



(51) International Patent Classification:

G06F 3/01 (2006.01) **G06F 13/14** (2006.01)
G06F 15/16 (2006.01)

(21) International Application Number:

PCT/US2009/051008

(22) International Filing Date:

17 July 2009 (17.07.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

200910005688.1 19 February 2009 (19.02.2009) CN

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,

CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- with international search report (Art. 21(3))

(54) Title: SYSTEM AND METHOD FOR PLAYING MEDIA FILES STORED ON A PORTABLE MEDIA DEVICE USING A CONNECTED DEVICE

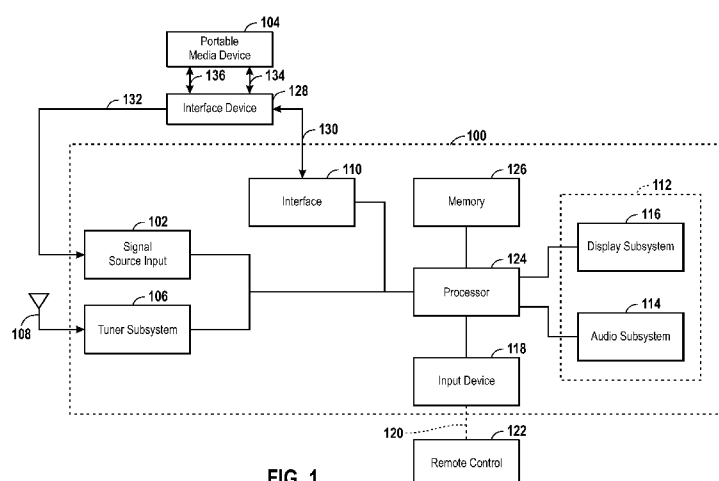


FIG. 1

(57) Abstract: An electronic device (100) is provided that includes a media subsystem (112) that may include an audio subsystem (114), a display subsystem (116), or both. The media subsystem (112) is adapted to play media files, including still pictures, audio files, or video files, or any combination thereof. The electronic device (100) additionally includes an interface (110) configured to place the electronic device (100) in communication with a portable media device (104). The electronic device (100) may display directory information for the portable media device (104) on the display subsystem (116). This directory information may be used to control the play of media files from the portable media device (104) on the media subsystem (112) of the electronic device (100).

SYSTEM AND METHOD FOR PLAYING MEDIA FILES STORED ON A PORTABLE MEDIA DEVICE USING A CONNECTED DEVICE

BACKGROUND

5 This section is intended to introduce the reader to various aspects of art which may be related to various aspects of embodiments of the present invention that are described below. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of embodiments
10 of the present invention. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

Many portable media devices are intended to store and play media files, such as audio files, video files, digital still picture files, and the like.
15 To facilitate the playing of media files, these devices often have audio features, video features, or both. For example, a conventional portable media device typically includes small speakers and a small video display. However, the small size of the portable devices may make it desirable to view or listen to the media files on a larger device. For
20 example, it may be difficult to effectively play media files for large groups of people on a portable media device. Accordingly, it may be desirable to connect the portable media device to a larger device, such as a conventional stereo or television, for the presentation of media files stored on the portable device.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a block diagram of an electronic device in accordance
30 with an exemplary embodiment of the present invention; and

FIG. 2 is a process flow diagram illustrating a method in accordance with an exemplary embodiment of the present invention.

DETAILED DESCRIPTION

5 One or more specific embodiments of the present invention will be described below. In an effort to provide a concise description of these embodiments, not all features of an actual implementation are described in the specification. It should be appreciated that in the development of any such actual implementation, as in any engineering or design project,
10 numerous implementation-specific decisions may be made to achieve the developers' specific goals, such as compliance with system-related and business-related constraints, which may vary from one implementation to another. Moreover, it should be appreciated that such a development effort might be complex and time consuming, but would
15 nevertheless be a routine undertaking of design, fabrication, and manufacture for those of ordinary skill having the benefit of this disclosure.

