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(54) Title: INTERFACES FOR DEVICE INTERACTIONS

(57) Abstract: The present disclosure generally relates to managing interactions between devices. In some embodiments, methods and user interfaces for managing interactions between devices are described.

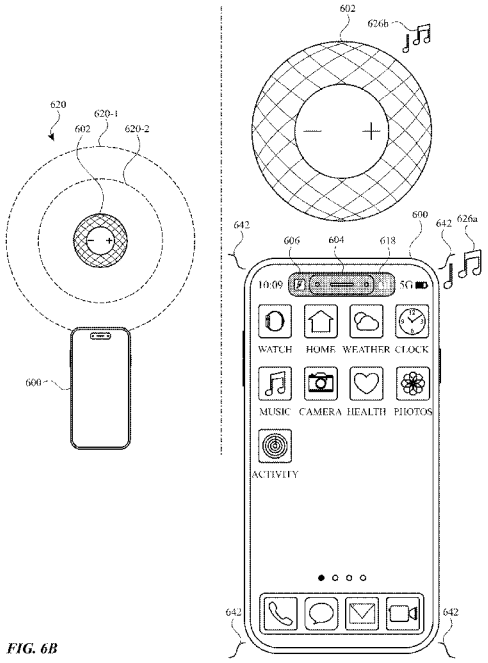

FIG. 6B

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INTERFACES FOR DEVICE INTERACTIONS

REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Patent Application No. 18/237,310, entitled "INTERFACES FOR DEVICE INTERACTIONS", filed on August 23, 2023 and to U.S. Provisional Patent Application No. 63/404,175, entitled "INTERFACES FOR DEVICE INTERACTIONS," filed on September 6, 2022. The entire contents of each of these applications are hereby incorporated by reference in their entireties.

FIELD

[0002] The present disclosure relates generally to computer user interfaces, and more specifically to techniques for managing interactions between devices.

BACKGROUND

[0003] Users of electronic devices, such as smart phones and other computing systems, often operate multiple devices (e.g., a smart phone and a smart speaker), which can interact with each other, often in a coordinated manner. For example, a user can use a set of devices to manage and enable media playback, including transferring playback from one device to the other.

BRIEF SUMMARY

[0004] Some techniques for managing interactions between devices using electronic devices, however, are generally cumbersome and inefficient. For example, some existing techniques use a complex and time-consuming user interface, which may include multiple key presses or keystrokes. Existing techniques require more time than necessary, wasting user time and device energy. This latter consideration is particularly important in battery-operated devices.

[0005] Accordingly, the present technique provides electronic devices with faster, more efficient methods and interfaces for managing interactions between devices. Such methods and interfaces optionally complement or replace other methods for managing interactions between devices. Such methods and interfaces reduce the cognitive burden on a user and

produce a more efficient human-machine interface. For battery-operated computing devices, such methods and interfaces conserve power and increase the time between battery charges.

[0006] In accordance with some embodiments, a method performed at a computer system that is in communication with a display generation component and an external device is described. The method comprises: displaying, via the display generation component, a user interface element; while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and in response to detecting the first change in distance: in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size; in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

[0007] In accordance with some embodiments a non-transitory computer readable storage is described. The non-transitory computer-readable storage medium storing one or more programs configured to be executed by one or more processors of a computer system, wherein the computer system is in communication with a display generation component and an external device, the one or more programs including instructions for: displaying, via the display generation component, a user interface element; while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and in response to detecting the first change in distance: in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size; in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and in accordance with a determination that the distance between the computer system and the external device is less

than the second threshold distance, displaying the user interface element at a second predetermined size.

[0008] In accordance with some embodiments a transitory computer readable storage is described. The transitory computer-readable storage medium storing one or more programs configured to be executed by one or more processors of a computer system, wherein the computer system is in communication with a display generation component and an external device, the one or more programs including instructions for: displaying, via the display generation component, a user interface element; while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and in response to detecting the first change in distance: in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size; in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

[0009] In accordance with some embodiments, a computer system is described. The computer system comprises one or more processors, wherein the computer system is in communication with a display generation component and an external device; and memory storing one or more programs configured to be executed by the one or more processors, the one or more programs including instructions for: displaying, via the display generation component, a user interface element; while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and in response to detecting the first change in distance: in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size; in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and in accordance with a determination that the distance

between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

[0010] In accordance with some embodiments, a computer system is described. The computer system, comprises: one or more processors, wherein the computer system is in communication with a display generation component and an external device; memory storing one or more programs configured to be executed by the one or more processors; means for displaying, via the display generation component, a user interface element; means for while displaying the user interface element detecting a first change in distance between the computer system and the external device; and means, responsive to detecting the first change in distance, for: in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size; in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

[0011] In accordance with some embodiments, a computer program product is described. The computer program product comprising one or more programs configured to be executed by one or more processors of a computer system that is in communication with a display generation component and an external device, the one or more programs including instructions for: displaying, via the display generation component, a user interface element; while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and in response to detecting the first change in distance: in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size; in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and in accordance with a determination that the distance between the computer

system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

[0012] Executable instructions for performing these functions are, optionally, included in a non-transitory computer-readable storage medium or other computer program product configured for execution by one or more processors. Executable instructions for performing these functions are, optionally, included in a transitory computer-readable storage medium or other computer program product configured for execution by one or more processors.

[0013] Thus, devices are provided with faster, more efficient methods and interfaces for managing interactions between devices, thereby increasing the effectiveness, efficiency, and user satisfaction with such devices. Such methods and interfaces may complement or replace other methods for managing interactions between devices.

DESCRIPTION OF THE FIGURES

[0014] For a better understanding of the various described embodiments, reference should be made to the Description of Embodiments below, in conjunction with the following drawings in which like reference numerals refer to corresponding parts throughout the figures.

[0015] FIG. 1A is a block diagram illustrating a portable multifunction device with a touch-sensitive display in accordance with some embodiments.

[0016] FIG. 1B is a block diagram illustrating exemplary components for event handling in accordance with some embodiments.

[0017] FIG. 2 illustrates a portable multifunction device having a touch screen in accordance with some embodiments.

[0018] FIG. 3 is a block diagram of an exemplary multifunction device with a display and a touch-sensitive surface in accordance with some embodiments.

[0019] FIG. 4A illustrates an exemplary user interface for a menu of applications on a portable multifunction device in accordance with some embodiments.

[0020] FIG. 4B illustrates an exemplary user interface for a multifunction device with a touch-sensitive surface that is separate from the display in accordance with some embodiments.

[0021] FIG. 5A illustrates a personal electronic device in accordance with some embodiments.

[0022] FIG. 5B is a block diagram illustrating a personal electronic device in accordance with some embodiments.

[0023] FIG. 5C illustrates an electronic device in accordance with some embodiments.

[0024] FIG. 5D is a block diagram illustrating an electronic device in accordance with some embodiments.

[0025] FIGS. 6A-6O illustrate exemplary user interfaces for managing interactions between devices, in accordance with some embodiments.

[0026] FIG. 7 is a flow diagram illustrating a method for managing interactions between devices s, in accordance with some embodiments.

DESCRIPTION OF EMBODIMENTS

[0027] The following description sets forth exemplary methods, parameters, and the like. It should be recognized, however, that such description is not intended as a limitation on the scope of the present disclosure but is instead provided as a description of exemplary embodiments.

[0028] There is a need for electronic devices that provide efficient methods and interfaces for managing interactions between devices. For example, there is a need for computer systems that allow a user the ability to easily transfer the playback of media items between computer systems. Such techniques can reduce the cognitive burden on a user who manages the playback of media on computer systems, thereby enhancing productivity. Further, such techniques can reduce processor and battery power otherwise wasted on redundant user inputs.

[0029] Below, FIGS. 1A-1B, 2, 3, 4A-4B, and 5A-5D provide a description of exemplary devices for performing the techniques for managing interactions between devices. FIGS. 6A-

6O illustrate exemplary user interfaces for managing interactions between devices. FIG. 7 is a flow diagram illustrating methods of managing interactions between devices in accordance with some embodiments. The user interfaces in FIGS. 6A-6O are used to illustrate the processes described below, including the processes in FIG. 7.

[0030] The processes described below enhance the operability of the devices and make the user-device interfaces more efficient (e.g., by helping the user to provide proper inputs and reducing user mistakes when operating/interacting with the device) through various techniques, including by providing improved visual feedback to the user, reducing the number of inputs needed to perform an operation, providing additional control options without cluttering the user interface with additional displayed controls, performing an operation when a set of conditions has been met without requiring further user input, and/or additional techniques. These techniques also reduce power usage and improve battery life of the device by enabling the user to use the device more quickly and efficiently.

[0031] In addition, in methods described herein where one or more steps are contingent upon one or more conditions having been met, it should be understood that the described method can be repeated in multiple repetitions so that over the course of the repetitions all of the conditions upon which steps in the method are contingent have been met in different repetitions of the method. For example, if a method requires performing a first step if a condition is satisfied, and a second step if the condition is not satisfied, then a person of ordinary skill would appreciate that the claimed steps are repeated until the condition has been both satisfied and not satisfied, in no particular order. Thus, a method described with one or more steps that are contingent upon one or more conditions having been met could be rewritten as a method that is repeated until each of the conditions described in the method has been met. This, however, is not required of system or computer readable medium claims where the system or computer readable medium contains instructions for performing the contingent operations based on the satisfaction of the corresponding one or more conditions and thus is capable of determining whether the contingency has or has not been satisfied without explicitly repeating steps of a method until all of the conditions upon which steps in the method are contingent have been met. A person having ordinary skill in the art would also understand that, similar to a method with contingent steps, a system or computer readable storage medium can repeat the steps of a method as many times as are needed to ensure that all of the contingent steps have been performed.

[0032] Although the following description uses terms "first," "second," etc. to describe various elements, these elements should not be limited by the terms. In some embodiments, these terms are used to distinguish one element from another. For example, a first touch could be termed a second touch, and, similarly, a second touch could be termed a first touch, without departing from the scope of the various described embodiments. In some embodiments, the first touch and the second touch are two separate references to the same touch. In some embodiments, the first touch and the second touch are both touches, but they are not the same touch.

[0033] The terminology used in the description of the various described embodiments herein is for the purpose of describing particular embodiments only and is not intended to be limiting. As used in the description of the various described embodiments and the appended claims, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will also be understood that the term "and/or" as used herein refers to and encompasses any and all possible combinations of one or more of the associated listed items. It will be further understood that the terms "includes," "including," "comprises," and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0034] The term "if" is, optionally, construed to mean "when" or "upon" or "in response to determining" or "in response to detecting," depending on the context. Similarly, the phrase "if it is determined" or "if [a stated condition or event] is detected" is, optionally, construed to mean "upon determining" or "in response to determining" or "upon detecting [the stated condition or event]" or "in response to detecting [the stated condition or event]," depending on the context.

[0035] Embodiments of electronic devices, user interfaces for such devices, and associated processes for using such devices are described. In some embodiments, the device is a portable communications device, such as a mobile telephone, that also contains other functions, such as PDA and/or music player functions. Exemplary embodiments of portable multifunction devices include, without limitation, the iPhone®, iPod Touch®, and iPad® devices from Apple Inc. of Cupertino, California. Other portable electronic devices, such as laptops or tablet computers with touch-sensitive surfaces (e.g., touch screen displays and/or

touchpads), are, optionally, used. It should also be understood that, in some embodiments, the device is not a portable communications device, but is a desktop computer with a touch-sensitive surface (e.g., a touch screen display and/or a touchpad). In some embodiments, the electronic device is a computer system that is in communication (e.g., via wireless communication, via wired communication) with a display generation component. The display generation component is configured to provide visual output, such as display via a CRT display, display via an LED display, or display via image projection. In some embodiments, the display generation component is integrated with the computer system. In some embodiments, the display generation component is separate from the computer system. As used herein, "displaying" content includes causing to display the content (e.g., video data rendered or decoded by display controller 156) by transmitting, via a wired or wireless connection, data (e.g., image data or video data) to an integrated or external display generation component to visually produce the content.

[0036] In the discussion that follows, an electronic device that includes a display and a touch-sensitive surface is described. It should be understood, however, that the electronic device optionally includes one or more other physical user-interface devices, such as a physical keyboard, a mouse, and/or a joystick.

[0037] The device typically supports a variety of applications, such as one or more of the following: a drawing application, a presentation application, a word processing application, a website creation application, a disk authoring application, a spreadsheet application, a gaming application, a telephone application, a video conferencing application, an e-mail application, an instant messaging application, a workout support application, a photo management application, a digital camera application, a digital video camera application, a web browsing application, a digital music player application, and/or a digital video player application.

[0038] The various applications that are executed on the device optionally use at least one common physical user-interface device, such as the touch-sensitive surface. One or more functions of the touch-sensitive surface as well as corresponding information displayed on the device are, optionally, adjusted and/or varied from one application to the next and/or within a respective application. In this way, a common physical architecture (such as the touch-sensitive surface) of the device optionally supports the variety of applications with user interfaces that are intuitive and transparent to the user.

[0039] Attention is now directed toward embodiments of portable devices with touch-sensitive displays. FIG. 1A is a block diagram illustrating portable multifunction device 100 with touch-sensitive display system 112 in accordance with some embodiments. Touch-sensitive display 112 is sometimes called a "touch screen" for convenience and is sometimes known as or called a "touch-sensitive display system." Device 100 includes memory 102 (which optionally includes one or more computer-readable storage mediums), memory controller 122, one or more processing units (CPUs) 120, peripherals interface 118, RF circuitry 108, audio circuitry 110, speaker 111, microphone 113, input/output (I/O) subsystem 106, other input control devices 116, and external port 124. Device 100 optionally includes one or more optical sensors 164. Device 100 optionally includes one or more contact intensity sensors 165 for detecting intensity of contacts on device 100 (e.g., a touch-sensitive surface such as touch-sensitive display system 112 of device 100). Device 100 optionally includes one or more tactile output generators 167 for generating tactile outputs on device 100 (e.g., generating tactile outputs on a touch-sensitive surface such as touch-sensitive display system 112 of device 100 or touchpad 355 of device 300). These components optionally communicate over one or more communication buses or signal lines 103.

