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TITLE

METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY

U.S. DEPT. of COMM.-Pat. & TM Office — PTO-436L (rev. 10-78)

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Primary Examiner

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TITLE

METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY

This is to certify that annexed hereto is a true copy from the records of the United States Patent and Trademark Office of the application as filed which is identified above.

By authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

Date Certifying Officer

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07/971,044

PATENT APPLICATION TRANSMITTAL LETTER

Docket No. XRX-134
(D/92142)

To the Commissioner of Patents and Trademarks:
Transmitted herewith for filing is the patent application of
ERIC A. BIER

entitled METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY

Enclosed are:
X 13 sheet(s) of drawings
X an assignment of the invention to Xerox Corporation

X executed declaration of the inventor(s)
___ a certified copy of _____ application No. _____, the priority of which is hereby claimed.
___ associate power of attorney
___ a verified statement to establish small entity status under 37 CFR 1.9 and 1.27
X information disclosure statement
___ preliminary amendment
___ other: _____

CLAIMS AS FILED

	NUMBER FILED	NUMBER EXTRA	RATE	FEE
BASIC FEE	////////////////////		$710	$710
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INDEPENDENT CLAIMS	2 -3 =	* 0	x $74	0
MULTIPLE DEPENDENT CLAIM PRESENT	1	////////////	$230	$230
*Number extra must be zero or larger		TOTAL		$940
If applicant has small entity status under 37 CFR 1.9 and 1.27, then divide total fee by 2, and enter amount here.		SMALL ENTITY TOTAL		$

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11/9/92
Date

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EXPRESS MAIL CERTIFICATE 37 CFR 1.10
Date of Deposit 11/10/92 Express Mail Label No. RB 948 917 915 US
I hereby certify that this paper or 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 above and is addressed to Commissioner of Patents & Trademarks, Washington, D.C. 20231

Thomas M. Webster
Name of Person Mailing

Signature

10/92

07/974044

Patent Application
Attorney Docket No. D/XRX-134
(D/92142)

APPLICATION FOR UNITED STATES LETTERS PATENT

Be it known that I, Eric A. Bier, a citizen of the United States of America have invented new and useful improvements in:

Method and Apparatus for Per-User Customization of Applications Shared by a Plurality of Users on a Single Display

of which the following is the specification:

EXPRESS MAIL CERTIFICATE

"Express Mail" label number: RB 948 917 915 US

Date of Deposit: November 10, 1992

I hereby certify that the following attached paper or fee, an application entitled **Method and Apparatus for Per-User Customization of Applications Shared by a Plurality of Users on a Single Display**, is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Thomas M. Webster
(Typed or printed name of person mailing paper or fee)

Thomas M. Webster
Signature of person mailing paper or fee)

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Attorney Docket D/92142 - XRX134

METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY

FIELD OF THE INVENTION

This invention relates to a method and apparatus employing a single display for a plurality of users, and is more in particular directed to a method and apparatus for establishing correspondence between the users and pointing devices in such a system. The invention is related to the invention disclosed in U.S. Patent Application Ser. No. 07/994,036, ~~(Attorney Docket D/92141 - XRX133)~~ filed on the same date as the present application, the contents of which are ~~encorporated~~ incorporated by reference herein.

BACKGROUND OF THE INVENTION

Many modern groupware applications generally require that each of a number of participants have his or her own computer. There are many occasions, however, in which two or more people wish to collaborate in a single-computer situation. This may occur, for example, when one person visits another's office, or when two or more people are using a large-screen computer, such as a Xerox ~~product known as Liveboard~~.

Many groupware computer systems do not provide any facilities

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for per-user customization. Those that do usually take advantage of the fact that each user has his or her own computer and is running a separate instance of an application. Prior systems have not permitted customization such that the same instance of the application and the same screen can be shared. The superscript identifications in the following discussion refer to the Bibliography at the end of this disclosure.

Shared window systems[1] in the past have allowed users to share standard applications over a network. Some systems of this type are of the What You See Is What I See (WYSYWIS) type. Work on shared window systems has focused on sharing unmodified single-user applications, maintaining a networked conference, and floor control. These systems have experienced difficulties in maintaining consistent views between displays when local user preferences are honored.

Networked conference-aware systems such as window systems[2], text editors[3] and drawing tools[4] allow users at different workstations to make changes simultaneously. These systems permit some types of local user preferences[5]. One simple system of this type is Commune[4] which allows users to simultaneously draw with a stylus on the pages of a shared electronic notebook. This latter system shows the same image to all users and uses colored cursors and objects to distinguish among different users.

SharedArk[6] supports collaborative learning of physics by allowing users to simulate experiments. In this system, users move around a planar space that contains objects that they can

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manipulate. When users' view of the plane overlap, the views are WYSIWIS in the shared region. Each user controls a pointer, labeled with the user's name, that is visible on all conference screens. Any user can manipulate any object in his or her view. Buttons in this system can be applied to any object, and shared between users. This system also supports per-user pointers, shared buttons and objects, lightweight locking of objects, and equal status of participants.

Several systems support meetings by allowing participants, working at individual workstations, to control a large shared screen. Some use chalk-passing floor control, such as the Capture Lab[7]. Others allow simultaneous editing, such as Colab[8]. The Colab team, in reporting on the Cognoter tool, noted that simultaneous access to the screen improves brainstorming because users need not wait for others to complete an entry before making their own contribution. They also noted that shared user interfaces need to be simple, because there is little time for training in a group setting. In all of these systems, however, the number of active participants is limited by the number of machines and the participants must go to a special meeting room.

SUMMARY OF THE INVENTION

The present invention is directed to the provision of a method and apparatus for sharing customizable software applications on a single display that overcomes the above discussed disadvantages of prior systems and that permits two or more persons to share the same instance of an application, exploying a common screen.

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The invention is directed to the solution of the following user interface problems:

1. Customized simultaneous input. In a system where a plurality of users may invoke the same command in the same application by taking comparable actions using comparable, but distinct, input devices, it must be possible to vary the effect of that command depending on the preferences of the user who generated it.
2. Registration. It must be possible to quickly register each input device with a user, and hence, with a set of preferences.
3. Per-user feedback. The system must direct feedback to the correct user without unduly disturbing other users.

In addition, the invention is directed to the solution of the following architectural problem:

Replication. The data structures of each application must be replicated for each user to support per-user modes, selections, and preferences.

In accordance with the invention, a special on-screen region, referred to herein as the "Home Area", allows each user to claim input devices, such as mice, that move cursors. The user simply clicks on a Home Area with the cursor in order to establish the association between the user represented by that Home Area and the input device. A user's Home Area also provides a natural place to position the control panel for that user's current application. These control panels are referred to herein as "Home Area menus".

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In addition, the system must provide feedback to each user without confusing the other users. In accordance with the invention this result is achieved by displaying the feedback for each user in a different color, and at other times by displaying feedback for each user in a different region of the screen.

The system in accordance with the invention supports multiple users, and also supports multiple applications. Such multiple applications can be spatially nested inside one another, forming a logical hierarchy where one application may be nested inside another. Users can act within this hierarchy at any level, with different users acting at different levels.

In the system and method of the invention:

(1) Each user can have a different "current position". For instance, one user can be adding text to a first paragraph of a document, while another user adds text to the third paragraph.

(2) Each user can be operating in a different mode. For example, one user can be rotating one object while another user is creating new objects.

(3) Each user can have different style settings. For example, when one user types, the new text appears in his or her chosen color or font. Another user can create text in a different font or color.

(4) Feedback involving a particular user (e.g. what application that user is currently using, which input devices are associated with that user, what operation the user is

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performing, and what current modes, such as current color or current font, are in force) is displayed in a way that indicates which user that feedback is directed to.

The user interface of the present invention is comprised of three visible components, namely:

1. Home Areas for providing iconic representations of the users.
2. Applications that allow the users to perform tasks, such as editing document media.
3. Menus, which provide buttons that users can press to invoke commands.

BRIEF FIGURE DESCRIPTION

In order that the invention may be more clearly understood, it will now be disclosed in greater detail with reference to the accompanying drawings, wherein:

Fig. 1 is a block diagram of a system in accordance with the invention;

Fig. 2 is a view of a screen display in accordance with one embodiment of the invention;

Fig. 3 is a view of the Home Area of the screen display of Fig. 2;

Fig. 4 is a view of the screen display of a Rectangle Editor;

Fig. 5 is a view of the screen display of a Text Editor;

Fig. 6 is a screen display illustrating a method for moving a rectangle in a rectangle editor, in accordance with the invention;

Fig. 7 is a screen display illustrating resizing of a rectangle in a rectangle editor;

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Fig. 8 is a screen display illustrating the simultaneous resizing of a rectangle by manipulation of two pointing devices;

Fig. 9 is a screen display illustrating the display of four editors on the screen display;

Fig. 10 is a screen display illustrating a doubly selected rectangle;

Fig. 11 is a screen display illustrating doubly selected text characters;

Fig. 12 is a screen display illustrating a Home Area with rectangle creation color feedback;

Fig. 13 is a screen display illustrating a Home Area with current font feedback;

Fig. 14 is a flow diagram of the processing of an input from an external device such as a mouse;

Fig. 15 illustrates the data structure of an Event Record;

Fig. 16 is a flow diagram of processing of Event Records in the Home Area;

Fig. 17 is a simplified diagram illustrating the interface between the Notify Process and the shared applications;

Fig. 18 is a simplified illustration showing the updating of a screen, in accordance with the invention;

Fig. 19 is a diagram illustrating the structure of an application;

Fig. 20 is a flow diagram illustrating the handling of an Event Record by an application;

Fig. 21 is a flow diagram illustrating the transformation of

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coordinates for a child editor;

Fig. 22 illustrates a rectangle editor in which a rectangle contained in that editor and the editor itself are being simultaneously repositioned;

Fig. 23 illustrates the results of the instructions of Fig. 22, in the absence of the system of the invention; and

Fig. 24 is a flow diagram of a Paint Process in accordance with the invention;

Fig. 25 illustrates the involvement of user preferences in the processing of input events from ~~form~~ two different users, both when an application is constructing a command and when the display is being updated; and

Fig. 26 illustrates three applications that are receiving input from two input devices and updating a single display.

DISCLOSURE OF PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to the drawings, Fig. 1 is a block diagram of a basic multi-user system that includes a computer 20, which may be a conventional microcomputer having RAM and program ROM, and a plurality of input devices 21, 22, 23. The devices 21, 22 may be pointing devices, such as mouses with one or more mouse buttons, and the input device 23 may be a keyboard. It will be understood that the invention is not limited to this configuration of input devices, and that more input devices may be provided than herein illustrated. The computer system also is provided with a display screen 25 which may be a conventional computer monitor, or it may be a display device having a much larger surface area.

The system is adapted to be employed by one or more users. For example, a single user may employ the two devices 21, 22, with the system reacting to inputs from the two devices in different manners. In this case, as discussed herein the two devices have different "user instances". Alternatively, the two devices 21, 22 may be controlled by different users, with the users controlling functions on the same application or in different applications. Further input devices may be assigned to other users, or be used for other user instances.

The Display Screen

A typical display that may be provided on the display screen 25, in accordance with the invention, is illustrated in Fig. 2. This screen includes a command menu 30, a rectangle editor 31 which may have a nested text editor 32, a text editor 33 and a Home Area 34. The illustrated editor screens are exemplary only, and other combinations of editor screens may be employed.

In order to invoke any of the selections of the command menu 30, the user controls his or her input device to place the cursor on the desired menu selection, and clicks or otherwise controls the device to make the selection.

The Rect Editor selection immediately turns all selected rectangles into rectangle editors, the Text Editor selection turns them into text editors, the Menu turns them into menus, the Color Menu turns them into color menus and the Delete selection deletes the selected rectangles. The New User selection creates a new Home Area for the user named by the selected text characters in

the selecting user's current application. The Print selection produces a file in a page description language corresponding to the selecting user's current application.

A separate Home Area is employed for each user participating in a session. Briefly, in order to join a session, a new user may enter his or her name into a keyboard or via a selection menu, followed by the clicking of the "New User" menu button. Other conventional techniques may of course be provided for creating a new Home Area. The system of the invention then displays a new Home Area that displays the new user's name. The Home Area of a user may appear, for example, as illustrated in Fig. 3, wherein the user's name is displayed at the top of the area. The user then moves the cursor to the name in the desired Home Area, as seen in Fig. 2, and clicks his or her mouse button or other input device. As a result, the system assigns the respective input device to that user, and any actions performed with the input device will take his or her preferences into account. The change of ownership of the input device may cause the cursor color to change to that of the user's Home Area. A user may have more than one Home Area, which may be selected in the same manner as above discussed. Extra Home Areas allow users to switch back and forth between different sets of preferences. Each Home Area is said to belong to a different "user instance".

The applications may, for example only, be rectangle editors and text editors. These applications are discussed herein only to illustrate generally the function of an application, and the

invention is not limited to these specific applications. The rectangle editor permits a user to create solid colored rectangles on the screen, to select and delete groups of rectangles, and to change their size, position and color. The text editor, on the other hand, allows users to place a starting point for a line of text, to enter characters, to choose a font and color, to move a line of text, to select a sequence of characters, and to delete or change the color of selected characters.

Since the system of the invention is largely concerned with keyboardless interfaces, all editor commands, except for example text entries, are preferably activated by a pointing device such as a mouse. Command selection involves pointing to different parts (called "handles") of graphical objects on the screen for the purpose of invoking different operations.

For example, as illustrated in Fig. 4, the rectangle editor may display one or more rectangles, which may be nested. The rectangles may have a wide border or frame. The screen display of a text editor is illustrated in Fig. 5, wherein text may appear in desired fonts and colors.

In order to move a rectangle, in the rectangle editor, from one position to another, without changing its size, the user places his or her cursor 61 on the border of the rectangle 60 that is to be moved, as seen in Fig. 6, clicks and holds the input device button, and drags that border in any direction, until the desired position is reached. If, on the other hand, the user desires to change the size of a rectangle, the user places his or her cursor 61 on a corner

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of the rectangle 67 as seen in Fig. 7, clicks and holds the input device button, and drags that corner in a direction to change the lengths of the adjacent two sides of the rectangle, to thereby increase or decrease the size of the rectangle.

A user may create a new rectangle on the screen by clicking his or her input device with the cursor on the background of the rectangle editor portion of the screen. Several users may simultaneously work in an application, performing different operations and using different modes. For example, in the rectangle editor, one user may drag one rectangle while another user resizes the rectangle, or while another user performs operations on another of the rectangles. As seen in Fig. 8, two users via cursors 64, 65 may be simultaneously stretching the rectangle 66 in different directions. The rectangle editor keeps track of both operations and updates the screen to show their progress. Similarly, the users may employ the color menu 36 in order to control the color that rectangles will appear when created using the respective input device. For example, one user may choose blue as the current color for that editor while another user chooses red. The editor stores both users' modes and creates a rectangle of a color appropriate to the creating user.

Users can work simultaneously on the same object. One user can add characters to a text string while another changes the color of existing characters. Very fine-grained sharing is also possible. One user can stretch a rectangle by one corner while another stretches its opposite corner, as seen in Fig. 8, or one user can type a string of characters while another repositions the string.

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The system in accordance with the invention does not have a conventional window manager. Instead, the desktop is an instance of the rectangle editor. The rectangle editor allows other editors to be nested inside of it. Each editor presents a finite window onto an "infinite" plane that contains the objects and child editors that editor manages, which may overlap. The shape and position of this window is managed by the editor's parent. Thus, Fig. 9 shows several rectangle editors and a text editor. The text editor C is partly hidden by sibling editor B and by a rectangle, and the rectangle editor D is partly outside of the porthole of its parent editor B.

Because the window system of the invention is an editor, users do not need to learn both window manager and editor operations, unlike systems where selection of an editor is different from selection within an editor. Users can also place shared widgets in the document in which they are working; widgets do not need to remain at the top level.

In single-user environments, graphical feedback is used to display aspects of system state, such as the current application mode, color, or insertion point. In accordance with the present invention, however, graphical feedback must show all of this information, as well as indicating the user to which the feedback applies. Color and spatial placement may be employed to indicate this correspondence.

Each user has a color to identify his or her cursors, insertion points, and selections. As illustrated in Fig. 10, two

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users have selected a rectangle, and each user's selection is shown by highlighting a corner of the rectangle frame in that user's color. Similarly, Fig. 11 shows two selections in a text string, each marked by an underline in one user's color. The overlapping part of the selection is underlined twice.

Likewise, a narrow band in the frame around a user's current editor is set to that user's color. Where several users are using the same editor, a band is colored for each user. If too many users have selected an object, such as a rectangle, text or editor, to identify them all in the frame, then only the most recent selections are shown.

A user's mode within his or her current editor is displayed in the lower half 40 of that user's Home Area, as illustrated in Fig. 12. When a user works in a rectangle editor, his or her Home Area displays that user's default color in that editor. Similarly, for a text editor, the current font and colors are illustrated in the users's Home Area, as seen at reference numeral 41 in Fig. 13.

In many desktop environments, menus are displayed once for each application window or at a unique location on the screen. For example, the Apple Macintosh pull-down menus are at the top of the screen. For a shared application on a single screen, however, menus displayed once per window take up much space and menus displayed at a fixed location only allow a single application to be used at any given time.

In accordance with the invention, however, menus can be shared among users and editors, and may be positioned anywhere on the

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screen, even in documents. For example, the menus illustrated in Fig. 2 can be placed in a rectangle editor regardless of its nesting level, and then applied to objects in any user's selected editor, regardless of that editor's nesting level.

Allowing people and editors to share menus reduces the screen real estate needed for control. Also, menus can be created or positioned where a user is working, avoiding user interference. Finally, users can group menus into a document to use as a customized control panel.

Shared menus work well for commands, like changing color or deleting, that apply to several editors. Some functions, however, are specific to a particular editor. Menus of these functions need only be displayed when such an editor is in use. In the system of the invention, menus for a user's selected editor are displayed in that user's Home Area. These menus can be combined with feedback that shows current modes in the selected editor. For example, as illustrated in Fig. 13, reference numeral 41, menus can display possible font choices with the user's currently selected font highlighted.

Users can simultaneously work at different levels in the application hierarchy. This capability reduces interference between users. One user can reposition or resize a document while another edits its contents. While some multi-level edits may disturb the user working at a lower lever, others work well. For example, a user may resize a rectangle editor to uncover an object beneath it without disturbing another user who is editing child rectangles

that are far from the border being moved.

The user interface of the invention requires a software architecture that is unusual in several respects. It must support a hierarchy of concurrently active applications. It must handle multiple devices and users, and make links between them. Each input event must be directed to the correct application, even though other input events may be modifying the application tree. Each application must store state for all of the users who have referenced it. Finally, the applications must coordinate their screen updates to produce a consistent image.

The applications are arranged in a tree structure. The application at the root of the tree structure can have any number of child applications, each of which can have any number of children and so on. Each application has an application queue of input events and its own lightweight application process (or operating system "thread") to dequeue and execute events. When an application receives an input event, it may act on the event immediately, place it on its queue for sequenced execution or pass it to a child application.

At any moment, up to three applications are important to each user. A user's selected application will receive his or her keyboard events and his or her commands generated by clicking on a menu. If a user performs an interactive operation, such as dragging a rectangle, for example, the application in which that operation began is the mouse focus application. The mouse focus application receives mouse motion and mouse button events until the interactive

operation completes, so it is possible to drag objects out of view. The most deeply nested visible application that contains a user's cursor is his or her containing application. If no interactive operation is in progress, the containing application receives all mouse motion and mouse button events.

The Processing of Input Events

As illustrated in the flow diagram of Fig. 14, when an input device is controlled to provide an input (block ~~150~~ 100) to the system, i.e. to create an "event", the system initially starts building an Event Record (block 101) that includes the time of the event, the identification of the device that created the event, and the nature of the event. The nature of the event may be the pressing of a keyboard key, the movement of a mouse, the clicking of a mouse, etc. The above actions are taken by a thread called the device process. The device process then places the Event Record on system queue (block 102).

