

DO NOT DESTROY

PATENT
Attorney Docket No.: 17002-022500US
Client Reference No.: CT-1139

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

CROSS-REFERENCES TO RELATED APPLICATIONS

INSAI

This application is related to Application No. , entitled "System for ^{Ad 1} ~~Selecting and Playing Songs in a Playback Device with a Limited User Interface,~~" (Atty. Docket No. 17002-020800); and Application No. , entitled "~~Audioplayback Device with Power Savings Storage Access Mode,~~" (Atty. Docket No. 17002-022400), all filed January 5, 2001, the disclosures of which are incorporated herein by reference.

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BACKGROUND OF THE INVENTION

Today, portable consumer electronic devices are more powerful than ever.

For example, small, portable music playback devices can store hundreds, even thousands, of compressed songs and can play back the songs at high quality. With the capacity for so many songs, a playback device can store many songs from different albums, artists, styles of music, etc.

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Music jukeboxes implemented in software executed by a digital computer and portable MP3 and CD players both provide facilities for forming playlists. For example, the **OOZIC** player, distributed by the assignee of the present application, runs on a host PC and has a playlist feature that allows selection of tracks from the PC's hard disk to be included in the playlist.

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As storage capacity increases and songs are compressed to shorter file lengths the number of songs that can be stored increases rapidly. Major problems facing the consumer are organizing and accessing the tracks.

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Typically, portable devices have a user interface including a small screen and buttons. Using such a compact user interface to navigate and select among hundreds of songs is inefficient and often frustrating. The display screen can only show a few song titles at one time, and the limited controls make it difficult for a user to arbitrarily select, or move among, the songs.

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The creation of playlists is one technique to organize the playing of songs. A set of songs can be included in a playlist which is given a name and stored. When the playlist is accessed, the set of songs can be played utilizing various formats such as sequential play or shuffle.

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However, the creation of playlists itself becomes problematic as the number of songs increases, since the user often arbitrarily selects songs from a large number of tracks to form a playlist. This selection mechanism: can be fairly tedious; does not necessarily produce playlists that are of interest to the user over the course of time; may not remain up-to-date if new songs are added that logically fit into a previously created playlist (e.g. "Favorites by Band X" might become out of date if a new favorite by Band X is added after the playlist was created); and leads to "lost" songs that are not members of any playlist.

Accordingly, improved techniques for organizing and grouping tracks useful in a portable music player are needed.

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SUMMARY OF THE INVENTION

According to one aspect of the present invention, a technique is provided for organizing tracks on a portable music player by automatically filing tracks in a hierarchical order based on attributes of the tracks.

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According to another aspect of the invention, metadata is associated with each track that is used to automatically define the track's appropriate place in the hierarchy.

According to another aspect of the invention, the hierarchy is displayed on the portable music player so that a user can traverse the organizational hierarchy to find individual tracks or find playlists composed of logical groups of tracks.

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According to another aspect of the invention, the hierarchy is derived by using metadata associated with the audio content that was obtained through any source of metadata (e.g. CDDDB metadata, id3v2 metadata, other obtainable metadata) and subsequently stored with or alongside the file that stores the track.

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According to another aspect of the invention, a file is formatted so that an unaltered track is stored as file data and information about the track is stored in file attribute files.

Other features and advantages of the invention will be apparent in view of the following detailed description and appended drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic diagram of a tree structure for hierarchical filing of tracks;

Fig. 2 is a definition file that specifies the hierarchy depicted in Fig. 1;
Fig. 3 is a user's view of the hierarchy;
Fig. 4 is a schematic diagram of a user interface displaying the hierarchical
category structure;
5 Fig. 5 is a diagram of a file format for storing filed data and file attributes;
Fig. 6 is a flow chart depicting steps for filing tracks according to the
hierarchical tree structure;
Fig. 7 depicts a tree resulting from searching the tracks; and
Fig. 8 depicts a format for a user interface.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the invention will now be described in the context
of a portable personal player that plays audio files stored in memory. The files may be in
15 MP3, wav, or other digital formats.

In the presently described embodiment, users are able to see the tracks on their
player in some organized fashion other than as a single list of tracks. As will be described in
more detail below, in one embodiment tracks are sorted utilizing a tree structure having
branches labeled according to types of metadata associated with the tracks

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For example, a track recorded as "Golden Slumbers" by the Beatles that
appears on their album "Hey Jude" might appear as a track under the album "Abbey Road" as
well as a track under the list of tracks by the Beatles. It might appear as a track under the
genre "Pop Rock" as well as "Songs from the 60's." Furthermore, the organization can have
more complex hierarchies. For example, the category of "Pop Rock" might contain
25 subcategories "British Musicians," "American Musicians" and "Other Musicians". In all
cases, the track is automatically filed into all appropriate locations without requiring user
interaction.

In the currently defined embodiment, a tree structure is defined by a file
having the following structure.

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The first line of a TreeDef.inf file contains a version number:

V1.0

Each subsequent line (at least in v1.0) contains lines of the following format:

CATEGORY_NAME|TRACK_TYPE_MASK|CATEGORY_STRUCTURE

CATEGORY_NAMES are the top-level names of the branch under which tracks are sorted. They include things like "Album," "Artist," "Voice Tracks," "All Tracks," etc.

TRACK_TYPE_MASKs tell which types of tracks are to be filed under this particular branch. The actual value is a hexadecimal numerical value (in '0x' format, e.g. 0x01) generated by ORing the following flags together as appropriate:

```
enum tTrackType
{
    10     kTTNothing=0x00,
        kTTSong=0x01,
        kTTVoice=0x02,
        kTTBook=0x04,
        kTTMacro=0x08,
    15     kTTPlaylist=0x10
};
```

So, for example, the "Album" branch has a TRACK_TYPE_MASK of kTTSong, because only songs are filed under that branch, but the "All Tracks" branch has a TRACK_TYPE_MASK of (kTTSong | kTTVoice | kTTBook).

Other elements might be added to tTrackType (e.g. kTTVideo) as appropriate.

CATEGORY_STRUCTUREs tell how to file the songs based on their metadata information. The CATEGORY_STRUCTURE is a string of characters that tell, from left to right, the order of hierarchy. The characters come from the following enum constants:

```
enum tFileTag
{
    30     kFTNone='@',
        kFTTrackType='T',
        kFTTitle='N',
        kFTAudioFile='F',
        kFTArtist='M',
        kFTAlbum='L',
};
```

```
5      kFTGenre='G',  
      kFTSource='S',  
      kFTYear='Y',  
      kFTArtistCountry='C'  
      };
```

Thus, a CATEGORY_STRUCTURE of LN tells to create a subcategory that is a list of Albums, each of which contains a list of Tracks.

In total, a line like:

```
10 Album|0x01|LN
```

Says to create a branch called "Album" which contains tracks of type kTTSong organized first by album name, and then by track name. *

```
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```

The following is an example of a tree definition file similar (though not identical) to the hierarchy presented in the Nomad Jukebox product (the 'B' before each FileTag was used to identify that these are basic tags so that we wouldn't run out of letters in the alphabet as we included more complex metadata – thus each group of two letters represents a level in the hierarchy):

```
20 V1.0  
Album|0x01|BLBN  
Artist|0x01|BMBN  
Genre|0x01|BGBN  
Voice Tracks|0x02|BSBGBN  
Playlists|0x10|BN  
25 Macros|0x08|BN  
All Tracks|0x07|BN
```

Fig. 1 depicts a hypothetical organization hierarchy. The tree shows how tracks might be listed (as leaves in the tree) after having been organized. Example values for nodes in the tree are shown as well. The same track may appear more than once as a leaf in the tree, as described above, if it fits into multiple categories (e.g. a song that appears on the Abbey Road branch would also appear in the Beatles branch). In the example shown, the first branch contains tracks organized by album. As shown in the example, this music collection contains three tracks from "Abbey Road" and three tracks from "Hits from the

60's". The second branch contains tracks organized by artist, and sub organized by where the artist is from. Thus, a user browsing would first select the "Artists" branch and then choose between "British Artists" and "American Artists". Finally, they would select the particular artist. In the third branch, all tracks are shown.

5 The tree definition file that would specify the hierarchy shown in Figure 1 is shown in Figure 2.

 The first line identifies the version of the tree definition file.

 The second line defines the "Albums" branch. The first part of the line, "Albums" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BLBN," defines that the branch lists first the names of all albums (BL) and then tracks on those albums (BN).

 The third line defines the "Artists" branch. The first part of the line "Artists" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BCBMBN," defines that the branch lists first the names of all countries where artists in this collection come from (BC) and under those items, the artists' names (BM), and then tracks by those artists (BN).

 Fig. 3 shows what a user's view of this hierarchy might be if he/she were shown a fully expanded view of the 6-song tree. Notice that each song appears three times, once in each branch.

 In consumer products the tree define file is not edited directly but through a user interface, one example of which is depicted in Fig. 4. An example of a user interface for viewing songs by category and editing the tree structure is depicted in Fig. 4.

 An embodiment of the invention is utilized in the Nomad® Jukebox, manufactured by the assignee of the present invention, and described more fully in the copending application, filed on the same date as the present application, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Attny. Docket No. 17002-020800).

 In a preferred embodiment, metadata is associated with each track and includes such information as title, genre, artist name, type, etc. In the preferred embodiment, software stored in a portable player and executed by the onboard processor automatically files each track in the correct category utilizing the associated metadata and the tree define file. The program code can be stored in any computer readable medium including magnetic storage, CD ROM, optical media, or digital data encoded on an electromagnetic signal.

Thus, the user is automatically provided with a powerful and flexible tool for organizing and categorizing the tracks stored on the portable player.

If the tracks are formatted in MP3 format the metadata can be stored in ID3 tags included in the MP3 file. In one embodiment of the invention, the tracks are stored in alternate file format including file data and file attributes. The file data is the music track itself and the file attributes part of the file includes fields of arbitrary size which are used to store metadata characterizing the track stored as the file data. Again this metadata includes information about the track such as title, genre, artist name, type, etc.

There are several advantages to using the alternate file format. Metadata of types not easily included in an ID3 tag can be utilized. Further, the original track format is not changed, so that error correction data such as checksums are valid. Finally, any file format can be used (e.g. WAV, WMA, etc.) because the metadata is stored separately, and thus audio formats that have limited support for metadata can still be stored on the portable player in native format without transcoding. The formatted files are formed by software stored in the portable music player and executed by an on-board processor.

The metadata for each track is utilized to file each track, using the categories defined in the hierarchical structure as described above, without any input from the user.

Fig. 5 is a schematic diagram of the alternative file format including file data in the form of an MP3 track, and metadata fields for holding data indicating the name of the album the track is from, the name of the song, the genre of the song, and the type of track.

A particular embodiment of a file format will now be described. All tracks are created with some set of attributes as shown below:

Definition of TrackInfo Data Field

Field	Offset	Size	Description
Attribute Count	0	2	The number of attribute follow for the track
Attr 1 type	2	2	Binary = 0, ASCII = 1
Attr 1 name len	4	2	Length of attribute name string
Attr1 data len	6	4	Length of attribute data
Attr1 Name	10	N	Attribute name string
Attr 1 Data	10+N	M	Attribute data

....			
....			
Attr N type			
Attr 1 name len			
Attr1 data len			
Attr1 Name			
Attr 1 Data			

Required Attributes

Attribute Name	Value(s)	Remarks
TITLE	ASCII string	<u>Required By Jukebox</u>
CODEC	"MP3", "WMA", "WAV"	<u>Required By Jukebox</u>
TRACK ID	DWORD	Set By Jukebox
ALBUM	ASCII string	Optional
ARTIST	ASCII string	Optional
GENRE	ASCII string	Optional
LENGTH	In seconds	Optional
TRACK SIZE	In bytes	Optional
TRACK NUM	1-n (track within album)	Optional

5 These attributes can be subsequently changeable via a host application, running on a personal computer connected to the portable music player.

10 Fig. 6 shows a flow chart of an embodiment the process used to build the hierarchical database of tracks. It starts by iterating through each track, and, for each track, iterating through each branch to find if the track belongs on the branch, and, if so, where. In this case, the term track could refer to any content, e.g. a music track, a spoken word track, or even a video track.

Also, the hierarchical catalog of tracks can be used to form playlists in a structured manner. For example, if a user wants to hear Jazz and Blues the entire sub-categories can be selected to form one playlist.

5 An alternative hierarchical catalog generation technique will now be described. In this alternative embodiment, at system startup and as tracks are added or changed, the hierarchy is generated as an in-memory tree structure. Each track is added to the tree using the categories ALBUM, ARTIST and GENRE.

The following example shows the algorithm for adding a track. For clarity, only the attributes used by the tree are shown.

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TITLE	"Free Falling"
ALBUM	"Full Moon Fever"
ARTIST	"Tom Petty"
GENRE	"Rock"
TRACK NUM	1

The following function is executed to build the in-memory memory tree.

Build Tree ()

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For each track,

Add Track To Category(Album, Track)

Add Track To Category(Artist, Track)

Add Track To Category(Genre,Track)

End of Build Tree

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Fig. 7 depicts a tree which could result from implementing Build Tree() function. Note that "Stardust" does not have any entries for Album or Artist. The host software running on a computer connected to the portable music player could be utilized to add missing attributes to the "Stardust" track and, optionally, edit the title attribute. The Build Tree() function would then reinsert this track in the correct location in the tree.

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Fig. 8 is an embodiment of a user interface according to another embodiment of the invention. In this example the root node is labeled "My Configuration" and the Playlist category has been selected and the Playlist subcategory "Meddle" has been selected.

Note that the types of Metadata, in this example, Track Name, Artist, Album, Tempo and Dance, are listed across the top of the screen, and the attribute values for each track are listed in a row across the screen. Various control buttons are displayed to the right of configuration window that facilitate quickly invoking selected processing on a selected track.

5 The invention has now been described with reference to the preferred embodiments. Alternatives and substitutions will now be apparent to persons of skill in the art.

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WHAT IS CLAIMED IS:

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1 A method, performed by a processor in a portable digital music player,
2 for filing audio tracks stored on a computer readable media, with each audio track having
3 metadata associated therewith including category value data for naming attributes of the track
4 and type data indicating the type of track, said method comprising the acts of:
5 reading a definition file that defines an ordered hierarchical tree structure, with
6 the file including category names for naming the branch under which tracks are sorted, track
7 type information specifying which type of tracks are to be sorted under the branch, and
8 structure information defining how to file tracks based on associated metadata;
9 for each track, iteratively determining, base on metadata describing the track,
10 if the track belongs in the branch, and, for each branch in which the track belongs, traversing
11 the branch to determine the appropriate location to file the track.

1 2. The method of claim 1, where said act of searching further comprises
2 the acts of:
3 utilizing track type information to file only tracks of a specified type under a
4 particular branch.

1 3. The method of claim 1 further comprising the acts of:
2 for each branch, utilizing category structure information to file tracks in a
3 specified attribute order.

1 4. The method of claim 1, where said portable digital music player
2 includes a display screen and a user interface for interacting with the display, further
3 comprising the acts of:
4 displaying the categories and subcategories on the display in a hierarchical
5 order;
6 displaying all names of tracks associated with a category or sub-category
7 when a user utilizes the interface to select a category or sub-category;

8 utilizing the pointer to access and play a track when a user selects a track
9 name through the user interface. and
10 utilizing the pointer to access and play a collection of tracks within a category
11 or subcategory when a user selects a category or subcategory through the user interface.

1 5. A method, implemented by a processor in a portable digital music
2 player, for associating metadata with audio tracks comprising the acts of:
3 opening a formatted file for each track comprising a file data portion and a file
4 attributes portion, with the file attributes portion including a plurality of fields corresponding
5 to category types and file types;
6 storing an unmodified audio track in the file data portion of the formatted file;
7 and
8 storing category type and file type information about the unmodified track in
9 corresponding fields.

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1 6. A method, performed by a processor in a portable digital music player,
2 for filing audio tracks, stored on a computer readable media, under categories in an in-
3 memory tree structure, with each audio track having metadata associated therewith including
4 category name data for naming, said method comprising the acts of:
5 upon startup or when a track is added or changed, searching the metadata of
6 each track; and
7 for each track, automatically filing the track by category name under each
8 selected category to form a hierarchical track filing scheme.

1 7. The method of claim 6 further comprising the act of:
2 selecting the categories to be the Album including the track, the title of the
3 track, and the name of the artist that recorded the track.

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8. The method of claim 6, where said portable digital music player includes a display screen and a user interface for interacting with the display, further comprising the acts of:
displaying the categories on the display in a hierarchical order;
displaying all names of tracks associated with a category when a user utilizes the interface to select a category ;
accessing and playing a track when a user selects a track name through the user interface. and
accessing and playing a collection of tracks within a category when a user selects a category through the user interface.

9. A computer program product comprising:
a computer readable medium having program code embodied therein for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track, said program code comprising:
program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata;
program code, executed by a processor, for each track, for iteratively determining, base on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track.

10. A computer program product comprising:
a computer readable medium for having program code embodied therein for filing audio tracks, stored on a computer readable media, under categories in an in-memory tree structure, with each audio track having metadata associated therewith including category name data for naming, said program code comprising:

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA** the specification of which _____ is attached hereto or _____ was filed on _____ as Application No. _____ and was amended on _____ (if applicable).

I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56. I claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

I claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application No.	Date of Filing	Status
unknown	January 5, 2001	pending
unknown	January 5, 2001	pending

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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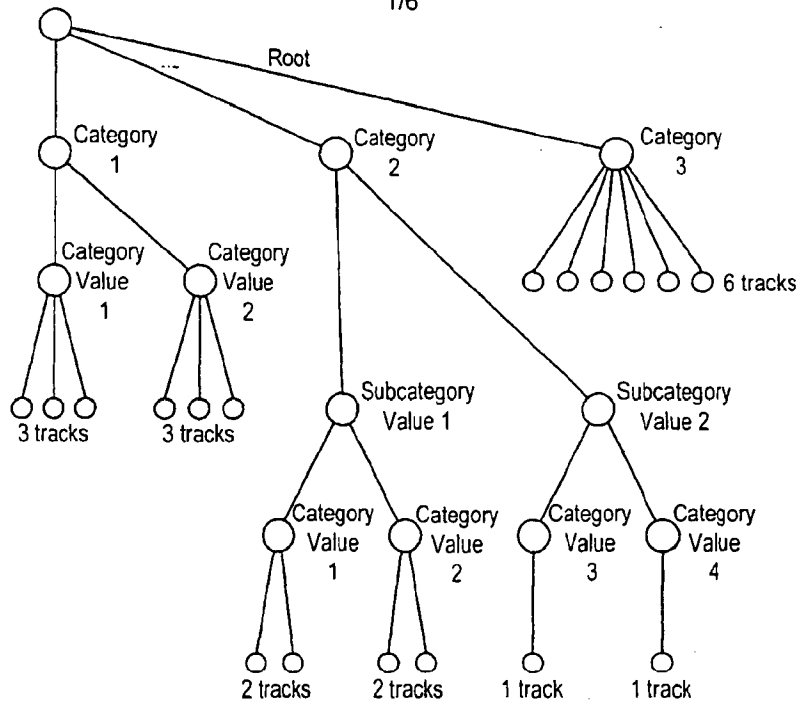
Full Name of Inventor 2:	Last Name: EGAN	First Name: HOWARD	Middle Name or Initial: N.	
Residence & Citizenship:	City: Capitola	State/Foreign Country: California	Country of Citizenship: United States	
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I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 1	Signature of Inventor 2
<u>RON GOODMAN</u>	<u>HOWARD N. EGAN</u>
Date	Date

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For example:

Category 1 = Album Name
Category Value 1 = Abbey Road
Category Value 2 = Hits from the 60's

Category 2 = Artist Name
Subcategory Value 1 = British Artists
Subcategory Value 2 = American Artists
Category Value 1 = The Beatles
Category Value 2 = Petula Clark
Category Value 3 = Mamas and the Papas
Category Value 4 = Nick Drake

Category 3 = All tracks

FIG. 1.

V1.0
Albums|0x01|BLBN
Artists|0x01|BCBMBN
All Tracks|0x01|BN

FIG. 2.

002200 2255200

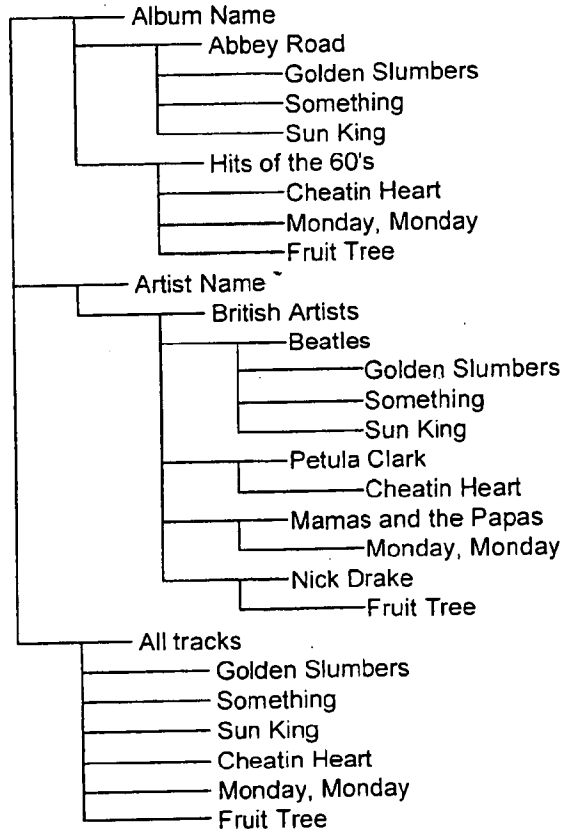


FIG. 3.

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09755722.00000

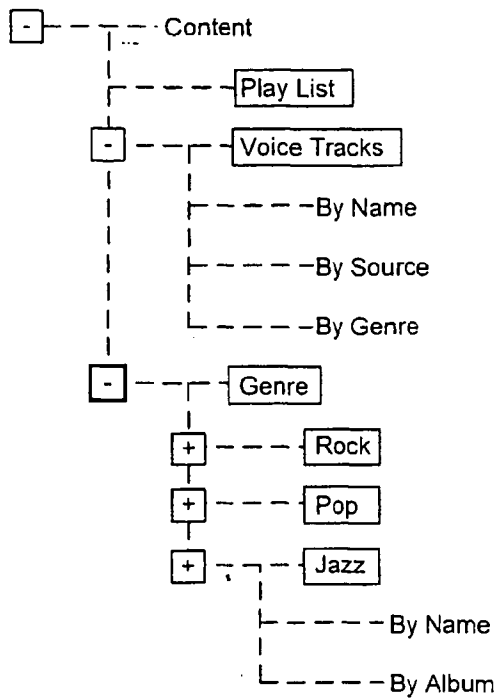


FIG. 4.

file data	album	name	genre	type
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FIG. 5.

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09755720 040204

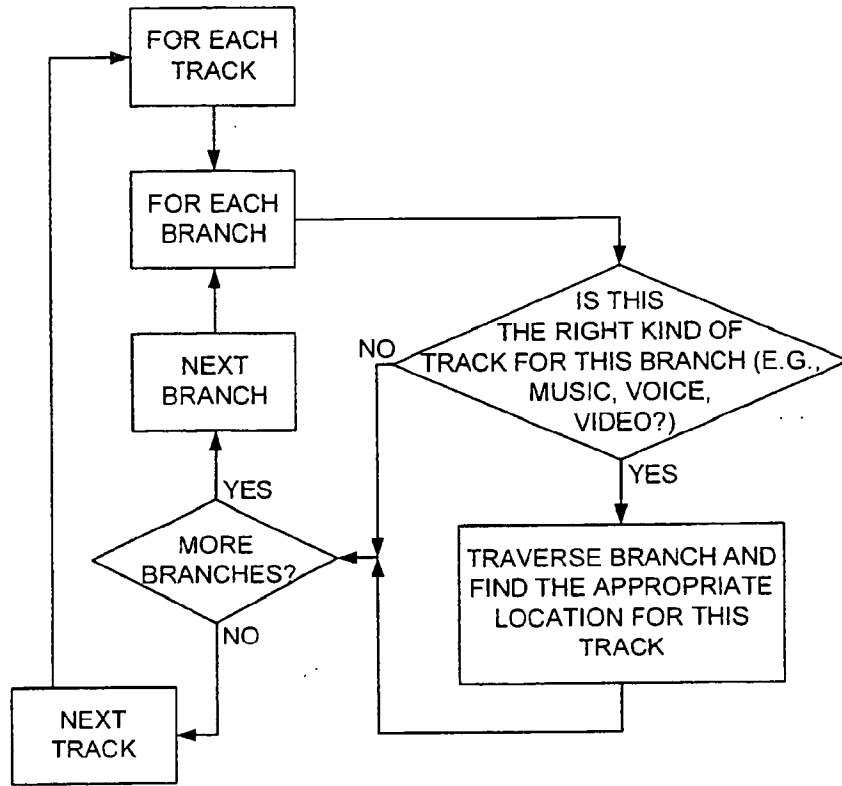


FIG. 6.

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100260 225960

Albums	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road The Boy In The Bubble Graceland	
	Graceland		
	Hotel California	Hotel California New Kid In Town	
	Unknown (Created for items without Album attribute)	Track 1 Stardust	
Artist	Tom Petty	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road
	Eagles	Hotel California	Hotel California New Kid In Town
	Paul Simon	Graceland	The Boy In The Bubble Graceland
Genre	Rock	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road
		Hotel California	Hotel California New Kid In Town
		Graceland	The Boy In The Bubble Graceland

FIG. 7.

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002607 E2455460

Oasis Play - My Configuration

Playlists

Track Name Artist Album Tempo Dance

Meddle/Pink Floyd	Pink Floyd	Meddle	Slow	Hi
One of these days	Pink Floyd	Meddle	Med	Med
A Pillow of W...	Pink Floyd	Meddle	Slow	Lo
Fearless	Pink Floyd	Meddle	Fast	Hi
San Tropez	Pink Floyd	Meddle	Slow	Hi
Sea	Pink Floyd	Meddle	Slow	Lo
Echoes	Pink Floyd	Meddle	Slow	Lo

The Wall/Pink Floyd

All Playlists

The Wall

Meddle

All Songs

Buttons: New Playlist..., Convert Format..., Copy To Clipboard, Cut To Clipboard, Paste from Clipboard, Delete

Playback controls: Stop, Play/Pause, Next, Previous

FIG. 8.

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 #2

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APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY IDENTIFICATION NUMBER
09/755,723	01/05/2001	Ron Goodman	17002-022500

20350
 TOWNSEND AND TOWNSEND AND CREW
 TWO EMBARCADERO CENTER
 EIGHTH FLOOR
 SAN FRANCISCO, CA 94111-3834

CONFIRMATION NO. 3728

FORMALITIES LETTER



OC00000005783175

Date Mailed: 02/21/2001

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.
- The balance due by applicant is \$ 130.

The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Substitute drawings in compliance with 37 CFR 1.84 because:
 - drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch);

*A copy of this notice **MUST** be returned with the reply.*

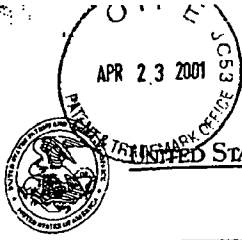
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UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
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APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
09/755,723	01/05/2001	Ron Goodman	17002-022500

CONFIRMATION NO. 3728

20350
TOWNSEND AND TOWNSEND AND CREW
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

FORMALITIES LETTER



Date Mailed: 02/21/2001

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.
- The balance due by applicant is \$ 130.

The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Substitute drawings in compliance with 37 CFR 1.84 because:
 - drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch);

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FEB 25 10 41 AM '01
TOWNSEND & CREW
SAN FRANCISCO

09/23/2001 09:00:00 201430
09/23/01 100.00 CR 09755723

A copy of this notice MUST be returned with the reply.

CL 000073

Frank Geromeu
Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 1 - ATTORNEY/APPLICANT COPY

CL 000074

QIPK JC53 3D
APR 23 2001
PATENT & TRADEMARK

Please type a plus sign (+) inside this box → *

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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PTO/SB/21 (08-00)

#3

TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application Number	09/755,723
	Filing Date	January 5, 2001
	First Named Inventor	GOODMAN, RON, et. al.
	Group Art Unit	2185
	Examiner Name	
Total Number of Pages in This Submission	Attorney Docket Number	017002022500

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input checked="" type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input checked="" type="checkbox"/> Assignment Papers (for an Application) <input checked="" type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition Routing Slip (PTO/SB/69) and Accompanying Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Copy of PTO Notice, Recordation Cover Sheet, ADS
Remarks		The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.

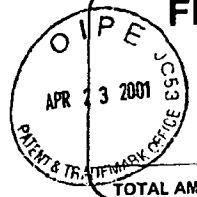
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm and Individual name	Townsend and Townsend and Crew LLP Charles E. Krueger	
		Reg No. 30,077
Signature		
Date	4/17/01	

CERTIFICATE OF MAILING		
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this date: 4-18-01		
Typed or printed name	D. Bullock	
Signature		Date
		4-18-01

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SF 1210973 v1

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FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$) 170

Complete If Known	
Application Number	09/755,723
Filing Date	January 5, 2001
First Named Inventor	GOODMAN, RON, et. al.
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Group Art Unit	2185
Attorney Docket No.	017002022500

METHOD OF PAYMENT		FEE CALCULATION (continued)																																																																																																																																																																																					
<p>1. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:</p> <p>Deposit Account Number: 20-1430</p> <p>Deposit Account Name: Townsend and Townsend and Crew LLP</p> <p><input checked="" type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17</p> <p><input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27</p>		<p>3. ADDITIONAL FEES</p> <table border="1"> <thead> <tr> <th>Large Fee Code</th> <th>Entity (\$)</th> <th>Small Fee Code</th> <th>Entity (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>105</td><td>130</td><td>205</td><td>65</td><td>Surcharge - late filing fee or oath</td><td>130</td></tr> <tr><td>127</td><td>50</td><td>227</td><td>25</td><td>Surcharge - late provisional filing fee or cover sheet.</td><td></td></tr> <tr><td>139</td><td>130</td><td>139</td><td>130</td><td>Non-English specification</td><td></td></tr> <tr><td>147</td><td>2,520</td><td>147</td><td>2,520</td><td>For filing a request for reexamination</td><td></td></tr> <tr><td>112</td><td>920*</td><td>112</td><td>920*</td><td>Requesting publication of SIR prior to Examiner action</td><td></td></tr> <tr><td>113</td><td>1,840*</td><td>113</td><td>1,840*</td><td>Requesting publication of SIR after Examiner action</td><td></td></tr> <tr><td>115</td><td>110</td><td>215</td><td>55</td><td>Extension for reply within first month</td><td></td></tr> <tr><td>116</td><td>390</td><td>216</td><td>195</td><td>Extension for reply within second month</td><td></td></tr> <tr><td>117</td><td>890</td><td>217</td><td>445</td><td>Extension for reply within third month</td><td></td></tr> <tr><td>118</td><td>1,390</td><td>218</td><td>695</td><td>Extension for reply within fourth month</td><td></td></tr> <tr><td>128</td><td>1,890</td><td>228</td><td>945</td><td>Extension for reply within fifth month</td><td></td></tr> <tr><td>119</td><td>310</td><td>219</td><td>155</td><td>Notice of Appeal</td><td></td></tr> <tr><td>120</td><td>310</td><td>220</td><td>155</td><td>Filing a brief in support of an appeal</td><td></td></tr> <tr><td>121</td><td>270</td><td>221</td><td>135</td><td>Request for oral hearing</td><td></td></tr> <tr><td>138</td><td>1,510</td><td>138</td><td>1,510</td><td>Petition to institute a public use proceeding</td><td></td></tr> <tr><td>140</td><td>110</td><td>240</td><td>55</td><td>Petition to revive - unavoidable</td><td></td></tr> <tr><td>141</td><td>1,240</td><td>241</td><td>620</td><td>Petition to revive - unintentional</td><td></td></tr> <tr><td>142</td><td>1,240</td><td>242</td><td>620</td><td>Utility issue fee (or reissue)</td><td></td></tr> <tr><td>143</td><td>440</td><td>243</td><td>220</td><td>Design issue fee</td><td></td></tr> <tr><td>144</td><td>600</td><td>244</td><td>300</td><td>Plant issue fee</td><td></td></tr> <tr><td>122</td><td>130</td><td>122</td><td>130</td><td>Petitions to the Commissioner</td><td></td></tr> <tr><td>123</td><td>50</td><td>123</td><td>50</td><td>Petitions related to provisional applications</td><td></td></tr> <tr><td>128</td><td>180</td><td>128</td><td>180</td><td>Submission of Information Disclosure Sheet</td><td></td></tr> <tr><td>581</td><td>40</td><td>581</td><td>40</td><td>Recording each patent assignment per property (times number of properties)</td><td></td></tr> <tr><td>148</td><td>710</td><td>248</td><td>355</td><td>Filing a submission after final rejection (37 CFR § 1.129(a))</td><td></td></tr> <tr><td>149</td><td>710</td><td>249</td><td>355</td><td>For each additional invention to be examined (37 CFR § 1.129(b))</td><td></td></tr> <tr><td>179</td><td>710</td><td>279</td><td>355</td><td>Request for Continued Examination (RCE)</td><td></td></tr> <tr><td>189</td><td>900</td><td>189</td><td>900</td><td>Request for expedited examination of a design application</td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td>Other fee (specify) assignment recordation fee</td><td>40</td></tr> </tbody> </table>		Large Fee Code	Entity (\$)	Small Fee Code	Entity (\$)	Fee Description	Fee Paid	105	130	205	65	Surcharge - late filing fee or oath	130	127	50	227	25	Surcharge - late provisional filing fee or cover sheet.		139	130	139	130	Non-English specification		147	2,520	147	2,520	For filing a request for reexamination		112	920*	112	920*	Requesting publication of SIR prior to Examiner action		113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action		115	110	215	55	Extension for reply within first month		116	390	216	195	Extension for reply within second month		117	890	217	445	Extension for reply within third month		118	1,390	218	695	Extension for reply within fourth month		128	1,890	228	945	Extension for reply within fifth month		119	310	219	155	Notice of Appeal		120	310	220	155	Filing a brief in support of an appeal		121	270	221	135	Request for oral hearing		138	1,510	138	1,510	Petition to institute a public use proceeding		140	110	240	55	Petition to revive - unavoidable		141	1,240	241	620	Petition to revive - unintentional		142	1,240	242	620	Utility issue fee (or reissue)		143	440	243	220	Design issue fee		144	600	244	300	Plant issue fee		122	130	122	130	Petitions to the Commissioner		123	50	123	50	Petitions related to provisional applications		128	180	128	180	Submission of Information Disclosure Sheet		581	40	581	40	Recording each patent assignment per property (times number of properties)		148	710	248	355	Filing a submission after final rejection (37 CFR § 1.129(a))		149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))		179	710	279	355	Request for Continued Examination (RCE)		189	900	189	900	Request for expedited examination of a design application						Other fee (specify) assignment recordation fee	40
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<p>2. EXTRA CLAIM FEES</p> <p>Total Claims: [] -20** = [] X [] = []</p> <p>Independent Claims: [] -3** = [] X [] = []</p> <p>Multiple Dependent: [] X [] = []</p> <table border="1"> <thead> <tr> <th>Large Fee Code</th> <th>Entity (\$)</th> <th>Small Fee Code</th> <th>Entity (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>103</td><td>18</td><td>203</td><td>9</td><td>Claims in excess of 20</td><td></td></tr> <tr><td>102</td><td>80</td><td>202</td><td>40</td><td>Independent claims in excess of 3</td><td></td></tr> <tr><td>104</td><td>270</td><td>204</td><td>135</td><td>Multiple dependent claim, if not paid</td><td></td></tr> <tr><td>109</td><td>80</td><td>209</td><td>40</td><td>** Reissue independent claims over original patent</td><td></td></tr> <tr><td>110</td><td>18</td><td>210</td><td>9</td><td>** Reissue claims in excess of 20 and over original patent</td><td></td></tr> </tbody> </table> <p>SUBTOTAL (2) (\$)</p>		Large Fee Code	Entity (\$)	Small Fee Code	Entity (\$)	Fee Description	Fee Paid	103	18	203	9	Claims in excess of 20		102	80	202	40	Independent claims in excess of 3		104	270	204	135	Multiple dependent claim, if not paid		109	80	209	40	** Reissue independent claims over original patent		110	18	210	9	** Reissue claims in excess of 20 and over original patent		<p>The Commissioner is authorized to charge any additional fees to the above noted Deposit Account.</p> <p>*Reduced by Basic Filing Fee Paid</p> <p>SUBTOTAL (3) (\$) 170</p>																																																																																																																																																	
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SUBMITTED BY		Complete (if applicable)			
Name (Print/Type)	Charles E. Krueber	Registration No. (Attorney/Agent)	30,077	Telephone	415-576-0290
Signature		Date	4/17/01		

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

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CL 000076



DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA** the specification of which _____ is attached hereto or _____ was filed on _____ as Application No. _____ and was amended on _____ (if applicable).

I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56. I claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

I claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application No.	Date of Filing	Status
unknown	January 5, 2001	pending
unknown	January 5, 2001	pending

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Charles E. Krueger, Reg. No. 30,077
Paul C. Haughey, Reg. No. 31,836
Charles J. Kulas, Reg. No. 35,809
Daniel D. Tagliaferri, Reg. No. 43,178

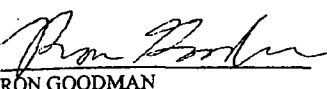

Send Correspondence to: Charles E. Krueger TOWNSEND and TOWNSEND and CREW LLP Two Embarcadero Center, 8 th Floor San Francisco, California 94111-3834	Direct Telephone Calls to: (Name, Reg. No., Telephone No.) Name: Charles E. Krueger Reg. No.: 30,077 Telephone: 415-576-0200
--	---

Full Name of Inventor 1:	Last Name: GOODMAN	First Name: RON	Middle Name or Initial:
Residence & Citizenship:	City: Santa Cruz	State/Foreign Country: California	Country of Citizenship: United States
Post Office Address:	Post Office Address: 226 Jeter Street	City: Santa Cruz	State/Country: California Postal Code: 95060

CL 000077

Full Name of Inventor 2:	Last Name: EGAN	First Name: HOWARD	Middle Name or Initial: N.	
Residence & Citizenship:	City: Capitola	State/Foreign Country: California	Country of Citizenship: United States	
Post Office Address:	Post Office Address: 219 Elinor Street	City: Capitola	State/Country: California	Postal Code: 95010

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 1  RON GOODMAN	Signature of Inventor 2  HOWARD N. EGAN
Date 3/14/2001	Date 3-22-2001

SF 1175410 v1

ASSIGNMENT OF PATENT APPLICATION

WHEREAS, RON GOODMAN, of 226 Jeter Street, Santa Cruz, CA 95060; HOWARD N. EGAN, of 219 Elinor Street, Capitola, CA 95010; hereinafter referred to as "Assignors," are the inventors of the invention described and set forth in the below-identified application for United States Letters Patent:

Title of Invention: AUTOMATIC HIERARCHICAL CATEGORIZATION OF
MUSIC BY METADATA

Date(s) of Execution:

Filing Date: January 5, 2001

Application No.: 09/755,723; and

WHEREAS, CREATIVE TECHNOLOGY LTD., located at 31 International Business Park, Creative Resource, Singapore, 609921, hereinafter referred to as "ASSIGNEE," is desirous of acquiring ASSIGNORS' interest in the said invention and application and in any U.S. Letters Patent which may be granted on the same;

NOW, THEREFORE, TO ALL WHOM IT MAY CONCERN: Be it known that, for good and valuable consideration, receipt of which is hereby acknowledged by Assignors, Assignors have sold, assigned and transferred, and by these presents do sell, assign and transfer unto the said Assignees, and Assignees' successors and assigns, all their right, title and interest in and to the said invention and application, and in and to any Letters Patent which may hereafter be granted on the same in the United States, the said interest to be held and enjoyed by said Assignees as fully and exclusively as it would have been held and enjoyed by said Assignors had this Assignment and transfer not been made, to the full end and term of any Letters Patent which may be granted thereon, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof.

Assignors further agree that they will, without charge to Assignee, but at Assignee's expense, cooperate with Assignee in the prosecution of said application and/or applications, execute, verify, acknowledge and deliver all such further papers, including applications for Letters Patent and for the reissue thereof, and instruments of assignment and transfer thereof, and will perform such other acts as Assignee lawfully may request, to obtain or maintain Letters Patent for said invention and improvement, and to vest title thereto in Assignee, or Assignee's successors and assigns.

Assignors hereby authorize and request Townsend and Townsend and Crew LLP, Two Embarcadero Center, 8th Floor, San Francisco, CA 94111-3834, to insert herein above the application number and filing date of said application when known.

IN TESTIMONY WHEREOF, Assignors have signed their names on the dates indicated.

CL 000079

Assignment
Attorney Docket No.: 17002-022500US
Page 2

Dated: 3/14/2001

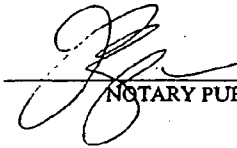

RON GOODMAN

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On March 14, 2001, before me, Jacqueline W. Bazzano, personally appeared RON GOODMAN, personally known to me (~~or proved to me on the basis of satisfactory evidence~~) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.




NOTARY PUBLIC

My Commission Expires: 4/2/2001

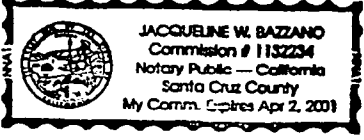
Dated: 3-22-2001

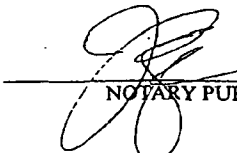

HOWARD N. EGAN

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On March 22, 2001, before me, Jacqueline W. Bazzano (Notary Public), personally appeared HOWARD N. EGAN, personally known to me (~~or proved to me on the basis of satisfactory evidence~~) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.




NOTARY PUBLIC

My Commission Expires: 4/2/2001

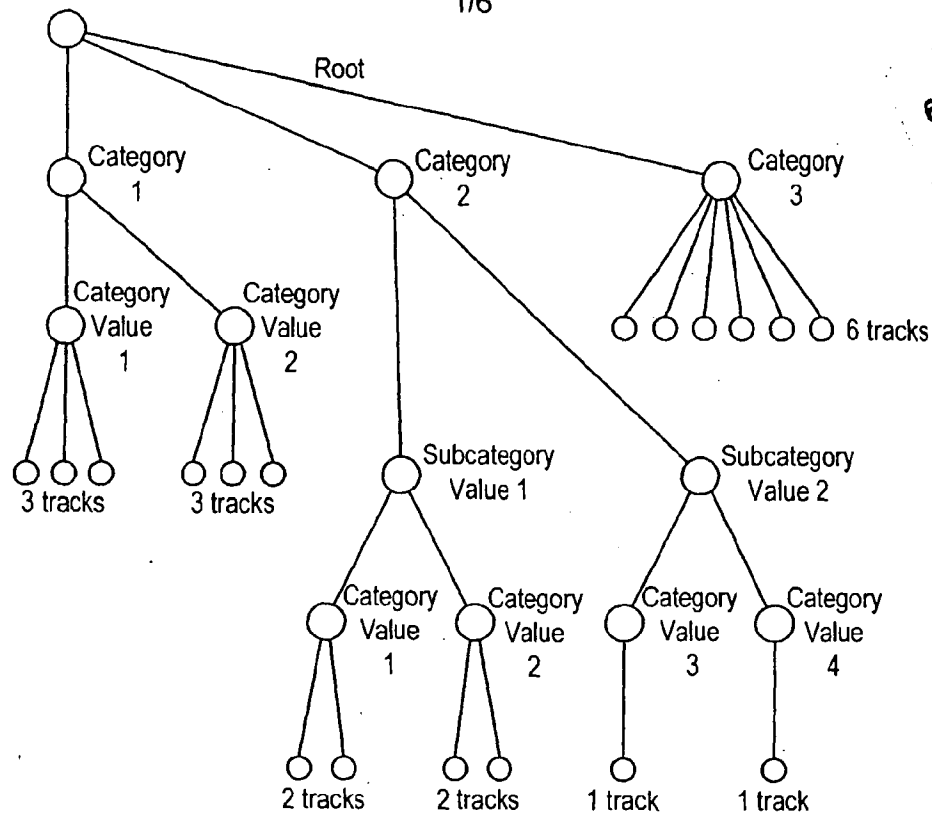
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#3

+

6928433

1/6



For example:

- Category 1 = Album Name
 - Category Value 1 = Abbey Road
 - Category Value 2 = Hits from the 60's

- Category 2 = Artist Name
 - Subcategory Value 1 = British Artists
 - Subcategory Value 2 = American Artists
 - Category Value 1 = The Beatles
 - Category Value 2 = Petula Clark
 - Category Value 3 = Mamas and the Papas
 - Category Value 4 = Nick Drake

- Category 3 = All tracks

FIG. 1.

CL 000081



V1.0
Albums|0x01|BLBN
Artists|0x01|BCBMBN
All Tracks|0x01|BN

FIG. 2.

7 0 0 2 2 7 0 " 2 2 2 5 2 6 0

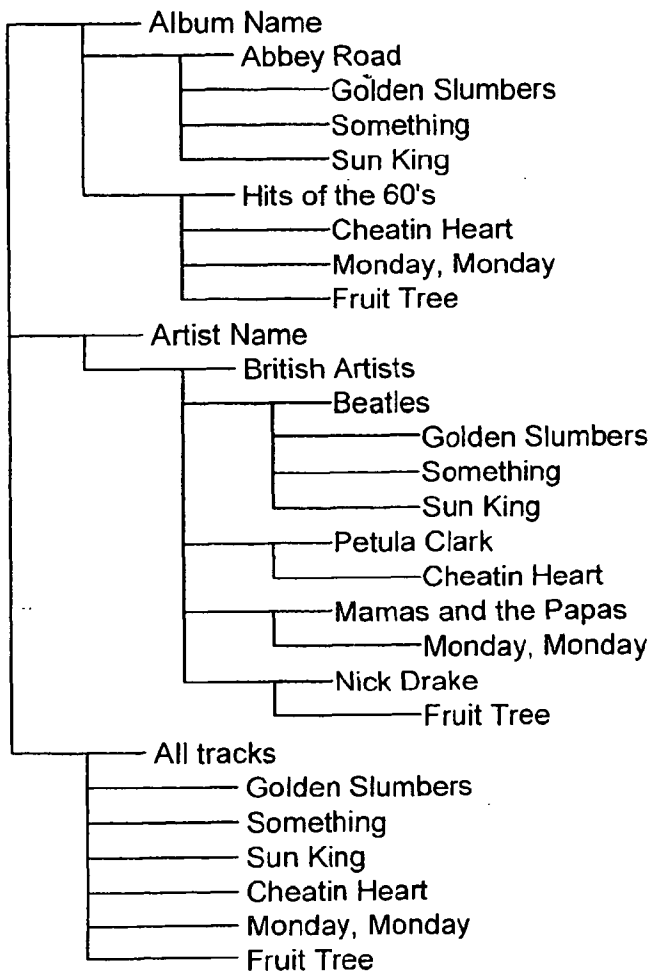


FIG. 3.

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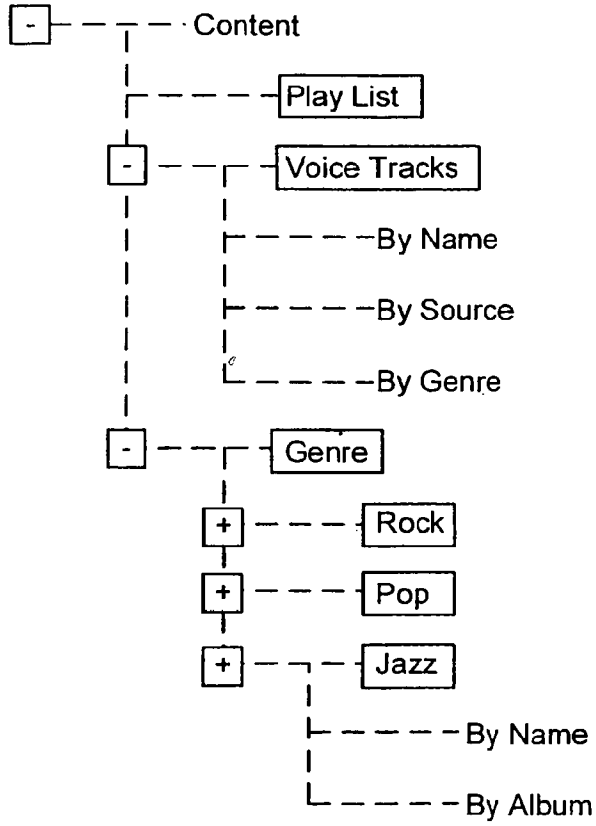


FIG. 4.

file data	album	name	genre	type
-----------	-------	------	-------	------

FIG. 5.

CL 000083

FOR EVIDENCE

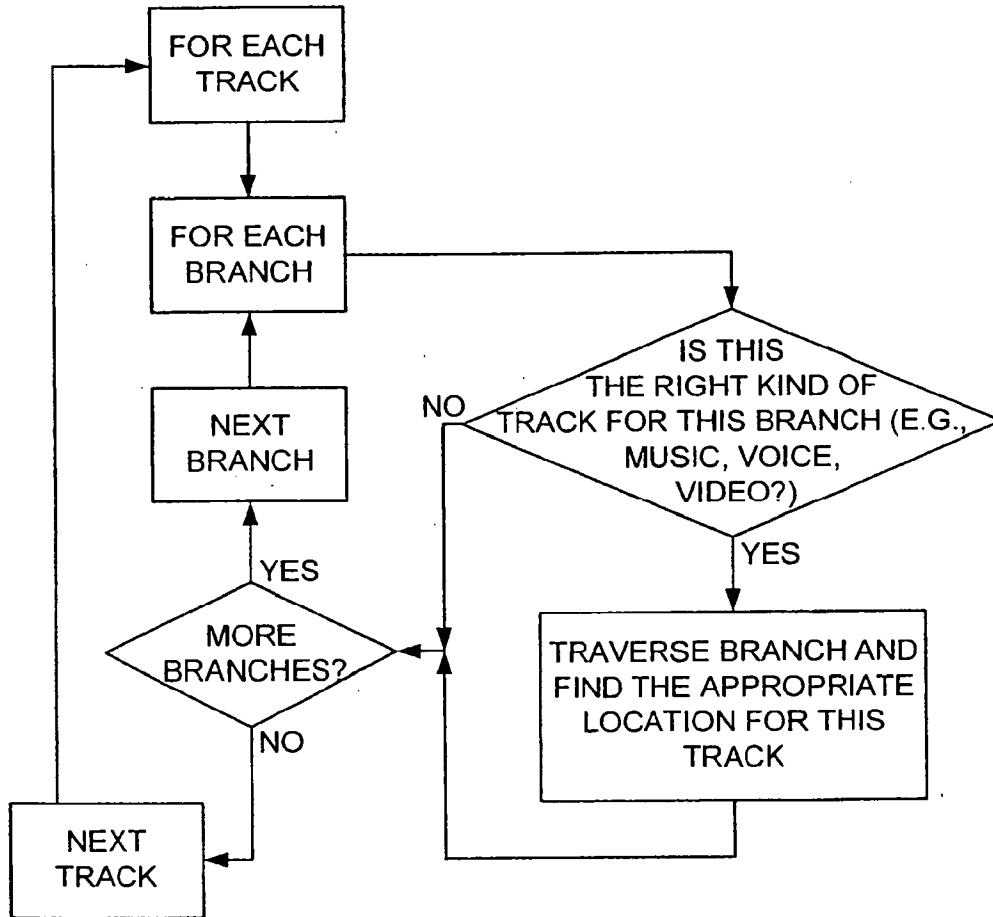


FIG. 6.

CL 000084



+

THE 22-1107 22-2552-60

Albums	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road The Boy In The Bubble Graceland
	Graceland	
	Hotel California	Hotel California New Kid In Town
	Unknown (Created for items without Album attribute)	Track 1
		Stardust
Artist	Tom Petty	Full Moon Fever Free Falling I Won't Back Down Love Is A Long Road
	Eagles	Hotel California New Kid In Town
	Paul Simon	The Boy In The Bubble Graceland
Genre	Rock	Free Falling I Won't Back Down Love Is A Long Road
		Hotel California New Kid In Town
		The Boy In The Bubble Graceland

FIG. 7.

CL 000085

Oasis Play - My Configuration

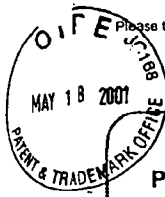
Playlists

P	Track Name	Artist	Album	Tempo	Dance
<input checked="" type="checkbox"/>	Meddle/Pink Floyd	Pink Floyd	Meddle	Slow	Hi
<input type="checkbox"/>	One of these days	Pink Floyd	Meddle	Med	Med
<input type="checkbox"/>	A Pillow of W...	Pink Floyd	Meddle	Slow	Lo
<input type="checkbox"/>	Fearless	Pink Floyd	Meddle	Fast	Hi
<input type="checkbox"/>	San Tropez	Pink Floyd	Meddle	Slow	Hi
<input type="checkbox"/>	Sea	Pink Floyd	Meddle	Slow	Lo
<input type="checkbox"/>	Echoes	Pink Floyd	Meddle	Slow	Lo
<input type="checkbox"/>	The Wall/Pink Floyd				
<input checked="" type="checkbox"/>	All Playlists				
<input type="checkbox"/>	The Wall				
<input type="checkbox"/>	Meddle				
<input type="checkbox"/>	All Songs				

FIG. 8.

CL 000086

#4



Please type a plus sign (+) inside this box: → +

PTO/SB/81 (10-00) Approved for use through 10/31/2002. OMB 0651-0035 U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY OR AUTHORIZATION OF AGENT	Application Number	09/755,723
	Filing Date	January 5, 2001
	First Named Inventor	Ron Goodman
	Group Art Unit	2185
	Examiner Name	
	Attorney Docket Number	017002-022500US

I hereby appoint:

Practitioners at Customer Number → Place Customer Number Bar Code Label here

OR

Practitioner(s) named below:

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

The above-mentioned Customer Number.
OR

Firm or Individual Name

Address

Address

City State

Country

Telephone Fax

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MAY 22 2001
Technology Center 210c

I am the:
 Applicant/Inventor.
 Assignee of record of the entire interest. See 37 CFR 3.71.
Certificate under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

SIGNATURE of Applicant or Assignee of Record

Name	Ng Keh Long
Signature	<i>Ng Keh Long</i>
Date	April 10, 2001

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

*Total of 1 forms are submitted.

Burden Hour Statement: This form is estimated to take 3 minutes to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231. SF 1197815 v1

CL 000087

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)Applicant/Patent Owner: Creative Technology LTD.Application No./Patent No.: 09/755,723 Filed/Issue Date: January 5, 2001Entitled: Automatic Hierarchical Categorization of Music by MetadataCreative Technology LTD., a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. the assignee of the entire right, title, and interest; or
2. an assignee of an undivided part interest

in the patent application/patent identified above by virtue of either:

- A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

- B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

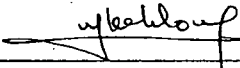
Additional documents in the chain of title are listed on a supplemental sheet.

- Copies of assignments or other documents in the chain of title are attached.

[NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.8]

The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of the assignee.

April 10, 2001
Date


Signature

Ng Keh Long

Typed or printed name

Chief Financial Officer

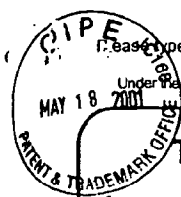
Title

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CL 000088

2185



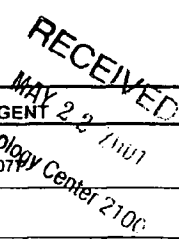
Please type a plus sign (+) inside this box → +
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PTO/SB/21 (08-00)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application Number	09/755,723	
	Filing Date	January 5, 2001	
	First Named Inventor	GOODMAN, RON, et. al.	
	Group Art Unit	2185	
	Examiner Name		
Total Number of Pages in This Submission	4	Attorney Docket Number	017002022500

ENCLOSURES (check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition Routing Slip (PTO/SB/69) and Accompanying Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input checked="" type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Rule 3.73(b) Statement, copy of assignment
Remarks		The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm and Individual name	Townsend and Townsend and Crew LLP Charles E. Krueger	Reg No. 30,071
Signature		
Date	5/10/01	



CERTIFICATE OF MAILING			
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this date:			
			5-14-01
Typed or printed name	D. Bullock	Signature	
		Date	5-14-01

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CL 000089



#5

Inventor Information

Inventor One Given Name:: RON
 Family Name:: GOODMAN
 Name Suffix::
 Postal Address Line One:: 226 Jeter Street
 City:: Santa Cruz
 State or Province:: CA
 Postal or Zip Code:: 95060
 Citizenship Country:: US

Inventor Two Given Name:: HOWARD
 Family Name:: EGAN
 Name Suffix::
 Postal Address Line One:: 219 Elinor Street
 City:: Capitola
 State or Province:: CA
 Postal or Zip Code:: 95010
 Citizenship Country:: US

FOE2HO-82255260

Correspondence Information

Correspondence Customer Number:: 20350

Application Information

Title Line One:: AUTOMATIC HIERARCHICAL
 Title Line Two:: CATEGORIZATION OF
 Title Line Three:: MUSIC BY METADATA
 Total Drawing Sheets:: 6
 Formal Drawings?:: Yes
 Application Type:: Utility
 Docket Number:: 017002022500
 Secrecy Order in Patent Appl.?:: No

U.S. PATENT AND TRADEMARK OFFICE
APR 23 2001
JCE3
PHOTOGRAPHY

I hereby certify that this correspondence being deposited with the United States Postal Service as first class mail in an envelope addressed to:

PATENT # 61
12-2
M.L.
Attorney Docket No.: 017002-022500US
Client Reference No.: CT-1139

Assistant Commissioner for Patents
Washington, D.C. 20231

On 4-18-01

TOWNSEND and TOWNSEND and CREW LLP

By: *[Signature]*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

GOODMAN et al.

Art Unit: 2185

Application No.: 09/755,723

PRELIMINARY AMENDMENT

Filed: January 5, 2001

For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-referenced application, please enter the following amendments and remarks.

IN THE SPECIFICATION:

Please substitute the following for the paragraph appearing on page 1 under the CROSS-REFERENCES TO RELATED APPLICATIONS heading. A marked up version of the paragraph is appended to this amendment.

CAI
AI
6-3-04
6-3-5

This application is related to Application No. 09/755,629, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Atty. Docket No. 17002-020800); and Application No. 09/755,367, entitled "Audioplayback Device with Power Savings Storage Access Mode," (Atty. Docket No. 17002-022400); both filed January 5, 2001, the disclosures of which are incorporated herein by reference.
U.S. Patent 6,590,730

CL 000091

Y

GOODMAN et al.
Application No.: 09/755,723
Page 2

PATENT

REMARKS

By this amendment information regarding related applications that was not available at the time of filing has been added. Entrance of the amendment is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,


Charles E. Krueger
Reg. No. 30,077

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200
Fax: (415) 576-0300
CEK:deb
SF 1210990 v1

CL 000092

EX

Marked Up Version of Amended Paragraph 09/755.723

This application is related to Application No. [/ ,] 09/755.629, entitled
"System for Selecting and Playing Songs in a Playback Device with a Limited User Interface,"
(Atty. Docket No. 17002-020800); and Application No. [/ ,] 09/755.367, entitled
"Audioplayback Device with Power Savings Storage Access Mode," (Atty. Docket No.
5 17002-022400), **[all] both** filed January 5, 2001, the disclosures of which are incorporated herein
by reference.

TELETYPE UNIT IS REQUIRED FOR THIS SERVICE

CL 000093

A



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United States Patent and Trademark Office
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Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	3728

20350 7590 01/15/2003

TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER

PUNIT, PRAKASH C

ART UNIT PAPER NUMBER

2175

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/755,723	GOODMAN ET AL.	
	Examiner	Art Unit	
	Prakash C Punit	2175	

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

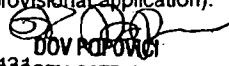
- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.

- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Applic |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |


DOV POPOVIC
 SUPERVISORY PATENT EXAMINER
 TECHNOLOGY CENTER 2100

CL 000095

DETAILED ACTION

1. This action is in response to application dated 01/05/2001. Claims 1-10 are pending in this office action.

Claim Objections

2. Claims 1-4 and 9 are objected to because of the following informalities:

In claim 1, line 9: the claim recitation "base" should be --based--. Appropriate correction is required.

08
11/13/03

Claims 2-4 are ^{objected} ~~objects~~ to because claims 2-4 are dependent from objected independent claim 1.

In claim 9, line 12: the claim recitation "base" should be --based--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Grewe et al. (U.S. Patent No.5,670,730.)

CL 000096

As to claim 1, Grewe et al. teaches a method, performed by a processor in a portable digital music player, for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track (see Abstract, see Fig. 3, and see column 1, lines 6-21), said method comprising the acts of:

reading a definition file that defines an ordered hierarchical tree structure (see Fig. 2, see column 1, lines 47-49), with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata (see column 1, lines 49-67);

for each track, iteratively determining, base on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track (see Abstract, see Fig. 3, also see column 3, lines 45-49.)

As to claim 2, Grewe et al. teaches a method, where said act of searching further comprises the acts of:

utilizing track type information to file only tracks of a specified type under a particular branch (see Abstract, see column 3, lines 47-53.)

As to claim 3, Grewe et al. teaches a method further comprising the acts of:

CL 000097

for each branch, utilizing category structure information to file tracks in a specified attribute order (see column 4, lines 19-35.)

As to claim 4, Grewé et al. teaches a method, where said portable digital music player includes a display screen and a user interface for interacting with the display (see column 1, lines 13-21), further comprising the acts of:

displaying the categories and subcategories on the display in a hierarchical order (see column 2, lines 49-51, also see column 3, lines 38-44);

displaying all names of tracks associated with a category or sub-category when a user utilizes the interface to select a category or sub-category (see column 1 line 65 through column 2, line 3, also see column 3, lines 49-53);

utilizing the pointer to access and play a track when a user selects a track name through the user interface (see column 3, lines 53-57, also see column 3, lines 17-19) and

utilizing the pointer to access and play a collection of tracks within a category or subcategory when a user selects a category or subcategory through the user interface (see column 3, lines 55-57.)

As to claim 5, Grewé et al. teaches a method, implemented by a processor in a portable digital music player, for associating metadata with audio tracks (see Abstract) comprising the acts of:

CL 000098

opening a formatted file for each track comprising a file data portion and a file attributes portion, with the file attributes portion including a plurality of fields corresponding to category types and file types (see column 3, lines 45-49);

storing an unmodified audio track in the file data portion of the formatted file (see column 4, lines 19-21);

and

storing category type and file type information about the unmodified track in corresponding fields (see column 2, line 37 through column 3, line 28.)

As to claim 6, Grewe et al. teaches a method, performed by a processor in a portable digital music player, for filing audio tracks, stored on a computer readable media, under categories in an in memory tree structure, with each audio track having metadata associated therewith including category name data for naming (see Abstract, see column 1, lines 46-56), said method comprising the acts of:

upon startup or when a track is added or changed, searching the metadata of each track (see column 1, lines 58-65); and

for each track, automatically filing the track by category name under each selected category to form a hierarchical track filing scheme (see column 5, lines 34-54.)

As to claim 7, Grewe et al. teaches a method further comprising the act of:

selecting the categories to be the Album including the track, the title of the track, and the name of the artist that recorded the track (see column 3, lines 45-53.)

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As to claim 8, Grewe et al. teaches a method, where said portable digital music player includes a display screen and a user interface for interacting with the display (see column 2, lines 49-51), further comprising the acts of:

displaying the categories on the display in a hierarchical order see column 2, lines 49-51, also see column 3, lines 38-44);

displaying all names of tracks associated with a category when a user utilizes the interface to select a category (see column 3, lines 49-53) ;

accessing and playing a track when a user selects a track name through the user interface (see column 3, lines 53-57, also see column 3, lines 17-19); and

accessing and playing a collection of tracks within a category when a user selects a category through the user interface ((see column 1 line 65 through column 2, line 3, also see column 3, lines 49-53.)

As to claim 9, Grewe et al. teaches a computer program product comprising:

a computer readable medium having program code embodied therein for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track (see Abstract), said program code comprising:

program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be

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sorted under the branch, and structure information defining how to file tracks based on associated metadata (see Abstract, see summary);

program code, executed by a processor, for each track, for iteratively determining, based on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track (see Fig. 3, see column 3, lines 45-49, also see column 4, lines 10-14.)

As to claim 10, Grewe et al. teaches a computer program product comprising:

a computer readable medium for having program code embodied therein for filing audio tracks, stored on a computer readable media, under categories in an in-memory tree structure,

with each audio track having metadata associated therewith including category name data for naming (see Abstract, see column 1, lines 46-56), said program code comprising:

program code, executed by a processor, upon startup or when a track is added or changed, for searching the metadata of each track (see column 1, lines 58-65); and

program code, executed by a processor, for each track, for automatically filing the track by category name under each selected category to form a hierarchical track filing scheme (see column 5, lines 34-54.)

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Art Unit: 2175

The following patents are cited to further show the state of art with respect to method of organizing music in general:

U.S. Patent No. 5,670,730 to Grewe et al.

U.S. Patent No. 5,616,876 to Cluts.

U.S. Patent No. 5,918,303 to Yamaura et al.

U.S. Patent No. 5,969,283 to Looney et al.

U.S. Patent No. 5,062,868 to Toriumi.

U.S. Patent No. 5,248,946 to Dwek.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prakash Punit whose telephone number is (703) 305-5914. The examiner can normally be reached on Mondays – Fridays from 9:45 am to 6:15 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici, can be reached on (703) 305-3830. The fax numbers of the group is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Prakash Punit
Patent Examiner
Art Unit 2175


DOV POPOVICI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

January 10, 2003

CL 000102

Notice of References Cited	Application/Control No. 09/755,723	Applicant(s)/Patent Under Reexamination GOODMAN ET AL.	
	Examiner Prakash C Punit	Art Unit 2175	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
A	US-5,670,730	09-1997	Grewe et al.	84/609
B	US-5,616,876	04-1997	Cluts, Jonathan C.	84/609
C	US-5,918,303	06-1999	Yamaura et al.	84/609
D	US-5,969,283	10-1999	Looney et al.	84/609
E	US-6,062,868	05-2000	Toriumi, Hiroshi	434/307A
F	US-6,248,946	06-2001	Dwek, Norman Scott	84/609
G	US-			
H	US-			
I	US-			
J	US-			
K	US-			
L	US-			
M	US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
N					
O					
P					
Q					
R					
S					
T					

NON-PATENT DOCUMENTS

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)				
U					
V					
W					
X					

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 7

CL 000103



#8
5/21/03
Ad

Docket No.: 6407P212

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

RON GOODMAN, ET AL.

Application No.: 09/755,723

Filed: January 5, 2001

For: **AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA**

Art Group: 2175

Examiner: Punit, Prakash C

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PETITION FOR EXTENSION OF TIME PURSUANT TO 37 C.F.R. § 1.136(a)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 C.F. R. § 1.136(a), Applicants for the above-identified application respectfully Petition the Commissioner for a one (1) month extension of time, extending the period for response to May 15, 2003, from the Office Action dated January 15, 2003. The petition filing fee of \$110.00 and a Response to Office Action are attached.

If it should be determined that a longer extension of time is required to prevent this application from being abandoned, please charge any additional fees to Deposit Account No. 02-2666. A copy of the Fee Transmittal is enclosed for deposit account charging purposes.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Mark R. Vatuone

Mark R. Vatuone, Reg. No. 53,719

Date: 5/15/03

12400 Wilshire Blvd., 7th Floor
Los Angeles, California 90025
Telephone: (408) 947-8200

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Sarah M. Montgomery 5/15/03
Sarah M. Montgomery Date

05/21/2003 HNDHAMX1 00000022 09755723
91 FE:1251 110.00 OP

CL 000104



#9B
5/27/03
A.W.

Attorney's Docket No. 6407P212

Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re of Application of:

Ron Goodman et al.

Application No.: 09/755,723

Filing Date: January 5, 2001

For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

Examiner: Punit, Prakash C.

Art Group: 2175

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

on May 15, 2003
Date of Deposit

Sarah M. Montgomery
Name of Person Mailing Correspondence

Signature

Date

Commissioner for Patents
Washington, D.C. 20231

AMENDMENT AND RESPONSE TO THE OFFICE ACTION

Sir:

In response to the Office Action of January 15, 2003 please enter the following amendments and consider the following remarks.

AMENDMENT

1. IN THE CLAIMS

Please cancel claim 5, without prejudice.

Please amend the claims as follows:

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1. (Currently Amended) A method, performed by a processor in a portable digital music media player, for filing audio-media tracks stored on a computer readable media, with each audio-media track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track, said method comprising the acts of:
 - reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata;
 - for each track, iteratively determining, base based on metadata describing the track if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track.
2. (Original) The method of claim 1, where said act of searching further comprises the acts of:
 - utilizing track type information to file only tracks of a specified type under a particular branch.
3. (Original) The method of claim 1 further comprising the acts of:
 - for each branch, utilizing category structure information to file tracks in a specified attribute order.
4. (Currently Amended) The method of claim 1, where said portable digital music media player includes a display screen and a user interface for interacting with the display, further comprising the acts of:
 - displaying the categories and subcategories on the display in a hierarchical order;

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displaying all names of tracks associated with a category or sub-category when a user utilizes the interface to select a category or sub-category;

utilizing the pointer to access and play a track when a user selects a track name through the user interface; and

utilizing the pointer to access and play a collection of tracks within a category or subcategory when a user selects a category or subcategory through the user interface.

5. (Canceled)

6. (Currently Amended) A method, performed by a processor in a portable digital ~~music-media~~ player, for filing ~~audio-media~~ tracks, stored on a computer readable media, under categories in an in memory tree structure, with each ~~audio-media~~ track having metadata associated therewith including category name data for naming, said method comprising the acts of:

upon startup or when a track is added or changed, searching the metadata of each track; and

for each track, automatically filing the track by category name under each selected category to form a hierarchical track filing scheme.

7. (Original) The method of claim 6 further comprising ~~the act of~~:

selecting the categories to be the Album including the track, the title of the track, and the name of the artist that recorded the track.

8. (Currently Amended) The method of claim 6, where said portable digital ~~music-media~~ player includes a display ~~screen~~ and a user interface for interacting with the display, further comprising the acts of:

displaying the categories on the display in a hierarchical order;

displaying all names of tracks associated with a category when a user utilizes the interface to select a category ;

accessing and playing a track when a user selects a track name through the user interface; and

accessing and playing a collection of tracks within a category when a user selects a category through the user interface.

9. (Currently Amended) A computer program product comprising:

a computer readable medium having program code embodied therein for filing audio-media tracks stored on a computer readable media, with each audio-media track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track, said program code comprising:

program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata;

program code, executed by a processor, for each track, for iteratively determining, base based on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track.

10. (Currently Amended) A computer program product comprising:

a computer readable medium for having program code embodied therein for filing audio-media tracks, stored on a computer readable media, under categories in an in-memory tree structure, with each audio-media track having

metadata associated therewith including category name data for naming, said program code comprising:

program code, ~~execute~~ executed by a processor, upon startup or when a track is added or changed, for searching the metadata of each track; and

program code, executed by a processor, for each track, for automatically filing the track by category name under each selected category to form a hierarchical track filing scheme.

REMARKS

Reconsideration of this application, as amended, is earnestly requested.

Claims 1, 4, 6 and 8 – 10 have been amended as shown above. Claim 5 has been cancelled without prejudice.

Claims 1-4 and 9 were objected to because of certain informalities. These informalities have been corrected as shown above, and it is submitted that the objections to these claims have been overcome.

Claims 1 - 10 stand rejected under 35 U.S.C. 102(b) as being anticipated by Grewe et al., U.S. Patent 5,670,730 (hereinafter referred to as "Grewe"). This rejection is respectfully traversed.

Grewe teaches a system in which music files are provided with individual headers 36 that include category, artist, and track address information (Fig. 3, col. 3 from ln. 45). The track address information is used to identify the start and/or end location of the file, so that the music player can locate and play the file.

A global header 22 and a table of contents 34 are maintained separate from the individual music files. The global header 22 includes general information about the selections on the chip and how they were encoded, for example the distributor of the music and the bit rate at which the tracks have been encoded. Track selections are listed as part of the table of contents by individual headers 36. (Col. 3 ln. 23, Fig. 3). That is, as can be seen from the description and in particular Figs. 3 and 4, the "table of contents" is nothing more than a sequential list of the individual headers, appended one after another to the table of contents. The table of contents does not appear to be hierarchical¹ at all.

¹ Based on Applicants' understanding, Grewe's use of the term "hierarchical" appears to refer only to the predefined format of the individual headers and/or the global header.

Although it is not clearly stated how this is accomplished, it is a goal of Grewe to permit selection of tracks by category or artist. From the description of Grewe's "table of contents", it appears that such selections can only be made by searching serially through the sequential list of headers in the "table of contents" to identify the individual tracks meeting the criteria. While this may be an acceptable solution for small numbers of tracks, this method is going to be cumbersome when large numbers of tracks are involved or when the database is updated frequently.

Unlike Grewe, the current invention provides a hierarchical definition file that has a tree structure, including category names that name the branch under which tracks are listed. For each track, each branch in which the track belongs is determined, and the track is filed in the appropriate location in the branch. These limitations, found in claims 1 and 10, are not taught or suggested by Grewe.

Similarly, Grewe does not teach or suggest the method of claim 4. While Grewe does mention that music can be selected using the information in the headers (col. 3 lns. 50 - 57), there is little disclosure as to how this is accomplished. Similarly, while Grewe does mention that information can be presented on a display, there is no mention of displaying categories, subcategories and tracks in an hierarchical order for selection as defined in claim 4. Grewe does not even appear to contemplate subcategories at all. In particular, Grewe does not teach or disclose any of the specific displaying or utilizing steps in claim 4.

Similarly, Grewe does not teach the limitations of claims 6 and 9. The filing system of Grewe merely appends each individual header to the last individual header in the "table of contents," which thus is merely an elementary list of track headers (See Figs. 3 and 4). Grewe does not teach automatically filing a track by category name under each selected category, to form a hierarchical track filing scheme, as claimed in claims 6 and 9.

As set forth in MPEP 2131, to anticipate a claim the reference must teach every element of the claim. Since, as discussed above, every element of independent claims 1, 6, 9 and 10 is not taught by Grewe, Applicants submit that these claims are not anticipated by Grewe and are thus allowable.

Further, it is submitted that claims 2-4, 7 and 8 are allowable as being dependent on allowable base claims.

From at least the foregoing reasons, it is respectfully submitted that claims 1 - 4 and 6 -10 are allowable and allowance of the application is earnestly requested.

If there are any additional fees associated with this communication, please charge our Deposit Account No. 02-2666.

Respectfully submitted

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP



Mark R. Vatuone
Reg. No. 53,719

Date: May 15, 2003

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
(408) 947-8200



TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>		Application No.	09/755,723
		Filing Date	January 5, 2001
		First Named Inventor	Ron Goodman
		Group Art Unit	2175
		Examiner Name	Punit, Prakash C
Total Number of Pages in This Submission	11	Attorney Docket Number	6407P212

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ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input checked="" type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> PTO/SB/08 <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Basic Filing Fee <input type="checkbox"/> Declaration/POA <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <div style="border: 1px solid black; padding: 5px; width: fit-content;">Postcard.</div>
Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Mark R. Vatuone, Reg. No. 53,719 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	<i>Mark R. Vatuone</i>
Date	5/15/2003

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Typed or printed name	Sarah M. Montgomery
Signature	<i>Sarah M. Montgomery</i>
Date	5/15/03

Based on PTO/SB/21 (05-03) as modified by Blakely, Sokoloff, Taylor & Zafman (w/r) 05/02/2003.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

CL 000113



FEE TRANSMITTAL for FY 2003

Effective 01/01/2003. Patent fees are subject to annual revision.

Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT (\$) **110.00**

Complete if Known

Application Number	09/755,723
Filing Date	January 5, 2001
First Named Inventor	Ron Goodman
Examiner Name	Punit, Prakash C
Group/Art Unit	2175
Attorney Docket No.	6407P212

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<p>METHOD OF PAYMENT (check one)</p> <p><input checked="" type="checkbox"/> Check <input type="checkbox"/> Credit card <input type="checkbox"/> Money Order <input type="checkbox"/> Other <input type="checkbox"/> None</p> <p><input type="checkbox"/> Deposit Account</p> <p>Deposit Account Number: 02-2666</p> <p>Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP</p> <p>The Commissioner is authorized to: (check all that apply)</p> <p><input type="checkbox"/> Charge fee(s) indicated below <input checked="" type="checkbox"/> Credit any overpayments</p> <p><input checked="" type="checkbox"/> Charge any additional fee(s) required under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20.</p> <p><input type="checkbox"/> Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.</p>	<p>3. ADDITIONAL FEES</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th colspan="2">Large Entity</th> <th colspan="2">Small Entity</th> <th rowspan="2">Fee Description</th> <th rowspan="2">Fee Paid</th> </tr> <tr> <th>Fee Code</th> <th>Fee (\$)</th> <th>Fee Code</th> <th>Fee (\$)</th> </tr> </thead> <tbody> <tr> <td>1051</td> <td>130</td> <td>2051</td> <td>65</td> <td>Surcharge - late filing fee or oath</td> <td></td> </tr> <tr> <td>1052</td> <td>50</td> <td>2052</td> <td>25</td> <td>Surcharge - late provisional filing fee or cover sheet</td> <td></td> </tr> <tr> <td>2053</td> <td>130</td> <td>2053</td> <td>130</td> <td>Non-English specification</td> <td></td> </tr> <tr> <td>1812</td> <td>2,520</td> <td>1812</td> <td>2,520</td> <td>For filing a request for ex parte reexamination</td> <td></td> </tr> <tr> <td>1804</td> <td>920*</td> <td>1804</td> <td>920*</td> <td>Requesting publication of SIR prior to Examiner action</td> <td></td> </tr> <tr> <td>1805</td> <td>1,840*</td> <td>1805</td> <td>1,840*</td> <td>Requesting publication of SIR after Examiner action</td> <td></td> </tr> <tr> <td>1251</td> <td>110</td> <td>2251</td> <td>55</td> <td>Extension for reply within first month</td> <td>110.00</td> </tr> <tr> <td>1252</td> <td>410</td> <td>2252</td> <td>205</td> <td>Extension for reply within second month</td> <td></td> </tr> <tr> <td>1253</td> <td>930</td> <td>2253</td> <td>465</td> <td>Extension for reply within third month</td> <td></td> </tr> <tr> <td>1254</td> <td>1,450</td> <td>2254</td> <td>725</td> <td>Extension for reply within fourth month</td> <td></td> </tr> <tr> <td>1255</td> <td>1,670</td> <td>2255</td> <td>965</td> <td>Extension for reply within fifth month</td> <td></td> </tr> <tr> <td>1404</td> <td>320</td> <td>2401</td> <td>160</td> <td>Notice of Appeal</td> <td></td> </tr> <tr> <td>1402</td> <td>320</td> <td>2402</td> <td>160</td> <td>Filing a brief in support of an appeal</td> <td></td> </tr> <tr> <td>1403</td> <td>280</td> <td>2403</td> <td>140</td> <td>Request for oral hearing</td> <td></td> </tr> <tr> <td>1451</td> <td>1,610</td> <td>2451</td> <td>1,510</td> <td>Petition to institute a public use proceeding</td> <td></td> </tr> <tr> <td>1452</td> <td>110</td> <td>2452</td> <td>55</td> <td>Petition to revive - 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late filing fee or oath		1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet		2053	130	2053	130	Non-English specification		1812	2,520	1812	2,520	For filing a request for ex parte reexamination		1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action		1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action		1251	110	2251	55	Extension for reply within first month	110.00	1252	410	2252	205	Extension for reply within second month		1253	930	2253	465	Extension for reply within third month		1254	1,450	2254	725	Extension for reply within fourth month		1255	1,670	2255	965	Extension for reply within fifth month		1404	320	2401	160	Notice of Appeal		1402	320	2402	160	Filing a brief in support of an appeal		1403	280	2403	140	Request for oral hearing		1451	1,610	2451	1,510	Petition to institute a public use proceeding		1452	110	2452	55	Petition to revive - unavoidable		1453	1,300	2453	650	Petition to revive - unintentional		1501	1,300	2501	650	Utility issue fee (or reissue)		1502	470	2502	235	Design issue fee		1503	630	2503	315	Plant issue fee		1480	130	2480	130	Petitions to the Commissioner		1807	50	1807	50	Processing fee under 37 CFR 1.17(g)		1806	180	1806	180	Submission of Information Disclosure Stmt		8021	40	8021	40	Recording each patent assignment per property (times number of properties)		1809	750	1809	375	Filing a submission after final rejection (37 CFR § 1.129(a))		1810	750	2810	375	For each additional invention to be examined (37 CFR § 1.129(b))		1801	750	2801	375	Request for Continued Examination (RCE)		1802	900	1802	900	Request for expedited examination of a design application	
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1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	750	2001	375	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	520	2003	260	Plant filing fee	
1004	750	2004	375	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) (\$) _____

2. EXTRA CLAIM FEES

Total Claims: _____

Independent Claims: _____

Multiple Dependent: _____

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	64	2201	42	Independent claims in excess of 3	
1203	280	2203	140	Multiple Dependent claim, if not paid	
1204	64	2204	42	**Reissue independent claims over original patent	
1205	18	2205	9	**Reissue claims in excess of 20 and over original patent	

SUBTOTAL (2) (\$) _____

**For number previously paid, if greater, For Reissues, see below

SUBMITTED BY		Complete (if applicable)	
Name (Print/Type)	Mark R. Vatuone	Registration No. (Attorney/Agent)	53,719
Signature	<i>Mark R. Vatuone</i>	Telephone	(408) 947-8200
		Date	5/15/03

Based on PTO/SB/17 (01-03) as modified by Blakely, Sokoloff, Taylor & Zafman (M) 05/02/2003.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

CL 000114

PR4



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	3728

20350 7590 07/29/2003
 TOWNSEND AND TOWNSEND AND CREW, LLP
 TWO EMBARCADERO CENTER
 EIGHTH FLOOR
 SAN FRANCISCO, CA 94111-3834

EXAMINER

RONES, CHARLES

ART UNIT	PAPER NUMBER
2175	10

DATE MAILED: 07/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PRC

Office Action Summary	Application No. 09/755,723	Applicant(s) GOODMAN ET AL.	
	Examiner Charles L. Rones	Art Unit 2175	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 20 May 2003.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.

 4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-10 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____ .
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other:

DETAILED ACTION

The amendment timely filed May 20, 2003. Claims 1-10 are pending in this office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Grewe et al. (U. S. Patent No. 5,670,730.)

As to claim 1, Grewe et al. teaches a method, performed by a processor in a portable digital music player, for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track (see Abstract, see Fig. 3, and see column 1, lines 6-21), said method comprising the acts of:

reading a definition file that defines an ordered hierarchical tree structure (see Fig. 2, see column 1, lines 47-49), with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of

CL 000117

tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata (see column 1, lines 49-67);

for each track, iteratively determining, base on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track (see Abstract, see Fig. 3, also see column 3, lines 45-49.)

As to claim 2, Grewe et al. teaches a method, where said act of searching further comprises the acts of:

utilizing track type information to file only tracks of a specified type under a particular branch (see Abstract, see column 3, lines 47-53.)

As to claim 3, Grewe et al. teaches a method further comprising the acts of:

for each branch, utilizing category structure information to file tracks in a specified attribute order (see column 4, lines 19-35.)

As to claim 4, Grewe et al. teaches a method, where said portable digital music player includes a display screen and a user interface for interacting with the display (see column 1, lines 13-21), further comprising the acts of:

displaying the categories and subcategories on the display in a hierarchical order (see column 2, lines 49-51, also see column 3, lines 38-44);

CL 000118

displaying all names of tracks associated with a category or sub-category when a user utilizes the interface to select a category or sub-category (see column 1 line 65 through column 2, line 3, also see column 3, lines 49-53);

utilizing the pointer to access and play a track when a user selects a track name through the user interface (see column 3, lines 53-57, also see column 3, lines 17-19) and

utilizing the pointer to access and play a collection of tracks within a category or subcategory when a user selects a category or subcategory through the user interface (see column 3, lines 55-57.)

As to claim 5, Grewe et al. teaches a method, implemented by a processor in a portable digital music player, for associating metadata with audio tracks (see Abstract) comprising the acts of:

opening a formatted file for each track comprising a file data portion and a file attributes portion, with the file attributes portion including a plurality of fields corresponding to category types and file types (see column 3, lines 45-49);

storing an unmodified audio track in the file data portion of the formatted file (see column 4, lines 19-21); and

storing category type and file type information about the unmodified track in corresponding fields (see column 2, line 37 through column 3, line 28.)

- CL 000119

As to claim 6, Grewe et al. teaches a method, performed by a processor in a portable digital music player, for filing audio tracks, stored on a computer readable media, under categories in an in memory tree structure, with each audio track having metadata associated therewith including category name data for naming (see Abstract, see column 1, lines 46-56), said method comprising the acts of:

upon startup or when a track is added or changed, searching the metadata of each track (see column 1, lines 58-65); and

for each track, automatically filing the track by category name under each selected category to form a hierarchical track filing scheme (see column 5, lines 34-54.)

As to claim 7, Grewe et al. teaches a method further comprising the act of:

selecting the categories to be the Album including the track, the title of the track, and the name of the artist that recorded the track (see column 3, lines 45-53.)

As to claim 8, Grewe et al. teaches a method, where said portable digital music player includes a display screen and a user interface for interacting with the display (see column 2, lines 49-51), further comprising the acts of:

displaying the categories on the display in a hierarchical order see column 2, lines 49-51, also see column 3, lines 38-44);

displaying all names of tracks associated with a category when a user utilizes the interface to select a category (see column 3, lines 49-53) ;

accessing and playing a track when a user selects a track name through the user interface (see column 3, lines 53-57, also see column 3, lines 17-19); and

CL 000120

accessing and playing a collection of tracks within a category when a user selects a category through the user interface ((see column 1 line 65 through column 2, line 3, also see column 3, lines 49-53.)

As to claim 9, Grewe et al. teaches a computer program product comprising:

a computer readable medium having program code embodied therein for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track (see Abstract), said program code comprising:

program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata (see Abstract, see summary);

program code, executed by a processor, for each track, for iteratively determining, base on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track (see Fig. 3, see column 3, lines 45-49, also see column 4, lines 10-14.)

As to claim 10, Grewe et al. teaches a computer program product comprising:

CL 000121

a computer readable medium for having program code embodied therein for filing audio tracks, stored on a computer readable media, under categories in an in-memory tree structure,

with each audio track having metadata associated therewith including category name data for naming (see Abstract, see column 1, lines 46-56), said program code comprising:

program code, executed by a processor, upon startup or when a track is added or changed, for searching the metadata of each track (see column 1, lines 58-65); and

program code, executed by a processor, for each track, for automatically filing the track by category name under each selected category to form a hierarchical track filing scheme (see column 5, lines 34-54.)

Response to Arguments

Applicant's arguments filed May 20, 2003 have been fully considered but they are not persuasive.

Firstly, Applicant argues that Grewe does not disclose using a hierarchical definition file as stated in the claim.

In response, Examiner maintains that Grewe discloses such as stated above in the rejection of the claim wherein the hierarchical arrangement of headers and the table of contents are deemed to be hierarchical.

CL 000122

Secondly, Applicant argues that Grewe does not disclose display categories or subcategories and tracks in an hierarchical order for selection.

In response, Examiner maintains that Grewe discloses such wherein Grewe discloses that the information is displayable. See 2:36-54.

Lastly, Applicant argues that Grewe does not disclose automatically filing a track by category name under a selected category to form a hierarchical track filing scheme.

In response, Examiner maintains that Grewe discloses such wherein Grewe discloses that the headers are arranged hierarchically and that the headers contains a music filed to which the track of music belongs, such as jazz, classical, country, etc. which are deemed to be categories of music arranged hierarchically.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

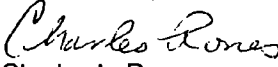
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

CL 000123

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles L. Rones whose telephone number is (703-306-3030. The examiner can normally be reached on Mondays – Fridays from Monday-Thursday 8am-4pm pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici, can be reached on (703-305-3830. The fax numbers of the group is (703)746-7239.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.


Charles L. Rones
Primary Examiner
Art Unit 2175

CL 000124

Notice of References Cited	Application/Control No. 09/755,723	Applicant(s)/Patent Under Reexamination GOODMAN ET AL.	
	Examiner Charles L. Ronos	Art Unit 2175	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
A	US-2003/0016940 A1	01-2003	Robbins, Gerald V.	386/46
B	US-			
C	US-			
D	US-			
E	US-			
F	US-			
G	US-			
H	US-			
I	US-			
J	US-			
K	US-			
L	US-			
M	US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
N					
O					
P					
Q					
R					
S					
T					

NON-PATENT DOCUMENTS

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
U	
V	
W	
X	

* A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office
PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 10

CL 000125

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Approved for use through 10/31/2002. PTO/SB/02 (10-02) Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

#11
8/103
AW

REVOCATION OF POWER OF ATTORNEY OR AUTHORIZATION OF AGENT	Application No.	09/755,723
	Filing Date	January 5, 2001
	First Named Inventor	Ron Goodman
	Group Art Unit	2175
	Examiner Name	Punit, Prakash C
	Attorney Docket Number	6407P212

I hereby revoke all previous powers of attorney or authorizations of agent given in the above-identified application:

A Power of Attorney or Authorization of Agent is submitted herewith.

AND

Please change the correspondence address for the above-identified application to:

Customer Number
OR

08791



<input type="checkbox"/> Firm or Individual Name	BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP					
Address	12400 Wilshire Boulevard, Seventh Floor					
Address						
City	Los Angeles	State	California	Zip Code	90025	
Country	U.S.A.	Telephone	(408) 947-8200	Fax	(408) 947-8280	

I am the:

Applicant.

Assignee of record of the entire interest. See 37 CFR 3.71. Statement under of 37 CFR 3.73(b) is enclosed. (Form PTO/SB/06)

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MAY 22 2003

Technology Center 2100

SIGNATURE of Applicant or Assignee of Record

Name	C. HOCK LEON
Signature	<i>[Handwritten Signature]</i>
Date	5/13/03

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

Total of _____ forms are submitted.

Burden Hour Statement: This form is submitted to take 0.5 hours to complete. There will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

CL 000126



Docket No.: 6407P212

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

RON GOODMAN, ET AL.

Application No.: 09/755,723

Filed: January 5, 2001

For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

Art Group: 2175

Examiner: Punit, Prakash C

POWER OF ATTORNEY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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Sir:

Applicant of the above-identified Application, hereby appoints the persons listed on Appendix A attached hereto (which is incorporated by reference and a part of this document), with full power of substitution and revocation, to prosecute this Application and to transact all business in the Patent and Trademark Office connected herewith.

Please direct all future communications concerning this Application to:

André L. Marais, Reg. No. 48,095
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
12400 Wilshire Boulevard, Seventh Floor
Los Angeles, CA 90025
(714) 557-3800

Creative Technology Ltd.

Date: 5/8/03

CL 000127

Appendix A

I hereby appoint with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith, BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP, a firm including: Ramih Aghevli, Reg. No. 43,462; William E. Alford, Reg. No. 37,764; Farzad E. Amini, Reg. No. 42,261; W. Thomas Babbitt, Reg. No. 39,591; Jordan M. Becker, Reg. No. 39,602; Michael A. Bernadacou, Reg. No. 35,834; Roger W. Blakely, Jr., Reg. No. 25,831; R. Alan Burnett, Reg. No. 48,149; Gregory D. Caldwell, Reg. No. 39,928; Cory G. Claassan, Reg. No. 50,298; Thomas M. Coester, Reg. No. 39,837; Mimi D. Dao, Reg. No. 45,828; Stephen M. De Klerk, Reg. No. 48,503; Daniel M. De Vos, Reg. No. 37,813; Sanjeet Dutta, Reg. No. 46,145; Tarek N. Fahmi, Reg. No. 41,402; Thomas S. Ferril, Reg. No. 42,532; George L. Fountain, Reg. No. 36,374; Adam Furst, Reg. No. 51,710; Angelo J. Gaz, Reg. No. 45,907; Andre M. Gibbs, Reg. No. 47,583; James Y. Go, Reg. No. 40,821; Jeffery S. Hellason, Reg. No. 48,765; James A. Herry, Reg. No. 41,064; William E. Hickman, Reg. No. 48,771; Willmore F. Holbrow III, Reg. No. 41,845; Sheryl Sue Holloway, Reg. No. 37,850; George W. Hoover II, Reg. No. 32,982; Eric S. Hymat, Reg. No. 30,139; Astam A. Jaffary, Reg. No. 51,841; Walter T. Kim, Reg. No. 42,731; Eric T. King, Reg. No. 44,188; Steven Laut, Reg. No. 47,736; Suk S. Lee, Reg. No. 47,745; Gordon R. Lindem III, Reg. No. 33,192; Jan C. Little, Reg. No. 41,181; Joseph Lutz, Reg. No. 43,765; Lawrence E. Lycka, Reg. No. 38,540; Michael J. Maffie, Reg. No. 36,591; Andrea L. Marzls, Reg. No. 48,095; Raul D. Martinez, Reg. No. 46,904; Paul A. Mendonsa, Reg. No. 42,879; Jonathan S. Miller, Reg. No. 48,634; Heather M. Mollur, Reg. No. 50,432; Richard A. Nakashima, Reg. No. 42,023; Thinh V. Nguyen, Reg. No. 42,034; Robert B. O'Rourke, Reg. No. 46,872; Daniel E. Ovarazian, Reg. No. 41,238; Philip A. Pedigo, Reg. No. 52,107; Marina G. Portnova, Reg. No. 45,750; Joseph A. Pugh, Reg. No. 52,137; James H. Safer, Reg. No. 35,868; William W. Schaaf, Reg. No. 39,018; James C. Schaller, Reg. No. 31,185; Saina S. Shamlov, Reg. No. 48,288; Kevin G. Shao, Reg. No. 45,085; Stanley W. Sokoloff, Reg. No. 25,128; Judith A. Szapesl, Reg. No. 39,393; Edwin H. Taylor, Reg. No. 25,129; Lisa Tom, Reg. No. 52,291; John F. Travis, Reg. No. 43,203; Kerry D. Tweet, Reg. No. 45,858; Mark C. Van Ness, Reg. No. 39,885; Thomas A. Van Zandt, Reg. No. 43,219; Mark R. Vatuone, Reg. No. 53,718; Lester J. Vincent, Reg. No. 31,460; John P. Ward, Reg. No. 40,216; Mark L. Watson, Reg. No. 48,322; Thomas C. Webster, Reg. No. 48,154; Chui-Iou Teresa Wong, Reg. No. 48,042; and Norman Zafman, Reg. No. 28,250, my patent attorneys, and Brent Vecchia, Reg. No. 48,011 and Lehua Wang, Reg. No. 48,023, my patent agents, with offices located at 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025, telephone (310) 207-3800; and James R. Thain, Reg. No. 31,710, my patent attorney, also appoint P. Francois de Villiers, Reg. No. 48,200 of Creative Labs Inc., a corporation having principal offices at 1901 McCarthy Boulevard, Milpitas, California 95035; with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.



Docket No. 6407P212

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Creative Technology Ltd

Application No./Patent No.: 09/755,723 Filing/Issue Date: 1/5/2001

Entitled: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

Creative Technology Ltd, a Limited Liability Corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)
of Singapore,

states that it is:

- 1. the assignee of the entire right, title and interest; or
- 2. an assignee of an undivided part interest

in the patent application/patent identified above by virtue of either:

A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the Patent and Trademark Office at Reel 011788, Frame 0174, or for which a copy thereof is attached.

OR

B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: _____ To: _____

The document was recorded in the Patent and Trademark Office at Reel 011788, Frame 0174, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet.

Copies of assignments or other documents in the chain of title are attached.

(NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the PTO. See MPEP 302-302.8)

The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of assignee.

05/09/03
Date

[Signature]
Signature

André L. Marais, Reg. No. 48,095

Typed or printed name

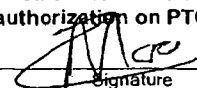
Title

Burden Hour Statement: This form is estimated to take 0.1 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

CL 000129



#12
11/13/03
AW

NOTICE OF APPEAL FROM THE EXAMINER TO THE BOARD OF PATENT APPEALS AND INTERFERENCES		Docket Number (Optional) 6407P212	
I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. <u>10/29/03</u>		In re Application of Ron Goodman, et al.	
Signature <u>Dawn Shaw</u>		Application Number 09/755,723	Filed 01/05/2001
Typed or printed name <u>Dawn Shaw</u>		For AUTOMATIC HIERARCHICAL CATEGORIZATION	
		Art Unit 2175	Examiner Charles Rones
Applicant hereby appeals to the Board of Patent Appeals and Interferences from the last decision of the examiner.			
The fee for this Notice of Appeal is (37 CFR 1.17(b))		_____ \$330.00	
<input type="checkbox"/> Applicant claims small entity status under 37 CFR 1.27. Therefore, the fee shown above is reduced by half, and the resulting fee is: _____			
<input checked="" type="checkbox"/> A check in the amount of the fee is enclosed.			
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.			
<input checked="" type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account. I have enclosed a duplicate copy of the fee transmittal.			
<input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. <u>02-2666</u> . I have enclosed a duplicate copy of the fee transmittal.			
<input type="checkbox"/> A petition for an extension of time under 37 CFR 1.136(a) (PTO/SB/22) is enclosed.			
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2039.			
I am the		 Signature	
<input type="checkbox"/> applicant/inventor.		<u>André L. Marais, Reg. No. 48,095</u> Typed or printed name	
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)			
<input checked="" type="checkbox"/> attorney or agent of record.		<u>10/29/03</u> Date	
<input type="checkbox"/> attorney or agent acting under 37 CFR 1.34(a). Registration number if acting under 37 CFR 1.34(a) _____			
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.			
<input type="checkbox"/> *Total of _____ forms are submitted.			

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Technology Center 2100

Based on PTO/SB/01 (09-03) as modified by Blakely, Sokoloff, Taylor & Zehman (w/09/11/2003, 11/05/2003 BABRAHAI 00000124 09755723
 SEND TO: Mail Stop Appeal, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

01 FC:1401

330.00 0P

CL 000130



AF/£
2775
2700

TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>		Application No.	09/755,723
		Filing Date	January 5, 2001
		First Named Inventor	Ron Goodman
		Art Unit	2175
		Examiner Name	Charles Rones
Total Number of Pages in This Submission	4	Attorney Docket Number	6407P212

ENCLOSURES <i>(check all that apply)</i>		
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> PTO/SB/08 <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Basic Filing Fee <input type="checkbox"/> Declaration/POA <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <div style="border: 1px solid black; padding: 5px; text-align: center;"> Return Postcard RECEIVED NOV 06 2003 Technology Center 2100 </div>
Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	André L. Marais, Reg. No. 48,095 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	<i>[Handwritten Signature]</i>
Date	10/29/03

CERTIFICATE OF MAILING/TRANSMISSION			
I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.			
Typed or printed name	Dawn Shaw	Date	10/29/03
Signature	<i>[Handwritten Signature]</i>	Date	10/29/03

Based on PTO/SB/21 (08-03) as modified by Blakely, Sokoloff, Taylor & Zafman (w/r) 09/11/2003.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

CL 000131



FEE TRANSMITTAL for FY 2003 <small>Effective 01/01/2003. Patent fees are subject to annual revision.</small>		<i>Complete if Known</i>	
		Application Number	09/755,723
		Filing Date	January 5, 2001
		First Named Inventor	Ron Goodman
		Examiner Name	Charles Rones
		Group/Art Unit	2175
		Attorney Docket No.	6407P212
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.		RECEIVED	
TOTAL AMOUNT OF PAYMENT	(\$)	330.00	

METHOD OF PAYMENT (check all that apply)

Check
 Credit card
 Money Order
 Other
 None

Deposit Account

Deposit Account Number: 02-2666
 Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

The Commissioner is authorized to: (check all that apply)

Charge fee(s) indicated below
 Credit any overpayments
 Charge any additional fee(s) required under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20.
 Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account

3. ADDITIONAL FEES (continued) NOV 06 2003

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	85	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for <i>ex parte</i> reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	1,210	2255	605	Extension for reply within fifth month	
1404	330	2401	165	Notice of Appeal	
1402	330	2402	185	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	685	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	2480	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	1809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
Other fee (specify): _____					
* Reduced by Basic Filing Fee Paid					SUBTOTAL (3) (\$) 330.00

FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1) (\$)					

2. EXTRA CLAIM FEES

Large Entity	Small Entity	Extra Claims	Fee from below	Fee Paid
Total Claims	20*	0	18.00	\$0.00
Independent Claims	3*	0	86.00	\$0.00
Multiple Dependent				

2. EXTRA CLAIM FEES (continued)

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	86	2201	43	Independent claims in excess of 3	
1203	260	2203	145	Multiple Dependent claim, if not paid	
1204	86	2204	43	**Reissue independent claims over original patent	
1205	18	2205	9	**Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2) (\$)					0.00

SUBMITTED BY		<i>Complete if applicable</i>	
Name (Print/Type)	André L. Marais	Registration No. (Attorney/Agent)	48,095
Signature		Telephone	(408) 947-8200
		Date	10/29/03

Based on PTO/5B/17 (08-03) as modified by Blakely, Sokoloff, Taylor & Zafman (wtr) 08/11/2003.
 SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

CL 000132

12/2



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/755,723	01/05/2001	Ron Goodman	017002022500

08791
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

CONFIRMATION NO. 3728

1 00000000010623703

Date Mailed: 08/01/2003

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/20/2003.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

ANGELA S WHITE
2100 (703) 308-8264

OFFICE COPY

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UNITED STATES PATENT AND TRADEMARK OFFICE

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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/755,723	01/05/2001	Ron Goodman	017002022500

CONFIRMATION NO. 3728

20350
TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

10000000010623641
OC000000010623641

Date Mailed: 08/01/2003

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/20/2003.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

ANGELA S WHITE
2100 (703) 308-8264

OFFICE COPY

CL 000134



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	3728

8791 7590 11/17/2003
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER
RONES, CHARLES

ART UNIT PAPER NUMBER
2175

DATE MAILED: 11/17/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action	Application No. 09/755,723	Applicant(s) GOODMAN ET AL.
	Examiner Charles L. Roncs	Art Unit 2175

3

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

- a) The period for reply expires 3 months from the mailing date of the final rejection.
b) The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. A Notice of Appeal was filed on 03 November 2003. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. The proposed amendment(s) will not be entered because:
(a) they raise new issues that would require further consideration and/or search (see NOTE below);
(b) they raise the issue of new matter (see Note below);
(c) they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
(d) they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____

3. Applicant's reply has overcome the following rejection(s): _____
4. Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. The a) affidavit, b) exhibit, or c) request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____
6. The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. For purposes of Appeal, the proposed amendment(s) a) will not be entered or b) will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____
Claim(s) objected to: _____
Claim(s) rejected: _____
Claim(s) withdrawn from consideration: _____

8. The drawing correction filed on _____ is a) approved or b) disapproved by the Examiner
9. Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
10. Other: _____

CL 000136

Charles L. Roncs
Charles L. Roncs
Primary Examiner
Art Unit: 2175



Docket No.: 6407P212

SC
#14
2/10/04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

RON GOODMAN, ET AL.

Art Group: 2175

Application No.: 09/755,723

Examiner: Rones, Charles

Filed: January 5, 2001

For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

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FEB 05 2004

Technology Center 2100

PETITION FOR EXTENSION OF TIME PURSUANT TO 37 C.F.R. § 1.136(a)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

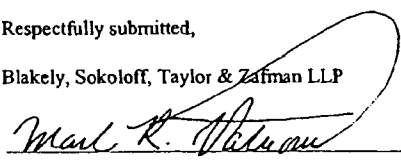
In accordance with 37 C.F. R. § 1.136(a), Applicants for the above-identified application respectfully
Petition the Commissioner for a one (1) month extension of time, extending the period for response to February 03,
2004, from the Advisory Action dated November 17, 2003. The petition filing fee of \$110.00 and a Request for
Continued Examination are attached.

If it should be determined that a longer extension of time is required to prevent this application from being
abandoned, please charge any additional fees to Deposit Account No. 02-2666. A copy of the Fee Transmittal is
enclosed for deposit account charging purposes.

Respectfully submitted,

Blakely, Sokoloff, Taylor & Zafman LLP

Date: 1/29/04


Mark R. Vatuone, Reg. No. 53,719

12400 Wilshire Boulevard, 7th Floor
Los Angeles, CA 90025
Telephone: (408) 947-8200

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the
United States Postal Service on the date shown below with sufficient
postage as first class mail in an envelope addressed to: Mail Stop
RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA
22313-1450.

Dawn Shaw 1/29/04
Dawn Shaw Date

2004 EFLORES 00000157 09755723
110.00 UP

CL 000137



2700
RCE 1/29/04
HIS
2/1/04

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL <small>Address to: Mail Stop RCE, Commissioner for Patents, P.O. 1450, Alexandria, VA 22313-1450</small>	Application No.	09/755,723
	Filing Date	January 5, 2001
	First Named Inventor	Ron Goodman
	Art Unit	2175
	Examiner Name	Rones, Charles
	Attorney Docket Number	6407P212

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application. Request for Continued Examination (RCE) practice under 37 CFR § 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 C.F.R. § 1.114**

a. Previously submitted

i. Consider the amendment(s)/reply under 37 C.F.R. § 1.116 previously filed on (Any unentered amendment(s) referred to above will be entered).

ii. Consider the arguments in the Appeal Brief or Reply Brief previously filed on

iii. Other _____

b. Enclosed

i. Amendment/Reply

ii. Affidavit(s)/Declaration(s)

iii. Information Disclosure Statement (IDS)

iv. Other _____

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FEB 05 2004
Technology Center 2100

2. **Miscellaneous**

a. Suspension of action on the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 C.F.R. § 1.17(i) required)

b. Other _____

3. **Fees** The RCE fee under 37 C.F.R. § 1.17(e) is required by 37 C.F.R. § 1.114 when the RCE is filed.

a. The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 02-2666.

i. RCE fee required under 37 C.F.R. § 1.17(e) and any additional claims fee(s)

ii. Extension of time fee (37 C.F.R. § 1.136 and 1.17)

iii. Other: (\$00) _____

b. Check in the amount of \$880.00 enclosed

c. Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name (Print/Type)	Mark R. Vatouric	Registration No. (Attorney/Agent)	53,719
Signature	<i>Mark R. Vatouric</i>	Date	1/29/04

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Name (Print/Type)	Dawn Shaw	Date	1/29/04
Signature	<i>Dawn Shaw</i>		

Based on PTO/SB/30 (08-03) as modified by Blakey, Solokoff, Taylor & Zalman (M) 08/11/2003.
 SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
 02/04/2004 EFLORES 00000157 09755723
 01 FC:1801 770.00 CP

CL 000138



SC
#16C
2/10/04

Attorney's Docket No. 6407P212

Patent

Response Under 37 CFR 1.116 — Expedited Procedure
Examining Group 2175

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Ron Goodman et al.

Application No.: 09/755,723

Filed: January 5, 2001

For: **AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA**

RECEIVED

FEB 05 2004

Examiner: Rones, Charles

Technology Center 2100

Art Group: 2175

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

on 1/29/04
Date of Deposit

Dawn R. Shaw
Name of Person Mailing Correspondence

Dawn R. Shaw 1/29/04
Signature Date

Mail Stop RCE
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT ACCOMPANYING REQUEST FOR CONTINUING EXAMINATION

Sir:

Further to the Notice of Appeal of November 3, 2003 and to the Final Office Action mailed July 29, 2003, Applicants respectfully request the Examiner to enter the following amendment and reconsider the present application in view of the submission below.

Amendments to the Claims are reflected in the listing of claims which begin on page 2 of this paper.

Remarks/Arguments begin on page 8 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (Currently Amended) A method, performed by a processor in a digital media player, for filing media tracks stored on a computer-readable mediamedium, with each media track having ~~metadata associated therewith including category value~~attribute data for naming ~~identifying~~ attributes of the track and type data indicating the type of track, said method comprising the acts of:

cl
reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the hierarchical tree structure file including category names for naming ~~the branch~~branches under which tracks are sorted, subcategory names for defining subcategories within the branches, ~~track type information specifying which type of tracks are to be sorted under the branch~~, and structure information defining how to file tracks based on ~~associated metadata~~ the hierarchy of branch names and subcategory names; and

for each track, determining, based on ~~metadata describing the attribute data associated with the track~~ if the track belongs in ~~the branch~~one or more of the branches, and, for each branch in which the track belongs, filing the track under one or more subcategories ~~traversing the branch to determine the appropriate location to file the track~~.

2. (Currently Amended) The method of claim 1, ~~where said act of searching further comprises the acts of~~comprising:

utilizing track type information to file only tracks of a specified type under a particular branch.

3. (Currently Amended) The method of claim 1, ~~further comprising the acts of~~:

for each branch, utilizing category structure information to file tracks in a specified attribute order.

4. (Currently Amended) The method of claim 1, where said digital media player includes a display screen and a user interface for interacting with the display screen, ~~further the method comprising the acts of:~~

~~displaying the categories and subcategories on the display screen in a hierarchical order;
displaying all names of at least some tracks associated with a category or sub-category when a user utilizes the interface to select a category or sub-category;~~

~~monitoring selection of a track name by the user and, in response to the selection, playing the track utilizing the pointer to access and play a track when a user selects a track name through the user interface; and~~

~~monitoring selection of a category or subcategory by the user and, in response to the selection, playing utilizing the pointer to access and play a collection of tracks within a the selected category or subcategory when a user selects a category or subcategory through the user interface.~~

5. (Canceled)

6. (Currently Amended) A method, performed by a processor in a digital media player, for filing media tracks, stored on a computer-readable mediamedium, under categories in ~~an in memory~~ a tree structure, with each media track having metadata-attribute data identifying attributes of the track associated therewith, the attribute data including category name data for naming, said method comprising ~~the acts of:~~

~~upon startup or when a track is added or changed, searching the metadata-attributes of each track; and~~

~~for each track, automatically filing the track by category name under each selected category associated with the attributes to form a hierarchical track filing scheme.~~

7. (Currently Amended) The method of claim 6, ~~further comprising the act of:~~

~~selecting the categories to be the album Album including the track, the title of the track, and the name of the artist that recorded the track.~~

8. (Currently Amended) The method of claim 6, where said digital media player includes a display screen and a user interface for interacting with the display screen, ~~further the method comprising the acts of:~~

~~displaying the categories on the display screen in a hierarchical order;~~

~~displaying all names of tracks associated with a category when a user utilizes the user interface to select a category ;~~

~~accessing and playing a track when a user selects a track name through the user interface;~~

~~and~~

~~accessing and playing a collection of tracks within a category when a user selects a category through the user interface.~~

9. (Currently Amended) A computer program product comprising:

a computer readable medium having program code embodied therein for filing media tracks stored on a computer readable ~~mediamedium~~, with each media track having metadata associated therewith including category value attribute data for naming identifying attributes of the track and type data indicating the type of track, said program code comprising:

program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure ~~having a plurality of branches~~, with the hierarchical tree structure ~~file~~ including category names for naming the ~~branch~~ branches under which tracks are sorted, subcategory names for defining subcategories within the branches ~~track type information specifying which type of tracks are to be sorted under the branch~~, and structure information defining how to file tracks based on associated metadata ~~the hierarchy of branch names and subcategory names within the branches;~~

program code, executed by a processor, for each track, for determining, based on metadata ~~describing the attribute data associated with the track~~, if the track belongs in one or more of the ~~branch~~ branches, and, for each branch in which the track belongs, ~~filing the track under one or more subcategories~~ ~~traversing the branch to determine the appropriate location to file the track.~~

10. (Currently Amended) A computer program product comprising:

a computer readable medium for having program code embodied therein for filing media tracks, stored on a computer-readable medium, under categories in an in-memory tree structure, with each media track having metadata-attribute data identifying attributes of the track associated therewith, the attribute data including category name data ~~for naming~~, said program code comprising:

program code, execute by a processor, upon startup or when a track is added or changed, for searching the metadata-attributes of each track; and

program code, executed by a processor, for each track, for automatically filing the track by category name under each selected category to form a hierarchical track filing scheme.

11. (New) A method of arranging media information relating to media tracks stored on a computer-readable medium, the method comprising:

reading a media definition file that includes a plurality of categories, wherein each category groups tracks having corresponding attributes associated with the media tracks; and

for each track,

identifying a plurality of attributes associated with the track;

identifying a category associated with each attribute; and

grouping the track within each category that has been identified.

12. (New) The method of claim 11, wherein each track is grouped within at least two categories of the media definition file and each category includes a list of tracks having corresponding attributes.

13. (New) The method of claim 11, wherein a plurality of track identifiers are provided in each category, each track identifier being to identify a track associated with the category.

14. (New) The method of claim 11, wherein the plurality of categories relates to music and the categories comprise one of an album name category, an artist name category, and a genre category.

15. (New) The method of claim 11, wherein the at least one category comprises a plurality of subcategories associated with further attributes of the media tracks, the categories and the subcategories being arranged in a hierarchical tree structure.
16. (New) The method of claim 15, wherein the category comprises an artist name category that includes at least one subcategory identifying a group with which the artist is associated.
17. (New) The method of claim 15, wherein the category comprises a genre category that includes at least one subcategory identifying a group or artist associated with the genre category.
18. (New) The method of claim 11, wherein at least one category of the plurality of categories comprises a list of all tracks associated with the media definition file irrespective of their associated attributes
19. (New) The method of claim 1, wherein a link to the same media track is provided in more than one category.
20. (New) The method of claim 1, wherein said grouping the track within each category comprises providing an identifier within each category that has been identified, the identifier identifying the track associated with the category.
21. (New) A method of displaying media information on a display screen, the media information relating to media tracks stored on a computer-readable medium, the method comprising:
 - retrieving display data for display on the display screen from a media definition file that includes a plurality of categories, each category corresponding to an attribute associated with the media tracks, the display screen layout being based on the plurality of categories; and
 - for each track, displaying the track under each category with which it is associated.

22. (New) The method of claim 21, wherein the categories comprise at least one of an artist name category, an album name category and a genre category, the display screen layout identifying the at least one category.

23. (New) A method of arranging media information relating to media tracks stored on a computer-readable medium, the method comprising:
identifying a plurality of attributes associated with a media track;
identifying at least two categories, each identified category corresponding to an attribute;
and
providing a link to the track in each of the categories identified to provide a plurality of links in each category that identify a plurality of tracks associated with the category.

REMARKS

1. Summary of the Office Action

Claims 1-4 and 6-10 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. patent no. 5,670,730 (hereinafter "Grewe et al.").

2. Response to § 102 Rejections

Applicants respectfully traverse this rejection for the reasons set out below, and ask the Examiner for reconsideration.

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Grewe teaches a system in which music files are arranged track-by-track. Each file is provided with individual headers 36 that include category, artist, and track address information (Figures 2-4 and col. 3 from ln. 29 onwards) associated with the particular track. The track address information is used to identify the start and/or end location of the file, so that the music player can locate and play the file. Clearly, the tracks are **arranged in a track-by-track fashion** and not based on the individual header 36. As can be seen from the description and in particular Figs. 3 and 4, the table of contents 34 is nothing more than a sequential list of the individual headers, ordered track-by-track, one after the other. The category information (see category field 40) and the artist information (see artist field 42) are thus **dispersed**. Thus, it is not readily apparent which set of tracks is in which genre or which set of tracks is performed by one particular artist.

Claim 1, as amended, reads as follows:

"1. A method, performed by a processor in a digital media player, for filing media tracks stored on a computer-readable medium, with each media track having attribute data for identifying attributes of the track, said method comprising:

reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with **the hierarchical tree structure including category names for naming branches under which tracks are sorted**, subcategory names for defining subcategories within the branches, and structure information defining the hierarchy of branch names and subcategory names; and

for each track, **determining**, based on the attribute data associated with the track **if the track belongs in one or more of the branches**, and, for each branch in which the track belongs, **filing the track under one or more subcategories**"

Claim 1 includes the limitation of a "**hierarchical tree structure including category names for naming branches under which tracks are sorted**"

Firstly, Grewe does not teach or suggest "**reading a definition file** that defines an ordered hierarchical tree structure having a plurality of branches, with **the hierarchical tree structure including category names for naming branches under which tracks are sorted**, subcategory names for defining **subcategories** within the branches, and structure information defining the hierarchy of branch names and subcategory names." In Grewe, the tracks are not sorted according to category names that are provided in a branch but rather in sequential blocks of memory locations. There is no hierarchical relationship between the category field 40 or the artist field 42 with a particular track and any hierarchy in Grewe.

Secondly, as the tracks in Grewe are filed sequentially in memory according to track number, the limitation of claim 1 of "**for each track, determining**, based on the attribute data associated with the track **if the track belongs in one or more of the branches**, and, for each branch in which the track belongs, **filing the track under one or more subcategories**" is also not described or even suggested in Grewe.

In view of the above, it is submitted that Grewe does not describe or even suggest all the limitations of claim 1. Accordingly, claim 1 is allowable and, as claims 1-4 are dependent upon claim 1, they are also allowable.

Claim 9, as amended, also includes the limitation of "reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the **hierarchical tree structure including category names for naming branches under which tracks are sorted.**" Claim 9 also includes the limitation wherein, for each track, "**determining, based on the attribute data associated with the track, if the track belongs in one or more of the branches, and, for each branch in which the track belongs, filing the track under one or more subcategories.**"

Accordingly, in view of the remarks above, it is submitted that claim 9 is also allowable.

Claim 6, as amended, reads as follows:

"6. A method, performed by a processor in a digital media player, for filing media tracks, stored on a computer-readable medium, under categories in a tree structure, with each media track having attribute data identifying attributes of the track associated therewith, the attribute data including category name data, said method comprising:
upon startup or when a track is added or changed, searching the attributes of each track;
and
for each track, automatically **filing the track by category name** under each selected category associated with the attributes to form an hierarchical track filing scheme."

Claim 6 includes the limitation of "for each track, automatically **filing the track by category name** under each selected category associated with the attributes to form an hierarchical track filing scheme." This limitation is also not described or even suggested in Grewe that files tracks sequentially track-by-track. The filing system of Grewe merely appends each individual header 36 to the last individual header 36 in the table of contents 34 so that tracks having a common category field 40 or a common artist field 42 are dispersed (see

Figures 3 and 4). Grewe does not describe, or even suggest, "for each track, **filing the track by category name under each selected category**" as claimed in claim 6.

In view of the above it is submitted that claim 6 is allowable and, as claims 7 and 8 are dependent upon claim 6, they are also allowable.

Claim 10, as amended, also includes the limitation of, for each track, "**automatically filing the track by category name under each selected category to form an hierarchical track filing scheme.**" Accordingly, in view of the remarks above, it is submitted that claim 10 is also allowable.

Claim 11 reads as follows:

"11. A method of arranging media information relating to media tracks stored on a computer-readable medium, the method comprising:
reading a media definition file that includes a plurality of categories, wherein **each category groups tracks having corresponding attributes** associated with the media tracks; and
for each track,
identifying a plurality of attributes associated with the track;
identifying a category associated with each attribute; and
grouping the track within each category that has been identified."

Claim 11 includes the limitation of "reading a media definition file that includes a plurality of categories, wherein **each category groups tracks having corresponding attributes** associated with the media tracks." This limitation is also not disclosed in Grewe that merely arranges tracks in a sequential order resulting category fields 40 and artist fields 42 that are **dispersed** and not grouped as claimed in claim 11.

The above limitation in claim 11 must also be read in conjunction with the grouping operation performed for each track. In particular, claim 11 includes the limitation of, for each track, "**grouping the track within each category that has been identified.**" Grewe does not

group tracks within a category but merely identifies a category associated with the track. Further, the category field 40 and artist field 42 are dispersed in Grewe.

In view of the above it is submitted that claim 11 is allowable. As claims 12-20 are dependent upon claim 11, they are also allowable.

Claim 21 reads as follows:

"21. A method of displaying media information on a display screen, the media information relating to media tracks stored on a computer-readable medium, the method comprising:

retrieving display data for display on the display screen from a media definition file that includes a plurality of categories, each category corresponding to an attribute associated with the media tracks, the **display screen layout being based on the plurality of categories; and**
for each track, **displaying the track under each category with which it is associated."**

Grewe does not even mention that information can be displayed on a display screen. Accordingly, Grewe does not describe or even suggest the limitations of a **"display screen layout being based on the plurality of categories; and for each track, displaying the track under each category with which it is associated."**

In view of the above it is submitted that claim 21 is allowable and, as claim 22 is dependent upon claim 21, it is also allowable.

Claim 23 reads as follows:

"23. A method of arranging media information relating to media tracks stored on a computer-readable medium, the method comprising:

identifying a plurality of attributes associated with a media track;

identifying at least two categories, each identify category corresponding to an attribute;

and

providing a link to the track in each of the categories identified to provide a plurality of links in each category that identifies a plurality of tracks associated with the category.”

The limitation of “providing a link to the track in each of the categories identified to provide a plurality of links in each category that identify a plurality of tracks associated with the category” is not described or even suggested in Grewe. Accordingly, claim 22 is also allowable.

In light of the above, Applicants respectfully submit that the rejection under 35 U.S.C. § 102 has been also been overcome, and withdrawal of this rejection is therefore respectfully requested.

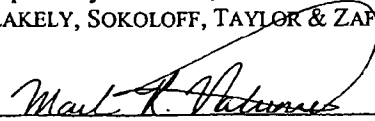
3. Conclusion

Having tendered the above remarks and amended the claims as indicated herein, Applicants respectfully submit that all rejections have been addressed and that the claims are now in a condition for allowance, which is earnestly solicited.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of the present application, the Examiner is invited to contact Garth Vivier at (408) 947-8200 ext. 245.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAPMAN LLP

Dated: 1/29, 2004


Mark Vatuone
Reg. No. 53,719

12400 Wilshire Blvd.
Seventh Floor
Los Angeles, CA 90025-1026
(408) 947-8200



FEE TRANSMITTAL for FY 2003

Effective 01/01/2003. Patent fees are subject to annual revision.

Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT (\$) 880.00

Complete if Known	
Application Number	09/755,723
Filing Date	January 5, 2001
First Named Inventor	Ron Goodman
Examiner Name	Rones, Charles
Group/Art Unit	2175
Attorney Docket No.	6407P212

RECEIVED

METHOD OF PAYMENT (check all that apply)

Check Credit card Money Order Other None

Deposit Account

Deposit Account Number: 02-2666

Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

The Commissioner is authorized to: (check all that apply)

Charge fee(s) indicated below Credit any overpayments

Charge any additional fee(s) required under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20.

Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	30	2052	25	Surcharge - late provisional filing fee or cover sheet	
2053	130	2053	130	Non-English specification	
1812	2,620	1812	2,520	For filing a request for <i>ex parte</i> reexamination	
1804	820*	1804	820*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	110.00
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	1,210	2255	605	Extension for reply within fifth month	
1404	330	2401	185	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1480	130	2480	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1808	180	1808	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	1809	385	Filing a submission after final rejection (37 CFR § 1.128(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	770.00
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify):

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 880.00

FEB 05 2004
Technology Center 2100

FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	180	2005	80	Provisional filing fee	

SUBTOTAL (1) (\$) 0

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
9	20*	0	\$0.00
4	5*	0	\$0.00

*For number previously paid, if greater, For Reissues, see below

Multiple Dependent

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	88	2201	43	Independent claims in excess of 3	
1203	280	2203	145	Multiple Dependent claim, if not paid	
1204	88	2204	43	**Reissue independent claims over original patent	
1205	18	2205	9	**Reissue claims in excess of 20 and over original patent	

SUBTOTAL (2) (\$) 0.00

SUBMITTED BY

Name (Print/Type)	Registration No. (Attorney/Agent)	Telephone	Date
Mark R. Vatupie	53,719	(408) 947-8200	1/29/04

Signature: *Mark R. Vatupie*

Based on PTO/SE-17 (08-03) as modified by Blakely, Sokoloff, Taylor & Zafman (w/4) 08/11/2003.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

CL 000152



UNITED STATES PATENT AND TRADEMARK OFFICE

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	3728
8791	7590	03/30/2004	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD, SEVENTH FLOOR LOS ANGELES, CA 90025			RONES, CHARLES	
			ART UNIT	PAPER NUMBER
			2175	17
DATE MAILED: 03/30/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

CL 000153

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	09/755,723	GOODMAN ET AL.	
	Examiner	Art Unit	
	Charles L. Rones	2175	

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 03 February 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-4 and 6-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) _____ is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) 21 and 22 are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Restriction/Election</u> . |

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Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claim 1-4, 6-20, and 23, drawn to a method/computer program for filing media tracks, classified in class 707, subclass 7.
- II. Claims 21-22, drawn to a method of displaying on a display screen, classified in class 707, subclass 526.

The inventions are distinct, each from the other because of the following reasons:

Inventions in Group I and Group II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because a method of filing media tracks and a method of displaying are distinct and does not require the particulars of the other. The subcombination has separate utility such as method of filing and a displaying.

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Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Conclusion

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles L. Rones whose telephone number is 703-306-3030. The examiner can normally be reached on Monday-Thursday 8am-4pm.

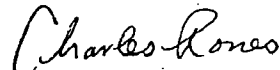
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici can be reached on 703-305-3830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Charles L. Rones
Primary Examiner
Art Unit 2175

March 29, 2004

CL_000157



#18D
6/3/04
A.W.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

In re application of: Goodman, et al

Attorney Docket No.:
6407P212

Application No.: 09/755,723

Examiner: Rones, Charles I.

Filed: January 5, 2001

Group: 2175

Title: **AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA**

RECEIVED
MAY 06 2004
Technology Center 2100

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail to: Commissioner for Patents, Alexandria, VA 22313 on April 30, 2004.

Signed: Karen Howe-Behrooz
Karen Howe-Behrooz

Amendment and Response to Restriction Requirement

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The enclosed remarks and amendments are submitted in response to the to the Office Action mailed on March 30, 2004 wherein a restriction requirement was imposed. Applicants respectfully request reconsideration of the captioned application in view of the following remarks and amendments. A listing of the claims commences on page 2. Remarks begin on page 6 of this paper.

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USSN: 09/755,723

1

Atty Dkt No.:

Listing of Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (withdrawn) A method, performed by a processor in a digital media player, for filing media tracks stored on a computer-readable medium, with each media track having attribute data for identifying attributes of the track, said method comprising:

reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the hierarchical tree structure including category names for naming-branches under which tracks are sorted, subcategory names for defining subcategories within the branches, and structure information defining the hierarchy of branch names and subcategory names; and

for each track, determining, based on the attribute data associated with the track if the track belongs in one or more of the branches, and, for each branch in which the track belongs, filing the track under one or more subcategories .

2-23. (cancelled)

See
E1

¹
~~24. (new) A method of selecting at least one track from a plurality of tracks stored in a computer-readable medium of a portable media player configured to present sequentially a first, second, and third display screen on the display of the media player, the plurality of tracks organized according to a file hierarchy, the file hierarchy having a plurality of categories, subcategories, and items respectively in a first, second, and third level of the hierarchy, the method comprising:~~

~~selecting a category in the first display screen of the portable media player;
displaying the subcategories belonging to the selected category in a listing presented in the second display screen;~~

~~selecting a subcategory in the second display screen;
displaying the items belonging to the selected subcategory in a listing presented in the third display screen; and~~

CL 000159

USSN: 09/755,723

2

Atty Dkt No.:

D

Sub
21

accessing at least one track based on a selection made in one of the display screens.

2

25. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting a subcategory in the second display screen and playing a plurality of tracks associated with the selected subcategory.

3

26. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting a subcategory and adding the tracks associated with the selected subcategory to a playlist.

4

27. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting an item in the third display screen and playing at least one track associated with the selected item.

5

28. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting an item in the third display screen and adding at least one track associated with the selected item to a playlist.

6

29. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises one of playing or adding to a playlist at least one track associated with a selected one of the category, subcategory, and item.

7

30. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track is made after the presentation of the third display screen by reverting back to one of the second and first display screens, the second display screen presented sequentially after the third display screen.

8

31. (new) The method of selecting a track as recited in claim 24 further comprising selecting one of the items displayed in the third display screen and presenting

CL 000160

a listing of items associated with the selected item in a fourth sequentially presented display screen.

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32. (new) The method of selecting a track as recited in claim 24 wherein the category genre is selected in the first display screen from available categories that include at least artist, album, and genre; and the subcategories listed in the second display screen comprise a listing of at least one genre type and one of the at least one genre type is selected.

10

9

33. (new) The method of selecting a track as recited in claim 32 further comprising displaying in the third display screen at least one album associated with the selected genre type and selecting one of the at least one albums displayed in the third display screen and presenting a listing of tracks associated with the selected album in a fourth sequentially presented display screen.

11

1

34. (new) The method of selecting a track as recited in claim 24 wherein the category artist is selected in the first display screen from available categories that include at least artist, album, and genre; the subcategories listed in the second display screen comprise a listing of names of artists and a first artist name is selected; and the items displayed in the third display screen comprises at least one album associated with the first artist name.

12

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35. (new) The method of selecting a track as recited in claim 24 wherein the track is a music track, the item accessed in the third display screen is a track title, and the track is played in response to the access.

13

1

36. (new) The method of selecting a track as recited in claim 24 wherein receipt of the selection in the first display screen results in an automatic transition of the first display screen into the second display screen and receipt of the selection in the second display screen results in an automatic transition of the second display screen into the third display screen.

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D

Amendments to the Specification:

The changes to the specification are included in the attached substitute specification, submitted pursuant to 37 CFR 1.125. Both a marked up version and a clean version are attached. The substitute specification does not include the currently pending claims, which are listed directly in a listing of claims in this paper.

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Atty Dkt No.:

Amendments to the Drawings:

New Drawings for Figures 9-14 are added. These are attached and correspond to drawings from patent application serial number 09/755.629, "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface", said application disclosure having been incorporated by reference in the original specification.

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USSN: 09/755,723

6

Atty Dkt No.:

REMARKS

Claims 1-4 and 6-23 are pending in the application. The examiner had required restriction to one of the Group I and Group II inventions under 35 U.S.C. 121. In particular, the Examiner had indicated that the Group I inventions included claims 1-4, 6-20, and 23, drawn to a method/computer program for filing media tracks. The Examiner had further indicated that the Group II invention included claims 21-22, drawn to a method of displaying on a display screen.

Applicants hereby elect without traverse the claims of Group II, claims 21-22. The claims to the Group I invention have been either cancelled or withdrawn. In particular, claim 1 has been withdrawn and the remainder of the claims identified by the examiner to be associated with Group I, i.e., claims 2-4, 6-20, and 23 have been cancelled. Applicants reserve the right to submit the nonelected claims in a continuation or divisional application.

Further, Group II claims 21-22 have been cancelled. New claims 24-39 have been added, consistent with applicants' election of Group II. No new matter has been added. Applicants respectfully submit that new claims 24-36 fall within the classification of the elected Group II. Support for the new claims may be found throughout the original specification, including the matter incorporated by reference.

Applicants have further amended the specification to directly include matter from patent application serial number 09/755.629, "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface", said application disclosure having been incorporated by reference in the original specification. This matter is added via a substitute specification. The substitute specification adds no new matter. Clean and marked up copies are attached to this amendment. Applicants respectfully request that the substitute specification be entered pursuant to the provisions of 37 CFR 1.125.

Applicants have also submitted replacement drawings, FIGS. 9-14, attached hereto. Applicants respectfully request entry of the replacement drawings (new drawings). These drawings correspond to drawings which were a part of patent application serial number 09/755.629, "System for Selecting and Playing Songs in a

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USSN: 09/755,723

7

Atty Dkt No.:

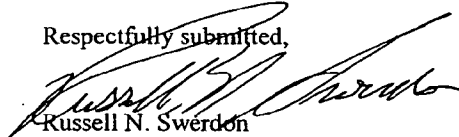
Playback Device with a Limited User Interface”, said application disclosure having been incorporated by reference in the original specification.

Applicants respectfully request entry of the amendments to the claims. The new claims correspond to the election to the invention of Group II in response to the restriction required by the Examiner in the office action of March 30, 2004. Support for the amendments may be found in the previous versions of the claims and the new drawings submitted including Figures 9 and 10 as well as the accompanying text, for example in pages 13-15 of the description. Applicants submit that the amended claims, including independent claim 24 and dependant claims 25-36, are patentable over the art of record for at least the reason that Grewe doesn't teach or suggest displaying categories or subcategories in a display screen.

Conclusion

Accordingly, it is submitted that all issues in the Office Action have been addressed. Applicants believe that this application is in condition for allowance, and respectfully request a prompt passage to issuance. If the Examiner believes that a telephone conference would expedite the prosecution of this application, he is invited to contact the Applicants' undersigned attorney at the telephone number set out below.

Respectfully submitted,



Russell N. Swerdon
Registration No. 36,943

Creative Labs, Inc.
1901 McCarthy Boulevard
Milpitas, CA 95035
(408) 428-6600

CL 000165

USSN: 09/755,723

8

Atty Dkt No.:



SUBSTITUTE SPECIFICATION- MARKED UP VERSION

Attorney Docket No.: 17002-022500US
Client Reference No.: CT-1139

*OK to enter
substitute
specification
CR
12-9-04*

PATENT APPLICATION

**AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY
METADATA**

Inventor:

RON GOODMAN, a citizen of the United States,
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Santa Cruz, CA 95060

HOWARD N. EGAN, a citizen of the United States,
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Assignee:

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31 International Business Park
Creative Resource
Singapore 609921
Republic of Singapore

Entity:

Large

CL 000166

SUBSTITUTE SPECIFICATION- CLEAN VERSION

Attorney Docket No.: 17002-022500US

Client Reference No.: CT-1139



PATENT APPLICATION

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

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Assignee:

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Singapore 609921
Republic of Singapore

Entity:

Large

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**AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY
METADATA**

CROSS-REFERENCES TO RELATED APPLICATIONS

5

This application is related to Application No. 09/755,629, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," now abandoned (Atty. Docket No. 17002-020800); and Application No. 09/755,367, entitled "Audioplayback Device with Power Savings Storage Access Mode," issued as U.S. Patent No. 6,590,730 (Atty. Docket No. 17002-022400), all filed January 5, 2001, the disclosures of which are incorporated herein by reference.

10

BACKGROUND OF THE INVENTION

15

Today, portable consumer electronic devices are more powerful than ever. For example, small, portable music playback devices can store hundreds, even thousands, of compressed songs and can play back the songs at high quality. With the capacity for so many songs, a playback device can store many songs from different albums, artists, styles of music, etc.

20

Music jukeboxes implemented in software executed by a digital computer and portable MP3 and CD players both provide facilities for forming playlists. For example, the OOZIC player, distributed by the assignee of the present application, runs on a host PC and has a playlist feature that allows selection of tracks from the PC's hard disk to be included in the playlist.

25

As storage capacity increases and songs are compressed to shorter file lengths the number of songs that can be stored increases rapidly. Major problems facing the consumer are organizing and accessing the tracks.

30

Typically, portable devices have a user interface including a small screen and buttons. Such a display screen might be, e.g., 1" x 2". This small display size is necessary because of the physical size of the device which is typically carried in the hand. The small size

CL 000168

also limits the number, size, shape, and types of user input controls that can be mounted on the device. For example, a few pushbuttons are usually provided to perform all of the device's control functions. Using such a compact user interface to navigate and select among hundreds of songs is inefficient and often frustrating. The display screen can only show a few song titles at one time, and the limited controls make it difficult for a user to arbitrarily select, or move among, the songs.

The creation of playlists is one technique to organize the playing of songs. A set of songs can be included in a playlist which is given a name and stored. When the playlist is accessed, the set of songs can be played utilizing various formats such as sequential play or shuffle.

However, the creation of playlists itself becomes problematic as the number of songs increases, since the user often arbitrarily selects songs from a large number of tracks to form a playlist. This selection mechanism: can be fairly tedious; does not necessarily produce playlists that are of interest to the user over the course of time; may not remain up-to-date if new songs are added that logically fit into a previously created playlist (e.g. "Favorites by Band X" might become out of date if a new favorite by Band X is added after the playlist was created); and leads to "lost" songs that are not members of any playlist.

Accordingly, improved techniques for organizing and grouping tracks useful in a portable music player are needed. Further, it is desirable to provide a user interface suitable for a small device. The user interface should allow a user to efficiently navigate among, and select from, many items stored in the device.

SUMMARY OF THE INVENTION

The present invention provides an efficient user interface for a small portable music player. The invention is suitable for use with a limited display area and small number of controls to allow a user to efficiently and intuitively navigate among, and select, songs to be played. By using the invention, very large numbers of songs can be easily accessed and played.

One aspect of the invention includes an overlapping hierarchy of categories. Categories include items that can also be included in other categories so that the categories

“overlap” with each other. Thus, a song title can be accessed in multiple different ways by starting with different categories. For example, a preferred embodiment of the invention uses the top-level categories “Albums”, “Artists”, “Genres” (or styles), and “Play Lists”. Within the Albums category are names of different albums of songs stored in the device. Within each
5 album are the album tracks, or songs, associated with that album. Similarly, the Artists category includes names of artists which are, in turn, associated with their albums and songs. The Genre category includes types of categories of music such as “Rock”, “Hip Hop”, “Rap”, “Easy Listening”, etc. Within these sub-categories are found associated songs. Finally, the “Play Lists” category includes collections of albums and/or songs which are typically defined by the
10 user.

Advantageous use is made of the overlapping hierarchy to allow the user to quickly designate a song for playback. The device uses three “soft” pushbuttons that have assignable functions. The interface maintains consistent button functionality whenever possible and uses uniform command names and operations on different types of items so that the interface
15 is more intuitive. For example, the user can open and queue both albums and songs with predictable results.

The interface also provides for multiple functions for a single control. For example, a “Play” button can act, in a first function, to play a currently-selected song. The Play button can act, in a second function, to cycle through different playback modes. The modes can
20 be, e.g., (1) playback of songs from a hard disk; (2) playback of music from a radio receiver built into the device; and (3) playback of voice messages. The first function for the Play button can be activated by momentarily depressing the Play button for a short period of time. The second function is invoked by depressing the Play button for a longer period of time whereupon the device cycles through the different modes. Other ways of invoking the functions are possible
25 such as where the second function is automatically entered from a powered-down state.

In one embodiment, the invention provides a method for selecting songs to be played in an electronic audio device, wherein the device includes a display and one or more user input controls, wherein songs are organized into categories, albums, wherein songs and albums are associated with artist names. The method includes steps of displaying categories on the
30 display; accepting signals from a user input control to select a category; displaying one or more songs in the selected category on the display; accepting signals from a user input control to select

a displayed song; and entering selected songs into a playlist queue, wherein the device plays back songs in the playlist queue.

According to one aspect of the present invention, a technique is provided for organizing tracks on a portable music player by automatically filing tracks in a hierarchical order based on attributes of the tracks.

According to another aspect of the invention, metadata is associated with each track that is used to automatically define the track's appropriate place in the hierarchy.

According to another aspect of the invention, the hierarchy is displayed on the portable music player so that a user can traverse the organizational hierarchy to find individual tracks or find playlists composed of logical groups of tracks.

According to another aspect of the invention, the hierarchy is derived by using metadata associated with the audio content that was obtained through any source of metadata (e.g. CDDDB metadata, id3v2 metadata, other obtainable metadata) and subsequently stored with or alongside the file that stores the track.

According to another aspect of the invention, a file is formatted so that an unaltered track is stored as file data and information about the track is stored in file attribute files.

Other features and advantages of the invention will be apparent in view of the following detailed description and appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic diagram of a tree structure for hierarchical filing of tracks;

Fig. 2 is a definition file that specifies the hierarchy depicted in Fig. 1;

Fig. 3 is a user's view of the hierarchy;

Fig. 4 is a schematic diagram of a user interface displaying the hierarchical category structure;

Fig. 5 is a diagram of a file format for storing filed data and file attributes;

Fig. 6 is a flow chart depicting steps for filing tracks according to the hierarchical tree structure;

Fig. 7 depicts a tree resulting from searching the tracks;

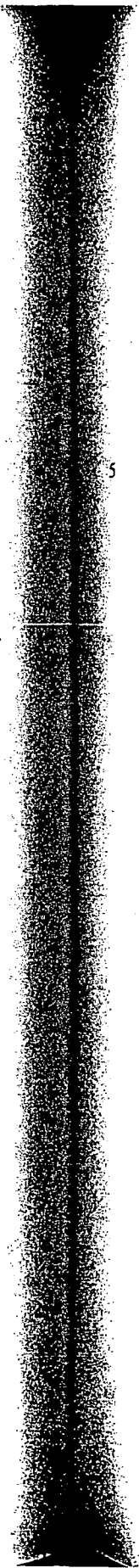


Fig. 8 depicts a format for a user interface;

Fig. 9 illustrates the NOMAD Jukebox and its user interface controls;

Fig. 10 illustrates a sequence of display screens describing how to navigate to lower levels;

Fig. 11 illustrates associations among items;

Fig. 12 shows display screens used to search for a song or other item;

Fig. 13 illustrates details of different items; and

Fig. 14 illustrates a playback device coupled to a host computer system.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 A preferred embodiment of the invention will now be described in the context of a portable personal player that plays audio files stored in memory. The files may be in MP3, wav, or other digital formats.

In the presently described embodiment, users are able to see the tracks on their player in some organized fashion other than as a single list of tracks. As will be described in more detail below, in one embodiment tracks are sorted utilizing a tree structure having branches labeled according to types of metadata associated with the tracks

10 For example, a track recorded as "Golden Slumbers" by the Beatles that appears on their album "Hey Jude" might appear as a track under the album "Abbey Road" as well as a track under the list of tracks by the Beatles. It might appear as a track under the genre "Pop Rock" as well as "Songs from the 60's." Furthermore, the organization can have more complex hierarchies. For example, the category of "Pop Rock" might contain subcategories "British Musicians," "American Musicians" and "Other Musicians". In all cases, the track is
15 automatically filed into all appropriate locations without requiring user interaction.

In the currently defined embodiment, a tree structure is defined by a file having the following structure.

20 The first line of a TreeDef.inf file contains a version number:
V1.0

Each subsequent line (at least in v1.0) contains lines of the following format:
CATEGORY_NAME|TRACK_TYPE_MASK|CATEGORY_STRUCTURE

25 CATEGORY_NAMES are the top-level names of the branch under which tracks are sorted. They include things like "Album," "Artist," "Voice Tracks," "All Tracks," etc.

TRACK_TYPE_MASKS tell which types of tracks are to be filed under this particular branch. The actual value is a hexadecimal numerical value (in '0x' format, e.g. 0x01) generated by ORing the following flags together as appropriate:

30 enum tTrackType
{

```
5      kTTNothing=0x00,  
      kTTSong=0x01,  
      kTTVoice=0x02,  
      kTTBook=0x04,  
      kTTMacro=0x08,  
      kTTPlaylist=0x10  
};
```

10 So, for example, the "Album" branch has a TRACK_TYPE_MASK of kTTSong,
because only songs are filed under that branch, but the "All Tracks" branch has a
TRACK_TYPE_MASK of (kTTSong | kTTVoice | kTTBook).

Other elements might be added to tTrackType (e.g. kTTVideo) as appropriate.

15 CATEGORY_STRUCTURES tell how to file the songs based on their metadata
information. The CATEGORY_STRUCTURE is a string of characters that tell, from left to
right, the order of hierarchy. The characters come from the following enum constants:

```
enum tFileTag  
{  
20     kFTNone='@',  
     kFTTrackType='T',  
     kFTTitle='N',  
     kFTAudioFile='F',  
     kFTArtist='M',  
     kFTAlbum='L',  
25     kFTGenre='G',  
     kFTSource='S',  
     kFTYear='Y',  
     kFTArtistCountry='C'  
30 };
```

Thus, a CATEGORY_STRUCTURE of LN tells to create a subcategory that is a list of Albums, each of which contains a list of Tracks.

In total, a line like:

```
Album|0x01|LN
```

5 Says to create a branch called "Album" which contains tracks of type kTTSong organized first by album name, and then by track name.

The following is an example of a tree definition file similar (though not identical) to the hierarchy presented in the Nomad Jukebox product (the 'B' before each FileTag was used to identify that these are basic tags so that we wouldn't run out of letters in the alphabet as we included more complex metadata – thus each group of two letters represents a level in the hierarchy):

10

```
V1.0
Album|0x01|BLBN
15 Artist|0x01|BMBN
Genre|0x01|BGBN
Voice Tracks|0x02|BSBGBN
Playlists|0x10|BN
Macros|0x08|BN
20 All Tracks|0x07|BN
```

Fig. 1 depicts a hypothetical organization hierarchy. The tree shows how tracks might be listed (as leaves in the tree) after having been organized. Example values for nodes in the tree are shown as well. The same track may appear more than once as a leaf in the tree, as described above, if it fits into multiple categories (e.g. a song that appears on the Abbey Road branch would also appear in the Beatles branch). In the example shown, the first branch contains tracks organized by album. As shown in the example, this music collection contains three tracks from "Abbey Road" and three tracks from "Hits from the 60's". The second branch contains tracks organized by artist, and sub organized by where the artist is from. Thus, a user browsing would first select the "Artists" branch and then choose between "British Artists" and "American Artists". Finally, they would select the particular artist. In the third branch, all tracks are shown.

25

30

The tree definition file that would specify the hierarchy shown in Figure 1 is shown in Figure 2.

The first line identifies the version of the tree definition file.

The second line defines the "Albums" branch. The first part of the line, "Albums" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BLBN," defines that the branch lists first the names of all albums (BL) and then tracks on those albums (BN).

The third line defines the "Artists" branch. The first part of the line "Artists" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BCBMBN," defines that the branch lists first the names of all countries where artists in this collection come from (BC) and under those items, the artists' names (BM), and then tracks by those artists (BN).

Fig. 3 shows what a user's view of this hierarchy might be if he/she were shown a fully expanded view of the 6-song tree. Notice that each song appears three times, once in each branch.

In consumer products the tree define file is not edited directly but through a user interface, one example of which is depicted in Fig. 4. An example of a user interface for viewing songs by category and editing the tree structure is depicted in Fig. 4.

An embodiment of the invention is utilized in the Nomad® Jukebox, manufactured by the assignee of the present invention, and described more fully in the copending application, filed on the same date as the present application, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Attny. Docket No. 17002-020800).

In a preferred embodiment, metadata is associated with each track and includes such information as title, genre, artist name, type, etc. In the preferred embodiment, software stored in a portable player and executed by the onboard processor automatically files each track in the correct category utilizing the associated metadata and the tree define file. The program code can be stored in any computer readable medium including magnetic storage, CD ROM, optical media, or digital data encoded on an electromagnetic signal.

Thus, the user is automatically provided with a powerful and flexible tool for organizing and categorizing the tracks stored on the portable player.

If the tracks are formatted in MP3 format the metadata can be stored in ID3 tags included in the MP3 file. In one embodiment of the invention, the tracks are stored in alternate file format including file data and file attributes. The file data is the music track itself and the file attributes part of the file includes fields of arbitrary size which are used to store metadata characterizing the track stored as the file data. Again this metadata includes information about the track such as title, genre, artist name, type, etc.

There are several advantages to using the alternate file format. Metadata of types not easily included in an ID3 tag can be utilized. Further, the original track format is not changed, so that error correction data such as checksums are valid. Finally, any file format can be used (e.g. WAV, WMA, etc.) because the metadata is stored separately, and thus audio formats that have limited support for metadata can still be stored on the portable player in native format without transcoding. The formatted files are formed by software stored in the portable music player and executed by an on-board processor.

The metadata for each track is utilized to file each track, using the categories defined in the hierarchical structure as described above, without any input from the user.

Fig. 5 is a schematic diagram of the alternative file format including file data in the form of an MP3 track, and metadata fields for holding data indicating the name of the album the track is from, the name of the song, the genre of the song, and the type of track.

A particular embodiment of a file format will now be described. All tracks are created with some set of attributes as shown below:

Definition of TrackInfo Data Field

Field	Offset	Size	Description
Attribute Count	0	2	The number of attribute follow for the track
Attr 1 type	2	2	Binary = 0, ASCII = 1
Attr 1 name len	4	2	Length of attribute name string
Attr1 data len	6	4	Length of attribute data
Attr1 Name	10	N	Attribute name string
Attr 1 Data	10+N	M	Attribute data

....			
....			
Attr N type			
Attr 1 name len			
Attr1 data len			
Attr1 Name			
Attr 1 Data			

Required Attributes

Attribute Name	Value(s)	Remarks
TITLE	ASCII string	Required By Jukebox
CODEC	"MP3", "WMA", "WAV"	Required By Jukebox
TRACK ID	DWORD	Set By Jukebox
ALBUM	ASCII string	Optional
ARTIST	ASCII string	Optional
GENRE	ASCII string	Optional
LENGTH	In seconds	Optional
TRACK SIZE	In bytes	Optional
TRACK NUM	1-n (track within album)	Optional

- These attributes can be subsequently changeable via a host application,
5 running on a personal computer connected to the portable music player.

Fig. 6 shows a flow chart of an embodiment the process used to build the hierarchical database of tracks. It starts by iterating through each track, and, for each track, iterating through each branch to find if the track belongs on the branch, and, if so, where. In this

case, the term track could refer to any content, e.g. a music track, a spoken word track, or even a video track.

Also, the hierarchical catalog of tracks can be used to form playlists in a structured manner. For example, if a user wants to hear Jazz and Blues the entire sub-categories can be selected to form one playlist.

An alternative hierarchical catalog generation technique will now be described. In this alternative embodiment, at system startup and as tracks are added or changed, the hierarchy is generated as an in-memory tree structure. Each track is added to the tree using the categories ALBUM, ARTIST and GENRE.

The following example shows the algorithm for adding a track. For clarity, only the attributes used by the tree are shown.

TITLE	"Free Falling"
ALBUM	"Full Moon Fever"
ARTIST	"Tom Petty"
GENRE	"Rock"
TRACK NUM	1

The following function is executed to build the in-memory memory tree.