[0040] As used in the specification and claims, the term "intensity" of a contact on a touch-sensitive surface refers to the force or pressure (force per unit area) of a contact (e.g., a finger contact) on the touch-sensitive surface, or to a substitute (proxy) for the force or pressure of a contact on the touch-sensitive surface. The intensity of a contact has a range of values that includes at least four distinct values and more typically includes hundreds of distinct values (e.g., at least 256). Intensity of a contact is, optionally, determined (or measured) using various approaches and various sensors or combinations of sensors. For example, one or more force sensors underneath or adjacent to the touch-sensitive surface are, optionally, used to measure force at various points on the touch-sensitive surface. In some implementations, force measurements from multiple force sensors are combined (e.g., a weighted average) to determine an estimated force of a contact. Similarly, a pressure-sensitive tip of a stylus is, optionally, used to determine a pressure of the stylus on the touch-sensitive surface. Alternatively, the size of the contact area detected on the touch-sensitive surface and/or changes thereto, the capacitance of the touch-sensitive surface proximate to the contact and/or changes thereto, and/or the resistance of the touch-sensitive surface proximate to the contact and/or changes thereto are, optionally, used as a substitute for the

force or pressure of the contact on the touch-sensitive surface. In some implementations, the substitute measurements for contact force or pressure are used directly to determine whether an intensity threshold has been exceeded (e.g., the intensity threshold is described in units corresponding to the substitute measurements). In some implementations, the substitute measurements for contact force or pressure are converted to an estimated force or pressure, and the estimated force or pressure is used to determine whether an intensity threshold has been exceeded (e.g., the intensity threshold is a pressure threshold measured in units of pressure). Using the intensity of a contact as an attribute of a user input allows for user access to additional device functionality that may otherwise not be accessible by the user on a reduced-size device with limited real estate for displaying affordances (e.g., on a touch-sensitive display) and/or receiving user input (e.g., via a touch-sensitive display, a touch-sensitive surface, or a physical/mechanical control such as a knob or a button).

[0041] As used in the specification and claims, the term "tactile output" refers to physical displacement of a device relative to a previous position of the device, physical displacement of a component (e.g., a touch-sensitive surface) of a device relative to another component (e.g., housing) of the device, or displacement of the component relative to a center of mass of the device that will be detected by a user with the user's sense of touch. For example, in situations where the device or the component of the device is in contact with a surface of a user that is sensitive to touch (e.g., a finger, palm, or other part of a user's hand), the tactile output generated by the physical displacement will be interpreted by the user as a tactile sensation corresponding to a perceived change in physical characteristics of the device or the component of the device. For example, movement of a touch-sensitive surface (e.g., a touch-sensitive display or trackpad) is, optionally, interpreted by the user as a "down click" or "up click" of a physical actuator button. In some cases, a user will feel a tactile sensation such as an "down click" or "up click" even when there is no movement of a physical actuator button associated with the touch-sensitive surface that is physically pressed (e.g., displaced) by the user's movements. As another example, movement of the touch-sensitive surface is, optionally, interpreted or sensed by the user as "roughness" of the touch-sensitive surface, even when there is no change in smoothness of the touch-sensitive surface. While such interpretations of touch by a user will be subject to the individualized sensory perceptions of the user, there are many sensory perceptions of touch that are common to a large majority of users. Thus, when a tactile output is described as corresponding to a particular sensory perception of a user (e.g., an "up click," a "down click," "roughness"), unless otherwise

stated, the generated tactile output corresponds to physical displacement of the device or a component thereof that will generate the described sensory perception for a typical (or average) user.

[0042] It should be appreciated that device 100 is only one example of a portable multifunction device, and that device 100 optionally has more or fewer components than shown, optionally combines two or more components, or optionally has a different configuration or arrangement of the components. The various components shown in FIG. 1A are implemented in hardware, software, or a combination of both hardware and software, including one or more signal processing and/or application-specific integrated circuits.

[0043] Memory 102 optionally includes high-speed random access memory and optionally also includes non-volatile memory, such as one or more magnetic disk storage devices, flash memory devices, or other non-volatile solid-state memory devices. Memory controller 122 optionally controls access to memory 102 by other components of device 100.

[0044] Peripherals interface 118 can be used to couple input and output peripherals of the device to CPU 120 and memory 102. The one or more processors 120 run or execute various software programs (such as computer programs (e.g., including instructions)) and/or sets of instructions stored in memory 102 to perform various functions for device 100 and to process data. In some embodiments, peripherals interface 118, CPU 120, and memory controller 122 are, optionally, implemented on a single chip, such as chip 104. In some other embodiments, they are, optionally, implemented on separate chips.

[0045] RF (radio frequency) circuitry 108 receives and sends RF signals, also called electromagnetic signals. RF circuitry 108 converts electrical signals to/from electromagnetic signals and communicates with communications networks and other communications devices via the electromagnetic signals. RF circuitry 108 optionally includes well-known circuitry for performing these functions, including but not limited to an antenna system, an RF transceiver, one or more amplifiers, a tuner, one or more oscillators, a digital signal processor, a CODEC chipset, a subscriber identity module (SIM) card, memory, and so forth. RF circuitry 108 optionally communicates with networks, such as the Internet, also referred to as the World Wide Web (WWW), an intranet and/or a wireless network, such as a cellular telephone network, a wireless local area network (LAN) and/or a metropolitan area network (MAN), and other devices by wireless communication. The RF circuitry 108 optionally

includes well-known circuitry for detecting near field communication (NFC) fields, such as by a short-range communication radio. The wireless communication optionally uses any of a plurality of communications standards, protocols, and technologies, including but not limited to Global System for Mobile Communications (GSM), Enhanced Data GSM Environment (EDGE), high-speed downlink packet access (HSDPA), high-speed uplink packet access (HSUPA), Evolution, Data-Only (EV-DO), HSPA, HSPA+, Dual-Cell HSPA (DC-HSPDA), long term evolution (LTE), near field communication (NFC), wideband code division multiple access (W-CDMA), code division multiple access (CDMA), time division multiple access (TDMA), Bluetooth, Bluetooth Low Energy (BTLE), Wireless Fidelity (Wi-Fi) (e.g., IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n, and/or IEEE 802.11ac), voice over Internet Protocol (VoIP), Wi-MAX, a protocol for e-mail (e.g., Internet message access protocol (IMAP) and/or post office protocol (POP)), instant messaging (e.g., extensible messaging and presence protocol (XMPP), Session Initiation Protocol for Instant Messaging and Presence Leveraging Extensions (SIMPLE), Instant Messaging and Presence Service (IMPS)), and/or Short Message Service (SMS), or any other suitable communication protocol, including communication protocols not yet developed as of the filing date of this document.

[0046] Audio circuitry 110, speaker 111, and microphone 113 provide an audio interface between a user and device 100. Audio circuitry 110 receives audio data from peripherals interface 118, converts the audio data to an electrical signal, and transmits the electrical signal to speaker 111. Speaker 111 converts the electrical signal to human-audible sound waves. Audio circuitry 110 also receives electrical signals converted by microphone 113 from sound waves. Audio circuitry 110 converts the electrical signal to audio data and transmits the audio data to peripherals interface 118 for processing. Audio data is, optionally, retrieved from and/or transmitted to memory 102 and/or RF circuitry 108 by peripherals interface 118. In some embodiments, audio circuitry 110 also includes a headset jack (e.g., 212, FIG. 2). The headset jack provides an interface between audio circuitry 110 and removable audio input/output peripherals, such as output-only headphones or a headset with both output (e.g., a headphone for one or both ears) and input (e.g., a microphone).

[0047] I/O subsystem 106 couples input/output peripherals on device 100, such as touch screen 112 and other input control devices 116, to peripherals interface 118. I/O subsystem 106 optionally includes display controller 156, optical sensor controller 158, depth camera

controller 169, intensity sensor controller 159, haptic feedback controller 161, and one or more input controllers 160 for other input or control devices. The one or more input controllers 160 receive/send electrical signals from/to other input control devices 116. The other input control devices 116 optionally include physical buttons (e.g., push buttons, rocker buttons, etc.), dials, slider switches, joysticks, click wheels, and so forth. In some embodiments, input controller(s) 160 are, optionally, coupled to any (or none) of the following: a keyboard, an infrared port, a USB port, and a pointer device such as a mouse. The one or more buttons (e.g., 208, FIG. 2) optionally include an up/down button for volume control of speaker 111 and/or microphone 113. The one or more buttons optionally include a push button (e.g., 206, FIG. 2). In some embodiments, the electronic device is a computer system that is in communication (e.g., via wireless communication, via wired communication) with one or more input devices. In some embodiments, the one or more input devices include a touch-sensitive surface (e.g., a trackpad, as part of a touch-sensitive display). In some embodiments, the one or more input devices include one or more camera sensors (e.g., one or more optical sensors 164 and/or one or more depth camera sensors 175), such as for tracking a user's gestures (e.g., hand gestures and/or air gestures) as input. In some embodiments, the one or more input devices are integrated with the computer system. In some embodiments, the one or more input devices are separate from the computer system. In some embodiments, an air gesture is a gesture that is detected without the user touching an input element that is part of the device (or independently of an input element that is a part of the device) and is based on detected motion of a portion of the user's body through the air including motion of the user's body relative to an absolute reference (e.g., an angle of the user's arm relative to the ground or a distance of the user's hand relative to the ground), relative to another portion of the user's body (e.g., movement of a hand of the user relative to a shoulder of the user, movement of one hand of the user relative to another hand of the user, and/or movement of a finger of the user relative to another finger or portion of a hand of the user), and/or absolute motion of a portion of the user's body (e.g., a tap gesture that includes movement of a hand in a predetermined pose by a predetermined amount and/or speed, or a shake gesture that includes a predetermined speed or amount of rotation of a portion of the user's body).

[0048] A quick press of the push button optionally disengages a lock of touch screen 112 or optionally begins a process that uses gestures on the touch screen to unlock the device, as described in U.S. Patent Application 11/322,549, "Unlocking a Device by Performing

Gestures on an Unlock Image," filed December 23, 2005, U.S. Pat. No. 7,657,849, which is hereby incorporated by reference in its entirety. A longer press of the push button (e.g., 206) optionally turns power to device 100 on or off. The functionality of one or more of the buttons are, optionally, user-customizable. Touch screen 112 is used to implement virtual or soft buttons and one or more soft keyboards.

[0049] Touch-sensitive display 112 provides an input interface and an output interface between the device and a user. Display controller 156 receives and/or sends electrical signals from/to touch screen 112. Touch screen 112 displays visual output to the user. The visual output optionally includes graphics, text, icons, video, and any combination thereof (collectively termed "graphics"). In some embodiments, some or all of the visual output optionally corresponds to user-interface objects.

[0050] Touch screen 112 has a touch-sensitive surface, sensor, or set of sensors that accepts input from the user based on haptic and/or tactile contact. Touch screen 112 and display controller 156 (along with any associated modules and/or sets of instructions in memory 102) detect contact (and any movement or breaking of the contact) on touch screen 112 and convert the detected contact into interaction with user-interface objects (e.g., one or more soft keys, icons, web pages, or images) that are displayed on touch screen 112. In an exemplary embodiment, a point of contact between touch screen 112 and the user corresponds to a finger of the user.

[0051] Touch screen 112 optionally uses LCD (liquid crystal display) technology, LPD (light emitting polymer display) technology, or LED (light emitting diode) technology, although other display technologies are used in other embodiments. Touch screen 112 and display controller 156 optionally detect contact and any movement or breaking thereof using any of a plurality of touch sensing technologies now known or later developed, including but not limited to capacitive, resistive, infrared, and surface acoustic wave technologies, as well as other proximity sensor arrays or other elements for determining one or more points of contact with touch screen 112. In an exemplary embodiment, projected mutual capacitance sensing technology is used, such as that found in the iPhone® and iPod Touch® from Apple Inc. of Cupertino, California.

[0052] A touch-sensitive display in some embodiments of touch screen 112 is, optionally, analogous to the multi-touch sensitive touchpads described in the following U.S. Patents:

6,323,846 (Westerman et al.), 6,570,557 (Westerman et al.), and/or 6,677,932 (Westerman), and/or U.S. Patent Publication 2002/0015024A1, each of which is hereby incorporated by reference in its entirety. However, touch screen 112 displays visual output from device 100, whereas touch-sensitive touchpads do not provide visual output.

[0053] A touch-sensitive display in some embodiments of touch screen 112 is described in the following applications: (1) U.S. Patent Application No. 11/381,313, "Multipoint Touch Surface Controller," filed May 2, 2006; (2) U.S. Patent Application No. 10/840,862, "Multipoint Touchscreen," filed May 6, 2004; (3) U.S. Patent Application No. 10/903,964, "Gestures For Touch Sensitive Input Devices," filed July 30, 2004; (4) U.S. Patent Application No. 11/048,264, "Gestures For Touch Sensitive Input Devices," filed January 31, 2005; (5) U.S. Patent Application No. 11/038,590, "Mode-Based Graphical User Interfaces For Touch Sensitive Input Devices," filed January 18, 2005; (6) U.S. Patent Application No. 11/228,758, "Virtual Input Device Placement On A Touch Screen User Interface," filed September 16, 2005; (7) U.S. Patent Application No. 11/228,700, "Operation Of A Computer With A Touch Screen Interface," filed September 16, 2005; (8) U.S. Patent Application No. 11/228,737, "Activating Virtual Keys Of A Touch-Screen Virtual Keyboard," filed September 16, 2005; and (9) U.S. Patent Application No. 11/367,749, "Multi-Functional Hand-Held Device," filed March 3, 2006. All of these applications are incorporated by reference herein in their entirety.

[0054] Touch screen 112 optionally has a video resolution in excess of 100 dpi. In some embodiments, the touch screen has a video resolution of approximately 160 dpi. The user optionally makes contact with touch screen 112 using any suitable object or appendage, such as a stylus, a finger, and so forth. In some embodiments, the user interface is designed to work primarily with finger-based contacts and gestures, which can be less precise than stylus-based input due to the larger area of contact of a finger on the touch screen. In some embodiments, the device translates the rough finger-based input into a precise pointer/cursor position or command for performing the actions desired by the user.