The device process runs at a high priority so that the time-stamps will be close to real-time.

After the Event Record has been started, as above discussed, the system continues to build the Event Record, by a program running in a second thread, called the Notify Process, to include the User Instance of the input device, by referring to the association in the Device To User Instance table (block 103). The Notify Process then builds a Device States Record that represents the current state of all devices owned by the given user (e.g. whether any mouse buttons or keyboard keys are currently being held

down).

If the input device is a pointing device, and the pointing device is clicked in a Home Area, then the Notify Process performs a sequence of steps that enable a user to claim the pointing device. These steps will be discussed later. It is noted, however, that only the Notify Process can modify the Device To User Instance table in the device claiming algorithm, in order to insure that the table holds consistent values in the Event Record.

If the device is a pointing device, the x-y coordinates of the root application are stored.

Fig. 15 illustrates an Event Record built in the above described manner.

Storage is also allocated to hold local information as the event is passed between applications. This storage is called "modified event". For example, x,y coordinates will be modified to reflect the local coordinate system of each aapplication.

The Notify Process delivers the Event Record to the proper application, menu or Home Area. For example, if it is determined that the event occurred at coordinates corresponding to a menu area, at block 105, the program proceeds to block 106 to process the menu selection, for example by creating a new application area, deleting an object, etc. If the event is not located in the menu area, then the input is tested to determine if it relates to a Home Area, at block 107. If so, the Event Record is processed by the selected Home Area input algorithm, at block 109. Otherwise, the Notify Process executes the ~~Home Area processing, at block 109.~~ application input algorithm at block 108

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The Home Area Algorithm

The Home Area has several areas in which the cursor may be positioned when the user clicks (e.g. depresses a button on a mouse). Clicking with the input device on the top of the Home Area causes the pointing device to be associated with that Home Area's User instance. This is called "claiming" the device.

The Home Area has several areas, which control the role of the pointing device. For example, the Home Area may have two or more sub-areas for claiming the device, such as a primary device area and a secondary device area. See Fig. 3. In this example, the input from a device that was claimed using the primary device area may control objects to be created, selected or moved, while input from a device that was claimed using the secondary device area may control the scrolling of the application in which that devices's cursor is located.

Each Home Area has a single user instance. A device belonging to that user instance can have different roles, depending upon how it was claimed.

The system records the current association of "user instances" to devices in two hash tables, called the "device ownership tables". One of these tables is the User Instance To Device table, and the other is the Device to User Instance table.

The User Instance To Device table uses the memory address of the user instance as a hash key and the memory address of a list of Device Records as the value stored in the hash table under that key. This list corresponds to all of the devices current claimed by

that user instance. The hash table uses rehashing so that looking up a key is guaranteed to produce the unique value that was stored in the table associated with that key. If the hash table overflows, its size is automatically increased and keys are rehashed.

The Device To User Instance table uses the memory address of a Device Record as a key and the memory address of a User Instance as the value stored in the hash table under that key. A device can only be claimed by a single User Instance at any given time. Rehashing and resizing are employed so that the hash table does not fail. Hashs tables are used to ensure good performance.

Referring to Fig. 16, when a user clicks a pointing device, D, on a Home Area, H, the following steps are performed:

1. The User Instance Record, U, of the Home Area is examined (block 150).
2. The pointing device, D, is looked up in the Device To User Instance table to determine if there is a previous owner of D (Block 151).
3. If there is a previous owner, and the previous owner is not user instance U, then remove D from the device list of the previous owner in the User To Device Instance table and the Device To User Instance table (block 152).
4. Obtain a list of devices currently claimed by U in the User Instance To Device Instance table associated with the Home Area (block 153).
5. Add the current pointing device to this table, if it is not already there (block 155).

6. Add the device and instance to the Device To User Instance table (block 155).

7. If the device was clicked at the top of the Home Area, record the device as a primary device. If the device had been clicked at the bottom of the Home Area, record the device as a secondary device (blocks ~~156~~ 157, 158, 159).

If the application employs only one pointing device associated with a given user instance, the system checks to see if a pointing device is already associated with that user instance. If it is, then the previous pointing device is removed from the User Instance to Device and Device To User Instance tables, and the new pointing device is assigned in these tables.

The device claiming process, as above discussed, is performed in the Notify Process.

The Application Interface

Briefly stated, when an Event Record is removed from the system queue, the Notify Process then "walks" the tree of applications, asking each to accept the event or pass it on to a child application.

When an application accepts an Event Record, the Notify Process performs any necessary actions, and then dequeues the record to handle the next event. This process is illustrated briefly in Fig. 17.

Only the Notify Process updates or reads the Device Ownership tables and the Device States Record. This insures that these structures are not being changed by other threads while the Notify

Process is using them.

The Notify Process thus walks the tree of applications, beginning at the root, asking each application either to accept the event or to pass the event to a child. When an application accepts the event, the Notify Process performs any actions that must be done immediately, before the next event can be handled, and then dequeues the next event from the system queue and repeats this procedure.

Each application in the tree is represented by an Application Record, part of which is application-specific and accessible only to that application's application process and the rest of which is accessible to the Notify Process or the Paint Process described below. All editor records include a list of User Instance State records, one for each user instance who has referenced the application during the current session. Each User Instance State record describes the child application that is on the path to the user's selected application and the child application that is on the path to the user's mouse focus application. The system of the invention can find a user's selected application, for example, by chaining down the former path from the root application.

If a user has a mouse focus application, events are passed to the child application that lies on the path to that application. On the way, the event's position information must be translated into the receiving application's coordinate system. If the application process of some parent application, P, is busy, any child applications may be moving, so the Notify Process waits for P's

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application process to finish its current event before translating the coordinates. Then, if the child application is the mouse focus application, this child application accepts the event. Otherwise the Notify Process continues down the path of applications.

The Notify Process must not wait too long. If it becomes stuck, all applications stop responding to users. The invention therefore provides timeouts to avoid this problem. If the Notify Process needs to wait for more than a few seconds for an application process, it gives up, throws the event away, and marks that process as "sick". Subsequent events that must pass through a sick application are discarded until its application process is idle, whereupon it is once again marked as "healthy". While events are sometimes lost by this scheme, it is an acceptable price to pay for guaranteed responsiveness. Ideally, when several users are sharing applications, the system performance should not slow down their dialogue.

If there is no mouse focus application, the Notify Process passes mouse events to the containing application (the frontmost most deeply nested application that contains the mouse coordinates). As the event is passed down the tree, the Notify Process waits for each application's application process to be idle before translating event coordinates and passing the event to a child application. Because keyboard events do not contain coordinates, they are passed down the tree to the selected application without any waiting.

When an application receives a user event, it looks in the

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application-specific fields of its User Instance State record for that user to discover his or her current modes and preferences. The rectangle editor, for example, stores the user's default color for creating rectangles, the user's interactive command (dragging versus resizing a rectangle) and the last coordinates of the user's cursor that were processed during dragging. In addition, each rectangle records a list of all users who have selected it.

Applications respond to events in two phases. First, the application may request that it become the mouse focus or selected application for the user who originated the event. This is done by the Notify Process to ensure that the chains of pointers in the application hierarchy that represent the path to the mouse focus and selected applications are not changing when the Notify Process reads them. The application may then place the event on its application queue.

In the second phase, if any, the application process chooses an event from its corresponding application queue and executes it. To choose an event, it inspects all the queued events. It performs the oldest mandatory event, or if there are no mandatory events, it executes the most recent optional events (e.g., motions during rubber-banding are optional), skipping older ones. This helps the application handle large volumes of input.

Applications place incoming events from all users on the same queue, so it is necessary to decide which user's event to respond to first. Mandatory events are handled in the order in which they are received, regardless of user. For optional events, the

application selects the user who has been least recently served, so the application feels equally responsive to all users.

Any application process can make changes that require the screen to be refreshed. Objects and applications can overlap so refreshing the screen for one application may require the cooperation of both parent and sibling applications. It is possible to allow each application process to walk the entire application tree as needed to update the screen after a change, but this might allow one process to read application data while another application process is modifying it.

Instead, in accordance with the invention, when an application wishes to paint, it creates a Paint Request record which includes (in the coordinates of the application) a rectangle that bounds the region to be repainted. The application notifies the system that it would like to paint and then turns off its application process and waits. The system asks all application processes to pause and waits until they have all stopped, and then the system Paint Process walks the tree of applications to determine a rectangle or rectangles bounding all the regions that have changed. It then walks the tree again asking each application in turn to repaint itself within these rectangles. The resulting paint actions are double-buffered so that they appear to the user all at once, enhancing the perception of simultaneous motion. Once all applications have finished painting, their application processes are reactivated.

Fig. 18 illustrates a screen update procedure. An application

program was produced that constantly sends Paint Requests to draw a rotating animation. In this figure, when both windmills are painting at once, the system will update the screen all at once, using the rectangle that bounds both of the rectangles, as shown by the heavy black lines.

Structures of the Applications

As illustrated in Fig. 19, each application has an Application Record, part of which (the Application Data) is editor specific, and accessible only to that editor's Application Process. The next two fields of the Application Record (the User Instance State Records and the queue) are accessible to the Notify Process. Finally, the Paint Requests are accessible to the application process and to the System Paint Process.The Application Record has a separate User Instance State Record for each user who has referenced the application during the current session.

Each User Instance State Record describes the child application that is on the path to the user's selected application (and the child application that is on the path (in the tree of applications) to the user's mouse editor.) As seen in Fig. 20, the Notify Process removes an Event Record from the queue (block 180) and directs it to the root application (block 181). When an application, A, receives an input event, it uses the Application Record and the User Instance to determine if it should queue and execute the event, or whether a child application should receive the input event, in accordance with an algorithm:

1. Examine the User Instance State Records for application

A (block 182).

2. From this Record find the User Instance State Record that corresponds to the user instance that produced the event (block 183).

3. If the event is a keyboard event (block 184), examine the Path to Selected Editor field of the User Instance State Record (block 185). If the path points to application A (block 186), place the event on the queue of application A (block 187). Otherwise, if the Path to Selected Editor points to a child application, pass the event to that child (block 188).

4. Otherwise, if the event is from a pointing device (e.g. upon movement of a mouse or pressing of a mouse button):

If the Path To Mouse Focus Application is not empty, pass the event to the application recorded in this field for processing. Otherwise:

Determine the frontmost child application that contains the mouse cursor (block 190). If there is such an application (block 191), pass the event to this application (block 192). Otherwise:

Place the event on the queue of application A (block 193).

Each user has one or more distinct User Instance State Records, so that events may be delivered to different applications, depending upon which user instance is producing the event.

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Coordinate Transformation

When an event is passed to a child application, the two dimensional coordinates (x,y) of the event must be translated into the coordinate system of the child application. In a multi-user system, however, one user may be moving the child application at the same time that another user is pointing to it. In order to reliably transform event coordinates, the system must determine a single consistent position of the child application with respect to its parent. In accordance with the invention, this is effected by the use of a cooperation between the application processes and the Notify Process.

When an event directed to a child application is created by a pointing device, (block 200 in Fig. 21),
the system asks the parent application to pause in its current activity. When the parent application has paused, the coordinates of the input event are translated for the child application. This translation is effected as follows, with reference to Fig. 21:

1. If the parent application, A, is idle (block 201), and its queue is also empty, no further action need be taken since the coordinate transformation algorithm is being performed at that time by the Notify Process (block 202), which is the only process that can add events to A's queue. The Notify Process accordingly transforms the coordinates, and records the A as being "healthy" (block 204).
2. If the parent application has paused in response to a

request thereto to pause (block 205), (e.g., at the request of a Paint Process), but the queue is not empty, a Continue OK flag of the parent editor process is set to FALSE (block 206), preventing any other process from restarting A. The coordinates for the child editor are then transformed (block 207). The Continue OK flag is then set to TRUE (block 208), allowing the process that paused A to continue A when appropriate. (block 209).

3. Otherwise, if A is currently handling an event, a test is made to see if A is "healthy" or "sick". If A is recorded to be sick, the event is discarded (210) and the system proceeds to handle the next event. If, on the other hand, A is recorded to be healthy, a request (211) is made for it to stop as soon as it has completed the event that is currently being handled. If A stops within a given time, e.g., one second, the coordinates are translated (213) from A to C and then the processing by the parent editor is restarted (214). If A does not stop within the given time, the input is being held for too long a time, the queue of the parent editor is recorded as being sick, and the event is discarded and the system proceeds to handle the next event.

The above algorithm guarantees that no application will hold up the processing of input events indefinitely. If an application takes too long to process an input event, it is "marked" as being sick, and future input events to that application are discarded

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until the application has caught up with the work on its queue. In the meantime, the user can interact with other applications that are not sick.

The Event Delivery Algorithm also requires the determination of the frontmost child application that contains the mouse cursor. Correct determination of that child also requires having a consistent view of the parent application. This can also be done using the Coordinate Transformation Algorithm, where the decision of which child is under the mouse coordinates is determined immediately prior to transforming the coordinates to the coordinate system of that child.

Updating of the Screen

As user events are processed, applications must update the screen to reflect changes in state. Screen updates from multiple applications must be coordinated to produce a sequence of screen images each of which is consistent with itself.

Referring to Fig. 22, a condition is depicted wherein one user is attempting to drag a rectangle of a child editor in the upward direction, while another user is attempting to drag a rectangle of the editor that is the parent editor of this child, where said second rectangle includes the child editor rectangle, in a rightward direction. If the system were to update the region of change, taking into account the latest position of the child editor, an inconsistent display would appear, as illustrated in Fig. 23. In accordance with the invention, however, the system momentarily pauses all applications, updates all portions of the

screen that have changed since the last screen update, and then allows all applications to continue. This algorithm requires the cooperation of all of the applications in an algorithm referred to herein as the Paint Algorithm.

The Paint Algorithms

When an application wishes to redraw the screen display, it does not do so immediately, but instead creates a data structure, representing the desired change, and stores this data structure in the "Paint Requests" field of its Application Record, and then notifies the system that it wishes to update the screen. The Paint Process (an operating system thread) executes the following algorithm, with reference to Fig. 24:

1. The Paint Process requests that all applications stop their activities after finishing the processing of their current events (block 250).
2. When all of the applications have stopped, the Paint Process walks the entire tree of applications, gathering all Paint Requests. (block 251). Each Paint Request describes a specific region of the screen to modify.
3. The Paint Process responds to these requests by computing a rectangle that bounds all of the regions to change (block 252).
4. The Paint Process then requests the root application to redraw itself in the computed rectangle of Step 3 (block 253). The root application proceeds to redraw those of its objects that are in this region, in back-to-front

order. In order to redraw an object that contains a child application, it recursively asks the child application to repaint itself within the region of change. This process continues until all applications that are included in the region of change have redrawn themselves in the correct order.

5. The Paint Process then requests all applications to restart the processing of events (block 254).

6. The Paint Process then returns to an idle state, waiting for the next Paint Request. 256

In general, in accordance with the Paint algorithm, the Paint Process can compute more than one regions of change, if it is faster to update several small regions rather than one large region. Applications whose size, shape and appearance are unchanged can be repainted from a saved raster image of their previous appearance. Applications and application objects that are obscured by other objects need not be repainted at all.

While the invention has been disclosed and described with reference to a limited number of embodiments, it will be apparent that variations and modifications may be made therein, and it is therefore the aim of the present invention to cover each such variation and modification as falls within the true spirit and scope of the invention.

The following paper is hereby incorporated by reference: Eric A. Bier et al., "MMM: A User Interface Architecture for Shared Editors on a Single Screen," Proceedings of the ACM Symposium on User Interface Software and Technology, Nov. 11 - 13, 1991, p. 79. ~~In the event of any inconsistencies between the foregoing description and the above paper, the paper shall prevail.~~

EAB Nov. 10, 1992

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WHAT IS CLAIMED IS:

1. A computer system for entering simultaneous and sequential input events for at least one application program under the control of multiple users and for displaying a visual response of said application program to said input events on a shared display, each of said users having a unique identity; said system comprising

a plurality of input devices for entering input events under user control, each of said input devices having a unique identity that is linked with any input events that are entered thereby;

means for revokably registering different ones of said users with different ones of said input devices, whereby the identity of each input device that has a user registered therewith is linked with the identity of its registered user;

means for linking any input events from input devices that have users registered therewith with prespecified, individualized preferences of the respective registered users of such input devices, and

means for translating input events from input devices that have registered users into commands that said application program executes in accordance with the preferences of the registered users of the respective input devices.

2. The computer system of Claim 1 wherein said means for registering said users with said input devices includes

a device ownership table for linking the identities of said input devices to the identities of any users that are claiming ownership of any of said devices; and

means for updating said device ownership table consistently whenever additional device ownership claims are made and whenever existing device ownership claims are superseded.

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3. The computer system of Claim 2 wherein said means for updating said device ownership table includes

a process for updating said device ownership table whenever a user owned pointing device selects a screen representation of an additional input device, whereby said additional input device then is linked in said device ownership table to the identity of the user that last claimed ownership of said pointing device.

4. The computer system of any of Claims 2 or 3 wherein

each user identity is linked to a set of customizable user preferences, said preferences including a feedback mode that defaults to a setting that is visually distinguishable from any feedback modes that are in use by other users.

5. The computer system of Claim 4 wherein

said display is a color monitor, and

said feedback modes are distinguished from each other by the color in which they are displayed on said monitor.

6. The computer system of Claim 4 wherein

said feedback modes are distinguished from each other by being displayed on spatially distinct regions of said display.

7. A method for entering simultaneous and sequential input events for at least one application program under the control of multiple users of a computer system and for displaying a visual response of said application program to said input events on a shared display, each of said users having a unique identity; said method comprising the steps of

entering input events through user control of a plurality of input devices, each of said input devices having a unique identity that is linked with any input events that are entered thereby;

revokably registering different ones of said users with different ones of said input devices, whereby the identity of each input device that has a user registered therewith is linked with the identity of its registered user;

linking any input events from input devices that have users registered therewith with prespecified, individualized preferences of the respective registered users of such input devices, and

translating input events from input devices that have registered users into commands that said application program executes in accordance with the preferences of the registered users of the respective input devices.

ABSTRACT OF THE DISCLOSURE

A multi-user multi-device system enables a plurality of users to control a single screen. Each user has one or more input devices, which can be used to control one or more stored applications. At any time, the system produces a consistent view of all applications on the single screen. The input from each user produces a response customized to the preferences of that user. Each user can inform the system of which devices that user is using. Inputs to the system initiate the building of Event Records that are queued and then directed to specific applications. The screen is updated, and the coordinates of child applications are determined, only during pauses in the operations of all applications.

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07/974044

Docket No. XRX-134
(D/92142)

COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

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

METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY

the specification of which is attached hereto unless the following is checked:

___ was filed on _____ as U.S. Application No.

or PCT International Application Number _____

and was amended on _____ (if applicable).

I hereby state that 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, §1.56.
I hereby claim foreign priority benefits under Title 35, United States Code, §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.

PRIOR FOREIGN APPLICATION(S)			
NUMBER	COUNTRY	DATE FILED	PRIORITY CLAIMED
NONE			

I hereby claim the benefit under Title 35, United States Code, §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, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

APPLICATION NO.	FILING DATE	STATUS PATENTED, PENDING, ABANDONED
NONE		

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.