```
Build Tree ()  
For each track,  
    Add Track To Category(Album, Track)  
    Add Track To Category(Artist, Track)  
    Add Track To Category(Genre,Track)  
End of Build Tree
```

Fig. 7 depicts a tree which could result from implementing Build Tree() function. Note that "Stardust" does not have any entries for Album or Artist. The host software running

on a computer connected to the portable music player could be utilized to add missing attributes to the "Stardust" track and, optionally, edit the title attribute. The Build Tree() function would then reinsert this track in the correct location in the tree.

Fig. 8 is an embodiment of a user interface according to another embodiment of the invention. In this example the root node is labeled "My Configuration" and the Playlist category has been selected and the Playlist subcategory "Meddle" has been selected. Note that the types of Metadata, in this example, Track Name, Artist, Album, Tempo and Dance, are listed across the top of the screen, and the attribute values for each track are listed in a row across the screen. Various control buttons are displayed to the right of configuration window that facilitate quickly invoking selected processing on a selected track.

As noted above, a preferred embodiment of the present invention is incorporated into a product manufactured and distributed by Creative Technology, Ltd. The product is called the "NOMAD Jukebox." The following description describes further details of the display screens and interface controls.

Fig. 9 illustrates the NOMAD Jukebox and its user interface controls.

In Fig. 9, electronic audio device 100 measures about 5.5" wide by 5.5" tall by 1" thick. Display screen 102 is about 2" wide by 1" tall. Display screen 102 includes different regions such as main region 104 and soft button function description region 106.

Three soft buttons are located at 108; including buttons 110, 112 and 114. The specific command, or function, that any of the soft buttons perform when depressed is indicated by the label in soft button function description region 106. Thus, the function of soft button 112 (as shown in Fig. 9) is "open," the function of soft button 114 is "search" while soft button 110 is currently not assigned a function.

The other eight buttons on device 100 perform essentially the same functions at all times. In other words, they are not subject to function changes according to soft button function description area 106. These buttons include Library button 116, EAX and System button 118, Skip Backward button 120, Play button 122, Stop button 124, Skip Forward button 126, Scroll Up button 128 and Scroll Down button 130. However, as discussed below, these buttons (or any type of controls used with the device) can include alternate functionality that is invoked in different ways.

The device uses visual cues, or indicators, in the display. When an item is highlighted it indicates that the item is the "current" item, or currently-selected item, which is susceptible to be operated on by a subsequent user action – such as playback, or expansion of the item. In Fig. 1, screen 102 shows that the item, "ALBUMS," is highlighted. The highlighted item can be acted upon by using the soft buttons, or another button, as discussed below. The current item can be changed by using Scroll Up button 128 and Scroll Down button 130 to move the highlight up or down, respectively, throughout a list of displayed items.

Icons are used to provide additional visual cues for an item. In Fig. 1, each of the categories has a category icon to the left of it. The category icon, which may not be distinctly visible in the Figure, illustrates a first box connected by lines to additional boxes below the first box. The icon depicts a hierarchy and illustrates the property of categories, i.e., that categories can contain additional categories, songs or other items.

Fig. 10 illustrates a sequence of display screens describing how to navigate to lower levels.

In Fig. 10, library category screen 150 shows the display as it appears when the user depresses library button 116 of Fig. 9. A preferred embodiment of the device uses 4 first-level categories. These are "Albums", "Artists," "Styles" and "Play Lists". Each of these categories can "contain," or be associated with, other categories, songs, or items.

Note that in library category screen 150 ALBUMS is currently highlighted. By depressing soft button 112 of Fig. 9, the "open" command is performed on the highlighted category, as indicated by the labeling of soft button 112 and soft button function description area 152 of Fig. 10.

Lists screen 154 is displayed as a result of a user opening the Albums category of library category screen 150. Lists screen 154 shows items within the Albums category such as commercial albums of multiple songs from a record label, pre-made lists or collections created by a user, or other predefined lists or collections of songs or recordings.

In Fig. 10, lists screen 154 shows each item as a list of songs. This is shown visually by the icon to the left of each item which depicts a miniature list. Possible soft button commands are "Close", "Open" and "Queue". These commands correspond to soft buttons 110, 112 and 114, respectively. If the user selects the Close command, the display reverts to library category screen 150. If the user selects the Open command, the display shows tracks screen 156.

Alternatively, the user can select the Queue command to instruct the device to place all the songs from the selected (i.e., highlighted) list into the play list for eventual playback. Yet another option allows the user to press play button 122 of Fig. 9 to cause any currently-selected songs or a list of songs (e.g., an album) to immediately be played.

5 Returning to Fig. 10, tracks screen 156 shows that a single song called "JukeBox Demo" is in the list. The list is also called JukeBox Demo as shown in lists screen 154. Tracks screen 156 shows possible soft commands assigned to buttons, namely "Close", "Details" and "Queue." The Close button performs the same function as before -- it returns the user to the previous screen which, in this case, is lists screen 154. The user can also select the Details
10 command to cause details of the song JukeBox Demo to be displayed in details screen 158 as shown in Fig. 10. The user can select the Queue command by soft button 114 to enter the selected song into the play list queue. As before, the user can also depress play button 122 of Fig. 9 to cause immediate playback of the selected song.

 Details screen 158 shows information about the selected song including the name
15 of the song, album (or list) name containing the song; the track number, if applicable, and track duration. Note that other information can be included. The user can preview the song, close the Details screen to return to the Tracks screen or queue the song on the play list queue.

 The device provides the ability to "preview" audio files even while a current song, or playlist, is being played. When a user chooses to preview an audio file, the audio file is
20 played for about 10 seconds while any currently-played file or playlist is suspended. After previewing is complete, the suspended file or playlist resumes playback. In other embodiment, the preview duration can vary, or be stopped by user selection.

 Fig. 11 illustrates associations among items.

 In Fig. 11, song 168 is one of many songs stored in the device. Categories such as
25 albums 160, artists 162, play lists 164 and genres 166 each include sub-categories. For example, albums 160 includes the names of various albums. Songs are associated with albums, genres and playlists. Such association can be by using pointers, a data structure including items to be associated, etc. "Association" as used herein, includes a first item associated with a second item; and the second item associated with the first item. In other words, albums can be associated with
30 one or more songs in the database of the device so that an automated search to find all songs

associated with an album is easier. The direction of arrow pointers in Fig. 11 is not intended to limit the manner of associations among items in the present invention.

Similar to albums, the category of artists 162 includes names of artists, or performers, of songs. Each artist name is associated with one or more songs in the database. Playlists 164 includes names of playlists. These are collections of songs that can be defined by the user, the device manufacturer, or others. Each playlist can be associated with one or more songs. Genres 166 includes various styles of music which are associated with one or more songs in the database. Note that items can exist without being associated with a song. Also, items can be associated with other items as where an artist name is associated with the albums containing the songs that the artist has created.

Although not shown in Fig. 11, items can have additional information, such as properties, details, etc., associated with the item. For example, a song can have information such as play time, artist name, artist album, copyright owner, etc., associated with the song.

Fig. 12 illustrates display screens used to search for a song or other item.

In Fig. 12, screen 180 is the initial library screen, as discussed above. If the user invokes the Search command (via the appropriate soft button) with Albums selected then screen 182 is displayed. Note that the search function can be applied to any of the categories. The user can depress the Plus or Minus soft buttons to cycle through the alphabet and change the character in the current location as indicated by the cursor. The cursor position is changed by using the scroll up/scroll down buttons 128 and 130, respectively, of Fig. 9. As each letter is entered the letters are compared and the nearest match of the stored albums' names is displayed as shown in screen 184. When the desired match is displayed the user selects the Go! command.

Screen 186 shows the result of selecting the Go! command. A list of albums is displayed with the matched album centered and selected. The user can close, open or queue the album as discussed above.

Fig. 13 illustrates details of different items.

In Fig. 13, screen 200 illustrates details displayed as a result of selecting the "Details" command from soft button 1A track is selected. Screen 200 shows that details of the track "Jukebox Demo" shows the name of the album that the track resides on, the creator, or copyright owner, of the track, and the playing time of the track.

Screen 202 illustrates details of an item on the active queue list. Items are placed onto the active queue list by selecting the "Queue" command when an album, song, track, or other item is selected, as discussed above. For example, screen 204 shows the active queue list where the track "Jukebox Demo" is selected. By invoking the "Details" command screen 202 is brought up to show details of the Jukebox Demo track.

As shown in screen 202, the Detail screen shows what track number the selected track is, which album the track is from; the creator, or copyright owner, of the track, and the title of the track. Additionally, the details for an item on the queue list also show playback settings. These are shown by two-letter abbreviations at the bottom of the screen. The settings are as show in Table I, below.

EA	Environmental Preset
EQ	Parametric EQ
HS	Headphone Spatialization
TS	Time Scaling
4S	Four Channel Speaker Sound (only if speakers are connected)

TABLE I

These settings have their common meanings, as is known in the art. Note that the setting 4S is not shown in screen 202 as it is not currently active.

Fig. 14 illustrates the Nomad Jukebox coupled to a host computer system.

In Fig. 14, device 300 (e.g., the Nomad Jukebox) is coupled to host system 302.

5 In a preferred embodiment host system 302 is a personal computer, such as an IBM-PC compatible computer. Host system 302 includes a user interface having display 304 and user input devices such as keyboard 306 and mouse 308. In other embodiments the host system need not be a full computer system. Any type of processing system having a user interface is possible. For example, it is possible to couple the device to a laptop computer, game console, web-enabled
10 television, or any consumer electronic device or digital platform, in general. The host user interface need not provide a display and can be much more minimal than the keyboard and mouse shown in Fig. 14. A preferred embodiment of the invention uses a Universal Synchronous Bus (USB) connection but any type of connection such as IEEE 1394 (FireWire), Ethernet, Serial Port, etc. can be used. A wireless (i.e., optical or radio frequency) connection
15 can be used.

Once device 300 is coupled to host system 302, a user of host system 302 can launch a bridge interface to allow for the transfer of files between device 300 and host system 302. In a preferred embodiment, once the bridge interface is launched, the controls of device 300 are inoperable. The user interface of host system 302 is used to operate the bridge interface
20 to transfer files.

The invention has now been described with reference to the preferred embodiments. Alternatives and substitutions will now be apparent to persons of skill in the art.

WHAT IS CLAIMED IS:

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

ABSTRACT OF THE DISCLOSURE

A method, performed by software executing on the processor of a portable music playback device, that automatically files tracks according to hierarchical structure of categories to organize tracks in a logical order. A user interface is utilized to change the hierarchy, view track names, and select tracks for playback or other operations. The user interface uses an overlapping hierarchy of categories. A song title can be accessed in multiple different ways by starting with different categories. A preferred embodiment of the invention uses the top-level categories "Albums", "Artists", "Genres" (or styles), and "Play Lists". Within the Albums category are names of different albums of songs stored in the device. Within each album are the album tracks, or songs, associated with that album. Navigation is performed by presenting a sequence of display screens for each level of the hierarchy.

SF 1174925 v2

Do not enter
Ownership
they will file
separately.

PATENT

Attorney Docket No.: 17002-022500US

Client Reference No.: CT-1139

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

CROSS-REFERENCES TO RELATED APPLICATIONS

This application is related to Application No. 09/755,629, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," now abandoned (~~Atty. Docket No. 17002-020800~~), and Application No. 09/755,367, entitled "Audioplayback Device with Power Savings Storage Access Mode," issued as U.S. Patent No. 6,590,730 (~~Atty. Docket No. 17002-022400~~), all filed January 5, 2001, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

Today, portable consumer electronic devices are more powerful than ever. For example, small, portable music playback devices can store hundreds, even thousands, of compressed songs and can play back the songs at high quality. With the capacity for so many songs, a playback device can store many songs from different albums, artists, styles of music, etc.

Music jukeboxes implemented in software executed by a digital computer and portable MP3 and CD players both provide facilities for forming playlists. For example, the **OOZIC** player, distributed by the assignee of the present application, runs on a host PC and has a playlist feature that allows selection of tracks from the PC's hard disk to be included in the playlist.

As storage capacity increases and songs are compressed to shorter file lengths the number of songs that can be stored increases rapidly. Major problems facing the consumer are organizing and accessing the tracks.

Typically, portable devices have a user interface including a small screen and buttons. Such a display screen might be, e.g., 1" x 2". This small display size is necessary because of the physical size of the device which is typically carried in the hand. The small size also limits the number, size, shape, and types of user input controls that can be mounted on the

CL 000188

device. For example, a few pushbuttons are usually provided to perform all of the device's control functions. Using such a compact user interface to navigate and select among hundreds of songs is inefficient and often frustrating. The display screen can only show a few song titles at one time, and the limited controls make it difficult for a user to arbitrarily select, or move among,
5 the songs.

The creation of playlists is one technique to organize the playing of songs. A set of songs can be included in a playlist which is given a name and stored. When the playlist is accessed, the set of songs can be played utilizing various formats such as sequential play or shuffle.

10 However, the creation of playlists itself becomes problematic as the number of songs increases, since the user often arbitrarily selects songs from a large number of tracks to form a playlist. This selection mechanism: can be fairly tedious; does not necessarily produce playlists that are of interest to the user over the course of time; may not remain up-to-date if new songs are added that logically fit into a previously created playlist (e.g. "Favorites by Band X"
15 might become out of date if a new favorite by Band X is added after the playlist was created); and leads to "lost" songs that are not members of any playlist.

Accordingly, improved techniques for organizing and grouping tracks useful in a portable music player are needed. Further, it is desirable to provide a user interface suitable for a small device. The user interface should allow a user to efficiently navigate among, and select
20 from, many items stored in the device.

SUMMARY OF THE INVENTION

The present invention provides an efficient user interface for a small portable music player. The invention is suitable for use with a limited display area and small number of controls to allow a
25 user to efficiently and intuitively navigate among, and select, songs to be played. By using the invention, very large numbers of songs can be easily accessed and played.

One aspect of the invention includes an overlapping hierarchy of categories. Categories include items that can also be included in other categories so that the categories
30 "overlap" with each other. Thus, a song title can be accessed in multiple different ways by starting with different categories. For example, a preferred embodiment of the invention uses the

top-level categories "Albums", "Artists", "Genres" (or styles), and "Play Lists". Within the Albums category are names of different albums of songs stored in the device. Within each album are the album tracks, or songs, associated with that album. Similarly, the Artists category includes names of artists which are, in turn, associated with their albums and songs. The Genre category includes types of categories of music such as "Rock", "Hip Hop", "Rap", "Easy Listening", etc. Within these sub-categories are found associated songs. Finally, the "Play Lists" category includes collections of albums and/or songs which are typically defined by the user.

Advantageous use is made of the overlapping hierarchy to allow the user to quickly designate a song for playback. The device uses three "soft" pushbuttons that have assignable functions. The interface maintains consistent button functionality whenever possible and uses uniform command names and operations on different types of items so that the interface is more intuitive. For example, the user can open and queue both albums and songs with predictable results.

The interface also provides for multiple functions for a single control. For example, a "Play" button can act, in a first function, to play a currently-selected song. The Play button can act, in a second function, to cycle through different playback modes. The modes can be, e.g., (1) playback of songs from a hard disk; (2) playback of music from a radio receiver built into the device; and (3) playback of voice messages. The first function for the Play button can be activated by momentarily depressing the Play button for a short period of time. The second function is invoked by depressing the Play button for a longer period of time whereupon the device cycles through the different modes. Other ways of invoking the functions are possible such as where the second function is automatically entered from a powered-down state.

In one embodiment, the invention provides a method for selecting songs to be played in an electronic audio device, wherein the device includes a display and one or more user input controls, wherein songs are organized into categories, albums, wherein songs and albums are associated with artist names. The method includes steps of displaying categories on the display; accepting signals from a user input control to select a category; displaying one or more songs in the selected category on the display; accepting signals from a user input control to select a displayed song; and entering selected songs into a playlist queue, wherein the device plays back songs in the playlist queue.

According to one aspect of the present invention, a technique is provided for organizing tracks on a portable music player by automatically filing tracks in a hierarchical order based on attributes of the tracks.

5 According to another aspect of the invention, metadata is associated with each track that is used to automatically define the track's appropriate place in the hierarchy.

According to another aspect of the invention, the hierarchy is displayed on the portable music player so that a user can traverse the organizational hierarchy to find individual tracks or find playlists composed of logical groups of tracks.

10 According to another aspect of the invention, the hierarchy is derived by using metadata associated with the audio content that was obtained through any source of metadata (e.g. CDDDB metadata, id3v2 metadata, other obtainable metadata) and subsequently stored with or alongside the file that stores the track.

15 According to another aspect of the invention, a file is formatted so that an unaltered track is stored as file data and information about the track is stored in file attribute files.

Other features and advantages of the invention will be apparent in view of the following detailed description and appended drawings.

20

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic diagram of a tree structure for hierarchical filing of tracks;

Fig. 2 is a definition file that specifies the hierarchy depicted in Fig. 1;

Fig. 3 is a user's view of the hierarchy;

25

Fig. 4 is a schematic diagram of a user interface displaying the hierarchical category structure;

Fig. 5 is a diagram of a file format for storing file data and file attributes;

Fig. 6 is a flow chart depicting steps for filing tracks according to the hierarchical tree structure;

30

Fig. 7 depicts a tree resulting from searching the tracks; and

Fig. 8 depicts a format for a user interface[.];

Fig. 9 illustrates the NOMAD Jukebox and its user interface controls;

Fig. 10 illustrates a sequence of display screens describing how to navigate to lower levels;

Fig. 11 illustrates associations among items;

Fig. 12 shows display screens used to search for a song or other item;

Fig. 13 illustrates details of different items; and

Fig. 14 illustrates a playback device coupled to a host computer system.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the invention will now be described in the context of a portable personal player that plays audio files stored in memory. The files may be in MP3, wav, or other digital formats.

5 In the presently described embodiment, users are able to see the tracks on their player in some organized fashion other than as a single list of tracks. As will be described in more detail below, in one embodiment tracks are sorted utilizing a tree structure having branches labeled according to types of metadata associated with the tracks

10 For example, a track recorded as "Golden Slumbers" by the Beatles that appears on their album "Hey Jude" might appear as a track under the album "Abbey Road" as well as a track under the list of tracks by the Beatles. It might appear as a track under the genre "Pop Rock" as well as "Songs from the 60's." Furthermore, the organization can have more complex hierarchies. For example, the category of "Pop Rock" might contain subcategories "British Musicians," "American Musicians" and "Other Musicians". In all cases, the track is
15 automatically filed into all appropriate locations without requiring user interaction.

In the currently defined embodiment, a tree structure is defined by a file having the following structure.

The first line of a TreeDef.inf file contains a version number:

V1.0

20 Each subsequent line (at least in v1.0) contains lines of the following format:
CATEGORY_NAME|TRACK_TYPE_MASK|CATEGORY_STRUCTURE

CATEGORY_NAMES are the top-level names of the branch under which tracks are sorted. They include things like "Album," "Artist," "Voice Tracks," "All Tracks," etc.

25 TRACK_TYPE_MASKs tell which types of tracks are to be filed under this particular branch. The actual value is a hexadecimal numerical value (in '0x' format, e.g. 0x01) generated by ORing the following flags together as appropriate:

```
enum tTrackType
{
30     kTTNothing=0x00,
```

5 kTTSong=0x01,
 kTTVoice=0x02,
 kTTBook=0x04,
 kTTMacro=0x08,
 kTTPlaylist=0x10
 };

10 So, for example, the "Album" branch has a TRACK_TYPE_MASK of kTTSong,
 because only songs are filed under that branch, but the "All Tracks" branch has a
 TRACK_TYPE_MASK of (kTTSong | kTTVoice | kTTBook).

 Other elements might be added to tTrackType (e.g. kTTVideo) as appropriate.

15 CATEGORY_STRUCTURES tell how to file the songs based on their metadata
 information. The CATEGORY_STRUCTURE is a string of characters that tell, from left to
 right, the order of hierarchy. The characters come from the following enum constants:

```
enum tFileTag
{
    kFTNone='@',
    kFTTrackType='T',
    kFTTitle='N',
    kFTAudioFile='F',
    kFTArtist='M',
    kFTAlbum='L',
    kFTGenre='G',
    kFTSource='S',
    kFTYear='Y',
    kFTArtistCountry='C'
};
```

30 Thus, a CATEGORY_STRUCTURE of LN tells to create a subcategory that is a
 list of Albums, each of which contains a list of Tracks.

In total, a line like:

```
Album|0x01|LN
```

Says to create a branch called "Album" which contains tracks of type kTTSong organized first by album name, and then by track name.

5 The following is an example of a tree definition file similar (though not identical) to the hierarchy presented in the Nomad Jukebox product (the 'B' before each FileTag was used to identify that these are basic tags so that we wouldn't run out of letters in the alphabet as we included more complex metadata – thus each group of two letters represents a level in the hierarchy):

10