[0055] In some embodiments, in addition to the touch screen, device 100 optionally includes a touchpad for activating or deactivating particular functions. In some embodiments, the touchpad is a touch-sensitive area of the device that, unlike the touch screen, does not display visual output. The touchpad is, optionally, a touch-sensitive surface

that is separate from touch screen 112 or an extension of the touch-sensitive surface formed by the touch screen.

[0056] Device 100 also includes power system 162 for powering the various components. Power system 162 optionally includes a power management system, one or more power sources (e.g., battery, alternating current (AC)), a recharging system, a power failure detection circuit, a power converter or inverter, a power status indicator (e.g., a light-emitting diode (LED)) and any other components associated with the generation, management and distribution of power in portable devices.

[0057] Device 100 optionally also includes one or more optical sensors 164. FIG. 1A shows an optical sensor coupled to optical sensor controller 158 in I/O subsystem 106. Optical sensor 164 optionally includes charge-coupled device (CCD) or complementary metal-oxide semiconductor (CMOS) phototransistors. Optical sensor 164 receives light from the environment, projected through one or more lenses, and converts the light to data representing an image. In conjunction with imaging module 143 (also called a camera module), optical sensor 164 optionally captures still images or video. In some embodiments, an optical sensor is located on the back of device 100, opposite touch screen display 112 on the front of the device so that the touch screen display is enabled for use as a viewfinder for still and/or video image acquisition. In some embodiments, an optical sensor is located on the front of the device so that the user's image is, optionally, obtained for video conferencing while the user views the other video conference participants on the touch screen display. In some embodiments, the position of optical sensor 164 can be changed by the user (e.g., by rotating the lens and the sensor in the device housing) so that a single optical sensor 164 is used along with the touch screen display for both video conferencing and still and/or video image acquisition.

[0058] Device 100 optionally also includes one or more depth camera sensors 175. FIG. 1A shows a depth camera sensor coupled to depth camera controller 169 in I/O subsystem 106. Depth camera sensor 175 receives data from the environment to create a three dimensional model of an object (e.g., a face) within a scene from a viewpoint (e.g., a depth camera sensor). In some embodiments, in conjunction with imaging module 143 (also called a camera module), depth camera sensor 175 is optionally used to determine a depth map of different portions of an image captured by the imaging module 143. In some embodiments, a depth camera sensor is located on the front of device 100 so that the user's

image with depth information is, optionally, obtained for video conferencing while the user views the other video conference participants on the touch screen display and to capture selfies with depth map data. In some embodiments, the depth camera sensor 175 is located on the back of device, or on the back and the front of the device 100. In some embodiments, the position of depth camera sensor 175 can be changed by the user (e.g., by rotating the lens and the sensor in the device housing) so that a depth camera sensor 175 is used along with the touch screen display for both video conferencing and still and/or video image acquisition.

[0059] Device 100 optionally also includes one or more contact intensity sensors 165. FIG. 1A shows a contact intensity sensor coupled to intensity sensor controller 159 in I/O subsystem 106. Contact intensity sensor 165 optionally includes one or more piezoresistive strain gauges, capacitive force sensors, electric force sensors, piezoelectric force sensors, optical force sensors, capacitive touch-sensitive surfaces, or other intensity sensors (e.g., sensors used to measure the force (or pressure) of a contact on a touch-sensitive surface). Contact intensity sensor 165 receives contact intensity information (e.g., pressure information or a proxy for pressure information) from the environment. In some embodiments, at least one contact intensity sensor is collocated with, or proximate to, a touch-sensitive surface (e.g., touch-sensitive display system 112). In some embodiments, at least one contact intensity sensor is located on the back of device 100, opposite touch screen display 112, which is located on the front of device 100.

[0060] Device 100 optionally also includes one or more proximity sensors 166. FIG. 1A shows proximity sensor 166 coupled to peripherals interface 118. Alternately, proximity sensor 166 is, optionally, coupled to input controller 160 in I/O subsystem 106. Proximity sensor 166 optionally performs as described in U.S. Patent Application Nos. 11/241,839, "Proximity Detector In Handheld Device"; 11/240,788, "Proximity Detector In Handheld Device"; 11/620,702, "Using Ambient Light Sensor To Augment Proximity Sensor Output"; 11/586,862, "Automated Response To And Sensing Of User Activity In Portable Devices"; and 11/638,251, "Methods And Systems For Automatic Configuration Of Peripherals," which are hereby incorporated by reference in their entirety. In some embodiments, the proximity sensor turns off and disables touch screen 112 when the multifunction device is placed near the user's ear (e.g., when the user is making a phone call).

[0061] Device 100 optionally also includes one or more tactile output generators 167. FIG. 1A shows a tactile output generator coupled to haptic feedback controller 161 in I/O

subsystem 106. Tactile output generator 167 optionally includes one or more electroacoustic devices such as speakers or other audio components and/or electromechanical devices that convert energy into linear motion such as a motor, solenoid, electroactive polymer, piezoelectric actuator, electrostatic actuator, or other tactile output generating component (e.g., a component that converts electrical signals into tactile outputs on the device). Contact intensity sensor 165 receives tactile feedback generation instructions from haptic feedback module 133 and generates tactile outputs on device 100 that are capable of being sensed by a user of device 100. In some embodiments, at least one tactile output generator is collocated with, or proximate to, a touch-sensitive surface (e.g., touch-sensitive display system 112) and, optionally, generates a tactile output by moving the touch-sensitive surface vertically (e.g., in/out of a surface of device 100) or laterally (e.g., back and forth in the same plane as a surface of device 100). In some embodiments, at least one tactile output generator sensor is located on the back of device 100, opposite touch screen display 112, which is located on the front of device 100.

[0062] Device 100 optionally also includes one or more accelerometers 168. FIG. 1A shows accelerometer 168 coupled to peripherals interface 118. Alternately, accelerometer 168 is, optionally, coupled to an input controller 160 in I/O subsystem 106. Accelerometer 168 optionally performs as described in U.S. Patent Publication No. 20050190059, "Acceleration-based Theft Detection System for Portable Electronic Devices," and U.S. Patent Publication No. 20060017692, "Methods And Apparatuses For Operating A Portable Device Based On An Accelerometer," both of which are incorporated by reference herein in their entirety. In some embodiments, information is displayed on the touch screen display in a portrait view or a landscape view based on an analysis of data received from the one or more accelerometers. Device 100 optionally includes, in addition to accelerometer(s) 168, a magnetometer and a GPS (or GLONASS or other global navigation system) receiver for obtaining information concerning the location and orientation (e.g., portrait or landscape) of device 100.

[0063] In some embodiments, the software components stored in memory 102 include operating system 126, communication module (or set of instructions) 128, contact/motion module (or set of instructions) 130, graphics module (or set of instructions) 132, text input module (or set of instructions) 134, Global Positioning System (GPS) module (or set of instructions) 135, and applications (or sets of instructions) 136. Furthermore, in some

embodiments, memory 102 (FIG. 1A) or 370 (FIG. 3) stores device/global internal state 157, as shown in FIGS. 1A and 3. Device/global internal state 157 includes one or more of: active application state, indicating which applications, if any, are currently active; display state, indicating what applications, views or other information occupy various regions of touch screen display 112; sensor state, including information obtained from the device's various sensors and input control devices 116; and location information concerning the device's location and/or attitude.

[0064] Operating system 126 (e.g., Darwin, RTXC, LINUX, UNIX, OS X, iOS, WINDOWS, or an embedded operating system such as VxWorks) includes various software components and/or drivers for controlling and managing general system tasks (e.g., memory management, storage device control, power management, etc.) and facilitates communication between various hardware and software components.

[0065] Communication module 128 facilitates communication with other devices over one or more external ports 124 and also includes various software components for handling data received by RF circuitry 108 and/or external port 124. External port 124 (e.g., Universal Serial Bus (USB), FIREWIRE, etc.) is adapted for coupling directly to other devices or indirectly over a network (e.g., the Internet, wireless LAN, etc.). In some embodiments, the external port is a multi-pin (e.g., 30-pin) connector that is the same as, or similar to and/or compatible with, the 30-pin connector used on iPod® (trademark of Apple Inc.) devices.

[0066] Contact/motion module 130 optionally detects contact with touch screen 112 (in conjunction with display controller 156) and other touch-sensitive devices (e.g., a touchpad or physical click wheel). Contact/motion module 130 includes various software components for performing various operations related to detection of contact, such as determining if contact has occurred (e.g., detecting a finger-down event), determining an intensity of the contact (e.g., the force or pressure of the contact or a substitute for the force or pressure of the contact), determining if there is movement of the contact and tracking the movement across the touch-sensitive surface (e.g., detecting one or more finger-dragging events), and determining if the contact has ceased (e.g., detecting a finger-up event or a break in contact). Contact/motion module 130 receives contact data from the touch-sensitive surface. Determining movement of the point of contact, which is represented by a series of contact data, optionally includes determining speed (magnitude), velocity (magnitude and direction), and/or an acceleration (a change in magnitude and/or direction) of the point of contact. These

operations are, optionally, applied to single contacts (e.g., one finger contacts) or to multiple simultaneous contacts (e.g., "multitouch"/multiple finger contacts). In some embodiments, contact/motion module 130 and display controller 156 detect contact on a touchpad.

[0067] In some embodiments, contact/motion module 130 uses a set of one or more intensity thresholds to determine whether an operation has been performed by a user (e.g., to determine whether a user has "clicked" on an icon). In some embodiments, at least a subset of the intensity thresholds are determined in accordance with software parameters (e.g., the intensity thresholds are not determined by the activation thresholds of particular physical actuators and can be adjusted without changing the physical hardware of device 100). For example, a mouse "click" threshold of a trackpad or touch screen display can be set to any of a large range of predefined threshold values without changing the trackpad or touch screen display hardware. Additionally, in some implementations, a user of the device is provided with software settings for adjusting one or more of the set of intensity thresholds (e.g., by adjusting individual intensity thresholds and/or by adjusting a plurality of intensity thresholds at once with a system-level click "intensity" parameter).

[0068] Contact/motion module 130 optionally detects a gesture input by a user. Different gestures on the touch-sensitive surface have different contact patterns (e.g., different motions, timings, and/or intensities of detected contacts). Thus, a gesture is, optionally, detected by detecting a particular contact pattern. For example, detecting a finger tap gesture includes detecting a finger-down event followed by detecting a finger-up (liftoff) event at the same position (or substantially the same position) as the finger-down event (e.g., at the position of an icon). As another example, detecting a finger swipe gesture on the touch-sensitive surface includes detecting a finger-down event followed by detecting one or more finger-dragging events, and subsequently followed by detecting a finger-up (liftoff) event.

[0069] Graphics module 132 includes various known software components for rendering and displaying graphics on touch screen 112 or other display, including components for changing the visual impact (e.g., brightness, transparency, saturation, contrast, or other visual property) of graphics that are displayed. As used herein, the term "graphics" includes any object that can be displayed to a user, including, without limitation, text, web pages, icons (such as user-interface objects including soft keys), digital images, videos, animations, and the like.

[0070] In some embodiments, graphics module 132 stores data representing graphics to be used. Each graphic is, optionally, assigned a corresponding code. Graphics module 132 receives, from applications etc., one or more codes specifying graphics to be displayed along with, if necessary, coordinate data and other graphic property data, and then generates screen image data to output to display controller 156.

[0071] Haptic feedback module 133 includes various software components for generating instructions used by tactile output generator(s) 167 to produce tactile outputs at one or more locations on device 100 in response to user interactions with device 100.

[0072] Text input module 134, which is, optionally, a component of graphics module 132, provides soft keyboards for entering text in various applications (e.g., contacts 137, e-mail 140, IM 141, browser 147, and any other application that needs text input).

[0073] GPS module 135 determines the location of the device and provides this information for use in various applications (e.g., to telephone 138 for use in location-based dialing; to camera 143 as picture/video metadata; and to applications that provide location-based services such as weather widgets, local yellow page widgets, and map/navigation widgets).

[0074] Applications 136 optionally include the following modules (or sets of instructions), or a subset or superset thereof:

- Contacts module 137 (sometimes called an address book or contact list);
- Telephone module 138;
- Video conference module 139;
- E-mail client module 140;
- Instant messaging (IM) module 141;
- Workout support module 142;
- Camera module 143 for still and/or video images;
- Image management module 144;

- Video player module;
- Music player module;
- Browser module 147;
- Calendar module 148;
- Widget modules 149, which optionally include one or more of: weather widget 149-1, stocks widget 149-2, calculator widget 149-3, alarm clock widget 149-4, dictionary widget 149-5, and other widgets obtained by the user, as well as user-created widgets 149-6;
- Widget creator module 150 for making user-created widgets 149-6;
- Search module 151;
- Video and music player module 152, which merges video player module and music player module;
- Notes module 153;
- Map module 154; and/or
- Online video module 155.

[0075] Examples of other applications 136 that are, optionally, stored in memory 102 include other word processing applications, other image editing applications, drawing applications, presentation applications, JAVA-enabled applications, encryption, digital rights management, voice recognition, and voice replication.

[0076] In conjunction with touch screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, contacts module 137 are, optionally, used to manage an address book or contact list (e.g., stored in application internal state 192 of contacts module 137 in memory 102 or memory 370), including: adding name(s) to the address book; deleting name(s) from the address book; associating telephone number(s), e-mail address(es), physical address(es) or other information with a name; associating an image with a name; categorizing and sorting names; providing telephone

numbers or e-mail addresses to initiate and/or facilitate communications by telephone 138, video conference module 139, e-mail 140, or IM 141; and so forth.

[0077] In conjunction with RF circuitry 108, audio circuitry 110, speaker 111, microphone 113, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, telephone module 138 are optionally, used to enter a sequence of characters corresponding to a telephone number, access one or more telephone numbers in contacts module 137, modify a telephone number that has been entered, dial a respective telephone number, conduct a conversation, and disconnect or hang up when the conversation is completed. As noted above, the wireless communication optionally uses any of a plurality of communications standards, protocols, and technologies.