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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RESIDENCE	
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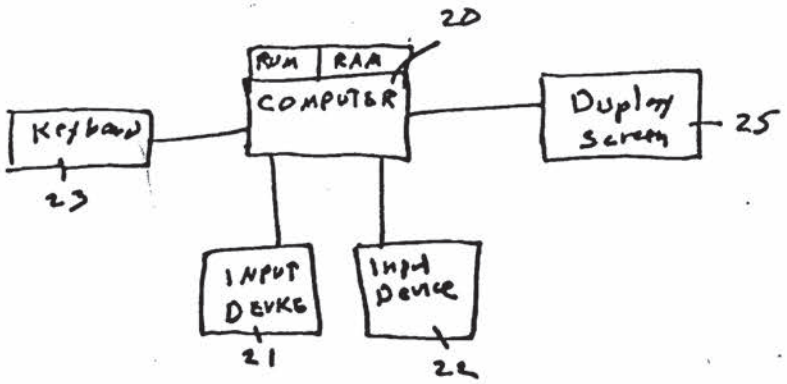

FIG. 1

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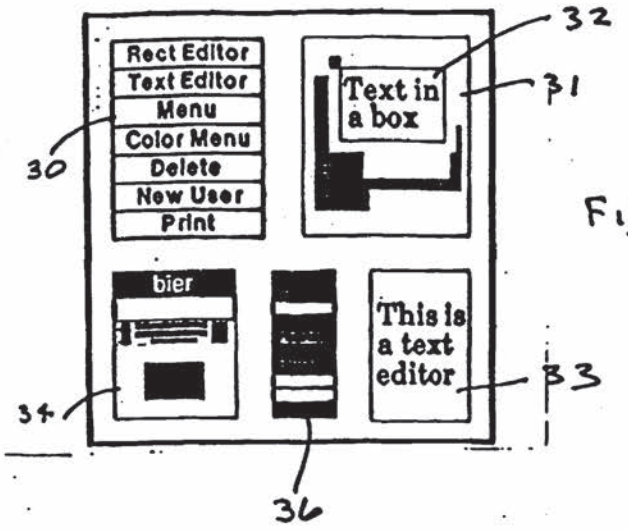

Fig. 2

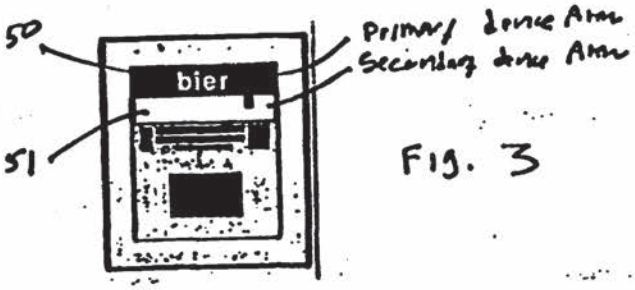

Fig. 3

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(D/92142)

07/974044

Fig. 4

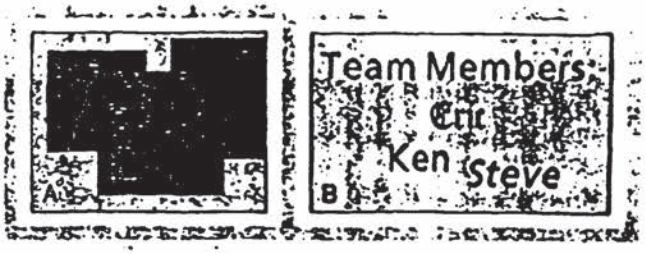

Fig.

Fig. 10

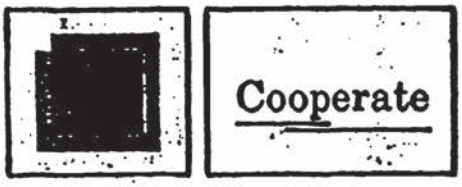

Fig. 11

Fig. 12

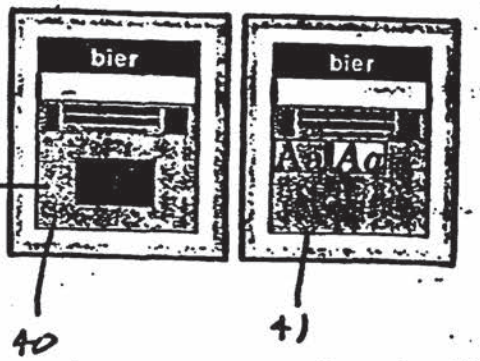

Fig. 13

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(D92142)

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Fig 6

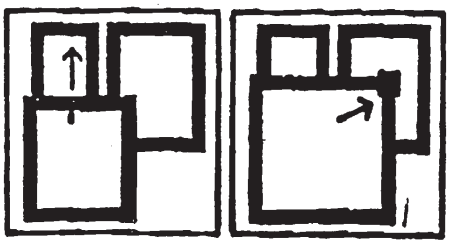

Fig 7

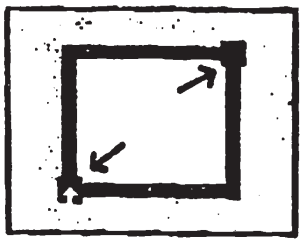

Fig. 8

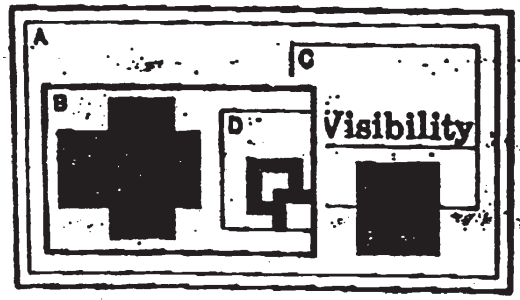

Fig. 9

PRINT OF DRAWINGS
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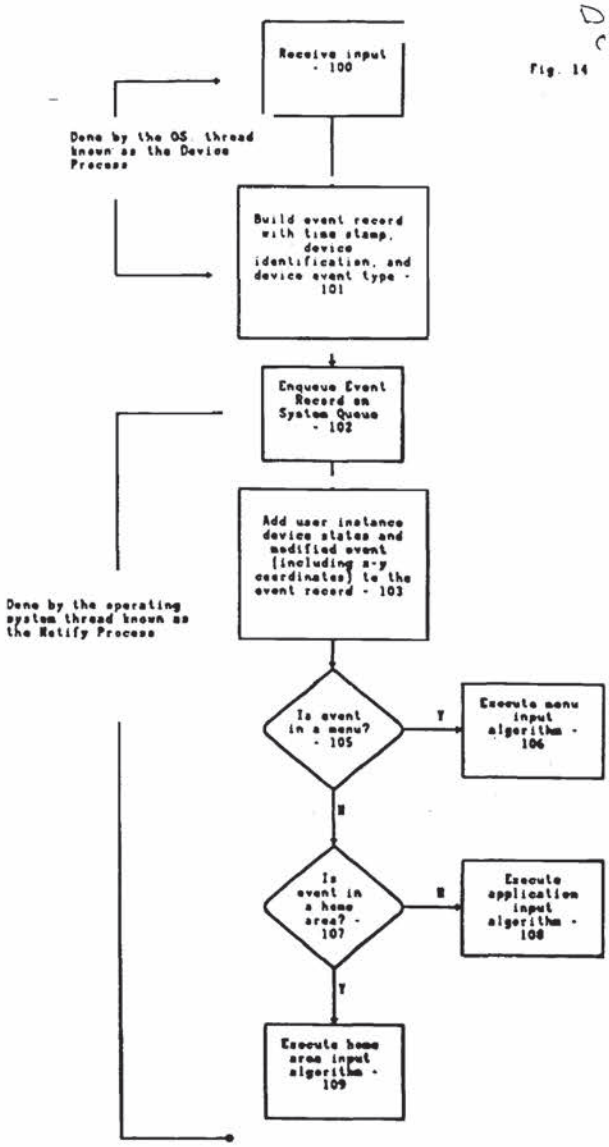
(D/92142)

Fig. 14

07/974044



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(D/92142)

07/974044

Fig. 15

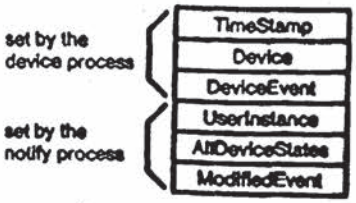
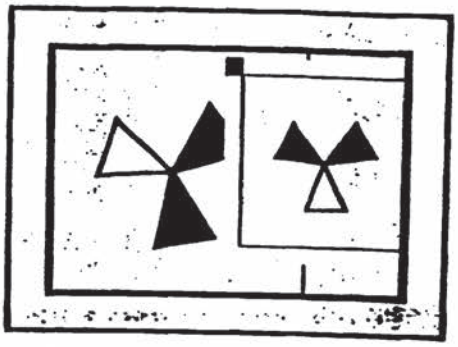


Fig 18



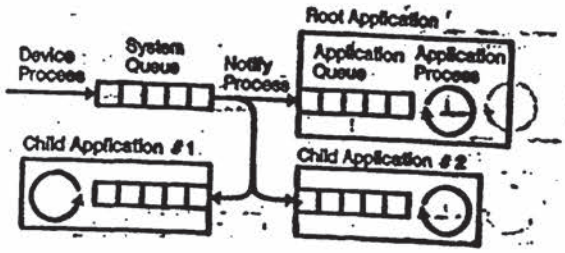


Fig 17

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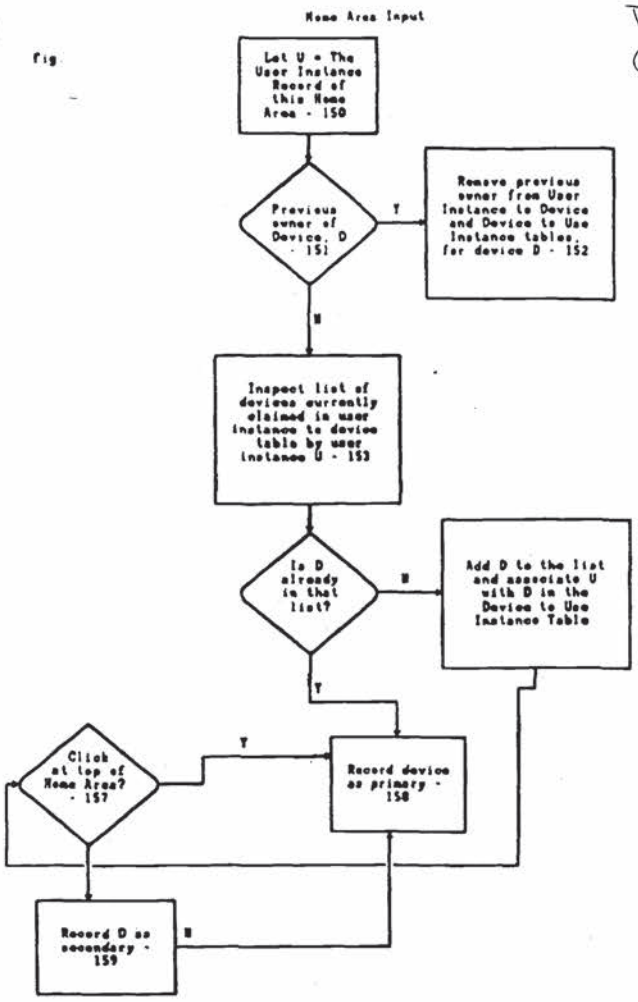
(D/92142)
07/974044

Fig



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D# XRX-134
(D/92142)
07/974044

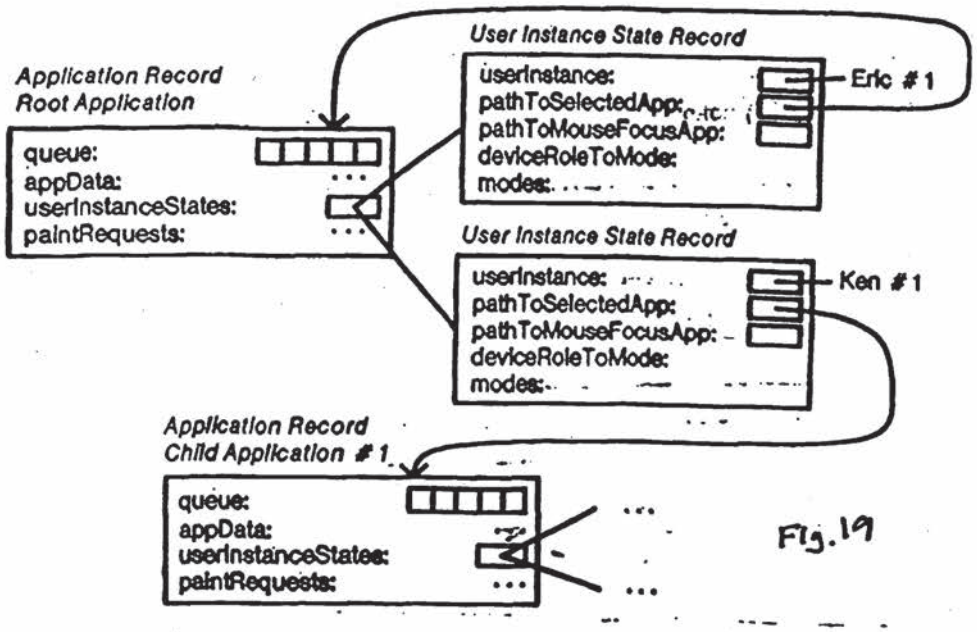

Fig.19

Fig 22

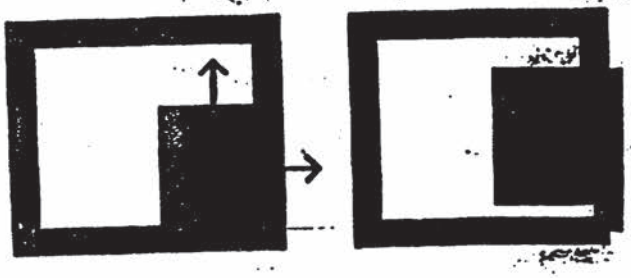

Fig. 23

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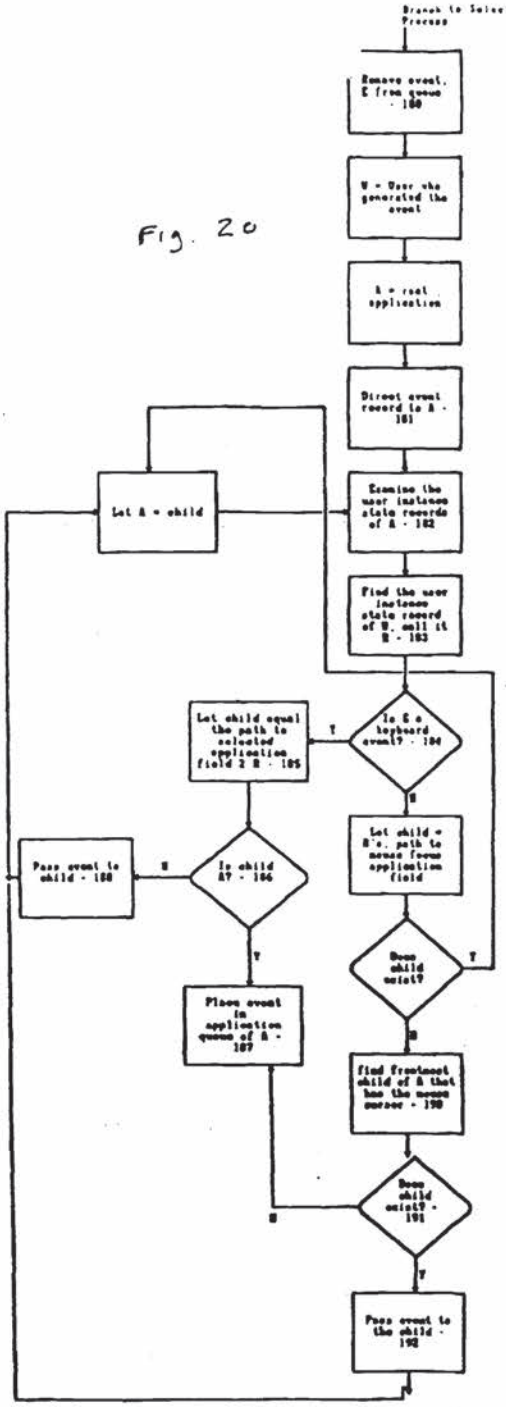
D#XRX-
(D/92142)

Fig. 20



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. 2' · Coordinate Transforr ion Algorithm

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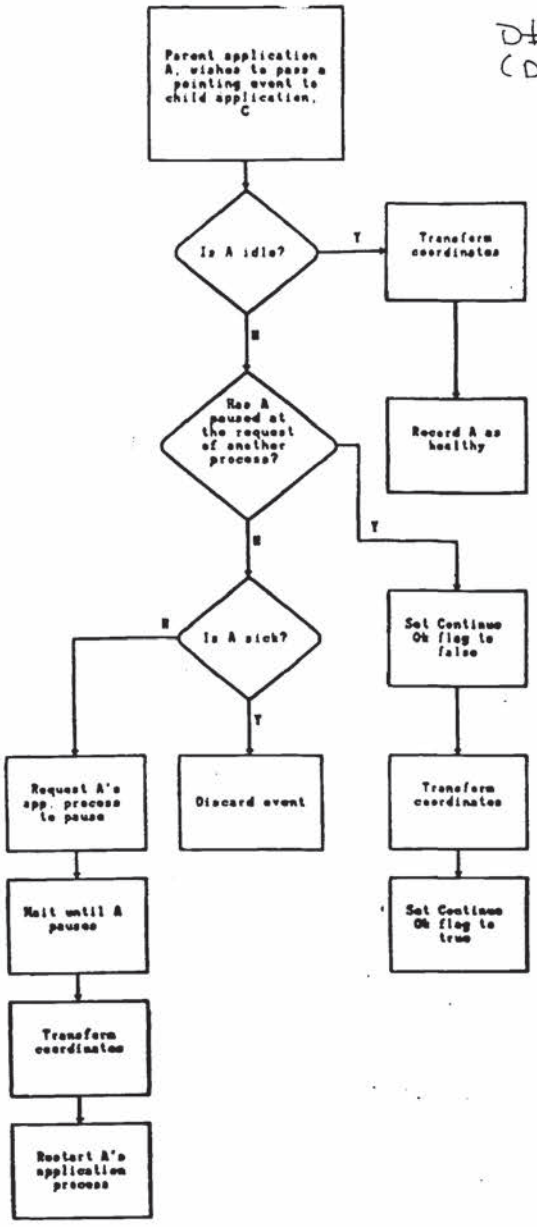
D# XRX-134
(D/92142)

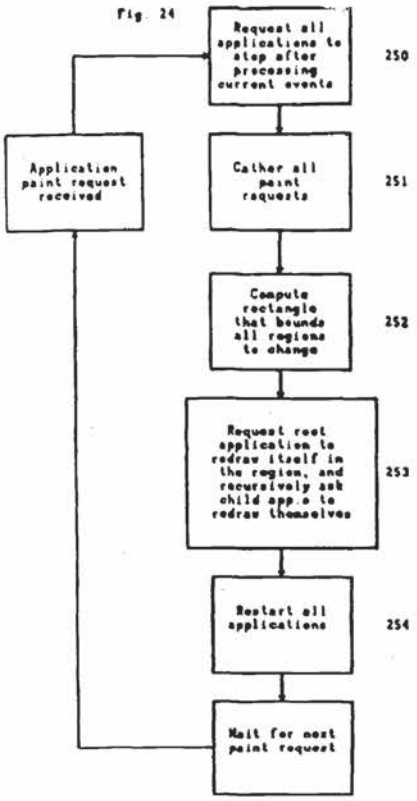


PRINT OF DRAWINGS
AS ORIGINALLY FILED

07/974044
D# xRX-134
(D/92142)

The Paint Algorit

Fig. 24



PRINT OF DRAWINGS
AS ORIGINALLY FILED

08/474044
D# XRX-134
(D/92142)