 While conventional media systems may be configured to facilitate
20 presentation of media files from a portable media device on an electronic device, e.g., a television or stereo system, it is now recognized that these systems may be inconvenient because the control of the presentation remains with the portable media device. For example, activating the play of files from the portable media device on the
25 electronic device may require manipulation of controls on the portable electronic device, such as a keypad on the face of the portable electronic device.

 Present embodiments relate to an electronic system that is
30 configured to connect, either wirelessly or directly, with an interface

device or docking station. The interface device may be configured to connect to a portable media device such that media files stored on the portable media device may be presented through the electronic device, and the portable media device may be controlled from the electronic device. Additionally, a system in accordance with present embodiments may include an electronic device that may incorporate the interface device into the electronic device.

In one embodiment of the present techniques, an electronic device (e.g., a television) may be coupled with an interface device or docking station via an interface (e.g., a serial interface). Specifically, the interface device may be coupled with a signal input on the electronic device, such as an audio input, a video input, or both. Further, the interface device may be configured to couple with a portable media device, and facilitate communication between the portable media device and the electronic device. Additionally, in accordance with present embodiments, the interface device is configured to facilitate control of the portable media device via the electronic device. For example, the interface device may enable control features of the electronic device to be utilized to play media files from the portable media device. Examples of portable media devices that may be used in accordance with present embodiments include portable audio players, portable video players, portable mixed media players, or any other player that has internal circuitry for the generation of media signals. It should also be noted that the electronic device may be configured with a user interface to enter commands that may be used to control the portable media device. This control may include, for example, command signals sent from the electronic device to the portable media device through the interface device.

FIG. 1 is a block diagram of an electronic device 100 in accordance with an embodiment of the present invention. The electronic device 100 includes various subsystems represented as functional blocks in FIG. 1. One of ordinary skill in the art will appreciate that the various functional blocks shown in FIG. 1 may include, for example, hardware elements (including circuitry), software elements (including computer code stored on a machine-readable medium) or a combination of both hardware and software elements.

The electronic device 100 may include a signal source input 102, which may include, for example, a cable input, an audio input, a video input, an S-video input, a composite video input, a digital video input, or combinations thereof. One of ordinary skill in the art will appreciate that, although only one signal source input 102 is shown, the electronic device 100 may have multiple signal source inputs. The signal source input 102 may be adapted to receive a signal that includes video signals and/or audio signals. In accordance with present embodiments, the signal source input 102 may be used to receive audio and/or video signals from a portable media device 104 for presentation or play by the electronic device 100.

The portable media player 104 includes a self-contained and portable electronic device configured to store and play digital media. Moreover, the portable media player 104 includes a device that is easily transported by a user and capable of independent use in a variety of environments, such as while traveling in a plane or while working out. For example, the portable media player 104 may include an audio, video, or multi-media player such as an iPod® commercially available from Apple, Inc., a Zune commercially available from Microsoft, a LYRA™ commercially available from RCA, or the like.

The electronic device 100 may include a tuner subsystem 106 configured to isolate a particular audio and/or video signal from a broadcast signal received from an antenna 108. One of ordinary skill in the art will appreciate that input signals that are not received as part of a broadcast spectrum may bypass the tuner subsystem 106. For example, a media signal received directly from another device, such as a DVD player, may not require tuning and, thus, may bypass the tuner subsystem 106.

The electronic device 100 may have an interface 110 that may include, for example, an RS-232 compliant serial port, a high-definition multimedia interface (HDMI), a wireless network connection, an Ethernet connection, a Universal Serial Bus (USB) connection, or any other suitable connection that allows the electronic device 100 to communicate with an external unit, such as a portable media device 104. As discussed below, the interface 110 may be used for the transfer of command and control information between the electronic device 100 and a portable media device 104, including, for example, commands from the electronic device 100 to the portable media device 104, directory information from the portable media device 104 to the electronic device 100, and the like.

The electronic device 100 may include, for example, a media subsystem 112, including an audio subsystem 114, a display subsystem 116, or both. The audio subsystem 114 may include, for example, an audio amplifier and one or more speakers connected to the audio amplifier and may be adapted to play audio files, including audio files associated with video files being displayed by the electronic device 100. The display subsystem 116 may include, for example, a plasma display,

liquid crystal (LCD) display, a liquid-crystal-on-silicon (LCOS) display, a digital light projection (DLP) display or any other suitable display type. The display subsystem 116 may also include a lighting source (not shown) that is used to generate a visible image on the display.