[0078] In conjunction with RF circuitry 108, audio circuitry 110, speaker 111, microphone 113, touch screen 112, display controller 156, optical sensor 164, optical sensor controller 158, contact/motion module 130, graphics module 132, text input module 134, contacts module 137, and telephone module 138, video conference module 139 includes executable instructions to initiate, conduct, and terminate a video conference between a user and one or more other participants in accordance with user instructions.

[0079] In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, e-mail client module 140 includes executable instructions to create, send, receive, and manage e-mail in response to user instructions. In conjunction with image management module 144, e-mail client module 140 makes it very easy to create and send e-mails with still or video images taken with camera module 143.

[0080] In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, the instant messaging module 141 includes executable instructions to enter a sequence of characters corresponding to an instant message, to modify previously entered characters, to transmit a respective instant message (for example, using a Short Message Service (SMS) or Multimedia Message Service (MMS) protocol for telephony-based instant messages or using XMPP, SIMPLE, or IMPS for Internet-based instant messages), to receive instant messages, and to view received instant messages. In some embodiments, transmitted and/or received instant messages optionally include graphics, photos, audio files, video files and/or other

attachments as are supported in an MMS and/or an Enhanced Messaging Service (EMS). As used herein, "instant messaging" refers to both telephony-based messages (e.g., messages sent using SMS or MMS) and Internet-based messages (e.g., messages sent using XMPP, SIMPLE, or IMPS).

[0081] In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, GPS module 135, map module 154, and music player module, workout support module 142 includes executable instructions to create workouts (e.g., with time, distance, and/or calorie burning goals); communicate with workout sensors (sports devices); receive workout sensor data; calibrate sensors used to monitor a workout; select and play music for a workout; and display, store, and transmit workout data.

[0082] In conjunction with touch screen 112, display controller 156, optical sensor(s) 164, optical sensor controller 158, contact/motion module 130, graphics module 132, and image management module 144, camera module 143 includes executable instructions to capture still images or video (including a video stream) and store them into memory 102, modify characteristics of a still image or video, or delete a still image or video from memory 102.

[0083] In conjunction with touch screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, and camera module 143, image management module 144 includes executable instructions to arrange, modify (e.g., edit), or otherwise manipulate, label, delete, present (e.g., in a digital slide show or album), and store still and/or video images.

[0084] In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, browser module 147 includes executable instructions to browse the Internet in accordance with user instructions, including searching, linking to, receiving, and displaying web pages or portions thereof, as well as attachments and other files linked to web pages.

[0085] In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, e-mail client module 140, and browser module 147, calendar module 148 includes executable instructions

to create, display, modify, and store calendars and data associated with calendars (e.g., calendar entries, to-do lists, etc.) in accordance with user instructions.

[0086] In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, and browser module 147, widget modules 149 are mini-applications that are, optionally, downloaded and used by a user (e.g., weather widget 149-1, stocks widget 149-2, calculator widget 149-3, alarm clock widget 149-4, and dictionary widget 149-5) or created by the user (e.g., user-created widget 149-6). In some embodiments, a widget includes an HTML (Hypertext Markup Language) file, a CSS (Cascading Style Sheets) file, and a JavaScript file. In some embodiments, a widget includes an XML (Extensible Markup Language) file and a JavaScript file (e.g., Yahoo! Widgets).

[0087] In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, and browser module 147, the widget creator module 150 are, optionally, used by a user to create widgets (e.g., turning a user-specified portion of a web page into a widget).

[0088] In conjunction with touch screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, search module 151 includes executable instructions to search for text, music, sound, image, video, and/or other files in memory 102 that match one or more search criteria (e.g., one or more user-specified search terms) in accordance with user instructions.

[0089] In conjunction with touch screen 112, display controller 156, contact/motion module 130, graphics module 132, audio circuitry 110, speaker 111, RF circuitry 108, and browser module 147, video and music player module 152 includes executable instructions that allow the user to download and play back recorded music and other sound files stored in one or more file formats, such as MP3 or AAC files, and executable instructions to display, present, or otherwise play back videos (e.g., on touch screen 112 or on an external, connected display via external port 124). In some embodiments, device 100 optionally includes the functionality of an MP3 player, such as an iPod (trademark of Apple Inc.).

[0090] In conjunction with touch screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, notes module 153 includes

executable instructions to create and manage notes, to-do lists, and the like in accordance with user instructions.

[0091] In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, GPS module 135, and browser module 147, map module 154 are, optionally, used to receive, display, modify, and store maps and data associated with maps (e.g., driving directions, data on stores and other points of interest at or near a particular location, and other location-based data) in accordance with user instructions.

[0092] In conjunction with touch screen 112, display controller 156, contact/motion module 130, graphics module 132, audio circuitry 110, speaker 111, RF circuitry 108, text input module 134, e-mail client module 140, and browser module 147, online video module 155 includes instructions that allow the user to access, browse, receive (e.g., by streaming and/or download), play back (e.g., on the touch screen or on an external, connected display via external port 124), send an e-mail with a link to a particular online video, and otherwise manage online videos in one or more file formats, such as H.264. In some embodiments, instant messaging module 141, rather than e-mail client module 140, is used to send a link to a particular online video. Additional description of the online video application can be found in U.S. Provisional Patent Application No. 60/936,562, "Portable Multifunction Device, Method, and Graphical User Interface for Playing Online Videos," filed June 20, 2007, and U.S. Patent Application No. 11/968,067, "Portable Multifunction Device, Method, and Graphical User Interface for Playing Online Videos," filed December 31, 2007, the contents of which are hereby incorporated by reference in their entirety.

[0093] Each of the above-identified modules and applications corresponds to a set of executable instructions for performing one or more functions described above and the methods described in this application (e.g., the computer-implemented methods and other information processing methods described herein). These modules (e.g., sets of instructions) need not be implemented as separate software programs (such as computer programs (e.g., including instructions)), procedures, or modules, and thus various subsets of these modules are, optionally, combined or otherwise rearranged in various embodiments. For example, video player module is, optionally, combined with music player module into a single module (e.g., video and music player module 152, FIG. 1A). In some embodiments, memory 102

optionally stores a subset of the modules and data structures identified above. Furthermore, memory 102 optionally stores additional modules and data structures not described above.

[0094] In some embodiments, device 100 is a device where operation of a predefined set of functions on the device is performed exclusively through a touch screen and/or a touchpad. By using a touch screen and/or a touchpad as the primary input control device for operation of device 100, the number of physical input control devices (such as push buttons, dials, and the like) on device 100 is, optionally, reduced.

[0095] The predefined set of functions that are performed exclusively through a touch screen and/or a touchpad optionally include navigation between user interfaces. In some embodiments, the touchpad, when touched by the user, navigates device 100 to a main, home, or root menu from any user interface that is displayed on device 100. In such embodiments, a "menu button" is implemented using a touchpad. In some other embodiments, the menu button is a physical push button or other physical input control device instead of a touchpad.

[0096] FIG. 1B is a block diagram illustrating exemplary components for event handling in accordance with some embodiments. In some embodiments, memory 102 (FIG. 1A) or 370 (FIG. 3) includes event sorter 170 (e.g., in operating system 126) and a respective application 136-1 (e.g., any of the aforementioned applications 137-151, 155, 380-390).

[0097] Event sorter 170 receives event information and determines the application 136-1 and application view 191 of application 136-1 to which to deliver the event information. Event sorter 170 includes event monitor 171 and event dispatcher module 174. In some embodiments, application 136-1 includes application internal state 192, which indicates the current application view(s) displayed on touch-sensitive display 112 when the application is active or executing. In some embodiments, device/global internal state 157 is used by event sorter 170 to determine which application(s) is (are) currently active, and application internal state 192 is used by event sorter 170 to determine application views 191 to which to deliver event information.

[0098] In some embodiments, application internal state 192 includes additional information, such as one or more of: resume information to be used when application 136-1 resumes execution, user interface state information that indicates information being displayed or that is ready for display by application 136-1, a state queue for enabling the user to go

back to a prior state or view of application 136-1, and a redo/undo queue of previous actions taken by the user.

[0099] Event monitor 171 receives event information from peripherals interface 118. Event information includes information about a sub-event (e.g., a user touch on touch-sensitive display 112, as part of a multi-touch gesture). Peripherals interface 118 transmits information it receives from I/O subsystem 106 or a sensor, such as proximity sensor 166, accelerometer(s) 168, and/or microphone 113 (through audio circuitry 110). Information that peripherals interface 118 receives from I/O subsystem 106 includes information from touch-sensitive display 112 or a touch-sensitive surface.

[0100] In some embodiments, event monitor 171 sends requests to the peripherals interface 118 at predetermined intervals. In response, peripherals interface 118 transmits event information. In other embodiments, peripherals interface 118 transmits event information only when there is a significant event (e.g., receiving an input above a predetermined noise threshold and/or for more than a predetermined duration).

[0101] In some embodiments, event sorter 170 also includes a hit view determination module 172 and/or an active event recognizer determination module 173.

[0102] Hit view determination module 172 provides software procedures for determining where a sub-event has taken place within one or more views when touch-sensitive display 112 displays more than one view. Views are made up of controls and other elements that a user can see on the display.

[0103] Another aspect of the user interface associated with an application is a set of views, sometimes herein called application views or user interface windows, in which information is displayed and touch-based gestures occur. The application views (of a respective application) in which a touch is detected optionally correspond to programmatic levels within a programmatic or view hierarchy of the application. For example, the lowest level view in which a touch is detected is, optionally, called the hit view, and the set of events that are recognized as proper inputs are, optionally, determined based, at least in part, on the hit view of the initial touch that begins a touch-based gesture.

[0104] Hit view determination module 172 receives information related to sub-events of a touch-based gesture. When an application has multiple views organized in a hierarchy, hit

view determination module 172 identifies a hit view as the lowest view in the hierarchy which should handle the sub-event. In most circumstances, the hit view is the lowest level view in which an initiating sub-event occurs (e.g., the first sub-event in the sequence of sub-events that form an event or potential event). Once the hit view is identified by the hit view determination module 172, the hit view typically receives all sub-events related to the same touch or input source for which it was identified as the hit view.

[0105] Active event recognizer determination module 173 determines which view or views within a view hierarchy should receive a particular sequence of sub-events. In some embodiments, active event recognizer determination module 173 determines that only the hit view should receive a particular sequence of sub-events. In other embodiments, active event recognizer determination module 173 determines that all views that include the physical location of a sub-event are actively involved views, and therefore determines that all actively involved views should receive a particular sequence of sub-events. In other embodiments, even if touch sub-events were entirely confined to the area associated with one particular view, views higher in the hierarchy would still remain as actively involved views.

[0106] Event dispatcher module 174 dispatches the event information to an event recognizer (e.g., event recognizer 180). In embodiments including active event recognizer determination module 173, event dispatcher module 174 delivers the event information to an event recognizer determined by active event recognizer determination module 173. In some embodiments, event dispatcher module 174 stores in an event queue the event information, which is retrieved by a respective event receiver 182.

[0107] In some embodiments, operating system 126 includes event sorter 170. Alternatively, application 136-1 includes event sorter 170. In yet other embodiments, event sorter 170 is a stand-alone module, or a part of another module stored in memory 102, such as contact/motion module 130.

[0108] In some embodiments, application 136-1 includes a plurality of event handlers 190 and one or more application views 191, each of which includes instructions for handling touch events that occur within a respective view of the application's user interface. Each application view 191 of the application 136-1 includes one or more event recognizers 180. Typically, a respective application view 191 includes a plurality of event recognizers 180. In other embodiments, one or more of event recognizers 180 are part of a separate module, such

as a user interface kit or a higher level object from which application 136-1 inherits methods and other properties. In some embodiments, a respective event handler 190 includes one or more of: data updater 176, object updater 177, GUI updater 178, and/or event data 179 received from event sorter 170. Event handler 190 optionally utilizes or calls data updater 176, object updater 177, or GUI updater 178 to update the application internal state 192. Alternatively, one or more of the application views 191 include one or more respective event handlers 190. Also, in some embodiments, one or more of data updater 176, object updater 177, and GUI updater 178 are included in a respective application view 191.

[0109] A respective event recognizer 180 receives event information (e.g., event data 179) from event sorter 170 and identifies an event from the event information. Event recognizer 180 includes event receiver 182 and event comparator 184. In some embodiments, event recognizer 180 also includes at least a subset of: metadata 183, and event delivery instructions 188 (which optionally include sub-event delivery instructions).

[0110] Event receiver 182 receives event information from event sorter 170. The event information includes information about a sub-event, for example, a touch or a touch movement. Depending on the sub-event, the event information also includes additional information, such as location of the sub-event. When the sub-event concerns motion of a touch, the event information optionally also includes speed and direction of the sub-event. In some embodiments, events include rotation of the device from one orientation to another (e.g., from a portrait orientation to a landscape orientation, or vice versa), and the event information includes corresponding information about the current orientation (also called device attitude) of the device.

[0111] Event comparator 184 compares the event information to predefined event or sub-event definitions and, based on the comparison, determines an event or sub-event, or determines or updates the state of an event or sub-event. In some embodiments, event comparator 184 includes event definitions 186. Event definitions 186 contain definitions of events (e.g., predefined sequences of sub-events), for example, event 1 (187-1), event 2 (187-2), and others. In some embodiments, sub-events in an event (e.g., 187-1 and/or 187-2) include, for example, touch begin, touch end, touch movement, touch cancellation, and multiple touching. In one example, the definition for event 1 (187-1) is a double tap on a displayed object. The double tap, for example, comprises a first touch (touch begin) on the displayed object for a predetermined phase, a first liftoff (touch end) for a predetermined

phase, a second touch (touch begin) on the displayed object for a predetermined phase, and a second liftoff (touch end) for a predetermined phase. In another example, the definition for event 2 (187-2) is a dragging on a displayed object. The dragging, for example, comprises a touch (or contact) on the displayed object for a predetermined phase, a movement of the touch across touch-sensitive display 112, and liftoff of the touch (touch end). In some embodiments, the event also includes information for one or more associated event handlers 190.