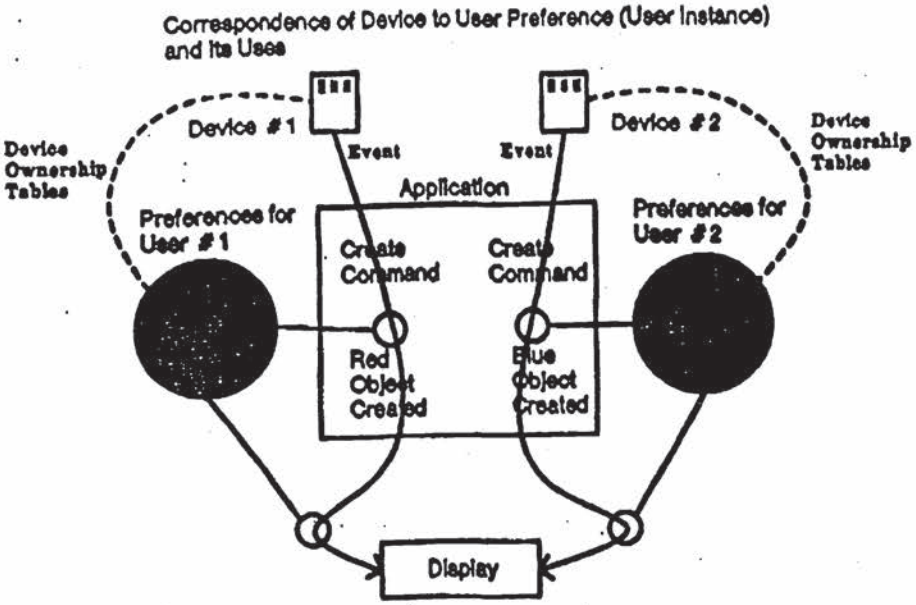


Fig. 25

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(D/92142)

Delivering Input and Refreshing the Display in the Presence of Multiple Users and Multiple Applications

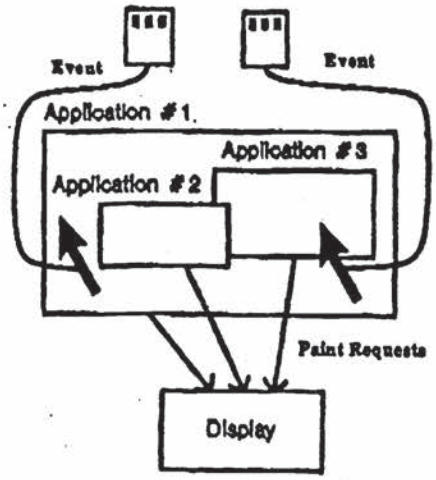

Fig. 26

XEROX

Xerox Corporation
Xerox Square 20A
Rochester, New York 14644
716-427-5400

Office of General Counsel

PATENTAPPLICATION
Attorney Docket D/XRX-134 (D/92142)

EXPRESS MAIL LABEL NUMBER: RB 948 917 915 US Date of Deposit November 10, 1992

CERTIFICATE OF EXPRESS MAILING

I hereby certify that the following paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231

#2

Thomas M. Webster

11/10/92
Date

INFORMATION DISCLOSURE STATEMENT TRANSMITTAL LETTER

In re application of: **Eric A. Bier**

Serial Number	Filing Date	Examiner	Group Art Unit
Not Yet Assigned	**November 10, 1992**	**Not Yet Assigned**	**Not Yet Assigned**

Title: **Method and Apparatus for Per-User Customization of Applications Shared by a Plurality of Users on a Single Display**

Commissioner of Patents and Trademarks
Washington, DC 20231

Sir:

Transmitted herewith are:

- [X] Information Disclosure Statement.
- [X] PTO-1449 with copies of listed items.
- [ ] Certification Under 37 CFR 1.97(e)(1).
- [ ] Certification Under 37 CFR 1.97(e)(2).

- [ ] Charge the Information Disclosure fee of $ 00.00 under 37 CFR 1.17(p)to Deposit Account No. 24-0025/37. Two copies of this sheet are enclosed.
- [ ] Charge the Petition fee of $ 00.00 under 37 CFR 1.17(i)(2)to Deposit Account No. 24-0025/37. Two copies of this sheet are enclosed.
- [X] Please charge any additional fees under 37 CFR 1.16,1.17 and 1.21 (but not 1.18), or credit any overpayment to Deposit Account No. 24-0025/37. Two copies of this sheet are enclosed.
- [X] This constitutes a request for any needed extension of time and an authorization to charge all fees therefor to the above deposit account, if not otherwise specifically requested.

Thomas M. Webster
Signature under Rule 10.18
Registration No. 22,814
Telephone No. 415-812-4266

Palo Alto, California
Date: November 10, 1992

#2

PATENT APPLICATION
Attorney Docket No. D/XRX-134 (D/92142)

EXPRESS MAIL LABEL NUMBER: RB 948 917 915 US Date of Deposit: November 10, 1992

CERTIFICATE OF EXPRESS MAILING

I hereby certify that the following paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to:
Commissioner of Patents and Trademarks, Washington, D. C. 20231

Thomas M. Webster — Date 11/10/92

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Eric A. Bier
Application No.: Not Yet Assigned — **Group Art Unit: Not Yet Assigned**
Filed: November 10, 1992 — Examiner: Not Yet Assigned
Title: Method and Apparatus for Per-User Customization of Applications Shared by a Plurality of Users on a Single Display

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Sir:

INFORMATION DISCLOSURE STATEMENT

The Bier et al. paper that is identified on the attached PTO-1449 is incorporated by reference in the above application.

Respectfully submitted,

Thomas M. Webster
Attorney For Applicant
Registration No. 22,814
Phone: 415-812-4266

Palo Alto, California
November 10, 1992

2317 23C St-030 10-18-93 GP2306 #3

PATENT APPLICATION

Docket No.: XRX-134 (D/92142)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

EX12 - BARRY LANCE

In re Application of:	Eric A. Bier
Serial No.:	07/974,044
Filing Date:	November 10, 1992
Title:	**METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY**
Group Art Unit:	2306

RECEIVED
OCT 1 5 1993
GROUP 2300

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

Sir:

Enclosed is an Information Disclosure Citation in Application form and a copy of each document listed herein.

The Examiner is requested to consider the enclosed document, make them of record, and indicate his consideration of the documents by initialing the enclosed Citation form adjacent the citation of each document.

Please return a copy of the initialed Citation form to the applicant's undersigned Attorney.

Respectfully submitted,

Date: 10/5/93

Daniel M. Rosen
Reg. No. 22,505
ROSEN, DAINOW & JACOBS
489 Fifth Avenue
New York, New York 10017
(212) 692-7000

JO:hc
encls.
XRX\134\001.xrx.19

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address : COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
07/974,044	11/10/92	BIER E	XRX-134-(D/9

EXAMINER	
BARRY,L	

B3M1/0203

ROSEN, DAINOW & JACOBS
489 FIFTH AVENUE
NEW YORK, NY 10017

ART UNIT	PAPER NUMBER
2317	4

DATE MAILED: 02/03/95

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 11/10/93 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 0 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.
2. ☒ Notice re Patent Drawing, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449. X 2
4. ☒ Notice of Informal Patent Application, Form PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☒ Claims 1-7 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-7 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☒ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).
12. ☐ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be 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.
14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 9-89)

Part III DETAILED ACTION

A. Specification

A1. The applicant's cooperation is requested in providing the serial number and status of the related application. (Specification, p. 1, l. 11)

A2. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort should be made to prevent their use in any manner which might adversely affect their validity as trademarks. More specifically, trademarks should be capitalized and placed between ~~parenthesis~~ quotation marks wherever they appear and be accompanied by the generic terminology. M.P.E.P. § 608.01(v) The use of what is suspected to be a trademark, viz., "LIVEBOARD" (Specification, p. 1, ll. 20-21), has been noted in this application. Cooperation is requested, moreover, in identifying any other trademarks and in capitalizing, placing between parenthesis, and accompanying them by the generic terminology.

A3. The applicant has attempted to incorporate what appears to be essential subject matter, i.e., material that prevails over the specification in the event of inconsistencies.

(Specification, p. 32A) This attempted incorporation of essential material by reference to a publication is improper. The applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or applicant's attorney or agent, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. *In re Hawkins*, 486 F.2d 569, 179 USPQ 157; *In re Hawkins*, 486 F.2d 579, 179 USPQ 163; *In re Hawkins*, 486 F.2d 577, 179 USPQ 167.

B. Claims

B1. The second paragraph of 35 U.S.C. § 112 requires that the specification conclude "with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."[1] This paragraph forms the basis for all indefiniteness rejections in this Office action and any future Office actions.

B2. Claims 3-6 are rejected under 35 U.S.C. § 112, ¶ 2, as failing to point-out particularly and claim distinctly the subject matter regarded as the invention. In claim 3, "said

[1]*See also* 37 C.F.R. § 1.75(a).

means for updating said device ownership table" is a *non sequitur* because the means and table are not specified in claim 1. The applicant may correct this error by incorporating these features into claim 1.

B3. The following is a quotation of the appropriate paragraph of 35 U.S.C. § 102 that forms the basis for the rejections made under this section in this Office action.

> A person shall be entitled to a patent unless --
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

B4. Claims 1-7 are rejected under 35 U.S.C. § 102(a) as being anticipated by Bier, E.A., and Freeman, S. "MMM: A User Interface Architecture for Shared Editors on a Single Screen." *Proceedings of the ACM Symposium on User Interface Software and Technology* (Nov. 11-13, 1991), p. 79 (hereinafter Bier & Freeman).

Regarding claims 1 and 7, Brier & Freeman discloses a plurality of input devices (¶ 1, multiple pointing devices), registering means (fig. 2), linking means (¶ 3.4, Per-User Commands, Modes, and Preferences), and translating means (¶¶ 4.2-4.3)

Regarding claim 2, Brier & Freeman discloses a device ownership table and updating means (¶ 1 (inherent disclosure)).

Regarding claim 3, Brier & Freeman discloses an updating process (¶ 1 (inherent disclosure)).

Regarding claim 4, Brier & Freeman discloses a feedback mode (¶ 3.7).

Regarding claim 5, Brier & Freeman discloses a color monitor and distinguishing feedback modes by color (¶ 3.7).

Regarding claim 6, Brier & Freeman discloses a color monitor and distinguishing feedback modes by spatial distinctness (fig. 7(B) depicts areas spatially distinguished by boxes).

Brier & Freeman, therefore, anticipates the invention as set forth in claims 1-7.

B5. The copy of the Bier & Freeman reference itself does not indicate a date. The applicant's cooperation is requested to document the date indicated on his Information Disclosure Statement (Paper 2).

B6. The following is a quotation of 35 U.S.C. § 103, which forms the basis for all obviousness rejections set forth in this Office action and any future Office actions.

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

B7. Claims 1-7 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,337,407 (Bates) in view of U.S. Patent No. 5,157,384 (Greanias) further in view of U.S. Patent No. 5,319,747 (Gerrissen).

Regarding claims 1 and 7, Bates discloses a plurality of input devices (80), registering means (col. 6, l. 54, "log on"), but does not disclose expressly (1) linking means and (2) translating means.

First, Greanias discloses linking means (101). A person of ordinary skill in the art would have been motivated to employ Greanias in Bates (Bates-Greanias) in order to improve customization because Greanias discloses allowing different users, such as those of Bates, to construct different user interfaces to accommodate individual preferences in inputting data. (Greanias, col. 3, ll. 45-48)

Second, Gerrissen discloses translating means (claim 4). A person of ordinary skill in the art would have been motivated to employ Gerrissen in Bates-Greanias in order to improve performance because Gerrissen discloses faster and less tiresome interaction between a user and a system (Gerrissen, col. 1, ll. 55-63), such as that of Bates-Greanias. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Gerrissen with Bates-Greanias (Bates-Greanias-Gerrissen) to obtain the invention a specified in claims 1 and 7.

Regarding claim 2, Bates-Greanias-Gerrissen discloses a device ownership table and updating means (Greanias, 101, 107, col. 10, ll. 8-9).

Regarding claim 3, Bates-Greanias-Gerrissen discloses an updating process (Greanias, 101, 107, col. 10, ll. 8-9 (inherent disclosure)).

Regarding claim 4, Bates-Greanias-Gerrissen discloses a feedback mode (Bates, col. 6, ll. 53-54, col. 7, ll. 16-18).

Regarding claim 5, Bates-Greanias-Gerrissen discloses a color monitor and distinguishing feedback modes by color (Bates, col. 5, ll. 10-28).

Regarding claim 6, Bates-Greanias-Gerrissen discloses a color monitor and distinguishing feedback modes by spatial distinctness (Bates, col. 5, ll. 29-46).

C. Conclusion

C1. The references made of record but not relied upon in a rejection are germane to the claimed invention.

C2. All general inquiries including those relating to the status of patent applications and the receipt of mailings should be

directed to the receptionist of Group 2300 whose telephone number is (703) 305-9600. The Patent Examiner's extension in 9654. The extension of his supervisor, Thomas Lee, is 9717.

Lance Leonard Barry
Patent Examiner
January 26, 1995

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-92) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO.	GROUP ART UNIT	ATTACHMENT TO PAPER NUMBER
NOTICE OF REFERENCES CITED	07/974,044	2317	4
	APPLICANT(S) BIER		

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
	A	5337407	8-1994	BATES ET AL	395	153	
	B	5319747	6-1994	GERRISSEN ET AL	395	155	
	C	5287514	2-1994	GRAM	395	700	
	D	5220675	6-1993	PADAWER ET AL	395	400	
	E	5179700	1-1993	AIHARA ET AL	395	650	
	F	5115501	5-1992	KERR	395	600	
	G	5369778	11-1994	SAN SOUCIE ET AL	395	800	
	H	5136694	8-1992	BELT ET AL	395	~~275~~ 887	
	I	4727478	2-1988	ENDFIELD ET AL	395	~~275~~ 887	
	J	4323891	4-1982	AKASHI	340	709	
	K	4064560	12-1977	BAXTER	341	22	

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG	PERTINENT PP. SPEC.
	L								
	M								
	N								
	O								
	P								
	Q								

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

R	
S	
T	
U	

EXAMINER	DATE
LANCE LEONARD BARRY	11/26/95

* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05 (a).)

1 OF 2 #2

FORM PTO-1449 — DEPARTMENT OF COMMERCE — PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO: D/92142 - XRX-134

Serial NO.: Not Yet Assigned 07/974,644

APPLICANT: Eric A. Bier

FILING DATE: November 10, 1992

GROUP: 2310 Not Yet Assigned

MAIL ROOM NOV 10 1992 PAT. & TRADEMARK OFFICE

LIST OF PRIOR ART CITED BY APPLICANT

(USE SEVERAL SHEETS IF NECESSARY)

Sheet 1 of 1

U.S. PATENT DOCUMENT

*EX'R INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
	AL							
	AM							
	AN							
	AO							
	AP							

OTHER DOCUMENTS (*Including Author, Title, Date, Pertinent Pages, Etc.*)

MB	AR	Bier, E. A. et al. "MMM: A User Interface Architecture for Shared Editors on a Single Screen," Proceedings of the ACM Symposium on User Interface Software and Technology, Nov, 11-13, 1991, p. 79.
	AS	
	AT	

EXAMINER: LANCE LEONARD BARRY

DATE CONSIDERED: 1/25/95

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

MAIL ROOM
OCT 7 1993
PAT. & TRADEMARK OFF.

2 OF 2

#3

Sheet 1 of 1

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number XRX-134	Serial Number 07/974,044
	Applicant: Eric A. Bier	
	Filing Date 11/10/92	Group Art Unit ~~2306~~ 2317

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE
[illegible]	5,157,384	10/20/92	Greanias et al.	340	706	

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANS-LATION YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

EXAMINER Lance Leonard Barry DATE CONSIDERED 1/26/95

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

3/92

PTO FORM 948
(REV. 7-92)

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

ATTACHMENT TO PAPER NUMBER 4

APPLICATION NUMBER 974044

GROUP 2317

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

THE PTO DRAFTSMEN REVIEW ALL ORIGINALLY FILED DRAWINGS REGARDLESS OF WHETHER THEY WERE DESIGNATED AS INFORMAL OR FORMAL. ADDITIONALLY, THE PATENT EXAMINER WILL ALSO REVIEW THE DRAWINGS FOR COMPLIANCE WITH THE REGULATIONS.

The drawings filed 11/10/92

A. ☐ are approved by the draftsperson.

B. ☒ are objected to by the draftsperson under 37 CFR 1.84 for the reason(s) checked below. The examiner will require submission of new, corrected drawings at the appropriate time. Corrected drawings must be submitted according to the instructions listed on the back of this Notice.

1. Paper and ink. 37 CFR 1.84(a)

☐ Sheet(s)_____ Poor.

2. Size of Sheet and Margins. 37 CFR 1.84(b)

Acceptable Paper Sizes and Margins

Margin	Paper Size: 8 1/2 by 14 inches	8 1/2 by 13 inches	DIN size A4 21 by 29.7 cm.
Top	2 inches	1 inch	2.5 cm.
Left	1/4 inch	1/4 inch	2.5 cm.
Right	1/4 inch	1/4 inch	1.5 cm.
Bottom	1/4 inch	1/4 inch	1.0 cm.

☒ Proper Size Paper Required. All Sheets Must be Same Size. Sheet(s) 1-13

☐ Proper Margins Required. Sheet(s) _____

☐ TOP ☐ RIGHT

☐ LEFT ☐ BOTTOM

3. Character of Lines. 37 CFR 1.84(c)

☒ Lines Pale or Rough and Blurred. Fig(s) 1-26

☒ Solid Black Shading Not Allowed. Fig(s) 2-13, 18, 22, 23, 25

4. ☐ Photographs Not Approved.

_____

5. Hatching and Shading. 37 CFR 1.84(d)

☐ Shade Lines are Required. Fig(s) _____

☐ Criss-Cross Hatching Not Allowed. Fig(s) _____

☐ Double Line Hatching Not Allowed. Fig(s) _____

☐ Parts in Section Must be Hatched. Fig(s) _____

6. Reference Characters. 37 CFR 1.84(f) avoid

☒ Reference Characters Poor or Incorrectly Sized. Fig(s) 1-26

☐ Reference Characters Placed Incorrectly. Fig(s) _____

7. Views. 37 CFR 1.84(i) & (j)

☐ Figures Must be Numbered Properly.

☐ Figures Must Not be Connected. Fig(s) _____

8. ☒ Identification of Drawings. 37 CFR 1.84(1) Extraneous Matter or Copy Machine Marks Not Allowed. Fig(s) 1-26

9. ☐ Changes Not Completed from Prior PTO-948 dated _____

☒ Comments: - Descriptive matter dy (Fig 16, 20, 21, 24, 25, 26)

Telephone inquires concerning this review should be directed to the Chief Draftsperson at telephone number (703) 305-8404.

WS — Reviewing Draftsperson

12/3/92 — Date

Note: Any objection to the drawings made by the examiner will be communicated separately in an office action.

PTO Copy

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY DOCKET NO./TITLE

DATE MAILED:

NOTICE OF INFORMAL APPLICATION

(Attachment to Office Action)

This application does not conform with the rules governing applications for the reason(s) checked below. The period within which to correct these requirements and avoid abandonment is set in the accompanying Office action.