```
V1.0
Album|0x01|BLBN
Artist|0x01|BMBN
Genre|0x01|BGBN
15 Voice Tracks|0x02|BSBGBN
Playlists|0x10|BN
Macros|0x08|BN
All Tracks|0x07|BN
```

20

Fig. 1 depicts a hypothetical organization hierarchy. The tree shows how tracks might be listed (as leaves in the tree) after having been organized. Example values for nodes in the tree are shown as well. The same track may appear more than once as a leaf in the tree, as described above, if it fits into multiple categories (e.g. a song that appears on the Abbey Road branch would also appear in the Beatles branch). In the example shown, the first branch contains tracks organized by album. As shown in the example, this music collection contains three tracks from "Abbey Road" and three tracks from "Hits from the 60's". The second branch contains tracks organized by artist, and sub organized by where the artist is from. Thus, a user browsing would first select the "Artists" branch and then choose between "British Artists" and "American Artists". Finally, they would select the particular artist. In the third branch, all tracks are shown.

25

30

The tree definition file that would specify the hierarchy shown in Figure 1 is shown in Figure 2.

The first line identifies the version of the tree definition file.

The second line defines the "Albums" branch. The first part of the line, "Albums" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BLBN," defines that the branch lists first the names of all albums (BL) and then tracks on those albums (BN).
5

The third line defines the "Artists" branch. The first part of the line "Artists" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BCBMBN," defines that the branch lists first the names of all countries where artists in this collection come from (BC) and under those items, the artists' names (BM), and then tracks by those artists (BN).
10

Fig. 3 shows what a user's view of this hierarchy might be if he/she were shown a fully expanded view of the 6-song tree. Notice that each song appears three times, once in each branch.

In consumer products the tree define file is not edited directly but through a user interface, one example of which is depicted in Fig. 4. An example of a user interface for viewing songs by category and editing the tree structure is depicted in Fig. 4.
15

An embodiment of the invention is utilized in the Nomad® Jukebox, manufactured by the assignee of the present invention, and described more fully in the copending application, filed on the same date as the present application, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Attny. Docket No. 17002-020800).
20

In a preferred embodiment, metadata is associated with each track and includes such information as title, genre, artist name, type, etc. In the preferred embodiment, software stored in a portable player and executed by the onboard processor automatically files each track in the correct category utilizing the associated metadata and the tree define file. The program code can be stored in any computer readable medium including magnetic storage, CD ROM, optical media, or digital data encoded on an electromagnetic signal.
25

Thus, the user is automatically provided with a powerful and flexible tool for organizing and categorizing the tracks stored on the portable player.

If the tracks are formatted in MP3 format the metadata can be stored in ID3 tags included in the MP3 file. In one embodiment of the invention, the tracks are stored in alternate
30

file format including file data and file attributes. The file data is the music track itself and the file attributes part of the file includes fields of arbitrary size which are used to store metadata characterizing the track stored as the file data. Again this metadata includes information about the track such as title, genre, artist name, type, etc.

5 There are several advantages to using the alternate file format. Metadata of types not easily included in an ID3 tag can be utilized. Further, the original track format is not changed, so that error correction data such as checksums are valid. Finally, any file format can be used (e.g. WAV, WMA, etc.) because the metadata is stored separately, and thus audio formats that have limited support for metadata can still be stored on the portable player in native
10 format without transcoding. The formatted files are formed by software stored in the portable music player and executed by an on-board processor.

 The metadata for each track is utilized to file each track, using the categories defined in the hierarchical structure as described above, without any input from the user.

15 Fig. 5 is a schematic diagram of the alternative file format including file data in the form of an MP3 track, and metadata fields for holding data indicating the name of the album the track is from, the name of the song, the genre of the song, and the type of track.

 A particular embodiment of a file format will now be described. All tracks are created with some set of attributes as shown below:

20 Definition of TrackInfo Data Field

Field	Offset	Size	Description
Attribute Count	0	2	The number of attribute follow for the track
Attr 1 type	2	2	Binary = 0, ASCII = 1
Attr 1 name len	4	2	Length of attribute name string
Attr 1 data len	6	4	Length of attribute data
Attr 1 Name	10	N	Attribute name string
Attr 1 Data	10+N	M	Attribute data
....			

Attr N type			
Attr 1 name len			
Attr1 data len			
Attr1 Name			
Attr 1 Data			

Required Attributes

Attribute Name	Value(s)	Remarks
TITLE	ASCII string	<u>Required By Jukebox</u>
CODEC	"MP3", "WMA", "WAV"	<u>Required By Jukebox</u>
TRACK ID	DWORD	Set By Jukebox
ALBUM	ASCII string	Optional
ARTIST	ASCII string	Optional
GENRE	ASCII string	Optional
LENGTH	In seconds	Optional
TRACK SIZE	In bytes	Optional
TRACK NUM	1-n (track within album)	Optional

5 These attributes can be subsequently changeable via a host application, running on a personal computer connected to the portable music player.

10 Fig. 6 shows a flow chart of an embodiment the process used to build the hierarchical database of tracks. It starts by iterating through each track, and, for each track, iterating through each branch to find if the track belongs on the branch, and, if so, where. In this case, the term track could refer to any content, e.g. a music track, a spoken word track, or even a video track.

Also, the hierarchical catalog of tracks can be used to form playlists in a structured manner. For example, if a user wants to hear Jazz and Blues the entire sub-categories can be selected to form one playlist.

An alternative hierarchical catalog generation technique will now be described.

5 In this alternative embodiment, at system startup and as tracks are added or changed, the hierarchy is generated as an in-memory tree structure. Each track is added to the tree using the categories ALBUM, ARTIST and GENRE.

The following example shows the algorithm for adding a track. For clarity, only the attributes used by the tree are shown.

10

TITLE	"Free Falling"
ALBUM	"Full Moon Fever"
ARTIST	"Tom Petty"
GENRE	"Rock"
TRACK NUM	1

The following function is executed to build the in-memory memory tree.

Build Tree ()

15

For each track,

Add Track To Category(Album, Track)

Add Track To Category(Artist, Track)

Add Track To Category(Genre, Track)

End of Build Tree

20

Fig. 7 depicts a tree which could result from implementing Build Tree() function. Note that "Stardust" does not have any entries for Album or Artist. The host software running on a computer connected to the portable music player could be utilized to add missing attributes to the "Stardust" track and, optionally, edit the title attribute. The Build Tree() function would
25 then reinsert this track in the correct location in the tree.

Fig. 8 is an embodiment of a user interface according to another embodiment of the invention. In this example the root node is labeled "My Configuration" and the Playlist category has been selected and the Playlist subcategory "Meddle" has been selected. Note that the types of Metadata, in this example, Track Name, Artist, Album, Tempo and

5 Dance, are listed across the top of the screen, and the attribute values for each track are listed in a row across the screen. Various control buttons are displayed to the right of configuration window that facilitate quickly invoking selected processing on a selected track.

As noted above, a preferred embodiment of the present invention is incorporated into a product manufactured and distributed by Creative Technology, Ltd. The product is called
10 the "NOMAD Jukebox." The following description describes further details of the display screens and interface controls.

Fig. 9 illustrates the NOMAD Jukebox and its user interface controls.

In Fig. 9, electronic audio device 100 measures about 5.5" wide by 5.5" tall by 1" thick. Display screen 102 is about 2" wide by 1" tall. Display screen 102 includes different
15 regions such as main region 104 and soft button function description region 106.

Three soft buttons are located at 108; including buttons 110, 112 and 114. The specific command, or function, that any of the soft buttons perform when depressed is indicated by the label in soft button function description region 106. Thus, the function of soft button 112 (as shown in Fig. 9) is "open," the function of soft button 114 is "search" while soft button 110 is
20 currently not assigned a function.

The other eight buttons on device 100 perform essentially the same functions at all times. In other words, they are not subject to function changes according to soft button function description area 106. These buttons include Library button 116, EAX and System button 118, Skip Backward button 120, Play button 122, Stop button 124, Skip Forward button
25 126, Scroll Up button 128 and Scroll Down button 130. However, as discussed below, these buttons (or any type of controls used with the device) can include alternate functionality that is invoked in different ways.

The device uses visual cues, or indicators, in the display. When an item is highlighted it indicates that the item is the "current" item, or currently-selected item, which is
30 susceptible to be operated on by a subsequent user action – such as playback, or expansion of the item. In Fig. 1, screen 102 shows that the item, "ALBUMS," is highlighted. The highlighted

item can be acted upon by using the soft buttons, or another button, as discussed below. The current item can be changed by using Scroll Up button 128 and Scroll Down button 130 to move the highlight up or down, respectively, throughout a list of displayed items.

5 Icons are used to provide additional visual cues for an item. In Fig. 1, each of the categories has a category icon to the left of it. The category icon, which may not be distinctly visible in the Figure, illustrates a first box connected by lines to additional boxes below the first box. The icon depicts a hierarchy and illustrates the property of categories, i.e., that categories can contain additional categories, songs or other items.

10 Fig. 10 illustrates a sequence of display screens describing how to navigate to lower levels.

In Fig. 10, library category screen 150 shows the display as it appears when the user depresses library button 116 of Fig. 9. A preferred embodiment of the device uses 4 first-level categories. These are "Albums", "Artists," "Styles" and "Play Lists". Each of these categories can "contain," or be associated with, other categories, songs, or items.

15 Note that in library category screen 150 ALBUMS is currently highlighted. By depressing soft button 112 of Fig. 9, the "open" command is performed on the highlighted category, as indicated by the labeling of soft button 112 and soft button function description area 152 of Fig. 10.

20 Lists screen 154 is displayed as a result of a user opening the Albums category of library category screen 150. Lists screen 154 shows items within the Albums category such as commercial albums of multiple songs from a record label, pre-made lists or collections created by a user, or other predefined lists or collections of songs or recordings.

25 In Fig. 10, lists screen 154 shows each item as a list of songs. This is shown visually by the icon to the left of each item which depicts a miniature list. Possible soft button commands are "Close", "Open" and "Queue". These commands correspond to soft buttons 110, 112 and 114, respectively. If the user selects the Close command, the display reverts to library category screen 150. If the user selects the Open command, the display shows tracks screen 156. Alternatively, the user can select the Queue command to instruct the device to place all the songs from the selected (i.e., highlighted) list into the play list for eventual playback. Yet another
30 option allows the user to press play button 122 of Fig. 9 to cause any currently-selected songs or a list of songs (e.g., an album) to immediately be played.

Returning to Fig. 10, tracks screen 156 shows that a single song called "JukeBox Demo" is in the list. The list is also called JukeBox Demo as shown in lists screen 154. Tracks screen 156 shows possible soft commands assigned to buttons, namely "Close", "Details" and "Queue." The Close button performs the same function as before -- it returns the user to the previous screen which, in this case, is lists screen 154. The user can also select the Details command to cause details of the song JukeBox Demo to be displayed in details screen 158 as shown in Fig. 10. The user can select the Queue command by soft button 114 to enter the selected song into the play list queue. As before, the user can also depress play button 122 of Fig. 9 to cause immediate playback of the selected song.

10 Details screen 158 shows information about the selected song including the name of the song, album (or list) name containing the song, the track number, if applicable, and track duration. Note that other information can be included. The user can preview the song, close the Details screen to return to the Tracks screen or queue the song on the play list queue.

15 The device provides the ability to "preview" audio files even while a current song, or playlist, is being played. When a user chooses to preview an audio file, the audio file is played for about 10 seconds while any currently-played file or playlist is suspended. After previewing is complete, the suspended file or playlist resumes playback. In other embodiment, the preview duration can vary, or be stopped by user selection.

Fig. 11 illustrates associations among items.

20 In Fig. 11, song 168 is one of many songs stored in the device. Categories such as albums 160, artists 162, play lists 164 and genres 166 each include sub-categories. For example, albums 160 includes the names of various albums. Songs are associated with albums, genres and playlists. Such association can be by using pointers, a data structure including items to be associated, etc. "Association" as used herein, includes a first item associated with a second item; and the second item associated with the first item. In other words, albums can be associated with one or more songs in the database of the device so that an automated search to find all songs associated with an album is easier. The direction of arrow pointers in Fig. 11 is not intended to limit the manner of associations among items in the present invention.

30 Similar to albums, the category of artists 162 includes names of artists, or performers, of songs. Each artist name is associated with one or more songs in the database. Playlists 164 includes names of playlists. These are collections of songs that can be defined by

5 the user, the device manufacturer, or others. Each playlist can be associated with one or more songs. Genres 166 includes various styles of music which are associated with one or more songs in the database. Note that items can exist without being associated with a song. Also, items can be associated with other items as where an artist name is associated with the albums containing the songs that the artist has created.

Although not shown in Fig. 11, items can have additional information, such as properties, details, etc., associated with the item. For example, a song can have information such as play time, artist name, artist album, copyright owner, etc., associated with the song.

Fig. 12 illustrates display screens used to search for a song or other item.

10 In Fig. 12, screen 180 is the initial library screen, as discussed above. If the user invokes the Search command (via the appropriate soft button) with Albums selected then screen 182 is displayed. Note that the search function can be applied to any of the categories. The user can depress the Plus or Minus soft buttons to cycle through the alphabet and change the character in the current location as indicated by the cursor. The cursor position is changed by using the scroll up/scroll down buttons 128 and 130, respectively, of Fig. 9. As each letter is entered the letters are compared and the nearest match of the stored albums' names is displayed as shown in screen 184. When the desired match is displayed the user selects the Go! command.

15 Screen 186 shows the result of selecting the Go! command. A list of albums is displayed with the matched album centered and selected. The user can close, open or queue the album as discussed above.

Fig. 13 illustrates details of different items.

20 In Fig. 13, screen 200 illustrates details displayed as a result of selecting the "Details" command from soft button 1A track is selected. Screen 200 shows that details of the track "Jukebox Demo" shows the name of the album that the track resides on, the creator, or copyright owner, of the track, and the playing time of the track.

25 Screen 202 illustrates details of an item on the active queue list. Items are placed onto the active queue list by selecting the "Queue" command when an album, song, track, or other item is selected, as discussed above. For example, screen 204 shows the active queue list where the track "Jukebox Demo" is selected. By invoking the "Details" command screen 202 is brought up to show details of the Jukebox Demo track.

As shown in screen 202, the Detail screen shows what track number the selected track is, which album the track is from, the creator, or copyright owner, of the track, and the title of the track. Additionally, the details for an item on the queue list also show playback settings. These are shown by two-letter abbreviations at the bottom of the screen. The settings are as show in Table I, below.

<u>EA</u>	<u>Environmental Preset</u>
<u>EQ</u>	<u>Parametric EQ</u>
<u>HS</u>	<u>Headphone Spatialization</u>
<u>TS</u>	<u>Time Scaling</u>
<u>4S</u>	<u>Four Channel Speaker Sound</u> <u>(only if speakers are connected)</u>

TABLE I

These settings have their common meanings, as is known in the art. Note that the setting 4S is not shown in screen 202 as it is not currently active.

Fig. 14 illustrates the Nomad Jukebox coupled to a host computer system.

In Fig. 14, device 300 (e.g., the Nomad Jukebox) is coupled to host system 302.

5 In a preferred embodiment host system 302 is a personal computer, such as an IBM-PC compatible computer. Host system 302 includes a user interface having display 304 and user input devices such as keyboard 306 and mouse 308. In other embodiments the host system need not be a full computer system. Any type of processing system having a user interface is possible. For example, it is possible to couple the device to a laptop computer, game console, web-enabled
10 television, or any consumer electronic device or digital platform, in general. The host user interface need not provide a display and can be much more minimal than the keyboard and mouse shown in Fig. 14. A preferred embodiment of the invention uses a Universal Synchronous Bus (USB) connection but any type of connection such as IEEE 1394 (FireWire), Ethernet, Serial Port, etc. can be used. A wireless (i.e., optical or radio frequency) connection
15 can be used.

Once device 300 is coupled to host system 302, a user of host system 302 can launch a bridge interface to allow for the transfer of files between device 300 and host system 302. In a preferred embodiment, once the bridge interface is launched, the controls of device 300 are inoperable. The user interface of host system 302 is used to operate the bridge interface
20 to transfer files.

The invention has now been described with reference to the preferred embodiments. Alternatives and substitutions will now be apparent to persons of skill in the art.

WHAT IS CLAIMED IS:

PATENT

Attorney Docket No.: 17002-022500US

Client Reference No.: CT-1139

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

ABSTRACT OF THE DISCLOSURE

A method, performed by software executing on the processor of a portable music playback device, that automatically files tracks according to hierarchical structure of categories to organize tracks in a logical order. A user interface is utilized to change the hierarchy, view track names, and select tracks for playback or other operations. The user interface uses an overlapping hierarchy of categories. A song title can be accessed in multiple different ways by starting with different categories. A preferred embodiment of the invention uses the top-level categories "Albums", "Artists", "Genres" (or styles), and "Play Lists". Within the Albums
5
10 category are names of different albums of songs stored in the device. Within each album are the album tracks, or songs, associated with that album. Navigation is performed by presenting a sequence of display screens for each level of the hierarchy.

SF 1174925 v2

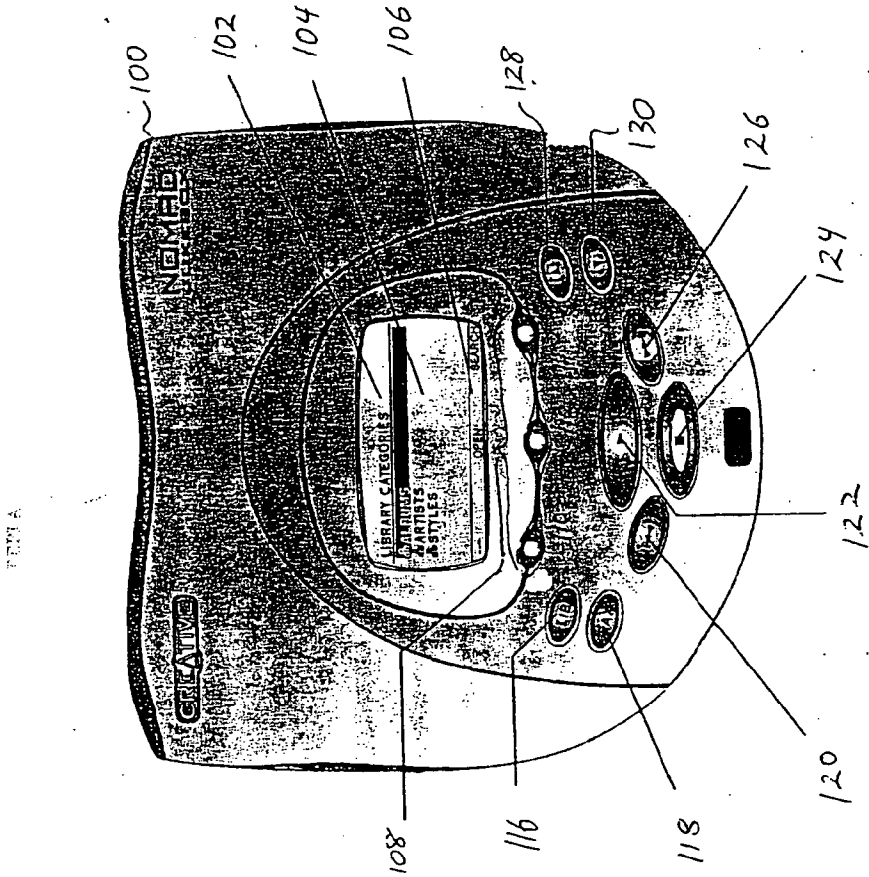


Fig. 9

CL 000208



REPLACEMENT SHEET

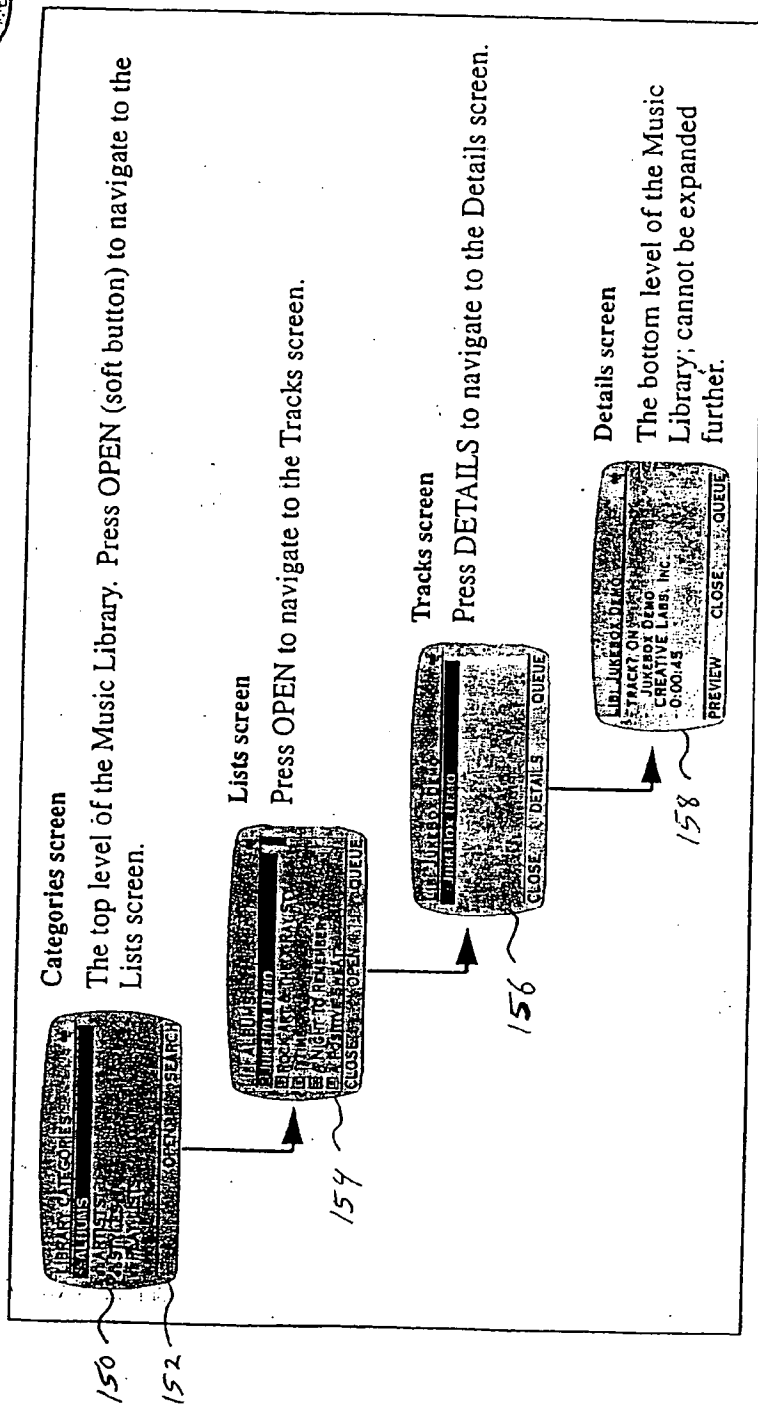


Fig. 10

CL 000209



REPLACEMENT SHEET

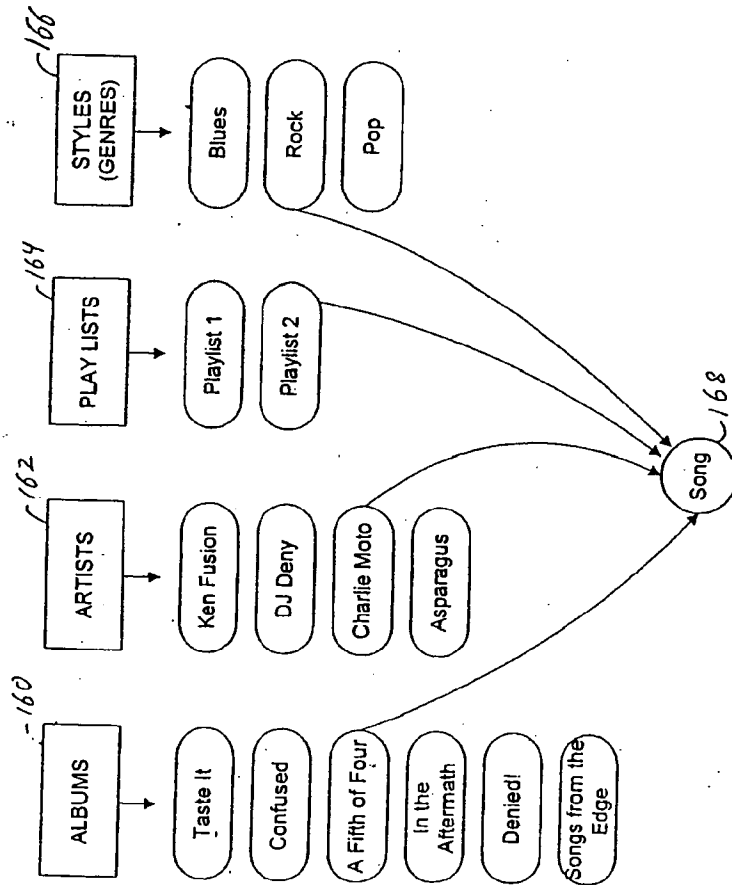


Fig. 11

CL 000210

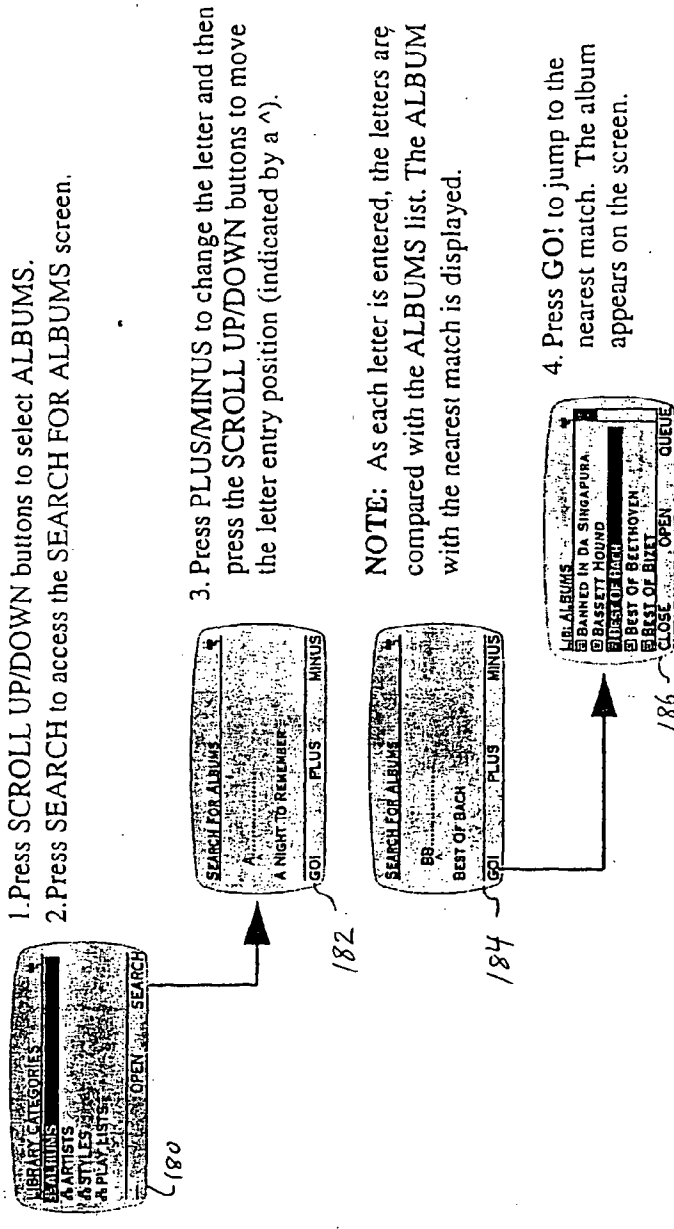


Fig. 12

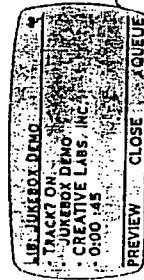
CL 000211



View DETAILS accessed from the TRACKS screen:



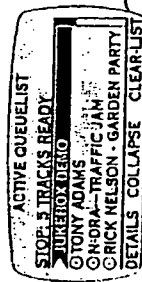
1. Press DETAILS. The DETAILS screen displays the Track Order, Album, Artist, and duration of the track.



2. Press CLOSE to return to the TRACKS screen.

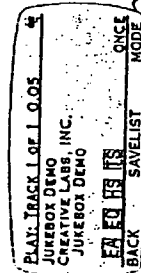
200

Viewing DETAILS accessed from the ACTIVE QUEUE LIST screen:



1. Press DETAILS. The DETAILS screen displays the Track Title, Artist, and Album together with Audio Playback settings (see note below) and Play Mode (see "Setting Play Mode" on page 16).

204



2. Press BACK to return to the ACTIVE QUEUE LIST screen.

202

Fig. 13

CL 000212

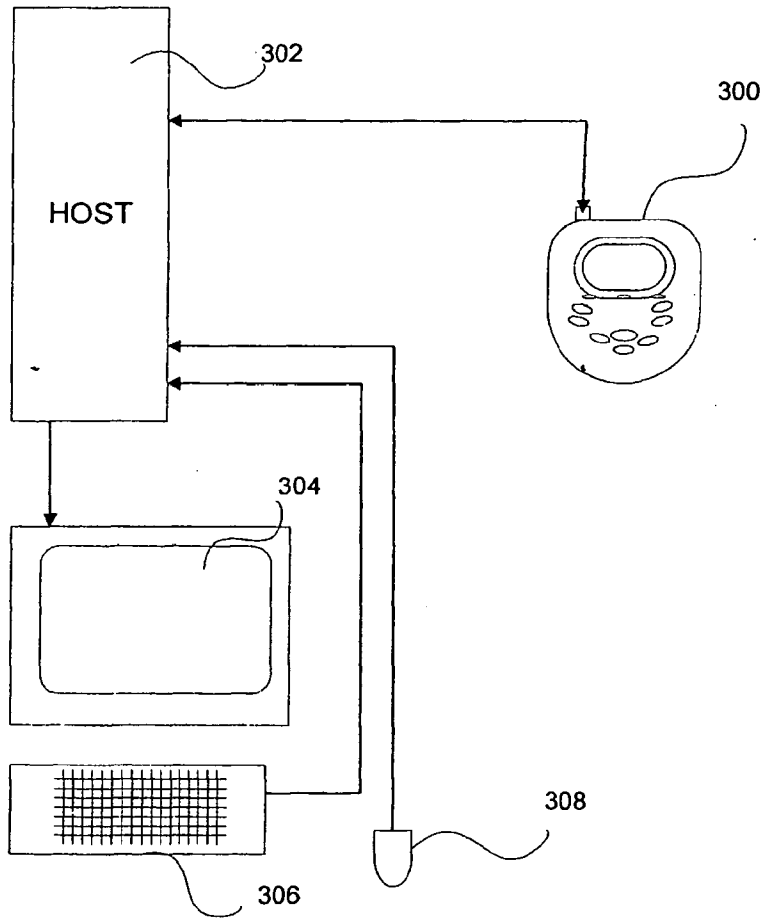


Fig. 14

CL 000213



2178

PTO/SB/21 (03-03)
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	First Named Inventor	GOODMAN, Ron
	Art Unit	2175
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	Attorney Docket Number	6407P212
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<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input checked="" type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Terminal Disclaimer	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Request for Refund	
<input checked="" type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> CD, Number of CD(s) _____	
<input type="checkbox"/> Certified Copy of Priority Document(s)	RECEIVED MAY 06 2004 Technology Center 2100	
<input type="checkbox"/> Response to Missing Parts/ Incomplete Application	Remarks _____ Items also enclosed: Information Disclosure Statement Cover Letter; References with Information Disclosure Statement; and Return Receipt Postcard.	
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

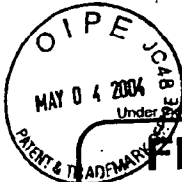
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual	Russell N. Swerdon Reg. No. 36,943
Signature	<i>Russell N. Swerdon</i>
Date	April 30, 2004

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CL 000214



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Effective 10/01/2003. Patent fees are subject to annual revision.

Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$)**0**

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Application Number	09/755,723
Filing Date	01/05/2001
First Named Inventor	GOODMAN, Ron
Examiner Name	RONES, Charles
Art Unit	2175
Attorney Docket No.	6407P212

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1004 770	2004 385	Reissue filing fee	
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1201 86	2201 43	Independent claims in excess of 3	
1203 290	2203 145	Multiple dependent claim, if not paid	
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1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 420	2252 210	Extension for reply within second month	
1253 950	2253 475	Extension for reply within third month	
1254 1,480	2254 740	Extension for reply within fourth month	
1255 2,010	2255 1,005	Extension for reply within fifth month	
1401 330	2401 165	Notice of Appeal	
1402 330	2402 165	Filing a brief in support of an appeal	
1403 290	2403 145	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,330	2501 665	Utility issue fee (or reissue)	
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1503 640	2503 320	Plant issue fee	
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1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))	
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Name (Print/Type)	RUSSELL N. SWERDON	Registration No. (Attorney/Agent)	36,943	Telephone	(408) 428-6600
Signature	<i>Russell N. Swerdon</i>	Date	4-30-2004		

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:
GOODMAN, et al
Application No.: 09/755,723
Filed: January 5, 2001
For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

Examiner: RONES, Charles L.
Art Unit: 2175

Commissioner for Patents
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Respectfully Submitted,

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First Named Inventor:	GOODMAN, Ron
Art Unit	2175
Examiner Name	RONES, Charles L.
Attorney Docket Number	6407P212

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Art Unit	2175
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CR	2	Web page on "MusicMatch Jukebox 4.0: Screen Shot 1," PC Magazine, June 17, 1999, 2 pages, http://web.archive.org/web/20000226113655/www.zdnet.com/products/stories/reviews/0,4161,2277814,00.html	
CR	3	Web page, NORTON, PATRICK, "MusicMatch Jukebox 4.1, the Ultimate MP3 Utility," techtv, 9/17/1999, 2 pages, http://www.techtv.com/freshgear/print0,23102,2324631,00.html	
CR	4	Web page on "Can you carry your CD collection in your pocket? Yes, you can." Compaq web site, 3 pages, http://research.compaq.com/SRC/pjb/ , printed on April 30, 2004.	

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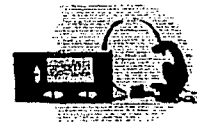
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MP3 *newswire.net*

①

1200 Song MP3 Portable is a Milestone Player

By Richard Menta- 01/11/00



Remote Solutions Personal Jukebox is a milestone product. By that we mean any product whose breakthrough innovations are so significant, they influence the future course of its industry. The iMac, which presently has PC manufacturers scrambling to breakout of the beige box routine, is a recent example of a milestone product.

Remote Solutions Personal Jukebox holds 1200 songs in its 4.8G hard drive

Personal Jukebox raises the bar in several areas and there is no doubt the leaders in MP3 portables are re-evaluating their future product releases. The most obvious element is Personal Jukebox's huge storage ability.

Up until now, all MP3 portables came with either 32MB or 64MB of memory, capable of holding anywhere of 9 to 20 song files at the standard 128k compression. This is the most limiting factor of MP3 players (many manufacturers advertise player capacity using songs compressed at a lower quality 56k setting. This stretches the limit of 64MB units to two hours), but promises of 300MB units using expensive flash memory or IBM's pricey, but tiny, micro drive litter manufacturer press releases.

The Personal Jukebox uses a 4.8G laptop hard drive, larger than the IBM's but far cheaper per MB of storage. This translates to a whopping 81 hours of music or 1200 songs and that is measured using the the higher 128k compression.

Think about this for a second. Right now, the largest capacity flash memory on the market is a 224MB CompactFlash card which Delkin started shipping Dec 99. The only player using that particular card to date is the RCA Lyra. The cost of the 224MB card is a very steep \$800. Add to that the \$200 cost of the Lyra costs and your up to \$1,000. The Personal Jukebox offers more that

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20 times that capacity and does it for \$799.

And that is another area where the Personal Jukebox will affect the industry - price. Think about S3's (formerly Diamond's) Rio. The next generation of players is to include a unit using IBM's 300+MB micro drive. While this drive obviously has a size and weight advantage over the Jukebox's, how much can they actually sell it for now that its MP3 capacity, in a span of a few months, has gone from huge to modest. The player hasn't even come out yet! Indeed, these new Rio's may possibly be scrapped because market forces might not allow them to sell at prices that would cover the costs of those expensive micro drives.

The good news for consumers is that Remote Solution has provided shoppers with a choice. A choice that puts pressure on the companies supplying the storage cards and micro drives to drop prices, less they watch the MP3 portable industry shift to laptop drives - a seasoned, and far more competitive, arena.

The Hardware

The Personal Jukebox is a large and heavy unit for an MP3 player, closer in size and weight to a portable CD player. That's still a pretty reasonable size, especially since you can tote far more music along. It may not be the first choice of joggers for whom the smaller the better, but everywhere else it was a blessing

Real Jukebox uses a rechargeable Lithium Ion battery which give the unit a very long life considering the power needs of the hard drive, about 10 hours. This battery is another feature that makes this unit a candidate for milestone kudos. The battery charges inside the unit which comes with a power adapter.

The unit, which comes with both a cassette and cigarette lighter adapter, was ideally suited for the car. We didn't even bother to use the lighter adapter, we just attached the cassette adapter, popped it in the cassette bay of our radio, closed the player in the glove compartment, and ran tunes the whole day on just the battery. No CD changer in the trunk, no miles of speaker wire to lay.

We also hooked our player up to the stereo system. At this point we had a dozen CD's worth of music and if the Personal Jukebox seems big when

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compared to other MP3 portables, it is sleek and petite when compared to the bulky 100 CD carousels that equals it's music capacity.

Getting started: A

The unit includes Jukebox Manager, an intuitive drag-and-drop interface that easily allowed us to rip and download files to the player. We had no problem loading the software to our PC. A key (and another milestone) feature is the user has the ability to rip and encode MP3 files directly to the players hard drive, bypassing the need to load these files on your computers hard drive first. This is a major convenience in both time and system space.

The player connects to your PC through a USB cable, the only way to go when you have the power to download hundreds of megs of MP3 files in a shot. Downloads were quick and simple.

Controls: A

Big and easy. The unit doesn't have some of the nice features in other units, like the ability to scan within a song, but it did the job well and that is what's most important. The controls were precise and effective.

The Display: A

Excellent. The display on the Personal Jukebox is twice the size of the nearest competitor and they put it to good use. The unit shows no less than six categories of information simultaneously, avoiding the need to navigate through various sub-menus to display the info you need. This includes CD and folder titles (the player can separate music by genre or album title) track name, tone and bass settings, battery consumption, volume, bit rate of the music, a counter, and more.

While the unit does not come with a backlight, the letters were big and clear and were very readable in all but the lowest light conditions.

Sound: A

Again, excellent.

The Personal Jukebox comes with a fine set of Koss headphones. Some may

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choose to go with low profile earbuds - the Sennheiser MX-4 earbuds are our recommendation - but there was no need to upgrade for the sound quality, the Koss's did the job well

Conclusion

The reason MP3 player's will eventually send the cassette the way of the 8 track is convenience and the ability to store large amounts of music without taking up physical space. The biggest complaint of 32MB and 64MB portables is that they simply are not there yet, requiring you to constantly run back to your PC to swap music. The Personal Jukebox IS there right now as Jukebox owners can hold most (if not their entire) CD library, leveraging the advantages of the format today.

The industry seemed ready to bring larger capacity units by 64MB increments, thereby using capacity as a continual upgrading point, similar to how PC's use chip speed to get you to upgrade your system every few years. Personal Jukebox jumped over all that malarchy and now stands alone as the pre-eminent machine. The \$799 pricetag should cause ripples in an industry that would have today priced this much capacity in the thousands.

The unit is not a perfect instrument. It's a tad heavy for the exercise minded, you can feel the hard drive mildly vibrate when it changes tunes, it doesn't have some useful scan and backlight features. So what? We'll take four-and-a-half gigs of extra space over a backlight anyday. In other words, the advantages this portable offers far outbalances the couple of minor niceties it may be missing. This unit is more expensive than the \$150-\$200 portables on the market, but it offers far more bang to the buck.

BUT - and this is important - this does NOT mean that every other portable on the market is ready for the dustbin. The reason is the memory expansion slots most have, the saving grace of the industry. Right now a 32MB flash card sells for about \$100, quite a bit of money. Those prices will go down!

As mentioned above, what makes the Personal Jukebox so significant to the industry is that it pressures memory manufacturers to drop those prices quicker. In a couple of years, 32MB cards will sell for around five bucks and 300 MB cards will sell for about \$50. At those prices, these flash cards will essentially become the new cassettes. Heck, we might be able to buy them

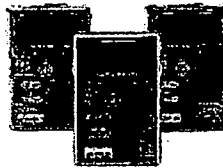
pre-programmed with music from the record store like any other album (the Rio people saw this early and added sleeves to the carrying case of the Rio 500 that holds 8 flash cards).

When that happens, users will get that bang for the buck, even on units that already been on the market for a year. They also get the size and weight advantages not offered by the large Remote Solutions machine.

Bottom line, not everyone has \$800 to spend right now for the Personal Jukebox. For a fraction of that cost, the better of the 64MB players like the Rio 500 and the RavEMP can do just fine till memory card prices drop. Hopefully that will be sooner rather than later.

Final Score: A+ (a Milestone Player)

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Order The New Rio PMP 500 from [Amazon](http://www.amazon.com) for \$289.

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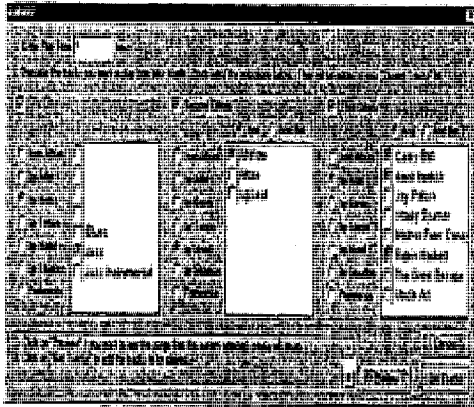
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MusicMatch Jukebox 4.0: Screen Shot 1

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Jukebox's AutoDJ function lets you select songs by general categories to fill large blocks of listening time easily.

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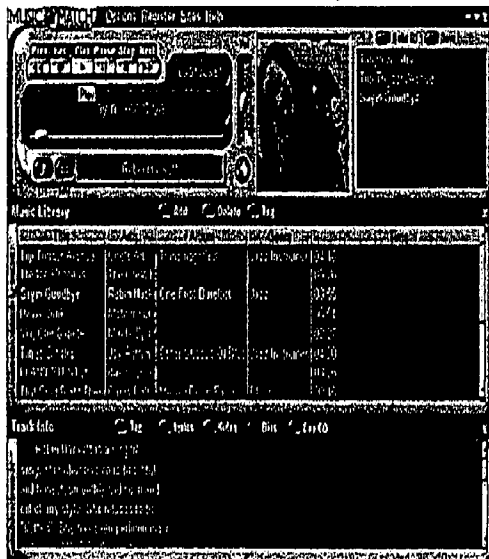
MusicMatch Jukebox 4.0: Screen Shot 2

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Via support for ID3v2, Jukebox lets you add graphics or text to your encoded music and view the information

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★★★★★

By [Patrick Norton](#)

Before RealJukebox jumped into the MP3 scene this summer, MusicMatch's Jukebox was the first such product. The latest version of MusicMatch Jukebox, 4.1 delivers nifty database and playlist tweaks, a graphic equalizer, and settings to help record from analog sources. As far as we're concerned, MusicMatch Jukebox (free to download, \$29.99 for high bit encoding), is the best MP3 tool out there for managing, playing, and creating MP3 audio files.

MusicMatch divvies the Jukebox interface across four windows: one each for the player, library, recorder, and track information such as title or cover information from the CDDb database. The latter info automatically gets downloaded if your system has a connection to the Net. All we did was drop in a CD, check the songs we wanted to encode, and hit the start button. MusicMatch then plays and records the songs in real time. Unfortunately, this product doesn't offer RealJukebox's speedy "read-ahead" encoding.

Both MusicMatch Jukebox and RealJukebox use our favorite encoder: Xing Technologies. In blind testing, we couldn't tell the difference between MP3s encoded (or played back) over either app. Both sounded as good as MP3 gets. Jukebox's AutoDJ, which maps types of music to a specific program time gives it a lead over RealJukebox. We also found its interface more intuitive.

Summary, Pros, Cons

Summary: MusicMatch Jukebox 4.1 delivers the best MP3 utility for encoding, organizing, and playing back, at least for our dollar.

Pros: Solid interface, Xing encoder delivers great audio quality; nifty AutoDJ settings.

Cons: \$29.99 upgrade if you want the best encoding; doesn't offer RealJukebox's speed in encoding.

Company: [MusicMatch Inc.](#)

Phone: 619.385.8360

Price: Free; \$22.99 for high quality encoding

Available: Now

Category: MP3, Audio

Platform: Windows 95, 98, NT 4.0

Specs: NA

Requirements: Pentium/166 or better PC; 16MB RAM (32MB for Windows NT); 30MB hard disk space; sound card; speakers

Originally posted September 17, 1999

<http://www.techtv.com/freshgear/print/0,23102,2324631,00.html>

4/30/2004

CL 000229

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<http://www.techtv.com/freshgear/print/0,23102,2324631,00.html>

4/30/2004

CL 000230

Can you carry your CD
collection in your pocket?

(4)
Yes, you can.

The **Personal Jukebox**, or PJB, was created as a prototype personal audio appliance by Compaq's Systems Research Center (SRC) and Palo Alto Advanced Development group (PAAD). The PJB project started in May 1998, and the PJB-100 product shipped in November 1999.

The PJB is a portable music player built around a small disk drive. A 30 GByte PJB will hold 550 hours of CD-quality audio. The battery lasts 10 to 11 hours on a single charge. The player weighs 9.5 ounces and can fit your jacket pocket. The audio quality is generally regarded as excellent, and the user interface is remarkably easy to learn and use. A 20 GByte PJB currently sells for around \$550; the 6 GByte version is under \$500.

Stereo Review's *Sound & Vision* magazine said:

In my 20 years of covering audio and video equipment, I can count on the fingers of one hand those products that gave me a spine-tingling "this changes everything" feeling. Now I can add the PJB-100 to the list.

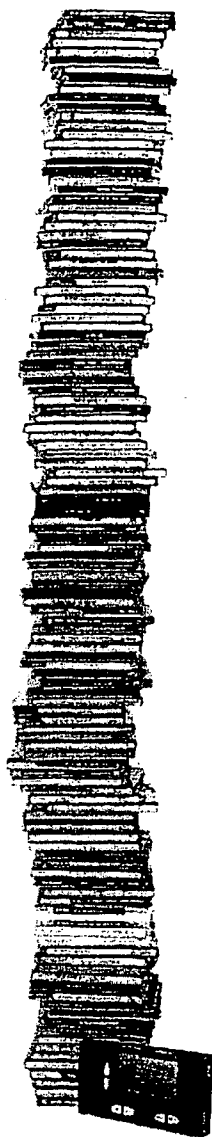


The PJB is being shipped as a product by our partner, HanGo Electronics (dba Remote Solutions). You can see their product specifications on their web site. You can also read several product reviews.

<http://research.compaq.com/SRC/pjb/>

4/30/2004

CL 000231



You can try out our Java emulation of the PJB User Interface. Or, of course, you could just buy a real one: try Hammacher-Schlemmer (U.S. mail and web order catalog), MP3FactoryDirect (U.S. distributor), or Uhu (European distributor).

For a slightly more detailed description of the PJB, see our PowerPoint presentation about it.

For information about the research project that created the PJB, please contact Andrew Birrell, Dave Redell, or Ted Wobber.

Opening up the covers, you'll find that the PJB is a fairly powerful special-purpose computer. It contains a Motorola 56309 digital signal processor (DSP), a 6.5 GByte hard disk, 12 MB of memory, 1 MB of flash memory, a USB port, a high quality digital-to-analog converter, and a small LCD display. We currently use MPEG-2 layer-3 encoding technology (MP3) from Fraunhofer IIS to store compressed CD-quality digital audio on the hard disk. This results in a 11:1 size reduction over raw digital audio with little noticeable difference in sound quality (even when you play it over your home stereo). Because the PJB uses flash ROM and a general-purpose DSP, it's quite easy to upgrade it to use other compression algorithms, or even to use different algorithms for different tracks.

You download music into a PJB using a PC program called the Jukebox Manager. This program communicates with the PJB using a proprietary RPC protocol over the USB. It reads digital audio from a CD in a local CD-ROM drive, compresses the bit stream, and stores the result on the PJB hard disk.

The Jukebox manager can also copy MP3 files from your PC into your PJB. The Jukebox Manager creates and manages a hierarchical table-of-contents (TOC), stored on the PJB, that makes it easy to find material in the PJB. The manager makes use of the Internet CDDB database to attach names to sets (categories), disks and tracks. Using the Jukebox Manager, it's easy to create personal playlists, to adjust the set/disk/track names to suit your personal tastes, and to move or copy items around within a TOC.

COMPAQ

Legal Statement Privacy Statement

<http://research.compaq.com/SRC/pjb/>

4/30/2004

CL 000233

19

Notice of Allowability	Application No.	Applicant(s)	
	09/755,723	GOODMAN ET AL.	
	Examiner	Art Unit	
	Charles L. Rones	2175	

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address-

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

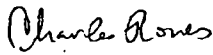
1. This communication is responsive to amendment filed May 4, 2004.
2. The allowed claim(s) is/are 24-36.
3. The drawings filed on 05 January 2001 are accepted by the Examiner.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All* b) Some* c) None of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

- Attachment(s)
- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date <u>19</u> 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____ 7. <input type="checkbox"/> Examiner's Amendment/Comment 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|--|---|
- 
 Charles L. Rones
 Primary Exam'
 Art Unit: 2175

CL 000234



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UNITED STATES DEPARTMENT OF COMMERCE
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NOTICE OF ALLOWANCE AND FEE(S) DUE

08791 7590 06/09/2004
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER
RONES, CHARLES

ART UNIT 2175
PAPER NUMBER

DATE MAILED: 06/09/2004

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Values: 09/755,723, 01/05/2001, Ron Goodman, 017002022500, 3728

TITLE OF INVENTION: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

Table with 6 columns: APPL. TYPE, SMALL ENTITY, ISSUE FEE, PUBLICATION FEE, TOTAL FEE(S) DUE, DATE DUE
Values: nonprovisional, NO, \$1330, \$300, \$1630, 09/09/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.
[] Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
 or **Fax** **(703) 746-4000**

INSTRUCTIONS: This form should be used for transmitting the **ISSUE FEE** and **PUBLICATION FEE** (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

08791 7590 06/09/2004
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 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	3728

TITLE OF INVENTION: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1330	\$300	\$1630	09/09/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
RONES, CHARLES	2175	707-104100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

"Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY and STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent): individual corporation or other private group entity government

4a. The following fee(s) are enclosed:

Issue Fee
 Publication Fee
 Advance Order - # of Copies _____

4b. Payment of Fee(s):

A check in the amount of the fee(s) is enclosed.
 Payment by credit card. Form PTO-2038 is attached.
 The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) _____ (Date) _____

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	3728
08791	7590	06/09/2004	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD, SEVENTH FLOOR LOS ANGELES, CA 90025			RONES, CHARLES	
			ART UNIT	PAPER NUMBER
			2175	

DATE MAILED: 06/09/2004

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 303 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 303 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.



B/93 2175 RA #21 8-16-04 TC

Approved for use through 11/30/2005. OMB 0951-0035 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REVOCATION OF POWER OF ATTORNEY WITH NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS	Application Number	09/755,723
	Filing Date	1/5/2001
	First Named Inventor	GOODMAN et al.
	Art Unit	2175
	Examiner Name	Rones, Charles
	Attorney Docket Number	6407P212

I hereby revoke all previous powers of attorney given in the above-identified application.

A Power of Attorney is submitted herewith.

OR

I hereby appoint the practitioners associated with the Customer Number:

Please change the correspondence address for the above-identified application to:

The address associated with Customer Number:

OR

<input type="checkbox"/> Firm or Individual Name			
Address			
Address			
City	State	Zip	
Country			
Telephone	Fax		

I am the:

Applicant/Inventor.

Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

SIGNATURE of Applicant or Assignee of Record

Name	Chon Hock Leow		
Signature			
Date	<input type="text" value="7/5/04"/>	Telephone	<input type="text" value="(408) 428-6600"/>

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.38. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

CL 000238



PTO/SB/96 (08-03)

Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: CREATIVE TECHNOLOGY LTD.

Application No./Patent No.: 09/755,723 Filed/Issue Date: 1/5/2001

Entitled: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

CREATIVE TECHNOLOGY LTD., a CORPORATION

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

- 1. the assignee of the entire right, title, and interest; or
- 2. an assignee of less than the entire right, title and interest.
The extent (by, percentage) of its ownership interest is _____ %
in the patent application/patent identified above by virtue of either:

A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel/Frame 011788/0174, or for which a copy thereof is attached.

OR

B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

- 1. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- 2. From: _____ To: _____
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- 3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet.

Copies of assignments or other documents in the chain of title are attached.
[NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

7/6/04
Date
(408) 428-6600
Telephone number

CHON HOCK LEOW
Typed or printed name

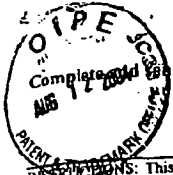
Signature
CHIEF TECHNOLOGY OFFICER
Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

CL 000239

816104



PART B - FEE(S) TRANSMITTAL

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Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
 or FAX **(703) 746-4000**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections to see Block 1)
 08791 7590 06/09/2004
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for **first-class** mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO, on the date indicated below.

Cynthia K. Dawn (Depositor's name)
Cynthia K. Dawn (Signature)
August 12, 2004 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/03/2001	Ron Goodman	017002022500	3728

TITLE OF INVENTION: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1330	\$300	\$1630	09/09/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
RONES, CHARLES	2175	707-104100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
 Change of correspondence address (or Change of Correspondence Address form PTO/SB/47) attached.
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

Russell N. Swerdon
Creative Technology LTD

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
 PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.
 (A) NAME OF ASSIGNEE: **Creative Technology LTD**
 (B) RESIDENCE: (CITY and STATE OR COUNTRY) **Singapore**

Please check the appropriate assignee category or categories (will not be printed on the patent): individual corporation or other private group entity government

4a. The following fee(s) are enclosed:
 Issue Fee
 Publication Fee
 Advance Order - # of Copies _____

4b. Payment of Fee(s):
 A check in the amount of the fee(s) is enclosed.
 Payment by credit card. Form PTO-2038 is attached.
 The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) Russell N. Swerdon (Date) Aug. 12, 2004

RUSSELL N. SWERDON, Reg. No. 36,943
 NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant, a registered attorney or agent, or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

08/16/2004 SWERDRE 00000002 09750723
 01 FC:1501 1330.00 US
 02 FC:1504 300.00 US

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.** SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

CL 000240

TRANSMIT THIS FORM WITH FEE(S)



I hereby certify that the form Part B - Fee(s) Transmittal PTOL-85 and the check in the amount of the fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.10 on the date indicated below and is addressed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By: Cynthia K. Dawn

Typed Name: Cynthia K. Dawn

Express Mail Label No.: EV347886201US

Date of Deposit: August 12, 2004

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/755,723	01/05/2001	Ron Goodman	017002022500

08791
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

CONFIRMATION NO. 3728
OC00000013550953

#22

Date Mailed: 08/16/2004

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/12/2004.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Allen M Willis
ALLEN M WILLIS
OPPD (-)

OFFICE COPY

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/755,723	01/05/2001	Ron Goodman	017002022500

40032
CREATIVE LABS, INC.
LEGAL DEPARTMENT
1901 MCCARTHY BLVD
MILPITAS, CA 95035

CONFIRMATION NO. 3728

OC000000013550969

#22

Date Mailed: 08/16/2004

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/12/2004.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Timothy Caldwell
For ALLEN M WILLIS
OPPD (

OFFICE COPY

CL 000243

07-12-04

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#23
9/10/04
A.W.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail No. ER886552274US with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

on July 9, 2004
Date of Deposit

Cynthia K. Dawn
Name of Person Mailing Correspondence

Cynthia K. Dawn

Application No.: 09/755,723

Title: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

Applicant: Ron Goodman

Filed: January 5, 2001
TC/A.U. 2175
Examiner: Rones, Charles

Docket No.: 6407P212
Customer No.: 40032

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Match and Return

AMENDMENT AND PETITION UNDER 37 C.F.R. § 1.48(c)
TO CORRECT INVENTORSHIP

Dear Sir:

The undersigned hereby respectfully requests and petitions that the above-referenced application be amended under 37 C.F.R. § 1.48(c) to correct inventorship of the application.

The application was filed on January 5, 2001 naming the following persons as inventors of the present patent application:

1

07/14/2004 (SM146551 00600096 09755723 130.00 0P)
91-FC:1460

CL 000244

- (1) Ron Goodman, a citizen of the United States, residing at 226 Jeter Street, Santa Cruz, CA 95060; and
- (2) Howard N. Egan, a citizen of the United States, residing at 219 Elinor Street, Capitola, CA 95010.

Please correct and amend the present patent application so that David Bristow, a citizen of the United Kingdom, residing at 5988 NE Tolo Road, Bainbridge Island, WA 98110 is additionally named as a joint inventor of the present patent application.

It is respectfully submitted that the amendment is necessitated by amendment of the claims and that the error in inventorship of the present patent application was made without any deceptive intent by anyone, including the actual inventors.

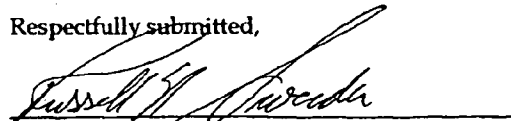
Enclosed with this Amendment and Petition are the following documents:

- (1) a verified Statement of Facts by David Bristow stating that the addition in inventorship of the present patent application is necessitated by amendment of the claims and that the inventorship error occurred without any deceptive intent on his part;
- (2) an executed Declaration/Power of Attorney indicating all inventors; and
- (3) an Assent of Assignee for Correction of Inventorship with a copy of the previously recorded Notice of Recordation of Assignment document.

The Assignment by the additional inventor, David Bristow, to be recorded in accordance with 37 C.F.R. § 1.33(1), and a check in the amount of \$40.00 to cover the recordation fee required by 37 C.F.R. § 1.21(h), are being forwarded separately to the Assignment Division.

Enclosed herewith is a check in the amount of \$130.00 in payment of the fee under 37 C.F.R. § 1.17(i) for correction of inventorship.

Respectfully submitted,


Russell N. Swerton
Reg. No. 36,943

Dated: July 9, 2004

Creative Labs, Inc.
1901 McCarthy Boulevard
Milpitas, CA 95035
(408) 428-6600

09/755,723

2

6407P212

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JUL 09 04 11:50a

David Bristow

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P. 6

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Date of Deposit: July 9, 2004

Name of Person Mailing Correspondence: Cynthia K. Dawn

Signature: Cynthia K. Dawn Date: July 9, 2004

Application No.: 09/755,723

Title: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

Applicant: Ron Goodman

Filed: January 5, 2001
TC/A.U. 2175

Examiner: Rones, Charles

Docket No.: 6407P212
Customer No.: 40032

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

STATEMENT OF FACTS BY DAVID BRISTOW
UNDER 37 C.F.R. § 1.48(c)

Dear Sir:

I hereby declare:

I am making this Statement of Facts under 37 C.F.R. § 1.48(c) in connection with U.S. Patent Application Serial No. 09/755,723 filed January 5, 2001 (hereinafter referred to as "the present patent application").

CL 000246

2. My current residence and country of citizenship is as follows:

David Bristow, a citizen of the United Kingdom, residing at 5988 NE Tolo Road, Bainbridge Island, WA 98110.

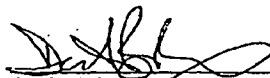
3. The amendment in inventorship is made as necessitated by amendment of the claims. An inventorship error was made by naming only Ron Goodman and Howard N. Egan as joint inventors, rather than naming Ron Goodman, Howard N. Egan and David Bristow as joint inventors.

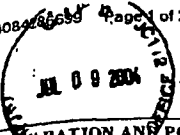
4. The inventorship error was made without any deceptive intent whatsoever on my part.

5. It is now requested that the additional inventor David Bristow be added to the present patent application.

I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Dated: July 7th, 2004


David Bristow



PATENT APPLICATION

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION ATTORNEY DOCKET NO. 6407P212

As a below named inventor, I hereby declare that: My residence/post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

the specification of which is attached hereto unless the following box is checked:

(X) was filed on January 5, 2001 as US Application Serial No. or PCT International Application

Number 09/755,723 and was amended on 4/30/2004 (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claims of Foreign Priority

I hereby claim foreign priority benefits under Title 35, United States Code Section 119 of my foreign application(s) for patent or inventor(s) certificate listed below and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application on which priority is claimed:

Table with 4 columns: COUNTRY, APPLICATION NUMBER, DATE FILED, PRIORITY CLAIMED UNDER 35 U.S.C. 119. Includes YES/NO checkboxes.

Provisional Application

I hereby claim the benefit under Title 35, United States Code Section 119(e) of any United States provisional application(s) listed below:

Table with 2 columns: APPLICATION SERIAL NUMBER, FILING DATE.

U.S. Priority Claims

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(e) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Table with 3 columns: APPLICATION SERIAL NUMBER, FILING DATE, STATUS (patented/pending/abandoned).

POWER OF ATTORNEY:

As a named inventor, I hereby appoint the practitioners associated with Customer No. 40032 as my patent attorneys, with full power of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Form for correspondence and direct telephone calls to: P. Francois de Villiers, Customer No. 40032, Creative Labs, Inc., 1901 McCarthy Boulevard, Milpitas, CA 95035. Direct Telephone Calls To: Russell N. Swerdon, (408) 428-6600.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Form for inventor information: Full Name of Inventor: Ron GOODMAN, Citizenship: UNITED STATES, Residence: 226 Jeter Street, Santa Cruz, CA USA 95060, Post Office Address: Same.

Signature: Ron Goodman, Date: July 7, 2004.

CL 000248

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION (continued)	ATTORNEY DOCKET NO. 6407P212
---	-------------------------------------

Full Name of Inventor: Howard N. EGAN Citizenship: UNITED STATES

Residence: 219 Elnor Street, Capitola, CA 95010 USA

Post Office Address: Same

Inventor's Signature _____ Date July, 2004

Full Name of Inventor: David BRISTOW Citizenship: UNITED KINGDOM

Residence: 5988 NE Tolo Road, Bainbridge Island, WA 98110

Post Office Address: Same

Inventor's Signature _____ Date July, 2004

Full Name of Inventor: _____ Citizenship: _____

Residence: _____

Post Office Address: _____

Inventor's Signature _____ Date _____

Full Name of Inventor: _____ Citizenship: _____

Residence: _____

Post Office Address: _____

Inventor's Signature _____ Date _____

Full Name of Inventor: _____ Citizenship: _____

Residence: _____

Post Office Address: _____

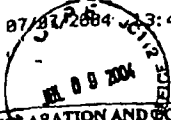
Inventor's Signature _____ Date _____

Full Name of Inventor: _____ Citizenship: _____

Residence: _____

Post Office Address: _____

Inventor's Signature _____ Date _____



PATENT APPLICATION

ATTORNEY DOCKET NO. 6407P212

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below signatory inventor, I hereby declare that: My residence/post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

the specification of which is attached hereto unless the following box is checked: (X) was filed on January 5, 2001 as US Application Serial No. or PCT International Application Number 09/755,723 and was amended on 4/30/2004 (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claims of Foreign Priority

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor(s) certificate listed below and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application on which priority is claimed:

Table with 4 columns: COUNTRY, APPLICATION NUMBER, DATE FILED, PRIORITY CLAIMED UNDER 35 U.S.C. 119 (YES/NO).

Provisional Application

I hereby claim the benefit under Title 35, United States Code Section 119(e) of any United States provisional application(s) listed below:

Table with 2 columns: APPLICATION SERIAL NUMBER, FILING DATE.

U.S. Priority Claims

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(e) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Table with 3 columns: APPLICATION SERIAL NUMBER, FILING DATE, STATUS (patented/pending/abandoned).

POWER OF ATTORNEY:

As a named inventor, I hereby appoint the practitioners associated with Customer No. 40032 as my patent attorneys, with full power of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Form with fields for Send Correspondence to (P. Francois de Villers, Creative Labs, Inc.) and Direct Telephone Calls To (Russell N. Swerden).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Form with fields for Full Name of Inventor (Ron GOODMAN), Residence (226 Jeter Street, Santa Cruz, CA USA 95060), and Citizenship (UNITED STATES).

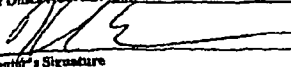
Form with fields for Inventor's Signature and Date (July 2004).

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION (continued)	ATTORNEY DOCKET NO. <u>64077212</u>
---	-------------------------------------

Full Name of Inventor: Howard M. EGAN Citizenship: UNITED STATES

Residence: 212 Elmer Street, Capitola, CA 95010 USA

Post Office Address: Same

Inventor's Signature:  Date: 7 2004

Full Name of Inventor: David BRISTOW Citizenship: UNITED KINGDOM

Residence: 5285 NE Tain Road, Bainbridge Island, WA 98110

Post Office Address: Same

Inventor's Signature: _____ Date: 7 2004

Full Name of Inventor: _____ Citizenship: _____

Residence: _____

Post Office Address: _____

Inventor's Signature: _____ Date: _____

Full Name of Inventor: _____ Citizenship: _____

Residence: _____

Post Office Address: _____

Inventor's Signature: _____ Date: _____

Full Name of Inventor: _____ Citizenship: _____

Residence: _____

Post Office Address: _____

Inventor's Signature: _____ Date: _____

Full Name of Inventor: _____ Citizenship: _____

Residence: _____

Post Office Address: _____

Inventor's Signature: _____ Date: _____

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dave bristow

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p. 4
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DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION PATENT APPLICATION ATTORNEY DOCKET NO. 6407P212

As a below named inventor, I hereby declare that: My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA** the specification of which is attached hereto unless the following box is checked:

(X) was filed on January 5, 2001 as US Application Serial No. or PCT International Application Number 09/755,723 and was amended on 4/30/2004 (if applicable).

I hereby state that I have reviewed and understood the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose all information which is material to patentability as defined in 37 CFR 1.56.

Foreign Application(s) and/or Claim of Foreign Priority I hereby claim foreign priority benefits under Title 35, United States Code Section 119 of any foreign application(s) for patent or inventor(s) certificate listed below and have also identified below any foreign application for patent or inventor(s) certificate having a filing date before that of the application on which priority is claimed:

COUNTRY	APPLICATION NUMBER	DATE FILED	PRIORITY CLAIMED UNDER 35 U.S.C. 119	
			YES: _____	NO: _____
			YES: _____	NO: _____

Provisional Application I hereby claim the benefit under Title 35, United States Code Section 119(e) of any United States provisional application(s) listed below:

APPLICATION SERIAL NUMBER	FILING DATE

U.S. Priority Claims I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code Section 112. I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

APPLICATION SERIAL NUMBER	FILING DATE	STATUS (if patented pending should state)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the practitioners associated with Customer No. 40032 as my patent attorneys, with full power of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Head Correspondence to: F. Francisco de Villera Customer No. 40032 Creative Labs, Inc. 1901 McCarthy Boulevard Milpitas, CA 95035	Direct Telephone Calls To: Russell N. Newrdon (408) 428-6600
--	--

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that those statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that each willful false statement may jeopardize the validity of the application or any patent issued thereon.

Full Name of Inventor: RON GOODMAN Citizenship: UNITED STATES
Residence: 226 Jeter Street, Santa Cruz, CA USA 95060
Post Office Address: Same

Inventor's Signature _____ Date July 2004

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ve bristow

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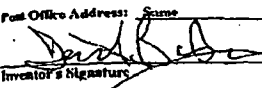
**DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION (continued)**

ATTORNEY DOCKET NO. 6407P212

Full Name of Inventor: Howard N. EGAN Citizenship: UNITED STATES
 Residence: 212 Elmer Street, Canby, CA 95019 USA
 Post Office Address: Same

 Inventor's Signature _____ July _____ 2004
 Date _____

Full Name of Inventor: David BRISTOW Citizenship: UNITED KINGDOM
 Residence: 208N NE Toke Road, Bainbridge Island, WA 98110
 Post Office Address: Same

 Inventor's Signature  _____ July ²⁶ _____ 2004
 Date _____

Full Name of Inventor: _____ Citizenship: _____
 Residence: _____
 Post Office Address: _____

 Inventor's Signature _____ Date _____

Full Name of Inventor: _____ Citizenship: _____
 Residence: _____
 Post Office Address: _____

 Inventor's Signature _____ Date _____

Full Name of Inventor: _____ Citizenship: _____
 Residence: _____
 Post Office Address: _____

 Inventor's Signature _____ Date _____

Full Name of Inventor: _____ Citizenship: _____
 Residence: _____
 Post Office Address: _____

 Inventor's Signature _____ Date _____

CL 000253



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail No. ER86652274US with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

on July 9, 2004
Date of Deposit

Cynthia K. Dawn
Name of Person Mailing Correspondence

Cynthia K. Dawn

Application No.: 09/755,723

Title: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

Applicant: Ron Goodman

Filed: January 5, 2001
TC/A.U. 2175

Examiner: Rones, Charles

Docket No.: 6407P212

Customer No.: 40032

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ASSENT OF ASSIGNEE UNDER 37 C.F.R. § 3.73(b)
FOR CORRECTION OF INVENTORSHIP

Dear Sir:

Attached please find a copy of the Recordation of Assignment document that is currently on file with the U.S. Patent and Trademark Office concerning the above noted application. The Assignment document is being submitted to provide evidence of chain of title for this application.

Match and Return

07/14/2004 SHINRSS1 00000096 09755723

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Assignee, CREATIVE TECHNOLOGY LTD., a Singapore corporation having a place of business at 31 International Business Park, Creative Resource, Singapore 609921, Republic of Singapore, does hereby assent to the correction of inventorship, the petition for which is filed herewith, which seeks to add David Bristow as an additional inventor in the above-referenced application. The undersigned of Creative Technology Ltd. does hereby declare, under penalty of perjury, that he is authorized by Creative Technology Ltd. to make this Assent of Assignee for Correction of Inventorship.

Respectfully submitted,

Dated: 7/6/, 2004



Chon Hock Leow
Chief Technology Officer



JULY 30, 2001



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

PTAS
TOWNSEND AND TOWNSEND AND CREW LLP
CHARLES E. KRUEGER
TWO EMBARCADERO CENTER, EIGHTH FLOOR
SAN FRANCISCO, CALIFORNIA 94111



GE Stanton 101717181A*
017002022500US

UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 04/23/2001

REEL/FRAME: 011788/0174
NUMBER OF PAGES: 4

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
GOODMAN, RON

DOC DATE: 03/14/2001

ASSIGNOR:
EGAN, HOWARD N.

DOC DATE: 03/22/2001

ASSIGNEE:
CREATIVE TECHNOLOGY LTD., A CORP.
OF THE REPUBLIC OF SINGAPORE
31 INTERNATIONAL BUSINESS PARK
CREATIVE RESOURCE
SINGAPORE, SINGAPORE 609921

SERIAL NUMBER: 09755723
PATENT NUMBER:

FILING DATE: 01/05/2001
ISSUE DATE:

CL 000256

011788/0174 PAGE 2

ALLYSON PURNELL, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

CL 000257

Attorney Docket No.: 17002-022500US
Client Reference No.: CT-1139

ASSIGNMENT OF PATENT APPLICATION

WHEREAS, RON GOODMAN, of 226 Jeter Street, Santa Cruz, CA 95060; HOWARD N. EGAN, of 219 Elinor Street, Capitola, CA 95010; hereinafter referred to as "Assignors," are the inventors of the invention described and set forth in the below-identified application for United States Letters Patent:

Title of Invention: AUTOMATIC HIERARCHICAL CATEGORIZATION OF
MUSIC BY METADATA

Date(s) of Execution: -

Filing Date: January 5, 2001

Application No.: 09/755,723; and

WHEREAS, CREATIVE TECHNOLOGY LTD., located at 31 International Business Park, Creative Resource, Singapore, 609921, hereinafter referred to as "ASSIGNEE," is desirous of acquiring ASSIGNORS' interest in the said invention and application and in any U.S. Letters Patent which may be granted on the same;

NOW, THEREFORE, TO ALL WHOM IT MAY CONCERN: Be it known that, for good and valuable consideration, receipt of which is hereby acknowledged by Assignors, Assignors have sold, assigned and transferred, and by these presents do sell, assign and transfer unto the said Assignees, and Assignees' successors and assigns, all their right, title and interest in and to the said invention and application, and in and to any Letters Patent which may hereafter be granted on the same in the United States, the said interest to be held and enjoyed by said Assignees as fully and exclusively as it would have been held and enjoyed by said Assignors had this Assignment and transfer not been made, to the full end and term of any Letters Patent which may be granted thereon, or of any division, renewal, continuation in whole or in part, substitution, conversion, reissue, prolongation or extension thereof.

Assignors further agree that they will, without charge to Assignee, but at Assignee's expense, cooperate with Assignee in the prosecution of said application and/or applications, execute, verify, acknowledge and deliver all such further papers, including applications for Letters Patent and for the reissue thereof, and instruments of assignment and transfer thereof, and will perform such other acts as Assignee lawfully may request, to obtain or maintain Letters Patent for said invention and improvement, and to vest title thereto in Assignee, or Assignee's successors and assigns.

Assignors hereby authorize and request Townsend and Townsend and Crew LLP, Two Embarcadero Center, 8th Floor, San Francisco, CA 94111-3834, to insert herein above the application number and filing date of said application when known.

IN TESTIMONY WHEREOF, Assignors have signed their names on the dates indicated.

CL 000258

Assignment
Attorney Docket No.: 17002-022500US
Page 2

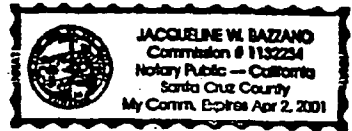
Dated: 3/14/2001


RON GOODMAN

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On March 14, 2001, before me, Jacqueline W. Bazzano, personally appeared RON GOODMAN, personally known to me (~~or proved to me on the basis of satisfactory evidence~~) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.




NOTARY PUBLIC

My Commission Expires: 4/2/2001

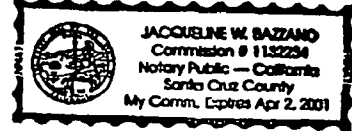
Dated: 3-22-2001



HOWARD N. EGAN

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On March 22, 2001, before me, Jacqueline W. Bazzano (Notary Public), personally appeared HOWARD N. EGAN, personally known to me (~~or proved to me on the basis of satisfactory evidence~~) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.




NOTARY PUBLIC

My Commission Expires: 4/2/2001

CL 000259

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A.L.
(25)

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OK to
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Do not
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Drawings
will be
filed
separately

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

In re application of: Goodman, et al

Attorney Docket No.:
6407P212

RECEIVED
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Application No.: 09/755,723

Examiner: Rones, Charles L.

JUL 27 2004

Filed: January 5, 2001

Group: 2175

OFFICIAL

Title: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

CERTIFICATE OF FACSIMILE TRANSMISSION
I hereby certify that this correspondence is being facsimile
transmitted to the United States Patent and Trademark Office
(FAX No. (703) 572-9306 on July 27, 2004.

Signed: Cynthia K. Dawn
Cynthia K. Dawn

Amendment After Notice of Allowance, pursuant to 37 CFR 1.312

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The enclosed remarks and amendments are submitted under the provisions of 37 CFR 1.312. This amendment is filed on or before the date the issue fee is paid. Applicants respectfully request reconsideration of the captioned application in view of the following remarks and amendments. A listing of the claims commences on page 2. Remarks begin on page 6 of this paper. Formal drawings are also attached to replace several informal drawings in the drawing package previously submitted.

USSN: 09/755,723

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Atty Dkt No.: 6407P212

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Listing of Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1-23. (cancelled)

¹24. (currently amended) A method of selecting at least one track from a plurality of tracks stored in a computer-readable medium of a portable media player configured to present sequentially a first, second, and third display screen on the display of the media player, the plurality of tracks accessed ~~organized~~ according to a ~~file~~ hierarchy, the ~~file~~ hierarchy having a plurality of categories, subcategories, and items respectively in a first, second, and third level of the hierarchy, the method comprising:

- selecting a category in the first display screen of the portable media player;
- displaying the subcategories belonging to the selected category in a listing presented in the second display screen;
- selecting a subcategory in the second display screen;
- displaying the items belonging to the selected subcategory in a listing presented in the third display screen; and
- accessing at least one track based on a selection made in one of the display screens.

E1

²25. (previously presented) The method of selecting a track as recited in claim ¹24 wherein the accessing at least one track comprises selecting a subcategory in the second display screen and playing a plurality of tracks associated with the selected subcategory.

³26. (previously presented) The method of selecting a track as recited in claim ¹24 wherein the accessing at least one track comprises selecting a subcategory and adding the tracks associated with the selected subcategory to a playlist.

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USSN: 09/755,723

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Atty Dkt No.: 6407P212

CL 000261

⁴
27. (previously presented) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting an item in the third display screen and playing at least one track associated with the selected item.

⁵
28. (previously presented) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting an item in the third display screen and adding at least one track associated with the selected item to a playlist.

⁶
29. (previously presented) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises one of playing or adding to a playlist at least one track associated with a selected one of the category, subcategory, and item.

⁷
30. (previously presented) The method of selecting a track as recited in claim 24 wherein the accessing at least one track is made after the presentation of the third display screen by reverting back to one of the second and first display screens, the second display screen presented sequentially after the third display screen.

E1

⁸
31. (previously presented) The method of selecting a track as recited in claim 24 further comprising selecting one of the items displayed in the third display screen and presenting a listing of items associated with the selected item in a fourth sequentially presented display screen.

⁹
32. (previously presented) The method of selecting a track as recited in claim 24 wherein the category genre is selected in the first display screen from available categories that include at least artist, album, and genre; and the subcategories listed in the second display screen comprise a listing of at least one genre type and one of the at least one genre type is selected.

¹⁰ ⁹
33. (previously presented) The method of selecting a track as recited in claim 22 further comprising displaying in the third display screen at least one album associated with the selected genre type and selecting one of the at least one albums displayed in the

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third display screen and presenting a listing of tracks associated with the selected album in a fourth sequentially presented display screen.

¹¹ 34. (previously presented) The method of selecting a track as recited in claim 24 wherein the category artist is selected in the first display screen from available categories that include at least artist, album, and genre; the subcategories listed in the second display screen comprise a listing of names of artists and a first artist name is selected; and the items displayed in the third display screen comprises at least one album associated with the first artist name.

¹² 35. (currently amended) The method of selecting a track as recited in claim 24 wherein the track is a music track, accessing at least one track comprises accessing a track title ~~the item accessed~~ in the third display screen ~~is a track title~~, and the track is played in response to the access.

E1

¹³ 36. (previously presented) The method of selecting a track as recited in claim 24 wherein receipt of the selection in the first display screen results in an automatic transition of the first display screen into the second display screen and receipt of the selection in the second display screen results in an automatic transition of the second display screen into the third display screen.

¹⁴ 37. (new) The method of selecting a track as recited in claim 24 wherein the category selected in the first display screen is from a top level of the hierarchy.

¹⁵ 38. (new) The method of selecting a track as recited in claim 24 wherein the category selected in the first display screen is a category from a level at least one level below the top level of the hierarchy.

¹⁶ 39. (new) The method of selecting a track as recited in claim 24 wherein the plurality of categories comprise a list of artist names, the plurality of subcategories comprise a list of album names and the plurality of items comprise a list of track names.

Amendments to the Drawings:

Five sheets of Replacement Drawings for Figures 9-13 are attached. These are formal drawings submitted to replace the informal drawings submitted and entered with the April 30 amendment. Inasmuch as the previously submitted informal drawings include handwritten reference numbers and grayscale sectioning that may be unsuitable for publication, applicants request entry of the formal drawings attached.

ATTACHMENT: 5 sheets of formal drawings

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Atty Dkt No.: 6407P212

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REMARKS

The examiner had indicated the allowability of claims 24-36 in a notice of allowance mailed on June 9, 2004. As a result of the amendment filed on or about April 30, only claims 1 and 24-36 had been pending.

Applicants herewith have amended the claims to cancel claim 1. Claim 1 had previously been merely withdrawn, hence the cancellation deals with mere informalities. Independent claim 24 has been amended to identify in the preamble that the plurality of tracks are accessed according to a hierarchy instead of organized according to a file hierarchy. Applicants believe that this amendment should be entered for at least the reason that it helps clarify the invention and that the amended claim with the change in only two words is allowable for the same reasons as the previously presented claim was found to be allowable by the Examiner. Further, the claim is patentable over the art of record for at least the reason that Grewe doesn't teach or suggest displaying categories or subcategories in a display screen.

Dependent claim 35 has been amended to overcome any problems as to explicit antecedent basis for the phrase "the item accessed" and hence largely deals with informalities. Dependent claims 37, 38, and 39 are new claims, all of which are dependent from independent claim 24. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers (35 USC 112.) These claims add a further limitation to independent claim 24 and thus help clarify applicant's invention. Since the added claims are dependant claims, applicants submit that this reason alone strongly supports their entry. In particular, MPEP section 714.16 notes in pertinent part as follows:

"Where claims added by amendment under 37 CFR 1.312 are all of the form of dependant claims, some of the usual reasons for nonentry are less likely to apply."

The dependent claims depend from an allowed independent claim (claim 24) and are therefore patentable for at least the same reason as the independent claim 24. Support for the amendments may be found in the drawings, FIGS. 1, 3, 7, 10-11, their associated descriptions, and throughout the specification, in particular the abstract and page 8. They

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Atty Dkt No.: 6407P212

PAGE 6/12 * RCVD AT 7/27/2004 2:57:07 PM [E-Search Daylight Time] * SVR:USPTO-EF-XRF-1/3 * DNS:8729308 * C SID:408 428 6699 * DURATION (min-ss):03-00

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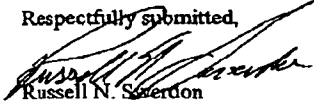
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add no new matter. The amendments to claim 35 had not been submitted previously because the lack of proper antecedent basis for the terms used had not been noticed previously. Allowed claims 24-36 had first been presented in the amendment recently filed on April 30, 2004 (in response to a restriction requirement) and thus had not been previously involved in any discussions or communications between the examiner and applicants. Applicants submit that the amendments to add dependent claims 37-39 are proper to help clarify and disclose applicant's invention.

Conclusion

Applicants believe that entry of the amendment is proper and respectfully request that the application not be withdrawn from issue. Applicants respectfully request that the primary examiner recommend entry of the amendment as provided by the guidelines set forth in MPEP Section 714.16(a), including the claim amendments discussed above and the entry of replacement formal drawings, FIGS. 9-13, as discussed in the drawings amendment section. Applicants believe that consideration of the matters presented herein will not require any substantial amount of additional work on the part of the Office and are needed for proper disclosure of the invention. If the Examiner believes that a telephone conference would expedite the prosecution of this application, he is invited to contact the Applicants' undersigned attorney at the telephone number set out below.

Respectfully submitted,



Russell N. Swerdon
Registration No. 36,943

Creative Labs, Inc.
1901 McCarthy Boulevard
Milpitas, CA 95035
(408) 428-6600

USSN: 09/755,723

7

Atty Dkt No.: 6407P212

PAGE 1/12 * RCVD AT 7/27/2004 2:57:03 PM [Eastern Daylight Time] * SVR:USPTO-EFAXF-1/8 * DNIS:8729300 * CBID:408 428 6699 * DURATION (mm-ss):03-50

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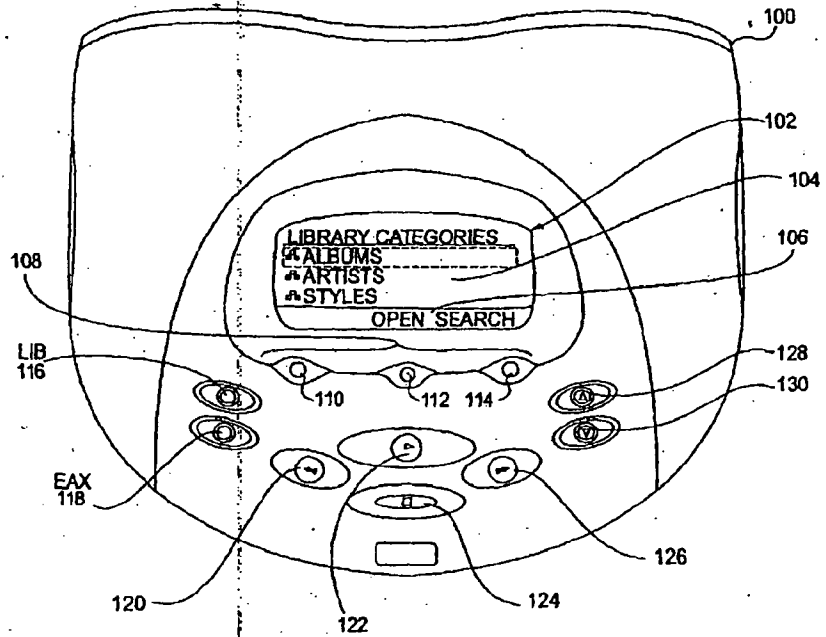


FIG. 9

PAGE 8/12 * RCVD AT 7/27/2004 2:57:07 PM (Eastern Daylight Time) * SVR:USPTO-EFAXP-1/1 * DIS:8720306 * CID:408 428 6699 * DURATION (mm-ss):03-50

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PAGE 012 - RCVD AT 7/27/04 2:57:02 PM (Eastern Daylight Time) * Svr:USPTO-EXXRF-V3 * DNS:8720306 * CSD:403 428 6699 * DURATION:00m-56s-03-50

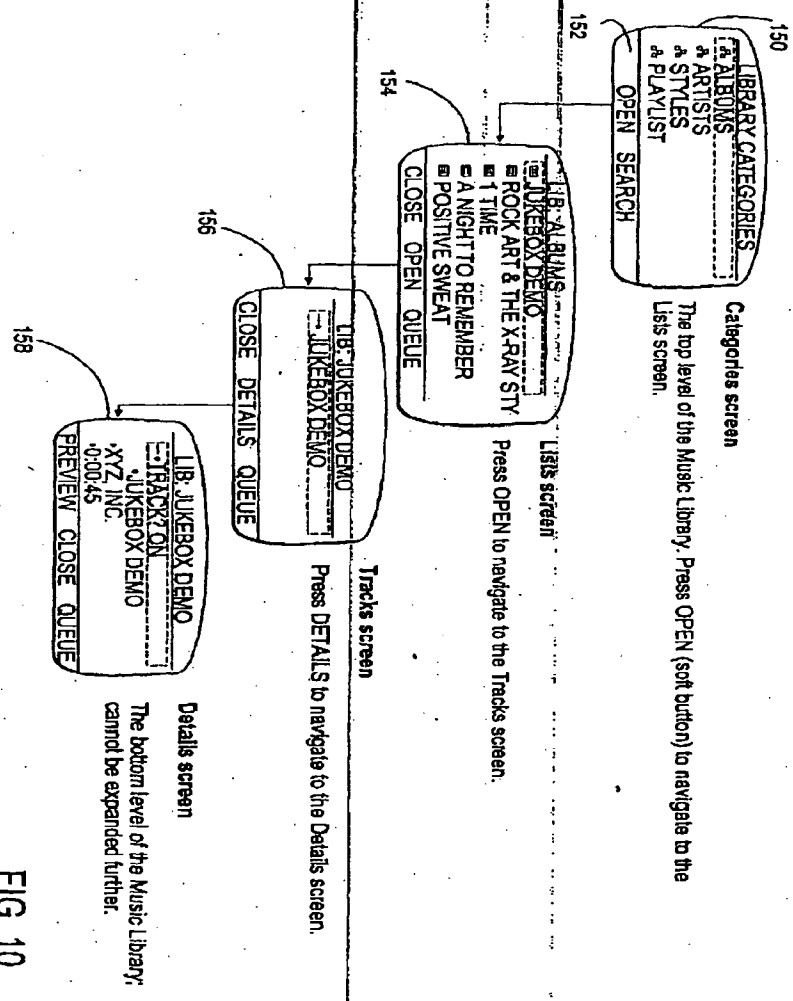


FIG. 10

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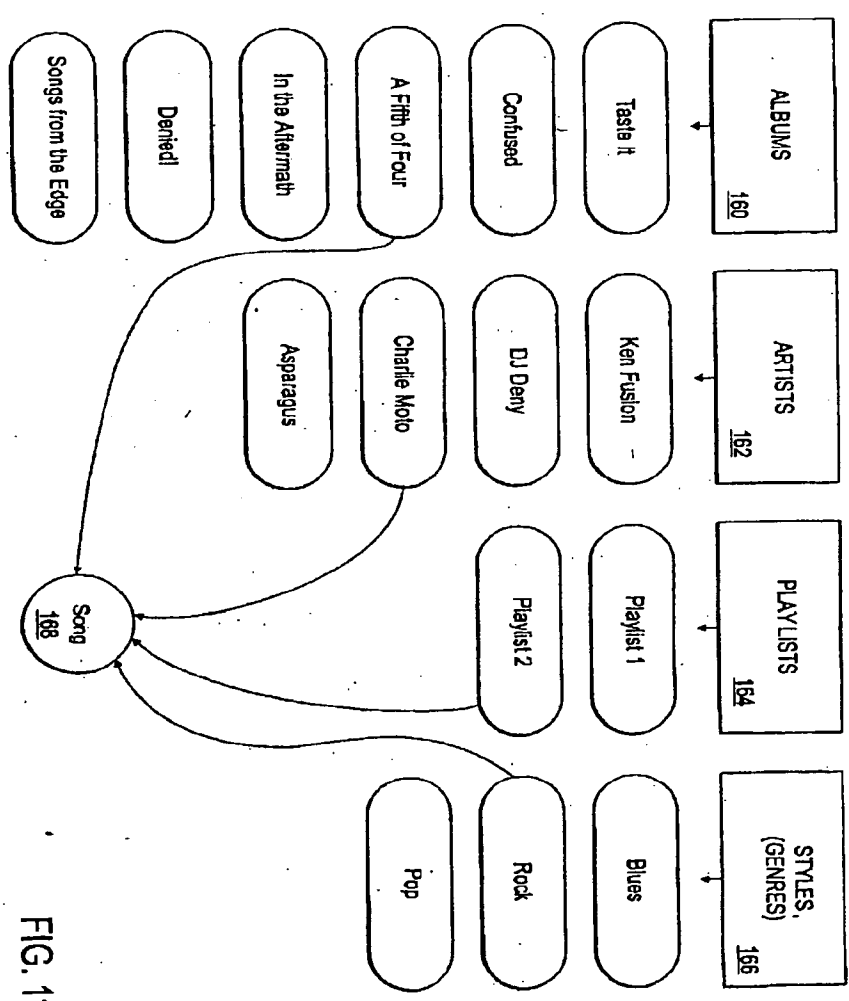
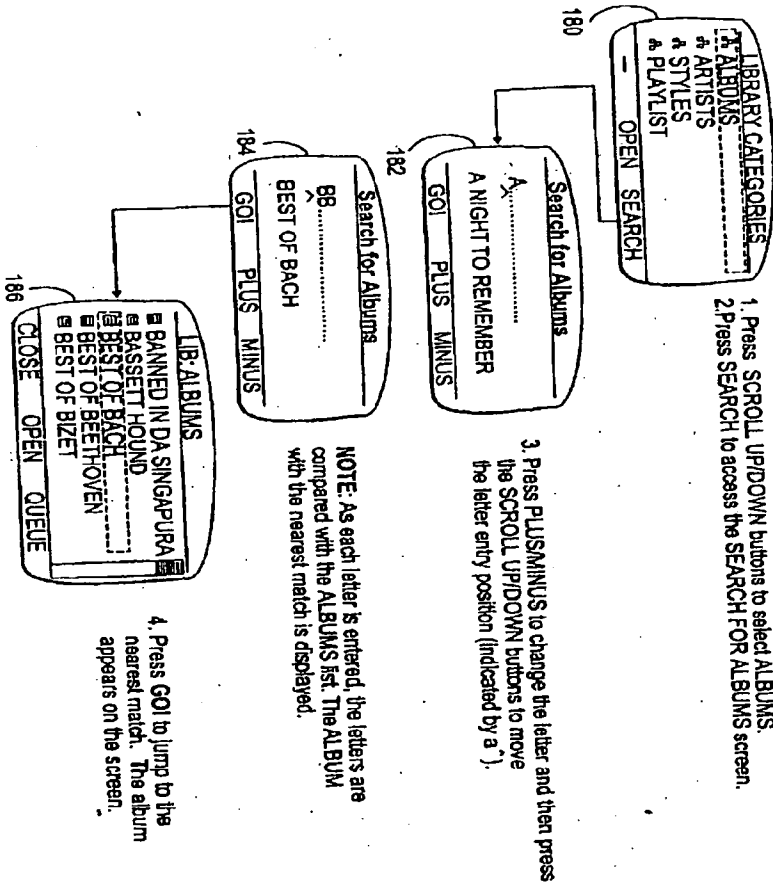


FIG. 11

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1. Press SCROLL UP/DOWN buttons to select ALBUMS.
2. Press SEARCH to access the SEARCH FOR ALBUMS screen.
3. Press PLUS/MINUS to change the letter and then press the SCROLL UP/DOWN buttons to move the letter entry position (indicated by a ^).
4. Press GOI to jump to the nearest match. The album appears on the screen.

FIG. 12

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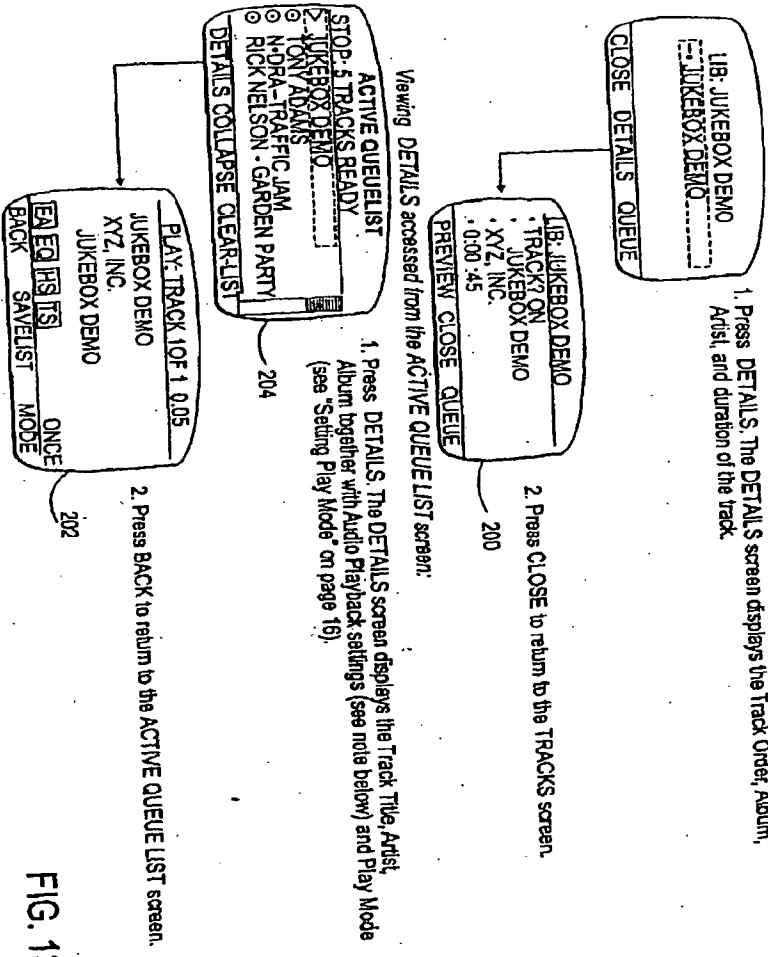


FIG. 13

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	3728

40032 7590 02/08/2005

CREATIVE LABS, INC.
LEGAL DEPARTMENT
1901 MCCARTHY BLVD
MILPITAS, CA 95035

EXAMINER

RONES, CHARLES

ART UNIT PAPER NUMBER

2164

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Response to Rule 312 Communication	Application No.	Applicant(s)	
	09/755,723	GOODMAN ET AL.	
	Examiner	Art Unit	
	Charles Rones	2164	

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -

The amendment filed on July 27, 2004 under 37 CFR 1.312 has been considered, and has been:

- a) entered.
- b) entered as directed to matters of form not affecting the scope of the invention.
- c) disapproved because the amendment was filed after the payment of the issue fee.
 Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.
- d) disapproved. See explanation below.
- e) entered in part. See explanation below.

C. Rones

Charles Rones
 Primary Examiner
 Art Unit: 2164

CL 000273



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	J728

40032 7590 03/03/2005

CREATIVE LABS, INC.
LEGAL DEPARTMENT
1901 MCCARTHY BLVD
MILPITAS, CA 95035

EXAMINER

RONES, CHARLES # 24

ART UNIT PAPER NUMBER

2164

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Supp.
Notice of Allowability

Application No.	Applicant(s)	
09/755,723	GOODMAN ET AL.	
Examiner	Art Unit	
Charles Rones	2164	

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address-
 All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- 1. This communication is responsive to drawing replacement sheets filed 11-16-04, 11-19-04 and 7-27-04.
- 2. The allowed claim(s) is/are 24-39.
- 3. The drawings filed on 11-16-04, 11-19-04 and 7-27-04 are accepted by the Examiner.
- 4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

- 5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 - 6. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date _____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
- 7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- 1. Notice of References Cited (PTO-892)
- 2. Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3. Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
- 4. Examiner's Comment Regarding Requirement for Deposit of Biological Material
- 5. Notice of Informal Patent Application (PTO-152)
- 6. Interview Summary (PTO-413), Paper No./Mail Date _____
- 7. Examiner's Amendment/Comment
- 8. Examiner's Statement of Reasons for Allowance
- 9. Other _____

C. Rones
 Charles Rones
 Primary Examiner
 Art Unit: 2164

CL 000275



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

In re application of: Goodman, et al

Attorney Docket No.:

Application No.: 09/755,723

6407P212

Filed: January 5, 2001

Examiner: Rones, Charles L.

Group: 2175

Title: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

94

res

27

4-25-05
to

Declaration from Practitioner re Amendatory Material

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, Russell N. Swerdon, declare as follows:

1. I am the an attorney employed by Creative Labs, Inc. and am one of the attorneys of record for assignee Creative Technology Ltd. with respect to the above entitled patent application. I have reviewed the file in this matter including the application filed on or about Jan. 5, 2001, and the application entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," also filed on Jan. 5, 2001, and assigned application serial number 09/755,629. Based on my review of the records I can make the following statements either based on personal knowledge or upon information and belief.

2. The currently pending application, application serial number 09/755,723, incorporated by reference the application entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," also filed on Jan. 5, 2001, and assigned application serial number 09/755629.

USSN: 09/755,723

1

Atty Dkt No.:

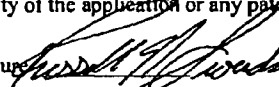
CL 000276

3. On or about April 30, 2004 a substitute specification was submitted in an amendment filed with the PTO. The amendment also included new drawings, FIGS. 9-14 which were submitted rather than relying upon their previous incorporation by reference. The amendatory material as provided in the substitute specification, included FIGS. 9-14, constitutes the same material incorporated by reference in the referencing application.

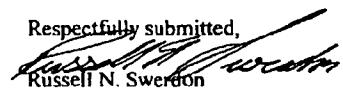
4. I hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: 11.16.04

Signature

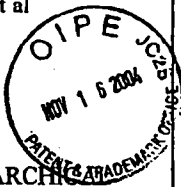

Russell N. Swerdon

Respectfully submitted,


Russell N. Swerdon
Registration No. 36,943

Creative Labs, Inc.
1901 McCarthy Blvd.
Milpitas, CA 95035
(408) 428-6600

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): GOODMAN, et al		Art Unit: 2175	Examiner: Charles L. RONES
Application No.: 09/755,723			
Filed: 1/5/2001			
Title: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA			
Attorney Docket No.: 6407P212			

Approved 3-1-05 CR

28

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

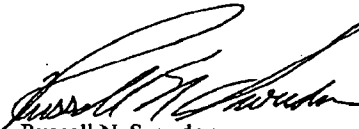
FORMAL DRAWING TRANSMITTAL LETTER

Dear Sir:

Enclosed herewith please find five sheets of formal drawings (Figs 9-13) in substitution for the identically numbered formal drawings previously submitted by fax. Applicants were informally notified that several of the formal drawings previously submitted by fax were of poor quality. Please substitute these formal drawings for the corresponding poor quality drawings previously filed.

Entry of these drawings is respectfully requested.

Dated: 11-15-01


Russell N. Swerdon
Reg. No. 36943

1901 McCarthy Boulevard
Milpitas, CA 95035
Tel. (408) 546-6104
Fax (408) 428-6699

CL 000278



09755723 R23

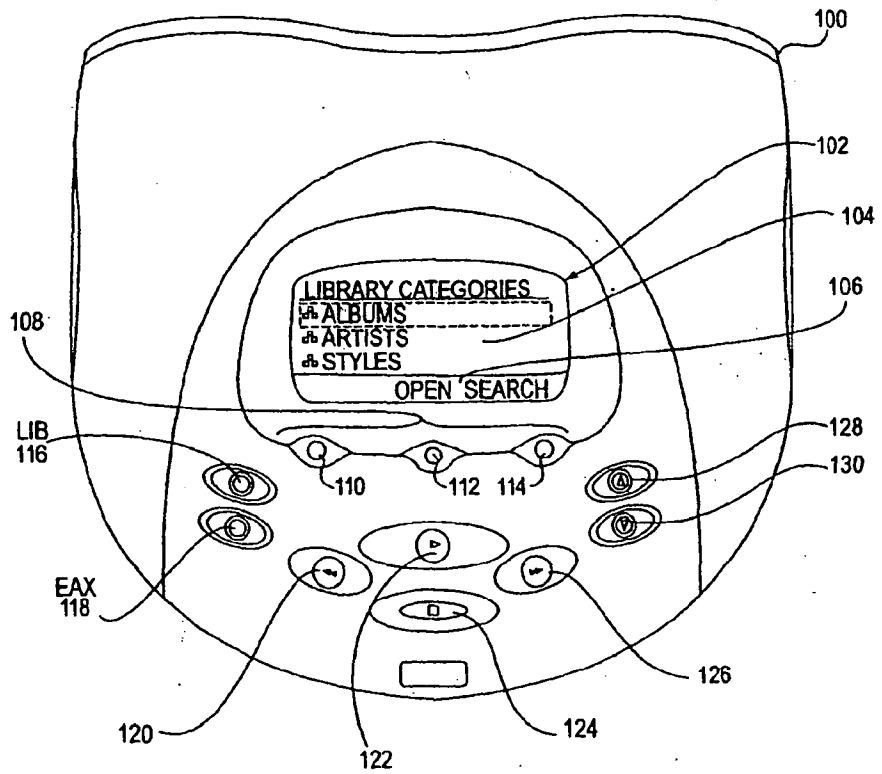


FIG. 9

CL 000279

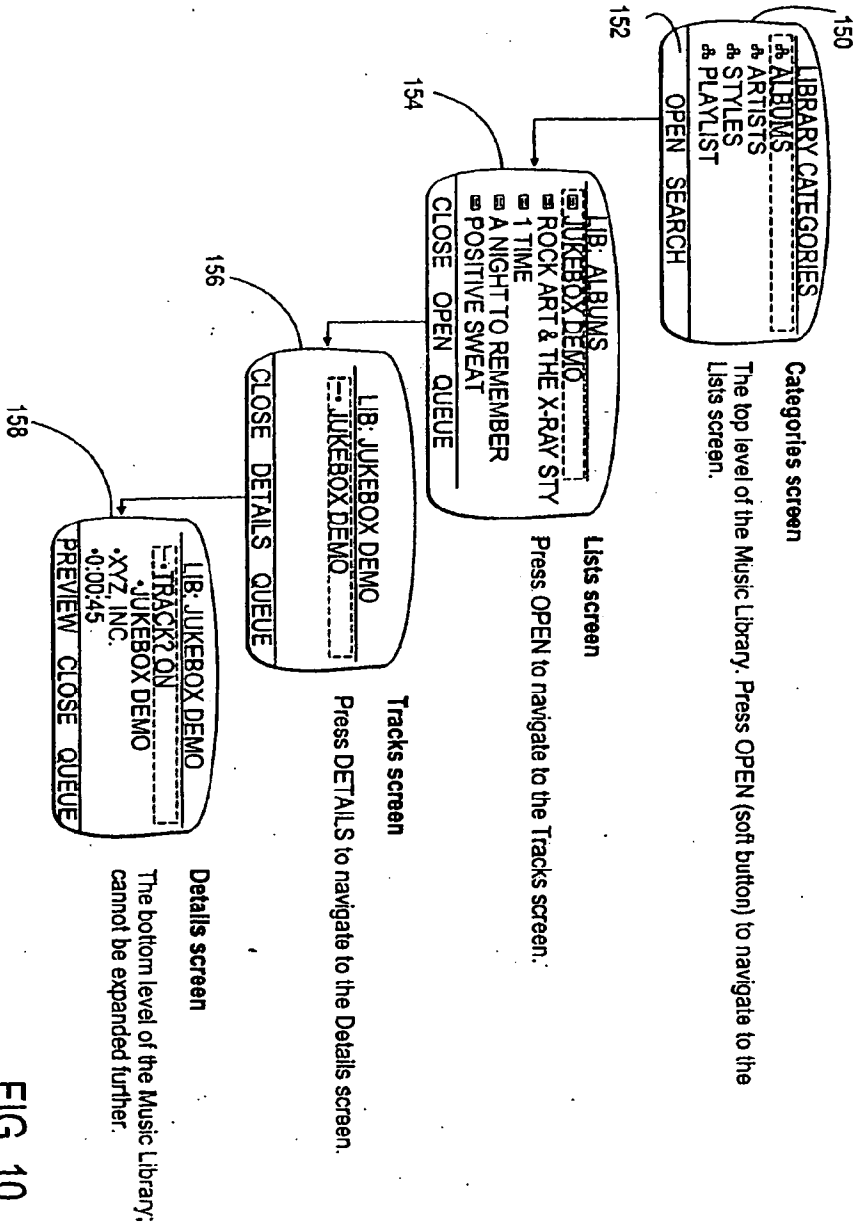


FIG. 10

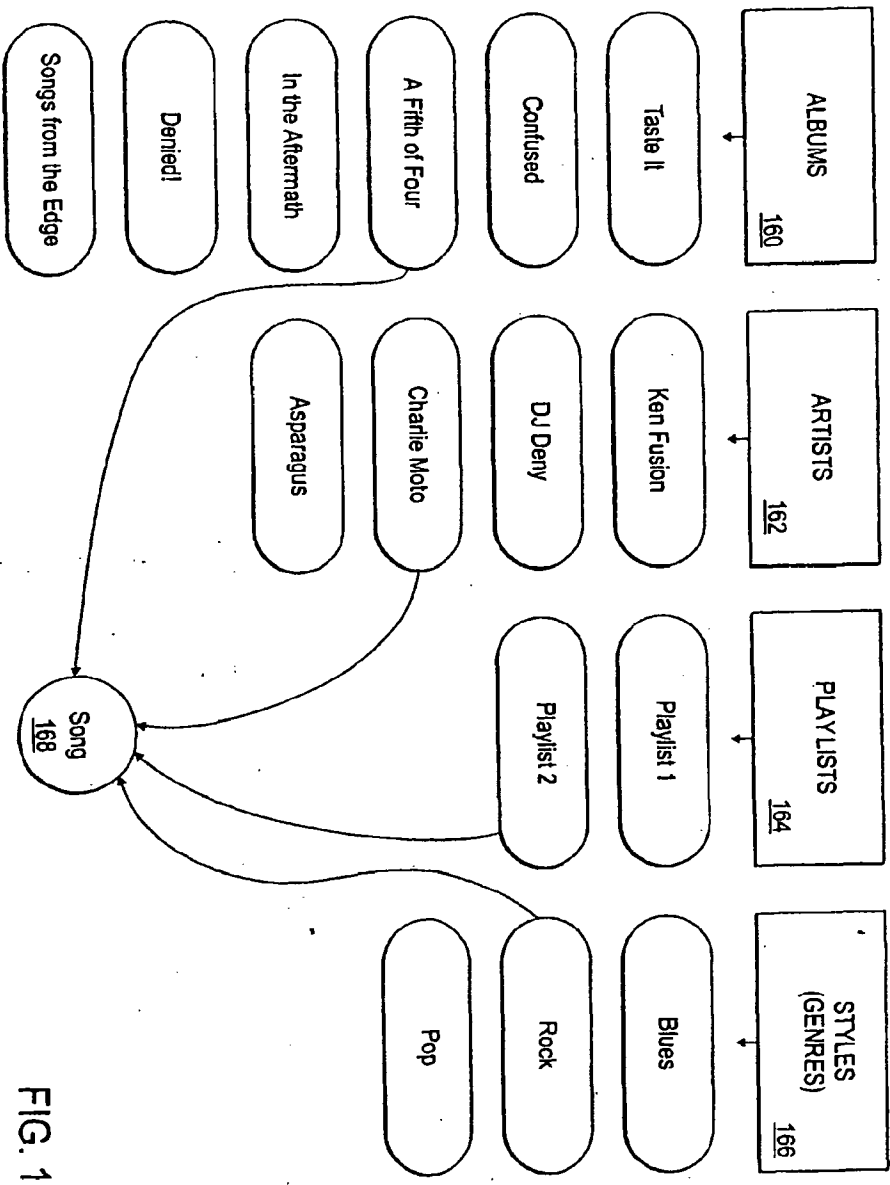


FIG. 11

CL 000281

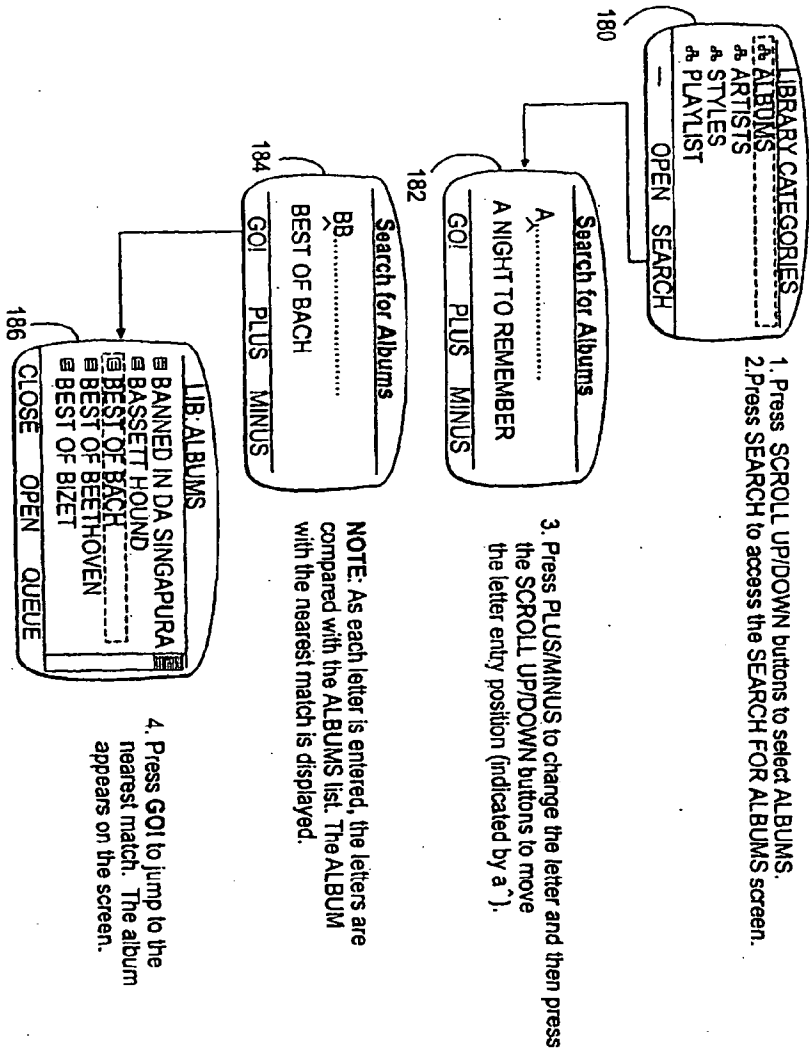


FIG. 12

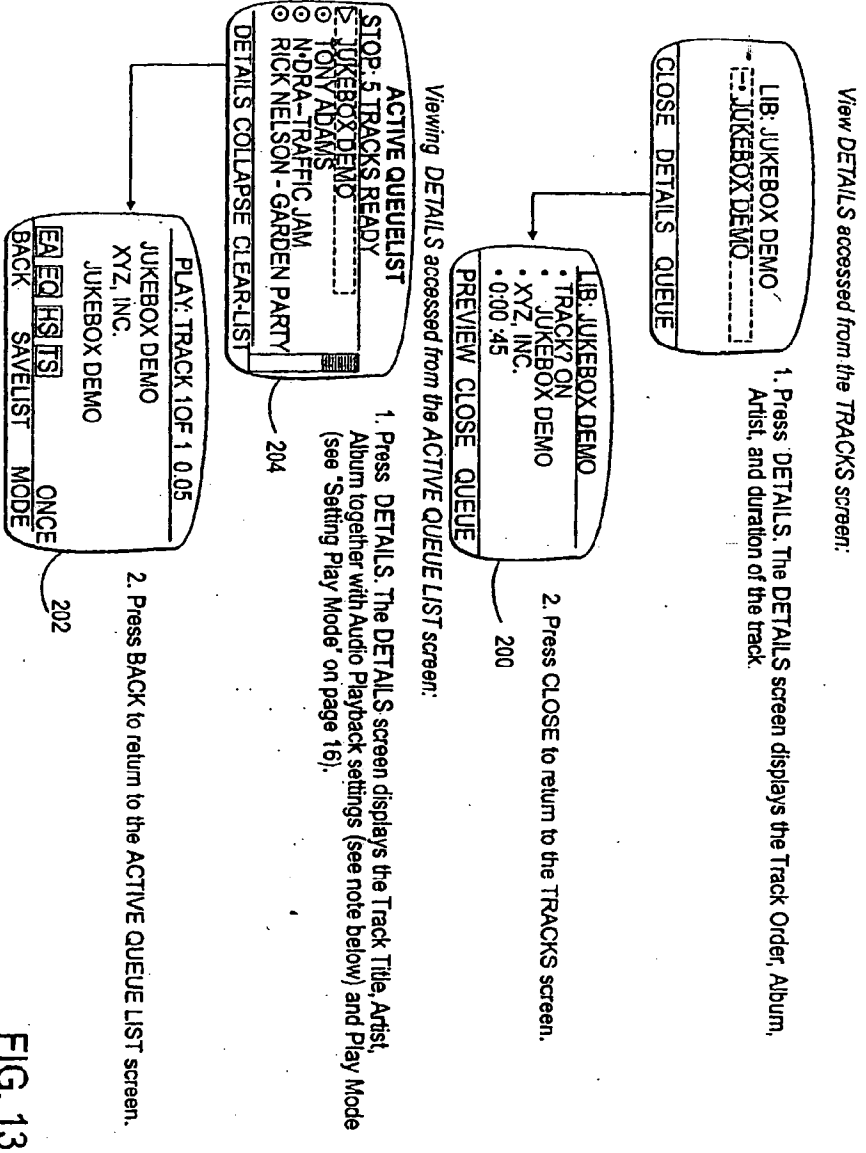


FIG. 13



Approved
3-1-05 CR

11-22-04

941 2175
#29

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

In re application of: Goodman, et al

Attorney Docket No.:
6407P212

Application No.: 09/755,723 ✓

Examiner: Rones, Charles L.

Filed: January 5, 2001

Group: 2175

Title: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

Mail-Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

FORMAL DRAWING TRANSMITTAL LETTER

Sir:

Enclosed herewith please find 1 sheet of formal drawing(s) including FIG. 14. Please substitute this formal drawing for the informal FIG. 14 drawing, originally filed with the amendment (including substitute specification) mailed on or about April 30, 2004.

Please add this sheet to the formal drawing sheets corresponding to FIGS. 1-8 (previously approved) and the recently filed (November 16, 2004) formal drawing sheets pertaining to FIGS. 9-13.

Applicants respectfully request that the Examiner approve entry of this formal drawing. If any others of the formal drawings in the group of Figures 1-14 are not currently approved, then applicants further request that the Examiner approve entry of those drawings.

Respectfully submitted,

Russell N. Swerdon
Registration No. 36,943

Creative Labs, Inc.
1901 McCarthy Boulevard
Milpitas, CA 95035
(408) 428-6600

CERTIFICATE OF EXPRESS MAIL (37 C.F.R. § 1.10)

Express Mail No.: EV 413 048 674 US

Date: 11/19/2004

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as "Express Mail Post Office to Addressee" in an envelope addressed to Mail Stop Issue Fee, Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Lissa Oros

Date of Deposit: 11/19/04

CL 000284



RS

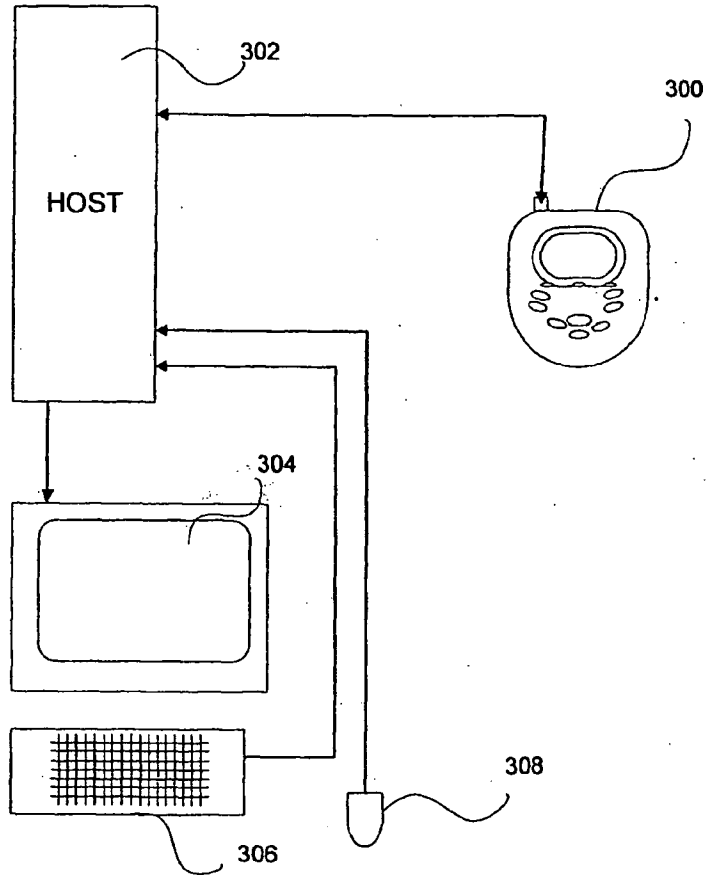


FIG. 14

CL 000285

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2000

Application or Docket Number

09755728

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	10	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	10 minus 20=	0
INDEPENDENT CLAIMS	5 minus 3 =	2
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

* If the difference in column 1 is less than zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	Minus	**
	Independent	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	Minus	**
	Independent	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	Minus	**
	Independent	Minus	***
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE

OTHER THAN SMALL ENTITY

RATE	FEE	OR	RATE	FEE
BASIC FEE	355.00	OR	BASIC FEE	710.00
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	160.00
+135=		OR	+270=	
TOTAL		OR	TOTAL	870.00

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE	OR	RATE	ADDITIONAL FEE
X\$ 9=		OR	X\$18=	
X40=		OR	X80=	
+135=		OR	+270=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

CLAIMS ONLY

SERIAL NO. 09755723 FILING DATE _____
 APPLICANT(S) _____

CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT		*	*	*		
	IND.	DEP.	IND.	DEP.	IND.	DEP.				IND.	DEP.
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TOTAL CLAIMS											

* MAY BE USED FOR ADDITIONAL CLAIMS OR ADMENDMENTS

*Approved 3-1-05
C.R.*

Amendments to the Drawings:

Five sheets of Replacement Drawings for Figures 9-13 are attached. These are formal drawings submitted to replace the informal drawings submitted and entered with the April 30 amendment. Inasmuch as the previously submitted informal drawings include handwritten reference numbers and grayscale sectioning that may be unsuitable for publication, applicants request entry of the formal drawings attached.

ATTACHMENT: 5 sheets of formal drawings

USSN: 09/755,723

5

Atty Dkt No.: 6407P212

CL 000288

ISSUE SLIP STAPLE AREA (for additional cross references)

POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION			
O.I.P.E. CLASSIFIER	<i>SW</i>	<i>SW</i>	<i>2/2</i>
FORMALITY REVIEW	<i>OFF</i>	1027	02/28/01
RESPONSE FORMALITY REVIEW	<i>lee</i>	901	6-5-01

INDEX OF CLAIMS

- ✓ Rejected
- Allowed
- (Through numeral)..... Canceled
- + Restricted
- N Non-elected
- I Interference
- A Appeal
- O Objected

Claim	Final	Original	Date
1	✓	✓	01/10/03
2	✓	✓	01/10/03
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4	✓	✓	01/10/03
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6	✓	✓	01/10/03
7	✓	✓	01/10/03
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Claim	Final	Original	Date
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If more than 150 claims or 10 actions
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CL 000289

10/20/01



SEARCHED			
Class	Sub.	Date	Exmr.
84	609 601 602 611-614	01/08/03	Ⓢ
707	104.1 3 4 102	↓	↓
386	46	7-24-03	CLR
707	3 4 102 46	6-8-04	CLR

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	Date	Exmr.
SEARCHED EAST (USPAT; US-PAT PUB EPO; JPO; DERIVAT (IBM/TDB))	01/08/03	Ⓢ
SEARCH NOTES ATTACHED	↓	↓
Exmr	7-24-03	CLR
Exmr	6-8-04	CLR

INTERFERENCE SEARCHED			
Class	Sub.	Date	Exmr.
707	3 4 102 46	6-8-04	CLR

CL 000290

(RIGHT OUTSIDE)

7-20-05
06-25-05

ATTACH
DISK/FICHE/CD-ROM
ENVELOPE
HERE

(RIGHT INSIDE)

CL 000291

CLASSIFICATION NOTES

Examiner/ Classifier	Class	Date	Initials

CL 000292

7/25
06

ATTACH
DISK/FICHE/CD-ROM
ENVELOPE
HERE

(RIGHT INSIDE)

CL 000293

PATENT APPLICATION



09755723

JCP-41 U.S. PTO

09/755723



01/05/01

FEB 0 20 194

INITIALS _____

CONTENTS

	Date Received (Incl. C. of M.) or Date Mailed		Date Received (Incl. C. of M.) or Date Mailed
1. Application <i>6 photo</i> papers.	7/1/01	42.	
2. Ltr. re. Decisions, corr. pap	09/28/01	43.	
2. <i>etc.</i> <i>file drawings</i>	4-23-01	44.	
4. <i>power of atty.</i>	5/18/01	45.	
5. <i>data sheet</i>	4-23-01	46.	
<i>Amendment - A</i>	4-23-01	47.	
10/7. <i>Rej. (3 mos)</i>	1/15/03	48.	
8. <i>Ext of time 1</i>	5/20/03	49.	
9. <i>Amndt B</i>	5/20/03	50.	
10/5. <i>Final Rejection</i>	7-29-03	51.	
11. <i>Revoc 1 PA</i>	5/20/03	52.	
12. <i>Notice of Appeal</i>	11/3/03	53.	
13/4. <i>Advisory Action</i>	11/17/03	54.	
14. <i>Ext of time 1</i>	2/3/04	55.	
15. <i>Req for RCE</i>	2-3-04	56.	
16. <i>Amndt C</i>	2-3-04	57.	
17/3. <i>Restriction</i>	3/30/04	58.	
18. <i>Amndt D</i>	5/4/04	59.	
19. <i>TDS</i>	5/4/04	60.	
20/4. <i>Allowance</i>	6/9/04	61.	
21. <i>Revoc / PQA</i>	7-12-04	62.	
22. <i>Notice of Revoc / Accept</i>	8-16-04	63.	
23. <i>Change of Inventorship</i>	7/9/04	64.	
24. <i>Amndt E (Rule 312) N.E</i>	7/27/04	65.	
25/2. <i>Response to Rule 312</i>	2/8/05	66.	
26/5. <i>Supp Notice of Allowance</i>	3-3-05	67.	
27/4. <i>Letter</i>	11-16-04	68.	
28. <i>Ltr re- replacement pag</i>	11/16/04	69.	
29. <i>Ltr formal brief (skt)</i>	1/19/04	70.	
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CL 000294

(LEFT OUTSIDE)

CL 000295

United States Patent [19]

[11] Patent Number: **5,616,876**

Cluts

[45] Date of Patent: **Apr. 1, 1997**

[54] **SYSTEM AND METHODS FOR SELECTING MUSIC ON THE BASIS OF SUBJECTIVE CONTENT**

[75] Inventor: **Jonathan C. Cluts, Redmond, Wash.**

[73] Assignee: **Microsoft Corporation, Redmond, Wash.**

[21] Appl. No.: **424,781**

[22] Filed: **Apr. 19, 1995**

[51] Int. Cl.⁶ **G09B 15/06; G09B 15/04; G10H 7/00**

[52] U.S. CL **84/609; 84/477 R; 434/307 A**

[58] Field of Search **84/609-614, 601, 84/602, 634-638, 477 R, 478; 358/335; 273/433; 379/93, 96, 97, 100; 434/307 A**

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,250,745	10/1993	Tsumura	84/609 X
5,454,723	10/1995	Horii	84/601 X
5,486,645	1/1996	Suh et al.	84/610

OTHER PUBLICATIONS

The Big Picture, "Introducing Digital Music Express", Georgia Cable TV & Communications, Apr. 1995.

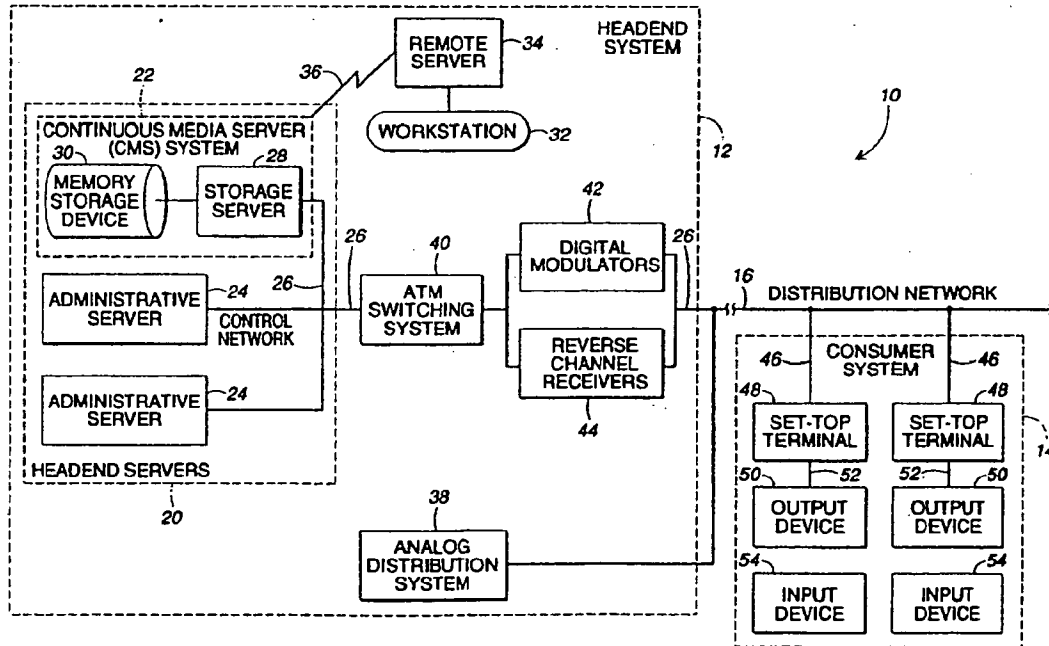
More Like This, "Get More of What Your're Looking For", Lexis-Nexis, 1995.

Primary Examiner—Stanley J. Witkowski
Attorney, Agent, or Firm—Jones & Askew

[57] **ABSTRACT**

An interactive network provides music to subscribers. A "more like" function allows a subscriber to use a seed song to identify other songs that are similar to the seed song, and to add the new songs to the current playlist. The similarity between songs is based on the subjective content of the songs, as reflected in style tables prepared by editors. The subscriber may control the closeness of the match by adjusting a style slider provided by the user interface. A style equalizer employs eight faders that indicate the predominant styles of the songs in the playlist. A subscriber may use the style equalizer to see what types of songs are included in the playlist, and to adjust the mix of songs that are played from the playlist.

45 Claims, 8 Drawing Sheets



CL 000296

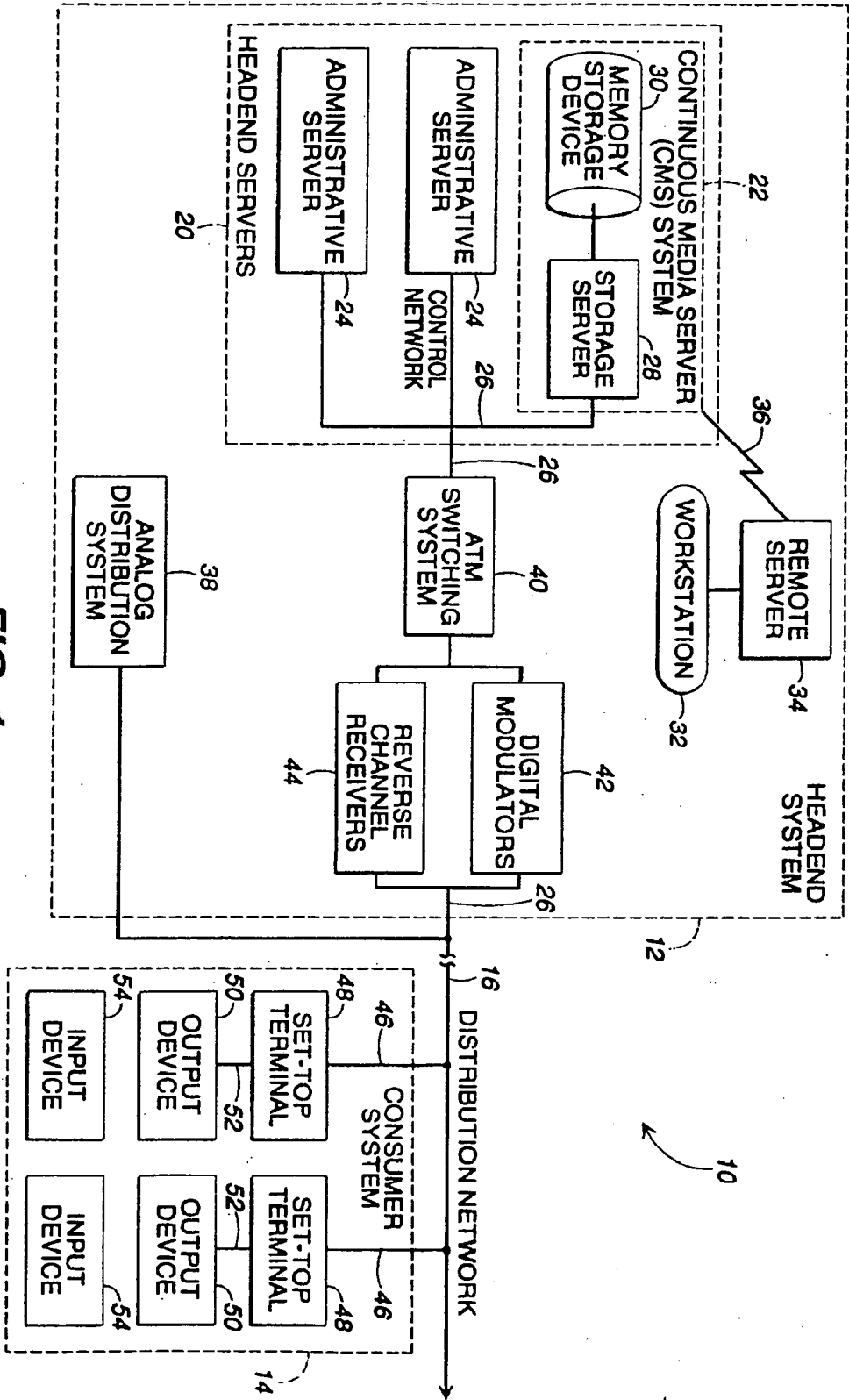


FIG. 1

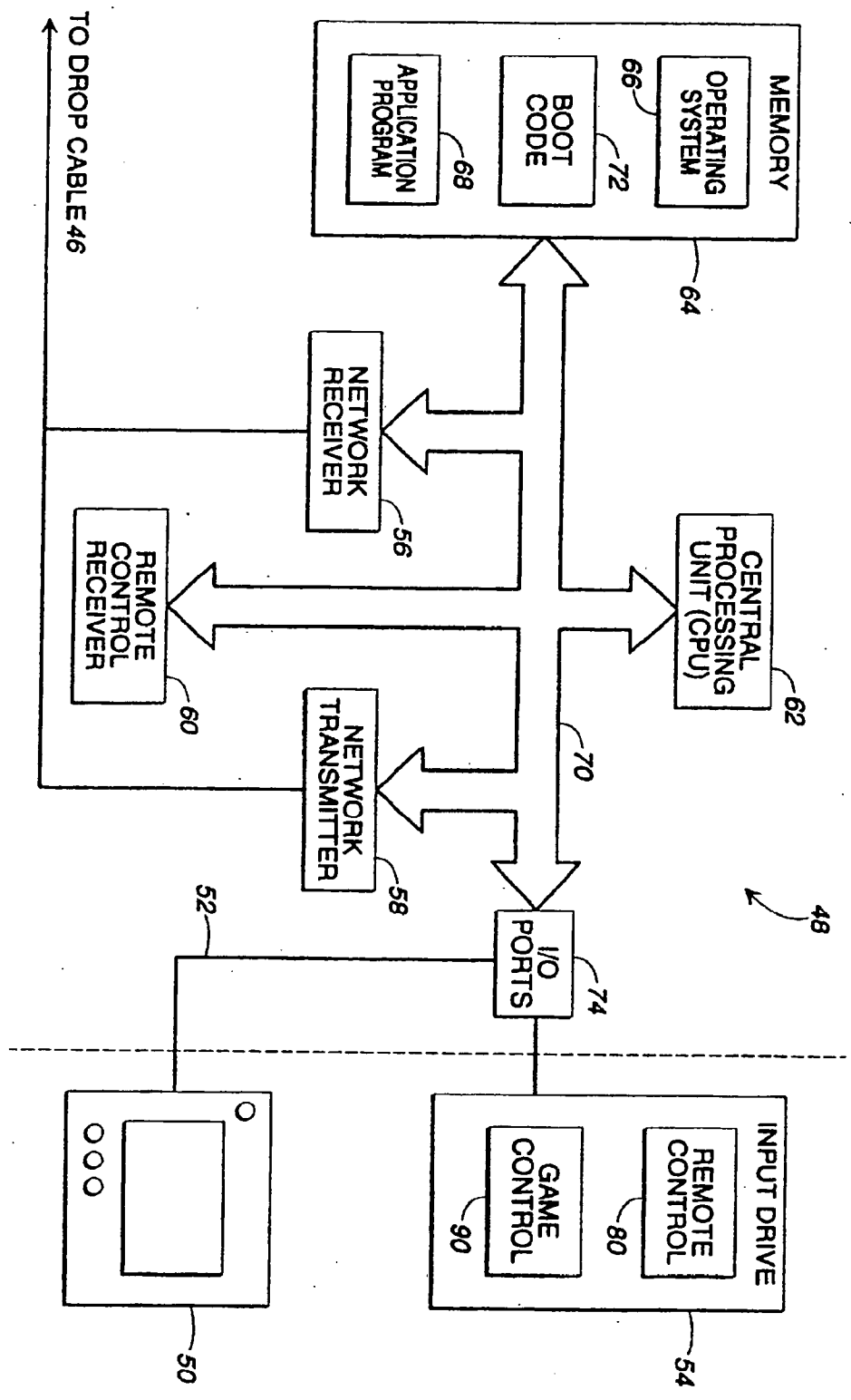
5,616,876

Sheet 1 of 8

Apr. 1, 1997

U.S. Patent

FIG. 2



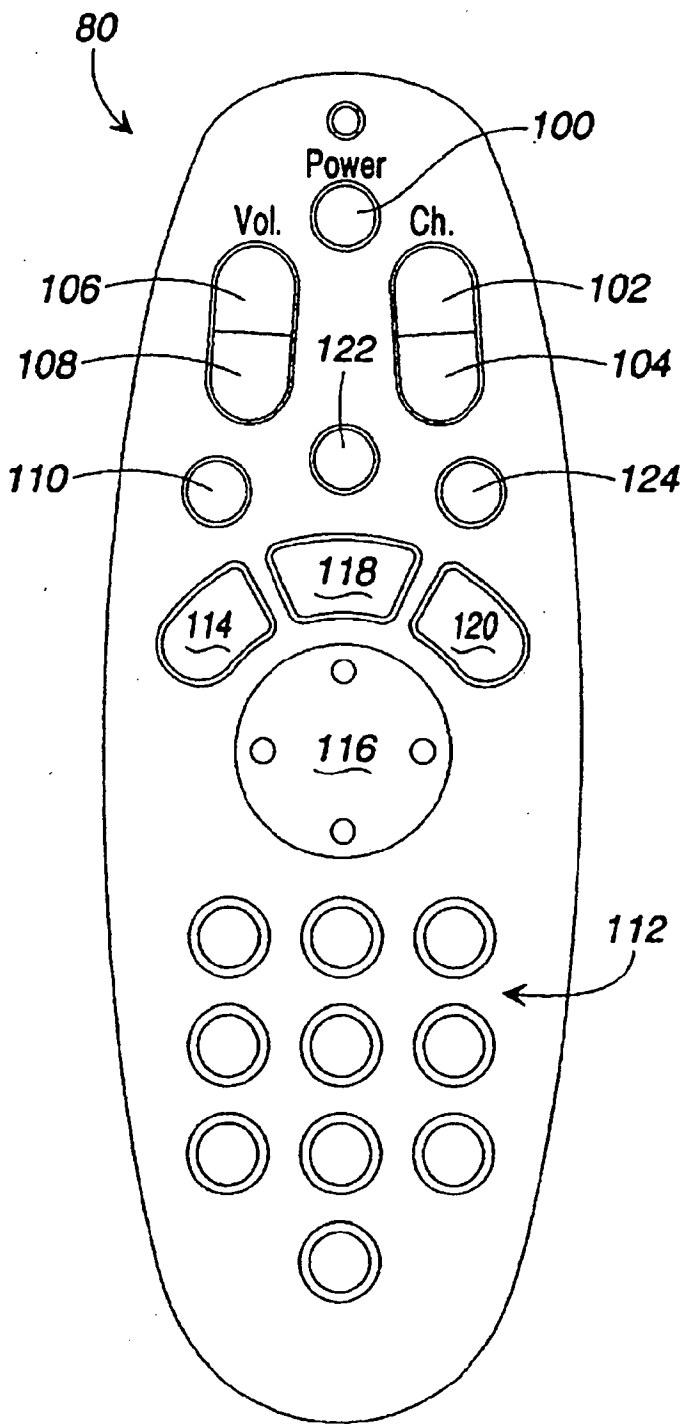


FIG. 3

CL 000299

FIG. 4

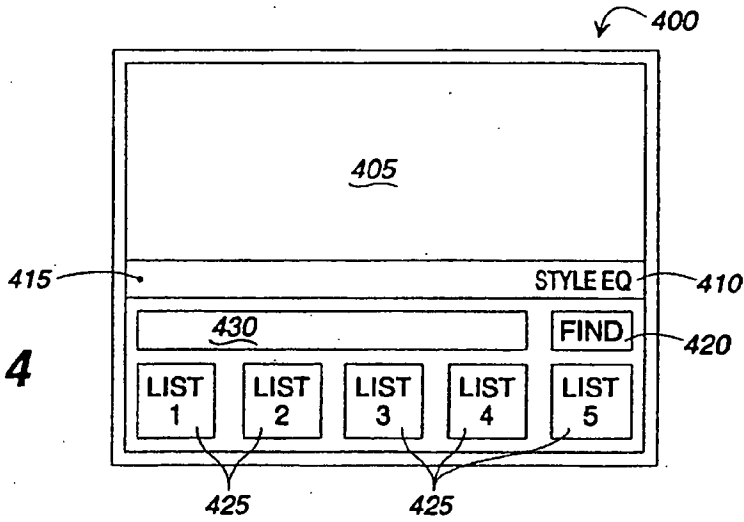


FIG. 5

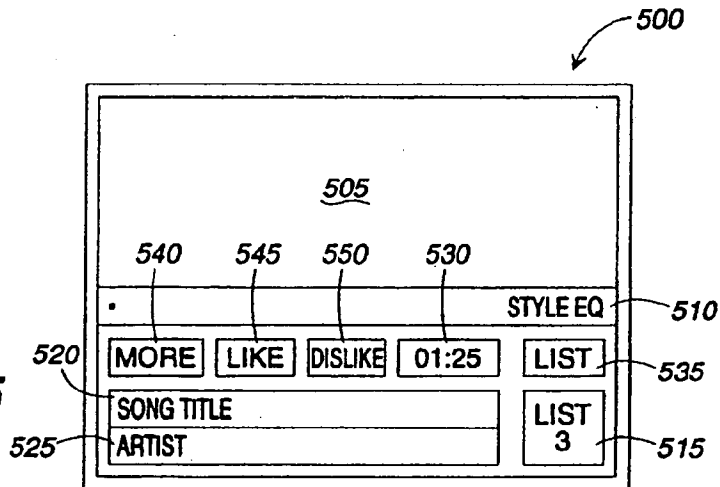
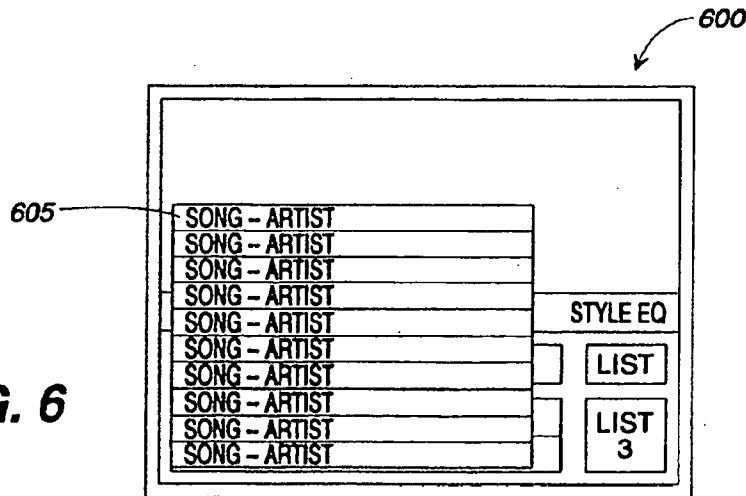


FIG. 6



CL 000300

FIG. 7

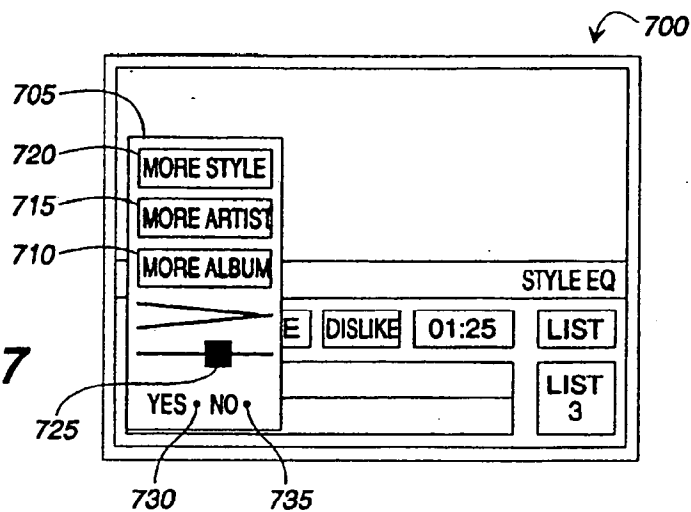


FIG. 8

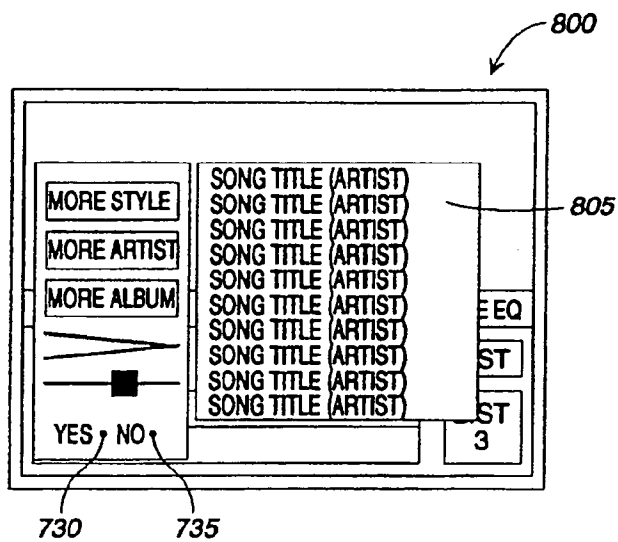
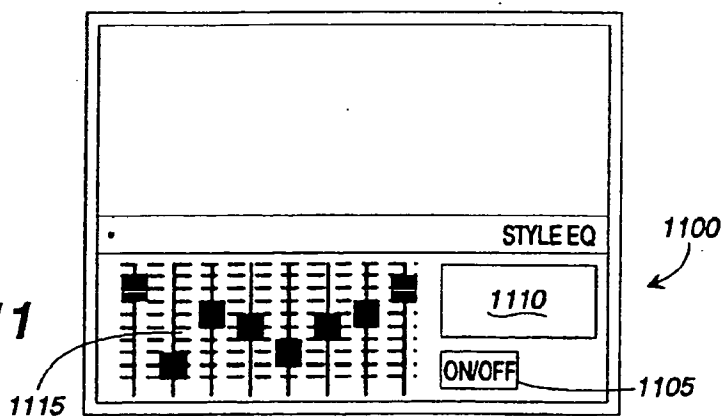


FIG. 11



CL 000301

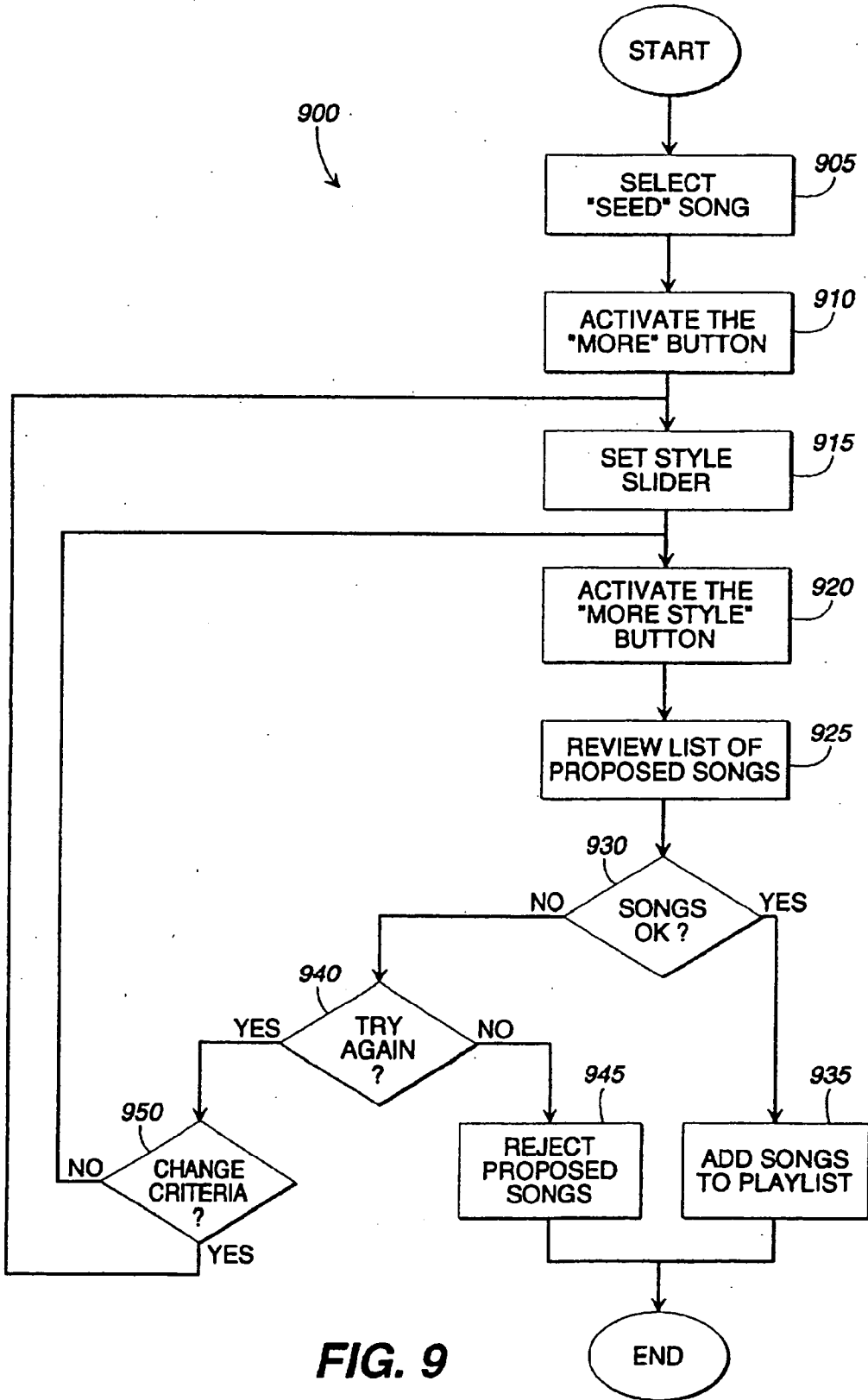


FIG. 9

CL 000302

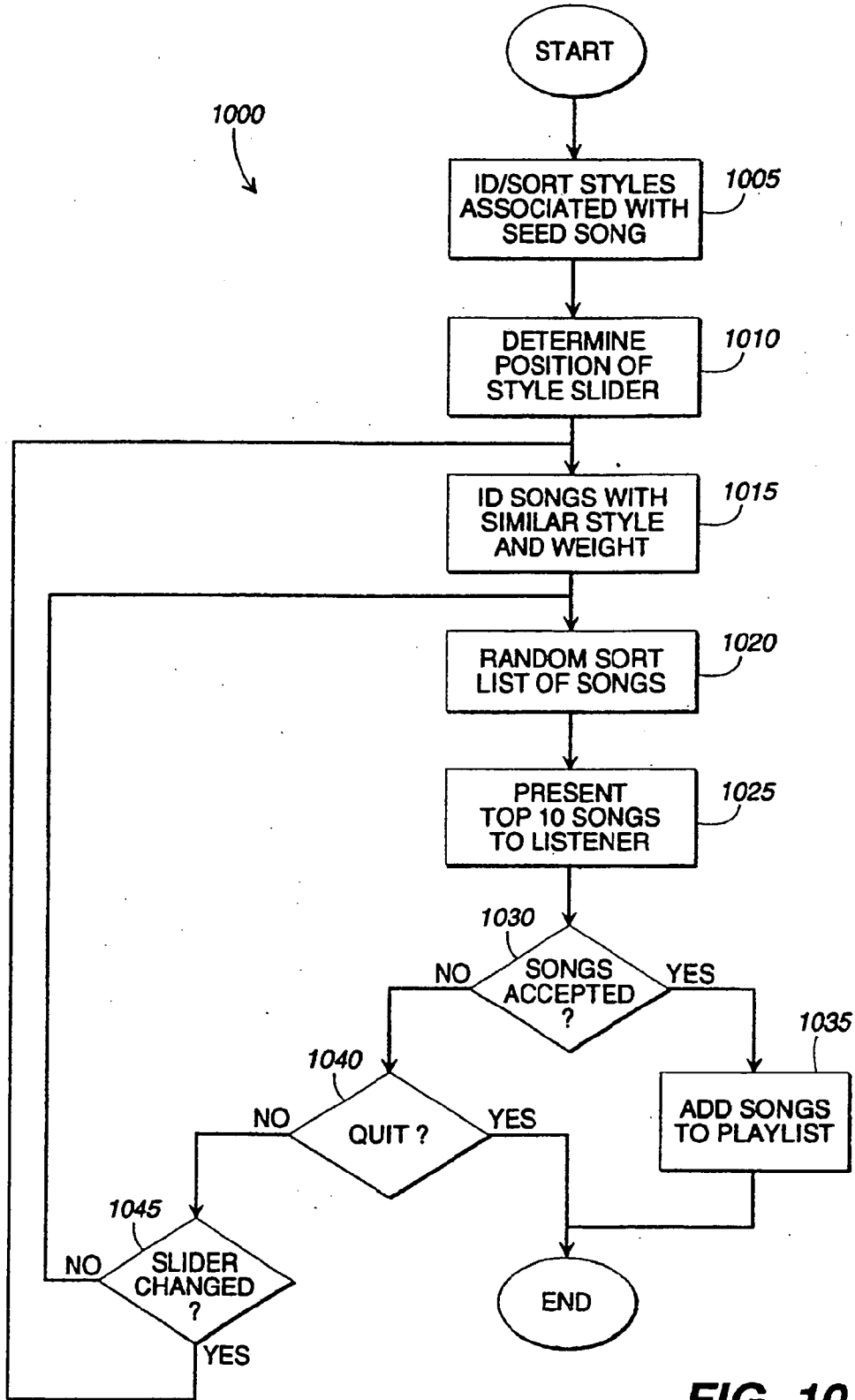


FIG. 10

CL 000303

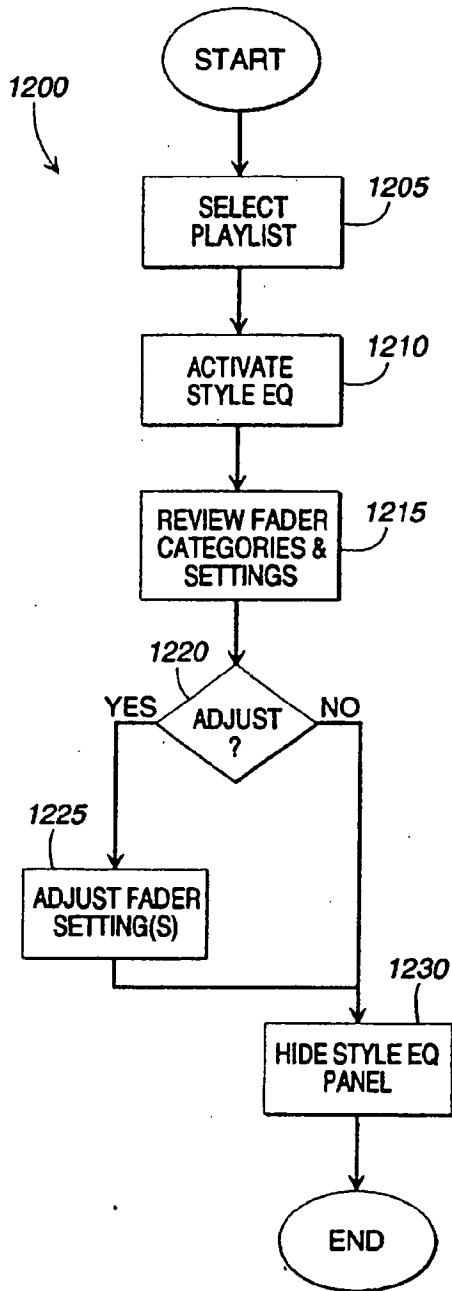


FIG. 12

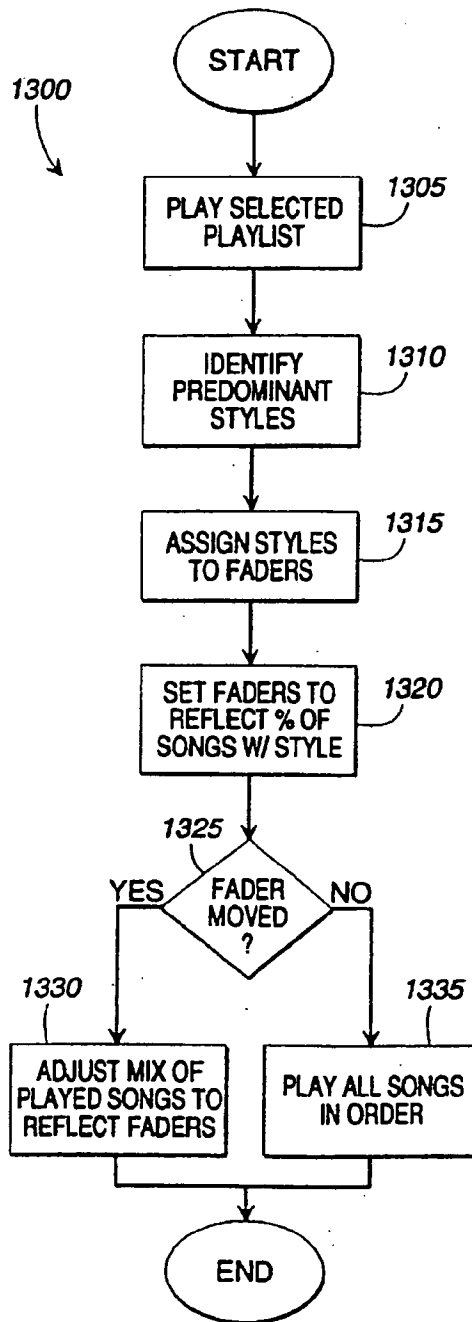


FIG. 13

CL 000304

SYSTEM AND METHODS FOR SELECTING MUSIC ON THE BASIS OF SUBJECTIVE CONTENT

TECHNICAL FIELD

The present invention relates to systems and methods for selecting and playing audio selections, and more particularly relates to methods for selecting and playing audio selections on the basis of their subjective content.

BACKGROUND OF THE INVENTION

The expansion and improvement of cable television systems (sometimes referred to as community antenna television or CATV systems) have made it possible for cable companies to provide a variety of programming services to subscribers. These services typically include a multitude of television channels that are viewed on the subscriber's television. Some cable companies also provide music channels that are connected to a subscriber's stereo system through a subscriber terminal.

Although CATV systems were originally designed to distribute television signals in the "downstream" direction only (i.e., from a central "headend" location to multiple subscriber locations, which is also known as the "forward" path), the advent of pay-per-view services and of other interactive television applications has fueled the development of bidirectional or "two-way" cable systems. These two-way cable systems also provide for the transmission of signals from the subscriber locations back to the headend via an "upstream" direction or a "reverse" path.

By upgrading conventional CATV systems to increase their bandwidth, cable service providers can use the additional channels gained by this wider bandwidth network to provide many new subscriber services. The ever-expanding deployment of fiber optic technology supports the implementation of an "interactive network" that allows a subscriber to obtain desirable services or programming at a time and date specified by the subscriber. Indeed, it is feasible that this interactive network will have sufficient bandwidth to supply hundreds of channels of programming information, thereby leading to an explosion of program options available to subscribers. Potential subscriber services supported by this interactive network include Movies on Demand (MOD) or Video on Demand (VOD), interactive music channels, interactive computing, shopping, entertainment, and other related services.

An interactive network makes it possible for subscribers to have immediate access to vast selections of music. For example, record companies may provide catalogs of their music for subscribers to listen to via an interactive network. Similarly, various publishers may compile playlists of various styles of music (e.g., Jazz, Classical, Top 40, etc.) that will be available to subscribers via an interactive network.

When music catalogs are available via an interactive network, a subscriber must have a way to select the music he or she would like to listen to. The computers that form a part of an interactive network facilitate selection by song title, artist, or album name. As in a record store, music may also be classified and searched by style (e.g., Jazz, Classical, Top 40, etc.). Thus, in an interactive network, it will be very simple for a subscriber to select a specific song.

However, unless a subscriber is familiar with a particular artist or song title, there is no simple way to identify other music that the subscriber may enjoy. Because of the sub-

jective nature of such a decision, there is no simple way for a subscriber to identify additional music that is similar to a song he or she likes. This is a significant disadvantage in an environment where a large assortment of music is readily available.

When a listener browses published playlists, the playlists are typically described by a short title, such as Jazz, Classical, Top 40, Progressive Rock, etc. When a subscriber listens to such a playlist, there is no simple way for the subscriber to get a clearer idea of the specific types of music that are included in the playlist. Similarly, there is no simple way for a subscriber to alter the mix of the songs that are played back from the playlist.

In summary, there is no simple, effective way for a subscriber to identify and select music he or she is likely to enjoy on the basis of the music's subjective content and its similarity to a song the subscriber is familiar with. Furthermore, there is no way for a user to quickly assess the mix of music included in a playlist and to alter the mix of music played from the playlist.

Therefore, there is a need in the art for a system that allows a subscriber to pick a song he or she likes and to then identify additional songs that include similar subjective content. Likewise, there is a need in the art for a system that allows a user to perceive the content of a playlist and alter the mix of songs played from the playlist.

SUMMARY OF THE INVENTION

The present invention satisfies the above described needs by providing systems and methods for selecting and playing music based on its subjective content.

Generally described, the present invention provides a method for selecting programming information items in an interactive media distribution system that includes a server, a distribution network, an output device and an input device. The method includes storing on the server a plurality of programming information items and editorial data associated with the programming information items. An initial programming information item is played in response to a first input signal. In response to a second input signal, a list of proposed new programming information items is created on the basis of the editorial data associated with the initial programming information item and the plurality of programming information items. The list of proposed new programming information items is presented on the output device. The proposed new programming information items are then added to a playlist in response to a third input signal.

The present invention also provides a method for classifying and selecting programming information items having subjective content. A plurality of programming information items and editorial data associated with the programming information items are stored. The editorial data includes a plurality of categories and weightings associating each programming information item with the categories. An initial programming information item is selected in response to a first input signal. The setting of a matching closeness indicator is determined in response to a second input signal. The method determines matching categories for the initial programming entry. The matching categories include the categories whose weightings correspond to the position of the matching closeness indicator. The method determines matching programming information items based on the initial programming information item. The matching items include the matching categories with weightings corresponding to the setting of the matching closeness indicator. The matching items are presented to the user.

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The present invention also provides a system for classifying and selecting programming information having subjective content. The system includes a data storage device containing a plurality of programming information items and editorial data associated with the programming information items, an output device for providing information to a user, an input device for receiving input from the user, and a computer associated with the data storage device. The computer is configured to play an initial programming information item in response to a first input signal. The computer creates a list of proposed new programming information items on the basis of the editorial data associated with the programming information items in response to a second input signal. The list of proposed new programming information items is presented on the output device. Finally, the proposed new programming information items are added to a playlist in response to a third input signal.

In another aspect, the present invention provides a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from the playlist. The method includes loading a playlist including a plurality of programming information items and loading editorial data associated with the programming information items. A predetermined number of indicators are displayed on the output device. Each of the indicators is associated with a category from the editorial data. The indicators are positioned to indicate the portion of the plurality of programming information items corresponding to each of the categories. At least one of the indicators is adjusted in response to an input signal from an input device. In response to the adjustment of one or more indicators, the method selects programming information items from the playlist such that the portions of the selected programming information items associated with each of the categories corresponds to the adjusted positions of the indicators.

It is therefore an object of the present invention to provide a system for classifying and selecting information having subjective content.

It is another object of the present invention to provide a method for the context based selection of subjective material.

It is another object of the present invention to provide a method for adding items having subjective content to a group of items having similar subjective content.

It is another object of the present invention to predict, based on a listener's current choice of music, the choices from an audio content database that are most like the current choice.

It is another object of the present invention to identify other music that is similar to the music a listener is listening to.

It is another object of the present invention to identify more music that is like a current musical selection.

It is another object of the present invention to identify other movies that are similar to a movie a viewer is watching.

It is another object of the present invention to display the types of music are in a playlist.

It is another object of the present invention to allow a user to alter the mix of music that is selected and played from a playlist.

It is another object of the present invention to select various types of programming on the basis of its subjective content.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates an interactive network system.

FIG. 2 illustrates a set top terminal, which forms a part of the interactive network system of FIG. 1.

FIG. 3 illustrates the preferred remote control unit for use with the set top terminal of FIG. 2.

FIG. 4 is illustrates the features of the initial screen display in the preferred audio on demand system.

FIG. 5 illustrates the features of the playlist screen display in the preferred audio on demand system.

FIG. 6 illustrates a list of songs provided in response to the find button on the playlist screen display of FIG. 5.

FIG. 7 illustrates the "more like" panel provided in response to the "more" button on the playlist screen display of FIG. 5.

FIG. 8 illustrates a list of songs provided by the "more like" function.

FIG. 9 is a flow diagram illustrating the steps taken by a subscriber when using the "more like" function.

FIG. 10 is a flow diagram illustrating the "more like" function as implemented in a program module running on the preferred interactive network.

FIG. 11 illustrates the features of the "style equalizer" screen display.

FIG. 12 is a flow diagram illustrating the steps taken by a subscriber when using the "style equalizer" function.

FIG. 13 is a flow diagram illustrating the "style equalizer" function as implemented in a program module running on the preferred interactive network.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment of the present invention is directed to systems and methods for selecting music on the basis of its subjective content, and is implemented in an interactive network system that can deliver a variety of services, including entertainment, information, and transaction services, to consumers via an interactive broadband network. The preferred system, which is referred to as the audio on demand system, allows a subscriber to listen to songs provided by the system. The subscriber may select songs on the basis of title, artist and album. The subscriber may also select playlists, which are predetermined collections of songs. The audio on demand system provides a "more like" function that identifies more music that is like the subscriber's current selection. In addition, the system includes a "style equalizer" that allows a subscriber to see the predominant styles of music included in a playlist, and to adjust the mix of music played from the playlist.

Although the preferred embodiment will be generally described in the context of an interactive television system for delivering broadcast television programs, music, and related information, those skilled in the art will recognize that the present invention also can be used to support the delivery of other forms of programming information, including radio, broadcast print, audio, games, computer software, including program modules such as application programs and operating systems, and other combinations of audio, video and/or computer software. Accordingly, it will be understood that the terms "programming information" and "programming information items" generally include information transmitted electronically to entertain, instruct, edu-

cate, or inform the recipient, as well as program modules for supporting these services.

Turning first to the nomenclature of the specification, the detailed description which follows is represented largely in terms of processes and symbolic representations of operations by conventional computer components, including a central processing unit (CPU), memory storage devices for the CPU, and connected pixel-oriented display devices. These operations include the manipulation of data bits by the CPU and the maintenance of these bits within data structures resident in one or more of the memory storage devices. Such data structures impose a physical organization upon the collection of data bits stored within computer memory and represent specific electrical or magnetic elements. These symbolic representations are the means used by those skilled in the art of computer programming and computer construction to most effectively convey teachings and discoveries to others skilled in the art.

For the purposes of this discussion, a process is generally conceived to be a sequence of computer-executed steps leading to a desired result. These steps generally require physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, compared, or otherwise manipulated. It is conventional for those skilled in the art to refer to these signals as bits, values, elements, symbols, characters, terms, numbers, records, files or the like. It should be kept in mind, however, that these and similar terms should be associated with appropriate physical quantities for computer operations, and that these terms are merely conventional labels applied to physical quantities that exist within and during operation of the computer.

It should also be understood that manipulations within the computer are often referred to in terms such as adding, comparing, moving, etc. which are often associated with manual operations performed by a human operator. It must be understood that no involvement of a human operator is necessary or even desirable in the present invention. The operations described herein are machine operations performed in conjunction with a human operator or user that interacts with the computer. The machines used for performing the operation of the present invention include general purpose digital computers or other similar computing devices.

In addition, it should be understood that the programs, processes, methods, etc. described herein are not related or limited to any particular computer or apparatus. Rather, various types of general purpose machines may be used with programs constructed in accordance with the teachings described herein. Similarly, it may prove advantageous to construct specialized apparatus to perform the method steps described herein by way of dedicated computer systems with hard-wired logic or programs stored in nonvolatile memory, such as read only memory.

Referring now the drawings, in which like numerals represent like elements throughout the several figures, the present invention and the preferred operating environments will be described.

THE OPERATING ENVIRONMENT

A typical CATV system for the delivery of television programming to subscribers comprises three main elements: a headend, a distribution system, and subscriber drops.

The "headend" is a signal reception and processing center that collects, organizes and distributes signals. The headend

receives satellite-delivered video and audio programming, over-the-air broadcast television station signals, and network feeds delivered by terrestrial microwave and other communication systems. In addition, headends may inject local broadcast programming into the package of signals sent to subscribers, such as commercials and live programs created in a television studio.

The "distribution system" carries the signals from the headend to a number of distribution points in a community and, in turn, distributes these signals to individual neighborhoods for delivery to subscribers. A modern distribution system typically comprises a combination of coaxial cable and optical fibers with trunk amplifiers periodically spaced to compensate for attenuation of the signals along the line.

"Subscriber drops" are taps in the distribution system that feed individual lines into subscribers' television sets or subscriber set-top terminals, often referred to as "subscriber premises equipment" or "customer premises equipment" ("CPE").

Referring to FIG. 1, an interactive network system includes a headend system 12 for delivering programming information to and receiving instructions from a consumer system 14 via a "two-way" distribution network 16. The headend system 12 is the control center for collecting, organizing, and distributing the signals for all interactive network operations and the source for all programming information. The distribution network 16 transports signals carrying programming information and instructions between the headend system 12 and the consumer system 14. The distribution network 16 can include a world-wide public asynchronous transfer mode (ATM) compatible network with links to the Internet, third party service providers, and other wired and wireless communications networks. The consumer system 14 includes the equipment required for a consumer to receive programming information directly at his or her office or residence and to transmit requests and instructions to the headend system 12.

The headend system 12 can include a set of headend servers 20, including a continuous media server (CMS) system 22 and one or more administrative servers 24, to support various network functions, and a control network 26 linking these headend servers. The headend servers 20 can execute program modules, including service and application program software, to support the transmission of programming information and the reception of requests for such programming information.

It will be appreciated that the headend servers 20 are not necessarily located in one physical location, but can be linked by wired and/or wireless communications paths supplied by the control network. The control network 26 can be a local area network, a wide area network, or a combination of both types of networks. For the preferred embodiment, the control network 26 is implemented as an ATM-based network for routing digital data between the headend servers 20 and the distribution network 16.

The CMS system 22 is a server-based file storage and delivery system that can manage on-demand access to stored digitized data, such as audio and video. On-demand access of digitized data is a particularly desirable characteristic of the CMS system 22 because it allows the interactive network to support the on-demand delivery of various types of programming, such as music, movies, etc. The preferred CMS system 22 can supply digital data streams at a constant rate to numerous consumers of the consumer system 14.

The CMS system 22 includes one or more storage servers 28, which operate to retrieve and to transmit the digitized

data as required by clients of the CMS system, i.e., the equipment of the consumer system 14. The digitized data, which typically comprises programming information, is maintained on one or more memory storage devices 30 connected to the storage servers 28. Each memory storage device 30 can be implemented as a SCSI hard disk drive, an optical storage system, or any other similar mass storage media. By spreading the data management operations across a group of storage servers and memory storage devices, user load can be balanced with the limited disk, network, and input/output (I/O) resources of the headend system. This also supports fault tolerance by replicating digitized data within the CMS system 22 to survive the failure of a storage server or a memory storage device.

To support the tasks of updating or revising programming information stored on a memory storage device 30 of the CMS system 22, a computer workstation 32 and a remote server 34 can be connected to the control network 26 via a communications link 36. This communications link allows a program distributor or supplier, which typically operates at a location remote from the CMS system 22, to transmit programming information for storage by one or more of the memory storage devices 30 and eventual distribution to consumers via the headend system 12. The communications link 36 can be implemented by either a wireless or wired communications system. For example, the communications link 36 can be constructed as a microwave link or as a conventional telephone link.

The administrative servers 24 of the headend system 12 can support a variety of services and applications associated with the interactive network system 10, including network security, monitoring, object storage, financial transactions, data management, and other administrative functions. The administrative servers 24 also handle the interactive service requests or instructions transmitted via the consumer system 14 by consumers. For an application involving a large base of consumers, an administrative server 24 is preferably dedicated to a particular service or function. For example, one or more servers can handle all consumer authorization requirements, whereas other servers can handle network management services, and so forth. These administrative servers preferably support the Simple Network Management Protocol (SNMP) to enable end-to-end network administration and monitoring.

The headend system 12 also can support the distribution of programming information and other services via an analog distribution system 38 that is coupled to the distribution network 16. This distribution of analog formatted signals can be handled by a separate headend system associated with a community antenna television (CATV) system. The headend of the CATV system typically supports satellite-delivered video and audio programs, over-the-air broadcast television station signals, and broadcast network signal feeds delivered by microwave and other communications systems.

The distribution network 16 is a two-way communications network that connects the headend system 12 to various community distribution points of the consumer system 14 and, in turn, to individual neighborhood nodes for delivery to consumers of services supplied by the interactive network system 10. The distribution network 16 comprises one or more downstream channels supporting transmissions from the headend system to the consumer system and one or more upstream channels for carrying transmissions from the consumer system to the headend system. This bidirectional communications network supports delivery of programming information via the headend system 12 to each consumer

and the delivery of requests for programming information by a consumer to the headend system 12. The distribution network 16 can be implemented by a microwave distribution system, a telephone system, coaxial cables, optical fibers, or any combination of these delivery systems. However, the preferred distribution network is implemented by a combination of hybrid optical fiber/coaxial cable (HFC) and optical fiber-to-the-curb (FTTC).

Those persons skilled in the art will appreciate that the programming information delivered over the distribution network 16 typically includes both video and audio signals. Programming information can be delivered in digital format, analog format, or a combination of both analog and digital formats. For the preferred embodiment, music-related programming is delivered as a stream of digital audio and video signals in a compressed digital data stream, which may include conventional MPEG-1 and MPEG-2 compressed video streams. Likewise, requests or instructions issued by consumers via the consumer system 14 are preferably formatted as digital signals.

The CMS system 22 and the administrative servers 24 are connected to the distribution network 16 via an ATM switching system 40. The ATM switching system 40 supports network switching requirements for delivery by the headend system 12 of digital data streams carrying multimedia content and the handling of interactive service requests from consumers.

Because the interactive network 10 is a two-way communications system, the ATM switching system 40 preferably connects to the distribution network 16 via modulation/demodulation devices. The downstream channels of the distribution network 16 can be connected to the ATM switching system 40 via digital modulators 42, whereas the reverse channels of the distribution network 16 are connected to reverse channel receivers 44.

Each consumer within a neighborhood node of the consumer system 14 is connected to the distribution network 16 via a subscriber drop cable 46, which is typically part of a local cable network administered by a multiple service operator (MSO). The drop cable 46 is typically a coaxial cable or optical fiber connected to a set-top terminal 48 or set-top box located at the consumer's location. This combination of the drop cable 46 and the set-top terminal 48 operates as a "tap" into the distribution network 16, and allows the consumer to (1) receive program modules and programming information distributed by the headend system 12 and to (2) transmit requests or instructions to the headend system 12. For example, the set-top terminal 48 can accept and convert signals carrying programming information to a format compatible for presentation by an output device 50, such as a television or a computer system. This output device 50, which can be connected to the set-top terminal via a conductive path 52 such as coaxial cable, preferably includes a receiver and a display or monitor for receiving and displaying programs and program-related information. Those skilled in the art will understand that the output device 50 can be implemented as a combination of separate components, such as a receiver and a monitor, or as a single component, such as a conventional television or a general purpose computer system.

Selected operating functions of the set-top terminal 48 can be controlled by an input device 54 capable of supplying input data to the set-top terminal 48. The input device 54 can be used to transmit command signals to the set-top terminal 48 and to input character-based data, such as text, for processing by the set-top terminal 48. For example, the input

device 54 can be used to control the position of a display object presented by the output device or to enter text for conducting a service-related transaction supported by the interactive network 10. The input device 54 can be implemented as one or more devices for inputting data, including a hand held control, a keyboard, a mouse device, a game control, a joystick, a pen or stylus, a trackball, or a track pad.

For the preferred embodiment, the input device 54 is implemented as a hand held remote control unit capable of transmitting infrared signals carrying commands for controlling the operation of the set-top terminal 48. The remote control unit can include a directional keypad having distinct keys for allowing the user to control direction (up, down, left, right) and relative changes in volume or channel (increase or decrease), as well as absolute changes to channel value via a numeric key pad. The remote control unit and its functions are more fully described in conjunction with FIG. 3.

FIG. 2 illustrates the basic components of the set-top terminal 48. The primary components of the set-top terminal 48 include a network receiver 56, a network transmitter 58, a remote control receiver 60, a central processing unit (CPU) 62, and memory 64. These components are connected by a system bus 70, which can carry control, address, and data signals. The network receiver 56 conducts tuning operations for receiving a selected channel of the interactive network 10 and decoding operations for decoding compressed digitized data supplied via the interactive network 10. For example, the set-top terminal 48 can include MPEG decoding capability for converting the compressed digitized data into standard National Television Standard Committee (NTSC) video signals for reception by a conventional television. The network transmitter 58 transmits requests for programming information and related instructions for processing by the headend system 12. The network receiver 56 and the network transmitter 58 can be connected to the distribution network 16 via the drop cable 46. The remote control receiver 60, which is preferably implemented as an infrared receiving device, can decode signals carrying the commands issued by the input device 54, such as a remote control unit 80.

The CPU 62, which is connected to the network receiver and transmitter 56 and 58, as well as to the remote control receiver 60, controls the operations of the set-top terminal 48 and supports the rendering of graphical images that form a part of the user interface. The CPU 62 is typically implemented by at least one microprocessor, such as the model 80486 or the "PENTIUM" microprocessor, manufactured by Intel Corporation, Santa Clara, Calif. The CPU 62 communicates, by means of control, address, and data signals, with the remaining components of the set-top terminal 48 through the system bus 70. The CPU 62 operates in conjunction with the operating system 66 to retrieve, process, store, and display data. It will be appreciated that the processing functions of the CPU 62 may be divided among two or more microprocessors to support the presentation of a graphics-intensive user interface. For example, a microprocessor may be dedicated to control operations associated with the bi-directional communications with the headend system 12, whereas another microprocessor may be dedicated to the generation of graphics.

The memory 64, which is connected to the CPU 62, is useful for storing one or more program modules and data associated with set-top terminal operations. Program modules stored in the memory 64 can include operating system 66 and one or more application programs 68. The memory 64 can be implemented as a combination of dynamic

memory, such as random access memory (RAM), and static memory, such as read only memory (ROM).

The operating system 66 comprises a set of computer programs that control the internal functions of the set-top terminal and support the execution of other program modules, including application programs 68. The preferred operating system 66 supports a graphics-based presentation of program-related information, including control items that visually represent control functions of the operating system and other program modules. A control item or control object is any visual image that can be manipulated by the user to perform an operation. The operating system 66 can receive and interpret input data supplied by the input device 54, as received by the remote control receiver 60. As described in more detail below, a user can "select" and "activate" (or launch) control items by the use of the input device 54 in a manner similar to the computer arts.

For the preferred set-top terminal 48, the memory includes a ROM containing at least a portion of program module representing "boot code" 72 for initializing the operations of the set-top terminal 48. Upon power-up of the set-top terminal 48, the boot code 72 initiates a request for the headend system 12 to download certain program modules, including the operating system 66 and one or more application programs 68. The program modules can be stored within the memory 64 of the set-top terminal 48. This downloading process allows the headend system 12 to easily update the program modules used in set-top terminals 48 throughout the interactive network 10. For example, the application programs 68 may be maintained within the set-top terminal 48 only during actual use of the features of these programs; otherwise, these application programs are maintained at the headend system 12. Thus, it will be appreciated that the preferred set-top terminal 48 relies heavily upon data storage mechanisms located at the headend system 12 rather than within the set-top terminal 48 itself.

The set-top terminal 48 can be connected to a peripheral device via input/output (I/O) ports 74. The I/O ports 74 support the connection of the system bus 70 to a connected peripheral device. For example, the output device 50 can be connected to the I/O ports 74 via a conductor 52. Likewise, an input device 54, such as a game control 90, can be connected to the I/O ports 74. In contrast to the remote control unit 80, which communicates with the remote control receiver 60 via a wireless communications link, other types of input devices 54 are typically connected to the I/O ports 74 via a cable. Nevertheless, those skilled in the art will appreciate that input devices 54 can communicate with the set-top terminal 48 by use of either wireless or wired communications links.

Generally, when a user first powers-up a set-top terminal 48, the set-top terminal 48 contacts the headend system 12 and requests the downloading of certain program modules, including the operating system 66. In response to loading these program modules, the set-top terminal 48 enters a stand-by mode to limit power consumption and awaits a command signal initiated by a user pressing a key or button on an input device 54, such as a remote control unit 80. In this stand-by mode, the set-top terminal can communicate with the headend system and can respond to administrative requests transmitted by the headend system 12. In the event that a user tunes to an interactive channel (such as the audio on demand service), the set-top terminal 48 changes modes and enters the active mode. In the active mode, the set-top terminal 48 communicates with the headend system 12 to process the instructions transmitted by the remote control

unit. For example, the set-top terminal 48 responds to a command requesting programming information by forwarding this instruction to the headend system 12 via the drop cable 46 and the distribution network 16. The headend system 12 responds by retrieving selected programming information from the CMS system 22 and transmitting the selected programming information via the return path provided by the distribution network 16 and the drop cable 46. The set-top terminal then supplies this programming information in the proper format for presentation by the display 10 50.

FIG. 3 illustrates the preferred remote control unit 80, which is used to transmit commands to the set-top terminal 48. The remote control unit 80 includes a variety of keys that are common to remote control units for use with conventional television sets. These include power on/off 100, channel up 102, channel down 104, volume up 106, volume down 108, mute 110, and a 10 digit numeric keypad 112.

The preferred remote control unit also includes keys that are specifically related to preferred interactive system. A menu button 114 is used to open and close on-screen menus. A directional control 116 is a rocker switch that is used to select specific control items by moving a cursor up, down, left or right. An action button 118 is used to activate a selected control item. A help key 120 is used to initiate on-screen help. An "A" button 122 and "B" button 124 are used to select specific options that are provided in some contexts.

The Preferred Systems and Methods for Selecting Music Based on Subject Content

Turning now to FIGS. 4-13, the preferred systems and methods for selecting music based on subjective content will be described. The primary features of the present invention are a "more like" music search function and a "style equalizer" (style EQ). In addition, the preferred audio on demand system also provides a variety of ancillary features. These features allow a subscriber to find a specific song by artist and title or select a playlist, which is a collection of songs. Once a playlist is selected, the user may review the contents of the playlist and select another song in the playlist. While a song is playing, the listener may add the song to a playlist called "my favorites", or mark the song so that it is never played again. Each of these features is discussed in conjunction with its corresponding user interface and control objects.

FIGS. 4-6 illustrate general aspects of the user interface employed in the preferred embodiment of the present invention, which is referred to as the audio on demand system. FIGS. 7-10 include screen displays and flow charts associated with the "more like" function, which provides the subscriber with more songs that are like the current song. FIGS. 11-13 includes a screen display and flow charts associated with the style EQ function, which displays the styles associated with the current playlist and allows the subscriber to adjust the mix of songs played from the playlist.

The General User Interface

Before describing the preferred "more like" and "style EQ" functions in detail, it will be helpful to understand the basic features of the preferred audio on demand system and the user interface. This information is provided in conjunction with FIGS. 4-6, which illustrate screen displays that appear on the subscriber's display or monitor. Each of the screen displays that form a part of the user interface provide

information and control objects, which typically appear as buttons. The subscriber may select and activate the control objects using the directional control and action button on the remote control unit (FIG. 3). An object is selected by moving the "focus" to the object. The focus is analogous to a cursor on a general purpose computer, and may be represented by a highlighted or colored frame or border that appears around a control object.

The audio on demand system relies on an audio content database, which includes all of the programming information items (e.g., songs) available on the system. The songs in the audio content database are obtained from various sources and are loaded on the continuous media servers that form a part of the headend system. In most cases, the operator of the system will arrange for record companies to provide their music catalogs. Those skilled in the art will appreciate that while the audio on demand system is capable of combining music catalogs from various sources into an integrated music resource, some music companies may prefer that their music not be mixed with music from other publishers. In this case, the system may make different music catalogs available on different channels on the interactive network.

FIGS. 4-6 illustrate the basic features of the audio on demand user interface. FIG. 4 illustrates the initial audio on demand screen display 400, which appears when the subscriber selects the audio on demand system. The initial screen display 400 is divided into three (3) different regions or panels. The top region is a graphic display field 405, which may be used to display graphic images associated with the audio on demand system. For example, the service provider may choose to display a service mark, trademark or other logo when an audio on demand channel is selected by the subscriber.

Immediately below the graphic display field 405 is the style EQ panel 410. The style EQ panel 410 is used to select the style equalizer, which is described below. The style EQ panel 410 also includes a style EQ status indicator 415, which indicates whether the style EQ feature is currently activated.

The bottom region of the screen display 400 is used to select individual songs or playlists. A find button 420 is provided in order to allow a subscriber to select a specific song. When the find button is activated, the screen displays bins that appear to be similar to those found in music stores. In these bins, artists are listed in alphabetical order. When the subscriber selects a particular artist, the names of the artist's albums appear in chronological order, and are followed by an alphabetical listing of the artist's songs. The subscriber may use this feature to select a particular song or album. If the user selects a song, that song is loaded into a new playlist. If the user selects an album, all of the songs from that album are loaded into a new playlist.

The screen display 400 also includes a plurality of playlist buttons 425, which allow the subscriber to select a playlist. As described briefly above, a playlist is a collection of songs. Playlists may be generated in a variety of different ways. For example, various types of playlists may be provided by the service provider or other publishers. In addition, a subscriber may build a playlist one song at a time using the find button 420. A subscriber may also communicate with the preferred interactive network via a personal computer. When connected in this manner, the subscriber may use the personal computer to create and name playlists, perform abstract music searches or queries, etc. Those skilled in the art will appreciate that the interface provided by a personal computer is much more efficient for these tasks than a cumbersome

some on-screen interface that relies on input from a remote control unit. Those skilled in the art will also appreciate that playlists need not be limited to songs. Playlists can include collections of news stories, movies, and other types of programming information. The five playlist buttons 425 are similar to the preset buttons on car radio and indicate the subscriber's five favorite playlists.

The bottom portion of the screen display 400 includes an alphanumeric display 430, which is used to provide some feedback when the subscriber selects one of the other control objects on the screen. For example, when the subscriber uses the remote control unit to move the focus to one of the playlist buttons, the alphanumeric display 430 indicates the name of the associated playlist. Likewise, when the find button has the focus, the alphanumeric display 430 displays an informative message such as "select a song".

FIGS. 5 and 6 illustrate the format of the screen displays 500 that are associated with individual playlists. The playlist screen display 500 appears after the subscriber has created a new playlist by using the find button 420 or selected an existing playlist using one of the playlist buttons 425 on the initial screen display 400 (FIG. 4). Like the initial screen display 400, the playlist screen display 500 includes a graphic display field 505 and a style EQ panel 510. The graphic display panel 505 may be used to display general information associated with the playlist or information associated with the currently playing album or song.

The bottom portion of the playlist screen display 500 includes a playlist identification box 515. If the playlist was selected by choosing one of the playlist buttons 425 on the initial screen display, the playlist identification box 515 will include the same name, logo or icon that appeared on the playlist button. In the preferred audio on demand system, if the playlist was selected by using the find button 420 on the initial screen display, the playlist identification box 515 will display an icon that resembles a compact disc. The compact disc icon is used to indicate a user preference playlist.

As mentioned above, a playlist is a collection of songs. When a playlist is selected, the audio on demand system begins to play the first song in the playlist. The name of the current song is displayed in a song title box 520. The artist's name is displayed in an artist box 525. A counter 530 displays the elapsed time of the current song.

The playlist screen display 500 also provides a list button 535, which may be used to display a list of the songs that are included in the current playlist and to jump to another song in the playlist. FIG. 6 shows a screen display 600 with a pop-up list 605, which is displayed when the subscriber activates the list button 535 on the playlist screen display 500. Each entry in the list includes the title of the song and the artist. In the preferred audio on demand system, the list displays ten (10) of the songs in the current playlist. The subscriber may use the directional control on the remote control unit to scroll through all of the songs in the playlist. The subscriber may also select any of the songs in the playlist by using the directional control to highlight the desired song and pressing the action button (on the remote control unit, FIG. 3). After the subscriber selects a song from the list 605, the system returns to the playlist screen display 500. At that point, the newly selected song begins to play, and the song's title and artist are displayed in the song title box 520 and artist box 525, respectively.

The playlist screen display of FIG. 5 also includes a "more" button 540, a "like" button 545, and a "dislike" button 550. The "more" button 540 is used to activate the "more like" music search function, which is described below. The subscriber may add the currently playing song to

a playlist called "my favorites" by activating the "like" button 545 while a song is playing. If the user does not like the current song, the subscriber may activate the "dislike" button 550 while the song is playing. Once the subscriber indicates the song is disliked, the audio on demand system will never play that song again for the subscriber. This is true without regard to where the song is found. In the preferred audio on demand system, the only way for a subscriber to again listen to a song has been labeled as disliked is to select that specific song using the find button on the initial screen display (FIG. 4).

The "More Like" Function

Generally described, the "more like" function of the present invention provides systems and methods for using a seed song (e.g., the current song) to add new songs to a playlist. This is accomplished on the basis of subjective style classifications and style weightings that are associated with the songs in the audio content database.

The "more like" function allows for the context based selection of subjective material. More particularly, the "more like" function allows a subscriber to locate additional songs on the basis of subjective decisions that have been made regarding the styles of the songs. In order to work properly, the subscriber must be able to predict the output of the "more like" function to some extent. In other words, the "more like" functions must find songs that most subscribers would agree are "similar" to the seed song.

Those skilled in the art will appreciate that it is subjective content that complicates the classification of information. Systems that classify only objective content are easily implemented. For example, songs are easily classified and identified by their title and artist. However, systems that accurately and predictably classify and search subjective content are more complex. In this sense, the present invention is applicable to any systems that classify and select programming information having subjective content. However, in the preferred system, the invention is described in the context of musical selections.

In the present invention, the subjective content associated with each song is embodied in style tables, which are tools for classifying each song's subjective content. Each song can be associated with any number of different styles. The editor that creates the style table must determine how important each style is to the description of each song. This is reflected by weighting each style as it pertains to each song. Thus, the process of creating a style table for an artist involves two steps: (1) creating the list of possible style categories; and (2) assigning weightings to each style category. Both of these steps are performed by the editor that creates the style table.

The "more like" function relies on two elements: a database and a method for searching and combining the songs in the audio content database. As mentioned above, the database takes the form of style tables that classify the style of each song. Although human beings work well as editors to provide the required editorial content, there are limits as to the number of categories that can be considered. For example, the operator of the audio on demand system may deem it acceptable to spend the time to classify the artists of the songs that are provided on the system. However, the system operator may not consider it feasible to classify each and every song on the system.

In the present system, these considerations are accommodated by allowing music to be classified by various levels (e.g., artist, album, song). The editor is responsible for choosing the particular level or levels that will be used in the system. This decision depends on the amount of editorial

time the editor is willing to spend and the specificity required for the desired outcome of the "more like" function. Although they require more editorial work, higher level style tables (e.g., album or song) allow the style tables to more accurately reflect the styles associated with each song or album. This is especially useful in the case of artists whose styles have varied over their career or from album to album.

In the preferred audio on demand system, the style tables are constructed at the artist level, which is the lowest level, or broadest area of categorization. This reduces the amount of editorial work required, while providing style information that can be broadly applied to all of the songs available on the system.

In the preferred system, the each song has a song identification (ID) number that uniquely identifies that song. Similarly, each artist is identified by a unique artist ID number. The digital audio data is stored on a continuous media server by song ID number. The associated administrative information is stored on an administrative server. The administrative information includes the style tables, information for each song (title, artist, album, etc.), and all of the other databases, graphics, text, etc. that are required by the audio on demand system. A playlist is created by creating a database that includes the song ID numbers of the songs that are included in the playlist.

In the preferred embodiment of the present invention, the style tables operate in the following manner. The audio on demand system operator creates an artist level default style table for all of the artists whose songs appear on the system. As mentioned above, the editor must determine which style categories to use and the weightings assigned to each artist. Therefore, the default style tables may include any number of style categories associated with any number of artists.

An example of a style table for the Beatles is shown below:

Artist: The Beatles	
Style Category	Weight
1960s	1
1970s	1
British Invasion	7
Rock	5
Pop	5
Innovators	6

Although the audio on demand system provides default style tables for all of the artists whose songs appear on the system, playlist publishers may wish to provide their own style tables that categorize artists in a different manner. For example, the default style tables may include a single category for rap music. However, rap music aficionados may prefer to further classify rap music into more precise sub-categories, such as New York City rap, Los Angeles Rap, Male Rap, Female Rap, etc.

The present invention allows playlist-specific style tables to be loaded into the system with each playlist. Therefore, playlist publishers may elect to use the default style tables, or may provide their own. Each playlist-specific style table may reclassify all of the artists whose music appears on the system, or only artists of particular interest. Thus, in the previous rap music example, a publisher of a rap music playlist may provide a style table that reclassifies those artists whose music appears in the rap playlist. In other words, a playlist publisher can recategorize the artists that are important to that publisher, and for which they want to make finer distinctions.

The method of searching for and matching the entries in the audio content database employs a qualitative scale of closeness, which is controlled by a matching closeness indicator. In the preferred system, the matching closeness indicator is a style slider, which is presented as part of the user interface. The qualitative scale of closeness determines the degree of similarity between the subjective content of the seed song and the songs that will be chosen by the "more like" function. Thus, the style slider allows the subscriber to determine the closeness of the match.

The advantage of the qualitative scale of closeness is that it purposely allows the subscriber to choose a very broad setting. Those skilled in the art will appreciate that many subscribers will want to expand their playlists to include new songs that are only somewhat similar to earlier entries. This provides a mechanism by which a subscriber may move his or her playlist in new directions instead of repeatedly narrowing the playlist. Likewise, this method of finding similar music is vastly superior to searching by artist name or song title.

The outcome of the "more like" function depends on the relationship between the number of styles in the style tables, the weighting scale, and the position of the style slider when the "more like" function is activated.

FIGS. 7 and 8 illustrate the screen displays associated with the "more like" music search function FIG. 7 illustrates the more like screen display 700. A more like panel 705 appears when the subscriber activates the more button 540 on the playlist screen display 500 (FIG. 5). The more like panel 705 includes several control objects. A more album button 710 instructs the audio on demand system to list the other songs from the album that includes the current song. A more artist button 715 instructs the system to list more songs by the artist that performed the current song. A yes button 730 and a no button 735 allow the subscriber to accept or reject the list of songs that are presented as the output of the "more album" and "more artist" functions. If the subscriber selects the yes button, the listed songs are added to the current playlist.

A more style button 720 allows the subscriber to locate more music that is like the, current song. The more style button 720 operates in conjunction with a style slider 725, which the subscriber sets to indicate the degree of closeness or similarity that is required in order for a song to match the current song. If the subscriber moves the style slider 725 all the way to the right, the "more like" function will produce songs with styles that are very similar to the current song. As the style slider 725 is moved to the left, the "more like" function will present the subscriber with a broader group of songs that are in some way similar to the current song. A yes button 730 and a no button 735 allow the subscriber to accept or reject the list of similar songs that are presented as the output of the "more like" function.

FIG. 8 is a screen display 800 that includes a list 805 of songs that are generated in response to the more style button. In the preferred system, ten similar songs are presented to the subscriber. If the subscriber likes the songs in the list, he or she can add the songs to current playlist by activating the yes button 730. If the subscriber wants to see other songs based on the same matching criteria, he or she may activate the more style button while leaving the style slider in the same position. If the subscriber wants to see songs that are more or less similar than those in the current list, the subscriber may adjust the style slider and activate the more style button. Finally, if the subscriber decides not to add any songs to the current playlist, the subscriber may activate the no button 735. Once the subscriber activates the yes or no

button, the list 805 and more like panel disappear, and the system displays the playlist screen display 500 (FIG. 5). The details of the "more like" engine are provided below.

FIG. 9 is a flow diagram that summarizes the steps carried out by a subscriber who is using the more button 540 to find more music. The method 900 begins at step 905 when the user selects a song to hear. This is accomplished by using the find button to select a specific song, or by selecting a playlist. Those skilled in the art will appreciate that the "more like" function uses the current song as a "seed song" and selects other songs that match the style criteria associated with the seed song.

At step 910 the subscriber activates the more button 540 on the playlist screen display 500 (FIG. 5). This causes the more like panel to appear. At step 915 the subscriber sets the style slider in order to determine the closeness of the match. When the style slider is moved to the right, the "more like" function finds songs whose style more strongly resembles the seed song. As the style slider is moved to the left, the "more like" function relaxes the degree of similarity that is required. The function of the style slider is described more completely below.

At step 920 the user activates the more style button 720 on the more like panel 705 (FIG. 7). When the subscriber activates the more style button, the audio on demand system carries out the process of identifying songs that have a style similar to the seed song. This process is described in detail below in connection with FIG. 10. When the process is complete, the system displays a list of ten (10) songs for review by the subscriber. This list is reviewed by the subscriber at step 925.

At step 930 the subscriber determines whether the songs included in the list should be added to the current playlist. If so, the subscriber activates the yes button on the more like panel, and the system adds the songs to the playlist (step 935). If the subscriber decides not to add the songs to the playlist, the subscriber must decide whether to quit the more like function (step 940). If so, the subscriber activates the no button and the more like panel is dismissed (step 945).

At step 940 the subscriber may decide to try the more like function again and see a different list of songs. If this is the case, the subscriber determines whether to leave the style slider in the same place (step 950). If so, the subscriber returns to step 920 and activates the more style button. This causes the system to display ten other songs from the group of songs that was generated earlier. If the subscriber decides to expand or narrow the matching criteria, the subscriber returns to step 915 and adjusts the style slider prior to activating the more style button.

FIG. 10 is a flow diagram illustrating the "more like" function of the present invention as implemented in a program module running on a headend server, which forms a part of the interactive network. The method 1000 begins at step 1005 after the user has selected a seed song and activated the more style button. At step 1005 the system uses the style tables to identify the style categories and weightings that are associated with the seed song. In the preferred embodiment, which implements only artist level style tables, this step involves identifying the style table that corresponds to the artist that performed the seed song. The style table data is then sorted by weighting in decreasing order.

At step 1010 the system determines the setting of the style slider. The style slider operates to indicate a percentage, which is applied to the sorted style table in the manner described below. The percentage associated with a particular style slider position depends on the granularity of the style slider. If the style slider has 11 positions, the positions would

represent increments of 10% each (ranging from 0% to 100%). Thus, the rightmost position would indicate a 100% match was desired. If the style slider is in the center position, that would indicate a 50% was desired.

At step 1015 the system uses the seed song's style table and the position of the style slider to identify more songs that are like the seed song. In the preferred system, this step involves identifying other artists who have the same styles as the seed song artist at weights that are at least as high as the position of the style slider.

The following example will illustrate the operation of this step, and the relationship between the styles in the style table, the weighting scale, and the position of the style slider. Assume the style table weighting scale ranges from 1-10 and the style slider has 11 positions (at >0%, 10%, 20%, . . . , 80%, 90%, 100%). If the style slider is set at 100%, the system will determine which of the style categories associated with the seed song artist have weightings of 10 (which is 100% of the 1-10 scale). After these style categories are identified, the system will search for artists who have at least one of the same style categories at a weighting of 10. Those skilled in the art will appreciate that this process will yield artists whose style is very similar to the seed song artist.

If the style slider is set at 50%, the system will determine which of the style categories associated with the seed song artist have weightings of at least 5 (which is 50% of the 1-10 scale). After these style categories are identified, the system will search for artists who have at least one of the same style categories with a weighting of at least 5.

If the seed song is a Beatles song and the system uses the sample style table provided above, a style slider position of 50% would match artists who have the styles British Invasion, Innovators, Rock or Pop with a weighting of at least 5. Those skilled in the art will understand that the "more like" function is constrained by the style categories that are associated with the seed song artist. However, the matching weightings for those style categories are determined by the position of the style slider.

At this point, it should be appreciated that the style slider positions, which are determined by the system provider, work with any style table, regardless of the weighting scale used. For example, if a style table uses a weighting scale of 1-100, a style slider position of 60% will search for artists having the requisite styles with a weighting of at least 60. This allows playlist publishers and others to create compatible style tables using any size weighting scale.

After the matching artists are identified, the system compiles a list of the songs performed by those artists. In order to limit the number of songs that may be included in the group, the system can be designed to select only a predetermined number of songs by each artist.

At step 1020 the system performs a random sort of the songs that were identified in step 1015. At step 1025 the system picks the first ten songs from the sorted group of songs and displays a list of those 10 songs to the subscriber. This is illustrated in FIG. 8. In the preferred system, the style categories and weightings that are used in the search are not displayed to the subscriber.

At step 1030 the system determines whether the subscriber has accepted the songs by activating the yes button on the more like panel. If so, the method proceeds to step 1035, the 10 songs in the list are added to the current playlist, and the method 1000 ends. Instead of adding all 10 songs to the playlist, an alternative user interface may be provided in order to allow the subscriber to specify which of the 10 listed songs should be added to the playlist.

If the subscriber does not activate the yes button, the method proceeds to step 1040 and determines if the sub-

scriber has activated the no button on the more like panel. If so, the method 1000 ends.

At step 1040 the system may determine that the subscriber has again activated the more style button. If this occurs, the system proceeds to step 1045 and determines the position of the style slider. If the position of the style slider is the same as before, the system returns to step 1020 and resorts to the same group of songs. If the subscriber moved the style slider before reactivating the more style button, the system returns to step 1015 and identifies other songs that match the new criteria.

Although the preferred system only implements artist level style tables, the system could also implement album level style tables and song level style tables. Those skilled in the art will appreciate that using "low level" style tables (i.e., artist level) reduces the amount of editorial work required to classify the music available in the system. While requiring more editorial work, higher level style tables (e.g., album or song) allow the style tables to more accurately reflect the styles associated with songs or albums. This is advantageous because it can be used to take into account artists whose styles have varied over their career or from album to album.

If more than one level of style tables is provided, the system may be designed to implement an "aggregation function" in the process of step 1015. Aggregation allows the system to combine one or more levels using any type of mathematical operator. For example, "adding" style levels leads to a tighter match between songs. "Multiplying" style levels results in a broader spread of songs that will match the seed song.

Although the "more like" function has been described as searching the entire audio content database, it is possible to limit the search material that is searched by the system. For example, instead of searching all published songs, the "more like" process may be used to search only new releases. This would allow a subscriber to use the "more like" function to add new music to a playlist. Those skilled in the art will understand that the source material in the audio content database may be selected or restricted in any number of ways, and that the data used to make such distinctions is maintained on the interactive network's administrative servers.

From the foregoing description of the "more like" function, those skilled in the art will appreciate that the present invention includes two means for providing context during the search. First, the style slider allows the subscriber to control the closeness of the matches provided by the "more like" function. Second, the present invention employs editorial data produced by the system operator and playlist publishers to classify the songs in the audio content database. Because new style tables may be loaded in with a playlist, the outcome of the "more like" function will vary depending on the nature of the style table and the editorial decisions made by the playlist publisher.

Finally, those skilled in the art will appreciate that the present invention provides distinct advantages over various other computer based processes that could be used to identify similar songs. For example, it is possible to implement a "more like" engine based on the computer analysis of rhythm, tempo, etc. However, such an approach would require relatively powerful computer processors, and would require that all of the songs in the audio content database be pre-analyzed. Furthermore, such a system may not be predictable, because most listeners would not equate jazz at 120 beats per minute with classical at 120 beats per minute.

The Style EQ Function

As described briefly above, the style EQ function addresses two distinct needs that arise in the interactive

network environment. These problems arise because a subscriber typically selects a playlist on the basis of a very short title, and because playlists may include a relatively large number of songs. First, the style EQ allows the subscriber to get a clearer look at what types of music are included in the playlist. The system accomplishes this by displaying an indicator for each of the predominant styles in the playlist and setting the position of the indicators to reflect the relative portion of the playlist that includes that style. This allows the subscriber to see how much music of each style is present in the playlist. Second, the style EQ feature allows the subscriber to alter the mix of the songs that are played from the playlist by adjusting one or more of the indicators. Thus, if the subscriber does not care for one of the styles in the playlist, the subscriber can decrease the amount of that style that is played. Similarly, the subscriber can boost the styles of music that he or she enjoys, which acts as a filter and does not alter the actual content of the playlist. This allows a subscriber to listen to a playlist in a variety of different ways.

FIG. 11 illustrates the screen display associated with the style EQ function provided by the preferred audio on demand system. The style EQ screen display 1100 is displayed when the subscriber selects the style EQ function from the style EQ panel on the initial screen display 400 (FIG. 4) or the playlist screen display 500 (FIG. 5). The style EQ screen display 1100 covers the bottom portion of the display. The style EQ screen display includes an on/off button 1105, an alphanumeric display 1110, and a plurality of faders 1115. The style EQ is turned on and off by activating the on/off button 1105. The alphanumeric display 1110 provides information to the subscriber.

The preferred style EQ includes eight (8) indicators, or faders 1115. Those skilled in the art will appreciate that the style EQ faders resemble a conventional graphic equalizer. However, instead of each fader being assigned to a frequency band, each fader is assigned to a particular style of music included in the playlist. This allows the faders to be used to give a subscriber a clearer picture of the types of music included in a playlist. For example, a playlist that includes rock music may simply be called "Rock". The style EQ faders may indicate that the playlist includes music that may be more specifically described as 1970s rock, 1980s rock, 1990s rock, soft rock, acid rock, heavy metal, etc.

When a playlist is loaded and the style EQ function is first turned on, the faders 1115 are positioned by the system to indicate the portion of the playlist that fits into the associated style category. The subscriber may get an idea of what is included in the playlist by using the remote control unit's directional control to highlight each of the faders. The display 1110 displays the name of the style associated with the highlighted fader.

The style EQ function also allows the subscriber to adjust the mix of songs that is played from the playlist. For example, if the subscriber dislikes acid rock and heavy metal, the subscriber can "attenuate" those styles by using the remote control unit to move those faders to their lowest position. Likewise, the subscriber can "boost" the amount of soft rock songs that are played by moving the fader upward. Those skilled in the art will appreciate that the style EQ function does not alter the content of the playlist. Instead, it merely adjusts the mix of songs that are played from the playlist. The details regarding the operation of the style EQ function and the assignment of style names to the faders are discussed below.

FIG. 12 is a flow diagram that summarizes the steps carried out by a subscriber who is using the style EQ

function. The method 1200 begins at step 1205 when the user selects a playlist. This is accomplished by using the playlist buttons on the initial screen display. After a playlist is selected the subscriber activates the style EQ screen display 900 (FIG. 9) by activating the style EQ button on the playlist screen display (step 1210). This causes the system to display the style EQ panel with the faders set to indicate the mix of songs included in the playlist.

At step 1215 the subscriber reviews the style labels associated with each fader and the proportion of songs that are described by that style. At step 1220 the subscriber determines whether to adjust the sliders in order to alter the mix of music that is played from the playlist. If so, the subscriber uses the direction control on the remote control unit to adjust one or more faders up or down (step 1225). The subscriber then proceeds to step 1230 and dismisses the style EQ panel. If at step 1220, the subscriber decides not to adjust the faders, the subscriber proceeds to step 1230 and dismisses the style EQ panel.

FIG. 13 is a flow diagram illustrating the style EQ function of the present invention as implemented in a program module running on a headend server, which forms a part of the interactive network. The method 1300 begins at step 1305 by playing a playlist that has been selected by the subscriber.

At step 1310 the system identifies the predominant styles of music that are included in the playlist. Those skilled in the art will appreciate that this step may be accomplished in a variety of ways. In the preferred system, the style information used by the style EQ function is provided by the publisher of the playlist, and is loaded into the system when the playlist is selected. In this case, the playlist style data defines the style categories that will be associated with each of the faders and provides the initial settings for the faders.

In an alternative embodiment, the system may assign style categories to faders by reading the style tables (provided in conjunction with the "more like" function) and assigning the predominant style categories to the faders. The style tables would provide the information necessary to determine how many songs are associated with each style, and the relative portions of the playlist that are described by each of these styles.

Once the predominant styles have been identified, the system proceeds to step 1315 and assigns the styles to the faders. As described above, the style EQ function in the preferred system includes 8 faders. Those skilled in the art will appreciate that there are no inherent limitations on the number of faders (and associated styles) that can be used in conjunction with the style EQ function.

Those skilled in the art will appreciate that either method allows the fader labels to be determined by the music in each playlist. This avoids the problems that would arise if the system defined only a fixed number of style labels that could be assigned regardless of the types of music in a playlist. The present invention allows broad labels to be used for playlist containing a broad mix of styles and specific labels to be used for narrower playlists. For example, if a playlist included all of the music in the world, the fader labels would be broad categories, such as classical, jazz, country, rock, etc. Similarly, if a playlist includes only jazz music, the style EQ function will assign meaningful jazz related subcategories to the faders.

Defining the labels on the basis of the content of each playlist also ensures that each fader label represents music that is in fact included in the playlist. This avoids the problems of having a fader label without having any music to go with it. For example, it would be misleading if there

is a standard label for jazz music, but a playlist does not include jazz music. This would lead to the subscriber thinking he can increase the amount of jazz music played from the playlist, when in fact the playlist includes no jazz music.

At step 1320 the system adjusts the position of the faders to reflect the relative portion of songs that are described by the style associated with each fader. This allows the subscriber to see about what portion of the playlist is represented by each style of music.

At step 1325 the system determines whether the subscriber has moved any of the fader from their original positions. If not, the method proceeds to step 1330 and plays all of the songs in the playlist in order.

If at step 1325 one or more of the faders have been moved, the system goes to step 1335 and adjusts the mix of the music that is played from the playlist. Those skilled in the art will appreciate that the style EQ feature does not alter the playlist by adding or removing songs. Instead it simply adjusts the mix of songs that are played from the playlist.

In the preferred system, the percentage of the songs that have each style is determined by the following equation:

$$\% \text{ of style} = (\text{value of style}) / (\text{total values for all styles})$$

In this equation, the value of each style is determined by the position of the fader and the number of positions on each fader. For example, on the style EQ panel of FIG. 10, each fader has 10 positions. If we refer to each of the faders as styles 1-8 (from left to right), the total values for all styles is 51 (which is the sum of $9 + 3 + 7 + 6 + 4 + 6 + 7 + 9$) out of a possible 80. In this example, the percentage of music with style 1 is $\frac{9}{51} = 18\%$. Similarly, the percentage of music with style 2 is $\frac{3}{51} = 6\%$.

Those skilled in the art will appreciate that an advantage of the style EQ feature is that moving a fader up or down leads to results that the user can understand. Furthermore, although the style EQ function has been described in the context of music playlist, those skilled in the art will appreciate that this aspect of the invention may be applied to many collections of material with subjective content. For example, the style EQ could be applied to a playlist that includes news stories, with faders labels such as national news, international news, business, sports, etc. This would allow subscribers to adjust the faders so that they hear more of the stories they are interested in, and less of the stories they are not interested in.

From the foregoing description, it will be appreciated that the present invention provides efficient systems and method for selecting and playing music based on its subjective content.

The foregoing methods of the present invention may conveniently be implemented in a program module that is based upon the flow charts in FIGS. 10 and 13. No particular programming language has been indicated for carrying out the various procedures described above because it is considered that the operations, steps and procedures described above and illustrated in the accompanying drawings are sufficiently disclosed to permit one of ordinary skill in the art to practice the instant invention. Moreover, there are many computers and operating systems which may be used in practicing the instant invention and therefore no detailed computer program could be provided which would be applicable to these many different systems. Each user of a particular computer will be aware of the language and tools which are most useful for that user's needs and purposes.

The present invention has been described in relation to particular embodiments which are intended in all respects to

be illustrative rather than restrictive. For example, although the present invention has been described in the context of an interactive network system, those skilled in the art will understand that the principles of the present invention may be applied to, and embodied in, any type of interactive computing device, including general purpose computers, personal computer, notebook computers, etc.

Furthermore, the program modules described in conjunction with the preferred embodiment run on the headend server, which forms a part of the interactive system. Those skilled in the art will appreciate that the system may be configured so that various program modules run on the set top terminal. For example, data associated with the current playlist and its style EQ settings could be downloaded to the set top terminal in order to increase the processing speed.

Alternative embodiments will become apparent to those skilled in the art to which the present invention pertains without departing from its spirit and scope. Accordingly, the scope of the present invention is defined by the appended claims rather than the foregoing description.

What is claimed is:

1. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items from said media server comprising the steps of:

storing on said server a plurality of programming information items and editorial data associated with said programming information items;

playing, in response to a first input signal from said input device, an initial programming information item from said plurality of programming information items;

creating, in response to a second input signal from said input device, a list of proposed new programming information items on the basis of said editorial data associated with said initial programming information item and said plurality of programming information items;

presenting on said output device said list of said proposed new programming information items; and

adding, in response to a third input signal from said input device, said proposed new programming information items to a playlist.

2. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein said editorial data comprises subjective content and weighting information associated with each of said programming information items, and wherein creating a list of proposed new programming information items comprises the steps of:

retrieving said editorial data associated with said initial programming information item;

identifying other programming information items having similar editorial data; and

selecting a predetermined number of said other programming information items having similar editorial data.

3. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein said editorial data comprises subjective content and weighting information associated with the author of each of said programming information items, and wherein creating a list of proposed new programming information items comprises the steps of:

identifying the author of said initial programming information item;

retrieving the editorial data associated with said author; identifying other authors having similar editorial data; and selecting a predetermined number of programming information items by authors having similar editorial data.

4. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein creating a list of proposed new programming information items comprises the steps of:

determining the setting of a matching closeness indicator; and

selecting new programming information items by comparing said editorial data associated with said initial programming information item with said editorial data associated with said plurality of programming information items, said comparison being based on the setting of said matching closeness indicator.

5. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein said interactive media distribution system comprises an interactive television system.

6. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein said server is a continuous media server.

7. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein said output device is a television monitor and said input device is a remote control unit.

8. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein said programming information items comprise musical selections.

9. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein said programming information items comprise movies.

10. In an interactive media distribution system including a media server, a distribution network, an output device and an input device, a method for selecting programming information items as recited in claim 1, wherein said programming information items comprise news stories.

11. In an interactive music distribution system including a server, a distribution network, an output device and an input device, a method for selecting musical selections from said server comprising the steps of:

storing on said server a plurality of musical selections and editorial data associated with said musical selections;

playing, in response to a first input signal from said input device, an initial musical selection from said plurality of musical selections;

creating, in response to a second input signal from said input device, a list of proposed new musical selections on the basis of said editorial data associated with said initial musical selection and said plurality of musical selections;

presenting on said output device said list of said proposed new musical selections; and

adding, in response to a third input signal from said input device, said proposed new musical selections to a playlist.

12. In an interactive music distribution system including a server, a distribution network, an output device and an input device, a method for selecting musical selections as recited in claim 11, wherein said editorial data comprises subjective style and weighting information associated with each of said musical selections, and wherein creating a list of proposed new musical selections comprises the steps of: 5
 retrieving said editorial data associated with said initial musical selection;
 identifying other musical selections having similar editorial data; and
 selecting a predetermined number of said other musical selections having similar editorial data.

13. In an interactive music distribution system including a server, a distribution network, an output device and an input device, a method for selecting musical selections as recited in claim 11, wherein said editorial data comprises subjective style and weighting information associated with an album on which each of said musical selections was released, and wherein creating a list of proposed new musical selections comprises the steps of: 10
 identifying the album on which said initial musical selection was released;

retrieving said editorial data associated with said album;
 identifying other albums having similar editorial data; and
 selecting a predetermined number of musical selections from said other albums having similar editorial data. 15

14. In an interactive music distribution system including a server, a distribution network, an output device and an input device, a method for selecting musical selections as recited in claim 11, wherein said editorial data comprises subjective style and weighting information associated with the artist who performed each of said musical selections, and wherein creating a list of proposed new musical selections comprises the steps of: 20
 identifying the artist who performed said initial musical selections;

retrieving the editorial data associated with said artist;
 identifying other artists having similar editorial data; and
 selecting a predetermined number of musical selections performed by artists having similar editorial data. 25

15. In an interactive music distribution system including a server, a distribution network, an output device and an input device, a method for selecting musical selections as recited in claim 11, wherein creating a list of proposed new musical selections comprises the steps of: 30
 determining the setting of a matching closeness indicator; and

selecting new musical selections by comparing said editorial data associated with said initial musical selection with said editorial data associated with said plurality of musical selections, said comparison being based on the setting of said matching closeness indicator. 35

16. In an interactive music distribution system including a server, a distribution network, an output device and an input device, a method for selecting musical selections as recited in claim 11, wherein said interactive music distribution system comprises an interactive television system. 40

17. In an interactive music distribution system including a server, a distribution network, an output device and an input device, a method for selecting musical selections as recited in claim 11, wherein said server is a continuous media server. 45

18. In an interactive music distribution system including a server, a distribution network, an output device and an input device, a method for selecting musical selections as recited in claim 11, wherein said output device is a television monitor and said input device is a remote control unit.

19. A method for classifying and selecting programming information items having subjective content, comprising the steps of:

storing a plurality of programming information items;
 storing editorial data associated with said programming information items, said editorial data including a plurality of categories and weightings associating each programming information item with said categories;
 identifying, in response to a first input signal from an input device, an initial programming information item from said plurality of programming information items;
 determining, in response to a second input signal from said input device, the setting of a matching closeness indicator;
 determining matching categories for said initial programming entry, said matching categories including the categories whose weightings correspond to the position of the matching closeness indicator;
 identifying matching programming information items, said matching programming information items including said matching categories with weightings corresponding to the setting of said matching closeness indicator; and
 presenting said matching programming information items of a user. 50

20. A method for classifying and selecting programming information items having subjective content as recited in claim 19, wherein said matching closeness indicator is set in response to a third input signal from said input device.

21. A method for classifying and selecting programming information items having subjective content as recited in claim 19, wherein said programming information items comprise songs.

22. A method for classifying and selecting programming information items having subjective content as recited in claim 19, wherein said programming information items comprise news stories.

23. A method for classifying and selecting programming information items having subjective content as recited in claim 19, wherein said programming information items comprise movies.

24. A system for classifying and selecting programming information having subjective content, comprising:

a data storage device containing a plurality of programming information items and editorial data associated with said programming information items;
 an output device for providing information to a user;
 an input device for receiving input from said user; and
 a computer associated with said data storage device, said computer being configured to:
 play, in response to a first input signal from said input device, an initial programming information item from said plurality of programming information items,
 create, in response to a second input signal from said input device, a list of proposed new programming information items on the basis of said editorial data associated with said programming information items,
 present on said output device said list of proposed new programming information items, and 55

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add, in response to a third input signal from said input device, said proposed new programming information items to a playlist.

25. A system for classifying and selecting programming information as recited in claim 24, wherein said editorial data includes a plurality of style categories and weightings associated with each of said style categories.

26. A system for classifying and selecting programming information as recited in claim 25, wherein said proposed new programming information items and said initial programming selection include at least one identical style category.

27. A system for classifying and selecting programming information as recited in claim 24, wherein said programming information items comprise songs.

28. A system for classifying and selecting programming information as recited in claim 24, wherein said programming information items comprise new stories.

29. A system for classifying and selecting programming information as recited in claim 24, wherein said programming information items comprise movies.

30. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist, comprising the steps of:

loading a playlist including a plurality of programming information items;

loading editorial data associated with said plurality of programming information items;

displaying on said output device a predetermined number of indicators;

associating with each of said indicators a category from said editorial data, said indicators being positioned to indicate the portion of said plurality of programming information items corresponding to each of said categories;

adjusting, in response to an input signal from said input device, the position of at least one of said indicators;

selecting programming information items from said playlist such that the portions of said selected programming information items associated with each of said categories corresponds to the adjusted positions of said indicators; and

playing said selected programming information items on said output device.

31. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 30, wherein associating a category with each of said indicators comprises the steps of:

determining the predominant categories of said categories; and

assigning said predominant categories to said indicators.

32. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 31, wherein determining the predominant categories comprises the steps of:

identifying the categories included in said editorial data; and

determining the number of programming information items associated with each of said categories.

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33. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 30, wherein selecting songs comprises the steps of:

determining a total number of positions associated with said indicators;

determining a number of positions associated with one of said indicators; and

dividing said number of positions by said total number of positions.

34. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 30, wherein said programming information items comprise songs.

35. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 30, wherein said programming information items comprise news stories.

36. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 30, wherein said programming information items comprise movies.

37. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 30, wherein said server comprises a desktop computer and said output device comprises a display.

38. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 30, wherein said input device is a remote control unit.

39. In an interactive system including a server, an output device, and an input device, a method for indicating the mix of programming information included in a playlist and adjusting the mix of programming information played from said playlist as recited in claim 30, wherein said video output device is a television monitor.

40. In an interactive music system including a server, a video output device, an audio output device and an input device, a method for indicating the mix of songs included in a playlist and adjusting the mix of songs played from said playlist, comprising the steps of:

loading a playlist including a plurality of songs;

loading editorial data associated with said plurality of songs;

displaying on said video output device a predetermined number of indicators;

associating with each of said indicators a category from said editorial data;

setting the position of said indicators to indicate the portion of said plurality of songs corresponding to each of said categories;

adjusting, in response to an input signal from said input device, the position of at least one of said indicators;

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selecting songs from said playlist such that the portions of said selected songs associated with each of said categories corresponds to the adjusted positions of said indicators; and

playing said selected songs on said audio output device. 5

41. In an interactive music system including a server, a video output device, an audio output device and an input device, a method for indicating the mix of songs included in a playlist and adjusting the mix of songs played from said playlist as recited in claim 40, wherein associating a category with each of said indicators comprises the steps of: 10

determining the predominant categories of said categories; and

assigning said predominant categories to said indicators.

42. In an interactive music system including a server, a video output device, an audio output device and an input device, a method for indicating the mix of songs included in a playlist and adjusting the mix of songs played from said playlist as recited in claim 41, wherein determining the predominant categories comprises the steps of: 20

identifying the categories included in said editorial data; and

determining the number of songs associated with each of said categories.

43. In an interactive music system including a server, a video output device, an audio output device and an input 25

device, a method for indicating the mix of songs included in a playlist and adjusting the mix of songs played from said playlist as recited in claim 40, wherein selecting songs comprises the steps of:

determining a total number of positions associated with said indicators;

determining a number of positions associated with one of said indicators; and

dividing said number of positions by said total number of positions.

44. In an interactive music system including a server, a video output device, an audio output device and an input device, a method for indicating the mix of songs included in a playlist and adjusting the mix of songs played from said playlist as recited in claim 40, wherein said input device is a remote control unit.

45. In an interactive music system including a server, a video output device, an audio output device and an input device, a method for indicating the mix of songs included in a playlist and adjusting the mix of songs played from said playlist as recited in claim 40, wherein said video output device is a television monitor.

* * * * *

United States Patent [19]

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Grewe et al.

[45] **Date of Patent:** Sep. 23, 1997

[54] **DATA PROTOCOL AND METHOD FOR SEGMENTING MEMORY FOR A MUSIC CHIP**

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[51] **Int. Cl. 6** G10H 1/26

[52] **U.S. Cl.** 84/609

[58] **Field of Search** 84/601, 602, 609-614, 84/634-638, 477 R, 478; 369/49; 434/307 A, 308-313

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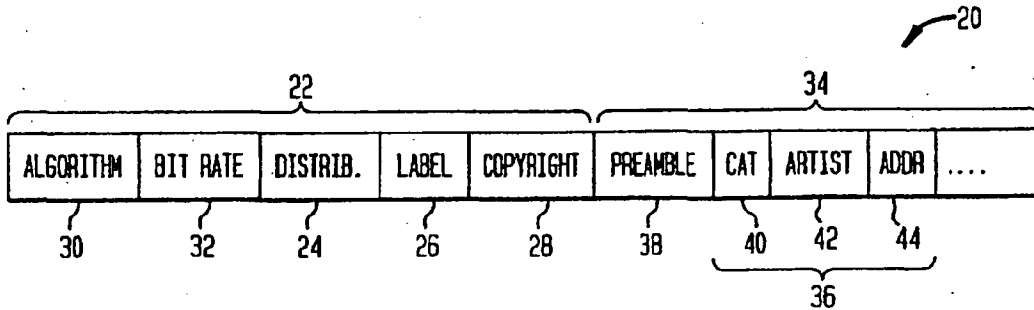
Primary Examiner—Stanley J. Witkowski

[57] **ABSTRACT**

A protocol for labeling various types of data contained in a

music chip. The protocol includes a hierarchical arrangement of headers for storing information about selections on the chip and the method in which they were coded in the memory of the chip. A global header located at the very start of memory will specify information needed to successfully decode the content of the music chip. This will include, for example, the necessary bit rate, as well as information pertaining to a specific PAC (Perceptual Audio Coding) algorithm employed in recording audio on the chip. In addition to the global header, each chip will have a section of memory allocated to a table of contents. The table of contents will include information on play times, song titles, music category and artist. Individual track selections will be listed as part of the table of contents by individual headers. The individual header contains a music field to which a track belongs, for example, classical, jazz, country, rock, etc., an artist field, and an address field which pertains to the information for addressing each track selection. Information from the headers is self-registered or automatically downloaded when a chip is loaded into a player/juke box device. The concept of self-registering general information included within the headers allows a user to select by type of music, artist, etc. for music selections made over a period of time. In addition, the present invention provides a method for segmenting memory in an integrated circuit chip wherein the integrated circuit chip is adapted for use in an audio player and the memory has pre-recorded audio stored therein. The method includes the steps of storing in a global header parameters corresponding to encoding techniques used in storing the pre-recorded audio in memory and coding in at least one individual header data fields indicative of general description information for individual tracks of the pre-recorded audio.

35 Claims, 1 Drawing Sheet



CL 000320

FIG. 1

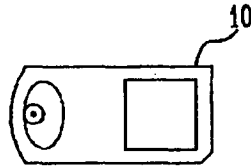


FIG. 2

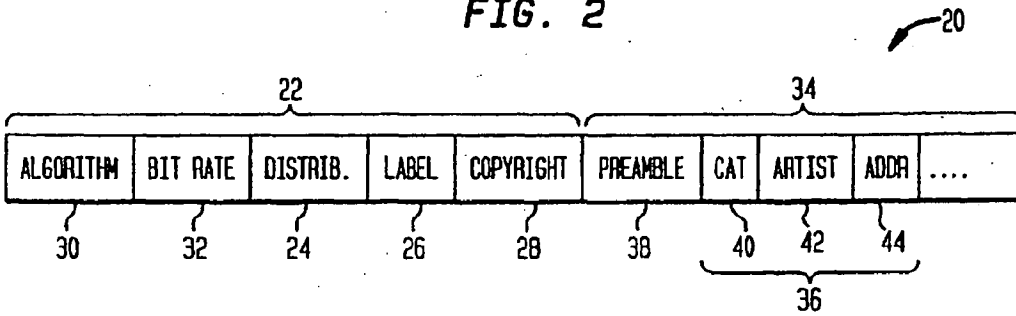


FIG. 3

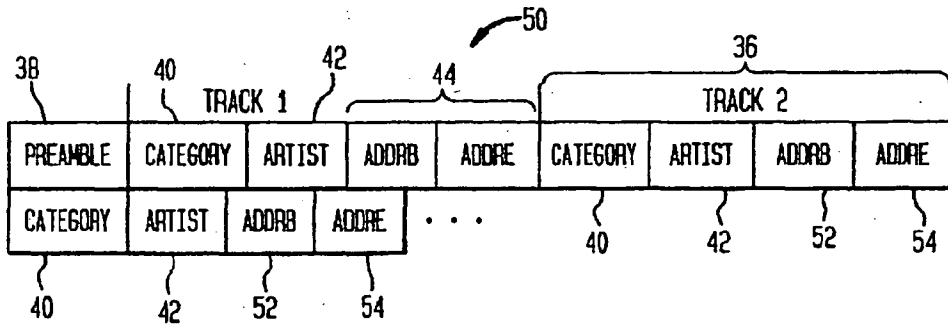
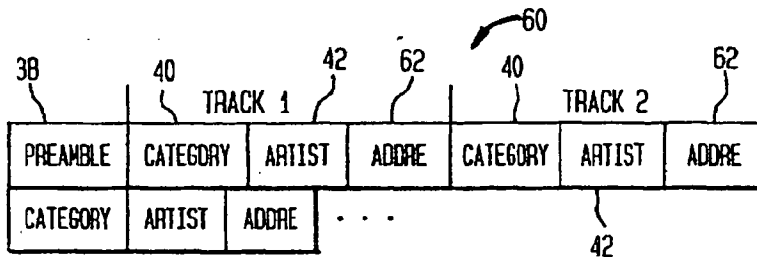


FIG. 4



CL 000321

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**DATA PROTOCOL AND METHOD FOR
SEGMENTING MEMORY FOR A MUSIC
CHIP**

FIELD OF THE INVENTION

The present invention relates to a protocol for labeling various types of data contained in a music chip, and more particularly to a data protocol that contains a hierarchical arrangement of headers.

BACKGROUND OF THE INVENTION

A variety of recording media exist today for the storage of consumer directed pre-recorded music and other audio applications. These media include CD-ROM (Compact Disc Read Only Memory), DAT (Digital Audio Tape) and traditional magnetic cassette audio tape, just to name a few. Of the above technologies, the compact disc format has steadily increased in popularity and gained consumer approval due to the high sound quality of the digitally stored audio, as well as ease of use.

Compact discs and other formats, however, have some significant disadvantages. For one, compact discs do not normally include the ability to register the content of the information stored on disc prior to selection at the player. In other words, in order to gain any information regarding the contents of a particular music selection, that selection will first have to be manually selected at the player. In the alternative, some CD players may be manually programmed to play certain selections based upon user input. In either circumstance, however, there is no way to automatically search and play music by category, for example, by mist, music type, etc., unless a user has prior knowledge with regard to the selection. Such knowledge must include at a minimum the precise location of a selection on the recording medium, a way in which to direct the player apparatus to that location, and a searchable index keyed to the selection and the locations. Largely because of limitations in the recording medium, many of these functions cannot be accomplished cost effectively or efficiently. It is therefore an object of the present invention, to provide a storage format for pre-recorded music that is easily selectable by a user in regard to general content.

SUMMARY OF THE INVENTION

The present invention is a protocol for labeling various types of data contained in a music chip. The data protocol includes a hierarchical arrangement of headers for storing information about selections on the chip and the method in which they were coded in the memory of the chip. A global header located at the very start of memory will specify information needed to successfully decode the content of the music chip. This will include, for example, the necessary bit rate, as well as information pertaining to the specific encoding algorithm employed in recording audio on the chip.

In addition to the global header, each chip will have a section of memory allocated to a table of contents. The table of contents will include information on play times, song titles, music category and artist. Individual track selections will be listed as part of the table of contents by individual headers. The individual header contains a music category to which a track belongs, for example, classical, jazz, country, rock, etc., the artist, and information for addressing each track selection. Information from the headers is self-registered or automatically downloaded when a chip is loaded into a player/juke box device. The concept of self-

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registering general information included within the headers allows a user to make selections by type of music, mist, etc. which is to be played over a period of time.

BRIEF DESCRIPTION OF THE FIGURES

For a better understanding of the present invention, reference may be had to the following description of exemplary embodiments thereof; considered in conjunction with the accompanying drawings, in which:

FIG. 1 shows a top plan view of one preferred embodiment of a music chip used in connection with the present invention data protocol;

FIG. 2 shows one preferred embodiment of the present invention data protocol utilizing a hierarchical arrangement of headers;

FIG. 3 shows one preferred implementation of an addressing scheme contained within individual headers;

FIG. 4 shows another preferred implementation of an addressing scheme contained within the individual headers.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to FIG. 1, there is shown one preferred embodiment of a music chip 10, for use with the present invention data protocol. The music chip 10 is essentially a memory component which is adapted to be received into an accompanying solid state audio player for playing music contained on the chip. The physical characteristics of the chip 10 are that of a device of approximately 2.5"x1.125"x0.25" and made of a rugged ABS plastic (acrylic butyl styrene) or other like material. The relatively modest sized music chip device will have significant advantages over compact discs and other media with regard to transportability and storage. Memory and interface circuitry of the music chip 10 are embedded within the package. The memory of the music chip 10 contains prerecorded music or other like audio material stored in a compressed digital format.

Referring to FIG. 2, there is shown one preferred representation for the present invention memory configuration and format of a data protocol 20 used with the music chip 10. The data protocol 20 is essentially a standardized format for obtaining addressing and music selection information stored on the music chip 10. Each music chip 10 is encoded with a global header 22 at a starting address of memory, presumably at address 0x0. The global header 22 contains general information about selections on the chip and the method in which they were coded, among other things. More specifically, the global header 22 will contain the distributor of the music 24, record label 26 and perhaps copyright information 28. This information will be displayable (and/or audible) on a display device associated with the audio player. Also contained in the global header 22 will be parameter information that specifies the manner in which the music found on the music chip 10 was encoded, i.e., the specific encoding algorithm 30 employed.

The parameter information of the global header 22 is advantageously included because as compression technology evolves, it may be possible to encode more on a single chip using different algorithms, and almost certainly at different bit rates. Thus, rather than "freeze" the compression algorithm to its current quality using a specific bit rate, it will be more cost effective to generate a specific algorithm release for each chip. This would allow an album from a specific artist introduced today to use 128 Kbps while an album released at some future date from the same artist could utilize a different algorithm that would play at perhaps 32 Kbps with the same quality that the 128 Kbps piece has at present.

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The global header 22, thus, will also specify the the necessary information pertaining to algorithm 30 and which can be a PAC (Perceptual Audio Coding) algorithm and bit rate 32 needed to successfully decode the contents of a music chip 10. By putting less than 12K of information, for example, into this particular section of the global header 22, the present invention avoids stranding the hardware associated with the music chip 10 to any particular software version. This versatility will allow the memory size for a given play length to be reduced over time, thus, providing a means to reduce the price per chip or increase margins.

As mentioned, the global header 22 contains information about the selections on the chip and the manner in which they were coded. This and other header information are accessed once upon power-up or insertion of the music chip into an associated audio player in order to determine the available track selection of the chip. Header information pertaining to each track is read subsequently in cueing up the chip and navigating between individual track selections.

In addition to the global header 22, each chip will have a section of memory therein allocated to what amounts to a table of contents 34. Track selections will be listed as part of this table of contents by individual headers 36. The table of contents 34 will include information on play times, song titles, music category and artist. The information contained in the table of contents 34 allows the chip contents to be self-registered, i.e., downloaded, upon insertion into an audio player/juke box device.

Referring once again to FIG. 2, an exemplary representation for the table of contents 34 including individual headers 36 is shown immediately following the global header 22. A preamble field 38 is shown preceding the individual headers 36, wherein the preamble may include play times and song titles as has been discussed. The preamble field 38 or global header 22 may also include other information as memory costs prove to be less restrictive. Examples of additional information which may be includable on the memory chip include graphics data corresponding to the prerecorded music, such as album artwork, and printed song lyrics, each of which may be viewed on a display device associated with the audio player. The display device may be a display window on the player or a display at a remotely viewable device, such as a remote control.

An individual header 36 is broken into sections and contains a category field 40, an artist field 42, and address field 44 for each track selection. The category field 40 designates a type of music associated with each individual track, for example, classical, jazz, country, rock, etc. The concept of storing specific track information within an individual header 36 allows a user to select music according to a categorized type of music, by artist, or combinations of both, as well as other criteria. For instance, a user may randomly select from the category of country western songs to be played over the course of an evening. On the other hand, the user could also request to hear songs from a specific mist, for example, Billy Joel.

The category field 40 (CAT) of the individual header 36 will correspond to a standardized numbering scheme for types of music. The category field 40 includes a fixed field of predetermined length having some reasonable limit—for example, a field of eight binary encoded bits corresponding to 256 possible categories. Examples of three letter abbreviations and corresponding category numbers for some standard music types are as follows: Classical (CLS=0); Country (CTY=1); Gospel (GOS=2); Jazz (JAZ=3); Popular (POP=4); Rap (RAP=5); Reggae (REG=6); Rhythm and

Blues (RNB=7); and Rock (ROC=8). The list will, of course, be further developed to include various recognized music types.

The specification of bit assignments to each music type is intended to be standardized and periodically reviewed to accommodate new music types. Specification of the category field 40 and bit assignments therefor would most likely include input from music distributors, as well as the audio player hardware manufacturers.

Also included within the individual header 36 is the artist field 42, which may be encoded in one of two different ways. In a first technique, a unique bit assignment would be given to each recognized artist in a similar manner to the assignment of category field 40. This method, however, will necessitate an extremely large field in order to include an almost boundless list of musical artists. In addition, this coding technique will present a formidable challenge in keeping the artist encodings up to date as new artists emerge.

A second approach, which is perhaps more efficient, is to implement a procedure for abbreviating an artist's name and then encode each character of the abbreviation. As an example, an abbreviation for the artist Whitney Houston might be encoded as follows:

EX: Whitney Houston → WHOUST = 23/8/15/21/19/20
where alphabetic codes are represented as {a = 1, b = 2, c = 3, ..., z = 26}

Thus, each alphabetic character would be assigned a corresponding numeric code, wherein artist names would be abbreviated up to a predetermined number of characters. The intent here is not to convey an absolute representation of the artist's name, but to provide a field that can be scanned quickly to identify selections from a particular artist with low probability of falsely selecting a track from another artist.

This kind of encoding scheme, wherein the artist's name or identity is somehow abbreviated lends itself to arithmetic coding techniques used for text compression. Arithmetic coding, however, requires a global database of possible artists to get the highest efficiency in bit assignments and also results in non-uniform word fields. For this reason, arithmetic coding utilizing non-uniform word fields may be undesirable, since implementation thereof is contrary to the concept of fixed field widths. Non-arithmetically coded abbreviations, however, may be implementable utilizing a fixed field of sufficient length to accommodate abbreviations for any of the artists.

As mentioned, an address field 44 is included as another section of the individual header 36. Two possible encoding schemes are contemplated for the address field 44. Referring to FIG. 3, there is shown a first address encoding scheme 50 for indicating track addresses of a music selection. FIG. 3 shows the preamble field 38, as well as category and artist fields 40, 42. Addressing is accomplished by explicitly specifying a begin address (ADDRB) 52 and an end address (ADDRE) 54 for each track. These addresses are read from the individual header 36 information at the start of each track. Decoding of this first address encoding scheme 50 begins with ADDR B 52 and proceeds until ADDRE 54 is reached, at which time a new track is selected. The remainder of the memory in the music chip 10 following the global header 22 and individual header 36 information will contain the actual encoded music which is stored utilizing a suitable PAC (Perceptual Audio Coding) algorithm.

Referring to FIG. 4, a second address encoding scheme 60 is represented. As with the first approach shown in FIG. 3, the instant scheme utilizes the preamble field 38, and

CL 000323

includes an individual header 36 with category and artist field 40, 42, respectively. An end address 62 is specified following the artist field 42. The second address encoding scheme 60 relies more heavily on predefined, fixed width header fields and eliminates the need to specify both begin and end addresses (only one of which is supplied). Advantageously, this is more efficient in terms of storage requirements and accessing time, since only one address need be accessed for each track. By utilizing fixed field widths, the encoded music data corresponding to Track 1 of a music chip is known to begin at the end of the complete header information, i.e., global header 22+ preamble field 38+ individual headers 36. Thus, the address field for Track 1 need only specify the end address 62, since the begin address is already known or implied. A begin address for subsequent tracks is computed as the end address 62 of the preceding track on the chip, plus one address location, i.e., one more than the end address of the preceding track.

If a random play feature of tracks is desired, this can be achieved by indexing to the address field of the appropriate header 36 of a preceding track and adding one to recover a begin address for the desired track. The address field for the last track on a music chip 10 will be encoded with an "End-of-ROM" indicator in order to signify that no music content exists beyond that selection.

It will of course be understood, that the address field of the present embodiment encoding scheme can also be equivalently encoded as the begin address of the next track, wherein the end address of the present track is implied. This approach is somewhat less intuitive than providing an end address 62, as previously discussed, in that the address information contained in a specific header does not explicitly pertain to the track in which it is encoded.

The present invention data protocol for a music chip 10 enables general information regarding specific music selections to be quickly and easily accessed. In a preferred embodiment of the invention, the headers, i.e., global and individual are encoded with fixed field widths to eliminate the need for explicitly numbering each track. The header information for a track, n, can then be accessed at the following address:

$$[\text{global header width}] + \{(n-1)(\text{individual header width})\}$$

where $n = \text{Track 1, } \dots, \text{Track N.}$

By supplying general information regarding the contents of a music chip 10 within a hierarchical arrangement of global and individual headers, 22 and 36 respectively this general information can be easily downloaded to a jukebox or home player, wherein a user may access that information without having to manually program any hardware. Music selections are then easily accomplished on the basis of artist, type of music, or combinations of both, thus allowing for increased flexibility in the making of single or multiple music selections.

Of course a significant concern in the implementation of the present invention data protocol hierarchical header arrangement is the amount of memory space on the music chip 10 which is lost in providing space for the headers. At present the standard music chip 10 includes in excess of 20 M-bytes of Read Only Memory (ROM). Employing the encoding algorithm at present day processing speeds, this translates to approximately 45 minutes of usable playing time per chip. At an average of 3 minutes per track, a music chip can accommodate approximately 15 or more tracks. The memory required for storage of the 15 accompanying headers for each of the tracks is envisioned to be significantly less than 1% of the memory capacity of the music

chip 10. Accordingly, the required memory space for storage of the header arrangement will not adversely affect the overall storage capacity of the music chip 10, and will at the same time provide enhanced selectivity for the user.

From the above, it should be understood that the embodiments described, in regard to the drawings, are merely exemplary and that a person skilled in the art may make variations and modifications to the shown embodiments without departing from the spirit and scope of the invention. All such variations and modifications are intended to be included within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A data format for use in an audio system wherein pre-recorded music is digitally encoded in memory of an integrated circuit music chip, and said music is decoded and reproduced by means of an associated audio player, said data format for storing information pertaining to the contents of said music chip, wherein individual tracks of audio are stored in designated locations in said music chip, said data format including:

first header having parameters stored therein for use by said audio player in decoding said digitally encoded music stored in said memory; and

at least one second header, said second header including selectable categorical information relating to said individual tracks of audio stored in said memory.

2. The data format of claim 1, wherein said first header includes a bit rate used for decoding said contents of said memory.

3. The data format of claim 1, wherein said first header specifies an algorithm used to encode said contents of said memory.

4. The data format of claim 1, wherein said second header includes a data field designating a category of music corresponding to one of said individual tracks of audio stored on said music chip.

5. The data format of claim 1, wherein said second header includes a data field having stored therein a code representative of an artist, said artist having a work included as a corresponding one of said individual tracks of audio.

6. The data format of claim 1, wherein said second header includes addressing information corresponding to said individual tracks of audio.

7. The data format of claim 6, wherein said addressing information includes a begin and end address for each of said individual tracks of audio.

8. The data format of claim 6, wherein said second header includes data fields of fixed widths, and wherein said addressing information includes only an end address for each of said individual tracks of audio, whereby a corresponding begin address is implied.

9. The data format of claim 1, wherein said first header includes data pertaining to distribution of said pre-recorded music.

10. The data format of claim 5, wherein said code representative of said artist includes a binary coded abbreviation of said artist.

11. The data format of claim 4, wherein said category code includes a binary code corresponding to a specific music type.

12. The data format of claim 1, wherein said at least one second header includes a data field corresponding to song titles and play times.

13. The data format of claim 4, wherein said music categories are selected from the group consisting of Classical (CLS); Country (CTY); Gospel (GOS); Jazz (JAZ),

Popular (POP); Rap (RAP); Reggae (REG); Rhythm and Blues (RNB); and Rock (ROC).

14. The data format of claim 1, wherein information included in said first and second header is automatically downloadable from said music chip upon power-up.

15. The data format of claim 1, wherein said at least one second header follows said first header and said second header includes a data field designating a music category followed by a data field designating a musical artist followed by a data field designating addressing information for a corresponding one of said individual tracks of audio.

16. The data format of claim 15, wherein said addressing information includes a begin and end address for each of said individual tracks of audio.

17. The data format of claim 15, wherein said second header includes data fields of fixed widths, and wherein said addressing information includes only an end address for each of said individual tracks of audio, whereby a corresponding begin address is implied.

18. A data protocol for use in storing pre-recorded audio in memory of an integrated circuit chip, said integrated circuit chip being adapted for use with an audio player, said data protocol comprising:

global header having parameters stored therein corresponding to an encoding technique used for storing said pre-recorded audio in memory and used by said audio player in decoding said audio; and

at least one individual header having multiple data fields, said data fields including general description information about individual tracks of said pre-recorded audio.

19. The data protocol of claim 18, wherein said global header specifies a bit rate to be used in decoding said pre-recorded audio stored in memory.

20. The data protocol of claim 18, wherein said individual header includes a data field indicative of a music category for an associated track of audio.

21. The data protocol of claim 18, wherein said individual header includes a data field representative of an artist associated with said individual track.

22. The data protocol of claim 18, wherein said individual header includes addressing information for an associated one of said individual tracks.

23. The data protocol of claim 22, wherein said addressing information includes only an end address and wherein a begin address is implied.

24. The data protocol of claim 18, wherein said global header and said individual header are self-registered upon said integrated circuit chip being powered in said audio player.

25. The data protocol of claim 18, wherein said pre-recorded audio is encoded in memory immediately following said at least one individual header.

26. The data protocol of claim 18, wherein said at least one individual header follows said global header and said individual header includes a data field designating a music category followed by a data field designating a musical artist followed by a data field designating addressing information for a corresponding one of said individual tracks of audio.

27. The data protocol of claim 18, wherein said individual header includes a preamble including displayable information pertaining to song titles and play times therefor.

28. The data protocol of claim 18, wherein said individual header includes a preamble including displayable graphics relating to said pre-recorded audio.

29. The data protocol of claim 18, wherein said individual header includes displayable song lyrics.

30. The data protocol of claim 26, wherein said global header includes a bit rate used for decoding said pre-recorded music, along with displayable record label and copyright information.

31. A method of segmenting memory in an integrated circuit chip, said integrated circuit chip adapted for use in an audio player and said memory having pre-recorded audio stored therein, said method comprising the steps of:

storing in a global header parameters corresponding to encoding techniques used in storing said pre-recorded audio in memory; and

coding in at least one individual header data fields indicative of general description information for individual tracks of said pre-recorded audio.

32. The method of claim 31, further including the step of specifying in said global header a bit rate to be used in decoding said pre-recorded audio stored in memory.

33. The method of claim 31, wherein said individual header includes a data field indicative of a music category for an associated track of audio.

34. The method of claim 31, wherein said individual header includes a data field representative of an artist associated with one of said individual tracks.

35. The method of claim 31, wherein said individual header includes addressing information for an associated one of said individual tracks.

* * * * *

United States Patent [19]
Yamaura et al.

[11] **Patent Number:** **5,918,303**
 [45] **Date of Patent:** **Jun. 29, 1999**

- [54] **PERFORMANCE SETTING DATA SELECTING APPARATUS**
- [75] **Inventors:** Atsushi Yamaura; Takeo Shibukawa, both of Hamamatsu, Japan
- [73] **Assignee:** Yamaha Corporation, Japan
- [21] **Appl. No.:** 08/978,464
- [22] **Filed:** Nov. 25, 1997
- [30] **Foreign Application Priority Data**
 Nov. 25, 1996 [JP] Japan 8-314037
- [51] **Int. Cl.⁶** G10H 1/06; G10H 1/26; G10H 1/36
- [52] **U.S. Cl.** 84/609; 84/610; 84/612; 84/622; 84/477 R; 434/307 A
- [58] **Field of Search** 84/609-614, 622-625, 84/634-638, 477 R, 478, DIG. 12, 601, 602; 434/307 A

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Primary Examiner—Stanley J. Witkowski
Attorney, Agent, or Firm—Rossi & Associates

[57] **ABSTRACT**

A performance setting data selecting apparatus including: a data storing unit for storing a plurality set of performance setting data; a table for storing a correspondence between each tune name of the plurality of tunes and each set of the performance setting data stored in the data storing unit suitable for playing a tune having the associated tune name; a designating unit for designating a tune name; and a unit for reading the performance setting data corresponding to the tune name designated by the designating unit from the data storing unit by referring to the table and setting the read performance setting data.

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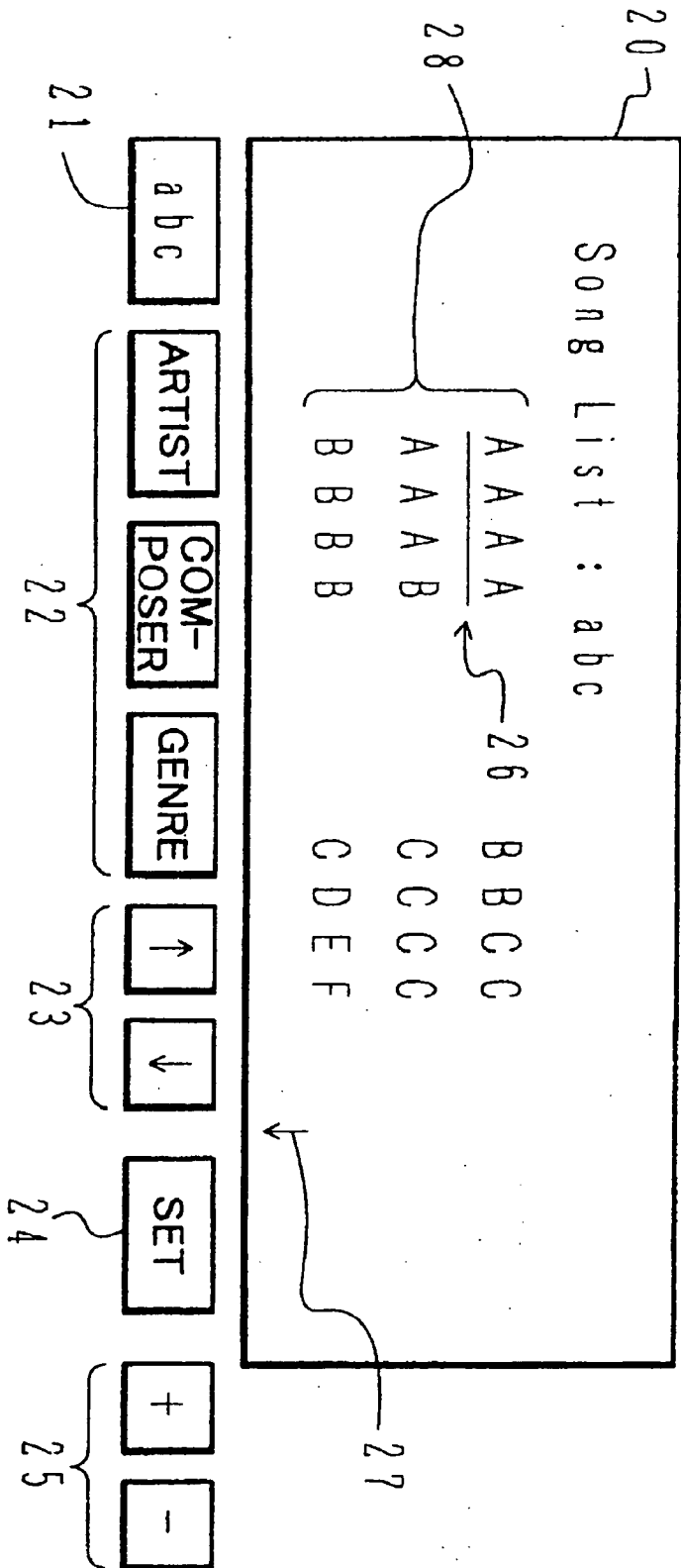
23 Claims, 13 Drawing Sheets

TUNE NUMBER (ABC ORDER)	TUNE NAME	ARTIST NUMBER	COM-POSER NUMBER	GENRE NUMBER	STYLE NUMBER	TONE COLOR NUMBER	TEMPO VALUE	HARMONY NUMBER
1	AAAA	35	5	22	10	1	150	2
2	AAAB	1	25	3	26	58	80	0
3	BBBB	18	32	11	10	36	110	4
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
400	ZZZZ	67	3	19	62	1	75	5

35 36 37 38

CL 000326

FIG. 1



CL 000327

FIG.2

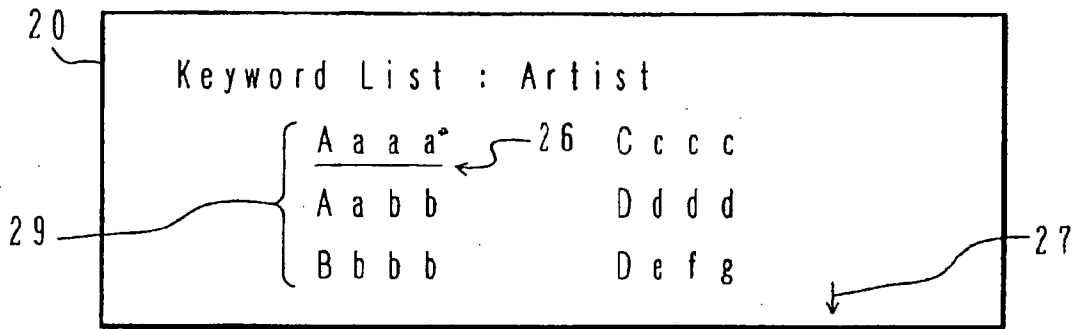


FIG.3

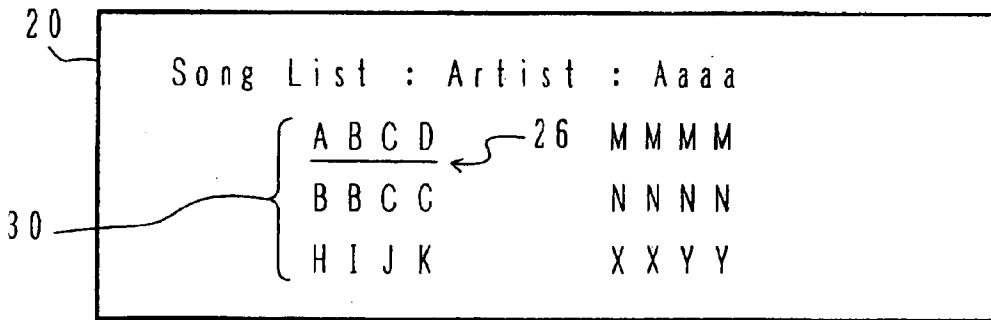
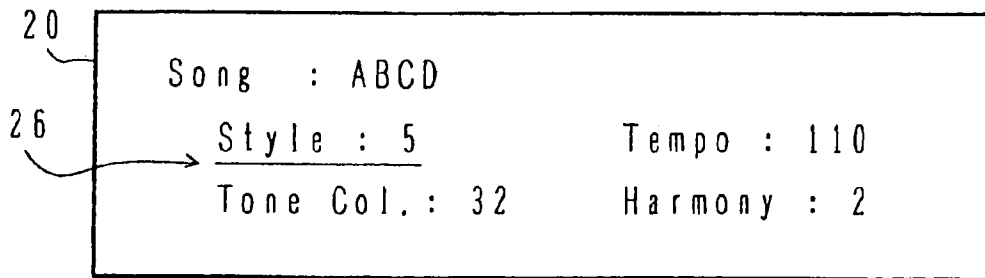


FIG.4



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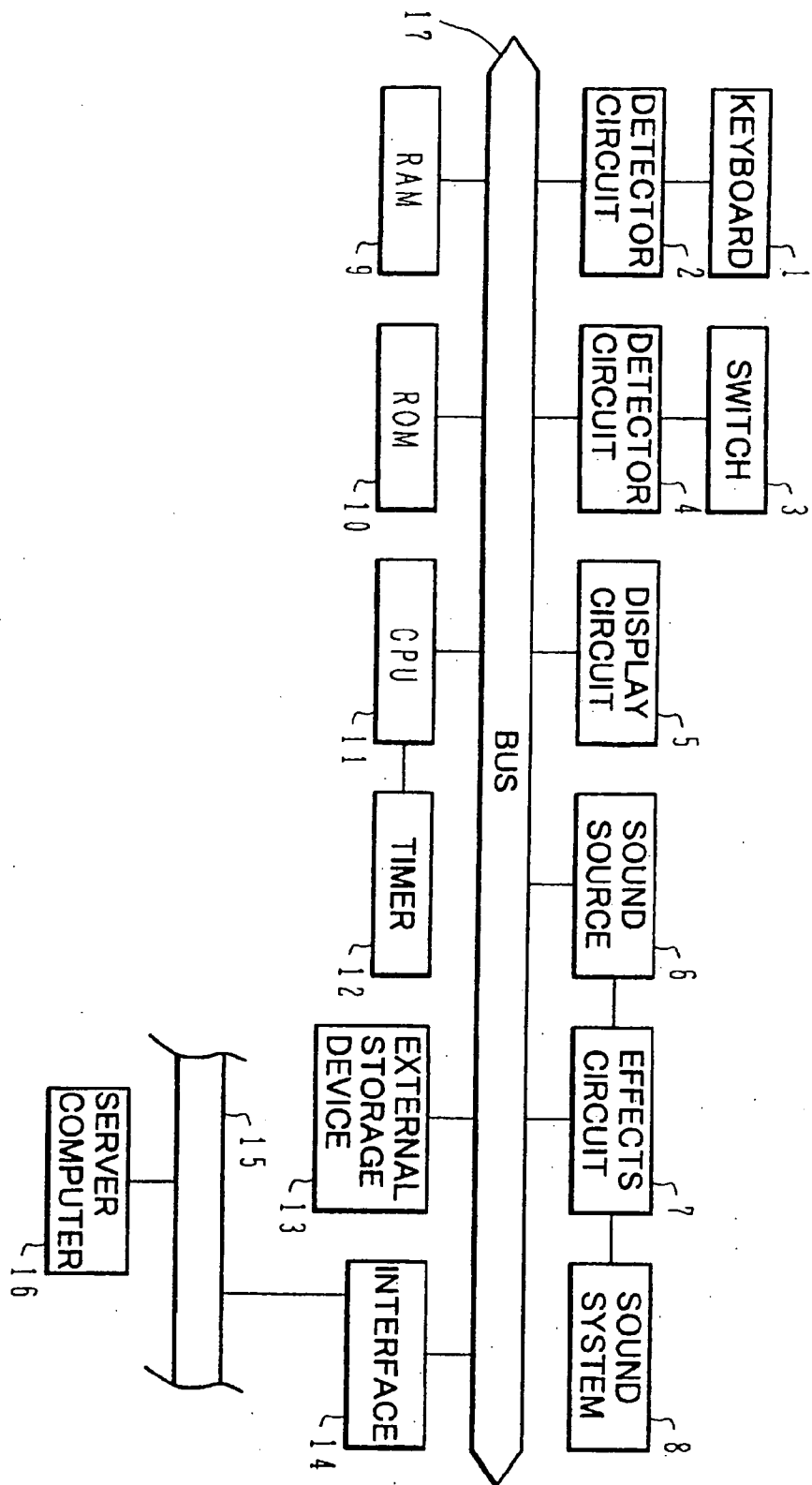


FIG. 5

FIG. 6

TUNE NUMBER (ABC ORDER)	TUNE NAME	ARTIST NUMBER	COM-POSER NUMBER	GENRE NUMBER	STYLE NUMBER	STONE COLOR NUMBER	TEMPO VALUE	HARMONY NUMBER
1	AAAAA	35	5	22	10	1	150	2
2	AAAB	1	25	3	26	58	80	0
3	BBBB	18	32	11	10	36	110	4
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
400	ZZZZ	67	3	19	62	1	75	5

35 — { TUNE NUMBER (ABC ORDER), TUNE NAME }
 36 — { ARTIST NUMBER, COM-POSER NUMBER, GENRE NUMBER }
 37 — { STYLE NUMBER, STONE COLOR NUMBER, TEMPO VALUE, HARMONY NUMBER }
 38 — { }

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FIG. 7A

ARTIST NUMBER	ARTIST NAME
1	Aaaa
2	Aabb
3	Bbbb
...	...
80	Zzzz

FIG. 7B

COMPOSER NUMBER	COMPOSER NAME
1	aaaa
2	aabb
3	bbba
...	...
62	zzzz

FIG. 7C

GENRE NUMBER	GENRE NAME
1	Rock
2	Pop
3	Dance
...	...
40	Enka

CL 000331

FIG.8A

STYLE NUMBER	STYLE DATA
1	...
2	...
3	...
⋮	⋮
100	...

STYLE NAME
INITIAL TEMPO
TIME
NUMBER OF BARS
RHYTHM PATTERN
BASE PATTERN
CODE PATTERN

FIG.8B

STONE COLOR NUMBER	STONE COLOR DATA
1	...
2	...
3	...
⋮	⋮
100	...

STONE COLOR NAME
STONE COLOR PARAMETER

FIG.8C

HARMONY NUMBER	HARMONY DATA
0	NONE
1	...
2	...
3	...
4	...

HARMONY NAME
HARMONY PARAMETER

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FIG. 9

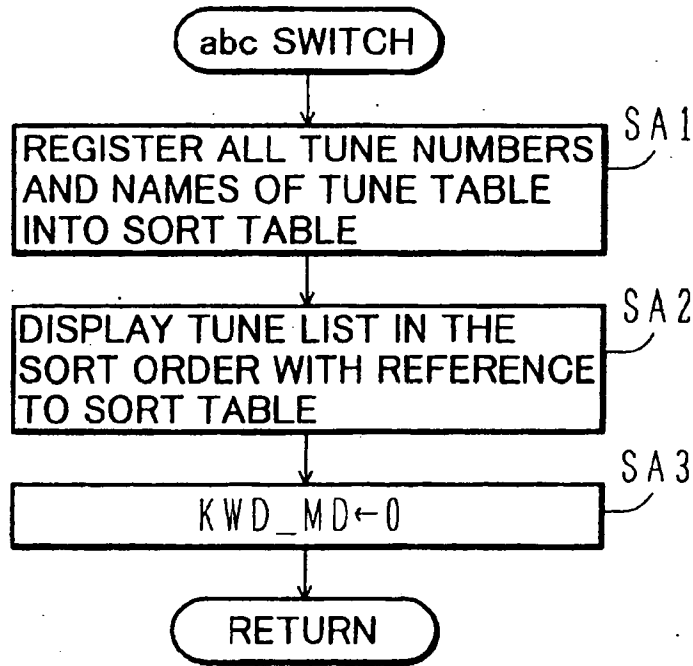


FIG. 10

P →

SORT ORDER	TUNE NUMBER	TUNE NAME
1	4	...
2	16	...
3	38	...
⋮	⋮	⋮
N	M	...

CL 000333

FIG. 11

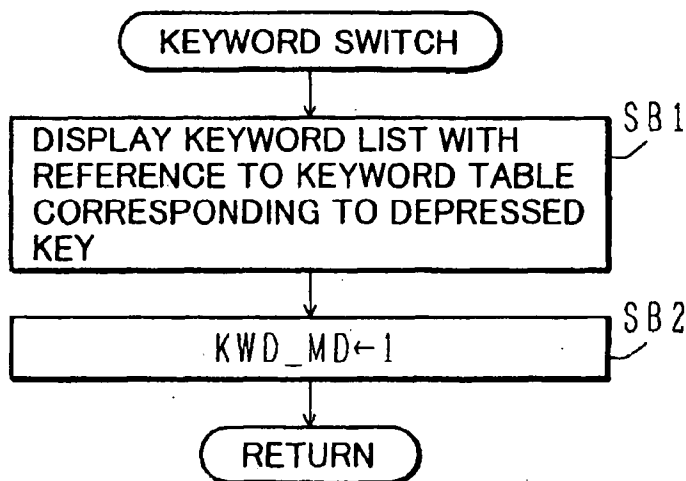
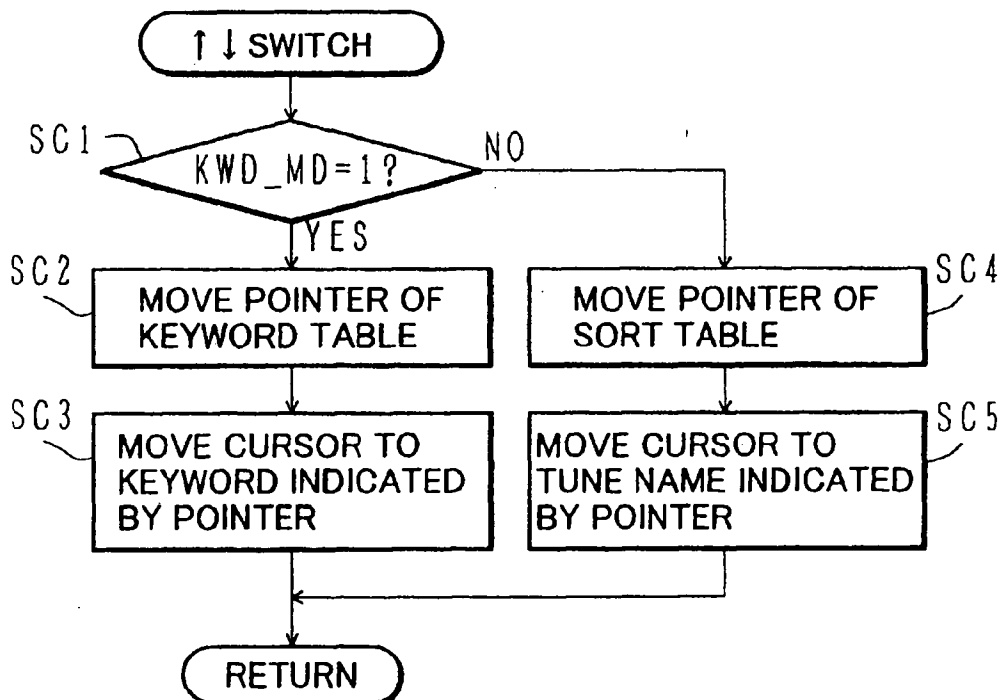
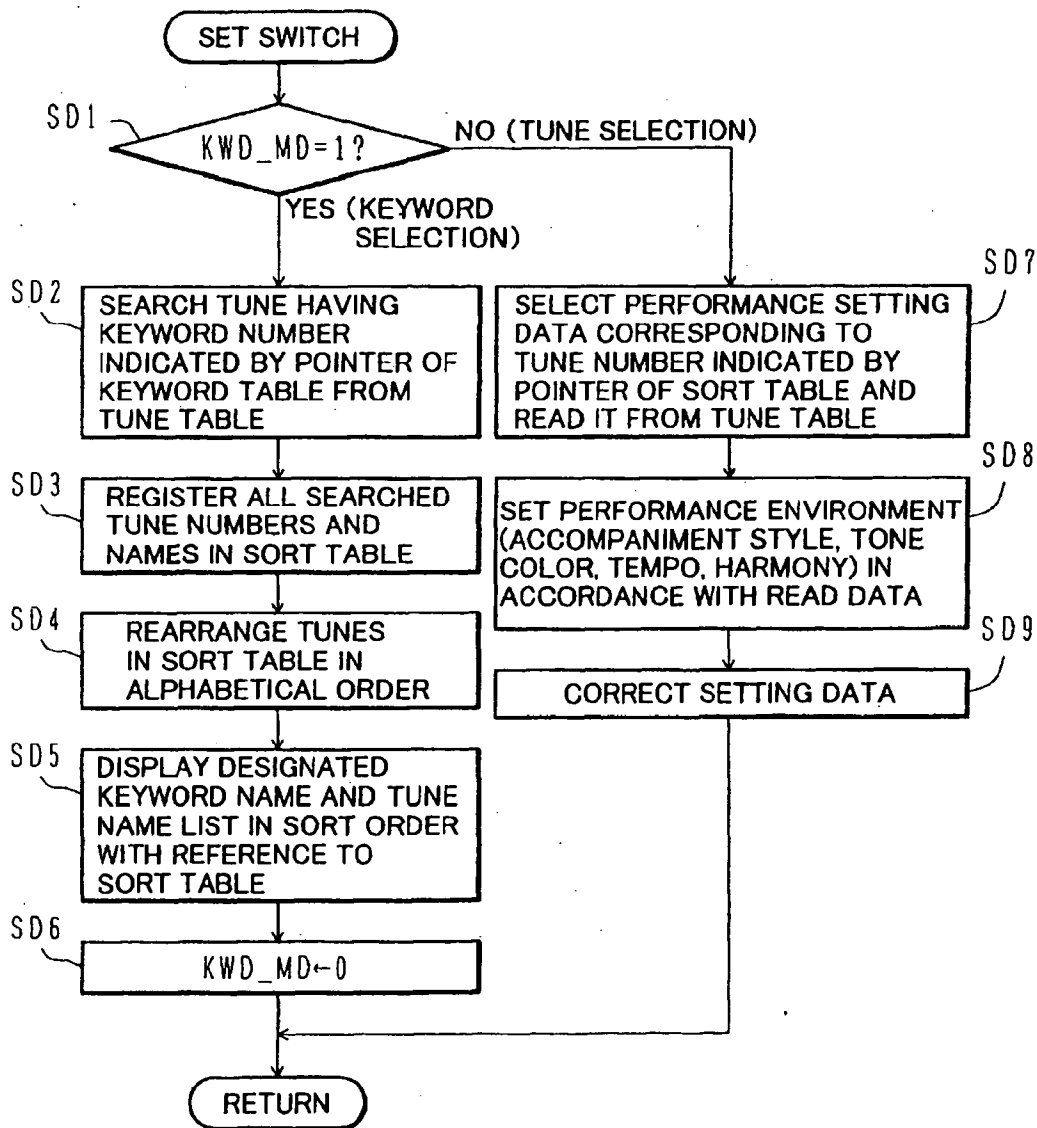


FIG. 12



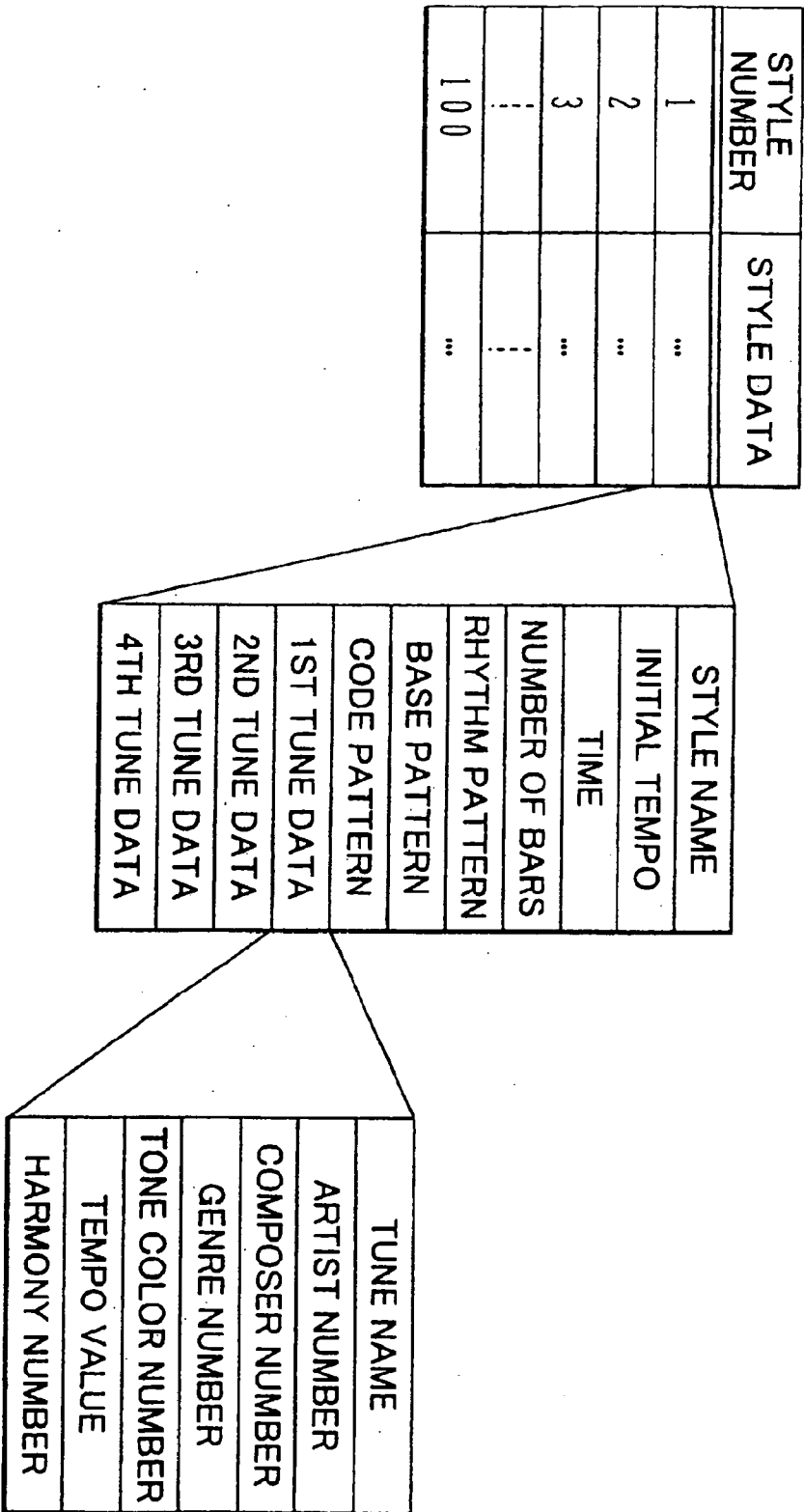
CL 000334

FIG.13



CL 000335

FIG. 14



CL 000336

FIG. 15

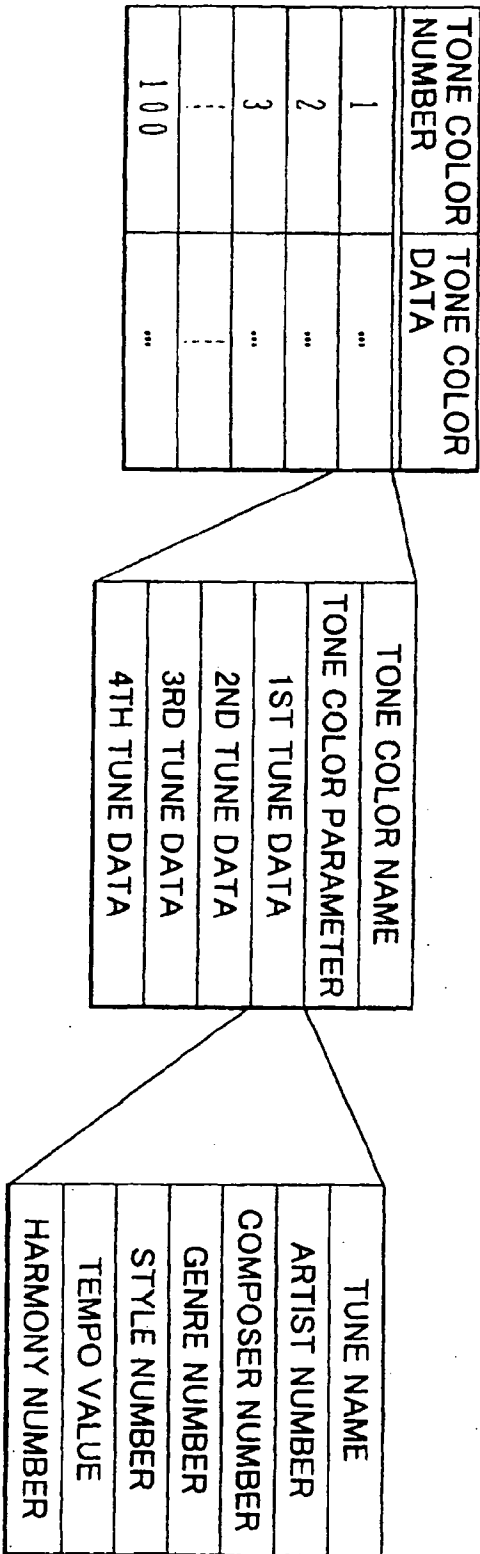
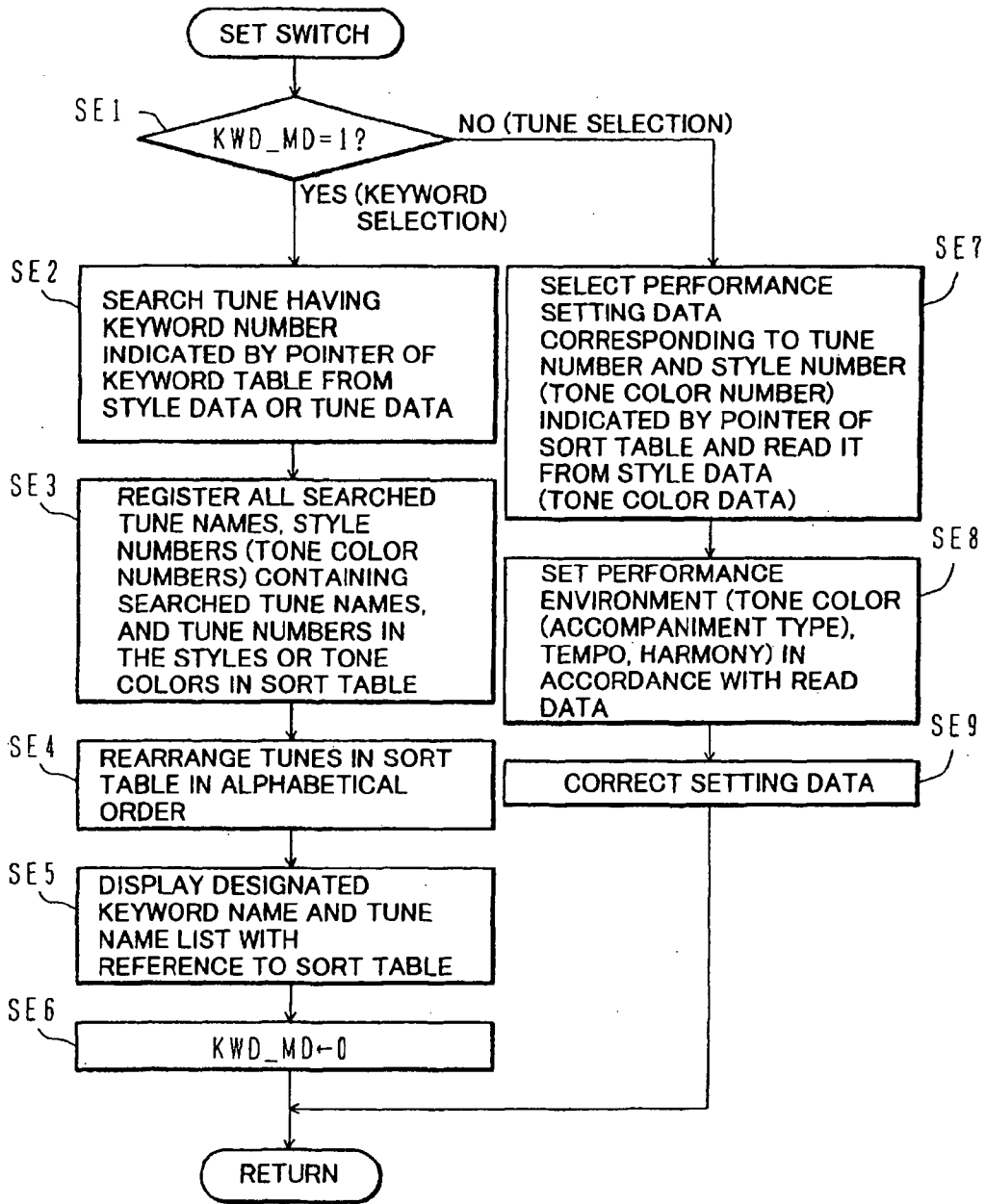


FIG. 16



CL 000338

FIG.17

SORT ORDER	STYLE NUMBER	TUNE NUMBER IN STYLE	TUNE NAME
1	2 3	1
2	5	3
3	1 2	4
⋮	⋮	⋮	⋮
N	6 8	2

CL 000339

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PERFORMANCE SETTING DATA SELECTING APPARATUS

This application is based on Japanese patent application No. 8-314037 filed on Nov. 25, 1996, the entire contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

a) Field of the Invention

The present invention relates to performance setting data selecting techniques, and more particularly to performance setting data selecting techniques which facilitate to select performance setting data necessary for the execution of tone color data or the like.

b) Description of the Related Art

A performance setting data selecting apparatus is used with, for example, an automatic accompaniment apparatus. A user can select performance setting data necessary for automatic accompaniment by using the performance setting data selecting apparatus. The performance setting data is, for example, a combination of accompaniment style, tone color, tempo, harmony and the like.

One of the methods of selecting performance setting data is a method called one touch setting (OTS). How one touch setting is used will be described.

(1) An accompaniment style is first selected. For example, [Pop Ballad Style] is selected.

(2) A switch [OTS] is depressed to select performance setting data. Upon depression of this switch, a list of four tune images matching the selected accompaniment style is displayed on a display device.

[Pop Ballad Style]

1. Richard's Solo
2. Classic Guitar
3. Orchestral Ballad
4. Piano Ballad

(3) One of the four numbers displayed on the display device is selected with a switch.

(4) The performance setting data matching the tune of the selected number is automatically set. The automatically set performance setting data is the data other than the already set accompaniment style data, and may be melody tone color data, tempo data, harmony data and the like.

When a user plays a tune, it is possible to play only a melody line, while leaving accompaniment matching the melody line to an automatic accompaniment apparatus. In this case, the tune to be played by the user is already determined. Although it is difficult for an ordinary user to manually select each set of performance setting data matching the tune to be played, one touch setting can automatically set the performance setting data.

Even if a tune to be played is already determined, it is difficult to determine which accompaniment style and tune image are to be selected in order to set performance setting data matching the tune.

Further, with one touch setting, an accompaniment style is first selected and then a tune image is selected. Even if a suitable tune image can be known, it may happen that it is not certain which accompaniment style is to be selected in order to select the tune image.

Still further, since only an abstract title of a tune image to be selected is displayed after the accompaniment style is selected, it is difficult to image the final accompaniment.

Under the presence of such problems, even if an accompaniment style and tune image a user thinks proper are

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selected, the actual automatic accompaniment may not match the played tune.

Even if it is found that the actual automatic accompaniment does not match a tune, it is difficult for the user to find more suitable settings.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a performance setting data selecting apparatus, a performance setting data selecting method, and a medium storing programs for executing the method, capable of facilitating to select performance setting data matching a tune to be played.

According to one aspect of the present invention, there is provided a performance setting data selecting apparatus comprising: means for storing a correspondence between each of a plurality of tune names and performance setting data suitable for playing each tune; means for designating the tune name of each tune; and means for setting the performance setting data corresponding to the tune name of each tune designated by said designating means by reading the performance setting data from said storing means.

According to another aspect of the present invention, there is provided a performance setting data selecting apparatus comprising: data storing means for storing a plurality set of performance setting data; a table for storing a correspondence between each tune name of the plurality of tunes and each set of the performance setting data stored in said data storing means suitable for playing a tune having the associated tune name; means for designating a tune name; and means for reading the performance setting data corresponding to the tune name designated by said designating means from said data storing means by referring to said table and setting the read performance setting data.

By designating a tune name, a user can automatically set the performance setting data suitable for the performance of the tune having the designated tune name. Since a tune is easy to be imaged from the tune name, the performance setting data a user wishes to play can be set by designating the tune name.

According to another aspect of the present invention, there is provided a performance setting data selecting apparatus comprising: storing means for storing a plurality set of performance setting data and storing a correspondence between each tune name and each set of the performance setting data suitable for playing a tune having the associated tune name; means for designating the tune name of each tune; and means for setting the performance setting data corresponding to the tune name of each tune designated by said designating means by reading the performance setting data from said storing means.

The storing means stores the performance setting data, and also stores a correspondence between each tune name and each set of the performance setting data suitable for playing a tune having the associated tune name. It is therefore possible to easily add new performance setting data. By designating a tune name, a user can automatically set the performance setting data suitable for the performance of the tune having the designated tune name.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1 to 4 show a display screen which is used for selecting performance setting data by using a performance setting data selecting apparatus according to an embodiment of the invention.

FIG. 5 is a block diagram showing the structure of the performance setting data selecting apparatus of the embodiment.

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FIG. 6 is a diagram showing the structure of a tune table.

FIGS. 7A to 7C are diagrams showing the structure of a keyword table, FIG. 7A shows the structure of an artist table, FIG. 7B shows the structure of a composer table, and FIG. 7C shows the structure of a genre table.

FIGS. 8A to 8C are diagrams showing the structure of performance setting data, FIG. 8A shows the structure of style data, FIG. 8B shows the structure of tone color data, and FIG. 8C shows the structure of harmony data.

FIG. 9 is a flow chart illustrating an operation to be executed by CPU when an abc switch is operated.

FIG. 10 is a diagram showing the structure of a sort table.

FIG. 11 is a flow chart illustrating an operation to be executed by CPU when a keyword switch is operated.

FIG. 12 is a flow chart illustrating an operation to be executed by CPU when a cursor switch is operated.

FIG. 13 is a flow chart illustrating an operation to be executed by CPU when a set switch is operated.

FIG. 14 is a diagram showing of the structure of other sets of style data.

FIG. 15 is a diagram showing of the structure of other sets of tone color data.

FIG. 16 is a flow chart illustrating another operation to be executed by CPU when a set switch is operated.

FIG. 17 shows the structure of another sort table.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1 to 4 are diagrams illustrating a method of selecting performance setting data by using a performance setting data selecting apparatus according to an embodiment of the invention. The performance setting data setting apparatus of this embodiment can automatically select performance setting data matching a tune selected by a user. This selecting method is called hereinafter song image setting (abbreviated as SIS).

FIG. 1 shows a display screen 20 of the performance setting data selecting apparatus and operation switches 21, 22, 23, 24 and 25.

An abc switch 21 is used for displaying a tune list on the display screen. For example, when this switch 21 is depressed, the names 28 of six tunes are displayed on the display screen 20 in an alphabetical order (in the order of a, b, c, . . .) or in a Japanese syllabary order (in the order of a, i, u, e, o . . . (phonetic translation of Japanese phonemes)). For example, tune names 28 are displayed in the order of AAAA, AAAB, BBBB, BBCC, CCCC and CDEF.

An arrow 27 indicates that the next page continues. Only six tune names, for example, can be displayed on the display screen 20. If there are seven or more tune names, the arrow 27 is displayed to notify a user of the presence of other tune names still not displayed on this display screen. The tune names 28 are displayed on the display screen 20, for example, in two columns. AAAA, AAAB and BBBB are displayed on the left column, and BBCC, CCCC and CDEF are displayed on the right column.

A cursor 26 displayed on the display screen 20 can be moved by a user operating a cursor motion switch 23. As the cursor is moved down at the lowest position of the left column, the cursor moves to the highest position of the right column. Conversely, as the cursor is moved up at the highest position of the right column, the cursor moves to the lowest position of the left column. The succeeding tune names can be displayed on the display screen 20 by moving the cursor to the lowest position of the right column.

Next, a method of selecting a tune will be described. A user moves the cursor 26 to the position of a tune name 28 which the user wants to select, by operating the cursor motion switch 23. In the example shown in FIG. 1, the cursor 26 is at the position of the tune name AAAA. As the user depresses a set switch 24 in this state, performance setting data matching the tune name AAAA is automatically set. The details of the performance setting data will be later described.

In addition to the abc switch 21, cursor motion switch 23 and set switch 24, the apparatus is provided with a keyword switch 22 and a numerical value change switch 25. The keyword switch 22 includes an artist switch, a composer switch and a genre switch. By operating the keyword switch 22, a user can select one of the artist, composer and genre as a keyword.

In the following description, it is assumed that an artist is selected as the keyword. Similar operations are executed also when a composer or genre is selected as the keyword.

FIG. 2 shows a display screen in the case where an artist is selected as the keyword. In order to indicate that the artist was selected as the keyword, "Keyword List: Artist" is displayed on the upper area of the display screen 20. Although the operation switches same as those shown in FIG. 1 are actually displayed on the lower area of the display screen 20, they are omitted in FIGS. 2, 3 and 4.

By operating the keyword switch 22, an artist is selected as the keyword. A list of artists are displayed on the display screen 20 in the alphabetical order or in the Japanese syllabary order. For example, six artist names 29 are displayed on the display screen 20. The artist names 29 are displayed in the order of, for example, Aaaa, Aabb, Bbbb, Cccc, Dddd, and Defg. An artist is, for example, a player. An arrow 27 indicates that there are other artists still not displayed.

Next, a method of selecting an artist will be described. A user moves the cursor 26 to the position of an artist name 28 which the user wants to select, by operating the cursor motion switch 23. In the example shown in FIG. 2, the cursor 26 is at the position of the artist name Aaaa. As the user depresses the set switch 24 in this state, a list of names of tunes to be played by the artist is displayed on the display screen 20.

FIG. 3 shows a display screen 20 in the case where the artist name Aaaa is selected and the set switch 24 is depressed. In order to indicate that the artist name Aaaa was selected, "Artist: Aaaa" is displayed on the upper area of the display screen 20.

A list of names of tunes to be played by the selected artist Aaaa is displayed on the display screen 20 in the alphabetical order or in the Japanese syllabary order. For example, six tune names 30 are displayed on the display screen 20. The tune names 30 are displayed in the order of, for example, ABCD, BBCC, HIJK, MMMM, NNNN, and XXYY.

As shown in FIG. 1, when the abc switch 21 is operated, a list of all tunes is displayed. Since the number of tunes is very large, the keyword is used for reducing the number of tunes. For example, if an artist name Aaaa is selected as the keyword, a list of tunes belonging only to the artist Aaaa is displayed as shown in FIG. 3. By using the keyword, a user can find a desired tune name quickly and easily.

Next, with reference to FIG. 3, a method of selecting a tune will be described. A user moves the cursor 26 to the position of a tune name which the user wants to select, by operating the cursor motion switch 23. In the example shown in FIG. 3, the cursor 26 is at the position of the tune

name ABCD. As the user depresses the set switch 24 in this state, performance setting data matching the tune name ABCD is displayed.

FIG. 4 shows a display screen 20 in the case where the tune name ABCD is selected as illustrated in FIG. 3. In order to indicate that the tune name ABCD was selected, "Song: ABCD" is displayed on the upper area of the display screen 20.

The contents of the performance setting data matching the selected tune name are displayed on the display screen. For example, the settings that an accompaniment style is the fifth style (Style: 5), a melody tone color is the thirty second melody tone color (Tone Col: 32), a tempo is 110 (Tempo: 110), and a harmony is the second harmony (Harmony: 2) are displayed on the display screen 20.

A user can determine whether or not the contents of the displayed performance setting data are satisfactory. If satisfactory, the set switch 24 is depressed to set the performance setting data.

If any portion of the contents of the performance setting data is to be corrected, a user moves the cursor 26 to the position of the performance setting data to be corrected, by operating the cursor motion switch 23. Thereafter, the numeral value change switch 25 shown in FIG. 1 is operated to correct the numerical value of the performance setting data. Thereafter, the set switch 24 is depressed to set the corrected performance setting data. In the above manner, even if the user dislikes a portion of the contents of the performance setting data, the contents can be corrected to those the user likes.

FIG. 5 is a block diagram showing the structure of an electronic musical instrument having the performance setting data selecting apparatus of this embodiment.

A key depression detector circuit 2 detects a key operation (key depression, key release and the like) of a keyboard 1, and generates a note-on signal, a note-off signal, a key code and the like. A switch detector circuit 4 detects a switch operation of a switch 3 and generates a switch signal. The switch 3 includes the abc switch 21, keyword switch 22, cursor motion switch 23, set switch and numerical value change switch 25 shown in FIG. 1.

A bus 17 is connected to the key depression detector circuit 2 and switch detector circuit 4 as well as a display circuit 5, a sound source (tone generator) circuit 6, an effects circuit 7, a RAM 9, a ROM 10, a CPU 11, an external storage device 13, and a communication interface 14.

RAM 9 has a working area for CPU 11, including flags, buffers and the like. ROM 10 stores various parameters and computer programs. CPU 11 executes calculations and controls in accordance with computer programs stored in ROM 10.

A timer 12 is connected to CPU 11. CPU 11 is supplied with time information from the timer 12. The communication interface 14 includes a musical instrument digital interface (MIDI) and other communication network interfaces to be described later.

The external storage device 13 includes an interface via which it is connected to the bus 17. The external storage device 13 may be a floppy disk drive (FDD), a hard disk drive (HDD), a magneto-optic drive (M), a compact disk-read only memory (CD-ROM) drive or the like.

In the external storage device 13 or ROM 10, a tune table (FIG. 6), keyword tables (FIGS. 7A to 7C), performance setting data (FIGS. 8A to 8C) are stored which tables are used for setting the performance setting data. The details thereof will be later given.

The performance setting data includes performance data such as accompaniment style data (accompaniment pattern data). If the performance data is stored in the external storage device 13, the performance data is loaded from the external storage device 13 into RAM 9 to reproduce the performance data. Other performance setting data is also loaded from the external storage device 13 into RAM 9.

CPU 11 reads the performance data stored in RAM 9 or ROM 10 and supplies musical tone parameters and effects parameters to the sound source circuit 6 and effects circuit 7. CPU 11 generates the musical tone parameters and effects parameters in accordance with a note-on signal and the like generated by the key depression detector circuit 2 and a switch signal generated by the switch detector circuit, and supplies the generated parameters to the sound source circuit 6 and effects circuit 7.

The sound source circuit 6 generates musical tone signals in accordance with supplied musical tone parameters. The effects circuit 7 assigns effects such as delay and reverb to a musical tone signal generated by the sound source circuit 6, in accordance with the supplied effects parameters. The sound system 8 includes a D/A converter and a speaker, converts the supplied digital musical tone signal into an analog musical tone signal and reproduces it.

The sound source circuit 6 may use any method including a waveform memory method, a frequency modulation method, a physical model method, a higher harmonics synthesis method, a formant synthesis method, and an analog synthesizer method with a voltage controlled oscillator (VCO), a voltage controlled filter (VCF) and a voltage controlled amplifier (VCA).

The sound source circuit 6 may be configured not only by using dedicated hardware but also by using a digital signal processor (DSP) and microprograms or by using a CPU and software programs.

A single sound source circuit may be used time divisionally to form a plurality of sound generating channels, or a single sound source circuit may be used independently for each of a plurality of sound generating channels.

Without storing computer programs and various data in ROM 10, they may be stored in a hard disk loaded in HDD which is one type of the external storage device 13. By reading computer programs or the like from a hard disk and loading them in RAM 9, CPU 11 can execute operations similar to the case where computer programs or the like are stored in ROM 10. With this arrangement, addition, version-up and the like of computer programs or the like become easy.

Computer programs and various data can be stored in CD-ROM (external storage device 13). Computer programs or the like can be copied from CD-ROM to a hard disk. It becomes easy therefore to perform installation and version-up of computer programs or the like.

The communication interface 14 is connected to a communication network 15 such as a local area network (LAN), Internet and a telephone network, and via this communication network 15 to a server computer 16. If computer programs or the like are not stored in HDD, they can be down-loaded from the server computer 16. The electronic musical instrument as a server computer transmits a command for requesting a down-load of computer programs or the like to the server computer 16 via the communication interface 14 and communication network 15. Upon reception of this command, the server computer 16 distributes the requested computer programs or the like to the electronic musical instrument via the communication network 15. The

electronic musical instrument receives the computer programs or the like via the communication interface 14 and stores them in HDD to thereby complete a down-load.

FIG. 6 shows the structure of a tune table stored in RAM or the like. The tune table stores a tune number 35, a tune name 36, a keyword 37, and a set of performance setting data 38, all being associated with each other. For example, the tune names 36 of 400 tunes are stored and each tune name 36 is assigned a specific tune number 35. It is preferable that the tune names 36 are disposed in the alphabetical order or in the Japanese syllabary order, and in the ascending order of the tune numbers 35.

The keyword 37 is constituted of an artist number, a composer number and a genre number. For example, the tune number No. 1 has a tune name AAAA, an artist number No. 35, a composer number No. 5, and a genre number No. 22. Each number is an identification number of the keyword. It is possible to search a tune name having a specific keyword by using the keyword 37.

The performance setting data 38 is constituted of a style number, a tone color number, a tempo value and a harmony number. For example, if the tune number No. 1 (tune name AAAA) is selected, the style number is set to 10, the tone color number is set to 1, the tempo value is set to 150 and the harmony number is set to 2.

FIGS. 7A to 7C show the structure of the keyword table stored in RAM or the like.

FIG. 7A shows the structure of the artist table. The artist table stores an artist number and an artist name, both being associated with each other. The artist number corresponds to the artist number of the keyword 37 shown in FIG. 6. For example, eighty artist names are stored in the artist table, each artist name being assigned a specific artist number. It is preferable that the artist names are disposed in the alphabetical order or in the Japanese syllabary order, and in the ascending order of the artist numbers.

FIG. 7B shows the structure of the composer table. The composer table stores a composer number and a composer name, both being associated with each other. The composer number corresponds to the composer number of the keyword 37 shown in FIG. 6. For example, sixty two composer names are stored in the composer table. It is preferable that the composer names are disposed in the alphabetical order or in the Japanese syllabary order, and in the ascending order of the composer numbers.

FIG. 7C shows the structure of the genre table. The genre table stores a genre number and a genre name, both being associated with each other. The genre number corresponds to the genre number of the keyword 37 shown in FIG. 6. For example, the genre name includes rock, pop, dance, and Japanese country song (Enka). It is preferable that the genre numbers are disposed in the order of higher user frequency or in a group containing similar genres.

FIGS. 8A to 8C show the structure of the performance setting data stored in RAM or the like.

FIG. 8A shows the structure of style data. Each set of style data is associated with a specific style number. The style number corresponds to the style number of the performance setting data 38 shown in FIG. 6. For example, the style data includes a style name, an initial tempo, a time, the number of bars, a rhythm pattern, a base pattern, and a code (chord) pattern.

The initial tempo is different from the tempo value shown in FIG. 6. The tempo value shown in FIG. 6 is a value set when a tune name is selected in the manner described earlier.

The initial tempo shown in FIG. 8A is a tempo set not when a tune name is selected but when a style is singularly selected. Therefore, when a tune name is selected, the initial tempo is neglected and the tempo value shown in FIG. 6 is adopted.

The rhythm pattern, base pattern and code pattern each contain a plurality of pattern sections such as intro, main, fill-in and ending.

FIG. 8B shows the structure of tone color data. Each set of tone color data is associated with a specific tone color number. The tone color number corresponds to the tone color number of the performance setting data 38 shown in FIG. 6. For example, the tone color data includes a tone color name and a tone color parameter.

FIG. 8C shows the structure of harmony data. Each set of harmony data is associated with a specific harmony number. The harmony number corresponds to the harmony number of the performance setting data 38 shown in FIG. 6. The harmony number No. 0 does not have harmony data and harmony is not added. For example, it is better not to add harmony when a piano solo performance is played.

The harmony number No. 1 and following numbers have harmony data and add harmony. The harmony data includes a harmony name and a harmony parameter. Harmony parameters include information on how many musical tones having what degree are added to each melody tone to be played by a player, and information on the volume and reproducing timings of the musical tones.

FIG. 9 is a flow chart illustrating an operation to be executed by CPU when the abc switch is operated.

At Step SA1, all tune numbers and names in the tune table (FIG. 6) are registered in a sort table. FIG. 10 shows the structure of the sort table. The sort table stores a sort order, a tune number and a tune name, all being associated with each other. The sort table shown in FIG. 10 shows an example wherein after a keyword search is performed, tune numbers and names are registered, and the contents thereof are not necessarily coincident with the contents of the sort table (correspondence between sort order and tune number) at this Step. For example, if four hundred tunes are registered in the tune table shown in FIG. 6, all four hundred tune numbers and names are registered in the sort table.

If the tune names are disposed in the tune table shown in FIG. 6 in the alphabetical order or in the Japanese syllabary order, then the sort order and tune number having the same serial number are registered in the sort table when the abc switch is operated. However, if the tune names are not disposed in the tune table shown in FIG. 6 in the alphabetical order or in the Japanese syllabary order, the tune names are sorted in the alphabetical order or in the Japanese syllabary order and thereafter they are registered in the sort table. Therefore, even if the tune names are not disposed in the tune table shown in FIG. 6 in the alphabetical order or in the Japanese syllabary order, the tune names are disposed in the alphabetical order or in the Japanese syllabary order.

At Step SA2, a list of tune names is displayed on the display device by referring to the sort table, the tune names being disposed in the sort order. The tune names are disposed on the display device in the alphabetical order or in the Japanese syllabary order (FIG. 1).

At Step SA3, a keyword mode flag KWD_MD is set to 0 to terminate the process for the abc switch. When the keyword mode flag KWD_MD takes 0, the mode is a tune selection mode, and when it takes 1, the mode is a key word selection mode.

FIG. 11 is a flow chart illustrating an operation to be executed by CPU when the keyword switch is operated.

At Step SB1, with reference to a keyword table (FIGS. 7A to 7C) corresponding to the operated switch, a keyword list is displayed on the display device (FIG. 2). If the keyword is an artist or a composer, the keywords are displayed in the alphabetical order or in the Japanese syllabary order, whereas if the keyword is a genre, they are displayed in the order of higher use frequency or in a group containing similar genres.

At Step SB2, the keyword mode flag KWD_MD is set to 1 to terminate the process for the keyword switch. When the flag KWD_MD is set to 1, the keyword selection mode is set.

FIG. 12 is a flow chart illustrating the operation to be executed by CPU when the cursor motion switch is operated.

At Step SC1, it is checked whether the flag KWD_MD is 1. If the flag KWD_MD is 0, it means the tune selection mode so that the flow advances to Step SC4 along a NO arrow.

At Step SC4, an address pointer of the sort table (FIG. 10) is moved. At the initial stage, the address pointer P is at the head of the table as shown in FIG. 10. For example, if a cursor up-direction switch is operated, the address pointer is decremented, whereas if a cursor down-direction switch is operated, the address pointer is incremented.

At Step SC5, the cursor is moved on the display screen to the tune name indicated by the address pointer of the sort table and displayed at this position. If necessary, the display screen is scrolled or the arrow 27 indicating a presence of other tunes is displayed. Thereafter, the process for the cursor motion switch is terminated.

If it is judged at Step SC1 that the flag KWD_MD is 1, it means that the mode is the keyword selection mode, and the flow advances to Step SC2 along a YES arrow. Namely, if the cursor motion switch is moved after the keyword switch is operated, the flow advances to Step SC2.

At Step SC2, an address pointer of the keyword table (FIGS. 7A to 7C) is moved. For example, if the cursor up-direction switch is operated, the address pointer is decremented, whereas if the cursor down-direction switch is operated, the address pointer is incremented.

At Step SC3, the cursor is moved on the display screen to the keyword indicated by the address pointer of the keyword table. If necessary, the display screen is scrolled or the arrow 27 indicating a presence of other keywords is displayed. Thereafter, the process for the cursor motion switch is terminated.

FIG. 13 is a flow chart illustrating the operation to be executed by CPU when the set switch is operated.

At Step SD1, it is checked whether the flag KWD_MD is 1. If the flag KWD_MD is 1, it means the keyword selection mode so that the flow advances to Step SD2 along a YES arrow. For example, if the cursor is positioned at a desired artist name or the like in the list displayed on the display screen and the set switch is operated, the flow advances to Step SD2.

At Step SD2, a tune having the keyword number indicated by the address pointer of the keyword table (FIGS. 7A to 7C) is searched from the tune table (FIG. 6). For example, if the artist number No. 1 is selected, a tune number and a tune name having the artist number No. 1 are searched.

At Step SD3, all searched tune numbers and tune names are registered in the sort table (FIG. 10). Since only the tune number and names having the same keyword are registered, the tune numbers are registered generally in a discontinuous order as shown in FIG. 10.

At Step SD4, the tune names in the sort table are rearranged in the alphabetical order or in the Japanese syllabary order. If the tune numbers are being disposed in the alphabetical order of tune names or in the Japanese syllabary order of tune names, the tune names may be sorted in the tune number order and registered in the sort table.

At Step SD5, the designated keyword name is displayed on the display screen. For example, "Artist: Aaaa" is displayed on the upper area of the display screen, as shown in FIG. 3. With reference to the sort table, a list 30 (FIG. 3) of tune names is displayed in the sort order (i.e., in the alphabetical order or in the Japanese syllabary order).

At Step SD6, the flag KWD_MD is set to 0 in order to change the keyword selection mode to the tune selection mode. Thereafter, the process for the set switch is terminated.

If it is judged at Step SD1 that the flag KWD_MD is 0, it means that the mode is the tune selection mode so that the flow advances to Step SD7 along a NO arrow. For example, if the cursor is moved to the position of a desired tune name among the tune names displayed on the display screen and the set switch is operated, the flow advances to Step SD7.

At Step SD7, the performance setting data 38 corresponding to the tune number indicated by the address pointer of the sort table is selected and read from the tune table (FIG. 6).

At Step SD8, the performance environment (such as accompaniment style, tone color, tempo and harmony) is set in accordance with the read performance setting data.

At Step SD9, if a user performs a correction of the performance setting data, the performance environment is set in accordance with the corrected performance setting data. If a user is not satisfied with the performance setting data read from the tune table, the user can correct the performance setting data by using the numerical value change switch (FIG. 4). Thereafter, the corrected performance setting data is set as described above to terminate the process for the set switch.

FIG. 14 shows the structure of other sets of style data different from the style data shown in FIG. 8A.

The style data is associated with a style number. The style data includes a style name, an initial tempo, a time, the number of bars of a repetition pattern of accompaniment, a rhythm pattern, a base pattern, a code pattern, and tune data. For example, if there are four tunes corresponding to the style number No. 1, the style data contains first tune data, second tune data, third tune data and fourth tune data.

The tune data includes a tune name, an artist number, a composer number, a genre number, a tone color number, a tempo value, and a harmony number. A keyword search becomes possible by using the artist number, composer number and genre number. Setting the performance setting data such as a tone color number also becomes possible. Since the style data contains tune data, the tune table shown in FIG. 6 becomes unnecessary.

With the configuration that style data contains tune data, it becomes easy to supplement style data. If the style data shown in FIG. 8A is used in place of the style data shown in FIG. 14, it is not easy to supplement new style data. In this case, it is necessary not only to add new style data to the style data shown in FIG. 8A but also to correspondingly register the new style number in the tune table shown in FIG. 6. The operation, therefore, becomes complicated. In contrast, if the style data shown in FIG. 14 is used, it is sufficient if only new style data is added, and the other

portions are not necessary to be changed. The operation of adding new data is therefore easy. Style data to be later added may be supplied to users in the form of floppy disk or the like.

FIG. 15 shows the structure of other sets of tone color data different from the tone color data shown in FIG. 8B.

The tone color data is associated with a tone color number. The tone color data includes a tone color name, a tone color parameter, and tune data. For example, if there are four tunes corresponding to the tone color number No. 1, the tone color data contains first tune data, second tune data, third tune data and fourth tune data.

The tune data includes a tune name, an artist number, a composer number, a genre number, a style number, a tempo value, and a harmony number. A keyword search becomes possible by using the artist number and the like, and the tune table shown in FIG. 6 becomes unnecessary. With the configuration that tone color data contains tune data, it becomes easy to supplement tone color data.

FIG. 16 is a flow chart illustrating the operation to be executed by CPU when the style data shown in FIG. 14 or the tone color data shown in FIG. 15 is used and the set switch is operated. This flow chart is used as a substitution for the flow chart shown in FIG. 13.

At Step SE1, it is checked whether the flag KWD_MD is 1. If the flag KWD_MD is 1, it means the keyword selection mode so that the flow advances to Step SE2 along a YES arrow.

At Step SE2, a tune having the keyword number indicated by the address pointer of the keyword table (FIGS. 7A to 7C) is searched from the style data (FIG. 14) or tone color data (FIG. 15).

At Step SE3, all searched tune names, style (tone color) numbers containing the searched tune names, and tune numbers in the styles (tone colors) are registered in the sort table (FIG. 17). As shown in FIG. 17, the sort table stores the style numbers, tune numbers in the styles, and tune names, all being associated with each other.

At Step SE4, the tune names in the sort table are rearranged in the alphabetical order or in the Japanese syllabary order.

At Step SE5, the designated keyword name is displayed on the display screen. With reference to the sort table, a list 30 (FIG. 3) of tune names is displayed in the sort order (i.e., in the alphabetical order or in the Japanese syllabary order).

At Step SE6, the flag KWD_MD is set to 0 in order to change the keyword selection mode to the tune selection mode. Thereafter, the process for the set switch is terminated.

If it is judged at Step SE1 that the flag KWD_MD is 0, it means that the mode is the tune selection mode so that the flow advances to Step SE7 along a NO arrow.

At Step SE7, the performance setting data (excepting style number and tone color number) corresponding to the style number (tone color number) and tune number indicated by the address pointer of the sort table is selected and read from the style data (FIG. 14) or tone color data (FIG. 15).

At Step SE8, the performance environment (such as tone color (or accompaniment style), tempo and harmony) is set in accordance with the read performance setting data. In this case, the performance environment for the style number and tone color number is also set.

At Step SE9, if a user performs a correction of the performance setting data, the performance environment is set in accordance with the corrected performance setting data. Thereafter, the process for the set switch is terminated.

With the performance setting data selecting apparatus of this embodiment, the performance setting data matching a tune to be played can be easily set by selecting a tune name itself, and so-called song image setting is possible. A tune name can be selected easily and quickly by searching the tune name by using an artist, a composer, a genre or the like as a keyword.

If a tune to be played by a user is already determined, the performance setting data matching the tune can be automatically set upon selection of the tune name.

If a user can have particular images of a tune basing upon its tune name, the user can select the tune name easily without being embarrassed. Performance imaged by a user becomes likely to match the actually played performance.

The performance setting data may include: in addition to an accompaniment style and a tone color, chord progression data; intro pattern data; ending pattern data; effects data such as reverb; left hand chord designating mode (single finger, finger chord, full keyboard, and so on) data; volume data of a melody part, an accompaniment part or the like; and other data. The keyword may include other keywords in addition to an artist name, a composer and a genre.

The performance setting data selecting apparatus is not limited only to the form of an electronic musical instrument, but may be realized by a combination of a personal computer and application software. The application software stored in a recording medium such as a magnetic disk may be supplied to the personal computer or it may be supplied via a network to the personal computer.

The performance setting data selecting apparatus may be realized as an integrated part of an electronic musical instrument with built-in sound source and automatic performance units, or may be realized as a discrete part of such an electronic musical instrument interconnected by communication means such as MIDI and networks. The invention is not limited only to keyboard musical instruments, but may be applied to other instruments such as stringed musical instruments, wind musical instruments, and percussion musical instruments.

The present invention has been described in connection with the preferred embodiments. The invention is not limited only to the above embodiments. It is apparent that various modifications, improvements, combinations, and the like can be made by those skilled in the art.

What is claimed is:

1. A performance setting data selecting apparatus comprising:
 - means for storing a correspondence between each of a plurality of tune names and performance setting data suitable for playing each tune;
 - means for designating the tune name of each tune; and
 - means for setting the performance setting data corresponding to the tune name of each tune designated by said designating means by reading the performance setting data from said storing means.
2. A performance setting data selecting apparatus according to claim 1, wherein
 - said storing means comprises:
 - data storing means for storing a plurality set of performance setting data; and
 - a table for storing a correspondence between each tune name of the plurality of tunes and each set of the performance setting data stored in said data storing means suitable for playing a tune having the associated tune name, and

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said designating means reads the performance setting data corresponding to the tune name designated by said designating means from said data storing means by referring to said table and setting the read performance setting data.

3. A performance setting data selecting apparatus according to claim 1, wherein

said storing means stores a plurality set of performance setting data and stores a correspondence, for each set of the performance setting data, between a tune name or names and each set of the performance setting data suitable for playing a tune having the associated tune name or names.

4. A performance setting data selecting apparatus according to claim 1, wherein the performance setting data includes at least one of an accompaniment style, a tone color, a tempo and a harmony.

5. A performance setting data selecting apparatus according to claim 1, wherein said setting means changes the performance setting data read from said storing means in accordance with a user instruction and sets the changed performance setting data.

6. A performance setting data selecting apparatus according to claim 1, further comprising means for displaying the tune names stored in said storing means on a display device.

7. A performance setting data selecting apparatus according to claim 6, wherein said displaying means sorts the tune names and displays the sorted tune names, in accordance with a predetermined rule.

8. A performance setting data selecting apparatus according to claim 6, wherein said displaying means displays only the tune names searched by keyword searching.

9. A performance setting data selecting apparatus according to claim 7, wherein said displaying means sorts the tune names in an alphabetical order and displays the sorted tune names.

10. A performance setting data selecting apparatus according to claim 8, wherein said displaying means performs a search by using at least one of an artist, a composer, and a genre as a keyword.

11. A performance setting data selecting apparatus according to claim 3, wherein said storing means stores the plurality set of performance setting data and the tune names, the performance setting data sets and the tune names being associated with each other.

12. A performance setting data selecting apparatus according to claim 6, wherein said displaying means displays the performance setting data read by said setting means from said storing means on the display device.

13. A performance setting data selecting apparatus according to claim 12, wherein said setting means changes the performance setting data displayed by said displaying means in accordance with a user instruction and sets the changed performance setting data.

14. A performance setting data selecting apparatus comprising:

- memory which stores a plurality of performance setting data suitable for playing a plurality of tunes and respective correspondences between the plurality of performance setting data and the plurality of tunes;
- designating device which designates one of the plurality of tunes;
- controlling device which sets one of the plurality of performance setting data corresponding to the designating

nated tune by reading out the one from the memory based on the correspondences,

wherein an automatic accompaniment of the designated tune is executed under the set performance setting data.

15. A performance setting data selecting method comprising the steps of:

- (a) preparing means for storing a correspondence between each of a plurality of tune names and performance setting data suitable for playing each tune;
- (b) designating the tune name of each tune; and
- (c) setting the performance setting data corresponding to the tune name of each designated tune by reading the performance setting data from said storing means.

16. A medium storing a program to be executed by a computer, the program comprising the processes of:

- (a) preparing means for storing a correspondence between each of a plurality of tune names and performance setting data suitable for playing each tune;
- (b) designating the tune name of each tune; and
- (c) setting the performance setting data corresponding to the tune name of each designated tune by reading the performance setting data from said storing means.

17. A medium according to claim 16, wherein

said storing means comprises:
data storing means for storing a plurality set of performance setting data; and

a table for storing a correspondence between each tune name of the plurality of tunes and each set of the performance setting data stored in said data storing means suitable for playing a tune having the associated tune name, and

said process (c) reads the performance setting data corresponding to the designated tune name from said data storing means by referring to said table and setting the read performance setting data.

18. A medium according to claim 16, wherein

said process (a) prepares the storing means for storing a plurality set of performance setting data and storing a correspondence, for each set of the performance setting data, between a tune name or names and each set of the performance setting data suitable for playing a tune having the associated tune name or names.

19. A medium according to claim 16, wherein the performance setting data includes at least one of an accompaniment style, a tone color, a tempo and a harmony.

20. A medium according to claim 16, wherein said process (c) changes the performance setting data read from said storing means in accordance with a user instruction and sets the changed performance setting data.

21. A medium according to claim 16, further comprising the process (d) of displaying the tune names stored in said storing means on a display device, before said process (b).

22. A medium according to claim 18, wherein said process (a) prepares the storing means for storing a correspondence between each set of the performance setting data and a plurality of tune names, after said process (b).

23. A medium according to claim 21, wherein said process (d) displays only the tune names searched by keyword searching.

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United States Patent [19]
Looney et al.

[11] **Patent Number:** 5,969,283
 [45] **Date of Patent:** Oct. 19, 1999

[54] **MUSIC ORGANIZER AND ENTERTAINMENT CENTER**
 [75] **Inventors:** Brian M. Looney, Lexington, Mass.; Dale R. McMullin, Parker, Colo.; Joseph Pasciuto, Bellingham; Edward T. Doyle, Westford, both of Mass.
 [73] **Assignee:** Looney Productions, LLC, Lexington, Mass.

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Attorney, Agent, or Firm—Cesari and McKenna LLP

[57] **ABSTRACT**

A music organizer and entertainment center provides a center having a microprocessor, sound card functions and high-volume data storage and retrieval units for playing back music according to a variety of predetermined categories. Music can be played back in random form or can be played back according to a particular pre-selected order. The categories are provided by service provider who delivers selected titles and/or songs to the end user. The songs are typically loaded using a custom CD-ROM provided from the service provider. The music is provided in data-compressed form and is decompressed and processed through a sound card during playback. The categories can include a variety of parameters such as title, artists, date, speed, dance characteristics, subjective energy level and music style, such as easy-listening, upbeat, etc.

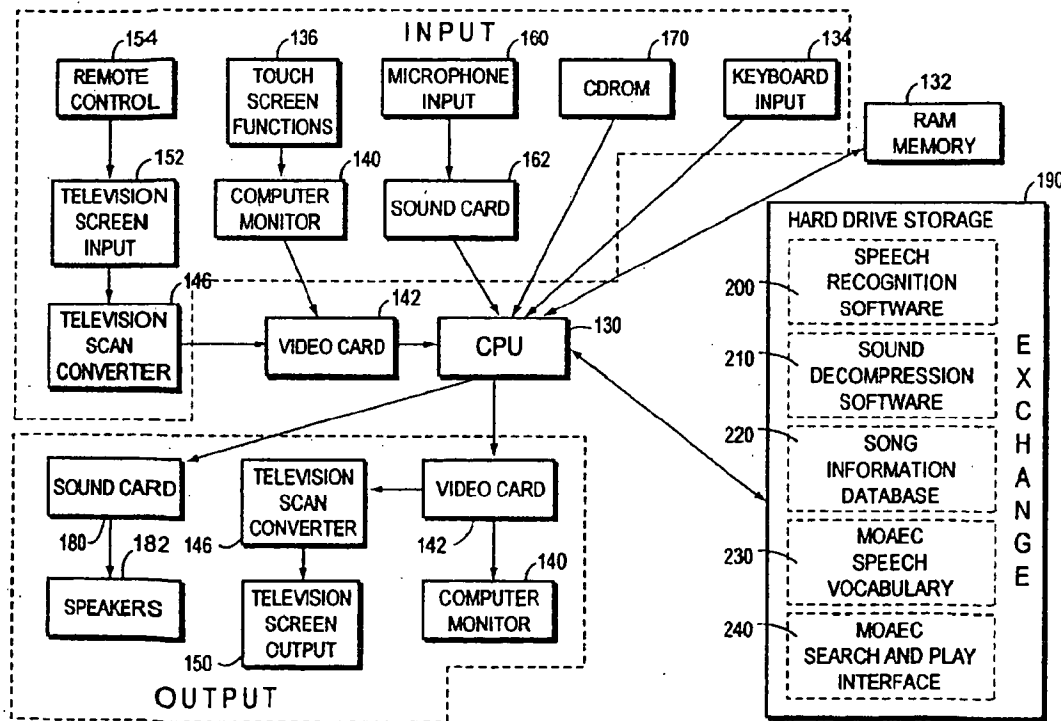
[21] **Appl. No.:** 09/098,843
 [22] **Filed:** Jun. 17, 1998
 [51] **Int. Cl.⁶** G09B 5/00; G09B 15/04; H04L 9/00; G10H 1/46
 [52] **U.S. Cl.** 84/609; 84/639; 84/478; 84/633; 380/19; 380/25; 380/49; 380/53; 434/307 A
 [58] **Field of Search** 84/601, 602, 609-614, 84/633-640, 477 R, 478, DIG. 6; 434/307 R, 307 A; 380/19-21, 23-25, 30, 49, 50, 53

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18 Claims, 27 Drawing Sheets



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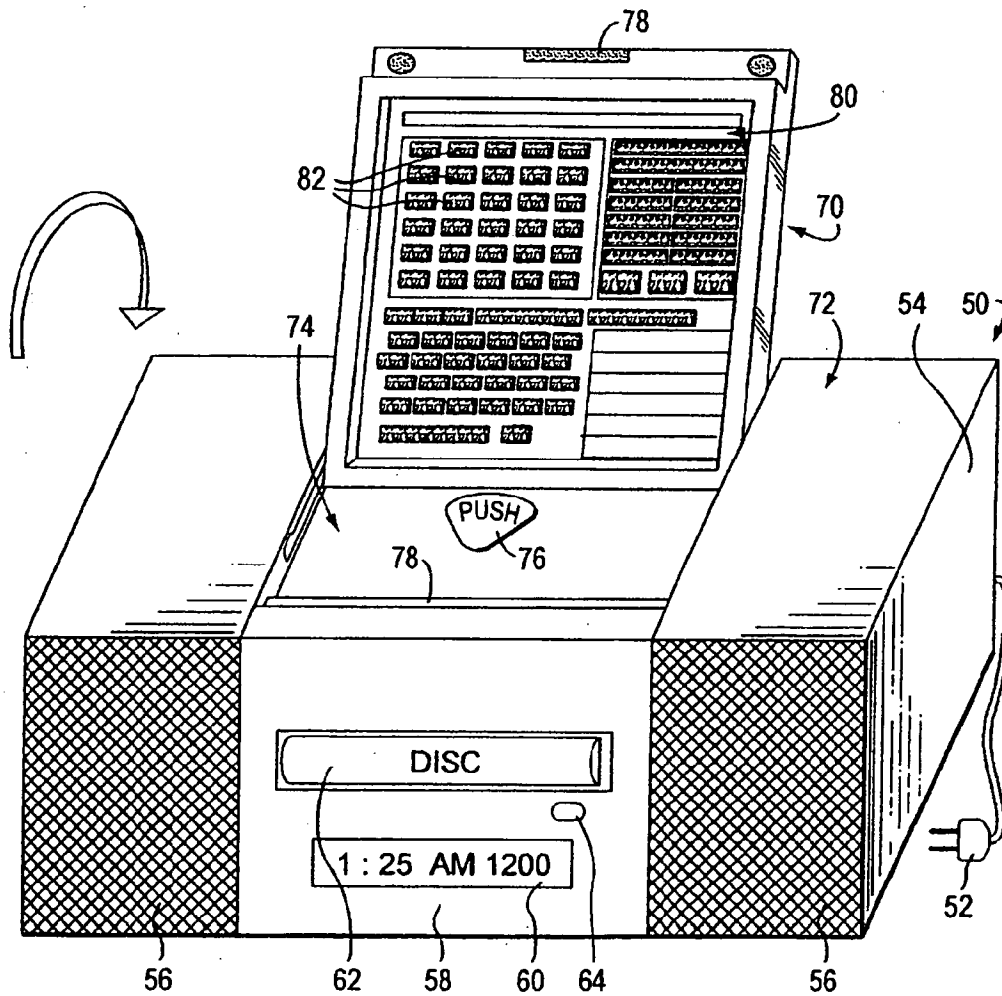


FIG. 1

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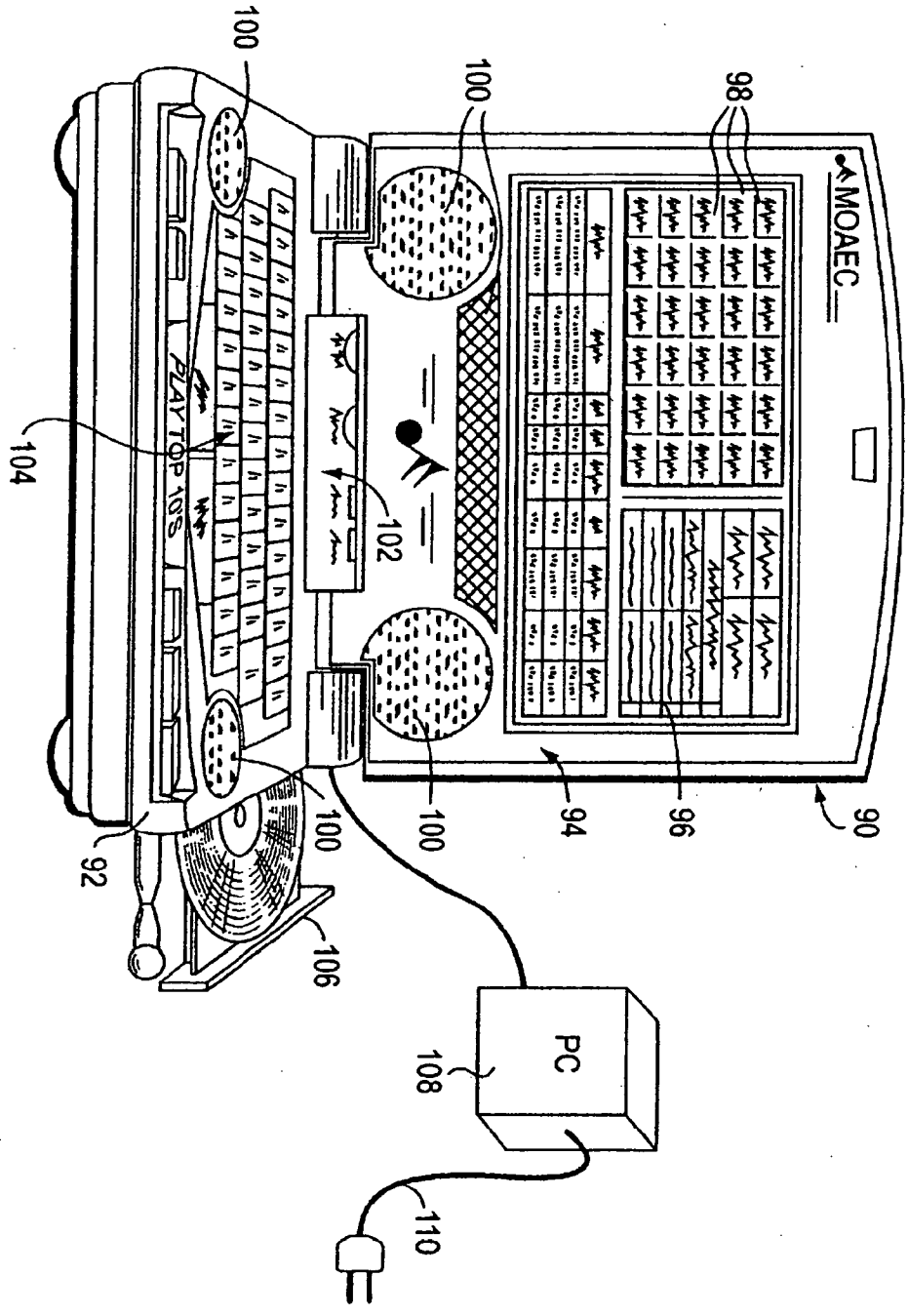


FIG. 2

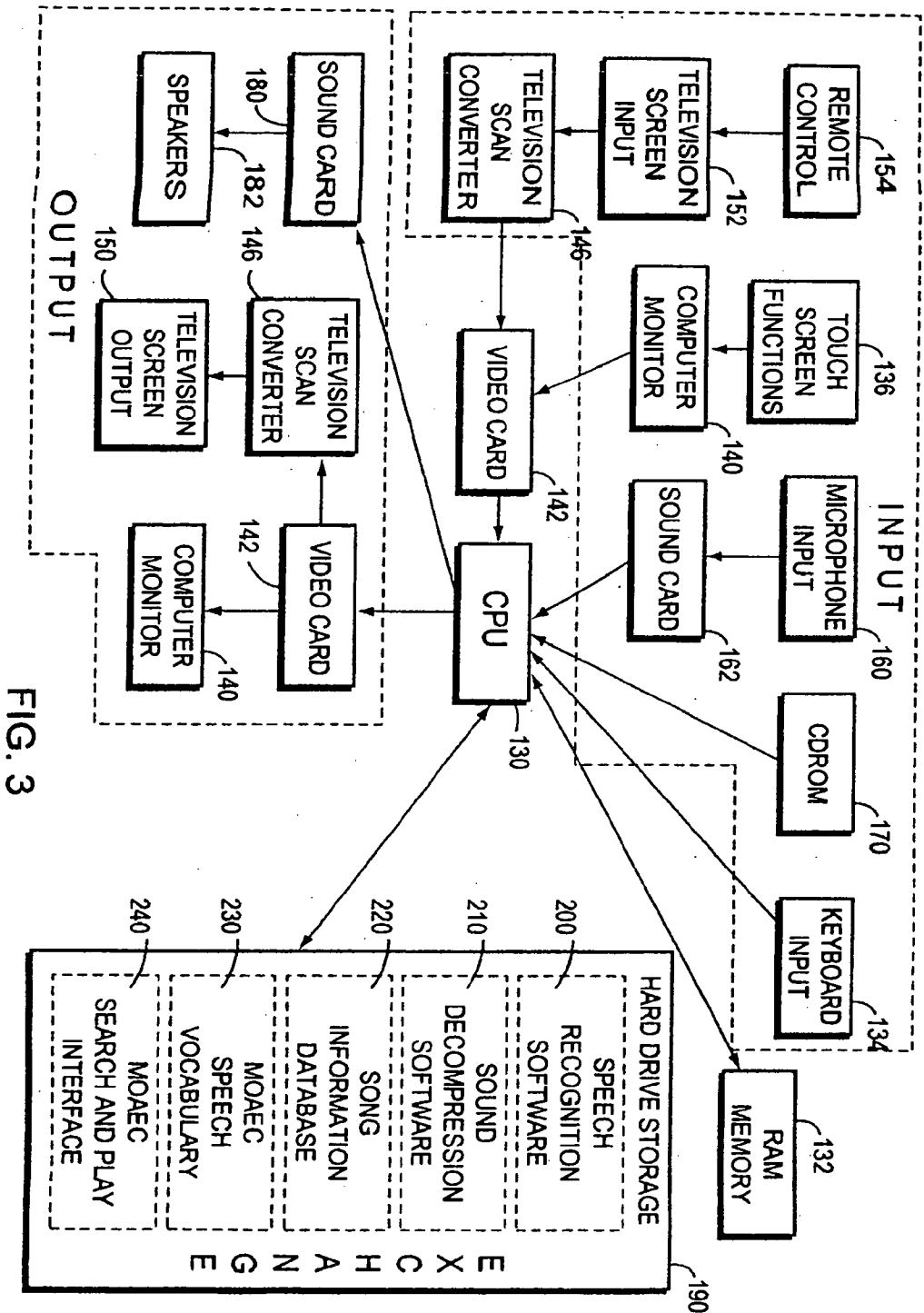


FIG. 3

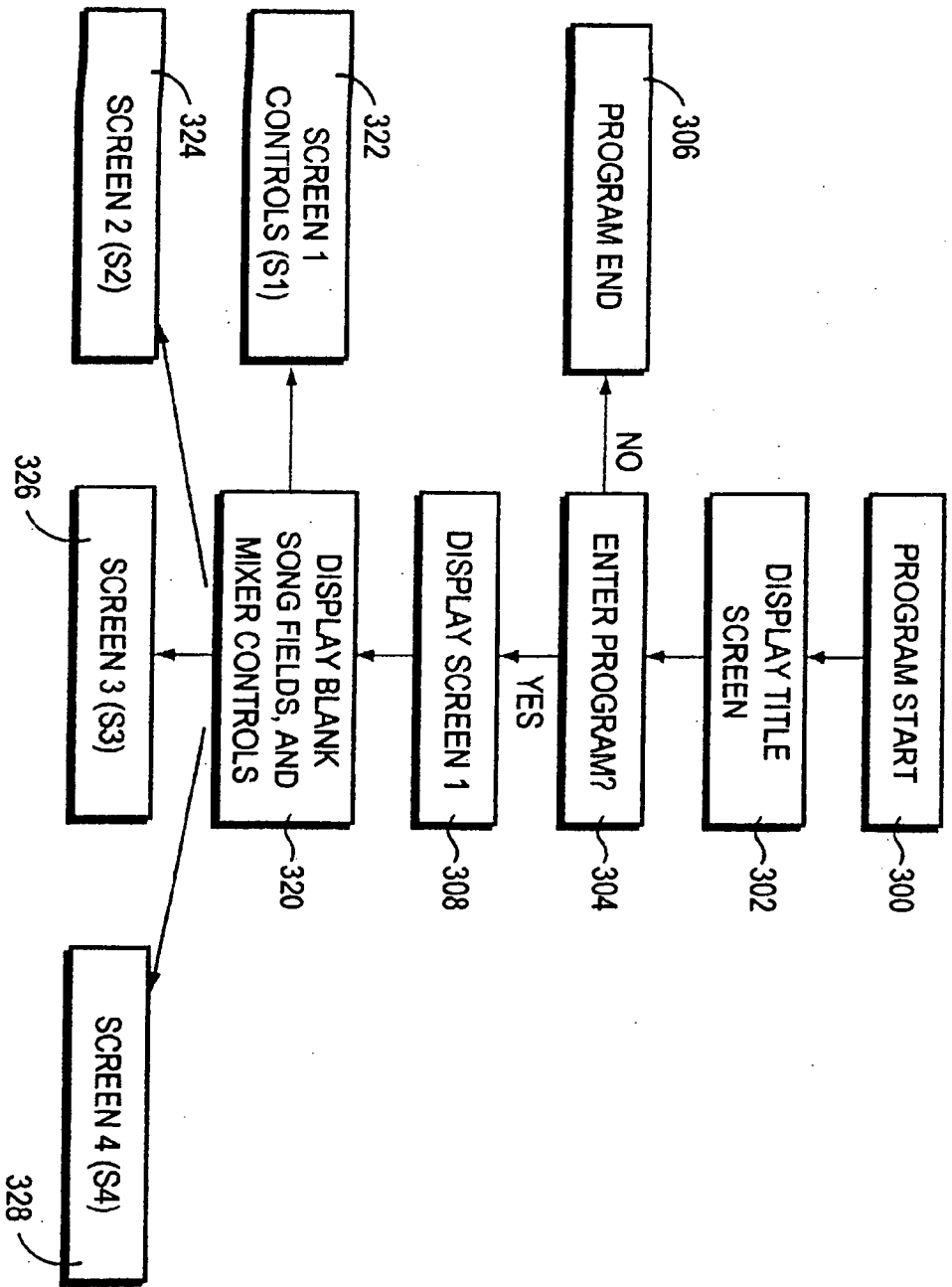


FIG. 4

CL 000351

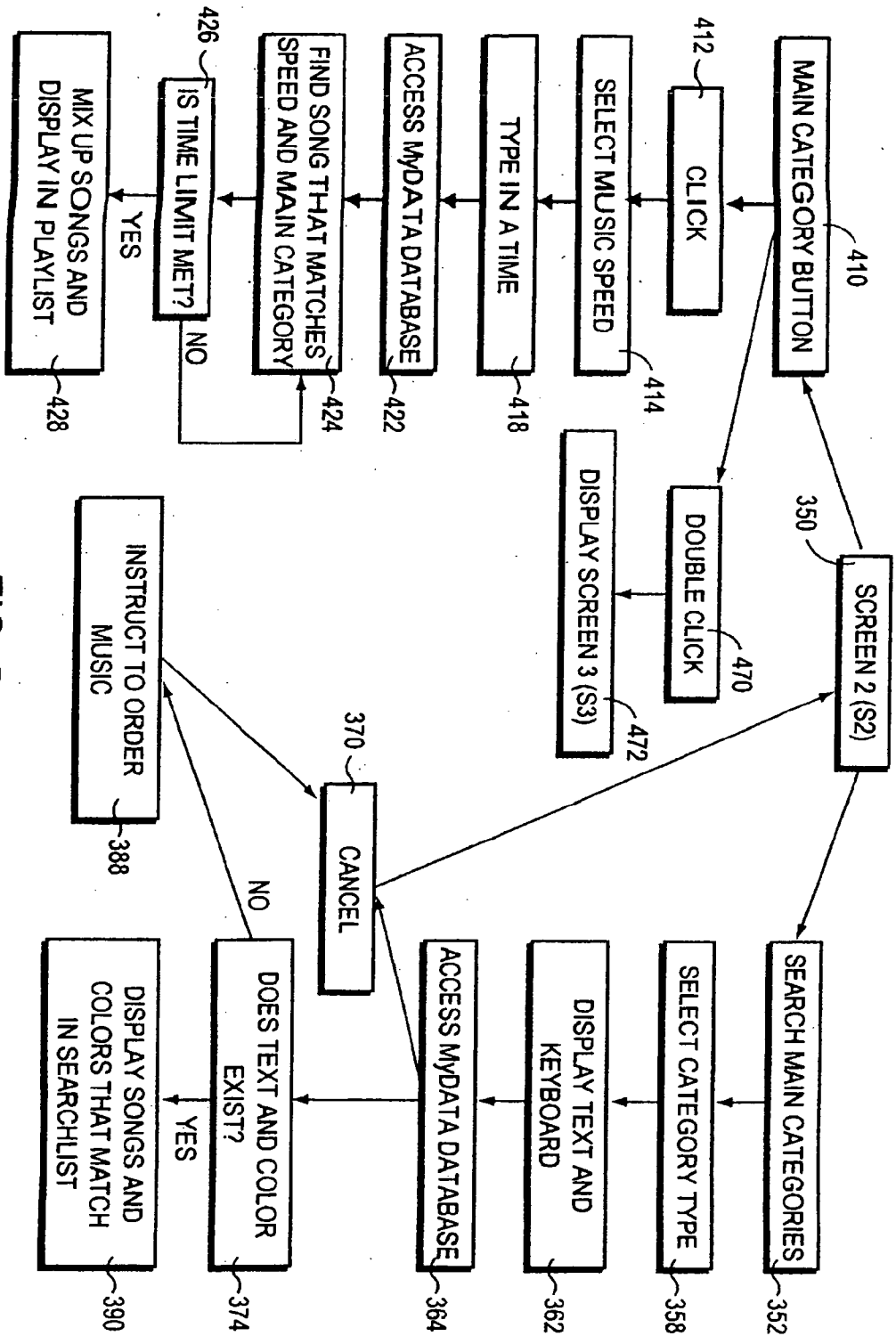


FIG. 5

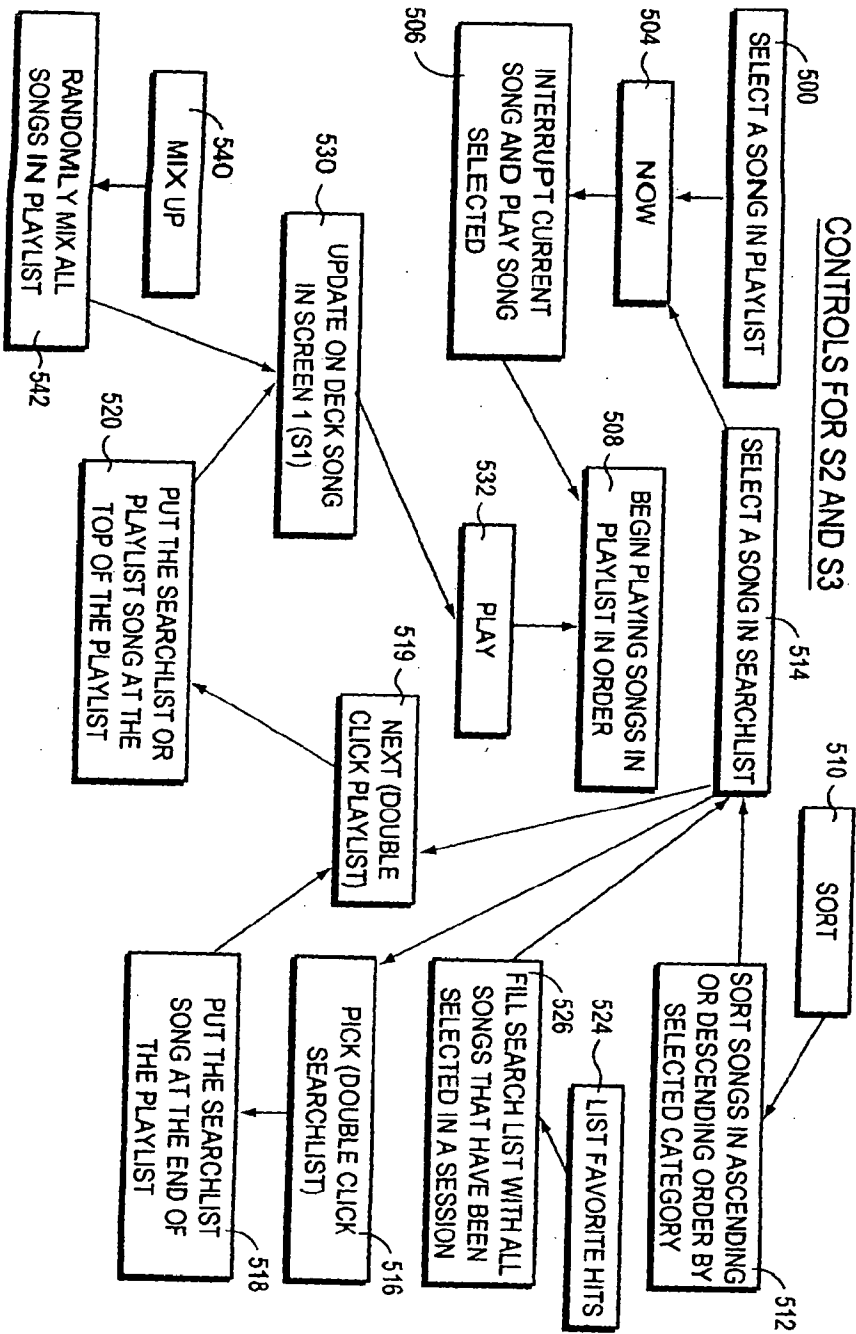


FIG. 6

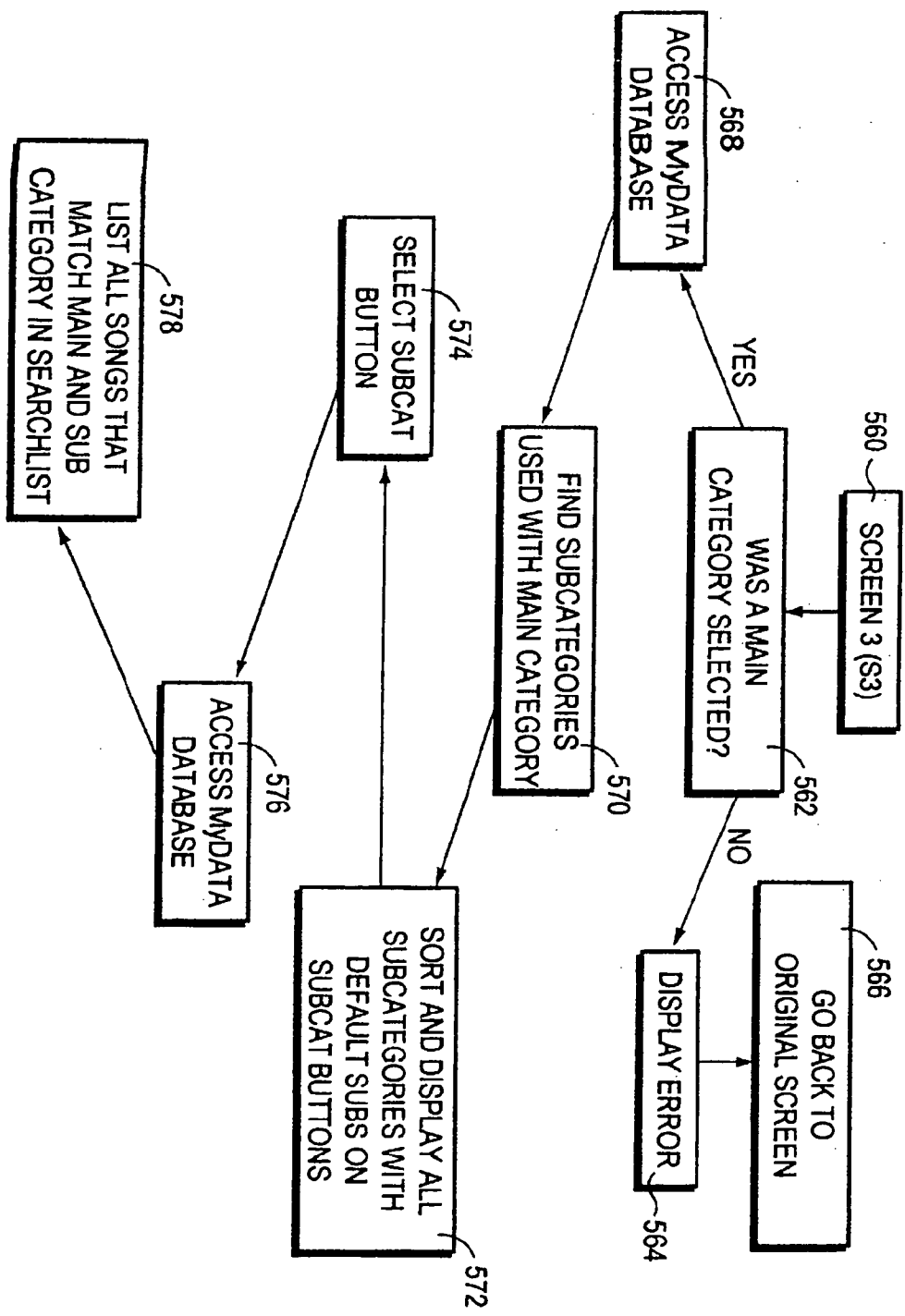


FIG. 7

CL 000354

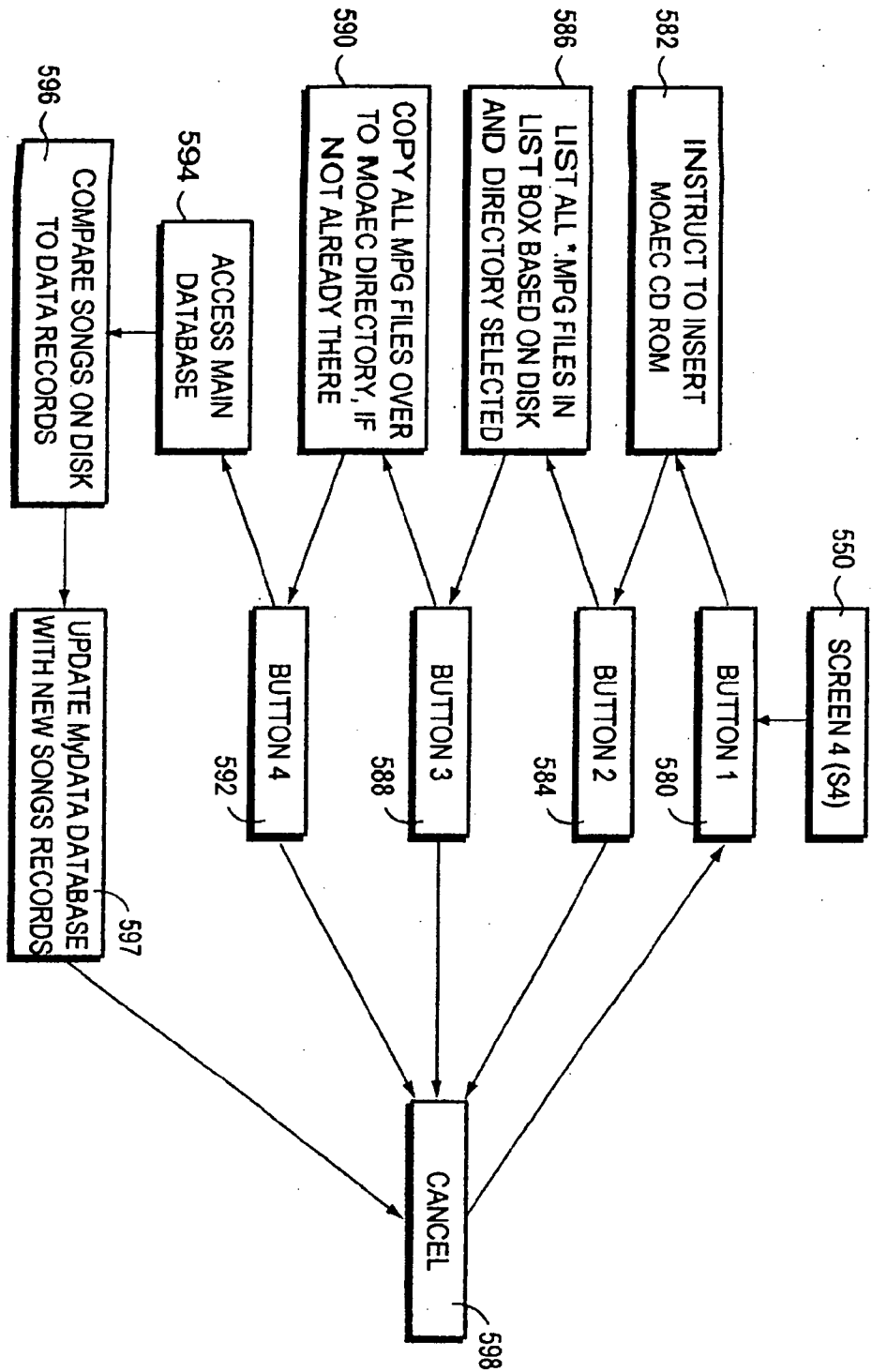


FIG. 8

CL 000355

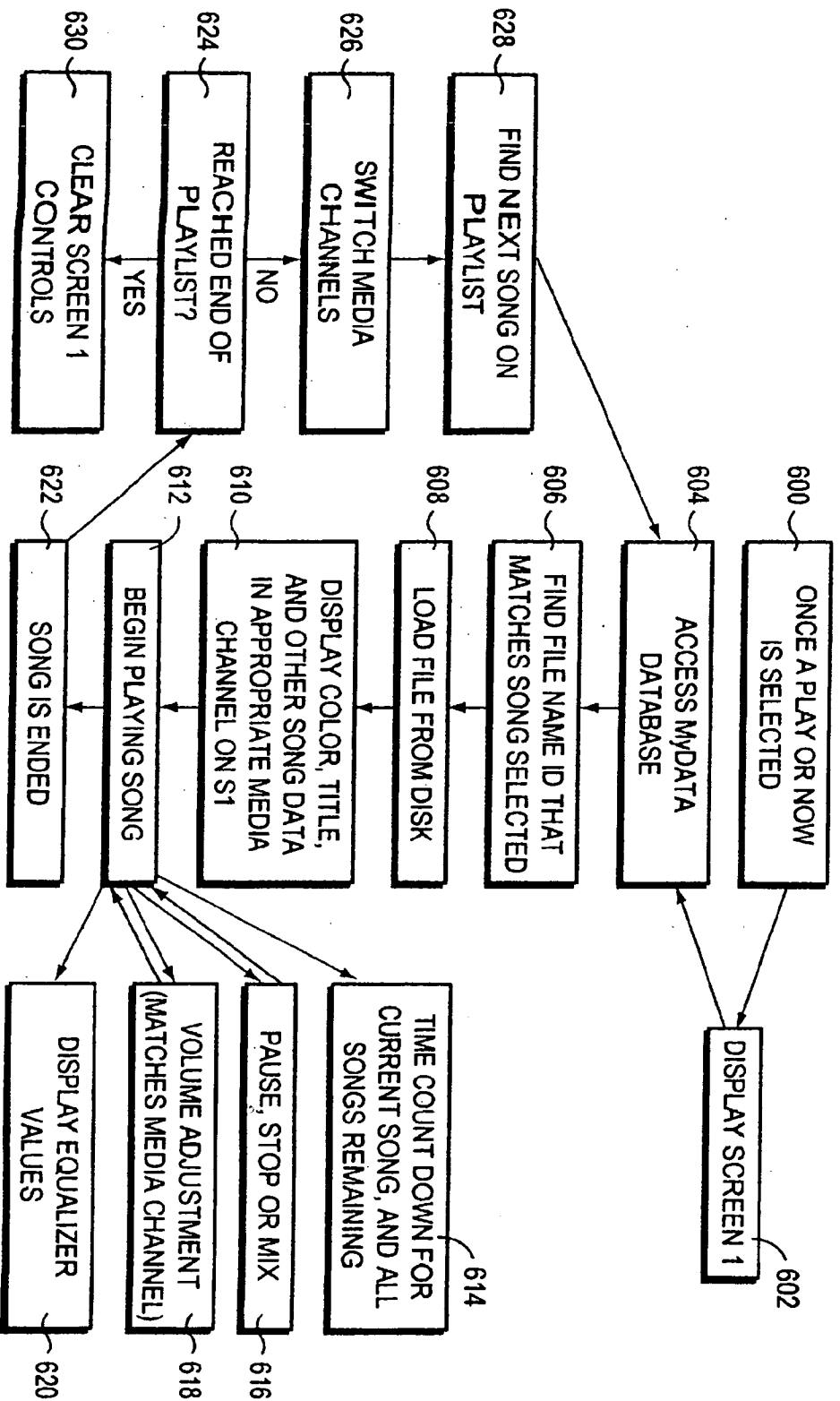


FIG. 9

SAVING AND LOADING
PLAYLIST

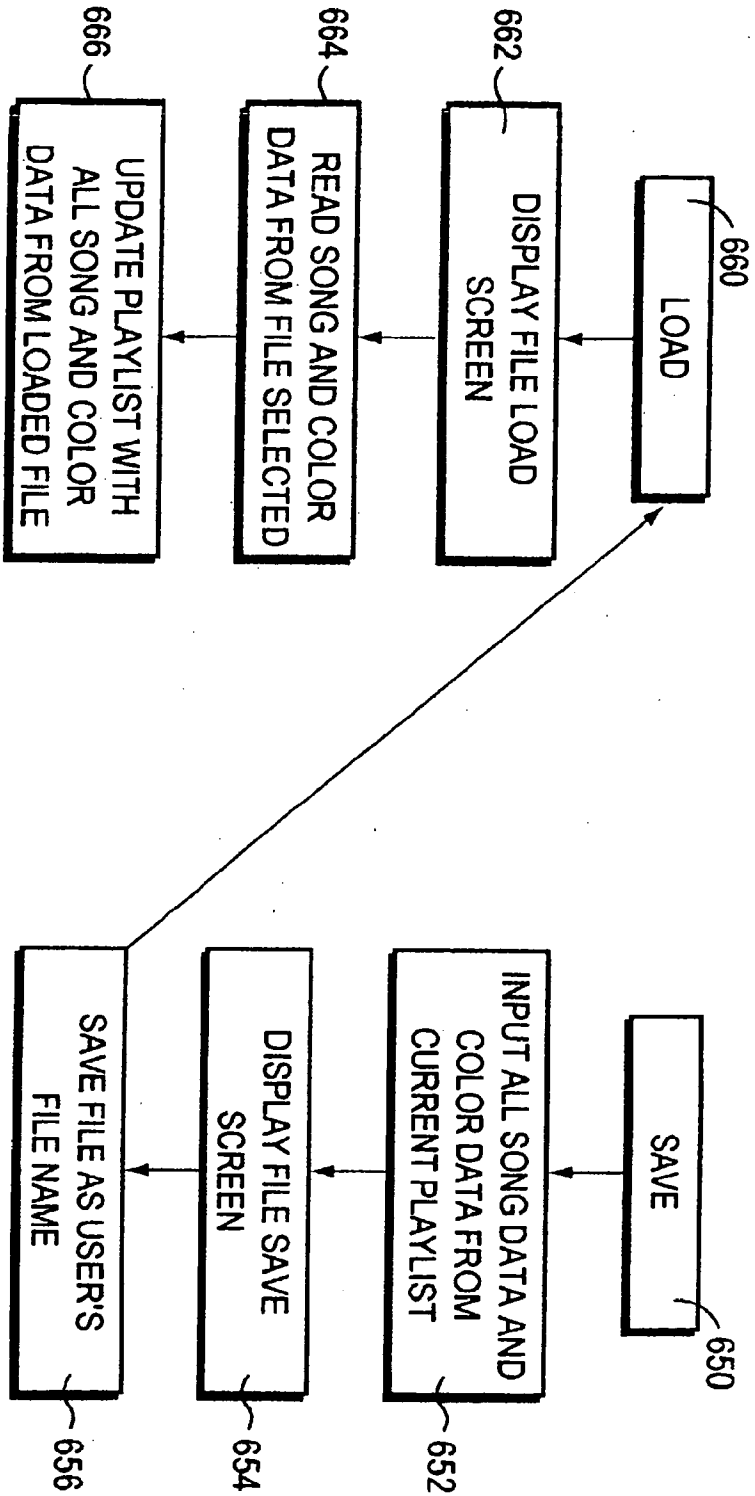


FIG. 10

CL 000357

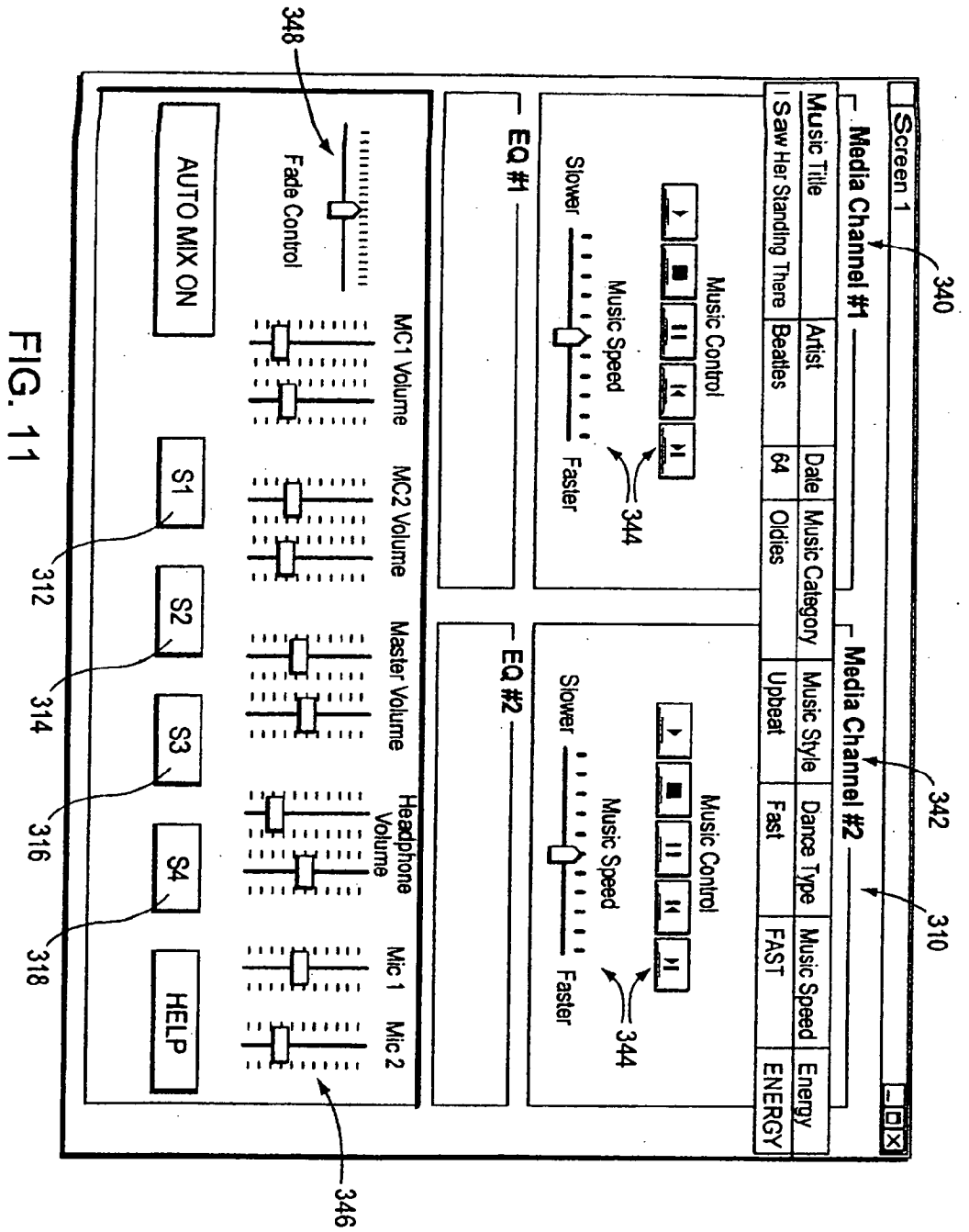


FIG. 11

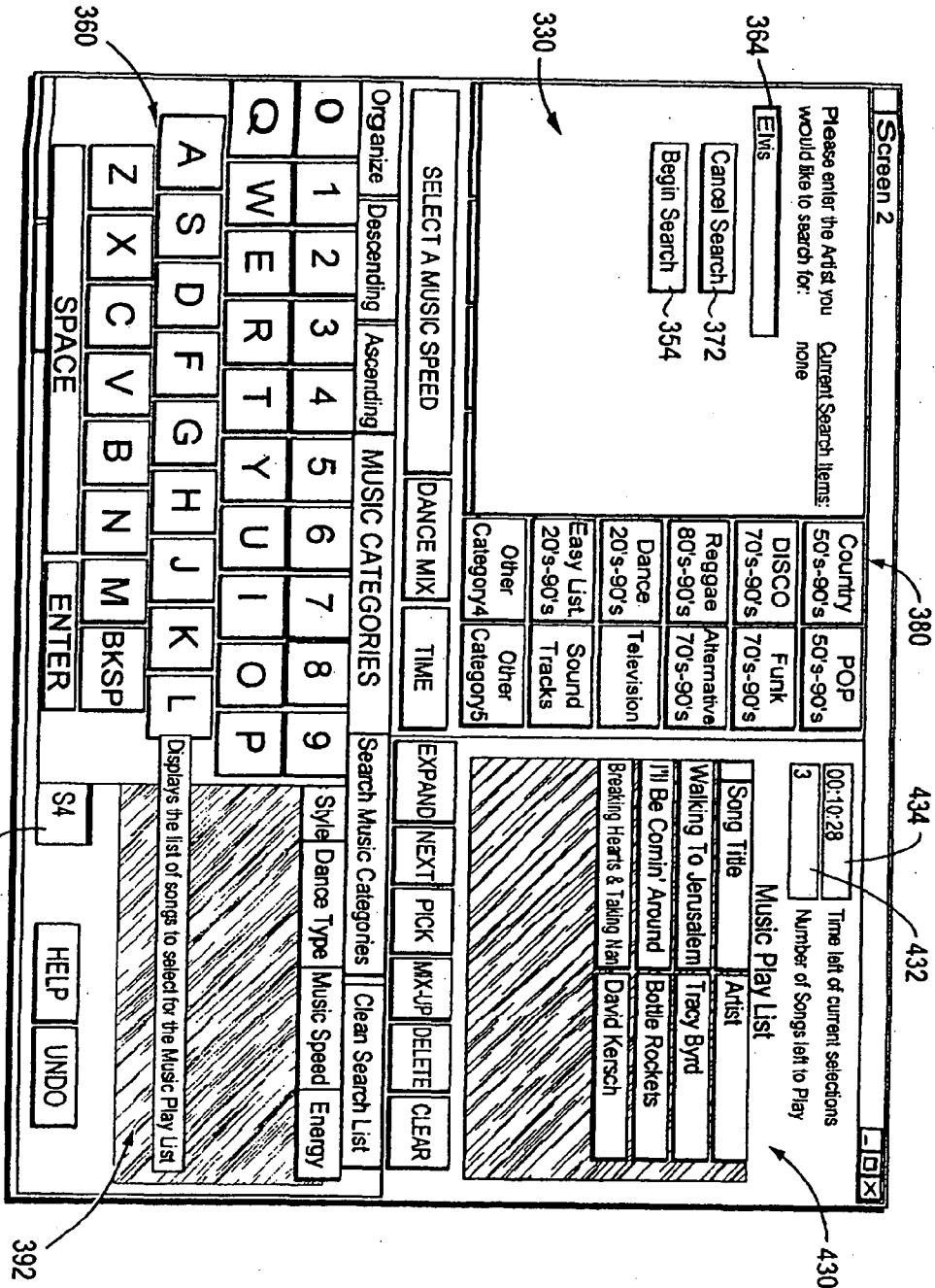


FIG. 12

CL 000359

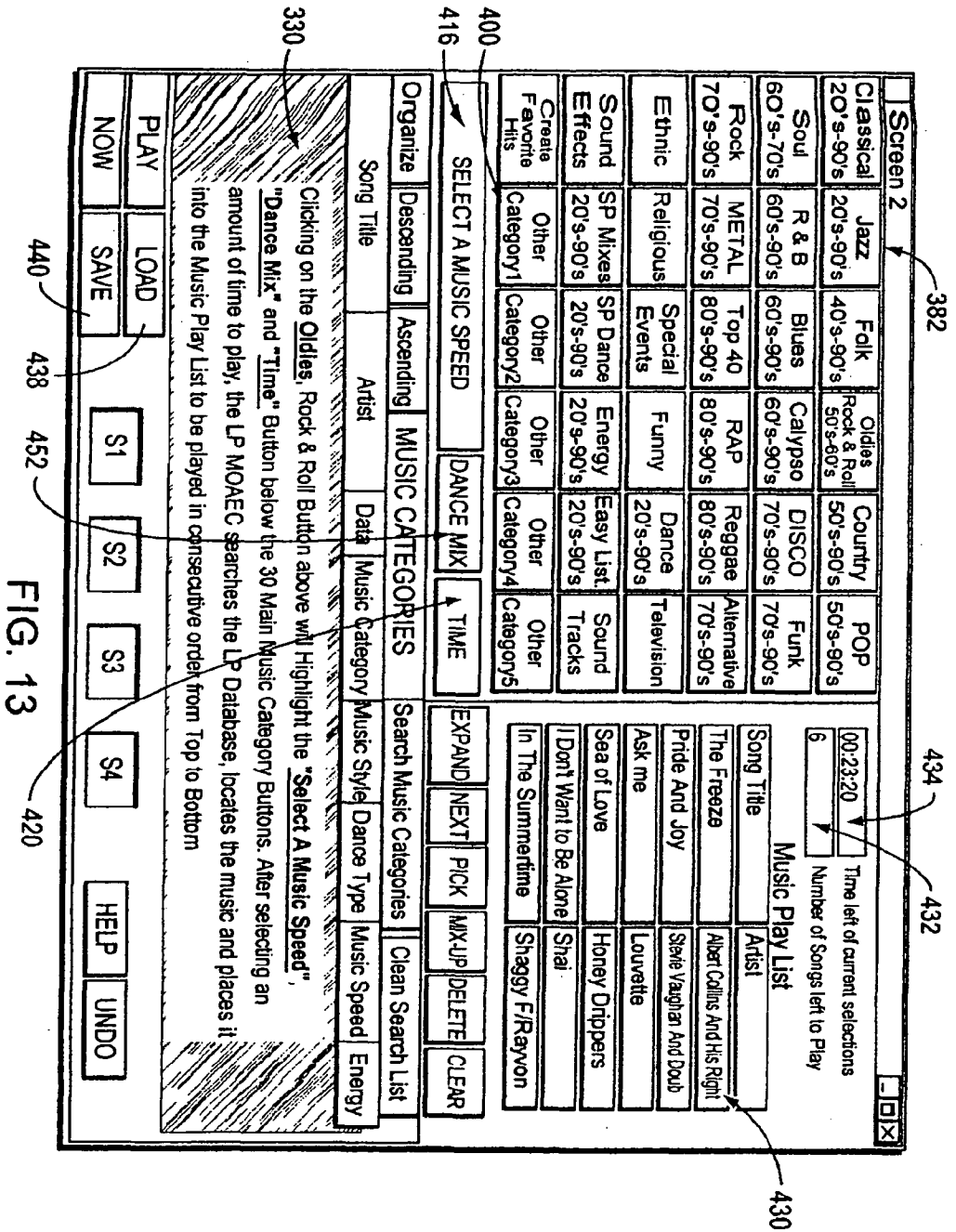


FIG. 13

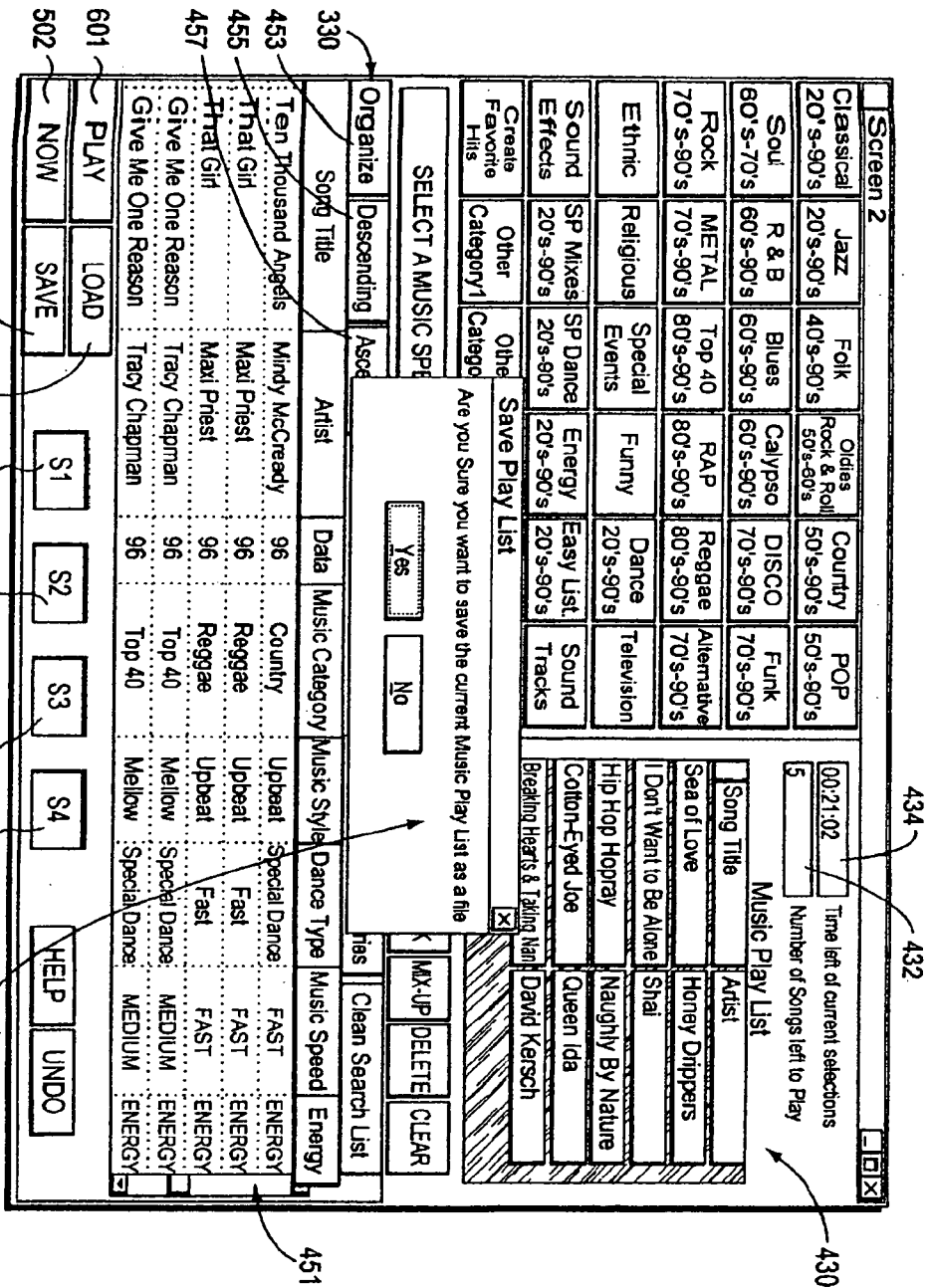


FIG. 14

CL 000361

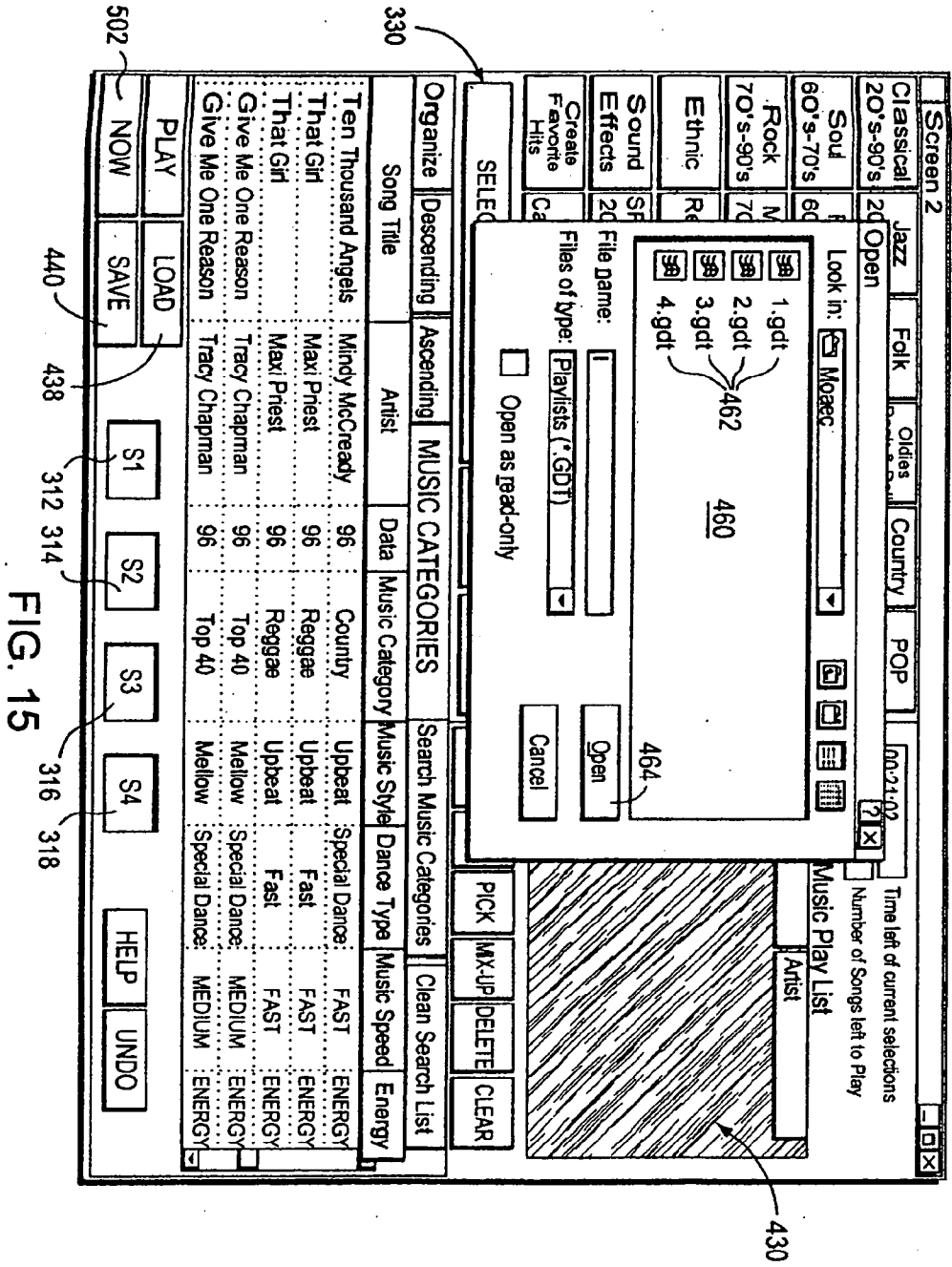


FIG. 15

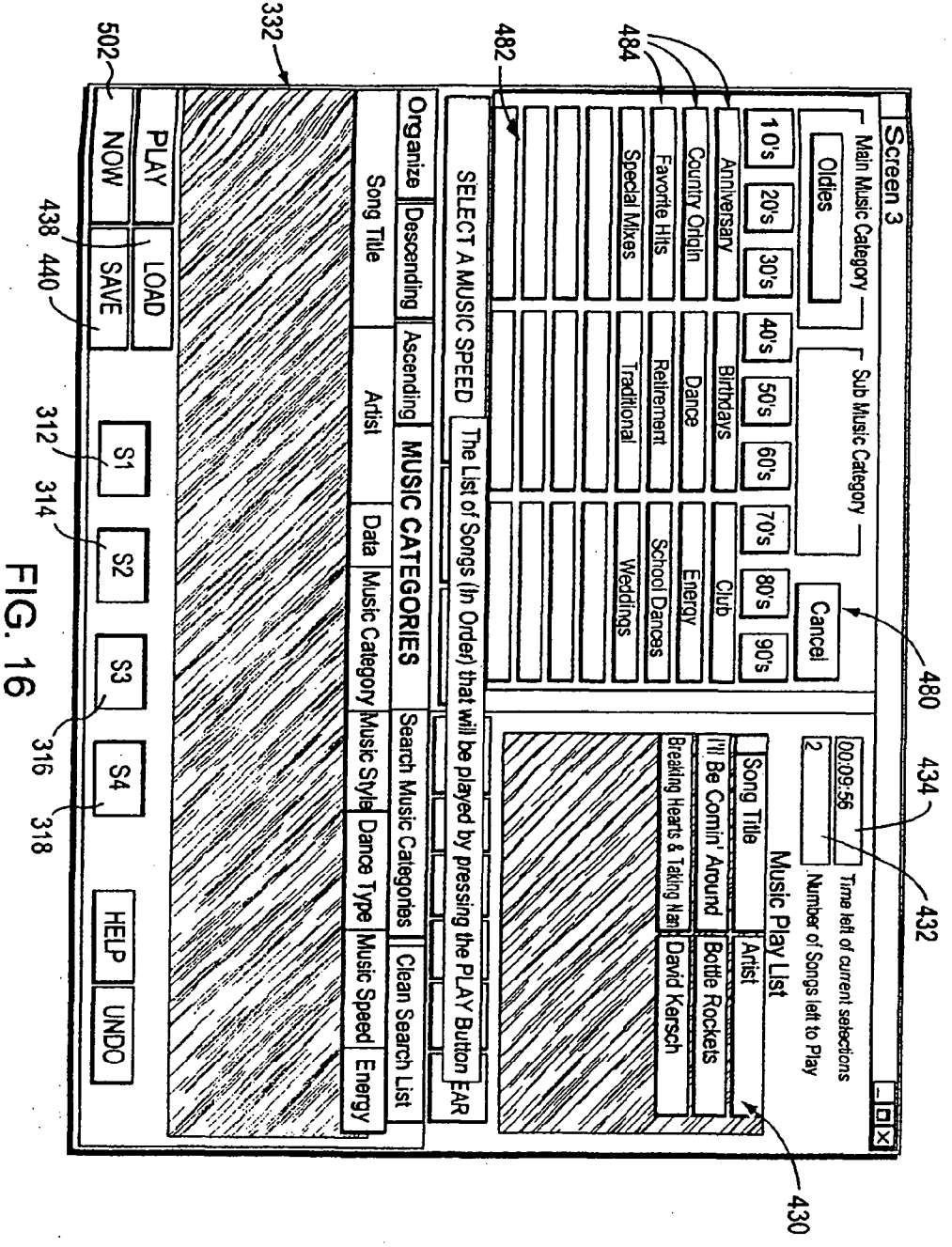


FIG. 16

Test ID	Disk	Song Num	Title	Artist	Ms	Style	D	Type	Spe	Time	EN	T
OK	2:RH34	3416	1979	Smashing Pumpkin	UP				M	260		A
OK	3:RU14	10	1979 (Vocal Mix)	Smashing Pumpkin	UP				M	310		A
OK	5:T327	11	A Little Bit Me, A Little Bit You	Specials	UP				M	211		A
OK	6:T317	11	Aeroplane	Red Hot Chili Peppers	UP				F	251		A
OK	11:RH36	3607	Big Me	Foo Fighters	UP				UP	133		A
OK	12:T319	13	Big Me	Foo Fighters	UP				UP	133		A
OK	13:T319	10	Bing Bang Baby	Stone Temple Pilots	UP				F	203		A
OK	15:T320	15	Blister	Salit	UP				M	194		A
OK	16:T314	16	Brother	Toad The Wet Spro	MEL				M	237		A
OK	17:RH38	06	But Anyway (Studio E)	Blues Traveler	MEL				M	179		A
OK	19:RH36	3618	Champagne Super No. 1	Oasis	MEL				M	304		A
OK	20:T317	13	Champagne Super No. 2	Oasis	MEL				M	301		A
OK	22:T322	04	Charm's (Radio Remix)	Philosopher Kings	UP				M	247		A
OK	23:RH35	3508	Closer To Free	Bodeans	UP				F	191		EN/A
OK	24:T322	13	Common People (7 B)	Pulp	UP				F	249		A
OK	25:RH37	3702	Counting Blue Cars	Dishwalla	UP				M	263		EN/A
OK	26:T319	15	Counting Blue Cars (E)	Dishwalla	UP				M	263		EN/A
OK	28:T325	17	Dangerous Type	Letters To Cleo	UP				F	194		A
OK	31:T350	14	Don't Speak	No Doubt	UP				M	252		A
OK	34:RH35	3502	Everything Falls Apart	Dog's Eye View	UP				F	227		EN/A
F/OK	35:T318	17	Flood	Jars Of Clay	UP				F	196		A
F/OK	36:RH36	3614	Flood	Jars Of Clay	UP				F	197		A
OK	37:RH35	3513	Follow You Down	Gin Blossoms	UP				F	226		EN/A
OK	38:T313	11	Follow You Down	Gin Blossoms	UP				F	225		EN/A
OK	40:T334	11	Free To Decide	Cranberries	MEL				M	265		EN/A
OK	41:RH38	03	Free To Decide	Cranberries	MEL				M	265		EN/A
F/OK	43:T323	18	Girl Don't Tell Me	Fuzzy	UP				F	148		A
F/OK	44:T324	03	God Only Knows	Nvrons	UP				M	211		EN/R

FIG. 17

336

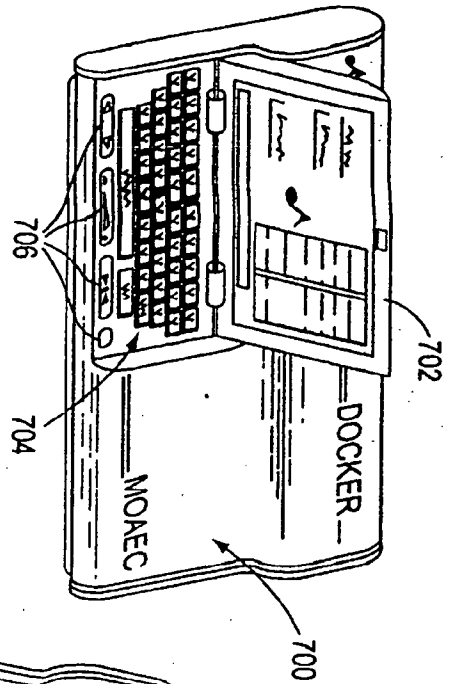


FIG. 18

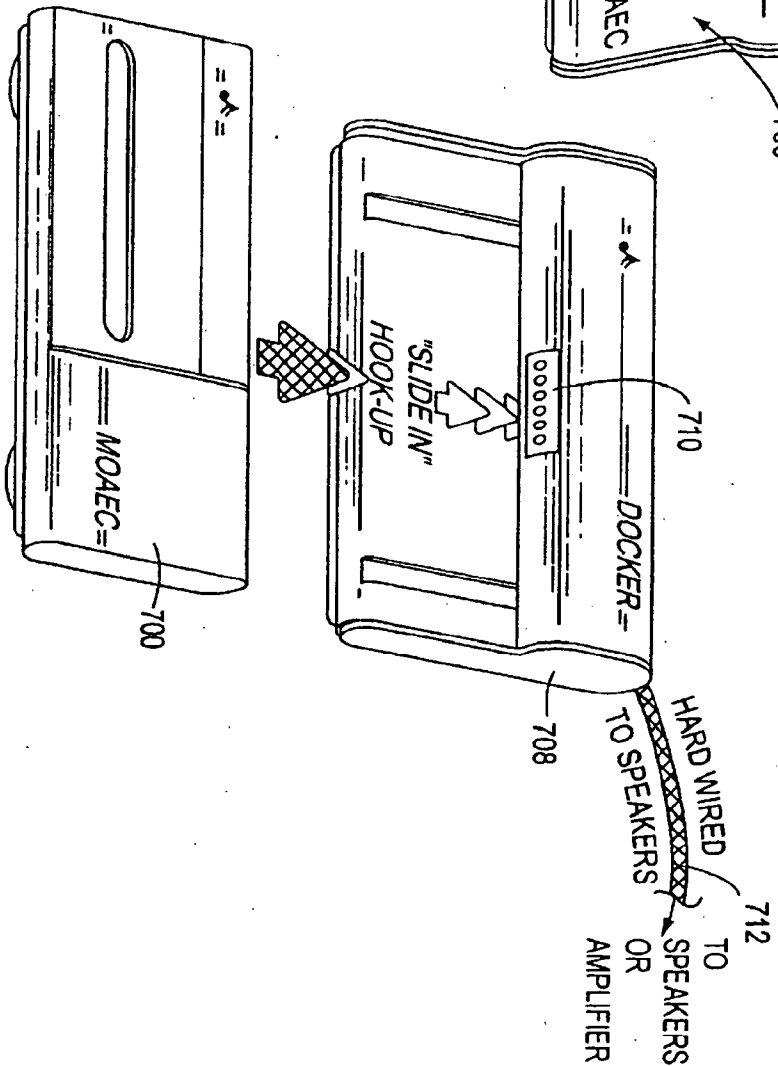


FIG. 19

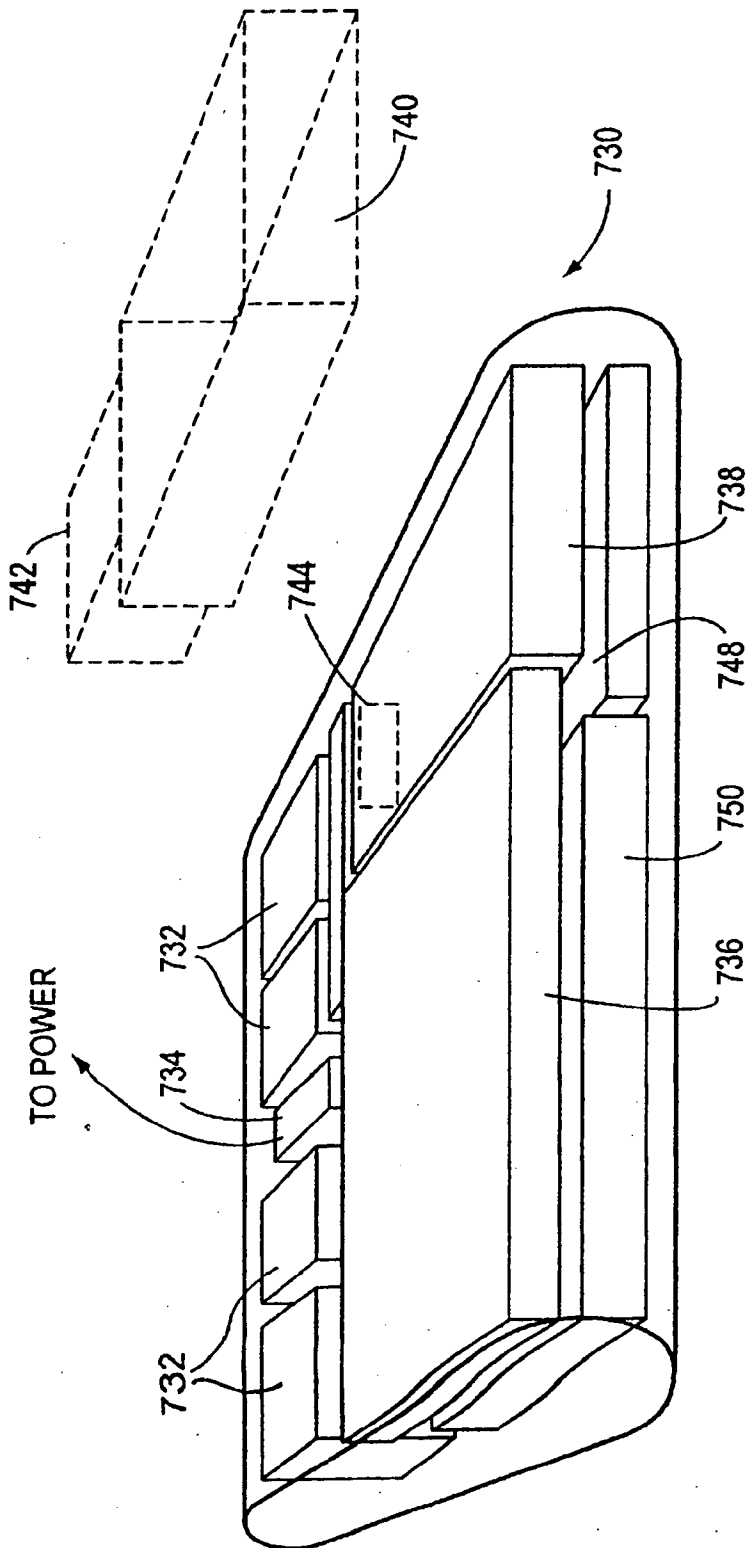


FIG. 20

CL 000366

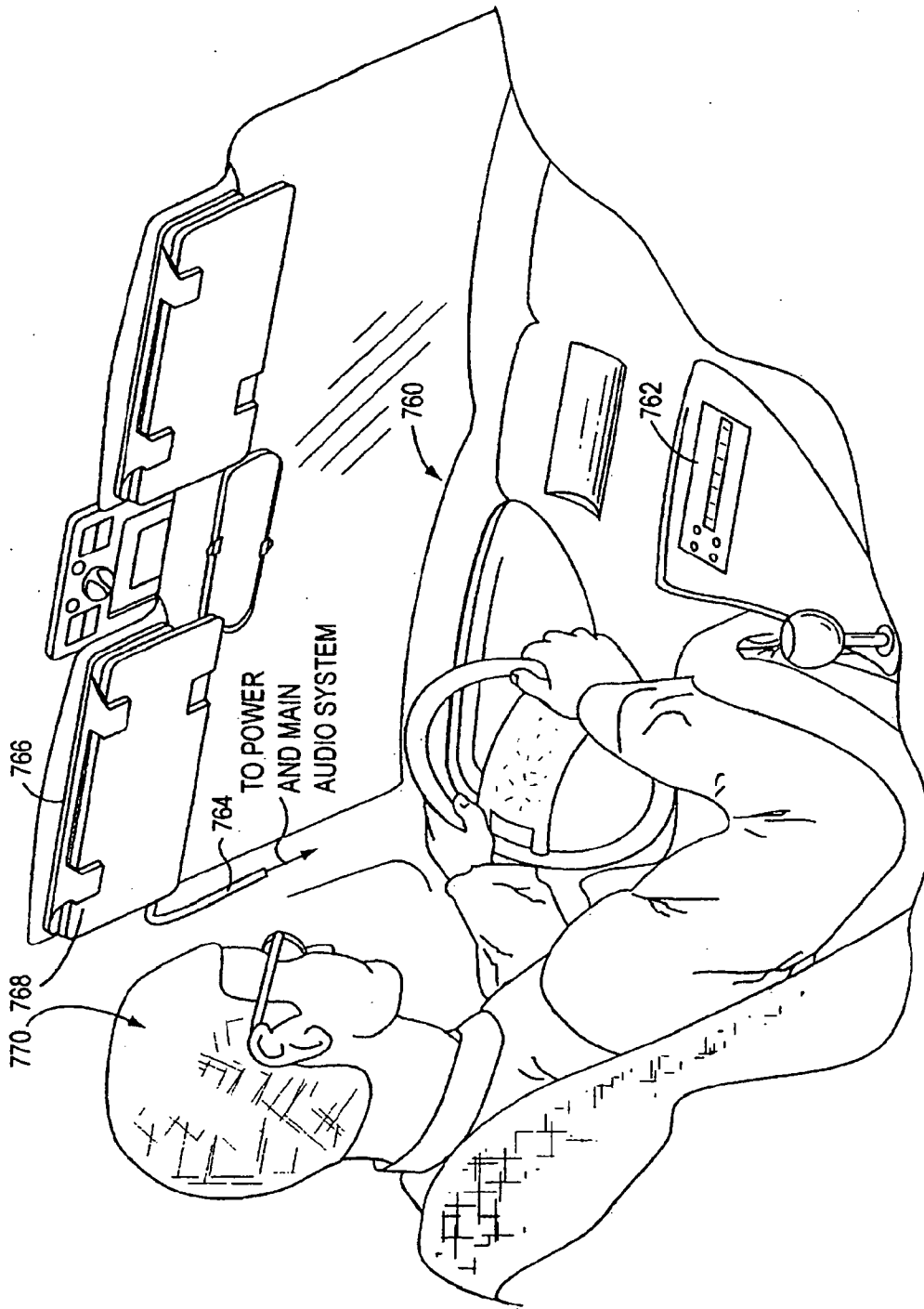


FIG. 21

CL 000367

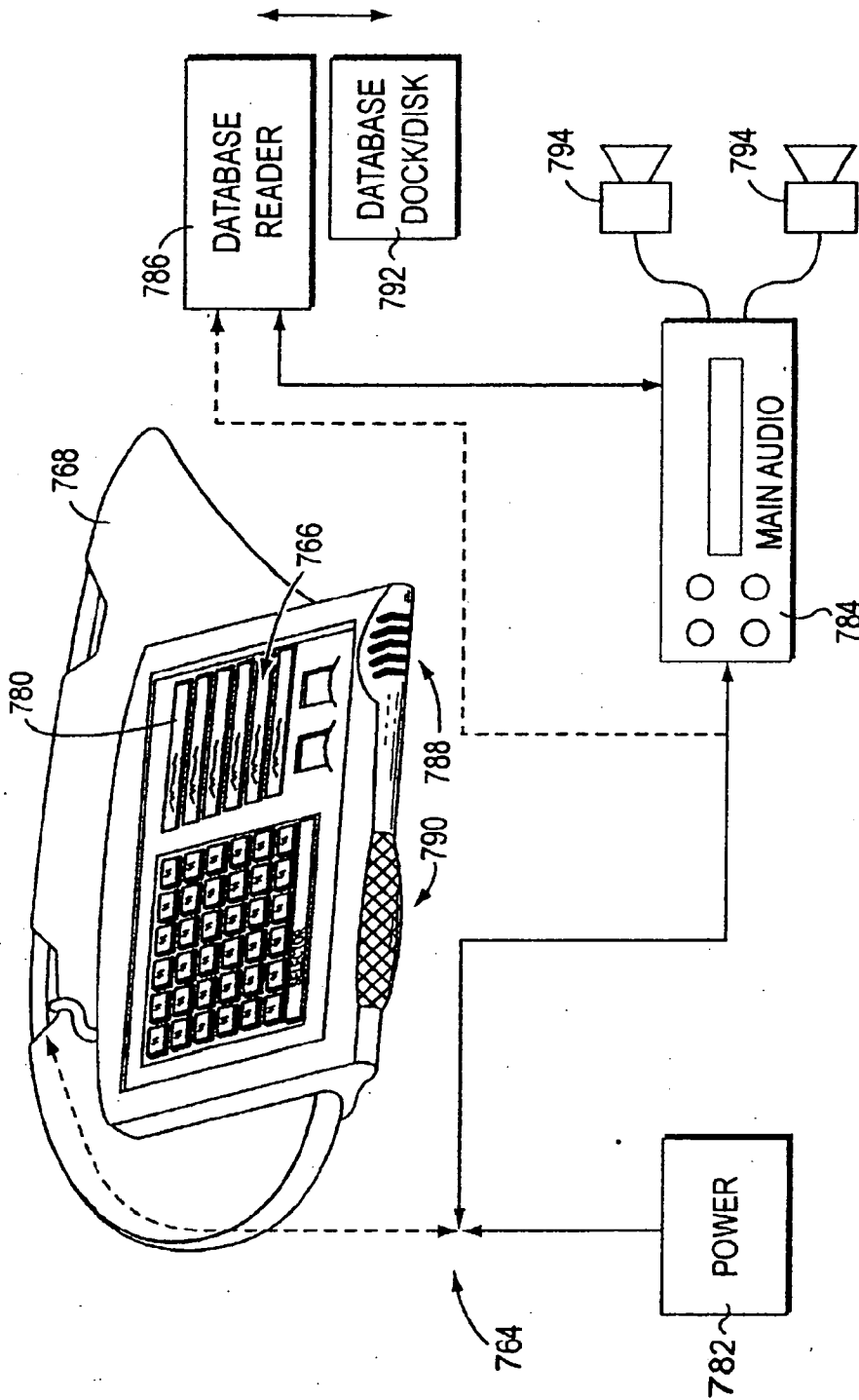


FIG. 22

CL 000368

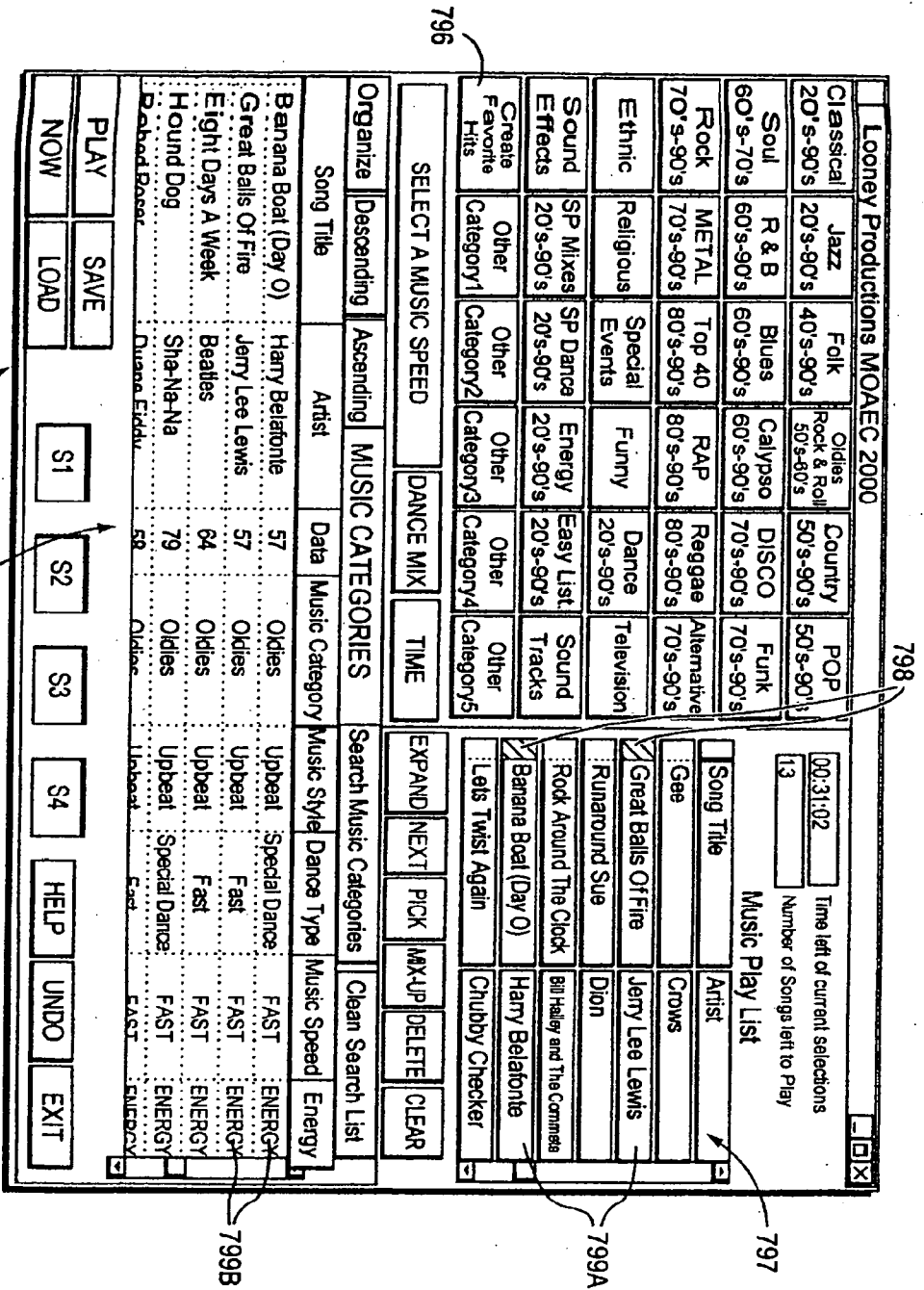


FIG. 23

Looney Productions MOAEC 2000

The Complete MOAEC Music Library

816	801	802	804	806	808	810	812	814	818
Own	Song Title	Artist	Data	Music Category	Music Style	Dance Type	Music Speed	Energy	Rating
Yes	Head Overfeet	Altivist, Morrissette	95	Alternative	Uppbeat	Special Dance	Medium	Energy	
Yes	He Is	Ashley Cleveland		Country	Mellow	Special Dance	Medium	Energy	
Yes	Spaceman	Baaylon Zoo		Meraj	Uppbeat	Special Dance	FMS	Energy	
Yes	Something Bawl Jesus	Big Ten Revival		Religion	Uppbeat	Fast	Fast	Energy	R
Yes	Here With Me	Big Ten Revival		Rock	Uppbeat	Special Dance	Fast	Energy	
Yes	Three Is The Magic Number	Blind Melon	96	Alternative	Uppbeat	Special Dance	Medium	Energy	
Yes	But Anyway (Studio Edit) Gull	Bipes Traveler	91	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Hurt By Love	Bodeans	97	Rock	Uppbeat	Special Dance	Medium	Energy	
Yes	Closer To Free	Bodeans	96	Alternative	Uppbeat	Fast	Fast	Energy	
Yes	I'll Be Comin' Around	Bottle Rockets		Country	Uppbeat	Special Dance	Fast	Energy	
Yes	That's The Point	Charlie Peacock		Country	Mellow	Special Dance	Medium	Energy	
Yes	The World I Know	Collective Soul	95	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cranberries	96	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cranberries	96	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Salvation	Cranberries	96	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Jellyhead	Crush	96	Alternative	Uppbeat	Fast	Fast	Energy	PG
Yes	Between You And Me	DC Talk		Top 40	Uppbeat	Special Dance	Fast	Energy	
Yes	Counting Blue Cars (Edit)	Dishwalla	99	Alternative	Uppbeat	Special Dance	Medium	Energy	
Yes	Counting Blue Cars (Full)	Dishwalla	96	Alternative	Uppbeat	Special Dance	Medium	Energy	
Yes	Everything Falls Apart	Dog's Eye View	96	Alternative	Uppbeat	Special Dance	Fast	Energy	
Yes	The Winding Song	Double Plus Good	96	Rap	Uppbeat	Special Dance	Fast	Energy	
Yes	Santa Monica	Everclear	95	Alternative	Uppbeat	Special Dance	Medium	Energy	R
Yes	Big Me	Foo Fighters	95	Alternative	Uppbeat	Special Dance	Medium	Energy	
Yes	Big Me	Foo Fighters	95	Alternative	Uppbeat	Special Dance	Medium	Energy	
Yes	Girl Don't Tell Me	Fuzzy	78	Alternative	Uppbeat	Special Dance	Fast	Energy	R
Yes	Stupid Girl	Garage	96	Alternative	Uppbeat	Special Dance	Medium	Energy	PG
Yes	Stupid Girl	Garage	96	Alternative	Uppbeat	Special Dance	Medium	Energy	PG

EXIT

RESET

RATING

S1

S2

S3

S4

CLEAR LIST

STOP

FIG. 24

The Complete MOAEC Music Library

Own	Song Title	Artist	Data	Music Category	Music Style	Dance Type	Music Speed	Energy	Rating
Yes	Head Overheel	As			Uppbeat	Special Dance	Medium	Energy	
Yes	Hells	As			Mellow	Special Dance	Medium	Energy	
Yes	Spaceman	Ba			Uppbeat	Special Dance	FMS	Energy	
Yes	Something Bout Jesus	Bi			Uppbeat	Special Dance	Fast	Energy	R
Yes	Here With Me	Bi			Uppbeat	Special Dance	Fast	Energy	
Yes	Three Is The Magic Number	Bi			Uppbeat	Special Dance	Medium	Energy	
Yes	But Anyway (Studio Edit)	Bi			Mellow	Special Dance	Medium	Energy	
Yes	Hurt By Love	Bc			Uppbeat	Special Dance	Fast	Energy	
Yes	Close To Free	Bc			Uppbeat	Special Dance	Fast	Energy	
Yes	I'll Be Comin Around	Bc			Mellow	Special Dance	Medium	Energy	
Yes	That's The Point	Cc			Mellow	Special Dance	Medium	Energy	
Yes	The World Know	Cc			Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cc			Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cc			Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cc			Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cc			Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cc			Mellow	Special Dance	Medium	Energy	
Yes	Savation	Cc			Uppbeat	Special Dance	Fast	Energy	PG
Yes	Jellyhead	Cc			Uppbeat	Special Dance	Fast	Energy	
Yes	Between You And Me	DC Talk			Uppbeat	Special Dance	Fast	Energy	
Yes	Counting Blue Cars (Edit)	Dishwalla			Uppbeat	Special Dance	Medium	Energy	
Yes	Counting Blue Cars (Edit)	Dishwalla			Uppbeat	Special Dance	Medium	Energy	
Yes	Everything Falls Apart	Dogs Eye View			Uppbeat	Special Dance	Fast	Energy	
Yes	The Whining Song	Double Plus Good			Uppbeat	Special Dance	Fast	Energy	R
Yes	Santa Monica	Everclear			Uppbeat	Special Dance	Medium	Energy	
Yes	Big Me	Foo Fighters			Uppbeat	Special Dance	Medium	Energy	
Yes	Big Me	Foo Fighters			Uppbeat	Special Dance	Medium	Energy	
Yes	Girl Don't Tell Me	Fuzy			Uppbeat	Special Dance	Fast	Energy	R
Yes	Stupid Girl	Garbage			Uppbeat	Special Dance	Medium	Energy	PG

Choose from following options to control the music your MOAEC will search, display, and play.

Blocking Options

Do Not Block Any Music

Block "PG" and "R" Rated Music

Block "R" rated Music Only

Cancel OK Password

EXIT RESET RATING 820 822 824

S1 S2 S3 S4

CLEARLIST STOP

FIG. 25

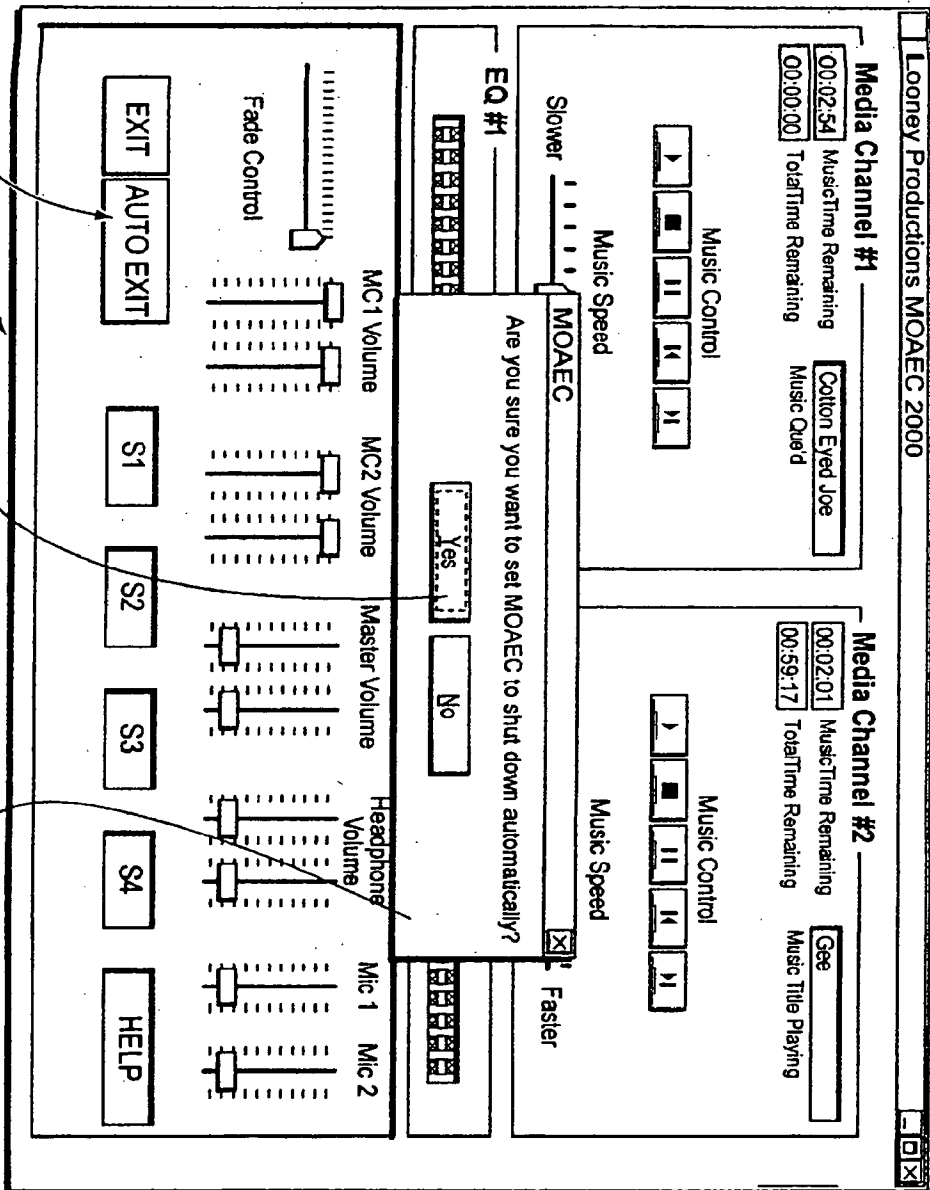


FIG. 27

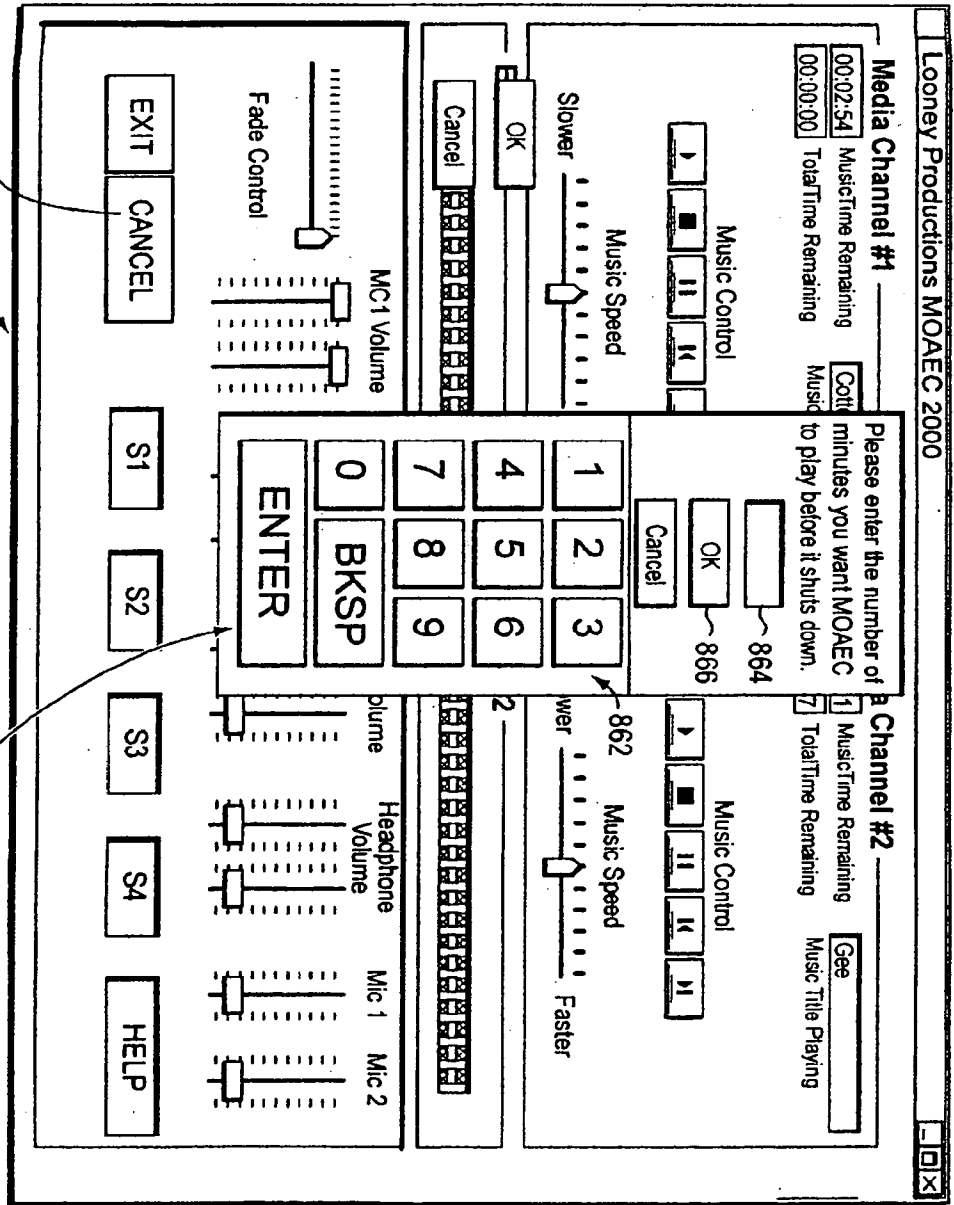


FIG. 28

1

MUSIC ORGANIZER AND ENTERTAINMENT CENTER

This application includes a Microfiche Appendix pursuant to 37 CFR 1.96(c) that contains a computer program listing of program commands in the commercially available Visual Basic language for implementing various functions of one embodiment of the center of the present invention described herein. The total number of microfiche and the total number of frames in the Microfiche Appendix are 2 and 103, respectively. A portion of the disclosure of this patent document or patent disclosure contains material, which is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all copyright rights whatsoever.

FIELD OF THE INVENTION

This invention relates to music recording and playback systems, and more particularly to a system that enables storage and playback of a wide range of individual music selections/songs according to a pre-programmed list of categories.

BACKGROUND OF THE INVENTION

The storage of music on digital media has presented a number of opportunities to miniaturize storage devices for music, thus enabling larger amounts of music to be stored in one place, and to radically alter the presentation of this music. In addition to the actual music sound data, new data related to certain characteristics of the music can now be overlaid in the storage media. This enables a listener to organize and playback music in a highly customized manner. It is no longer strictly necessary to store music in one format (e.g., a single disc or record) and playback individual selections from this disc or record according to a strict organization scheme. Likewise, advances in data compression and storage technology have enabled much larger quantities of digital data to be stored on magnetic disc and optical media than previously. The "Red Book" format common to music compact discs is somewhat inefficient due to its slow sample rate, and a much larger amount of data can be compressed on a standard data optical disc (CD-ROM), and decompressed and replayed using any number of readily available playback software routines.

In addition, most computers and data processing devices are now equipped with multimedia programs and advanced high-fidelity sound.

It is, therefore, an object of this invention to provide a music organizer and entertainment center that takes advantage of the latest advances in music data compression, storage and data processing capabilities. It is a further object of this invention to provide a user with the ability to fully customize playback of music according to a variety of parameters including categories of music. The graphical presentation of playback and storage controls should be easy to use and learn, and should take advantage of color and other visual aids.

SUMMARY OF THE INVENTION

This invention overcomes the disadvantages of the prior art by providing a music organizer and entertainment center that enables customized playback of music having a variety of predetermined categories that are provided, typically,

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ahead of time by a service provider. Music is played back in any desired order based upon those categories from an onboard database that can include a large number of songs or titles.

The music organizer and entertainment center provides a center having a microprocessor, sound card functions and high-volume data storage and retrieval units for playing back music according to a variety of predetermined categories. Music can be played back in random form or can be played back according to a particular pre-selected order. The categories are provided by service provider who delivers selected titles and/or songs to the end user. The songs are typically loaded using a custom CD-ROM provided from the service provider. The music is provided in data-compressed form and is decompressed and processed through a sound card during playback. The categories can include a variety of parameters such as title, artists, date, speed, dance characteristics, energy level and music style.

The user selects between a variety of graphical user interface screens that are arranged on a display. The display can comprise a touch screen, or can include a variety of cursor-moving functions for operating different display "buttons" defined on the screen. Alternatively voice recognition software can be used to provide a voice operation capability to the user. Likewise, voice synthesis can be used to inform the user of various system operations.

The interface can be organized according to various music categories that each appear as buttons. Within each button can be contained sub-categories for further organization. All categories are cross indexed with categories that are pre-defined within various fields of the database, that stores the data for each song in an appropriate file having the various category flags appended thereto. Conventional database software such as Microsoft Access® can be used in forming the database for compressed music data and categories. The music is preferably compressed using MPEG3 and a standard sound card, typically having high-fidelity characteristics is used to playback the decompressed music. The music is stored in a hard drive or other high-volume storage medium on the system in compressed form. Compression of the music, as well as loading of appropriate category flags is accomplished at the service provider's facility based upon the user's orders. Orders can be taken and filled electronically, via the Internet. Alternatively, oral orders can be made, that are filled by preparing a CD-ROM containing the selected songs in compressed form. A master list can be contained on the database of the users' system. This master list can be used to select the various songs from the service provider; the CD-ROM can include updates to the master list that are loaded along with the songs.

The CD-ROM and/or individual songs can include a special code or identification that is keyed to the user's system's code. In this manner only the user's system can load the songs on its hard drive. A docking mechanism can be provided to all or part of the system to allow songs to be moved to different playback devices. In this manner the user can have a library of songs to playback in a variety of portable and fixed base units including vehicles.

One of the categories provided to selections can be ratings. Ratings are typically provided ahead of time by the service provider and are appended to the overall database of categories. The user has, in the center, a facility for blocking out any songs from being listed or searched that exceed a predetermined rating category. A password is used to control the block-out function. This password is initially entered by the user or is provided ahead of time by the service provider. It must be entered in order to control the block-out function.

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The center can also be provided with an auto exit function. When an initial screen is called, the user can indicate how many minutes he or she wishes the center to playback songs. When that number of minutes has elapsed, the center automatically shuts off.

It is contemplated that with appropriate data storage techniques and playback facilities, the center can organize video and image data as well as music data. Particular video data compression and playback hardware and software are typically required for such playback.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects and advantages of the invention will become more clear with reference to the following detailed description, as illustrated by the drawings in which:

FIG. 1 is a perspective view of an exemplary music organizer and entertainment center according to an embodiment of this invention;

FIG. 2 is a perspective view of an exemplary music organizer and entertainment center designed for portability according to an alternate embodiment of this invention;

FIG. 3 is a schematic block diagram of the hardware architecture of an exemplary music organizer and entertainment center;

FIG. 4 is a schematic flow diagram illustrating a basic control data path for the music organizer and entertainment center of this invention;

FIG. 5 is a schematic flow diagram illustrating the use of a graphical user interface screen selected according to the flow diagram of FIG. 4;

FIG. 6 is a schematic flow diagram showing the selection of a graphical user interface screen selected according to the flow diagram of FIG. 4;

FIG. 7 is a schematic flow diagram showing the selection of a graphical user interface screen selected according to the flow diagram of FIG. 4;

FIG. 8 is a schematic flow diagram of a graphical user interface screen selected according to the flow diagram of FIG. 4;

FIG. 9 is a schematic flow diagram of the playback process using the graphical user interface screens selected according to the flow diagram in FIG. 4;

FIG. 10 is a schematic flow diagram showing the saving and loading of play lists using the music organizer and entertainment center according to this invention;

FIG. 11 is a plan view of a first graphical user interface screen;

FIG. 12 is a plan view of a second graphical user interface screen;

FIG. 13 is a more-detailed plan view of the second graphical user interface screen of FIG. 12;

FIG. 14 is a more-detailed plan view showing the saving of music play list selections using the graphical user interface screen of FIG. 12;

FIG. 15 is a more-detailed plan showing the loading of a music play list using the graphical user interface screen of FIG. 12;

FIG. 16 is a plan view of a third graphical user interface screen;

FIG. 17 is a plan view of a fourth graphical user interface screen;

FIGS. 18 and 19 are perspective views of an exemplary music organizer and entertainment center according to an

alternate embodiment of this invention utilizing a base unit and docking principle;

FIG. 20 is yet another alternate embodiment of a music organizer and entertainment center utilizing a docking principle for a main hard drive;

FIGS. 21 and 22 are perspective views of yet another exemplary music organizer and entertainment center for use in mobile environments including, for example, the docking element shown in FIG. 20;

FIG. 23 is a plan view of the graphical user interface screen of FIG. 12 detailing a favorite hits function;

FIG. 24 is a plan view of the fourth graphical user interface screen showing a display of the service provider's available library;

FIG. 25 is a plan view of the graphical user interface screen of FIG. 24 showing the use of a rating category;

FIG. 26 is a plan view of the graphical user interface screen of FIG. 24 showing a password entry window for retrieving rated music;

FIG. 27 is a plan view of a modified first graphical user interface screen according to another embodiment of the invention, including an auto-exit function; and

FIG. 28 is a plan view of the graphical user interface screen of FIG. 27 showing a shut-down time control window.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

A generalized embodiment of a music organizer and entertainment center 50 is detailed in FIG. 1. For the purposes of this description the term "center" will be used to describe any of the music organizer and entertainment center systems described herein.

The center 50 is a stand-alone unit powered by household current using a conventional power cord 52. The chassis 54 of the center includes at least two integral speakers 56 to provide stereo sound. A variety of horn-folding and acoustic enhancement techniques can be used to increase the performance of the speakers. Alternatively, separable speakers can be used, placed at remote locations in a room. The front panel 58 of the center can include a variety of knobs, switches and displays. In this embodiment, a basic LCD display 60 is shown and a retractable tray mechanism for receiving an optical data or music compact disc is also provided 62. This tray 62 is conventional according to this embodiment, extending outwardly and retracting inwardly based upon a switch 64. The transport mechanism and reading mechanism can be conventional. The center includes a flip-up type display 70 according to this embodiment. The display is located on the top 72 of the center and is retractable into a recess 74. A large button 76 is provided to support the display 70 in an upright position. This button can be spring-loaded. When it is pushed downwardly, it allows the display to be adjusted into different position. A latch mechanism 78 can be provided to the display 70 and to the recess 74. The latch mechanism allows the display to be locked into a close position, or, alternatively, released for deployment as shown. The display, itself, includes a screen 80 having any acceptable size, format and display technology. For example, a color active-matrix screen, such as that found in a laptop computer can be used. The pixel dimensions are generally comparable to those of a laptop computer display. The display itself includes a graphically user interface with a series of displayed graphical user interface "buttons" 82 that can be actuated using a touch-screen layer

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applied to the display 80. The touch-screen hardware and controller software are conventional and commercially available. Alternatively, a mouse or other cursor-moving mechanism, such as a track ball, can be provided to the chassis 54.

With reference to FIG. 2, an alternate embodiment of a center 90 is detailed. This center comprises a laptop arrangement having a base 92 and a foldable display section 94. This center can comprise, in essence, a modified laptop computer with all the basic components of a modern multimedia computer system. Certain personal computer components not specifically required for the purposes of this embodiment can be omitted. For example, a display 96 having buttons 98 as described above can be provided. A plurality of speakers 100 can also be provided representing base, midrange, tweeters, etc. Volume and screen display controls 102 can also be provided as well as a basic alphanumeric keyboard 104 of conventional design. A retracting compact disc tray and reader 106 can also be provided. An onboard battery (not shown) provides power while an AC/DC converter 108 recharges the unit based upon household current provided by a power cord 110. Note that automotive DC current can also be used.

The generalized architecture of a center is further detailed in FIG. 3, complete with optional components. The "heart" of the center is its central processing unit or CPU 130. The CPU, in a preferred embodiment comprises a Pentium® II microprocessor having an operating speed of 266 MHz or greater available from Intel. The architecture of this microprocessor is well-known. It is adapted to accept inputs from a variety of hardware components. These hardware components are, themselves, commercially available and can be interfaced with the CPU 130 by those of ordinary skill. In summary, the components involved in a complete center will now be described.

A random access memory (RAM) 132 is provided to support the CPU 130. This RAM typically provides twenty megabytes of storage or greater. A keyboard and/or cursor-moving mouse interface is also provided. The keyboard 134 can be omitted in certain embodiments where a touch-screen is used for all onboard functions. For example, the touch-screen, shown as a touch-screen interface 136, and used in conjunction with the monitor screen 140, can include a touch-keyboard thereon for entering alphanumeric characters. Where a monitor 140 is used, a video driver card 142 of conventional design is provided. A conventional television can also be utilized. Where a television screen is used for displaying data, a scan converter 146 can be provided. The scan converter 146 can be used for output 150 to the television screen and/or input 152 from, for example, a television remote control 154. In this manner both input and output via a television and/or computer monitor can be accomplished. A microphone 160 and appropriate voice recognition card 162 can also be provided in conjunction with the CPU. Additionally, a CD-ROM, with appropriate driver card 170 can also be provided. For output, a sound card, available from a variety of commercial sources such as the Soundblaster® driver 180 can be employed and appropriate amplifiers and speakers 182 can be provided. The amplifiers and speakers are conventional and receive inputs from the sound card in the form, typically, of analog audio signals.

Input/output exchange of data is provided through a hard drive storage 190, also of conventional design. As will be described further below, the hard drive storage interacts with the CPU 130 using onboard software. This software includes a speech recognition software block 200 a sound decompression software block 210, a sound information database 220 the center's proprietary speech vocabulary 230 and the center's search and play interface 240.

A significant feature of the center, to be described in greater detail below, is the organization of individual songs or selections according to specific categories, that are determined ahead of time, on a partially subjective basis, by the service provider. These categories are carried in a database, along with the raw digital music data, and allow the user to playback each of the individual selections based upon specific categories in a random or ordered manner. The use of categories for storage and playback empowers the user in an entirely new way. Songs can be chosen based upon a specific desire or mood that relates to categories such as music age, energy, speed, style, dance, or rating. Experienced listeners can enjoy new convenience in music playback. Newer listeners typically find their use of the center to be highly educational, as they quickly learn to associate certain types of categories with specific selections, artists and songs, and can enjoy the benefit of a full display of the song data via the center's screen.

With reference to the above-described architecture, the procedure by which individual songs become categorized and eventually made available for a user to playback according to particular categories will be described in summary:

1. Musical source material is first purchased or otherwise acquired by the service provider that services the music organizer and entertainment center of this invention. This music is typically obtained in standard Red Book compact disc format on individual music albums and singles.
2. A standard compact disc player, DAT or other audio playback medium is used by the service provider in conjunction with a main computer having a large database. A hard drive rated at five gigabytes or larger is used in conjunction with the database.
3. Music is played by the playback device into a data compression card commercially available from, for example, Dialog Four™. This data compression card compresses the music into the commercially available MPEG3 format. A CPU, similar to that shown in FIG. 3 stores the music in the hard drive of the service provider in compressed form. Individual songs are each given their own file identifier for later processing.
4. Compressed music is subsequently catalogued using a conventional database program such as Microsoft Access® 2.0 in this embodiment. The following categories, among others can be used in conjunction with the database program to catalog each individual musical selection-song title, artist, date, main music category, sub-main music category, special music category, sub-music category, music style, dance type, music speed and a subjective music "energy level" determined by the service provider. These categories are used subsequently by the center's operating system as described below. All categories are stored in the service provider's hard drive for subsequent retrieval.
5. A master list of available music, in the form of individual selections or songs, is compiled by the service provider. Individual customers or subscribers are solicited to select songs or groups of songs or selections from a service

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provider. According to a preferred embodiment, the selected songs are copied from the service provider hard drive to a writable data compact disc in MPEG3 compressed format. The center operating system software and Access® 2.0 database program available from Microsoft, Inc. of Redmond, Wash. can also be loaded onto this compact disc when the playback device does not already contain these software packages.

The package of data compressed songs and other software if applicable, is tagged with a distinct serial number or other identifier and/or format that matches a pre-loaded serial number or format in the subscriber's particular center. This serial number or format has been pre-loaded in the center from software made available by the service provider. For example, a commercially private or public key encryption algorithm can be provided to the subscriber. The data in the compact disc includes an appropriate encryption key that matches one already present in the center. Compressed data can be decrypted and "unlock" based upon a match between the key provided by the service provider and the key provided by the center. In any case, a technique for locking information so that only a desired center can read the information and, hence, play the songs, is provided. This prevents copyright infringement and unauthorized playback of songs by other units that have not paid appropriate license fees for receiving the music.

6. As noted above, a formatted, data-compressed disc is provided to the subscriber via a physical transfer of the disc. In other words, the disc is mailed or otherwise delivered to the subscriber. It should be noted that, while an optical disc is the preferred form of data transfer according to an embodiment of this invention, another form of storage media such as tape, circuit chips, removable hard drive, or any other acceptable high-volume data storage can be used to transfer song data. Likewise, the formatted compressed data can be transferred via a radio or telephone network link, assuming that appropriately wide bandwidths is available to enable the transfer to occur in a sufficiently short period of time. All these techniques of transferring formatted, compressed, customized song data are expressly contemplated according to this invention. It is desired primarily that the data include various categories as described above with reference to step 4.

When the subscriber receives the customized song data on the disc or other medium, the customer installs the disc in his or her center by following conventional installation and instructions provided with the disc. As noted, the center either includes well known CD-ROM installer routines, such as those found in popular Windows® operating system available from Microsoft or, alternatively, specialized installation software is included with the disc transferred from the service provider. All data on the disc is typically transferred into the high-volume hard drive or other storage media provided with the center. The song data, therefore, resides in the center formatted in the Access® 2.0 database as described above. The categories appended to each song as part of the database program also reside in the center's hard drive at this time.

7. The center's software loads data related to individual song selections and categories into appropriate database locations.

8. The center polls data in the downloaded disc to determine whether the appropriate identification code and/or serial number, matching that of the center is present. If not, then the downloading process is terminated, and the user is advised to contact the service provider.

9. If downloading of song data is completed successfully, then the data becomes resident on the center's disc drive or other high-volume random access memory storage unit. New songs are appended to a list that contains any previous songs. This information is displayed in a manner to be described further below.

10. The CD-ROM is subsequently removed from the center and stored for backup purposes. At this time, the user can select various songs downloaded in the previous steps using various graphical user interface and/or voice commands to be described further below.

11. Upon playback, song data is decompressed from its stored format using MPEG3 data compression. The decompressed song data is then played in a standard "wave" format using, for example, Winplay 3® available from Microsoft, or another data-to-sound software procedure. It is contemplated that the software procedure be compatible with an appropriate sound card, as described above. Speakers and an amplifier are used to deliver music to the user, as also described above.

Reference will now be made to the flow diagrams illustrated in FIGS. 4-10, and corresponding graphical user interface display screen illustrations will also be referenced. These display screens are shown in FIGS. 11-17.

Referring first to FIG. 4, the user initializes the program in a program start step 300. A title screen, not shown, is displayed 302. Any acceptable title screen can be used. The title screen prompts the user to enter the program in step 304. If the user does not desire to enter the program, it ends in step 306. If the user enters the program, then Screen1 is entered in step 308. Screen1 is shown in the display 310 in FIG. 11. Note that the various screens, entitled Screen1, Screen2, Screen3 and Screen4 are denoted respectively by buttons S1 (312), S2 (314), S3 (316) and S4 (318). These buttons appear on the bottom of all display screens used herein so that a user can quickly select between different control screens. The blank control fields are displayed in step 320. Based upon these fields, a user selects between Screen1 controls in step 322, Screen2 controls in step 324, Screen3 controls in step 326 and Screen4 controls in step 328.

Note that the Screen2 display 330 is shown in FIGS. 12, 13, 14 and 15. Likewise, Screen3 displays 332 are shown in FIG. 16 and Screen4 displays 336 are shown in FIG. 17. These screen displays will be described further below.

With reference to Screen1, as shown in FIG. 11, various media channels for playing back music can be established. In this example, Channel1 340 and Channel2 342 are provided. Each channel includes an individual set of speed and playback buttons 344 having conventional control symbols allowing, for example, play, stop, pause, forward and reverse. Additional controls 346 can also be provided for the channels and can be used, for example, for specialized functions such as mixing of songs and overriding of songs using, for example, external microphone inputs. Note that, in particular, a fade control 348 is provided.

FIG. 5 details user operations utilizing Screen2 after branching from step 350. Screen2 is shown generally in FIG. 12, as noted above. By branching to the searching step 352, a user can search the main categories of music recognized by the system. The begin search button 354 (FIG. 12) controls the searching of main categories. As noted, a variety of categories such as artists, as shown in FIG. 12, can be searched. The selection of an appropriate category is noted in block 358. Various text can be entered using a keyboard 360 (FIG. 12) according to the block 362. The particular

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element being searched as shown in the window 364 causes the system program to access a main song database entitled MyData in block 364. The request can be canceled in block 370, which causes a branching back to the initial screen block 350. The button 372 enables cancellation.

If no cancellation occurs, then block 374 determines whether the requested category and text within the category exists. In addition, categories and information can be characterized according to a variety of colors, as displayed in the partial window of categories 380 and the more complete window, as shown in FIG. 13 as window 382. If the particular category and/or text does not exist, then block 388 notes its absence and suggests ordering the desired music. This block then branches to the cancellation block 370. Conversely, if the particular categories and/or text exists, then the appropriately organized songs are displayed according to block 390 in the window 392.

Screen2 acts generally, as a main control screen for searching and playing any selections within the center. The illustrated window 382 in FIG. 13 shows some of the possible categories that can be organized by the service provider and cross-referenced within the database with respect to each individual selection. "Other category" buttons 400 are provided for future expansion. If one of the main category buttons in the window 382 is selected, as shown in block 410, then the routine determines whether a single or double "click" of the user interface has occurred. If a single click occurs as shown in block 412, then the system prompts the user to select a music "speed" in block 414 according to screen button 416. The user is then prompted to input an appropriate time duration within which music will be played in block 418 based upon button 420. Given these parameters, the system accesses the database in step 422 to determine music matching, the selected criteria for time and category. Songs are entered in a play list according to the categories based upon blocks 424, 426 and 428. In particular, according to block 428, the songs can be randomized after the time and category criteria have been met to provide a "disc-jockey" type playback which is somewhat arbitrary. The play list for the given time is detailed in window 430. The number of songs in the play list currently remaining as shown in window 432 and the time remaining is shown in window 434. Time values are based upon pre-entered time values provided by the service provider in the original database. Like other criteria, time of a song can be determined as an individual criteria. Conversely, the time of song can be measured based upon the size of the data file and upon other criteria well known to those of ordinary skill.

At any time, a portion of the current search list 451 is displayed, showing the various depicted categories such as title, artist, publication date, music category music style, dance type, music speed and energy in row-and-column form. The search list represents the selections located by pressing one or more category buttons. Songs from the search list can be appended to the end of the play list 430 by, for example clicking on their entry in the search list 451.

Once a selected play list is created, the user has the option to load and/or save the play list using respective buttons 438 and 440. If the save button 440 is pressed, then a confirmation window 450 is displayed as shown in FIG. 14. This particular play list is assigned a name and can be replayed at any give time by calling up the particular play list from a menu.

A set of buttons of particular interest are used to organize the search list 451 so that the song titles therein are displayed in a desired manner. The organize button 453 allows displays to be refined. In particular, by pressing either ascending or descending buttons 455 and 457, respectively, the search results can be displayed in corresponding order.

Another button of interest as detailed in FIG. 13 is the "dance mix" button 452. This button is a default selection button that selects and searches for dance music having a particular speed. In a preferred embodiment, this function specifically selects, at random, from the MyData database three dance category songs with a fast speed category followed by two dance category songs having a slow speed category. These songs, the order three fast and then two slow are placed in the music play list for playback at the earliest available time.

FIG. 15 shows a file listing window 460 having a four separate play list files 462 that can be selected. The selected play list file 462 can be transferred to the main music play list window 430 by pressing the open button 464 within the window 460.

Before discussing the system procedure further, it is noted that pressing the category button as detailed in step 410 (FIG. 5) twice (e.g., "double click") as shown in block 470, causes the particular category button to display Screen3 480 (FIG. 16). The display of Screen3 is detailed in block 472. Screen3 provides a window 482 with subcategories that fall under a particular music category. The sub-categories are listed as individual buttons 484. These categories can comprise a variety of parameters such as time frame, special occasions, type of music, etc. In addition, the basic categories such as speed or "energy" can be included as sub-categories under a particular category.

Further reference is made to FIG. 6. The controls for screens 2 and 3 will be described first, in further detail. When a particular song in a play list is selected by, for example, highlighting a song with the cursor as detailed in block 500, the song can be played immediately by pushing the Now button 502 as detailed generally in block 504. Any current song being played is interrupted in block 506 and the selected song is played instead. Subsequently, the play list begins playing songs in the prior order in block 508. Conversely, if the sort command is given in block 510, then songs are sorted in ascending or descending order according to a selected category in block 512. A song in the search list is selected in block 514. The song selected can be played according to the Now block 504. Alternatively, the pick block 516 can be used to put the searched song at the end of a given play list as shown in block 518. If the play list song is "clicked" twice as shown in block 519 then the search list song selected is placed to the top of the play list in block 520. In addition, a listing of favorite hits/selections can be requested by the user in block 524. This causes the search list to be filled that have been pre-selected in block 526 and a song from the search list is selected in block 514. Block 514 then branches to the now block 504 and continues as described.

Referring again to block 520, if a song is placed at the top of the play list the song is updated in Screen1 in block 530. The song is then played based upon the play block 532. If the mix up command is entered by the user in block 540, then songs in the play list are randomly mixed in block 542 and Screen1 is updated in block 530. As described above, the play command 532 causes songs to be played in the play list order selected in block 508.

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The selection of Screen3, shown in block 560, then the system determines whether a main category was selected in block 562. If not, then an error message is displayed in block 564 and the original screen is re-displayed in block 566. If a main category is selected in block 562, then the system accesses the MyData database of songs and categories in block 568. Any appropriate sub-categories are listed based upon that particular main category in block 570. Sub-categories are sorted and displayed on appropriate default sub-category buttons 572 shown in the window 482 in FIG. 16. The user can select appropriate sub-category buttons by "clicking" on them as shown in block 574. The MyData database is accessed in block 576 based upon the selected sub-categories and all songs that match the main and sub-category selections are listed in block 578. This listing is shown in the search window 332. Note that the search window 332 displays various category information such as title, artist, date, music category, music is style, dance type, music speed and energy. Of course, this can also be included as desired by the service provider who originally formats such categories. In addition, custom category information can be included based upon the user's desires.

FIG. 8 relates to the selection of Screen4 as shown in block 550. Screen4 is also illustrated generally as the display 336 in FIG. 17. The display is organized to display all songs within the user's library and the broader service provider's library. The display 336 includes columns showing data test status 552, song identification number 554, disc number (e.g., the disc on the service provider on which the song resides 556) the catalog song number 558, the title 590, the artist 592, the music style 594, the dance type, if any, 596, the speed 598, the time in seconds 570, the energy level, if any, 572 and any other appropriate category.

The entire library of the service provider can be provided in this format to the users, so that the user can select the songs that it wishes to order at later times. A series of buttons can be provided within Screen4. The first button, Button1, shown in block 580 instructs the user to insert an appropriate CD-ROM containing music and category data in block 582. The user is then prompted to use Button2, shown in block 584. This button lists all compressed data files based on the particular disc and directory selected in block 586. The user is then prompted by Button3 in block 588. Activating this button causes the copying of all compressed files from the disc over to the directory if these files are not already present in block 560. The user is then prompted by Button4 in block 562. Activating this button accesses the main database in block 564. Songs on the CD-ROM are compared to the data records within the center in block 566. The MyData database is updated with new songs in block 567. At any time, the canceled button can be pressed as shown in block 598, which returns to the Button1 prompt of block 580.

Reference is now made to FIG. 9. If a Play (see button 601, FIG. 14) or Now button on the screen is selected in block 600, Screen1 is displayed showing the various playback controls in block 602. The MyData database is accessed in block 604. The file MID that matches the selected song is searched for by the system in block 606. The file is loaded from the disc in block 608. Again, this file is retrieved from the disc in MPEG3 data compressed format. A particular color for the song, which may correspond to a given set of categories, as well as a title and other data are provided to one of the media channels in Screen1 in block 610. The song begins playing in block 612 as soon as the data is ready. A time countdown for the song is initiated

using known techniques in block 614. If a pause, stop or mixed command is received in block 616 then these steps, is described above, are carried out. In particular, a pause or stop ends playing of the song either temporarily (e.g., until pause is pressed again) or permanently, in case of a stop command.

Volume adjustment and other equalizer values can be provided according to block 618 and 620. These act upon the playback of a song using known techniques. When the particular song has ended in blocks 622 the system checks whether it has reached the end of the current play list in block 624 if not, media channels are switched in block 626 and the next song on the play list is located in block 628. This song information is transferred back to block 604 and the name of that new song is located in block 606. The process continues as described above.

If the end of the play list is reached in block 624, then Screen1 controls are cleared in block 630. The system awaits further instructions at this time.

FIG. 10 describes the saving and loading of play list in more detail. If a save command is initiated by the user in block 650, then all song data and associated colored data for the display from the current play list is collected 652. The file save window is placed on the screen in block 654. The user can select an appropriate file name for saving the particular play list file in block 656. Again, the display for this procedure is detailed in FIG. 14

If a load command is entered by a user as shown in block 660, then the file load window is displayed in block 662. The display for this window is shown in FIG. 15.

Song and color data are read from the selected file in block 664 and the current play list is updated and/or replaced with all song in color data from the loaded file in block 666.

It is specifically noted that category information is provided by the service provider appended to each song in the database. The accessing of songs having such data appended thereto occurs according to applicant's unique graphical user interface based upon provider categories. The association of various database identifiers to each song is implemented using conventional database programs such as the above-described Microsoft Access® 2.0. The association of category objects to song data should be conventional to those of ordinary skill. The storage of MPEG3 data compressed song files is accomplished in the same manner as other data stored as files in a database. The Microfiche Appendix included in the subject application pursuant to 37 CFR 1.96(c) contains a listing of program commands in the commercially available Visual Basic language for implementing various functions of the center according to this embodiment.

Using the hardware and software elements described above, FIGS. 18 and 19 detail a docking mechanism in which music is stored on a hard drive or other electronic medium in a main data handling unit 700 with a flip-up display 702 and associated keyboard 704 that can include playback controls 706 (e.g., play, stop, pause, forward and reverse). The unit 700 can be "docked" to a base unit 708 that includes a connector 710 for interfacing with an associated connector in the unit 700. A cable 712 can interconnect the base unit 708 with appropriate speakers or amplifiers. The unit 700, hence, can include the music data for the system and can be moved from location to location so that there is no need to purchase additional playback units to play music provided from the service provider with the particular code.

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FIG. 20 illustrates and alternate embodiment for docking unit in which a base unit 730 includes speakers 732, a power coupling 734, a flip-up display 736 and a removable memory storage device, such as a compact hard drive 738. The hard drive is shown removed in phantom 740. A connector 742 can interface with an associated connector (shown in phantom) 744 on the base unit. The hard drive, itself, it moved from base unit to base unit so that, again, there is need to purchase music only once, and that music is identified to a particular hard drive. The base unit can also include a CD-ROM-shelf 748 for reading music during the original loading process. In certain remote units, the CD-ROM may be omitted, since all music is contained on the hard drive and loading of music is accomplished with the base unit 730. A mother board 750 controls the operations of the unit.

FIGS. 21 and 22 illustrate a mobile playback system according to this invention. The above described docking units in FIGS. 19 and 20 can be utilized in conjunction with this unit. In other words, an entire hard drive or unit can be interfaced with an onboard automotive base unit to enable music in the hard drive or docking unit to be played within a car or other vehicle. In this embodiment, the automotive interior 760 is provided with a main audio system 762. Various cords 764 interconnect the main system to a contact display unit 766 that, in this embodiment, is located on the sun visor 768 where the driver 770 can easily access it. It is contemplated that the display unit can be located at any acceptable location. Alternatively, the unit can be entirely operated by voice commands, with no display unit, and instead, a voice response system implementing conventional voice-generating software. With further reference to FIG. 22, the sun visor 768 is lowered to reveal the display 766 having a screen 780. The wires 764 interconnect the display with a power source 782, that can be part of the main audio systems 784 or can be separate. The wires also connect the display 780 with the main audio system 784, or alternatively, can be routed directly to the vehicle's onboard database reader 786. The database reader is any microprocessor-based system as described above. It can be exclusively a disc drive or other high-volume data reader or can include many of the processing functions performed by the center. Alternatively the processor functions can be performed within the display 766. The display 766 includes a microphone 788 for voice activation. As described above, conventional voice-recognition software can be used in conjunction with the center. A hand grip 790 is provided for moving the display to an acceptable position. The database reader interfaces with an onboard docking unit or disc 792, as described above. This can be removed when not in use for placement in another database reader, such as the base unit 730 shown in FIG. 20. Music is routed from the database reader 786 or the display 766 depending upon where the microprocessor are located, back to the main audio unit 784 where amplification occurs. The music is played back on appropriate speakers 794.

Reference is now made to additional features that can be implemented according to certain embodiments of the invention. FIG. 23 details a favorite hits function that can be applied to Screen2. The display 795 includes a favorite hits category creation button 796. Favorite hits, when identified

by a user on the current play list 797 can be flagged by "clicking" on the individual titles. A colored flag 798 appears next to flagged songs. Unflagging can involve a second click on a flagged song or a separate delete button on the screen. The flagged songs 799A appear as top selections 799B on the current search music categories list 803. By clicking on the create favorite hits button 796, these favorites can be saved, so that they always appear at the top of the search categories list 803. In this manner, they can be retrieved to place on the play list within seconds. Again, any song on the search categories list 803 can be transferred to the play list for playback in a desired order (typically first-in-first-out) by simply clicking or-double clicking on the specific search list song entry.

FIGS. 24, 25 and 26 detail an alternate view of Screen4, as discussed above. The display 800 includes an overall listing of the selections available from the service provider. A list of over one hundred thousand titles can be included in the MyData database, as selections are delivered from the service provider. The category fields described above are provided for each title 801—namely, artist 802, date of publication 804, specific music category 806 (e.g. "rock," "jazz," "alternative," etc.), music style 808, dance type 810, music speed 812 and energy 814. In addition, an ownership column 816 is provided that indicates whether the music data accompanying the title is present in the users own database. If so, the entry states "yes," otherwise a "no" indication is provided to the column 816 next to the particular title. In addition a rating column 818 is now is provided with an appropriate entry field in the database. In this example songs that the service provider may not think are suitable for certain listeners due to content are appended with a rating, as appropriate. In this example, all songs not rates are acceptable to all. A specific rating letter such as "G" can also be placed next to such songs in the column 818. Higher rated songs can include the rating letter PG, or stronger rating letter R, on their particular title row. The depicted ratings are exemplary only. The actual song titles shown should not be taken to have these actual ratings. The music selection list of Screen2 would also display ratings when they are used. Note that a variety of levels of rating and rating criteria can be used. In general such ratings are defined and appended to individual songs be the service provider.

FIG. 25 illustrates the activation of Screen4's rating button 820. This button calls a window 822 that prompts the blocking of R and/or PG-rated songs. In this manner, higher rated song titles cannot be viewed or played. This function is enable and disabled using a password that is entered after striking the password button 824 in the window 822. This button calls a password-entry window 826, detailed in FIG. 26. Once an initial password is entered, it must be reentered to change the rating blocking function or to change the password itself.

FIGS. 27 and 28, finally, illustrate an auto-exit option appended to the display 850 of Screen1 in this embodiment. An auto-exit button 852 can be clicked to call an automatic shut-down window 854. By clicking a "yes" button 856 in this window, the center calls another window (FIG. 28) with an auto-shutdown keyboard 860. The window 860 includes a numeric keyboard 862 for entering shutdown time in minutes. A time box 864 indicates the selected time. Press-

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ing the "OK" button 866 causes the shutdown time to be acted upon. Playback will occur until the time has been elapsed. At any time, the cancel button 870 can be activated to cause the shutdown routine to cease and/or the window 860 to be removed from Screen1.

The architecture and database storage techniques, as well as the various graphical user interface functions described above can be readily adapted to handle images and full motion video as well. The primary addition to the above-described embodiments would be a screen capable of playing back video of appropriate size interconnected to the center's processor by an appropriate video driver card that is typically commercially available. In addition, appropriate data compression/decompression routines applicable to full motion video and/or images is desirable. In substance, the data for video packages is stored with various categories similar to or the same as those applicable to music described above. The graphical user interface is organized identically, as is control and manipulation of playback. In the case of music videos, most or all of the same categories as music can be used, with the addition, perhaps of certain video-specific categories.

A sufficiently large hard-drive can be used to store a large database of movies and/or other video data. Where storage is problematic, one example contemplates that the center's processor can interface with a commercially available, multi-disc CD-ROM or DVD (Digital Versatile/Video Disc) drive. The drive is interfaced to the processor using commercially available interface hardware. The raw video data can be retrieved as needed from the play-ready optical discs according to a request by the user entered via the MyData database which carries the underlying video category data associated with each video title in its list. Any titles not currently held in the optical unit, can trigger a load-optical-

disc message, prompting the user to load-in the optical disc containing the desired date. Of course, this is only one example of a system that handles video data using the underlying interface and organizational structure of the present invention.

Note that the graphical user interface herein has been described in terms of its primary functions. Any buttons on the display screens detailed herein not expressly described can be assumed to perform functions that are straightforward, and particularly noted on the buttons themselves, such as "OK" and "Cancel." All functions not specifically described should be clear to those of ordinary skill.

The foregoing has been a detailed description of a preferred embodiment of the invention. Various modifications and additions can be made without departing from the spirit and scope of this invention. For example, a variety of colors can be used for different keys and buttons, categories can be identified based on certain colors. Voice recognition and voice-playback functions can be provided to any of the embodiments described herein. Various interface devices can be used, such as touch screens, light pens and alike. In addition, the database, data compression and playback systems and software described herein can be substituted for any other acceptable system or software. The particular layout the graphical displays and content of various buttons in the display can also be varied. Again, it is expressly contemplated that particular category buttons on Screen2 are displayed in different colors, and that specific colors can be used to highlight certain windows or underlying selections in a display, as well as the status of various functions. Accordingly, this description is meant to be taken only by way of example and not to otherwise limit the scope of the invention.

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APPENDIX

MOAEC CODE

Updated 6/2/98

Author: Dale McMullin

Media: Microsoft Visual Basic V.5.0

Total Lines: 5,245