[0112] In some embodiments, event definitions 186 include a definition of an event for a respective user-interface object. In some embodiments, event comparator 184 performs a hit test to determine which user-interface object is associated with a sub-event. For example, in an application view in which three user-interface objects are displayed on touch-sensitive display 112, when a touch is detected on touch-sensitive display 112, event comparator 184 performs a hit test to determine which of the three user-interface objects is associated with the touch (sub-event). If each displayed object is associated with a respective event handler 190, the event comparator uses the result of the hit test to determine which event handler 190 should be activated. For example, event comparator 184 selects an event handler associated with the sub-event and the object triggering the hit test.

[0113] In some embodiments, the definition for a respective event (187) also includes delayed actions that delay delivery of the event information until after it has been determined whether the sequence of sub-events does or does not correspond to the event recognizer's event type.

[0114] When a respective event recognizer 180 determines that the series of sub-events do not match any of the events in event definitions 186, the respective event recognizer 180 enters an event impossible, event failed, or event ended state, after which it disregards subsequent sub-events of the touch-based gesture. In this situation, other event recognizers, if any, that remain active for the hit view continue to track and process sub-events of an ongoing touch-based gesture.

[0115] In some embodiments, a respective event recognizer 180 includes metadata 183 with configurable properties, flags, and/or lists that indicate how the event delivery system should perform sub-event delivery to actively involved event recognizers. In some embodiments, metadata 183 includes configurable properties, flags, and/or lists that indicate

how event recognizers interact, or are enabled to interact, with one another. In some embodiments, metadata 183 includes configurable properties, flags, and/or lists that indicate whether sub-events are delivered to varying levels in the view or programmatic hierarchy.

[0116] In some embodiments, a respective event recognizer 180 activates event handler 190 associated with an event when one or more particular sub-events of an event are recognized. In some embodiments, a respective event recognizer 180 delivers event information associated with the event to event handler 190. Activating an event handler 190 is distinct from sending (and deferred sending) sub-events to a respective hit view. In some embodiments, event recognizer 180 throws a flag associated with the recognized event, and event handler 190 associated with the flag catches the flag and performs a predefined process.

[0117] In some embodiments, event delivery instructions 188 include sub-event delivery instructions that deliver event information about a sub-event without activating an event handler. Instead, the sub-event delivery instructions deliver event information to event handlers associated with the series of sub-events or to actively involved views. Event handlers associated with the series of sub-events or with actively involved views receive the event information and perform a predetermined process.

[0118] In some embodiments, data updater 176 creates and updates data used in application 136-1. For example, data updater 176 updates the telephone number used in contacts module 137, or stores a video file used in video player module. In some embodiments, object updater 177 creates and updates objects used in application 136-1. For example, object updater 177 creates a new user-interface object or updates the position of a user-interface object. GUI updater 178 updates the GUI. For example, GUI updater 178 prepares display information and sends it to graphics module 132 for display on a touch-sensitive display.

[0119] In some embodiments, event handler(s) 190 includes or has access to data updater 176, object updater 177, and GUI updater 178. In some embodiments, data updater 176, object updater 177, and GUI updater 178 are included in a single module of a respective application 136-1 or application view 191. In other embodiments, they are included in two or more software modules.

[0120] It shall be understood that the foregoing discussion regarding event handling of user touches on touch-sensitive displays also applies to other forms of user inputs to operate

multifunction devices 100 with input devices, not all of which are initiated on touch screens. For example, mouse movement and mouse button presses, optionally coordinated with single or multiple keyboard presses or holds; contact movements such as taps, drags, scrolls, etc. on touchpads; pen stylus inputs; movement of the device; oral instructions; detected eye movements; biometric inputs; and/or any combination thereof are optionally utilized as inputs corresponding to sub-events which define an event to be recognized.

[0121] FIG. 2 illustrates a portable multifunction device 100 having a touch screen 112 in accordance with some embodiments. The touch screen optionally displays one or more graphics within user interface (UI) 200. In this embodiment, as well as others described below, a user is enabled to select one or more of the graphics by making a gesture on the graphics, for example, with one or more fingers 202 (not drawn to scale in the figure) or one or more styluses 203 (not drawn to scale in the figure). In some embodiments, selection of one or more graphics occurs when the user breaks contact with the one or more graphics. In some embodiments, the gesture optionally includes one or more taps, one or more swipes (from left to right, right to left, upward and/or downward), and/or a rolling of a finger (from right to left, left to right, upward and/or downward) that has made contact with device 100. In some implementations or circumstances, inadvertent contact with a graphic does not select the graphic. For example, a swipe gesture that sweeps over an application icon optionally does not select the corresponding application when the gesture corresponding to selection is a tap.

[0122] Device 100 optionally also include one or more physical buttons, such as "home" or menu button 204. As described previously, menu button 204 is, optionally, used to navigate to any application 136 in a set of applications that are, optionally, executed on device 100. Alternatively, in some embodiments, the menu button is implemented as a soft key in a GUI displayed on touch screen 112.

[0123] In some embodiments, device 100 includes touch screen 112, menu button 204, push button 206 for powering the device on/off and locking the device, volume adjustment button(s) 208, subscriber identity module (SIM) card slot 210, headset jack 212, and docking/charging external port 124. Push button 206 is, optionally, used to turn the power on/off on the device by depressing the button and holding the button in the depressed state for a predefined time interval; to lock the device by depressing the button and releasing the button before the predefined time interval has elapsed; and/or to unlock the device or initiate

an unlock process. In an alternative embodiment, device 100 also accepts verbal input for activation or deactivation of some functions through microphone 113. Device 100 also, optionally, includes one or more contact intensity sensors 165 for detecting intensity of contacts on touch screen 112 and/or one or more tactile output generators 167 for generating tactile outputs for a user of device 100.

[0124] FIG. 3 is a block diagram of an exemplary multifunction device with a display and a touch-sensitive surface in accordance with some embodiments. Device 300 need not be portable. In some embodiments, device 300 is a laptop computer, a desktop computer, a tablet computer, a multimedia player device, a navigation device, an educational device (such as a child's learning toy), a gaming system, or a control device (e.g., a home or industrial controller). Device 300 typically includes one or more processing units (CPUs) 310, one or more network or other communications interfaces 360, memory 370, and one or more communication buses 320 for interconnecting these components. Communication buses 320 optionally include circuitry (sometimes called a chipset) that interconnects and controls communications between system components. Device 300 includes input/output (I/O) interface 330 comprising display 340, which is typically a touch screen display. I/O interface 330 also optionally includes a keyboard and/or mouse (or other pointing device) 350 and touchpad 355, tactile output generator 357 for generating tactile outputs on device 300 (e.g., similar to tactile output generator(s) 167 described above with reference to FIG. 1A), sensors 359 (e.g., optical, acceleration, proximity, touch-sensitive, and/or contact intensity sensors similar to contact intensity sensor(s) 165 described above with reference to FIG. 1A). Memory 370 includes high-speed random access memory, such as DRAM, SRAM, DDR RAM, or other random access solid state memory devices; and optionally includes non-volatile memory, such as one or more magnetic disk storage devices, optical disk storage devices, flash memory devices, or other non-volatile solid state storage devices. Memory 370 optionally includes one or more storage devices remotely located from CPU(s) 310. In some embodiments, memory 370 stores programs, modules, and data structures analogous to the programs, modules, and data structures stored in memory 102 of portable multifunction device 100 (FIG. 1A), or a subset thereof. Furthermore, memory 370 optionally stores additional programs, modules, and data structures not present in memory 102 of portable multifunction device 100. For example, memory 370 of device 300 optionally stores drawing module 380, presentation module 382, word processing module 384, website creation module

386, disk authoring module 388, and/or spreadsheet module 390, while memory 102 of portable multifunction device 100 (FIG. 1A) optionally does not store these modules.

[0125] Each of the above-identified elements in FIG. 3 is, optionally, stored in one or more of the previously mentioned memory devices. Each of the above-identified modules corresponds to a set of instructions for performing a function described above. The above-identified modules or computer programs (e.g., sets of instructions or including instructions) need not be implemented as separate software programs (such as computer programs (e.g., including instructions)), procedures, or modules, and thus various subsets of these modules are, optionally, combined or otherwise rearranged in various embodiments. In some embodiments, memory 370 optionally stores a subset of the modules and data structures identified above. Furthermore, memory 370 optionally stores additional modules and data structures not described above.

[0126] Attention is now directed towards embodiments of user interfaces that are, optionally, implemented on, for example, portable multifunction device 100.

[0127] FIG. 4A illustrates an exemplary user interface for a menu of applications on portable multifunction device 100 in accordance with some embodiments. Similar user interfaces are, optionally, implemented on device 300. In some embodiments, user interface 400 includes the following elements, or a subset or superset thereof:

- Signal strength indicator(s) 402 for wireless communication(s), such as cellular and Wi-Fi signals;
- Time 404;
- Bluetooth indicator 405;
- Battery status indicator 406;
- Tray 408 with icons for frequently used applications, such as:
    - Icon 416 for telephone module 138, labeled “Phone,” which optionally includes an indicator 414 of the number of missed calls or voicemail messages;

- Icon 418 for e-mail client module 140, labeled "Mail," which optionally includes an indicator 410 of the number of unread e-mails;
- Icon 420 for browser module 147, labeled "Browser;" and
- Icon 422 for video and music player module 152, also referred to as iPod (trademark of Apple Inc.) module 152, labeled "iPod;" and

- Icons for other applications, such as:
  - Icon 424 for IM module 141, labeled "Messages;"
  - Icon 426 for calendar module 148, labeled "Calendar;"
  - Icon 428 for image management module 144, labeled "Photos;"
  - Icon 430 for camera module 143, labeled "Camera;"
  - Icon 432 for online video module 155, labeled "Online Video;"
  - Icon 434 for stocks widget 149-2, labeled "Stocks;"
  - Icon 436 for map module 154, labeled "Maps;"
  - Icon 438 for weather widget 149-1, labeled "Weather;"
  - Icon 440 for alarm clock widget 149-4, labeled "Clock;"
  - Icon 442 for workout support module 142, labeled "Workout Support;"
  - Icon 444 for notes module 153, labeled "Notes;" and
  - Icon 446 for a settings application or module, labeled "Settings," which provides access to settings for device 100 and its various applications 136.

[0128] It should be noted that the icon labels illustrated in FIG. 4A are merely exemplary. For example, icon 422 for video and music player module 152 is labeled "Music" or "Music Player." Other labels are, optionally, used for various application icons. In some embodiments, a label for a respective application icon includes a name of an application corresponding to the respective application icon. In some embodiments, a label for a particular application icon is distinct from a name of an application corresponding to the particular application icon.

[0129] FIG. 4B illustrates an exemplary user interface on a device (e.g., device 300, FIG. 3) with a touch-sensitive surface 451 (e.g., a tablet or touchpad 355, FIG. 3) that is separate

from the display 450 (e.g., touch screen display 112). Device 300 also, optionally, includes one or more contact intensity sensors (e.g., one or more of sensors 359) for detecting intensity of contacts on touch-sensitive surface 451 and/or one or more tactile output generators 357 for generating tactile outputs for a user of device 300.

[0130] Although some of the examples that follow will be given with reference to inputs on touch screen display 112 (where the touch-sensitive surface and the display are combined), in some embodiments, the device detects inputs on a touch-sensitive surface that is separate from the display, as shown in FIG. 4B. In some embodiments, the touch-sensitive surface (e.g., 451 in FIG. 4B) has a primary axis (e.g., 452 in FIG. 4B) that corresponds to a primary axis (e.g., 453 in FIG. 4B) on the display (e.g., 450). In accordance with these embodiments, the device detects contacts (e.g., 460 and 462 in FIG. 4B) with the touch-sensitive surface 451 at locations that correspond to respective locations on the display (e.g., in FIG. 4B, 460 corresponds to 468 and 462 corresponds to 470). In this way, user inputs (e.g., contacts 460 and 462, and movements thereof) detected by the device on the touch-sensitive surface (e.g., 451 in FIG. 4B) are used by the device to manipulate the user interface on the display (e.g., 450 in FIG. 4B) of the multifunction device when the touch-sensitive surface is separate from the display. It should be understood that similar methods are, optionally, used for other user interfaces described herein.

[0131] Additionally, while the following examples are given primarily with reference to finger inputs (e.g., finger contacts, finger tap gestures, finger swipe gestures), it should be understood that, in some embodiments, one or more of the finger inputs are replaced with input from another input device (e.g., a mouse-based input or stylus input). For example, a swipe gesture is, optionally, replaced with a mouse click (e.g., instead of a contact) followed by movement of the cursor along the path of the swipe (e.g., instead of movement of the contact). As another example, a tap gesture is, optionally, replaced with a mouse click while the cursor is located over the location of the tap gesture (e.g., instead of detection of the contact followed by ceasing to detect the contact). Similarly, when multiple user inputs are simultaneously detected, it should be understood that multiple computer mice are, optionally, used simultaneously, or a mouse and finger contacts are, optionally, used simultaneously.

[0132] FIG. 5A illustrates exemplary personal electronic device 500. Device 500 includes body 502. In some embodiments, device 500 can include some or all of the features described with respect to devices 100 and 300 (e.g., FIGS. 1A-4B). In some embodiments,

device 500 has touch-sensitive display screen 504, hereafter touch screen 504. Alternatively, or in addition to touch screen 504, device 500 has a display and a touch-sensitive surface. As with devices 100 and 300, in some embodiments, touch screen 504 (or the touch-sensitive surface) optionally includes one or more intensity sensors for detecting intensity of contacts (e.g., touches) being applied. The one or more intensity sensors of touch screen 504 (or the touch-sensitive surface) can provide output data that represents the intensity of touches. The user interface of device 500 can respond to touches based on their intensity, meaning that touches of different intensities can invoke different user interface operations on device 500.

[0133] Exemplary techniques for detecting and processing touch intensity are found, for example, in related applications: International Patent Application Serial No. PCT/US2013/040061, titled "Device, Method, and Graphical User Interface for Displaying User Interface Objects Corresponding to an Application," filed May 8, 2013, published as WIPO Publication No. WO/2013/169849, and International Patent Application Serial No. PCT/US2013/069483, titled "Device, Method, and Graphical User Interface for Transitioning Between Touch Input to Display Output Relationships," filed November 11, 2013, published as WIPO Publication No. WO/2014/105276, each of which is hereby incorporated by reference in their entirety.