A. A new oath or declaration, identifying this application by the application number and filing date is required. The oath or declaration does not comply with 37 CFR 1.63 in that it:

1. ☐ does not identify the city and state or foreign country of residence of each inventor.
2. ☐ does not identify the citizenship of each inventor.
3. ☐ does not state whether the inventor is a sole or joint inventor.
4. ☐ does not state that the person making the oath or declaration:
   a. ☐ has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration.
   b. ☐ believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.
   c. ☐ acknowledges the duty to disclose information which is material to the examination of the application in accordance with 37 CFR 1.56(a).
5. ☐ does not identify the foreign application for patent or inventor's certificate on which priority is claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application serial number, country, day, month, and year of its filing.
6. ☐ does not state that the person making the oath or declaration acknowledges the duty to disclose material information as defined in 37 CFR 1.56(a) which occurred between the filing date of the prior application and filing date of the continuation-in-part application which discloses and claims subject matter in addition to that disclosed in the prior application (37 CFR 1.63(d)).
7. ☐ does not include the date of execution.
8. ☐ does not use permanent ink, or its equivalent in quality, as required under 37 CFR 1.52(a).
9. ☐ contains non-initialed alterations (See 37 CFR 1.52(c)).
10. ☑ Other: FIGURE 5 NOT LABELED

B. Applicant is required to provide:

1. ☐ A statement signed by applicant giving his or her complete name. A full name must include at least one given name without abbreviation as required by 37 CFR 1.41(a).
2. ☐ Proof of authority of the legal representative under 37 CFR 1.44.
3. ☐ An abstract in compliance with 37 CFR 1.72(b).
4. ☐ A statement signed by applicant giving his or her complete post office address (37 CFR 1.33(a)).
5. ☐ A copy of the specification written, typed, or printed in permanent ink, or its equivalent in quality as required by 37 CFR 1.52(a).
6. ☐ Other:

FORM PTO-152 (REV. 6-90)

#5

PATENT APPLICATION
DOCKET NO. 010743/134(XRX)

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Application of: ERIC A. BIER

Serial No.: 07/974,044

Filing Date: November 10, 1992

RECEIVED
1995
GROUP 2800

For: **METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY**

Examiner: Barry, L. Group Art Unit: 2317

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231

LETTER TO CHIEF DRAFTSMAN

Sir:

Submitted herewith are thirteen (13) sheets of formal drawings to be filed in the above-identified application.

Respectfully submitted,

J. David Dainow, Reg. 22,959
Attorney for Applicant
ROSEN, DAINOW & JACOBS
489 Fifth Avenue
New York, N.Y. 10017
(212) 692-7000

JO:sz
encls.

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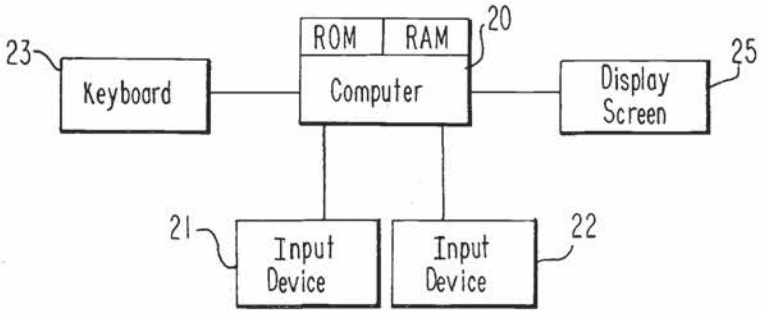
07/974 044

5561811

FIG. 1



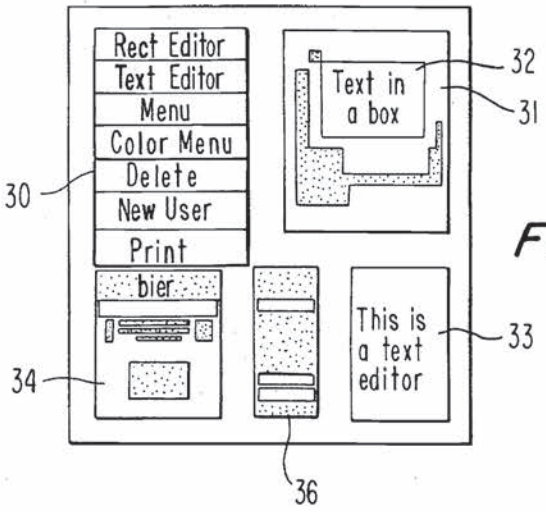

Rect Editor
Text Editor
Menu
Color Menu
Delete
New User
Print
30
bier
34
Text in a box
32
31
This is a text editor
33
36

FIG.2

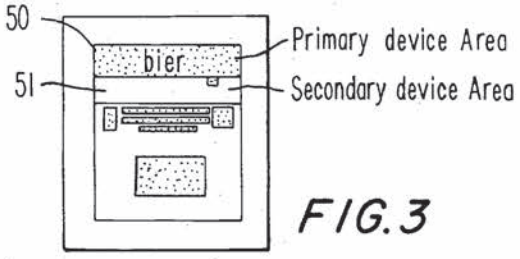

50
bier
51
Primary device Area
Secondary device Area

FIG.3

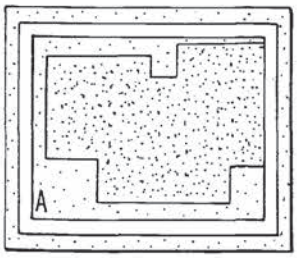


FIG. 4

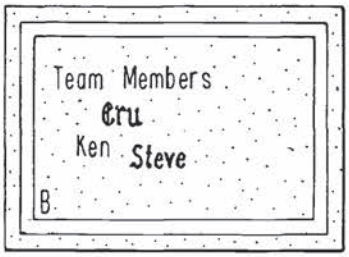


FIG. 5

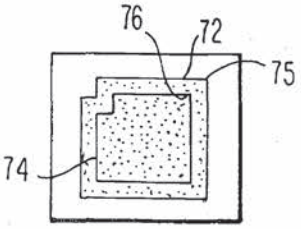


FIG. 10

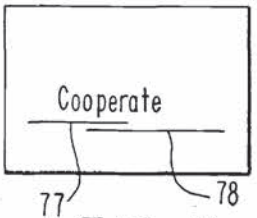


FIG. 11

FIG. 12

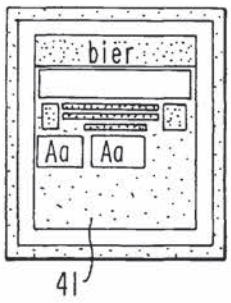


FIG. 13

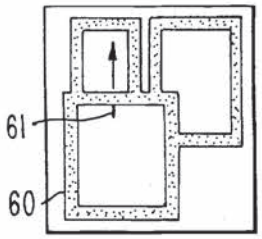


FIG. 6

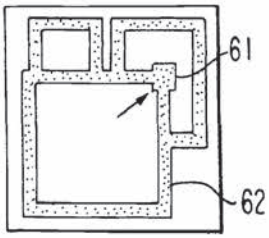


FIG. 7

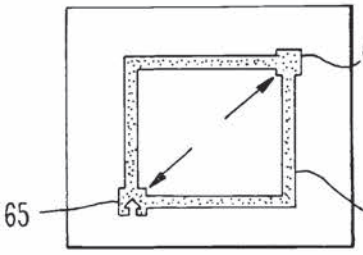


FIG. 8

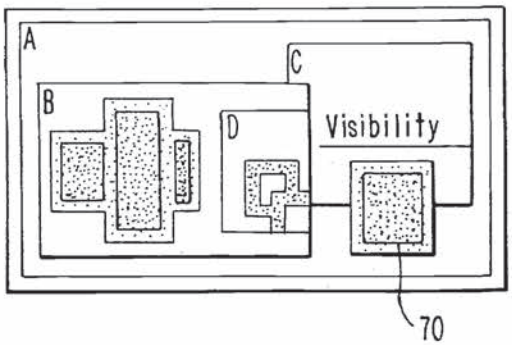
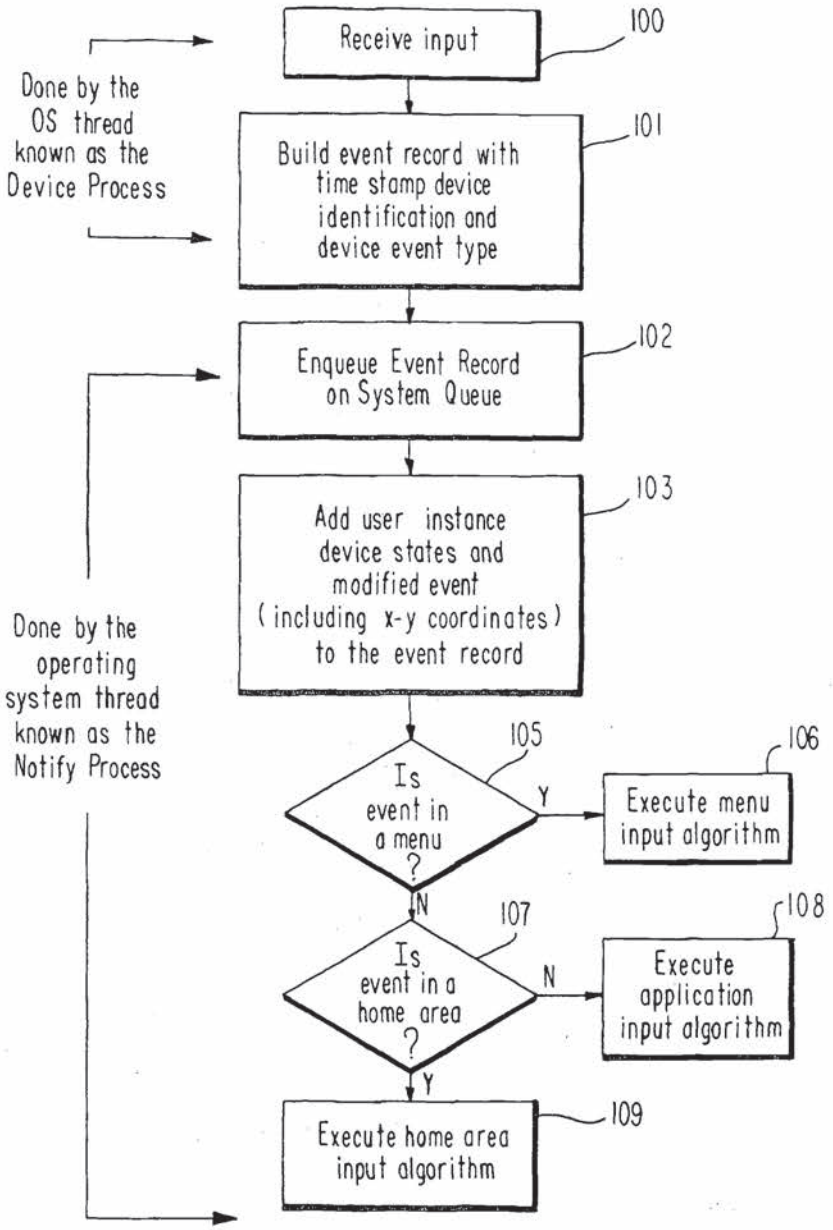


FIG. 9

FIG. 14


Receive input
100
Done by the OS thread known as the Device Process
Build event record with time stamp device identification and device event type
101
Enqueue Event Record on System Queue
102
Add user instance device states and modified event (including x-y coordinates) to the event record
103
Done by the operating system thread known as the Notify Process
Is event in a menu ?
105
Y
Execute menu input algorithm
106
N
Is event in a home area ?
107
N
Execute application input algorithm
108
Y
Execute home area input algorithm
109

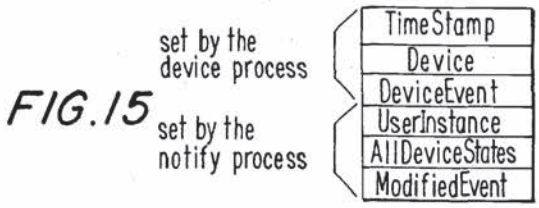


FIG.15

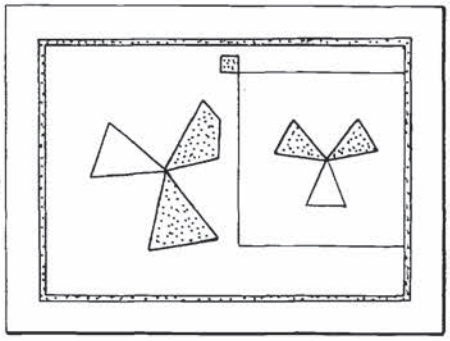


FIG.18

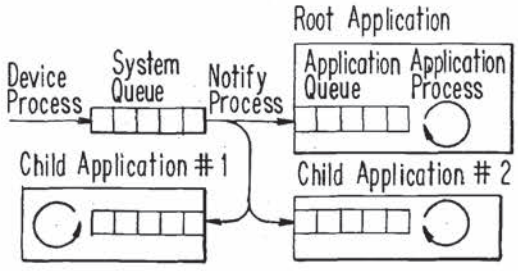
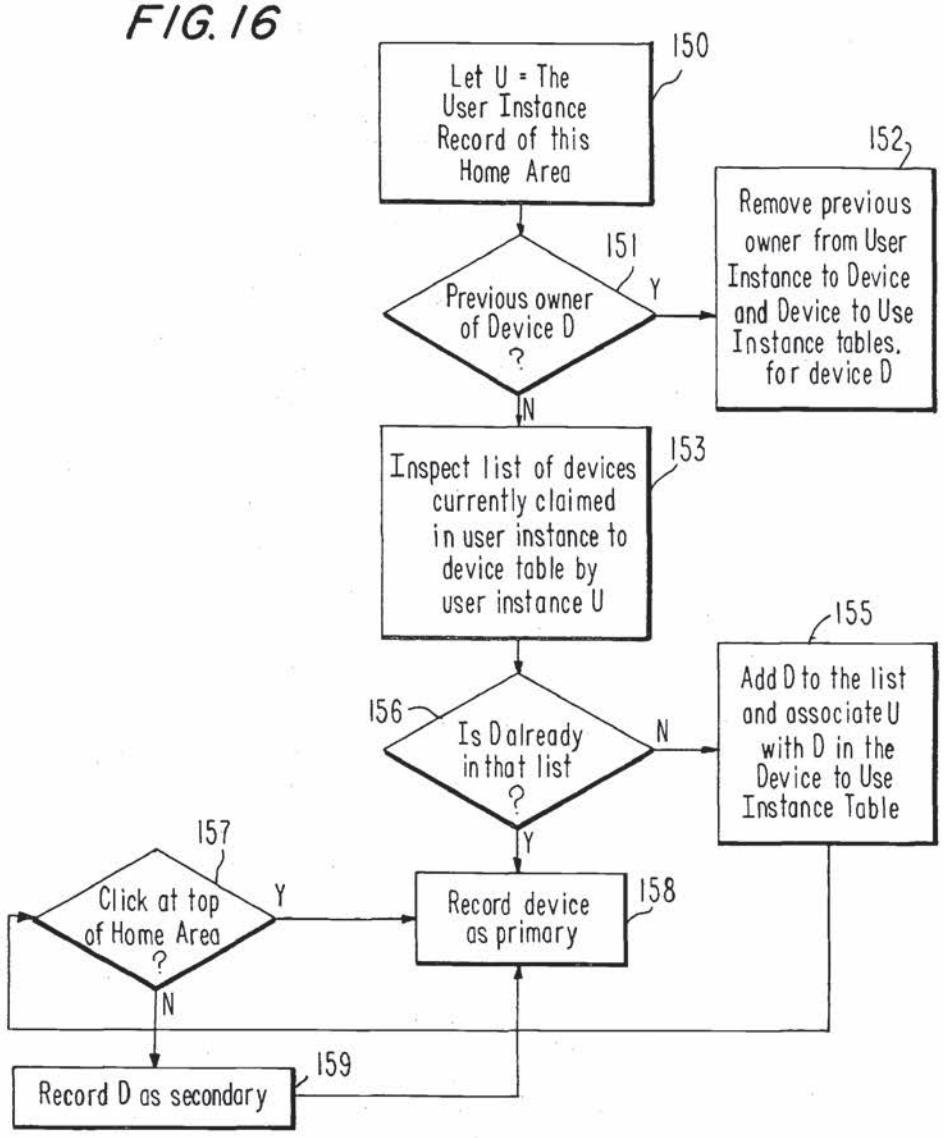


FIG.17

FIG. 16



O.G. FILE
CLASS SUBCLASS
DRAFTSMAN

FIG. 19

FIG. 23

FIG. 22

FIG. 20

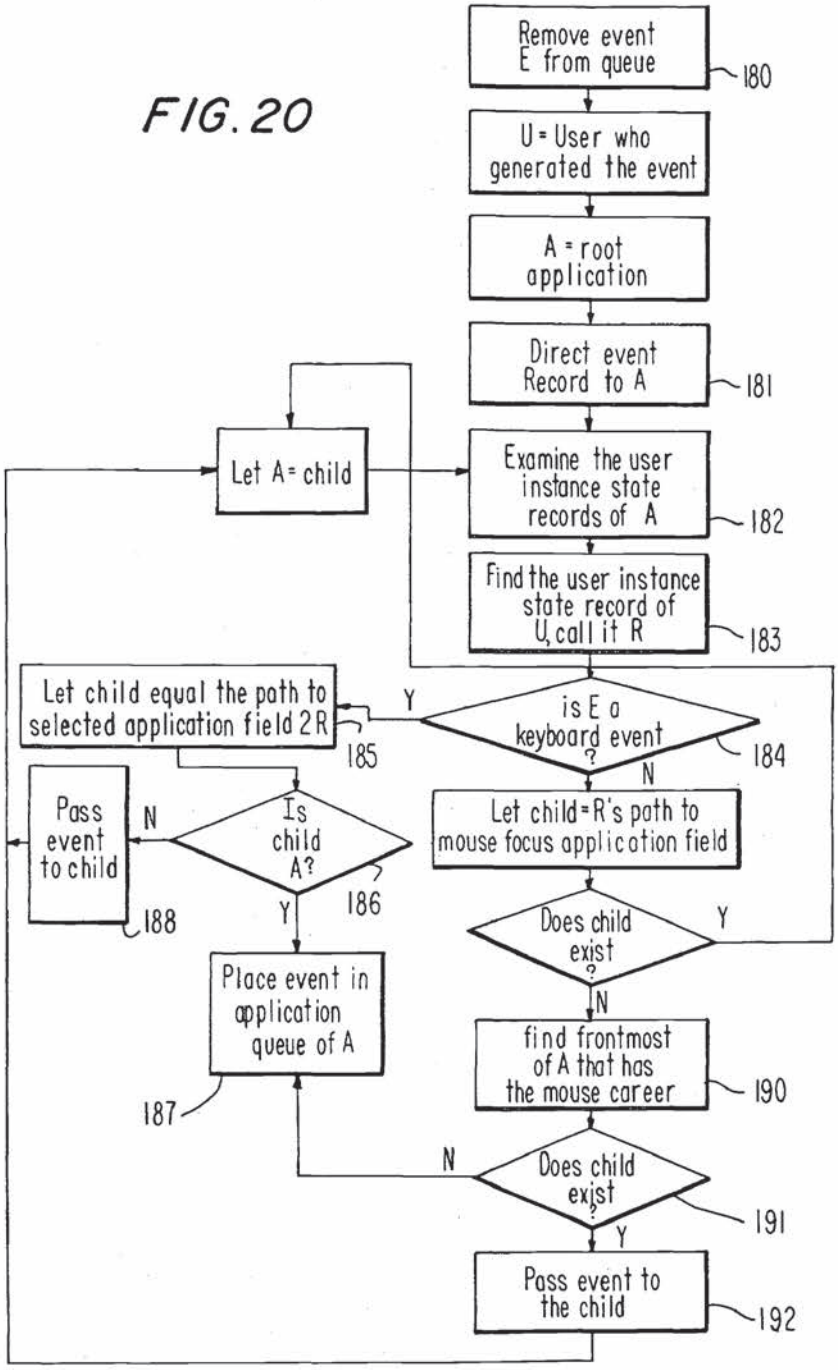

Remove event E from queue
180
U = User who generated the event
A = root application
Direct event Record to A
181
Let A = child
Examine the user instance state records of A
182
Find the user instance state record of U, call it R
183
Let child equal the path to selected application field 2R
185
Y
is E a keyboard event ?
184
N
Pass event to child
N
Is child A?
186
Let child = R's path to mouse focus application field
188
Y
Does child exist ?
Y
Place event in application queue of A
187
N
find frontmost of A that has the mouse career
190
N
Does child exist ?
191
Y
Pass event to the child
192