```

"Recorder.frm"
Sub UpdateList()
Dim i As Integer, final As Integer
Dim color As Long
Dim songdata(9) As Variant
On Error GoTo Stoploop
.MusicListing.Rows = 1
Screen2.Data1.DatabaseName = App.Path & "\music.mdb"
Screen2.Data2.DatabaseName = App.Path & "\music.mdb"
Screen2.Data3.DatabaseName = App.Path & "\mydata.mdb"
Screen2.Data3.RecordSource = "LP Complete Music Guide"
Screen2.Data1.Refresh
Screen2.Data2.Refresh
Screen2.Data1.Recordset.MoveLast
Screen2.Data1.Recordset.MoveFirst
final = Screen2.Data1.Recordset.RecordCount
Do While Not Screen2.Data1.Recordset.EOF And StoplistingList = False
LoopTop:
DoEvents
If PauseList = True Then NewPauseStartTime = Timer() - TimeSoFar
MousePointer = 11
Screen2.Data3.RecordSource = "LP Complete Music Guide"
Screen2.Data1.Recordset.MoveNext
i = Screen2.Data1.Recordset.AbsolutePosition
If i < 0 Or StoplistingList = True Then Exit Do
songdata(1) = Screen2.Data1.Recordset.Fields("Title")
Screen2.Data3.Refresh
Screen2.Data3.Recordset.FindFirst "Title = '" & songdata(1) & "'"
If Screen2.Data3.Recordset.NoMatch Then
songdata(9) = ""
If DisplayLibrary = False Then GoTo LoopTop
Else
songdata(9) = "yes"
End If
songdata(2) = Screen2.Data1.Recordset.Fields("artist")
songdata(3) = Screen2.Data1.Recordset.Fields("date")
songdata(4) = Screen2.Data1.Recordset.Fields("main1")
songdata(5) = Screen2.Data1.Recordset.Fields("Mstyle")
songdata(6) = Screen2.Data1.Recordset.Fields("Dtype")
songdata(7) = Screen2.Data1.Recordset.Fields("Speed")
songdata(8) = Screen2.Data1.Recordset.Fields("Energy")
Screen2.Data2.RecordSource = "Music Colors"
Screen2.Data2.Refresh
Screen2.Data2.Recordset.FindFirst "Main1 = '" & songdata(4) & "'"
color = Val(Screen2.Data2.Recordset.Fields("colorID"))
For X = 4 To 8
DoEvents
Screen2.Data2.RecordSource = X

```

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```

Screen2.Data2.Refresh
Screen2.Data2.Recordset.FindFirst "tag = " & songdata(X) & ""
songdata(X) = Screen2.Data2.Recordset.Fields("Label")
NEXT X
If DisplayLibrary = True Or (DisplayLibrary = False And songdata(9) = "yes") Then
    MusicListing.AddItem songdata(9) & Chr(9) & songdata(1) & Chr(9) & songdata(2) & Chr(9) & songdata(3) & Chr(9) &
    songdata(4) & Chr(9) & songdata(5) & Chr(9) & songdata(6) & Chr(9) & songdata(7) & Chr(9) & songdata(8)

    MusicListing.row = MusicListing.Rows - 1

    For j = 0 To 9
        MusicListing.Col = j
        MusicListing.CellBackColor = color
    Next j
    MusicListing.Col = 0
End If

If StoplistingList = True Then GoTo Stoploop
DoEvents
Loop
Stoploop:
If Screen1.wp.LinkMode <> LINK_NONE And PauseList = True Then
    Screen1.wp.LinkExecute "pause"
    PauseList = False
End If
MousePointer = 0
Screen2.Data1.DatabaseName = App.Path & ".mydata.mdb"
Screen2.Data2.DatabaseName = App.Path & ".mydata.mdb"
Screen2.Data3.DatabaseName = App.Path & ".mydata.mdb"
Screen2.Data1.RecordSource = "LP Complete Music Guide"
Screen2.Data2.RecordSource = "LP Complete Music Guide"
Screen2.Data3.RecordSource = "Music Colors"
Exit Sub
End Sub

Private Sub ClearList_Click()
    MusicListing.Rows = 1
    StoplistingList = True
    If RatingBox.Visible = True Then RatingBox.Visible = False
End Sub

Private Sub ExitSystem_Click()
    response = MsgBox("Are you sure you want to exit the system?", 4)
    If response = vbNo Then
        Exit Sub
    Else
        ExitButtonPushed = True
        EndtAll
    End If
End Sub

Private Sub Form_Activate()

```



```

If MusicListing.Rows > 2 Or Screen.ActiveForm.Name <> "Recorder" Then Exit Sub
If FirstLibrary = True Then
    answer = MsgBox("Are you sure you want to create the Library?" & Chr(13) & "Any music playing will be automatically
paused.", 4)
    If answer = vbNo Then Exit Sub
    If SongPlaying = True And Screen1.wp.LinkMode <> LINK_NONE Then
        Screen1.wp.LinkExecute "pause"
        PauseList = True
    End If

    Load choices
    choices.Show 1

End If
If CancelLibrary = True Then
    CancelLibrary = False
    Screen2.Show
    Screen2.SetFocus
    Exit Sub
Else
    FirstLibrary = False
End If
UpdateList
End Sub

Private Sub Form_Load()
    Recorder.WindowState = 2
    FirstLibrary = True
    StoplistingList = False
    RatingBlock = "none"
    RatingOption(0).Value = True
    password = "NOAEC"
End Sub

Private Sub Form_QueryUnload(Cancel As Integer, UnloadMode As Integer)
    Dim Msg ' Declare variable.

    If ExitButtonPushed = False Then
        Msg = "Do you really want to exit the application?"
    Else
        ExitButtonPushed = True
    End If
End Sub

End Sub

Private Sub Form_Resize()
    On Error Resume Next
    If WindowState = 2 Then
        For X = 1 To 3

```

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```

    ScreenShow(X).Left = ScreenShow(X - 1).Left + 1200
Next X
For X = 0 To 3
    ScreenShow(X).Top = Screen.Height - 1155
Next X
MusicListing.Height = Screen.Height - 2300
Else
    For X = 1 To 3
        ScreenShow(X).Left = ScreenShow(X - 1).Left + 1200
    Next X
    For X = 0 To 3
        ScreenShow(X).Top = Recorder.Height - 1155
    Next X
    MusicListing.Height = Recorder.Height - 2300
End If
Title.Left = (Recorder.Width / 2) - 3500
ExitSystem.Top = ScreenShow(0).Top
SearchAgain.Top = ScreenShow(0).Top
Rating.Top = ScreenShow(0).Top
SearchAgain.Height = ExitSystem.Height
MusicListing.Left = (Recorder.Width / 2) - (MusicListing.Width / 2)
StopListUpdate.Top = ScreenShow(0).Top
StopListUpdate.Left = Recorder.Width - 1560
ClearList.Top = ScreenShow(0).Top
ClearList.Left = StopListUpdate.Left - 1815
End Sub

Private Sub Form_Unload(Cancel As Integer)
    EndItAll
End Sub

Private Sub MusicListing_Click()
    If RatingBox.Visible = True Then RatingBox.Visible = False
    MusicListing.SelectionMode = flexSelectionFree
    MusicListing.Sort = 1
End Sub

Private Sub MusicListing_DbClick()
    If RatingBox.Visible = True Then RatingBox.Visible = False
    MusicListing.SelectionMode = flexSelectionFree
    MusicListing.Sort = 1
End Sub

Private Sub Rating_Click()
    Dim answer As String
    answer = InputBox("Please enter your password.")
    If answer <> password Then
        MsgBox "The password was incorrect."
        Exit Sub
    Else
        RatingBox.Visible = True
    End If
End Sub

```

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```

End If
End Sub

Private Sub RatingCancel_Click()
RatingBox.Visible = False
If RatingBlock = "none" Then
RatingOption(0).Value = True
ElseIf RatingBlock = "PG" Then
RatingOption(1).Value = True
ElseIf RatingBlock = "R" Then
RatingOption(2).Value = True
End If
End Sub

Private Sub RatingOK_Click()
Dim message As String
RatingBlock = RatingTemp
If RatingBlock = "none" Then
message = "No music "
ElseIf RatingBlock = "PG" Then
message = "PG and R rated music "
ElseIf RatingBlock = "R" Then
message = "R rated music "
End If
RatingBox.Visible = False
MsgBox (message & " will be blocked from search, display, and play.")
End Sub

Private Sub RatingOption_Click(Index As Integer)
If RatingOption(0).Value = True Then
RatingTemp = "none"
ElseIf RatingOption(1).Value = True Then
RatingTemp = "PG"
ElseIf RatingOption(2).Value = True Then
RatingTemp = "R"
Else
RatingTemp = "none"
End If
End Sub

Private Sub RatingPassword_Click()
NewPassword1 = InputBox("Please type your new password.")
If NewPassword1 = "" Then Exit Sub
NewPassword2 = InputBox("Please confirm you new password.")
If NewPassword2 = "" Then Exit Sub
If NewPassword2 = NewPassword1 Then
password = NewPassword1
MsgBox "Password changed successfully."
Else
MsgBox "Error entering new password."
End If
End Sub

```

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```

Private Sub ScreenShow_Click(Index As Integer)

Dim i As Integer
On Error Resume Next
If RatingBox.Visible = True Then RatingBox.Visible = False
If (SelCat1 = "" And Index = 2) Then
MsgBox ("Please select a main category from screen 2 before viewing this screen !!!")
Exit Sub
End If

For i = 0 To 3
Screen2.ScreenShow(i).BackColor = &H8000000F
ScreenShow(i).BackColor = &H8000000F
ScreenShow(i).ForeColor = &H80000012
Next i

Select Case Index
Case 0
Screen2.DD.Group = "Screen1"
Screen2.Hide
Screen2.cat1screen.Visible = True
Screen2.cat2screen.Visible = False
Screen2.FavHitsScrn.Visible = False
For i = 0 To 4
Screen1.ScreenShow(i).BackColor = &H8000000F
Screen1.ScreenShow(Index).ForeColor = &H80000012
Next i
Screen1.ScreenShow(Index).BackColor = &HC0&
Screen1.ScreenShow(Index).ForeColor = &H8000000E
Screen1.Show
If Screen1.WindowState <> 2 Then Screen1.WindowState = 2
Exit Sub
Case 1
Screen2.DD.Group = "Screen2"
Screen2.cat1screen.Visible = True
Screen2.cat2screen.Visible = False
Screen2.FavHitsScrn.Visible = False
For i = 0 To 4
Screen2.ScreenShow(i).BackColor = &H8000000F
Screen2.ScreenShow(Index).ForeColor = &H80000012
Next i
Screen2.ScreenShow(Index).BackColor = &HC0&
Screen2.ScreenShow(Index).ForeColor = &H8000000E
Screen2.Show
If Screen2.WindowState <> 2 Then Screen2.WindowState = 2
Exit Sub
Case 2
Screen2.DD.Group = "Screen2"
SelCat1 = MemCat
Screen2.cat1screen.Visible = False
Screen2.cat2screen.Visible = True
Screen2.FavHitsScrn.Visible = False
For i = 0 To 4
Screen2.ScreenShow(i).BackColor = &H8000000F

```

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```

    Screen2.ScreenShow(Index).ForeColor = &H80000012
Next i
Screen2.ScreenShow(Index).BackColor = &HC0&
Screen2.ScreenShow(Index).ForeColor = &H8000000E
Screen2.Show
If Screen2.WindowState <> 2 Then Screen2.WindowState = 2
Exit Sub
Case 3
Screen2.DD.Group = "Screen4"
Recorder.ScreenShow(Index).BackColor = &HC0&
Recorder.ScreenShow(Index).ForeColor = &H8000000E
Screen1.Hide
Screen2.Hide
Recorder.Show
    If Recorder.WindowState <> 2 Then Recorder.WindowState = 2

Recorder.Refresh
Screen2.ca1screen.Visible = True
Screen2.ca2screen.Visible = False
Screen2.FavHitsScrn.Visible = False

End Select
End Sub

Private Sub SearchAgain_Click()
    response = MsgBox("Are you sure you want to Reset the Library Display?" & Chr(13) & "Any music playing will be automatically
    paused.", 4)
    If response = vbNo Then
        Exit Sub
    Else
        If RatingBox.Visible = True Then RatingBox.Visible = False
        If SongPlaying = True And Screen1.wp.LinkMode <> LINK_NONE Then
            Screen1.wp.LinkExecute "pause"
            PauseList = True
        End If
        Load choices
        choices.Show 1
        If CancelLibrary = True Then
            CancelLibrary = False
            Screen2.Show
            Screen2.SetFocus
            Exit Sub
        End If
        StoplistingList = False
        UpdateList
    End If
End Sub

Private Sub StopListUpdate_Click()
    StoplistingList = True
    If RatingBox.Visible = True Then RatingBox.Visible = False

```

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```

If Screen1.wp.LinkMode <> LINK_NONE And PauseList = True Then
    Screen1.wp.LinkExecute "pause"
    PauseList = False
End If

```

```
End Sub
```

```
"Loader.frm"
```

```
Private Sub Form_Activate()
    Dim ftime, wtime As Integer

```

```

    Loader.Refresh
    MousePointer = 11
    ftime = Timer()
    wtime = 0
    App.HelpFile = App.Path & "moHELP.hlp"
    Load titlefrm
    titlefrm.Animation1.AutoPlay = True
    titlefrm.Animation2.AutoPlay = True
    titlefrm.Animation1.Open App.Path & "cd1a.avi"
    titlefrm.Animation2.Open App.Path & "cd1b.avi"
    titlefrm.Animation1.Play
    titlefrm.Animation2.Play
    titlefrm.MMControl1.FileName = App.Path & "Intro.wav"
    Call titlefrm.Main

```

```
touchscreen = True
```

```

Do While wtime < 10
    wtime = Timer() - ftime
    DoEvents
Loop
titlefrm.Show
Loader.Hide
MousePointer = 0
Unload Loader
End Sub

```

```
"choices.frm"
```

```
Private Sub Form_Load()
    DisplayLibrary = False

```

```
End Sub
```

```
Private Sub OKButton_Click(Index As Integer)
```

```

    If Index = 1 Then
        CancelLibrary = True
    End If
    Unload choices
End Sub

```

```
Private Sub Option1_Click()
    DisplayLibrary = False

```

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```

Recorder.Title.Caption = " Current Music You Own"
End Sub

Private Sub Option2_Click()
DisplayLibrary = True
Recorder.Title.Caption = "The Complete MOAEC Music Library"
End Sub

"Screen1.frm"
Private Declare Function mciSendCommandA Lib "WinMM" _
(ByVal wDeviceID As Long, ByVal message As Long, _
ByVal dwParam1 As Long, dwParam2 As Any) As Long

Private Declare Function mciSendStringA Lib "WinMM" _
(ByVal mciCommand As String, ByVal returnStr As String, _
ByVal returnLength As Integer, ByVal callBack As Integer) As Long

Private Declare Function GetProfileString Lib "kernel32" _
Alias "GetProfileStringA" (ByVal lpAppName As String, _
ByVal lpKeyName As String, ByVal lpDefault As String, _
ByVal lpReturnedString As String, ByVal nSize As Long) As Long

Const MCI_OPEN = &H803
Const MCI_CLOSE = &H804
Const MCI_PLAY = &H806
Const MCI_OPEN_TYPE = &H200&
Const MCI_OPEN_ELEMENT = &H200&
Const MCI_WAIT = &H2&

Private Type MCI_WAVE_OPEN_PARMS
dwCallback As Long
wDeviceID As Long
lpstrDeviceType As String
lpstrElementName As String
lpstrAlias As String
dwBufferSeconds As Long
End Type

Private Type MCI_PLAY_PARMS
dwCallback As Long
dwFrom As Long
dwTo As Long
End Type

Private Function StartApp(appname As String) As Long
On Error Resume Next

StartApp = (Shell(appname))
DoEvents

```

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```

If StartApp = 0 Then
  MsgBox "Couldn't start " & appname
  StartApp = 0
End
End If
End Function
Private Function CreateLink() As Integer

```

```

On Error Resume Next

```

```

'set DDE parameter
wp.Link.Mode = NONE
wp.Link.Item = ""

```

```

wp.Link.Topic = "WinPlay: audio"
wp.Link.Mode = LINK_MANUAL
tmp = Err

```

```

If (tmp = 0) Then
  WinPlay.Connected = 1
Else
  WinPlay.Connected = 0
End If

```

```

CreateLink = tmp

```

```

End Function

```

```

Sub AdjustVolume(SliderNum As Integer)

```

```

Dim newvolume As Long
Dim first As Integer
Dim other As Integer
Dim leftVol As Long
Dim RightVol As Long
Dim fadevalue As Variant

```

```

If ((SliderNum = 0 Or SliderNum = 1) And channel = 1) Or ((SliderNum = 2 Or SliderNum = 3) And channel = 2) Then

```

```

  If (channel = 1 And mixerbar.Value < 0) Or (channel = 2 And mixerbar.Value > 0) Then
    fadevalue = Abs(mixerbar.Value) / 100

```

```

    If fadevalue < 0.5 Then fadevalue = 0

```

```

  End If

```

```

  If SliderNum = 0 Or SliderNum = 1 Then

```

```

    first = 1
    other = 0

```

```

  ElseIf SliderNum = 2 Or SliderNum = 3 Then

```

```

    first = 3
    other = 2

```

```

  End If

```

```

  If SliderNum = first Or SliderNum = other Then

```

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```

Text2.Text = oldvolume
leftVol = CLng(Val("&H" & Hex(volumesldr(other).Value)) - 1)
RightVol = CLng(Val("&H" & Hex(fadevalue * (65535 - volumesldr(first).Value)) & Hex(fadevalue * (65535 -
volumesldr(other).Value))))
newvolume = RightVol
Call waveOutSetVolume(VolumeID, newvolume)
End If
End If
End Sub

```

```

Sub Playwave(WaveFile As Variant, songlength As Double)
Dim LTime As Long
Dim Y As Long
'Dim X As Long
Dim errorCode As Integer
Dim returnStr As Integer
Dim errorStr As String * 255
Dim MaxMsecs As Double
Dim volumeCode As Long
Dim pitch As Long
Dim mixing As Integer
Dim count As Double
Dim PiggysBack As Double
Dim checker As Integer

On Error GoTo errorhandler

play(channel).Enabled = True
pause(channel).Enabled = True
Screen1.stop(channel).Enabled = True
Screen1.stop(OtherChannel).Enabled = False
wp.LinkExecute "set PlayList " & WaveFile
LTime = Timer()
X = 0
Do While X < S
    X = Timer() - LTime
Loop
wp.LinkExecute "play"
StopList = False
If channel = 1 Then other = 0
If channel = 2 Then other = 3

PlayLab(channel).Visible = True
QueLab(channel).Visible = False
If channel = 1 Then mixerbar.Value = -100
If channel = 2 Then mixerbar.Value = 100
NewPauseStartTime = Timer()
X = 0
Do While X < TimeSerial(0, 0, songlength)
    DoEvents
    If Timer() > AutoExitTime - 30 And Timer() < AutoExitTime - 27 And AutoExitEvent = True Then
        MsgBox ("MOAEC WILL SHUT DOWN IN 30 SECONDS !!!" & Chr(13) & " Press CANCEL to prevent auto exit.")
    End If

```

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```

If Timer() > AutoExitTime And AutoExitEvent = True Then
    SendKeys "{enter}"
    EndIfAll
    Call ExitWindows(&H0, &H0)
End If
If PauseList = True Then
    NewPauseStartTime = Timer() - TimeSoFar
End If
If PauseList = False Then
    nexttrack(1).Enabled = True
    prevtrack(1).Enabled = True
    nexttrack(2).Enabled = True
    prevtrack(2).Enabled = True
    TimeSoFar = Timer() - NewPauseStartTime
    Let X = TimeSerial(0, 0, (TimeSoFar))
    TimeElapsed(channel).Text = Format(TimeSerial(0, 0, SongsTime + songlength) - X, "hh:mm:ss")
    Text1(channel).Text = Format(TimeSerial(0, 0, songlength) - X, "hh:mm:ss")
    Screen2.timebox.Text = Format(TimeSerial(0, 0, SongsTime + songlength) - X, "hh:mm:ss")
End If

If StopList = True Then
    X = TimeSerial(0, 0, 0)
    NewPauseStartTime = Timer()
    If PrevTrackVar = True Then
        PrevTrackVar = False
        StopList = False
        wp.LinkExecute "play"
    End If
End If
If NextTrackVar = True Then
    X = TimeSerial(0, 0, songlength)
    NextTrackVar = False
End If

Loop

PlayLab(channel).Visible = False
QueLab(channel).Visible = True

Exit Sub
errorhandler:
MsgBox ("Sorry....There was a problem playing this music selection.")
End Sub

Private Subject_Click()
Dim files As String
Dim n As Integer

If wp.LinkMode <> LINK_NONE Then
    On Error Resume Next
    fileopendlg.Action = 1
End If

```

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End Sub

```
Private Sub Command1_Click()
  If wp.LinkMode <> LINK_NONE Then
    wp.LinkExecute "dialog options output"
  End If
End Sub
```

```
Private Sub AutoExit_Click()
```

```
  On Error GoTo endsub
  If AutoExit.Caption = "CANCEL" Then
    response = MsgBox("Are you sure you want to cancel auto shutdown?", 4)
    If response = vbNo Then
      Exit Sub
    Else
      AutoExitEvent = False
      AutoExit.Caption = "AUTO EXIT"
    End If
  Else
    If SongPlaying = False Then Exit Sub
    response = MsgBox("Are you sure you want to set MOAEC to shut down automatically?", 4)
    If response = vbNo Then
      Exit Sub
    Else
      AutoExit.Caption = "CANCEL"
      TimeFrame.Visible = True
      keyboard.Visible = True
      TimeInput.SetFocus
    End If
  End If
endsub:
End Sub
```

```
Private Sub backup_Click()
  If TimeInput.Visible = True Then
    TimeInput.SetFocus
    SendKeys "{end}"
    SendKeys "{backspace}"
    SendKeys "{tab}"
  End If
End Sub
```

```
Private Sub CurrentSongExpanded_Click(Index As Integer)
  CurrentSongExpanded(Index).Visible = False
End Sub
```

```
Private Sub cursong_click(Index As Integer)
```

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```

    CurrentSongExpanded(Index).Visible = True
End Sub

Private Sub ENTERKEY_Click()
If TimeInput.Visible = True Then

    TimeOK.SetFocus
    SendKeys "{enter}"
End If
End Sub

Private Sub ExitSystem_Click()
    response = MsgBox("Are you sure you want to exit the system?", 4)
    If response = vbNo Then
        Exit Sub
    Else
        ExitButtonPushed = True
        EndIfAll
    End If
End Sub

Private Sub Form_GotFocus()
    On Error Resume Next
    Screen2.DD.Group = "Screen1"
End Sub

Public Sub Form_Load()
    Dim oldvolume As Long
    Dim oldrate As Long
    Dim newvolume As Long
    Dim VolumePoint As Long
    Dim volumeID As Long
    Dim volumecode As Long

    Dim tmp As String * 256
    Dim WinPlay3Name As String
    Dim n As Integer
    StoplistingList = True
    Screen1.WindowState = 2
    automix = True
    NextTrackVar = False
    AutoExitEvent = False
    volinc(0) = Master(0).Value
    volinc(1) = Master(1).Value
    Open DDE connection with WinPlay3
    If CreateLink() <> NONE Then

        ' get path to winplay3 from win.ini
        n = GetProfileString("WinPlay3", "ProgramFile", "WinPlay3.Exe", tmp, 256)
        WinPlay3Name = Left$(tmp, n)
        If StartApp(WinPlay3Name & ".DDE") Then
            Select Case CreateLink()
            Case 0
                ' dde server started

```

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```

Case NO_APP_RESPONDED
  MsgBox "Sorry, still can't connect."
End Select
End If

End If

Call waveOutGetID(VolumeHandle, VolumeID)
Call waveOutGetVolume(VolumeID, oldvolume)

PlaySpeed(0).Value = oldvolume
PlaySpeed(1).Value = oldvolume

Master(0).Value = 49000
Master(1).Value = 49000
volumesldr(8).Value = 49000
volumesldr(9).Value = 49000
For i = 4 To 5
  volumesldr(i).Value = 49000
Next i
For i = 0 To 3
  volumesldr(i).Value = 49000
Next i
mixerbar.Value = 100
Call waveOutSetVolume(VolumeID, CLng(Val("&H" & Hex(16000) & Hex(16000))))
PlaySpeed(0).Value = 5
PlaySpeed(1).Value = 5
End Sub

Private Sub Form_Resize()
On Error Resume Next
If WindowState = 2 Then
  For X = 1 To 4
    ScreenShow(X).Left = ScreenShow(X - 1).Left + 1200
  Next X
  For X = 0 To 4
    ScreenShow(X).Top = Screen.Height - 1155
  Next X
  ExitSystem.Top = Screen.Height - 1155
  Label10.Top = Screen.Height - 1155
Else
  For X = 1 To 4
    ScreenShow(X).Left = ScreenShow(X - 1).Left + 1200
  Next X
  For X = 0 To 4
    ScreenShow(X).Top = Screen1.Height - 1155
  Next X
  ExitSystem.Top = Screen1.Height - 1155
  Label10.Top = Screen1.Height - 1155

```

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```

End If
Label10.Left = Screen1.Width - 1455
ExitSystem.Left = 120
Channel1(1).Left = (Screen1.Width / 2) + 8
Channel1(3).Left = (Screen1.Width / 2) + 8
Picture1.Width = Screen1.Width - 460
Picture1.Top = Screen1.Height - 3255
For X = 0 To 3
  Channel1(X).Width = (Screen1.Width / 2) - 355
Next X
For X = 0 To 1
  PlaySpeed(X).Left = (Channel1(0).Width / 2) - 1200
Next X
Label3(0).Left = PlaySpeed(0).Left + 720
Label3(1).Left = PlaySpeed(0).Left - 600
Label3(3).Left = PlaySpeed(0).Left + 720
Label3(4).Left = PlaySpeed(0).Left - 600
Label3(2).Left = PlaySpeed(0).Left - 2520
Label3(5).Left = PlaySpeed(0).Left + 2520
Label4(0).Left = PlaySpeed(0).Left + 720
Label4(1).Left = PlaySpeed(0).Left - 720

For X = 1 To 2
  play(X).Left = ((Channel1(0).Width / 2) - 1425)
  Screen1.stop(X).Left = ((Channel1(0).Width / 2) - 1425) - 570
  pause(X).Left = ((Channel1(0).Width / 2) - 1425) - 1140
  prevtrack(X).Left = ((Channel1(0).Width / 2) - 1425) - 1710
  nexttrack(X).Left = ((Channel1(0).Width / 2) - 1425) + 2280
  cursong(X).Left = Channel1(1).Width - 2175
  Quelab(X).Left = cursong(1).Left
  PlayLab(X).Left = cursong(1).Left
Next X
For X = 2 To 5
  Channel1(X).Height = Screen1.Height - Channel1(0).Height - Picture1.Height - 1600
Next X
volumesldr(0).Left = 0.209 * Picture1.Width
volumesldr(1).Left = 0.267 * Picture1.Width
volumesldr(2).Left = 0.36 * Picture1.Width
volumesldr(3).Left = 0.418 * Picture1.Width
volumesldr(4).Left = 0.6734 * Picture1.Width
volumesldr(5).Left = 0.7315 * Picture1.Width
volumesldr(8).Left = 0.8128 * Picture1.Width
volumesldr(9).Left = 0.894 * Picture1.Width
Master(0).Left = 0.5225 * Picture1.Width
Master(1).Left = 0.5806 * Picture1.Width
Label1(1).Left = volumesldr(0).Left + 120
Label1(2).Left = volumesldr(2).Left + 120
Label1(4).Left = volumesldr(4).Left + 120
Label1(5).Left = volumesldr(8).Left + 120
Label1(6).Left = volumesldr(9).Left + 120
Label1(3).Left = Master(0).Left + 120

```

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```

AutoExit.Top = ExitSystem.Top
For X = 1 To 2
    CurrentSongExpanded(X).Left = (Screen.Width / 2) - 5408
Next X
EQ1(0).Top = (Channel1(2).Height / 2) - 100
EQ1(1).Top = (Channel1(2).Height / 2) - 100
EQ1(0).Left = (Channel1(2).Width / 2) - 2280
EQ1(1).Left = (Channel1(2).Width / 2) - 2280
End Sub

```

```

Private Sub Form_Unload(Cancel As Integer)
    If wp.LinkMode <> LINK_NONE Then
        wp.LinkExecute "stop"
        wp.LinkExecute "exit"
    End If
    WinPlay3Connected = 0
    wp.LinkMode = LINK_NONE

    EndtAll
End Sub

```

```

End Sub

```

```

Private Sub Label0_Click()
    SendKeys "{F1}"
End Sub

```

```

Private Sub Letters_Click(Index As Integer)
    'type the letter pressed in the text field
    If TimeInput.Visible = True Then
        TimeInput.SetFocus
        SendKeys LCase(Letters(Index).Caption)
        SendKeys "{tab}"
    End If
End Sub

```

```

End Sub

```

```

Private Sub Master_Click(Index As Integer)

```

```

    volinc(0) = Master(0).Value
    volinc(1) = Master(1).Value

```

```

End Sub

```

```

Private Sub Master_Scroll(Index As Integer)

```

```

    Dim volinc2(2) As Long
    volinc2(Index) = Master(Index).Value - volinc(Index)

```

```

Select Case Index

```

```

Case 0

```

```

    volumesldr(0).Value = OrigVol(0) - volinc2(0)
    volumesldr(2).Value = OrigVol(2) + volinc2(0)
    volumesldr(4).Value = OrigVol(4) + volinc2(0)

```

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```

Case 1
    volumesldr(1).Value = OrigVol(1) + volinc2(1)
    volumesldr(3).Value = OrigVol(3) + volinc2(1)
    volumesldr(5).Value = OrigVol(5) + volinc2(1)

End Select
volinc(Index) = Master(Index).Value

End Sub

Private Sub mixerbar_Change()
    If (mixerbar.Value <= 0 And channel = 1) Then
        AdjustVolume (1)
    ElseIf (mixerbar.Value >= 0 And channel = 2) Then
        AdjustVolume (2)
    End If

End Sub

Private Sub mixerbar_Scroll()
    If (mixerbar.Value <= 0 And channel = 1) Then
        AdjustVolume (1)
    ElseIf (mixerbar.Value >= 0 And channel = 2) Then
        AdjustVolume (2)
    End If

End Sub

Private Sub MixFade_Click()
    If MixFade.Caption = "AUTO MIX OFF" Then
        MixFade.Caption = "AUTO MIX ON"
        automix = True
    Else
        MixFade.Caption = "AUTO MIX OFF"
        automix = False
    End If
End Sub

Private Sub nexttrack_Click(Index As Integer)
    If Index = channel Then
        If wp.LinkMode <> LINK_NONE Then
            response = MsgBox("Are you sure you want to skip to the next song?", 4)
            If response = vbNo Then
                Exit Sub
            Else
                NextTrackVar = True
            End If
        End If
    End If
End Sub

```

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```

Private Sub pause_Click(Index As Integer)
If channel = Index Then
If StopListingList = False Then
MsgBox ("Your library is still updating!" & Chr(13) & "Please switch to Screen 4 to resume play.")
Exit Sub
End If
If wp.LinkMode <> LINK_NONE Then
wp.LinkExecute "pause"
If PauseList = True Then
PauseList = False
Else
PauseList = True
End If
End If
End If
End Sub

```

```

Private Sub play_Click(Index As Integer)
If wp.LinkMode <> LINK_NONE Then
If Index = OtherChannel And StopList = True Then
NextTrackVar = True
ElseIf Index = channel Then
PauseList = False
wp.LinkExecute "play"
StopList = False
End If
End If
End Sub

```

```

Private Sub PlaySpeed_Scroll(Index As Integer)
Dim oldrate As Long
Dim volumecode As Long
Dim newrate As Long
End Sub

```

```

Private Sub RestartMus_Click()
Dim SoundCom As Long

SoundCom = waveOutRestart(VolumeID)
Text2.Text = SoundCom

End Sub

```

```

Private Sub prevtrack_Click(Index As Integer)
If channel = Index Then
If wp.LinkMode <> LINK_NONE Then
wp.LinkExecute "stop"
StopList = True
PauseList = False
PrevTrackVar = True

```

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CL 000401

```

End If
End If
End Sub

```

```

Private Sub ScreenShow_Click(Index As Integer)
Dim i As Integer
On Error Resume Next
If (SelCat1 = "" And Index = 2) Then
MsgBox ("Please select a main category from screen 2 before viewing this screen !!!")
Exit Sub
End If
Screen2.Category(1).Visible = False
cat1count = 0
'disable speed buttons since switching to screen 3
For i = 0 To Screen2.SongSpeed.count - 1
Screen2.SongSpeed(i).Enabled = False
Screen2.SongSpeed(i).BackColor = &H8000000F
Next i
Screen2.Mix.Enabled = False
Screen2.PlayTime.Enabled = False
Screen2.Mix.BackColor = &H8000000F
Screen2.PlayTime.BackColor = &H8000000F
For j = 0 To 4
Screen2.ScreenShow(j).BackColor = &H8000000F
ScreenShow(j).BackColor = &H8000000F
ScreenShow(i).ForeColor = &H80000012
Next i
Select Case Index
Case 0
Screen2.DD.Group = "Screen1"
Screen2.Hide
Screen2.cat2screen.Visible = False
Screen2.FavHitsScrn.Visible = False
Exit Sub
Case 1
Screen2.DD.Group = "Screen2"
Screen2.cat2screen.Visible = False
Screen2.FavHitsScrn.Visible = False
For j = 0 To 4
Screen2.ScreenShow(j).BackColor = &H8000000F
Screen2.ScreenShow(Index).ForeColor = &H80000012
Next i
Screen2.ScreenShow(Index).BackColor = &HC0&
Screen2.ScreenShow(Index).ForeColor = &H8000000E
Screen2.Show
If Screen2.WindowState <> 2 Then Screen2.WindowState = 2
Exit Sub
Case 2
If IsDDWinRunning() Then Screen2.DD.Group = "Screen2"

```

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```

SelCat1 = MemCat
Screen2.ca2screen.Visible = True
Screen2.FavHitsScrn.Visible = False
For i = 0 To 4
    Screen2.ScreenShow(i).BackColor = &H800000F
    Screen2.ScreenShow(Index).ForeColor = &H8000012
Next i
Screen2.ScreenShow(Index).BackColor = &HC0&
Screen2.ScreenShow(Index).ForeColor = &H800000E
Screen2.Show
    If Screen2.WindowState <> 2 Then Screen2.WindowState = 2

Exit Sub
Case 3
Screen2.DD.Group = "Screen4"
Recorder.ScreenShow(Index).BackColor = &HC0&
Recorder.ScreenShow(Index).ForeColor = &H800000E
Screen1.Hide
Screen2.Hide
Recorder.Show
    If Recorder.WindowState <> 2 Then Recorder.WindowState = 2

Recorder.Refresh
Screen2.ca2screen.Visible = False
Screen2.FavHitsScrn.Visible = False
End Select
make the button pressed the right color

End Sub

Private Sub stop_Click(Index As Integer)
    If channel = Index Then
        If wp.LinkMode <> LINK_NONE Then
            wp.LinkExecute "stop"
            StopList = True
            play(OtherChannel).Enabled = True
        End If
    End If
End Sub

Private Sub undo_Click()

End Sub

Private Sub TimeCancel_Click()
    TimeFrame.Visible = False
    keyboard.Visible = False
End Sub

Private Sub TimeOK_Click()
    Dim Timer1 As Long

```

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```

Dim timer2 As Long
On Error GoTo endsub
If Val(TimeInput.Text) <= 0 Then
    AutoExitStart = Timer()
    AutoExitTime = AutoExitStart + (Val(TimeInput.Text) * 60)
    AutoExitEvent = True
End If
TimeFrame.Visible = False
keyboard.Visible = False

endsub:
End Sub

Private Sub volumesldr_Change(Index As Integer)
AdjustVolume (Index)
OrigVol(Index) = volumesldr(Index).Value

End Sub

Private Sub volumesldr_Scroll(Index As Integer)
On Error Resume Next
AdjustVolume (Index)
End Sub

Private Sub wp_Link_Close()
If WinPlay.Connected <= 0 Then
End If
wp.LinkMode = LINK_NONE
End Sub

Private Sub wp_Link_Error(LinkErr As Integer)
MsgBox ("Link error")
End Sub

"screen2.frm"

Sub DD_SpeechRecognized(Word As String, WordValue As String)
Dim CurControl As Control
Dim VoiceFlag As Boolean
Dim SavedName As String

On Error GoTo errorhandler

If Word = "[classical]" Then Category1(0).SetFocus
If Word = "[jazz]" Then Category1(1).SetFocus
If Word = "[folk]" Then Category1(2).SetFocus
If Word = "[oldies]" Then Category1(3).SetFocus
If Word = "[country]" Then Category1(4).SetFocus
If Word = "[pop]" Then Category1(5).SetFocus
If Word = "[soul]" Then Category1(6).SetFocus
If Word = "[R and B]" Then Category1(7).SetFocus

```

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```

If Word = "[blues]" Then Category1(8).SetFocus
If Word = "[calypso]" Then Category1(9).SetFocus
If Word = "[disco]" Then Category1(10).SetFocus
If Word = "[funk]" Then Category1(11).SetFocus
If Word = "[rock]" Then Category1(12).SetFocus
If Word = "[metal]" Then Category1(13).SetFocus
If Word = "[top 40]" Then Category1(14).SetFocus
If Word = "[rap]" Then Category1(15).SetFocus
If Word = "[reggae]" Then Category1(16).SetFocus
If Word = "[alternative]" Then Category1(17).SetFocus
If Word = "[ethnic]" Then Category1(18).SetFocus
If Word = "[religion]" Then Category1(19).SetFocus
If Word = "[special events]" Then Category1(20).SetFocus
If Word = "[funny]" Then Category1(21).SetFocus
If Word = "[easy listening]" Then Category1(22).SetFocus
If Word = "[favorite hits]" Then Category1(23).SetFocus
If Word = "[special dance]" Then Category1(24).SetFocus
If Word = "[special mixes]" Then Category1(25).SetFocus
If Word = "[dance]" Then Category1(26).SetFocus
If Word = "[energy]" Then Category1(27).SetFocus
If Word = "[sound effects]" Then Category1(28).SetFocus
If Word = "[sound tracks]" Then Category1(29).SetFocus
If Word = "[television]" Then Category1(30).SetFocus