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An input device 118 may be used to enter user data into the electronic device 100. In accordance with present embodiments, the input device 118 may include buttons on the front panel of the electronic device 100, a keypad on the front of the electronic device 100, or the like. The input device 118 may also include a remote receiver configured to receive signals 120 from a remote control 122. The input device 118 and the media subsystem 112 together may be configured as a user interface for the entry of commands for the control of the electronic device 100, the portable media device 104, or both. For example, the user interface may be used to provide instructions for the electronic device 100 to play any portion of content stored on the portable media device 104 in a random or sequential fashion.

A processor 124 may be configured to control general operation of the electronic device 100, including interaction with the portable media device 104, such as playing audio or video signals transferred from the portable media device 104. A memory 126, which may include read only memory (ROM) may be associated with the processor 124 to hold machine-readable computer code to instruct the processor 124 in controlling the operation of the electronic device 100, including interaction of the electronic device 100 with the portable media device 104. The memory 126 may also include random access memory (RAM) to be used for storage of temporary information, including information acquired from the portable media device 104, such as, for example, file lists, play-lists, and the like. To prevent the loss of such data during

power failures, the RAM portion of the memory 126 may include a non-volatile memory, such as an electrically erasable programmable read only memory (EEPROM), a flash memory, or any other suitable non-volatile memory, including a hard disk drive, a micro-disk drive, and the like.

To facilitate interfacing to a portable media device 104, an interface device 128 may be connected between the portable media device 104 and the electronic device 100. The interface device 128 may be connected to the electronic device 100 by a command cable 130 connected to the interface 110 of the electronic device 100. Further, the interface device 128 may be connected to a signal source input 102 of the electronic device 100 by a signal cable 132, which may include an audio and/or video cable. The signal source input 102 may be configured to receive analog audio signals, analog video signals, digital audio signals, digital video signals, or any combinations thereof, from the interface device 128.

One of ordinary skill in the art will recognize that the interface device 128 may be a separate unit, as illustrated in Fig. 1, or may be constructed into the electronic device 100. Since the control of the portable media device 104 is through the electronic device 100, the controls on the portable media device 104 do not need to be accessible during play. Accordingly, if the interface device 128 is constructed into the electronic device 100, it may be located under a compartment door or on the back of the electronic device 100.

As set forth above, the connection between the electronic device 100 and the interface device 128 may include a cable, such as cables 130 and 132, physically connecting the interface device 128 to the

electronic device 100. Alternatively, the connection may be made using digital or analog radio signals. For example, a connection may be automatically established if an interface device 128 that includes a radio interface, (e.g., a wireless network transceiver, a Bluetooth transceiver, or the like) is placed in range of an electronic device 100 having an interface 110 that includes a similar transceiver.

The interface device 128 may have a slot into which the portable media device 104 may be inserted. Upon insertion, gravity may hold contacts located on the portable media device 104 against contacts located on the interface device 128 to facilitate transfer of information, such as command signals 134 and media signals 136, between the interface device 128 and the portable media device 104. In another embodiment, the interface device 128 may contain plugs to allow cables to be connected between the interface device 128 and the portable media device 104. Since the contact location on any particular portable media device 104 may be specific to the manufacturer of that device, embodiments that allow cable connections to be made between the interface device 128 and the portable media device 104 may allow for the use of a larger variety of portable media devices.

In some embodiments, the interface device 128 may have an integral microprocessor to translate signals 134 and 136 for communication between the portable media device 104 and the electronic device 100. However, in other embodiments, the interface device may not need a microprocessor to adapt the signals 134 and 136 for communication between the electronic device 100 and the portable media device 104. In embodiments in which no microprocessor is used, the interface device 128 may be simpler, thus reducing associated costs.