FIG. 21

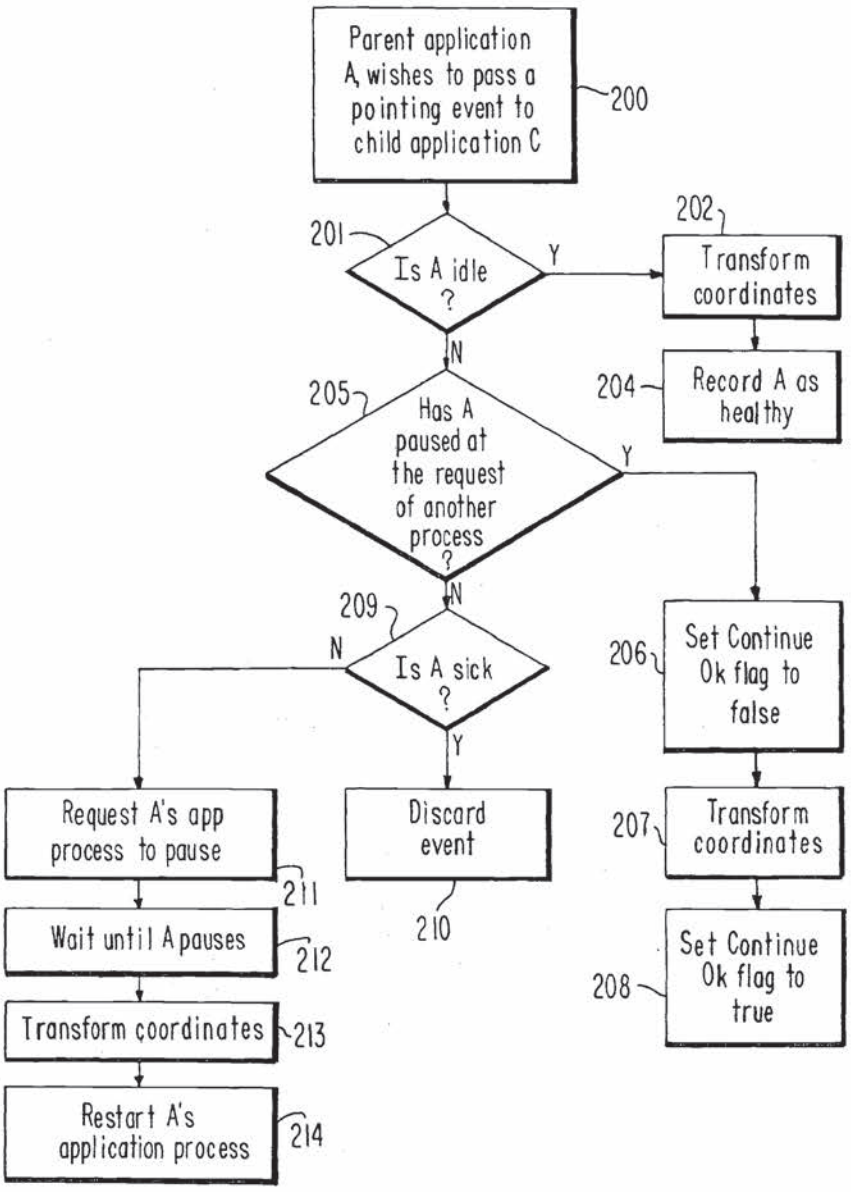
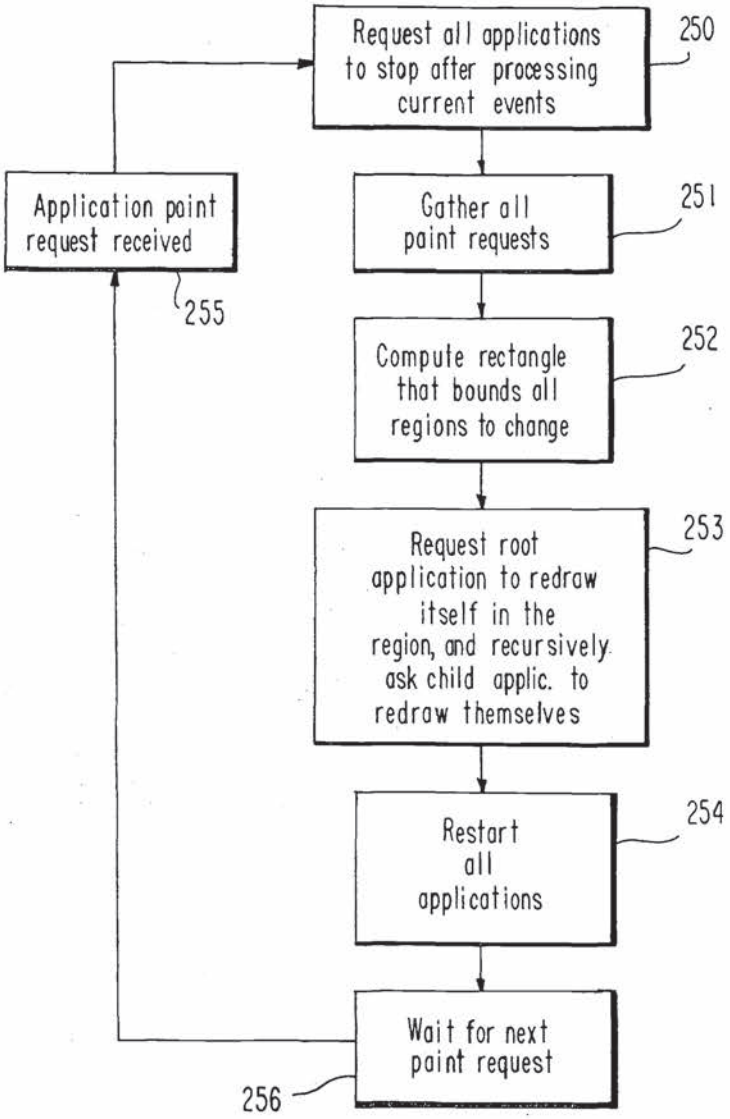

Parent application A wishes to pass a pointing event to child application C
200
201
Is A idle ?
Y
202
Transform coordinates
N
204
Record A as healthy
205
Has A paused at the request of another process ?
Y
N
209
Is A sick ?
N
Y
206
Set Continue Ok flag to false
207
Transform coordinates
208
Set Continue Ok flag to true
Request A's app process to pause
211
Wait until A pauses
212
Transform coordinates
213
Restart A's application process
214
Discard event
210

FIG. 24



O.G. FIG. GLASS BUBBLES DRAFTSMAN

Correspondence of Device to User Preference (User instance)
and its Uses
Device Ownership Tables
Device # 1
Event
Preferences for User # 1
Application
Create Command
Red Object Created
Device Ownership Tables
Device # 2
Event
Preferences for User # 2
Create Command
Blue Object Created
Display

FIG. 25

07/974 044

O.G. FIG.
CLASS SUBCLASS
BRAFTSMAN

Delivering input and Refreshing the Display in the Presence of Multipe Users and Multiple Applications

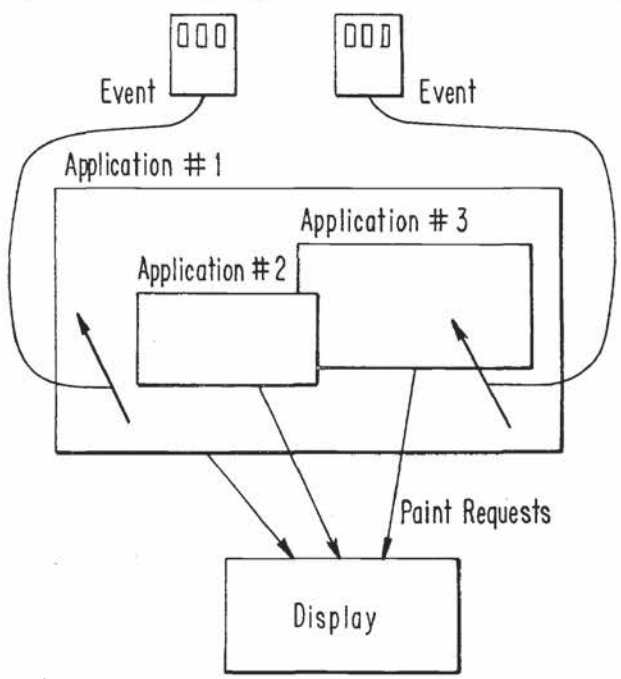


FIG. 26

#6

PATENT APPLICATION
DOCKET: 010743/134(XRX)
D/92142

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Application of: Eric A. Bier

Serial No.: 07/974,044

Filing Date: November 10, 1992

For: **METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY**

Examiner: L. Barry Group Art Unit: 2317

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231

DECLARATION

Sir:

I, Eric A. Bier, hereby declare and state:

1. I am the applicant of the above-identified application.

2. I am the same Eric A. Bier listed as the lead author of the paper entitled "MMM: a user interface architecture for shared editors on a single screen", which was published in *Proceedings of the ACM SIGGRAPH Symposium on User Interface Software and Technology* (South Carolina, November), ACM, 1991, pages 79-86. The Symposium took place at Hilton Head, S. Carolina, on Nov. 11-13, 1991.

3. I am the sole inventor of the subject matter described and claimed in the above application.

4. Steve Freeman, who is listed as the second author of the paper, is not an inventor of any of the claimed subject matter of the above application.

5. At the time the invention was made, I was employed as a full time employee at Xerox PARC. Steve Freeman was brought in as a summer student to work at Xerox PARC under my direction, control and supervision. Steve Freeman did not contribute to any of the concepts disclosed in the above patent application or the paper. Steve Freeman's sole contribution to the paper was to write a program under my direction and supervision to implement the concepts invented solely by me.

5. 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.

5/1/95
Date

Eric Bier
Eric A. Bier

JUN 2 1995

2317

#7/A

PATENT APPLICATION
DOCKET NO. 010743/134(XRX)

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

RECEIVED
JUN 15 1995
GROUP 2300

6-15-95

In re Application of: ERIC A. BIER

Serial No.: 07/974,044

Filing Date: November 10, 1992

For: **METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY**

Examiner: Barry, L. Group Art Unit: 2317

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231

AMENDMENT

Sir:

In response to the Office Action dated February 3, 1995, please amend as follows:

In the Specification

Page 1, line 11, after "No." insert --07/974,036--;

line 21, before "Liveboard" insert --product known as--; after "Liveboard" insert --which is described in Proceedings of CHI, 92, ACM Conference on Human Factors in Computing Systems, May 3-7, 1992, Monterey, CA, pgs. 599-607.--.

Page 8, line 10, delete "form" and insert --from--;

Page 11, line 22, after "cursor" insert --61--; after "rectangle" insert --60--;

line 26, after "cursor" insert --61--.

Nintendo Exhibit 1005
Page 95 of 134

Page 12, line 1, after "rectangle" insert --62--;

line 12, after "users" insert --via cursors 64, 65--;

line 13, after "rectangle" insert --66--;

line 26, after "string." insert the following as a paragraph --In Figs. 6-8, the arrows indicate cursor motion; they are not visible on the screen.--.

Page 13, line 8, after "editors" insert --A, B and D,--; after "editor" insert --C--;

line 9, after "rectangle" insert --70--;

line 11, after "B." insert --Each child application occupies a display sub-region of its parent's display region. Thus, application A is the parent of child applications B and C, and application B is the parent of child application D.--

Page 14, line 1, after "rectangle" insert--72, 74--;

line 2, after "corner" insert --75, 76--;

line 4, after "underline" insert --77, 78--.

Page 17, line 8, change "150" to --100--.

Page 18, line 26, delete "Home Area processing, at block 109" and insert --application input algorithm at block 108.--

Page 21, line 6, change "156, 157, 158" to read --157, 158, 159--.

Page 24, line 25, delete "eventss" and insert --events--;

line 26, delete "eventss" and insert --events--.

Page 29, line 11, after "discarded" insert --210--;

line 13, after "request" insert --211--;

line 16, after "translated" insert --213--;

line 18, after "restarted" insert --214--.

Page 31, line 10, after "screen" insert --255--.

Page 32, line 10, after "Request" insert --256--;

line 17, after "all." insert as a new paragraph --Fig. 25 illustrates the involvement of user preferences in the processing of input events from two different users, both when an application is constructing a command and when the display is being updated; and Fig. 26 illustrates three applications that are receiving input from two input devices and updating a single display.--.

Page 32A, line 4, delete "In the event of any inconsistencies between the foregoing";

line 5, delete in its entirety.

In the Claims

Claim 1, line 4, before "shared" insert --single--.

Claim 3, line 1, change "1" to --2--.

Claim 4, line 4, before "shared" insert --single--.

REMARKS

In response to Form PTO-152 attached to the application, enclosed herewith is a copy of original sheet 3 with Fig. 5 labeled in red ink. Apparently, the "5" was truncated when the sheet was copied.

Formal drawings are also herewith supplied together with a letter to the Chief Draftsman.

The specification has been amended to update the reference to the copending application, and to reference a publication that described the Liveboard, a product of Xerox known by that name.

In addition, the reference to the "MMM" paper as prevailing in the event of an inconsistency has been deleted, as the material is not believed essential. However, it is believed that the reference should be retained as it does provide additional background for the reader.

Further, minor corrections have been made throughout the specification for consistency with the drawings. For completeness sake, it is noted that reference numerals have been added to the drawings to identify certain features, and the reference numerals added to the specification by this Amendment. These changes had been requested by the Examiner of the copending application and the formal drawings filed in the latter included those reference numerals. Since the additions also help clarify the description in this case, which happens to use the same set of drawings, it was considered appropriate to make the same changes herein. It is assumed that the Examiner would have no objection.

With respect to the rejection under § 112, the reference in claim 3 has been changed to claim 2 which specifies the table and the means.

Submitted herewith is a Declaration by the Applicant declaring that the cited "MMM" paper, jointly authored by the applicant and Steve Freeman, discloses subject matter that is the sole invention of the applicant, and that Steve Freeman did not contribute to any of the subject matter claimed in the above application.

Since the "MMM" paper was published less than 1 year before the filing date of the instant application, the "MMM" paper is not prior art to the claims of the above application under any subsection of § 102.

Accordingly, withdrawal of the rejection of the claims on the "MMM" paper is respectfully solicited.

For completeness' sake, the full citation of the "MMM" paper is given in the applicant's declaration. The "MMM" paper was published during the Symposium.

With respect to the rejection under § 103 on Bates in view of Greanias in view of Gerrissen, the following should be noted.

As is clear from the title and the description at pgs. 1-3, the invention relates to computer systems in which plural users share the same display and can simultaneously input events from respective input devices. This has been further clarified by amending claims 1-7 to recite that a single shared display for concurrent use by multiple users is present. This is the feature that is plainly absent from the cited art.

None of Bates, Greanias or Gerrissen provide a system that allows several users to share a single screen while simultaneously inputting events.

Thus the Bates system is a system with multiple computers. Each user has his own computer with its own screen, which he or she can log into. See, for example, col. 1, ls. 61-64; col. 2, ls. 66-68, col. 4, ls. 32-49.

In contrast, the Greanias system describes a single user system; hence it needs only one user profile at a time. Greanias does not link different input devices simultaneously used by different users.

Nintendo Exhibit 1005
Page 99 of 134

Gerissen is, like Bates, a networked system with plural workstations, but no shared display. See, for instance, col. 4, ls. 35-44.

In applying this art, the Examiner applies the disclosure in Greanias, col. 3, ls. 45-48 to Bates. Why?

Greanias describes a single user system, used by a single user at a time, never by plural users at the same time. At any one time the display visible to the single user reflects only that user's commands.

Bates describes a networked system each with its own user having his own display for sharing objects. The network allows plural users at a time into the system. It is not seen what would motivate the skilled artisan to combine these teachings.

But even if combined, the result, arguendo, would be: a network of computers, each with its own display, with the Greanias invention used to allow several users to use the same workstation but at different times. There still would be no teaching in this combination of plural users simultaneously inputting events to the same system, with the results displayed on a single shared display.

In accordance with the present invention, to achieve that result needs the mapping of input devices to individual users, the mapping of input events to individual input devices, the mapping of user's preferences to individual users and to their linked input devices, all in connection with the current application.

Nintendo Exhibit 1005
Page 100 of 134

Greanias does not show or suggest this combination, because never at any instant does Greanias contemplate more than one user at a time of a workstation. Hence, Greanias does not have to track, at all times, multiple user inputs from multiple input devices with respect to multiple sets of preferences.

For these reasons, it is submitted that claims 1-7 are clearly patentable over the art of record, and should be allowed.

An early allowance of the case is respectfully solicited.

Respectfully submitted,

J. David Dainow
Registration No. 22.959
ROSEN, DAINOW & JACOBS
489 Fifth Avenue
New York, N.Y. 10017
(212) 692-7000

JO:sz

Fig. 4

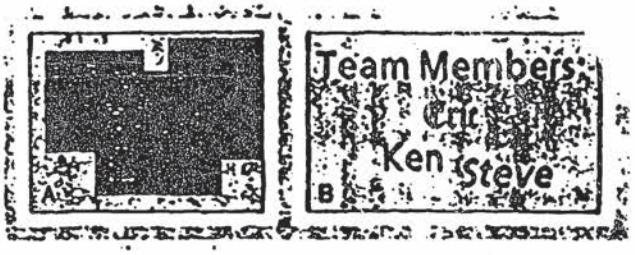


Fig. 10

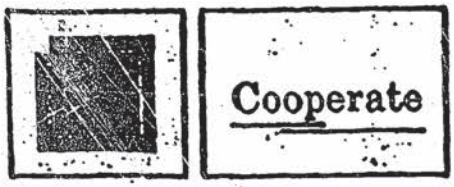


Fig. 11

Approved
JDB
6/95

Fig. 12

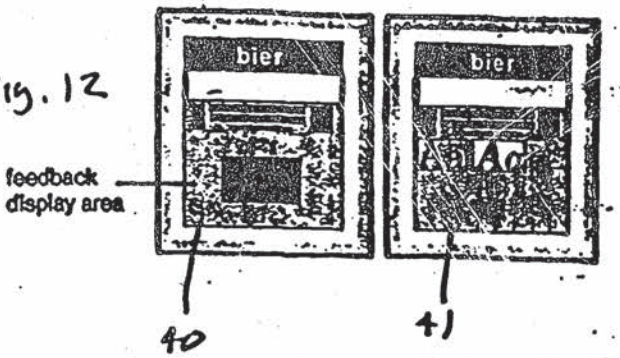


Fig. 13

#7

AMENDMENT TRANSMITTAL LETTER			Attorney Docket No. 010743/134(XRX)
Serial No 07/974,044	Filing Date November 10, 1992	Examiner Barry, L.	Group Art Unit 2317
Inventor(s) ERIC A. BIER			
Title METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SIGNLE DISPLAY			

MAIL ROOM JUN 2 1995 PAT. & TRADEMARK OFF.

RECEIVED GROUP 2300

To The Commissioner of Patents and Trademarks:

Transmitted herewith is an amendment in the above identified application.

__ Small entity status of this application under 37 CFR 1.27 has been established by a verified statement previously submitted.

__ A verified statement to establish small entity status under 37 CFR 1.9 and 1.27 is enclosed.

_X_ A _1_ month extension of time is requested. Please charge the extension fee of $110.00 to Deposit Account No. 24-0037.

__ No additional fee is required.

__ The additional fee has been calculated as shown below.

__ Other:

	Claims Remaining after amendment		Highest No. Previously paid for	Present Extra		Rate (small entity)	Additional Fee	OR	Rate	Additional Fee
Total	7	Minus	7	0		x$11 =	$		x$22 =	$0.00
Indep.	2	Minus	2	0		x$38 =	$		x$76 =	$0.00
First Presentation of Multiple Dependent Claim						x$120 =	$		x$240 =	$0.00
						Total	$	OR	Total	$0.00

_X_ Please charge my Deposit Account No. 24-0037 in the amount of $ 110.00 .
A duplicate copy of this sheet is enclosed.

__ A check in the amount of $_____ to cover the additional fee is enclosed.

_X_ The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 24-0037. A duplicate copy of this sheet is enclosed.