```

```

If Word = "[Dance Mix]" Then Mix.SetFocus
If Word = "[Clear]" Then ClrSrch.SetFocus
If Word = "[Undo]" Then undo.SetFocus

```

```

If Word = "[Search List]" Then searchlist.SetFocus
If Word = "[Play List]" Then Playlist(0).SetFocus
If Word = "[Search]" Then search.SetFocus
If Word = "[Expand]" And ExpandList.Caption = "EXPAND" Then
  ExpandList.SetFocus
ElseIf Word = "[Shrink]" And ExpandList.Caption = "SHRINK" Then
  ExpandList.SetFocus
End If

```

```

If Word = "[Load]" Then LoadPlay.SetFocus
If Word = "[Save]" Then SavePlay.SetFocus
If Word = "[Next]" Then AddList(0).SetFocus
If Word = "[Pick]" Then AddList(1).SetFocus
If Word = "[Delete]" Then delete.SetFocus

```

```

If Word = "[Title]" Then SearchCat(1).SetFocus
If Word = "[Artist]" Then SearchCat(2).SetFocus
If Word = "[Date]" Then SearchCat(3).SetFocus
If Word = "[Song Category]" Then SearchCat(4).SetFocus
If Word = "[Dance Type]" Then SearchCat(6).SetFocus
If Word = "[Music Style]" Then SearchCat(5).SetFocus
If Word = "[Speed]" And SearchCat(1).Enabled = True Then SearchCat(7).SetFocus
If Word = "[Energy]" Then SearchCat(8).SetFocus

```

```

If Word = "[Speed]" And AllSpeeds.Enabled = True Then AllSpeeds.SetFocus
If Word = "[Fast]" And SongSpeed(0).Enabled = True Then SongSpeed(0).SetFocus

```

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```

If Word = "[Fast]" Then SongSpeed(0).SetFocus
If Word = "[Medium]" And SongSpeed(1).Enabled = True Then SongSpeed(1).SetFocus
If Word = "[Slow]" And SongSpeed(2).Enabled = True Then SongSpeed(2).SetFocus
If Word = "[Time]" And PlayTime.Enabled = True Then PlayTime.SetFocus
If Word = "[30]" Then
    TimeInput.SetFocus
    TimeInput.Text = 30
End If
If Word = "[OK]" And timebox.Visible = True Then TimeOK.SetFocus
If Word = "[Begin Search]" And SearchScreen.Visible = True Then BeginSearch.SetFocus
If Word = "[Cancel]" And timebox.Visible = True Then TimeCancel.SetFocus
If Word = "[Cancel]" And SearchScreen.Visible = True Then Cancel.SetFocus
If Word = "[Cancel]" And cat2screen.Visible = True Then CancelSubScreen.SetFocus
If word = "[minutes]" Then Text2.SetFocus
If Word = "[Play]" Then PlayButton.SetFocus
If Word = "[Now]" Then Now.SetFocus

If word = "[screen 1]" Then ScreenShow(0).SetFocus
If word = "[screen 2]" Then ScreenShow(1).SetFocus
If word = "[screen 3]" Then ScreenShow(2).SetFocus
If word = "[screen 4]" Then ScreenShow(3).SetFocus
SendKeys ""

ErrorHandler:
Exit Sub
End Sub
Sub GrayOut()
'disable and gray out speed, mix, and time buttons
Mix.Enabled = False
AllSpeeds.Visible = True
AllSpeeds.Enabled = False
PlayTime.Enabled = False
Mix.BackColor = &H8000000F
AllSpeeds.BackColor = &H8000000F
PlayTime.BackColor = &H8000000F
For i = 0 To SongSpeed.count - 1
    SongSpeed(i).Enabled = False
    SongSpeed(i).BackColor = &H8000000F
Next i
End Sub
Sub LoadNewSong(Songfile As String)
Dim memHandle As Long
Dim memPointer As Long
Dim fileName As String
Dim retValue As Long
Dim nBytes As Long
Dim fileSize As Long

Dim origStr As String
Dim strSize As Long
Dim textStr As String

On Error GoTo noFilename

```

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```

fileName = Songfile
FilePointer = CreateFile(fileName, GENERIC_READ Or GENERIC_WRITE, 0&, 0&, OPEN_EXISTING,
FILE_ATTRIBUTE_NORMAL, 0&)
fileSize = GetFileSize(FilePointer, 0)
memHandle = GlobalAlloc(GMEM_MOVEABLE Or GMEM_ZEROINIT, fileSize)
memPointer = GlobalLock(memHandle)
retValue = ReadFile(FilePointer, ByVal memPointer, fileSize, nBytes, 0&)

Call Screen1.Playwave(fileName, songlength)
CloseHandle (FilePointer)
GlobalUnlock (memHandle)
GlobalFree (memHandle)
Exit Sub

noFilename:

End Sub
Sub StartPlay(row As Integer, list As Integer)
Dim song, songlength? As String
Dim i, j As Integer
Dim CurControl As MSFlexGrid
'Dim OtherChannel As Integer
On Error GoTo errorhandler

If list = 1 Then
Set CurControl = searchlist
ElseIf list = 2 Then
Set CurControl = Playlist(0)
End If
StopList = False
If (CurControl.Name = Playlist(0).Name And Playlist(0).Rows > 1) Or CurControl.Name = searchlist.Name Then
If SongPlaying = True Then
answer = MsgBox("Are you sure you want to interrupt the current song?", 4, "Interrupt Song Playing")
If answer = vbNo Then
Exit Sub
Else
If channel = 1 Then
channel = 2
OtherChannel = 1
ElseIf channel = 2 Then
channel = 1
OtherChannel = 2
End If
End If

End If
End If

Mix.Enabled = False
'switch to s1
Screen1.Show

```

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CL 000407

```

Screen1.Refresh
Screen2.Hide

If Playlist(0).Rows > 1 Then
  Playlist(0).Col = 1
  Playlist(1).Col = 1
  Playlist(0).ColSel = 2
  Playlist(1).ColSel = 8
End If
'build the songlist array from the play list

'find the song from the play list

'disable mix button
If CurControl.Name = searchlist.Name Then
If searchlist.RowSel > 0 Then
  searchlist.BackColorSel = searchlist.CellBackColor
  searchlist.ForeColorSel = searchlist.CellForeColor
  For i = 0 To 8
    selsong(i) = searchlist.TextMatrix(searchlist.row, i)
  Next i
  Playlist(0).AddItem selsong(0) & Chr(9) & selsong(1) & Chr(9) & selsong(2)
  Playlist(1).AddItem selsong(0) & Chr(9) & selsong(1) & Chr(9) & selsong(2)
'Add a song to the total to be played
NumSongs.Text = PlaySongs
'Add the song time to the play time box
End If
End If
'begin playing song list
Do Until Playlist(0).Rows < 2
  Undo.Enabled = False
  For j = 0 To 4
    ScreenShow(j).BackColor = &H8000000F
    ScreenShow(j).ForeColor = &H80000012
    Screen1.ScreenShow(j).BackColor = &H8000000F
    Screen1.ScreenShow(j).ForeColor = &H80000012
  Next j
  Screen1.ScreenShow(0).BackColor = &HC0&
  Screen1.ScreenShow(0).ForeColor = &H8000000E

Screen1.Refresh

If Playlist(0).Rows > 1 Then
  CurControl.row = row
  If channel = 1 Then OtherChannel = 2
  If channel = 2 Then OtherChannel = 1
  Screen1.PlayLab(OtherChannel).Visible = False
  Screen1.Quelab(OtherChannel).Visible = True
'find the first song to be played

```

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```

If the song was already on deck then play it
Data1.Refresh
Data1.Recordset.MoveLast
Data1.Recordset.MoveFirst
Data1.Recordset.FindFirst "Title = " & CurControl.TextMatrix(row, 1) & " and Artist = " & CurControl.TextMatrix(row, 2) &

If IsNull(Data1.Recordset.Fields("ID")) Then
    MsgBox ("There was a problem finding your song file on disk.")
Else
    songlist = "c:\Progra-1\moaec\895.mpg"
'songlist = "C:\Progra-1\moaec\" & Data1.Recordset.Fields("ID") & ".mpg"
'songlist = "c:\windows\media\tada.wav"
songlist = "e:" & Data1.Recordset.Fields("ID") & ".mpg"

End If

songlength = Val(CurControl.TextMatrix(row, 0)) - 2
Screen1.cursong(channel).Text = CurControl.TextMatrix(row, 1)
CurControl.Col = 1
Screen1.cursong(channel).BackColor = CurControl.CellBackColor
Screen1.Text1(channel).Text = Format(TimeSerial(0, 0, songlength), "hh:mm:ss")
If CurControl.Name = Playlist(0).Name Then
    For X = 0 To 8
        Screen1.CurrentSongExpanded(channel).TextMatrix(1, X) = Playlist(1).TextMatrix(row, X)
        Screen1.CurrentSongExpanded(channel).CellBackColor = Playlist(1).CellBackColor
        Screen1.CurrentSongExpanded(channel).BackColorSel = Playlist(1).CellBackColor
        Screen1.CurrentSongExpanded(channel).ForeColorSel = Playlist(1).CellForeColor
    Next X
Else
    For X = 0 To 8
        Screen1.CurrentSongExpanded(channel).TextMatrix(1, X) = CurControl.TextMatrix(row, X)
        Screen1.CurrentSongExpanded(channel).CellBackColor = CurControl.CellBackColor
        Screen1.CurrentSongExpanded(channel).BackColorSel = CurControl.CellBackColor
        Screen1.CurrentSongExpanded(channel).ForeColorSel = CurControl.CellForeColor
    Next X
End If
Data1.Recordset.Close
If (CurControl.Name = Playlist(0).Name And Playlist(0).Rows > 2) Or CurControl.Name = searchlist.Name Then
    If (CurControl.Name = Playlist(0).Name And row < 1) Or CurControl.Name = searchlist.Name Then
        Playlist(0).row = 1
        Playlist(1).row = 1
    Else
        Playlist(0).row = 2
        Playlist(1).row = 2
    End If
    songlength2 = Val(Playlist(0).TextMatrix(Playlist(0).row, 0))
    Screen1.cursong(OtherChannel).Text = Playlist(0).TextMatrix(Playlist(0).row, 1)
    Playlist(0).Col = 1
    Screen1.cursong(OtherChannel).BackColor = Playlist(0).CellBackColor
    Screen1.Text1(OtherChannel).Text = Format(TimeSerial(0, 0, songlength2), "hh:mm:ss")
    Screen1.TimeElapsed(OtherChannel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")

```

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```

For X = 0 To 8
  Screen1.CurrentSongExpanded(OtherChannel).TextMatrix(1, X) = Playlist(1).TextMatrix(Playlist(0).row, X)
  Screen1.CurrentSongExpanded(OtherChannel).CellBackColor = Playlist(1).CellBackColor
  Screen1.CurrentSongExpanded(OtherChannel).BackColorSel = Playlist(1).CellBackColor
  Screen1.CurrentSongExpanded(OtherChannel).ForeColorSel = Playlist(1).CellForeColor
Next X

Else
  songlist2 = ""
  Screen1.cursong(OtherChannel).Text = ""
  Screen1.cursong(OtherChannel).BackColor = &H80000009
  Screen1.Text1(OtherChannel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")
  Screen1.TimeElapsed(OtherChannel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")
End If

If CurControl.Name = searchlist.Name Then SongsTime = SongsTime + CLng(Val(CurControl.TextMatrix(row, 0)))
SongsTime = SongsTime - CLng(Val(CurControl.TextMatrix(row, 0)))
timebox.Text = Format(TimeSerial(0, 0, CLng(SongsTime)), "hh:mm:ss")

If Playlist(0).Rows > 2 Then
  If CurControl.Name = Playlist(0).Name And row < 1 Then
    Playlist(0).row = row
    Playlist(1).row = row
  ElseIf CurControl.Name = searchlist.Name Then
    Playlist(0).row = Playlist(0).Rows - 1
    Playlist(1).row = Playlist(0).Rows - 1
  Else
    Playlist(0).row = 1
    Playlist(1).row = 1
  End If
  Playlist(1).RemoveItem (Playlist(0).row)
  Playlist(0).RemoveItem (Playlist(0).row)
Else
  Playlist(0).Clear
  Playlist(1).Clear
  Playlist(0).Rows = 1
  Playlist(1).Rows = 1
  Playlist(0).Col = 1
  Playlist(1).Col = 1
  Playlist(0).ColSel = 2
  Playlist(1).ColSel = 8
  Playlist(0).CellBackColor = Playlist(0).BackColorFixed
  Call FormatHeaders
End If
If CurControl.Name = searchlist.Name Then PlaySongs = PlaySongs + 1
PlaySongs = PlaySongs - 1
NumSongs.Text = PlaySongs
Playlist(0).Col = 1
Playlist(1).Col = 1
Playlist(0).ColSel = 2
Playlist(1).ColSel = 8

```

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```

Playlist(0).BackColorSel = Playlist(0).CellBackColor
Playlist(0).ForeColorSel = Playlist(0).CellForeColor
Playlist(1).BackColorSel = Playlist(0).CellBackColor
Playlist(1).ForeColorSel = Playlist(0).CellForeColor
SongPlaying = True
Call Screen1.Playwave(songlist, songlength)
If CurControl.Name = searchlist.Name Then Set CurControl = Playlist(0)
row = 1

If channel = 1 Then
    channel = 2
    OtherChannel = 1
Else
    channel = 1
    OtherChannel = 2
End If
SongPlaying = False

End If
Loop
Else
    StopList = True
End If

Clearall:
SongsTime = 0
    Playlist(0).Col = 1
    Playlist(1).Col = 1
    Playlist(0).ColSel = 2
    Playlist(1).ColSel = 8
    textbox.Text = Format(TimeSerial(0, 0, CLng(SongsTime)), "hh:mm:ss")
    Playlist(0).Clear
    Playlist(0).Rows = 1
    Call FormatHeaders
    Playlist(0).BackColorSel = Playlist(0).BackColorFixed
    Playlist(0).ForeColorSel = Playlist(0).ForeColorFixed
    Playlist(1).Clear
    Playlist(1).Rows = 1
    Playlist(1).BackColorSel = Playlist(1).BackColorFixed
    Playlist(1).ForeColorSel = Playlist(1).ForeColorFixed
    searchlist.BackColorSel = &H80000008
    searchlist.ForeColorSel = &H8000000E
    PlaySongs = 0
    NumSongs.Text = "0"
    Screen1.cursong(channel).Text = ""
    Screen1.cursong(channel).BackColor = &H80000009

    Screen1.Text1(channel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")
    Screen1.TimeElapsed(channel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")
    Screen1.cursong(OtherChannel).Text = ""
    Screen1.cursong(OtherChannel).BackColor = &H80000009

    Screen1.Text1(OtherChannel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")
    Screen1.TimeElapsed(OtherChannel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")

```

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```

Now.Enabled = False
PlayButton.Enabled = False
Now.BackColor = &H8000000F
PlayButton.BackColor = &H8000000F

```

```
Exit Sub
```

```
errorhandler:
```

```

MsgBox "There was a problem finding your selected song file."
SongPlaying = False

```

```
End Sub
```

```
Sub RestoreSearchList()
```

```
CurRow2 = 1
```

```
CurRow1 = 1
```

```
CurCol = 0
```

```
undo.Enabled = False
```

```
'clear the playlists
```

```
SearchSongs = 0
```

```
searchlist.AllowBigSelection = True
```

```
searchlist.Rows = numRows
```

```
If numRows = 0 Then
```

```
ClearSearchList
```

```
ClrSrch.Enabled = False
```

```
Else
```

```
ClrSrch.Enabled = True
```

```
searchlist.row = 1
```

```
searchlist.Col = 0
```

```
searchlist.RowSel = numRows - 1
```

```
searchlist.ColSel = 8
```

```
searchlist.Clip = allCells1
```

```
For i = 1 To numRows - 1
```

```
searchlist.row = i
```

```
For k = 0 To 8
```

```
searchlist.Col = k
```

```
searchlist.CellBackColor = FileColors(i)
```

```
Next k
```

```
SearchSongs = SearchSongs + 1
```

```
Next i
```

```
searchlist.AllowBigSelection = False
```

```
searchlist.row = 1
```

```
searchlist.Col = 0
```

```
delete.Enabled = True
```

```
End If
```

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CL 000412

```

Exit Sub

End Sub
Sub RestorePlayList()
If numRows = 0 Then
ClearPlayList
Else
CurRow2 = 1
CurRow1 = 1
CurCol = 0
undo.Enabled = False
'clear the play-lists
PlaySongs = 0
SongsTime = 0
NumSongs.Text = 0
timebox.Text = Format(TimeSerial(0, 0, CLng(SongsTime)), "hh:mm:ss")
SinglePlayTime.Text = "00:00:00"
Playlist(0).AllowBigSelection = True
Playlist(1).AllowBigSelection = True
Playlist(0).Rows = numRows
Playlist(0).row = 1
Playlist(0).Col = 0
Playlist(0).RowSel = numRows - 1
Playlist(0).ColSel = 2
Playlist(1).Rows = numRows
Playlist(1).row = 1
Playlist(1).Col = 0
Playlist(1).RowSel = numRows - 1
Playlist(1).ColSel = 8
Playlist(0).Clip = allCells1
Playlist(1).Clip = allCells2
For i = 1 To numRows - 1
Playlist(0).row = i
For j = 0 To 2
Playlist(0).Col = j
Playlist(0).CellBackColor = FileColors(i)
Next j
Playlist(1).row = i
For k = 0 To 8
Playlist(1).Col = k
Playlist(1).CellBackColor = FileColors(j)
Next k
SongsTime = SongsTime + CLng(Val(Playlist(0).TextMatrix(i, 0)))
timebox.Text = Format(TimeSerial(0, 0, SongsTime), "hh:mm:ss")
PlaySongs = PlaySongs + 1
NumSongs.Text = PlaySongs
Next i
Playlist(0).AllowBigSelection = False
Playlist(1).AllowBigSelection = False
Playlist(0).row = 1
Playlist(1).row = 1
Playlist(0).Col = 0
Playlist(1).Col = 0
ExpandList.Enabled = True

```

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CL 000413

```

delete.Enabled = True
Command1.Enabled = True
Now.Enabled = True
Now.BackColor = &HFF&
PlayButton.Enabled = True
PlayButton.BackColor = &HFF8080
RndMix.Enabled = True
SavePlay.Enabled = True
Call CheckOnDeck
End If
Exit Sub

```

```
End Sub
```

```
Sub SaveSearchList()
```

```

CurRow1 = searchlist.row
CurCol = 0
undo.Enabled = True
On Error GoTo errorhandler

```

```

searchlist.AllowBigSelection = True
searchlist.row = 1
searchlist.Col = 0
searchlist.RowSel = searchlist.Rows - 1
searchlist.ColSel = 8
allCells1 = searchlist.Clip

numRows = searchlist.Rows
ReDim FileColors(searchlist.Rows - 1)
For i = 1 To searchlist.Rows - 1
    searchlist.row = i
    FileColors(i) = searchlist.CellBackColor
    Write #FileNum, FileColors(i)
Next i
searchlist.AllowBigSelection = False
searchlist.row = CurRow1
searchlist.Col = 0

```

```
Exit Sub
```

```
errorhandler:
```

```
Exit Sub
```

```
End Sub
```

```
Sub SavePlayList()
```

```

CurRow2 = Playlist(1).row
CurRow1 = Playlist(0).row
CurCol = 0
undo.Enabled = True
On Error GoTo errorhandler

```

```

Playlist(0).AllowBigSelection = True
Playlist(0).row = 1

```

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CL 000414

```

Playlist(0).Col = 0
Playlist(0).RowSel = Playlist(0).Rows - 1
Playlist(0).ColSel = 2
allCells1 = Playlist(0).Clip
Playlist(1).AllowBigSelection = True
Playlist(1).row = 1
Playlist(1).Col = 0
Playlist(1).RowSel = Playlist(1).Rows - 1
Playlist(1).ColSel = 8
allCells2 = Playlist(1).Clip
numRows = Playlist(0).Rows
ReDim FileColors(Playlist(0).Rows - 1)
For i = 1 To Playlist(0).Rows - 1
    Playlist(0).row = i
    FileColors(i) = Playlist(0).CellBackColor
    Write #FileNum, FileColors(i)
Next i
Playlist(1).AllowBigSelection = False
Playlist(0).AllowBigSelection = False
Playlist(0).row = CurRow1
Playlist(1).row = CurRow2
Playlist(0).Col = 1
Playlist(1).Col = 1
Exit Sub

Errorhandler:
Exit Sub
End Sub

Sub ListFavHits()
If PlayedSongs(1, 1, 1) <> "" Then
    Organize.Enabled = True
    For z = 1 To zed
        searchlist.AddItem PlayedSongs(1, z, 0) & Chr(9) & PlayedSongs(1, z, 1) & Chr(9) & PlayedSongs(1, z, 2) & Chr(9) &
        PlayedSongs(1, z, 3) & Chr(9) & PlayedSongs(1, z, 4) & Chr(9) & PlayedSongs(1, z, 5) & Chr(9) & PlayedSongs(1, z, 6) & Chr(9) &
        PlayedSongs(1, z, 7) & Chr(9) & PlayedSongs(1, z, 8)
        SearchSongs = SearchSongs + 1
        searchlist.row = SearchSongs
        For X = 0 To 8
            searchlist.Col = X
            searchlist.CellBackColor = PlayedSongs(1, z, 9)
        Next X
        ClrSrch.Enabled = True
        searchlist.BackColorSel = searchlist.CellBackColor
    Next z
Else
    MsgBox ("Sorry...You have no song selections defined as favorite hits.")
End If
End Sub

Sub ClearPlayList()
Dim i As Integer
'reset the song variables

```

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CL 000415

```

SongsTime = 0
PlaySongs = 0
'clear the fields associated with song count and time
timebox.Text = Format(TimeSerial(0, 0, CLng(SongsTime)), "hh:mm:ss")
SinglePlayTime.Text = "00:00:00"
NumSongs.Text = "0"
'purge the contents of the playlist
For i = 0 To i
    Playlist(i).Clear
    Playlist(i).Rows = 1
    Playlist(i).BackColorSel = Playlist(0).BackColorFixed
    Playlist(i).ForeColorSel = Playlist(0).ForeColorFixed
Next i
'reset column widths and make the smallest list visible
Call FormatHeaders
Playlist(0).Visible = True
Playlist(1).Visible = False
'reset the buttons
SavePlay.Enabled = False
RndMix.Enabled = False
Mix.Enabled = False
Now.Enabled = False
Now.BackColor = &H800000F
PlayButton.BackColor = &H800000F
PlayButton.Enabled = False
AddList(0).Enabled = False
Command1.Enabled = False
ExpandList.Enabled = False
'reset button colors and return selection to searchlist
Now.BackColor = &H800000F
Mix.BackColor = &H800000F
searchlist.BackColorSel = &H80000008
searchlist.ForeColorSel = &H8000000E
End Sub
Sub ClearSearchList()
Dim i As Integer
'reset caption of main search button and text fields
search.Caption = "Search Music Categories"

For i = 0 To 9
    csearch(i).Caption = ""
Next i
'remove all rows of the list
searchlist.Clear
searchlist.Rows = 1
Call FormatHeaders
'reset the searchlist colors
searchlist.BackColorSel = searchlist.BackColorFixed
searchlist.ForeColorSel = searchlist.ForeColorFixed
searchlist.BackColor = &H8000000E
'reset the main search flag and flag label
csearch(0).Caption = "none"
searchflag = 0
'reset searchlist variables and reset buttons

```

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CL 000416


```

SearchSongs = 0
AddList(0).Enabled = False
AddList(1).Enabled = False
ClrSrch.Enabled = False
Organize.Enabled = False
Now.Enabled = False
Now.BackColor = &H800000F
End Sub
Sub DeletePlay(RowNum As Integer)
If Playlist(0).Rows <= 2 Then
    Playlist(1).row = 1
    For i = 0 To 8
        UndoText(i) = Playlist(1).TextMatrix(1, i)
    Next i
    ClearPlayList
Else
    PlaySongs = PlaySongs - 1
    SongsTime = SongsTime - CLng(Val(Playlist(0).TextMatrix(RowNum, 0)))
    timebox.Text = Format(TimeSerial(0, 0, SongsTime), "hh:mm:ss")
    NumSongs.Text = PlaySongs
    Playlist(0).RemoveItem RowNum
    Playlist(1).RemoveItem RowNum
End If
End Sub
Sub ExpandListButs()
On Error Resume Next
Dim X As Integer
Dim ButWidth(9) As Integer
Dim ButLeft(8) As Integer
ButWidth(1) = 2450
ButWidth(2) = 1960
ButWidth(3) = 690
ButWidth(4) = 1630
ButWidth(5) = 1000
ButWidth(6) = 1450
ButWidth(7) = 1150
ButWidth(8) = 1080
ButLeft(2) = 4410
ButLeft(3) = 5100
ButLeft(4) = 6730
ButLeft(5) = 7730
ButLeft(6) = 9180
ButLeft(7) = 10330
ButLeft(8) = 11410

For X = 1 To 8
    SearchCat(X).Width = ButWidth(X) + (HeadExpand * 44.5)
Next X
For X = 2 To 8
    SearchCat(X).Left = SearchCat(X - 1).Left + SearchCat(X - 1).Width - 15

```

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CL 000417

```

Next X
End Sub
Sub FormatHeaders()
'Expands the headers of the spreadsheets to match screen width
On Error Resume Next
Playlist(0).FormatString = "<Song Title           " & Space(5 * HeadExpand) & "<Artist           " &
Space(5 * HeadExpand)
Playlist(1).FormatString = "<Song Title           " & Space(HeadExpand) & "<Artist           " &
Space(HeadExpand) & "<Date           " & Space(HeadExpand) & "<Music Category           " & Space(HeadExpand) & "<Music Style           "
& Space(HeadExpand) & "<Dance Type           " & Space(HeadExpand) & "<Music Speed           " & Space(HeadExpand) & "<Energy
" & Space(HeadExpand)
searchlist.FormatString = "<Song Title           " & Space(HeadExpand) & "<Artist           " &
Space(HeadExpand) & "<Date           " & Space(HeadExpand) & "<Music Category           " & Space(HeadExpand) & "<Music Style           "
& Space(HeadExpand) & "<Dance Type           " & Space(HeadExpand) & "<Music Speed           " & Space(HeadExpand) & "<Energy
" & Space(HeadExpand)
End Sub
Sub CheckSub(checker As String)
If checker = "Sub1" Then
SubCol = "Sub2"
SubCount = 0
ElseIf checker = "Sub2" Then
SubCol = "Sub3"
ElseIf checker = "Sub3" Then
SubCol = "Sub4"
ElseIf checker = "Sub4" Then
SubCol = "Sub5"
ElseIf checker = "Sub5" Then
SubCol = "Sub6"
ElseIf checker = "Sub6" Then
SubCol = "Sub7"
ElseIf checker = "Sub7" Then
SubCol = "Sub8"
ElseIf checker = "Sub8" Then
SubCol = "Sub9"
ElseIf checker = "Sub9" Then
SubCol = "Sub10"
ElseIf checker = "Sub10" Then
SubCol = "Sub11"
ElseIf checker = "Sub11" Then
SubCol = "Sub1"

End If
SubCount = SubCount + 1
End Sub

Option Compare Text
Sub CheckMain(checker2 As String)
If checker2 = "Main" Then
Cat1 = "Main1"
ElseIf checker2 = "Main1" Then
Cat1 = "Main2"
MainCount = 0
ElseIf checker2 = "Main2" Then
Cat1 = "Main3"

```

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```

Elseif checker2 = "Main3" Then
  Cat1 = "Main4"
Elseif checker2 = "Main4" Then
  Cat1 = "Main5"
Elseif checker2 = "Main5" Then
  Cat1 = "Main6"
Elseif checker2 = "Main6" Then
  Cat1 = "Main7"
Elseif checker2 = "Main7" Then
  Cat1 = "Main8"
Elseif checker2 = "Main8" Then
  Cat1 = "Main1"

End If
MainCount = MainCount - 1
End Sub
Sub CheckOnDeck()
Dim songlist2 As String
Dim songlength2 As Integer
On Error GoTo errorhandler
If Playlist(0).Rows > 1 Then
  songlength2 = Val(Playlist(0).TextMatrix(1, 0))

  Playlist(0).row = 1
  Playlist(1).row = 1
  Playlist(0).BackColorSel = Playlist(0).CellBackColor
  Playlist(0).ForeColorSel = Playlist(0).CellForeColor
  Playlist(1).BackColorSel = Playlist(1).CellBackColor
  Playlist(1).ForeColorSel = Playlist(1).CellForeColor

  Screen1.cursong(OtherChannel).Text = Playlist(0).TextMatrix(1, 1)
  Screen1.cursong(OtherChannel).BackColor = Playlist(0).CellBackColor
  Screen1.Text1(OtherChannel).Text = Format(TimeSerial(0, 0, songlength2), "hh:mm:ss")
  Screen1.TimeElapsed(OtherChannel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")
  For X = 0 To 8
    Screen1.CurrentSongExpanded(OtherChannel).TextMatrix(1, X) = Playlist(1).TextMatrix(1, X)
    Screen1.CurrentSongExpanded(OtherChannel).CellBackColor = Playlist(1).CellBackColor
    Screen1.CurrentSongExpanded(OtherChannel).BackColorSel = Playlist(1).CellBackColor
    Screen1.CurrentSongExpanded(OtherChannel).ForeColorSel = Playlist(1).CellForeColor
  Next X
  Data1.Recordset.Close
Else
  Screen1.cursong(OtherChannel).Text = ""
  Screen1.cursong(OtherChannel).BackColor = &H80000009
  Screen1.Text1(OtherChannel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")
  Screen1.TimeElapsed(OtherChannel).Text = Format(TimeSerial(0, 0, 0), "hh:mm:ss")
End If
Screen1.PlayLab(OtherChannel).Visible = False
Screen1.QUElab(OtherChannel).Visible = True
Exit Sub

errorhandler:

```

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CL 000419

```

Exit Sub

End Sub

Private Sub AllSpeeds_Click()
    AllSpeeds.Visible = False
    AllSpeeds.Enabled = False
End Sub

Private Sub CancelSubScreen_Click()
    CancelSearch = True
End Sub

Private Sub ENTERKEY_Click()
    If searchfield.Visible = True Then
        BeginSearch.SetFocus
        SendKeys "{end}"
        SendKeys "{enter}"
    Else
        TimeOK.SetFocus
        SendKeys "{enter}"
    End If
End Sub

Private Sub ExitSystem_Click()
    response = MsgBox("Are you sure you want to exit the system?", 4)
    If response = vbNo Then
        Exit Sub
    Else
        ExitButtonPushed = True
        EndtAll
    End If
End Sub

Private Sub Form_GotFocus()
    On Error Resume Next
    Screen2.DD.Group = "Screen2"
End Sub

Private Sub Form_QueryUnload(Cancel As Integer, UnloadMode As Integer)
    Dim Msg ' Declare variable.
    If ExitButtonPushed = False Then

        Msg = "Do you really want to exit the application?"

    Else
        EndtAll
        ExitButtonPushed = True
    End If

End Sub

Private Sub Form_Resize()

```

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CL 000420

```

If WindowState = 2 Then
  Screen1.WindowState = 2
  Recorder.WindowState = 2
  HeadExpand = 0
  Call FormatHeaders
  Call ExpandListButs
  HeadExpand = (Screen2.Width - 11565) / 443
  Call FormatHeaders
  Call ExpandListButs
  If ExpandList.Caption = "EXPAND" Then
    Picture1.Left = 6720
    Picture1.Width = Screen.Width - 6830
    SinglePlayTime.Left = Screen.Width + 100
    Label5.Left = Screen.Width + 100
    Label1.Left = 1440
  Else
    Picture1.Left = 0
    Picture1.Width = Screen2.Width - 195
    Playlist(1).Left = 0
    SinglePlayTime.Left = 4800
    Label5.Left = 6240
    Label1.Left = 0.41 * Picture1.Width
  End If
  Picture1.Top = 0

  Picture4.Height = Screen.Height - 6290
  Picture4.Width = Screen2.Width - 195
  searchlist.Width = Picture4.Width - 100
  searchlist.Height = Picture4.Height - 600
  For X = 0 To 4
    ScreenShow(X).Top = Screen.Height - 1155
  Next X
  undo.Top = Screen.Height - 1155
  Help.Top = Screen.Height - 1155
  SavePlay.Top = Screen.Height - 1490
  PlayButton.Top = Screen.Height - 1490
  LoadPlay.Top = Screen.Height - 995
  Now.Top = Screen.Height - 995

  ScreenShow(0).Left = 0.511 * Screen.Width
  For X = 1 To 4
    ScreenShow(X).Left = ScreenShow(X - 1).Left - 1200
  Next X
  undo.Left = Screen.Width - 2025
  Help.Left = Screen.Width - 2985
  Label2.Left = 0.4 * Screen.Width
  search.Left = Screen.Width - 4575
  ChSrch.Left = Screen.Width - 2175
  Playlist(0).Width = Picture1.Width - 240
  Playlist(1).Width = Screen.Width
Else
  HeadExpand = 0
  maxed = True

```

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CL 000421

```

Call FormatHeaders
Call ExpandListButs
HeadExpand = (Screen2.Width - 11565) / 340
Call ExpandListButs
Call FormatHeaders
If ExpandList.Caption = "EXPAND" Then
    Picture1.Left = 6720
    Picture1.Width = 4815
    Playlist(1).Left = 120
    Playlist(0).Left = 120
    Label1.Left = 1440
Else
    Picture1.Left = 0
    Picture1.Width = 11535
    Playlist(1).Left = 0
    Playlist(0).Left = 0
    Label1.Left = 4200
End If
SinglePlayTime.Left = 4800
Label5.Left = 6240
Picture1.Top = 0
Picture4.Height = 2775
Picture4.Width = 11535
searchlist.Width = 11435
searchlist.Top = 480
searchlist.Height = 2175
For X = 0 To 4
    ScreenShow(X).Top = 7800
Next X
undo.Top = 7600
Help.Top = 7800
LoadPlay.Top = 7560
Now.Top = 8040
SavePlay.Top = 8040
PlayButton.Top = 7560
Label2.Left = 4080
ScreenShow(0).Left = 5600
For X = 1 To 4
    ScreenShow(X).Left = ScreenShow(X - 1).Left - 1200
Next X
undo.Left = 9540
Help.Left = 8580
search.Left = 6840
ChrSrch.Left = 9240
Playlist(0).Width = Picture1.Width - 240
Playlist(1).Width = 11535
End If
ExitSystem.Left = undo.Left - 975
ExitSystem.Top = undo.Top
End Sub
Private Sub AddList_Click(Index As Integer)
Dim i As Integer
Dim j As Integer
Dim oldcolor, oldcolor2, oldcolor3 As Long

```

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CL 000422

```

Dim oldtime As Integer
On Error GoTo errorhandler
delete.Enabled = True
ExpandList.Enabled = True
SavePlay.Enabled = True
Command1.Enabled = True
RndMix.Enabled = True
If IsNull(channel) Then
    channel = 1
    OtherChannel = 2
End If
MousePointer = 11
'select the text from the search list
Now.BackColor = &HFF&
Now.Enabled = True
PlayButton.Enabled = True
PlayButton.BackColor = &HFF8080
undo.Enabled = True
UndoEvent = 0
If Playlist(0).Rows = 1 Then
    numRows = 0
Else
    SavePlayList
End If
If searchlist.Rows >= 1 Then
    'if the PICK button is pushed
    If Index = 1 Then
        If SelList = 1 Then
            PlaySongs = PlaySongs - 1
            zed = zed - 1
            For j = 0 To 8
                selsong(j) = searchlist.TextMatrix(searchlist.row, j)
                PlayedSongs(1, zed, i) = searchlist.TextMatrix(searchlist.row, i)
            Next j
            PlayedSongs(1, zed, 9) = searchlist.CellBackColor
            Playlist(0).AddItem selsong(0) & Chr(9) & selsong(1) & Chr(9) & selsong(2)
            Playlist(1).AddItem selsong(0) & Chr(9) & selsong(1) & Chr(9) & selsong(2) & Chr(9) & selsong(3) & Chr(9) &
            selsong(4) & Chr(9) & selsong(5) & Chr(9) & selsong(6) & Chr(9) & selsong(7) & Chr(9) & selsong(8)
            'add a song to the total to be played

            NumSongs.Text = PlaySongs
            Playlist(0).row = Playlist(0).Rows - 1
            Playlist(1).row = Playlist(1).Rows - 1
            'add the song time to the play time box
            SongsTime = SongsTime + CLng(Val(searchlist.TextMatrix(searchlist.row, 0)))
            timebox.Text = Format(TimeSerial(0, 0, SongsTime), "hh:mm:ss")
            For z = 0 To 2
                Playlist(0).Col = z
                Playlist(0).CellBackColor = searchlist.CellBackColor
                Playlist(0).BackColorSel = searchlist.CellBackColor
                Playlist(0).ForeColorSel = searchlist.CellForeColor
            Next z

```

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CL 000423

```

For z = 0 To 8
  Playlist(1).Col = z
  Playlist(1).CellBackColor = searchlist.CellBackColor
  Playlist(1).BackColorSel = searchlist.CellBackColor
  Playlist(1).ForeColorSel = searchlist.CellForeColor
Next z
End If
'if the NEXT button is pushed
ElseIf Index = 0 Then

'if the searchlist is selected
If Sellist = 1 Then
  zed = zed + 1
  For i = 0 To 8
    selsong(i) = searchlist.TextMatrix(searchlist.row, i)
    PlayedSongs(1, zed, i) = searchlist.TextMatrix(searchlist.row, i)
  Next i
  PlayedSongs(1, zed, 9) = searchlist.CellBackColor
  'if there is only one row in the playlist (fixed top)
  If Playlist(0).Rows = 1 Then
    Playlist(0).Rows = Playlist(0).Rows + 1
    Playlist(1).Rows = Playlist(1).Rows + 1
    NumSongs.Text = PlaySongs
    time = CLng(Val(searchlist.TextMatrix(searchlist.row, 0)))
    SongsTime = SongsTime + CLng(Val(searchlist.TextMatrix(searchlist.row, 0)))
    timebox.Text = Format(TimeSerial(0, 0, SongsTime), "hh:mm:ss")
    For j = 0 To 2
      Playlist(0).TextMatrix(1, j) = selsong(j)
      Playlist(0).row = 1
      Playlist(0).Col = j
      Playlist(0).CellBackColor = searchlist.CellBackColor
      Playlist(0).BackColorSel = searchlist.CellBackColor
      Playlist(0).ForeColorSel = searchlist.CellForeColor
    Next j
    For j = 0 To 8
      Playlist(1).TextMatrix(1, j) = selsong(j)
      Playlist(1).row = 1
      Playlist(1).Col = j
      Playlist(1).CellBackColor = searchlist.CellBackColor
      Playlist(1).BackColorSel = searchlist.CellBackColor
      Playlist(1).ForeColorSel = searchlist.CellForeColor
    Next j
  Else
    'if there is more than one row in the playlist
    Playlist(0).Rows = Playlist(0).Rows + 1
    Playlist(1).Rows = Playlist(1).Rows + 1
    PlaySongs = PlaySongs + 1
    NumSongs.Text = PlaySongs

    For i = Playlist(0).Rows - 2 To 1 Step -1
      For X = 0 To 1
        Playlist(X).row = i
        oldcolor = Playlist(X).CellBackColor
        Playlist(X).RowPosition(i) = i - 1

```

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CL 000424


```

    Playlist(X).row = i + 1
Next X
For j = 0 To 2
    Playlist(0).Col = j
    'change color
    Playlist(0).CellBackColor = oldcolor
    Playlist(0).BackColorSel = searchlist.CellBackColor
    Playlist(0).ForeColorSel = searchlist.CellForeColor
Next j
For j = 0 To 8
    Playlist(1).Col = j
    'change color
    Playlist(1).CellBackColor = oldcolor
    Playlist(1).BackColorSel = searchlist.CellBackColor
    Playlist(1).ForeColorSel = searchlist.CellForeColor
Next j

Next i
For i = 0 To 8
    selsong(i) = searchlist.TextMatrix(searchlist.row, i)
Next i
For j = 0 To 2
    Playlist(0).TextMatrix(1, j) = selsong(j)
    Playlist(0).row = 1
    Playlist(0).Col = j
    Playlist(0).CellBackColor = searchlist.CellBackColor
    Playlist(0).BackColorSel = searchlist.CellBackColor
    Playlist(0).ForeColorSel = searchlist.CellForeColor
Next j
For j = 0 To 8
    Playlist(1).TextMatrix(1, j) = selsong(j)
    Playlist(1).row = 1
    Playlist(1).Col = j
    Playlist(1).CellBackColor = searchlist.CellBackColor
    Playlist(1).BackColorSel = searchlist.CellBackColor
    Playlist(1).ForeColorSel = searchlist.CellForeColor
Next j
SongsTime = SongsTime - CLng(Val(searchlist.TextMatrix(searchlist.row, 0)))
textbox.Text = Format(TimeSerial(0, 0, SongsTime), "hh:mm:ss")
End If
Else
    'if the playlist is selected then just move the song to the top
    If Playlist(0).Rows = 1 Then
        MsgBox "the Song you want to move is already next!"
    Else
        X = Playlist(0).row
        For Y = 0 To 8
            selsong(Y) = Playlist(1).TextMatrix(X, Y)
        Next Y
        oldcolor2 = Playlist(0).CellBackColor
        oldcolor3 = Playlist(0).CellForeColor

```

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CL 000425

```

For i = X - 1 To 1 Step -1
  Playlist(0).row = i
  Playlist(1).row = i
  oldcolor = Playlist(0).CellBackColor
  For j = 0 To 2
    Playlist(0).TextMatrix(i + 1, j) = Playlist(0).TextMatrix(i, j)
    Playlist(0).row = i + 1
    Playlist(0).Col = j
    'change color
    Playlist(0).CellBackColor = oldcolor
  Next j
  For j = 0 To 8
    Playlist(1).TextMatrix(i + 1, j) = Playlist(1).TextMatrix(i, j)
    Playlist(1).row = i + 1
    Playlist(1).Col = j
    'change color
    Playlist(1).CellBackColor = oldcolor
  Next j
Next i
For j = 0 To 2
  Playlist(0).TextMatrix(1, j) = selsong(j)
  Playlist(0).row = 1
  Playlist(0).Col = j
  Playlist(0).CellBackColor = oldcolor2
  Playlist(0).BackColorSel = oldcolor2
  Playlist(0).ForeColorSel = oldcolor3
Next j
For j = 0 To 8
  Playlist(1).TextMatrix(1, j) = selsong(j)
  Playlist(1).row = 1
  Playlist(1).Col = j
  Playlist(1).CellBackColor = oldcolor2
  Playlist(1).BackColorSel = oldcolor2
  Playlist(1).ForeColorSel = oldcolor3
Next j
End If
End If
'searchlist.RemoveItem searchlist.Row Position
End If
End If
MousePointer = 0
UndoRow = Playlist(0).row
Call CheckOnDeck
Exit Sub

errorhandler:
  MsgBox ("Sorry, there was a problem with the song data...unable to add to playlist")
  MousePointer = 0
End Sub

Private Sub backup_Click()
  If searchfield.Visible = True Then
    searchfield.SetFocus
    SendKeys "{end}"
  
```

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CL 000426

```

SendKeys "{backspace}"
SendKeys "{tab}"
Else
    TextInput.SetFocus
    SendKeys "{end}"
    SendKeys "{backspace}"
    SendKeys "{tab}"
End If
End Sub

Private Sub BeginSearch_Click()
'loop to search the Access database
Dim position, final As Long
Dim flag As Boolean
Dim selection As String
Dim Mcat1 As String
Dim string2 As String * 255
Dim SelTag As String
Dim tempfield(9) As String
Dim finalfield(10) As String
SaveSearchList
On Error GoTo errorhandle:
keyboard.Visible = False
delete.Enabled = False
AddList(1).Enabled = False
AddList(0).Enabled = False
CancelSearch = False
If searchflag >= 10 Then
    MsgBox "Sorry, you have already narrowed your search to ten categories !!!"
    MousePointer = 0

    searchfield.Text = ""
    search.Enabled = True
    For i = 1 To 8
        SearchCat(i).Enabled = False
    Next i
    AddList(0).Enabled = True
    AddList(1).Enabled = True
    ClrSrch.Enabled = True
    Organize.Enabled = True
    Exit Sub
End If
UndoEvent = 1
SaveSearchList
undo.Enabled = True
flag = True
SearchCats(0, searchflag) = colnum
SearchCats(1, searchflag) = searchfield.Text
csearch(searchflag).Caption = searchfield.Text
MousePointer = 1
'search data base for first search
If searchflag = 0 Then
    selection = "*" & Trim(searchfield.Text) & "*"
    If colnum >= 4 Then

```

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CL 000427

```

Data2.RecordSource = Trim(Str(colnum))
Data2.Refresh
Data3.Refresh
Data2.Recordset.MoveLast
Data3.Recordset.MoveLast
Data2.Recordset.MoveFirst
Data3.Recordset.MoveFirst
Data2.Recordset.FindFirst "Label LIKE " & selection
If Data2.Recordset.NoMatch Then
  MsgBox ("Sorry...Could not find that entry.")
  flag = False
Else
  SelTag = Data2.Recordset.Fields("Tag")
  selection = "" & SelTag & ""
End If
End If

```

MainLoop:

```

DoEvents
Data1.RecordSource = "LP Complete Music Guide"
Data1.Refresh
Data2.Refresh
Data3.Refresh
Data1.Recordset.MoveLast
Data3.Recordset.MoveLast
Data1.Recordset.MoveFirst
Data3.Recordset.MoveFirst

Data1.Recordset.FindLast Cat1 & " LIKE " & selection
If Data1.Recordset.NoMatch Then flag = False
final = Data1.Recordset.AbsolutePosition
Data1.Recordset.MoveFirst
If flag = True Then
  SearchSongs = searchlist: Rows - 1
  Do Until position = final
    DoEvents
    Data1.Recordset.FindNext Cat1 & " LIKE " & selection
    If Data1.Recordset.NoMatch Then

      position = Data1.Recordset.AbsolutePosition
    Else
      position = Data1.Recordset.AbsolutePosition
      assign song color to tracking array
      Data3.Recordset.MoveFirst
      If IsNull(Data1.Recordset.Fields("Main1")) Then
        Mcat1 = "none found"
        MnCa:Color(SearchSongs) = &H80000005
      Else
        Mcat1 = Data1.Recordset.Fields("Main1")
        Data3.Recordset.FindFirst "Main1 = " & Mcat1 & ""
        MnCa:Color(SearchSongs) = Val(Data3.Recordset.Fields("colorID"))
      End If
    End If
  End If

```

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CL 000428

```

'find the abbreviations for each category
finalfield(9) = Val(Data3.Recordset.Fields("colorID"))
If IsNull(Data1.Recordset.Fields("time")) Then
    finalfield(0) = 300
Else
    finalfield(0) = Data1.Recordset.Fields("time")
End If
If IsNull(Data1.Recordset.Fields("Title")) Then
    finalfield(1) = "NL"
Else
    finalfield(1) = Data1.Recordset.Fields("Title")
End If
If IsNull(Data1.Recordset.Fields("Artist")) Then
    finalfield(2) = "NL"
Else
    finalfield(2) = Data1.Recordset.Fields("Artist")
End If
If IsNull(Data1.Recordset.Fields("Date")) Then
    finalfield(3) = "NL"
Else
    finalfield(3) = Data1.Recordset.Fields("Date")
End If
If IsNull(Data1.Recordset.Fields("Main1")) Then
    tempfield(4) = "NL"
Else
    tempfield(4) = Data1.Recordset.Fields("Main1")
End If
If IsNull(Data1.Recordset.Fields("Mstyle")) Then
    tempfield(5) = "NL"
Else
    tempfield(5) = Data1.Recordset.Fields("Mstyle")
End If
If IsNull(Data1.Recordset.Fields("Dtype")) Then
    tempfield(6) = "NL"
Else
    tempfield(6) = Data1.Recordset.Fields("Dtype")
End If
If IsNull(Data1.Recordset.Fields("Speed")) Then
    tempfield(7) = "NL"
Else
    tempfield(7) = Data1.Recordset.Fields("Speed")
End If
If IsNull(Data1.Recordset.Fields("Energy")) Then
    tempfield(8) = ""
Else
    tempfield(8) = Data1.Recordset.Fields("Energy")
End If
For X = 4 To 8
    Data2.RecordSource = X
    Data2.Refresh
    Data2.Recordset.MoveLast
    Data2.Recordset.MoveFirst
    Data2.Recordset.FindFirst "Tag = " & tempfield(X) & ""
    finalfield(X) = Data2.Recordset.Fields("Label")

```

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CL 000429

```

Next X
searchlist.AddItem finalfield(0) & Chr(9) & finalfield(1) & Chr(9) & finalfield(2) & Chr(9) & finalfield(3) & Chr(9) &
finalfield(4) & Chr(9) & finalfield(5) & Chr(9) & finalfield(6) & Chr(9) & finalfield(7) & Chr(9) & finalfield(8)
If IsNull(finalfield(0)) Then
  searchlist.TextMatrix(searchlist.row, 0) = 300
End If

searchlist.row = SearchSongs + 1
For z = 0 To 8
  searchlist.Col = z
  searchlist.CellBackColor = MnCatColor(SearchSongs)
Next z
searchlist.BackColorSel = MnCatColor(SearchSongs)
searchlist.ForeColorSel = searchlist.ForeColor
SearchSongs = SearchSongs + 1
search.Caption = "Narrow Search Results"
searchflag = 1

End If
'move to the next data row in data base
If CancelSearch = True Then
  Data1.Recordset.Close
  Data2.Recordset.Close
  Data3.Recordset.Close
  MousePointer = 0
  SearchScreen.Visible = False
  searchfield.Text = ""
  search.Enabled = True
  For i = 1 To 8
    SearchCat(i).Enabled = False
  Next i
  AddList(0).Enabled = True
  AddList(1).Enabled = True
  ClrSrch.Enabled = True
  Organize.Enabled = True
  Exit Sub
End If
Loop
If colnum = 4 Then
  Call CheckMain(Cat1)
  If MainCount < 8 Then GoTo MainLoop
End If
MainCount = 0

End If
If SearchSongs > 0 Then flag = True
stoppoint:
If flag = False Then
  MsgBox "Your entry was either misspelled or is not found in your current Music Library. Please go to Screen 4 and review and
select music from the LP MOAEC Music Library."
  MousePointer = 0
  Data1.Recordset.Close
  Data2.Recordset.Close

```

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CL 000430

```

Data3.Recordset.Close
keyboard.Visible = True
searchfield.Text = ""
searchfield.SetFocus
Exit Sub
End If
Data1.Recordset.Close
Data2.Recordset.Close
Data3.Recordset.Close

```

```

Elseif searchflag < 10 And searchflag <> 0 Then
'if searchlist is already full, narrow the field

```

```

For j = 1 To searchflag
i = 1
Do While i <= searchlist.Rows - 1
If searchlist.Rows <= 2 Then Exit Do
If SearchCats(0, j) <> 9 Then
result = InStr(1, searchlist.TextMatrix(i, SearchCats(0, j)), SearchCats(1, j), 1)
If result = 0 Then
searchlist.row = i
searchlist.RemoveItem searchlist.row
SearchSongs = SearchSongs - 1
Else
i = i - 1
End If
ElseIf SearchCats(0, j) = 9 Then
result = InStr(1, searchlist.TextMatrix(i, SearchCats(0, j)), SearchCats(1, j), 1)
If result = 0 Then
searchlist.row = i
searchlist.RemoveItem searchlist.row
SearchSongs = SearchSongs - 1
Else
i = i - 1
End If
End If
Loop
Next j
searchflag = searchflag - 1

```

```

End If

```

```

'once the search is complete, hide the screen

```

```

MousePointer = 0
SearchScreen.Visible = False
searchfield.Text = ""
search.Enabled = True
For i = 1 To 8
SearchCat(i).Enabled = False

```

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CL 000431

```

Next i
AddList(0).Enabled = True
AddList(1).Enabled = True
ClrSrch.Enabled = True
Organize.Enabled = True
Exit Sub

```

```

errorhandler:

```

```

MsgBox "Sorry. There was an error accessing music database." & Chr(13) & "Please make sure the database is properly installed
or" & Chr(13) & "contact Looney Productions."

```

```

MousePointer = 0

```

```

SearchScreen.Visible = False
searchfield.Text = ""
search.Enabled = True
For i = 1 To 8
    SearchCat(i).Enabled = False

```

```

Next i

```

```

AddList(0).Enabled = True
AddList(1).Enabled = True
ClrSrch.Enabled = True
Organize.Enabled = True
Exit Sub
End Sub

```

```

Private Sub Cancel_Click()

```

```

    keyboard.Visible = False

```

```

    SearchScreen.Visible = False

```

```

    searchfield.Text = ""

```

```

    search.Enabled = True

```

```

    For i = 1 To 8

```

```

        SearchCat(i).Enabled = False

```

```

    Next i

```

```

    CancelSearch = True

```

```

End Sub

```

```

Private Sub Category1_Click(Index As Integer)

```

```

    Dim i As Integer

```

```

    Dim j As Integer

```

```

    Dim flag As Boolean

```

```

    Dim TempCat1, TempCat2 As String

```

```

    Dim c As Integer

```

```

    Mix.BackColor = &H8000000F

```

```

    PlayTime.BackColor = &H8000000F

```

```

    Mix.BackColor = &H8000000F

```

```

    For i = 0 To 3

```

```

        SongSpeed(i).BackColor = &H8000000F

```

```

        AllSpeeds.BackColor = &H8000000F

```

```

    Next i

```

```

    For i = 0 To 2

```

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CL 000432


```

csearch(i).Caption = ""
Next i
csearch(0).Caption = "none"
searchflag = 0
SelList = 0
SelCat1 = Category1(Index).Tag
If Index = 24 Then
  Cat1 = "Drypc"
Elseif Index = 25 Then
  Cat1 = "Main1"
Else
  Cat1 = "Main1"
End If
SubCol = "Sub1"
'if clicked twice, goto category 2 screen and clear time options
If Index = 23 Then
  Call ListFavHits
  Exit Sub
End If
If (cat1count = 1) And (Index = cliktrak) Then
  Call titlefrm.NMain
  CatColor = Category1(Index).BackColor
  Category(0).BackColor = CatColor
  Category(1).BackColor = CatColor
  Category(0).Caption = Category1(Index).Tag
  FavHitsLab1.Caption = Category1(Index).Tag
  FavHitsLab1.BackColor = CatColor
  FavHitsLab2.BackColor = CatColor
  Category(1).Visible = False
  cat1count = 0
  For X = 0 To 23
    Category2(X).Caption = ""
    Category2(X).BackColor = &H8000000F
    j = j - 1
  Next X
  'disable speed buttons since switching to screen 3
  For i = 0 To SongSpeed.count - 1
    AllSpeeds.Enabled = False
    SongSpeed(i).Enabled = False
    SongSpeed(i).BackColor = &H8000000F
    AllSpeeds.BackColor = &H8000000F
  Next i
  For i = 0 To 5
    FavHits(i).BackColor = CatColor
  Next i
  Mix.Enabled = False
  PlayTime.Enabled = False
  Mix.BackColor = &H8000000F
  PlayTime.BackColor = &H8000000F
  'change screen lights to screen 3 red
  For i = 0 To 4
    Screen2.ScreenShow(i).BackColor = &H8000000F

```

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CL 000433

```

Screen2.ScreenShow(i).ForeColor = &H8000012
Next i
If Index > 23 Then
Screen2.ScreenShow(2).BackColor = &HC0&
Screen2.ScreenShow(2).ForeColor = &H800000E
cat1screen.Visible = False
FavHisScrn.Visible = False
cat2screen.Visible = True
End If
For i = 0 To 8
searchdate(i).BackColor = CatColor
Next i
'Make sure the static categories match the button
If Index = 20 Then
subcatcount = 9
subcanotal = 9
FinalCats(7) = StaticCats(9)
FinalCats(8) = StaticCats(10)
FinalCats(9) = StaticCats(11)
ElseIf Index = 18 Then
subcatcount = 8
subcanotal = 8
FinalCats(7) = StaticCats(8)
FinalCats(8) = StaticCats(11)
ElseIf Index = 1 Then
subcatcount = 7
subcanotal = 7
FinalCats(7) = StaticCats(7)
Else
subcatcount = 6
subcanotal = 6
End If
'make the temporary subcats array with tags
For X = 1 To subcanotal
DoEvents
If CancelSearch = True Then Go To stopme
Data2.RecordSource = "Subs"
Data2.Refresh
Data3.Refresh
Data2.Recordset.MoveLast
Data3.Recordset.MoveLast
Data2.Recordset.MoveFirst
Data3.Recordset.MoveFirst
Data2.Recordset.FindFirst "Label = "" & FinalCats(X) & ""
If Data2.Recordset.NoMatch Then
flag = True

Else
SubCats(X) = Data2.Recordset.Fields("Tag")
End If
Next X

```

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CL 000434

```

'FIND THE SONG CATEGORY TAG THAT MATCHES THE BUTTON
For X = 1 To subcattotal
DoEvents
If CancelSearch = True Then GoTo stopme
  If SelCat1 = "Energy" Then
    SelCat1 = "EN"
  Else
    Data2.RecordSource = 4
    Data2.Refresh
    Data3.Refresh
    Data2.Recordset.MoveLast
    Data3.Recordset.MoveLast
    Data2.Recordset.MoveFirst
    Data3.Recordset.MoveFirst
    Data2.Recordset.FindFirst "Label = " & SelCat1 & ""
    If Data2.Recordset.NoMatch Then
      flag = True
    Else
      SelTag = Data2.Recordset.Fields("Tag")
      SelCat1 = SelTag
      MemCat = SelTag
    End If
  End If
Next X

'fill secondary category buttons with text from data
MainSubLoop:
DoEvents
If CancelSearch = True Then GoTo stopme
Data1.Refresh
Data1.Recordset.MoveLast
Data1.Recordset.MoveFirst
MousePointer = 11
LoopReset:
i = 0
For j = 1 To Data1.Recordset.RecordCount
  'if cat1 matches the first button, type cat2 in the screen3 buttons
  'that is if cat2 is not blank
  If UCase(Data1.Recordset.Fields("Main1")) = UCase(Trim(SelCat1)) And (Data1.Recordset.Fields(SubCol) <> "") Then
    If IsNull(Data1.Recordset.Fields(SubCol)) Then
      j = j + 1
      GoTo LoopReset
    End If
    'and if it isn't already on a button
    flag = False
    'find new subcategories not default from database
    subcatcount = subcattotal
    For l = 1 To subcatcount
      If Data1.Recordset.Fields(SubCol) = SubCats(l) Then
        flag = True
      End If

```

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CL 000435

```

Next I
If flag = False Then
  SubCats(subcatcount + 1) = Data1.Recordset.Fields(SubCol)
  subcantotal = subcantotal + 1
End If
End If
Data1.Recordset.MoveNext
Next j

Call CheckSub/SubCol)
If SubCount < 11 Then GoTo MainSubLoop
SubCount = 0
For X = 1 To subcantotal
  Data2.RecordSource = "Subs"
  Data2.Refresh
  Data3.Refresh
  Data2.Recordset.MoveLast
  Data3.Recordset.MoveLast
  Data2.Recordset.MoveFirst
  Data3.Recordset.MoveFirst
  Data2.Recordset.FindFirst "Tag = " & SubCats(X) & ""
Next X
'sort subcats array
For r = subcantotal To 1 Step -1
  DoEvents
  If CancelSearch = True Then GoTo stopme
  TempCat = FinalCats(r - 1)
  TempCat2 = SubCats(r - 1)
  c = StrComp(TempCat, FinalCats(r))
  If c = 1 Then
    FinalCats(r - 1) = FinalCats(r)
    SubCats(r - 1) = SubCats(r)
    FinalCats(r) = TempCat
    SubCats(r) = TempCat2
  r = subcantotal - 1
End If
Next r

'fill buttons with the finalcats array
For X = 0 To subcantotal - 1
  Category2(X).Caption = FinalCats(X - 1)
  Category2(X).BackColor = Category1(Index).BackColor
  i = i + 1
Next X

'make the last of the buttons (if any) blank
Do While i <= 23
  Category2(i).Caption = ""
  Category2(i).BackColor = &H8000000F
  i = i + 1

```

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CL 000436

```

Loop
stepme:

Data2.Recordset.Close
Data3.Recordset.Close
cat1screen.Visible = False
cat2screen.Visible = True
MousePointer = 0
'reset color of speed buttons
CancelSearch = False
Exit Sub
End If

'otherwise assign button caption to primary category variable
kliktrak = Index
'enable speed selection buttons
CatColor = Category1(Index).BackColor
PlayTime.BackColor = CatColor
PlayTime.Enabled = True
Mix.Enabled = True
Mix.BackColor = CatColor
For i = 0 To SongSpeed.count - 1
    AllSpeeds.Enabled = True
    SongSpeed(i).Enabled = True
    SongSpeed(i).BackColor = CatColor
    AllSpeeds.BackColor = CatColor
Next i
cat1count = 1
End Sub

Private Sub Category2_Click(Index As Integer)
Dim flag As Boolean
Dim i As Integer
Dim tempfield(9) As String
Dim finalfield(10) As String

If Category2(Index).Caption = ButMem Then
MsgBox ("You just picked that button...Please pick another.")
Exit Sub
End If
ButMem = Category2(Index).Caption

Cat1 = "Main1"
flag = False
Category(1).Caption = Category2(Index).Caption
Category(1).Visible = True

If Category2(Index).Caption = "Favorite Hits" Then
ListFavHits
Exit Sub
End If
If Category2(Index).Caption = "ENERGY" Then SubCol = "Energy"
'fill search screen with selections from the categories
MousePointer = 1

```

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CL 000437

```

If SelCat1 = "SPMIX" Or SelCat1 = "Special Mixes" Then
  Cat1 = "Main3"
  SelCat1 = "SPMIX"

Elseif SelCat1 = "EN" Or SelCat1 = "Energy" Then
  Cat1 = "Main2"
  SelCat1 = "EN"
Elseif SelCat1 = "EL" Or SelCat1 = "Easy Listening" Then
  Cat1 = "Mstyle"
  SelCat1 = "EL"
Elseif SelCat1 = "Special Dance" Or SelCat1 = "SPD" Then
  Cat1 = "Dtype"
  SelCat1 = "SPD"
End If
MainLoop:
DoEvents
Data1.Refresh
Data3.Refresh
Data1.Recordset.MoveLast
Data3.Recordset.MoveLast
Data1.Recordset.MoveFirst
Data3.Recordset.MoveFirst

For i = 1 To Data1.Recordset.RecordCount
  'if the data base field matches search criteria, write it to the searchlist
  If UCase(Data1.Recordset.Fields(Cat1)) = SelCat1 And UCase(Data1.Recordset.Fields(SubCol)) = UCase(Trim(SubCats(Index
- 1))) Then
    Data3.Recordset.MoveFirst
    If IsNull(Data1.Recordset.Fields("Main1")) Then
      Mcat1 = "none listed"
      MnCatColor(SearchSongs) = &H80000005
    Else
      Mcat1 = Data1.Recordset.Fields("Main1")
      Data3.Recordset.FindFirst "Main1 = " & Mcat1 & ""
      MnCatColor(SearchSongs) = Val(Data3.Recordset.Fields("colorID"))
      finalfield(9) = Val(Data3.Recordset.Fields("colorID"))
      If IsNull(Data1.Recordset.Fields("time")) Then
        finalfield(0) = 300
      Else
        finalfield(0) = Data1.Recordset.Fields("time")
      End If
      If IsNull(Data1.Recordset.Fields("Title")) Then
        finalfield(1) = "NL"
      Else
        finalfield(1) = Data1.Recordset.Fields("Title")
      End If
      If IsNull(Data1.Recordset.Fields("Artist")) Then
        finalfield(2) = "NL"
      Else
        finalfield(2) = Data1.Recordset.Fields("Artist")
      End If
      If IsNull(Data1.Recordset.Fields("Date")) Then
        finalfield(3) = "NL"

```

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CL 000438

```

Else
    finalfield(3) = Data1.Recordset.Fields("Date")
End If
If IsNull(Data1.Recordset.Fields("Main1")) Then
    tempfield(4) = "NL"
Else
    tempfield(4) = Data1.Recordset.Fields("Main1")
End If
If IsNull(Data1.Recordset.Fields("Mstyle")) Then
    tempfield(5) = "NL"
Else
    tempfield(5) = Data1.Recordset.Fields("Mstyle")
End If
If IsNull(Data1.Recordset.Fields("Dtype")) Then
    tempfield(6) = "NL"
Else
    tempfield(6) = Data1.Recordset.Fields("Dtype")
End If
If IsNull(Data1.Recordset.Fields("Speed")) Then
    tempfield(7) = "NL"
Else
    tempfield(7) = Data1.Recordset.Fields("Speed")
End If
If IsNull(Data1.Recordset.Fields("Energy")) Then
    tempfield(8) = ""
Else
    tempfield(8) = Data1.Recordset.Fields("Energy")
End If
For X = 4 To 8
    Data2.RecordSource = X
    Data2.Refresh
    Data2.Recordset.MoveLast
    Data2.Recordset.MoveFirst
    Data2.Recordset.FindFirst "Tag = " & tempfield(X) & ""
    finalfield(X) = Data2.Recordset.Fields("Label")
    Data2.Recordset.Close
Next X
searchlist.AddItem finalfield(0) & Chr(9) & finalfield(1) & Chr(9) & finalfield(2) & Chr(9) & finalfield(3) & Chr(9) &
finalfield(4) & Chr(9) & finalfield(5) & Chr(9) & finalfield(6) & Chr(9) & finalfield(7) & Chr(9) & finalfield(8)
Stime(searchlist.row) = Data1.Recordset.Fields("time")
flag = True
SearchSongs = SearchSongs - 1
search.Caption = "Narrow Search Results"
searchflag = 1
End If

searchlist.row = SearchSongs
For z = 0 To 8
    searchlist.Col = z
    searchlist.CellBackColor = finalfield(9)
Next z
searchlist.BackColorSel = finalfield(9)
searchlist.ForeColorSel = searchlist.ForeColor

```

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CL 000439

```

End If

'move to the next data row in data base
Data1.Recordset.MoveNext
Next i
If Category2(Index).Caption <> "ENERGY" Then
    Call CheckSub(SubCol)
    If SubCount < 11 Then GoTo MainLoop
End If
SubCount = 0
SubCol = "Sub1"
Data1.Recordset.Close
Data3.Recordset.Close
MousePointer = 0
AddList(0).Enabled = True
AddList(1).Enabled = True
ClrSrch.Enabled = True
Organize.Enabled = True
If flag = False Then
    MsgBox "No matches were found for your search. Please try again."
    Exit Sub
End If

End Sub

Private Sub ClrSrch_Click()
'clear all items off the search list
UndoEvent = 1
SaveSearchList
Call ClearSearchList

End Sub

Public Sub Command1_Click()
Dim answer As Variant
answer = MsgBox("Are you sure you want to delete the current play list?", 4, "Clear Play List")
If answer = vbNo Then
    Exit Sub
Else
    UndoEvent = 0
    SavePlayList
    ClearPlayList
    RndMix.Enabled = False
    If maxed = True Then
        Picture1.Left = 6720
        Picture1.Width = Screen2.Width - 6830
        SinglePlayTime.Left = Screen.Width - 100
        Label5.Left = Screen.Width - 100
        Label1.Left = 1440
    Else
        Picture1.Width = 4695
        Picture1.Left = 6720
    End If
End Sub

```

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CL 000440


```

SinglePlayTime.Left = 4680
Labels.Left = 6240
Label1.Left = 1440

```

```

End If
ExpandList.Left = 120
ExpandList.Caption = "EXPAND"
AddList(0).Left = 1020
AddList(1).Left = 1730
RndMix.Left = 2430
delete.Left = 3070
Command1.Left = 3840

Playlist(0).Width = Picture1.Width - 240
Playlist(0).Left = 120
Playlist(1).Visible = False
End If
callscreen.Visible = True
Call CheckOnDeck

```

```
End Sub
```

```

Private Sub DataCreate_Click()
'user creates his own song lists and databases
'show a new form
End Sub

```

```

Private Sub databack_Click()
Dim password As String

password = InputBox("Please enter the database access password:")
Databacked = False
End Sub

```

```

Private Sub delete_Click()
Dim answer As String
On Error GoTo errorhandler
If SongSelected = False Then
MsgBox ("No song has been selected for deletion!!!")
Exit Sub
End If
answer = MsgBox("Are you sure you want to delete the selected song?", 4, "Remove Song")
If answer = vbYes Then

```

```

If SellList = 2 Then
UndoEvent = 0
SavePlayList
For i = 0 To 8
UndoText(i) = Playlist(1).TextMatrix(1, i)
Next i
If ExpandList.Caption = "EXPAND" Then
Playlist(1).row = Playlist(0).row
UndoRow = Playlist(0).row
For i = 0 To 8

```

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CL 000441

```

        UndoText(i) = Playlist(1).TextMatrix(Playlist(0).row, i)
    Next i
    Call DeletePlay(Playlist(0).row)
Else
    Playlist(0).row = Playlist(1).row
    UndoRow = Playlist(1).row
    For i = 0 To 8
        UndoText(i) = Playlist(1).TextMatrix(Playlist(0).row, i)
    Next i
    Call DeletePlay(Playlist(1).row)
End If

SongSelected = False
ElseIf SellList = 1 Then
    UndoEvent = 1
    SaveSearchList
    If searchlist.Rows <= 2 Then
        search.Caption = "Search Music Categories"
        For i = 0 To 2
            csearch(i).Caption = ""
        Next i
        searchlist.Rows = 1
        Call FormatHeaders
        searchlist.BackColorSel = searchlist.BackColorFixed
        searchlist.ForeColorSel = searchlist.ForeColorFixed
        csearch(0).Caption = "none"

        SearchSongs = 0
        searchflag = 0
        searchlist.Clear
        searchlist.BackColor = &H8000000E
        searchlist.Rows = 1
        AddList(0).Enabled = False
        AddList(1).Enabled = False
        ClrSrch.Enabled = False
        Organize.Enabled = False
    Else
        UndoEvent = 1
        X = searchlist.row
        For i = x To searchlist.Rows - 1
            Stime(i) = Stime(i - 1)
        Next i
        For i = 0 To 8
            UndoText(i) = searchlist.TextMatrix(X, i)
        Next i
        searchlist.RemoveItem searchlist.row
        SearchSongs = SearchSongs - 1
    End If
End If
Call CheckOnDeck
undo.Enabled = True
SongSelected = False
Exit Sub
ElseIf answer = vbNo Then

```

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CL 000442

```

Exit Sub
End If

errorhandler:
Now.BackColor = &H8000000F
Now.Enabled = False
PlayButton.Enabled = False
PlayButton.BackColor = &H8000000F
MsgBox "You have no songs to delete!"
delete.Enabled = False
End Sub

Private Sub ExpandList_Click()
'expand the playlist to display all information

If ExpandList.Caption = "EXPAND" Then
callscreen.Visible = False
Playlist(1).Visible = True
ExpandList.Caption = "SHRINK"
If maxed = True Then
Picture1.Left = 0
Picture1.Width = Screen3.Width - 195
SinglePlayTime.Left = 4680
Label5.Left = 6240
Playlist(0).Left = 0
Playlist(1).Left = 0
Label1.Left = 0.41 * Picture1.Width
Else
Picture1.Width = 11550
Picture1.Left = 0
SinglePlayTime.Left = 4680
Label5.Left = 6240
Playlist(0).Left = 0
Playlist(1).Left = 0
Label1.Left = 4200
End If

ExpandList.Left = 120 + 6720
AddList(0).Left = 1020 + 6720
AddList(1).Left = 1730 + 6720
RndMix.Left = 2430 + 6720
delete.Left = 3070 + 6720
Command1.Left = 3840 + 6720
Playlist(1).RowSel = Playlist(0).RowSel

Else
If maxed = True Then
Picture1.Left = 6720
Picture1.Width = Screen.Width - 6830
SinglePlayTime.Left = Screen.Width - 100
Label5.Left = Screen.Width - 100

```

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CL 000443

```

Else
  Picture1.Width = 4815
  Picture1.Left = 6720
  SinglePlayTime.Left = 4800
  Label5.Left = 6500

End If
Playlist(0).Left = 120
Playlist(1).Left = 120
ctrlscreen.Visible = True
Playlist(1).Visible = False
ExpandList.Caption = "EXPAND"
ExpandList.Left = 120
AddList(0).Left = 1020
AddList(1).Left = 1730
RndMix.Left = 2430
delete.Left = 3070
Command1.Left = 3840
Playlist(0).RowSel = Playlist(1).RowSel
Label1.Left = 1440
End If

AddList(0).Enabled = False
AddList(1).Enabled = False
End Sub

Private Sub FavHits_Click(Index As Integer)
  ButMem = FavHits(Index).Caption
  FavHitsFrm2.Visible = True
  FavHitsLab2.Visible = True
  FavHitsLab2.BackColor = FavHitsLab1.BackColor
  FavHitsLab2.Caption = FavHits(Index).Caption
  If PlayedSongs(1, 1) <> "" Then
    Organize.Enabled = True
    For z = 1 To zed
      searchlist.AddItem PlayedSongs(1, z, 0) & Chr(9) & PlayedSongs(1, z, 1) & Chr(9) & PlayedSongs(1, z, 2) & Chr(9) &
        PlayedSongs(1, z, 3) & Chr(9) & PlayedSongs(1, z, 4) & Chr(9) & PlayedSongs(1, z, 5) & Chr(9) & PlayedSongs(1, z, 6) & Chr(9) &
        PlayedSongs(1, z, 7) & Chr(9) & PlayedSongs(1, z, 8)
      SearchSongs = SearchSongs + 1
      searchlist.row = SearchSongs
      For X = 0 To 8
        searchlist.Col = X
        searchlist.CellBackColor = PlayedSongs(1, z, 9)
      Next X

      ChrSrch.Enabled = True
    Next z
  Else
    MsgBox ("Sorry...You have no song selections defined as favorite hits.")
  End If
End Sub

```

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CL 000444

```

Private Sub Form_Load()
Dim i As Integer
Dim running As Boolean
Screen2.WindowState = 2
maxed = True
Data1.DatabaseName = App.Path & "\mydata.mdb"
Data2.DatabaseName = App.Path & "\mydata.mdb"
Data3.DatabaseName = App.Path & "\mydata.mdb"
For j = 0 To 9
    csearch(j).Caption = ""
Next j
zed = 0
Speed = ""
channel = 1
SearchSongs = 0
PlaySongs = 0
Speed = "Any"
DataLocked = True
SongSelected = False
ScreenShow(1).BackColor = &HC0&
'assign buttons to color array for reference
For i = 0 To 35
    MnCatColor(i) = Category1(i).BackColor
Next i
If VoiceActivation = True Then
If Not IsDDWinRunning() Then
    running = StartDDWin()
    If Not running Then
        MsgBox "Could not start dragon dictate", vbExclamation
    End
    End If
End If
DD.Attach = True
If FindVocabulary("Moac") And Not FindGroup("Moac", "ver1.0") Then
    On Error GoTo VocabAdd
    DeleteVocabulary("Moac")
End If
VocabAdd:
If Not FindVocabulary("Moac") Then
    AddVocabulary "Moac"
    Call AddGroup("Moac", "ver1.0")
    Call AddGroup("Moac", "Screen1")
    Call AddGroup("Moac", "Screen2")
    Call AddGroup("Moac", "Screen3")
    Call AddGroup("Moac", "Screen4")
    Call AddWord("Moac", "Screen2", "[classical]", "")
    Call AddWord("Moac", "Screen2", "[jazz]", "")
    Call AddWord("Moac", "Screen2", "[folk]", "")
    Call AddWord("Moac", "Screen2", "[oldies]", "")
    Call AddWord("Moac", "Screen2", "[country]", "")
    Call AddWord("Moac", "Screen2", "[pop]", "")
    Call AddWord("Moac", "Screen2", "[soul]", "")
    Call AddWord("Moac", "Screen2", "[R and B]", "")

```

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Call AddWord("Moac", "Screen2", "[blues]", "")
 Call AddWord("Moac", "Screen2", "[calypso]", "")
 Call AddWord("Moac", "Screen2", "[disco]", "")
 Call AddWord("Moac", "Screen2", "[funk]", "")
 Call AddWord("Moac", "Screen2", "[rock]", "")
 Call AddWord("Moac", "Screen2", "[metal]", "")
 Call AddWord("Moac", "Screen2", "[top 40]", "")
 Call AddWord("Moac", "Screen2", "[rap]", "")
 Call AddWord("Moac", "Screen2", "[reggae]", "")
 Call AddWord("Moac", "Screen2", "[alternative]", "")
 Call AddWord("Moac", "Screen2", "[ethnic]", "")
 Call AddWord("Moac", "Screen2", "[religion]", "")
 Call AddWord("Moac", "Screen2", "[special events]", "")
 Call AddWord("Moac", "Screen2", "[funny]", "")
 Call AddWord("Moac", "Screen2", "[easy listening]", "")
 Call AddWord("Moac", "Screen2", "[favorite hits]", "")
 Call AddWord("Moac", "Screen2", "[special dance]", "")
 Call AddWord("Moac", "Screen2", "[special mixes]", "")
 Call AddWord("Moac", "Screen2", "[dance]", "")
 Call AddWord("Moac", "Screen2", "[energy]", "")
 Call AddWord("Moac", "Screen2", "[sound effects]", "")
 Call AddWord("Moac", "Screen2", "[sound tracks]", "")
 Call AddWord("Moac", "Screen2", "[television]", "")

 Call AddWord("Moac", "Screen2", "[Dance Mix]", "")
 Call AddWord("Moac", "Screen2", "[Clear]", "")
 Call AddWord("Moac", "Screen2", "[Undo]", "")

 Call AddWord("Moac", "Screen2", "[Search List]", "")
 Call AddWord("Moac", "Screen2", "[Play List]", "")
 Call AddWord("Moac", "Screen2", "[Search]", "")
 Call AddWord("Moac", "Screen2", "[Expand]", "")

 Call AddWord("Moac", "Screen2", "[Shrink]", "")

 Call AddWord("Moac", "Screen2", "[Load]", "")
 Call AddWord("Moac", "Screen2", "[Save]", "")
 Call AddWord("Moac", "Screen2", "[Next]", "")
 Call AddWord("Moac", "Screen2", "[Pick]", "")
 Call AddWord("Moac", "Screen2", "[Delete]", "")

 Call AddWord("Moac", "Screen2", "[Title]", "")
 Call AddWord("Moac", "Screen2", "[Artist]", "")
 Call AddWord("Moac", "Screen2", "[Date]", "")
 Call AddWord("Moac", "Screen2", "[Song Category]", "")
 Call AddWord("Moac", "Screen2", "[Dance Type]", "")
 Call AddWord("Moac", "Screen2", "[Music Style]", "")
 Call AddWord("Moac", "Screen2", "[Speed]", "")
 Call AddWord("Moac", "Screen2", "[Energy]", "")

 Call AddWord("Moac", "Screen2", "[Speed]", "")
 Call AddWord("Moac", "Screen2", "[Fast]", "")
 Call AddWord("Moac", "Screen2", "[Medium]", "")
 Call AddWord("Moac", "Screen2", "[Slow]", "")

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CL 000446

```

Call AddWord("Moaec", "Screen2", "[Time]", "")
Call AddWord("Moaec", "Screen2", "[OK]", "")
Call AddWord("Moaec", "Screen2", "[Begin Search]", "")
Call AddWord("Moaec", "Screen2", "[Cancel]", "")
Call AddWord("Moaec", "Screen2", "[Cancel]", "")
Call AddWord("Moaec", "Screen2", "[Cancel]", "")
Call AddWord("Moaec", "Screen2", "[minutes]", "")
Call AddWord("Moaec", "Screen2", "[Play]", "")
Call AddWord("Moaec", "Screen2", "[Now]", "")

Call AddWord("Moaec", "Screen2", "[screen 1]", "")
Call AddWord("Moaec", "Screen2", "[screen 2]", "")
Call AddWord("Moaec", "Screen2", "[screen 3]", "")
Call AddWord("Moaec", "Screen2", "[screen 4]", "")
End If
DD.Vocabulary = "Moaec"
DD.Group = "Screen2"
End If
End Sub

```

```
Private Sub Form_Unload(Cancel As Integer)
```

```

    EndItAll
End
End Sub

```

```
Private Sub Help_Click()
    SendKeys "{F1}"
End Sub

```

```
Private Sub Letters_Click(Index As Integer)
    'type the letter pressed in the text field
    If searchfield.Visible = True Then
        searchfield.SetFocus
        SendKeys LCase(Letters(Index).Caption)
        SendKeys "{tab}"
    Else
        TimeInput.SetFocus
        SendKeys LCase(Letters(Index).Caption)
        SendKeys "{tab}"
    End If
End Sub

```

```
End Sub
```

```
Private Sub LoadPlay_Click()
    Dim allCells1, allCells2 As String
    Dim FileNum As Integer
    Dim CurRow1, CurRow2, CurCol As Integer
    Dim FileColors() As Variant
    On Error GoTo errorhandler
    GrayOut

```

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CL 000447

```

If Playlist(0).Rows > 1 Then
  CurRow2 = Playlist(1).row
  CurRow1 = Playlist(0).row
  CurCol = 0
End If
response = MsgBox("Are you sure you want to replace the current Music Playlist?", 4, "Load Play List")
If response = vbNo Then
  Exit Sub
ElseIf response = vbYes Then
  'clear the playlists
  CommonDialog1.DefaultExt = "GDT"
  CommonDialog1.ShowOpen
  FileNum = FreeFile
  Open CommonDialog1.FileName For Input As #FileNum
  Input #FileNum, numRows
  ReDim FileColors(numRows - 1)
  Input #FileNum, allCells1
  Input #FileNum, allCells2
  ClearPlaylist
  PlaySongs = 0
  SongsTime = 0
  NumSongs.Text = 0
  timebox.Text = Format(TimeSerial(0, 0, CLng(SongsTime)), "hh:mm:ss")
  SinglePlayTime.Text = "00:00:00"
  Playlist(0).AllowBigSelection = True
  Playlist(1).AllowBigSelection = True
  Playlist(0).Rows = numRows
  Playlist(0).row = 1
  Playlist(0).Col = 0
  Playlist(0).RowSel = numRows - 1
  Playlist(0).ColSel = 2
  Playlist(1).Rows = numRows
  Playlist(1).row = 1
  Playlist(1).Col = 0
  Playlist(1).RowSel = numRows - 1
  Playlist(1).ColSel = 8
  Playlist(0).Clip = allCells1
  Playlist(1).Clip = allCells2
  For i = 1 To numRows - 1
    Input #FileNum, FileColors(i)
    Playlist(0).row = i
    For j = 0 To 2
      Playlist(0).Col = j
      Playlist(0).CellBackColor = FileColors(i)
    Next j
    Playlist(1).row = i
    For k = 0 To 8
      Playlist(1).Col = k
      Playlist(1).CellBackColor = FileColors(i)
    Next k
    SongsTime = SongsTime + CLng(Val(Playlist(0).TextMatrix(i, 0)))
    timebox.Text = Format(TimeSerial(0, 0, SongsTime), "hh:mm:ss")
    PlaySongs = PlaySongs + 1
  NumSongs.Text = PlaySongs

```

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CL 000448


```

Next i

Close #FileNum
Playlist(0).AllowBigSelection = False
Playlist(1).AllowBigSelection = False
Playlist(0).row = CurRow1
Playlist(1).row = CurRow2
Playlist(0).Col = 0
Playlist(1).Col = 0
ExpandList.Enabled = True
delete.Enabled = True
Command1.Enabled = True
RndMix.Enabled = True
Now.Enabled = True
Now.BackColor = &HFF&
PlayButton.Enabled = True
PlayButton.BackColor = &HFF8080
SavePlay.Enabled = True
If SongPlaying = True Then
    Call CheckOnDeck
End If
CommonDialog1.FileName = ""
Exit Sub
End If

errorhandler:
If Err.Number = cd!Cancel Then
    CommonDialog1.FileName = ""
    Exit Sub
End If
MsgBox "Unknown error while loading file " & CommonDialog1.FileName

End Sub

Private Sub Mix_Click()
Dim RanPlace, RanPlace2 As Integer
Dim TempTime, TempTime2 As Integer
Dim MixCount As Integer
Dim TestSpeed As String
Dim LoopStop As Boolean
Dim slowcount, midcount, fastcount As Boolean
Dim FirstMedCount, medcount As Integer
'mix up the selected song list by categories
Mix.Enabled = False
If Playlist(0).Rows > 1 Then
    Playlist(0).Col = 0
    Playlist(1).Col = 0
    Playlist(0).ColSel = 2
    Playlist(1).ColSel = 8
End If
If SelList = 2 And Playlist(0).Rows > 1 Then

    MixCount = 0

```

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CL 000449

```

medcount = 0
'disable once clicked
Mix.Enabled = False
Mix.BackColor = &H800000F
AddList(0).Enabled = False
AddList(1).Enabled = False
FastSpeed = "FAST"
MidSpeed = "MEDIUM"
SlowSpeed = "SLOW"
fastcount = False
midcount = False
slowcount = False
For i = 1 To Playlist(0).Rows - 1
  TestSpeed = Playlist(1).TextMatrix(i, 7)
  If TestSpeed = "FAST" Then
    fastcount = True
  ElseIf TestSpeed = "MEDIUM" Then
    midcount = True
  ElseIf TestSpeed = "SLOW" Then
    slowcount = True
  End If
Next i
If slowcount = False Then
  If midcount = False Then
    MidSpeed = "FAST"
    SlowSpeed = "FAST"
  ElseIf fastcount = False Then
    FastSpeed = "MEDIUM"
    MidSpeed = "MEDIUM"
    SlowSpeed = "MEDIUM"
  Else
    FastSpeed = "FAST"
    MidSpeed = "FAST"
    SlowSpeed = "MEDIUM"
  End If
ElseIf midcount = False Then
  If fastcount = False Then
    FastSpeed = "SLOW"
    MidSpeed = "SLOW"
  End If
ElseIf fastcount = False Then
  If slowcount = False Then
    FastSpeed = "MEDIUM"
    SlowSpeed = "MEDIUM"
  End If
End If

For i = 1 To Playlist(0).Rows - 1
  TestSpeed = Playlist(1).TextMatrix(i, 7)
  If TestSpeed = MidSpeed Then
    medcount = medcount + 1
  End If
Next i

```

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CL 000450

```

Do Until LoopStop = True
i = 1
MixCount = 0
LoopStop = True

For i = 1 To Playlist(0).Rows - 1
If MixCount > 4 Then MixCount = 0
Playlist(1).row = i
TestSpeed = Playlist(1).TextMatrix(i, 7)
If TestSpeed = FastSpeed And MixCount < 3 Then
MixCount = MixCount + 1
Elseif TestSpeed = SlowSpeed And MixCount >= 3 Then
MixCount = MixCount - 1
Else
Playlist(0).RowPosition(i) = Playlist(0).Rows - 1
Playlist(1).RowPosition(i) = Playlist(1).Rows - 1
medcount = medcount - 1
LoopStop = False
End If
If i >= Playlist(1).Rows - medcount Then
LoopStop = True
End If

Next i
Loop
For j = 0 To 1
Playlist(j).row = 1
Playlist(j).BackColorSel = Playlist(j).CellBackColor
Playlist(j).ForeColorSel = Playlist(j).CellForeColor
Next j
delete.Enabled = False
Else
Speed = "MIXED"
Mix.Enabled = False
Mix.BackColor = &H8000000F
For i = 0 To 3
SongSpeed(i).BackColor = &H8000000F
SongSpeed(i).Enabled = False
AllSpeeds.BackColor = &H8000000F
AllSpeeds.Enabled = False
Next i
End If
If SongPlaying = True Then
Call CheckOnDeck
End If
End Sub

Private Sub Now_Click()
Dim CurControl As Integer

```

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CL 000451

```
If SelList = 1 Then CurControl = searchlist.row
If SelList = 2 Then CurControl = Playlist(0).row
```

```
Call StartPlay(CurControl, SelList)
```

```
End Sub
```

```
Private Sub Organize_Click()
```

```
'enable the sorting buttons
```

```
sortstat = True
```

```
search.Enabled = False
```

```
For i = 1 To 8
```

```
    SearchCat(i).Enabled = True
```

```
Next i
```

```
End Sub
```

```
Private Sub OrgLst_Click(Index As Integer)
```

```
'sort the searchlist by category
```

```
OrgLst(0).Enabled = False
```

```
OrgLst(1).Enabled = False
```

```
Organize.Enabled = True
```

```
search.Enabled = True
```

```
sortstat = False
```

```
searchlist.Sort = Index - 1
```

```
For i = 1 To 8
```

```
    SearchCat(i).Enabled = False
```

```
Next i
```

```
End Sub
```

```
Private Sub PlayButton_Click()
```

```
Call StartPlay(1, 2)
```

```
End Sub
```

```
Private Sub Playlist_Click(Index As Integer)
```

```
If Playlist(Index).Rows > 1 Then
```

```
SelList = 2
```

```
SongSelected = True
```

```
If Playlist(0).Rows = 1 Then Exit Sub
```

```
SinglePlayTime.Text = Format(TimeSerial(0, 0, Val(Playlist(Index).TextMatrix(Playlist(Index).row, 0))), "hh:mm:ss")
```

```
AddList(1).Enabled = False
```

```
AddList(0).Enabled = True
```

```
If Index = 0 Then
```

```
    Playlist(1).row = Playlist(0).row
```

```
    Playlist(1).Col = Playlist(0).Col
```

```
End If
```

```
If Playlist(1).Col = 0 And Playlist(1).CellBackColor <> &HC0& Then 'if the song is flagged add it to the top of the favhits list
```

```
    Playlist(0).SelectionMode = flexSelectionFree
```

```
    Playlist(1).SelectionMode = flexSelectionFree
```

```
    Playlist(0).CellBackColor = &H80000006
```

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CL 000452

```

For i = 1 To zed
  If PlayedSongs(1, i, 1) = Playlist(Index).TextMatrix(Playlist(Index).row, 1) Then
    FavHitsFinder = i
  End If
Next i
For i = (FavHitsFinder - 1) To 1 Step -1
  For j = 0 To 9
    PlayedSongs(1, i - 1, j) = PlayedSongs(1, i, j)
  Next j
Next i
Playlist(0).Col = 1
Playlist(0).BackColorSel = Playlist(0).CellBackColor
Playlist(0).ForeColorSel = Playlist(0).CellForeColor
Playlist(1).Col = 1
Playlist(1).BackColorSel = Playlist(1).CellBackColor
Playlist(1).ForeColorSel = Playlist(1).CellForeColor
For i = 0 To 8
  selsong(i) = Playlist(1).TextMatrix(Playlist(1).row, i)
  PlayedSongs(1, 1, i) = Playlist(1).TextMatrix(Playlist(1).row, i)
Next i
Playlist(1).Col = 1
Playlist(0).Col = 1
PlayedSongs(1, 1, 9) = Playlist(1).CellBackColor
Else
  Playlist(Index).SetFocus
  delete.Enabled = True
  Playlist(0).Col = 1
  Playlist(0).ColSel = 2
  Playlist(1).Col = 1
  Playlist(1).ColSel = 8
  For i = 0 To 1
    Playlist(i).BackColorSel = &H80000008
    Playlist(i).ForeColorSel = &H8000000E
  Next i
  If Index = 1 Then
    Playlist(0).row = Playlist(1).row
    Playlist(0).RowSel = Playlist(1).RowSel
    Playlist(0).Col = 1
    Playlist(0).ColSel = 2
  Else
    Playlist(1).row = Playlist(0).row
    Playlist(1).RowSel = Playlist(0).RowSel
    Playlist(1).Col = 1
    Playlist(1).ColSel = 8
  End If
  Now.Enabled = True
  Now.BackColor = &HFF&
  If searchlist.Rows = 1 Then
    Exit Sub
  End If
  searchlist.BackColorSel = searchlist.CellBackColor
  searchlist.ForeColorSel = searchlist.CellForeColor
End If

```

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```

End If
End Sub

Private Sub Playlist_DbClick(Index As Integer)
Dim X As Integer
If Index = 0 Then
    Playlist(1).row = Playlist(0).row
    Playlist(1).Col = Playlist(0).Col
End If
If Playlist(1).Rows > 1 And Playlist(1).Col < 0 Then
If Index = 1 Then
    Playlist(0).row = Playlist(1).row
End If

If Playlist(0).row = 1 Then
    MsgBox "the Song you want to move is already next!"
Else
    X = Playlist(0).row
    For Y = 0 To 8
        selsong(Y) = Playlist(1).TextMatrix(X, Y)
    Next Y
    oldcolor2 = Playlist(0).CellBackColor
    oldcolor3 = Playlist(0).CellForeColor
    undo.Enabled = True
    UndoEvent = 0
    SavePlayList
    For i = X - 1 To 1 Step -1
        Playlist(0).row = i
        Playlist(1).row = i
        oldcolor = Playlist(0).CellBackColor
        For j = 0 To 2
            Playlist(0).TextMatrix(i - 1, j) = Playlist(0).TextMatrix(i, j)
            Playlist(0).row = i - 1
            Playlist(0).Col = j
            'change color
            Playlist(0).CellBackColor = oldcolor
        Next j
        For j = 0 To 8
            Playlist(1).TextMatrix(i - 1, j) = Playlist(1).TextMatrix(i, j)
            Playlist(1).row = i - 1
            Playlist(1).Col = j
            'change color
            Playlist(1).CellBackColor = oldcolor
        Next j
    Next i
    For j = 0 To 2
        Playlist(0).TextMatrix(1, j) = selsong(j)
        Playlist(0).row = 1
        Playlist(0).Col = j
        Playlist(0).CellBackColor = oldcolor2
    
```

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CL 000454

```

        Playlist(0).BackColorSel = oldcolor2
        Playlist(0).ForeColorSel = oldcolor3
    Next j
    For j = 0 To 8
        Playlist(1).TextMatrix(1, j) = selsong(j)
        Playlist(1).row = 1
        Playlist(1).Col = j
        Playlist(1).CellBackColor = oldcolor2
        Playlist(1).BackColorSel = oldcolor2
        Playlist(1).ForeColorSel = oldcolor3
    Next j
End If
Playlist(0).SelectionMode = flexSelectionFree
Playlist(1).SelectionMode = flexSelectionFree
Call CheckOnDeck
End If
End Sub

Private Sub Playlist_Scroll(Index As Integer)
    'make the playlists scroll equally
    Select Case Index
    Case 0
        Playlist(1).TopRow = Playlist(0).TopRow
    Case 1
        Playlist(0).TopRow = Playlist(1).TopRow
    End Select
End Sub

Private Sub PlayTime_Click()
    Dim boxcaption As String
    On Error GoTo errorhandler
    'show the keyboard
    TimeFrame.Visible = True
    keyboard.Visible = True
    AllSpeeds.Visible = True
    GrayOut
    'pop up the time selection query box
    CurScreen = "Time"
    If Speed <> "Any" Then
        boxcaption = "Please enter the number of minutes you would like " & Speed & " " & SelCat1 & " " & "music to play:"
    Else
        boxcaption = "Please enter the number of minutes you would like " & SelCat1 & " music to play:"
    End If
    TimeLabel.Caption = boxcaption
    TimeInput.SetFocus
Exit Sub
'write the variables to the play boxes with colors
'disable button once clicked

errorhandler:
    MsgBox "You did not enter a valid time."
    Exit Sub

End Sub

```

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```

Private Sub RndMix_Click()
    Dim color As Long
    If Playlist(0).Rows > 1 Then
        Randomize
        Playlist(0).SelectionMode = flexSelectionFree
        For i = 1 To Playlist(0).Rows - 1
            k = Rnd()
            Y = Int(Playlist(0).Rows * k)
            If Y < 0 Then
                Playlist(0).RowPosition(i) = Y
                Playlist(1).RowPosition(i) = Y
            End If
        Next i
        Playlist(0).row = 1
        Playlist(1).row = 1
        Playlist(0).Col = 1
        Playlist(1).Col = 1
        Playlist(0).BackColorSel = Playlist(0).CellBackColor
        Playlist(1).BackColorSel = Playlist(0).CellBackColor
        CheckOnDeck
    End If
End Sub

Private Sub SavePlay_Click()
    Dim allCells1, allCells2, colors As String
    Dim FileNum, numRows As Integer
    Dim CurRow1, CurRow2, CurCol As Integer
    Dim FileColors() As Variant

    CurRow2 = Playlist(1).row
    CurRow1 = Playlist(0).row
    CurCol = 0
    On Error GoTo errorhandler
    response = MsgBox("Are you Sure you want to save the current Music Play List as a file", 4, "Save Play List")
    If response = vbNo Then
        Exit Sub
    ElseIf response = vbYes Then
        GrayOut
        CommonDialog1.DefaultExt = "GDT"

        CommonDialog1.ShowSave
        Playlist(0).AllowBigSelection = True
        Playlist(0).row = 1
        Playlist(0).Col = 0
        Playlist(0).RowSel = Playlist(0).Rows - 1
        Playlist(0).ColSel = 2
        allCells1 = Playlist(0).Clip
        Playlist(1).AllowBigSelection = True
        Playlist(1).row = 1
        Playlist(1).Col = 0
        Playlist(1).RowSel = Playlist(1).Rows - 1
        Playlist(1).ColSel = 8
    End If
end Sub

```

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```

allCells2 = Playlist(1).Clip
numRows = Playlist(0).Rows
ReDim FileColors(Playlist(0).Rows + 1)
FileNum = FreeFile
Open CommonDialog1.FileName For Output As #FileNum
Write #FileNum, numRows
Write #FileNum, allCells1
Write #FileNum, allCells2
For i = 1 To Playlist(0).Rows - 1
    Playlist(0).row = i
    FileColors(i) = Playlist(0).CellBackColor
    Write #FileNum, FileColors(i)
Next i

Close #FileNum
Playlist(1).AllowBigSelection = False
Playlist(0).AllowBigSelection = False
Playlist(0).row = CurRow1
Playlist(1).row = CurRow2
Playlist(0).Col = 0
Playlist(1).Col = 0
Exit Sub
End If

errorhandler:
If Err.Number = cdCancel Then Exit Sub
MsgBox "Unknow error while saving file " & CommonDialog1.FileName

End Sub

Private Sub ScreenShow_Click(Index As Integer)
Dim i As Integer
On Error Resume Next
If (SelCat1 = "" And Index = 2) Then
    MsgBox ("Please select a main category from screen 2 before viewing this screen !!!!")
Exit Sub
End If
Category(1).Visible = False
cat1count = 0
'disable speed buttons since switching to screen 3
For i = 0 To SongSpeed.count - 1
    AllSpeeds.Enabled = False
    SongSpeed(i).Enabled = False
    SongSpeed(i).BackColor = &H8000000F
    AllSpeeds.BackColor = &H8000000F
Next i
Mix.Enabled = False
PlayTime.Enabled = False
Mix.BackColor = &H8000000F
PlayTime.BackColor = &H8000000F
For j = 0 To 4
Screen1.ScreenShow(i).BackColor = &H8000000F
ScreenShow(i).BackColor = &H8000000F
ScreenShow(i).ForeColor = &H80000012

```

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```

Next i
If Index < 0 And Index < 3 Then
  ScreenShow(Index).BackColor = &HC0&
  ScreenShow(Index).ForeColor = &H800000E
End If
Select Case Index
  Case 0

    On Error Resume Next
    Screen2.DD.Group = "Screen1"
    Screen1.Show
    If Screen1.WindowState < 2 Then Screen1.WindowState = 2

    Screen2.Hide
    cat1screen.Visible = True
    cat2screen.Visible = False
    For i = 0 To 4
      Screen1.ScreenShow(i).BackColor = &H800000F
      Screen1.ScreenShow(i).ForeColor = &H80000012
    Next i
    Screen1.ScreenShow(Index).BackColor = &HC0&
    Screen1.ScreenShow(Index).ForeColor = &H800000E
    Exit Sub
  Case 1
    Screen2.DD.Group = "Screen2"
    Screen1.Hide
    Screen2.Show
    If Screen2.WindowState < 2 Then Screen2.WindowState = 2

    cat1screen.Visible = True
    cat2screen.Visible = False
    FavHiisScrn.Visible = False
  Case 2
    Screen2.DD.Group = "Screen2"
    SelCat1 = MemCat
    Screen1.Hide
    Screen2.Show
    If Screen2.WindowState < 2 Then Screen2.WindowState = 2
    cat1screen.Visible = False
    cat2screen.Visible = True
    FavHiisScrn.Visible = False
  Case 3
    Screen2.DD.Group = "Screen4"
    Recorder.ScreenShow(Index).BackColor = &HC0&
    Recorder.ScreenShow(Index).ForeColor = &H800000E
    Screen1.Hide
    Screen2.Hide
    Recorder.Show
    If Recorder.WindowState < 2 Then Recorder.WindowState = 2

    Recorder.Refresh
    cat1screen.Visible = True
    cat2screen.Visible = False
    FavHiisScrn.Visible = False

```

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```

End Select

'make the button pressed the right color

End Sub

Private Sub search_Click()
    search.Enabled = False
    GrayOut
    For i = 1 To 8
        SearchCat(i).Enabled = True
    Next i
End Sub

Private Sub SearchCat_Click(Index As Integer)
    Dim QuestCat As String
    If sortstat = False Then
        'assign the search button caption to the primary search variable

        colnum = Index
        keyboard.Visible = True
        Cat1 = SearchCat(Index).Tag
        QuestCat = SearchCat(Index).Caption
        CurScreen = "SearchCat"
        'Load search screen to begin search

        SearchScreen.Visible = True
        SearchQuery.Caption = "Please enter the " & QuestCat & " you would like to search for:"
        searchfield.SetFocus
    Else
        searchlist.Col = Index
        For i = 1 To 8
            SearchCat(i).Enabled = False
        Next i
        OrgLst(i).Enabled = True
        OrgLst(1).Enabled = True
        Organize.Enabled = False
    End If
End Sub

Private Sub searchdate_Click(Index As Integer)
    Dim finalfield(10) As String
    Dim tempfield(9) As String
    If searchdate(Index).Caption = ButMem Then
        MsgBox ("You just picked that button...Please pick another.")
        Exit Sub
    End If
    ButMem = searchdate(Index).Caption

    Cap1 = "Main1"
    AddList(0).Enabled = True

```

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```

AddList(1).Enabled = True
ClrSrch.Enabled = True
Organize.Enabled = True
    Category(1).Caption = searchdate(Index).Caption
    Category(1).Visible = True
'fill search screen with selections from the categories
MousePointer = 11
SearchSongs = searchlist.Rows - 1
Data1.Refresh
Data3.Refresh
Data1.Recordset.MoveLast
Data1.Recordset.MoveFirst
Data3.Recordset.MoveLast
Data3.Recordset.MoveFirst
If SelCat1 = "SPMIX" Or SelCat1 = "Special Mixes" Then
    Cat1 = "Main3"
    SelCat1 = "SPMIX"

Elseif SelCat1 = "EN" Or SelCat1 = "Energy" Then
    Cat1 = "Main2"
    SelCat1 = "EN"
Elseif SelCat1 = "EL" Or SelCat1 = "Easy Listening" Then
    Cat1 = "Mstyle"
    SelCat1 = "EL"
Elseif SelCat1 = "Special Dance" Or SelCat1 = "SPD" Then
    Cat1 = "Dtype"
    SelCat1 = "SPD"
End If
For i = 1 To Data1.Recordset.RecordCount
    DoEvents
    'if the data base field matches search criteria, write it to the searchlist
    If (Caseof(Data1.Recordset.Fields(Cat1)) = LCase(Trim(SelCat1))) And Data1.Recordset.Fields("date") >=
searchdate(Index).Tag And Data1.Recordset.Fields("date") <= (searchdate(Index).Tag + 9) Then
        Data3.Recordset.MoveFirst
        If IsNull(Data1.Recordset.Fields("Main1")) Then
            Mcat1 = "none listed"
            MnCatColor(SearchSongs) = &H80000005
        Else
            Mcat1 = Data1.Recordset.Fields("Main1")
            Data3.Recordset.FindFirst "Main1 = " & Mcat1 & ""
            MnCatColor(SearchSongs) = Val(Data3.Recordset.Fields("colorID"))
            finalfield(9) = Val(Data3.Recordset.Fields("colorID"))
        End If
        If IsNull(Data1.Recordset.Fields("time")) Then
            finalfield(0) = 300
        Else
            finalfield(0) = Data1.Recordset.Fields("time")
        End If
        If IsNull(Data1.Recordset.Fields("Title")) Then
            finalfield(1) = "NL"
        Else
            finalfield(1) = Data1.Recordset.Fields("Title")
        End If
        If IsNull(Data1.Recordset.Fields("Artist")) Then

```

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```

    finalfield(2) = "NL"
Else
    finalfield(2) = Data1.Recordset.Fields("Artist")
End If
If IsNull(Data1.Recordset.Fields("Date")) Then
    finalfield(3) = "NL"
Else
    finalfield(3) = Data1.Recordset.Fields("Date")
End If
If IsNull(Data1.Recordset.Fields("Main1")) Then
    tempfield(4) = "NL"
Else
    tempfield(4) = Data1.Recordset.Fields("Main1")
End If
If IsNull(Data1.Recordset.Fields("Mstyle")) Then
    tempfield(5) = "NL"
Else
    tempfield(5) = Data1.Recordset.Fields("Mstyle")
End If
If IsNull(Data1.Recordset.Fields("Dtype")) Then
    tempfield(6) = "NL"
Else
    tempfield(6) = Data1.Recordset.Fields("Dtype")
End If
If IsNull(Data1.Recordset.Fields("Speed")) Then
    tempfield(7) = "NL"
Else
    tempfield(7) = Data1.Recordset.Fields("Speed")
End If
If IsNull(Data1.Recordset.Fields("Energy")) Then
    tempfield(8) = ""
Else
    tempfield(8) = Data1.Recordset.Fields("Energy")
End If
For X = 4 To 8
    Data2.RecordSource = X
    Data2.Refresh
    Data2.Recordset.MoveLast
    Data2.Recordset.MoveFirst
    Data2.Recordset.FindFirst "Tag = "" & tempfield(X) & ""
    finalfield(X) = Data2.Recordset.Fields("Label")
    Data2.Recordset.Close
Next X
searchlist.AddItem finalfield(0) & Chr(9) & finalfield(1) & Chr(9) & finalfield(2) & Chr(9) & finalfield(3) & Chr(9) &
finalfield(4) & Chr(9) & finalfield(5) & Chr(9) & finalfield(6) & Chr(9) & finalfield(7) & Chr(9) & finalfield(8)
SearchSongs = SearchSongs - 1
Data5.Recordset.MoveFirst

searchlist.row = SearchSongs
For z = 0 To 8
    searchlist.Col = z
    searchlist.CellBackColor = finalfield(9)
Next z
searchlist.BackColorSel = finalfield(9)

```

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CL 000461

```

searchlist.ForeColorSel = searchlist.ForeColor
search.Caption = "Narrow Search Results"
searchflag = 1
End If
flag = True
'move to the next data row in data base
Data1.Recordset.MoveNext
Next i
Data1.Recordset.Close
Data3.Recordset.Close

MousePointer = 0

End Sub

Private Sub searchfield_Change()
SendKeys "{tab}"
End Sub

Private Sub searchlist_Click()
If searchlist.RowSel > 0 Then
Now.BackColor = &HFF&
Now.Enabled = True
SelList = 1
SongSelected = True
If searchlist.Rows = 1 Then Exit Sub
FavHitsLab1.BackColor = searchlist.CellBackColor
FavHitsLab2.BackColor = searchlist.CellBackColor
For i = 0 To 5
FavHits(i).BackColor = searchlist.CellBackColor
Next i
If searchlist.Col = 0 And searchlist.CellBackColor <> &HC0& Then 'if the song is flagged add it to the top of the favhits list
searchlist.SelectionMode = flexSelectionFree
searchlist.CellBackColor = &H800000&
For i = 1 To zed
If PlayedSongs(1, i, 1) = searchlist.TextMatrix(searchlist.row, 1) Then
FavHitsFinder = i
End If
Next i
If FavHitsFinder = zed Then FavHitsFinder = FavHitsFinder - 1
For i = (FavHitsFinder - 1) To 1 Step -1
For j = 0 To 9
PlayedSongs(1, i + 1, j) = PlayedSongs(1, i, j)
Next j
Next i
searchlist.Col = 1
searchlist.BackColorSel = searchlist.CellBackColor
searchlist.ForeColorSel = searchlist.CellForeColor
For i = 0 To 8
selSong(i) = searchlist.TextMatrix(searchlist.row, i)
PlayedSongs(1, 1, i) = searchlist.TextMatrix(searchlist.row, i)
Next i
searchlist.Col = 1

```

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```

    PlayedSongs(1, 1, 9) = searchlist.CellBackColor
Else
    searchlist.SetFocus
    AddList(0).Enabled = True
    AddList(1).Enabled = True
    delete.Enabled = True
    searchlist.Col = 1
    searchlist.ColSel = 8
    searchlist.BackColorSel = &H80000008
    searchlist.ForeColorSel = &H8000000E

If Playlist(0).Rows > 1 Then
    Playlist(0).BackColorSel = Playlist(0).CellBackColor
    Playlist(0).ForeColorSel = Playlist(0).CellForeColor
    Playlist(1).BackColorSel = Playlist(1).CellBackColor
    Playlist(1).ForeColorSel = Playlist(1).CellForeColor
End If
End If
End If
End Sub

Private Sub searchlist_DblClick()
Dim flag As Boolean
flag = False
undo.Enabled = True
UndoEvent = 0
If Playlist(0).Rows = 1 Then
    numRows = 0
Else
    SavePlayList
End If

If searchlist.Rows > 1 And searchlist.Col <> 0 Then

    FavHitsLab1.BackColor = searchlist.CellBackColor
    For i = 0 To 5
        FavHits(i).BackColor = searchlist.CellBackColor
    Next i
    PlaySongs = PlaySongs + 1

    For j = 1 To zed
        If searchlist.TextMatrix(searchlist.row, j) = PlayedSongs(j, i, i) Then
            flag = True
        End If
    Next i
    If flag = False Then
        zed = zed - 1
        For i = 0 To 8
            PlayedSongs(1, zed, i) = searchlist.TextMatrix(searchlist.row, i)
        Next i
        PlayedSongs(1, zed, 9) = searchlist.CellBackColor
    End If
    For i = 0 To 8

```

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```

    selsong(i) = searchlist.TextMatrix(searchlist.row, i)
  Next i
  Playlist(0).AddItem selsong(0) & Chr(9) & selsong(1) & Chr(9) & selsong(2)
  Playlist(1).AddItem selsong(0) & Chr(9) & selsong(1) & Chr(9) & selsong(2) & Chr(9) & selsong(3) & Chr(9) & selsong(4) &
  Chr(9) & selsong(5) & Chr(9) & selsong(6) & Chr(9) & selsong(7) & Chr(9) & selsong(8)
  'add a song to the total to be played

  NumSongs.Text = PlaySongs
  Playlist(1).row = Playlist(1).Rows - 1
  Playlist(0).row = Playlist(0).Rows - 1
  'add the song time to the play time box
  SongsTime = SongsTime + CLng(Val(searchlist.TextMatrix(searchlist.row, 0)))
  timebox.Text = Format(TimeSerial(0, 0, SongsTime), "hh:mm:ss")
  For z = 0 To 2
    Playlist(0).Col = z
    Playlist(0).CellBackColor = searchlist.CellBackColor
    Playlist(0).BackColorSel = searchlist.CellBackColor
    Playlist(0).ForeColorSel = searchlist.CellForeColor
  Next z
  For z = 0 To 8
    Playlist(1).Col = z
    Playlist(1).CellBackColor = searchlist.CellBackColor
    Playlist(1).BackColorSel = searchlist.CellBackColor
    Playlist(1).ForeColorSel = searchlist.CellForeColor
  Next z
  If Playlist(0).row = 1 Then CheckOnDeck
  delete.Enabled = True
  RndMix.Enabled = True
  ExpandList.Enabled = True
  SavePlay.Enabled = True
  Command1.Enabled = True
  If IsNull(channel) Then
    channel = 1
    OtherChannel = 2
  End If
  Now.BackColor = &HFF&
  Now.Enabled = True
  PlayButton.Enabled = True
  PlayButton.BackColor = &HFF8080
End If

End Sub

Private Sub searchlist_MouseMove(Button As Integer, Shift As Integer, X As Single, Y As Single)
  Dim ScrollWidth As Integer
  Dim ButtonWidth As Integer
  ButtonWidth = 1080
  ScrollWidth = 400
  If (X > searchlist.Width - ScrollWidth) And (searchlist.Height / searchlist.RowHeightMin < searchlist.Rows) Then
    SearchCat(8).Width = ButtonWidth - ScrollWidth - 200 + (HeadExpand * 44)
  Else
    SearchCat(8).Width = ButtonWidth + (HeadExpand * 44)
  End If
End Sub

```

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CL 000464


```
Private Sub SongSpeed_Click(Index As Integer)
```

```
'select speed category
```

```
Speed = SongSpeed(Index).Caption
```

```
'disable speed buttons
```

```
For i = 0 To SongSpeed.count - 1
```

```
  AllSpeeds.Visible = True
```

```
  AllSpeeds.Enabled = False
```

```
  SongSpeed(i).Enabled = False
```

```
  SongSpeed(i).BackColor = &H8000000F
```

```
  AllSpeeds.BackColor = &H8000000F
```

```
Next i
```

```
'enable time selection buttons
```

```
Mix.Enabled = False
```

```
Mix.BackColor = &H8000000F
```

```
PlayTime.Enabled = True
```

```
PlayTime.BackColor = CatColor
```

```
cat1count = 0
```

```
End Sub
```

```
Private Sub spacebar_Click()
```

```
If searchfield.Visible = True Then
```

```
  searchfield.SetFocus
```

```
  searchfield.Text = searchfield.Text & " "
```

```
  SendKeys "{end}"
```

```
  SendKeys "{tab}"
```

```
Else
```

```
  TimeInput.SetFocus
```

```
  TimeInput.Text = TimeInput.Text & " "
```

```
  SendKeys "{end}"
```

```
  SendKeys "{tab}"
```

```
End If
```

```
End Sub
```

```
Private Sub Text1_Change()
```

```
End Sub
```

```
Private Sub TimeCancel_Click()
```

```
  TimeFrame.Visible = False
```

```
  keyboard.Visible = False
```

```
  CancelSearch = True
```

```
End Sub
```

```
Private Sub TimeInput_Change()
```

```
  SendKeys "{tab}"
```

```
End Sub
```

```
Private Sub TimeOK_Click()
```

```
Dim TempTime, TotalTime, TimeCount As Long
```

```
Dim selection, Mcat1 As String
```

```
Dim timearray(3000, 10) As Variant
```

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CL 000465

```

Dim MixCount As Integer
Dim tempfield(9) As String
Dim position As Integer
Dim rndcount As Integer
On Error GoTo errorhandler
MousePointer = 11
searchflag = 0
cat1count = 0
FastSpeed = "FAST"
SlowSpeed = "SLOW"
MidSpeed = "MEDIUM"
CancelSearch = False
For i = 0 To 3
    SongSpeed(i).Enabled = False
    SongSpeed(i).BackColor = &H8000000F
    AllSpeeds.BackColor = &H8000000F
    AllSpeeds.Enabled = False
Next i
MixCount = 0
flag = True
i = 0
keyboard.Visible = False
If TimeInput.Text <> "" Then
    TotalTime = CLng(Val(TimeInput.Text) * 60)
    PlayTime.Enabled = False
    PlayTime.BackColor = &H8000000F
    Mix.BackColor = &H8000000F
    'search the database for songs until the time is up
    Data1.Refresh
    Data3.Refresh
    'FIND THE SONG CATEGORY TAG THAT MATCHES THE BUTTON
    If Cat1 = "Dtype" Then
        Data2.RecordSource = 6
    Else
        Data2.RecordSource = 4
    End If
    Data2.Refresh
    Data3.Refresh
    Data2.Recordset.MoveLast
    Data3.Recordset.MoveLast
    Data2.Recordset.MoveFirst
    Data3.Recordset.MoveFirst
    Data2.Recordset.FindFirst "Label = "" & SelCat1 & ""
    SelTag = Data2.Recordset.Fields("Tag")
    SelCat1 = SelTag
    If SelCat1 = "SPMIX" Then
        Cat1 = "Main3"
        MainCount = 4
    ElseIf SelCat1 = "EN" Then
        Cat1 = "Main2"
        MainCount = 3
    ElseIf SelCat1 = "EL" Then

```

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```

    Cat1 = "Mstyle"
End If

If Speed <> "MIXED" And Speed <> "Any" Then
    Data2.RecordSource = 7
    Data2.Refresh
    Data2.Recordset.MoveFirst
    Data3.Recordset.MoveFirst
    Data2.Recordset.FindFirst "Label LIKE "*" & Speed & """
    SelTag = Data2.Recordset.Fields("Tag")
    Speed = SelTag
End If
Data1.Refresh
Data1.Recordset.MoveLast
Data1.Recordset.MoveFirst
Data1.Recordset.FindFirst Cat1 & " like " & SelCat1 & "" and Speed = "S"
If Data1.Recordset.NoMatch Then
    Data1.Refresh
    Data1.Recordset.MoveLast
    Data1.Recordset.MoveFirst
    Data1.Recordset.FindFirst Cat1 & " like " & SelCat1 & "" and Speed = "M"
If Data1.Recordset.NoMatch Then
    SlowSpeed = "FAST"
    MidSpeed = "FAST"
Else
    SlowSpeed = "MEDIUM"
    MidSpeed = "FAST"
End If
End If
Undo.Enabled = True
UndoEvent = 0
If Playlist0.Rows = 1 Then
    numRows = 0
Else
    SavePlayList
End If
MainLoop:
    DoEvents
    position = 0
    Data1.Recordset.MoveLast
    Data3.Recordset.MoveLast
    Data1.Recordset.MoveFirst
    Data3.Recordset.MoveFirst
    If Speed <> "Any" And Speed <> "MIXED" Then
        Data1.Recordset.FindLast Cat1 & " like " & SelCat1 & "" and Speed = "" & Speed & ""
    Else
        Data1.Recordset.FindLast Cat1 & " LIKE " & SelCat1 & ""
    End If
    If Data1.Recordset.NoMatch Then flag = False
    final = Data1.Recordset.AbsolutePosition
    Data1.Recordset.MoveFirst
If flag = True Then

Do Until position = final

```

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```

DoEvents
If Speed <> "Any" And Speed <> "MIXED" Then
  Data1.Recordset.FindNext Cat1 & " LIKE "" & SelCat1 & "" and Speed = "" & Speed & ""
Else
  Data1.Recordset.FindNext Cat1 & " LIKE "" & SelCat1 & ""
End If
If IsNull(Data1.Recordset.Fields("time")) Then
  timearray(i, 0) = 300
Else
  timearray(i, 0) = Data1.Recordset.Fields("time")
End If
If IsNull(Data1.Recordset.Fields("Title")) Then
  timearray(i, 1) = "NL"
Else
  timearray(i, 1) = Data1.Recordset.Fields("Title")
End If
If IsNull(Data1.Recordset.Fields("Artist")) Then
  timearray(i, 2) = "NL"
Else
  timearray(i, 2) = Data1.Recordset.Fields("Artist")
End If
If IsNull(Data1.Recordset.Fields("Date")) Then
  timearray(i, 3) = "NL"
Else
  timearray(i, 3) = Data1.Recordset.Fields("Date")
End If
If IsNull(Data1.Recordset.Fields("Main1")) Then
  tempfield(4) = "NL"
Else
  tempfield(4) = Data1.Recordset.Fields("Main1")
End If
If IsNull(Data1.Recordset.Fields("Mstyle")) Then
  tempfield(5) = "NL"
Else
  tempfield(5) = Data1.Recordset.Fields("Mstyle")
End If
If IsNull(Data1.Recordset.Fields("Drype")) Then
  tempfield(6) = "NL"
Else
  tempfield(6) = Data1.Recordset.Fields("Drype")
End If
If IsNull(Data1.Recordset.Fields("Speed")) Then
  tempfield(7) = "NL"
Else
  tempfield(7) = Data1.Recordset.Fields("Speed")
End If
If IsNull(Data1.Recordset.Fields("Energy")) Then
  tempfield(8) = ""
Else
  tempfield(8) = Data1.Recordset.Fields("Energy")
End If
For X = 4 To 8
  Data2.RecordSource = X

```

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```

Data2.Refresh
Data2.Recordset.MoveLast
Data2.Recordset.MoveFirst
Data2.Recordset.FindFirst "Tag = " & tempfield(X) & ""
timearray(i, X) = Data2.Recordset.Fields("Label")

Next X 'ReDim timearray(i, 10)
position = Data1.Recordset.AbsolutePosition
'assign song color to tracking array
Data1.Recordset.MoveFirst
Mcat1 = Data1.Recordset.Fields("Main1")
Data3.Recordset.FindFirst "Main1 = " & Mcat1 & ""
timearray(i, 9) = Val(Data3.Recordset.Fields("colorID"))
i = i - 1
If CancelSearch = True Then
MousePointer = 0
Data1.Recordset.Close
Data2.Recordset.Close
Data3.Recordset.Close
SavePlay.Enabled = False
TimeFrame.Visible = False
Speed = "Any"
TimeInput.Text = ""
Exit Sub
End If
Loop
End If
If SelCat1 = "SPMIX" Then
Call CheckMain(Cat1)
If MainCount < 8 Then GoTo MainLoop
End If
MainCount = 0

Data1.Recordset.Close
Data2.Recordset.Close
Data3.Recordset.Close

If IsEmpty(timearray(0, 1)) Then
' = "" Then
MsgBox "You do not have enough Music downloaded in the LP MOAEC Database to fill your request. Please Go To Screen
4 and Select the Button. Music Available to Download and place your orders with Looney Productions at T# 781-863-2203."
Speed = "Any"
MousePointer = 0
TimeFrame.Visible = False
TimeInput.Text = ""
Exit Sub
ElseIf Speed = "MIXED" And i < 4 Then
MsgBox "Sorry, there are not enough speed variations to mix that style. Please try again."
MousePointer = 0
TimeFrame.Visible = False
Speed = "Any"
TimeInput.Text = ""
Exit Sub

```

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```

Else
Now.Enabled = True
Now.BackColor = &HFF&
PlayButton.Enabled = True
PlayButton.BackColor = &HFF8080

SavePlay.Enabled = True
Command1.Enabled = True
Now.BackColor = &HFF&
TimeFrame.Visible = False
RndMix.Enabled = True
rndcount = 0
loopcount = 0
Randomize
Do While TimeCount < TotalTime
DoEvents
  'select random song selections from the song array and add them to the play list

```

LoopReset:

```

k = Rnd(i)
Y = Int(i * k)
AlreadyChosen = False
If timearray(Y, 0) <> "" Then

  If IsNull(timearray(Y, 1)) Then GoTo LoopReset
  If Speed = "MIXED" Then
    If MixCount > 4 Then MixCount = 0
    If loopcount > 500 Then GoTo DEFAULT
    If (timearray(Y, 7) = FastSpeed And MixCount < 2) Or (timearray(Y, 7) = SlowSpeed And MixCount >= 3) Then

      If rndcount > 0 Then
        For j = 0 To rndcount
          If RndSongsCount(j) = timearray(Y, 1) Then
            AlreadyChosen = True
          End If
        Next j
      End If
      If AlreadyChosen = False Then
        Playlist(0).AddItem timearray(Y, 0) & Chr(9) & timearray(Y, 1) & Chr(9) & timearray(Y, 2)
        Playlist(1).AddItem timearray(Y, 0) & Chr(9) & timearray(Y, 1) & Chr(9) & timearray(Y, 2) & Chr(9) &
timearray(Y, 3) & Chr(9) & timearray(Y, 4) & Chr(9) & timearray(Y, 5) & Chr(9) & timearray(Y, 6) & Chr(9) & timearray(Y, 7) &
Chr(9) & timearray(Y, 8)
        RndSongsCount(rndcount) = timearray(Y, 1)
        loopcount = 0
        PlaySongs = PlaySongs + 1
        rndcount = rndcount + 1
        MixCount = MixCount + 1
      Else
        loopcount = loopcount + 1
        GoTo LoopReset
      End If
    End If
  End If

```

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```

End If
Else
loopcount = loopcount + 1
GoTo LoopReset
End If

Else
DEFAULT: If rndcount > 0 Then
For j = 0 To rndcount
If RndSongsCount(j) = timearray(Y, 1) Then
AlreadyChosen = True
End If
Next j
End If
If AlreadyChosen = False Then
Playlist(0).AddItem timearray(Y, 0) & Chr(9) & timearray(Y, 1) & Chr(9) & timearray(Y, 2)
Playlist(1).AddItem timearray(Y, 0) & Chr(9) & timearray(Y, 1) & Chr(9) & timearray(Y, 2) & Chr(9) & timearray(Y,
3) & Chr(9) & timearray(Y, 4) & Chr(9) & timearray(Y, 5) & Chr(9) & timearray(Y, 6) & Chr(9) & timearray(Y, 7) & Chr(9) &
timearray(Y, 8)
RndSongsCount(rndcount) = timearray(Y, 1)
PlaySongs = PlaySongs - 1
rndcount = rndcount - 1
End If
End If

If Playlist(0).Rows > 1 And AlreadyChosen = False Then
loopcount = 0
NumSongs.Text = PlaySongs
Playlist(0).row = Playlist(0).Rows - 1
Playlist(1).row = Playlist(1).Rows - 1
For z = 0 To 2
Playlist(0).Col = z
Playlist(0).CellBackColor = timearray(Y, 9)
Playlist(0).BackColorSel = timearray(Y, 9)
Playlist(0).ForeColorSel = Playlist(0).CellForeColor
Next z
For z = 0 To 8
Playlist(1).Col = z
Playlist(1).CellBackColor = timearray(Y, 9)
Playlist(1).BackColorSel = timearray(Y, 9)
Playlist(1).ForeColorSel = Playlist(1).CellForeColor
Next z
TempTime = CLng(timearray(Y, 0))
SongsTime = SongsTime + TempTime
timebox.Text = Format(TimeSerial(0, 0, SongsTime), "hh:mm:ss")
TimeCount = TimeCount + TempTime
zed = zed + 1
For j = 0 To 8
'selongs(j) = Playlist(1).TextMatrix(Playlist(1).Row, j)
PlayedSongs(1, zed, j) = Playlist(1).TextMatrix(Playlist(1).row, j)

```

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```

Next j
PlayedSongs(1, zed, 9) = Playlist(1).CellBackColor
Else
loopcount = loopcount + 1
If loopcount > 100 Then
MsgBox ("Sorry, there were not enough different music titles to fill your time request. Please try another category as
well.")
Exit Do
End If
End If

End If
Loop
End If

Speed = "Any"
TimeInput.Text = ""
AddList(0).Enabled = True
ExpandList.Enabled = True
delete.Enabled = True
MousePointer = 0

End If

Call CheckOnDeck

Exit Sub

errorhandler.
Speed = "Any"
TimeInput.Text = ""
AddList(0).Enabled = True
ExpandList.Enabled = True
delete.Enabled = True
MousePointer = 0

Exit Sub
End Sub

Private Sub undo_Click()
On Error GoTo errorhandler

Select Case LindoEvent
Case 0
Call RestorePlayList

Case 1
Call RestoreSearchList

End Select

```

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```

undo.Enabled = False
Exit Sub

errorhandler:
MsgBox ("Sorry....Nothing to undo.")
undo.Enabled = False
End Sub

```

```

"titlefrm.frm"
Sub Main()
'allocate initial subcategories
FinalCats(1) = "Dance"
FinalCats(2) = "ENERGY"
FinalCats(3) = "Favorite Hits"
FinalCats(4) = "Traditional"
FinalCats(5) = "Special Mixes"
FinalCats(6) = "Club"
StaticCats(7) = "Big Band"
StaticCats(8) = "Spanish"
StaticCats(9) = "Halloween"
StaticCats(10) = "School Dances"
StaticCats(11) = "Italian"
subcatcount = 6
subcattotal = 6
CatColor = &H8000000E
CancelSearch = False
channel = 1
cued(1) = False
cued(2) = False
ExitButtonPushed = False
Speed = "Any"

```

```
End Sub
```

```

Private Sub Animation2_Click()
'enters the system if clicked
titlefrm.Hide
Unload titlefrm
Unload Loader
Animation1.Close
Animation2.Close
Screen1.Show
End Sub

```

```

Private Sub EnterSystem_Click(Index As Integer)
'button click to enter the system
If Index = 0 Then
    VoiceActivation = True
ElseIf Index = 1 Then
    VoiceActivation = False
End If

```

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```

titlefrm.Hide
Unload titlefrm
Unload Loader
Animation1.Close
Animation2.Close
Load Screen1
Load Screen2
Screen1.Show
End Sub

Private Sub ExitSystem_Click()
Dim response As String
'exit option
response = MsgBox("Are you sure you want to exit?", 4, "Exit System")
If response = vbNo Then
Exit Sub
Else
Animation1.Close
Animation2.Close
EndIfAll
End
End If
End
End Sub

Private Sub Form_Activate()
Dim WaitTime, ftime As Integer
titlefrm.Refresh
Call waveOutSetVolume(0, &HFFFFFFF)
MMControl1.Command = "stop"
MMControl1.Command = "reset"
MMControl1.Command = "play"
WaitTime = Timer()
ftime = Timer() - WaitTime

Do While ftime <= 2
DoEvents
ftime = Timer() - WaitTime
Loop
Animation2.Visible = True
Animation1.Visible = False

'play the theme music
Do While ftime <= 5
'wait 9 seconds and then display title
ftime = Timer() - WaitTime
DoEvents

If ftime >= 3 Then
Title!(0).Visible = True

```

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```

        Title1(1).Visible = True
    End If
    Loop
    'play the welcome sound file
    EnterSystem(0).Visible = True
    EnterSystem(1).Visible = True
    ExitSystem.Visible = True

End Sub

Private Sub Form_Load()
    MMControl1.Command = "open"
    titlefrm.WindowState = 2
End Sub

Private Sub Form_Resize()
    Dim ScreenHeight As Integer
    Dim ScreenWidth As Integer

    ScreenHeight = (titlefrm.Height / 2)
    ScreenWidth = (titlefrm.Width / 2)
    Title1(0).Width = titlefrm.Width - 105
    Title1(1).Width = titlefrm.Width - 105
    Animation1.Top = ScreenHeight - 1087
    Animation1.Left = ScreenWidth - 1087
    Animation2.Top = ScreenHeight - 1087
    Animation2.Left = ScreenWidth - 1087
    EnterSystem(1).Top = titlefrm.Height - 2880
    EnterSystem(0).Top = EnterSystem(1).Top + 600
    ExitSystem.Top = EnterSystem(1).Top + 1200
    EnterSystem(1).Left = ScreenWidth - 1207
    EnterSystem(0).Left = EnterSystem(1).Left
    ExitSystem.Left = EnterSystem(1).Left
End Sub

Private Sub Form_Unload(Cancel As Integer)
    Animation1.Close
    Animation2.Close
    MMControl1.Command = "stop"
    MMControl1.Command = "close"
End Sub

"Module 1"
Option Explicit
Global Const NONE = 0

'Clipboard formats
Global Const CF_LINK = &HBF00
Global Const CF_TEXT = 1
Global Const CF_BITMAP = 2

```

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Global Const CF_METAFILE = 3

Global Const CF_DIB = 8

Global Const MODAL = 1

'ErrNum (LinkError)

Global Const WRONG_FORMAT = 1

Global Const DDE_SOURCE_CLOSED = 6

Global Const TOO_MANY_LINKS = 7

Global Const DATA_TRANSFER_FAILED = 8

'MousePointer

Global Const DEFAULT = 0

Global Const HOURGLASS = 11

'LinkMode (forms and controls)

Global Const LINK_NONE = 0

Global Const LINK_SOURCE = 1

Global Const LINK_AUTOMATIC = 1

Global Const LINK_MANUAL = 2

'Run time errors

Global Const NO_APP_RESPONDED = 282

Global Const DDE_REFUSED = 285

'Button parameter masks

Global Const LEFT_BUTTON = 1

Global Const RIGHT_BUTTON = 2

Global Const MB_YESNO = 4

Global Const MB_ICONQUESTION = 32

Global Const IDYES = 6

Global Const REP_LIGHT = "1 - Light"

Global Const REP_NORMAL = "2 - Normal"

Global Const REP_INTENSE = "3 - Intense"

"Module2"

Global Const SEL_DEFAULT = "0 - Default"

Global Const SEL_MINIMAL = "1 - Minimal"

Global Const SEL_AUTOMATIC = "2 - Automatic"

Global Const SEL_ALLWORDS = "3 - All Words"

"Musicdat"

'constants

Public Const WAVECAPS_LRVOLUME = &H8 ' separate left-right volume control

Public Const WAVECAPS_PITCH = &H1 ' supports pitch control

Public Const WAVECAPS_PLAYBACKRATE = &H2 ' supports playback rate control

Public Const WAVECAPS_VOLUME = &H4 ' supports volume control

Public Const WAVE_FORMAT_1S16 = &H8 ' 11.025 kHz, Stereo, 16-bit

Public Const WAVE_GOING = &H3

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```

Public Const GMEM_MOVEABLE = &H2
Public Const GMEM_ZEROINIT = &H4
Public Const GENERIC_READ = &H80000000
Public Const GENERIC_WRITE = &H40000000
Public Const OPEN_EXISTING = 3
Public Const FILE_ATTRIBUTE_NORMAL = &H80
Public Const CREATE_NEW = 1
Public Const CREATE_ALWAYS = 2

```

```

'global variables

```

```

Public Cat1 As String
Public MemCat As String
Public SubCol As String
Public maxed As Boolean
Public SelCat1 As String
Public Cat2 As String
Public ScreenIndex As Integer
Public letter As String
Public Speed As String
Public cat1count As Integer
Public CurScreen As String
Public SongsTime As Long, time As Long
Public selsong(8) As String
Public Datalocked As Boolean
Public touchscreen As Boolean
Public kliktrak As Integer
Public songlist As Variant, songlist2 As Variant
Public songlength As Double
Public sortstat As Boolean
Public SelList As Integer
Public CatColor As Variant
Public MinDate(36) As Integer
Public MaxDate(36) As Integer
Public SearchCats(2, 10) As Variant
Public searchflag As Integer
Public colnum As Integer
Public SearchSongs As Integer, PlaySongs As Integer
Public MnCatColor(3000) As Variant
Public subcatcount As Integer, subcattotal As Integer
Public Stime(3000) As String, Ptime(3000), RndSongsCount(3000) As String
Public SubCats(100) As String, FinalCats(100) As String
Public StaticCats(12) As String
Public PlayTime As Integer
Public SongPlaying As Boolean
Public CancelSearch As Boolean
Public channel As Integer
Public HeadExpand As Integer
Public OtherChannel As Integer
Public cmd As String * 255
Public StopList As Boolean, PauseList As Boolean
Public cued(3) As Boolean
Public MainCount As Integer, SubCount As Integer
Public UndoEvent As Integer
Public UndoText(10) As String

```

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```

Public UndoRow As Integer
Public ButMem As String
Public PlayedSongs(6, 3000, 10) As Variant
Public PlaylistsPlayed As Integer
Public PlayedTemp(6) As Integer
Public SlowSpeed As String
Public MidSpeed As String
Public FastSpeed As String
Public zed As Integer
Public FavHitsFinder As Integer
Public InitialFolder As String
Public totalFiles As Integer
Public NewSlidePos As Long
Public OldSlidePos As Long
Public volinc(2) As Long
Public RateInc As Long
Public DevID As Long
Public VolumeID As Long
Public VolumeHandle As Long
Public PitchHandle As Long
Public CancelCopy As Boolean
Public allCells1 As String, allCells2 As String, colors As String
Public FileNum As Integer, numRows As Integer
Public CurRow1 As Integer, CurRow2 As Integer, CurCol As Integer
Public FileColors() As Variant
Public AlreadyChosen As Boolean
Public automix As Boolean
Public FadePercent As Single
Public OldVolValue(2) As Long
Public WinPlayConnected As Integer
Public DisplayLibrary As Boolean
Public FirstLibrary As Boolean
Public NextTrackVar As Boolean
Public PrevTrackVar As Boolean
Public AutoExitTime As Long
Public AutoExitStart As Long
Public AutoExitEvent As Boolean
Public ExitButtonPushed
Public CancelLibrary As Boolean
Public VoiceActivation As Boolean
Public SongSelected As Boolean
Public FilePointer As Long
Public OrigVol(9) As Long
Public StoplistingList As Boolean
Public RatingTemp As String
Public RatingBlock As String
Public password As String
Public NewPassword1 As String
Public NewPassword2 As String
Public TimeSoFar As Long
Public NewPauseStartTime As Long

Declare Function waveOutClose Lib "winmm.dll" (ByVal hWaveOut As Long) As Long

```

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```

Declare Function waveOutGetVolume Lib "winmm.dll" (ByVal uDeviceID As Long, lpdwVolume As Long) As Long
Declare Function waveOutSetVolume Lib "winmm.dll" (ByVal uDeviceID As Long, ByVal dwVolume As Long) As Long
Declare Function waveOutGetID Lib "winmm.dll" (ByVal hWaveOut As Long, lpuDeviceID As Long) As Long
Declare Function waveOutPause Lib "winmm.dll" (ByVal hWaveOut As Long) As Long
Declare Function waveOutRestart Lib "winmm.dll" (ByVal hWaveOut As Long) As Long

Declare Function waveOutGetPlaybackRate Lib "winmm.dll" (ByVal hWaveOut As Long, lpdwRate As Long) As Long
Declare Function waveOutSetPlaybackRate Lib "winmm.dll" (ByVal hWaveOut As Long, ByVal dwRate As Long) As Long

Declare Function waveOutGetPitch Lib "winmm.dll" (ByVal hWaveOut As Long, lpdwPitch As Long) As Long
Declare Function GlobalAlloc Lib "kernel32" (ByVal wFlags As Long, ByVal dwBytes As Long) As Long
Declare Function GlobalLock Lib "kernel32" (ByVal hMem As Long) As Long
Declare Function GlobalFree Lib "kernel32" (ByVal hMem As Long) As Long
Declare Function GlobalUnlock Lib "kernel32" (ByVal hMem As Long) As Long
Declare Function CreateFile Lib "kernel32" Alias "CreateFileA" (ByVal lpFileName As String, ByVal dwDesiredAccess As Long,
ByVal dwShareMode As Long, lpSecurityAttributes As Any, ByVal dwCreationDisposition As Long, ByVal dwFlagsAndAttributes
As Long, ByVal hTemplateFile As Long) As Long
Declare Function ReadFile Lib "kernel32" (ByVal hFile As Long, lpBuffer As Any, ByVal nNumberOfBytesToRead As Long,
lpNumberOfBytesRead As Long, lpOverlapped As Any) As Long
Declare Function WriteFile Lib "kernel32" (ByVal hFile As Long, lpBuffer As Any, ByVal nNumberOfBytesToWrite As Long,
lpNumberOfBytesWritten As Long, lpOverlapped As Any) As Long
Declare Function GetFileSize Lib "kernel32" (ByVal hFile As Long, lpFileSizeHigh As Long) As Long
Declare Function CloseHandle Lib "kernel32" (ByVal hObject As Long) As Long
Declare Function ExitWindows Lib "user32" (ByVal dwReserved As Long, ByVal uReturnCode As Long) As Long
Declare Function waveOutSetPitch Lib "winmm.dll" (ByVal hWaveOut As Long, ByVal dwPitch As Long) As Long

```

```

Public Sub EndItAll()
Unload Screen1
Unload Screen2

```

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'Unload titlefrm
'Unload Updater
'Unload DriveScan
'Unload Main
'Unload Recorder
End
End Sub

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What is claimed is:

1. A music organizer and entertainment center comprising:

a storage device for storing encrypted, compressed data and an associated unique encryption key, the data defining a plurality of individual music selections and associated category flags, the encryption key being associated with an authorized user of the data;

a processor that retrieves selections and the associated category flags from the storage device based upon user selection of predetermined of the categories;

a decompression device that translates the encrypted, compressed data stored in the storage device into playable digital music data if a decryption key associated with the authorized user and corresponding to the encryption key has been provided to the decompression device; and

a sound card that converts the playable digital music data into audible music signals.

2. The center as set forth in claim 1 further comprising a data reading device that transfers data to the data storage device, the data reading device receiving data from a service provider that appends predetermined associated category flags to each of the plurality of individual music selections as originally prepared by the service provider.

3. The center as set forth in claim 2 wherein the data reading device comprises an optical disc reader that reads an optical disc of individual music selections prepared by the service provider.

4. The center as set forth in claim 3 wherein the storage device includes a file having all individual music selections available from the service provider, constructed and arranged so that a user can identify each of the individual music selections whereby the individual music selections can be requested from the service provider.

5. The center as set forth in claim 4 wherein one of the category flags comprises an ownership category flag that indicates which music selections from the list of all music selections are currently resident in the storage device.

6. The center as set forth in claim 1 further comprising a graphical user interface display having a plurality of selectable screens, at least one of the selectable screens including a plurality of category buttons constructed and arranged so that when a predetermined of the category buttons is activated, music selections having category flags matching the predetermined category of a respective of the buttons are selected and listed on the display.

7. The center as set forth in claim 6 wherein at least one of the displays includes a play list of music selections chosen from the search list, the center being constructed and arranged to translate compressed data of each of the music

selections on the play list, in a predetermined order, and to convert the playable digital music data into audible music signals.

8. The center as set forth in claim 7 further comprising a memory function constructed and arranged to memorize predetermined lists of music selections for subsequent playback based upon predetermined list identifier commands.

9. The center as set forth in claim 8 wherein at least one of the category flags comprises a rating flag and further comprising means for selectively blocking playback of songs associated with predetermined rating flags, the means for blocking including a password entry function to control the means for blocking.

10. The center as set forth in claim 1 further comprising a display screen having a plurality of graphical user interface displays, at least one of the displays including a plurality of buttons that, when activated, display a list of music selections on a search list having the associated category flags.

11. The center as set forth in claim 10 wherein each of the category buttons is constructed and arranged to display a plurality of sub-category buttons with other associated category flags whereby activation of the sub-category buttons further defines a selection of individual music selections so that the further defined music selections have each of the selected associated category flags.

12. The center as set forth in claim 1 further comprising a graphical user interface having a plurality of display screens, at least one of the screens showing thereon a plurality of buttons associated with individual of the associated category flags, a playback list showing music selections schedule for playback by the center and a search list showing current music selections retrieved based upon predetermined of the category buttons.

13. The center as set forth in claim 12 wherein the graphical user interface comprises a further screen having a plurality of music playback control buttons for controlling sound levels of the audible music signals.

14. The center as set forth in claim 13 wherein the graphical user interface includes a display screen having a listing of all available music selections currently stored in the storage device.

15. The center as set forth in claim 1 wherein the decryption key is stored in the center.

16. The center as set forth in claim 1 wherein the keys comprise a public/private key pair.

17. The center as set forth in claim 1 wherein the center comprises two separately housed units for being docked with each other.

18. The center of claim 1 wherein the center includes a voice-activation mechanism.

* * * * *

United States Patent [19]

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Toriumi

[45] **Date of Patent:** May 16, 2000

[54] **SING-ALONG DATA TRANSMITTING METHOD AND A SING-ALONG DATA TRANSMITTING/RECEIVING SYSTEM**

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[73] **Assignee:** Pioneer Electronic Corporation, Tokyo, Japan

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** 434/307 A; 434/307 R; 348/13; 84/609; 84/477 R; 340/825.07; 370/437

[58] **Field of Search** 434/307 R-309, 434/318, 118, 365; 84/477 R, 609-613; 634-637, 644, 650-652, 662; 369/1, 2, 4; 48, 178, 192; 360/32, 72.2; 348/473, 595, 563, 564, 484, 478, 7, 12-14, 732, 488, 571; 386/96; 379/93; 370/95.1, 95.2, 85.8, 432, 535, 536, 437; 340/825.03, 825.08, 825.21, 825.07; 705/39; 485/4.2, 5.1, 6.3; 704/769; 455/66, 5.1, 4.2, 6.3, 3.1; 375/358

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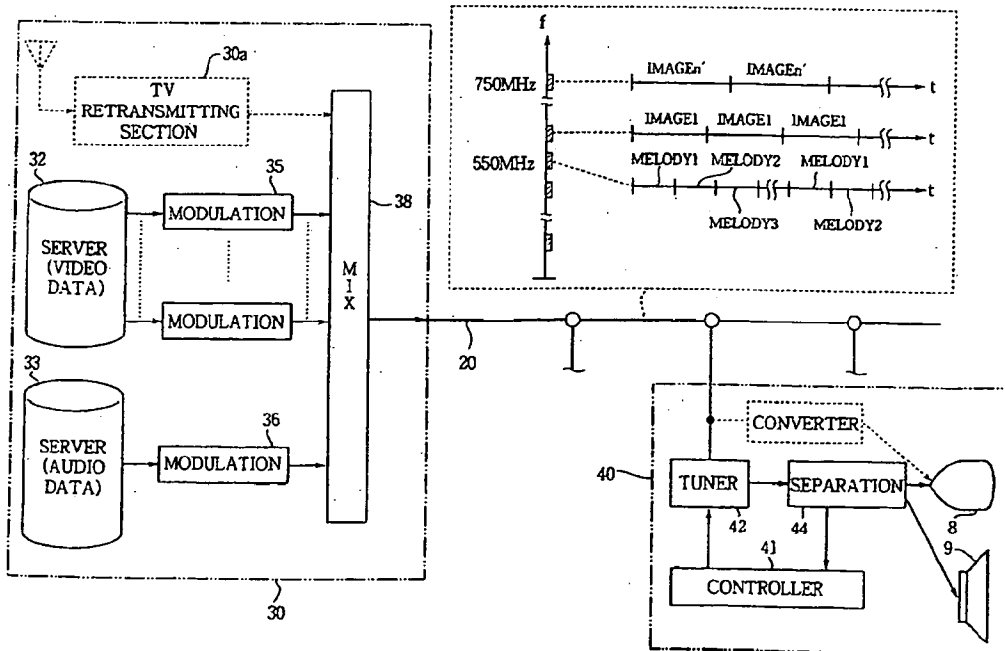
Primary Examiner—Joe H. Cheng

Attorney, Agent, or Firm—Arent Fox Kinter Plotkin & Kahn PLLC

[57] **ABSTRACT**

A sing-along data transmitting method includes the steps of providing a sing-along data center for supplying background video data and music data, and providing a plurality of sing-along data receiving terminals for receiving the background video data and music data fed from the sing-along data center. The next step is transmitting a plurality of background video data by way of a plurality of different channels, and transmitting music data of a plurality of melodies by way of at least one channel. The method further includes the step of transmitting a channel data indicating a channel through which said background video data corresponding to a selected music is being transmitted, with the channel data being transmitted together with music data. There is also provided a sing-along data transmitting/receiving system for carrying out the above sing-along data transmitting method.

5 Claims, 8 Drawing Sheets



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FIG. 1

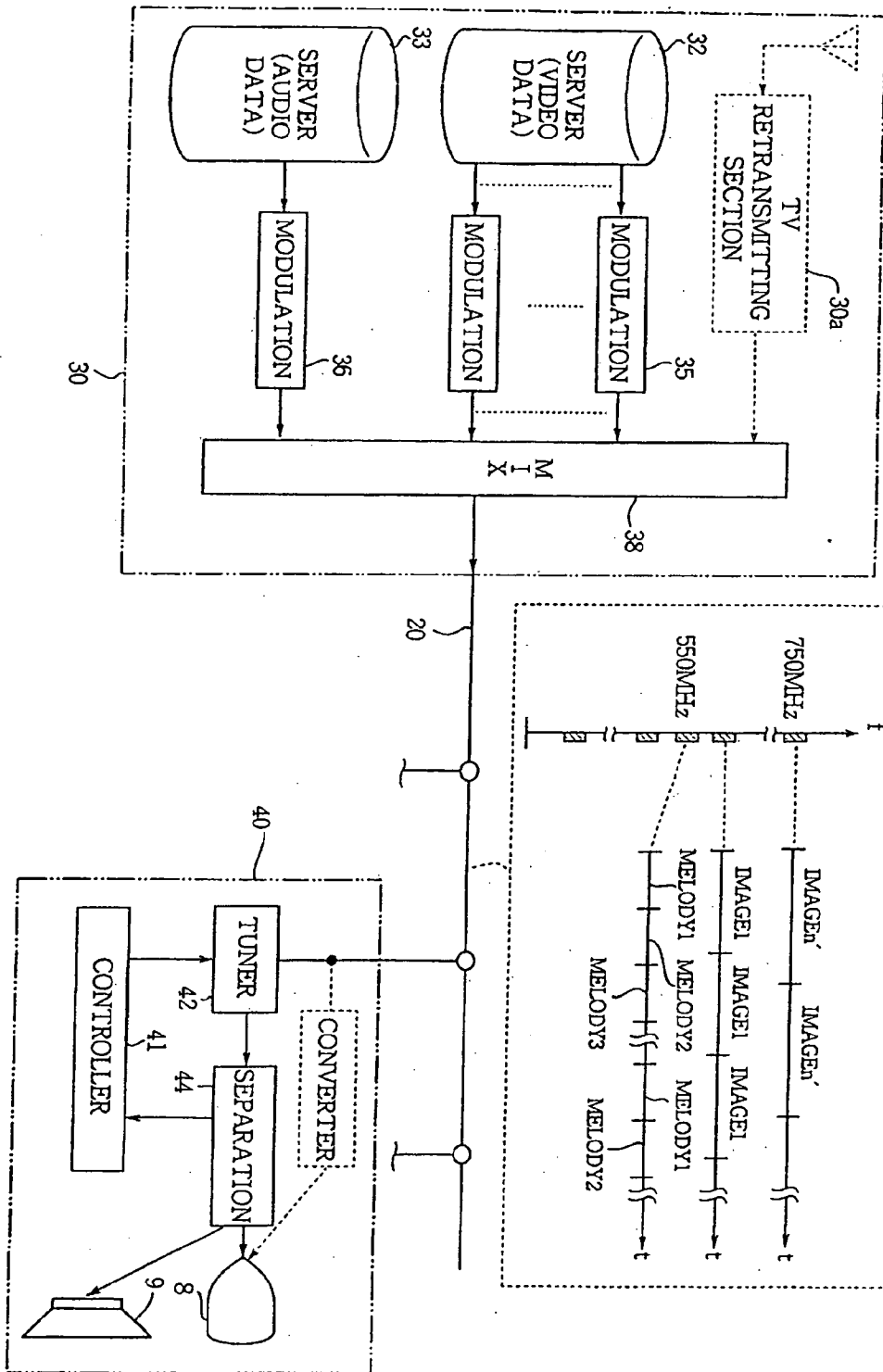
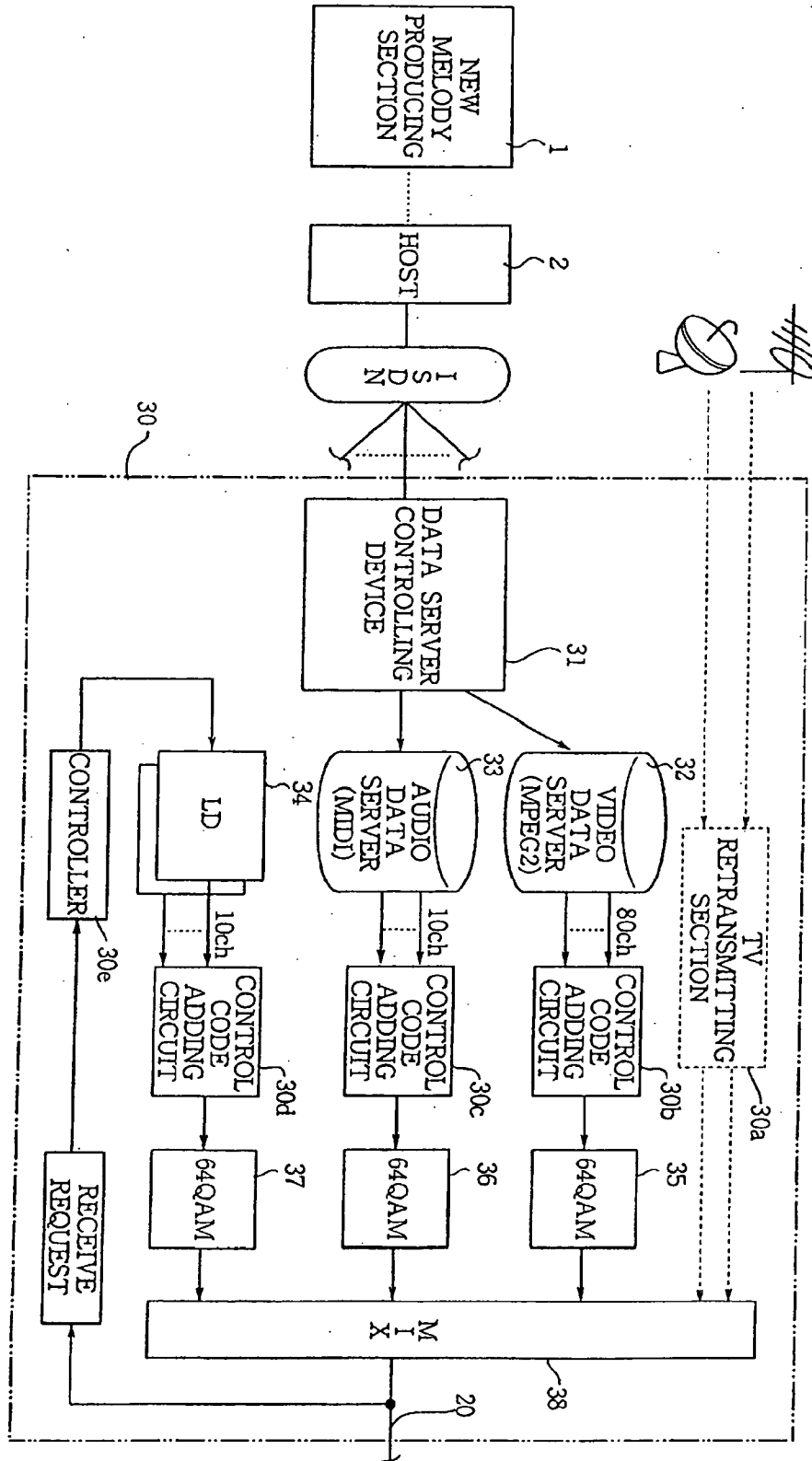


FIG.2



CL 000484

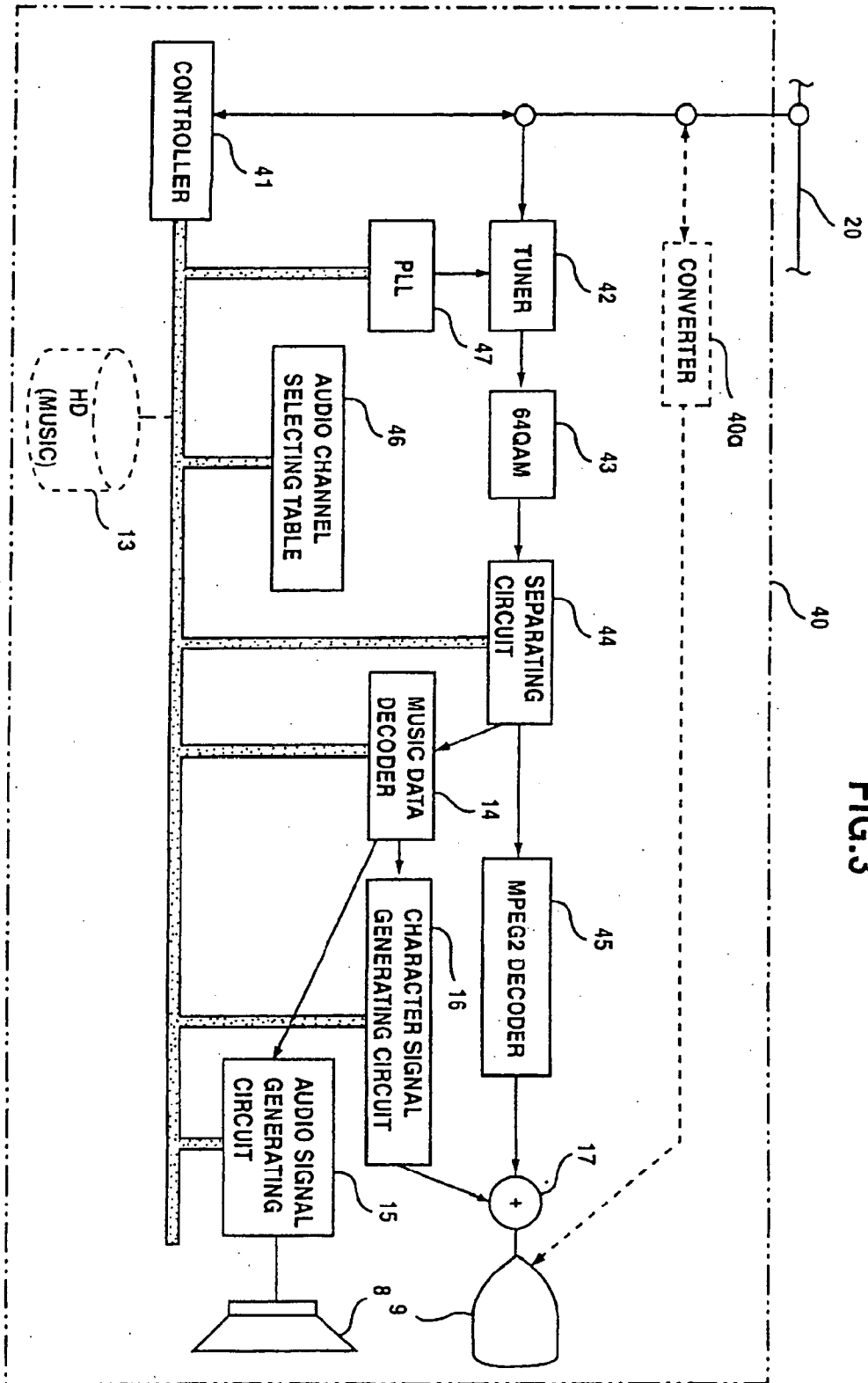
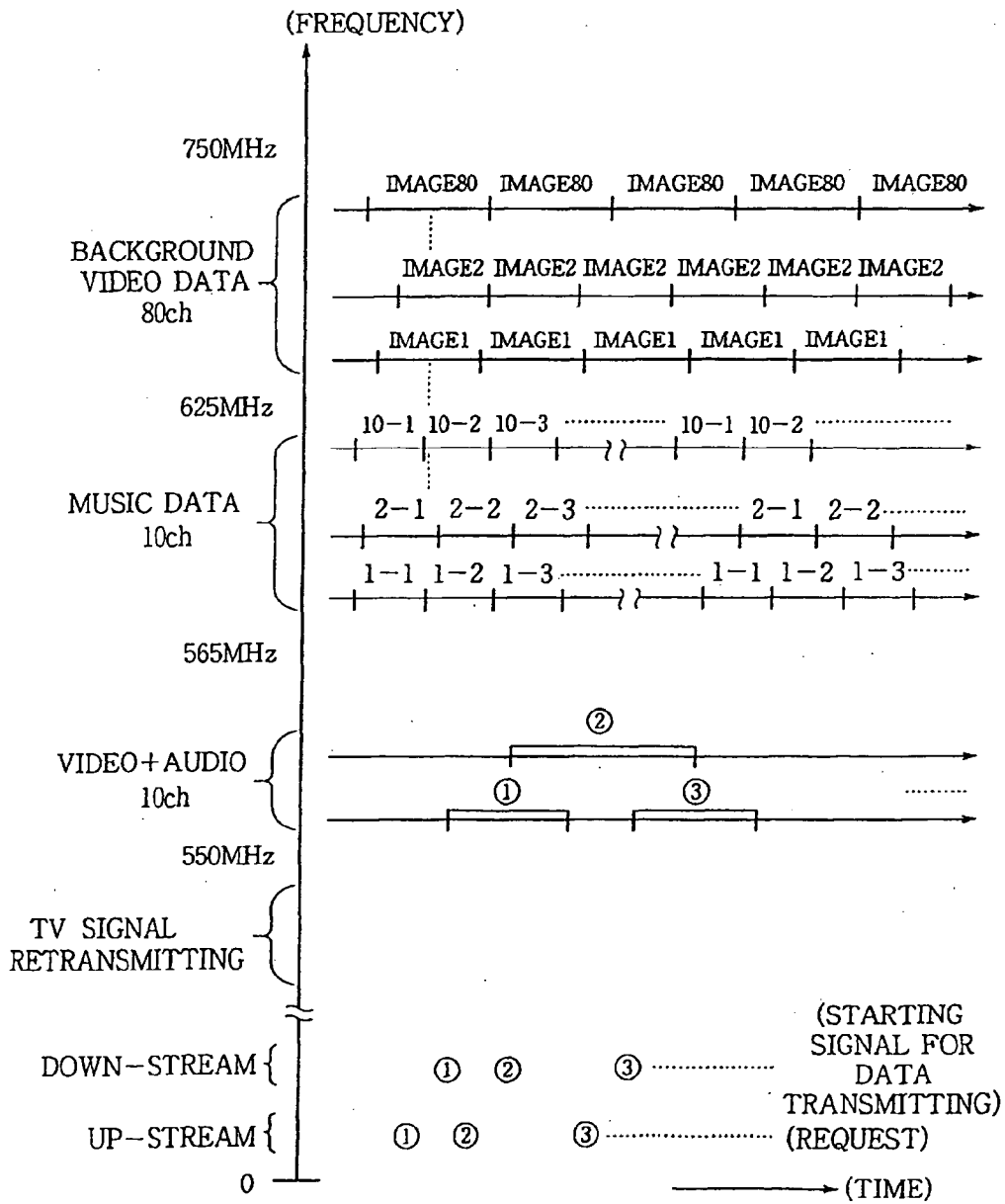


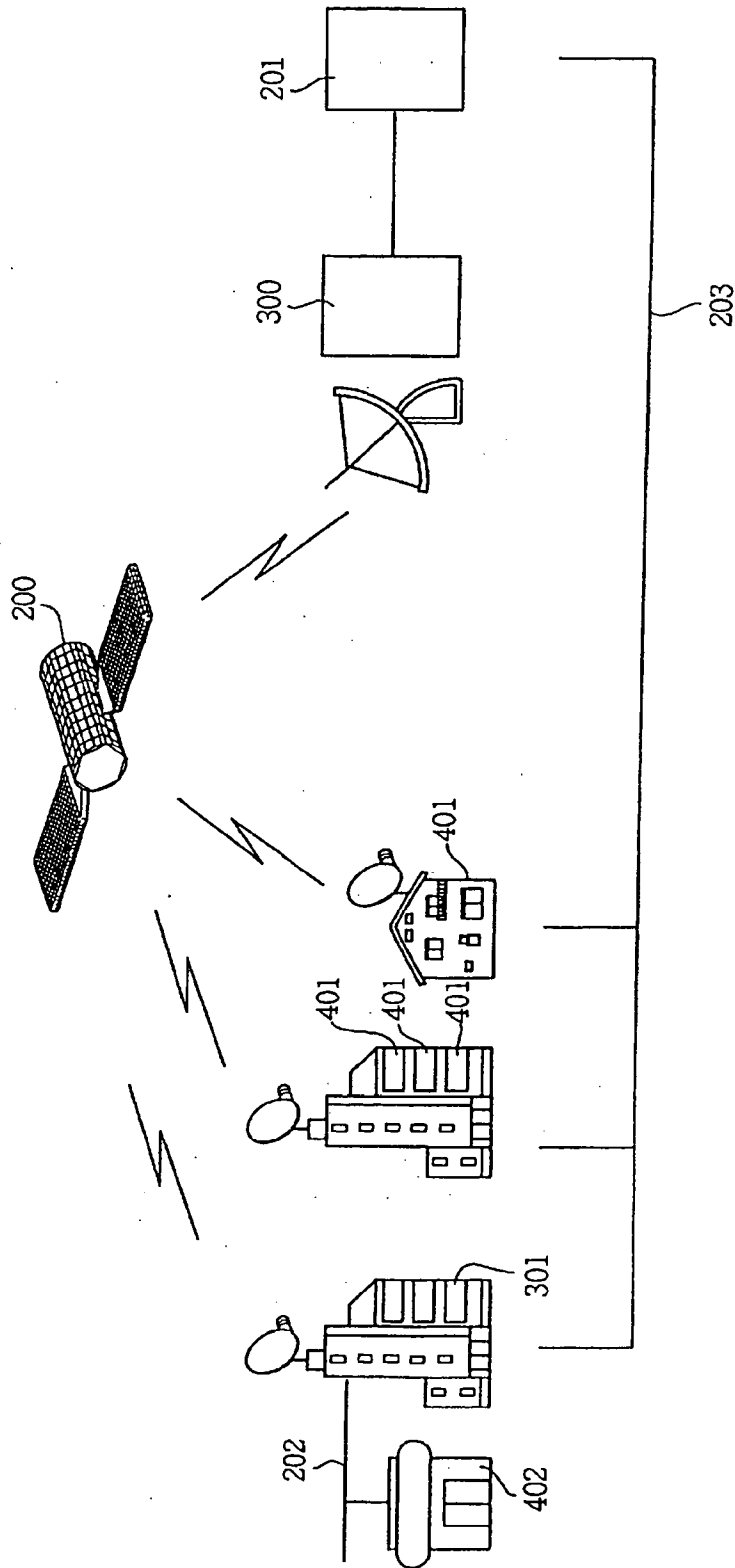
FIG. 3

FIG.4



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FIG.5



CL 000487

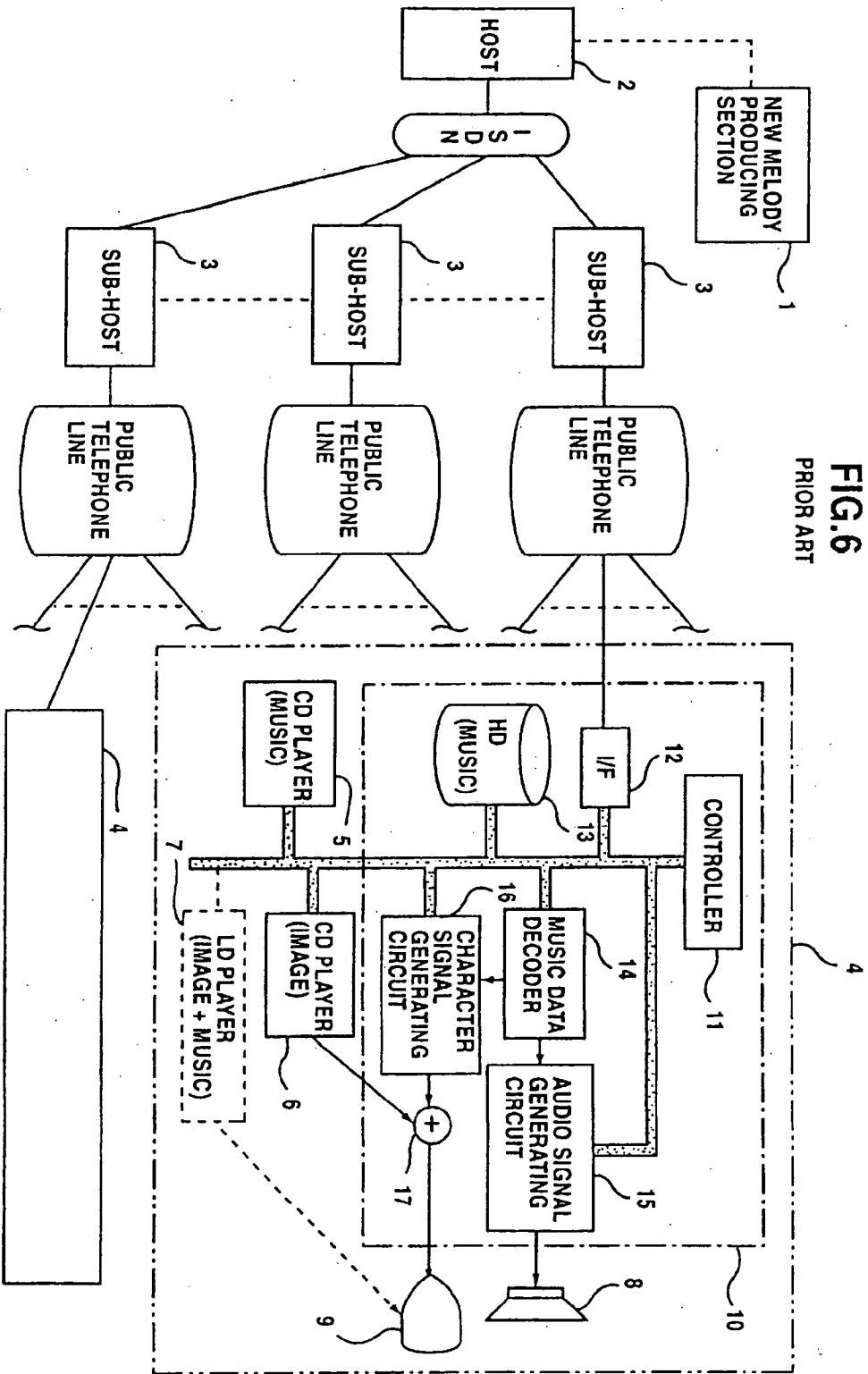
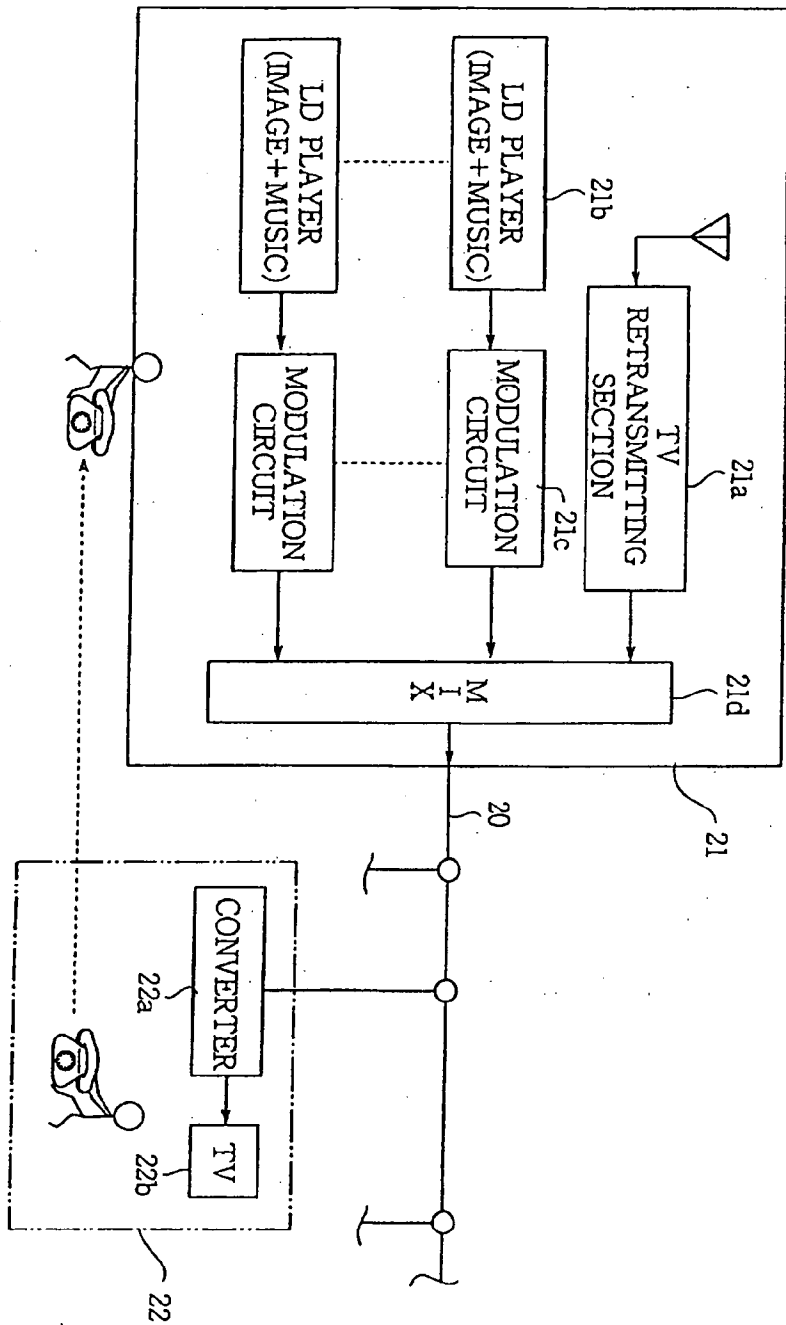


FIG. 6
PRIOR ART

FIG. 7

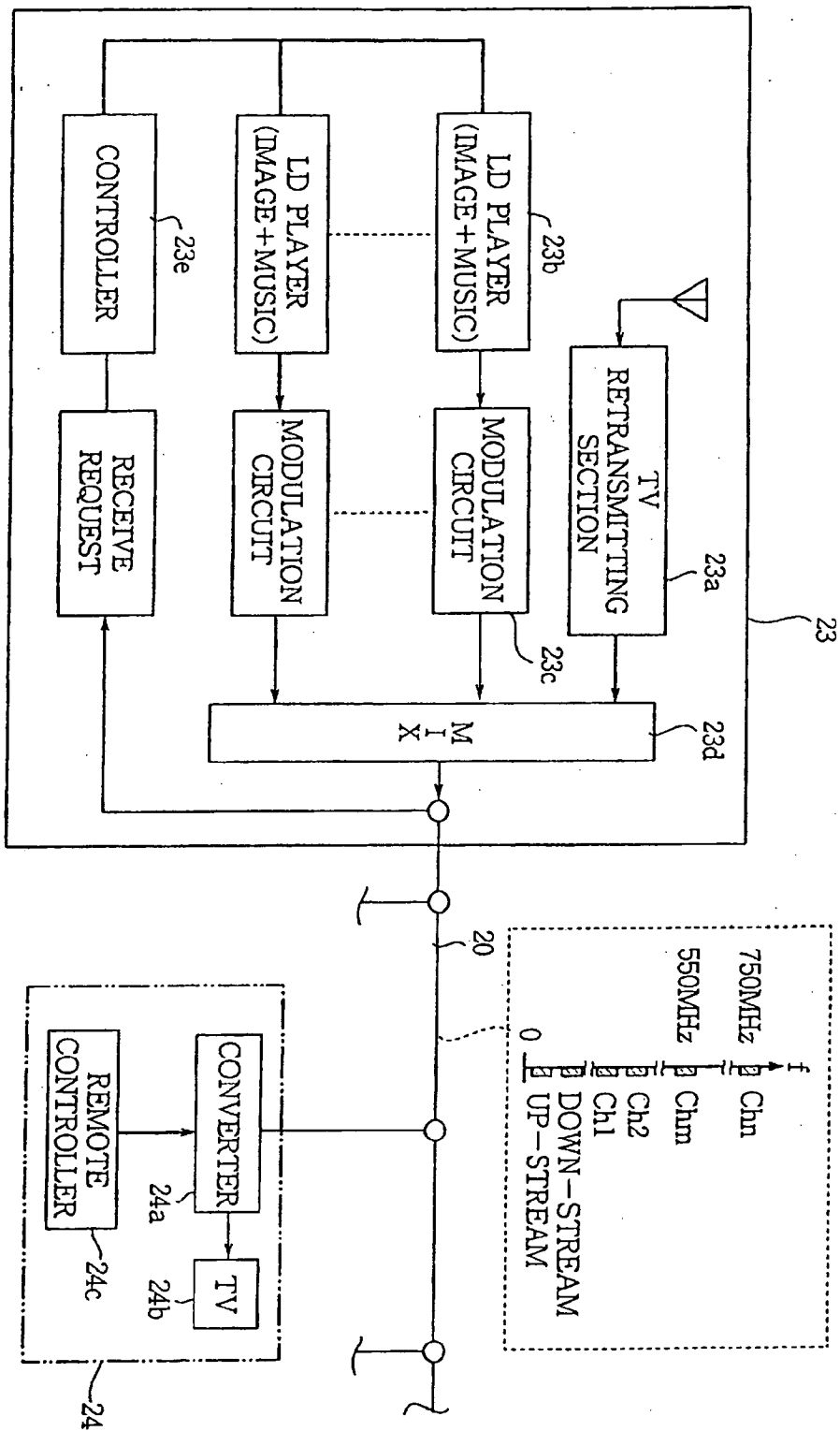
PRIOR ART



CL 000489

FIG. 8

PRIOR ART



CL 000490

SING-ALONG DATA TRANSMITTING METHOD AND A SING-ALONG DATA TRANSMITTING/RECEIVING SYSTEM

BACKGROUND OF THE INVENTION

The present invention relates to a sing-along (so-called Karaoke) data transmitting method and a sing-along data transmitting/receiving system.