As discussed above, an electronic device 100 in accordance with present embodiments may be configured to allow a user to control a portable media device 104, access content stored on the portable media device 104, and play that content using appropriate subsystems of the electronic device 100. Details with respect to how content from a portable media device 104 may be accessed and played by an electronic device 100, in an embodiment, are explained below with reference to FIG. 2.

FIG. 2 is a process flow diagram illustrating a method 200 for accessing and playing content on a portable media device in accordance with an embodiment of the present invention. The method 200 begins at block 202. At block 204, a determination is made as to whether an electronic device is connected to an interface device, such as a docking station. In embodiments which have an interface device integrated into an electronic device, this step may be disregarded.

If an interface device is not connected to the electronic device, the method 200 ends at block 206. Alternatively, if an interface device is connected to the electronic device, the method 200 proceeds to block 208. In block 208, the method 200 may determine if a portable media device is connected to the interface device.

If a portable media device is not connected to the interface device, the method 200 ends at block 206. Alternatively, if a portable media device is connected to the interface device, the method proceeds to block 210 from block 208. In block 210, the method 200 determines if a command has been received by the electronic device. For example, in an embodiment where the electronic device is a television, if the method 200 determines that a portable media device is connected to the

interface device in block 208, the method 200 may automatically power on the portable media device and display a screen on the television listing the media files stored on the portable media device and other commands available. Alternatively, the user may use a menu listing available input devices to select the portable media device. In this embodiment, the portable media device may not be displayed on the menu unless it is connected. The user may then use the remote control to scroll through the list of media files stored on the portable media player and highlight particular media files for play or highlight commands for implementation. Once the command is highlighted, the user may press a button, such as SELECT, to begin processing of the command by the method 200.

The method 200 may then process the command in block 212. For example, the command may be appropriately formatted and sent to a portable media player via an interface device connected to a serial port. Commands may include, for example, user commands to initiate the play of a media file or a group of media files from the portable media device on the electronic device. Other commands may include, for example, the initiation of play of media files listed in a play-list on the portable media device. One of ordinary skill in the art will recognize that any number of other possible commands may be created for controlling the portable media device, including, for example, commands to build play-lists on the portable media device, commands to delete files from the portable media device, commands to record audio and/or video signals on the portable media device, and the like. Once the processing of the command is completed, the process loops back to block 210 for the method 200 to determine if another command has been received.

If a determination is made at block 210 that no command has been received, the method 200 proceeds from block 210 to block 214. At block 214, the method 200 determines if a portable media device is still connected to the interface device. If a portable media device is still
5 connected, the process loops back to block 210 and the method 200 again determines if a command has been received.

If the method 200 determines that a portable media device is no longer connected to the interface device, the method 200 proceeds from
10 block 214 to block 216. At block 216, the method determines if an interface device is still connected to the electronic device 100. As for block 204, embodiments which have an interface device integrated into an electronic device may not use this step. If an interface device is still connected, the method 200 loops back to block 208 and the method
15 determines if a portable media device is connected to the interface device. If not, the method 200 ends at block 206.

While the invention may be susceptible to various modifications and alternative forms, specific embodiments have been shown by way of
20 example in the drawings and will be described in detail herein. However, it should be understood that the invention is not intended to be limited to the particular forms disclosed. Rather, the invention is to cover all modifications, equivalents and alternatives falling within the spirit and scope of the invention as defined by the following appended claims.

CLAIMS

What is claimed is:

- 5 1. An electronic device (100), comprising:
a user interface that facilitates the entry of a user command
on the electronic device (100);
an interface (110) configured to send a command to a
portable media device (104) through an interface
10 device (128) in response to the user command;
a signal source input (102) configured to connect to the
interface device (128) for the transfer of media signals
from the portable media device (104) to the electronic
device (100); and
15 a media subsystem (112) configured to play the media
signals, where the command sent to the portable
media device (104) directs the play of the media
signals.
- 20 2. The electronic device (100) of claim 1, wherein the media
subsystem (112) comprises an audio subsystem (114), or a display
subsystem (116), or both.
3. The electronic device (100) of claim 1, wherein the interface
25 device (128) connects to the electronic device (100) through a wireless
transceiver.
4. The electronic device (100) of claim 1, wherein the electronic
device (100) is configured to access file lists, play-lists, still picture files,

audio files, video files, or any combination thereof, stored on the portable media device (104).