_X_ Any additional filing fees required under 37 CFR 1.16.
_X_ Any patent application processing fees under 37 CFR 1.17.

5-30-95
(Date)

J. David Dainow
Reg. No. 22,959
Rosen, Dainow & Jacobs
Limited Liability Partnership
489 Fifth Avenue
New York, NY 10017
(212) 692-7000

I hereby certify that this paper is being deposited on the date indicated below with the U.S. Postal Service as First Class Mail Addressed to Commissioner of Patents & Trademarks, Washington, D.C. 20231

Victor Pizzullo 5-30-95
Name Date

Victor Pizzullo
Signature

c:\winword\doc\xrx\134\019.doc.9

BC

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
07/974,044	11/10/92	BIER	XRX-134-(D/9

EXAMINER: BARRY, L

B3M1/0623

ROSEN, DAINOW & JACOBS
489 FIFTH AVENUE
NEW YORK, NY 10017

ART UNIT	PAPER NUMBER
2317	8

DATE MAILED: 06/23/95

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 5/30/95. ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 0 days from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☑ Notice of References Cited by Examiner, PTO-892.
2. ☐ Notice re Patent Drawing, PTO-948.
3. ☐ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, Form PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☑ Claims 1-7 are pending in the application.
   Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☑ Claims 1-7 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☑ The proposed additional or substitute sheet(s) of drawings, filed on 5/30/95 has (have) been ☑ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).
12. ☐ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be 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.
14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 9-89)

Part III DETAILED ACTION

A. Amendment

A1. The amendment of May 30, 1995, has been received and entered in-part as Paper 7.

A2. The requested amendment to claim 4 (Paper 7, p. 3) has not been entered because the word "shared" doesn't appear in line 4 of claim 4.

B. Specification

B1. Cooperation is requested in updating the status of the patent application referenced in the specification. (Specification, p. 1, l. 11)

B2. Page 1, l. 13, contains a misspelling, viz., "**e**ncorporated" (emphasis added).

B3. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort should be made to prevent their use in

any manner which might adversely affect their validity as trademarks. More specifically, trademarks should be capitalized and placed between quotation marks wherever they appear and be accompanied by the generic terminology. M.P.E.P. § 608.01(v) The use of the trademark "LIVEBOARD" has been noted in this application. (Specification, p. 1, l. 21) Cooperation is requested, moreover, in identifying any other trademarks and in capitalizing, placing between quotation marks, and accompanying them by the generic terminology.

C. Claims

Cl. The following is a quotation of 35 U.S.C. § 103, which forms the basis for all obviousness rejections set forth in this Office action and any future Office actions.

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the

invention was made, owned by the same person or subject to an obligation of assignment to the same person.

C2. Claims 1-7 are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,337,407 (Bates) in view of U.S. Patent No. 5,157,384 (Greanias) further in view of U.S. Patent No. 5,319,747 (Gerrissen) (collectively Bates-Greanias-Gerrissen). The details of the grounds of this rejection are incorporated herein by reference from the prior office action (Paper 4, ¶ B7).

D. Response to Remarks

D1. The remarks have been fully considered. In response to the art rejection of the claims, the applicant alleges that Bates-Greanias-Gerrissen fails to disclose "allowing several users to share a *single* screen" and "*simultaneously* inputting." (Paper 7, p. 5 (emphasis added)). This allegation is unpersuasive.

D2. First, the limitations of a *single* display and *simultaneous* input are not entitled to patentable weight. The U.S. Court of Appeals for the Federal Circuit (Federal Circuit) has stated that limitations in the preamble generally do not limit the claims.

DeGeorge v. Bernier.[1] Where the effect of a preamble is ambiguous, added the Federal Circuit, a compelling reason must exist before the language can be given weight. *DeGeorge*.[2]

In this case, the limitations of a *single* display and *simultaneous* input exist *only* in the preamble of the claims. (*See, e.g.,* claim 1, pmbl.) The body of the claims does not repeat or reference these two limitations. Applying *DeGeorge*, therefore, the adjectives "single" and "simultaneous" do not limit the claims. Nor is there any compelling reason to give the limitation weight because the language in the body of the claims, standing alone, is "clear and unambiguous."[3] The language defines entering input events (*Id.* at claim 1, l. 5). This language does not include "simultaneous" input and is not limited expressly to a "single" display. These two limitation, therefore, cannot be granted patentable weight. Accordingly, any arguments based on this limitation are void *ab initio*.

---

[1]768 F.2d 1318, 1322 n.3, 226 U.S.P.Q. 758, 761 n. 3 (Fed. Cir. 1985); *see also In re de Castelet*, 562 F.2d 1236, 1244 n.6, 195 USPQ 439, 446 n.6 (CCPA 1977).

[2]768 F.2d at 1322 n.3, 226 USPQ. at 761 n.3 (citing *Arshall v. United States*, 621 F.2d 421, 430-31, 208 USPQ 397, 406-07 (Ct. Cl. 1980).

[3]*Arshall*, 621 F.2d at 430-31, 208 USPQ at 406-07.

D3. Even if the limitations were considered, they would not overcome the art rejection because the combination discloses the limitations. The U.S. Court of Customs and Patent Appeals has held that claims are to be given their broadest reasonable interpretation during the prosecution of a patent application. *In re Pearson*.[4] Applying this standard, the claimed "single display" reads-on the single display of fig. 3 of Bates and, therefore, of Bates-Greanias-Gerrissen.[5] The claimed "simultaneous input," furthermore, reads-on the "simultaneous efforts" of Bates-Greanias-Gerrissen (Bates, col. 1, ll. 33-34).[6]

D4. Therefore, the remarks fail to overcome the aforementioned art rejections of the claims.

E. Conclusion

E1. The references made of record and not relied upon are considered pertinent to the instant disclosure. Simpson

---

[4]494 F.2d 1399, 1403, 181 USPQ 641, 645 (CCPA 1974).

[5]In addition, each display (16) in Gerrissen is a single display.

[6]In addition, Gerrissen implies simultaneous input. *See, e.g.*, col. 3, ll. 16-17 ("collective ... in a ... natural way)).

discloses simultaneous input (as represented by the first input cursor in the upper left hand corner and the second input cursor in the bottom right hand corner) to a single screen. The other reference shows that this feature pre-dates the applicant's application.

E2. **THIS ACTION IS MADE FINAL.** A reminder of the extension of time policy as set forth in 37 C.F.R. § 1.136(a) follows.

> A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE 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 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

E3. All general inquiries including those relating to the status of patent applications and the receipt of mailings should be directed to the receptionist of Group 2300 whose telephone number is (703) 305-9600. Inquiries concerning this communication or earlier communications from the Patent Examiner should be directed to Lance Leonard Barry whose extension is 9654. The Examiner can normally be reached on Monday-Thursday from 8:00 AM - 5:30 PM; he can also be reached on alternate Fridays. The

Examiner's supervisor, Thomas C. Lee, can be reached at (703) 305-9717. The facsimile numbers for the Group are (703) 305-9564 and (703) 305-9565.

Lance Leonard Barry
Patent Examiner
June 21, 1995

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP–APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-92)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO.	GROUP ART UNIT	ATTACHMENT TO PAPER NUMBER
NOTICE OF REFERENCES CITED		07/974,044	2319	8
		APPLICANT(S) BIER		

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
	A						
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
	J						
	K						

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG.	PERTINENT PP. SPEC.
	L								
	M								
	N								
	O								
	P								
	Q								

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	R	SIMPSON, A. "MASTERING WORDPERFECT 5.1 & 5.2 FOR WINDOWS" CA, SYBEX, 1993, Fig. 2.2
	S	WORDPERFECT FOR WINDOWS VERSION 5.1, WORDPERFECT CORPORATION, [redacted] APR. 30, 1992.
	T	
	U	

EXAMINER	DATE
LANCE LEONARD BARRY	6/21/95

* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05 (a).)

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95 SEP 25 AM 11:21

RECEIVED
95 SEP 26 AM 11:21

#9/B (ALE) AH 10-6-95

RESPONSE UNDER 37 CFR 1.116 - EXPEDITED PROCEDURE - EXAMINING GROUP 2317
PATENT APPLICATION
ATTORNEY DOCKET NO.: 010743/134 (XRX)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application Of:	Eric A. Bier
Serial No.:	07/974,044
Filed:	November 10, 1992
For:	METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY
Examiner:	Barry, L.
Art Group Unit:	2317

Hon. Commissioner of Patents & Trademarks
Washington, D.C. 20231
BOX AF

AMENDMENT AND RESPONSE UNDER 37 CFR 1.116

Sir:

In response to the Final Office Action dated June 23, 1995, please amend as follows:

IN THE SPECIFICATION

Page 1, line 12, after "application," insert --, now U.S. Patent No. 5,442,788, issued August 15, 1995,--;

line 13, change "encorporated" to --incorporated--; and

line 21, delete "product known as Liveboard" and insert --LIVEBOARD® interactive display system,--.

Nintendo Exhibit 1005
Page 113 of 134

IN THE CLAIMS

Amend as follows:

1. (Twice Amended) A computer system for entering simultaneous and sequential input events for at least one application program under the control of multiple users and for displaying a visual response of said application program to said input events on a [single] shared display, each of said users having a unique identity; said system comprising

a plurality of input devices connected to a single computer for entering simultaneous and sequential input events under user control, each of said input devices having a unique identity that is linked with any input events that are entered thereby;

means for revokably registering different ones of said users with different ones of said input devices, whereby the identity of each input device that has a user registered therewith is linked with the identity of its registered user;

means for linking any input events from input devices that have users registered therewith with prespecified, individualized preferences of the respective registered users of such input devices, and

means for translating input events from input devices that have registered users into commands that said application program executes in accordance with the preferences of the registered users of the respective input devices.

7. (Once Amended) A method for entering simultaneous and sequential input events for at least one application program under the control of multiple users of a computer system and for displaying a visual response of said application program to said input events on a

shared display, each of said users having a unique identity; said method comprising the steps of

entering simultaneous and sequential input events through user control of a plurality of input devices connected to a single computer, each of said input devices having a unique identity that is linked with any input events that are entered thereby;

revokably registering different ones of said users with different ones of said input devices, whereby the identity of each input device that has a user registered therewith is linked with the identity of its registered user;

linking any input events from input devices that have users registered therewith with prespecified, individualized preferences of the respective registered users of such input devices, and

translating input events from input devices that have registered users into commands that said application program executes in accordance with the preferences of the registered users of the respective input devices.

REMARKS

By this Amendment, independent claims 1 and 7 have been amended to place them in condition for allowance, and the specification has been amended to correct informalities noted by the Examiner in sections B1, B2, and B3 of the Office Action.

The Examiner's courtesy during a telephone interview with Applicant's representative on September 20, 1995 is gratefully acknowledged. During this interview, the Examiner and Applicant's representative tentatively agreed that the amendments to claim 1 as proposed in

this Amendment would avoid the pending rejection of the claim under § 103. This is because none of the prior art of record, either alone or in combination, discloses or suggests a computer system comprising, among other things, a plurality of input devices connected to a single computer for entering simultaneous and sequential input events under user control, each of said input devices having a unique identity that is linked with any input events that are entered thereby.

In light of this, and further in light of the Examiner's statements in section D2 of the Office Action regarding the law governing the effect of limitations in the preamble, claim 1 is further amended herein to recant a change to the claim made in the previous amendment filed May 30, 1995. That is, recognizing that the novelty of the claimed invention does not necessarily rely on the use of a single shared display, the word "single," previously added to the claim, has been deleted from the claim so that the claim reads as initially filed in that respect.

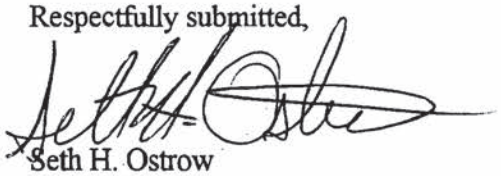
It is believed that claim 1 as amended and dependent claims 2-6 are patentable over the prior art of record and that this Amendment avoids the rejection set forth in the Office Action. Because independent claim 7 is being amended in the same manner in which claim 1 is amended, claim 7 is similarly believed to be patentable over the prior art of record.

It is submitted that these amendments do not present new issues and that they can and should be handled without a refusal to enter because of any alleged new issues.

Nintendo Exhibit 1005
Page 116 of 134

Therefore, the Examiner is respectfully requested to enter this Amendment, reconsider the rejection in the Office Action, and allow pending claims 1-7.

Respectfully submitted,



Dated: September 22, 1995

Seth H. Ostrow
Registration No. 37,410
Attorney for Applicant
ROSEN, DAINOW & JACOBS
489 Fifth Avenue
New York, NY 10017
(212) 692-7000

SHO

C:\WINWORD\DOC\XRX\134\AMD9_21.DOC.24

#9

AMENDMENT TRANSMITTAL LETTER

			Attorney Docket No. 010743-134 (XRX)
Serial No 07/974,044	Filing Date November 10, 1992	Examiner Barry, L.	Group Art Unit 2317
Inventor(s) Eric A. Bier			
Title METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY			

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230

To The Commissioner of Patents and Trademarks:

Transmitted herewith is an amendment in the above identified application.

___ Small entity status of this application under 37 CFR 1.27 has been established by a verified statement previously submitted.

___ A verified statement to establish small entity status under 37 CFR 1.9 and 1.27 is enclosed.

___ A ___ month extension of time is requested. The extension fee of $_____ is enclosed by separate check or is included in the check enclosed for $_____.

X No additional fee is required.

___ The additional fee has been calculated as shown below.

___ Other:

[redacted]	Claims Remaining after amendment	[redacted]	Highest No. Previously paid for	Present Extra		Rate (small entity)	Additional Fee	OR	Rate	Additional Fee
Total	7	Minus	7	0		x$11 =	$		x$22 =	$0.00
Indep.	2	Minus	2	0		x$38 =	$		x$76 =	$0.00
First Presentation of Multiple Dependent Claim						x$120 =	$		x$240 =	$0.00
						Total	$	OR	Total	$0.00

___ Please charge my Deposit Account No. 25-0350 in the amount of $_____.
A duplicate copy of this sheet is enclosed.

___ A check in the amount of $_____ to cover the additional fee is enclosed.

X The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 25-0350. A duplicate copy of this sheet is enclosed.

X Any additional filing fees required under 37 CFR 1.16.
X Any patent application processing fees under 37 CFR 1.17.

September 22, 1995
(Date)

Seth H. Ostrow
Reg. No. 37,410
Rosen, Dainow & Jacobs
Limited Liability Partnership
489 Fifth Avenue
New York, NY 10017
(212) 692-7000

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
07/974,044	11/10/92	BIER E	XRX-134-(D/9

B3M1/1013

ROSEN, DAINOW & JACOBS
489 FIFTH AVENUE
NEW YORK, NY 10017

EXAMINER	
BARRY	
ART UNIT	PAPER NUMBER
2317	10

DATE MAILED: 10/13/95

Below is a communication from the EXAMINER in charge of this application

COMMISSIONER OF PATENTS AND TRADEMARKS

ADVISORY ACTION

☑ THE PERIOD FOR RESPONSE:

a) ☑ ~~is extended to run~~ _____ or continues to run 3 mos from the date of the final rejection

b) ☐ expires three months from the date of the final rejection or as of the mailing date of this Advisory Action, whichever is later. In no event however, will the statutory period for the response expire later than six months from the date of the final rejection.

Any extension of time must be obtained by filing a petition under 37 CFR 1.136(a), the proposed response and the appropriate fee. The date on which the response, the petition , and the fee have been filed is the date of the response and also the date for the purposes of determining the period of extension and the corresponding amount of the fee. Any extension fee pursuant to 37 CFR 1.17 will be calculated from the date of the originally set shortened statutory period for response or as set forth in b) above.

☐ Appellant's Brief is due in accordance with 37 CFR 1.192(a).

☑ Applicant's response to the final rejection, filed 9/22/95 has been considered with the following effect, but it is not deemed to place the application in condition for allowance:

1. ☑ The proposed amendments to the claim and /or specification will not be entered and the final rejection stands because:

   a. ☑ There is no convincing showing under 37 CFR 1.116(b) why the proposed amendment is necessary and was not earlier presented.

   b. ☑ They raise new issues that would require further consideration and/or search. (See Note).

   c. ☐ They raise the issue of new matter. (See Note).

   d. ☑ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal.

   e. ☐ They present additional claims without cancelling a corresponding number of finally rejected claims.

   NOTE: ADDITIONS AND DELETIONS TO CLAIMS 1 AND 7 REQUIRE FURTHER SEARCHING & CONSIDERING.

2. ☐ Newly proposed or amended claims _____ would be allowed if submitted in a separately filed amendment cancelling the non-allowable claims.

3. ☐ Upon the filing an appeal, the proposed amendment ☐ will be entered ☑ will not be entered and the status of the claims will be as follows:

   Claims allowed: _____
   Claims objected to: _____
   Claims rejected: 1-7

   However;

   ☑ Applicant's response has overcome the following rejection(s): THE DECLARATION FILED 6/2/95 WAS SUFFICIENT TO OVERCOME THE MMM REFERENCE.

4. ☑ The affidavit, exhibit or request for reconsideration has been considered but does not overcome the rejection because THEY DEPEND ON PROPOSED AMENDMENTS THAT SHOULD NOT BE ENTERED FOR ABOVEMENTIONED REASONS.

5. ☐ The affidavit or exhibit will not be considered because applicant has not shown good and sufficent reasons why it was not earlier presented.

☐ The proposed drawing correction ☐ has ☐ has not been approved by the examiner.

☑ Other

THOMAS C. LEE
SUPERVISORY PATENT EXAMINER
GROUP 230

PTOL-303 (REV. 5-89)

2301

#11

PATENT APPLICATION
Attorney Docket No. 010743/134 (XRX)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

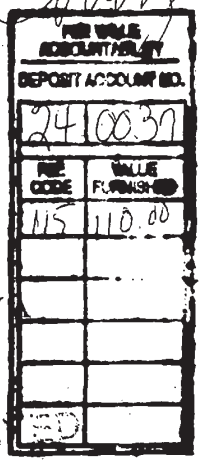
Before Application Of: Eric A. Bier

Serial No.: 07/974,044

Filed: November 10, 1992

For: METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY PLURALITY OF USERS ON A SINGLE DISPLAY

Art Group Unit: 2317 Examiner: Barry, L.



RECEIVED
NOV 16 1995
GROUP 2300

Hon. Commissioner of Patents & Trademarks
BOX AF
Washington, D.C. 20231

REQUEST FOR EXTENSION OF TIME

Sir:

A one month extension of time to October 23, 1995 to respond to the Final Office Action dated June 23, 1995 is requested under 37 C.F.R. 1.36(a). The fee of $110.00 is being charged to Deposit Account No. 24-0037 as required by 37 C.F.R. 1.17(c).

The Commissioner is hereby authorized to charge any fees, including the $110.00 required under 37 C.F.R. § 1.17(c), or any additional fees which may be required, or credit overpayment to Deposit Account No. 24-0037. A duplicate copy of this sheet is enclosed.

P 03024 12/14/95 07974044 24-0037 02 110.00 CH

Respectfully submitted,

Date: October 23, 1995

Seth H. Ostrow, Reg. No. 37,410
ROSEN, DAINOW & JACOBS
Limited Liability Partnership
489 Fifth Ave.
New York, New York 10017
(212) 692-7000

EXPRESS MAIL CERTIFICATE 37 C.F.R. §1.10
Date of Deposit: October 23, 1995
Express Mail Label No.: EG886834195US
I hereby certify that this paper or fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to Hon. Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Sal Forestiere
Printed Name of Person

Sal Forestiere
Signature

MAIL ROOM
OCT
23
1995
PAT. & TRADEMARK OFF.