FIG. 6 shows a conventional sing-along data transmitting/receiving system, where a plurality of sing-along data receiving terminals 4 are provided so that they can communicate with a host 2 and/or a plurality of sub-hosts 3 by way of ISDN (integrated service digital network) and/or public telephone lines.

As shown in FIG. 6, each sing-along data receiving terminal 4 has a main section 10 including a communication interface (hereinafter referred to as I/F) 12, a controller 11 capable of operating for the main section 10 to receive sing-along music data through the I/F 12 and to store the data in a hard disc 13. The terminal 4 further has a speaker 8, a monitor 9, an audio player 5, either a background image video player 6 or a laser disc player 7, all of which are connected with the main section 10 on the outside thereof.

Referring to FIG. 6, the main section 10 further contains a music data decoder 14 and an audio signal generating circuit 15 which are provided to produce audio signal in accordance with the music data read from either the audio player 5 or the hard disc 13. The audio signal fed from the audio signal generating circuit 15 is applied to the speaker 8. Moreover, the main section 10 contains a character signal generating circuit 16 and a synthesizing circuit 17. In this way, character signals are generated and mixed with the background image data produced from the background image video player 6. Finally, the synthesized signals are applied to the monitor 9.

In the conventional sing-along data transmitting system shown in FIG. 6, a new melody producing section 1 is provided to compose new melodies. The newly composed melody data are fed to the host 2, and further fed through ISDN to the sub-hosts 3 and stored there. When there is a request for obtaining new melodies, the new melody data may be supplied from the sub-hosts 3 through public telephone lines to the I/F 12, and stored in the hard disc 13 by the control of the controller 11. In this way, newly composed melodies can be supplied to respective terminals 4.

When there is a request for a desired melody, such a request may be input to the sing-along data receiving terminal 4. If the melody data are stored in a disc of the audio player 5, the desired melody data may be read out therefrom. On the other hand, if the desired melody data are stored in the hard disc 13, it can be read out from the hard disc 13. In both cases, read-out melodies are reproduced through the speaker 8. Meanwhile, background image data corresponding to the selected melody may be read out from a disc of the background image video player 6, and the background image is then displayed on the monitor 9.

FIG. 7 shows another conventional sing-along data transmitting/receiving system using a CATV system. As illustrated in FIG. 7, the sing-along data transmitting/receiving system includes a CATV center 21 and a CATV terminal 22, which are connected with each other through a CATV cable 20.

The CATV center 21 contains a re-transmitting section 21a for re-transmitting television broadcast signals, laser disc players 21b for reproducing background images and

corresponding melodies, modulation circuits 21c for modulating reproduced video and audio signal in a predetermined frequency band, a mixer 21d for mixing various signals and for transmitting the mixed signals through the CATV cable 20.

The CATV terminal 22 includes a converter 22a and a TV receiver 22b. Besides, it is also possible to include an audio stereo equipment to improve acoustic sound effect.

In the system shown in FIG. 7, if a sing-along shop (CATV terminal 22) has a request for a desired sing-along song, such a request may be transmitted by telephone to an operator of the CATV center 21. Then, the converter 22a of the CATV terminal 22 is operated to select a sing-along channel. After waiting for a while, the desired sing-along melody and image are reproduced in the CATV center 21 and are transmitted to the CATV terminal 22 through a selected sing-along channel by way of the CATV cable 20.

In order to eliminate the inconvenience of requesting a desired sing-along song by telephone, there has been suggested a further sing-along transmitting/receiving system using a two-way CATV system, as shown in FIG. 8. The system has a CATV terminal 24 including a converter 24a, a TV receiver 24b and a remote controller 24c. The converter 24a is used to transmit a signal requesting a desired sing-along song to the CATV center 23 by way of an up-stream channel of the CATV cable 20. Then, a controller 23e operates to control a laser disc player 23b so as to reproduce the desired melody and image. The reproduced data representing the desired song are transmitted to the terminal 24 through the CATV cable 20.

However, the above conventional sing-along systems have the following disadvantages.

In the system shown in FIG. 6, each sing-along data receiving terminal 4 is required to include an audio data player 5 and a video data player 6. In detail, it is necessary to employ an audio player having a disc changer capable of receiving many audio discs containing the data of at least 10000 melodies. Further, it is also necessary to employ a video player having a disc changer capable of receiving many video discs containing the data of at least 80 patterns of background images. As a result, a sing-along shop has a high burden in equipment investment and daily management.

In the systems using CATV as shown in FIGS. 7 and 8, since there are only limited number of channels for data transmitting, it is merely allowed to have at most 10 terminals (22 or 24) for independently performing sing-along service at the same time. In particular, in the evening of a weekend when there are many customers for sing-along playing, it is often required to stop television retransmitting service in order to ensure sufficient sing-along services.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an improved sing-along data transmitting method and an improved sing-along data transmitting/receiving system, so as to solve the above-mentioned problems peculiar to the above-mentioned prior arts.

According to one aspect of the present invention, there is provided a sing-along data transmitting method which comprises: providing a sing-along data center for supplying background video data and music data; providing a plurality of sing-along data receiving terminals for receiving the background video data and music data fed from the sing-along data center; transmitting a plurality of background video data by way of a plurality of different channels; and

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transmitting music data of a plurality of melodies by way of at least one channel.

The method further includes transmitting a channel data indicating a channel through which said background video data corresponding to a selected music is being transmitted, said channel data being transmitted together with the selected music data. Here, said music data contain music melody data and lyrics data, and are repeatedly transmitted. Further, such music data are compressed so as to be transmitted in a sufficiently shortened time period less than real time.

According to another aspect of the present invention, there is also provided a sing-along data transmitting/receiving system for carrying out the above sing-along data transmitting method.

The sing-along data transmitting/receiving system comprises: a sing-along data center for supplying background video data and music data; a plurality of sing-along data receiving terminals for receiving the background video data and music data fed from the sing-along data center; a data communication way for transmitting the background video data and music data from the sing-along data center to the plurality of sing-along data receiving terminals.

The sing-along data center comprises: a video data supplying means for repeatedly reproducing a plurality of background video data; a video data transmitting means for transmitting the reproduced background video data by way of respective video data transmitting channels; a music data supplying means for repeatedly reproducing music data of a plurality of melodies; a music data transmitting means for transmitting the reproduced music data by way of a predetermined music data transmitting channel.

Each of the sing-along data receiving terminals comprises: an input means for designating a sing-along melody; a music data receiving means for receiving the music data from the above predetermined music data transmitting channel; and a video data receiving means for receiving the video data from one of the above video data transmitting channels.

The sing-along data transmitting/receiving system according to the present invention, further comprises a channel data producing means for producing a channel data indicating a channel through which a background video data corresponding to a music is being transmitted. In particular, the music data transmitting means is provided to transmit reproduced music data together with the produced respective channel data, and the music data receiving means is provided to extract music data of a sing-along melody designated by said input means and to extract channel data corresponding to the designated sing-along melody. Further, the video data receiving means receives the video data from one of the video data transmitting channels, in accordance with the extracted channel data.

According to a further aspect of the present invention, there is provided a sing-along data receiving system, adapted to receive background video data transmitted through a plurality of video data transmitting channels, to receive music data of a plurality of melodies by way of at least one music data transmitting channel, to receive a channel data indicating a channel through which said background video data corresponding to a selected music is being transmitted.

Said sing-along data receiving terminal comprises: an input means for designating a sing-along melody; a music data receiving means for selecting a music data transmitting channel to receive music data of a sing-along melody designated by the input means and channel data corresponding to the sing-along melody, so as to output the sing-along

melody; and a video data receiving means for selecting one of the video data transmitting channels in accordance with channel data received by the above music data receiving means, so as to receive the background video data, thereby outputting the background image.

The above objects and features of the present invention will become more understood from the following description with reference to the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a block diagram showing a preferred embodiment of a sing-along data transmitting/receiving system according to the present invention.

FIG. 2 is a block diagram indicating a sing-along data center involved in the system of FIG. 1.

FIG. 3 is a block diagram indicating a sing-along data receiving terminal involved in the system of FIG. 1.

FIG. 4 is a graphical diagram indicating an assignment of frequency bands for transmitting various signals.

FIG. 5 is an explanatory view illustrating another embodiment of a sing-along data transmitting/receiving system according to the present invention.

FIG. 6 is a block diagram showing a conventional sing-along data transmitting/receiving system.

FIG. 7 is a block diagram showing another conventional sing-along data transmitting/receiving system using a CATV system.

FIG. 8 is a block diagram showing a further conventional sing-along data transmitting/receiving system using a two-way CATV system.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, a sing-along data transmitting/receiving system of the present invention includes a sing-along data center 30 (hereinafter, simply referred to as center) for supplying and transmitting sing-along data, a plurality of sing-along data receiving terminals 40 (hereinafter, simply referred to as terminals), a CATV cable 20 for communication between the center 30 and the terminals 40.

The center 30 includes a TV retransmitting section 30a for receiving and transmitting TV signal and performing two-way data communication, all using a frequency band below 550 MHz. The terminal 40 is connected to the CATV cable 20 in a manner similar to a conventional CATV terminal. Sing-along data (image and melody) are transmitted from the center 30 through the CATV cable 20 to the terminals 40 using a frequency band of 750 MHz-550 MHz.

Referring to FIG. 2, the center 30 has a data server controlling device 31 including a micro-computer and an I/F (interface) connecting with ISDN (integrated service digital network) circuit, and a video data server 32 which is under control of the controlling device 31 for storing and transmitting background image video data. There are 80 patterns of background images which are classified in accordance with their specific properties and stored in a form of digital data. Since the background video data are compressed in accordance with a MPEG (moving picture coding experts group)-2 method, the memory capacity of the video data server 32 and the transmitting capacity of the CATV cable 20 are allowed to be comparatively small.

The video data server 32 includes a storage memory such as hard disc, a read-out circuit and a controller for control-

ling the hard disc and the read-out circuit. Such a video data server 32 may be used to continuously read out the 80 patterns of background video data and to feed the same to a control code adding circuit 30b. The control code adding circuit 30b is provided to add a control code in the background video data so as to identify the data.

Then, an AM modulation circuit 35 is provided after the control code adding circuit 30b for modulating 80 patterns (80 channels) of background video data in accordance with a 64QAM (quadrature amplitude modulation) method. In this way, it becomes possible to transmit video data having a data amount corresponding to four channels, using only one channel having a frequency band of 6 MHz, which in prior art can only be used to transmit analogue data of one channel. Thus, the background video data of 80 channels, which have been frequency-multiplexed and converted into signals in a frequency band of 625 MHz-750 MHz, are transmitted through a mixer 38 to the CATV cable 20.

Referring again to FIG. 2, the center 30 is further provided with an audio data server 33 which is also controlled by the data server controlling device 31 so as to store and transmit digital audio data. Such digital audio data include 10000-20000 melodies, of which musical instrument melody data have been compressed in accordance with MIDI (musical instrument digital interface) standard and back-chorus melody data have been compressed in accordance with MPEG method. Therefore, the memory capacity of the audio data server 33 and the transmitting capacity of the CATV cable 20 are allowed to be comparatively small.

In this embodiment according to the present invention, when a music data is being stored in the audio data server 33, the data server controlling device 31 produces a channel data containing a channel number representing a channel through which a desired background video data is being transmitted. For instance, after a melody is selected, and a background image corresponding to the melody is transmitted through channel 3, the data server controlling device 31 will produce a channel data containing a channel number (channel 3). Such a channel data will be added at the beginning of the melody data.

Similarly, the audio data server 33 includes a storage memory such as a hard disc, a read-out circuit and a controller for controlling the hard disc and the read-out circuit. The music audio data containing 10000-20000 melodies are divided in the audio data server 33 into ten groups and will be read out continuously from the hard disc so as to be fed to a control code adding circuit 30c. Similarly, the control code adding circuit 30c is provided to add a control code in the music data so as to identify the data.

Then, a similar AM modulation circuit 36 is provided after the control code adding circuit 30c for modulating 10 groups (10 channels) of melody audio data in accordance with a 64QAM (quadrature amplitude modulation) method. In this way, the melody audio data of 10 channels, which have been frequency-multiplexed and converted into signals in a frequency band of 565 MHz-625 MHz, are transmitted through a mixer 38 to the CATV cable 20.

Referring further to FIG. 2, the center 30 has a controller 30e, a laser disc player 34, a further control code adding circuit 30d and a further AM modulation circuit 37. The controller 30e is provided to receive a request from a terminal 40 for a melody not stored in the audio data server 33. The laser disc player 34 is provided to reproduce a requested melody and corresponding image recorded on a laser disc (in the player 34) in accordance with a command from the controller 30e. The control code adding circuit 30d

and the AM modulation circuit 37 are respectively similar to the control code adding circuit 30c and the AM modulation circuit 36.

The data server controlling device 31 of the center 30, is provided not only to perform the operations described above, but also to receive data of new melodies composed in a new melody producing section 1. The data of new melodies are transmitted from a host 2 through the ISDN (integrated service digital network). In fact, the data server controlling device 31 is so provided that as soon as data of a new melody is received, a channel data will be added in the received melody data which will then be stored in one group of melody data having least data amount as compared with other nine groups of melody data in the audio data server 33.

Referring to FIG. 3, the terminal 40 includes a converter 40a connected with the CATV cable 20 for receiving TV signals retransmitted from the center 30 and for two-way communication using a frequency band below 550 MHz. Similar to a conventional sing-along data transmitting/receiving system, the terminal 40 also has a speaker 8, a monitor 9, a hard disc 13, an music data decoder 14, an audio signal generating circuit 15, a character signal generating circuit 16 and a synthesizing circuit 17. Further, the terminal 40 includes a controller 41, a tuner 42, 64QAM demodulation circuit 43, a separating circuit 44, a MPEG2 decoder 45, an audio channel selecting table 46, and a PLL (phase locked loop) circuit 47.

Since it is possible to dispense with an audio player 5, a background image data player 6 and a laser disc player 7, the terminal 40 may be made more compact in size and lower in cost.

The controller 41 mainly contains a micro-computer to control the PLL circuit 47 and the music data decoder 14 in accordance with a predetermined program. The controller further includes a circuit for receiving data from the center 30 and another circuit for sending a data (such as a request signal) to the center 30.

Moreover, the controller 41 is provided with a commander and a data receiving circuit for specific use with the commander. Accordingly, a customer may perform remote operation using the commander to input a number of his desired melody, so that the number data of desired melody may be stored in an inner memory provided in the controller 41. In this way, it is possible to send a customer's request from the terminal 40 to the center 30, so as to select and reserve a desired melody by operating the controller 41 in the terminal 40.

The tuner 42 is connected with the CATV cable 20, and is adapted to selectively perform tuning within a range of 550 MHz-750 MHz in accordance with an oscillating signal from the PLL circuit 47.

The 64QAM demodulation circuit 43 is a signal processing circuit for processing received signals selected by the tuner 42 in accordance with the QAM method, so as to restore sing-along data transmitted from a predetermined channel.

The separating circuit 44 mainly contains a DSP (digital signal processor), and is capable of identifying whether a sing-along data being transferred herein is a background video data or a music data, with reference to a control code added therein. If a sing-along data is a background video data, the data will be fed to MPEG2 decoder 45. On the other hand, if a sing-along data is music (song) data, the data will be processed so as to separate channel data therefrom. The separated data and remaining data will be in a condition under control by the controller 41.

The audio channel selecting table 46 is a table provided on a memory such as a ROM (read-only memory), in which all the melody numbers including uppermost and lowermost numbers have been recorded. With reference to these numbers, it is possible to know a channel number indicating a channel for transmitting the desired melody.

Further, the controller 41, by referring to the audio channel selecting table 46, will obtain a channel number for a desired melody, so as to control the PLL circuit 47 in order that the tuner 42 will tune to a corresponding frequency band to select an appropriate channel.

In addition, the controller 41 is provided also to monitor the music (song) data passing through the separating circuit 44. When it is determined that a melody number contained in the music data is the same as a melody number of a requested melody, the separating circuit 44 will be controlled so that the music data will be fed to the music data decoder 14 which has a maintainable buffer for maintaining at least one piece of melody. Meanwhile, the controller 41 operates to control the PLL circuit 47 in order that the tuner 42 will tune to a frequency band corresponding to a channel (indicated by a channel data) for a desired background image, in accordance with the channel data separated from the music data in the separating circuit 44.

Furthermore, the controller 41 is provided such that, after music data have been fed from the separating circuit 44 to the music data decoder 14, it will control the music data decoder 14 (mainly containing the DSP), the audio signal generating circuit 15 (mainly containing MIDI audio source and DSP), the character signal generating circuit 16 (mainly containing character generator). Accordingly, character information of the music data is fed from the music data decoder 14 to the character signal generating circuit 16 so as to produce character signal. Meanwhile, musical instrument performance data and chorus data are decoded in accordance with a corresponding standard, thereby producing an analogue audio signal from these decoded data by means of the audio signal generating circuit 15. In this manner, the character signal is added to the background video data in the synthesizing circuit 17, whilst the audio signal is fed to the speaker 8.

The MPEG2 decoder 45, consisting of a DSP and a frame memory etc., receives video data from the separating circuit 44 so as to perform expanding process on the video data in accordance with MPEG-2 method. The background video signals restored through the expanding process are converted into analogue video signals, and finally fed to the monitor 9 through the synthesizing circuit 17.

Referring again to FIG. 3, the hard disc 13 is also adapted to receive newly added and/or renewed data, in particular to store or maintain audio data of 1000 melodies requested by customers. When a melody stored in the hard disc 13 is requested by a customer, the controller 41, by using the music data of the hard disc 13, can immediately effect a desired tuning to a background video data transmitting channel. In this way, the terminal 40 can perform a quick sing-along service by providing a melody newly requested by a customer.

The operation of the above sing-along data transmitting/receiving system, which is the first embodiment of the present invention; will be described in detail below with reference to FIGS. 1-3, and further with reference to FIG. 4 showing various channels carried by the CATV cable 20 and an example of data flow therethrough.

Referring to FIGS. 1 and 4, at first, the background video data of 80 channels are transmitted with the use of a

frequency band of 625 MHz-750 MHz (FIG. 4), by way of the data server controlling device 31, the video data server 32, the control code adding circuit 30b, the 64QAM modulation circuit 35 and the mixer 38. Thus, there have been established a plurality of channels for transmitting background video data. Therefore, a plurality of background video data, corresponding to a plurality of sing-along melodies, may be simultaneously, repeatedly and continuously transmitted through respective channels. For instance, one background image (image 1) is being transmitted by way of background image data transmitting channel 1, at the same time, another background image (image 2) is being transmitted by way of background image data transmitting channel 2.

Further referring to FIGS. 1 and 4, the melody data of 10 channels including 10000-20000 melodies divided into 10 groups each containing 1000-2000 of melodies, are transmitted with the use of a frequency band of 565 MHz-625 MHz (FIG. 4), by way of the data server controlling device 31, audio data server 32, the control code adding circuit 30c, the 64QAM modulation circuit 37 and the mixer 38. Thus, there have been established a plurality of channels for transmitting music audio data. Therefore, a plurality of audio melody data, corresponding to a plurality of sing-along melodies, may be simultaneously, repeatedly and continuously transmitted through respective audio data transmitting channels. Meanwhile, channel data are continuously transmitted together with respective audio melody data in united form therewith. For instance, melodies 1-1, 1-2, 1-3, . . . of the first group (containing 1000-2000 melodies) are being successively and continuously transmitted by way of audio data transmitting channel 1. At the same time, melodies 2-1, 2-2, 2-3, . . . of the second group (containing 1000-2000 melodies) are being successively and continuously transmitted by way of audio data transmitting channel 2.

In the center 30, all the channels for transmitting sing-along data are set above a frequency of 550 MHz, a plurality of background video data are transmitted through different channels, whilst a plurality of audio melody data together with channel data are transmitted through at least one channel. Thus, the sing-along service can be smoothly provided without causing any troubles (interference) to usual CATV service.

Referring again to FIG. 4, a frequency band of 550 MHz-565 MHz is reserved in order that the reproduced data from the laser disc player 34 (FIG. 2) may be transmitted, using such a frequency band which can form another 10 channels.

In the terminal 40, when a customer designates his desired melodies (for example, melody 1-1 and melody 1-2), it is checked whether his desired melodies have been stored in the hard disc 13. If a desired melody data is existing in the hard disc 13, the melody data will be fed to the music data decoder 14 so that a desired sing-along performance can be started immediately.

If a desired melody is not existing in the hard disc 13, the controller 41 makes an access to the audio channel selecting table 46, so that the channel number (for example, channel 1) of an audio data channel for transmitting a selected melody data may be known in accordance with a melody number (for example, melody 1-1). Then, with the PLL circuit 47 being controlled by the controller 41, the music data being transmitted through channel 1 can be received and monitored by means of the tuner 42, 64QAM modulation circuit 43 and the separating circuit 44. In this way, the

music data of melody 1-1 and channel data can be obtained within 10-20 seconds.

In fact, the music data are fed to the music data decoder 14, whilst the channel data are fed to the controller 41. Thus, the controller 41 operates to control the PLL circuit 47 in accordance with the channel data. Therefore, the desired background video data being transmitted through the background video data transmitting channel are fed to the MPEG2 decoder 45. For example, if the channel data indicates that channel 80 is a channel transmitting the desired background video data, the background video data of channel 80 will be applied to the MPEG2 decoder 45.

Thus, while background image (for example, image 80) is combined with the character data in the synthesizing circuit 17 and then displayed on the monitor 9, the sound of melody 1-1 is produced through the audio signal generating circuit 15 and the speaker 8.

Up to this, a sing-along service producing melody 1-1 can be provided to a customer in the terminal 40.

During the sing-along playing of melody 1-1, the controller 41 will continue to control the PLL circuit 47 and the separating circuit 44, so that the music data of another melody (for example, melody 2-2) and the channel data thereof may be obtained in the same manner with relation to melody 1-1. The music data of melody 2-2 and the channel data thereof are temporarily stopped and stored in the separating circuit 44. Then, as fast as the playing of melody 1-1 is over, the music data of melody 2-2 and channel data thereof are fed to music data decoder 14, so as to select a channel transmitting the background image data corresponding to melody 2-2. In this manner, it is possible to provide a customer with his desired melody (melody 2-2) and the corresponding background image in a shortest time period.

On the other hand, if 80 patterns of background image are found to be insufficient, a request may be fed from the terminal 40 through the up-stream channel to the center 30. Then, the laser disc player 34 reproduces a background video data and music data to be transmitted through a frequency band of 550 MHz-565 MHz (FIG. 4). Therefore, the requested and reproduced data may be transmitted from the center 30 to the terminal 40. However, at the beginning of the data transmitting, starting signals containing channel number information are at first transmitted out through the downstream channel.

FIG. 5 shows a second embodiment of the present invention.

In the second embodiment shown in FIG. 5, a sing-along data center 300 has a transmitting section compatible with satellite communication. The center 300 transmits sing-along data to many sing-along data receiving terminals 401 by means of a communication satellite 200. Further, the sing-along data may be transmitted to terminals 402 located far away, first through the satellite 200 and then through a CATV relay station 301 and a CATV cable 202. In the drawing, a communication line 203 is provided to send customer's request to the center 300 via a host 201.

As can be understood from the above description, according to the present invention, since the background video data transmitting channels and the music data transmitting channels will not be unfavourably affected by the number of sing-along data receiving terminals, it is allowed to establish as many sing-along terminals as needed.

Further, since a sing-along data receiving terminal is allowed to dispense with any audio disc player and video disc player, the terminal can be made more compact than a conventional sing-along terminal. Therefore, such a sing-

along data receiving terminal can be formed by its simple combination into an existing or new CATV system, with only a low cost as compared with a conventional sing-along terminal.

Moreover, with the use of the method and system according to the present invention, it is not necessary to maintain and manage many audio and video data in a sing-along terminal (which is unavoidable in a conventional system), thus simplifying the operation and management of the terminal.

In addition, with the use of the method and system according to the present invention, it is easy to add new melodies to those existing in a audio data server, thereby obtaining a greatly increased amount of music data as compared with a conventional sing-along system.

While the presently preferred embodiments of the this invention have been shown and described above, it is to be understood that these disclosures are for the purpose of illustration and that various changes and modifications may be made without departing from the scope of the invention as set forth in the appended claims.

What is claimed is:

1. A sing-along data transmitting method, comprising:

providing a sing-along data center for supplying background video data and music data;

providing a plurality of sing-along data receiving terminals for receiving the background video data and music data fed from the sing-along data center;

continuously transmitting a plurality of background video data by way of a plurality of different channels without receiving a request from a specific data receiving terminal of said plurality of data receiving terminals;

transmitting music data of a plurality of melodies by way of at least one channel; and

transmitting a channel data indicating a channel through which said background video data corresponding to a selected music is being transmitted, said channel data being transmitted together with music data;

wherein the music data contains music melody data and lyrics data, and wherein the music data is repeatedly transmitted.

2. The sing-along data transmitting method according to claim 1, wherein said music data are compressed so as to be transmitted in a sufficiently shortened time period less than real time.

3. A sing-along data transmitting/receiving system, comprising:

a sing-along data center for supplying background video data and music data;

a plurality of sing-along data receiving terminals for receiving the background video data and music data fed from the sing-along data center;

a data communication way for continuously transmitting the background video data and music data from the sing-along data center to the plurality of sing-along data receiving terminals;

wherein the sing-along data center comprises:

a video data supplying means for repeatedly reproducing a plurality of background video data;

a video data transmitting means for continuously transmitting the reproduced background video data by way of respective video data transmitting channels without a specific request from one data terminal of the plurality of data terminals;

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a music data supplying means for repeatedly reproducing music data of a plurality of melodies;

a music data transmitting means for transmitting the reproduced music data by way of a predetermined music data transmitting channel;

wherein each of the sing-along data receiving terminals comprises:

an input means for designating a sing-along melody;

a music data receiving means for receiving the music data from the above predetermined music data transmitting channel; and

wherein the system further comprises a channel data producing means for producing channel data indicating a channel through which background video data corresponding to a music is being transmitted,

wherein each of the sing-along data receiving terminals further comprises a video data receiving means for receiving the video data from one of the above video data transmitting channels in accordance with the channel data transmitted together with the music data,

wherein music data contains music melody data and lyrics data, and wherein the music data is repeatedly transmitted.

4. A sing-along data transmitting/receiving system according to claim 3,

wherein the music data transmitting means is provided to transmit reproduced music data together with the produced respective channel data, and the music data receiving means is provided to extract music data of a sing-along melody designated by said input means and to extract channel data corresponding to the designated sing-along melody; and

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wherein the video data receiving means receives the video data from one of the video data transmitting channels, in accordance with the extracted channel data.

5. A sing-along data receiving system, adapted to receive background video data continuously transmitted through a plurality of video data transmitting channels without receiving a request from a specific data receiving terminal, to receive music data of a plurality of melodies by way of at least one music data transmitting channel, to receive a channel data indicating a channel through which said background video data corresponding to a selected music is being transmitted, said sing-along data receiving terminal comprises:

an input means for designating a sing-along melody;

a music data receiving means for selecting a music data transmitting channel to receive music data of a sing-along melody designated by the input means and channel data corresponding to the sing-along melody, so as to output the sing-along melody; and

a video data receiving means for selecting one of the video data transmitting channels in accordance with channel data received by the above music data receiving means, so as to receive the background video data, thereby outputting the background image,

wherein said channel data is transmitted together with said music data;

wherein said music data contains music melody data and lyrics data, and wherein the music data is repeatedly transmitted.

* * * * *

CL 000496

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Dwek

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(45) Date of Patent: Jun. 19, 2001

(54) MULTIMEDIA CONTENT DELIVERY SYSTEM AND METHOD

6,069,310 * 5/2000 James 84/645

* cited by examiner

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(57) ABSTRACT

A system and method for delivering multimedia content to computers over a computer network, such as the Internet, includes a novel media player which may be downloaded onto a user's personal computer. The media player includes a user interface which allows a listener to search an online database of media selections and build a custom playlist of exactly the music selections desired by the listener. The multimedia content delivery system delivers advertisements which remain visible on a user's computer display screen at all times when the application is open, for example, while music selections are being delivered to the user. The advertisements are displayed in a window which always remains on a topmost level of windows on the user's computer display screen, even if the user is executing one or more other programs with the computer.

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(22) Filed: Mar. 1, 2000

(51) Int. Cl.⁷ G10H 1/26

(52) U.S. Cl. 84/609; 84/477 R; 84/DIG. 6; 434/307 A

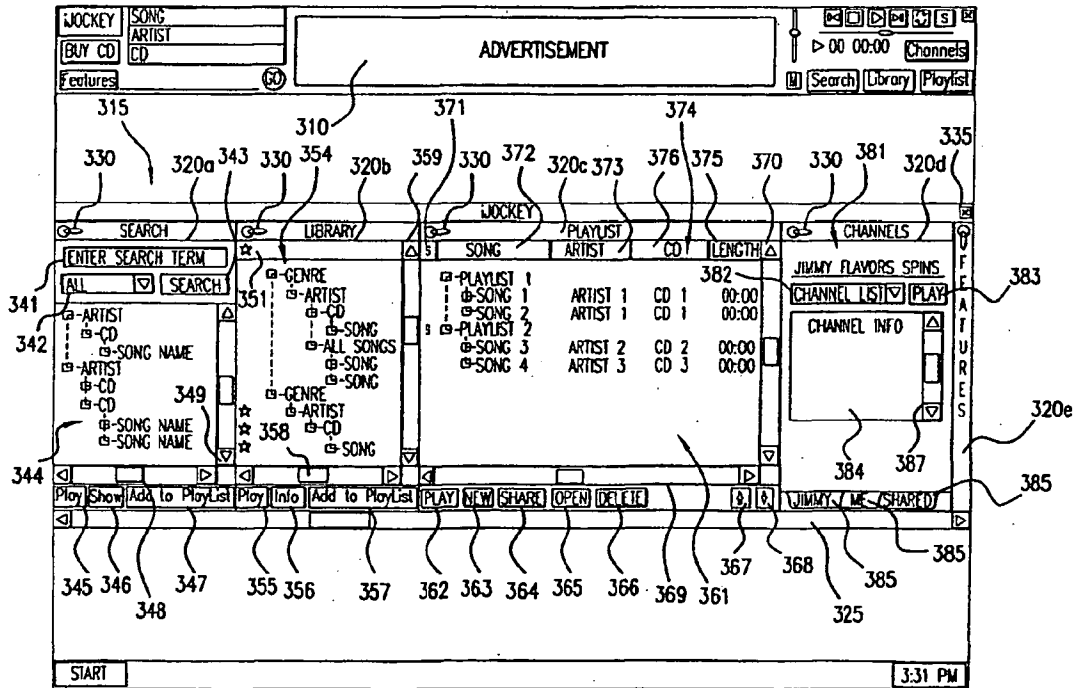
(58) Field of Search 84/609-614, 634-638, 84/477 R, 478, DIG. 6; 434/307 A

(56) References Cited

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20 Claims, 11 Drawing Sheets



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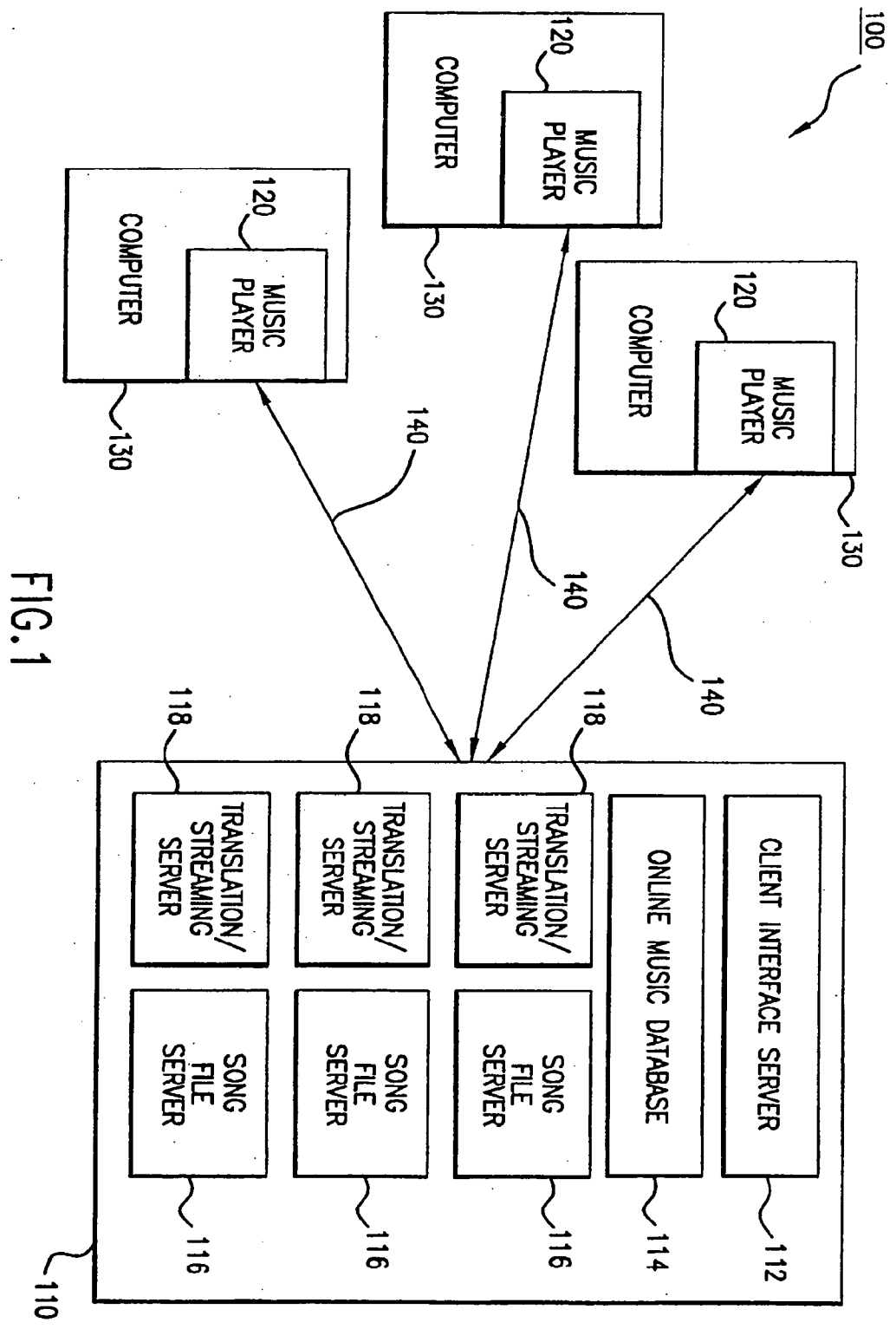


FIG. 1

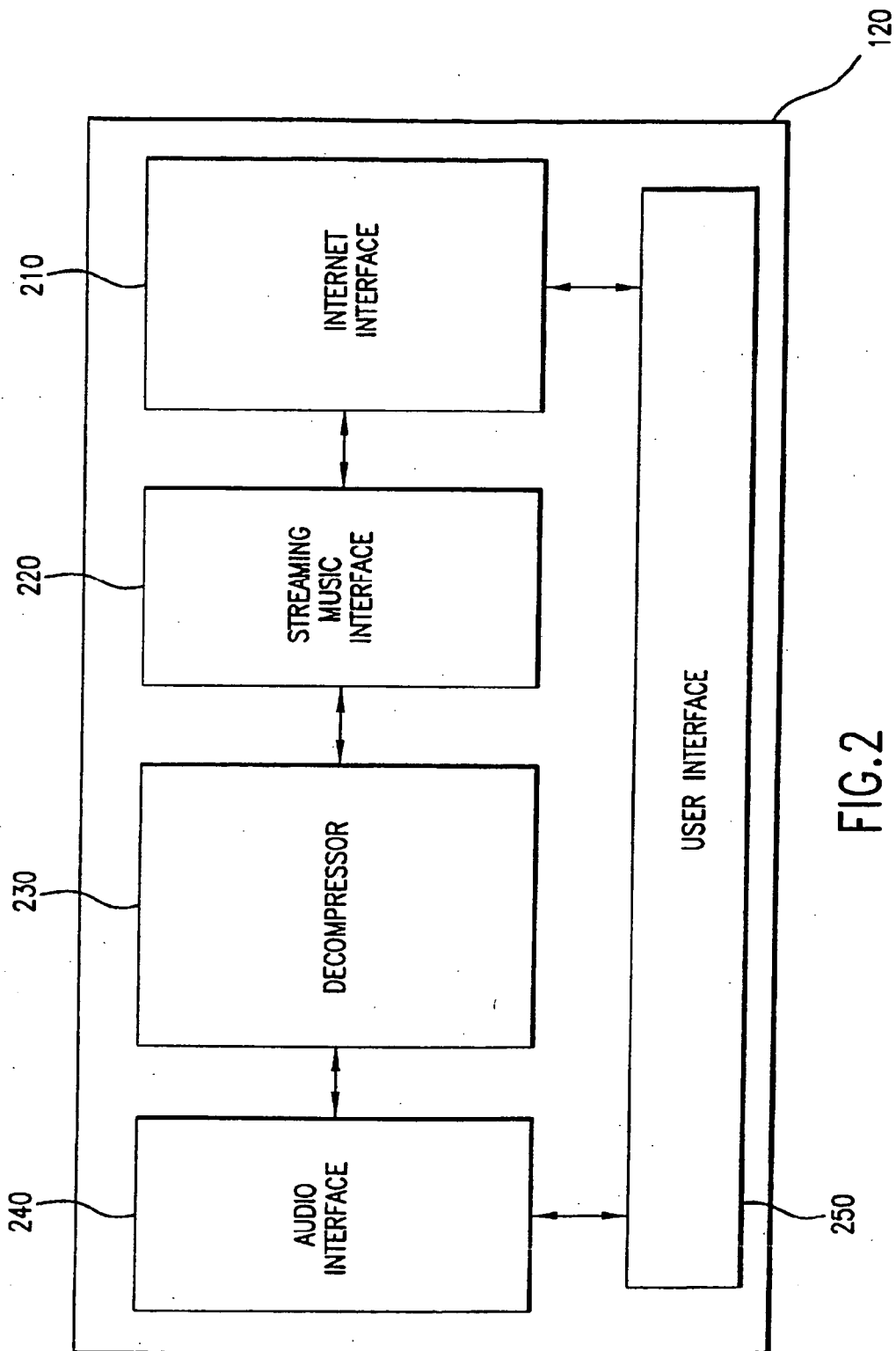


FIG. 2

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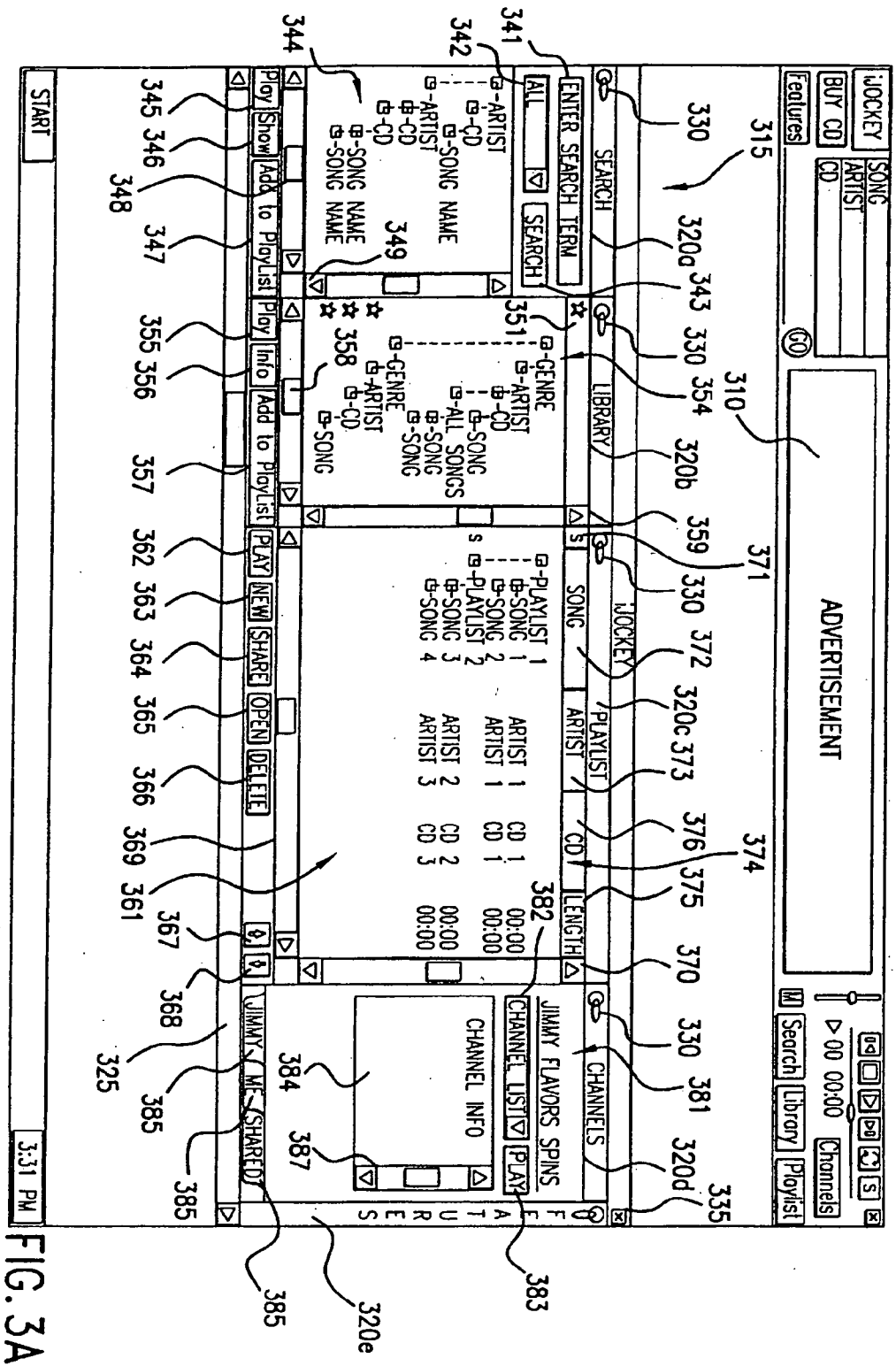


FIG. 3A

CL 00500

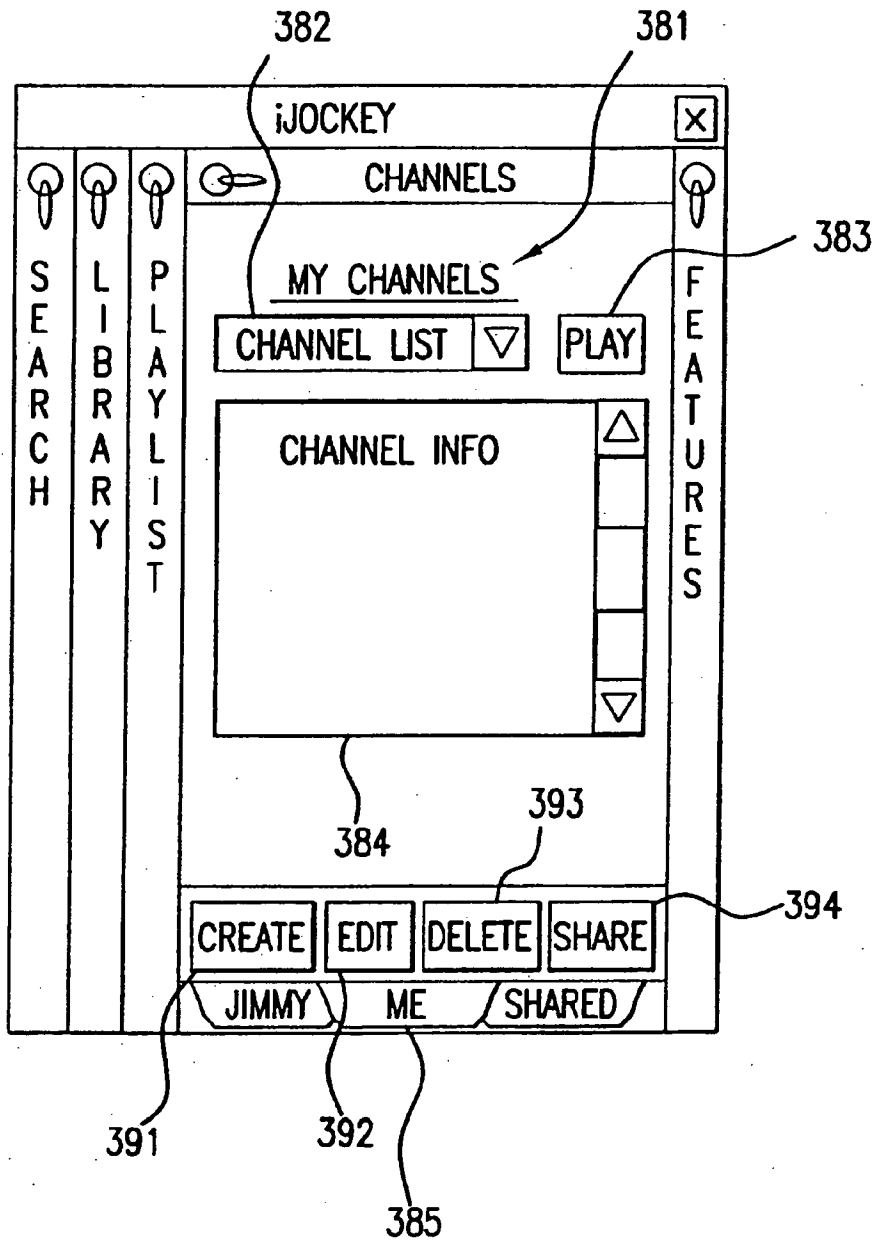


FIG. 3B

CL 000501

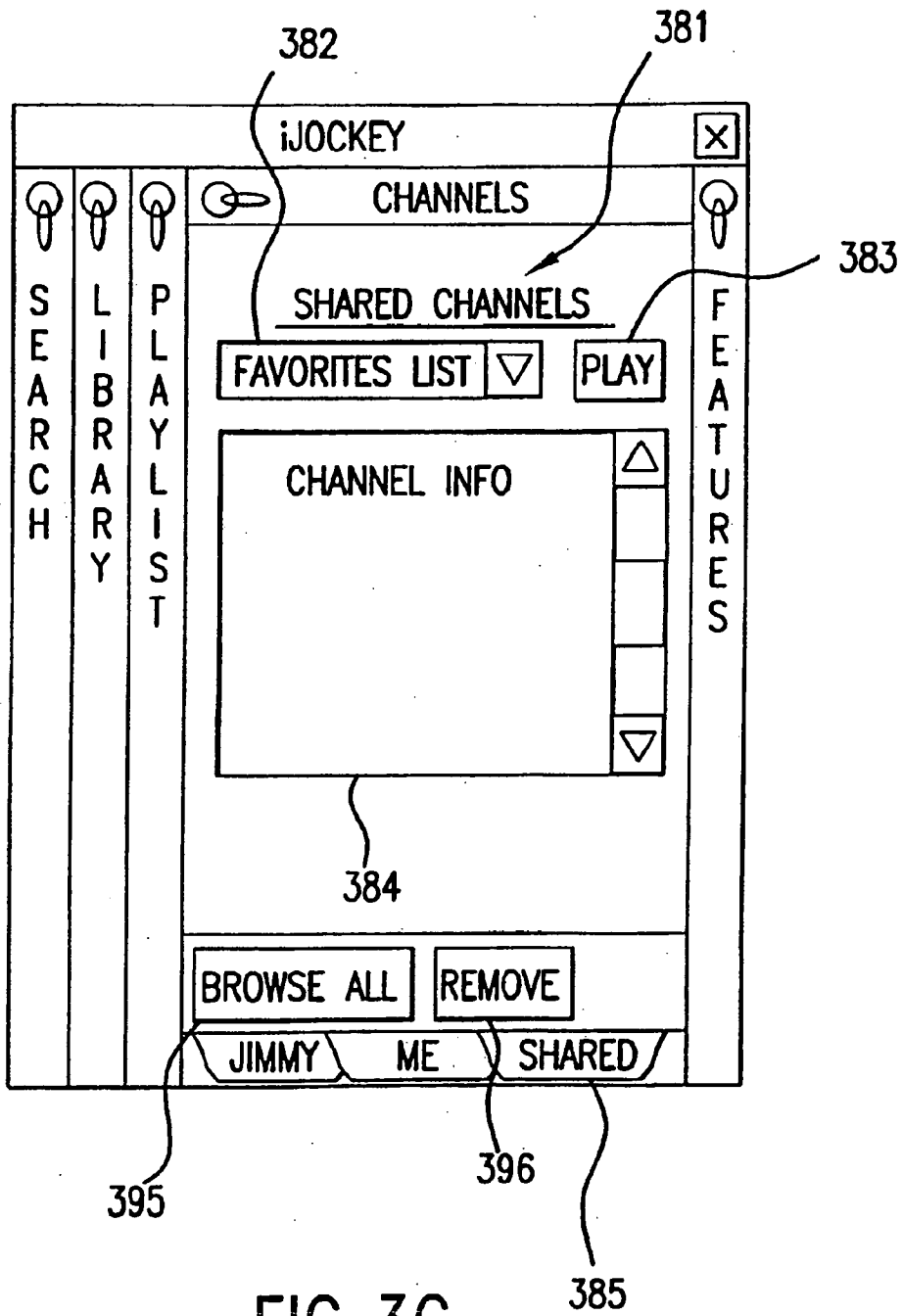


FIG. 3C

CL 000502

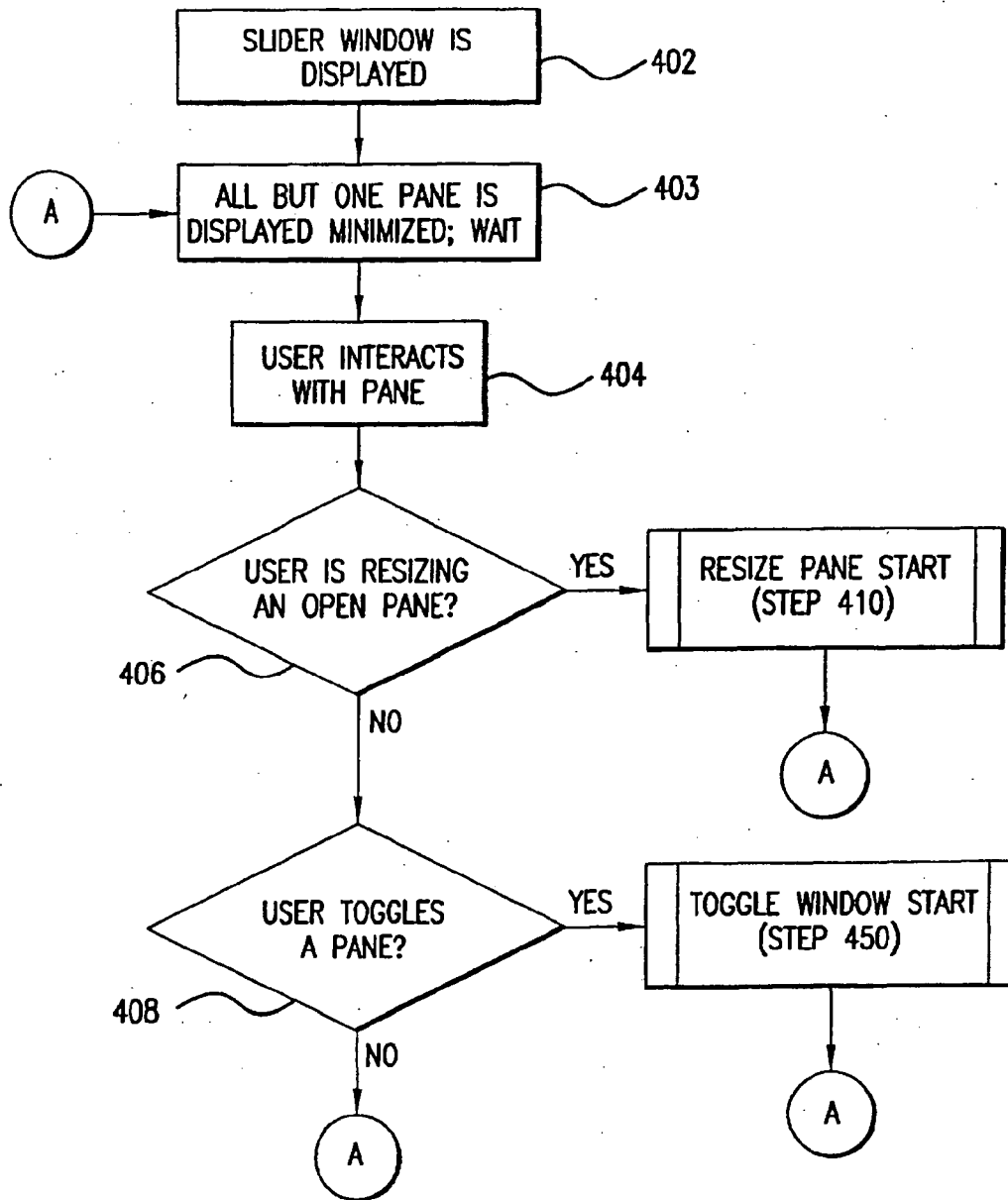


FIG. 4A

CL 000503

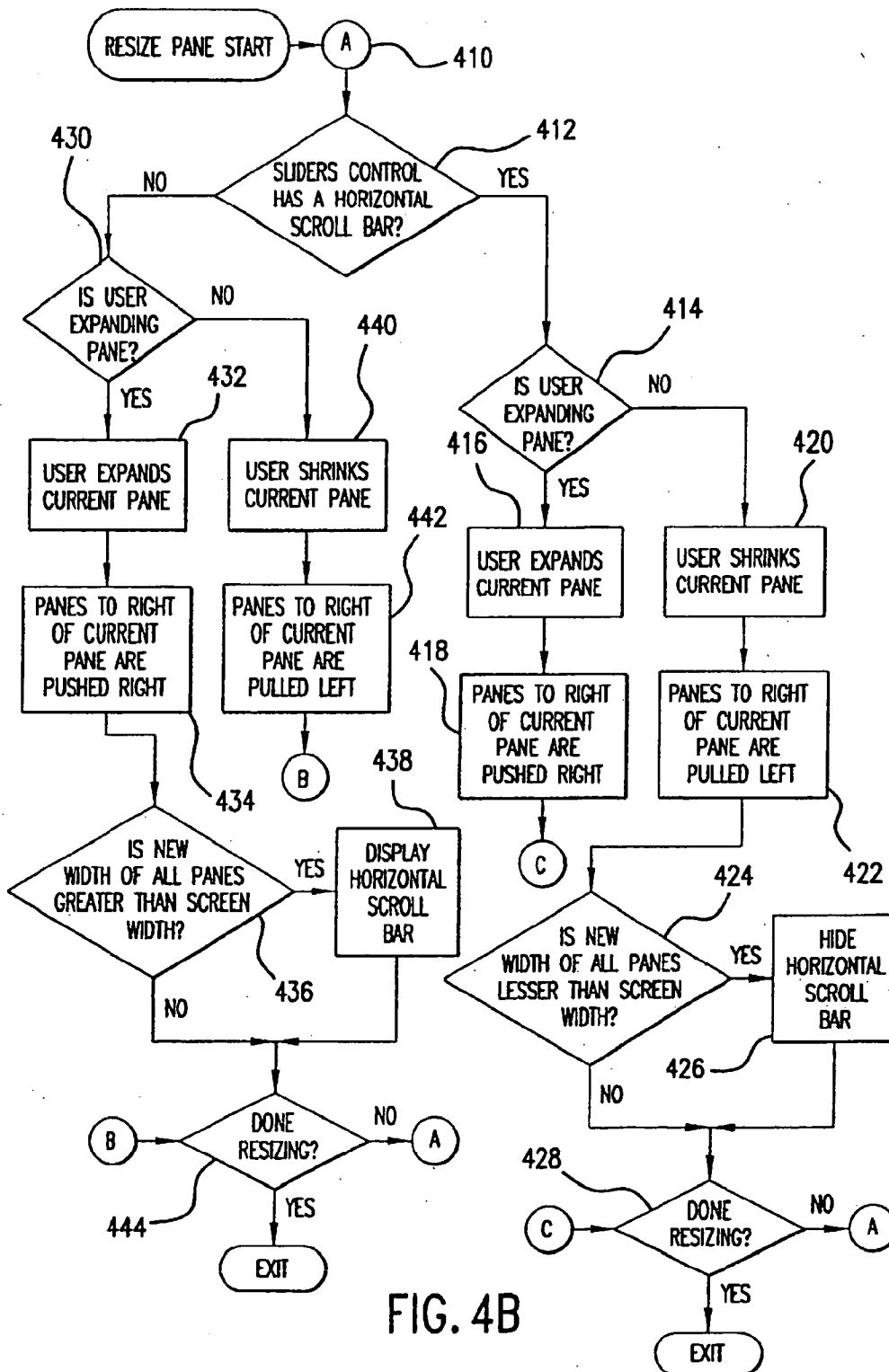


FIG. 4B

CL 000504

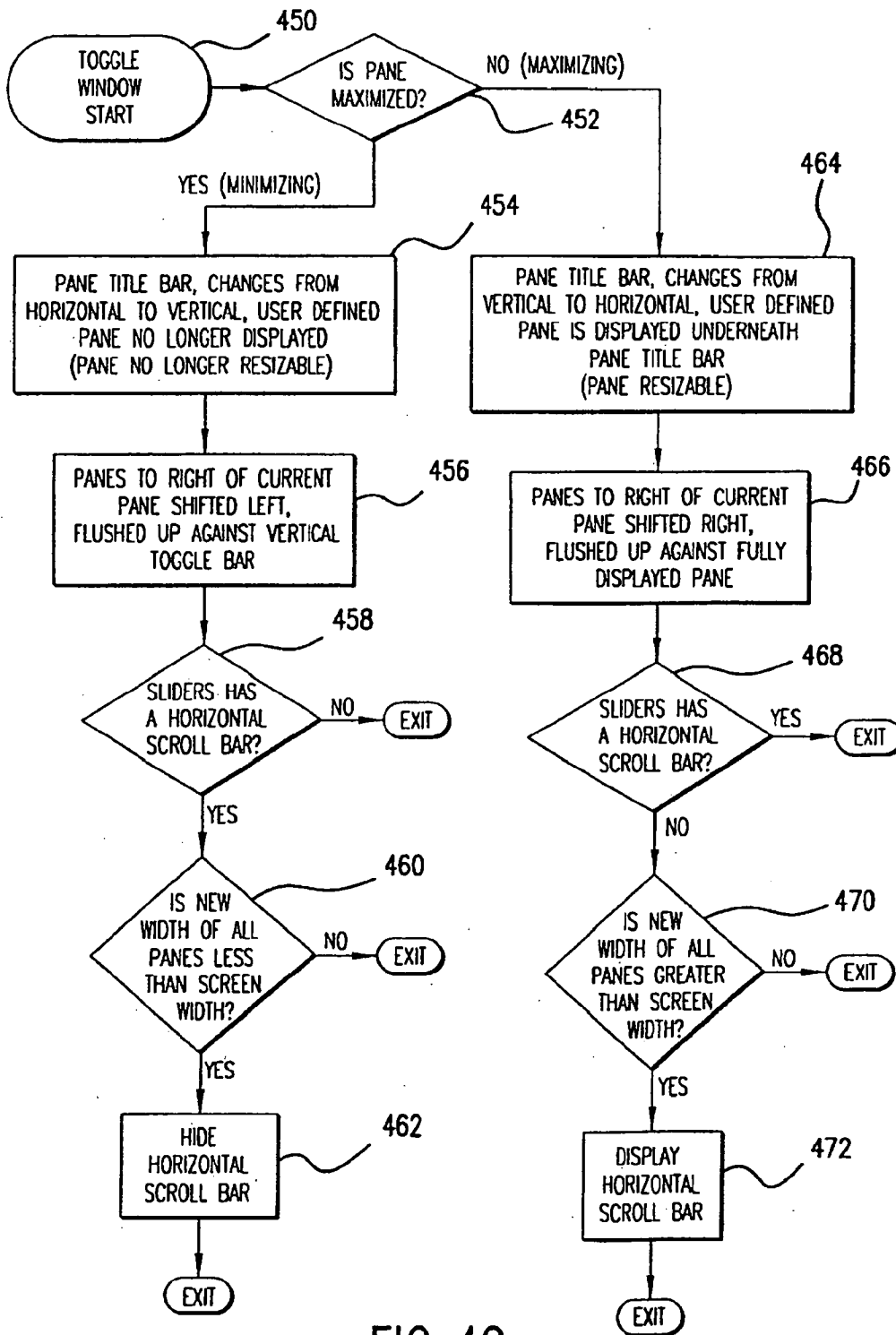


FIG. 4C

CL 000505

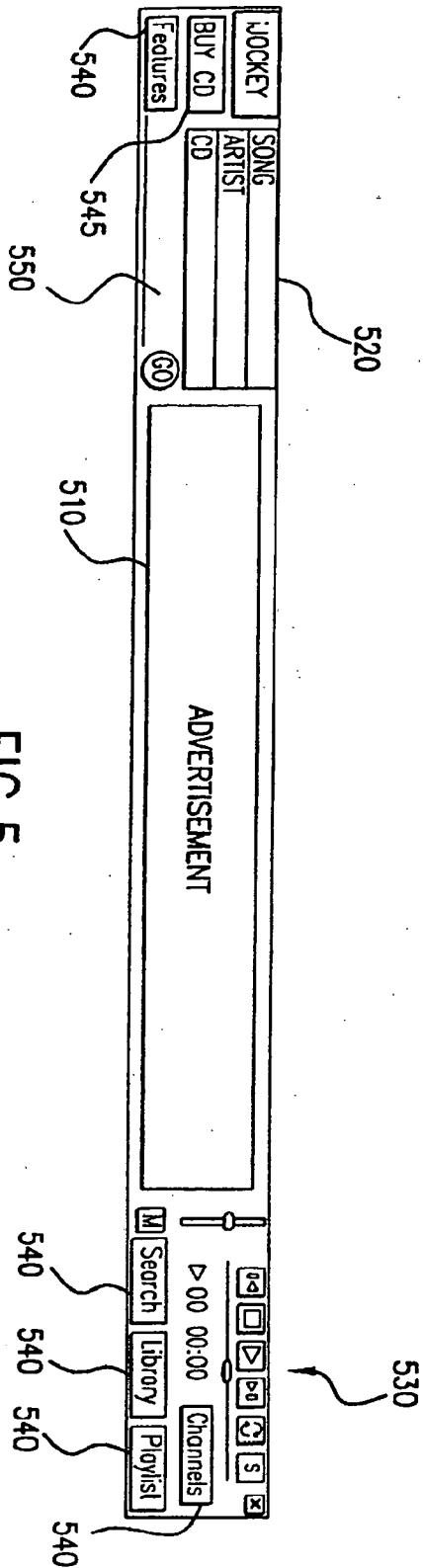


FIG. 5

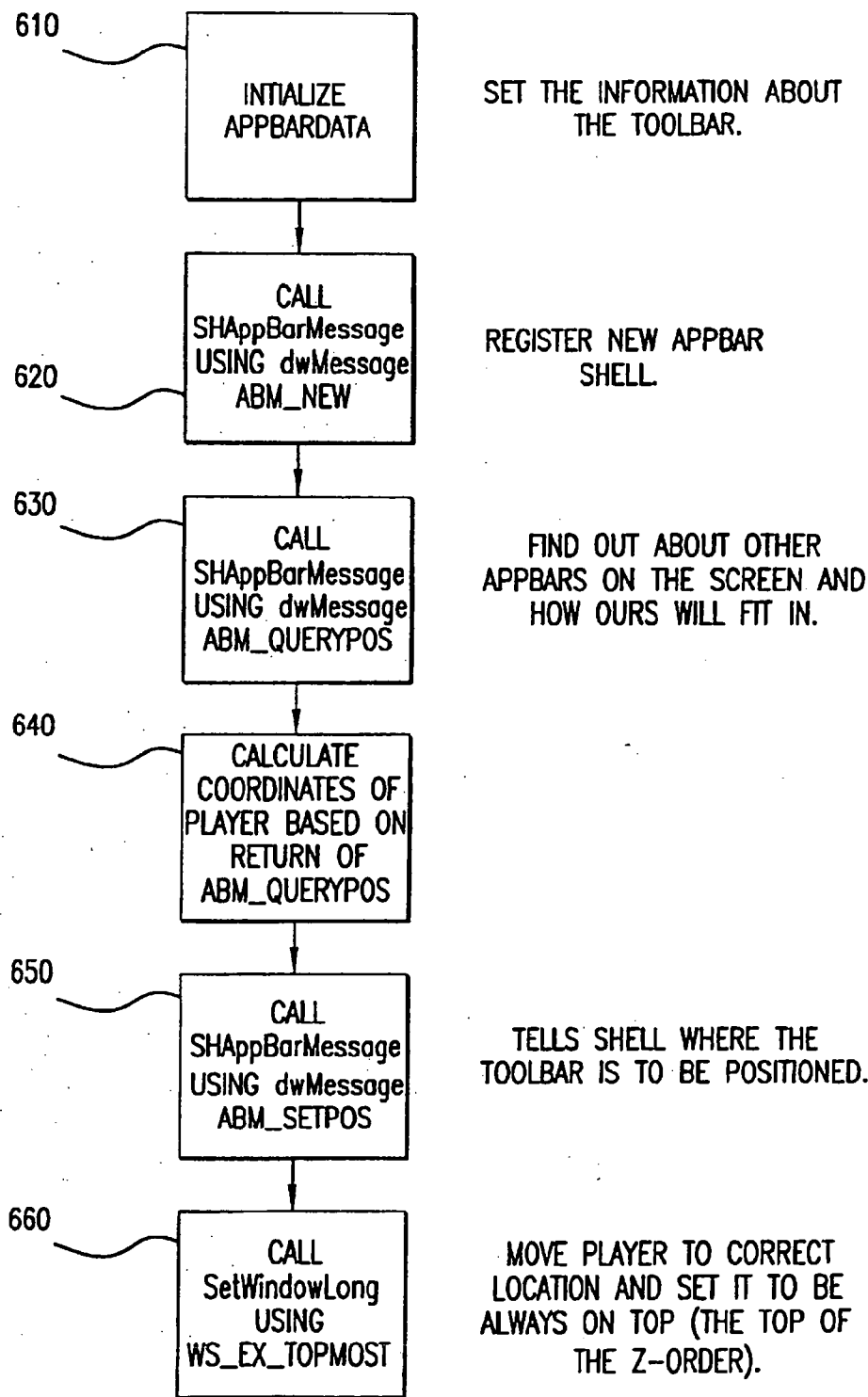


FIG. 6A

CL 000507

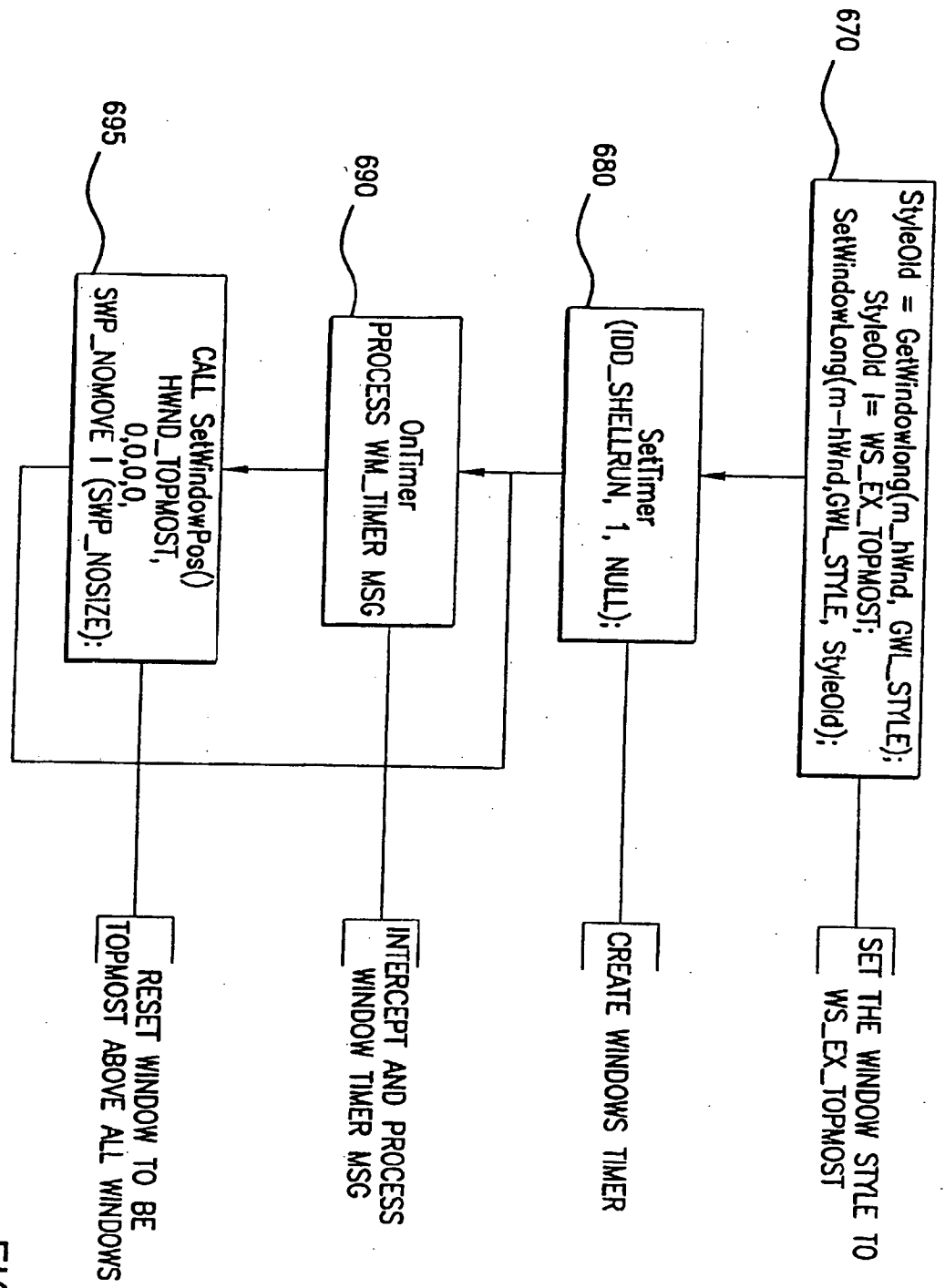


FIG. 6B

CL 000508

MULTIMEDIA CONTENT DELIVERY SYSTEM AND METHOD

BACKGROUND OF THE INVENTION

1) Field of the Invention

This invention pertains to the field of multimedia content distribution, and more particularly, to a system and method for delivering multimedia content from a central database or repository to remotely distributed users over a network, such as the Internet.

2) Description of the Related Art

Multimedia applications have become an important driver for the growth of both the personal computer market and the Internet, indicating their popularity with users. It is apparent that many people enjoy listening to music or watching video programs via their computers, either in a standalone mode or, often, while performing other functions with the computer.

In the office environment, an increasing number of people work with a personal computer (PC). In that case, while working at their computers some workers may play music selections from a compact disc (CD), using the CD-ROM drive and audio processing components present in most new PCs. Also, someone working at home on their personal computer may listen to music while they work. Moreover, as more home computers are equipped and connected with hi-fidelity speaker systems, people may use a home computer as a audio music system, even when they are not using the computer for any other purposes.

However, it is sometimes the case that a person wants to hear one or more particular songs for which they do not presently have a copy of the recording. Also, it is often the case that a person wants to hear one or more music selections from a particular recording before making a purchase decision. And sometimes an individual may just want to hear a collection of songs from one particular artist. In other words, listeners desire the freedom and flexibility to choose exactly what songs they hear, in the order they choose, and at times of their own choosing.

Of course radio stations play music selections to which an individual may listen. Some PCs are equipped with radio tuners so that an individual may listen to broadcast radio stations via his or her PC. Moreover, many broadcast radio stations also transmit their broadcast audio signal over the Internet. And other specialized "Internet radio stations" have been developed which transmit a radio-like audio signal over the Internet only from a web site to which listeners connect. Thus, individuals may listen to many radio stations via a personal computer which is connected to the Internet.

For example, one advertisement-sponsored Internet web site known to the inventors, SPINNER.COM, allows a computer user to select from and listen to multiple Internet radio stations each of which is tailored to a particular musical format. SPINNER.COM uses its own downloadable music player for listeners to connect over the Internet with streaming audio servers associated with the SPINNER.COM radio stations. SPINNER.COM earns revenue to support its music service from Internet "banner ads" which appear in the music player window. Although a user may set the SPINNER.COM music player to remain on a topmost level of windows displayed on the user's computer display screen, the user may also allow the SPINNER.COM music player to be minimized or covered with other open windows on a user's computer display screen, so that the advertisements may not actually be viewed by the listener. In other words,

the display of advertisements on the user's computer display screen is fully within the user's control. So the value of the advertisements to the advertisers is diminished.

But with Internet radio stations, as with AM and FM radio stations, the songs which are played are chosen by a program director and can not be tailored to each individual listener's choices. Neither broadcast nor Internet radio stations meet the desire for total flexibility of music choice by a listener.

Other Internet music services have been developed which allow a listener more freedom to choose the music selections which he or she wants to hear. Internet music services such as RADIO SONICNET and RADIOMOI.COM allow a listener a limited capability to program his or her own "customized" radio station.

RADIO SONICNET allows a listener to select and rank musical artists and musical categories of interest to the listener to create a customized radio station. RADIO SONICNET then provides the listener with a list of musical artists whose music will be played on the radio station. Individual song selections, play frequency, and song order are all determined by the RADIO SONICNET music service without any direct listener control. To create a "custom" radio station, a listener interacts with musical preference forms supplied to his or her computer's existing Internet web browser over an Internet connection with the RADIO SONICNET web site. All songs are delivered from the RADIO SONICNET server(s) to the listener's computer over an Internet connection with the listener's web browser, and are played on the listener's computer by one or more plug-ins or helper applications associated with the web browser. RADIO SONICNET earns revenue to support its music service from Internet "banner ads" which are displayed in the listener's browser window on the user's computer display screen while music selections are streamed to his or her computer. However, the user's web browser may be minimized or covered with other open windows on the computer display screen, so that the ads may not be viewed by the user. So, once again, the value of the advertisements to the advertisers is diminished.

Meanwhile, RADIOMOI.COM allows a listener to search a database of available songs by song title, artist, etc., and to add particular songs to a playlist for a "custom" radio station for that listener. The database of songs is divided into non-interactive and interactive songs. Once the listener has completed his or her playlist, he or she must submit it to the RADIOMOI music service for approval. The music service then checks the playlist against a predetermined set of rules and informs the listener whether the playlist has been approved or rejected. A playlist of only interactive songs is automatically approved. If the playlist is approved, then the listener may request that the music service begin streaming the songs on the playlist to the listener's computer via the Internet. However, the playlist may be rejected by the music service for one or more reasons, such as having too many consecutive songs by a same artist or from a same album or CD recording. In that case, the listener must edit his or her playlist to conform to the RADIOMOI music service's rules or to contain only interactive songs.

To create a "custom" radio station with RADIOMOI, a listener interacts with song and artist selection forms supplied to his or her computer's existing Internet web browser over an Internet connection with the RADIOMOI.COM web site. All songs are delivered from the RADIOMOI.COM server(s) to the listener's computer over an Internet connection with the listener's Internet web browser, and are played on the listener's computer by one or more plug-ins or helper

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applications associated with the web browser. RADIO-MOI.COM earns revenue to support its music service from Internet "banncr ads" which are displayed in the Internet browser window on the user's computer display screen while music selections are streamed to his or her computer. However, as with RADIO SONICNET, the user's web browser may be minimized or covered with other open windows on a user's computer display screen, so that the ads may not be viewed by the listener.

Accordingly, all of these previous multimedia delivery systems and methods suffer from several disadvantages. For example, none of the previous systems is well adapted to providing an effective advertisement vehicle to support a free Internet music service. In these previous systems, the music player or Internet browser through which the music is being delivered can be minimized or covered on a user's computer display screen by other windows which are open for other active programs. So any ads which are being delivered for display through the music player are not necessarily visible to the user and may not be viewed by the user. This diminishes the value of the advertisements to sponsors, and therefore reduces the amount a sponsor will pay to have the advertisement delivered. In turn, the reduced advertising revenues limit the available funds for purchasing music licensing rights, distribution bandwidth, hardware, and other resources for supporting a free Internet music service.

Accordingly, it would be advantageous to provide a system and method of multimedia content delivery over a computer network which provides increased value to advertisers. It would also be advantageous to provide a system and method of multimedia content delivery over a computer network which provides increased flexibility to users. It would still further be advantageous to provide such a system and method which can deliver multimedia content over the Internet. Other and further objects and advantages will appear hereinafter.

SUMMARY OF THE INVENTION

The present invention comprises a system and method for delivering multimedia content to computers over a computer network, such as the Internet.

In one aspect of the invention, a multimedia content delivery system includes a novel media player which may be downloaded onto a user's personal computer. The media player comprises a user interface which allows a user to search an online database of media selections and build a custom playlist.

In another aspect of the invention, a multimedia content delivery system delivers advertisements which remain visible on a user's computer display screen at all times while a music player is open on a computer user's computer display screen. The advertisements are displayed in a window which always remains on a topmost level of windows on the user's computer display screen even if the user is executing one or more other programs with the computer.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a functional block diagram of a preferred embodiment of an online music delivery system;

FIG. 2 is a functional block diagram of a music player;

FIGS. 3A-C show a preferred embodiment of a user interface for a music player;

FIGS. 4A-C are a flowchart of a process of opening, closing, sizing and resizing user interface panes in a user interface of a music player;

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FIG. 5 is a player toolbar for a music player;

FIGS. 6A-B show a flowchart of a process for establishing and maintaining a user interface at a topmost window on a computer display screen.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

For ease of explanation, the preferred embodiments described herein pertain to the delivery of musical content from a central music library to a plurality of users via the Internet. Nevertheless, it will be understood that the invention is not limited to the delivery of music, but could be used to deliver video or other streaming multimedia content. Also, delivery does not have to occur via the Internet but could also be accomplished over an intranet or a dedicated dial-up network.

A preferred embodiment of an online music delivery system 100 is shown in FIG. 1. The online music delivery system 100 may be used by an online music provider to provide an online music service delivering music selections to one or more users. The online music delivery system 100 includes an online music library 110 and one or more music players 120 operating on one or more personal computers 130 connected to the online music library 110 via Internet connections 140.

The online music library 110 preferably consists of a client interface server 112, an online music database 114 of available songs or music selections, a plurality of song file servers 116 and a plurality of translation/streaming servers 118.

The client interface server 112 provides an Internet home page through which a new user may establish a connection with the online music delivery system 100. For example, a new user may register with the online music service and download an installation file for installing a copy of the music player 120 onto the user's computer. Also, the client interface server 112 may allow a user to access the online music database 114 of available music selections. In that case, the client interface server 112 interfaces with the music player 120 for allowing the user to browse or search the online music database 114 and to implement various features of the online music delivery system 100 as described in more detail below.

The online music database 114 lists all of the songs or music selections available through the online music delivery system 100. Preferably, the online music database 114 indexes the music selections to allow users to access music in a variety of ways. For example, in a preferred embodiment, each music selection is indexed by song title, musical artist, album or compact disc (CD) title, one or more corresponding musical genres, and/or year the recording was made.

The song file servers 116 contain all of the song files available through the online music delivery system 100. Preferably, each music selection is stored in an individual song file in a basic, uncompressed raw format. In that case, all translation, compression, and other formatting is performed by the translation/streaming servers 118 as described in more detail below.

The translation/streaming servers 118 provide the interface points for one or more users to access the music selections of the song file servers 116 through the user's music player 120. The translation/streaming servers receive song files in a raw uncompressed format from the song file servers 116, then compress the song files, and stream the compressed song files across the Internet connection 140 to the user's music player 120.

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FIG. 2 shows a preferred embodiment of a music player 120. Preferably, the music player 120 is downloaded from the online music library 110 across the Internet connection 140 to a user's computer when the user registers with the online music system 100. The music player 120 has several components, including an Internet interface 210, a streaming music interface 220, a decompressor 230, an audio interface 240, and a user interface 250.

When a user opens or launches the music player 120 which is resident on his or her computer, the Internet interface 210 establishes an Internet connection 140 between the user's computer and the online music library 110. The Internet interface 210 may establish a connection with an online Internet service provider (ISP) through which the Internet interface 210 is connected by a TCP/IP or UDP connection with the online music library 110. Preferably, the Internet interface 210 may include a dial-up dialog box to allow a user to specify his or her protocol, including for example an access number, for establishing an Internet connection 140 through an Internet Service Provider (ISP).

The streaming music interface 220 receives compressed song files as data packets from the Internet interface 210 and formats the data packets into a streaming compressed song file.

The decompressor 230 receives the streaming compressed song file from the streaming audio interface and decompresses the file on-the-fly to provide a song file in a general purpose format playable by the audio processing components of the personal computer.

The audio interface 240 interfaces the decompressed song file from the decompressor 230 to the audio processing components of the personal computer.

FIGS. 3A-C show a preferred embodiment of a user interface 250 for a music player 120. As shown in FIG. 3A, the user interface 250 includes a player toolbar 310 and an interactive window 315 comprising one or more user interface panes 320, one or more toggles or handles 330 associated with the user interface panes 320, and a close panes box 335.

In one embodiment, the user interface 250 may have a "lego-like" structure, such that a user may rearrange the appearance of various components on the user's computer display screen. For example, the user may grab and drag various panes appearing in the user interface to various areas of the user's computer display screen as desired by the user.

The player toolbar 310 comprises one or more tools allowing a user to interact with aspects of the online music delivery system 100, preferably including user controls for controlling the audio playback of music selections delivered through the online music delivery system 100. Other features of the player toolbar 310 will be described in more detail below with respect to the preferred embodiment shown in FIG. 5.

The user interface panes 320 within the interactive window 315 display various information to the user and allow the user to affect the operation of the music player 120. In a preferred embodiment, the user interface panes 320 include a search pane 320a, a library pane 320b, a playlist pane 320c, a channels pane 320d, and a features pane 320e. The user interface panes 320 may be closed by a user by selecting or "clicking" the close panes box 335.

One or more of the user interface panes 320 may be displayed at a given time, depending upon the state of the associated handles 330. A user interface pane 320 may be displayed or hidden by a user selecting or "clicking" on the associated handle 330. Preferably, when the associated

handle 330 is in a first "open" position (i.e., when the lever icon is horizontal) then the corresponding user interface pane 320 is displayed to the user. When the handle is in a second "closed" position (i.e., when the lever icon is vertical) then the corresponding user interface pane 320 is minimized. Further details regarding the operation of the handles 330 and the display of the user interface panes 320 will be described below with respect to FIG. 5.

In a preferred embodiment, the search pane 320a includes a search terms entry box 341, a search parameter selection box 342, a search button 343, a search results display subpane 344, a play button 345, a show selection button 346, an add button 347, and horizontal and vertical scrollbars 348, 349.

The search pane 320a provides an interface with the client interface server 112 for allowing the user to browse or search the online music database 114 to locate a particular music selection which may be referenced by song title, artist, album or CD title, musical genre, etc. When the user wants to locate one or more music selections in the online music database 114, he or she enters the search criteria into the search terms entry box 341 and selects a search category through the search parameter selection box 342. Search criteria generally consist of keywords in a song's title, an artist's name, etc. Search parameters may include, for example, the song title, CD title, recording artist, or all of these parameters. The user activates the search by pressing, selecting or "clicking" on the search button 343, through depressing a mouse button, for example.

When the search button 343 is selected, the music player 120 communicates a search request across the Internet connection 140 to the online music library 110. The online music library 110 performs a search of the online music database 114 and returns search results across the Internet connection 140 to the music player 120. All music selections which satisfy the search criteria are displayed in the search results display subpane 344.

In a preferred embodiment, the search parameter selection box 342 includes an Internet search category for searching the Internet for song files. When the user selects the Internet search category and activates the search button 343, the music player 120 communicates a search request across the Internet connection 140 to the online music library 110. In that case, the online music library 110 includes or is linked to an Internet search engine which performs a search of the Internet for song files matching the search criteria. The online music library 110 returns the search results across the Internet connection 140 to the music player 120. All song files which are found by the search engine which satisfy the search criteria are displayed in the search results display subpane 344.

At that point, the user may highlight a music selection in the search results display subpane 344 and select the play button 345. If the user selects the play button 345, then the music player 120 will transmit a request to the online music library 110 to begin streaming the corresponding compressed song file immediately across the Internet to the music player 120. Upon receiving the compressed streaming song file, the music player 120 will decompress the song file and play the music selection back through the user's computer.

Advantageously, in this way a listener may select any music selection available and play it at once, without any reference to any other music selections which are currently playing or which have previously been requested. That is, by searching for and playing music selections in an online

music delivery system 100 according to the present invention, a listener is provided the total flexibility to select any songs from the music database to be played in any order as desired by the user.

Alternatively, if the user highlights one or more music selections in the search results display subpane 344 and selects the add button 347, then the highlighted music selection(s) may be added to a playlist of music selections to be delivered to the user's music player 120. At this point, the playlist pane 320c is opened (if it was closed) and the user selects a playlist to which the highlighted music selection(s) will be added, as described in more detail below.

Advantageously, in this way a listener may select any music selections available via the online music delivery system 100 and add them to one or more playlists in any order, without any reference to any other music selections which are already included in the playlist. That is, a listener or user is provided the total flexibility to select a list of any songs, or entire compact disc recordings, from the music database to be played in any order as desired by the listener.

If the user highlights a music selection in the search results display subpane 344 and selects the show selection button 346, then the library pane 320b opens (if it was closed), displaying the highlighted music selection.

In a preferred embodiment, the library pane 320b includes a favorites button 351, a database display subpane 354, a play button 355, an information button 356, an add button 357, and horizontal and vertical scrollbars 358, 359. Via the database display subpane 354, the library pane 320b provides a hierarchical view into the online music database 114.

In a preferred embodiment, at a topmost hierarchical level a list of musical genres is provided in the database display subpane 354, for example, classical music, country music, show tunes, rock music, jazz music, etc. A list of subgenres may also be provided at a next topmost hierarchical level, for example, within the rock music genre, there may be several subgenres, such as oldies rock, classic rock, heavy metal, grunge rock, etc. At successive lower hierarchical levels, music selections may be classified by recording artist, CD or album title, and song title. A user may select or "click" on an expansion box to view or hide various hierarchical levels.

Upon browsing the online musical database 114 and locating one or more music selections of interest, a user may mark the music selection(s) for more easy retrieval in the future. In a preferred embodiment, the library pane 320b includes a favorites button 351 indicating the location of particular music selections which have been previously marked by the user.

In a preferred embodiment, the database display subpane 354 also shows a directory structure for one or more mass storage devices associated with the user's computer. Thus, the user may view and select one or more song files stored on the mass storage devices. Preferably, the music player 120 can retrieve and play music selections stored onto a mass storage device in a variety of compressed audio formats, such as MP3, REALAUDIO®, LIQUID AUDIO™ etc. Also, the music player 120 may retrieve and play music selections stored on a compact disc, or downloaded onto a hard disk drive of a user's computer, in an uncompressed audio format.

Upon one or more music selections being displayed in the database display subpane 354, the user may highlight a music selection and select the play button 355. If the highlighted music selection is stored on a mass storage device of the user's personal computer, then the music

player 120 will retrieve and play the music selection. However, if the highlighted music selection is stored in the online music library 110, then the music player 120 will transmit a request across the Internet 140 to the online music library 110 to begin streaming the corresponding compressed song file immediately across the Internet to the music player 120. Upon receiving the compressed streaming song file, the music player 120 will decompress the song file and play the music selection back through the user's computer.

Advantageously, a listener may select any music selection available in the online music delivery system 100 and play it immediately, without any reference to any other music selections which are currently playing or which have previously been requested. That is, by browsing for and playing music selections in this way, a listener is provided the total flexibility to select any songs from the online music database 114 to be played in any order as desired by the listener.

Alternatively, if the user highlights one or more music selections in the database display subpane 354 and selects the add button 357, then the highlighted music selection(s) may be added to a playlist of music selections to be delivered to the user's music player 120. At this point, the playlist pane 320c opens and the user selects a playlist to which the highlighted music selection(s) will be added, as described in more detail below.

Advantageously, a listener may browse and select any music selections available and add them to one or more playlists in any order, without any reference to any other music selections which are already included in the playlist. That is, a listener is provided the total flexibility to select a list of any songs from the online music database 114 to be played in any order as desired by the listener.

If the user highlights a music selection in the database display subpane 354 and selects the info button 356, then a dialog box appears on the computer display screen providing more information about the highlighted item. For example, if the highlighted item is a song title, the dialog box may reveal the song length, the year it was recorded, and/or other information of interest.

In a preferred embodiment, the playlist pane 320c includes a playlist display subpane 361, a play button 362, a new button 363, a share button 364, and open button 365, a delete button 366, up and down buttons 367, 368, and horizontal and vertical scrollbars 369, 370. The playlist pane 320c displays a list of all playlists which the user has saved, together with the music selections included in each playlist. The user may create, open, edit, delete, share, and play playlists via the playlist pane 320c.

The playlist display subpane 361 includes a shared column 371, a playlist column 372, and artist column 373, a CD column 374, and a length column 375. The widths of each column in the playlist display pane 361 can be adjusted by dragging the corresponding column separator bar 376. The playlist column 371 provides a hierarchical listing of all playlists which the user has saved. The upper hierarchical level includes a name for the playlist, and the lower hierarchical level includes a song title for each music selection included in the playlist. The music selections are shown in the order in which they will be played in the playlist, with the first music selection at the top and the last music selection at the bottom. For each music selection in the playlist, the artist column 373 provides the name of the recording artist, the CD column 374 provides the title of the CD or album which includes the music selection, and the length column 375 provides the time required for the music selection to play.

A user may add songs to a playlist through the search pane 320a or the library pane 320b as described above. Preferably, the user may reorder the music selection within a playlist by either highlighting a music selection in the playlist display subpane 361 and dragging it to its desired location within the playlist, or by using the up and down buttons 367, 368 to move the highlighted music selection up or down one place at a time. Preferably, the user may delete a music selection from a playlist by highlighting it in the playlist display subpane 361 and selecting the delete button 366.

The user may play a highlighted playlist by selecting the play button 361. Alternatively, in an optional embodiment, when the play button is selected the user may be given the choice to play the highlighted playlist immediately, to schedule a time for the playlist to be played in the future, or to create a queue of playlists to be played sequentially.

By creating and playing playlists of music selections in this way, a listener is provided the total flexibility to select any music selections from the online music database 114 to be played in any order as desired by the listener. In particular, a listener may create and play playlists consisting of an entire CD by one artist, or even several CDs from a same artist, played consecutively.

The user may create a new playlist by selecting the new button 363. In that case, a dialog box is opened on the computer display screen and the user may enter a name for the new playlist. The user may delete a playlist by highlighting it in the playlist display subpane 361 and selecting the delete button 366.

The user may also share a playlist by selecting the share button 364. A shared playlist is a playlist which is stored at the online music library 110 and is accessible to all registered users of the online music system 100. When the user elects to share a playlist by selecting the share button, a dialog box is opened on the computer display screen for the user to provide information about the playlist to be shared, such as the user's name or alias, the total playtime, musical theme, etc. When the user closes the dialog box, the music player 120 transmits the information together with the playlist across the Internet connection 140 to the online music library 110. The shared column 371 of the playlist display subpane 361 indicates whether or not a playlist is shared.

A user may open and save a shared playlist by pressing the open button 365. When the open button 365 is pressed, the music player 120 sends a request across the Internet connection 140 to the online music library 110 for all playlists which may be downloaded from the online music library 110. Then, a new window is opened on the computer display screen showing the shared playlists available from the online music library 110. At this point, the user may highlight a shared playlist to see the music selections included in the playlist. The user can save a shared playlist by selecting the new button 363, or can play a shared playlist by selecting the play button 362.

In a preferred embodiment, the channels pane 320d includes a channel title subpane 381, a channel selection box 382, a play button 383, a channel display subpane 384, two or more channel category tabs 385, a horizontal scrollbar (not shown), and a vertical scrollbar 387. Channels are analogous to radio stations, providing a continuous stream of music selections from the online music service system 100. For each channel, music selections are played from a very long carousel. Although one or more music selections may repeat more frequently, the length of the total play cycle

may be several days or longer. Moreover, in some cases music selections matching certain target criteria for a channel may be randomly selected and played in a channel.

In a preferred embodiment, the online music system 100 includes three different types of channels, namely, preprogrammed channels, user-defined channels, and shared channels. Preprogrammed channels are channels which are programmed by the online music provider to fit popular musical formats such as might exist on conventional broadcast radio. Music selections may be continuously added or removed from each preprogrammed channel. Whenever a user "tunes" to a preprogrammed channel, the user hears the music already in progress, much as if he or she tuned to a radio station. User-defined channels are created in response to a user's particular musical preferences. Preferably, the online music system 100 automatically creates user-defined channels in response to information provided by a user. Shared channels are channels of music delivered to a user which were created and then shared in response to particular musical preferences supplied by one or more other users. Channels will be described in more detail below.

When the preprogrammed channel category tab 385 is selected, the channel title subpane 381 includes a title (e.g., "Jimmy Flavors Spins") indicating that the preprogrammed channel category is active. A list of all preprogrammed channels appears in the channel selection box 382. Information about the channel currently selected in the channel selection box 382 appears in the channel display subpane 384. If a user highlights a channel then selects the play button 383, then the music player 120 will send a request across the Internet connection 140 to the online music library 110 to begin immediately streaming the selected channel to the user's computer. The selected preprogrammed channel is played "in progress" as with a conventional broadcast radio program.

As shown in FIG. 3B, when the user-defined channel category tab 385 is selected, the channel title subpane 381 includes a title indicating that the user-defined channel category is active (e.g., "My Channels"). A list of all user-defined channels appears in the channel selection box 382. Information about the user-defined channel currently selected in the channel selection box 382 appears in the channel display subpane 384. If a user highlights a user-defined channel then selects the play button 383, then the music player 120 will send a request across the Internet connection 140 to the online music database 114 to begin immediately streaming the selected user-defined channel to the user's computer.

As shown in FIG. 3B, when the user-defined channel category tab 385 is selected, the channel title subpane 381 includes four additional buttons: a create button 391, an edit button 392, a delete button 393 and a share button 394.

A user may create a new user-defined channel by selecting the create button 391. When the user selects the create button 391, a dialog box is opened on the computer display screen for the user to enter his or her musical preferences for the channel, together with a channel name. The musical preferences are used to create parameters for the online music system 100 to automatically program the user-defined channel.

A user may edit an existing user-defined channel by selecting the edit button 392. When the user highlights a user-defined channel and selects the edit button 392, a dialog box is opened on the computer display screen showing the user-defined channel name and the musical preferences for the user-defined channel. The user may edit those preferences to change the musical format of the user-defined channel.

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A user may delete a user-defined channel by selecting the delete button 393. When the user highlights a user-defined channel and selects the delete button 393, the highlighted channel is deleted from the user-defined channel list.

A user may share a user-defined channel by selecting the share button 394. A shared channel is a user-defined channel whose parameters are stored at the online music library 110 and which is accessible to all registered users of the online music system 100. When the user elects to share a channel, a dialog box is opened on the computer display screen for the user to provide information about the channel to be shared, such as a channel name, the user's name or alias, musical theme, etc. When the user closes the dialog box, the music player 120 transmits the information together with the channel parameters across the Internet connection 140 to the online music library 110.

As shown in FIG. 3C, when the shared channel category tab 385 is selected, the channel title subpane 381 includes a title indicating that the shared channel category is active. A list of a user's preselected favorite shared channels appears in the channel selection box 382. Information about the shared channel currently selected in the channel selection box 382 appears in the channel display subpane 384. If a user highlights a shared channel then selects the play button 383, then the music player 120 will send a request to the online music database 114 to begin immediately streaming the selected shared channel to the user's computer. If the shared channel is active, i.e., another user is already listening to the shared channel, then the selected channel begins "in progress" as with a conventional broadcast radio program. If no other users are currently listening to the shared channel, then the selected channel begins at the start of its musical rotation.

Preferably, when a channel is being streamed to a user, the user may mark a music selection that is currently playing from the channel as a favorite to be accessed through the library pane 320b. Also, the user may add a music selection that is currently playing from the channel to a playlist in the playlist pane 320c.

As shown in FIG. 3C, when the shared channel category tab 385 is selected, the channel title subpane 381 includes two additional buttons: a browse button 395 and a remove button 396. A user may add a shared channel to the favorite shared channels in the channel selection box 382 by selecting the browse all button 395. When the user selects the browse all button 395, a dialog box is opened on the computer display screen, listing all of the shared channels available through the online music system 100. The user may highlight one or more shared channels and add them to the favorite shared channels. Conversely, when the user highlights a shared channel in the channel selection box 382 and selects the remove button 396, the highlighted shared channel is removed from the favorite shared channels.

The features pane 320e preferably includes buttons which a user may select to implement a variety of special features of the online music delivery system 100. For example, the features pane 320e preferably includes a "chat" button to allow a user to connect to one or more chat rooms hosted by the online music library 110. The chat rooms may allow users listening to a same channel to discuss what they are hearing in real time. In that case, each preprogrammed channel may have an associated chat room. Shared channels may also have a chat room if so specified by the channel's originator.

The features pane 320e preferably includes a "skins" button to allow a user to create, or select a precreated, "skin"

or custom appearance template for the user interface 250 of the music player 120. By changing skins, a user can customize the size, shape, color, or other appearance features of the panes, handles, and buttons of the user interface 250.

The features pane 320e preferably includes an "instant messaging" button for a user to send an instant message via the Internet to one or more users currently connected with the online music delivery system 100. Preferably, the user may have a predefined list of users with which he or she may exchange instant messages.

The features pane 320e preferably includes a "ratings" button to allow a user to rate a music selection and/or to view the ratings of other users regarding music selections in the online music database 114.

The features pane 320e preferably includes a "pay-per-listen" button to allow a user to order special pay-per-listen events, such as new recording releases, concerts, etc. When the user selects the "pay-per-listen" button, a dialog box is opened on the computer display screen listing upcoming "pay-per-listen" events and allowing the user to purchase one or more of these events.

As can be seen, numerous user interface panes 320 exist within the interactive window 315 and may be opened on the computer display screen. If too many user interface panes 320 are opened, then the interactive window 315 cannot fit onto the user's computer display screen. In that case, a horizontal scroll bar 325 appears in the interactive window 315 below the user interface panes 320 to allow the user to scroll across the interactive window 315. Moreover, a user may not only open and close the user interface panes 320 with the handles 330, but may also resize each user interface pane 320.

FIGS. 4A-C show a flowchart of a preferred embodiment of a process which may be executed by a pane management computer program for opening, closing, sizing and resizing the display areas of the user interface panes 320 in the interactive window 315 for display on a computer display screen.

In a first step 402, an interactive window 315 is displayed. At that time, all but one user interface pane 320 are minimized. Then, in a step 403, the pane management program waits for user interaction.

Then, in a step 404, a user interacts with a user interface pane 320. In a step 406, the pane management program determines if the user is resizing the user interface pane 320. If so, then the pane management program executes a resize pane routine at a step 410. If not, then in a step 408, the pane management program determines if the user is toggling (opening or closing) the user interface pane 320. If so, then the pane management program executes a toggle pane routine at a step 450. If not, then the pane management program returns to the step 403.

The resize pane routine begins at the step 410 as shown in FIG. 4B. In a next step 412, the pane management program determines if the interactive window 315 includes a horizontal scroll bar 325.

If the interactive window 315 includes a horizontal scroll bar 325, then in a step 414, the pane management program determines if the user is expanding the user interface pane 320. If the user is expanding the user interface pane 320, then in a step 416 the pane management program allows the user to expand the current user interface pane 320. Then, in a step 418, all of the user interface panes 320 to the right of the user interface pane 320 the user is expanding are pushed to the right. Then the pane management program proceeds to a step 428.

If interactive window 315 includes a horizontal scroll bar 325 and if the user is not expanding the user interface pane 320, then in a step 420 the pane management program allows the user to shrink the current user interface pane 320. Then, in a step 422, all of the user interface panes 320 to the right of the user interface pane 320 the user is expanding are pulled to the left. Then, in a step 424, the pane management program determines if the new width of all of the user interface panes 320 is less than the computer display screen width. If not, then the pane management program proceeds to the step 428. If so, then the pane management program hides the horizontal scroll bar 325 in a step 426 before proceeding to the step 428.

In the step 428, the pane management program determines if the user is done resizing the user interface pane 320. If not, then the pane management program returns to the step 410. If so, then the pane management program exits the resize pane routine and returns to the step 403.

If in the step 412 the pane management program determines that interactive window 315 does not include a horizontal scroll bar 325, then in a step 430 the pane management program determines if the user is expanding the user interface pane 320. If the user is expanding the user interface pane 320, then in a step 432 the pane management program allows the user to expand the current user interface pane 320. Then, in a step 434, all of the user interface panes 320 to the right of the user interface pane 320 the user is expanding are pushed to the right. Then, in a step 436, the pane management program determines if the new width of all of the user interface panes 320 is greater than the computer display screen width. If not, then the pane management program proceeds to the step 444. If so, then the pane management program hides the horizontal scroll bar 325 in a step 438 before proceeding to the step 444.

If the interactive window 315 does not include a horizontal scroll bar 325 and if the user is not expanding the user interface pane 320, then in a step 440 the pane management program allows the user to shrink the current user interface pane 320. Then, in a step 442, all of the user interface panes 320 to the right of the user interface pane 320 the user is expanding are pulled to the left. Then the pane management program proceeds to a step 444.

In the step 444, the pane management program determines if the user is done resizing the user interface pane 320. If not, then the pane management program returns to the step 410. If so, then the pane management program exits the resize pane routine and returns to the step 403.

The toggle pane routine begins at the step 450. In a next step 452, the pane management program determines if the user interface pane 320 is maximized.

If the user interface pane 320 is maximized, then in a step 454 the user interface pane 320 title bar changes from horizontal to vertical and the user interface pane 320 is no longer displayed. Then, in a step 456, user interface panes 320 to the right of the current user interface pane 320 are shifted to the left against the vertical toggle bar or handle.

Next, in a step 458, the pane management program determines if the interactive window 315 includes a horizontal scroll bar 325. If not, then the pane management program exits the toggle pane routine and returns to the step 403. If so, then the pane management program proceeds to a step 460 where it determines if the width of all of the user interface panes 320 is less than the computer display screen width. If the width of all of the user interface panes 320 is not less than the computer display screen width, then the pane management program exits the toggle pane routine and

returns to the step 403. If the width of all of the user interface panes 320 is less than the computer display screen width, then the pane management program proceeds to a step 462 wherein it hides the horizontal scroll bar 325 and then exits the toggle pane routine and returns to the step 403.

If in the step 452, the pane management program determines that the user interface pane 320 is not maximized, then in a step 464 the user interface pane 320 title bar changes from vertical to horizontal and the user interface pane 320 is displayed underneath the user interface pane 320 title bar. Then, in a step 466, user interface panes 320 to the right of the current user interface pane 320 are shifted to the right.

Next, in a step 468, the pane management program determines if the user interface panes 320 include a horizontal scroll bar 325. If so, then the pane management program exits the toggle pane routine and returns to the step 403. If not, then the pane management program proceeds to a step 470 where it determines if the width of all of the user interface panes 320 is greater than the computer display screen width. If the width of all of the user interface panes 320 is not greater than the computer display screen width, then the pane management program exits the toggle pane routine and returns to the step 403. If the width of all of the user interface panes 320 is greater than the computer display screen width, then the pane management program proceeds to a step 472 wherein it displays the horizontal scroll bar 325 and then exits the toggle pane routine and returns to the step 403.

FIG. 5 shows a preferred embodiment of a player toolbar 310 in the interactive window 315 of the music player 120. The player toolbar comprises an advertisement component of the user interface 250, as will be described in more detail below.

In a preferred embodiment, the player toolbar 310 is an application desktop toolbar according to the WINDOWS® operating system. In that case, the player toolbar 310 is automatically set to be a topmost desktop toolbar which remains on a user's computer display screen at all times regardless of other applications which may be open on the user's computer desktop. In other words, the player toolbar 310 is automatically set to be a topmost desktop toolbar on a z-order (z-axis) stack of desktop toolbars or windows on the display screen. Also, the player toolbar occupies a topmost or bottommost position (y-axis) on the user's computer display screen. All other open windows on the user's computer display screen are then "resized," or pushed up or down, to fit within the remaining available display area on the user's computer display screen.

Minimally, the player toolbar 310 comprises at least one pane for displaying an advertisement or other information to a user, and one or more player controls. In a preferred embodiment, the player toolbar 310 includes an advertisement pane 510, an information pane 520, a player control pane 530, and several user interface buttons 540.

The advertisement pane 510 includes and displays advertisements. Preferably, the advertisements are delivered across the Internet from the online music library 110 to the music player 120. The advertisements may be simple "banner ads" or may include picture images, animations, video, audio, or any combination thereof. Preferably, each advertisement had a display duration (e.g., 15 seconds, 30 seconds, etc.) after which it is replaced by a next advertisement. An advertisement display duration may be matched to the duration of a particular music selection which is played by the music player 120.

The advertisements may be targeted to a user or group of users, depending upon the music selections they choose to hear, and/or some combination of user demographics. Demographic information may be obtained from users when they subscribe to the online music delivery service. In a preferred embodiment, the advertisements may include ties to particular music selections being played by the music player 120. These may include concert tickets, albums, T-shirts, or other items associated with a particular artist whose music selection is being played. In that case, a user may "click" on an advertisement to open a web browser window where he or she may purchase an advertised product over the Internet.

The information pane 520 preferably includes information about a music selection currently being delivered to the user's computer via the online music delivery system 100. The information may include a song title, an artist name, a CD or album title, etc.

The player control pane 530 preferably includes several player controls for music selections being played by the music player 120. Preferably, the player controls include a play button, a stop button, a previous song button, a next song button, a repeat button, a shuffle button for randomly playing songs, a volume control bar, a balance control bar, an elapsed time/remaining time counter, an elapsed time bar, and an equalizer.

In a preferred embodiment, the player toolbar 310 includes several user interface buttons 540, such as a search button, a library button, a playlist button, a channels button and a features button. If a user selects any of these user interface buttons 540, the corresponding user interface pane 320 is opened and displayed on the computer display screen in the interactive window 315.

Preferably, the player toolbar 310 includes a purchase button 545 to allow a user to purchase a CD or album which includes the music selection which is being played by the music player 120. Additionally, the user may purchase a downloadable copy of a music selection by selecting the purchase button 545 while the music selection is being streamed to the user's computer.

Also, preferably, the player toolbar 310 includes an Internet search button 550 for allowing a user to perform an Internet keyword search. In that case, the online music delivery system 100 may include an Internet search engine for searching the Internet for web sites matching a user's selected keywords. Alternatively, the Internet search button 550 may provide a link to another Internet web site featuring an Internet search engine. In another alternative embodiment, the search button 550 may search directly into the online music database 114.

In a preferred embodiment, the music player 120 operates on a computer with an operating system having a graphical user interface, for example the MACINTOSH® operating system or the WINDOWS® operating system. As is well known, in such an operating system a number of computer programs or applications may have user interfaces which are simultaneously displayed in separate windows on the computer display screen. When two or more windows are open, they may typically be resized to various sizes desired by the user. Also, a first window may be placed over a second window, thus covering or hiding some or all of the second window such that its contents are not displayed on the computer display screen and are therefore not visible to a computer user.

Advantageously, the player toolbar 310 and its associated advertisement pane 510 automatically remain visible on a

user's computer display screen whenever the music player 120 is open and executing on the computer. There is no user control provided in the user interface 250 for a user to minimize or hide the player toolbar 310 on the computer display screen.

In an alternative embodiment, an advertisement component of the user interface 250 may comprise a "floating window" instead of the player toolbar 310. In that case, a floating window remains visible on a user's computer display screen whenever the music player 120 is open. Unlike an application desktop toolbar, the floating window does not be moved by a user to any position on the user's computer display screen, not just the topmost or bottommost position (y-axis) of the user's computer display screen. Also, unlike an application desktop toolbar, the floating window does not "resize" the screen for all other open windows. The floating window may therefore cover portions of other windows open on the user's computer display screen. Nevertheless, like the player toolbar, the floating window is automatically set to remain on a topmost z-order (z-axis) stack of windows displayed on the user's computer display screen, and cannot be minimized by a user or moved off of the user's computer display screen. There is no user control provided in the user interface 250 for a user to minimize or hide the floating window on the computer display screen.

Thus, the advertisement component of the user interface 250 insures that the advertisements always appear on the user's computer display screen as long as the music player 120 is open. This ensures that advertisements are always visible to a user while using the online music service. This in turn makes the advertisements more effective and valuable to advertisers, generating higher advertisement rates. The increased advertisement revenues allow the online music service provider sufficient revenue to procure rights to transmit music selections from many artists, to be played in any order desired by a user.

FIGS. 6A-B show a flowchart of a preferred embodiment of a process which may be executed by a player toolbar display program to create and automatically maintain a player toolbar 310 on a "topmost" level window (z-axis) of a computer display screen running under the WINDOWS® computer operating system. The process automatically places the player toolbar 310 on the "topmost" level window (z-axis) of a computer display screen without any user involvement, and also automatically ensures that the player toolbar 310 remains on the "topmost" level window (z-axis) of a computer display screen despite efforts by a user to remove it therefrom.

In a first step 610, the player toolbar display program initializes data regarding the player toolbar 310. Next, in a step 620, the player toolbar display program registers the player toolbar 310 with the shell of the computer's operating system program. Then, in a step 630, the player toolbar display program retrieves information from the shell regarding other application desktop toolbars for other computer programs which are open on the computer display screen.

From this information, in a step 640, the player toolbar display program calculates the coordinates (x/y axes) for the location of the player toolbar 310 to be displayed on the computer display screen. Then, in a step 650, the player toolbar display program informs the shell of the computer's operating system where the player toolbar 310 will be displayed on the computer display screen. Next, in a step 660, the player toolbar display program calls a subroutine to place the player toolbar 310 at the correct position (x/y axes) on the computer display screen and to make it the "topmost"

window on the stack (z-axis) of windows displayed on the user's computer display screen. In other words, the player toolbar 310 is displayed such that it is not covered by any other window or application desktop toolbar on the computer display screen. The player toolbar display program displays the player toolbar 310 at either the very top or the very bottom position on the computer display screen. All other open windows on the user's computer display screen are resized, or pushed up or down, to fit within the remaining available area on the user's computer display screen.

In a step 670, the player toolbar display program sets the window style for the player toolbar to be at the topmost position (z-axis) on the "stack" of windows on the computer display screen. Then, to insure that the player toolbar 310 maintains the topmost position on the stack of windows on the computer display screen, in a step 680 the player toolbar display program sets a timer to return a message when a predetermined time interval expires. Preferably, the predetermined time interval is set to a short enough duration to insure that the player toolbar 310 always appears to a user to be the topmost window. In a step 690, the player toolbar display program sets a handle so that when the timer expires, the player toolbar display program will recognize the timer. Finally, in a step 695, when the player toolbar display program receives the timeout message, the player toolbar display program calls a subroutine to again place the player toolbar 310 at the correct position on the computer display screen and to make it the "topmost" level window on the stack of windows displayed on the user's computer display screen. Then, the program returns to step 690 and repeats the loop. In this way, the player toolbar display program ensures that the player toolbar 310 remains at the "topmost" window on the stack of windows displayed on the user's computer display screen so long as the music player 120 is open.

In one embodiment, the player toolbar display program recognizes attempts by a user to cover the player toolbar 310 or to force the player toolbar 310 from being displayed on the "topmost" window on the stack of windows displayed on the user's computer display screen. In that case, the player toolbar display program displays a warning message to a user that the player toolbar must remain on the computer display screen at all times in order for the user to continue receiving music selections from the online music service provider. Optionally, after repeated attempts by a user to force the player toolbar 310 from being displayed as the "topmost" window on the stack (z-axis) of windows displayed on the user's computer display screen, the player toolbar display program may cause the music player to disconnect from the online music library, to stop playing music selections, and to close.

In an alternative embodiment where the user interface substitutes a floating window for the player toolbar, then the steps 670 through 695 of the above-described player toolbar display program may be used to create and automatically maintain the floating window on a "topmost" level window (z-axis) of a computer display screen running under the WINDOWS® computer operating system. The process automatically places the floating window on the "topmost" level window (z-axis) of a computer display screen without any user involvement, and also automatically ensures that the floating window remains on the "topmost" level window (z-axis) of a computer display screen despite any efforts by a user to remove it therefrom.

The user interface 250 may include other desirable features. For example, when a music selection is being delivered from the online music library 110 to the music player 120 and is being played through the user's computer, a

special display scrolling window or "ticker" may be opened on the computer display screen wherein the song lyrics are scrolled. Also, the user interface 250 may include a control or button for allowing a user to "rip" a CD, that is, to copy music selections from a CD onto a hard disk drive in the user's computer.

While preferred embodiments are disclosed herein, many variations are possible which remain within the concept and scope of the invention. For example, although the preferred embodiment has been described in terms of an online music delivery system, the invention in its various aspects may be applied appropriately to an online video delivery system. Such variations would become clear to one of ordinary skill in the art after inspection of the specification, drawings and claims herein. The invention therefore is not to be restricted except within the spirit and scope of the appended claims.

What is claimed is:

1. A multimedia content delivery system for delivering multimedia content across a computer network to a user computer having a display screen, audio processing components, and an operating system supporting graphical user interfaces, the system comprising:

on online music library, comprising,
a song file server for storing song files, and
an online database of the song files; and

a music player resident on the user computer for accessing the online database via the computer network and selecting therefrom selected song files to be delivered across the computer network to the user computer,

wherein said music player includes a user interface displaying an advertisement on a topmost level of windows on the display screen at all times even when other computer programs are being executed by the user computer.

2. The system of claim 1, wherein the online music library further comprises a translation/streaming server receiving the selected song files from the song file server and communicating the selected song files across the computer network to the user computer.

3. The system of claim 2, wherein the computer network is the Internet, and wherein the music player further comprises:

an Internet interface for establishing an Internet connection between the user computer and the translation/streaming server;

a streaming music interface receiving the selected song files via the Internet; and

an audio interface for providing the selected song files to the audio processing components of the user computer to be played by the audio processing components of the user computer.

4. The system of claim 1, wherein the user interface further comprises:

an interactive window comprising a plurality of user interface panes; and

a plurality of handles each associated with a corresponding one of the user interface panes for opening and minimizing the corresponding user interface panes.

5. The system of claim 4, further comprising a close box for closing all of the user interface panes.

6. The system of claim 4, wherein the interactive window comprises:

a search pane for a user to search the online database;

a library pane for providing a hierarchical view of the song files in the database;

a playlist pane for providing a list of song file playlists to the user; and

a channels pane providing a list of preprogrammed channels available through the online music library.

7. The system of claim 6, wherein the user interface further comprises a horizontal scroll bar which is displayed to a user when a width of open user interface panes exceeds a width of the display screen and which is not displayed to a user when the width of open user interface panes is less than the width of the display screen.

8. A method of delivering music to a user via a personal computer having a display screen and audio processing components, the method comprising:

displaying an advertisement on a topmost level of windows on the display screen at all times even when other computer programs are being executed by the personal computer;

providing an online music database of music selections; displaying contents of the online music database to the listener via the display screen;

receiving from the user a list of selected music selections in the online music database; and

delivering the selected music selections to the personal computer.

9. The method of claim 8, further comprising playing the selected music selections through the audio processing components.

10. The method of claim 8, further comprising delivering to the personal computer lyrics for the selected music selections.

11. The method of claim 8, further comprising storing a playlist comprising the list of selected music selections.

12. The method of claim 8, further comprising receiving from the user a scheduled playtime for the selected music selections, and wherein the selected music selections are delivered to the personal computer at the scheduled playtime.

13. A music player for a computer having a display screen, audio processing components, and an operating system supporting graphical user interfaces, the music player comprising:

an Internet interface for establishing an Internet connection between the computer and an online music library;

a streaming music interface for receiving a song file from the online music library via the Internet;

an audio interface for providing the song file to the audio processing components of the computer to be played by the audio processing components of the computer; and

a user interface for user interaction with the music player, said user interface comprising,

an advertisement component for displaying an advertisement on the display screen, and

a display program for automatically setting said advertisement component to displayed in a topmost level of windows on the display screen at all times even when other computer programs are being executed by the computer.

14. The music player of claim 13, wherein the advertisement component comprises a floating window.

15. The music player of claim 13, wherein the advertisement component comprises a player toolbar.

16. The music player of claim 15, wherein the player toolbar comprises:

a player control pane including player controls for the song file being played by the music player; and

an advertisement pane for displaying the advertisement.

17. The music player of claim 13, wherein the song file received by the streaming music interface is a compressed song file, and wherein the music player further comprises a decompressor for decompressing the compressed song file.

18. The music player of claim 13, wherein the user interface further comprises:

an interactive window comprising a plurality of user interface panes; and

a plurality of handles each associated with a corresponding one of the user interface panes for opening and minimizing the corresponding user interface panes.

19. The music player of claim 18, wherein the interactive window comprises:

a search pane for a user to search an online database of song files in the online music library;

a library pane for providing a hierarchical view of the song files in the online database;

a playlist pane for providing a list of playlists to the user; and

a channels pane providing a list of pre-programmed channels available from the online music library.

20. The music player of claim 13, wherein the user interface further comprises a scrolling window for displaying lyrics corresponding to a song file being played by the music player.

* * * * *

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Burrows

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 (45) Date of Patent: **Apr. 23, 2002**

(54) **SYSTEM AND METHOD FOR PLAYING COMPRESSED AUDIO DATA**

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 6,076,063 A * 6/2000 Unno et al. 704/500
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(75) Inventor: **Michael Burrows, Palo Alto, CA (US)**

* cited by examiner

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(57) **ABSTRACT**

A portable audio player stores a large amount of compressed audio data on an internal disk drive, and loads a portion of this into an internal random access memory (RAM) which requires less power and less time to access. The audio player plays the data stored in RAM and monitors the amount of unplayed data. When the amount of unplayed data falls below a threshold, additional data is copied from the disk drive into RAM. When the portable audio player is turned off, a predetermined amount of audio data is stored in a fast-access non-volatile flash memory unit. When the audio player is turned back on, and play is resumed, a suitable portion of this data can be played while data is being loaded from the disk drive into RAM, thus reducing the amount of time a user must wait before receiving data in response to a play request.

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(22) Filed: **Feb. 12, 1999**

(51) Int. Cl.⁷ **G11B 3/90**

(52) U.S. Cl. **369/59.21; 369/47.1; 369/30.3; 704/500; 84/609**

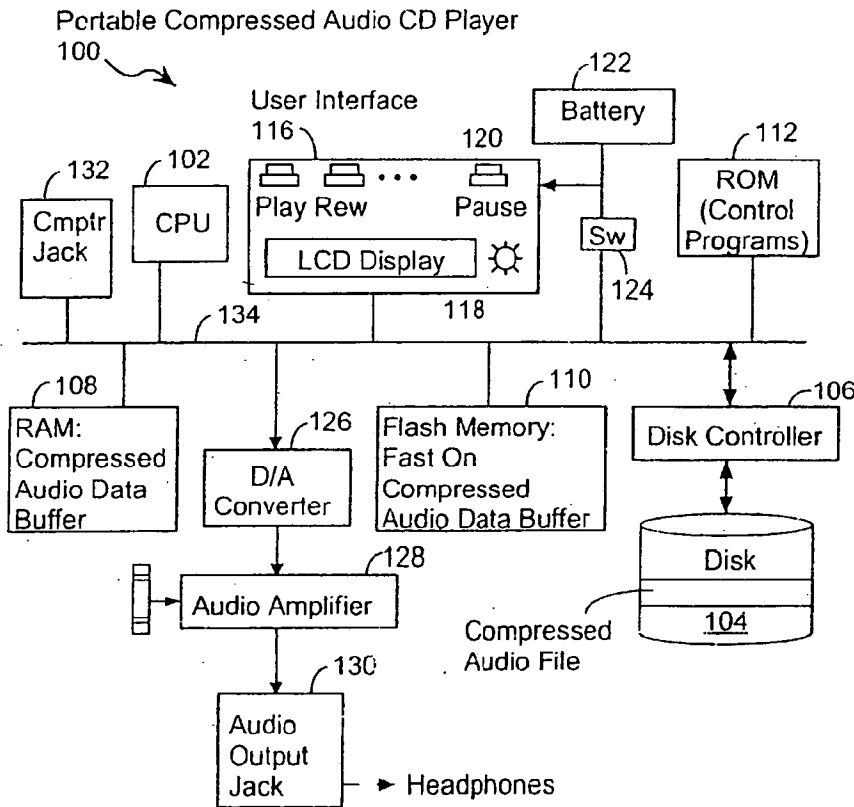
(58) **Field of Search** 369/54, 32, 48, 369/33, 47, 59, 58, 59.21, 59.23, 30.03, 32.01, 30.06, 47.1; 704/500, 501, 502; 84/609

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21 Claims, 4 Drawing Sheets



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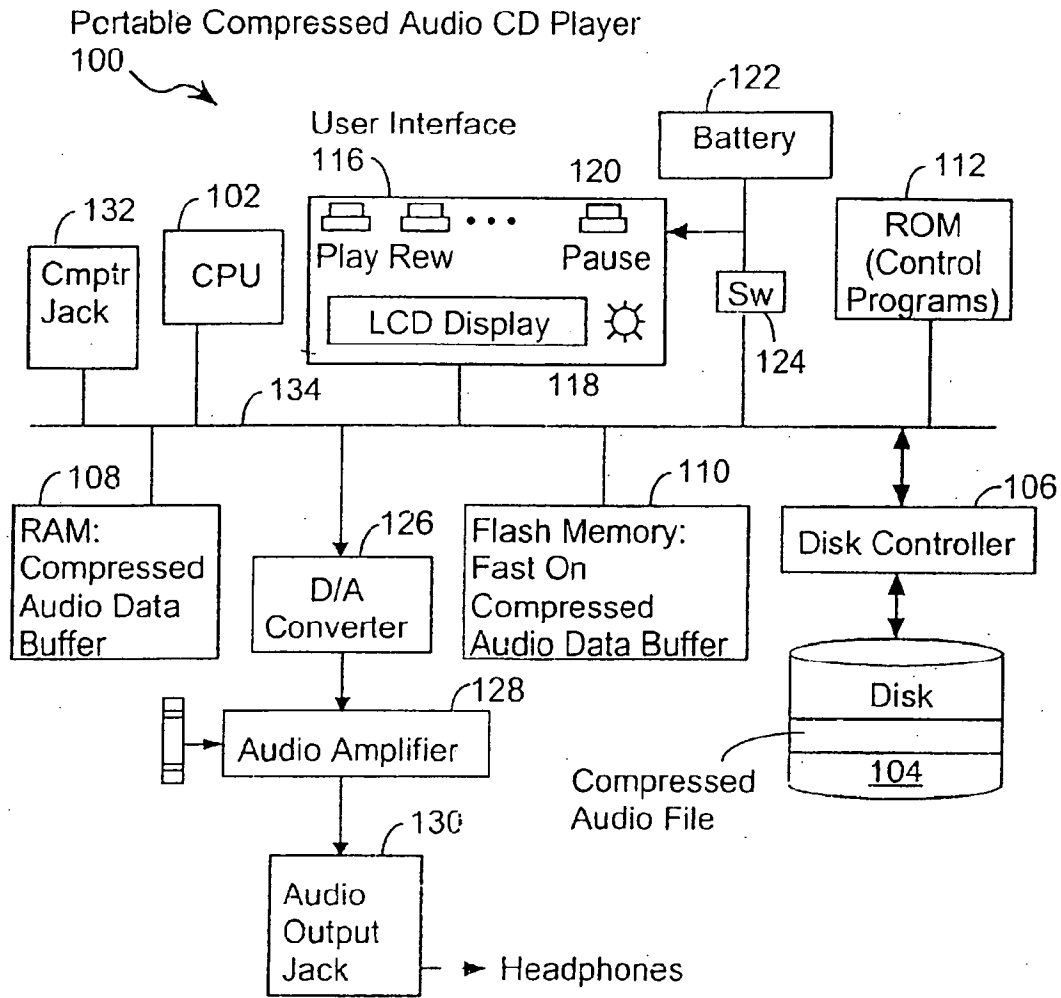


FIG. 1

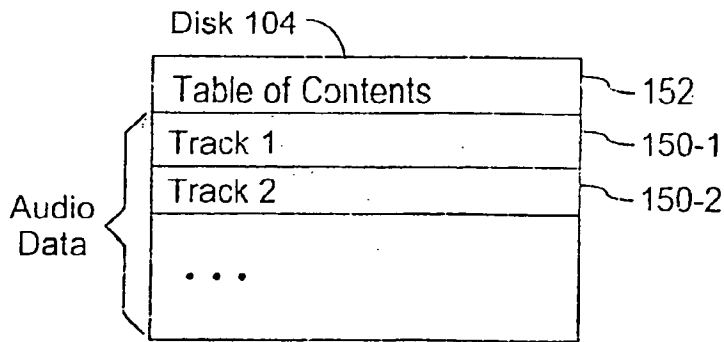


FIG. 2A

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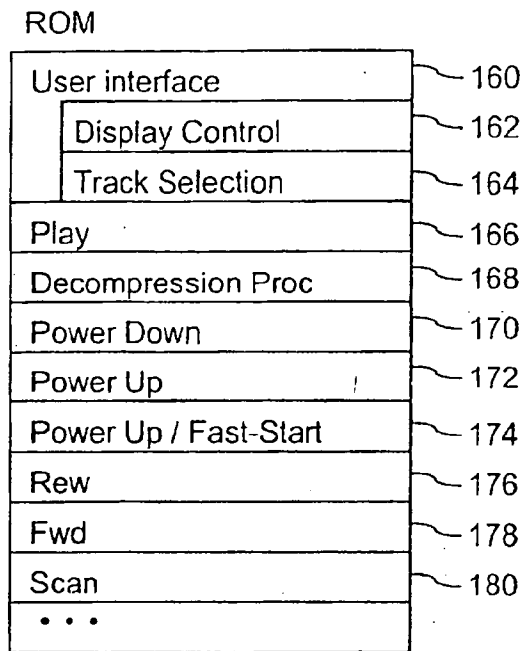


FIG. 2B

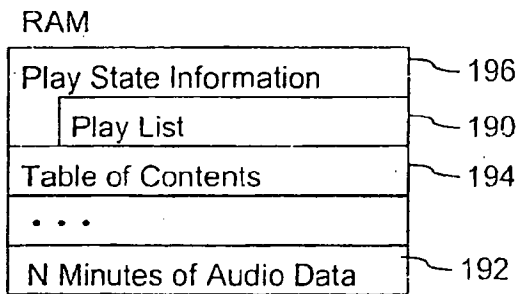


FIG. 2C

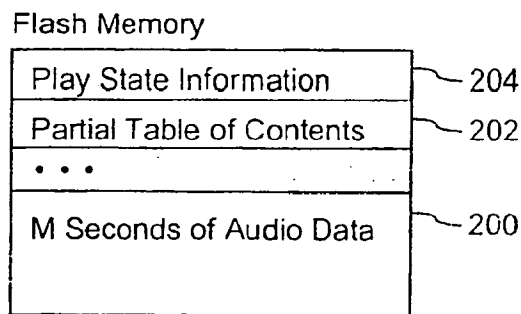


FIG. 2D

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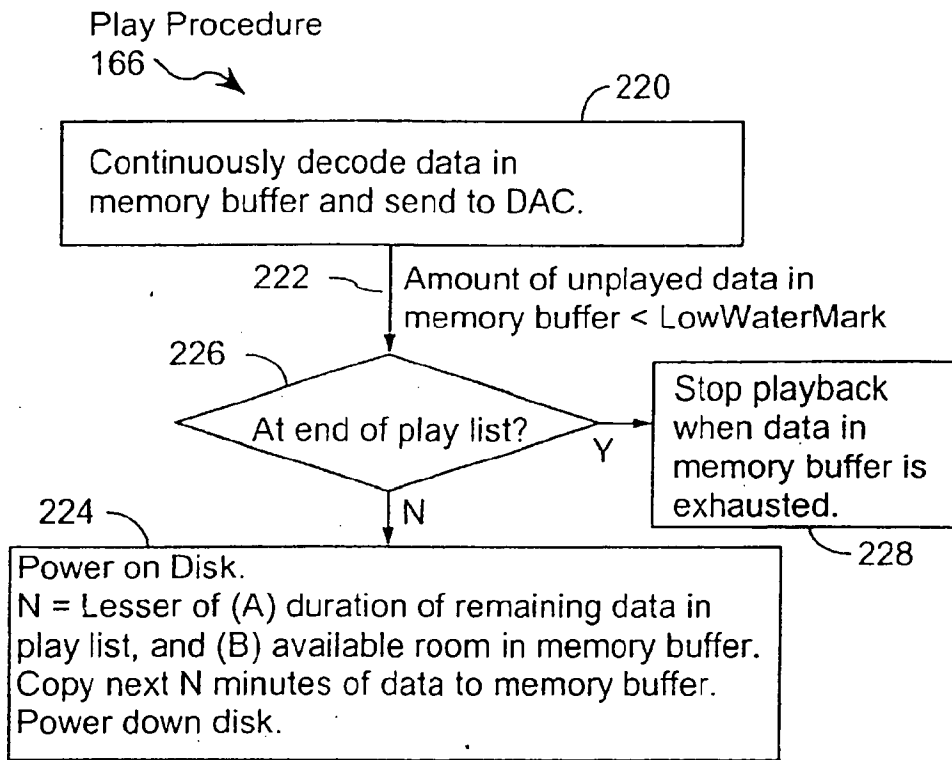


FIG. 3

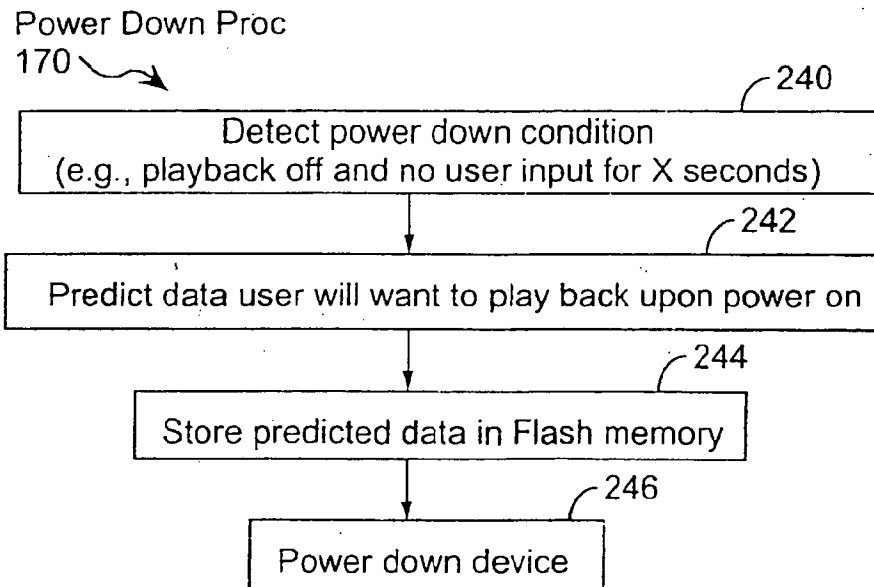


FIG. 4

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Power Up / Fast-Start Procedure

172-174

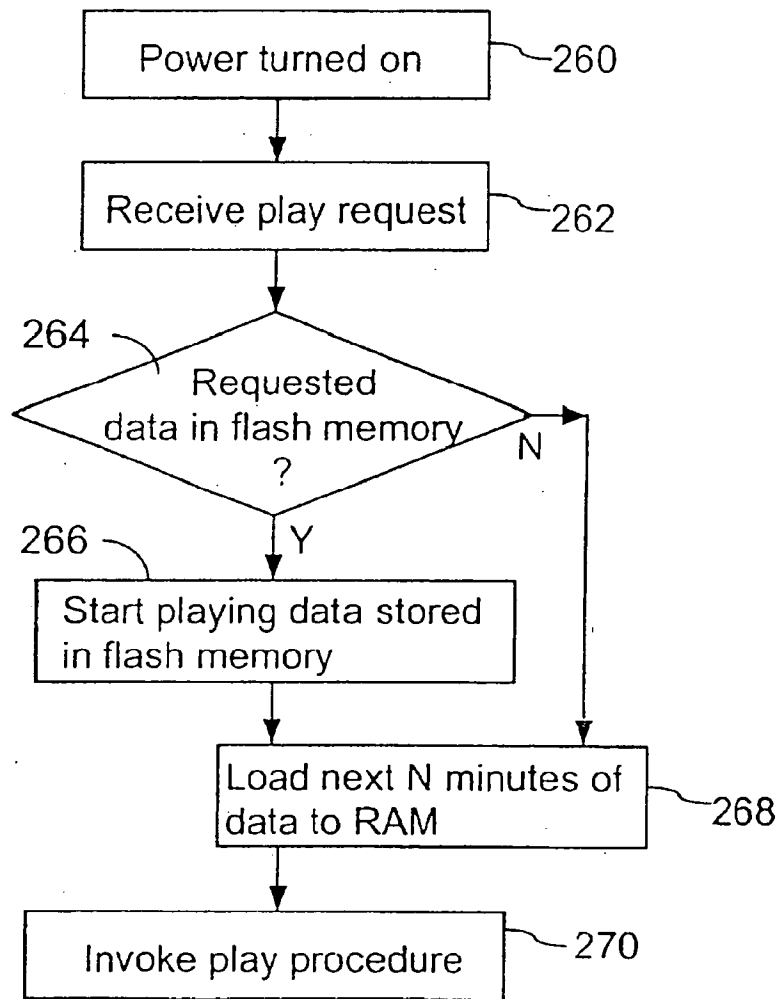


FIG. 5

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SYSTEM AND METHOD FOR PLAYING COMPRESSED AUDIO DATA

The present invention relates generally to a system and method for decreasing the amount of time necessary to resume playing audio data from a portable audio player following a play stoppage.

BACKGROUND OF THE INVENTION

Since the advent of the audio cassette, portable audio players have enjoyed widespread popularity. Portable audio players allow a user to listen to audio data in virtually any setting by freeing the user from the mobility constraints imposed by bulky home-based stereo systems. Because portable audio players are often used in manner that makes connection to an external power supply impractical, portable audio players typically rely on batteries to provide power. Since such batteries have a limited lifetime, it is desirable for the audio player to consume as little power as possible. In addition, because portable audio players are often physically carried by the user, it is desirable to make the portable audio player's batteries small and lightweight.

Current portable audio players play digital audio data stored on a compact disk, or CD, which is manually loaded into the player by the user. CDs are capable of storing more data than cassette tapes and are less susceptible to degradation resulting from repeated use. In addition, CDs allow the user to jump quickly and automatically to different tracks of data, unlike cassette tapes, which require a magnetic tape to be physically spooled to the desired location, and typically do not contain indexing information to indicate where new tracks begin.

However, while CDs represent an improvement over audio cassette tapes, CDs still suffer from a limited amount of storage. For example, most present-day CDs are capable of storing at most 70 to 75 minutes of audio data. Moreover, many of the CDs that a user owns will contain even less data than this, since separate CDs are typically used to record separate programs and events. Even with the advent of the digital video disk, or DVD, with a much greater storage capacity than a traditional CD, it will typically be the case that a user will own a library of many different disks, each containing its own unique set of data. Thus, to listen to several hours of audio data, or to listen to a variety of programs, a user must carry several CDs and manually load the next CD into the player when the previous CD is finished playing. In addition, since CDs are relatively large, they require a relatively large portable unit to contain them. Another disadvantage of CDs is that the manner in which data is read from the disks is sensitive to physical shocks, which can cause undesirable discontinuities, or skips, in the audio output. In addition, power is consumed by continuously spinning the compact disk to obtain data.

The development of effective compression techniques has enabled a greater quantity of audio data to be stored in a much smaller amount of memory. For example, the MPEG audio layer 3 compression format, or MP3, is able to compress CD-quality digital audio data by a factor of about ten, and thus enables a CD-quality audio signal to be delivered at a data rate of 128 kilobits per second. As a result, these compression techniques make it practical for a compressed audio player to use storage media other than traditional cassettes or disks—media that would otherwise be prohibitively expensive to use. For example, the Rio MP3 Software Player, made by Diamond Multimedia, stores data in a 32 megabyte flash memory, a type of non-volatile

electronic memory that allows for writing and erasing of data. By making use of compression techniques, a user can thus store approximately 30 minutes of audio data in the flash memory, whereas without compression, only about 3 minutes of audio data could be stored. However, current flash-memory-based portable audio players are only able to store about half as much data as a typical CD. As a result, whenever the user wants to listen to the data stored on a different CD, the user must manually copy that CD into the flash memory, a process which is much more time-consuming and cumbersome than simply loading a new CD into a traditional portable CD player. Although a flash memory can store additional audio data if a higher compression rate is used, higher compression rates can cause undesirable degradation of the audio data. In addition, flash memory is subject to fatigue, and will wear out after repeated write-erase cycles.

What is needed, then, is a portable player that makes use of a compact, high-capacity non-volatile storage medium, thus allowing the user to listen to a virtually unlimited supply of audio data without having to physically insert or copy additional data into the portable player's memory. While non-volatile magnetic media, such as the hard disk drives used in portable computers, have a large storage capacity, the amount of power that these hard disk drives consume makes them impractical for use in a portable audio player, which would either have to include an undesirably large battery, or have an undesirably short playtime. For example, while the 2.5" disk drives used in laptop computers are designed to consume relatively little power, their power consumption is still much greater than that which is acceptable in a typical CD-based portable audio player. Whereas a portable audio player may have a total battery weight of about 2 ounces, a laptop computer may have a battery weight of more than a pound. Thus, if a portable audio player were to use a hard disk in the same manner as a laptop computer, the battery life of the portable audio player would be prohibitively short.

Moreover, if the hard disk were turned off to conserve power, it would take a relatively long time to access data at a random location on the hard disk in comparison to the time necessary to access random data on a flash memory or CD. More specifically, from a powered off state, it typically takes three to six seconds to "spin up" and begin accessing data at a specified disk location. As a result, powering off the hard disk to conserve power would cause an undesirable delay between a user's request for audio data and the actual delivery of that data to the user.

Accordingly, it is an object of the present invention to provide a system and method for storing a large volume of audio data in a portable audio player. It is another object of the present invention to provide a system and method for reducing the power consumed by a portable audio player, while minimizing the delay between a user's request for audio data and the delivery of that audio data. Yet another object of the present invention is to provide a system and method for providing continuous, uninterrupted audio data to the listener.

SUMMARY OF THE INVENTION

A portable audio player includes a disk storage unit, a volatile memory buffer, and fast-access non-volatile memory buffer. Fast-start logic copies a predefined amount of compressed audio data from the disk storage unit or the volatile memory buffer into the non-volatile memory buffer when the portable audio player is commanded to stop

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playing or to power down. The fast-start logic plays the compressed audio data in the non-volatile memory buffer when the portable audio player is commanded to resume playing.

BRIEF DESCRIPTION OF THE DRAWINGS

Additional objects and features of the invention will be more readily apparent from the following detailed description and appended claims when taken in conjunction with the drawings, in which:

FIG. 1 is a block diagram of a portable audio player system in accordance with the present invention.

FIGS. 2A, 2B, 2C and 2D are block diagrams of the contents of the memory units contained in a system according to the present invention.

FIG. 3 is a flow chart of a method of playing data in one embodiment of the present invention.

FIG. 4 is a flow chart illustrating a method of powering down a portable audio player in accordance with an embodiment of the present invention.

FIG. 5 is a flow chart showing a method for powering up a portable audio player in accordance with an embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following embodiments of the present invention will be described in the context of a portable audio player used to play compressed audio data, although those skilled in the art will recognize that the disclosed systems and methods are readily adaptable for broader application. For example, without limitation, the present invention could be readily applied in the context of a video, multimedia, or uncompressed audio player.

The present invention enables a portable audio player to store a large amount of data while maintaining an acceptable level of power consumption and an optimal data retrieval time. The portable audio player stores a large amount of compressed audio data on an internal, non-volatile storage medium, such as a hard disk drive, and loads a portion of this into a volatile storage medium, such as random-access memory (RAM) which requires less power and less time to access. The audio player plays the data stored in the volatile storage medium while keeping track of the amount of playtime associated with the remaining, unplayed data. Once the remaining playtime decreases to a predetermined level, additional data is copied from the non-volatile storage medium into the volatile storage medium. Because the time necessary to copy a block of data from the non-volatile storage medium to the volatile storage medium is much less than the amount of time it takes to play the same block of audio data, this approach minimizes the amount of time that the non-volatile storage medium must be operated, and thus minimizes the amount of power consumed by the system.

In addition, when the portable audio player is turned off, a predetermined amount of audio data is stored in a fast-access non-volatile storage unit, such as flash memory. When the audio player is turned back on, and play is resumed, a suitable portion of this data can be played while data is being loaded from the main non-volatile storage unit into the volatile storage unit, thus reducing the amount of time a user must wait before receiving data in response to a play request.

FIG. 1 shows an implementation of the portable audio player 100 that preferably includes:

a data processor 102;
 a main non-volatile storage unit 104, preferably a hard disk drive having an associated disk controller 106;
 a volatile storage unit 108, preferably random access memory (RAM);
 a fast-access non-volatile storage unit 110, preferably a flash memory array;
 a control memory module 112, preferably read only memory (ROM), which stores the control programs for the system;
 a user interface 116 that includes a display 118 and one or more buttons 120 or other user input devices;
 a power supply 122, preferably a battery;
 a switch 124 for delivering power from the battery to the system and for shutting power off when the system is powered down;
 a digital to analog data converter 126;
 an audio amplifier 128;
 an audio output jack 130 that can be used to deliver an analog audio signal to a pair of headphones or another audio output device;
 a jack 132 for coupling the system to a computer (not shown), such as for downloading compressed audio data onto the hard disk 104; and
 one or more internal buses 134 for interconnecting the aforementioned elements of the system.

To play audio data via the audio output jack 130, it is necessary for processing unit 102 to decompress a portion of the audio data stored in RAM 108. Once the compressed audio data has been decompressed, it is sent via bus 134 to the digital-to-analog converter 126 which converts the digital audio data to an analog audio signal. This audio signal is then sent to one or more audio amplifiers 128 before being delivered to the audio output jack 130.

In a preferred embodiment, the hard disk 104 is preferably a compact device, such as 2.5" diameter or smaller hard disk device, that includes at least four gigabytes of storage. Four gigabytes of non-volatile disk storage enables the system 100 to store over 65 hours of MP3 compressed audio data. The compressed audio data is preferably received, via the jack 132, from a host computer that compresses the audio data from audio CDs. One of ordinary skill in the art will recognize that any suitable non-volatile storage medium could be used in place of the hard disk used in the preferred embodiment.

Each "track" of each audio CD may be stored as a separate file 150 (FIG. 2A) on the hard disk 104. Referring to FIG. 2A, a table of contents 152 is stored on the hard disk 104. The table of contents, which is composed by the host computer, preferably organizes the compressed files in a hierarchy. For example, the top level could contain music genres such as classical, jazz, country, rock, light rock, and so on. Only music genres for which at least one CD or at least one track has been stored on the hard disk are included in the table of contents. At the second level, within each genre, is a listing of the CDs for which music is stored on the hard disk. At the third level is stored the names of the tracks for each CD stored on the hard disk. If the user has selected individual tracks for storage on the system 100, instead of entire CDs, the second level may reference user specified "pseudo-CDs." The table of contents also includes information about the disk storage location of each track.

The table of contents 152 can be viewed on the display 118, and the user can select CDs and/or individual tracks to be played. User selections are added to a "play list" 190 (FIG. 2B), which is a queue of tracks to be played by the system.

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The host computer, when coupled to the system 100 via the jack 132, can access the table of contents 152, delete entire CDs and/or tracks stored on the hard disk 104, download additional CDs and/or tracks onto the hard disk 104, and replace or update the table of contents 152.

Referring to FIGS. 1 and 2B, the control logic of the system 100 is implemented primarily in the form of control programs that are executed by the system's data processor 102. The system's control programs may be stored in read-only memory (ROM) 112. In a typical implementation, the control programs stored in the ROM will include:

- a set of user interface procedures 160, including a display control procedure 162 for displaying user selected portions of the table of contents, and track selection procedures 164 for enabling the user to select audio tracks to be played;
- a play procedure 166, discussed in more detail below, for controlling the playing of audio tracks;
- a decompression procedure 168 for decompressing compressed audio data;
- a power down procedure 170, discussed in more detail below, for powering down the system and enabling the fast-start feature of the present invention;
- a power up procedure 172 for turning on the system and for invoking the power up fast-start procedure 174 when appropriate; as well as
- other control procedures for implementing such features as fast forward 176, rewind 178, track scanning 180 and the like.

One of ordinary skill in the art will recognize that in an alternate embodiment, the control logic could readily be implemented with a custom-made chip, rather than with software operating in conjunction with a general-purpose processor 102.

FIG. 2C shows a memory-map for RAM 108 in accordance with one embodiment of the present invention. A portion of RAM 108 is devoted to storing a predetermined amount of compressed audio data 192. In addition, RAM 108 preferably stores a copy 194 of the table of contents (copied from the hard disk) and play state information 196. The play state information 196 indicates the state of the portable audio player 100, for example, information regarding the amount of unplayed data stored in RAM, and the playing mode of the device (e.g., fast-forward, normal play, rewind, etc.). The play state 196 also includes a "play list" 190, which is a list of audio tracks to be played.

FIG. 2D shows a memory map for flash memory 110 in accordance with an embodiment of the present invention. Flash memory 110 stores a predetermined amount of compressed audio data 200. In addition, flash memory 110 preferably includes a table of contents 202 indicating the location and identity of data within flash memory, and a play state table 204 which stores, for example, information regarding the play state of the audio player just prior to the device being powered down.

Power Conserving Play Logic

The operation of the portable audio player 100 will now be described with reference to FIG. 3, which is a flow chart of a preferred method of playing audio data in accordance with the present invention. Data is played by continuously reading it from RAM 108, decompressing it, converting it into an analog audio signal, and sending it to the output jack 130 (220). The rate at which the data is read from RAM 108 is dictated by the application. For example, MP3 compressed audio data is typically played at a rate of 128 Kilobits per second.

Play control logic monitors (222) the amount of data that remains in RAM (or equivalently, it monitors the amount of playtime associated with the unplayed data in RAM). To ensure that there is no undesirable break in the audio output, when the playtime associated with the data stored in RAM falls below a predetermined threshold (sometimes called the low water mark), the play control logic determines whether, and how much, additional data will be required by RAM 108, and initiates the transfer of additional data from disk 104 to RAM 108 (224). To transfer data from disk 104 to RAM 108, the play control logic powers on the hard disk, copies data to RAM 108, then powers off the disk 104. The threshold at which data will be copied from disk 104 to RAM 108 will depend on the playtime of the data remaining in RAM 108 and the time required to access disk 104 and transfer data to RAM 108. To ensure that an undesirable break in the audio output does not occur, the threshold should be chosen so that RAM 108 does not run out of data to play before additional data is copied into it from the disk 104. In addition, by playing data directly from RAM 108, rather than from disk 104, undesirable skips in the audio output are avoided, since reading data from RAM 108 is typically not dependent on moving parts that are sensitive to physical jarring.

To minimize power consumption, the frequency and duration of accesses to disk 104 should be minimized. Thus, it is desirable to power on the disk just long enough to copy data into RAM 108, and to play as much of the data stored in RAM as is practical before copying additional data from disk 104. In addition, it is desirable for RAM 108 to contain a relatively large amount of memory. Preferably, the ratio of (a) the time necessary to play the data stored in RAM 108, to (b) the time necessary to copy data from disk 104 into RAM 108 will be greater than five-to-one, and in a preferred embodiment this ratio is approximately sixty-to-one. In any event, the ratio should be at least two-to-one, although any suitable ratio could be chosen in accordance with the principles of the present invention.

For example, in one embodiment of the present invention a 10 megabyte RAM is used in conjunction with a 4 gigabyte hard disk drive with an access time of 5 seconds. Thus, if 128 kilobits of compressed audio data are played every second, RAM will contain approximately 10 minutes of compressed audio data and disk 104 will contain approximately 65 hours of compressed audio data. Assuming it takes 5 seconds to power on the hard disk and an additional 5 seconds to copy 10 megabytes of compressed audio data from the hard disk to RAM, then the system must allow at least 10 seconds to access the disk and copy data to RAM in order to ensure that RAM does not run out of data to play. Thus, for example, a threshold of 20 or 30 seconds could be used in this embodiment. Since disk 104 is only powered on for 10 seconds every 10 minutes of play time, power consumption is minimized.

Of course, the play time associated with the stored audio data will be smaller if the portable audio player 100 is operated in a play mode such as fast-forward. However, this can readily be accounted for by simply initiating access to disk 104 sooner, thereby insuring that RAM 108 will not run out of data to play. In addition, in one embodiment, play control logic will not completely overwrite the data in RAM with data from disk 104 once the threshold is reached. Instead, the final portion of the previously-played data will be retained in case the user wishes to reverse the direction of play. Thus, in this embodiment, the amount of data comprising this final portion would be at least as great as the rewind speed multiplied by the amount of time it takes to access disk 104 and copy data from disk 104 to RAM 108.

When the amount of data remaining in RAM 108 falls below the threshold, but the play list is empty (226), the play procedure stops when the data in RAM 108 is exhausted (228). Further, the last transfer of data from disk 104 to RAM 108, when the play list is exhausted, may only partially fill the RAM 108 with audio data (224).

Fast Start Logic

Referring now to FIGS. 4 and 5, a preferred method for reducing restart latency will be discussed. FIG. 4 is a flow chart of a preferred method for powering down the portable audio player 100. The power down sequence shown in FIG. 4 can be initiated in a variety of ways. For example, a user can command the system to power down by pressing appropriate buttons on the user interface. In addition, power down can be initiated when the control logic detects a predefined power down condition (240). In a preferred embodiment, one predefined power down condition is (A) data is not being played, and (B) no user input has been received for a predefined period of time (e.g., 30 seconds).

Once a power down command is received or generated, the power down method shown in FIG. 4 is initiated. First, the control logic makes a prediction regarding the data that the user will want to access once the unit is turned back on (242). This prediction could be quite simple, consisting of, for example, the next portion of data starting from where the user left off, or could be more complex, consisting of several predictions regarding what the user may desire next, such as the beginning of the user's favorite tracks, as determined by frequency of play. In addition, some or all of these predictions could be made at the time the player is turned off, or, alternatively, could be made in advance. Moreover, it should be understood that these exemplary predictions are provided for illustration only, as one of ordinary skill in the art will recognize that any suitable prediction or group of predictions could be used in accordance with the present invention.

Once a prediction or group of predictions is obtained, the control logic copies blocks of data from the predicted areas of RAM 108 or disk 104 (or both) into flash memory 110 (244). Preferably, the size of these blocks will be large enough so that the playtime associated with each block will be greater than the amount of time it takes to copy data from disk 104 to RAM 108, thus preventing undesirable gaps in play when play is restarted. Once the desired blocks of data have been copied into the flash memory 110, the audio player is powered down (246). In one embodiment, power is removed from the audio player by deactivating switch 118. When power is removed from the portable audio player 100, the data stored in volatile memory, such as RAM 108, will be lost. However, data stored in non-volatile memory, such as disk 104 and flash memory 110, will remain stored.

FIG. 5 is a flow chart of a procedure followed by an exemplary embodiment of the present invention when the audio player is turned back on. When power is turned on (step 260), the audio player waits for the user to request data, such as by pressing the play button on user interface 116. When a command to resume play is received (step 262), the play control logic checks the table of contents stored in flash memory 110 to determine whether the beginning of the data the user has requested to be played corresponds to the data stored in flash memory 110 (step 264). In some embodiments, the system may be turned on by pressing the system's play button, in which case the resume play command is received immediately. If the system was previously in the middle of playing a track when it was shut down, the flash memory will contain data for a next portion of that

track. If the system was not playing a track when it was shut down, the flash memory may contain data for the track last shown on the user display, or other data.

If the beginning of the requested data is stored in the flash memory 110, then the play control logic plays that data (266) by reading it from the flash memory, decompressing it, and sending it to audio output jack 130 via digital-to-analog converter 126 and audio amplifier 128. In one embodiment, data in the flash memory 110 is copied to RAM before it is played. This copying step is fast and not noticeable to the end user.