5 5. The electronic device (100) of claim 1, wherein the command is configured to direct the portable media device (104) to provide directory information to the electronic device (100), and wherein the directory information comprises a list of media files, or a list of play-lists, or both.

10 6. The electronic device (100) of claim 1, wherein the user interface comprises an input device (118) adapted to receive commands from a remote transmitter (122).

15 7. The electronic device (100) of claim 1, wherein the interface (110) comprises a serial interface configured to connect to the interface device (128).

20 8. The electronic device (100) of claim 7, wherein the serial interface comprises an RS-232 compliant serial port.

 9. The electronic device (100) of claim 1, comprising memory that comprises machine-readable instructions configured to control the portable media device (104) through the interface (110).

25 10. The electronic device (100) of claim 1, comprising memory configured to store directory information transferred from the portable media device (104).

11. A method of controlling a portable media device (104) using an electronic device (100) to which the portable media device (104) is connected, the method comprising:

displaying a user interface on the electronic device (100), wherein

5 the user interface is configured to facilitate the entry of a user command to control the portable media device (104);
transferring a command from the electronic device (100) through an interface device (128) to the portable media device (104) in response to the user command;

10 transferring a media signal from the portable media device (104) through the interface device (128) to the electronic device (100); and

playing the media signal from the portable media device (104) on a media subsystem (112) of the electronic device (100).

15

12. The method of claim 11, comprising transferring a directory from the portable media device (104) to the electronic device (100) through an interface (110) connected to the interface device (128).

20 13. The method of claim 11, comprising displaying a directory of files stored on the portable media device (104) on a display subsystem (112) of the electronic device (100).

25 14. The method of claim 11, wherein the user interface of the electronic device (100) is configured to allow a user to:

display a list of media files stored on the portable media device (104);

select a media file on the portable media device (104); and

30 enter a command to play the media file from the portable media device (104) on the electronic device (100).

15. The method of claim 11, comprising transferring commands to the portable media device (104) through an RS-232 compliant serial interface.

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16. The method of claim 11, comprising determining if an interface device (128) is connected to the electronic device (100).

17. The method of claim 11, comprising determining if a portable
10 media device (104) is connected to the interface device (128).

18. The method of claim 11, comprising transferring an analog audio signal, or an analog video signal, or both, from the portable media device (104).

15

19. The method of claim 11, comprising recording a media signal from the electronic device (100) on the portable media device (104).

20. An electronic device (100) configured to control a portable
20 media device (104) to which the electronic device (100) is connected, the electronic device (100) comprising:

means for transferring control information from the electronic device (100) to the portable media device (104);

means for transferring media signals comprising audio signals,
25 video signals, or both from the portable media device (104) to the electronic device (100); and

means for displaying a user interface that allows a user to select a media file on the portable media device (104), to enter a command to play the media file on the portable media
30 device (104), and to display a media signal comprising the

media file on a media subsystem (112) of the electronic device (100).