GPC 2317
11-16-95
#12

PATENT APPLICATION
ATTORNEY DOCKET NO.: 010743/134 (XRX)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application Of:	Eric A. Bier
Serial No.:	07/974,044
Filed:	November 10, 1992
For:	METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY
Examiner:	Barry, L.
Art Group Unit:	2317

RECEIVED
NOV 16 1995
GROUP 2300

Hon. Commissioner of Patents & Trademarks
BOX AF
Washington, D.C. 20231

REQUEST FOR ENTRY OF AMENDMENT UNDER 37 CFR 1.129(a)

Sir:

Pursuant to 37 C.F.R. § 1.129(a), Applicant hereby requests that the Amendment and Response under 37 C.F.R. § 1.116 filed September 25, 1995 (dated September 22, 1995 and refused entry in an Advisory Action dated October 13, 1995) be entered and considered on the merits, and that the finality of the Final Office Action dated June 23, 1995 be withdrawn. The fee of $750.00 as required by 37 C.F.R. 1.17(r) is being charged to Deposit Account No. 24-0037.

The Commissioner is hereby authorized to charge payment of any fees, including the fee of $750 required under 37 C.F.R. § 1.17(r) as well as any additional fees which may

260 YC 24-0037 11/13/95 08974044
26015 145 750.00CH

be required, or credit any overpayment associated with this communication to Deposit Account No. 24-0037. A duplicate copy of this sheet is enclosed.

A Request for Extension of Time to respond to the Final Office Action dated June 23, 1995 is enclosed.

Respectfully submitted,

Dated: October 23, 1995

Seth H. Ostrow
Registration No. 37,410
Attorney for Applicant
ROSEN, DAINOW & JACOBS
489 Fifth Avenue
New York, NY 10017
(212) 692-7000

SHO

EXPRESS MAIL CERTIFICATE 37 C.F.R. §1.10
Date of Deposit: October 23, 1995
Express Mail Label No.: EG886834195US
I hereby certify that this paper or fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to Hon. Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Sal Forestiere
Printed Name of Person Mailing Paper or Fee

Signature

D:\XRX\134\LET_129.DOC.24

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
07/974,044	11/10/92	BIER	XRX-134-(D/9

E

EXAMINER
BARRY, L

B3M1/0119

ROSEN, DAINOW & JACOBS
489 FIFTH AVENUE
NEW YORK, NY 10017

ART UNIT	PAPER NUMBER
2317	13

DATE MAILED: 01/19/96

NOTICE OF ALLOWABILITY

PART I.

1. ☑ This communication is responsive to AMENDMENT OF 9/25/95 (PAPER 9).
2. ☑ All the 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 And Issue Fee Due or other appropriate communication will be sent in due course.
3. ☑ The allowed claims are 1-7.
4. ☑ The drawings filed on 6/2/95 are acceptable.
5. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has [_] been received. [_] not been received. [_] been filed in parent application Serial No. _____, filed on _____.
6. ☐ Note the attached Examiner's Amendment.
7. ☐ Note the attached Examiner Interview Summary Record, PTOL-413.
8. ☐ Note the attached Examiner's Statement of Reasons for Allowance.
9. ☑ Note the attached NOTICE OF REFERENCES CITED, PTO-892.
10. ☐ Note the attached INFORMATION DISCLOSURE CITATION, PTO-1449.

PART II.

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" indicated on this form. Failure to timely comply will result in the ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

1. ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
2. ☐ APPLICANT MUST MAKE THE DRAWING CHANGES INDICATED BELOW IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS PAPER.
   a. ☐ Drawing informalities are indicated on the NOTICE RE PATENT DRAWINGS, PTO-948, attached hereto or to Paper No. _____. CORRECTION IS REQUIRED.
   b. ☐ The proposed drawing correction filed on _____ has been approved by the examiner. CORRECTION IS REQUIRED.
   c. ☐ Approved drawing corrections are described by the examiner in the attached EXAMINER'S AMENDMENT. CORRECTION IS REQUIRED.
   d. ☐ Formal drawings are now REQUIRED.

Any response to this letter should include in the upper right hand corner, the following information from the NOTICE OF ALLOWANCE AND ISSUE FEE DUE: ISSUE BATCH NUMBER, DATE OF THE NOTICE OF ALLOWANCE, AND SERIAL NUMBER.

Attachments:

- _ Examiner's Amendment
- _ Examiner Interview Summary Record, PTOL-413
- _ Reasons for Allowance
- ✓ Notice of References Cited, PTO-892
- _ Information Disclosure Citation, PTO-1449
- _ Notice of Informal Application, PTO-152
- _ Notice re Patent Drawings, PTO-948
- _ Listing of Bonded Draftsmen
- _ Other

Lance Leonard Barry, Esq.
Patent Examiner
Group 2300

PTOL-37 (REV. 4-89) ★ USCOMM-DC 89-3789

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP–APART AND DISCARD CARBON

FORM PTD-892 (REV. 2-92)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO.	GROUP ART UNIT	ATTACHMENT TO PAPER NUMBER
NOTICE OF REFERENCES CITED		07/974,044	2317	13
		APPLICANT(S) BIER		

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
X	A	5473744	12-1995	ALLEN et al.	395	154	9-1992
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
	J						
	K						

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. DWG	PERTINENT PP. SPEC.
X	L	62714533	3-1987	JP	OKABA	—			
X	M	58142996	8-1983	JP	HARADA	—			
	N								
	O								
	P								
	Q								

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	R	
	S	
	T	
	U	

EXAMINER	DATE
LANCE LEONARD BARRY	12-1995

* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05 (a).)

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: Box ISSUE FEE
COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

B3M1/0119

ROSEN, DAINOW & JACOBS
489 FIFTH AVENUE
NEW YORK, NY 10017

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

☐ Note attached communication from the Examiner
☑ This notice is issued in view of applicant's communication filed _____

SERIES CODE/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
07/974,041	11/10/92	007	BARRY, L. 2317	01/19/96

First Named Applicant: BIER, ERIC A.

TITLE OF INVENTION: METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY

	ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2	XRX-134-(D/9	395-525,000	526	UTILITY	NO	$1250.00	04/19/96

THE APPLICATION IDENTIFIES ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE 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.

HOW TO RESPOND 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 changed, pay twice the amount of the FEE DUE shown above and notify the patent and Trademark Office of the change in status, or
B. If the Status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:
A. Pay FEE DUE shown above, or
B. File verified statement of Small Entity Status before, or with, pay of 1/2 the FEE DUE shown above.

II. Part B of this notice should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B should be completed and returned. If you are charging the ISSUE FEE to your deposit account, Part C of this notice should also be completed and returned.

III. All communications regarding this application must give series code (or filing date), serial number and batch number. Please direct all communication prior to issuance to Box ISSUE FEE unless advised to contrary.

IMPORTANT REMINDER: 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.

PTOL-85 (REV. 12-93) (0651-0033) 4. PATENT AND TRADEMARK OFFICE COPY

P.B

B

PART B—ISSUE FEE TRANSMITTAL

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 2 through 6 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, the Patent, advance orders and notification of maintenance fees will be mailed to addressee entered in Block 1 unless you direct otherwise, by: (a) specifying a new correspondence address in Block 3 below; or (b) providing the PTO with a separate "FEE ADDRESS" for maintenance fee notifications with the payment of Issue Fee or thereafter. **See reverse for Certificate of Mailing.**

1. CORRESPONDENCE ADDRESS

MAIL ROOM APR 24 1996 59 PAT. & TRADEMARK OFF.

B3M1/0119

ROSEN, DAINOW & JACOBS
489 FIFTH AVENUE
NEW YORK, NY 10017

2. INVENTOR(S) ADDRESS CHANGE (Complete only if there is a change)

INVENTOR'S NAME

Street Address

City, State and ZIP Code

CO-INVENTOR'S NAME

Street Address

City, State and ZIP Code

☐ Check if additional changes are on reverse side

SERIES CODE/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
07/974,044	11/10/92	007	BARRY, L 2317	01/19/96

First Named Applicant: BIER, ERIC

TITLE OF INVENTION: METHOD AND APPARATUS FOR PER-USER CUSTOMIZATION OF APPLICATIONS SHARED BY A PLURALITY OF USERS ON A SINGLE DISPLAY

	ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2	XRX-134-(D/9	395-825.000	S86	UTILITY	NO	$1250.00	04/19/96

3. Correspondence address change (Complete only if there is a change)

4. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR, alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will be printed.

1. Rosen, Dainow & Jacobs Limited Liability Partnersh
2.
3.

DO NOT USE THIS SPACE

WT04175 04/29/96 07974044 24-0037 040 142 1,250.00CH
WT04176 04/29/96 07974044 24-0037 040 561 30.00CH

5. ASSIGNMENT DATA TO BE PRINTED ON THE PATENT (print or type)

(1) NAME OF ASSIGNEE: Xerox Corporation

(2) ADDRESS: (CITY & STATE OR COUNTRY) Stamford, Connecticut

A. ☐ *This application is NOT assigned.*

☒ Assignment previously submitted to the Patent and Trademark Office.

☐ Assignment is being submitted under separate cover. Assignments should be *directed to* Box ASSIGNMENTS.

PLEASE NOTE: Unless an assignee is identified in Block 5, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

6a. The following fees are enclosed:
☐ Issue Fee ☐ Advance Order - # of Copies

6b. The following fees should be charged to:
DEPOSIT ACCOUNT NUMBER 24-0037
(ENCLOSE PART C)
☒ Issue Fee ☒ Advance Order - # of Copies 10
☒ Any Deficiencies in Enclosed Fees

The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the Issue Fee to the application identified above.

(Authorized Signature) (Date) 4-18-96

NOTE: The Issue Fee 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 Patent and Trademark Office.

1. TRANSMIT THIS FORM WITH FEE-CERTIFICATE OF MAILING ON REVERSE

PTOL-85B (REV.12-93)(0651-0033)

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:

Box ISSUE FEE
Commissioner of Patents and Trademarks
Washington, D.C. 20231

on April 18, 1996
(Date)

Diane M. Torniali
(Name of person making deposit)

Diane M. Torniali
(Signature)

4-18-96
(Date)

Note: If this certificate of mailing is used, it can only be used to transmit the Issue Fee. 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.

Burden Hour Statement: This form is estimated to take .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 Office of Information Systems, Patent and Trademark Office, Washington, D.C. 20231, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, (Project 0651-0033), Washington, D.C. 20503. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner of Patents and Trademarks, Box Issue Fee, Washington, DC 20231.

PTO UTILITY GRANT
Paper Number 14

The United States of America

The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

Bruce Lehman

Commissioner of Patents and Trademarks

Attest

Form PTO-1584 (Rev. 5/96)

FPI-LOM

PATENT APPLICATION SERIAL NO. 07/974044

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

DS20149 11/24/92 07974044 24-0037 020 101 940.00CH XRX-134

PTO-1556
(5/87)

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

(FOR USE WITH FORM PTO-875)

SERIAL NO. 974044 | FILING DATE

APPLICANT(S)

CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT			*		*		*	
	IND.	DEP.	IND.	DEP.	IND.	DEP.		IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1						51						
2		1					52						
3		1					53						
4		2					54						
5		2					55						
6		2					56						
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43							93						
44							94						
45							95						
46							96						
47							97						
48							98						
49							99						
50							100						
TOTAL IND.	2						TOTAL IND.						
TOTAL DEP.	8						TOTAL DEP.						
TOTAL CLAIMS	10						TOTAL CLAIMS						

PTO-1360 (3-78)

**MAY BE USED FOR ADDITIONAL CLAIMS OR AMENDMENTS*

U.S. DEPARTMENT of COMMERCE
Patent and Trademark Office

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 1992

Application or Docket Number: 9.74044

CLAIMS AS FILED - PART I

FOR	(Column 1) NUMBER FILED		(Column 2) NUMBER EXTRA	SMALL ENTITY RATE	SMALL ENTITY FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY FEE
BASIC FEE					$355.00	OR		$710.00
TOTAL CLAIMS	20	minus 20 =	*	x$11=		OR	x$22=	
INDEPENDENT CLAIMS	2	minus 3 =	*	x 37=		OR	x 74=	
MULTIPLE DEPENDENT CLAIM PRESENT				+115=		OR	+230=	230
				TOTAL		OR	TOTAL	940

* If the difference in column 1 is less then zero, enter "0" in column 2

CLAIMS AS AMENDED - PART II

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total	*	Minus	**	=	x$11=		OR	x$22=	
Independent	*	Minus	***	=	x 37=		OR	x 74=	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+ 115=		OR	+230=	
					TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total	*	Minus	**	=	x$11=		OR	x$22=	
Independent	*	Minus	***	=	x 37=		OR	x 74=	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+ 115=		OR	+ 230=	
					TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total	*	Minus	**	=	x$11=		OR	x$22=	
Independent	*	Minus	***	=	x 37=		OR	x 74=	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM					+115=		OR	+230=	
					TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* 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.

FORM PTO-875 (Rev.10-92)

Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PTO 1130 (REV 11/91)

U.S. DEPARTMENT OF COMMERCE– PATENT & TRADEMARK OFFICE

PACE DATA ENTRY CODING SHEET

1ST EXAMINER: D. ESTEY — DATE: 12-1-92

2ND EXAMINER: — DATE:

APPLICATION NUMBER	TYPE APPL	FILING DATE MONTH	FILING DATE DAY	FILING DATE YEAR	SPECIAL HANDLING	GROUP ART UNIT	CLASS	SHEETS OF DRAWING
07/974044	1	11	10	92	0	2306	364	13

TOTAL CLAIMS	INDEPENDENT CLAIMS	SMALL ENTITY?	FILING FEE	FOREIGN LICENSE	ATTORNEY DOCKET NUMBER
7	2	0	940	Y	XRX-134-(D/9

CONTINUITY DATA

CONTINUITY CODE	STATUS CODE	PARENT APPPLICATION SERIAL NUMBER	PARENT PATENT NUMBER	PARENT FILING DATE MONTH	PARENT FILING DATE DAY	PARENT FILING DATE YEAR
		0				
		0				
		0				
		0				
		0				

PCT/FOREIGN APPLICATION DATA

FOREIGN PRIORITY CLAIMED	COUNTRY CODE	PCT/FOREIGN APPLICATION SERIAL NUMBER	FOREIGN FILING DATE MONTH	FOREIGN FILING DATE DAY	FOREIGN FILING DATE YEAR

Nintendo Exhibit 1005
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POSITION		INIT.	DATE
CLASSIFIER		20	11/30/92
EXAMINER		3.1.9	12-1-92
TYPIST		18	12-1-92
VERIFIER		341	12-1-92
CORPS CORR.			
SPEC. HAND			
FILE MAINT.			

INDEX OF CLAIMS

Claim Final	Claim Original	Date 6/4/93	Date 12/6/93	Date
1	(1)	✓	=	
2	2	✓	=	
3	3	✓	=	
4	4	✓	=	
5	5	✓	=	
6	6	✓	=	
7	(7)	✓	=	
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SYMBOLS

- ✓ ..... Rejected
- = ... Allowed
- - (Through numeral) Canceled
- + ... Restricted
- N ..... Non-elected
- I ..... Interference
- A ..... Appeal
- O ..... Objected

Claim Final	Claim Original	Date
	51	
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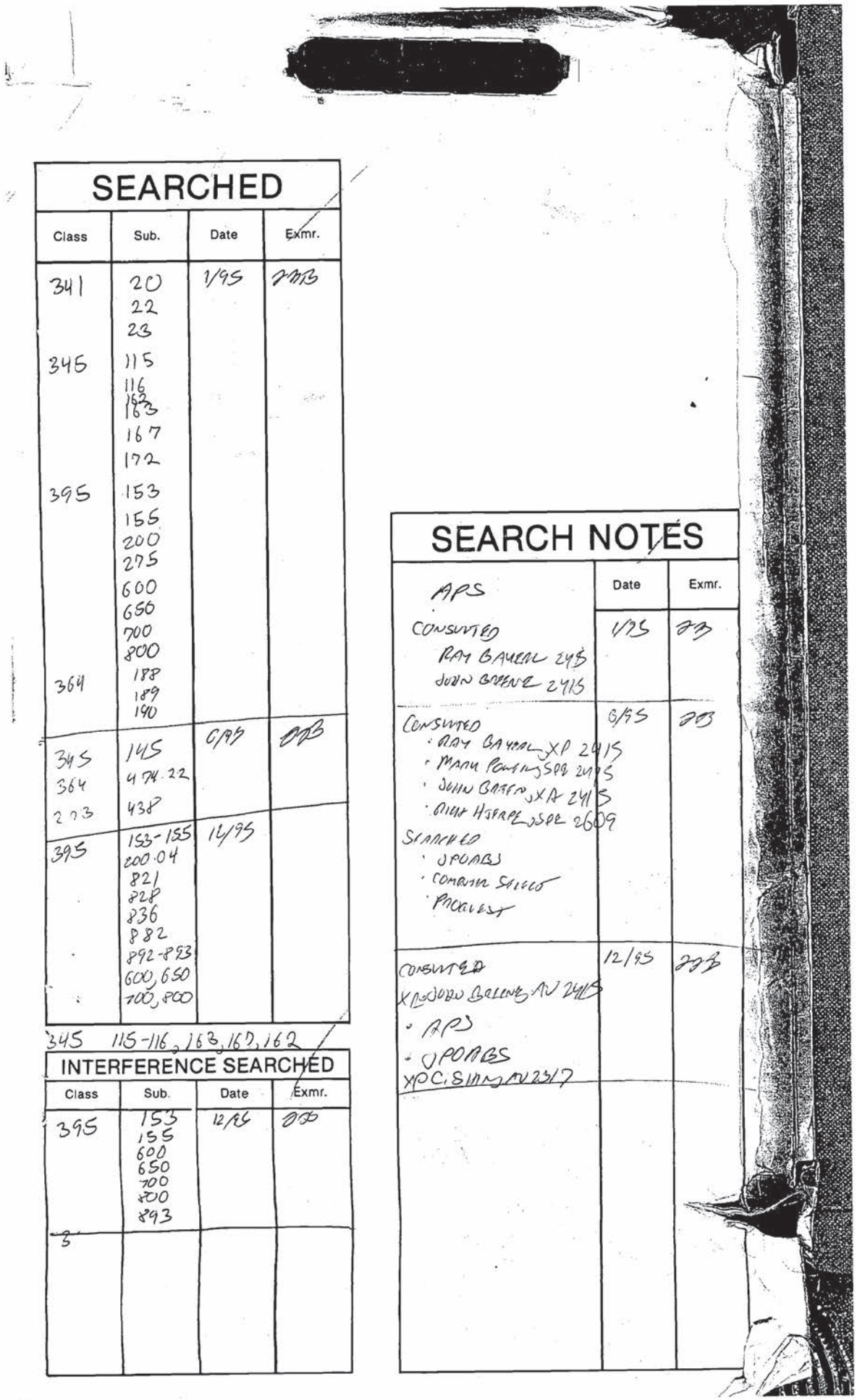
	100	



SEARCHED

Class	Sub.	Date	Exmr.
341	20	1/95	[illegible]
	22		
	23		
345	115		
	116		
	163		
	167		
	172		
395	153		
	155		
	200		
	275		
	600		
	650		
	700		
	800		
364	188		
	189		
	190		
345	145	6/95	[illegible]
364	474.22		
273	438		
395	153-155	11/95	
	200.04		
	821		
	828		
	836		
	882		
	892-893		
	600, 650		
	700, 800		

345 115-116, 163, 167, 162

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
395	153	12/95	[illegible]
	155		
	600		
	650		
	700		
	800		
	893		

SEARCH NOTES

	Date	Exmr.
APS		
CONSULTED	1/95	[illegible]
RAM BAHEAL 2415		
JOHN GREENE 2415		
CONSULTED	6/95	[illegible]
• RAM BAHEAL XP 2415		
• MARK POWELL SPE 2415		
• JOHN GREENE XA 2415		
• ALLEN HERPEL SPE 2609		
SEARCHED		
• USPORS		
• COMPUTER SEARCH		
• PROJECT		
CONSULTED	12/95	[illegible]
XP JOHN GREENE, AU 2415		
• APS		
• USPORS		
XPC: SUPERVISORY 2317		