Preferably, at the same time that the requested data is being played from flash memory 110, the next portion of data responsive to the user's request is copied from disk 104 to RAM 108 (268), so that once the requested data stored in flash memory 110 is finished playing, the audio player can begin playing data from RAM 108 using the procedure set forth in FIG. 3, thus preventing any interruption in play. If the requested data is not contained in flash memory 110, then the requested block is copied from disk 104 to RAM 108 (268) and played according to the play procedure shown in FIG. 3 (270).

Thus, the present invention minimizes the amount of time a user must wait to receive audio output after turning the system on. If the requested data is found in flash memory 110, it can be played immediately, while the remainder of the user's request is copied into RAM 108, thus rendering the step of copying data into RAM 108 transparent to the user.

In one embodiment, the present invention enables a user to skip to tracks of data that are not stored in RAM 108 and begin listening to them without waiting for data to be transferred from disk 104 to RAM 108. For example, in this embodiment, the system maintains a list of the N (e.g., 10 or 20 or 100) tracks last played by the user, and the flash memory 110 stores the first fifteen seconds of each track in that list. Accordingly, when the user asks to play a selected track of data, the play control logic can first check to see if that data is stored in the flash memory unit before copying data for the selected track from disk 104 to RAM 108. Thus, steps 242 and 244 of the power down procedure, for predicting data the user will want to play and storing it in the flash memory, may also be implemented in the play procedure or elsewhere in the system's control logic.

While the present invention has been described with reference to a few specific embodiments, the description is illustrative of the invention and is not to be construed as limiting the invention. Various modifications may occur to those skilled in the art without departing from the true spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. An audio player, comprising:

a first memory unit;

a non-volatile memory buffer;

fast-start logic for copying a predefined amount of audio data from the first memory unit into the non-volatile memory buffer under predefined conditions before the audio player is turned off, and for playing the audio data stored in the non-volatile memory buffer when the audio player is commanded to resume playing;

wherein the first memory unit has a longer data access time than a data access time associated with the non-volatile memory buffer;

whereby the fast-start logic enables the audio player to resume playing audio data within a time period corre-

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sponding to the data access time associated with the non-volatile memory buffer upon receiving a command to resume playing after the audio player has been turned off.

2. The audio player of claim 1, wherein the audio data is compressed; and the audio player further includes: a compressed audio data converter for converting compressed audio data in the first memory unit into a decompressed audio signal; and a communications port for transmitting the decompressed audio signal to a user.

3. The audio player of claim 1, wherein the first memory unit has storage capacity greater than storage capacity of the non-volatile memory buffer, and the first memory unit comprises a hard disk drive that is powered off when the audio player is turned off and the non-volatile memory buffer comprises a flash EEPROM.

4. The audio player of claim 1, wherein said first memory unit comprises a non-volatile memory unit and a volatile memory unit.

5. The audio player of claim 4 further comprising: play control logic for copying audio data from the non-volatile memory unit into the volatile memory unit while said fast start logic is playing the audio data stored in the non-volatile memory buffer, and for playing, without interruption, the audio data stored in the volatile memory unit when the fast start logic finishes playing the audio data stored in the non-volatile memory buffer.

6. The audio player of claim 1, further including: play control logic for playing, without interruption, audio data stored in the first memory unit when the fast start logic finishes playing the audio data stored in the non-volatile memory buffer.

7. A multimedia player, comprising: a first memory unit; a non-volatile memory buffer; fast-start logic for copying a predefined portion of multimedia data from said first memory unit into said non-volatile memory buffer upon the occurrence of a first predefined condition, and for playing the multimedia data stored in said non-volatile memory buffer upon the occurrence of a second predefined condition; wherein the first memory unit has a longer data access time than a data access time associated with the non-volatile memory buffer; whereby the fast-start logic enables the multimedia player to resume playing multimedia data within a time period corresponding to the data access time associated with the non-volatile memory buffer upon the occurrence of the second predefined condition.

8. The multimedia player of claim 7, wherein said multimedia data comprises compressed audio data.

9. The multimedia player of claim 7, wherein said multimedia data comprises audio-visual data.

10. The multimedia player of claim 7, wherein said first predefined condition comprises a command to turn off the multimedia player, and wherein said second predefined condition comprises a command to resume playing multimedia data.

11. The multimedia player of claim 7, further comprising: play control logic, wherein said first memory unit comprises a non-volatile memory unit and a volatile memory unit, said play control logic for copying mul-

timedia data from the non-volatile memory unit into the volatile memory unit while said fast start logic is playing the multimedia data stored in the non-volatile memory buffer.

12. A method of reducing data-retrieval latency in an audio player, comprising:

detecting a first predefined condition; copying a predefined portion of audio data from a first memory unit into a non-volatile memory buffer upon detection of the first predefined condition; the first memory unit having a longer data access time than a data access time associated with the non-volatile memory buffer;

detecting a second predefined condition; and playing the audio data stored in said non-volatile memory buffer upon detection of the second predefined condition;

whereby the audio player begins playing audio data within a time period corresponding to the data access time associated with the non-volatile memory buffer upon the occurrence of the second predefined condition.

13. The method of claim 12, wherein said first predefined condition comprises a command to turn off the audio player, and wherein said second predefined condition comprises a command to resume playing audio data.

14. The method of claim 12, wherein said first predefined condition comprises an absence of user-input to the audio player for a predetermined time interval when said audio player is not playing audio data.

15. The method of claim 12, wherein the predefined portion of audio data that is copied into the non-volatile memory buffer upon detection of said first predefined condition comprises a sequence of the next data to be played by the audio player, said sequence having a predetermined length.

16. A data storage and transmission unit, comprising:

a non-volatile memory unit; a volatile memory unit; a non-volatile memory buffer; the non-volatile memory unit having a longer data access time than a data access time associated with the non-volatile memory buffer; an output port for transmitting data from the volatile memory unit to an output device;

control logic for copying data from the non-volatile memory unit into the volatile memory unit, wherein the time required to transmit the copied data is greater than the time required to copy the data from the non-volatile memory unit into the volatile memory unit; and

fast-start logic for copying a predefined amount of data from the volatile memory unit into the non-volatile memory buffer under predefined conditions before the data storage and transmission unit is commanded to turn off, and for transmitting the predefined amount of data when the data storage and transmission unit is commanded to resume transmitting data.

17. The data storage and transmission unit of claim 16, wherein the non-volatile memory buffer has a data access time that is less than a data access time of the non-volatile memory unit.

18. A method of transmitting an audio signal with a compressed audio data player, comprising:

playing compressed audio data stored in a memory unit, including transmitting compressed audio data from a memory unit to a data converter, converting the com-

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pressed audio data into a decompressed audio signal,
 and transmitting the decompressed audio signal to an
 output port;

detecting a first predefined condition;

5 copying a predefined portion of compressed audio data
 from the memory unit into a non-volatile memory
 buffer upon detection of the first predefined condition;

detecting a second predefined condition; and

10 playing the compressed audio data stored in said non-
 volatile memory buffer upon detection of the second
 predefined condition, and then without interruption,
 playing compressed audio data stored in the memory
 unit.

15 19. The method of claim 18, wherein the step of playing
 the compressed audio data stored in the non-volatile
 memory buffer further comprises:

copying the predefined portion of compressed audio data
 from the non-volatile memory buffer into the memory 20
 unit;

transmitting the predefined portion of compressed audio
 data from the memory unit to the data converter;

converting the predefined portion of compressed audio
 data into a predefined decompressed audio signal; 25

transmitting the predefined decompressed audio signal to
 the output port.

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20. A method of operating an audio player, comprising:
 playing audio data stored in a first memory unit;
 copying a predefined amount of audio data from the first
 memory unit into a non-volatile memory buffer under
 predefined conditions before the audio player is pow-
 ered down; and

after the audio player has powered down and upon
 receiving a resume play command, playing the audio
 data stored in the non-volatile memory buffer, and then
 without interruption, playing audio data stored in the
 first memory unit.

21. An audio player, comprising:
 a first memory unit;
 a non-volatile memory buffer;
 fast-start logic for copying a predefined amount of audio
 data from the first memory unit into the non-volatile
 memory buffer under predefined conditions before the
 audio player is powered down, and for playing the
 audio data stored in the non-volatile memory buffer
 when the audio player is commanded to resume playing
 after being powered down; and

play control logic for playing, without interruption, audio
 data stored in the first memory unit when the fast start
 logic finishes playing the audio data stored in the
 non-volatile memory buffer.

* * * * *

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(54) SINGLE USE MEDIA DEVICE

(57)

ABSTRACT

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(21) Appl. No.: 09/907,734

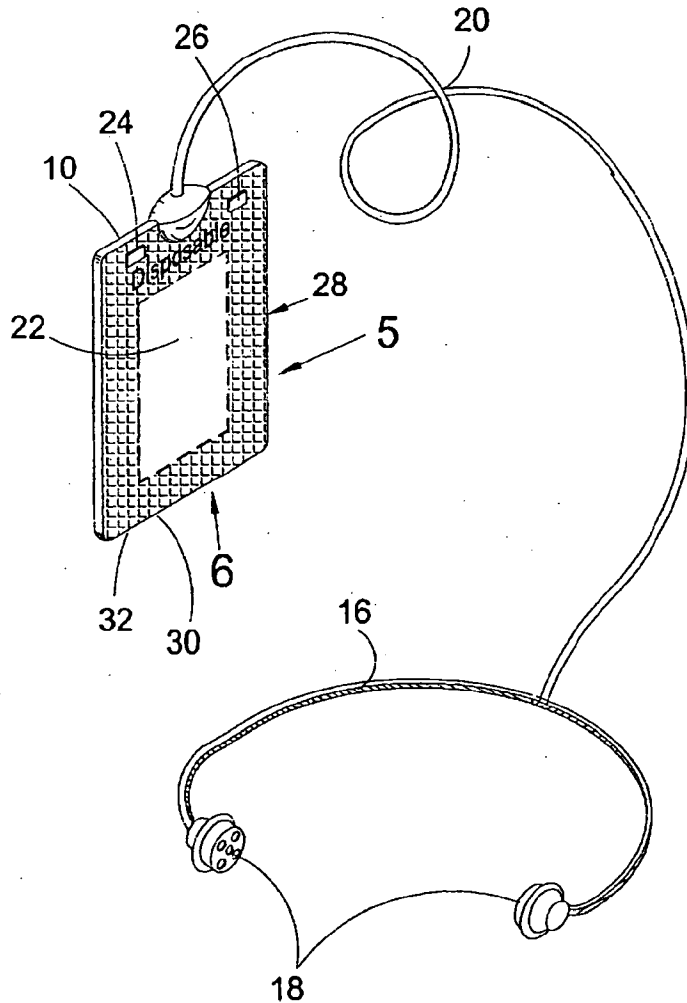
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(52) U.S. Cl. 386/46

The present invention discloses an audio-visual retrieval and playback apparatus for a single use which has a housing having a viewing screen thereon 22 which can be sealed and packaged 14 having a headphone 16 with a pair of earpieces 18 along with wiring 20 which connects the headphone to the housing. The present invention has a play button 24, along with a stop button 26 having slot 28 which accepts audiovisual cards along with a pair of ports 30, 32 for interfacing with another computer. Data can be retrieved from an external database having a plurality of audio video data for download. A user views the collection of audio video data and selects an audio video datafile for download to a disposable player that will retain the audio video datafile for later use.



CL 000530

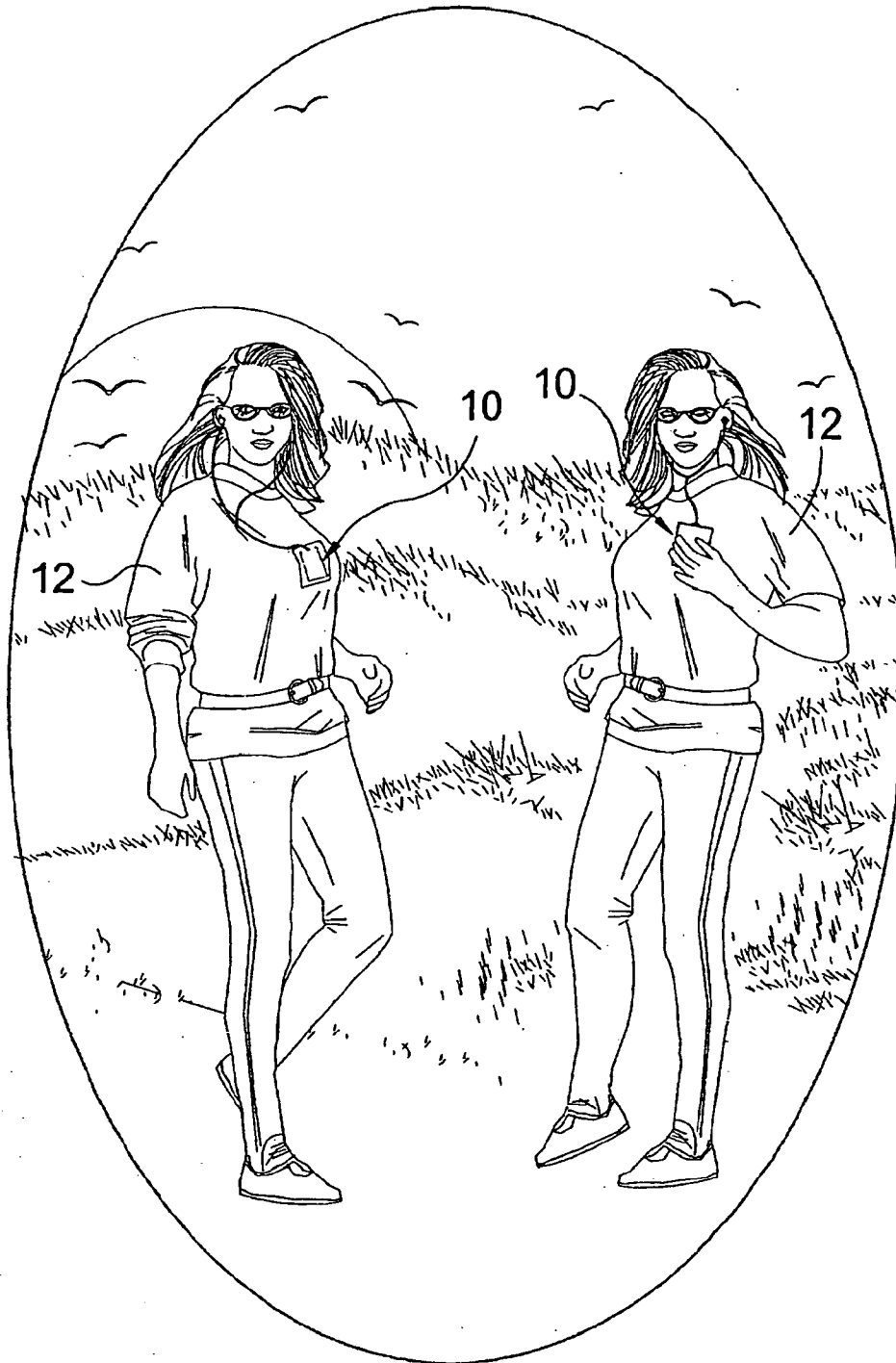


FIG 1

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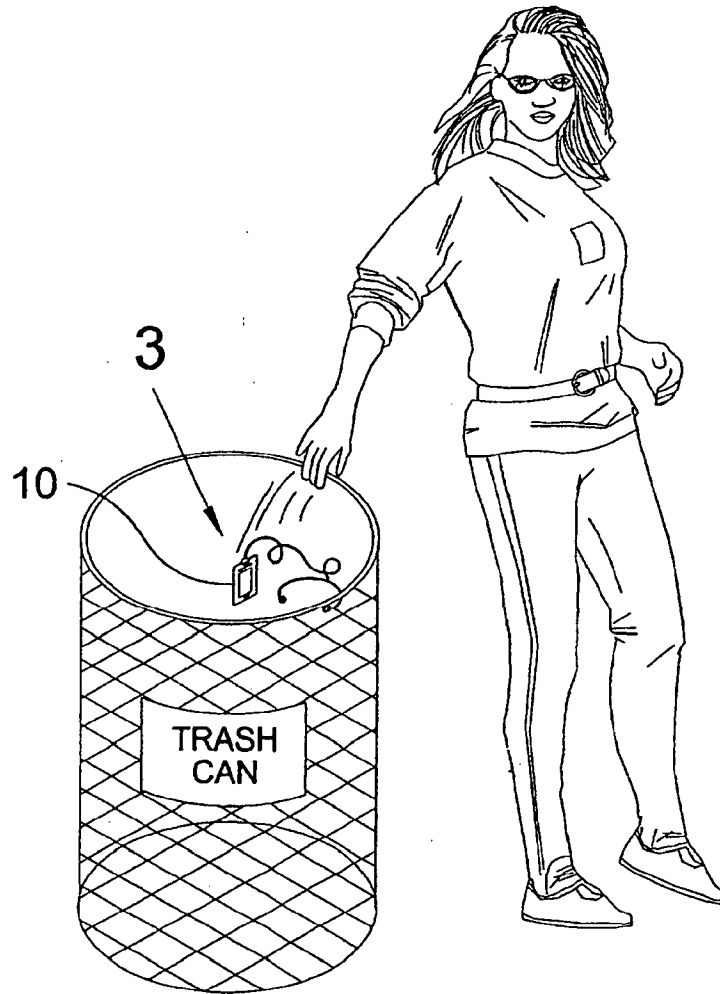


FIG 2

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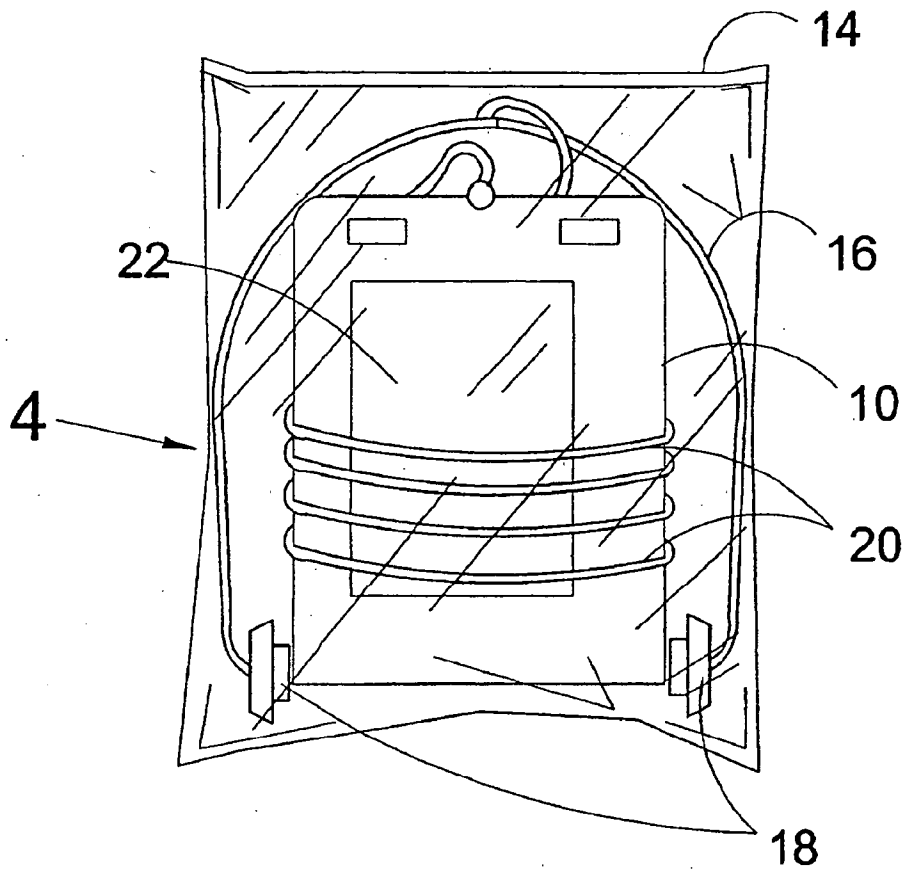
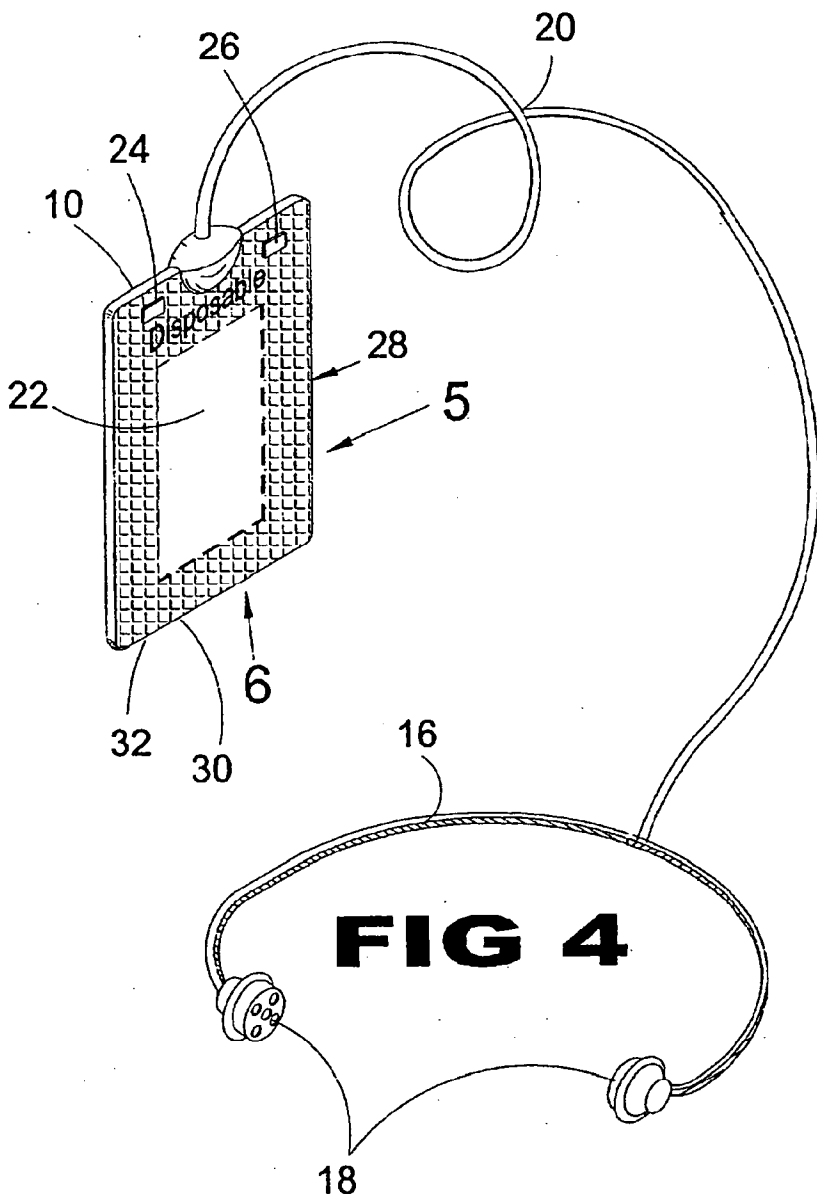


FIG 3

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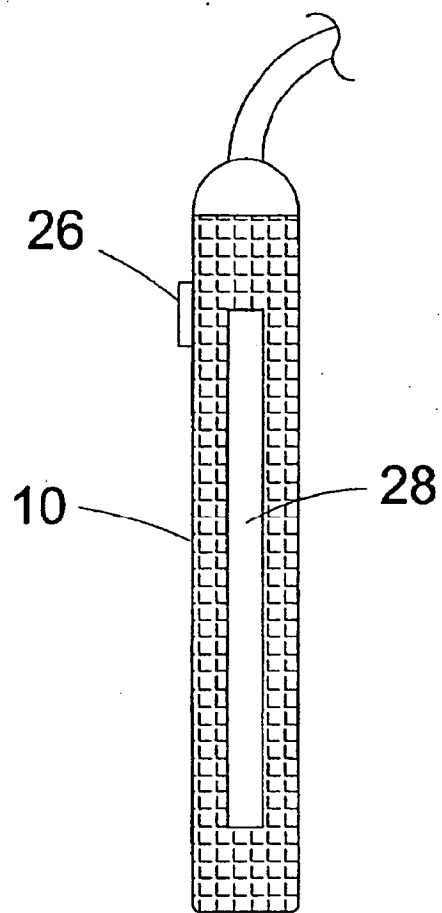


FIG 5

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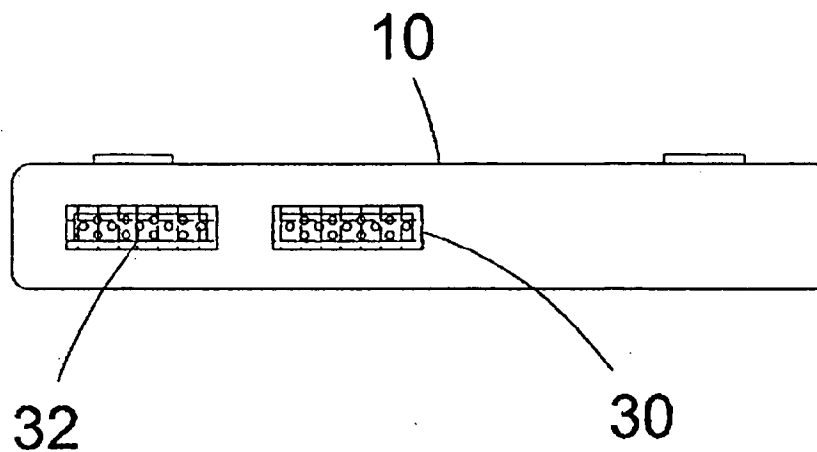


FIG 6

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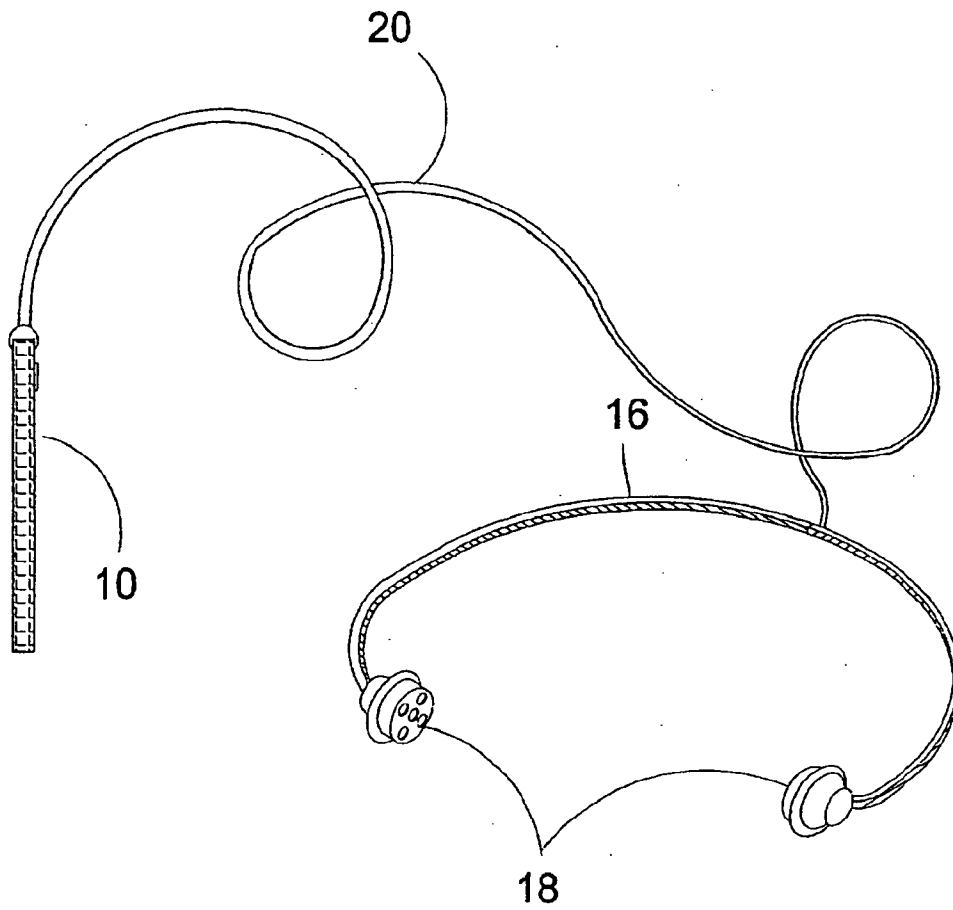


FIG 7

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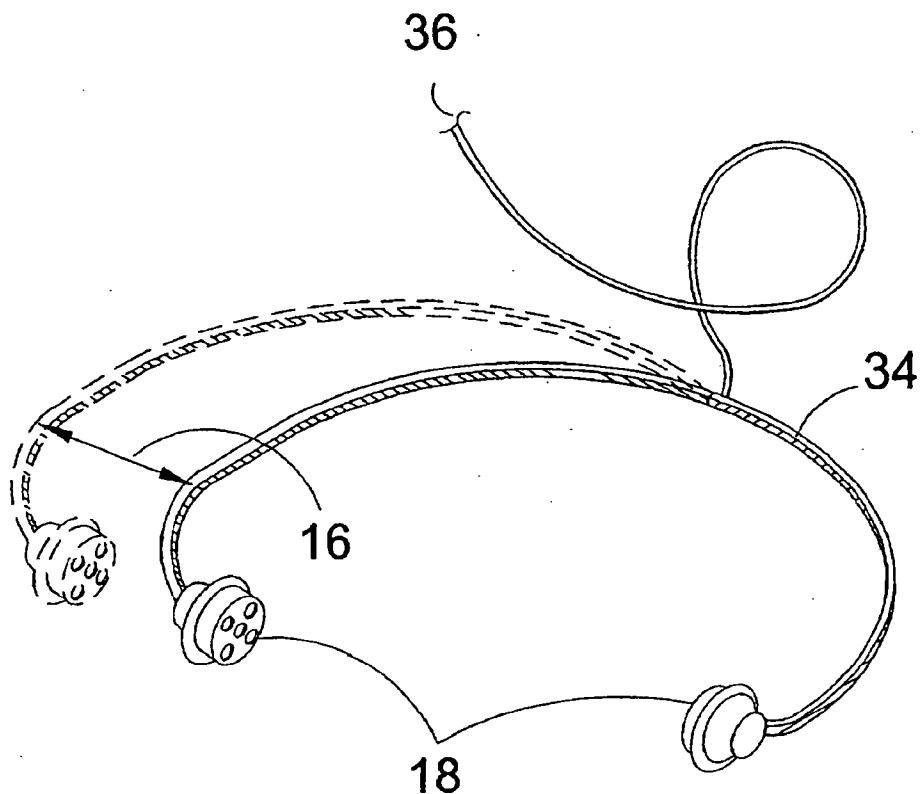
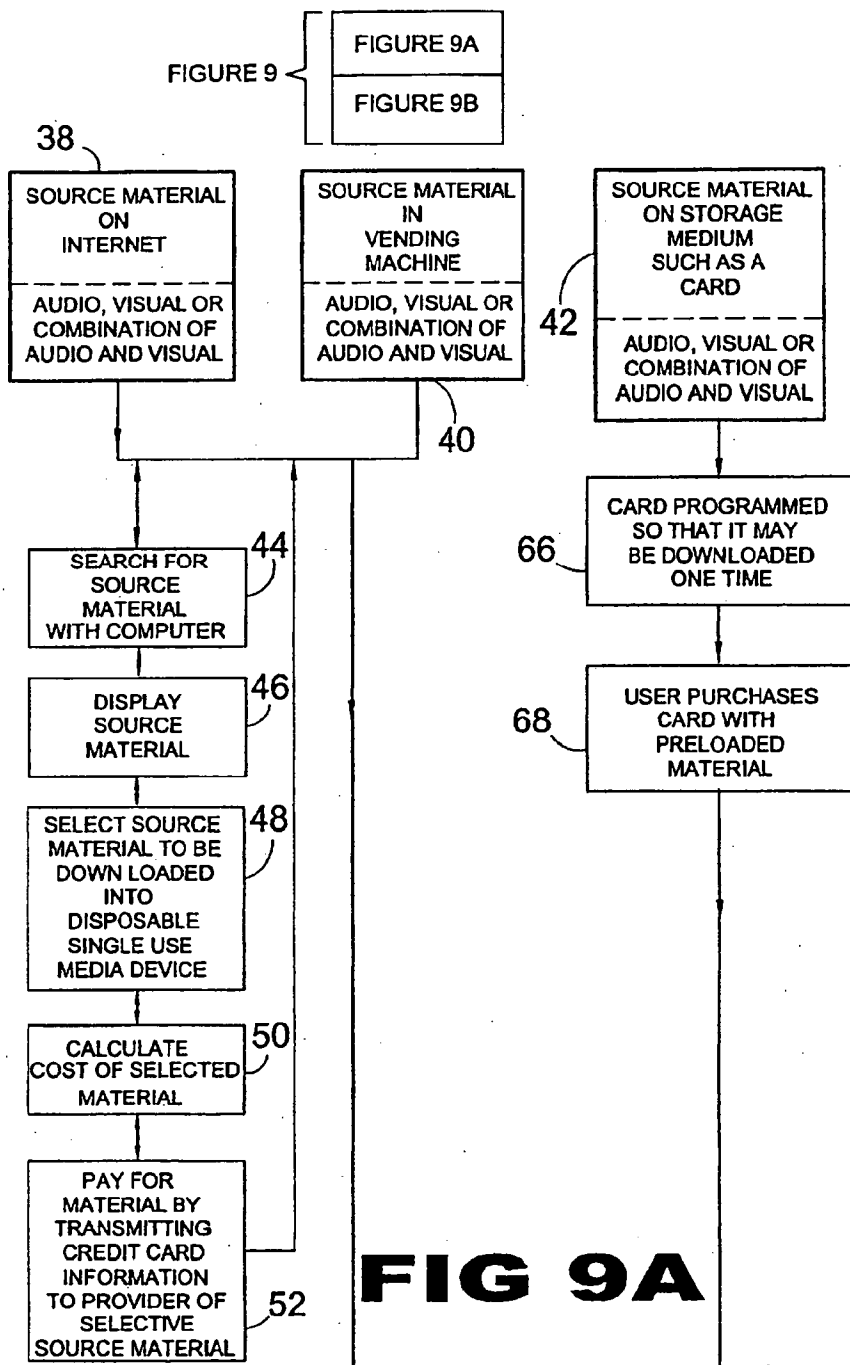


FIG 8

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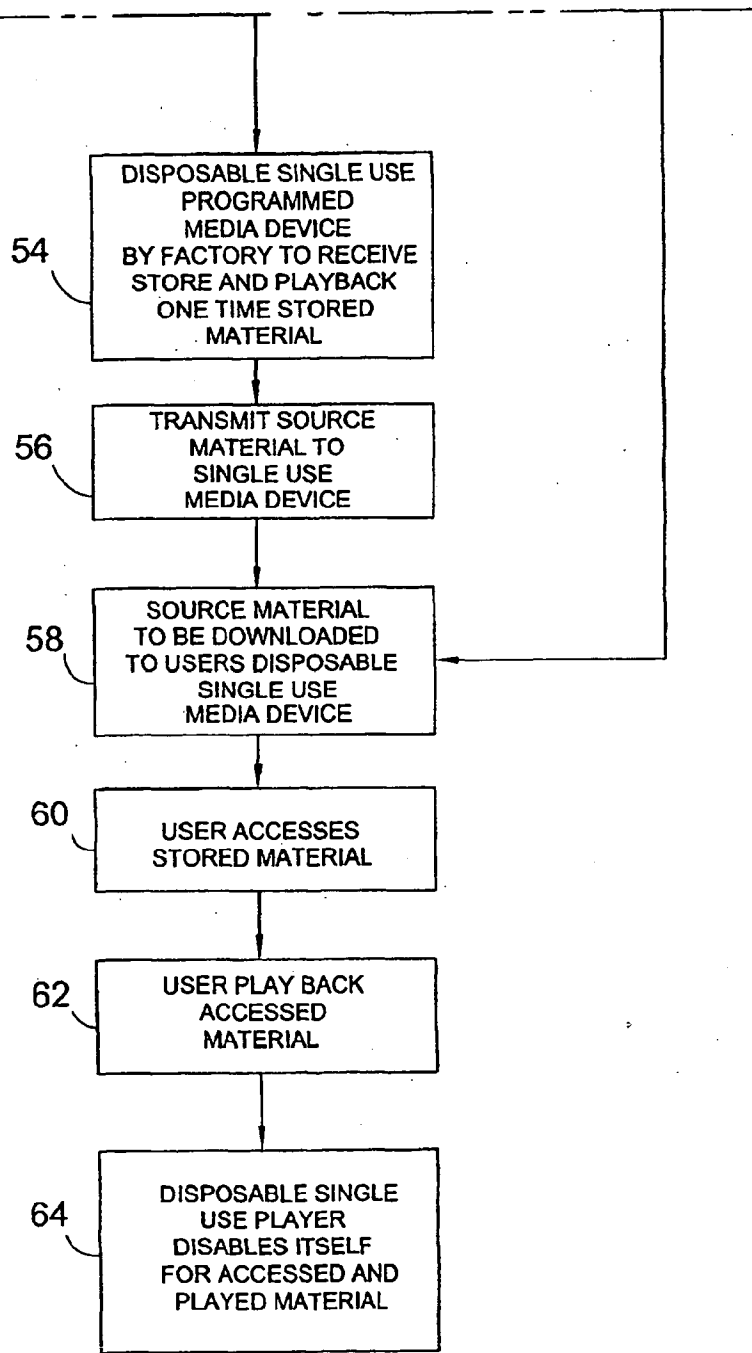


FIG 9B

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SINGLE USE MEDIA DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates generally to audio video equipment and, more specifically, to a disposable audio video player. The single use data to be played can be supplied with the audio video player when purchased or selectively downloaded from the Internet.

[0003] 2. Description of the Prior Art

[0004] There are other audio devices designed for audio/video playback. Typical of these is U.S. Pat. No. 4,587,643 issued to Monen et al. on May 6, 1986.

[0005] Another patent was issued to Suzuki on Aug. 28, 1990 as U.S. Pat. No. 4,953,153. Yet another U.S. Pat. No. 5,449,012 was issued to Friedman on Sep. 12, 1995 and still yet another was issued on Feb. 27, 1996 to Nakai et al. as U.S. Pat. No. 5,494,443.

[0006] Another patent was issued to Grewe on Sep. 23, 1997 as U.S. Pat. No. 5,670,730. Yet another U.S. Pat. No. 5,691,964 was issued to Niederlein on Nov. 25, 1997. Another was issued to Curtin on Nov. 16, 1999 as U.S. Pat. No. 5,986,200 and still yet another was issued on Dec. 14, 1999 to DeVito as U.S. Pat. No. 6,001,065.

[0007] Another patent was issued to Hoffmann on Apr. 20, 2000 as Deutschland Patent No. DE 19 943 306. Yet another U.S. Pat. No. 6,067,562 was issued to Goldman on May 23, 2000. Another was issued to Ansell et al. on Oct. 5, 2000 as W.I.P.O. Patent No. WO 00/58963 and still yet another was issued on Jan. 30, 2001 to Kelkar et al. as U.S. Pat. No. 6,182,128.

[0008] Apparatus permits the use of a known optical compact audio disc for providing a larger memory capacity so that data other than audio data can be reproduced therefrom while maintaining consistency with respect to signal format and signal processing, such as error correcting methods and recording data formats and the like, by providing write clock signals and read-out clock signals for reading into and out two memories the main digital data signal by using a subdigital data signal that is recorded on the disc along with the main digital data and which is reproduced from the disc at the same time as the main data in order to provide addressing of the main digital data on a more accurate level and with finer resolution, and a control system searches a playback location of the main digital data based upon the subdigital data as read out from the buffer memory, in which subdigital data has been written by the write clock signal.

[0009] A data reproducing device having a reading device for reading digitally recorded music data and image data from a data carrier, and data processing device for forming a music signal and an image signal according to the music data and image data thus read, and applying the music signal and image signal to a sound generating apparatus and display device, respectively, wherein the data processing device monitors time data recorded in the record carrier, and suspends, upon detection of the discontinuity of the time data, the image reproduction by the display device.

[0010] A hand-held umbrella with a mechanism for rotating the stem and dome of the umbrella relative to the handle

without manual rotation of the handle or umbrella. The rotation is created by a battery-operated motor forming a portion of the handle and adapted to receive the end of the stem opposite of the dome. The exterior surface of the dome may have a picture message imprinted thereon which has the appearance of animated movement when the dome is rotated. A speaker and mechanism for producing audible sound are also incorporated into the handle. In one embodiment, the music is contained on a sound synthesizer chip.

[0011] A karaoke system includes: reproduction unit for reproducing a MIDI sound source control information for karaoke song from a karaoke data recording medium, the MIDI sound source control information including playing time data of the karaoke songs; operation unit for inputting request of at least one desired karaoke song and karaoke playing time; calculation unit for obtaining playing time data of the requested karaoke songs and for calculating total playing time required for playing all of the requested karaoke songs; determination unit for comparing the total playing time with remaining playing time calculated on the basis of the karaoke playing time and for determining whether all of the requested songs can be played within the remaining playing time or not; and display unit for displaying a notice related to the result of the determination of the determination unit.

[0012] A protocol for labeling various types of data contained in a music chip. The protocol includes a hierarchical arrangement of headers for storing information about selections on the chip and the method in which they were coded in the memory of the chip. A global header located at the very start of memory will specify information needed to successfully decode the content of the music chip. This will include, for example, the necessary bit rate, as well as information pertaining to a specific PAC (Perceptual Audio Coding) algorithm employed in recording audio on the chip. In addition to the global header, each chip will have a section of memory allocated to a table of contents. The table of contents will include information on play times, song titles, music category and artist. Individual track selections will be listed as part of the table of contents by individual headers. The individual header contains a music field to which a track belongs, for example, classical, jazz, country, rock, etc., an artist field, and an address field which pertains to the information for addressing each track selection. Information from the headers is self-registered or automatically downloaded when a chip is loaded into a player/juke box device. The concept of self-registering general information included within the headers allows a user to select by type of music, artist, etc. for music selections made over a period of time. In addition, the present invention provides a method for segmenting memory in an integrated circuit chip wherein the integrated circuit chip is adapted for use in an audio player and the memory has pre-recorded audio stored therein. The method includes the steps of storing in a global header parameters corresponding to encoding techniques used in storing the pre-recorded audio in memory and coding in at least one individual header data fields indicative of general description information for individual tracks of the pre-recorded audio.

[0013] A music playing system includes a number of music playback units with playback changer devices, coding units, and ISDN cards. Each of the music playback units is provided with playable pieces of music. There is at least one

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input unit by means of which the pieces of music to be played on a playback unit are selected. In addition, there is a central computer with a memory in at least one playback unit, with the memory storing data about the pieces of music available in the playback units. The playback units can be connected between themselves and to the central computer via remote data transmission lines.

[0014] An interactive music playback device includes a sequencer for processing audio information corresponding to a song or other selected piece of music. The audio information may be retrieved from a PCMCIA card or other suitable solid state data storage cartridge which is inserted in a slot in the playback device. The sequencer arranges the audio information in a playback sequence based on one or more user-specified playback parameters, such as tempo, key and playback duration. Voice and instrument synthesizers receive the playback sequence and generate therefrom respective vocal and instrumental portions of the selected piece of music. The playback device may operate in a verse-shuffle mode of operation, in which the sequencer arranges the playback sequence to include randomly-selected verses of the selected piece of music interspersed with a chorus of the selected piece of music. The parameters of the playback sequence may also be varied in accordance with measures of external conditions as received from one or more environmental sensors. The playback device may also include a network connection for use in downloading the audio information from a network to the playback device.

[0015] A method and apparatus are disclosed for measuring and performing real-time FFT analysis of bioelectrical signals such as (EEG and EMG) for the control of systems. Passive and active interaction with various electronic media such as video games, movies, music, virtual reality, and computer animations is also discussed. A method and apparatus for detecting the presence of a subject in a controlled area and for controlling real or virtual spaces is also disclosed.

[0016] The tariff charging method has each digitized music title provided with inaudible tariff information, which is logged within an internal memory (6) of the mobile telephone (5) when the music title is played and transmitted to the telephone service provider, via the telephone network.

[0017] A digital radio broadcast station which includes a common digital database having stored therein a plurality of at least several hundred (preferably at least 1800) different selections of music to be played and broadcast by the radio station. A processor system is provided for programming the operation of the digital radio broadcast station with a sequence of music selections, which are subsequently retrieved in order from the common digital database and played over the digital radio broadcast station. The processor system preferably includes a main computer system for operating the radio station, and also a backup computer system for operating the radio station in the event of a failure of the main computer system. The processor system is preferably based upon reduced instruction set computing architecture, and preferably comprises an IBM RS/6000 system with an AIX operating system. The common digital database comprises a disk array storage, preferably a dual port RAID disk array. The digital radio broadcast station also includes a plurality of work station consoles for use by personnel responsible for operating the radio station such as disc jockeys and engineers.

[0018] Data such as a musical track is stored as a secure portable track (SPT) which can be bound to one or more players and can be bound to a particular storage medium, restricting playback of the SPT to the specific players and ensuring that playback is only from the original storage medium. The SPT is bound to a player by encrypting data of the SPT using a storage key which is unique to the player, is difficult to change, and is held in strict secrecy by the player. The SPT is bound to a particular storage medium by including data uniquely identifying the storage medium in a tamper-resistant form, e.g., cryptographically signed. The SPT can also be bound to the storage medium by embedding cryptographic logic circuitry, e.g., integrate circuitry, in the packaging of the storage medium. The SPT is bound by encrypting an encryption key using the embedded logic. By using unique cryptographic logic, only that particular storage medium can decrypt the encryption key and, therefore, the data of the SPT encrypted with the encryption key. To allow a user to playback the SPT on a number of players, players can share storage keys with one another. Such key sharing is done in a cryptographically secure manner. Before downloading an SPT to a particular external player, the ability of the external player to enforce restrictions placed upon the SPT is verified.

[0019] A music distribution system is divided into a plurality of regional networks each including a plurality of users. Each of the regional networks includes a distribution center to which the users of that region are connected. Each distribution center is provided with a library in which is stored a plurality of music titles. A user sends a request to the distribution center via an existing telephone network or cable network. Upon receiving the user's request, the distribution center locates and retrieves the requested data file stored in the regional library, and then transmits the requested file to the user via the existing cable service. At the user's destination, electronic equipment such as a television or a stereo receiver system may provide an audio/visual output of the requested data track.

[0020] While these audio may be suitable for the purposes for which they were designed, they would not be as suitable for the purposes of the present invention, as hereinafter described.

SUMMARY OF THE PRESENT INVENTION

[0021] The present invention discloses an audio video retrieval and playback apparatus for a single use. The present invention comprises a housing having a viewing screen thereon which can be sealed and packaged having a headphone with a pair of earpieces along with wiring which connects the headphone to the housing. The present invention further comprises a play button, along with a stop button having a slot which accepts audio-visual cards along with a pair of ports for interfacing with a vending machine or another computer. The audio video data can be retrieved from an external database having a plurality of audio video data for download. A user views the collection of audio video data and selects an audio video datafile for download to a disposable player that will retain the audio video datafile until single use playback is engaged by the user. The datafile or storage device having the audio video datafile will be altered preventing any further playback after the single use playback is completed. While the datafile can be retrieved from any number of devices the preferred method would be

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to retrieve the datafile from a database having a plurality of datafiles such as from the Internet or from a vending machine. The audio video player having a communication port therein is plugged into the download device whereupon the user selects the audio video datafile for download. The audio video player stores the downloaded datafile until the audio video player playback function is selected. The disposable audio video player can be stopped during playback and started again from the stopped position. Once playback is completed the datafile will be altered preventing any further playback of the downloaded audio video datafile.

[0022] A primary object of the present invention is to provide a single use disposable audio video player.

[0023] Another object of the present invention is to provide a single use audio video player having a housing for storing audio video data until such time as playback is desired.

[0024] Yet another object of the present invention is to provide an audio video player having a receptacle for inserting a storage device having audio video data stored thereon.

[0025] Still yet another object of the present invention is to provide an audio video player having a port for downloading an audio video data file from a storage device such as a computer or vending machine.

[0026] Another object of the present invention is to provide an audio video player having control buttons for selectively starting and stopping the player during single play usage.

[0027] Yet another object of the present invention is to provide an audio video player having control means for disabling the player after a single usage.

[0028] Additional objects of the present invention will appear as the description proceeds.

[0029] The present invention overcomes the shortcomings of the prior art by providing an audio video retrieval and playback apparatus for a single use. The audio video data can be retrieved from an external database having a plurality of audio video data for download. A user views the collection of audio video data and selects an audio video datafile for download to a disposable player that will retain the audio video datafile until single use playback is engaged by the user. The datafile or storage device having the audio video datafile will be altered preventing any further playback after the single use playback is completed.

[0030] Furthermore, the disposable audio video player can be stopped during playback and started again from the stopped position. Once playback is completed the datafile will be altered preventing any further playback of the downloaded audio video datafile.

[0031] The foregoing and other objects and advantages will appear from the description to follow. In the description reference is made to the accompanying drawings, which form a part hereof, and in which is shown by way of illustration specific embodiments in which the invention may be practiced. These embodiments will be described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that structural changes may be

made without departing from the scope of the invention. In the accompanying drawings, like reference characters designate the same or similar parts throughout the several views.

[0032] The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is best defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] In order that the invention may be more fully understood, it will now be described, by way of example, with reference to the accompanying drawings in which:

[0034] FIG. 1 is a perspective view of the single use media device.

[0035] FIG. 2 is a perspective view of the single use media device.

[0036] FIG. 3 is a front view of the packaged invention.

[0037] FIG. 4 is an isometric view of the invention.

[0038] FIG. 5 is a side view of the invention.

[0039] FIG. 6 is a bottom view of the invention.

[0040] FIG. 7 is a side view of the single use media device.

[0041] FIG. 8 is a detail view of the headphone of the present invention.

[0042] FIG. 9 is a block diagram of the method and apparatus of the present invention.

LIST OF REFERENCE NUMERALS

[0043] With regard to reference numerals used, the following numbering is used throughout the drawings.

- [0044] 10 present invention
- [0045] 12 user
- [0046] 14 sealed package
- [0047] 16 headphone
- [0048] 18 earpiece
- [0049] 20 wiring
- [0050] 22 viewing screen
- [0051] 24 play button
- [0052] 26 stop button
- [0053] 28 slot
- [0054] 30 vending machine port
- [0055] 32 computer port
- [0056] 34 wire frame
- [0057] 36 cut
- [0058] 38 source material
- [0059] 40 source material
- [0060] 42 source material
- [0061] 44 search
- [0062] 46 display

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- [0063] 48 select
- [0064] 50 calculate
- [0065] 52 pay for material
- [0066] 54 program device
- [0067] 56 transmit
- [0068] 58 download
- [0069] 60 access
- [0070] 62 playback
- [0071] 64 disable
- [0072] 66 card programmed
- [0073] 68 user purchases card

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0074] Turning now descriptively to the drawings, in which similar reference characters denote similar elements throughout the several views, FIGS. 1 through 9 illustrate the present invention wherein a single-use media device is disclosed.

[0075] Turning to FIG. 1, shown therein is a perspective view of the single use media device of the present invention 10 being carried about by a user 12. The present invention 10 is a self-contained, single use media device that on user demand will search, retrieve and play back a single time stored audio, visual or audiovisual files.

[0076] Turning to FIG. 2, shown therein is a perspective view of the single use media device of the present invention 10. The present invention 10 is a self-contained, disposable, single use media device that on demand will retrieve and play back a single time stored audio, visual or audiovisual files. After use, the present invention 10 may be disposed.

[0077] Turning to FIG. 3, shown therein is a front view of a sealed package 14 containing the present invention 10. The present invention 10 is shown wrapped and sealed in packaging 14. Also shown is the one-piece headphone 16 with a pair of earpieces 18 having the earphone wiring 20 wrapped around the housing unit along with the viewing screen 22 of the present invention.

[0078] Turning to FIG. 4, shown therein is an isometric view of the present invention 10. The present invention 10 is designed to accommodate a selected number of sound tracks. After the tracks have been listened to, the source material may not be reused. Shown therein is the one-piece adjustable headphones 16 having a pair of earpieces 18 thereon along with the wiring 20 for attaching the earphones to the present invention 10. Also shown is the viewing screen 22 of the present invention. Also shown is a play button 24 along with a stop button 26 disposed on the housing face of the present invention. Also shown is a slot 28 to accept pre-recorded audio, visual, or audio-visual cards, a port 30 to interface with a vending machine and a port 32 to interface with a computer which is connectable to the internet. The ports 30, 32 and slot 28 could be any conventional type of port such as would be provided by one skilled in the art.

[0079] Turning to FIG. 5, shown therein is a side view of the present invention 10. The present invention will save audio, visual or audiovisual files for on demand one-time playback. Also shown are the stop button 26 and side slot 28 for accepting pre-recorded cards.

[0080] Turning to FIG. 6, shown therein is a bottom view of the present invention 10. The present invention will save audio, visual or audiovisual files for on demand one-time playback. Also shown are the vending machine port 30 and computer port 32.

[0081] Turning to FIG. 7, shown therein is a side view of the single use media device 10. The present invention is wafer thin and may be carried in a pocket. The compact housing may be constructed of a durable, inexpensive plastic. Also shown are the headphones 16, earpieces 18 and wiring 20.

[0082] Turning to FIG. 8, shown therein is a detail view of the expandable, disposable headphone 16 of the present invention 10. Depicted is the head phone set 16 of the present invention which can be adjusted to fit any size head by pulling outwardly on the wire frame 34. It is also sealed within the packing to prevent contamination. Also shown are the earpieces 18 and wiring 20 cut at 36 to lead to the housing of the present invention.

[0083] Turning to FIGS. 9A and 9B, shown therein is block diagram illustrating the method and apparatus for using the audio video playback device of the present invention. Shown therein is the source material on the Internet 38 and the source material in vending machines 40 along with source material on the storage medium 42, such as a card. The present invention will then perform a search for the source material or information with the computer 44, display the source material 46, select the source material to be downloaded into the disposable single-use media device 48, calculate the cost of the selected material 50, and pay for the material by transmitting credit card information to the provider of selected source material 52. Also shown at 54 is the disposable, single-use programmed media device by the factory to receive, store, and playback one-time stored material, transmit source material to the single-use media device 56, the source material to be downloaded to the user's disposable, single-use media device 58, the user accesses the stored material 60, the user plays back the access material 62, and the disposable, single-use player disables itself for accessed to played material 64. Also shown is a card programmed so that it may be downloaded one time at 66, along with the user purchases card with the preloaded material 68.

[0084] What is claimed to be new and desired to be protected by letters patent is set forth in the appended claims.

I claim:

1. An apparatus for an audio-visual device, comprising:
 - a) a housing for containing the apparatus, said housing being generally rectangular shaped having a front and rear surface;
 - b) means for a computer disposed internal said housing whereby data may be retrieved, stored, played back and manipulated by the computer;
 - c) means for controlling said means for a computer;

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- d) means for a visual display disposed on said front surface of said housing;
 - e) means for an audio output disposed on said housing; and,
 - f) means for inputting data disposed on said housing.
2. The apparatus of claim 1, wherein said means for controlling said means for a computer further comprises a play button.
3. The apparatus of claim 2, wherein said means for controlling said means for a computer further comprises a stop button.
4. The apparatus of claim 3, wherein said means for a visual display further comprises a view screen disposed on said front surface of said housing.
5. The apparatus of claim 4, wherein said means for an audio output further comprises at least one earphone.
6. The apparatus of claim 5, wherein said means for an audio output further comprises a pair of earphones.
7. The apparatus of claim 6, wherein said means for inputting data further comprises a slot to accept pre-recorded media.
8. The apparatus of claim 7, wherein said means for inputting data further comprises an input port for connection of an external data source.

9. A method for an audio-visual device, comprising the steps of:

- a) providing a housing for containing the device;
- b) placing a computer internal the housing;
- c) searching for source material;
- d) displaying the source material;

- e) selecting the source material to be downloaded to the device;
 - f) calculating the cost of the selected source material;
 - g) paying for the selected source material by transmitting credit card information to the provider of the selected source material.
10. The method of claim 9, further comprising the steps of:
- a) initially programming the device to receive, store and play back one time stored material;
 - b) transmitting source material to the device;
 - c) downloading source material to the device;
 - d) having a user access the stored material;
 - e) having a user play back the stored material; and,
 - f) having the device disable itself for accessed and played material.
11. The method of claim 9, further comprising the step of using the Internet for the source material.
12. The method of claim 9, further comprising the step of using a vending machine for the source material.
13. The method of claim 10, further comprising the steps of using a storage media for the source material.
14. The method of claim 13, further comprising the step of programming the storage media for a single download.
15. The method of claim 14, further comprising the step of a user purchasing the storage media with the preloaded material.

* * * * *

MP3 *newswire.net*

①

1200 Song MP3 Portable is a Milestone Player

By Richard Menta- 01/11/00

Remote Solutions Personal Jukebox is a milestone product. By that we mean any product whose breakthrough innovations are so significant, they influence the future course of its industry. The iMac, which presently has PC manufacturers scrambling to breakout of the beige box routine, is a recent example of a milestone product.



Remote Solutions Personal Jukebox holds 1200 songs in its 4.8G hard drive

Personal Jukebox raises the bar in several areas and there is no doubt the leaders in MP3 portables are re-evaluating their future product releases. The most obvious element is Personal Jukebox's huge storage ability.

Up until now, all MP3 portables came with either 32MB or 64MB of memory, capable of holding anywhere of 9 to 20 song files at the standard 128k compression. This is the most limiting factor of MP3 players (many manufacturers advertise player capacity using songs compressed at a lower quality 56k setting. This stretches the limit of 64MB units to two hours), but promises of 300MB units using expensive flash memory or IBM's pricey, but tiny, micro drive litter manufacturer press releases.

The Personal Jukebox uses a 4.8G laptop hard drive, larger than the IBM's but far cheaper per MB of storage. This translates to a whopping 81 hours of music or 1200 songs and that is measured using the the higher 128k compression.

Think about this for a second. Right now, the largest capacity flash memory on the market is a 224MB CompactFlash card which Delkin started shipping Dec 99. The only player using that particular card to date is the RCA Lyra. The cost of the 224MB card is a very steep \$800. Add to that the \$200 cost of the Lyra costs and your up to \$1,000. The Personal Jukebox offers more that

20 times that capacity and does it for \$799.

And that is another area where the Personal Jukebox will affect the industry - price. Think about S3's (formerly Diamond's) Rio. The next generation of players is to include a unit using IBM's 300+MB micro drive. While this drive obviously has a size and weight advantage over the Jukebox's, how much can they actually sell it for now that its MP3 capacity, in a span of a few months, has gone from huge to modest. The player hasn't even come out yet! Indeed, these new Rio's may possibly be scrapped because market forces might not allow them to sell at prices that would cover the costs of those expensive micro drives.

The good news for consumers is that Remote Solution has provided shoppers with a choice. A choice that puts pressure on the companies supplying the storage cards and micro drives to drop prices, less they watch the MP3 portable industry shift to laptop drives - a seasoned, and far more competitive, arena.

The Hardware

The Personal Jukebox is a large and heavy unit for an MP3 player, closer in size and weight to a portable CD player. That's still a pretty reasonable size, especially since you can tote far more music along. It may not be the first choice of joggers for whom the smaller the better, but everywhere else it was a blessing

Real Jukebox uses a rechargeable Lithium Ion battery which give the unit a very long life considering the power needs of the hard drive, about 10 hours. This battery is another feature that makes this unit a candidate for milestone kudos. The battery charges inside the unit which comes with a power adapter.

The unit, which comes with both a cassette and cigarette lighter adapter, was ideally suited for the car. We didn't even bother to use the lighter adapter, we just attached the cassette adapter, popped it in the cassette bay of our radio, closed the player in the glove compartment, and ran tunes the whole day on just the battery. No CD changer in the trunk, no miles of speaker wire to lay.

We also hooked our player up to the stereo system. At this point we had a dozen CD's worth of music and if the Personal Jukebox seems big when

compared to other MP3 portables, it is sleek and petite when compared to the bulky 100 CD carousels that equals it's music capacity.

Getting started: A

The unit includes Jukebox Manager, an intuitive drag-and-drop interface that easily allowed us to rip and download files to the player. We had no problem loading the software to our PC. A key (and another milestone) feature is the user has the ability to rip and encode MP3 files directly to the players hard drive, bypassing the need to load these files on your computers hard drive first. This is a major convenience in both time and system space.

The player connects to your PC through a USB cable, the only way to go when you have the power to download hundreds of megs of MP3 files in a shot. Downloads were quick and simple.

Controls: A

Big and easy. The unit doesn't have some of the nice features in other units, like the ability to scan within a song, but it did the job well and that is what's most important. The controls were precise and effective.

The Display: A

Excellent. The display on the Personal Jukebox is twice the size of the nearest competitor and they put it to good use. The unit shows no less than six categories of information simultaneously, avoiding the need to navigate through various sub-menus to display the info you need. This includes CD and folder titles (the player can separate music by genre or album title) track name, tone and bass settings, battery consumption, volume, bit rate of the music, a counter, and more.

While the unit does not come with a backlight, the letters were big and clear and were very readable in all but the lowest light conditions.

Sound: A

Again, excellent.

The Personal Jukebox comes with a fine set of Koss headphones. Some may

choose to go with low profile earbuds - the Sennheiser MX-4 earbuds are our recommendation - but there was no need to upgrade for the sound quality, the Koss's did the job well

Conclusion

The reason MP3 player's will eventually send the cassette the way of the 8 track is convenience and the ability to store large amounts of music without taking up physical space. The biggest complaint of 32MB and 64MB portables is that they simply are not there yet, requiring you to constantly run back to your PC to swap music. The Personal Jukebox IS there right now as Jukebox owners can hold most (if not their entire) CD library, leveraging the advantages of the format today.

The industry seemed ready to bring larger capacity units by 64MB increments, thereby using capacity as a continual upgrading point, similar to how PC's use chip speed to get you to upgrade your system every few years. Personal Jukebox jumped over all that malarchy and now stands alone as the pre-eminent machine. The \$799 pricetag should cause ripples in an industry that would have today priced this much capacity in the thousands.

The unit is not a perfect instrument. It's a tad heavy for the exercise minded, you can feel the hard drive mildly vibrate when it changes tunes, it doesn't have some useful scan and backlight features. So what? We'll take four-and-a-half gigs of extra space over a backlight anyday. In other words, the advantages this portable offers far outbalances the couple of minor niceties it may be missing. This unit is more expensive than the \$150-\$200 portables on the market, but it offers far more bang to the buck.

BUT - and this is important - this does NOT mean that every other portable on the market is ready for the dustbin. The reason is the memory expansion slots most have, the saving grace of the industry. Right now a 32MB flash card sells for about \$100, quite a bit of money. Those prices will go down!

As mentioned above, what makes the Personal Jukebox so significant to the industry is that it pressures memory manufacturers to drop those prices quicker. In a couple of years, 32MB cards will sell for around five bucks and 300 MB cards will sell for about \$50. At those prices, these flash cards will essentially become the new cassettes. Heck, we might be able to buy them

pre-programmed with music from the record store like any other album (the Rio people saw this early and added sleeves to the carrying case of the Rio 500 that holds 8 flash cards).

When that happens, users will get that bang for the buck, even on units that already been on the market for a year. They also get the size and weight advantages not offered by the large Remote Solutions machine.

Bottom line, not everyone has \$800 to spend right now for the Personal Jukebox. For a fraction of that cost, the better of the 64MB players like the Rio 500 and the RaveMP can do just fine till memory card prices drop. Hopefully that will be sooner rather than later.

Final Score: A+ (a Milestone Player)

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Order The New Rio PMP 500 from [Amazon](#) for \$289.

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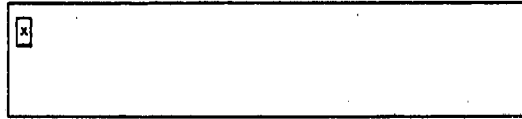


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MusicMatch Jukebox 4.0: Screen Shot 2

From [PC Magazine](#)

June 17, 1999



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Via support for ID3v2, Jukebox lets you add graphics or text to your encoded music and view the information

<http://web.archive.org/web/1999112205926/www.zdnet.com/products/stories/reviews/0,4161,2277816,00.html>

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4/30/2004

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3



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MusicMatch Jukebox 4.1, the Ultimate MP3 Utility

By [Patrick Norton](#)

Before RealJukebox jumped into the MP3 scene this summer, MusicMatch's Jukebox was the first such product. The latest version of MusicMatch Jukebox, 4.1 delivers nifty database and playlist tweaks, a graphic equalizer, and settings to help record from analog sources. As far as we're concerned, MusicMatch Jukebox (free to download, \$29.99 for high bit encoding), is the best MP3 tool out there for managing, playing, and creating MP3 audio files.

MusicMatch divvies the Jukebox interface across four windows: one each for the player, library, recorder, and track information such as title or cover information from the CDDB database. The latter info automatically gets downloaded if your system has a connection to the Net. All we did was drop in a CD, check the songs we wanted to encode, and hit the start button. MusicMatch then plays and records the songs in real time. Unfortunately, this product doesn't offer RealJukebox's speedy "read-ahead" encoding.

Both MusicMatch Jukebox and RealJukebox use our favorite encoder: Xing Technologies. In blind testing, we couldn't tell the difference between MP3s encoded (or played back) over either app. Both sounded as good as MP3 gets. Jukebox's AutoDJ, which maps types of music to a specific program time gives it a lead over RealJukebox. We also found its interface more intuitive.

Summary, Pros, Cons

Summary: MusicMatch Jukebox 4.1 delivers the best MP3 utility for encoding, organizing, and playing back, at least for our dollar.

Pros: Solid interface, Xing encoder delivers great audio quality; nifty AutoDJ settings.

Cons: \$29.99 upgrade if you want the best encoding; doesn't offer RealJukebox's speed in encoding.

Company: [MusicMatch Inc.](#)

Phone: 619.385.8360

Price: Free; \$22.99 for high quality encoding

Available: Now

Category: MP3, Audio

Platform: Windows 95, 98, NT 4.0

Specs: NA

Requirements: Pentium/166 or better PC; 16MB RAM (32MB for Windows NT); 30MB hard disk space; sound card; speakers

Originally posted September 17, 1999

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(4)

Can you carry your CD
collection in your pocket?

Yes, you can.

The **Personal Jukebox**, or PJB, was created as a prototype personal audio appliance by Compaq's Systems Research Center (SRC) and Palo Alto Advanced Development group (PAAD). The PJB project started in May 1998, and the PJB-100 product shipped in November 1999.

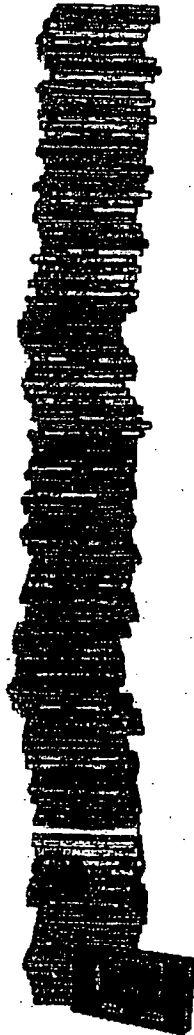
The PJB is a portable music player built around a small disk drive. A 30 GByte PJB will hold 550 hours of CD-quality audio. The battery lasts 10 to 11 hours on a single charge. The player weighs 9.5 ounces and can fit your jacket pocket. The audio quality is generally regarded as excellent, and the user interface is remarkably easy to learn and use. A 20 GByte PJB currently sells for around \$550; the 6 GByte version is under \$500.

Stereo Review's *Sound & Vision* magazine said:

In my 20 years of covering audio and video equipment, I can count on the fingers of one hand those products that gave me a spine-tingling "this changes everything" feeling. Now I can add the PJB-100 to the list.



The PJB is being shipped as a product by our partner, HanGo Electronics (dba Remote Solutions). You can see their product specifications on their web site. You can also read several product reviews.



You can try out our Java emulation of the PJB User Interface. Or, of course, you could just buy a real one: try Hammacher-Schlemmer (U.S. mail and web order catalog), MP3FactoryDirect (U.S. distributor), or Uhu (European distributor).

For a slightly more detailed description of the PJB, see our PowerPoint presentation about it.

For information about the research project that created the PJB, please contact Andrew Birrell, Dave Redell, or Ted Wobber.

Opening up the covers, you'll find that the PJB is a fairly powerful special-purpose computer. It contains a Motorola 56309 digital signal processor (DSP), a 6.5 GByte hard disk, 12 MB of memory, 1 MB of flash memory, a USB port, a high quality digital-to-analog converter, and a small LCD display. We currently use MPEG-2 layer-3 encoding technology (MP3) from Fraunhofer IIS to store compressed CD-quality digital audio on the hard disk. This results in a 11:1 size reduction over raw digital audio with little noticeable difference in sound quality (even when you play it over your home stereo). Because the PJB uses flash ROM and a general-purpose DSP, it's quite easy to upgrade it to use other compression algorithms, or even to use different algorithms for different tracks.

You download music into a PJB using a PC program called the Jukebox Manager. This program communicates with the PJB using a proprietary RPC protocol over the USB. It reads digital audio from a CD in a local CD-ROM drive, compresses the bit stream, and stores the result on the PJB hard disk.

The Jukebox manager can also copy MP3 files from your PC into your PJB. The Jukebox Manager creates and manages a hierarchical table-of-contents (TOC), stored on the PJB, that makes it easy to find material in the PJB. The manager makes use of the Internet CDDB database to attach names to sets (categories), disks and tracks. Using the Jukebox Manager, it's easy to create personal playlists, to adjust the set/disk/track names to suit your personal tastes, and to move or copy items around within a TOC.

COMPAQ

[Legal Statement](#) [Privacy Statement](#)

F2

**Reference cited in Substitute PTO Form 1449
Attorney Docket No. 380786-108980
Reexam Control No. 95/001,274**

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.
Before the Honorable Paul J. Luckern

In the Matter of


CERTAIN PORTABLE DIGITAL MEDIA
PLAYERS

Investigation No. 337-TA-573

**RESPONSE OF APPLE COMPUTER, INC. TO THE COMPLAINT OF
CREATIVE LABS, INC. AND CREATIVE TECHNOLOGY LTD.**

Dated: July 6, 2006

Respectfully submitted,



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Counsel for Respondent Apple Computer, Inc.

Pursuant to Commission Rule of Practice 210.13 (19 C.F.R. § 210.13), Respondent Apple Computer, Inc. ("Apple" or "Respondent") hereby responds to the Complaint under Section 337 of the Tariff Act of 1930, filed by Creative Labs, Inc. and Creative Technology Ltd. (collectively "Creative" or "Complainants") on May 15, 2006, pursuant to which an investigation was instituted by the Commission on June 14, 2006 (79 Fed. Reg. 34930, June 14, 2006).

Except as specifically admitted herein, Apple denies all allegations of the Complaint. Most importantly, Apple denies that it has engaged in acts of unfair competition or violated Section 337 by importing, selling for importation, and/or selling within the United States after importation any products that infringe, directly, contributorily, and/or by inducement, any valid and enforceable claim of United States Patent No. 6,928,433 entitled "Automatic Hierarchical Categorization of Music by Metadata" ("the File Hierarchy Patent" or "the '433 patent").

ADMISSIONS AND DENIALS OF CREATIVE'S SPECIFIC ALLEGATIONS

I. INTRODUCTION

1. Apple admits that Creative has requested that the United States International Trade Commission (the "ITC") commence an investigation pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337. Apple denies each and every allegation in paragraph 1 to the extent that it alleges, directly or by implication, that any acts of Apple constitute infringement of the File Hierarchy Patent.

2. Apple admits that it manufactures, imports, and sells the products accused of infringement. Further responding to paragraph 2, Apple denies each and every allegation to the extent that it alleges, directly or by implication, that any acts of Apple or its customers constitute infringement of the File Hierarchy Patent.

3. Apple admits that Exhibit 1 to the Complaint purports to be a certified copy of the File Hierarchy Patent.

4. Apple admits that Exhibit 2 to the Complaint purports to be copies of assignments for the File Hierarchy Patent. Apple is without sufficient knowledge or information to form a belief as to the truth of the remaining allegations contained in paragraph 4, and therefore denies them.

5. Apple is without sufficient knowledge or information to form a belief as to the allegations contained in paragraph 5, and therefore denies them.

6. In response to paragraph 6, Apple admits that Creative seeks relief from the ITC in the form of a limited exclusion order concerning the importation into the United States of Apple products which Creative alleges violate the File Hierarchy Patent. Apple also admits that Creative seeks from the ITC a cease and desist order prohibiting the "importation, sale after importation, marketing, advertising, demonstrating, warehousing inventory for distribution, offering for sale, selling, distributing, licensing, or use" of certain Apple products that Creative alleges infringe the File Hierarchy Patent. As to the balance of the allegations related to Apple contained therein, Apple denies each and every allegation, and specifically denies that it has infringed any valid and enforceable claim of the File Hierarchy Patent.

II. COMPLAINANT

7. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 7, and therefore denies them.

III. PROPOSED RESPONDENT

8. Apple denies each and every allegation contained in paragraph 8, except it admits that it is a corporation formed under the laws of California, and that its principal place of business is located at 1 Infinite Loop, Cupertino, CA 95014.

IV. THE TECHNOLOGY AND PRODUCTS AT ISSUE

9. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 9, and therefore denies same. Further answering, assuming that "conveniently organiz[ing] and access[ing] the ever growing number of songs stored on these devices in view of their small display screens and limited controls ... presented a significant and pressing challenge," that challenge had been met and addressed by Apple and third parties before Creative.

10. In response to paragraph 10, Apple specifically denies that (1) "Creative seized the opportunity to invent a solution — a way to manage a large amount of music in a manner that allows end users to access songs in a logical and user-friendly manner through sequential steps displayed on the small screen of a player," (2) "a team of Creative's engineers in Scotts Valley, California invented a user-friendly interface that simplified navigation on portable digital media players" and (3) "[t]his now-patented invention is directed to methods of accessing media tracks (e.g. music) stored on a portable digital media player by navigating through a hierarchical categorization such as artist, artist name and song title or genre, genre type and song title." Apple is without sufficient knowledge or information to form a belief as to the truth of the remaining allegations of paragraph 10, and therefore denies them.

11. In response to paragraph 11, Apple specifically denies that the '433 patent "set the standard for this new industry of portable digital players." Apple is without knowledge or information sufficient to form a belief as to the truth of the remaining allegations of paragraph 11, and therefore denies the same.

12. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 12, and therefore denies them.

13. In response to paragraph 13, Apple admits that certain Apple products were compatible with Creative products in 2001. Apple specifically denies that, "[i]n January 2001, Steve Jobs, the co-founder and CEO of Apple, approached a Creative employee, at the MacWorld tradeshow to extol the virtues of the NOMAD Jukebox" and that "Mr. Jobs indicated that Apple wanted a smaller version of the NOMAD jukebox digital music player." Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 13, and therefore denies them.

14. Apple admits that a meeting took place at some time between Creative and Apple representatives including Steve Jobs. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 14, and therefore denies them.

15. Apple denies each and every allegation contained in paragraph 15 including any allegations concerning Creative's state of mind, except that Apple admits that a meeting took place at some time between Creative and Apple representatives including Steve Jobs.

16. Apple admits that it announced the introduction of its first iPod® on October 23, 2001. Apple admits that its press release contains the words as quoted in paragraph 16. Apple denies the characterization of its press release as set forth in the last sentence of paragraph 16.

17. Apple admits (1) that it sells the iPod® and iPod® nano; (2) that it has retail stores in the United States; (3) that Exhibit 3 to the Complaint is a copy of Apple's 2005 Form 10-K; and (4) that Exhibit 4 to the Complaint purports to be a claim chart but specifically denies the allegations contained therein. Apple specifically denies the remaining allegations of paragraph 17.

18. Apple admits that Creative has asserted that the accused products are those specifically identified in paragraph 18 and that Apple products may be viewed on its website,

which may be found at www.apple.com/ipod. Apple is without sufficient knowledge or information to form a belief as to the truth of the remaining allegations contained in paragraph 18, and therefore denies them.

V. THE PATENT-IN-SUIT AND NON-TECHNICAL DESCRIPTION OF THE INVENTION

A. Overview and Ownership of the Asserted Patent

19. Apple admits that Exhibit 2 attached to the Complaint appears to be a copy of assignments for the File Hierarchy Patent and other patents/patent applications. Apple is without sufficient knowledge or information to form a belief as to the truth of the remaining allegations contained in paragraph 19, and therefore denies them.

20. Apple admits that Appendix A to the Complaint purports to be the prosecution history of the File Hierarchy Patent. Apple further admits that Appendix B purports to contain the references mentioned in the File Hierarchy Patent and/or its prosecution history.

B. The '433 Patent

1. Identification of the '433 Patent and Asserted Claims

21. In response to paragraph 21, Apple admits that the File Hierarchy Patent is entitled "Automatic Hierarchical Categorization of Music Metadata" and was issued on August 9, 2005. As to the balance of the allegations contained therein, Apple is without sufficient knowledge or information to form a belief as to the truth thereof, and therefore denies them.

22. Apple admits that the File Hierarchy Patent has one (1) independent claim and fifteen (15) dependent claims.

2. Non-Technical Description of '433 Patent

23. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 23, and therefore denies them.

24. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 24, and therefore denies them.

25. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 25, and therefore denies them.

C. Foreign Counterparts to the Asserted Patent

26. In response to paragraph 26, Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations, and therefore denies them.

D. Licenses

27. In response to paragraph 27, Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations, and therefore denies them.

**VI. UNLAWFUL AND UNFAIR ACTS OF RESPONDENT--
PATENT INFRINGEMENT**

28. Apple denies each and every allegation contained in paragraph 28, and specifically denies that it has infringed any valid and enforceable claim of the File Hierarchy Patent.

29. Apple admits that Exhibit 4 to the Complaint purports to be a claim chart but specifically denies the allegations contained therein or the application of Exhibit 4 to any of Apple's products.

A. Direct Infringement

30. In response to paragraph 30, Apple denies the allegations contained therein.

B. Contributory Infringement

31. In response to paragraph 31, Apple denies the allegations contained therein.

32. In response to paragraph 32, Apple denies the allegations contained therein.

C. Inducement of Infringement

33. Apple specifically denies the allegations contained in paragraph 33.

34. Apple admits that Exhibit 5 to the Complaint purports to be a version of an iPod® User Manual and that Exhibit 6 to the Complaint purports to be a version of an iPod® nano User Manual. Apple specifically denies the remainder of the allegations contained in paragraph 34.

35. Apple specifically denies the allegations contained in paragraph 35.

VII. SPECIFIC INSTANCE OF UNFAIR IMPORTATION AND SALE

36. Apple admits that it imports and sells within the United States after importation the iPod® and iPod® nano. Further responding to paragraph 36, Apple specifically denies that it imports, sells for importation into the United States, and/or sells within the United States after importation, any products, including but not limited to the iPod® and iPod® nano, that infringe any valid and enforceable claim of the File Hierarchy Patent.

37. Apple admits that Exhibit 3 purports to be a copy of Apple's December 1, 2005, 10-K filing. Apple further admits that the December 1, 2005 10-K filing states: "Currently, manufacture of many of the components used in the Company's products and final assembly of substantially all of the Company's portable products including PowerBooks, iBooks, and iPods are performed by third-party vendors in China." Apple admits that Exhibits 5 and 6, respectively, purport to be copies of versions of iPod® and iPod® nano user manuals. Apple admits that information about its products may be found at www.apple.com. Apple is without sufficient knowledge or information to form a belief as to the truth of the remaining allegations contained in paragraph 37, and therefore denies them.

VIII. HARMONIZED TARIFF SCHEDULE ITEM NUMBERS

38. Apple admits that Apple's accused products are imported under section 8519 (inclusive of subsections) of the United States Harmonized Tariff Schedule. Apple specifically denies the remaining allegations contained in paragraph 38.

IX. RELATED LITIGATION

39. Apple admits that Creative filed an action alleging infringement of the File Hierarchy Patent in United States District Court. Pursuant to 35 U.S.C. § 1659, Apple and Creative have stipulated to a stay of the District Court action. Apple is without sufficient knowledge or information to form a belief as to the truth of the remaining allegations contained in paragraph 39, and therefore denies them.

X. THE DOMESTIC INDUSTRY

40. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 40, and therefore denies them.

A. United States Investment in Plant And Equipment, Labor and Capital

41. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in paragraph 41, and therefore denies them.

B. Representative Claim Chart for the Creative Zen Vision:M™ Portable MP3 Player

42. Apple admits that Exhibit 9 to the Complaint is entitled "Non-Exclusive List of Creative Products That Practice One o[r] [sic] More of the Asserted Claims." Apple admits that Exhibit 10 to the Complaint purports to be a claim chart. Apple is without sufficient knowledge or information to form a belief as to the truth of the allegations contained in Exhibits 9 and 10 or in the remaining allegations contained in paragraph 42, and therefore denies them.

XI. RELIEF REQUESTED

43. In its Complaint, Creative requests certain relief from the ITC. Apple does not believe that any response to this prayer for relief is required. If a response is required, however, Apple specifically denies that it currently infringes or has ever infringed any valid claim of the File Hierarchy Patent and further denies that Creative is entitled to any relief from the ITC

whether or not requested. Apple further denies each and every factual allegation in this prayer for relief, including subparagraphs thereof.

RESPONSE TO THE NOTICE OF INVESTIGATION

Pursuant to Commission Rule of Practice and Procedure 210.13 (19 C.F.R. § 210.13), Apple hereby responds to the Notice of Investigation ("Notice") issued by the ITC on June 17, 2006, and published in the Federal Register on June 14, 2006 (79 Fed. Reg. 34930, June 14, 2006).

Apple admits that the initial Complaint was filed by Creative on May 15, 2006. Apple also admits that the Complaint sets forth the allegations referenced in the first paragraph of the Summary section, and that Creative has requested the institution of an investigation and the issuance of a limited permanent exclusion order and permanent cease and desist orders as referenced in the second paragraph of the Summary section.

Apple denies that there has been any violation of Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, by reason of any importation into the United States, the sale for importation or sale within the United States after importation of any article allegedly infringing any valid claim of the File Hierarchy Patent. Subject to further investigation, Apple further contends that the claims of the File Hierarchy patent are invalid and unenforceable and therefore cannot support any remedy for alleged infringement. Apple is without knowledge or information sufficient to form a belief as to the truth of the allegation that a domestic industry exists with respect to the File Hierarchy Patent, and on that ground denies each and every such allegation. Apple specifically denies that any Apple product practices any claim under the File Hierarchy Patent. Apple denies that Creative is entitled to any relief in this investigation, including, but not limited to, any exclusion order or cease and desist order.

ADDITIONAL INFORMATION REQUIRED UNDER RULE 210.13(b)

By providing the following information, Apple intends only to supply data required by 19 C.F.R. § 210.13(b). Apple specifically denies that any of the information or data supplied below relates to or supports any allegation of infringement against Apple or any violation of 19 U.S.C. § 1337.

Pursuant to Rule 210.13(b), Apple provides the following additional information:

1. The quantity and value of Apple's products accused of infringement to the United States in calendar year 2005 is 14.043 million units costing \$2.906 billion.
2. The Harmonized Tariff Schedule item number for the Apple products accused of infringement is 8519 and subsections thereof.
3. Apple's capacity to manufacture the products accused of infringement in calendar year 2005 is provided in Confidential Exhibit 1 to this response. In calendar year 2005, purchasers in the United States accounted for a substantial percentage of the products accused of infringement that Apple sold worldwide.

AFFIRMATIVE DEFENSES

The ITC instituted the present investigation on June 14, 2006, and Apple served its First Sets of Request for Production and Interrogatories on Creative on June 16, 2006. Creative has not yet responded to Apple's requests for discovery, and, after an opportunity to conduct reasonable discovery, Apple expects to further develop (1) invalidity defenses pursuant to 35 U.S.C. §§ 102, 103 and 112 and (2) unenforceability defenses.

At a minimum, Apple's accused products do not infringe any asserted claim of the File Hierarchy Patent. Creative's representations and actions before the USPTO cast light upon the flaws in Creative's infringement theory, and Apple thus first summarizes the file history of the File Hierarchy Patent. In that light, the only reading of the claims that makes sense, viewed in

light of the specification of which they are a part and the proceedings before the USPTO, is that Creative's claims are limited to portable media players that organize media in a hierarchical file structure. Apple's accused products, however, organize and store media in a flat list structure. For reasons discussed below, Apple's non-infringing method, which was disclosed in prior art Creative unequivocally disclaimed, is more efficient than Creative's alleged invention.

The Prosecution History of the File Hierarchy Patent

On January 5, 2001, Creative filed U.S. Patent Application No. 09/755,723 ("the '723 application"), entitled "Automatic Hierarchical Categorization Of Music By Metadata," naming Ron Goodman and Howard Egan as inventors. (Ex. 1.) On the same day, Creative also filed U.S. Patent Application No. 09/755,629 ("the '629 application"), entitled "System For Selecting And Playing Songs In A Playback Device With A Limited User Interface," naming Ron Goodman, Howard Egan, David Bristow and Maria Ayon as inventors. (Ex. 2.) As the titles of the two applications specify, the '629 application was directed at navigation of media through the user interface, the alleged invention that Creative hopes to convince the ITC is the subject matter of the File Hierarchy Patent. On the other hand, the '723 application was directed at a method of storing media files according to a hierarchical file structure.

The '629 application

During prosecution of the '629 application, Creative pursued claims that are nearly identical to those now asserted against Apple. (Ex. 2, '629 application, at 11-14; Ex. 2, 12/26/01 Amendment, at 2-6.) Repeatedly unconvinced that navigating media on the basis of categories such as genre, artist and album was inventive, the examiner rejected all '629 application claims as anticipated by or rendered obvious by U.S. Patent Nos. 5,616,876 ("Cluts"), 5,969, 283 ("Looney"), 5,918,303 ("Yamaura") and 6,062,868 ("Toriumi"). (Ex. 2, 9/24/01 Office Action, at 3-4; Ex. 2, 2/9/02 Office Action, at 3-4.) With respect to Cluts, Looney and Yamaura, the

examiner found that "each patent discloses the grouping of songs into categories such as album, artist, style and title. The categories overlap and are displayed." (Ex. 2, 2/9/02 Office Action, at 4.) Unable to overcome the prior art, on September 19, 2002, Creative abandoned claims directed at its alleged user interface invention. (Ex. 2, 9/19/02 Notice of Abandonment.)

The '723 application

The prosecution of the '723 application proceeded concurrently with the prosecution of the '629 application. During prosecution, the examiner — different from the examiner of the '629 application — did not initially believe that the use of a hierarchical tree in the software of a media player to organize and store data was an invention. (Ex. 1; 1/15/03 Office Action, at 2-7.) More specifically, the examiner found that U.S. Patent No. 5,670,730 ("Grewe"), media player prior art, which disclosed storing music data and identifying metadata in a flat list, anticipated Creative's alleged file hierarchy invention.¹(*Id.*)

To distinguish Grewe, Creative unequivocally argued to the USPTO that "the current invention provides a hierarchical definition file that has a tree structure, including category names that name the branch under which tracks are listed. For each track, each branch in which the track belongs is determined, and the track is filed in the appropriate location in the branch." (Ex. 1, 5/20/03 Amendment and Response to Office Action, at 7.) Despite Creative's argument, the examiner finally rejected Creative's application claims. (Ex. 1, 7/29/03 Office Action, at 2-8.) Creative then filed on November 3, 2003 a Notice of Appeal of the final rejection to the Board of Patent Appeals and Interferences. (Ex. 1, 11/3/03 Notice of Appeal.)

¹ As discussed in Exhibit 5, Apple's accused products also store data according to a flat list.

Instead of presenting its argument to the Board of Patent Appeals and Interferences, Creative then filed a Request for Continued Examination on February 3, 2004. (Ex. 1, 2/3/04 Request for Continued Examination.) In its Request, Creative first amended the pending applications claims in an attempt to overcome Grewe, and second added two new claims directed at a "method of displaying media information on a display screen." (*Id.*, at 6-7.)

On March 29, 2004, the examiner issued an Office Action indicating that Creative had to elect whether to pursue either the claims it had amended in the Request for Continued Examination or its two new claims. (Ex. 1, 3/29/04 Office Action, at 2-3.) On May 4, 2004, Creative in response (1) cancelled all pending claims including the two new claims it had added; (2) filed thirteen new claims; and (3) amended the specification of the '723 application to include substantially all of the written description of the '629 application. (Ex. 1, 5/4/04 Amendment and Response to Restriction Requirement.) On June 9, 2004, the USPTO issued a Notice of Allowance for the thirteen new claims Creative had filed. (Ex. 1.)

On July 27, 2004, Creative filed an "Amendment After Notice of Allowance, pursuant to 37 C.F.R. 1.312." (Ex. 1.) 37 C.F.R. § 1.312 provides: "No amendment may be made as a matter of right in any application after the mailing of the notice of allowance. Any amendment filed pursuant to this section must be filed before or with the payment of the issue fee, and may be entered on the recommendation of the primary examiner, approved by the Director, without withdrawing the application from issue." The Manual of Patent Examining Procedure interprets section 1.312 to mean: "Amendments other than those which merely embody the correction of formal matters without changing the scope of the claims require approval by the supervisory patent examiner." (Ex. 3, Manual of Patent Examining Procedure § 714.16 (emphasis added).)

Amended independent claim, which corresponds with claim 1 of the File Hierarchy Patent recited in pertinent part:

A method of selecting at least one track from a plurality of tracks stored in a computer-readable medium of a portable media player configured to present sequentially a first, second and third display screen on the display of the media player, the plurality of tracks accessed ~~organized~~ according to a ~~file~~ hierarchy, the ~~file~~ hierarchy having a plurality of categories, subcategories and items respectively in a first, second and third level of the hierarchy, the method comprising[.]

(Ex. 1, 7/27/04 Amendment After Notice of Allowance, at 2 (underlining reflecting new language and strikethrough reflecting deleted language from the original.) On February 8, 2005, the examiner entered the requested amendment without receiving approval by the supervisory patent examiner, noting that the proposed amendment was "directed to matters of form not affecting the scope of the invention." (Ex. 1, 2/8/05 Response to Rule 312 Communication.) The File Hierarchy Patent then issued on August 9, 2005.

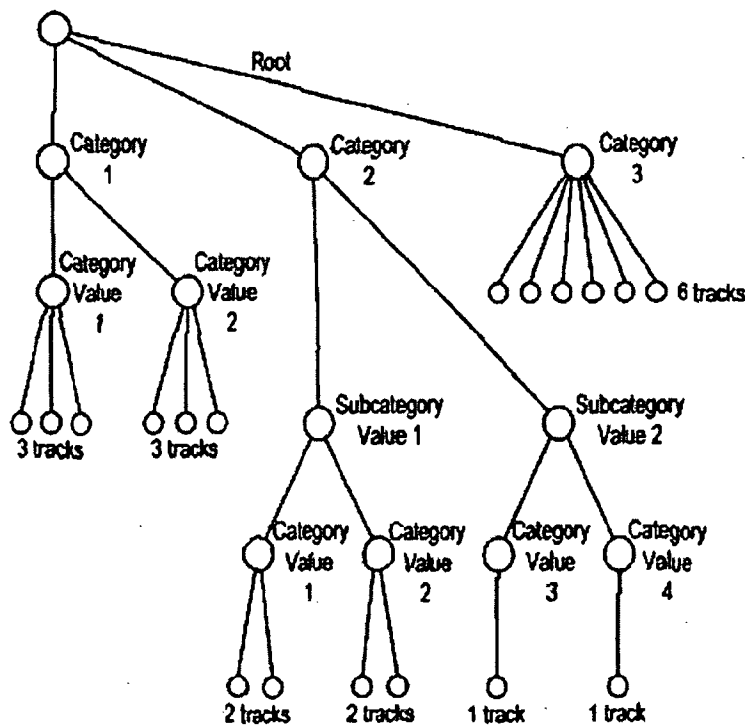
FIRST AFFIRMATIVE DEFENSE
(Non-Infringement)

Apple has not infringed any asserted claims of the File Hierarchy Patent because its accused products do not organize a plurality of tracks according to a file hierarchy, the hierarchy having a plurality of categories, subcategories, and items respectively in a first, second, and third level of the hierarchy, as required by independent claim 1 of the File Hierarchy Patent.

1. **Apple's Accused Products Do Not Use A Hierarchy To Organize Media Files**

The problem that the alleged inventors of the File Hierarchy Patent sought to solve was how to organize a relatively large amount of data in the memory of a media player. The solution the alleged inventors chose was to create a tree structure in the software of the media player that organized and stored the data and associated metadata. (Ex. 4, at col. 2:64-3:16.) As the name suggests, the tree had a root node, branches and leaf nodes. The root node — in logical terms the top of the tree — represented the highest level category for organizational purposes. (Ex. 4, at

col. 5:23-56.) In the case of music, the highest level might be music genre. (*Id.*) Branches belonging to the root would connect to leaf nodes for a subcategory such as artists. (*Id.*) That leaf node also could have branches leading to another leaf node for a subcategory such as albums. (*Id.*) The tree can shrink or grow depending upon the specificity of the organizational scheme. Figure 1 of the File Hierarchy Patent, reproduced immediately below, illustrates the hierarchical file structure that Creative allegedly invented for use in the software of a portable media player.



In the File Hierarchy Patent, upon downloading of a media file, the software running on the media player would interpret metadata information associated with the media ("such as title, genre, artist name, type, etc.") to determine in what location(s) to file the metadata. (Ex. 4, at col. 6:6-15.) In addition to the metadata, a copy of the media file would be placed in every applicable node of the tree. An analogy to the File Hierarchy Patent's alleged invention is filing

cabinets at the ITC used to store pleadings in categories such as (1) matter type; (2) case; (3) party; and (4) pleading type. After a pleading was filed, each pleading would need to be filed/stored at least four times. Each cabinet would also contain additional information specifying its contents. The ITC would then be well organized, but the file cabinets would take up substantial space. Likewise in Creative's portable media player, the hierarchical file structure consumes a substantial amount of memory.

Apple's accused products, however, do not use a hierarchical file structure for organizing media. Rather, the iPod product software simply stores data in arbitrary files one item of data after another in no logical order. With the iPod, whenever a user wants to play a particular song, the processor of the iPod looks to a separate flat file database of metadata to locate that song. Applying the preceding analogy, once a pleading was received by the ITC, a single copy of the pleading would be placed in whatever cabinet was available, and the ITC would have a single growing list of each piece of paper received at the ITC to enable future location of the pleading. In comparison with Creative's alleged invention, Apple's chosen method of organizing data consumes substantially less memory.

2. The Intrinsic Record Dictates That Apple's Products Do Not Literally Infringe The File Hierarchy Patent

The claims, specification and prosecution history of the File Hierarchy Patent reveal that Apple does not infringe. Independent claim 1 of the File Hierarchy Patent recites:

A method selecting at least one track from a plurality of tracks stored in a computer-readable medium of a portable media player configured to present sequentially a first, second, and third display screen on the display of the media player, *the plurality of tracks accessed according to a hierarchy, the hierarchy having a plurality of categories, subcategories, and items respectively in a first, second and third level of the hierarchy*, the method comprising:

selecting a category in the first display screen of the portable media player;

displaying the subcategories *belonging* to the selected category in a listing presented in the second display screen;

selecting a subcategory in the second display screen;

displaying the items *belonging* to the selected subcategory in a listing presented in the third display screen; and

accessing at least one track based on a selection made in one of the display screens.

(Ex. 4, File Hierarchy Patent, at col. 11:39-57 (emphasis added).)

To reach a proper construction of the claims, it is appropriate that the ITC read the claims in view of the written description. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (*en banc*). The specification makes it clear that File Hierarchy Patent is directed at organizing media files in a hierarchical tree:

- "A method, performed by software executing on the processor of a portable music playback device, that automatically files tracks according to hierarchical structure of categories to organize tracks in a logical order." (Ex. 4, at Abstract.)
- "According to one aspect of the present invention, a technique is provided for organizing tracks on a portable music player by automatically filing tracks in a hierarchical order based on attributes of the tracks." (Ex. 4, at col. 2:64-67.)
- "[U]sers are able to see the tracks on their player in some organized fashion other than as a single list of tracks [I]n one embodiment tracks are sorted utilizing a tree structure having branches labeled according to types of metadata associated with the tracks." (Ex. 4, col. 3:57-62.)
- "FIG. 1 depicts a hypothetical organization hierarchy. The tree shows how tracks might be listed (as leaves in the tree) after having been organized." (Ex. 4, at col. 5:23-25.)
- "The metadata for each track is utilized to file each track, using the categories defined in the hierarchical structure as described above, without any input from the user." (Ex. 4, at col. 6:38-40.)

Any claim construction adopted by the ITC must thus appropriately take into account what Creative told the public that it had allegedly invented in its specification — a particular hierarchical file structure for organizing and storing data in a portable media player.

The prosecution history of the File Hierarchy Patent likewise supports an ITC finding that Apple does not infringe. As discussed above, the original claims were repeatedly rejected in light of Grewe, prior art that organized media similar to how Apple organizes media in its accused products. Creative responded by repeatedly and unequivocally arguing:

In Grewe, the tracks are not sorted according to category names that are provided in a branch but rather in sequential blocks of memory locations. There is no hierarchical relationship between category field 40 or the artist field 42 with a particular track and any hierarchy in Grewe.

(See Ex. 1, 1/29/04 Amendment, at 9 (emphasis in original); see also Ex. 1, 5/15/03 Amendment, at 6-7.) Creative's clear and unmistakable disclaimer during prosecution should preclude its attempt to recapture a flat list organizational structure.² See *Omega Engineering Inc. v. Raytek Corp.*, 334 F.3d 1314, 1326 (Fed. Cir. 2003).

Moreover, as originally allowed, independent claim 1 read, *inter alia*, "the plurality of tracks *organized* according to a *file* hierarchy, the *file* hierarchy having a plurality of categories, subcategories, and items respectively." (Ex. 1, at 5/4/2004 Amendment (emphasized text subsequently amended or deleted).) For reasons discussed above, the word "accessed" must not be a substantive change from the word "organized" with respect to the claimed file hierarchy, and, if so, Apple does not infringe. A non-infringement chart is attached as Exhibit 5.³

² Creative's arguments regarding Grewe preclude any assertion that Apple has infringed under the doctrine of equivalents. Creative does not mention the doctrine of equivalents in its Complaint.

³ Creative has asserted that Apple has contributorily infringed the File Hierarchy Patent. Even if Creative could persuade the ITC that Apple's accused products sometimes infringe the File Hierarchy Patent, it remains Creative's burden to prove that there are no substantial non infringing uses of Apple's products. 35 U.S.C. § 271(c). Aside from playing music, Apple's products are regularly used as portable hard drives to, for example, transport electronic files from one location to another. Creative thus cannot sustain a contributory infringement claim.

SECOND DEFENSE
(Invalidity)

Subject to further investigation, upon information and belief, all asserted claims of the File Hierarchy Patent are invalid. After conducting discovery, Apple at least intends to prove that (1) each and every asserted claim of the File Hierarchy Patent is anticipated by one or more prior art references pursuant to 35 U.S.C. § 102; (2) to the extent that there exist any arguable differences between the asserted claims of the File Hierarchy Patent and the prior art, all such differences would have been obvious to one of ordinary skill in the art pursuant to 35 U.S.C. § 103; and (3) the asserted claims of the File Hierarchy Patent are not supported by adequate written description or an enabling disclosure pursuant to 35 U.S.C. § 112.

THIRD AFFIRMATIVE DEFENSE
(Unenforceability)

Subject to further investigation, all asserted claims of the File Hierarchy Patent are unenforceable.

FOURTH DEFENSE
(Public Interest)

The exclusion order and the cease and desist order requested by Creative would not further the public interest but would adversely affect the public welfare, competitive conditions and the U.S. consumer.

REQUEST FOR RELIEF

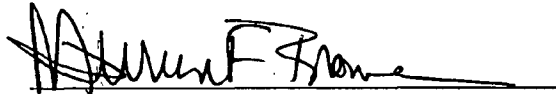
WHEREFORE, Apple respectfully requests that the ITC:

1. Deny all relief requested by Complainant Creative;
2. Find that Apple has not infringed any asserted claims of any of the Creative patents;
3. Find that no violation of Section 337 of the Tariff Act of 1930, as amended, exists by reason of the importation, sale for importation, or sale after importation in the United States of any Apple product;

4. Find that Apple has not infringed the File Hierarchy Patent;
5. Find that the File Hierarchy Patent is invalid pursuant to 35 U.S.C. § 102;
6. Find that the File Hierarchy Patent is invalid pursuant to 35 U.S.C. § 103;
7. Find that the File Hierarchy Patent is invalid pursuant to 35 U.S.C. § 112;
8. Find that the File Hierarchy Patent is unenforceable;
9. Issue an Order terminating the instant investigation with prejudice; and
10. Award Apple such other and further relief as the Commission deems appropriate.

Dated: July 6, 2006

Respectfully submitted,



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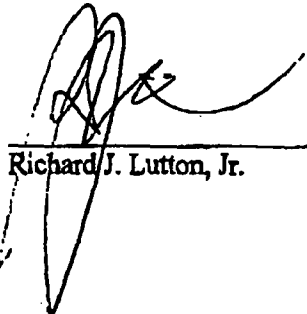
**VERIFICATION OF RESPONSE TO THE COMPLAINT AND
NOTICE OF INVESTIGATION, INCLUDING AFFIRMATIVE DEFENSES**

I, Richard J. Lutton, Jr., declare, in accordance with 19 C.F.R. §§ 210.4 and 210.13, under penalty of perjury under the laws of the United States of America, that the following statements are true:

1. I am the Director of Patents, of Apple Computer, Inc., and am duly authorized to sign this Response on behalf of Apple Computer, Inc.;
2. I have read the foregoing Response;
3. To the best of my knowledge, information, and belief, based upon reasonable inquiry, the foregoing is well founded in fact and is warranted by existing law or a non-frivolous argument for the extension, modification, or reversal of existing law or the establishment of new law; and
4. The foregoing Response is not being filed for an improper purpose, such as to harass or to cause unnecessary delay or needless increase in the cost of litigation.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 6 th day of July, 2006.



Richard J. Lutton, Jr.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing **RESPONSE OF APPLE COMPUTER, INC. TO THE COMPLAINT OF CREATIVE LABS, INC. AND CREATIVE TECHNOLOGY LTD.(PUBLIC)** was served as indicated, to the parties listed below, this 6th day of July 2006:

The Honorable Marilyn R. Abbott
SECRETARY
U.S. INTERNATIONAL TRADE COMMISSION
500 E Street, S.W., Room 112A
Washington, DC 20436
(VIA HAND DELIVERY – Original + 6 copies)

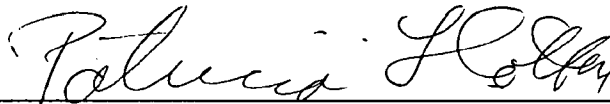
The Honorable Paul J. Luckern
ADMINISTRATIVE LAW JUDGE
U.S. INTERNATIONAL TRADE COMMISSION
500 E Street, S.W., Room 317
Washington, DC 20436
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10841 U.S. PTO
09/755723
01/05/01

4	Subclass
707	Class

ISSUE CLASSIFICATION

PATENT NUMBER	
6928433	
6928433	

U.S. UTILITY Patent Application

MIKAGI O.I.P.E. PATENT DATE AUG 17 2005
SCANNED 7/16/05 G.A. J.M.

APPLICATION NO. 09/755723	CONT/PRIOR	CLASS 707	SUBCLASS 4	ART UNIT 285	EXAMINER M. J. J. J.
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APPLICANTS: Rog Goodman, Howard Egan

2164

Automatic hierarchical categorization of music by metadata

PTO-204 1200

ISSUING CLASSIFICATION			
ORIGINAL		CROSS REFERENCE(S)	
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)
707	4	707	3, 102
INTERNATIONAL CLASSIFICATION		386	46
606E	17/30		

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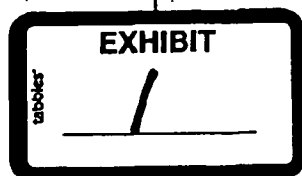
7/16/05 Formal Drawings (12 sheets) set 14 11/19/04

<input type="checkbox"/> TERMINAL DISCLAIMER	DRAWINGS			CLAIMS ALLOWED	
	Sheets Drwg. 6	Figs. Drwg. 8	Print Fig. 8	Total Claims 13	Print Claim for O.G. 1
<input type="checkbox"/> The term of this patent subsequent to _____ (date) has been disclaimed.	_____ (Assistant Examiner) (Date)			NOTICE OF ALLOWANCE MAILED	
<input type="checkbox"/> The term of this patent shall not extend beyond the expiration date of U.S. Patent No. _____	Charles Roneo CHARLES RONEO PRIMARY EXAMINER (Primary Examiner)			6/19/04 ISSUE FEE	
<input type="checkbox"/> The terminal _____ months of this patent have been disclaimed.	A. White (Legal Instruments Examiner)			Amount Due \$1330	Date Paid 04 8/12/04
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PATENT APPLICATION



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INITIALS _____

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10. <i>Final Rejection</i>	7-29-03 ✓	51.	
11. <i>Revoc / PA</i>	5/20/03 ✓	52.	
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20. <i>Allowance</i>	6/9/04 ✓	61.	
21. <i>Revoc / P.A.</i>	7-12-04 ✓	62.	
22. <i>Notice of Revoc / Accept</i>	8-16-04 ✓	63.	
23. <i>Change of Inventorship</i>	7/9/04 ✓	64.	
24. <i>Cont. E (Rule 312) N.E</i>	7/27/04 ✓	65.	
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26. <i>Supp. Notice of Allowability</i>	3-3-05 ✓	67.	
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SEARCHED

Class	Sub.	Date	Exmr.
84	609 601 602 611-614	01/08/03	Ⓢ
707	104.1 3 4 102	↓	↓
386	46	7-24-03	CZR
707	3 4 102 46	6-8-04	CZR
386			

SEARCH NOTES (INCLUDING SEARCH STRATEGY)

	Date	Exmr.
SEARCHED EAST (USPAT; US-TA PUB EPO; JPO; DERIVED (IBM.TDB)) SEARCH NOTES ATTACHED	01/08/03	Ⓢ
	↓	↓
East	7-24-03	CZR
East	6-8-04	CZR

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
707	3 4 102 46	6-8-04	CZR
386			

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ISSUE ... APLE AREA (for additional cross references)

POSITION	INITIALS	ID NO.	DATE
FEE DETERMINATION			
O.I.P.E. CLASSIFIER	<i>AS</i>	<i>1027</i>	<i>2/2</i>
FORMALITY REVIEW	<i>off</i>	<i>1027</i>	<i>02/2/11</i>
RESPONSE FORMALITY REVIEW	<i>ltt</i>	<i>AM</i>	<i>6-5-01</i>

INDEX OF CLAIMS

✓ Rejected N Non-elected
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 - (Through numeral) Canceled A Appeal
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Claim	Final	Original	Date
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(12) **United States Patent**
Goodman et al.

(10) Patent No.: **US 6,928,433 B2**
(45) Date of Patent: **Aug. 9, 2005**

(54) **AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA**

(75) Inventors: **Ron Goodman, Santa Cruz, CA (US);
Howard N. Egan, Capitola, CA (US)**

(73) Assignee: **Creative Technology LTD, Singapore
(SG)**

(*) Notice: **Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 323 days.**

(21) Appl. No.: **09/753,723**

(22) Filed: **Jan. 3, 2001**

(65) **Prior Publication Data**

US 2002/0147728 A1 Oct. 10, 2002

(51) Int. Cl.⁷ **G06F 17/30**

(52) U.S. Cl. **707/4; 707/3; 707/102;
386/46**

(58) Field of Search **84/609, 601, 602,
84/611-614; 707/104.1, 3, 4, 102; 386/46**

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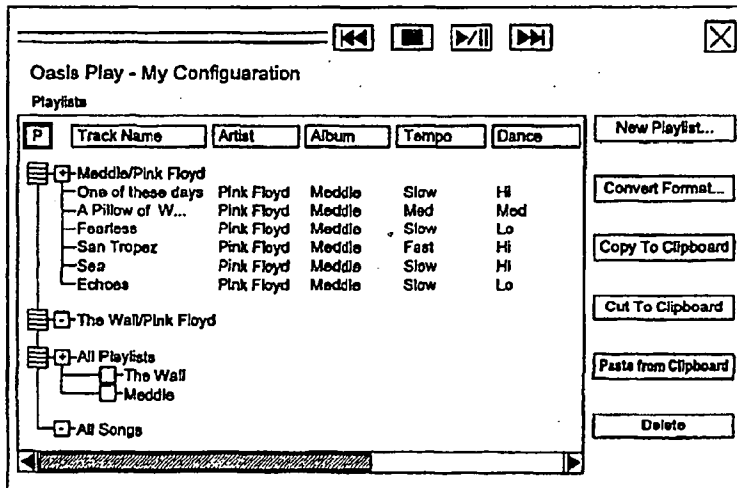
Primary Examiner—Charles Rooses

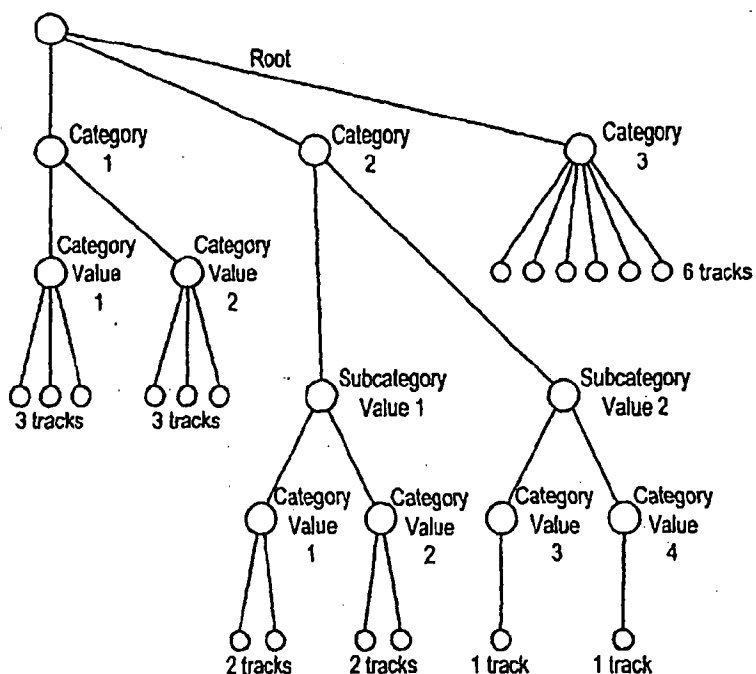
(74) *Attorney, Agent, or Firm*—Russell N. Swerdon;
Creative Technology LTD

(57) **ABSTRACT**

A method, performed by software executing on the proces-
sor of a portable music playback device, that automatically
files tracks according to hierarchical structure of categories
to organize tracks in a logical order. A user interface is
utilized to change the hierarchy, view track names, and
select tracks for playback or other operations.

16 Claims, 12 Drawing Sheets





For example:

Category 1 = Album Name

Category Value 1 = Abbey Road

Category Value 2 = Hits from the 60's

Category 2 = Artist Name

Subcategory Value 1 = British Artists

Subcategory Value 2 = American Artists

Category Value 1 = The Beatles

Category Value 2 = Petula Clark

Category Value 3 = Mamas and the Papas

Category Value 4 = Nick Drake

Category 3 = All tracks

FIG. 1.

V1.0
Albums|0x01|BLBN
Artists|0x01|BCBMBN
All Tracks|0x01|BN

FIG. 2.

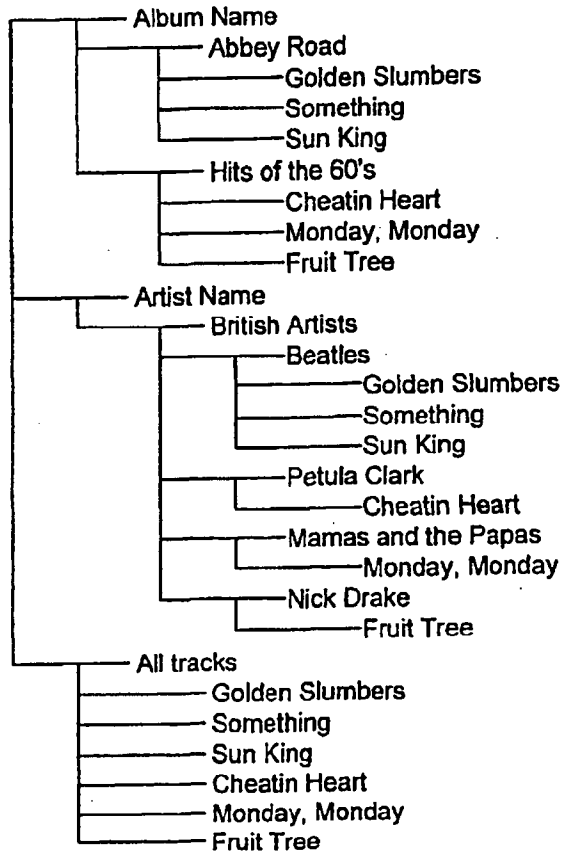


FIG. 3.

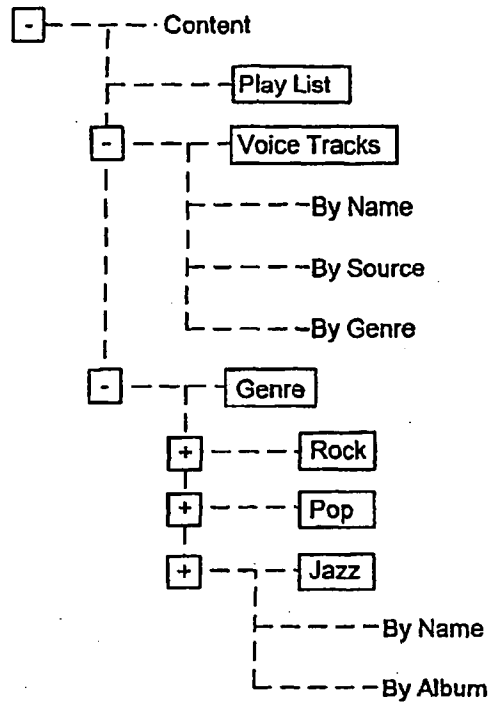


FIG. 4.

file data	album	name	genre	type
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FIG. 5.

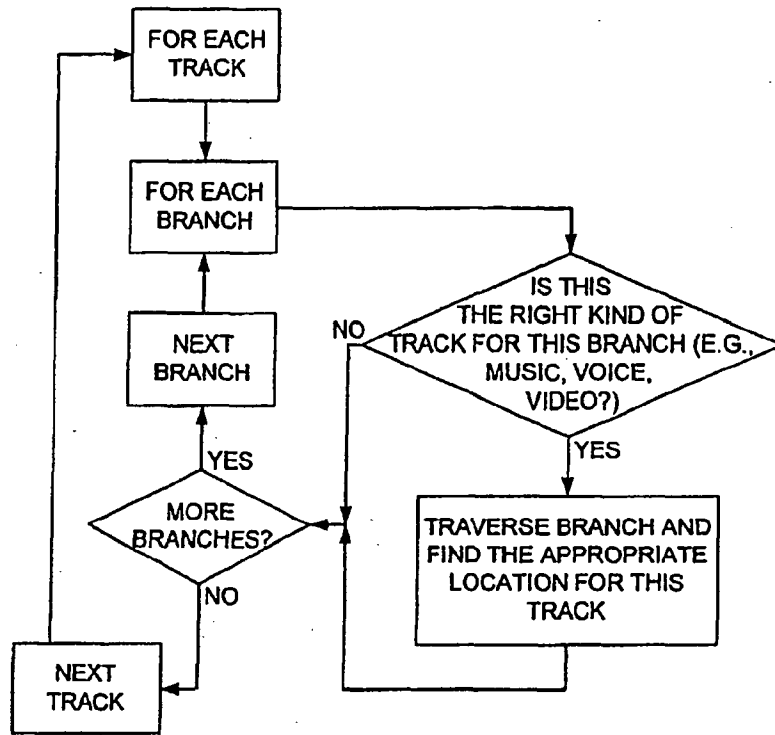


FIG. 6.

Albums	Full Moon Fever	Free Falling I Won't Back Down	
	Graceland	Love Is A Long Road The Boy In The Bubble Graceland	
	Hotel California	Hotel California New Kid In Town	
	Unknown (Created for Items Without Album attribute)	Track 1	
		Stardust	
Artist	Tom Petty	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road
	Eagles	Hotel California	Hotel California New Kid In Town
	Paul Simon	Graceland	The Boy In The Bubble Graceland
Genre	Rock	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road
		Hotel California	Hotel California New Kid In Town
		Graceland	The Boy In The Bubble Graceland

FIG. 7.

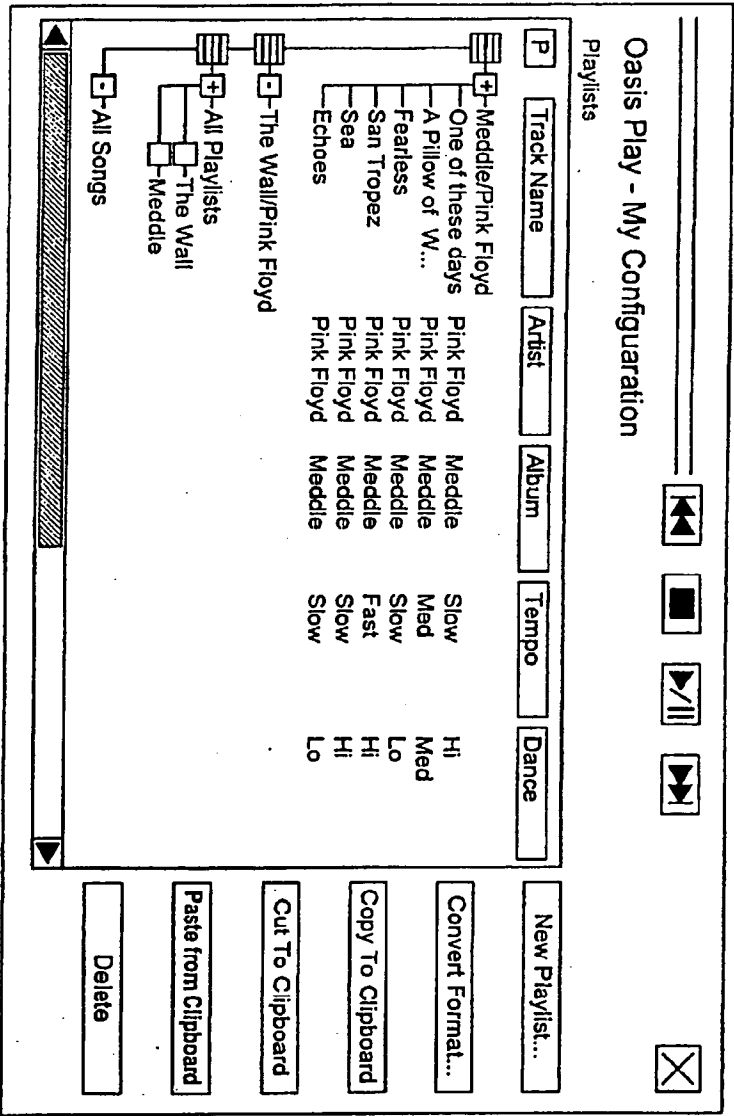


FIG. 8.

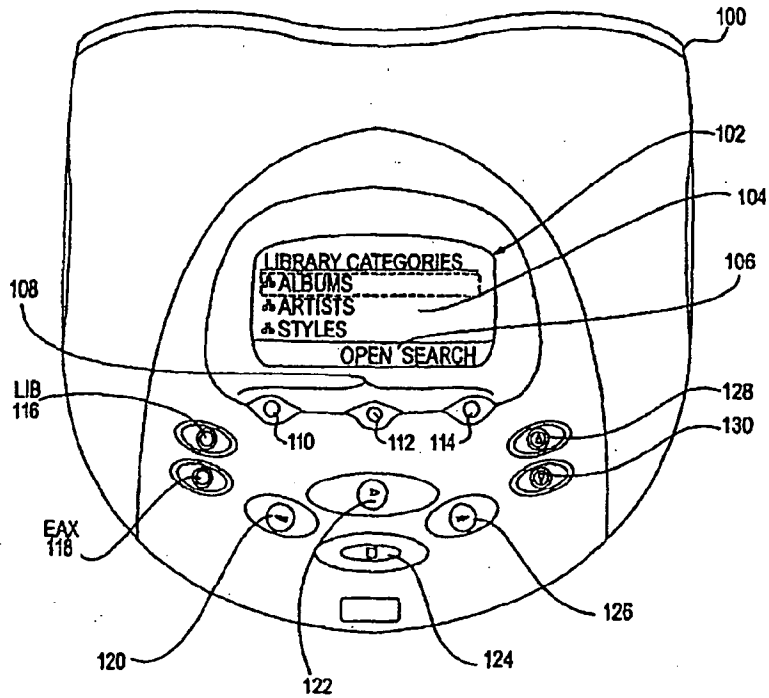


FIG. 9

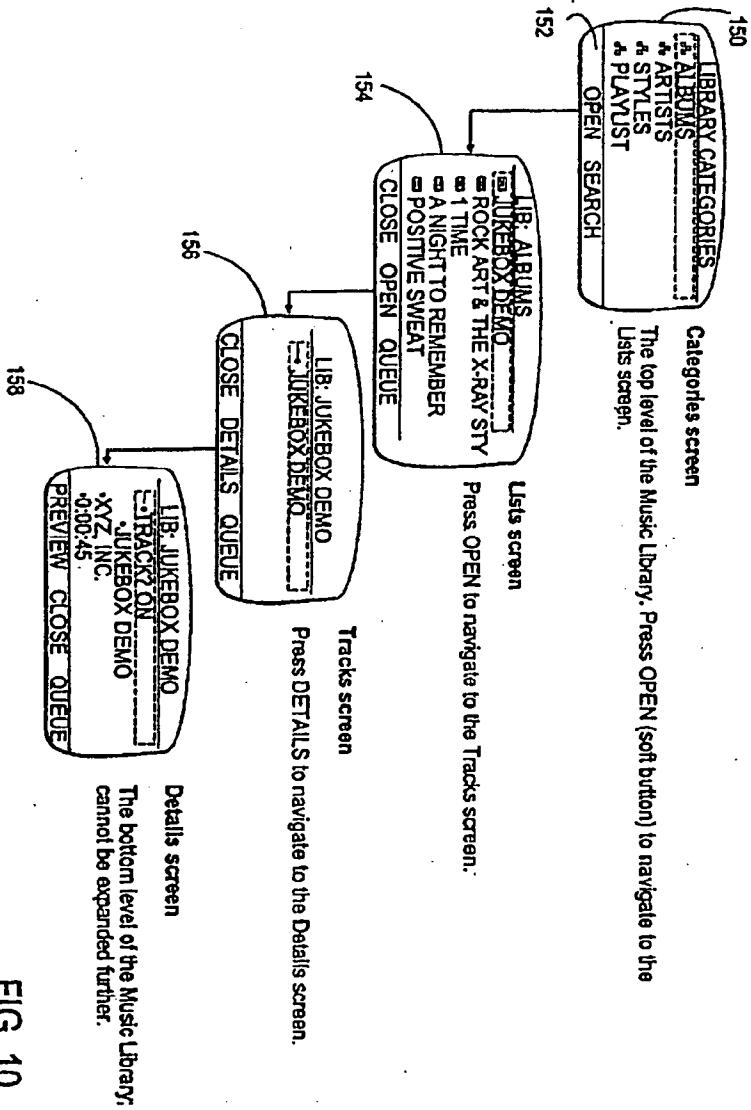


FIG. 10

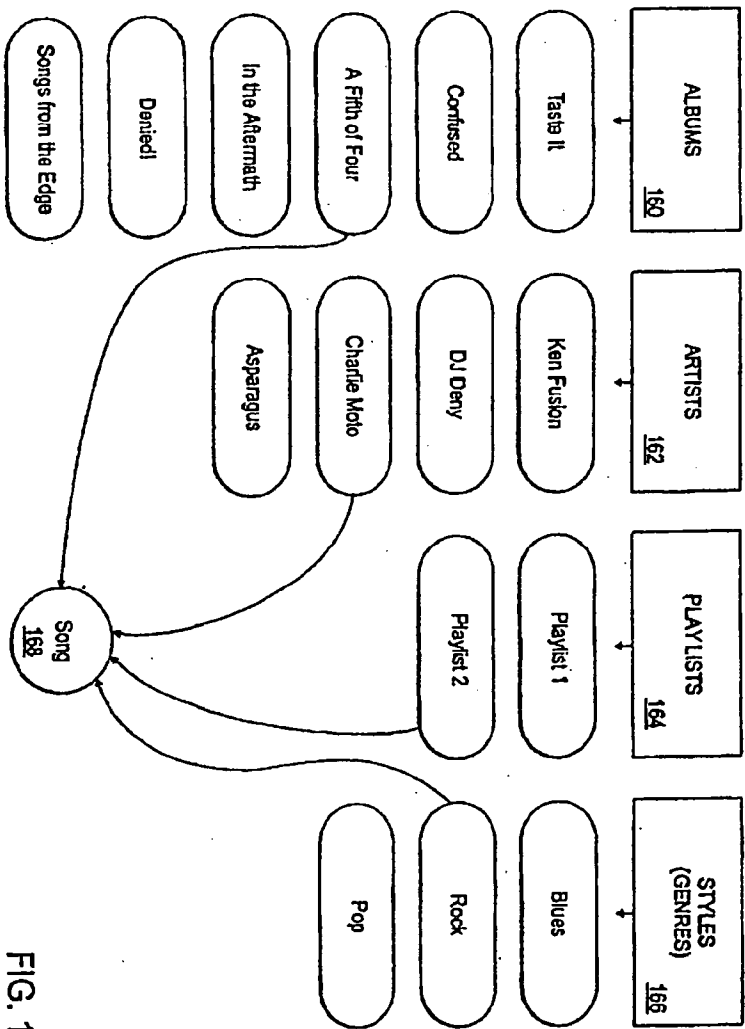


FIG. 11

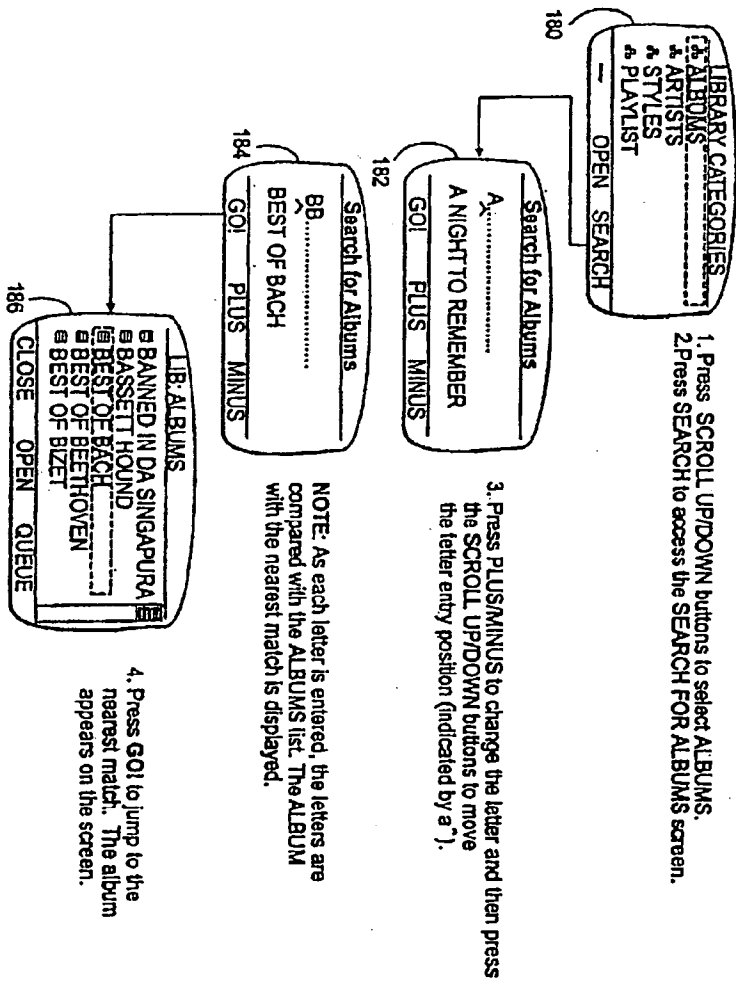


FIG. 12

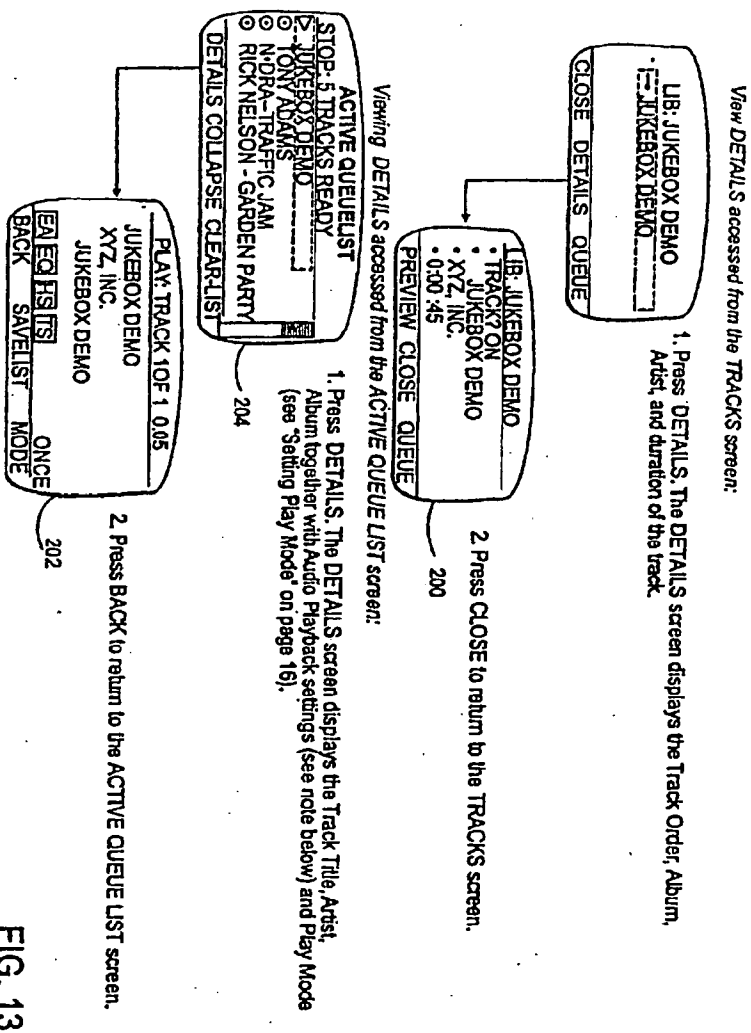


FIG. 13

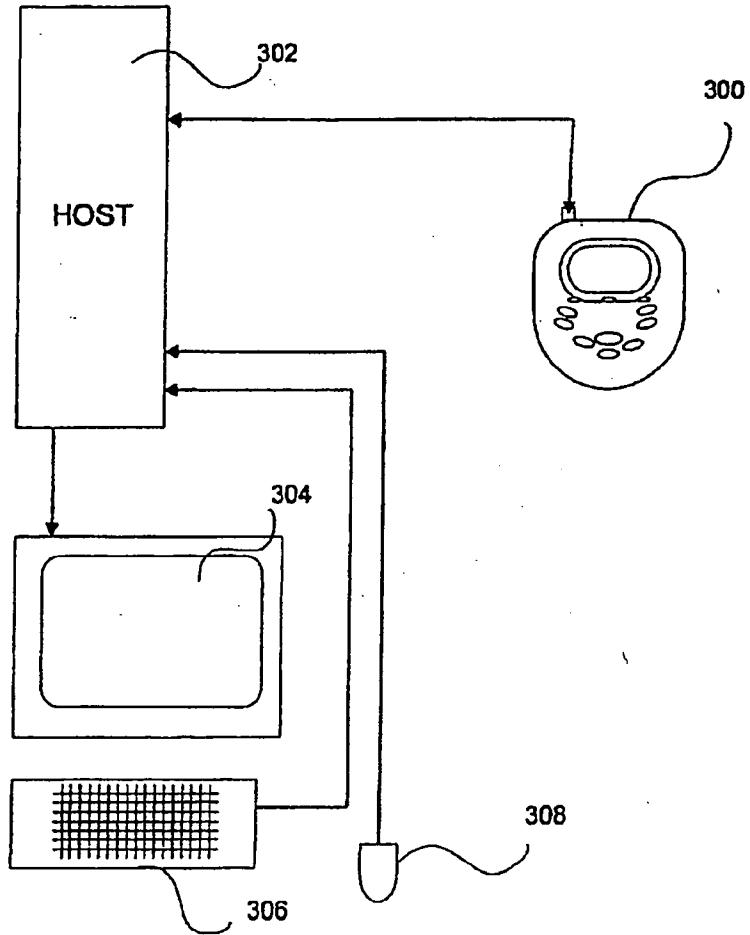


FIG. 14

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AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

CROSS-REFERENCES TO RELATED APPLICATIONS

This application is related to Application Ser. No. 09/755,629, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," now abandoned and Application Ser. No. 09/755,367, entitled "Audioplayback Device with Power Savings Storage Access Mode," issued as U.S. Pat. No. 6,590,730, all filed Jan. 5, 2001, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

Today, portable consumer electronic devices are more powerful than ever. For example, small, portable music playback devices can store hundreds, even thousands, of compressed songs and can play back the songs at high quality. With the capacity for so many songs, a playback device can store many songs from different albums, artists, styles of music, etc.

Music jukeboxes implemented in software executed by a digital computer and portable MP3 and CD players both provide facilities for forming playlists. For example, the OZIC player, distributed by the assignee of the present application, runs on a host PC and has a playlist feature that allows selection of tracks from the PC's hard disk to be included in the playlist.

As storage capacity increases and songs are compressed to shorter file lengths the number of songs that can be stored increases rapidly. Major problems facing the consumer are organizing and accessing the tracks.

Typically, portable devices have a user interface including a small screen and buttons. Such a display screen might be, e.g., 1"x2". This small display size is necessary because of the physical size of the device which is typically carried in the hand. The small size also limits the number, size, shape, and types of user input controls that can be mounted on the device. For example, a few pushbuttons are usually provided to perform all of the device's control functions. Using such a compact user interface to navigate and select among hundreds of songs is inefficient and often frustrating. The display screen can only show a few song titles at one time, and the limited controls make it difficult for a user to arbitrarily select, or move among, the songs.

The creation of playlists is one technique to organize the playing of songs. A set of songs can be included in a playlist which is given a name and stored. When the playlist is accessed, the set of songs can be played utilizing various formats such as sequential play or shuffle.

However, the creation of playlists itself becomes problematic as the number of songs increases, since the user often arbitrarily selects songs from a large number of tracks to form a playlist. This selection mechanism can be fairly tedious; does not necessarily produce playlists that are of interest to the user over the course of time; may not remain up-to-date if new songs are added that logically fit into a previously created playlist (e.g. "Favorites by Band X" might become out of date if a new favorite by Band X is added after the playlist was created); and leads to "lost" songs that are not members of any playlist.

Accordingly, improved techniques for organizing and grouping tracks useful in a portable music player are needed.

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Further, it is desirable to provide a user interface suitable for a small device. The user interface should allow a user to efficiently navigate among, and select from, many items stored in the device.

SUMMARY OF THE INVENTION

The present invention provides an efficient user interface for a small portable music player. The invention is suitable for use with a limited display area and small number of controls to allow a user to efficiently and intuitively navigate among, and select, songs to be played. By using the invention, very large numbers of songs can be easily accessed and played.

One aspect of the invention includes an overlapping hierarchy of categories. Categories include items that can also be included in other categories so that the categories "overlap" with each other. Thus, a song title can be accessed in multiple different ways by starting with different categories. For example, a preferred embodiment of the invention uses the top-level categories "Albums", "Artists", "Genres" (or styles), and "Play Lists". Within the Albums category are names of different albums of songs stored in the device. Within each album are the album tracks, or songs, associated with that album. Similarly, the Artists category includes names of artists which are, in turn, associated with their albums and songs. The Genre category includes types of categories of music such as "Rock", "Hip Hop", "Rap", "Easy Listening", etc. Within these sub-categories are found associated songs. Finally, the "Play Lists" category includes collections of albums and/or songs which are typically defined by the user.

Advantageous use is made of the overlapping hierarchy to allow the user to quickly designate a song for playback. The device uses three "soft" pushbuttons that have assignable functions. The interface maintains consistent button functionality whenever possible and uses uniform command names and operations in different types of items so that the interface is more intuitive. For example, the user can open and queue both albums and songs with predictable results.

The interface also provides for multiple functions for a single control. For example, a "Play" button can act, in a first function, to play a currently-selected song. The Play button can act, in a second function, to cycle through different playback modes. The modes can be, e.g., (1) playback of songs from a hard disk; (2) playback of music from a radio receiver built into the device; and (3) playback of voice messages. The first function for the Play button can be activated by momentarily depressing the Play button for a short period of time. The second function is invoked by depressing the Play button for a longer period of time whereupon the device cycles through the different modes. Other ways of invoking the functions are possible such as where the second function is automatically entered from a powered-down state.

In one embodiment, the invention provides a method for selecting songs to be played in an electronic audio device, wherein the device includes a display and one or more user input controls, wherein songs are organized into categories, albums, wherein songs and albums are associated with artist names. The method includes steps of displaying categories on the display; accepting signals from a user input control to select a category; displaying one or more songs in the selected category on the display; accepting signals from a user input control to select a displayed song; and entering selected songs into a playlist queue, wherein the device plays back songs in the playlist queue.

According to one aspect of the present invention, a technique is provided for organizing tracks on a portable music player by automatically filing tracks in a hierarchical order based on attributes of the tracks.

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According to another aspect of the invention, metadata is associated with each track that is used to automatically define the track's appropriate place in the hierarchy.

According to another aspect of the invention, the hierarchy is displayed on the portable music player so that a user can traverse the organizational hierarchy to find individual tracks or find playlists composed of logical groups of tracks.

According to another aspect of the invention, the hierarchy is derived by using metadata associated with the audio content that was obtained through any source of metadata (e.g. CDDB metadata, id3v2 metadata, other obtainable metadata) and subsequently stored with or alongside the file that stores the track.

According to another aspect of the invention, a file is formatted so that an unaltered track is stored as file data and information about the track is stored in file attribute files.

Other features and advantages of the invention will be apparent in view of the following detailed description and appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of a tree structure for hierarchical filing of tracks;

FIG. 2 is a definition file that specifies the hierarchy depicted in FIG. 1;

FIG. 3 is a user's view of the hierarchy;

FIG. 4 is a schematic diagram of a user interface displaying the hierarchical category structure;

FIG. 5 is a diagram of a file format for storing filed data and file attributes;

FIG. 6 is a flow chart depicting steps for filing tracks according to the hierarchical tree structure;

FIG. 7 depicts a tree resulting from searching the tracks; and

FIG. 8 depicts a format for a user interface;

FIG. 9 illustrates the NOMAD Jukebox and its user interface controls;

FIG. 10 illustrates a sequence of display screens describing how to navigate to lower levels;

FIG. 11 illustrates associations among items;

FIG. 12 shows display screens used to search for a song or other item;

FIG. 13 illustrates details of different items; and

FIG. 14 illustrates a playback device coupled to a host computer system.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the invention will now be described in the context of a portable personal player that plays audio files stored in memory. The files may be in MP3, wav, or other digital formats.

In the presently described embodiment, users are able to see the tracks on their player in some organized fashion other than as a single list of tracks. As will be described in more detail below, in one embodiment tracks are sorted utilizing a tree structure having branches labeled according to types of metadata associated with the tracks.

For example, a track recorded as "Golden Slumbers" by the Beatles that appears on their album "Hey Jude" might appear as a track under the album "Abbey Road" as well as a track under the list of tracks by the Beatles. It might appear as a track under the genre "Pop Rock" as well as "Songs

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from the 60's." Furthermore, the organization can have more complex hierarchies. For example, the category of "Pop Rock" might contain subcategories "British Musicians," "American Musicians" and "Other Musicians". In all cases, the track is automatically filed into all appropriate locations without requiring user interaction.

In the currently defined embodiment, a tree structure is defined by a file having the following structure.

The first line of a TreeDefIn file contains a version number:

V1.0

Each subsequent line (at least in v1.0) contains lines of the following format:

CATEGORY_NAME|TRACK_TYPE
MASK|CATEGORY_STRUCTURE

CATEGORY_NAMES are the top-level names of the branch under which tracks are sorted. They include things like "Album," "Artist," "Voice Tracks," "All Tracks," etc.

TRACK_TYPE_MASKs tell which types of tracks are to be filed under this particular branch. The actual value is a hexadecimal numerical value (in '0X' format, e.g. 0X01) generated by ORing the following flags together as appropriate:

```
enum tTrackType
{
    kTTNothing=0x00,
    kTTSong=0x01,
    kTTVoice=0x02,
    kTTBook=0x04,
    kTTMask=0x08,
    kTTPlaylist=0x10
};
```

So, for example, the "Album" branch has a TRACK_TYPE_MASK of kTTSong, because only songs are filed under that branch, but the "All Tracks" branch has a TRACK_TYPE_MASK of (kTTSong|kTTVoice|kTTBook).

Other elements might be added to tTrackType (e.g. kTTVideo) as appropriate.

CATEGORY_STRUCTUREs tell how to file the songs based on their metadata information. The CATEGORY_STRUCTURE is a string of characters that tell, from left to right, the order of hierarchy. The characters come from the following enum constants:

```
enum tFileTag
{
    kFTNone='@',
    kFTTrackType='T',
    kFTTitle='N',
    kFTAudiFile='P',
    kFTArtist='M',
    kFTAlbum='L',
    kFTGenre='G',
    kFTSource='S',
    kFTYear='Y',
    kFTArtistCountry='C'
};
```

Thus, a CATEGORY_STRUCTURE of LN tells to create a subcategory that is a list of Albums, each of which contains a list of Tracks.

In total, a line like:
 Album[0x01]LN
 Says to create a branch called "Album" which contains tracks of type KTTSoog organized first by album name, and then by track name.
 The following is an example of a tree definition file similar (though not identical) to the hierarchy presented in the Nomad Jukebox product (the 'B' before each FileTag was used to identify that these are basic tags so that we wouldn't run out of letters in the alphabet as we included more complex metadata—thus each group of two letters represents a level in the hierarchy):

```
V1.0
Album[0x01]BLBN
Artist[0x01]BMBN
Genre[0x01]BOBN
Video Tracks[0x02]BSBOBN
Playlist[0x01]PBN
Macro[0x00]BN
All Tracks[0x07]BN
```

FIG. 1 depicts a hypothetical organization hierarchy. The tree shows how tracks might be listed (as leaves in the tree) after having been organized. Example values for nodes in the tree are shown as well. The same track may appear more than once as a leaf in the tree, as described above, if it fits into multiple categories (e.g. a song that appears on the Abbey Road branch would also appear in the Beatles branch). In the example shown, the first branch contains tracks organized by album. As shown in the example, this music collection contains three tracks from "Abbey Road" and three tracks from "Hits from the 60's". The second branch contains tracks organized by artist, and sub organized by where the artist is from. Thus, a user browsing would first select the "Artists" branch and then choose between "British Artists" and "American Artists". Finally, they would select the particular artist. In the third branch, all tracks are shown.

The tree definition file that would specify the hierarchy shown in FIG. 1 is shown in FIG. 2.

The first line identifies the version of the tree definition file.

The second line defines the "Albums" branch. The first part of the line, "Albums" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BLBN," defines that the branch lists first the names of all albums (BL) and then tracks on those albums (BN).

The third line defines the "Artists" branch. The first part of the line "Artists" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BMBBN," defines that the branch lists first the names of all countries where artists in this collection come from (BC) and under those items, the artists' names (BM), and then tracks by those artists (BN).

FIG. 3 shows what a user's view of this hierarchy might be if he/she were shown a fully expanded view of the 6-song tree. Notice that each song appears three times, once in each branch.

In consumer products the tree define file is not edited directly but through a user interface, one example of which is depicted in FIG. 4. An example of a user interface for viewing songs by category and editing the tree structure is depicted in FIG. 4.

An embodiment of the invention is utilized in the Nomad Jukebox, manufactured by the assignee of the

present invention, and described more fully in the copending application, filed on the same date as the present application, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Attny. Docket No. 17002-020800).

In a preferred embodiment, metadata is associated with each track and includes such information as title, genre, artist name, type, etc. In the preferred embodiment, software stored in a portable player and executed by the onboard processor automatically files each track in the correct category utilizing the associated metadata and the tree define file. The program code can be stored in any computer readable medium including magnetic storage, CD ROM, optical media, or digital data encoded on an electromagnetic signal.

Thus, the user is automatically provided with a powerful and flexible tool for organizing and categorizing the tracks stored on the portable player.

If the tracks are formatted in MP3 format the metadata can be stored in ID3 tags included in the MP3 file. In one embodiment of the invention, the tracks are stored in alternate file format including file data and file attributes. The file data is the music track itself and the file attributes part of the file includes fields of arbitrary size which are used to store metadata characterizing the track stored as the file data. Again this metadata includes information about the track such as title, genre, artist name, type, etc.

There are several advantages to using the alternate file format. Metadata of types not easily included in an ID3 tag can be utilized. Further, the original track format is not changed, so that error correction data such as checksums are valid. Finally, any file format can be used (e.g. WAV, WMA, etc.) because the metadata is stored separately, and thus audio formats that have limited support for metadata can still be stored on the portable player in native format without transcoding. The formatted files are formed by software stored in the portable music player and executed by an on-board processor.

The metadata for each track is utilized to file each track, using the categories defined in the hierarchical structure as described above, without any input from the user.

FIG. 5 is a schematic diagram of the alternative file format including file data in the form of an MP3 track, and metadata fields for holding data indicating the name of the album the track is from, the name of the song, the genre of the song, and the type of track.

A particular embodiment of a file format will now be described. All tracks are created with some set of attributes as shown below:

Definition of TrackInfo Data Field			
Field	Offset	Size	Description
Attribute Count	0	2	The number of attributes follow for the track
Attr 1 type	2	2	Binary = 0, ASCII = 1
Attr 1 name len	4	2	Length of attribute name string
Attr 1 data len	6	4	Length of attribute data
Attr 1 Name	10	N	Attribute name string
Attr 1 Data	10 + N	M	Attribute data
...			
Attr N type			
Attr N name len			
Attr N data len			
Attr N Name			
Attr N Data			

-continued

Required Attributes		
Attribute Name	Value(s)	Remarks
TITLE	ASCII string	Required by jukebox
CODEC	"MP3", "WMA", "WAV"	Required by jukebox
TRACK ID	DWORD	Set by jukebox
ALBUM	ASCII string	Optional
ARTIST	ASCII string	Optional
GENRE	ASCII string	Optional
LENGTH	In seconds	Optional
TRACK SIZE	In bytes	Optional
TRACK NUM	1-n (track within album)	Optional

These attributes can be subsequently changeable via a host application, running on a personal computer connected to the portable music player.

FIG. 6 shows a flow chart of an embodiment of the process used to build the hierarchical database of tracks. It starts by iterating through each track, and, for each track, iterating through each branch to find if the track belongs on the branch, and, if so, where. In this case, the term track could refer to any content, e.g. a music track, a spoken word track, or even a video track.

Also, the hierarchical catalog of tracks can be used to form playlists in a structured manner. For example, if a user wants to hear Jazz and Blues the entire sub-categories can be selected to form one playlist.

An alternative hierarchical catalog generation technique will now be described. In this alternative embodiment, at system startup and as tracks are added or changed, the hierarchy is generated as an in-memory tree structure. Each track is added to the tree using the categories ALBUM, ARTIST and GENRE.

The following example shows the algorithm for adding a track. For clarity, only the attributes used by the tree are shown.

TITLE	"Free Falling"
ALBUM	"Pull Me In Fever"
ARTIST	"Tom Petty"
GENRE	"Rock"
TRACK NUM	1

The following function is executed to build the in-memory memory tree.

```

Build Tree()
For each track,
  Add Track To Category(Album, Track)
  Add Track To Category(Artist, Track)
  Add Track To Category(Genre, Track)
End of Build Tree
    
```

FIG. 7 depicts a tree which could result from implementing Build Tree() function. Note that "Stardust" does not have any entries for Album or Artist. The host software running on a computer connected to the portable music player could be utilized to add missing attributes to the "Stardust" track and, optionally, edit the title attribute. The Build Tree() function would then reinsert this track in the correct location in the tree.

FIG. 8 is an embodiment of a user interface according to another embodiment of the invention. In this example the root node is labeled "My Configuration" and the Playlist

category has been selected and the Playlist subcategory "Meddle" has been selected. Note that the types of Metadata, in this example, Track Name, Artist, Album, Tempo and Dance, are listed across the top of the screen, and the attribute values for each track are listed in a row across the screen. Various control buttons are displayed to the right of configuration window that facilitate quickly invoking selected processing on a selected track.

As noted above, a preferred embodiment of the present invention is incorporated into a product manufactured and distributed by Creative Technology, Ltd. The product is called the "NOMAD Jukebox." The following description describes further details of the display screens and interface controls.

FIG. 9 illustrates the NOMAD Jukebox and its user interface controls.

In FIG. 9, electronic audio device 100 measures about 5.5" wide by 5.5" tall by 1" thick. Display screen 102 is about 2" wide by 1" tall. Display screen 102 includes different regions such as main region 104 and soft button function description region 106.

Three soft buttons are located at 108, including buttons 110, 112 and 114. The specific command, or function, that any of the soft buttons perform when depressed is indicated by the label in soft button function description region 106. Thus, the function of soft button 112 (as shown in FIG. 9) is "open," the function of soft button 114 is "search" while soft button 110 is currently not assigned a function.

The other eight buttons on device 100 perform essentially the same functions at all times. In other words, they are not subject to function changes according to soft button function description area 106. These buttons include Library button 116, EAX and System button 118, Skip Backward button 120, Play button 122, Stop button 124, Skip Forward Button 126, Scroll Up button 128 and Scroll Down button 130. However, as discussed below, these buttons (or any type of controls used with the device) can include alternate functionality that is invoked in different ways.

The device uses visual cues, or indicators, in the display. When an item is highlighted it indicates that the item is the "current" item, or currently-selected item, which is susceptible to be operated on by a subsequent user action—such as playback, or expansion of the item. In FIG. 1, screen 102 shows that the item, "ALBUMS," is highlighted. The highlighted item can be acted upon by using the soft buttons, or another button, as described below. The current item can be changed by using Scroll Up button 128 and Scroll Down button 130 to move the highlight up or down, respectively, throughout a list of displayed items.

Icons are used to provide additional visual cues for an item. In FIG. 1, each of the categories has a category icon to the left of it. The category icon, which may not be distinctly visible in the Figure, illustrates a first box connected by lines to additional boxes below the first box. The icon depicts a hierarchy and illustrates the property of categories, i.e., that categories can contain additional categories, songs or other items.

FIG. 10 illustrates a sequence of display screens describing how to navigate to lower levels.

In FIG. 10, library category screen 150 shows the display as it appears when the user depresses library button 116 of FIG. 9. A preferred embodiment of the device uses 4 first-level categories. These are "Albums", "Artists", "Styles" and "Play Lists". Each of these categories can "contain," or be associated with, other categories, songs, or items.

Note that in library category screen 150 ALBUMS is currently highlighted. By depressing soft button 112 of FIG.

9, the "open" command is performed on the highlighted category, as indicated by the labeling of soft button 112 and soft button function description area 132 of FIG. 10.

Lists screen 154 is displayed as a result of a user opening Album category of library category screen 150. Lists screen 154 shows items within the Albums category such as commercial albums of multiple songs from a record label, pre-made lists or collections created by a user, or other predefined lists or collections of songs or recordings.

In FIG. 10, lists screen 154 shows each item as a list of songs. This is shown visually by the icon to the left of each item which depicts a miniature list. Possible soft button commands are "Close", "Open" and "Queue". These commands correspond to soft button 110, 112 and 114, respectively. If the user selects the Close command, the display reverts to library category screen 150. If the user selects the Open command, the display shows tracks screen 156. Alternatively, the user can select the Queue command to instruct the device to place all the songs from the selected (i.e., highlighted) list into the play list for eventual playback. Yet another option allows the user to press play button 122 of FIG. 9 to cause any currently-selected songs or a list of songs (e.g., an album) to immediately be played.

Returning to FIG. 10, tracks screen 156 shows that a single song called "JukeBox Demo" is in the list. The list is also called JukeBox Demo as shown in lists screen 154. Tracks screen 156 shows possible soft commands assigned to buttons, namely "Close", "Details" and "Queue." The Close button performs the same function as before—it returns the user to the previous screen which, in this case, is lists screen 154. The user can also select the Details command to cause details of the song JukeBox Demo to be displayed in details screen 158 as shown in FIG. 10. The user can select the Queue command by soft button 114 to enter the selected song into the play list queue. As before, the user can also depress play button 122 of FIG. 9 to cause immediate playback of the selected song.

Details screen 158 shows information about the selected song including the name of the song, album (or list) name containing the song; the track number, if applicable, and track duration. Note that other information can be included. The user can preview the song, close the Details screen to return to the Tracks screen or queue the song on the play list queue.

The device provides the ability to "preview" audio files even while a current song, or playlist, is being played. When a user chooses to preview an audio file, the audio file is played for about 10 seconds while any currently-played file or playlist is suspended. After previewing is complete, the suspended file or playlist resumes playback. In other embodiments, the preview duration can vary, or be stopped by user selection.

FIG. 11 illustrates associations among items.

In FIG. 11, song 168 is one of many songs stored in the device. Categories such as albums 160, artists 162, play lists 164 and genres 166 each include sub-categories. For example, albums 160 includes the names of various albums. Songs are associated with albums, genres and playlists. Such association can be by using pointers, a data structure including items to be associated, etc. "Association" as used herein, includes a first item associated with a second item; and the second item associated with the first item. In other words, albums can be associated with one or more songs in the database of the device so that an automated search to find all songs associated with an album is easier. The direction of arrow pointers in FIG. 11 is not intended to limit the manner of associations among items in the present invention.

Similar to albums, the category of artists 162 includes names of artists, or performers, of songs. Each artist name is associated with one or more songs in the database.

Playlists 164 includes names of playlists. These are collections of songs that can be defined by the user, the device manufacturer, or others. Each playlist can be associated with one or more songs. Genres 166 includes various styles of music which are associated with one or more songs. Genres 166 includes various styles of music which are associated with one or more songs in the database. Note that items can exist without being associated with a song. Also, items can be associated with other items as where an artist name is associated with the albums containing the songs that the artist has created.

Although not shown in FIG. 11, items can have additional information, such as properties, details, etc., associated with the item. For example, a song can have information such as a play time, artist name, artist album, copyright owner, etc., associated with the song.

FIG. 12 illustrates display screens used to search for a song or other item.

In FIG. 12, screen 180 is the initial library screen, as discussed above. If the user invokes the Search command (via the appropriate soft button) with Albums selected then screen 182 is displayed. Note that the search function can be applied to any of the categories. The user can depress the Plus or Minus soft buttons to cycle through the alphabet and change the character in the current location as indicated by the cursor. The cursor position is changed by using the scroll up/scroll down buttons 128 and 130, respectively, of FIG. 9. As each letter is entered the letters are compared and the nearest match of the stored albums' names is displayed as shown in screen 184. When the desired match is displayed the user selects the Go! command. Screen 186 shows the result of selecting the Go! command. A list of albums is displayed with the matched album centered and selected. The user can close, open or queue the album as discussed above.

FIG. 13 illustrates details of different items.

In FIG. 13, screen 200 illustrates details displayed as a result of selecting the "Details" command from soft button 1A track is selected. Screen 200 shows that details of the track "JukeBox Demo" shows the name of the album that the track resides on, the creator, or copyright owner, of the track, and the playing time of the track.

Screen 202 illustrates details of an item on the active queue list. Items are placed onto the active queue list by selecting the "Queue" command when an album, song, track, or other item is selected, as discussed above. For example, screen 204 shows the active queue list where the track "JukeBox Demo" is selected. By invoking the "Details" command screen 202 is brought up to show details of the Jukebox Demo track.

As shown in screen 202, the Detail screen shows what track number the selected track is, which album the track is from; the creator, or copyright owner, of the track, and the title of the track. Additionally, the details for an item on the queue list also show playback settings. These are shown by two-letter abbreviations at the bottom of the screen. The settings are as shown in Table I, below.

TABLE I

EA	Environmental Preset
EQ	Parametric EQ
HS	Headphone Spatialization
TS	Time Scaling

TABLE I-continued

4S	Four Channel Speaker Sound (only if speakers are connected)
----	--

These settings have their common meanings, as is known in the art. Note that the setting 4S is not shown in screen 202 as it is not currently active.

FIG. 14 illustrates the Nomad Jukebox coupled to a host computer system.

In FIG. 14, device 300 (e.g., the Nomad Jukebox) is coupled to host system 302. In a preferred embodiment host system 302 is a personal computer, such as an IBM-PC compatible computer. Host system 302 includes a user interface having display 304 and user input devices such as keyboard 306 and mouse 308. In other embodiments the host system need not be a full computer system. Any type of processing system having a user interface is possible. For example, it is possible to couple the device to a laptop computer, game console, web-enabled television, or any consumer electronic device or digital platform, in general. The host user interface need not provide a display and can be much more minimal than the keyboard and mouse shown in FIG. 14. A preferred embodiment of the invention uses a Universal Synchronous Bus (USB) connection but any type of connection such as IEEE 1394 (FireWire), Ethernet, Serial Port, etc. can be used. A wireless (i.e., optical or radio frequency) connection can be used.

Once device 300 is coupled to host system 302, a user of host system 302 can launch a bridge interface to allow for the transfer of files between device 300 and host system 302. In a preferred embodiment, once the bridge interface is launched, the controls of device 300 are inoperable. The user interface of host system 302 is used to operate the bridge interface to transfer files.

The invention has now been described with reference to the preferred embodiments. Alternatives and substitutions will now be apparent to persons of skill in the art.

What is claimed is:

1. A method of selecting at least one track from a plurality of tracks stored in a computer-readable medium of a portable media player configured to present sequentially a first, second, and third display screen on the display of the media player, the plurality of tracks accessed according to a hierarchy, the hierarchy having a plurality of categories, subcategories, and items respectively in a first, second, and third level of the hierarchy, the method comprising:

selecting a category in the first display screen of the portable media player;
displaying the subcategories belonging to the selected category in a listing presented in the second display screen;

selecting a subcategory in the second display screen;
displaying the items belonging to the selected subcategory in a listing presented in the third display screen; and
accessing at least one track based on a selection made in one of the display screens.

2. The method of selecting a track as recited in claim 1 wherein the accessing at least one track comprises selecting a subcategory in the second display screen and playing a plurality of tracks associated with the selected subcategory.

3. The method of selecting a track as recited in claim 1 wherein the accessing at least one track comprises selecting a subcategory and adding the tracks associated with the selected subcategory in a playlist.

4. The method of selecting a track as recited in claim 1 wherein the accessing at least one track comprises selecting

an item in the third display screen and playing at least one track associated with the selected item.

5. The method of selecting a track as recited in claim 1 wherein the accessing at least one track comprises selecting an item in the third display screen and adding at least one track associated with the selected item to a playlist.

6. The method of selecting a track as recited in claim 1 wherein the accessing at least one track comprises one of playing or adding to a playlist at least one track associated with a selected one of the category, subcategory, and item.

7. The method of selecting a track as recited in claim 1 wherein the accessing at least one track is made after the presentation of the third display screen by reverting back to one of the second and first display screens, the second display screen presented sequentially after the third display screen.

8. The method of selecting a track as recited in claim 1 further comprising selecting one of the items displayed in the third display screen and presenting a listing of items associated with the selected item in a fourth sequentially presented display screen.

9. The method of selecting a track as recited in claim 1 wherein the category genre is selected in the first display screen from available categories that include at least artist, album, and genre; and the subcategories listed in the second display screen comprise a listing of at least one genre type and one of the at least one genre type is selected.

10. The method of selecting a track as recited in claim 9 further comprising displaying in the third display screen at least one album associated with the selected genre type and selecting one of the at least one albums displayed in the third display screen and presenting a listing of tracks associated with the selected album in a fourth sequentially presented display screen.

11. The method of selecting a track as recited in claim 1 wherein the category artist is selected in the first display screen from available categories that include at least artist, album, and genre; the subcategories listed in the second display screen comprise a listing of names of artists and a first artist name is selected; and the items displayed in the third display screen comprises at least one album associated with the first artist name.

12. The method of selecting a track as recited in claim 1 wherein the track is a music track, accessing at least one track comprises accessing a track title in the third display screen, and the track is played in response to the access.

13. The method of selecting a track as recited in claim 1 wherein receipt of the selection in the first display screen results in an automatic transition of the first display screen into the second display screen and receipt of the selection in the second display screen results in an automatic transition of the second display screen into the third display screen.

14. The method of selecting a track as recited in claim 1 wherein the category selected in the first display screen is from a top level of the hierarchy.

15. The method of selecting a track as recited in claim 1 wherein the category selected in the first display screen is a category from a level at least one level below the top level of the hierarchy.

16. The method of selecting a track as recited in claim 1 wherein the plurality of categories comprise a list of artist names, the plurality of subcategories comprise a list of album names and the plurality of items comprise a list of track names.

• • • • •

Exhibit 1

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

01/10/2001 EEKUBRY1 00000001 201430 09755723

01 FC:01	710.00 CH
02 FC:102	160.00 EH

PTO-1556
(5/87)

U.S. GPO: 1996-459-082/15164



UNITED STATES PATENT AND TRADEMARK OFFICE

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Bib Data Sheet

CONFIRMATION NO. 3728

SERIAL NUMBER 09/755,723	FILING DATE 01/05/2001	CLASS -711 707	GROUP ART UNIT 2485 2175	ATTORNEY DOCKET NO. 017002022500
APPLICANTS Ron Goodman, Santa Cruz, CA; Howard N. Egan, Capitola, CA;				
** CONTINUING DATA NONE <i>Ⓟ</i>				
** FOREIGN APPLICATIONS NONE <i>Ⓟ</i>				
IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 02/20/2001				
Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Me after	STATE OR COUNTRY CA	SHEETS DRAWING 6	TOTAL CLAIMS 13
Verified and Acknowledged Examiner's Signature	Allowance by lists			INDEPENDENT CLAIMS 1
ADDRESS 20350				
TITLE Automatic hierarchical categorization of music by metadata				
FILING FEE RECEIVED 1000	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit	

DO NOT DESTROY

Attorney Docket No.: 17002-022500US
Client Reference No.: CT-1139

PATENT APPLICATION

**AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY
METADATA**

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Client Reference No.: CT-1139

**AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY
METADATA**

ABSTRACT OF THE DISCLOSURE

A method, performed by software executing on the processor of a portable
5 music playback device, that automatically files tracks according to hierarchical structure of
categories to organize tracks in a logical order. A user interface is utilized to change the
hierarchy, view track names, and select tracks for playback or other operations.

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PATENT
Attorney Docket No.: 17002-022500US
Client Reference No.: CT-1139

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

CROSS-REFERENCES TO RELATED APPLICATIONS

INSAI

~~This application is related to Application No. , entitled "System for
Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Atty.
Docket No. 17002-020800), and Application No. , entitled "Audioplayback
Device with Power Savings Storage Access Mode," (Atty. Docket No. 17002-022400), all
filed January 5, 2001, the disclosures of which are incorporated herein by reference.~~

10

BACKGROUND OF THE INVENTION

US
PATENT
AND
OFFICE
DOCUMENTS

Today, portable consumer electronic devices are more powerful than ever. For example, small, portable music playback devices can store hundreds, even thousands, of compressed songs and can play back the songs at high quality. With the capacity for so many songs, a playback device can store many songs from different albums, artists, styles of music, etc.

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Music jukeboxes implemented in software executed by a digital computer and portable MP3 and CD players both provide facilities for forming playlists. For example, the OOZIC player, distributed by the assignee of the present application, runs on a host PC and has a playlist feature that allows selection of tracks from the PC's hard disk to be included in the playlist.

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As storage capacity increases and songs are compressed to shorter file lengths the number of songs that can be stored increases rapidly. Major problems facing the consumer are organizing and accessing the tracks.

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Typically, portable devices have a user interface including a small screen and buttons. Using such a compact user interface to navigate and select among hundreds of songs is inefficient and often frustrating. The display screen can only show a few song titles at one time, and the limited controls make it difficult for a user to arbitrarily select, or move among, the songs.

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The creation of playlists is one technique to organize the playing of songs. A set of songs can be included in a playlist which is given a name and stored. When the playlist is accessed, the set of songs can be played utilizing various formats such as sequential play or shuffle.

