

[barcode]

(19) **Federal Republic of Germany**
[emblem]
German Patent and Trademark Office

(12) **Patent publication**
(10) **DE 101 01 702 A 1**
(21) File reference: 101 01 702.2
(22) Filing date: 01/15/2001
(43) Publishing date: 07/18/2002

(51) Int. Cl.⁷:
B 60 R 11/02
H 05 K 11/02

DE 101 01 702 A 1

(71) Applicant:
Volkswagen AG, 38440 Wolfsburg, DE

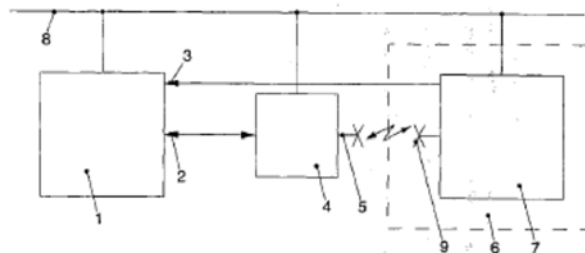
(72) Inventor:
Plagge, Frank, Dr., 38446 Wolfsburg, DE,
Hartkopp, Oliver, 31234 Edernissen, DE;
Briel, Björn, 38162 Cremlingen, DE;
Medler, Andreas, 38268 Lengede, DE

(56) Publications to be considered for the assessment of patentability:
DE 199 48 402 A1
DE 199 17 169 A1
EP 09 99 549 A2

The following information is taken from the documents submitted by the applicant

(54) Motor vehicle – audio device

(57) The invention relates to a motor vehicle – audio device, comprising an interface for a CD-transformer, with an interface emulator (4) being connected to the interface (2) for the CD-transformer and a player (7) to the interface emulator (4) for digital audio signals saved in a compressed form, with here the interface emulator (4) converting any control and status signals emitted by the motor vehicle - audio device (1) into a format compatible to the player and status signals emitted by the player (7) into a format compatible to the transformer.



DE 101 01 702 A 1

Description

[0001] The invention relates to the motor vehicle - audio device comprising an interface for a CD-transformer according to the preamble of claim 1.

[0002] Presently there are essentially several standards to save music or sound signals compressed in a digital form, for example the MP-3 standard (MPEG-1 audio layer 3), the MS-audio standard (WMA) and AAC (Advanced Audio Coding), defined by the MPEG-2-standard. On commercial CD-ROMS, with the help of an appropriately equipped computer, coded and compressed audio signals can be saved according to these standards and be recalled at any time. Based on the compression, this way on a CD-ROM a playing time can be yielded which is increased by many times. For playback, various mobile players are known, for example MP-3 players. Various devices are known from prior art for integrating a player for data saved in a compressed form in a motor vehicle,.

[0003] From DE 299 19 802 U1 a combined player is known for digitally saved music and/or sound signals, with data of the inserted CD/CD-ROM to be optically scanned with the help of a laser beam, being guided via a detection device, via a manual switch or automatically, either to a signal processing stage for MP3 or to a signal processing stage for non-data reduced signals.

[0004] From EP 0 999 549 A2 a MP3-player is known for a motor vehicle comprising a device for detecting the data format, with the data of an audio-CD being guided directly to a digital analog-transformer and the MP3-data being guided to a MP3-decoder with a downstream switched digital-analog transformer. This way, using a single CD-player, both audio CDs as well as MP3-CDs can be played, so that a CD-transformer can be waived.

[0005] In the MP3-player solutions of prior art it is disadvantageous that respectively the already existing motor vehicle radios must be exchanged. In particular in high-quality vehicle radios, being a component of infotainment solutions, this is extremely expensive. On the other hand, most existing motor vehicle radios offer no possibility to practically integrate players for the data saved in a compressed form.

[0006] The invention is therefore based on the technical problem to create a motor vehicle radio with a player for data saved in a compressed form, allowing already existing vehicle radios largely to be retrofitted.

[0007] The solution of the technical problem is discernible from the object showing the features of claim 1. Additional advantageous embodiments of the invention are discernible from the dependent claims.

[0008] For this purpose, an interface emulator is connected at the interface for the CD-transformer of the motor vehicle radio and at the interface emulator a player for the audio data saved in a compressed form based on a standard, with the interface emulator converting control and

status signals emitted by the vehicle radio into a format compatible for the player and status signals emitted by the player into a format compatible to the CD-converter.