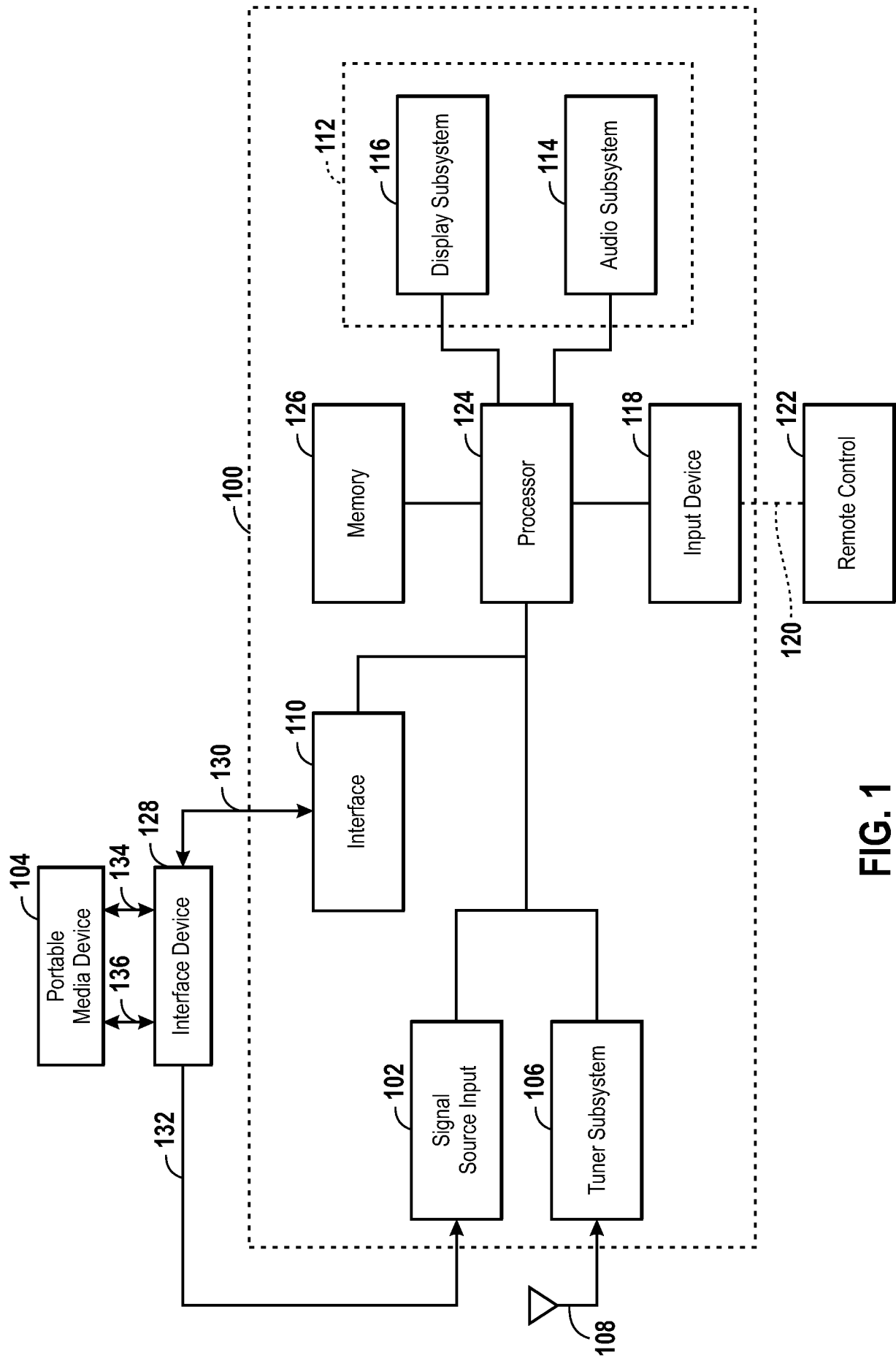
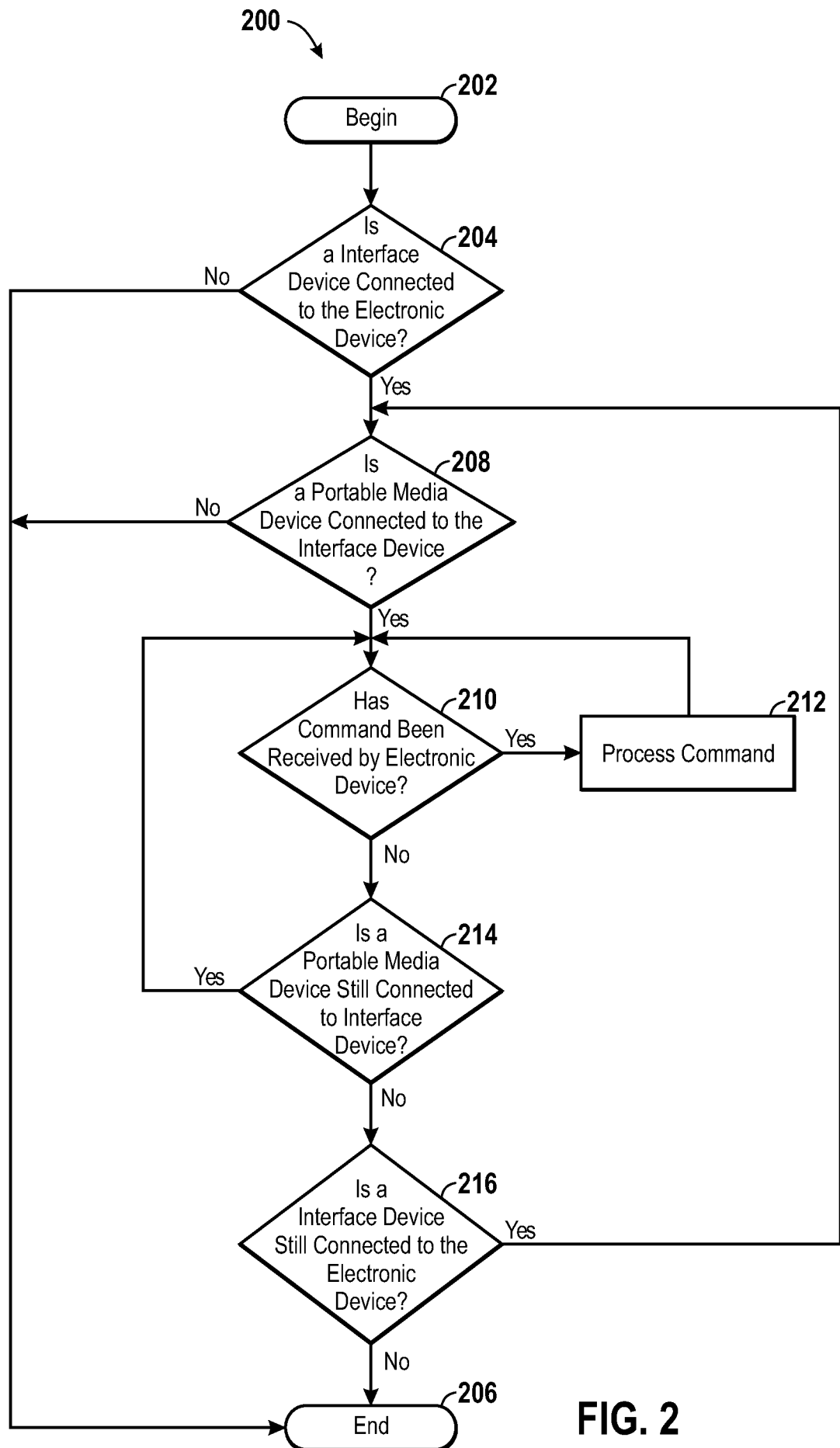


FIG. 1



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/051008**A. CLASSIFICATION OF SUBJECT MATTER****G06F 3/01(2006.01)i, G06F 15/16(2006.01)i, G06F 13/14(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models
Japanese utility models and applications for utility models
(Chinese Patents and application for patent)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

KOMPASS (KIPO internal) & Keywords: "electronic device, user interface, command, signal source, portable media player, media signal, audio subsystem, display subsystem"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008-0075432 A1 (CILLUFFO) 27 March 2008 See Abstract, Fig. 4, 5a, 5b and Claims 1-20	1-20
A	US 2008-0155467 A1 (OBITA et al.) 26 June 2008 See Abstract, Fig. 2, 4 and Claims 1-16	1-20
A	US 2008-005440 A1 (LI et al.) 03 January 2008 See Abstract, Fig. 3, 4 and Claims 1-15	1-20
A	US 2005-149213 A1 (GUZAK et al.) 07 July 2005 See Abstract, Fig. 1, 2, 8, 9 and Claims 1-21	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

10 MARCH 2010 (10.03.2010)

Date of mailing of the international search report

11 MARCH 2010 (11.03.2010)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
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Facsimile No. 82-42-472-7140

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Telephone No. 82-42-481-8174



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/051008

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