[0134] In some embodiments, device 500 has one or more input mechanisms 506 and 508. Input mechanisms 506 and 508, if included, can be physical. Examples of physical input mechanisms include push buttons and rotatable mechanisms. In some embodiments, device 500 has one or more attachment mechanisms. Such attachment mechanisms, if included, can permit attachment of device 500 with, for example, hats, eyewear, earrings, necklaces, shirts, jackets, bracelets, watch straps, chains, trousers, belts, shoes, purses, backpacks, and so forth. These attachment mechanisms permit device 500 to be worn by a user.

[0135] FIG. 5B depicts exemplary personal electronic device 500. In some embodiments, device 500 can include some or all of the components described with respect to FIGS. 1A, 1B, and 3. Device 500 has bus 512 that operatively couples I/O section 514 with one or more computer processors 516 and memory 518. I/O section 514 can be connected to display 504, which can have touch-sensitive component 522 and, optionally, intensity sensor 524 (e.g., contact intensity sensor). In addition, I/O section 514 can be connected with communication unit 530 for receiving application and operating system data, using Wi-Fi, Bluetooth, near

field communication (NFC), cellular, and/or other wireless communication techniques. Device 500 can include input mechanisms 506 and/or 508. Input mechanism 506 is, optionally, a rotatable input device or a depressible and rotatable input device, for example. Input mechanism 508 is, optionally, a button, in some examples.

[0136] Input mechanism 508 is, optionally, a microphone, in some examples. Personal electronic device 500 optionally includes various sensors, such as GPS sensor 532, accelerometer 534, directional sensor 540 (e.g., compass), gyroscope 536, motion sensor 538, and/or a combination thereof, all of which can be operatively connected to I/O section 514.

[0137] Memory 518 of personal electronic device 500 can include one or more non-transitory computer-readable storage mediums, for storing computer-executable instructions, which, when executed by one or more computer processors 516, for example, can cause the computer processors to perform the techniques described below, including process 700 (FIG. 7). A computer-readable storage medium can be any medium that can tangibly contain or store computer-executable instructions for use by or in connection with the instruction execution system, apparatus, or device. In some examples, the storage medium is a transitory computer-readable storage medium. In some examples, the storage medium is a non-transitory computer-readable storage medium. The non-transitory computer-readable storage medium can include, but is not limited to, magnetic, optical, and/or semiconductor storages. Examples of such storage include magnetic disks, optical discs based on CD, DVD, or Blu-ray technologies, as well as persistent solid-state memory such as flash, solid-state drives, and the like. Personal electronic device 500 is not limited to the components and configuration of FIG. 5B, but can include other or additional components in multiple configurations.

[0138] As used here, the term "affordance" refers to a user-interactive graphical user interface object that is, optionally, displayed on the display screen of devices 100, 300, and/or 500 (FIGS. 1A, 3, and 5A-5B). For example, an image (e.g., icon), a button, and text (e.g., hyperlink) each optionally constitute an affordance.

[0139] As used herein, the term "focus selector" refers to an input element that indicates a current part of a user interface with which a user is interacting. In some implementations that include a cursor or other location marker, the cursor acts as a "focus selector" so that when an input (e.g., a press input) is detected on a touch-sensitive surface (e.g., touchpad 355 in FIG. 3 or touch-sensitive surface 451 in FIG. 4B) while the cursor is over a particular user

interface element (e.g., a button, window, slider, or other user interface element), the particular user interface element is adjusted in accordance with the detected input. In some implementations that include a touch screen display (e.g., touch-sensitive display system 112 in FIG. 1A or touch screen 112 in FIG. 4A) that enables direct interaction with user interface elements on the touch screen display, a detected contact on the touch screen acts as a "focus selector" so that when an input (e.g., a press input by the contact) is detected on the touch screen display at a location of a particular user interface element (e.g., a button, window, slider, or other user interface element), the particular user interface element is adjusted in accordance with the detected input. In some implementations, focus is moved from one region of a user interface to another region of the user interface without corresponding movement of a cursor or movement of a contact on a touch screen display (e.g., by using a tab key or arrow keys to move focus from one button to another button); in these implementations, the focus selector moves in accordance with movement of focus between different regions of the user interface. Without regard to the specific form taken by the focus selector, the focus selector is generally the user interface element (or contact on a touch screen display) that is controlled by the user so as to communicate the user's intended interaction with the user interface (e.g., by indicating, to the device, the element of the user interface with which the user is intending to interact). For example, the location of a focus selector (e.g., a cursor, a contact, or a selection box) over a respective button while a press input is detected on the touch-sensitive surface (e.g., a touchpad or touch screen) will indicate that the user is intending to activate the respective button (as opposed to other user interface elements shown on a display of the device).

[0140] As used in the specification and claims, the term "characteristic intensity" of a contact refers to a characteristic of the contact based on one or more intensities of the contact. In some embodiments, the characteristic intensity is based on multiple intensity samples. The characteristic intensity is, optionally, based on a predefined number of intensity samples, or a set of intensity samples collected during a predetermined time period (e.g., 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10 seconds) relative to a predefined event (e.g., after detecting the contact, prior to detecting liftoff of the contact, before or after detecting a start of movement of the contact, prior to detecting an end of the contact, before or after detecting an increase in intensity of the contact, and/or before or after detecting a decrease in intensity of the contact). A characteristic intensity of a contact is, optionally, based on one or more of: a maximum value of the intensities of the contact, a mean value of the intensities of the contact, an average

value of the intensities of the contact, a top 10 percentile value of the intensities of the contact, a value at the half maximum of the intensities of the contact, a value at the 90 percent maximum of the intensities of the contact, or the like. In some embodiments, the duration of the contact is used in determining the characteristic intensity (e.g., when the characteristic intensity is an average of the intensity of the contact over time). In some embodiments, the characteristic intensity is compared to a set of one or more intensity thresholds to determine whether an operation has been performed by a user. For example, the set of one or more intensity thresholds optionally includes a first intensity threshold and a second intensity threshold. In this example, a contact with a characteristic intensity that does not exceed the first threshold results in a first operation, a contact with a characteristic intensity that exceeds the first intensity threshold and does not exceed the second intensity threshold results in a second operation, and a contact with a characteristic intensity that exceeds the second threshold results in a third operation. In some embodiments, a comparison between the characteristic intensity and one or more thresholds is used to determine whether or not to perform one or more operations (e.g., whether to perform a respective operation or forgo performing the respective operation), rather than being used to determine whether to perform a first operation or a second operation.

[0141] FIG. 5C illustrates exemplary electronic device 580. Device 580 includes body 580A. In some embodiments, device 580 can include some or all of the features described with respect to devices 100, 300, and 500 (e.g., FIGS. 1A-5B). In some embodiments, device 580 has one or more speakers 580B (concealed in body 580A), one or more microphones 580C, one or more touch-sensitive surfaces 580D, and one or more displays 580E. Alternatively, or in addition to a display and touch-sensitive surface 580D, the device has a touch-sensitive display (also referred to as a touchscreen). As with devices 100, 300, and 500, in some embodiments, touch-sensitive surface 580D (or the touch screen) optionally includes one or more intensity sensors for detecting intensity of contacts (e.g., touches) being applied. The one or more intensity sensors of touch-sensitive surface 580D (or the touchscreen) can provide output data that represents the intensity of touches. The user interface of device 580 can respond to touches based on their intensity, meaning that touches of different intensities can invoke different user interface operations on device 580. In some embodiments, the one or more displays 580E are one or more light-emitting diodes (LEDs). For example, a display can be a single LED, an LED cluster (e.g., a red, a green, and a blue LED), a plurality of discrete LEDs, a plurality of discrete LED clusters, or other arrangement

of one or more LEDs. For example, the display 580E can be an array of nine discrete LED clusters arranged in a circular shape (e.g., a ring). In some examples, the one or more displays are comprised of one or more of another type of light-emitting elements.

[0142] FIG. 5D depicts exemplary personal electronic device 580. In some embodiments, device 580 can include some or all of the components described with respect to FIGS. 1A, 1B, 3, and 5A-5B. Device 580 has bus 592 that operatively couples I/O section 594 with one or more computer processors 596 and memory 598. I/O section 594 can be connected to display 582, which can have touch-sensitive component 584 and, optionally, intensity sensor 585 (e.g., contact intensity sensor). In some embodiments, touch-sensitive component 584 is a separate component than display 582. In addition, I/O section 594 can be connected with communication unit 590 for receiving application and operating system data, using Wi-Fi, Bluetooth, near field communication (NFC), cellular, and/or other wireless communication techniques. Device 580 can include input mechanisms 588. Input mechanism 588 is, optionally, a button, in some examples. Input mechanism 588 is, optionally, a microphone, in some examples. Input mechanism 588 is, optionally, a plurality of microphones (e.g., a microphone array).

[0143] Electronic device 580 includes speaker 586 for outputting audio. Device 580 can include audio circuitry (e.g., in I/O section 594) that receives audio data, converts the audio data to an electrical signal, and transmits the electrical signal to speaker 586. Speaker 586 converts the electrical signal to human-audible sound waves. The audio circuitry (e.g., in I/O section 594) also receives electrical signals converted by a microphone (e.g., input mechanism 588) from sound waves. The audio circuitry (e.g., in I/O section 594) converts the electrical signal to audio data. Audio data is, optionally, retrieved from and/or transmitted to memory 598 and/or RF circuitry (e.g., in communication unit 590) by I/O section 594.

[0144] Memory 598 of personal electronic device 580 can include one or more non-transitory computer-readable storage mediums, for storing computer-executable instructions, which, when executed by one or more computer processors 596, for example, can cause the computer processors to perform the techniques described below, including process 700 (FIG. 7). A computer-readable storage medium can be any medium that can tangibly contain or store computer-executable instructions for use by or in connection with the instruction execution system, apparatus, or device. In some examples, the storage medium is a transitory

computer-readable storage medium. In some examples, the storage medium is a non-transitory computer-readable storage medium. The non-transitory computer-readable storage medium can include, but is not limited to, magnetic, optical, and/or semiconductor storages. Examples of such storage include magnetic disks, optical discs based on CD, DVD, or Blu-ray technologies, as well as persistent solid-state memory such as flash, solid-state drives, and the like. Personal electronic device 580 is not limited to the components and configuration of FIG. 5D, but can include other or additional components in multiple configurations.

[0145] As used herein, an "installed application" refers to a software application that has been downloaded onto an electronic device (e.g., devices 100, 300, and/or 500) and is ready to be launched (e.g., become opened) on the device. In some embodiments, a downloaded application becomes an installed application by way of an installation program that extracts program portions from a downloaded package and integrates the extracted portions with the operating system of the computer system.

[0146] As used herein, the terms "open application" or "executing application" refer to a software application with retained state information (e.g., as part of device/global internal state 157 and/or application internal state 192). An open or executing application is, optionally, any one of the following types of applications:

- an active application, which is currently displayed on a display screen of the device that the application is being used on;
- a background application (or background processes), which is not currently displayed, but one or more processes for the application are being processed by one or more processors; and
- a suspended or hibernated application, which is not running, but has state information that is stored in memory (volatile and non-volatile, respectively) and that can be used to resume execution of the application.

[0147] As used herein, the term "closed application" refers to software applications without retained state information (e.g., state information for closed applications is not stored in a memory of the device). Accordingly, closing an application includes stopping and/or removing application processes for the application and removing state information for the application from the memory of the device. Generally, opening a second application while in

a first application does not close the first application. When the second application is displayed and the first application ceases to be displayed, the first application becomes a background application.

[0148] Attention is now directed towards embodiments of user interfaces ("UI") and associated processes that are implemented on an electronic device, such as portable multifunction device 100, device 300, or device 500.

[0149] FIGS. 6A-6O illustrate exemplary user interfaces for managing interactions between devices, in accordance with some embodiments. The user interfaces in these figures are used to illustrate the processes described below, including the processes in FIG. 7.

[0150] At FIG. 6A, diagram 620 depicts the positioning of computer system 600 relative to computer system 602. Diagram 620 includes outer threshold distance 620-1 and inner threshold distance 620-2, both of which are provided for illustrative purposes only and do not form a part of user interface(s) displayed by device 600. Outer threshold distance 620-1 corresponds to a first predetermined distance (e.g., 4 inches, 8 inches, 12 inches, or 16 inches) from computer system 602. Inner threshold distance 620-2 corresponds to a second predetermined distance (e.g., 2 inches, 4 inches, 6 inches, or 8 inches) from computer system 602. As explained in greater detail below, both computer system 600 and computer system 602 perform various operations based on the distance between computer system 600 and computer system 602. As illustrated in FIG. 6A, computer system 600 is positioned outside of outer threshold distance 620-1.

[0151] FIG. 6A also includes a detailed depiction of computer system 600 and computer system 602 (e.g., the right half of FIG. 6A). At FIG. 6A, computer system 602 is depicted as a smart speaker and computer system 600 is depicted as a smart phone. While computer system 602 is depicted as a smart speaker, it should be recognized that this is merely an example and techniques described herein can work with other types of computer systems, such as a thermostat, a light control, a personal gaming system, and/or a desktop computer. Further, while computer system 600 is depicted as a smart phone, it should be recognized that this is merely an example and techniques described herein can work with other types of computer systems such as a smart watch, a smart speaker, and/or a tablet. In some embodiments, device 600 includes one or more features of devices 100, 300, and/or 500. In some embodiments, device 602 includes one or more features of device 580.