[0009] In another preferred embodiment the output of the player for the digital audio signals saved in a compressed form is directly connected to an input of the vehicle audio device, with the digital audio signals then being converted in the player, prior to forwarding to the vehicle audio device, into analog audio signals.

[0010] In principle, the interface emulator can be integrated in the player for audio signals saved in a compressed form. This is advantageous when the configuration is not altered. However, then the existing players must be modified.

[0011] In another preferred embodiment therefore the interface emulator and the player for the digital audio signals saved in a compressed form are embodied as separate units. Here, preferably the player and the interface emulator are each allocated to an interface, particularly an interface for the wireless data transmission, via which the control and status signals can be transmitted.

[0012] In another preferred embodiment the player for the digital audio signals saved in a compressed form are connected via the interface emulator or a plug-in connection to the motor vehicle – onboard system. When the player represents a mobile unit, it may be provided that in the operating phases of the motor vehicle the rechargeable batteries are being charged.

[0013] In another preferred embodiment means are provided in the interface emulator for converting various mobile media players, which can optionally be connected to the interface emulator.

[0014] In the following, the invention is explained in greater detail based on a preferred exemplary embodiment. The single figure shows a schematic block diagram of a motor vehicle - audio device with a MP3-player.

[0015] The motor vehicle – audio device **1** comprises an interface **2** for a CD-transformer with an audio input **3** for CD-data. The motor vehicle – audio device **1** is connected via the interface **2** to an interface emulator **4**. The interface emulator **4** is furthermore embodied with a wireless interface **5**. Via this wireless interface **5** the interface emulator **4** can communicate with a MP3-player **7** arranged in an accepting unit **6**. The MP3-player data can here either be saved in a storage medium or rendered available online.

[0016] The accepting unit **6** comprises mechanical connection means, not shown, and electric plug-in connections, via which the MP3-player can be connected to a motor vehicle - onboard network **8** and an audio input **3** of the motor vehicle radio **1**. Further, the MP3-player **7** is embodied with a wireless interface **9**. The MP3-player **7** is arranged in a detachable fashion in the accepting unit **6** such that for example mobile MP3-players **7** can be

allocated, even only temporarily, to the motor vehicle – audio device **1**.

[0017] When now such a mobile MP3-player **7** is arranged in the accepting unit, it is supplied via the motor vehicle – onboard network **8** with power and simultaneously the rechargeable batteries, not shown are charged. The output signals of the MP3-player **7**, which are usually issued in a mobile device via the headphones, can directly be issued to the audio input **3** of the motor vehicle – radio **1**, from which they can be forwarded to the loudspeakers in the motor vehicle.

[0018] The main objective of the interface emulator **4** is the converting of the control and status signals from the motor vehicle – audio device **1** and the MP3-player **7**. The control and status signals transmitted by the motor vehicle – audio device **1** via the interface **2** are adjusted to a CD-converter. The interface emulator **4** receives these signals and converts them into a format for the MP3-player **7**. The converted control and status signals are then sent by the interface emulator **4** via the wireless interface **5** and received via the wireless interface **9** by the MP3-player **7** and executed. Inversely, the MP3-player **7** sends its status signals via the wireless interface **9**, which are then received by the wireless interface **5** of the interface emulator **4**. The interface emulator **4** converts the status signals of the MP3-player **7** into status signals of a CD-transformer and transmits them via the interface **2** to the motor vehicle radio **1**. Signal technology in the interface emulator **4** allows for the motor vehicle – radio to communicate with a virtual CD-transformer.

Claims

1. A motor vehicle – audio device, comprising an interface for a CD-transformer, **characterized in** that an interface – emulator (**4**) is connected at the interface (**2**) for the CD-transformer and a player (**7**) at the interface emulator (**4**) for audio signals saved in a compressed form, with the interface emulator (**4**) converting control and status signals emitted by the motor vehicle – audio device (**1**) into a format compatible for the player (**7**) and status signals emitted by the player (**7**) into a format compatible for a CD-transformer.
2. A motor vehicle – audio device according to claim 1, characterized in that a signal output of the player (**7**) is connected directly to a signal input (**3**) of the motor vehicle – audio device (**1**).
3. A motor vehicle – audio device according to claim 1 or 2, characterized in that the interface emulator (**4**) and the player (**7**) are embodied as separate units, which communicate with each other via at least one interface for a wireless connection (**5, 9**).
4. A motor vehicle – audio device according to any of the previous claims, characterized in that a player (**7**) is connected via the interface emulator (**4**) or a plug-in connection to the motor vehicle – onboard network (**8**).
5. A motor vehicle – audio device according to any of the previous claims, characterized in that means are saved in the interface emulator (**4**) for converting various mobile media players, which can optionally be connected to the interface emulator (**4**).