However, the creation of playlists itself becomes problematic as the number of songs increases, since the user often arbitrarily selects songs from a large number of tracks to form a playlist. This selection mechanism: can be fairly tedious; does not necessarily produce playlists that are of interest to the user over the course of time; may not remain up-to-date if new songs are added that logically fit into a previously created playlist (e.g. "Favorites by Band X" might become out of date if a new favorite by Band X is added after the playlist was created); and leads to "lost" songs that are not members of any playlist.

Accordingly, improved techniques for organizing and grouping tracks useful in a portable music player are needed.

SUMMARY OF THE INVENTION

According to one aspect of the present invention, a technique is provided for organizing tracks on a portable music player by automatically filing tracks in a hierarchical order based on attributes of the tracks.

According to another aspect of the invention, metadata is associated with each track that is used to automatically define the track's appropriate place in the hierarchy.

According to another aspect of the invention, the hierarchy is displayed on the portable music player so that a user can traverse the organizational hierarchy to find individual tracks or find playlists composed of logical groups of tracks.

According to another aspect of the invention, the hierarchy is derived by using metadata associated with the audio content that was obtained through any source of metadata (e.g. CDDB metadata, id3v2 metadata, other obtainable metadata) and subsequently stored with or alongside the file that stores the track.

According to another aspect of the invention, a file is formatted so that an unaltered track is stored as file data and information about the track is stored in file attribute files.

Other features and advantages of the invention will be apparent in view of the following detailed description and appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic diagram of a tree structure for hierarchical filing of tracks;

Fig. 2 is a definition file that specifies the hierarchy depicted in Fig. 1;
Fig. 3 is a user's view of the hierarchy;
Fig. 4 is a schematic diagram of a user interface displaying the hierarchical
category structure;
5 Fig. 5 is a diagram of a file format for storing filed data and file attributes;
Fig. 6 is a flow chart depicting steps for filing tracks according to the
hierarchical tree structure;
Fig. 7 depicts a tree resulting from searching the tracks; and
Fig. 8 depicts a format for a user interface.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

10
A preferred embodiment of the invention will now be described in the context
of a portable personal player that plays audio files stored in memory. The files may be in
15 MP3, wav, or other digital formats.

In the presently described embodiment, users are able to see the tracks on their
player in some organized fashion other than as a single list of tracks. As will be described in
more detail below, in one embodiment tracks are sorted utilizing a tree structure having
branches labeled according to types of metadata associated with the tracks

20 For example, a track recorded as "Golden Slumbers" by the Beatles that
appears on their album "Hey Jude" might appear as a track under the album "Abbey Road" as
well as a track under the list of tracks by the Beatles. It might appear as a track under the
genre "Pop Rock" as well as "Songs from the 60's." Furthermore, the organization can have
more complex hierarchies. For example, the category of "Pop Rock" might contain
25 subcategories "British Musicians," "American Musicians" and "Other Musicians". In all
cases, the track is automatically filed into all appropriate locations without requiring user
interaction.

In the currently defined embodiment, a tree structure is defined by a file
having the following structure.

30 The first line of a TreeDef.inf file contains a version number:

V1.0

Each subsequent line (at least in v1.0) contains lines of the following format:
CATEGORY_NAME|TRACK_TYPE_MASK|CATEGORY_STRUCTURE

CATEGORY_NAMES are the top-level names of the branch under which tracks are sorted. They include things like "Album," "Artist," "Voice Tracks," "All Tracks," etc.

TRACK_TYPE_MASKs tell which types of tracks are to be filed under this particular branch. The actual value is a hexadecimal numerical value (in '0x' format, e.g. 0x01) generated by ORing the following flags together as appropriate:

```
enum tTrackType
{
10     kTTNothing=0x00,
        kTTSong=0x01,
        kTTVoice=0x02,
        kTTBook=0x04,
        kTTMacro=0x08,
15     kTTPlaylist=0x10
};
```

So, for example, the "Album" branch has a TRACK_TYPE_MASK of kTTSong, because only songs are filed under that branch, but the "All Tracks" branch has a TRACK_TYPE_MASK of (kTTSong | kTTVoice | kTTBook).

Other elements might be added to tTrackType (e.g. kTTVideo) as appropriate.

CATEGORY_STRUCTURES tell how to file the songs based on their metadata information. The CATEGORY_STRUCTURE is a string of characters that tell, from left to right, the order of hierarchy. The characters come from the following enum

constants:

```
enum tFileTag
{
30     kFTNone='@',
        kFTTrackType='T',
        kFTTitle='N',
        kFTAudioFile='F',
        kFTArtist='M',
        kFTAlbum='L',
```

```
    kFTGenre='G',
    kFTSource='S',
    kFTYear='Y',
    kFTArtistCountry='C'
5      );
```

Thus, a CATEGORY_STRUCTURE of LN tells to create a subcategory that is a list of Albums, each of which contains a list of Tracks.

In total, a line like:

```
10 Album|0x01|LN
```

Says to create a branch called "Album" which contains tracks of type KITTSong organized first by album name, and then by track name.

The following is an example of a tree definition file similar (though not identical) to the hierarchy presented in the Nomad Jukebox product (the 'B' before each FileTag was used to identify that these are basic tags so that we wouldn't run out of letters in the alphabet as we included more complex metadata – thus each group of two letters represents a level in the hierarchy):

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```
20 V1.0
    Album|0x01|BLBN
    Artist|0x01|BMBN
    Genre|0x01|BGBN
    Voice Tracks|0x02|BSBGBN
    Playlists|0x10|BN
25 Macros|0x08|BN
    All Tracks|0x07|BN
```

Fig. 1 depicts a hypothetical organization hierarchy. The tree shows how tracks might be listed (as leaves in the tree) after having been organized. Example values for nodes in the tree are shown as well. The same track may appear more than once as a leaf in the tree, as described above, if it fits into multiple categories (e.g. a song that appears on the Abbey Road branch would also appear in the Beatles branch). In the example shown, the first branch contains tracks organized by album. As shown in the example, this music collection contains three tracks from "Abbey Road" and three tracks from "Hits from the

60's". The second branch contains tracks organized by artist, and sub organized by where the artist is from. Thus, a user browsing would first select the "Artists" branch and then choose between "British Artists" and "American Artists". Finally, they would select the particular artist. In the third branch, all tracks are shown.

5 The tree definition file that would specify the hierarchy shown in Figure 1 is shown in Figure 2.

 The first line identifies the version of the tree definition file.

 The second line defines the "Albums" branch. The first part of the line, "Albums" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BLBN," defines that the branch lists first the names of all albums (BL) and then tracks on those albums (BN).

 The third line defines the "Artists" branch. The first part of the line "Artists" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BCBMBN," defines that the branch lists first the names of all countries where artists in this collection come from (BC) and under those items, the artists' names (BM), and then tracks by those artists (BN).

 Fig. 3 shows what a user's view of this hierarchy might be if he/she were shown a fully expanded view of the 6-song tree. Notice that each song appears three times, once in each branch.

 In consumer products the tree define file is not edited directly but through a user interface, one example of which is depicted in Fig. 4. An example of a user interface for viewing songs by category and editing the tree structure is depicted in Fig. 4.

 An embodiment of the invention is utilized in the Nomad® Jukebox, manufactured by the assignee of the present invention, and described more fully in the pending application, filed on the same date as the present application, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Attny. Docket No. 17002-020800).

 In a preferred embodiment, metadata is associated with each track and includes such information as title, genre, artist name, type, etc. In the preferred embodiment, software stored in a portable player and executed by the onboard processor automatically files each track in the correct category utilizing the associated metadata and the tree define file. The program code can be stored in any computer readable medium including magnetic storage, CD ROM, optical media, or digital data encoded on an electromagnetic signal.

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Thus, the user is automatically provided with a powerful and flexible tool for organizing and categorizing the tracks stored on the portable player.

If the tracks are formatted in MP3 format the metadata can be stored in ID3 tags included in the MP3 file. In one embodiment of the invention, the tracks are stored in alternate file format including file data and file attributes. The file data is the music track itself and the file attributes part of the file includes fields of arbitrary size which are used to store metadata characterizing the track stored as the file data. Again this metadata includes information about the track such as title, genre, artist name, type, etc.

There are several advantages to using the alternate file format. Metadata of types not easily included in an ID3 tag can be utilized. Further, the original track format is not changed, so that error correction data such as checksums are valid. Finally, any file format can be used (e.g. WAV, WMA, etc.) because the metadata is stored separately, and thus audio formats that have limited support for metadata can still be stored on the portable player in native format without transcoding. The formatted files are formed by software stored in the portable music player and executed by an on-board processor.

The metadata for each track is utilized to file each track, using the categories defined in the hierarchical structure as described above, without any input from the user.

Fig. 5 is a schematic diagram of the alternative file format including file data in the form of an MP3 track, and metadata fields for holding data indicating the name of the album the track is from, the name of the song, the genre of the song, and the type of track.

A particular embodiment of a file format will now be described. All tracks are created with some set of attributes as shown below:

Definition of TrackInfo Data Field

Field	Offset	Size	Description
Attribute Count	0	2	The number of attribute follow for the track
Attr 1 type	2	2	Binary = 0, ASCII = 1
Attr 1 name len	4	2	Length of attribute name string
Attr 1 data len	6	4	Length of attribute data
Attr 1 Name	10	N	Attribute name string
Attr 1 Data	10+N	M	Attribute data

....			
....			
Attr N type			
Attr 1 name len			
Attr 1 data len			
Attr 1 Name			
Attr 1 Data			

Required Attributes

Attribute Name	Value(s)	Remarks
TITLE	ASCII string	Required By Jukebox
CODEC	"MP3", "WMA", "WAV"	Required By Jukebox
TRACK ID	DWORD	Set By Jukebox
ALBUM	ASCII string	Optional
ARTIST	ASCII string	Optional
GENRE	ASCII string	Optional
LENGTH	In seconds	Optional
TRACK SIZE	In bytes	Optional
TRACK NUM	1-n (track within album)	Optional

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5 These attributes can be subsequently changeable via a host application, running on a personal computer connected to the portable music player.

Fig. 6 shows a flow chart of an embodiment the process used to build the hierarchical database of tracks. It starts by iterating through each track, and, for each track, iterating through each branch to find if the track belongs on the branch, and, if so, where. In this case, the term track could refer to any content, e.g. a music track, a spoken word track, or
 10 even a video track.

Also, the hierarchical catalog of tracks can be used to form playlists in a structured manner. For example, if a user wants to hear Jazz and Blues the entire sub-categories can be selected to form one playlist.

An alternative hierarchical catalog generation technique will now be described. In this alternative embodiment, at system startup and as tracks are added or changed, the hierarchy is generated as an in-memory tree structure. Each track is added to the tree using the categories ALBUM, ARTIST and GENRE.

The following example shows the algorithm for adding a track. For clarity, only the attributes used by the tree are shown.

10

TITLE	"Free Falling"
ALBUM	"Full Moon Fever"
ARTIST	"Tom Petty"
GENRE	"Rock"
TRACK NUM	1

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The following function is executed to build the in-memory memory tree.

Build Tree ()

15 For each track,

Add Track To Category(Album, Track)

Add Track To Category(Artist, Track)

Add Track To Category(Genre,Track)

End of Build Tree

20

Fig. 7 depicts a tree which could result from implementing Build Tree() function. Note that "Stardust" does not have any entries for Album or Artist. The host software running on a computer connected to the portable music player could be utilized to add missing attributes to the "Stardust" track and, optionally, edit the title attribute. The Build Tree() function would then reinsert this track in the correct location in the tree.

Fig. 8 is an embodiment of a user interface according to another embodiment of the invention. In this example the root node is labeled "My Configuration" and the Playlist category has been selected and the Playlist subcategory "Meddle" has been selected.

Note that the types of Metadata, in this example, Track Name, Artist, Album, Tempo and Dance, are listed across the top of the screen, and the attribute values for each track are listed in a row across the screen. Various control buttons are displayed to the right of configuration window that facilitate quickly invoking selected processing on a selected track.

5 The invention has now been described with reference to the preferred embodiments. Alternatives and substitutions will now be apparent to persons of skill in the art.

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WHAT IS CLAIMED IS:

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1 1. A method, performed by a processor in a portable digital music player,
2 for filing audio tracks stored on a computer readable media, with each audio track having
3 metadata associated therewith including category value data for naming attributes of the track
4 and type data indicating the type of track, said method comprising the acts of:
5 reading a definition file that defines an ordered hierarchical tree structure, with
6 the file including category names for naming the branch under which tracks are sorted, track
7 type information specifying which type of tracks are to be sorted under the branch, and
8 structure information defining how to file tracks based on associated metadata;
9 for each track, iteratively determining, base on metadata describing the track,
10 if the track belongs in the branch, and, for each branch in which the track belongs, traversing
11 the branch to determine the appropriate location to file the track.

1 2. The method of claim 1, where said act of searching further comprises
2 the acts of:
3 utilizing track type information to file only tracks of a specified type under a
4 particular branch.

1 3. The method of claim 1 further comprising the acts of:
2 for each branch, utilizing category structure information to file tracks in a
3 specified attribute order.

1 4. The method of claim 1, where said portable digital music player
2 includes a display screen and a user interface for interacting with the display, further
3 comprising the acts of:
4 displaying the categories and subcategories on the display in a hierarchical
5 order;
6 displaying all names of tracks associated with a category or sub-category
7 when a user utilizes the interface to select a category or sub-category;

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8 utilizing the pointer to access and play a track when a user selects a track
9 name through the user interface. and
10 utilizing the pointer to access and play a collection of tracks within a category
11 or subcategory when a user selects a category or subcategory through the user interface.

1 5. A method, implemented by a processor in a portable digital music
2 player, for associating metadata with audio tracks comprising the acts of:
3 opening a formatted file for each track comprising a file data portion and a file
4 attributes portion, with the file attributes portion including a plurality of fields corresponding
5 to category types and file types;
6 storing an unmodified audio track in the file data portion of the formatted file;
7 and
8 storing category type and file type information about the unmodified track in
9 corresponding fields.

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2 6. A method, performed by a processor in a portable digital music player,
3 for filing audio tracks, stored on a computer readable media, under categories in an in-
4 memory tree structure, with each audio track having metadata associated therewith including
5 category name data for naming, said method comprising the acts of:
6 upon startup or when a track is added or changed, searching the metadata of
7 each track; and
8 for each track, automatically filing the track by category name under each
9 selected category to form a hierarchical track filing scheme.

1 7. The method of claim 6 further comprising the act of:
2 selecting the categories to be the Album including the track, the title of the
3 track, and the name of the artist that recorded the track.

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FOOTNOTES

1 8. The method of claim 6, where said portable digital music player
2 includes a display screen and a user interface for interacting with the display, further
3 comprising the acts of:
4 displaying the categories on the display in a hierarchical order;
5 displaying all names of tracks associated with a category when a user utilizes
6 the interface to select a category ;
7 accessing and playing a track when a user selects a track name through the
8 user interface. and
9 accessing and playing a collection of tracks within a category when a user
10 selects a category through the user interface.

1 9. A computer program product comprising:
2 a computer readable medium having program code embodied therein for filing
3 audio tracks stored on a computer readable media, with each audio track having metadata
4 associated therewith including category value data for naming attributes of the track and type
5 data indicating the type of track, said program code comprising:
6 program code, executed by a processor, for reading a definition file that
7 defines an ordered hierarchical tree structure, with the file including category names for
8 naming the branch under which tracks are sorted, track type information specifying which
9 type of tracks are to be sorted under the branch, and structure information defining how to
10 file tracks based on associated metadata;
11 program code, executed by a processor, for each track, for iteratively
12 determining, base on metadata describing the track, if the track belongs in the branch, and,
13 for each branch in which the track belongs, traversing the branch to determine the appropriate
14 location to file the track.

1 10. A computer program product comprising:
2 a computer readable medium for having program code embodied therein for
3 filing audio tracks, stored on a computer readable media, under categories in an in-memory
4 tree structure, with each audio track having metadata associated therewith including category
5 name data for naming, said program code comprising:

6 program code, executed by a processor, upon startup or when a track is added
7 or changed, for searching the metadata of each track; and
8 program code, executed by a processor, for each track, for automatically filing
9 the track by category name under each selected category to form a hierarchical track filing
10 scheme.

Add
C 17
ADD D17

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DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA** the specification of which _____ is attached hereto or _____ was filed on _____ as Application No. _____ and was amended on _____ (if applicable).

I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56. I claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

I claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in

- Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or
- PCT international filing date of this application:

Application No.	Date of Filing	Status
unknown	January 5, 2001	pending
unknown	January 5, 2001	pending

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

- Charles E. Krueger, Reg. No. 30,077
- Paul C. Haughey, Reg. No. 31,836
- Charles J. Kulas, Reg. No. 35,809
- Daniel D. Tagliaferri, Reg. No. 43,178

Send Correspondence to: Charles E. Krueger TOWNSEND and TOWNSEND and CREW LLP Two Embarcadero Center, 8th Floor San Francisco, California 94111-3834	Direct Telephone Calls to: (Name, Reg. No., Telephone No.) Name: Charles E. Krueger Reg. No.: 30,077 Telephone: 415-576-0200
---	--

Full Name of Inventor 1:	Last Name: GOODMAN	First Name: RON	Middle Name or Initial:
Residence & Citizenship:	City: Santa Cruz	State/Foreign Country: California	Country of Citizenship: United States
Post Office Address:	Post Office Address: 226 Jeter Street	City: Santa Cruz	State/Country: California Postal Code: 95060

Attorney Docket No. 17822-022500
 Client Reference No.: CT-1139

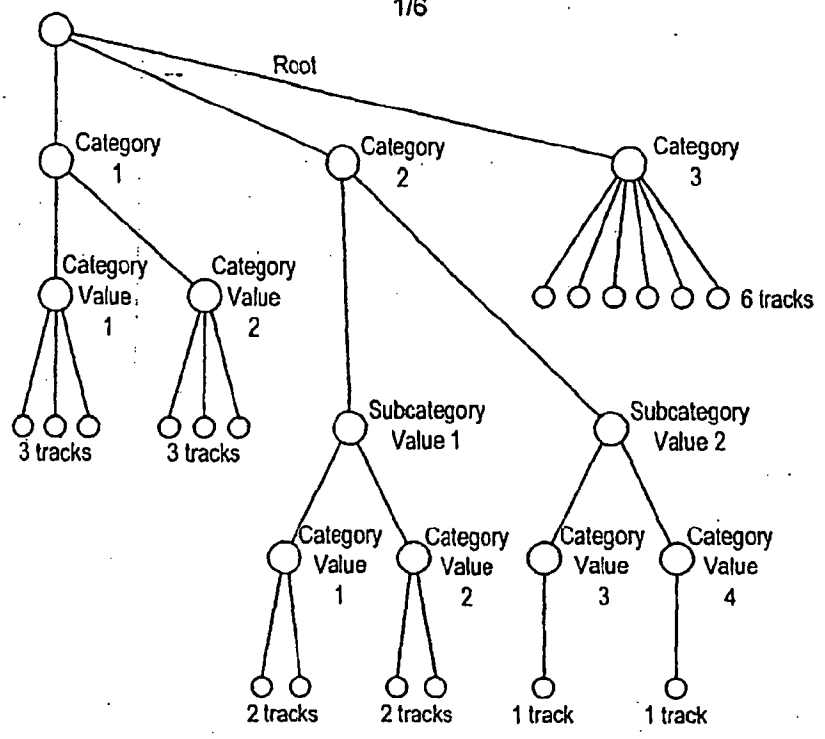
Full Name of Inventor 2:	Last Name: EGAN	First Name: HOWARD	Middle Name or Initial: N.
Residence & Citizenship:	City: Capitola	State/Foreign Country: California	Country of Citizenship: United States
Post Office Address:	Post Office Address: 219 Elnor Street	City: Capitola	State/Country: California
			Postal Code: 95010

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 1	Signature of Inventor 2
<u>RON GOODMAN</u>	<u>HOWARD N. EGAN</u>
Date	Date

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For example:

Category 1 = Album Name
Category Value 1 = Abbey Road
Category Value 2 = Hits from the 60's

Category 2 = Artist Name
Subcategory Value 1 = British Artists
Subcategory Value 2 = American Artists
Category Value 1 = The Beatles
Category Value 2 = Petula Clark
Category Value 3 = Mamas and the Papas
Category Value 4 = Nick Drake

Category 3 = All tracks

FIG. 1.

V1.0
Albums|0x01|BLBN
Artists|0x01|BCBMBN
All Tracks|0x01|BN

FIG. 2.

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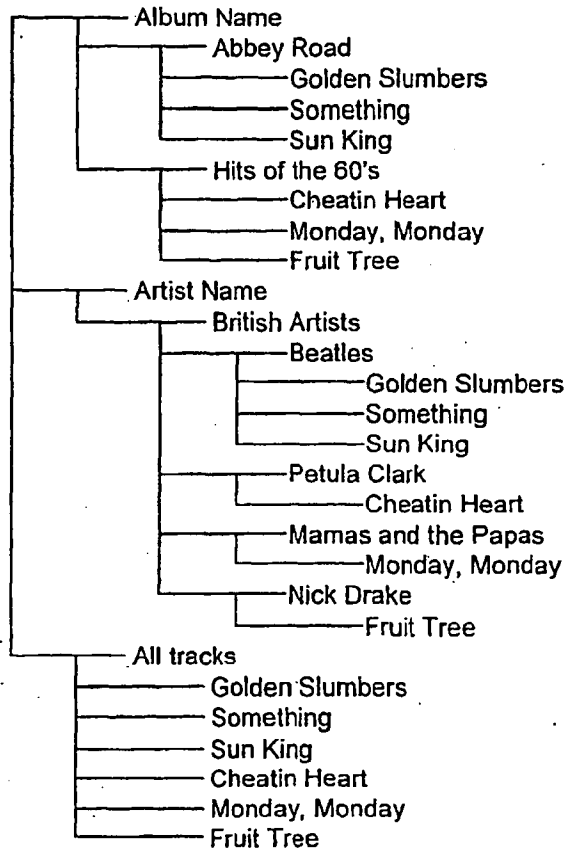


FIG. 3.

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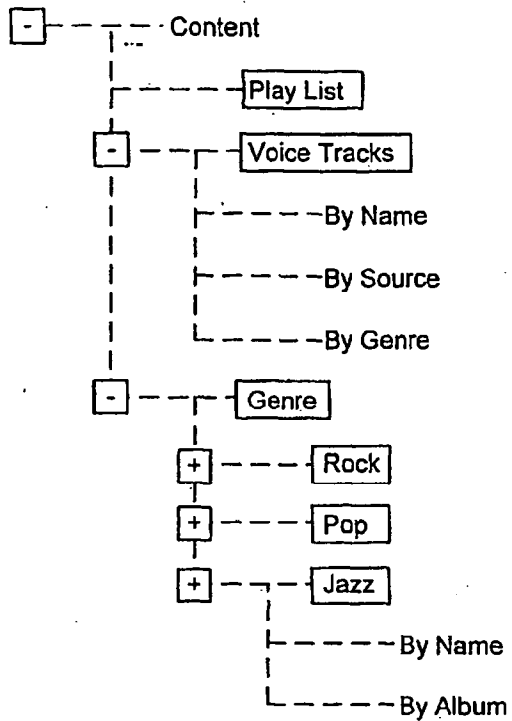


FIG. 4.

file data	album	name	genre	type
-----------	-------	------	-------	------

FIG. 5.

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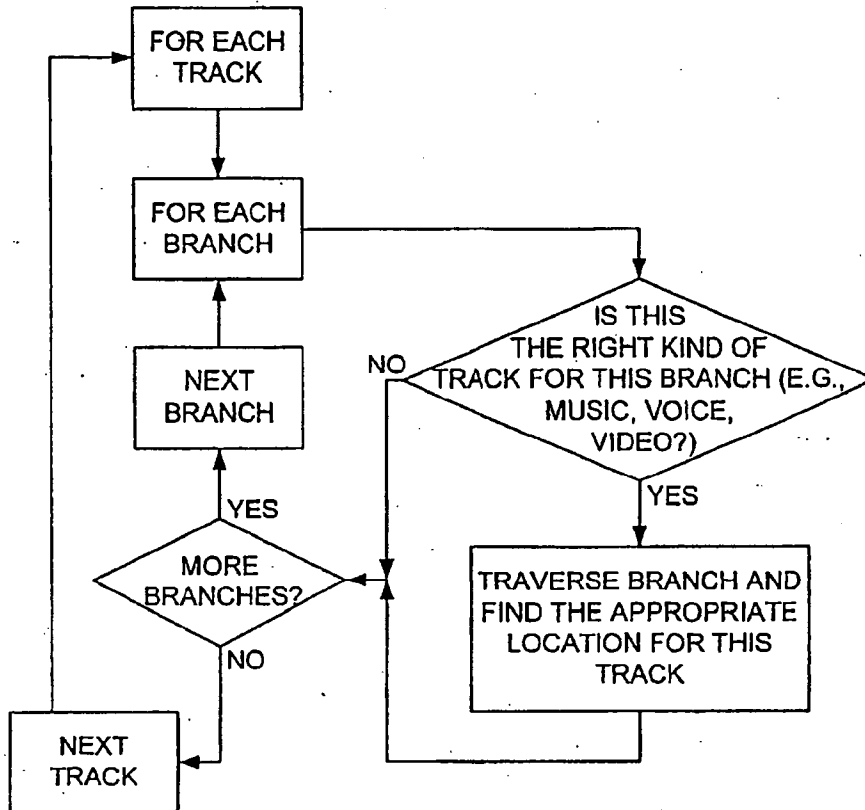


FIG. 6.

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Albums	Full Moon Fever	Free Falling I Won't Back Down	
	Graceland	Love Is A Long Road The Boy In The Bubble Graceland	
	Hotel California	Hotel California New Kid In Town	
	Unknown (Created for items without Album attribute)	Track 1	
		Stardust	
Artist	Tom Petty	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road
	Eagles	Hotel California	Hotel California New Kid In Town
	Paul Simon	Graceland	The Boy In The Bubble Graceland
Genre	Rock	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road
		Hotel California	Hotel California New Kid In Town
		Graceland	The Boy In The Bubble Graceland

FIG. 7.

PRINT OF DRAWINGS
AS ORIGINALLY

FOE240 E2755460

Oasis Play - My Configuration

Playlists

P	Track Name	Artist	Album	Tempo	Dance
+Meddle/Pink Floyd	One of these days	Pink Floyd	Meddle	Slow	Hi
-A Pillow of W...	A Pillow of W...	Pink Floyd	Meddle	Med	Med
-Fearless	Fearless	Pink Floyd	Meddle	Slow	Lo
-San Tropez	San Tropez	Pink Floyd	Meddle	Fast	Hi
-Sea	Sea	Pink Floyd	Meddle	Slow	Hi
-Echoes	Echoes	Pink Floyd	Meddle	Slow	Lo
-The Wall/Pink Floyd					
+All Playlists					
-The Wall					
-Meddle					
-All Songs					

Navigation: [Previous] [Next] [Stop] [Pause/Play] [Next]

Buttons: [X] [New Playlist...] [Convert Format...] [Copy To Clipboard] [Cut To Clipboard] [Paste from Clipboard] [Delete]

FIG. 8.

PRINT OF DRAWINGS
AS ORIGINALLY

Assignment
Attorney Docket No.: 17002-022500US
Page 2

Dated: 3/14/2001

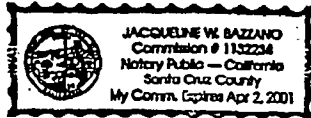


RON GOODMAN

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On March 14, 2001, before me, Jacqueline W. Bazzano
personally appeared RON GOODMAN, personally known to me (~~or proved to me on the~~
~~basis of satisfactory evidence~~) to be the person whose name is subscribed to the within instrument, and
acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on
the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.





NOTARY PUBLIC

My Commission Expires: 4/2/2001

Dated: 3-22-2001

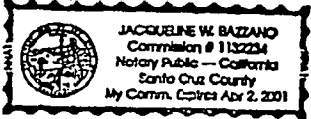


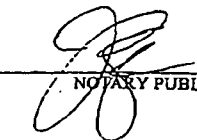
HOWARD N. EGAN

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On March 22, 2001, before me, Jacqueline W. Bazzano (Notary Public)
personally appeared HOWARD N. EGAN, personally known to me (~~or proved to me on the~~
~~basis of satisfactory evidence~~) to be the person whose name is subscribed to the within instrument, and
acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on
the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.





NOTARY PUBLIC

My Commission Expires: 4/2/2001

14360 U.S. PTO
01/05/01

Please type a plus sign (+) in box → 01/08/01

PTO/SB/05 (11-00)

Approved through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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**UTILITY
PATENT APPLICATION
TRANSMITTAL**

Attorney Docket No.	17002-022500
First Inventor	Ron Goodman
Title	Automatic Hierarchical Categorization of Music by Metadata
Express Mail Label No.	EL789991701US

(Only for new nonprovisional applications under 37 C.F.R. § 1.63(b))

<p>APPLICATION ELEMENTS See MPEP chapter 600 concerning design patent application contents.</p>		<p>ADDRESS TO Assistant Commissioner for Patents Box Patent Application Washington, DC 20231</p>	
<p>1. <input checked="" type="checkbox"/> Fee Transmittal Form (e.g., PTO/SB/M7) (Submit an original and a duplicate for fee processing)</p> <p>2. <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.</p> <p>3. <input checked="" type="checkbox"/> Specification (Total Pages <input type="text" value="14"/>) (preferred arrangement set forth below) - Descriptive title of the invention - Cross References to Related Applications - Statement Regarding Fed sponsored R & D - Reference to sequence listing, a table, or a computer program listing appendix - Background of the invention - Brief Summary of the invention - Brief Description of the Drawings (if filed) - Detailed Description - Claim(s) - Abstract of the Disclosure</p> <p>4. <input checked="" type="checkbox"/> Drawing(s) (35 U.S.C. 113) (Total Sheets <input type="text" value="7"/>)</p> <p>5. Oath or Declaration (Total Pages <input type="text" value="1"/>) a. <input type="checkbox"/> Newly executed (original or copy) b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63 (d)) (for a continuation/divisional with Box 18 completed) i. <input type="checkbox"/> DELETION OF INVENTOR(S) Signed statement attached detailing inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).</p> <p>6. <input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76</p>	<p>7. <input type="checkbox"/> CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)</p> <p>8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary) a. <input type="checkbox"/> Computer Readable Form (CRF) b. Specification Sequence Listing on: i. <input type="checkbox"/> CD-ROM or CD-R (2 copies); or ii. <input type="checkbox"/> paper c. <input type="checkbox"/> Statements verifying identity of above copies</p>	<p>ACCOMPANYING APPLICATIONS PARTS</p> <p>9. <input type="checkbox"/> Assignment Papers (cover sheet & document(s))</p> <p>10. <input type="checkbox"/> 37 C.F.R. §3.73(b) Statement of Power of Attorney (when there is an assignee)</p> <p>11. <input type="checkbox"/> English Translation Document (if applicable)</p> <p>12. <input type="checkbox"/> Information Disclosure Statement (IDS)/PTO-1449</p> <p>13. <input type="checkbox"/> Preliminary Amendment</p> <p>14. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503) (Should be specifically itemized)</p> <p>15. <input type="checkbox"/> Certified Copy of Priority Document(s) (if foreign priority is claimed)</p> <p>16. <input type="checkbox"/> Request and Certification under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.</p> <p>17. <input checked="" type="checkbox"/> Other: Unsigned Declaration/Power of Attorney, Fee Transmittal Sheet</p>	
<p>18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76: <input type="checkbox"/> Continuation <input type="checkbox"/> Divisional <input type="checkbox"/> Continuation-in-part (CIP) of prior application No: _____ / _____ Prior application information: Examiner: _____ Group / Art Unit: _____ For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.</p>			
<p>19. CORRESPONDENCE ADDRESS</p> <p><input checked="" type="checkbox"/> Customer Number or Bar Code Label <input type="text" value="20390"/> or <input type="checkbox"/> Correspondence address below (Insert Customer No. or attach bar code label here)</p>			
Name		Townsend and Townsend and Crew LLP	
Address		Two Embarcadero center Elgth Floor	
City	San Francisco	State	CA
Zip Code	94111-3834	Telephone	(415) 578-0200
Country	USA	Fax	(415) 576-0300
Name (Print/Type)	Charles E. Krueger	Registration No. (Attorney/Agent)	30,077
Signature		Date	1/5/01

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231.

09755723-010501

FEE TRANSMITTAL for FY 2001		<i>Complete if Known</i>	
<small>Patent fees are subject to annual revision.</small>		Application Number	
		Filing Date	
		First Named Inventor	RON GOODMAN
		Examiner Name	
		Group Art Unit	
TOTAL AMOUNT OF PAYMENT (\$) 870		Attorney Docket No.	17002-022500

METHOD OF PAYMENT (check one) The Commissioner is hereby authorized to charge indicated fees and credit any over payments to: 1. <input checked="" type="checkbox"/> Deposit Account Number: 20-1430 Deposit Account Name: Townsend and Townsend and Crew LLP <input checked="" type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17 <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27 2. <input type="checkbox"/> Payment Enclosed: <input type="checkbox"/> Check <input type="checkbox"/> Credit card <input type="checkbox"/> Money Order <input type="checkbox"/> Other		FEE CALCULATION (continued) <table border="1"> <thead> <tr> <th>Fee Code</th> <th>Large Entity Fee (\$)</th> <th>Small Entity Fee (\$)</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>105</td><td>130</td><td>205</td><td>Surcharge - late filing fee or oath</td><td></td></tr> <tr><td>127</td><td>50</td><td>227</td><td>Surcharge - late provisional filing fee or cover sheet</td><td></td></tr> <tr><td>139</td><td>130</td><td>130</td><td>Non-English specification</td><td></td></tr> <tr><td>147</td><td>2,520</td><td>147</td><td>2,620 For filing a request for reexamination</td><td></td></tr> <tr><td>112</td><td>920*</td><td>112</td><td>920* Requesting publication of SIR prior to Examiner action</td><td></td></tr> <tr><td>113</td><td>1,840*</td><td>113</td><td>1,840* Requesting publication of SIR after Examiner action</td><td></td></tr> <tr><td>115</td><td>110</td><td>215</td><td>55 Extension for reply within first month</td><td></td></tr> <tr><td>115</td><td>390</td><td>215</td><td>195 Extension for reply within second month</td><td></td></tr> <tr><td>117</td><td>890</td><td>217</td><td>445 Extension for reply within third month</td><td></td></tr> <tr><td>118</td><td>1,390</td><td>218</td><td>685 Extension for reply within fourth month</td><td></td></tr> <tr><td>120</td><td>1,890</td><td>228</td><td>945 Extension for reply within fifth month</td><td></td></tr> <tr><td>119</td><td>310</td><td>219</td><td>155 Notice of Appeal</td><td></td></tr> <tr><td>120</td><td>310</td><td>220</td><td>155 Filing a brief in support of an appeal</td><td></td></tr> <tr><td>121</td><td>270</td><td>221</td><td>135 Request for oral hearing</td><td></td></tr> <tr><td>130</td><td>1,510</td><td>130</td><td>1,510 Petition to institute a public use proceeding</td><td></td></tr> <tr><td>140</td><td>110</td><td>240</td><td>55 Petition to revive - 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114	150	214	75 Provisional filing fee																																																																																																																																																																																																																																																		
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141	1,240	241	620 Petition to revive - unintentional																																																																																																																																																																																																																																																		
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122	130	122	130 Petitions to the Commissioner																																																																																																																																																																																																																																																		
123	50	123	50 Petitions related to provisional applications																																																																																																																																																																																																																																																		
126	180	126	180 Submission of Information Disclosure Sheet																																																																																																																																																																																																																																																		
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149	710	249	355 For each additional invention to be examined (37 CFR § 1.129(b))																																																																																																																																																																																																																																																		
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09755723-010501

SUBMITTED BY		<i>Complete if applicable</i>			
Name (Print/Type)	Charles E. Kruse	Registration No. Attorney/Agent	30,077	Telephone	415-576-0200
Signature		Date	1/5/01		

Exhibit 2



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20521
www.uspto.gov

#2

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY IDENTIFICATION NUMBER
09/755,723	01/05/2001	Ron Goodman	17002-022500

CONFIRMATION NO. 3728

20350
TOWNSEND AND TOWNSEND AND CREW
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

FORMALITIES LETTER

0000000005783175

Date Mailed: 02/21/2001

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.
- The balance due by applicant is \$ 130.

The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Substitute drawings in compliance with 37 CFR 1.84 because:
 - drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch);

*A copy of this notice **MUST** be returned with the reply.*

Thirika Pernew
Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 3 - OFFICE COPY

Exhibit 3



#3
 Attorney Docket No.: 17002-022500US
 Client Reference No.: CT-1139

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA** the specification of which _____ is attached hereto or _____ was filed on _____ as Application No. _____ and was amended on _____ (if applicable).

I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56. I claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

I claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application No.	Date of Filing	Status
unknown	January 5, 2001	pending
unknown	January 5, 2001	pending

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Charles E. Krueger, Reg. No. 30,077
 Paul C. Haughey, Reg. No. 31,836
 Charles J. Kulas, Reg. No. 35,809
 Daniel D. Tagliaferri, Reg. No. 43,178

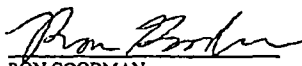
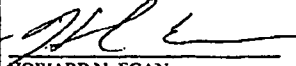
Send Correspondence to: Charles E. Krueger TOWNSEND and TOWNSEND and CREW LLP Two Embarcadero Center, 8 th Floor San Francisco, California 94111-3834	Direct Telephone Calls to: (Name, Reg. No., Telephone No.) Name: Charles E. Krueger Reg. No.: 30,077 Telephone: 415-576-0200
--	--

Full Name of Inventor 1:	Last Name: GOODMAN	First Name: RON	Middle Name or Initial:
Residence & Citizenship:	City: Santa Cruz	State/Foreign Country: California	Country of Citizenship: United States
Post Office Address:	Post Office Address: 226 Jeter Street	City: Santa Cruz	State/Country: California Postal Code: 95060

Attorney Docket No. 17822-022500
Client Reference No.: CT-1139

Full Name of Inventor 2:	Last Name: EGAN	First Name: HOWARD	Middle Name or Initial: N.
Residence & Citizenship:	City: Capitola	State/Foreign Country: California	Country of Citizenship: United States
Post Office Address:	Post Office Address: 219 Ellnor Street	City: Capitola	State/Country: California
			Postal Code: 95010

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 1  RON GOODMAN	Signature of Inventor 2  HOWARD N. EGAN
Date 3/14/2001	Date 3-22-2001

SF 1175410 v1

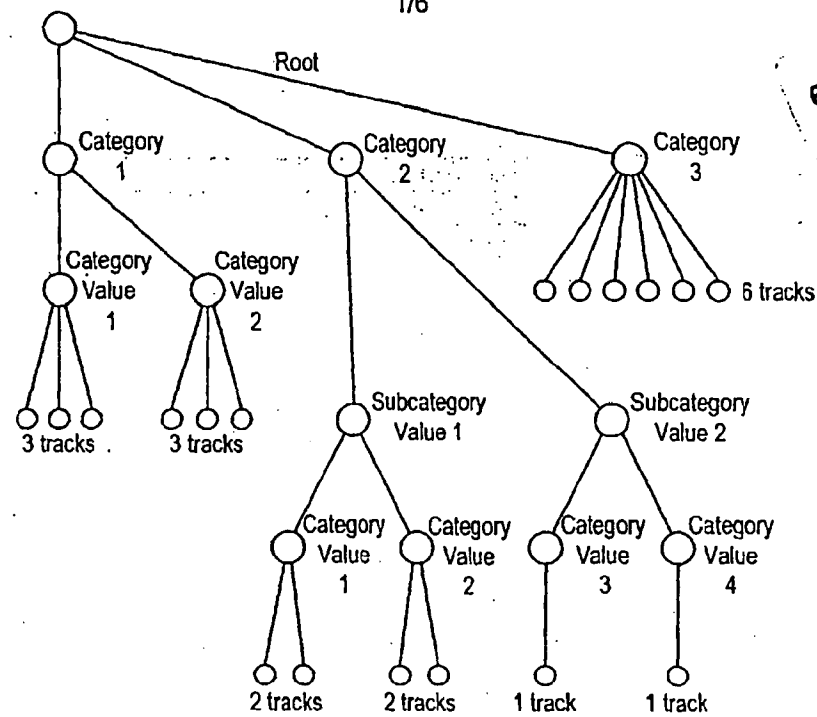
File 2-225

#3

+

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1/6



09755723.042304

For example:

Category 1 = Album Name
 Category Value 1 = Abbey Road
 Category Value 2 = Hits from the 60's

Category 2 = Artist Name
 Subcategory Value 1 = British Artists
 Subcategory Value 2 = American Artists
 Category Value 1 = The Beatles
 Category Value 2 = Petula Clark
 Category Value 3 = Mamas and the Papas
 Category Value 4 = Nick Drake

Category 3 = All tracks

FIG. 1.

+

V1.0
Albums|0x01|BLBN
Artists|0x01|BCBMBN
All Tracks|0x01|BN

FIG. 2.

09755723-042301

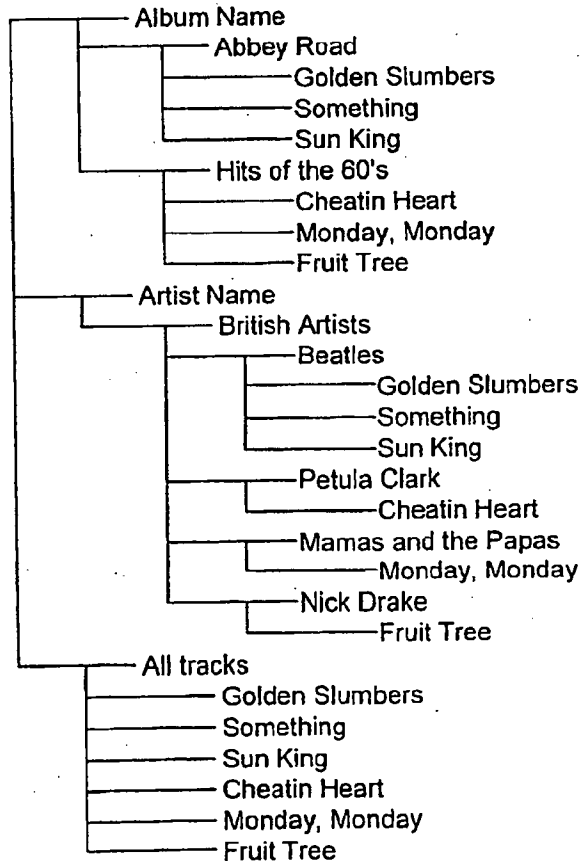


FIG. 3.

+

09755723-042304

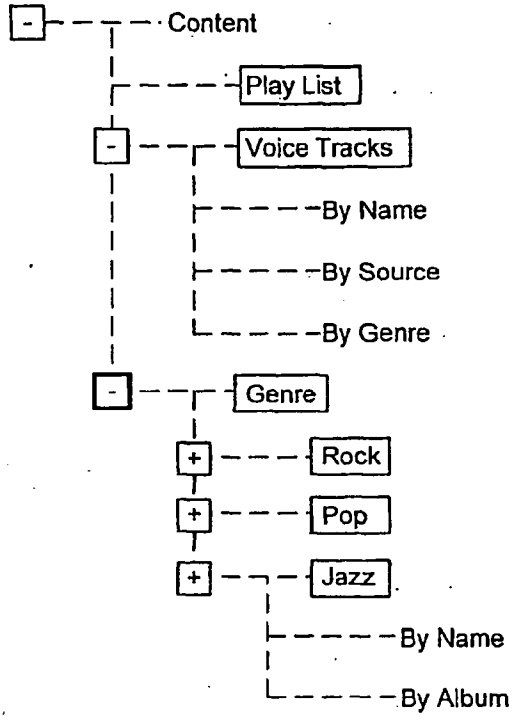


FIG. 4.

file data	album	name	genre	type
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FIG. 5.

+

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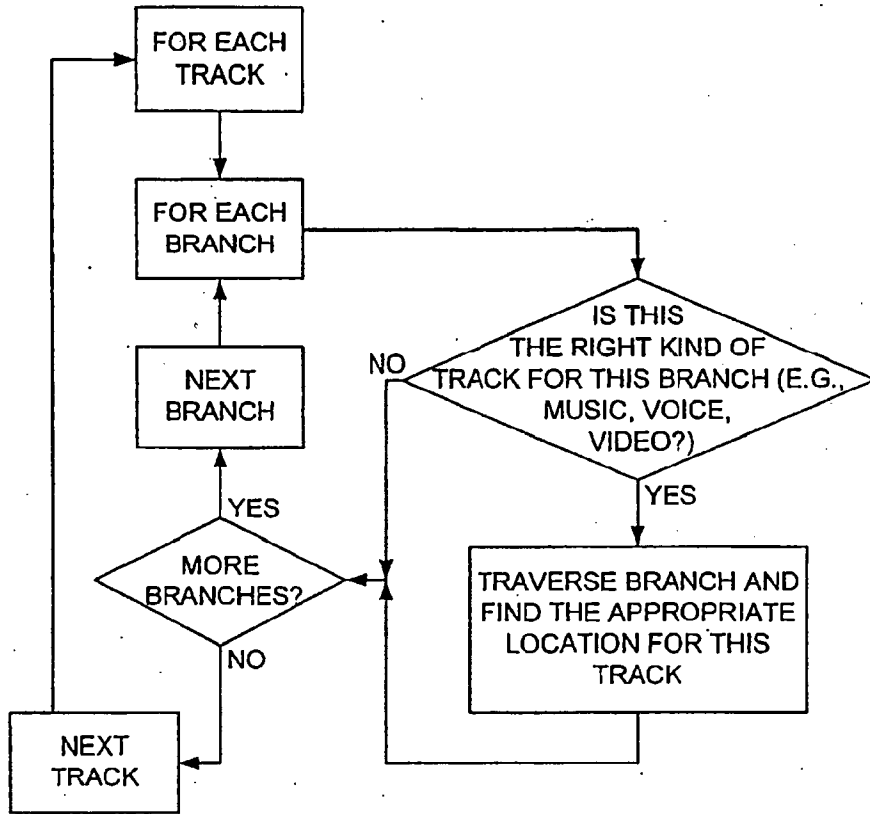


FIG. 6.

10E240-22755260

Albums	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road The Boy In The Bubble Graceland	
	Graceland		
	Hotel California	Hotel California New Kid In Town	
	Unknown (Created for items without Album attribute)	Track 1	
		Stardust	
Artist	Tom Petty	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road
	Eagles	Hotel California	Hotel California New Kid In Town
	Paul Simon	Graceland	The Boy In The Bubble Graceland
Genre	Rock	Full Moon Fever	Free Falling I Won't Back Down Love Is A Long Road
		Hotel California	Hotel California New Kid In Town
		Graceland	The Boy In The Bubble Graceland

FIG. 7.

FIG. 8

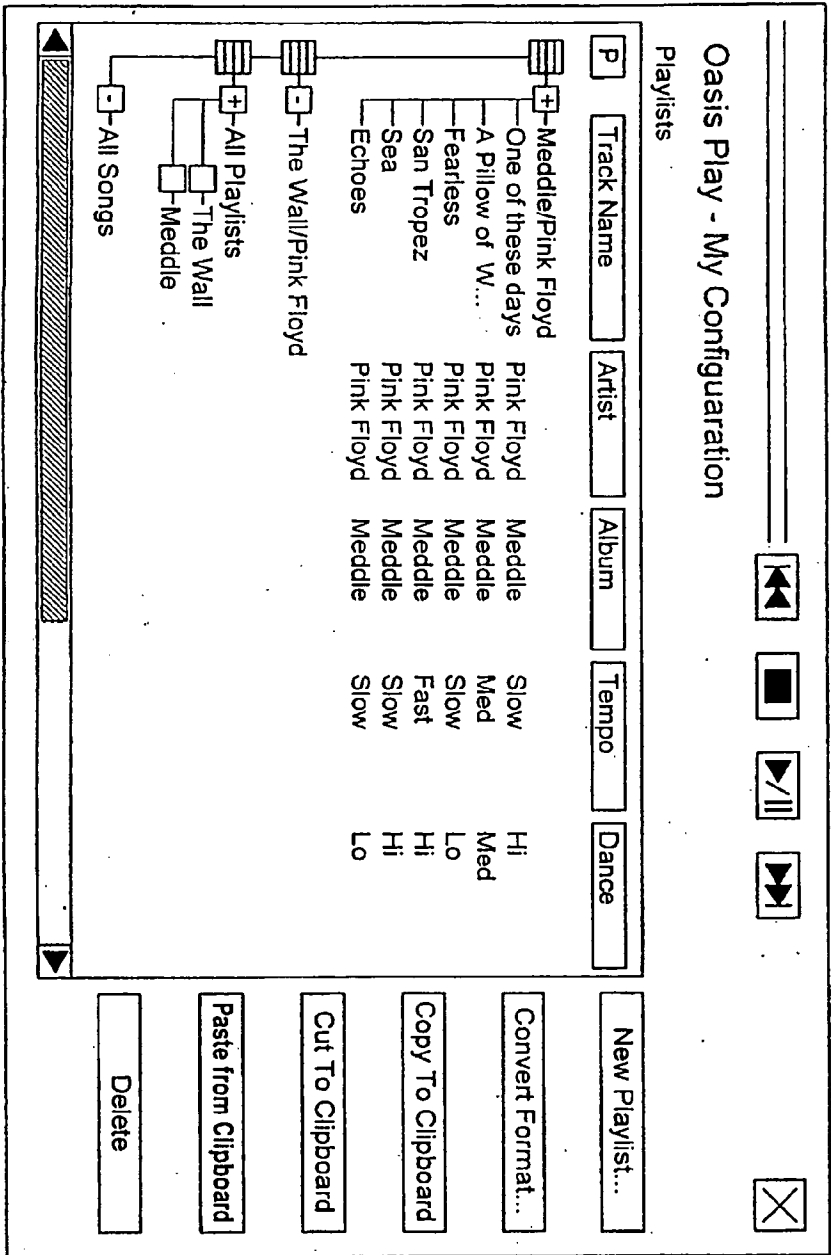


FIG. 8.

QIPE JCS9 2014
MAR 23 2001
PATENT & TRADEMARK OFFICE

Please type a plus sign (+) inside this box →

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1993, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

sectors \$

TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application Number	09/755,723
	Filing Date	January 5, 2001
	First Named Inventor	GOODMAN, RON, et. al.
	Group Art Unit	2185
	Examiner Name	
Total Number of Pages in This Submission	Attorney Docket Number	017002022500

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input checked="" type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input checked="" type="checkbox"/> Assignment Papers (for an Application) <input checked="" type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition Routing Slip (PTO/SB/59) and Accompanying Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Copy of PTO Notice, Recordation Cover Sheet, ADS
Remarks	The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.	

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm and individual name	Townsend and Townsend and Crew LLP Charles E. Krueger	Reg No. 30,077
Signature		
Date	4/17/01	

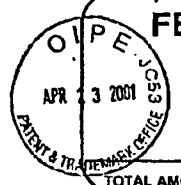
CERTIFICATE OF MAILING		
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this date: <u>4-18-01</u>		
Typed or printed name	D. Bullock	
Signature		Date: 4-18-01

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231. SF 1210973 v1

PTO/SB/17 (09-00)

Approved through 10/31/2002, OMB 0851-0032
 Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

Complete if Known	
Application Number	09/755,723
Filing Date	January 5, 2001
First Named Inventor	GOODMAN, RON, et. al.
Examiner Name	
Group Art Unit	2185
Attorney Docket No.	017002022500

TOTAL AMOUNT OF PAYMENT (5) 170

METHOD OF PAYMENT	FEE CALCULATION (continued)																																																																																																																																																																														
<p>1. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:</p> <p>Deposit Account Number: 20-1430</p> <p>Deposit Account Name: Townsend and Townsend and Crow LLP</p> <p><input checked="" type="checkbox"/> Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17</p> <p><input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27</p>	<p>3. ADDITIONAL FEES</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Large Fee Code</th> <th>Entity Fee Code</th> <th>Small Fee Code</th> <th>Entity Fee Code</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>105</td><td>130</td><td>205</td><td>63</td><td>Surcharge - late filing fee or oath</td><td>130</td></tr> <tr><td>127</td><td>50</td><td>227</td><td>25</td><td>Surcharge - late provisional filing fee or cover sheet</td><td></td></tr> <tr><td>139</td><td>130</td><td>139</td><td>130</td><td>Non-English specification</td><td></td></tr> <tr><td>147</td><td>2,520</td><td>147</td><td>2,520</td><td>For filing a request for reexamination</td><td></td></tr> <tr><td>112</td><td>920*</td><td>112</td><td>920*</td><td>Requesting publication of SPR prior to Examiner action</td><td></td></tr> <tr><td>113</td><td>1,840*</td><td>113</td><td>1,840*</td><td>Requesting publication of SPR after Examiner action</td><td></td></tr> <tr><td>115</td><td>110</td><td>215</td><td>55</td><td>Extension for reply within first month</td><td></td></tr> <tr><td>116</td><td>390</td><td>218</td><td>195</td><td>Extension for reply within second month</td><td></td></tr> <tr><td>117</td><td>690</td><td>217</td><td>445</td><td>Extension for reply within third month</td><td></td></tr> <tr><td>118</td><td>1,390</td><td>218</td><td>695</td><td>Extension for reply within fourth month</td><td></td></tr> <tr><td>128</td><td>1,590</td><td>228</td><td>945</td><td>Extension for reply within fifth month</td><td></td></tr> <tr><td>119</td><td>310</td><td>219</td><td>155</td><td>Notice of Appeal</td><td></td></tr> <tr><td>120</td><td>310</td><td>220</td><td>155</td><td>Filing a brief in support of an appeal</td><td></td></tr> <tr><td>121</td><td>270</td><td>221</td><td>135</td><td>Request for oral hearing</td><td></td></tr> <tr><td>138</td><td>1,510</td><td>138</td><td>1,510</td><td>Petition to institute a public use proceeding</td><td></td></tr> <tr><td>140</td><td>110</td><td>240</td><td>55</td><td>Petition to revive - unavoidable</td><td></td></tr> <tr><td>141</td><td>1,240</td><td>241</td><td>620</td><td>Petition to revive - unintentional</td><td></td></tr> <tr><td>142</td><td>1,240</td><td>242</td><td>620</td><td>Utility issue fee (or reissue)</td><td></td></tr> <tr><td>143</td><td>440</td><td>243</td><td>220</td><td>Design issue fee</td><td></td></tr> <tr><td>144</td><td>600</td><td>244</td><td>300</td><td>Plant issue fee</td><td></td></tr> <tr><td>122</td><td>130</td><td>122</td><td>130</td><td>Petitions to the Commissioner</td><td></td></tr> <tr><td>123</td><td>50</td><td>123</td><td>50</td><td>Petitions related to provisional applications</td><td></td></tr> <tr><td>126</td><td>180</td><td>126</td><td>180</td><td>Submission of Information Disclosure Sheet</td><td></td></tr> <tr><td>501</td><td>40</td><td>501</td><td>40</td><td>Recording each patent assignment per property (times number of properties)</td><td></td></tr> <tr><td>146</td><td>710</td><td>246</td><td>355</td><td>Filing a submission after final rejection (37 CFR § 1.129(e))</td><td></td></tr> <tr><td>149</td><td>710</td><td>249</td><td>355</td><td>For each additional invention to be examined (37 CFR § 1.129(b))</td><td></td></tr> <tr><td>179</td><td>710</td><td>279</td><td>355</td><td>Request for Continued Examination (RCE)</td><td></td></tr> <tr><td>189</td><td>900</td><td>189</td><td>900</td><td>Request for expedited examination of a design application</td><td></td></tr> </tbody> </table> <p>Other fee (specify) assignment recordation fee 40</p> <p>The Commissioner is authorized to charge any additional fees to the above noted Deposit Account.</p> <p>*Reduced by Basic Filing Fee Paid SUBTOTAL (2) (\$) 170</p>	Large Fee Code	Entity Fee Code	Small Fee Code	Entity Fee Code	Fee Description	Fee Paid	105	130	205	63	Surcharge - late filing fee or oath	130	127	50	227	25	Surcharge - late provisional filing fee or cover sheet		139	130	139	130	Non-English specification		147	2,520	147	2,520	For filing a request for reexamination		112	920*	112	920*	Requesting publication of SPR prior to Examiner action		113	1,840*	113	1,840*	Requesting publication of SPR after Examiner action		115	110	215	55	Extension for reply within first month		116	390	218	195	Extension for reply within second month		117	690	217	445	Extension for reply within third month		118	1,390	218	695	Extension for reply within fourth month		128	1,590	228	945	Extension for reply within fifth month		119	310	219	155	Notice of Appeal		120	310	220	155	Filing a brief in support of an appeal		121	270	221	135	Request for oral hearing		138	1,510	138	1,510	Petition to institute a public use proceeding		140	110	240	55	Petition to revive - unavoidable		141	1,240	241	620	Petition to revive - unintentional		142	1,240	242	620	Utility issue fee (or reissue)		143	440	243	220	Design issue fee		144	600	244	300	Plant issue fee		122	130	122	130	Petitions to the Commissioner		123	50	123	50	Petitions related to provisional applications		126	180	126	180	Submission of Information Disclosure Sheet		501	40	501	40	Recording each patent assignment per property (times number of properties)		146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(e))		149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))		179	710	279	355	Request for Continued Examination (RCE)		189	900	189	900	Request for expedited examination of a design application	
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<p>1. BASIC FILING FEE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Large Fee Code</th> <th>Entity Fee Code</th> <th>Small Fee Code</th> <th>Entity Fee Code</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>101</td><td>710</td><td>201</td><td>355</td><td>Utility filing fee</td><td></td></tr> <tr><td>100</td><td>320</td><td>200</td><td>160</td><td>Design filing fee</td><td></td></tr> <tr><td>107</td><td>490</td><td>207</td><td>245</td><td>Plant filing fee</td><td></td></tr> <tr><td>108</td><td>710</td><td>208</td><td>355</td><td>Reissue filing fee</td><td></td></tr> <tr><td>114</td><td>150</td><td>214</td><td>75</td><td>Provisional filing fee</td><td></td></tr> </tbody> </table> <p>SUBTOTAL (1) (\$) 170</p>	Large Fee Code	Entity Fee Code	Small Fee Code	Entity Fee Code	Fee Description	Fee Paid	101	710	201	355	Utility filing fee		100	320	200	160	Design filing fee		107	490	207	245	Plant filing fee		108	710	208	355	Reissue filing fee		114	150	214	75	Provisional filing fee																																																																																																																																												
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<p>2. EXTRA CLAIM FEES</p> <p>Total Claims <input type="text"/> -20** = <input type="text"/> X <input type="text"/> = <input type="text"/></p> <p>Independent Claims <input type="text"/> -3** = <input type="text"/> X <input type="text"/> = <input type="text"/></p> <p>Multiple Dependent <input type="text"/> X <input type="text"/> = <input type="text"/></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Large Fee Code</th> <th>Entity Fee Code</th> <th>Small Fee Code</th> <th>Entity Fee Code</th> <th>Fee Description</th> <th>Fee Paid</th> </tr> </thead> <tbody> <tr><td>103</td><td>18</td><td>203</td><td>9</td><td>Claims in excess of 20</td><td></td></tr> <tr><td>102</td><td>60</td><td>202</td><td>30</td><td>Independent claims in excess of 3</td><td></td></tr> <tr><td>104</td><td>270</td><td>204</td><td>135</td><td>Multiple dependant claim, if not paid</td><td></td></tr> <tr><td>109</td><td>60</td><td>209</td><td>30</td><td>** Reissue independent claims over original patent</td><td></td></tr> <tr><td>110</td><td>18</td><td>210</td><td>9</td><td>** Reissue claims in excess of 20 and over original patent</td><td></td></tr> </tbody> </table> <p>SUBTOTAL (2) (\$) 170</p> <p>**or number previously paid, if greater; For Reissues, see above</p>	Large Fee Code	Entity Fee Code	Small Fee Code	Entity Fee Code	Fee Description	Fee Paid	103	18	203	9	Claims in excess of 20		102	60	202	30	Independent claims in excess of 3		104	270	204	135	Multiple dependant claim, if not paid		109	60	209	30	** Reissue independent claims over original patent		110	18	210	9	** Reissue claims in excess of 20 and over original patent																																																																																																																																												
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SUBMITTED BY		Complete if applicable	
Name (Print/Type)	Charles E. Krueger	Registration No. (Attorney/Agent)	30,977
Signature		Telephone	415-375-0290
		Date	4/17/01

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2031.

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UNITED STATES PATENT AND TRADEMARK OFFICE			
COMMISSIONER FOR PATENTS UNITED STATES PATENT AND TRADEMARK OFFICE WASHINGTON, D.C. 20222 www.uspto.gov			
APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY IDENTIFICATION NUMBER
09/755,723	01/05/2001	Ron Goodman	17002-022500

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SAN FRANCISCO, CA 94111-3834

CONFIRMATION NO. 3728
FORMALITIES LETTER
000000005783175

Date Mailed: 02/21/2001

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of \$130 for a non-small entity, must be submitted with the missing items identified in this letter.
- The balance due by applicant is \$ 130.

The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Substitute drawings in compliance with 37 CFR 1.84 because:
 - drawing sheets do not have the appropriate margin(s) (see 37 CFR 1.84(g)). Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch);

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*A copy of this notice **MUST** be returned with the reply.*

Mark Geromeu
Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 1 - ATTORNEY/APPLICANT COPY

Exhibit 4



Please type a plus sign (+) inside this box. →

Approved for use through 10/31/2002. OMB 0651-0035
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#4

POWER OF ATTORNEY OR AUTHORIZATION OF AGENT	Application Number	09/755,723
	Filing Date	January 5, 2001
	First Named Inventor	Ron Goodman
	Group Art Unit	2185
	Examiner Name	
	Attorney Docket Number	017002-022500US

I hereby appoint:

Practitioner(s) at Customer Number → Place Customer Number Bar Code Label here

OR

Practitioner(s) named below:

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the Patent and Trademark Office connected therewith.

Please change the correspondence address for the above-identified application to:

The above-mentioned Customer Number.

OR

Firm or Individual Name

Address

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City State

Country

Telephone Fax

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 Technology Center 210C

I am the:

Applicant/Inventor.

Assignee of record of the entire interest. See 37 CFR 3.71. Certificate under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/98).

SIGNATURE of Applicant or Assignee of Record

Name	Ng Keh Long
Signature	<i>Ng Keh Long</i>
Date	April 10, 2001

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

Total of 1 forms are submitted.

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 SF 1197815 v1

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STATEMENT UNDER 37 CFR 3.73(b)Applicant/Patent Owner: Creative Technology LTD.Application No./Patent No.: 09/755,723 Filed/Issue Date: January 5, 2001Entitled: Automatic Hierarchical Categorization of Music by MetadataCreative Technology LTD. a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. the assignee of the entire right, title, and interest; or
2. an assignee of an undivided part interest

In the patent application/patent identified above by virtue of either:

- A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

- B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet.

- Copies of assignments or other documents in the chain of title are attached.

NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.8)

The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of the assignee.

April 10, 2001
Date

Ng Keh Long
Signature

Ng Keh Long
Typed or printed name

Chief Financial Officer
Title

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MAY 22 2001

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2185



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TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application Number	09755,723	
	Filing Date	January 5, 2001	
	First Named Inventor	GOODMAN, RON, et. al.	
	Group Art Unit	2185	
	Examiner Name		
Total Number of Pages in This Submission	4	Attorney Docket Number	017002022500

ENCLOSURES (check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application) <input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition Routing Slip (PTO/SB/68) and Accompanying Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input checked="" type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Rule 3.73(b) Statement, copy of assignment
Remarks	The Commissioner is authorized to charge any additional fees to Deposit Account 20-1430.	

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm and Individual name	Townsend and Townsend and Crew LLP Charles E. Krueger	Reg No. 30,077
Signature	<i>Charles E. Krueger</i>	
Date	5/10/01	

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CERTIFICATE OF MAILING			
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this date: <u>5-14-01</u>			
Typed or printed name	D. Bullock	Signature	<i>D. Bullock</i>
		Date	5-14-01

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Exhibit 5



#5

Inventor Information

Inventor One Given Name:: RON
 Family Name:: GOODMAN
 Name Suffix::
 Postal Address Line One:: 226 Jeter Street
 City:: Santa Cruz
 State or Province:: CA
 Postal or Zip Code:: 95060
 Citizenship Country:: US

Inventor Two Given Name:: HOWARD
 Family Name:: EGAN
 Name Suffix::
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 City:: Capitola
 State or Province:: CA
 Postal or Zip Code:: 95010
 Citizenship Country:: US

Correspondence Information

Correspondence Customer Number:: 20350

Application Information

Title Line One:: AUTOMATIC HIERARCHICAL
 Title Line Two:: CATEGORIZATION OF
 Title Line Three:: MUSIC BY METADATA
 Total Drawing Sheets:: 6
 Formal Drawings?: Yes
 Application Type: Utility
 Docket Number: 017002022500
 Secrecy Order in Patent Appl.?: No

09755723-042301

Exhibit 6

I hereby certify that this correspondence, being deposited with the United States Postal Service as first class mail in an envelope addressed to:

PATENT
Attorney Docket No.: 017002-022500US
Client Reference No.: CT-1139

Handwritten: #61, 12-2, M.L.

O.I.P.E.
APR 23 2001
JCS
PATENT AND TRADEMARK OFFICE

Assistant Commissioner for Patents
Washington, D.C. 20231

On 4-18-01

By: TOWNSEND and TOWNSEND and CREW LLP
[Signature]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

GOODMAN et al.

Art Unit: 2185

Application No.: 09/755,723

PRELIMINARY AMENDMENT

Filed: January 5, 2001

For: **AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA**

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-referenced application, please enter the following amendments and remarks.

IN THE SPECIFICATION:

Please substitute the following for the paragraph appearing on page 1 under the **CROSS-REFERENCES TO RELATED APPLICATIONS** heading. A marked up version of the paragraph is appended to this amendment.

Handwritten: CAL 6-8-01, AI, CAL 6-8-01 6-8-05

~This application is related to Application No. 09/755,629, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Atty Docket No. 17002-020800); and Application No. 09/755,367, entitled "Audioplayback Device with Power Savings Storage Access Mode," (U.S. Patent 6,590,730, Atty. Docket No. 17002-022400); both filed January 5, 2001, the disclosures of which are incorporated herein by reference.~

Handwritten: A.

GOODMAN et al.
Application No.: 09/755,723
Page 2


PATENT

REMARKS

By this amendment information regarding related applications that was not available at the time of filing has been added. Entrance of the amendment is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,


Charles E. Krueger
Reg. No. 30,077

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200
Fax: (415) 576-0300
CEK:deb
SF 1210990 v1

09755723.042301

Marked Up Version of Amended Paragraph 09/755.723

This application is related to Application No. [/ ,] 09/755.629, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Atty. Docket No. 17002-020800); and Application No. [/ ,] 09/755.367, entitled "Audioplayback Device with Power Savings Storage Access Mode," (Atty. Docket No. 17002-022400), [all] both filed January 5, 2001, the disclosures of which are incorporated herein by reference.

5

09755723.042301

A

Exhibit 7



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/735,723	01/05/2001	Ron Goodman	01700202500	3723

20350 3590 01/15/2003
 TOWNSEND AND TOWNSEND AND CREW, LLP
 TWO EMBARCADERO CENTER
 EIGHTH FLOOR
 SAN FRANCISCO, CA 94111-3834

EXAMINER

PUNTI, PRAKASH C

ART UNIT	PAPER NUMBER
2173	

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

DETAILED ACTION

1. This action is in response to application dated 01/05/2001. Claims 1-10 are pending in this office action.

Claim Objections

2. Claims 1-4 and 9 are objected to because of the following informalities:

In claim 1, line 9: the claim recitation "base" should be --based--. Appropriate correction is required.

O.B.
1/13/23

Claims 2-4 are ^{objected} ~~objects~~ to because claims 2-4 are dependent from objected independent claim 1.

In claim 9, line 12: the claim recitation "base" should be --based--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Grewe et al. (U.S. Patent No.5,670,730.)

As to claim 1, Grewe et al. teaches a method, performed by a processor in a portable digital music player, for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track (see Abstract, see Fig. 3, and see column 1, lines 6-21), said method comprising the acts of:

reading a definition file that defines an ordered hierarchical tree structure (see Fig. 2, see column 1, lines 47-49), with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata (see column 1, lines 49-67);

for each track, iteratively determining, base on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track (see Abstract, see Fig. 3, also see column 3, lines 45-49.)

As to claim 2, Grewe et al. teaches a method, where said act of searching further comprises the acts of:

utilizing track type information to file only tracks of a specified type under a particular branch (see Abstract, see column 3, lines 47-53.)

As to claim 3, Grewe et al. teaches a method further comprising the acts of:

for each branch, utilizing category structure information to file tracks in a specified attribute order (see column 4, lines 19-35.)

As to claim 4, Grewe et al. teaches a method, where said portable digital music player includes a display screen and a user interface for interacting with the display (see column 1, lines 13-21), further comprising the acts of:

displaying the categories and subcategories on the display in a hierarchical order (see column 2, lines 49-51, also see column 3, lines 38-44);

displaying all names of tracks associated with a category or sub-category when a user utilizes the interface to select a category or sub-category (see column 1 line 65 through column 2, line 3, also see column 3, lines 49-53);

utilizing the pointer to access and play a track when a user selects a track name through the user interface (see column 3, lines 53-57, also see column 3, lines 17-19) and

utilizing the pointer to access and play a collection of tracks within a category or subcategory when a user selects a category or subcategory through the user interface (see column 3, lines 55-57.)

As to claim 5, Grewe et al. teaches a method, implemented by a processor in a portable digital music player, for associating metadata with audio tracks (see Abstract) comprising the acts of:

opening a formatted file for each track comprising a file data portion and a file attributes portion, with the file attributes portion including a plurality of fields corresponding to category types and file types (see column 3, lines 45-49);

storing an unmodified audio track in the file data portion of the formatted file (see column 4, lines 19-21);

and

storing category type and file type information about the unmodified track in corresponding fields (see column 2, line 37 through column 3, line 28.)

As to claim 6, Grewe et al. teaches a method, performed by a processor in a portable digital music player, for filing audio tracks, stored on a computer readable media, under categories in an in memory tree structure, with each audio track having metadata associated therewith including category name data for naming (see Abstract, see column 1, lines 46-56), said method comprising the acts of:

upon startup or when a track is added or changed, searching the metadata of each track (see column 1, lines 58-65); and

for each track, automatically filing the track by category name under each selected category to form a hierarchical track filing scheme (see column 5, lines 34-54.)

As to claim 7, Grewe et al. teaches a method further comprising the act of:

selecting the categories to be the Album including the track, the title of the track, and the name of the artist that recorded the track (see column 3, lines 45-53.)

As to claim 8, Grewe et al. teaches a method, where said portable digital music player includes a display screen and a user interface for interacting with the display (see column 2, lines 49-51), further comprising the acts of:

displaying the categories on the display in a hierarchical order see column 2, lines 49-51, also see column 3, lines 38-44);

displaying all names of tracks associated with a category when a user utilizes the interface to select a category (see column 3, lines 49-53) ;

accessing and playing a track when a user selects a track name through the user interface (see column 3, lines 53-57, also see column 3, lines 17-19); and

accessing and playing a collection of tracks within a category when a user selects a category through the user interface ((see column 1 line 65 through column 2, line 3, also see column 3, lines 49-53.)

As to claim 9, Grewe et al. teaches a computer program product comprising:

a computer readable medium having program code embodied therein for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track (see Abstract), said program code comprising:

program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be

Art Unit: 2175

sorted under the branch, and structure information defining how to file tracks based on associated metadata (see Abstract, see summary);

program code, executed by a processor, for each track, for iteratively determining, based on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track (see Fig. 3, see column 3, lines 45-49, also see column 4, lines 10-14.)

As to claim 10, Grewe et al. teaches a computer program product comprising:

a computer readable medium for having program code embodied therein for filing audio tracks, stored on a computer readable media, under categories in an in-memory tree structure,

with each audio track having metadata associated therewith including category name data for naming (see Abstract, see column 1, lines 46-56), said program code comprising:

program code, executed by a processor, upon startup or when a track is added or changed, for searching the metadata of each track (see column 1, lines 58-65); and

program code, executed by a processor, for each track, for automatically filing the track by category name under each selected category to form a hierarchical track filing scheme (see column 5, lines 34-54.)

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of art with respect to method of organizing music in general:

U.S. Patent No. 5,670,730 to Grewe et al.

U.S. Patent No. 5,616,876 to Cluts.

U.S. Patent No. 5,918,303 to Yamaura et al.

U.S. Patent No. 5,969,283 to Looney et al.

U.S. Patent No. 5,062,868 to Toriumi.


U.S. Patent No. 5,248,946 to Dwek.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prakash Punit whose telephone number is (703) 305-5914. The examiner can normally be reached on Mondays – Fridays from 9:45 am to 6:15 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici, can be reached on (703) 305-3830. The fax numbers of the group is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Prakash Punit
Patent Examiner
Art Unit 2175


DOV POPOVICI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

January 10, 2003

Notice of References Cited	Application/Control No. 09/755,723	Applicant(s)/Patent Under Reexamination GOODMAN ET AL.	
	Examiner Prakash C Punit	Art Unit 2175	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
A	US-5,670,730	09-1997	Grewe et al.	84/609
B	US-5,616,876	04-1997	Cluts, Jonathan C.	84/609
C	US-5,918,303	06-1999	Yamaura et al.	84/609
D	US-5,969,283	10-1999	Looney et al.	84/609
E	US-6,062,868	05-2000	Toriumi, Hiroshi	434/307A
F	US-6,248,946	08-2001	Dwek, Norman Scott	84/609
G	US-			
H	US-			
I	US-			
J	US-			
K	US-			
L	US-			
M	US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
N					
O					
P					
Q					
R					
S					
T					

NON-PATENT DOCUMENTS

*	Include as applicable: Author, Title, Date, Publisher, Edition or Volume, Part/ent Pages)
U	
V	
W	
X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Exhibit 8



#8
5/15/03
AI

Docket No.: 6407P212

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

RON GOODMAN, ET AL.

Application No.: 09/755,723

Filed: January 5, 2001

For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

Art Group: 2175

Examiner: Punit, Prakash C

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MAY 22 2003

Technology Center 2100

PETITION FOR EXTENSION OF TIME PURSUANT TO 37 C.F.R. § 1.136(a)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 C.F.R. § 1.136(a), Applicants for the above-identified application respectfully Petition the Commissioner for a one (1) month extension of time, extending the period for response to May 15, 2003, from the Office Action dated January 15, 2003. The petition filing fee of \$110.00 and a Response to Office Action are attached.

If it should be determined that a longer extension of time is required to prevent this application from being abandoned, please charge any additional fees to Deposit Account No. 02-2666. A copy of the Fee Transmittal is enclosed for deposit account charging purposes.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Mark R. Vatone

Mark R. Vatone, Reg. No. 53,719

Date: 5/15/03

12400 Wilshire Blvd., 7th Floor
Los Angeles, California 90025
Telephone: (408) 947-8200

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Sarah M. Montgomery 5/15/03
Sarah M. Montgomery Date

05/21/2003 1157016861 00000022 09755723

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110.00 DP

Exhibit 9



Attorney's Docket No. 6407P212

Patent

#9B
5/21/03
A.V.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re of Application of:

Ron Goodman et al.

Application No.: 09/755,723

Filing Date: January 5, 2001

For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

Examiner: Punit, Prakash C.

Art Group: 2175

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on May 15, 2003
Date of Deposit

Sarah M. Montgomery
Name of Person Making Correspondence

Sarah M. Montgomery 5/15/03
Signature Date

Commissioner for Patents
Washington, D.C. 20231

AMENDMENT AND RESPONSE TO THE OFFICE ACTION

Sir:

In response to the Office Action of January 15, 2003 please enter the following amendments and consider the following remarks.

AMENDMENT

- IN THE CLAIMS

Please cancel claim 5, without prejudice.

Please amend the claims as follows:

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MAY 22 2003

Technology Center 2100

Sub
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1. (Currently Amended) A method, performed by a processor in a portable digital music media player, for filing audio-media tracks stored on a computer readable media, with each audio-media track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track, said method comprising the acts of:

reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata;

for each track, iteratively determining, base based on metadata describing the track if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track.

B1

2. (Original) The method of claim 1, where said act of searching further comprises the acts of:

utilizing track type information to file only tracks of a specified type under a particular branch.

3. (Original) The method of claim 1 further comprising the acts of:

for each branch, utilizing category structure information to file tracks in a specified attribute order.

4. (Currently Amended) The method of claim 1, where said portable digital music-media player includes a display screen and a user interface for interacting with the display, further comprising the acts of:

displaying the categories and subcategories on the display in a hierarchical order;

displaying all names of tracks associated with a category or sub-category when a user utilizes the interface to select a category or sub-category;

utilizing the pointer to access and play a track when a user selects a track name through the user interface; and

utilizing the pointer to access and play a collection of tracks within a category or subcategory when a user selects a category or subcategory through the user interface.

B1

5. (Canceled)

6. (Currently Amended) A method, performed by a processor in a portable digital music-media player, for filing audio-media tracks, stored on a computer readable media, under categories in an in memory tree structure, with each audio-media track having metadata associated therewith including category name data for naming, said method comprising the acts of:

upon startup or when a track is added or changed, searching the metadata of each track; and

for each track, automatically filing the track by category name under each selected category to form a hierarchical track filing scheme.

B2

7. (Original) The method of claim 6 further comprising the act of: selecting the categories to be the Album including the track, the title of the track, and the name of the artist that recorded the track.

8. (Currently Amended) The method of claim 6, where said portable digital music-media player includes a display screen and a user interface for interacting with the display, further comprising the acts of:

displaying the categories on the display in a hierarchical order;

displaying all names of tracks associated with a category when a user utilizes the interface to select a category ;
accessing and playing a track when a user selects a track name through the user interface; and
accessing and playing a collection of tracks within a category when a user selects a category through the user interface.

9. (Currently Amended) A computer program product comprising:
a computer readable medium having program code embodied therein for filing audio-media tracks stored on a computer readable media, with each audio-media track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track, said program code comprising:

B2
program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata;

program code, executed by a processor, for each track, for iteratively determining, based on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track.

10. (Currently Amended) A computer program product comprising:
a computer readable medium for having program code embodied therein for filing audio-media tracks, stored on a computer readable media, under categories in an in-memory tree structure, with each audio-media track having

metadata associated therewith including category name data for naming, said program code comprising:

program code, executed by a processor, upon startup or when a track is added or changed, for searching the metadata of each track; and

B2 program code, executed by a processor, for each track, for automatically filing the track by category name under each selected category to form a hierarchical track filing scheme.

REMARKS

Reconsideration of this application, as amended, is earnestly requested.

Claims 1, 4, 6 and 8 - 10 have been amended as shown above. Claim 5 has been cancelled without prejudice.

Claims 1-4 and 9 were objected to because of certain informalities. These informalities have been corrected as shown above, and it is submitted that the objections to these claims have been overcome.

Claims 1 - 10 stand rejected under 35 U.S.C. 102(b) as being anticipated by Grewe et al., U.S. Patent 5,670,730 (hereinafter referred to as "Grewe"). This rejection is respectfully traversed.

Grewe teaches a system in which music files are provided with individual headers 36 that include category, artist, and track address information (Fig. 3, col. 3 from ln. 45). The track address information is used to identify the start and/or end location of the file, so that the music player can locate and play the file.

A global header 22 and a table of contents 34 are maintained separate from the individual music files. The global header 22 includes general information about the selections on the chip and how they were encoded, for example the distributor of the music and the bit rate at which the tracks have been encoded. Track selections are listed as part of the table of contents by individual headers 36. (Col. 3 ln. 23, Fig. 3). That is, as can be seen from the description and in particular Figs. 3 and 4, the "table of contents" is nothing more than a sequential list of the individual headers, appended one after another to the table of contents. The table of contents does not appear to be hierarchical¹ at all.

¹ Based on Applicants' understanding, Grewe's use of the term "hierarchical" appears to refer only to the predefined format of the individual headers and/or the global header.

Although it is not clearly stated how this is accomplished, it is a goal of Grewe to permit selection of tracks by category or artist. From the description of Grewe's "table of contents", it appears that such selections can only be made by searching serially through the sequential list of headers in the "table of contents" to identify the individual tracks meeting the criteria. While this may be an acceptable solution for small numbers of tracks, this method is going to be cumbersome when large numbers of tracks are involved or when the database is updated frequently.

Unlike Grewe, the current invention provides a hierarchical definition file that has a tree structure, including category names that name the branch under which tracks are listed. For each track, each branch in which the track belongs is determined, and the track is filed in the appropriate location in the branch. These limitations, found in claims 1 and 10, are not taught or suggested by Grewe.

Similarly, Grewe does not teach or suggest the method of claim 4. While Grewe does mention that music can be selected using the information in the headers (col. 3 lns. 50-57), there is little disclosure as to how this is accomplished. Similarly, while Grewe does mention that information can be presented on a display, there is no mention of displaying categories, subcategories and tracks in an hierarchical order for selection as defined in claim 4. Grewe does not even appear to contemplate subcategories at all. In particular, Grewe does not teach or disclose any of the specific displaying or utilizing steps in claim 4.

Similarly, Grewe does not teach the limitations of claims 6 and 9. The filing system of Grewe merely appends each individual header to the last individual header in the "table of contents," which thus is merely an elementary list of track headers (See Figs. 3 and 4). Grewe does not teach automatically filing a track by category name under each selected category, to form a hierarchical track filing scheme, as claimed in claims 6 and 9.

As set forth in MPEP 2131, to anticipate a claim the reference must teach every element of the claim. Since, as discussed above, every element of independent claims 1, 6, 9 and 10 is not taught by Grewe, Applicants submit that these claims are not anticipated by Grewe and are thus allowable.

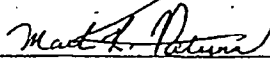
Further, it is submitted that claims 2 -4, 7 and 8 are allowable as being dependent on allowable base claims.

From at least the foregoing reasons, it is respectfully submitted that claims 1 - 4 and 6 -10 are allowable and allowance of the application is earnestly requested.

If there are any additional fees associated with this communication, please charge our Deposit Account No. 02-2666.

Respectfully submitted

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP



Mark R. Vatuone
Reg. No. 53,719

Date: May 15, 2003

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
(408) 947-8200



2175
75

TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>		Application No.	09755,723
		Filing Date	January 5, 2001 RECEIVED
		First Named Inventor	Ron Goodman MAY 22 2003
		Group Art Unit	2175 Technology Center 2100
		Examiner Name	Punit, Prakash C
Total Number of Pages In This Submission	11	Attorney Docket Number	6407P212

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavit/declaration(s) <input checked="" type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> PTO/SB/08 <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Basic Filing Fee <input type="checkbox"/> Declaration/POA <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation, Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <div style="border: 1px solid black; padding: 5px; width: fit-content;">Postcard.</div>
Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Mark R. Vatuone, Reg. No. 53,719 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	<i>Mark R. Vatuone</i>
Date	5/15/2003

CERTIFICATE OF MAILING/TRANSMISSION			
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Typed or printed name	Sarah M. Montgomery	Date	5/15/03
Signature	<i>Sarah M. Montgomery</i>	Date	5/15/03

Based on PTO/SB/21 (08-03) as modified by Blakely, Sokoloff, Taylor & Zafman (40) 05/02/2003.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450



FEE TRANSMITTAL for FY 2003

Effective 05/01/2003. Patent fees are subject to annual revision.

Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT (\$) 110.00

Complete if Known

Application Number: 09/755,723
 Filing Date: January 5, 2001
 First Named Inventor: Ron Goodman
 Examiner Name: Punit, Prakash C
 Group/Art Unit: 2175
 Attorney Docket No.: 6407P212

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MAY 22 2003

METHOD OF PAYMENT (check one)

Check Credit card Money Order Other None

Deposit Account

Deposit Account Number: 02-2666

Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

The Commissioner is authorized to: (check all that apply)

Charge fee(s) indicated below Credit any overpayments

Charge any additional fee(s) required under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20.

Charge fee(s) indicated below, except for the filing fee in the above-identified deposit account

3. ADDITIONAL FEES (continue on Technology Center 2100)

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	60	2052	25	Surcharge - late provisional filing fee or cover sheet	
2063	130	2053	130	Non-English specification	
1812	2,620	1812	2,620	For filing a request for ex parte reexamination	
1604	920*	1604	920*	Requesting publication of SIR prior to Examiner action	
1805	1,040*	1805	1,040*	Requesting publication of SIR after Examiner action	
1251	110	2251	65	Extension for reply within first month	110.00
1252	410	2252	205	Extension for reply within second month	
1253	930	2253	465	Extension for reply within third month	
1254	1,450	2254	725	Extension for reply within fourth month	
1255	1,870	2255	885	Extension for reply within fifth month	
1404	320	2401	160	Notice of Appeal	
1402	320	2402	160	Filing a brief in support of an appeal	
1403	260	2403	140	Request for oral hearing	
1451	1,810	2451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,300	2453	850	Petition to revive - unintentional	
1501	1,300	2501	650	Utility issue fee (or rebate)	
1502	470	2502	235	Design issue fee	
1503	630	2503	315	Plant issue fee	
1480	130	2480	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(a)	
1808	180	1808	180	Submission of Information Disclosure Sheet	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	750	1809	375	Filing a submission after final rejection (37 CFR § 1.126(a))	
1810	750	2810	375	For each additional invention to be examined (37 CFR § 1.126(b))	
1801	700	2801	375	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify): _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 110.00

FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	150	2001	37.5	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	570	2003	285	Plant filing fee	
1004	760	2004	376	Reissue filing fee	
1005	160	2005	60	Provisional filing fee	

SUBTOTAL (1) (\$) _____

2. EXTRA CLAIM FEES

Total Claims: _____

Independent Claims: 20

Multiple Dependent: 3

Fee from Claims: _____

Fee from below: _____

Fee Paid: _____

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	84	2201	42	Independent claims in excess of 3	
1203	280	2203	140	Multiple Dependent claims, if not paid	
1204	84	2204	42	*Rebate independent claims over original patent	
1205	18	2205	9	*Rebate claims in excess of 20 and over original patent	

SUBTOTAL (2) (\$) _____

*For number previously paid, if greater. For Rebates, see below

SUBMITTED BY

Name (Print/Type): Mark R. Vatone

Registration No. (Attorney/Agent): 53,719

Telephone: (408) 947-8200

Signature: *Mark R. Vatone*

Date: 5/15/03

Based on PTO/SB/11 (01-03) as modified by Blakely, Sokoloff, Taylor & Zafman (us) 05/02/2003.
 SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Exhibit 10

PLG



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22311-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/753,723	01/05/2001	Ron Goodman	017002022500	3728

20350 7590 07/29/2003
TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834

EXAMINER

RONES, CHARLES

ART UNIT PAPER NUMBER

2175

10

DATE MAILED: 07/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PRC

Office Action Summary	Application No.	Applicant(s)	
	09/755,723	GOODMAN ET AL.	
	Examiner	Art Unit	
	Charles L. Ronas	2175	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.133(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 20 May 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-10 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other:

DETAILED ACTION

The amendment timely filed May 20, 2003. Claims 1-10 are pending in this office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Grewe et al. (U. S. Patent No. 5,670,730.)

As to claim 1, Grewe et al. teaches a method, performed by a processor in a portable digital music player, for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track (see Abstract, see Fig. 3, and see column 1, lines 6-21), said method comprising the acts of:

reading a definition file that defines an ordered hierarchical tree structure (see Fig. 2, see column 1, lines 47-49), with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of

tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata (see column 1, lines 49-67);

for each track, iteratively determining, base on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track (see Abstract, see Fig. 3, also see column 3, lines 45-49.)

As to claim 2, Grewe et al. teaches a method, where said act of searching further comprises the acts of:

utilizing track type information to file only tracks of a specified type under a particular branch (see Abstract, see column 3, lines 47-53.)

As to claim 3, Grewe et al. teaches a method further comprising the acts of:

for each branch, utilizing category structure information to file tracks in a specified attribute order (see column 4, lines 19-35.)

As to claim 4, Grewe et al. teaches a method, where said portable digital music player includes a display screen and a user interface for interacting with the display (see column 1, lines 13-21), further comprising the acts of:

displaying the categories and subcategories on the display in a hierarchical order (see column 2, lines 49-51, also see column 3, lines 38-44);

displaying all names of tracks associated with a category or sub-category when a user utilizes the interface to select a category or sub-category (see column 1 line 65 through column 2, line 3, also see column 3, lines 49-53);

utilizing the pointer to access and play a track when a user selects a track name through the user interface (see column 3, lines 53-57, also see column 3, lines 17-19) and

utilizing the pointer to access and play a collection of tracks within a category or subcategory when a user selects a category or subcategory through the user interface (see column 3, lines 55-57.)

As to claim 5, Grewe et al. teaches a method, implemented by a processor in a portable digital music player, for associating metadata with audio tracks (see Abstract) comprising the acts of:

opening a formatted file for each track comprising a file data portion and a file attributes portion, with the file attributes portion including a plurality of fields corresponding to category types and file types (see column 3, lines 45-49);

storing an unmodified audio track in the file data portion of the formatted file (see column 4, lines 19-21);

and

storing category type and file type information about the unmodified track in corresponding fields (see column 2, line 37 through column 3, line 28.)

As to claim 6, Grewe et al. teaches a method, performed by a processor in a portable digital music player, for filing audio tracks, stored on a computer readable media, under categories in an in memory tree structure, with each audio track having metadata associated therewith including category name data for naming (see Abstract, see column 1, lines 46-56), said method comprising the acts of:

upon startup or when a track is added or changed, searching the metadata of each track (see column 1, lines 58-65); and

for each track, automatically filing the track by category name under each selected category to form a hierarchical track filing scheme (see column 5, lines 34-54.)

As to claim 7, Grewe et al. teaches a method further comprising the act of:

selecting the categories to be the Album including the track, the title of the track, and the name of the artist that recorded the track (see column 3, lines 45-53.)

As to claim 8, Grewe et al. teaches a method, where said portable digital music player includes a display screen and a user interface for interacting with the display (see column 2, lines 49-51), further comprising the acts of:

displaying the categories on the display in a hierarchical order see column 2, lines 49-51, also see column 3, lines 38-44);

displaying all names of tracks associated with a category when a user utilizes the interface to select a category (see column 3, lines 49-53) ;

accessing and playing a track when a user selects a track name through the user interface (see column 3, lines 53-57, also see column 3, lines 17-19); and

accessing and playing a collection of tracks within a category when a user selects a category through the user interface ((see column 1 line 65 through column 2, line 3, also see column 3, lines 49-53.)

As to claim 9, Grewe et al. teaches a computer program product comprising:

a computer readable medium having program code embodied therein for filing audio tracks stored on a computer readable media, with each audio track having metadata associated therewith including category value data for naming attributes of the track and type data indicating the type of track (see Abstract), said program code comprising:

program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure, with the file including category names for naming the branch under which tracks are sorted, track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata (see Abstract, see summary);

program code, executed by a processor, for each track, for iteratively determining, base on metadata describing the track, if the track belongs in the branch, and, for each branch in which the track belongs, traversing the branch to determine the appropriate location to file the track (see Fig. 3, see column 3, lines 45-49, also see column 4, lines 10-14.)

As to claim 10, Grewe et al. teaches a computer program product comprising:

a computer readable medium for having program code embodied therein for filing audio tracks, stored on a computer readable media, under categories in an in-memory tree structure,

with each audio track having metadata associated therewith including category name data for naming (see Abstract, see column 1, lines 46-56), said program code comprising:

program code, executed by a processor, upon startup or when a track is added or changed, for searching the metadata of each track (see column 1, lines 58-65); and

program code, executed by a processor, for each track, for automatically filing the track by category name under each selected category to form a hierarchical track filing scheme (see column 5, lines 34-54.)

Response to Arguments

Applicant's arguments filed May 20, 2003 have been fully considered but they are not persuasive.

Firstly, Applicant argues that Grewe does not disclose using a hierarchical definition file as stated in the claim.

In response, Examiner maintains that Grewe discloses such as stated above in the rejection of the claim wherein the hierarchical arrangement of headers and the table of contents are deemed to be hierarchical.

Secondly, Applicant argues that Grewe does not disclose display categories or subcategories and tracks in an hierarchical order for selection.

In response, Examiner maintains that Grewe discloses such wherein Grewe discloses that the information is displayable. See 2:36-54.

Lastly, Applicant argues that Grewe does not disclose automatically filing a track by category name under a selected category to form a hierarchical track filing scheme.

In response, Examiner maintains that Grewe discloses such wherein Grewe discloses that the headers are arranged hierarchically and that the headers contains a music filed to which the track of music belongs, such as jazz, classical, country, etc. which are deemed to be categories of music arranged hierarchically.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

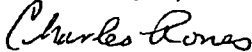
Application/Control Number: 09/755,723
Art Unit: 2175

Page 9

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles L. Ronas whose telephone number is (703-306-3030. The examiner can normally be reached on Mondays – Fridays from Monday-Thursday 8am-4pm pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici, can be reached on (703-305-3830. The fax numbers of the group is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.


Charles L. Ronas
Primary Examiner
Art Unit 2175

Notice of References Cited	Application/Control No. 09/755,723	Applicant(s)/Patent Under Reexamination GOODMAN ET AL.	
	Examiner Charles L. Rones	Art Unit 2175	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
A	US-2003/0016940 A1	01-2003	Robbins, Gerald V.	386/46
B	US-			
C	US-			
D	US-			
E	US-			
F	US-			
G	US-			
H	US-			
I	US-			
J	US-			
K	US-			
L	US-			
M	US-			

FOREIGN PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
N					
O					
P					
Q					
R					
S					
T					

NON-PATENT DOCUMENTS

*	Include as applicable: Author, Title, Date, Publisher, Edition or Volume, Pertinent Pages)
U	
V	
W	
X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Exhibit 11

05/13/03 16:10 FAX

@ 010 2178




#11
8/11/03
AW

Approved for use through 10/31/2003. (Class 001-003)
Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1996, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REVOCATION OF POWER OF ATTORNEY OR AUTHORIZATION OF AGENT	Application No.	09/755,723
	Filing Date	January 5, 2001
	First Named Inventor	Ron Goodman
	Group Art Unit	2175
	Examiner Name	Punit, Prakash C
	Attorney Docket Number	6407P212

I hereby revoke all previous powers of attorney or authorizations of agent given in the above-identified application:

A Power of Attorney or Authorization of Agent is submitted herewith.
AND
 Please change the correspondence address for the above-identified application to:

Customer Number 08791 →  *08791*

<input type="checkbox"/> Firm or Individual Name	BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP				
Address	12400 Wilshire Boulevard, Seventh Floor				
City	Los Angeles	State	California	Zip Code	90025
Country	U.S.A.	Telephone	(408) 947-8200	Fax	(408) 947-8280

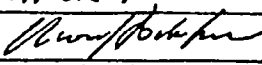
I am the:

Applicant.

Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under of 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

RECEIVED
MAY 22 2003
Technology Center 2100

SIGNATURE of Applicant or Assignee of Record

Name	C. HOCK LEON
Signature	
Date	5/13/03

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

Total of _____ forms are submitted.

Business Hour Statement: This form is estimated to take 6.3 hours to complete. Time will vary depending upon the needs of the individual user. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. MAIL TO: Commissioner for Patents, P.O. Box 1460, Alexandria, VA 22313-1460.

05/08/03 16:52 FAX

018



Docket No.: 6407P212

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

RON GOODMAN, ET AL.

Art Group: 2175

Application No.: 09/755,723

Examiner: Punit, Prakash C

Filed: January 5, 2001

For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

POWER OF ATTORNEY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RECEIVED

MAY 22 2003
Technology Center 2100

Sir:

Applicant of the above-identified Application, hereby appoints the persons listed on Appendix A attached hereto (which is incorporated by reference and a part of this document), with full power of substitution and revocation, to prosecute this Application and to transact all business in the Patent and Trademark Office connected herewith.

Please direct all future communications concerning this Application to:

André L. Maris, Reg. No. 48,095
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
12400 Wilshire Boulevard, Seventh Floor
Los Angeles, CA 90025
(714) 557-3800

Creative Technology Ltd.

Date: _____

5/8/03

Appendix A

I hereby appoint with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith, BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP, a firm including: Ramlin Aghebi, Reg. No. 43,482; William E. Alford, Reg. No. 37,764; Farzad E. Amiri, Reg. No. 42,281; W. Thomas Babbitt, Reg. No. 39,591; Jordan M. Becker, Reg. No. 39,602; Michael A. Boudicou, Reg. No. 35,934; Roger W. Blakely, Jr., Reg. No. 25,831; R. Alan Burnett, Reg. No. 48,148; Gregory D. Caldwell, Reg. No. 38,928; Cory G. Classason, Reg. No. 50,298; Thomas M. Coester, Reg. No. 39,807; Minni D. Dao, Reg. No. 45,828; Stephen M. De Kerk, Reg. No. 48,603; Daniel M. De Vos, Reg. No. 37,813; Sanjeet Dutta, Reg. No. 48,145; Tarek N. Fahmi, Reg. No. 41,402; Thomas S. Ferris, Reg. No. 42,632; George L. Fountain, Reg. No. 38,374; Adam Furst, Reg. No. 51,710; Angela J. Gar, Reg. No. 45,907; Andre M. Gibbs, Reg. No. 47,593; James Y. Go, Reg. No. 40,621; Jeffery B. Halleson, Reg. No. 48,785; James A. Henry, Reg. No. 41,064; William E. Hickman, Reg. No. 48,771; Wilmore F. Holbrow III, Reg. No. 41,845; Sheryl Sus Holoway, Reg. No. 37,650; George W. Hoover II, Reg. No. 32,992; Eric S. Hymen, Reg. No. 30,138; Aslam A. Jeffrey, Reg. No. 51,841; Walter T. Kim, Reg. No. 42,731; Eric T. King, Reg. No. 44,188; Steven Lau, Reg. No. 47,736; Suk S. Lee, Reg. No. 47,745; Gordon R. Lindan III, Reg. No. 33,182; Jan C. Little, Reg. No. 41,181; Joseph Lutz, Reg. No. 43,786; Lawrence E. Lycka, Reg. No. 38,540; Michael J. Mathe, Reg. No. 38,591; Andre L. Maritz, Reg. No. 48,096; Raul D. Martinez, Reg. No. 48,904; Paul A. Mandonsa, Reg. No. 42,878; Jonathan S. Miller, Reg. No. 48,634; Heather M. Moleur, Reg. No. 50,432; Richard A. Nakashima, Reg. No. 42,023; Thinh V. Nguyen, Reg. No. 42,034; Robert B. O'Rourke, Reg. No. 48,972; Daniel E. Ovenszian, Reg. No. 41,236; Philip A. Padigo, Reg. No. 52,107; Marina G. Portnova, Reg. No. 48,750; Joseph A. Pugh, Reg. No. 52,137; James H. Salter, Reg. No. 35,868; William W. Scheel, Reg. No. 39,018; James C. Scheffer, Reg. No. 31,196; Salma B. Shamlov, Reg. No. 48,288; Kevin G. Shao, Reg. No. 45,096; Stanley W. Sokoloff, Reg. No. 25,128; Judith A. Szapel, Reg. No. 39,393; Edwin H. Taylor, Reg. No. 26,128; Lisa Tom, Reg. No. 52,281; John F. Travis, Reg. No. 43,203; Kerry D. Twest, Reg. No. 45,859; Mark C. Van Ness, Reg. No. 39,885; Thomas A. Van Zandt, Reg. No. 43,219; Mark R. Vabone, Reg. No. 53,719; Lester J. Vincent, Reg. No. 31,480; John P. Ward, Reg. No. 40,218; Mark L. Watson, Reg. No. 48,322; Thomas C. Webster, Reg. No. 48,154; Chui-Iou Teresa Wong, Reg. No. 48,042; and Norman Zaitman, Reg. No. 28,250, my patent attorneys, and Brent Vecchia, Reg. No. 48,011 and Lehua Wang, Reg. No. 48,023, my patent agents, with offices located at 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025, telephone (310) 207-3800; and James R. Thein, Reg. No. 31,710, my patent attorney, also appoint P. Françoise de Villiers, Reg. No. 48,200 of Creative Labs Inc., a corporation having principal offices at 1901 McCarthy Boulevard, Milpitas, California 95035; with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith. with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.



Docket No. 6407P212

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Creative Technology Ltd

Application No./Patent No.: 09/755,723 Filing/Issue Date: 1/5/2001

Entitled: AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

Creative Technology Ltd, a Limited Liability Corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

of Singapore,

states that it is:

- 1. the assignee of the entire right, title and interest; or
- 2. an assignee of an undivided part interest.

in the patent application/patent identified above by virtue of either:

A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the Patent and Trademark Office at Reel 011788, Frame 0174, or for which a copy thereof is attached.

OR

B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

- 1. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at Reel 011788, Frame 0174, or for which a copy thereof is attached.
- 2. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- 3. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- 4. From: _____ To: _____
The document was recorded in the Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet.

Copies of assignments or other documents in the chain of title are attached.

(NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the PTO. See MPEP 302-302.8)

The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of assignee.

05/09/03
Date

[Signature]
Signature
André L. Marais, Reg. No. 48,095
Typed or printed name

Title

Briefing Hour Statement: This form is estimated to take 8-2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FILES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1506, Alexandria, VA 22315-1450.

Exhibit 12



#12
11/13/03
AW

NOTICE OF APPEAL FROM THE EXAMINER TO THE BOARD OF PATENT APPEALS AND INTERFERENCES		Docket Number (Optional) 6407P212
I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. <u>10/29/03</u>		In re Application of Ron Goodman, et al.
Signature <u>Dawn Shaw</u>		Application Number Filed 09/755,723 01/05/2001
Typed or printed name <u>Dawn Shaw</u>		For AUTOMATIC HIERARCHICAL CATEGORIZATION
		Art Unit Examiner 2175 Charles Rones.
Applicant hereby appeals to the Board of Patent Appeals and Interferences from the last decision of the examiner.		
The fee for this Notice of Appeal is (37 CFR 1.17(b))		<u>330.00</u>
<input type="checkbox"/> Applicant claims small entity status under 37 CFR 1.27. Therefore, the fee shown above is reduced by half, and the resulting fee is:		
<input checked="" type="checkbox"/> A check in the amount of the fee is enclosed.		
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.		
<input checked="" type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account. I have enclosed a duplicate copy of the fee transmittal.		
<input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. <u>02-2666</u> . I have enclosed a duplicate copy of the fee transmittal.		
<input type="checkbox"/> A petition for an extension of time under 37 CFR 1.136(a) (PTO/SB/22) is enclosed.		
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2039.		
I am the		 André L. Maris, Reg. No. 48,095 Typed or printed name <u>10/29/03</u> Date
<input type="checkbox"/> applicant/inventor.		
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/98)		
<input checked="" type="checkbox"/> attorney or agent of record.		
<input type="checkbox"/> attorney or agent acting under 37 CFR 1.34(a). <small>Registration number if acting under 37 CFR 1.34(a)</small>		
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.		
<input type="checkbox"/> *Total of _____ forms are submitted.		

RECEIVED
NOV 06 2003
Technology Center 2100

Based on PTO/SB/01 (09-03) as modified by Blakely, Sokoloff, Taylor & Zelman (44) 02/11/2003 11/05/2003 BABBAR11 00000124 09755723
 SEND TO: Mail Stop Appeal, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

01 FC11401

330.00 DP



AF 1#
2700

TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application No.	09/755,723	
	Filing Date	January 5, 2001	
	First Named Inventor	Ron Goodman	
	Art Unit	2175	
	Examiner Name	Charles Rones	
Total Number of Pages in This Submission	4	Attorney Docket Number	6407P212

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Response <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> PTO/SB/08 <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Basic Filing Fee <input type="checkbox"/> Declaration/POA <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s)	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <div style="border: 1px solid black; padding: 5px; text-align: center;"> Return Postcard RECEIVED NOV 06 2003 Technology Center 2100 </div>
Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or individual name	André L. Marais, Reg. No. 48,095 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	<i>[Handwritten Signature]</i>
Date	10/29/03

CERTIFICATE OF MAILING/TRANSMISSION	
I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.	
Typed or printed name	Dawn Shaw
Signature	<i>[Handwritten Signature]</i>
Date	10/29/03

Based on PTO/SB/21 (08-03) as modified by Blakely, Sokoloff, Taylor & Zafman (48) 00/1/2003.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450



FEE TRANSMITTAL for FY 2003 <small>Effective 01/01/2003. Patent fees are subject to annual revision.</small>		<i>Complete if known:</i>	
		Application Number	09/755,723
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.		Filing Date	January 5, 2001
		First Named Inventor	Ron Goodman
TOTAL AMOUNT OF PAYMENT (\$) 330.00		Examiner Name	Charles Rones
		Group/Art Unit	2175
		Attorney Docket No.	6407P212 RECEIVED

METHOD OF PAYMENT (check all that apply)

Check
 Credit card
 Money Order
 Other
 None

Deposit Account

Deposit Account Number: 02-2666

Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

The Controlling Owner is authorized to: (check all that apply)

Charge fee(s) indicated below
 Credit any overpayments

Charge any additional fee(s) required under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20.

Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account

3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or cash	
1052	60	2052	25	Surcharge - late provisional filing fee or cover sheet	
2053	130	2053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	930	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	1,210	2255	605	Extension for reply within fifth month	
1404	330	2401	155	Notice of Appeal	330.00
1402	330	2402	165	Filing a brief in support of an appeal	
1403	200	2403	145	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unworkable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or release)	
1502	480	2502	240	Design issue fee	
1503	840	2503	320	Plant issue fee	
1450	130	2450	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(a)	
1808	180	1808	180	Submission of Information Disclosure Sheet	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	1809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
Other fee (specify):					
SUBTOTAL (3)					(1) 330.00

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Retissue filing fee	
1005	100	2005	50	Provisional filing fee	
SUBTOTAL (1)					(3)

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid	
Independent Claims	20*	0	\$0.00	
Multiple Dependent	3*	88.00	\$0.00	
SUBTOTAL (2)				(1) 0.00

*For number previously paid, if greater. For Retissues, see below

SUBMITTED BY		<i>Complete (if applicable)</i>	
Name (Print/Type)	André L. Marais	Registration No. (Attorney/Agent)	48,095
Signature	<i>[Signature]</i>	Telephone	(408) 947-8200
		Date	10/29/03

Based on PTO/SB/17 (04-03) as modified by Blakely, Sokoloff, Taylor & Zafman (w) 04/11/2003.
 SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
750, West 14th
Alexandria, Virginia 22304-1400
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/755,723	01/05/2001	Ron Goodman	017002022500

CONFIRMATION NO. 3728

20350
TOWNSEND AND TOWNSEND AND CREW, LLP
TWO EMBARCADERO CENTER
EIGHTH FLOOR
SAN FRANCISCO, CA 94111-3834



Date Mailed: 08/01/2003

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/20/2003.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

ANGELA S WHITE
2100 (703) 308-8264

OFFICE COPY

Exhibit 13



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,723	01/05/2001	Ron Goodman	017002022500	3728
8791	7590	11/17/2003	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD, SEVENTH FLOOR LOS ANGELES, CA 90025				RONES, CHARLES
			ART UNIT	PAPER NUMBER
			2175	

DATE MAILED: 11/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action	Application No. 09/755,723	Applicant(s) GOODMAN ET AL.	
	Examiner Charles L. Rones	Art Unit 2175	3

-The MAILING DATE of this communication appears on the cover sheet with the correspondence address -

THE REPLY FILED FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.
Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) The period for reply expires 2 months from the mailing date of the final rejection.

b) The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.138(a). The date on which the petition under 37 CFR 1.138(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. A Notice of Appeal was filed on 03 November 2003. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. The proposed amendment(s) will not be entered because:

(a) they raise new issues that would require further consideration and/or search (see NOTE below);

(b) they raise the issue of new matter (see Note below);

(c) they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

(d) they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____

3. Applicant's reply has overcome the following rejection(s): _____

4. Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. The a) affidavit, b) exhibit, or c) request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____

6. The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. For purposes of Appeal, the proposed amendment(s) a) will not be entered or b) will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____

Claim(s) objected to: _____

Claim(s) rejected: _____

Claim(s) withdrawn from consideration: _____

8. The drawing correction filed on _____ is a) approved or b) disapproved by the Examiner.

9. Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

10. Other: _____



 Charles L. Rones
 Primary Examiner
 Art Unit: 2175

Exhibit 14



Docket No.: 6407P212

SC
#14
2/10/04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

RON GOODMAN, ET AL.

Art Group: 2175

Application No.: 09/755,723

Examiner: Rones, Charles

Filed: January 5, 2001

For: AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA

RECEIVED

FEB 05 2004

Technology Center 2100

PETITION FOR EXTENSION OF TIME PURSUANT TO 37 C.F.R. § 1.136(a)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 C.F.R. § 1.136(a), Applicants for the above-identified application respectfully petition the Commissioner for a one (1) month extension of time, extending the period for response to February 03, 2004, from the Advisory Action dated November 17, 2003. The petition filing fee of \$110.00 and a Request for Continued Examination are attached.

If it should be determined that a longer extension of time is required to prevent this application from being abandoned, please charge any additional fees to Deposit Account No. 02-2666. A copy of the Fee Transmittal is enclosed for deposit account charging purposes.

Respectfully submitted,

Blakely, Sokoloff, Taylor & Zafman LLP

Mark R. Vatone, Reg. No. 53,719

Date: 1/29/04

Mark R. Vatone

Mark R. Vatone, Reg. No. 53,719

12400 Wilshire Boulevard, 7th Floor
Los Angeles, CA 90025
Telephone: (408) 947-8200

CERTIFICATE OF MAILING/TRANSMISSION
I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

02/04/2004 EFL0RES 00000157 09755723

02 FC:1251

110.00 DP

Dawn Shaw 1/29/04

Dawn Shaw Date

Exhibit 15



2700
RCE
415
2/4

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL <small>Address to: Mail Stop RCE, Commissioner for Patents, P.O. 1450, Alexandria, VA 22313-1450</small>	Application No.	09/755,723
	Filing Date	January 5, 2001
	First Named Inventor	Ron Goodman
	Art Unit	2175
	Examiner Name	Rones, Charles
	Attorney Docket Number	6407P212

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application. Request for Continued Examination (RCE) practice under 37 CFR § 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 C.F.R. § 1.114**

- a. Previously submitted
 - i. Consider the amendment(s)/reply under 37 C.F.R. § 1.116 previously filed on (Any unentered amendment(s) referred to above will be entered).
 - ii. Consider the arguments in the Appeal Brief or Reply Brief previously filed on
 - iii. Other _____
- b. Enclosed
 - i. Amendment/Reply
 - ii. Affidavit(s)/Declaration(s)
 - iii. Information Disclosure Statement (IDS)
 - iv. Other _____

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FEB 05 2004
Technology Center 2101

2. **Miscellaneous**

- a. Suspension of action on the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 C.F.R. § 1.17(i) required)
- b. Other _____

3. **Fees**

- The RCE fee under 37 C.F.R. § 1.17(e) is required by 37 C.F.R. § 1.114 when the RCE is filed.
- a. The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 02-2668.
 - i. RCE fee required under 37 C.F.R. § 1.17(e) and any additional claims fee(s)
 - ii. Extension of time fee (37 C.F.R. § 1.138 and 1.17)
 - iii. Other: (\$00)
- b. Check in the amount of \$880.00 enclosed
- c. Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Name (Print/Type)	Mark R. Vatouric	Registration No. (Attorney/Agent)	53,719
Signature	<i>Mark Vatouric</i>	Date	1/29/04

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Name (Print/Type)	Dawn Shaw	Date	1/29/04
Signature	<i>Dawn Shaw</i>		

Based on PTO/SB/00 (08-00) as modified by Bishop, Soukoff, Taylor & Zafman (v) 09/11/2003.
SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

02/04/2004 EFL0RES 00000157 09755723

01 FC:1801

770.00 DP



FEE TRANSMITTAL for FY 2003 <small>Effective 01/01/2003. Patent fees are subject to annual revision.</small>		Complete if Known	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.		Application Number	09/755,723
TOTAL AMOUNT OF PAYMENT (\$) 880.00		Filing Date	January 5, 2001
		First Named Inventor	Ron Goodman
		Examiner Name	Rones, Charles
		Group/Art Unit	2175
		Attorney Docket No.	6407P212

RECEIVED

METHOD OF PAYMENT (check all that apply)

Check Credit card Money Order Other None

Deposit Account

Deposit Account Number: 02-2666

Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

The Commissioner is authorized to: (check all that apply)

Charge fee(s) indicated below Credit any overpayments

Charge any additional fee(s) required under 37 CFR §§ 1.10, 1.17, 1.19 and 1.20.

Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	60	2052	23	Surcharge - late provisional filing fee or cover sheet	
2053	130	2053	130	Non-English specification	
1812	2,020	1812	2,320	For filing a request for a <i>parte</i> reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	65	Extension for reply within first month	110.00
1252	420	2252	210	Extension for reply within second month	
1253	900	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	1,210	2255	605	Extension for reply within fifth month	
1404	320	2401	185	Notice of Appeal	
1402	330	2402	185	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1452	110	2452	65	Petition to revive - unavailable	
1453	1,330	2453	665	Petition to revive - unintentional	
1601	1,350	2501	665	Utility issue fee (or release)	
1502	400	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1450	150	2400	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(a)	
1800	180	1800	180	Submission of Information Disclosure Sheet	
8021	40	8021	40	Recording each patent as signed per property (times number of properties)	
1800	770	1800	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	770.00
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify):

* Reduced by Back Filing Fee Paid

SUBTOTAL (3) (1) 880.00

FEB 05 2004
Technology Center 2100

FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	175	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	180	2005	80	Provisional filing fee	

SUBTOTAL (1) (2)

2. EXTRA CLAIM FEES

Total Claims	Independent Claims	Multiple Dependent	Extra Claims	Fee from below	Fee Paid
9	4		0	18.00	\$0.00
			0	80.00	\$0.00

Multiple Dependent

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	66	2201	43	Independent claims in excess of 3	
1203	290	2203	145	Multiple Dependent claim, if not paid	
1204	66	2204	43	Release independent claims over original patent	
1205	18	2205	9	Release claims in excess of 20 and over original patent	

SUBTOTAL (2) (3) 0.00

* or number previously paid, if greater, For Reissues, see below

SUBMITTED BY		Complete if applicable	
Name (Print/Type)	Mark R. Vatunov	Registration No. (Attorney/Agent)	53,719
Signature	<i>Mark R. Vatunov</i>	Telephone	(408) 947-8200
		Date	1/25/04

Based on PTO/SB/17 (09-03) as modified by Blakely, Sokoloff, Taylor & Zafman (pat) 09/11/2003.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Exhibit 16



SC
#16C
2/10/0

Attorney's Docket No. 6407P212

Patent

Response Under 37 CFR 1.116 -- Expedited Procedure
Examining Group 2175

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Ron Goodman et al.

Application No.: 09/755,723

Filed: January 5, 2001

For: **AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA**

Examiner: Rones, Charles

Art Group: 2175

RECEIVED

FEB 05 2004

Technology Center 2100

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on 1/29/04
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Dawn R. Shaw
Name of Person Mailing Correspondence

Dawn R. Shaw 1/29/04
Signature Date

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Commissioner of Patents
P.O. Box 1450
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AMENDMENT ACCOMPANYING REQUEST FOR CONTINUING EXAMINATION

Sir:

Further to the Notice of Appeal of November 3, 2003 and to the Final Office Action mailed July 29, 2003, Applicants respectfully request the Examiner to enter the following amendment and reconsider the present application in view of the submission below.

Amendments to the Claims are reflected in the listing of claims which begin on page 2 of this paper.

Remarks/Arguments begin on page 8 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (Currently Amended) A method, performed by a processor in a digital media player, for filing media tracks stored on a computer-readable mediamedium, with each media track having ~~metadata associated therewith including category value~~attribute data for naming-identifying attributes of the track ~~and type data indicating the type of track~~, said method comprising the acts of:

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reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the hierarchical tree structure file including category names for naming the branch-branches under which tracks are sorted, subcategory names for defining subcategories within the branches, ~~track type information specifying which type of tracks are to be sorted under the branch~~, and structure information defining how to file tracks based on ~~associated metadata~~ the hierarchy of branch names and subcategory names; and

for each track, determining, based on metadata describing the attribute data associated with the track if the track belongs in the branch or more of the branches, and, for each branch in which the track belongs, filing the track under one or more subcategories ~~traversing the branch to determine the appropriate location to file the track~~.

2. ~~(Currently Amended) The method of claim 1, where said act of searching further comprises the acts of comprising:~~

~~utilizing track type information to file only tracks of a specified type under a particular branch.~~

3. (Currently Amended) The method of claim 1, ~~further comprising the acts of:~~

~~for each branch, utilizing category structure information to file tracks in a specified attribute order.~~

4. (Currently Amended) The method of claim 1, where said digital media player includes a display screen and a user interface for interacting with the display screen, ~~further the method comprising the acts of:~~

~~displaying the categories and subcategories on the display screen in a hierarchical order;
displaying all names of at least some tracks associated with a category or sub-category
when a user utilizes the interface to select a category or sub-category;~~

~~monitoring selection of a track name by the user and, in response to the selection, playing the track utilizing the pointer to access and play a track when a user selects a track name through the user interface; and~~

~~monitoring selection of a category or subcategory by the user and, in response to the selection, playing utilizing the pointer to access and play a collection of tracks within a the selected category or subcategory when a user selects a category or subcategory through the user interface.~~

5. (Canceled)

6. (Currently Amended) A method, performed by a processor in a digital media player, for filing media tracks, stored on a computer-readable media medium, under categories in an in-memory a tree structure, with each media track having metadata attribute data identifying attributes of the track associated therewith, the attribute data including category name data for naming, said method comprising the acts of:

upon startup or when a track is added or changed, searching the metadata attributes of each track; and

for each track, automatically filing the track by category name under each selected category associated with the attributes to form a hierarchical track filing scheme.

7. (Currently Amended) The method of claim 6, ~~further comprising the act of:~~

~~selecting the categories to be the album Album including the track, the title of the track, and the name of the artist that recorded the track.~~

8. (Currently Amended) The method of claim 6, where said digital media player includes a display screen and a user interface for interacting with the display screen, ~~further the method comprising the acts of:~~

- ~~displaying the categories on the display screen in a hierarchical order;~~
- ~~displaying all names of tracks associated with a category when a user utilizes the user interface to select a category ;~~
- ~~accessing and playing a track when a user selects a track name through the user interface;~~
- and
- ~~accessing and playing a collection of tracks within a category when a user selects a category through the user interface.~~

9. (Currently Amended) A computer program product comprising:
a computer readable medium having program code embodied therein for filing media tracks stored on a computer readable ~~mediamedium~~, with each media track having metadata associated therewith including category value attribute data for naming identifying attributes of the track and type data indicating the type of track, said program code comprising:

~~program code, executed by a processor, for reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the hierarchical tree structure file including category names for naming the branch branches under which tracks are sorted, subcategory names for defining subcategories within the branches track type information specifying which type of tracks are to be sorted under the branch, and structure information defining how to file tracks based on associated metadata the hierarchy of branch names and subcategory names within the branches;~~

~~program code, executed by a processor, for each track, for determining, based on metadata describing the attribute data associated with the track, if the track belongs in one or more of the branch branches, and, for each branch in which the track belongs, filing the track under one or more subcategories traversing the branch to determine the appropriate location to file the track.~~

10. (Currently Amended) A computer program product comprising:

a computer readable medium for having program code embodied therein for filing media tracks, stored on a computer-readable ~~media medium~~, under categories in an ~~in-memory~~ tree structure, with each media track having ~~metadata-attribute data identifying attributes of the track~~ associated therewith, ~~the attribute data~~ including category name data ~~for naming~~, said program code comprising:

program code, execute by a processor, upon startup or when a track is added or changed, for searching the ~~metadata-attributes~~ of each track; and

program code, executed by a processor, for each track, for automatically filing the track by category name under each selected category to form a ~~an~~ hierarchical track filing scheme.

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11. (New) A method of arranging media information relating to media tracks stored on a computer-readable medium, the method comprising:

reading a media definition file that includes a plurality of categories, wherein each category groups tracks having corresponding attributes associated with the media tracks; and for each track,

- identifying a plurality of attributes associated with the track;
- identifying a category associated with each attribute; and
- grouping the track within each category that has been identified.

12. (New) The method of claim 11, wherein each track is grouped within at least two categories of the media definition file and each category includes a list of tracks having corresponding attributes.

13. (New) The method of claim 11, wherein a plurality of track identifiers are provided in each category, each track identifier being to identify a track associated with the category.

14. (New) The method of claim 11, wherein the plurality of categories relates to music and the categories comprise one of an album name category, an artist name category, and a genre category.

15. (New) The method of claim 11, wherein the at least one category comprises a plurality of subcategories associated with further attributes of the media tracks, the categories and the subcategories being arranged in a hierarchical tree structure.

16. (New) The method of claim 15, wherein the category comprises an artist name category that includes at least one subcategory identifying a group with which the artist is associated.

17. (New) The method of claim 15, wherein the category comprises a genre category that includes at least one subcategory identifying a group or artist associated with the genre category.

18. (New) The method of claim 11, wherein at least one category of the plurality of categories comprises a list of all tracks associated with the media definition file irrespective of their associated attributes

19. (New) The method of claim 1, wherein a link to the same media track is provided in more than one category.

20. (New) The method of claim 1, wherein said grouping the track within each category comprises providing an identifier within each category that has been identified, the identifier identifying the track associated with the category.

21. (New) A method of displaying media information on a display screen, the media information relating to media tracks stored on a computer-readable medium, the method comprising:

retrieving display data for display on the display screen from a media definition file that includes a plurality of categories, each category corresponding to an attribute associated with the media tracks, the display screen layout being based on the plurality of categories; and
for each track, displaying the track under each category with which it is associated.

22. (New) The method of claim 21, wherein the categories comprise at least one of an artist name category, an album name category and a genre category, the display screen layout identifying the at least one category.

23. (New) A method of arranging media information relating to media tracks stored on a computer-readable medium, the method comprising:
c1 identifying a plurality of attributes associated with a media track;
identifying at least two categories, each identified category corresponding to an attribute;
and
providing a link to the track in each of the categories identified to provide a plurality of links in each category that identify a plurality of tracks associated with the category.

REMARKS

1. Summary of the Office Action

Claims 1-4 and 6-10 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. patent no. 5,670,730 (hereinafter "Grewe et al.>").

2. Response to § 102 Rejections

Applicants respectfully traverse this rejection for the reasons set out below, and ask the Examiner for reconsideration.

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Grewe teaches a system in which music files are arranged track-by-track. Each file is provided with individual headers 36 that include category, artist, and track address information (Figures 2-4 and col. 3 from ln. 29 onwards) associated with the particular track. The track address information is used to identify the start and/or end location of the file, so that the music player can locate and play the file. Clearly, the tracks are arranged in a track-by-track fashion and not based on the individual header 36. As can be seen from the description and in particular Figs. 3 and 4, the table of contents 34 is nothing more than a sequential list of the individual headers, ordered track-by-track, one after the other. The category information (see category field 40) and the artist information (see artist field 42) are thus dispersed. Thus, it is not readily apparent which set of tracks is in which genre or which set of tracks is performed by one particular artist.

Claim 1, as amended, reads as follows:

"1. A method, performed by a processor in a digital media player, for filing media tracks stored on a computer-readable medium, with each media track having attribute data for identifying attributes of the track, said method comprising:

reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the hierarchical tree structure including category names for naming branches under which tracks are sorted, subcategory names for defining subcategories within the branches, and structure information defining the hierarchy of branch names and subcategory names; and

for each track, determining, based on the attribute data associated with the track if the track belongs in one or more of the branches, and, for each branch in which the track belongs, filing the track under one or more subcategories"

Claim 1 includes the limitation of a "hierarchical tree structure including category names for naming branches under which tracks are sorted"

Firstly, Grewe does not teach or suggest "reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the hierarchical tree structure including category names for naming branches under which tracks are sorted, subcategory names for defining subcategories within the branches, and structure information defining the hierarchy of branch names and subcategory names." In Grewe, the tracks are not sorted according to category names that are provided in a branch but rather in sequential blocks of memory locations. There is no hierarchical relationship between the category field 40 or the artist field 42 with a particular track and any hierarchy in Grewe.

Secondly, as the tracks in Grewe are filed sequentially in memory according to track number, the limitation of claim 1 of "for each track, determining, based on the attribute data associated with the track if the track belongs in one or more of the branches, and, for each branch in which the track belongs, filing the track under one or more subcategories" is also not described or even suggested in Grewe.

In view of the above, it is submitted that Grewe does not describe or even suggest all the limitations of claim 1. Accordingly, claim 1 is allowable and, as claims 1-4 are dependent upon claim 1, they are also allowable.

Claim 9, as amended, also includes the limitation of "reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the hierarchical tree structure including category names for naming branches under which tracks are sorted." Claim 9 also includes the limitation wherein, for each track, "determining, based on the attribute data associated with the track, if the track belongs in one or more of the branches, and, for each branch in which the track belongs, filing the track under one or more subcategories."

Accordingly, in view of the remarks above, it is submitted that claim 9 is also allowable.

Claim 6, as amended, reads as follows:

"6. A method, performed by a processor in a digital media player, for filing media tracks, stored on a computer-readable medium, under categories in a tree structure, with each media track having attribute data identifying attributes of the track associated therewith, the attribute data including category name data, said method comprising:
upon startup or when a track is added or changed, searching the attributes of each track;
and
for each track, automatically filing the track by category name under each selected category associated with the attributes to form an hierarchical track filing scheme."

Claim 6 includes the limitation of "for each track, automatically filing the track by category name under each selected category associated with the attributes to form an hierarchical track filing scheme." This limitation is also not described or even suggested in Grewe that files tracks sequentially track-by-track. The filing system of Grewe merely appends each individual header 36 to the last individual header 36 in the table of contents 34 so that tracks having a common category field 40 or a common artist field 42 are dispersed (sec

Figures 3 and 4). Grewe does not describe, or even suggest, "for each track, filling the track by category name under each selected category" as claimed in claim 6.

In view of the above it is submitted that claim 6 is allowable and, as claims 7 and 8 are dependent upon claim 6, they are also allowable.

Claim 10, as amended, also includes the limitation of, for each track, "automatically filling the track by category name under each selected category to form an hierarchical track filling scheme." Accordingly, in view of the remarks above, it is submitted that claim 10 is also allowable.

Claim 11 reads as follows:

"11. A method of arranging media information relating to media tracks stored on a computer-readable medium, the method comprising:

- reading a media definition file that includes a plurality of categories, wherein each category groups tracks having corresponding attributes associated with the media tracks; and
- for each track,
 - identifying a plurality of attributes associated with the track;
 - identifying a category associated with each attribute; and
 - grouping the track within each category that has been identified."

Claim 11 includes the limitation of "reading a media definition file that includes a plurality of categories, wherein each category groups tracks having corresponding attributes associated with the media tracks." This limitation is also not disclosed in Grewe that merely arranges tracks in a sequential order resulting category fields 40 and artist fields 42 that are dispersed and not grouped as claimed in claim 11.

The above limitation in claim 11 must also be read in conjunction with the grouping operation performed for each track. In particular, claim 11 includes the limitation of, for each track, "grouping the track within each category that has been identified." Grewe does not

group tracks within a category but merely identifies a category associated with the track. Further, the category field 40 and artist field 42 are dispersed in Grewe.

In view of the above it is submitted that claim 11 is allowable. As claims 12-20 are dependent upon claim 11, they are also allowable.

Claim 21 reads as follows:

"21. A method of displaying media information on a display screen, the media information relating to media tracks stored on a computer-readable medium, the method comprising:

retrieving display data for display on the display screen from a media definition file that includes a plurality of categories, each category corresponding to an attribute associated with the media tracks, the display screen layout being based on the plurality of categories; and

for each track, displaying the track under each category with which it is associated."

Grewe does not even mention that information can be displayed on a display screen. Accordingly, Grewe does not describe or even suggest the limitations of a "display screen layout being based on the plurality of categories; and for each track, displaying the track under each category with which it is associated."

In view of the above it is submitted that claim 21 is allowable and, as claim 22 is dependent upon claim 21, it is also allowable.

Claim 23 reads as follows:

"23. A method of arranging media information relating to media tracks stored on a computer-readable medium, the method comprising:

identifying a plurality of attributes associated with a media track;

identifying at least two categories, each identify category corresponding to an attribute;

and

providing a link to the track in each of the categories identified to provide a plurality of links in each category that identifies a plurality of tracks associated with the category.”

The limitation of “providing a link to the track in each of the categories identified to provide a plurality of links in each category that identify a plurality of tracks associated with the category” is not described or even suggested in Grewe. Accordingly, claim 22 is also allowable.

In light of the above, Applicants respectfully submit that the rejection under 35 U.S.C. § 102 has been overcome, and withdrawal of this rejection is therefore respectfully requested.

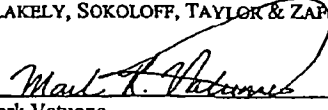
3. Conclusion

Having tendered the above remarks and amended the claims as indicated herein, Applicants respectfully submit that all rejections have been addressed and that the claims are now in a condition for allowance, which is earnestly solicited.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of the present application, the Examiner is invited to contact Garth Vivier at (408) 947-8200 ext. 245.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAPMAN LLP

Dated: 1/29, 2004


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Exhibit 17



#18.D
6/3/04
A.W.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

In re application of: Goodman, et al

Attorney Docket No.:
6407P212

Application No.: 09/755,723

Examiner: Rones, Charles L.

Filed: January 5, 2001

Group: 2175

Title: **AUTOMATIC HIERARCHICAL
CATEGORIZATION OF MUSIC BY
METADATA**

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail to: Commissioner for Patents, Alexandria, VA 22313 on April 30, 2004.

Signed: Karen Howe-Behrooz
Karen Howe-Behrooz

Amendment and Response to Restriction Requirement

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The enclosed remarks and amendments are submitted in response to the to the Office Action mailed on March 30, 2004 wherein a restriction requirement was imposed. Applicants respectfully request reconsideration of the captioned application in view of the following remarks and amendments. A listing of the claims commences on page 2. Remarks begin on page 6 of this paper.

USSN: 09/755,723

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Afty Dkt No.:

Listing of Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (withdrawn) A method, performed by a processor in a digital media player, for filing media tracks stored on a computer-readable medium, with each media track having attribute data for identifying attributes of the track, said method comprising:

reading a definition file that defines an ordered hierarchical tree structure having a plurality of branches, with the hierarchical tree structure including category names for naming-branches under which tracks are sorted, subcategory names for defining subcategories within the branches, and structure information defining the hierarchy of branch names and subcategory names; and

for each track, determining, based on the attribute data associated with the track if the track belongs in one or more of the branches, and, for each branch in which the track belongs, filing the track under one or more subcategories .

2-23. (cancelled)

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24. (new) A method of selecting at least one track from a plurality of tracks stored in a computer-readable medium of a portable media player configured to present sequentially a first, second, and third display screen on the display of the media player, the plurality of tracks organized according to a file hierarchy, the file hierarchy having a plurality of categories, subcategories, and items respectively in a first, second, and third level of the hierarchy, the method comprising:

DI
selecting a category in the first display screen of the portable media player; displaying the subcategories belonging to the selected category in a listing presented in the second display screen;

selecting a subcategory in the second display screen;

displaying the items belonging to the selected subcategory in a listing presented in the third display screen; and

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accessing at least one track based on a selection made in one of the display screens.

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25. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting a subcategory in the second display screen and playing a plurality of tracks associated with the selected subcategory.

3

26. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting a subcategory and adding the tracks associated with the selected subcategory to a playlist.

4

27. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting an item in the third display screen and playing at least one track associated with the selected item.

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28. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises selecting an item in the third display screen and adding at least one track associated with the selected item to a playlist.

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29. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track comprises one of playing or adding to a playlist at least one track associated with a selected one of the category, subcategory, and item.

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30. (new) The method of selecting a track as recited in claim 24 wherein the accessing at least one track is made after the presentation of the third display screen by reverting back to one of the second and first display screens, the second display screen presented sequentially after the third display screen.

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31. (new) The method of selecting a track as recited in claim 24 further comprising selecting one of the items displayed in the third display screen and presenting

↓

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a listing of items associated with the selected item in a fourth sequentially presented display screen.

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32. (new) The method of selecting a track as recited in claim 24 wherein the category genre is selected in the first display screen from available categories that include at least artist, album, and genre; and the subcategories listed in the second display screen comprise a listing of at least one genre type and one of the at least one genre type is selected.

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33. (new) The method of selecting a track as recited in claim 32 further comprising displaying in the third display screen at least one album associated with the selected genre type and selecting one of the at least one albums displayed in the third display screen and presenting a listing of tracks associated with the selected album in a fourth sequentially presented display screen.

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34. (new) The method of selecting a track as recited in claim 24 wherein the category artist is selected in the first display screen from available categories that include at least artist, album, and genre; the subcategories listed in the second display screen comprise a listing of names of artists and a first artist name is selected; and the items displayed in the third display screen comprises at least one album associated with the first artist name.

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35. (new) The method of selecting a track as recited in claim 24 wherein the track is a music track the item accessed in the third display screen is a track title, and the track is played in response to the access.

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36. (new) The method of selecting a track as recited in claim 24 wherein receipt of the selection in the first display screen results in an automatic transition of the first display screen into the second display screen and receipt of the selection in the second display screen results in an automatic transition of the second display screen into the third display screen.

Amendments to the Specification:

The changes to the specification are included in the attached substitute specification, submitted pursuant to 37 CFR 1.125. Both a marked up version and a clean version are attached. The substitute specification does not include the currently pending claims, which are listed directly in a listing of claims in this paper.

Amendments to the Drawings:

New Drawings for Figures 9-14 are added. These are attached and correspond to drawings from patent application serial number 09/755,629, "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface", said application disclosure having been incorporated by reference in the original specification.

REMARKS

Claims 1-4 and 6-23 are pending in the application. The examiner had required restriction to one of the Group I and Group II inventions under 35 U.S.C. 121. In particular, the Examiner had indicated that the Group I inventions included claims 1-4, 6-20, and 23, drawn to a method/computer program for filing media tracks. The Examiner had further indicated that the Group II invention included claims 21-22, drawn to a method of displaying on a display screen.

Applicants hereby elect without traverse the claims of Group II, claims 21-22. The claims to the Group I invention have been either cancelled or withdrawn. In particular, claim 1 has been withdrawn and the remainder of the claims identified by the examiner to be associated with Group I, i.e., claims 2-4, 6-20, and 23 have been cancelled. Applicants reserve the right to submit the nonelected claims in a continuation or divisional application.

Further, Group II claims 21-22 have been cancelled. New claims 24-39 have been added, consistent with applicants' election of Group II. No new matter has been added. Applicants respectfully submit that new claims 24-36 fall within the classification of the elected Group II. Support for the new claims may be found throughout the original specification, including the matter incorporated by reference.

Applicants have further amended the specification to directly include matter from patent application serial number 09/755.629, "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface", said application disclosure having been incorporated by reference in the original specification. This matter is added via a substitute specification. The substitute specification adds no new matter. Clean and marked up copies are attached to this amendment. Applicants respectfully request that the substitute specification be entered pursuant to the provisions of 37 CFR 1.125.

Applicants have also submitted replacement drawings, FIGS. 9-14, attached hereto. Applicants respectfully request entry of the replacement drawings (new drawings). These drawings correspond to drawings which were a part of patent application serial number 09/755.629, "System for Selecting and Playing Songs in a

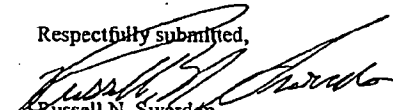
Playback Device with a Limited User Interface", said application disclosure having been incorporated by reference in the original specification.

Applicants respectfully request entry of the amendments to the claims. The new claims correspond to the election to the invention of Group II in response to the restriction required by the Examiner in the office action of March 30, 2004. Support for the amendments may be found in the previous versions of the claims and the new drawings submitted including Figures 9 and 10 as well as the accompanying text, for example in pages 13-15 of the description. Applicants submit that the amended claims, including independent claim 24 and dependant claims 25-36, are patentable over the art of record for at least the reason that Grewe doesn't teach or suggest displaying categories or subcategories in a display screen.

Conclusion

Accordingly, it is submitted that all issues in the Office Action have been addressed. Applicants believe that this application is in condition for allowance, and respectfully request a prompt passage to issuance. If the Examiner believes that a telephone conference would expedite the prosecution of this application, he is invited to contact the Applicants' undersigned attorney at the telephone number set out below.

Respectfully submitted,



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SUBSTITUTE SPECIFICATION- CLEAN VERSION

Attorney Docket No.: 17002-022500US
Client Reference No.: CT-1139



PATENT APPLICATION

**AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY
METADATA**

Inventor:

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Large

**AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY
METADATA**

CROSS-REFERENCES TO RELATED APPLICATIONS

5
This application is related to Application No. 09/755,629, entitled "System for
Selecting and Playing Songs in a Playback Device with a Limited User Interface," now
abandoned (Atty. Docket No. 17002-020800); and Application No. 09/755,367, entitled
"Audioplayback Device with Power Savings Storage Access Mode," issued as U.S. Patent No.
10 6,590,730 (Atty. Docket No. 17002-022400), all filed January 5, 2001, the disclosures of which
are incorporated herein by reference.

BACKGROUND OF THE INVENTION

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Today, portable consumer electronic devices are more powerful than ever. For
example, small, portable music playback devices can store hundreds, even thousands, of
compressed songs and can play back the songs at high quality. With the capacity for so many
songs, a playback device can store many songs from different albums, artists, styles of music,
20 etc.

Music jukeboxes implemented in software executed by a digital computer and
portable MP3 and CD players both provide facilities for forming playlists. For example, the
OOZIC player, distributed by the assignee of the present application, runs on a host PC and has
a playlist feature that allows selection of tracks from the PC's hard disk to be included in the
25 playlist.

As storage capacity increases and songs are compressed to shorter file lengths the
number of songs that can be stored increases rapidly. Major problems facing the consumer are
organizing and accessing the tracks.

Typically, portable devices have a user interface including a small screen and
30 buttons. Such a display screen might be, e.g., 1" x 2". This small display size is necessary
because of the physical size of the device which is typically carried in the hand. The small size

also limits the number, size, shape, and types of user input controls that can be mounted on the device. For example, a few pushbuttons are usually provided to perform all of the device's control functions. Using such a compact user interface to navigate and select among hundreds of songs is inefficient and often frustrating. The display screen can only show a few song titles at one time, and the limited controls make it difficult for a user to arbitrarily select, or move among, the songs.

The creation of playlists is one technique to organize the playing of songs. A set of songs can be included in a playlist which is given a name and stored. When the playlist is accessed, the set of songs can be played utilizing various formats such as sequential play or shuffle.

However, the creation of playlists itself becomes problematic as the number of songs increases, since the user often arbitrarily selects songs from a large number of tracks to form a playlist. This selection mechanism: can be fairly tedious; does not necessarily produce playlists that are of interest to the user over the course of time; may not remain up-to-date if new songs are added that logically fit into a previously created playlist (e.g. "Favorites by Band X" might become out of date if a new favorite by Band X is added after the playlist was created); and leads to "lost" songs that are not members of any playlist.

Accordingly, improved techniques for organizing and grouping tracks useful in a portable music player are needed. Further, it is desirable to provide a user interface suitable for a small device. The user interface should allow a user to efficiently navigate among, and select from, many items stored in the device.

SUMMARY OF THE INVENTION

The present invention provides an efficient user interface for a small portable music player. The invention is suitable for use with a limited display area and small number of controls to allow a user to efficiently and intuitively navigate among, and select, songs to be played. By using the invention, very large numbers of songs can be easily accessed and played.

One aspect of the invention includes an overlapping hierarchy of categories. Categories include items that can also be included in other categories so that the categories

"overlap" with each other. Thus, a song title can be accessed in multiple different ways by starting with different categories. For example, a preferred embodiment of the invention uses the top-level categories "Albums", "Artists", "Genres" (or styles), and "Play Lists". Within the Albums category are names of different albums of songs stored in the device. Within each album are the album tracks, or songs, associated with that album. Similarly, the Artists category includes names of artists which are, in turn, associated with their albums and songs. The Genre category includes types of categories of music such as "Rock", "Hip Hop", "Rap", "Easy Listening", etc. Within these sub-categories are found associated songs. Finally, the "Play Lists" category includes collections of albums and/or songs which are typically defined by the user.

Advantageous use is made of the overlapping hierarchy to allow the user to quickly designate a song for playback. The device uses three "soft" pushbuttons that have assignable functions. The interface maintains consistent button functionality whenever possible and uses uniform command names and operations on different types of items so that the interface is more intuitive. For example, the user can open and queue both albums and songs with predictable results.

The interface also provides for multiple functions for a single control. For example, a "Play" button can act, in a first function, to play a currently-selected song. The Play button can act, in a second function, to cycle through different playback modes. The modes can be, e.g., (1) playback of songs from a hard disk; (2) playback of music from a radio receiver built into the device; and (3) playback of voice messages. The first function for the Play button can be activated by momentarily depressing the Play button for a short period of time. The second function is invoked by depressing the Play button for a longer period of time whereupon the device cycles through the different modes. Other ways of invoking the functions are possible such as where the second function is automatically entered from a powered-down state.

In one embodiment, the invention provides a method for selecting songs to be played in an electronic audio device, wherein the device includes a display and one or more user input controls, wherein songs are organized into categories, albums, wherein songs and albums are associated with artist names. The method includes steps of displaying categories on the display; accepting signals from a user input control to select a category; displaying one or more songs in the selected category on the display; accepting signals from a user input control to select

a displayed song; and entering selected songs into a playlist queue, wherein the device plays back songs in the playlist queue.

According to one aspect of the present invention, a technique is provided for organizing tracks on a portable music player by automatically filing tracks in a hierarchical order based on attributes of the tracks.

According to another aspect of the invention, metadata is associated with each track that is used to automatically define the track's appropriate place in the hierarchy.

According to another aspect of the invention, the hierarchy is displayed on the portable music player so that a user can traverse the organizational hierarchy to find individual tracks or find playlists composed of logical groups of tracks.

According to another aspect of the invention, the hierarchy is derived by using metadata associated with the audio content that was obtained through any source of metadata (e.g. CDDDB metadata, id3v2 metadata, other obtainable metadata) and subsequently stored with or alongside the file that stores the track.

According to another aspect of the invention, a file is formatted so that an unaltered track is stored as file data and information about the track is stored in file attribute files.

Other features and advantages of the invention will be apparent in view of the following detailed description and appended drawings.

20

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic diagram of a tree structure for hierarchical filing of tracks;

Fig. 2 is a definition file that specifies the hierarchy depicted in Fig. 1;

Fig. 3 is a user's view of the hierarchy;

Fig. 4 is a schematic diagram of a user interface displaying the hierarchical category structure;

Fig. 5 is a diagram of a file format for storing filed data and file attributes;

Fig. 6 is a flow chart depicting steps for filing tracks according to the hierarchical tree structure;

30

Fig. 7 depicts a tree resulting from searching the tracks;

Fig. 8 depicts a format for a user interface;

Fig. 9 illustrates the NOMAD Jukebox and its user interface controls;

Fig. 10 illustrates a sequence of display screens describing how to navigate to lower levels;

5 Fig. 11 illustrates associations among items; -

Fig. 12 shows display screens used to search for a song or other item;

Fig. 13 illustrates details of different items; and

Fig. 14 illustrates a playback device coupled to a host computer system.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred embodiment of the invention will now be described in the context of a portable personal player that plays audio files stored in memory. The files may be in MP3, wav, or other digital formats.

In the presently described embodiment, users are able to see the tracks on their player in some organized fashion other than as a single list of tracks. As will be described in more detail below, in one embodiment tracks are sorted utilizing a tree structure having branches labeled according to types of metadata associated with the tracks

For example, a track recorded as "Golden Slumbers" by the Beatles that appears on their album "Hey Jude" might appear as a track under the album "Abbey Road" as well as a track under the list of tracks by the Beatles. It might appear as a track under the genre "Pop Rock" as well as "Songs from the 60's." Furthermore, the organization can have more complex hierarchies. For example, the category of "Pop Rock" might contain subcategories "British Musicians," "American Musicians" and "Other Musicians". In all cases, the track is automatically filed into all appropriate locations without requiring user interaction.

In the currently defined embodiment, a tree structure is defined by a file having the following structure.

The first line of a TreeDef.inf file contains a version number:

V1.0

Each subsequent line (at least in v1.0) contains lines of the following format:
CATEGORY_NAME|TRACK_TYPE_MASK|CATEGORY_STRUCTURE

CATEGORY_NAMES are the top-level names of the branch under which tracks are sorted. They include things like "Album," "Artist," "Voice Tracks," "All Tracks," etc.

TRACK_TYPE_MASKs tell which types of tracks are to be filed under this particular branch. The actual value is a hexadecimal numerical value (in '0x' format, e.g. 0x01) generated by ORing the following flags together as appropriate:

```
enum tTrackType  
{
```

```
    kTTNothing=0x00,  
    kTTSong=0x01,  
    kTTVoice=0x02,  
    kTTBook=0x04,  
5    kTTMacro=0x08,  
    kTTPlaylist=0x10  
};
```

So, for example, the "Album" branch has a TRACK_TYPE_MASK of kTTSong,
10 because only songs are filed under that branch, but the "All Tracks" branch has a
TRACK_TYPE_MASK of (kTTSong | kTTVoice | kTTBook).

Other elements might be added to tTrackType (e.g. kTTVideo) as appropriate.

CATEGORY_STRUCTUREs tell how to file the songs based on their metadata
information. The CATEGORY_STRUCTURE is a string of characters that tell, from left to
15 right, the order of hierarchy. The characters come from the following enum constants:

```
enum tFileTag  
{  
    kFTNone='@',  
20    kFTTrackType='T',  
    kFTTitle='N',  
    kFTAudioFile='F',  
    kFTArtist='M',  
    kFTAlbum='L',  
25    kFTGenre='G',  
    kFTSource='S',  
    kFTYear='Y',  
    kFTArtistCountry='C'  
30};
```

Thus, a CATEGORY_STRUCTURE of LN tells to create a subcategory that is a list of Albums, each of which contains a list of Tracks.

In total, a line like:

Album|0x01|LN

5 Says to create a branch called "Album" which contains tracks of type kTTSong organized first by album name, and then by track name.

The following is an example of a tree definition file similar (though not identical) to the hierarchy presented in the Nomad Jukebox product (the 'B' before each FileTag was used to identify that these are basic tags so that we wouldn't run out of letters in the alphabet as we included more complex metadata – thus each group of two letters represents a level in the hierarchy):

V1.0
Album|0x01|BLBN
15 Artist|0x01|BMBN
Genre|0x01|BGBN
Voice Tracks|0x02|BSBGBN
Playlists|0x10|BN
Macros|0x08|BN
20 All Tracks|0x07|BN

Fig. 1 depicts a hypothetical organization hierarchy. The tree shows how tracks might be listed (as leaves in the tree) after having been organized. Example values for nodes in the tree are shown as well. The same track may appear more than once as a leaf in the tree, as described above, if it fits into multiple categories (e.g. a song that appears on the Abbey Road branch would also appear in the Beatles branch). In the example shown, the first branch contains tracks organized by album. As shown in the example, this music collection contains three tracks from "Abbey Road" and three tracks from "Hits from the 60's". The second branch contains tracks organized by artist, and sub organized by where the artist is from. Thus, a user browsing would first select the "Artists" branch and then choose between "British Artists" and "American Artists". Finally, they would select the particular artist. In the third branch, all tracks are shown.

The tree definition file that would specify the hierarchy shown in Figure 1 is shown in Figure 2.

The first line identifies the version of the tree definition file.

The second line defines the "Albums" branch. The first part of the line, 5 "Albums" defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BLBN," defines that the branch lists first the names of all albums (BL) and then tracks on those albums (BN).

The third line defines the "Artists" branch. The first part of the line "Artists" 10 defines the name of the branch. The second part, "0x01," defines that all musical tracks should be categorized on this branch. The third part, "BCBMBN," defines that the branch lists first the names of all countries where artists in this collection come from (BC) and under those items, the artists' names (BM), and then tracks by those artists (BN).

Fig. 3 shows what a user's view of this hierarchy might be if he/she were shown a 15 fully expanded view of the 6-song tree. Notice that each song appears three times, once in each branch.

In consumer products the tree define file is not edited directly but through a user interface, one example of which is depicted in Fig. 4. An example of a user interface for viewing songs by category and editing the tree structure is depicted in Fig. 4.

An embodiment of the invention is utilized in the Nomad® Jukebox, 20 manufactured by the assignee of the present invention, and described more fully in the copending application, filed on the same date as the present application, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," (Attmy. Docket No. 17002-020800).

In a preferred embodiment, metadata is associated with each track and includes 25 such information as title, genre, artist name, type, etc. In the preferred embodiment, software stored in a portable player and executed by the onboard processor automatically files each track in the correct category utilizing the associated metadata and the tree define file. The program code can be stored in any computer readable medium including magnetic storage, CD ROM, optical media, or digital data encoded on an electromagnetic signal.

30 Thus, the user is automatically provided with a powerful and flexible tool for organizing and categorizing the tracks stored on the portable player.

If the tracks are formatted in MP3 format the metadata can be stored in ID3 tags included in the MP3 file. In one embodiment of the invention, the tracks are stored in alternate file format including file data and file attributes. The file data is the music track itself and the file attributes part of the file includes fields of arbitrary size which are used to store metadata characterizing the track stored as the file data. Again this metadata includes information about the track such as title, genre, artist name, type, etc.

There are several advantages to using the alternate file format. Metadata of types not easily included in an ID3 tag can be utilized. Further, the original track format is not changed, so that error correction data such as checksums are valid. Finally, any file format can be used (e.g. WAV, WMA, etc.) because the metadata is stored separately, and thus audio formats that have limited support for metadata can still be stored on the portable player in native format without transcoding. The formatted files are formed by software stored in the portable music player and executed by an on-board processor.

The metadata for each track is utilized to file each track, using the categories defined in the hierarchical structure as described above, without any input from the user.

Fig. 5 is a schematic diagram of the alternative file format including file data in the form of an MP3 track, and metadata fields for holding data indicating the name of the album the track is from, the name of the song, the genre of the song, and the type of track.

A particular embodiment of a file format will now be described. All tracks are created with some set of attributes as shown below:

Definition of TrackInfo Data Field

Field	Offset	Size	Description
Attribute Count	0	2	The number of attribute follow for the track
Attr 1 type	2	2	Binary = 0, ASCII = 1
Attr 1 name len	4	2	Length of attribute name string
Attr 1 data len	6	4	Length of attribute data
Attr 1 Name	10	N	Attribute name string
Attr 1 Data	10+N	M	Attribute data

....			
....			
Attr N type			
Attr 1 name len			
Attr 1 data len			
Attr 1 Name			
Attr 1 Data			

Required Attributes

Attribute Name	Value(s)	Remarks
TITLE	ASCII string	<u>Required By Jukebox</u>
CODEC	"MP3", "WMA", "WAV"	<u>Required By Jukebox</u>
TRACK ID	DWORD	Set By Jukebox
ALBUM	ASCII string	Optional
ARTIST	ASCII string	Optional
GENRE	ASCII string	Optional
LENGTH	In seconds	Optional
TRACK SIZE	In bytes	Optional
TRACK NUM	1-n (track within album)	Optional

- These attributes can be subsequently changeable via a host application,
 5 running on a personal computer connected to the portable music player.

Fig. 6 shows a flow chart of an embodiment the process used to build the hierarchical database of tracks. It starts by iterating through each track, and, for each track, iterating through each branch to find if the track belongs on the branch, and, if so, where. In this

case, the term track could refer to any content, e.g. a music track, a spoken word track, or even a video track.

Also, the hierarchical catalog of tracks can be used to form playlists in a structured manner. For example, if a user wants to hear Jazz and Blues the entire sub-categories can be selected to form one playlist.

An alternative hierarchical catalog generation technique will now be described. In this alternative embodiment, at system startup and as tracks are added or changed, the hierarchy is generated as an in-memory tree structure. Each track is added to the tree using the categories ALBUM, ARTIST and GENRE.

The following example shows the algorithm for adding a track. For clarity, only the attributes used by the tree are shown.

TITLE	"Free Falling"
ALBUM	"Full Moon Fever"
ARTIST	"Tom Petty"
GENRE	"Rock"
TRACK NUM	1

The following function is executed to build the in-memory memory tree.

```
Build Tree ()
20 For each track,
    Add Track To Category(Album, Track)
    Add Track To Category(Artist, Track)
    Add Track To Category(Genre,Track)
End of Build Tree
```

Fig. 7 depicts a tree which could result from implementing Build Tree() function. Note that "Stardust" does not have any entries for Album or Artist. The host software running

on a computer connected to the portable music player could be utilized to add missing attributes to the "Stardust" track and, optionally, edit the title attribute. The Build Tree() function would then reinsert this track in the correct location in the tree.

Fig. 8 is an embodiment of a user interface according to another embodiment of the invention. In this example the root node is labeled "My Configuration" and the Playlist category has been selected and the Playlist subcategory "Meddle" has been selected. Note that the types of Metadata, in this example, Track Name, Artist, Album, Tempo and Dance, are listed across the top of the screen, and the attribute values for each track are listed in a row across the screen. Various control buttons are displayed to the right of configuration window that facilitate quickly invoking selected processing on a selected track.

As noted above, a preferred embodiment of the present invention is incorporated into a product manufactured and distributed by Creative Technology, Ltd. The product is called the "NOMAD Jukebox." The following description describes further details of the display screens and interface controls.

Fig. 9 illustrates the NOMAD Jukebox and its user interface controls.

In Fig. 9, electronic audio device 100 measures about 5.5" wide by 5.5" tall by 1" thick. Display screen 102 is about 2" wide by 1" tall. Display screen 102 includes different regions such as main region 104 and soft button function description region 106.

Three soft buttons are located at 108; including buttons 110, 112 and 114. The specific command, or function, that any of the soft buttons perform when depressed is indicated by the label in soft button function description region 106. Thus, the function of soft button 112 (as shown in Fig. 9) is "open," the function of soft button 114 is "search" while soft button 110 is currently not assigned a function.

The other eight buttons on device 100 perform essentially the same functions at all times. In other words, they are not subject to function changes according to soft button function description area 106. These buttons include Library button 116, EAX and System button 118, Skip Backward button 120, Play button 122, Stop button 124, Skip Forward button 126, Scroll Up button 128 and Scroll Down button 130. However, as discussed below, these buttons (or any type of controls used with the device) can include alternate functionality that is invoked in different ways.

The device uses visual cues, or indicators, in the display. When an item is highlighted it indicates that the item is the "current" item, or currently-selected item, which is susceptible to be operated on by a subsequent user action – such as playback, or expansion of the item. In Fig. 1, screen 102 shows that the item, "ALBUMS," is highlighted. The highlighted item can be acted upon by using the soft buttons, or another button, as discussed below. The current item can be changed by using Scroll Up button 128 and Scroll Down button 130 to move the highlight up or down, respectively, throughout a list of displayed items.

Icons are used to provide additional visual cues for an item. In Fig. 1, each of the categories has a category icon to the left of it. The category icon, which may not be distinctly visible in the Figure, illustrates a first box connected by lines to additional boxes below the first box. The icon depicts a hierarchy and illustrates the property of categories, i.e., that categories can contain additional categories, songs or other items.

Fig. 10 illustrates a sequence of display screens describing how to navigate to lower levels.

In Fig. 10, library category screen 150 shows the display as it appears when the user depresses library button 116 of Fig. 9. A preferred embodiment of the device uses 4 first-level categories. These are "Albums", "Artists," "Styles" and "Play Lists". Each of these categories can "contain," or be associated with, other categories, songs, or items.

Note that in library category screen 150 ALBUMS is currently highlighted. By depressing soft button 112 of Fig. 9, the "open" command is performed on the highlighted category, as indicated by the labeling of soft button 112 and soft button function description area 152 of Fig. 10.

Lists screen 154 is displayed as a result of a user opening the Albums category of library category screen 150. Lists screen 154 shows items within the Albums category such as commercial albums of multiple songs from a record label, pre-made lists or collections created by a user, or other predefined lists or collections of songs or recordings.

In Fig. 10, lists screen 154 shows each item as a list of songs. This is shown visually by the icon to the left of each item which depicts a miniature list. Possible soft button commands are "Close", "Open" and "Queue". These commands correspond to soft buttons 110, 112 and 114, respectively. If the user selects the Close command, the display reverts to library category screen 150. If the user selects the Open command, the display shows tracks screen 156.

Alternatively, the user can select the Queue command to instruct the device to place all the songs from the selected (i.e., highlighted) list into the play list for eventual playback. Yet another option allows the user to press play button 122 of Fig. 9 to cause any currently-selected songs or a list of songs (e.g., an album) to immediately be played.

5 Returning to Fig. 10, tracks screen 156 shows that a single song called "JukeBox Demo" is in the list. The list is also called JukeBox Demo as shown in lists screen 154. Tracks screen 156 shows possible soft commands assigned to buttons, namely "Close", "Details" and "Queue." The Close button performs the same function as before -- it returns the user to the previous screen which, in this case, is lists screen 154. The user can also select the Details
10 command to cause details of the song JukeBox Demo to be displayed in details screen 158 as shown in Fig. 10. The user can select the Queue command by soft button 114 to enter the selected song into the play list queue. As before, the user can also depress play button 122 of Fig. 9 to cause immediate playback of the selected song.

 Details screen 158 shows information about the selected song including the name
15 of the song, album (or list) name containing the song; the track number, if applicable, and track duration. Note that other information can be included. The user can preview the song, close the Details screen to return to the Tracks screen or queue the song on the play list queue.

 The device provides the ability to "preview" audio files even while a current song, or playlist, is being played. When a user chooses to preview an audio file, the audio file is
20 played for about 10 seconds while any currently-played file or playlist is suspended. After previewing is complete, the suspended file or playlist resumes playback. In other embodiment, the preview duration can vary, or be stopped by user selection.

 Fig. 11 illustrates associations among items.

 In Fig. 11, song 168 is one of many songs stored in the device. Categories such as
25 albums 160, artists 162, play lists 164 and genres 166 each include sub-categories. For example, albums 160 includes the names of various albums. Songs are associated with albums, genres and playlists. Such association can be by using pointers, a data structure including items to be associated, etc. "Association" as used herein, includes a first item associated with a second item; and the second item associated with the first item. In other words, albums can be associated with
30 one or more songs in the database of the device so that an automated search to find all songs

associated with an album is easier. The direction of arrow pointers in Fig. 11 is not intended to limit the manner of associations among items in the present invention.

Similar to albums, the category of artists 162 includes names of artists, or performers, of songs. Each artist name is associated with one or more songs in the database.

5 Playlists 164 includes names of playlists. These are collections of songs that can be defined by the user, the device manufacturer, or others. Each playlist can be associated with one or more songs. Genres 166 includes various styles of music which are associated with one or more songs in the database. Note that items can exist without being associated with a song. Also, items can be associated with other items as where an artist name is associated with the albums containing
10 the songs that the artist has created.

Although not shown in Fig. 11, items can have additional information, such as properties, details, etc., associated with the item. For example, a song can have information such as play time, artist name, artist album, copyright owner, etc., associated with the song.

Fig. 12 illustrates display screens used to search for a song or other item.

15 In Fig. 12, screen 180 is the initial library screen, as discussed above. If the user invokes the Search command (via the appropriate soft button) with Albums selected then screen 182 is displayed. Note that the search function can be applied to any of the categories. The user can depress the Plus or Minus soft buttons to cycle through the alphabet and change the character in the current location as indicated by the cursor. The cursor position is changed by using the
20 scroll up/scroll down buttons 128 and 130, respectively, of Fig. 9. As each letter is entered the letters are compared and the nearest match of the stored albums' names is displayed as shown in screen 184. When the desired match is displayed the user selects the Go! command.

Screen 186 shows the result of selecting the Go! command. A list of albums is displayed with the matched album centered and selected. The user can close, open or queue the
25 album as discussed above.

Fig. 13 illustrates details of different items.

In Fig. 13, screen 200 illustrates details displayed as a result of selecting the "Details" command from soft button 1A track is selected. Screen 200 shows that details of the track "Jukebox Demo" shows the name of the album that the track resides on, the creator, or
30 copyright owner, of the track, and the playing time of the track.

Screen 202 illustrates details of an item on the active queue list. Items are placed onto the active queue list by selecting the "Queue" command when an album, song, track, or other item is selected, as discussed above. For example, screen 204 shows the active queue list where the track "Jukebox Demo" is selected. By invoking the "Details" command screen 202 is brought up to show details of the Jukebox Demo track.

As shown in screen 202, the Detail screen shows what track number the selected track is, which album the track is from; the creator, or copyright owner, of the track, and the title of the track. Additionally, the details for an item on the queue list also show playback settings. These are shown by two-letter abbreviations at the bottom of the screen. The settings are as show in Table I, below.

EA	Environmental Preset
EQ	Parametric EQ
HS	Headphone Spatialization
TS	Time Scaling
4S	Four Channel Speaker Sound (only if speakers are connected)

TABLE I

These settings have their common meanings, as is known in the art. Note that the setting 4S is not shown in screen 202 as it is not currently active.

Fig. 14 illustrates the Nomad Jukebox coupled to a host computer system.

In Fig. 14, device 300 (e.g., the Nomad Jukebox) is coupled to host system 302.

5 In a preferred embodiment host system 302 is a personal computer, such as an IBM-PC compatible computer. Host system 302 includes a user interface having display 304 and user input devices such as keyboard 306 and mouse 308. In other embodiments the host system need not be a full computer system. Any type of processing system having a user interface is possible. For example, it is possible to couple the device to a laptop computer, game console, web-enabled
10 television, or any consumer electronic device or digital platform, in general. The host user interface need not provide a display and can be much more minimal than the keyboard and mouse shown in Fig. 14. A preferred embodiment of the invention uses a Universal Synchronous Bus (USB) connection but any type of connection such as IEEE 1394 (FireWire), Ethernet, Serial Port, etc. can be used. A wireless (i.e., optical or radio frequency) connection
15 can be used.

Once device 300 is coupled to host system 302, a user of host system 302 can launch a bridge interface to allow for the transfer of files between device 300 and host system 302. In a preferred embodiment, once the bridge interface is launched, the controls of device 300 are inoperable. The user interface of host system 302 is used to operate the bridge interface
20 to transfer files.

The invention has now been described with reference to the preferred embodiments. Alternatives and substitutions will now be apparent to persons of skill in the art.

WHAT IS CLAIMED IS:

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

ABSTRACT OF THE DISCLOSURE

A method, performed by software executing on the processor of a portable music playback device, that automatically files tracks according to hierarchical structure of categories to organize tracks in a logical order. A user interface is utilized to change the hierarchy, view track names, and select tracks for playback or other operations. The user interface uses an overlapping hierarchy of categories. A song title can be accessed in multiple different ways by starting with different categories. A preferred embodiment of the invention uses the top-level categories "Albums", "Artists", "Genres" (or styles), and "Play Lists". Within the Albums category are names of different albums of songs stored in the device. Within each album are the album tracks, or songs, associated with that album. Navigation is performed by presenting a sequence of display screens for each level of the hierarchy.

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PATENT APPLICATION

AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY METADATA

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*Do not enter
Drawings
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separately.*

**AUTOMATIC HIERARCHICAL CATEGORIZATION OF MUSIC BY
METADATA**

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11-16-05*

CROSS-REFERENCES TO RELATED APPLICATIONS

*CR
11-16-04*

This application is related to Application No. 09/755,629, entitled "System for Selecting and Playing Songs in a Playback Device with a Limited User Interface," now abandoned (~~Atty. Docket No. 17002-022400~~); and Application No. 09/755,367, entitled "Audioplayback Device with Power Savings Storage Access Mode," issued as U.S. Patent No. 6,590,730 (~~Atty. Docket No. 17002-022400~~), all filed January 5, 2001, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

15 Today, portable consumer electronic devices are more powerful than ever. For example, small, portable music playback devices can store hundreds, even thousands, of compressed songs and can play back the songs at high quality. With the capacity for so many songs, a playback device can store many songs from different albums, artists, styles of music, etc.

20 Music jukeboxes implemented in software executed by a digital computer and portable MP3 and CD players both provide facilities for forming playlists. For example, the OOZIC player, distributed by the assignee of the present application, runs on a host PC and has a playlist feature that allows selection of tracks from the PC's hard disk to be included in the playlist.

25 As storage capacity increases and songs are compressed to shorter file lengths the number of songs that can be stored increases rapidly. Major problems facing the consumer are organizing and accessing the tracks.

30 Typically, portable devices have a user interface including a small screen and buttons. Such a display screen might be, e.g., 1" x 2". This small display size is necessary because of the physical size of the device which is typically carried in the hand. The small size also limits the number, size, shape, and types of user input controls that can be mounted on the