[0152] As illustrated in FIG. 6A, computer system 600 displays home screen user interface 614 that includes application icons 622. Each icon in application icons 622 corresponds to a respective application that is installed on computer system 600. Further, as illustrated in FIG. 6A, computer system 600 displays media user interface object 604 while computer system 600 displays home screen user interface 614. Media user interface object 604 includes equalizer bars 618 and album art 606. Equalizer bars 618 animate (e.g., move up and down, side to side, and/or in a diagonal direction) to indicate that a targeted computer system (e.g., computer system 600 or computer system 602) is currently playing back a media item. Album art 606 is a graphical representation of the media item that is being played back on the targeted computer system. As explained in greater detail below, computer system 600 displays media user interface object 604 at various sizes depending on the distance between computer system 600 and computer system 602. In some embodiments, media user interface object 604 includes a textual representation of the media item that is being played back on the targeted computer system. In some embodiments, media user interface object 604 includes an indication (e.g., a graphical and/or textual indication) of the device that is playing back the media represented by album art 606.

[0153] Computer system 600 includes one or more sensors 616 (e.g., infrared sensors and/or optical sensors) (e.g., one or more sensors 616 are integrated into computer system 600). As illustrated in FIG. 6A, media user interface object 604 is displayed around (e.g., encompassing) one or more sensors 616 of computer system 600.

[0154] At FIG. 6A, as indicated by music symbols 626a, computer system 600 is playing back a first media item (e.g., a song, a podcast, and/or a voice memo). At FIG. 6A, there are no music symbols in close proximity of computer system 602. Accordingly, at FIG. 6A, computer system 602 is not currently playing a respective media item. Throughout FIGS. 6A- 6O, the size of music symbols 626a correspond to the playback volume of computer system 600 and/or computer system 602. The larger music symbols 626a are, the higher the playback volume of computer system 600 and/or computer system 602.

[0155] As illustrated in FIG. 6A, home screen user interface 614 includes status bar 612. Status bar 612 includes time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c. Time user interface element 612a indicates the current time. Signal status user interface element 612b indicates whether computer system 600 is connected to a wireless cellular signal. Battery status user interface

element 612c indicates the current battery life of computer system 600. In some embodiments, status bar 612 includes additional user interface elements that indicate a respective status of computer system 600.

[0156] Various media transfer processes are described throughout FIGS. 6A-6O. In FIGS. 6A-6O, the various media transfer processes involve repositioning computer system 600 relative to computer system 602. However, it should be noted that in some embodiments, the various media transfer processes described below can be performed by moving computer system 602 closer to computer system 600 and/or moving both computer system 600 and computer system 602 such that the distance between computer system 600 and computer system 602 is decreased.

[0157] FIGS. 6A-6F illustrate an exemplary media transfer process where computer system 600 is initially playing back the first media item and computer system 602 is not playing back a respective media item. During the media transfer process illustrated in FIGS. 6B-6F, playback of the first media item is transferred from computer system 600 to computer system 602.

[0158] At FIG. 6A, computer system 600 detects that the distance between computer system 600 and computer 602 has decreased. In some embodiments, computer system 600 detects that the distance between computer system 600 and computer system 602 has decreased using one or more distance detection techniques such as detecting a change of a signal strength (e.g., wireless signal strength (e.g., Wi-Fi wireless signal, Bluetooth wireless signal, and/or ultra-wideband wireless signal)) that is exchanged between the computer system 600 and computer system 602. In some embodiments, computer system 602 detects that the distance between computer system 600 and computer 602 has decreased using one or more distance detection techniques such as detecting a change of a signal strength (e.g., wireless signal strength (e.g., Wi-Fi wireless signal, Bluetooth wireless signal, and/or ultra-wideband wireless signal)) that is exchanged between the computer system 600 and computer system 602, and then transmits data to computer system 600 indicating the detected change in distance.

[0159] Throughout the discussion of FIGS. 6A-6O, various references are made with respect to determinations being made regarding the distance between computer system 600 and computer system 602. In some embodiments, computer system 600 makes the

determination regarding the distance between computer system 600 and computer system 602 using one or more distance detection techniques (e.g., detecting a change in a signal strength that is exchanged between computer system 600 and computer system 602). In some embodiments, computer system 602 makes the determination regarding the distance between computer system 600 and computer system 602 using one or more distance detection techniques (e.g., detecting a change in a signal strength that is exchanged between computer system 600 and computer system 602). In such embodiments, computer system 602 can transmit data to computer 600 indicating the detected change in distance such that computer 600 can be said to detect and/or determine the change in distance, based on the received data.

[0160] At FIG. 6B, a determination is made that computer system 600 reaches outer threshold distance 620-1 (e.g., as indicated by the positioning of computer system 600 relative to outer threshold distance 620-1 in diagram 620). The positioning of computer system 600 is considered to have reached outer threshold distance 620-1 when the position of any portion of computer system 600 transitions from being outside of outer threshold distance 620-1 to being at or within outer threshold distance 620-1. In some embodiments, the positioning of computer system 600 is considered to have reached outer threshold distance 620-1 when the positioning of the entirety of computer system 600 is at or within outer threshold distance 620-1.

[0161] At FIG. 6B, because a determination is made that computer system 600 reaches outer threshold distance 620-1, computer system 600 outputs discrete haptic feedback 642 (e.g., a single vibration). Discrete haptic feedback 642 indicates computer system 600 has reached outer threshold distance 620-1. In some embodiments, computer system 600 outputs a series of discrete haptic alerts (e.g., two or more haptic feedbacks) in response to a determination being made that computer system 600 has reached outer threshold distance 620-1.

[0162] Further, at FIG. 6B, because a determination is made that computer system 600 has reached outer threshold distance 620-1, computer system 600 transmits instructions to computer system 602 that cause the initiation of the playback of the first media item on computer system 602. Accordingly, at FIG. 6B, both computer system 600 and computer system 602 are concurrently playing back the first media item. At FIG. 6B, playback of the first media item on computer system 600 and computer system 602 is synchronized (e.g., playback at computer system 602 is initiated at the same playback time as currently being

played on computer system 600). The playback of the first media item on computer system 602 is represented by music symbols 626b shown in close proximity to computer system 602. Similar to music symbols 626a, the size of music symbols 626b corresponds to the volume level of computer system 602. As illustrated in FIG. 6B, the size of music symbols 626a are larger than the size of music symbols 626b. Accordingly, at FIG. 6B, the volume level of computer system 600 is greater than the volume level of computer system 602. Further, the size of music symbols 626a at FIG. 6B is smaller than the size of music symbols 626a at FIG. 6A. Accordingly, at FIG. 6B, the playback volume of computer system 600 is lower than the playback volume of computer system 602 at FIG. 6A. In some embodiments, playback of the first media item on computer system 602 ceases in accordance with a determination that computer system 600 is moved outside of outer threshold distance 620-1. In some embodiments, computer system 602 initiates the playback of the first media item from the beginning of the first media item (e.g., the playback of the first media item on computer system 600 and computer system 602 is not synchronized).

[0163] At FIG. 6B, because a determination is made that the positioning of computer system 600 has reached outer threshold distance 620-1, a transfer of the playback of the first media item is initiated. At FIG. 6B, computer system 600 is the dominant playback computer system (e.g., the playback of the first media item is louder on computer system 600 than computer system 602). However, computer system 602 progressively becomes the dominant playback computer system as computer system moves closer to inner threshold distance 620-1.

[0164] At FIG. 6B, because a determination is made that the positioning of computer system 600 has reached outer threshold distance 620-1, computer system 600 increases the size of the display of media user interface object 604 (e.g., in comparison to the size of media user interface object 604 at FIG. 6A). At FIG. 6B, computer system 600 is repositioned closer to computer system 602. In some embodiments, album art 606 computer system 600 increases the size of album art 606 and equalizer bars 618 as a part of increasing the size of media user interface object 604.

[0165] Further, the size of media user interface object 604 and the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c have an inverse relationship. As the size of media user interface object 604 increases, the size of time user interface element 612a, signal status user interface

element 612b, and battery status user interface element 612c decrease and vice versa. Accordingly, at FIG. 6B, because the size of media user interface object 604 increases, the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c decreases (e.g., in comparison to the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c at FIG. 6A). In some embodiments, the size of equalizer bars 618 and album art 606 increase as the size of media user interface object 604 increases. In some embodiments, the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c decreases in response to media user interface object 604 growing to a size that impinges (e.g., encroaches)) on the display of one or more of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c

[0166] At FIG. 6C, a determination is made that the distance between computer system 600 and computer system 602 has decreased (e.g., in comparison to the distance between computer system 600 and computer system 602 at FIG. 6B). Further, at FIG. 6C, a determination is made that computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2. Because determinations are made that that the distance between computer system 600 and computer system 602 has decreased and that computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2, computer system 600 increases the size of media user interface object 604 (e.g., in comparison to the size of media user interface object 604 at 6B).

[0167] The size of media user interface object 604 has an inverse relationship with the distance between computer system 600 and computer system 602 while computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2. Accordingly, while computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2, as the distance between computer system 600 and computer system 602 decreases the size of media user interface object 604 increases and as the distance between computer system 600 and computer system 602 increases the size of media user interface object 604 decreases.

[0168] Further, at FIG. 6C, because the size of media user interface object 604 is increased, the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c decrease (e.g., in comparison to the size

of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c FIG. 6B).

[0169] In the media transfer process that is embodied in FIGS. 6A-6F (e.g., when computer system 600 is initially playing back a first media item and computer system 602 is not initially playing back a respective media item) the playback of the first media item scales between computer system 600 and computer system 602 based on the distance between computer system 600 and computer system 602 while computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2. That is, the volume of the playback of the first media item on computer system 600 progressively decreases as computer system 600 moves closer to inner threshold distance 620-2 and the volume of the playback of the first media item on computer system 602 progressively increases as computer system 600 moves closer to inner threshold distance 620-2. Further, the volume of the playback of the first media item on computer system 600 progressively increases as computer system 600 moves further from inner threshold distance 620-2 and the volume of the playback of the first media item on computer system 602 progressively decreases as computer system 600 moves further from inner threshold distance 620-2.

[0170] Accordingly, at FIG. 6C, because a determination is made that the distance between computer system 600 and computer system 602 has decreased, the playback volume of the first media item on computer system 602 increases while the playback volume of the first media item on computer system 600 decreases. The change of the playback volume on each respective computer system can be noted by the change of the size of both music symbols 626a and 626b (e.g., at FIG. 6C, the size of music symbol 626a has decreased in comparison to the size of music symbols 626a at FIG. 6B and the size of music symbols 626b has increased in comparison to the size of music symbols 626b at FIG. 6B). In some embodiments, the change in volume on both computer system 600 and computer system 602 is the same.

[0171] Further, at FIG. 6C, because a determination is made that computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2, computer system 600 outputs continuous haptic feedback 630. Computer system 600 outputs continuous haptic feedback 630 while computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2. At FIG. 6C, computer system 600 is repositioned closer to computer system 602. In some embodiments, while computer system 600 is positioned

between outer threshold distance 620-1 and inner threshold distance 620-2, the intensity of continuous haptic feedback 630 has an inverse relationship with the distance between computer system 600 and computer system 602 (e.g., the intensity of continuous haptic feedback 630 increases as the distance between computer system 600 and computer system 602 decreases and the intensity of continuous haptic feedback 630 decreases when the distance between computer system 600 and computer system 602 increases).

[0172] At FIG. 6D, a determination is made that the distance between computer system 600 and computer system 602 has decreased. Further, at FIG. 6D, a determination is made that computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2. Because determinations are made that the distance between computer system 602 and computer system 600 has decreased and computer system 600 is positioned between outer threshold distance 620-1 and inner threshold distance 620-2, computer system 600 increases the size of media user interface object 604 (e.g., in comparison to the size of media user interface object 604 at FIG. 6C). At FIG. 6D, the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c decrease (e.g., in comparison to the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c at FIG. 6C) as a result of the size of media user interface object 604 increasing. In some embodiments, the size of media user interface object 604 increases by a first factor and the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c decrease by the first factor.

[0173] At FIG. 6D, media user interface object 604 is displayed at its largest possible size. At FIG. 6D, because media user interface object 604 is displayed at its largest possible size, computer system 600 replaces the display of equalizer bars 618 (e.g., as shown in FIGS. 6A-6C) within media user interface object 604 with the display of playback device user interface element 680. Playback device user interface element 680 is a graphical representation of computer system 602. In some embodiments, computer system 600 replaces the display of equalizer bars 618 (e.g., as shown in FIGS. 6A-6C) within media user interface object 604 with the display of playback device user interface element 680 in accordance with a determination that computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2.

[0174] At FIG. 6D, because a determination is made that computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2, computer system 600 continues to output continuous haptic feedback 630. Further, at FIG. 6D, because a determination is made that the distance between computer system 600 and computer system 602 decreases, the volume of the playback of the first media item on computer system 602 increases and the volume of the playback of the first media item on computer system 600 decreases. At FIG. 6D, computer system 602 is the dominant playback computer system (e.g., the volume of the playback of the first media item on computer system 602 is greater than the volume of the playback of the first media item on computer system 600). Computer system 602 is the dominant playback computer system because computer system 600 is closer to inner threshold distance 620-2 than outer threshold distance 520-1. Accordingly, as illustrated in FIG. 6D, music symbols 626b are larger than music symbols 626a. At FIG. 6D, computer system 600 is repositioned closer to computer system 602. In some embodiments, computer system 600 progressively displays controls for an external device (e.g., a third party device) (e.g., a thermostat and/or fan) based on distance between computer system 600 and the external device.

[0175] At FIG. 6E, a determination is made that the positioning of computer system 600 reaches inner threshold distance 620-2. The positioning of computer system 600 is considered to have reached inner threshold distance 620-2 when the position of any portion of computer system 600 transitions from being outside of inner threshold distance 620-2 to being equal to or within inner threshold distance 620-2. Because a determination is made that computer system 600 reaches inner threshold distance 620-2, computer system 600 outputs discrete haptic feedback 642. Discrete haptic feedback 642 indicates that computer system 600 has reached inner threshold distance 620-2. In some embodiments, computer system 600 transmits instructions to computer system 602 that cause one or more light sources that are integrated into computer system 602 to output a light animation in accordance with a determination that the positioning of computer system 600 reaches inner threshold distance 620-2.