Here, see 1 page(s) of drawings

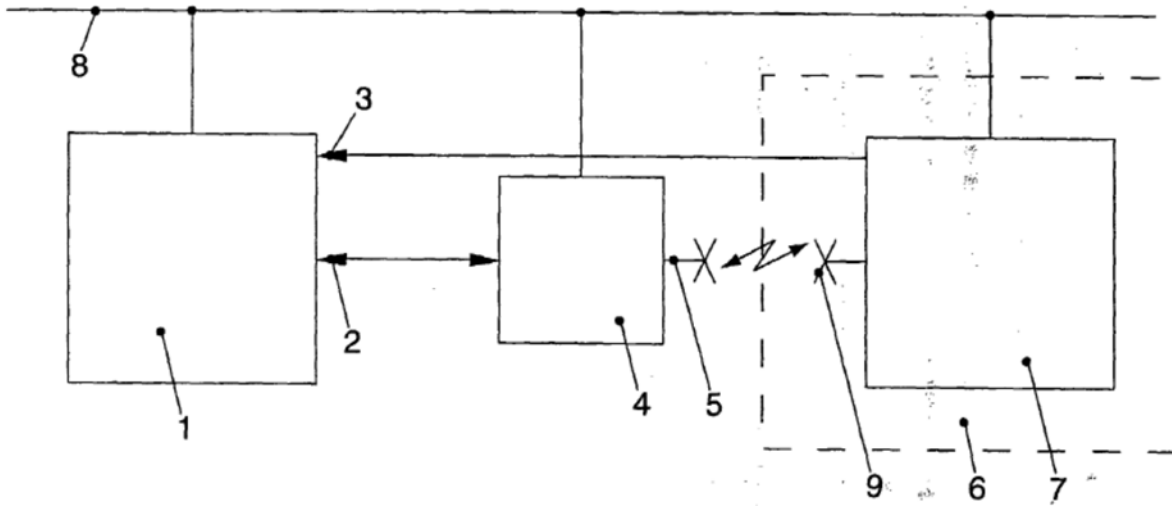


FIG. 1

102 290/565



21 Aktenzeichen: 101 01 702.2
22 Anmeldetag: 15. 1. 2001
43 Offenlegungstag: 18. 7. 2002

71 Anmelder:
Volkswagen AG, 38440 Wolfsburg, DE

72 Erfinder:
Plagge, Frank, Dr., 38446 Wolfsburg, DE; Hartkopp,
Oliver, 31234 Edemissen, DE; Briel, Björn, 38162
Cremlingen, DE; Medler, Andreas, 38268 Lengede,
DE

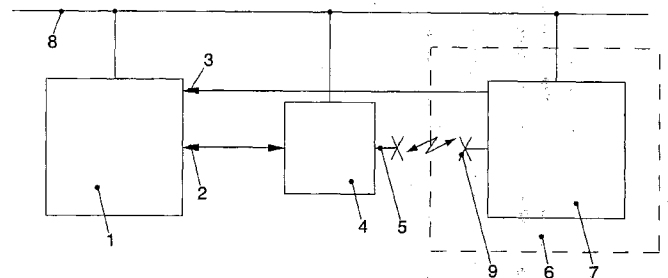
56 Für die Beurteilung der Patentfähigkeit in Betracht
zu ziehende Druckschriften:

DE 199 48 402 A1
DE 199 17 169 A1
EP 09 99 549 A2

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

54 Kraftfahrzeug-Audiogerät

57 Die Erfindung betrifft ein Kraftfahrzeug-Audiogerät, umfassend eine Schnittstelle für einen CD-Wechsler, wobei an der Schnittstelle (2) für den CD-Wechsler ein Schnittstellen-Emulator (4) und an dem Schnittstellen-Emulator (4) ein Abspielgerät (7) für komprimiert abgespeicherte digitale Audiosignale angeschlossen ist, wobei der Schnittstellen-Emulator (4) vom Kraftfahrzeug-Audiogerät (1) kommende Steuer- und Statussignale in ein für das Abspielgerät kompatibles Format und vom Abspielgerät (7) kommende Statussignale in ein CD-Wechsler kompatibles Format umsetzt.



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.