[0176] At FIG. 6E, because a determination is made computer system 600 reaches inner threshold distance 620-2, computer system 600 displays media user interface object 604 as performing a flex animation. During the flex animation, computer system 600 displays media user interface object 604 with a reduced size (e.g., in comparison to the size of media

user interface object 604 at FIG. 6D) and then displays media user interface object 604 at its initial size (e.g., the size of media user interface object 604 at FIG. 6A). At FIG. 6E, because the size of media user interface object 604 is reduced, the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c increase (e.g., in comparison to the size of time user interface element 612a, signal status user interface element 612b, and battery status user interface element 612c FIG. 6D). At FIG. 6E, computer system 600 ceases to display playback device user interface element 680 and album art 606 within media user interface object 604 as a part of displaying the flex animation. In some embodiments, computer system 600 maintains the display of playback device user interface element 680 and album art 606 within media user interface object 604 while displaying the flex animation.

[0177] At FIG. 6E, because a determination is made that the distance between computer system 600 has reached inner threshold distance 620-2, computer system 600 ceases playback of the first media item. When the distance between computer system 600 and computer system 602 is equal to less than the inner threshold distance 620-2, the playback transfer process is complete and computer system 602 plays back the first media item and computer system 600 does not playback the first media item.

[0178] At FIG. 6F, media user interface object 604 is no longer performing the flex animation. As illustrated in FIG. 6F, computer system 600 displays media user interface object 604 with its initial appearance (e.g., the appearance of media user interface object 604 at FIG. 6A) at the conclusion of the flex animation. Accordingly, as illustrated in FIG. 6F, media user interface includes equalizer bars 618 and album art 606. As explained above, album art 606 is representative of the first media item. Accordingly, at FIG. 6F, album art 606 is representative of the first media that is being played back on computer system 602. In some embodiments, computer system 600 ceases to playback the first media item after media user interface object 604 has completed the flex animation. In some embodiments, computer system 600 ceases to playback the first media item before media user interface object 604 begins the flex animation. In some embodiments, computer system 600 ceases to playback the first media item while media user interface object 604 is performing the flex animation.

[0179] As illustrated in FIG. 6F, computer system 600 displays now playing user interface 646. Computer system 600 displays now playing user interface 646 in accordance with a determination that computer system 600 has reached inner threshold distance 620-2.

At FIG. 6F, a determination is made that computer system 602 is playing back a respective media item and computer system 600 is not playing back a respective media item. As illustrated in FIG. 6F, because a determination is made that computer system 602 is playing back a respective media item and computer system 600 is not playing back a respective media item, now playing user interface 646 includes transfer to user interface object 652. In some embodiments, computer system 600 ceases to display now playing user interface 646 in response to detecting a swipe down gesture on now playing user interface 646. In some embodiments, computer system 600 displays now playing user interface 646 while computer system 600 displays media user interface object 604 as performing the flex animation. In some embodiments, computer system 600 displays now playing user interface 646 before computer system 600 displays media user interface object as performing the flex animation.

[0180] As illustrated in FIG. 6F, now playing user interface 646 includes enlarged album art 654, playback controls 660, and volume control 658. Similar to album art 606, enlarged album art 654 is a representation of the media item that computer system 602 is currently playing back. Computer system 600 transmits instructions to computer system 602 that modifies the playback status of computer system 602 in response to detecting selection of a respective user interface object in playback controls 660 (e.g., pause the playback of a respective media item, initiate playback of a respective media item, advance to a subsequent media item in a queue, and/or restart the playback of the first media item). Further, computer system 600 transmits instructions to computer system 602 that modifies the playback volume of computer system 602 (e.g., increase or decrease the volume level) in response to detecting of a selection of volume control 658. In some embodiments, enlarged album art 654 is representative of a media item that is being played back by computer system 600. In some embodiments, selection of a respective playback control in playback controls 660 controls playback of a media item on computer system 600. In some embodiments, selection of volume control 658 changes the volume level on computer system 600.

[0181] As illustrated in FIG. 6F, now playing user interface 646 includes exit user interface object 688. At FIG. 6F, computer system 600 detects tap input 650f that corresponds to selection of exit user interface object 688. Further, at FIG. 6F, computer system 600 is repositioned further away from computer system 602.

[0182] FIGS. 6G-6I illustrate an exemplary media transfer process where computer system 600 is initially not playing back a respective media item and computer system 602 is

playing back the first media item. During the media transfer process illustrated in FIGS. 6G-6I, playback of the first media item is transferred from computer system 602 to computer system 600.

[0183] At FIG. 6G, in response to detecting tap input 650f, computer system 600 ceases the display of now playing user interface 646 and displays home screen user interface 614. At FIG. 6G, because computer system 600 is repositioned further away from computer system 602, computer system 600 is positioned outside of outer threshold distance 620-1 (e.g., as illustrated by diagram 620). As illustrated in FIG. 6G, though computer system 600 is positioned outside of outer threshold distance 620-1, computer system 600 maintains the display of media user interface object 604. In some embodiments, computer system 600 ceases the display of media user interface object 604 in response to detecting that computer system 600 is repositioned outside of outer threshold distance 620-1. At FIG. 6G, computer system 600 is repositioned closer to computer system 602.

[0184] At FIG. 6H, a determination is made that the positioning of computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2. Because a determination is made that computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2, computer system 600 performs the various operations that are described above in FIGS. 6C-6D. The various operations include, but are not limited to, computer system 600 outputting continuous haptic feedback 630, computer system 600 displaying media user interface object 604 with a size dependent on the distance between computer system, and computer system 600 displaying playback device user interface element 680 within media user interface object 604.

[0185] At FIG. 6H, a determination is made that computer system 600 is not currently playing back a media item (e.g., as indicated by the absence of music notes in close proximity to computer system 600) and computer system 602 is playing back the first media item (e.g., as indicated by the presence of music symbols 626b in close proximity to computer system 602). Because a determination is made that computer system 600 is not currently playing back a media item and computer system 602 is playing back the first media item, though computer system 600 is between outer threshold distance 620-1 and inner threshold distance 620-2, the playback of the first media item does not scale between computer system 600 and computer system 602 as described above in relation to FIGS. 6C and 6D. That is, a respective media item does not scale between computer system 600 and computer system 602

when computer system 602 is playing back a media item and computer system 600 is not playing back a media item. At FIG. 6H, computer system 600 is repositioned closer to computer system 602.

[0186] At FIG. 6I, a determination is made that computer system 600 and computer system reaches inner threshold distance 620-2. Because a determination is made that computer system 600 reaches inner threshold distance 620-2, computer system 600 performs the various operations that are described above in FIG. 6E. The various operations include, but are not limited to, displaying now playing user interface 646, displaying media user interface object 604 performing the flex animation, and outputting discrete haptic feedback 642.

[0187] At FIG. 6I, a determination is made that computer system 600 is not currently playing back a media item (e.g., as indicated by the absence of music notes in close proximity to computer system 600) and computer system 602 is playing back the first media item (e.g., as indicated by the presence of music symbols 626b in close proximity to computer system 602). Because a determination is made that computer system 600 is not currently playing back a respective media item and computer system 602 is playing back the first media item, though computer system 600 reaches inner threshold distance 620-2, the playback of the first media item does not automatically transfer between computer system 600 and computer system 602 as described above in relation to FIG. 6E. That is, the transfer of a media item is not automatic upon detection that computer system 600 reaches inner threshold distance 620-2 when computer system 602 is playing back a respective media item and computer system 600 is not playing back a respective media item. At FIG. 6I, computer system 600 detects tap input 650i that corresponds to selection of transfer to user interface object 652.

[0188] At FIG. 6J, in response to detecting tap input 650i, computer system 600 initiates playback of the first media item (e.g., as indicated by the presence of music symbols 626a in close proximity to computer system 600) and computer system 600 transmits instructions to computer system 602 that causes computer system 602 to cease the playback of the first media item (e.g., as indicated by the absence of music symbols in close proximity to computer system 602). Computer system 602 ceases playback of the first media item at a first point of the first media item and computer system 600 initiates playback at the first point of the first media item (e.g., computer system 600 picks up playback of the media item where computer system 602 ceased playback of the media item). In some embodiments, in response

to detecting tap input 650i that corresponds to selection of transfer to user interface object 652, computer system 600 initiates the playback of the first media item while computer system 602 maintains the playback of the first media item. In some embodiments, computer system 600 initiates playback of the first media item from the beginning of the first media item.

[0189] At FIG. 6J, in response to detecting tap input 650i that corresponds to selection of transfer to user interface object 652, computer system 600 ceases the display of now playing user interface 646 and displays home screen user interface 614. As illustrated in FIG. 6J, home screen user interface 614 includes media user interface object 604. At FIG. 6J, album art 606 and equalizer bars 618 within media user interface object 604 are representative of the first media item that is being played back on computer system 600. At FIG. 6J, computer system 600 detects voice command 650j that corresponds to a request to play a second media item on computer system 602.

[0190] FIGS. 6K-6N illustrate an exemplary media transfer process where computer system 600 is initially playing back a first respective media item and computer system 602 is initially playing back a second respective media item. During the media transfer process illustrated in FIGS. 6K-6N, playback of the first respective media item is transferred from computer system 600 to computer system 602.

[0191] At FIG. 6K, in response to detecting voice command 650j, computer system 600 transmits instructions to computer system 602 that cause computer system 602 to initiate the playback of a second media item (e.g., a song, podcast, and/or voice memo) that is different than the first media item. Music notes 668 are shown in close proximity to computer system 602 to represent the playback of the second media item on computer system 602. Accordingly, at FIG. 6K, computer system 600 is playing back the first media item while computer system 602 is playing back the second media item. At FIG. 6K, as indicated by diagram 620, computer system 600 is positioned outside of outer threshold distance 620-1. At FIG. 6K, computer system 600 is repositioned closer to computer system 602.

[0192] At FIG. 6L, a determination is made that computer system 600 is positioned between outer threshold distance 620-1 and inner threshold distance 620-2. Because a determination is made that computer system 600 is positioned between outer threshold distance 620-1 and inner threshold distance 620-2, computer system 600 performs the various

operations that are described above in FIGS. 6C- 6D. The various operations include, but are not limited to, computer system 600 outputting continuous haptic feedback 630, computer system 600 displaying media user interface object 604 with a size that depends on the distance between computer system 600 and computer system 602, and computer system 600 displaying playback device user interface element 680 within media user interface object 604.

[0193] At FIG. 6L, a determination is made that computer system 600 is playing back the first media item (e.g., as indicated by the presence of music symbols 626a in close proximity of computer system 600) and computer system 602 is playing back the second media item (e.g., as indicated by the presence of music notes 668 in close proximity to computer system 602). Because a determination is made that that computer system 600 is currently playing back the first media item and computer system 602 is playing back the second media item, though the computer system 600 is positioned between outer threshold distance 620-1 and inner threshold distance 620-2, the playback of the first media item and/or the second media item does not scale between computer system 600 and computer system 602 as described above in relation to FIGS. 6C and 6D. At FIG. 6L, computer system 600 is repositioned closer to computer system 602.

[0194] At FIG. 6M, a determination is made that computer system 600 reaches inner threshold distance 620-2. Because a determination is made that computer system 600 reaches inner threshold distance 620-2, computer system 600 performs the various operations that are described above in FIG. 6E. The various operations include, but are not limited to, displaying now playing user interface 646, displaying media user interface object 604 as performing the flex animation, and outputting discrete haptic feedback 642.

[0195] At FIG. 6M, now playing user interface 646 corresponds to the second media item that is being played by computer system 602. Accordingly, at FIG. 6M, enlarged album art 654 included in now playing user interface 646 is representative of the second media item that is being played back by computer system 602. Further, as illustrated in FIG. 6M, now playing user interface 646 includes playback controls 660 and volume control 658. Selection of a respective playback control in playback controls 660 and/or selection of volume controls 658 modify the playback status of the second media item (e.g., as described above in relation to FIG. 6F) on computer system 602.

[0196] At FIG. 6M, a determination is made that computer system 600 is currently playing back the first media item and computer system 602 is playing back the second media item. Because a determination is made that is made that computer system 600 is currently playing back the first media item and computer system 602 is playing back the second media item, though computer system 600 reaches inner threshold distance 620-2, the playback of the first media item and/or the second media item does not transfer between computer system 600 and computer system 602 as described above in relation to FIG. 6F.

[0197] Additionally, as illustrated in FIG. 6M, because a determination is made that is made that computer system 600 is currently playing back the first media item and computer system 602 is playing back the second media item, now playing user interface 646 includes transfer from user interface object 678 (e.g., and now playing user interface 646 does not include transfer to user interface object 652). At FIG. 6M, computer system 600 detects tap input 650m that corresponds to selection of transfer from user interface object 678.

[0198] At FIG. 6N, in response to detecting tap input 650m, computer system 600 ceases the playback of the first media item. Further, in response to detecting tap input 650m, computer system 600 transmits instructions to computer system 602 that causes computer system 602 to cease playback of the second media item and initiate playback of the first media item (e.g., as indicated by music symbols 626b in close proximity to computer system 602). Computer system 600 ceases playback of the first media item at a first point of the first media item and computer system 602 initiates playback at the first point of the first media item (e.g., computer system 602 picks up playback of the media item where computer system 600 ceased playback of the media item). In some embodiments, computer system 602 initiates playback of the first media item from the beginning of the first media item. In some embodiments, in response to detecting tap input 650m, computer system 600 maintains the playback of the first media item while computer system 602 initiates playback of the first media item.

[0199] Additionally, in response to detecting tap input 650m, computer system 600 ceases to display now playing user interface 646 and displays home screen user interface 614. As illustrated in FIG. 6N, home screen user interface 614 includes media user interface object 604 that includes album art 606 and equalizers bars 618 that correspond to the playback of the first media item on computer system 602. As illustrated in FIG. 6N, computer system 600 maintains the display of media user interface object 604 though computer system 600 is

positioned outside of outer threshold distance 620-1. At FIG. 6N, computer system 600 detects long press input 650n (e.g., a tap and hold) on media user interface object 604.

[0200] As illustrated in FIG. 6O, in response to detecting long press input 650n, computer system 600 displays condensed now playing user interface element 676. Condensed now playing user interface element 676 includes playback controls 660 (e.g., as described above in relation to FIG. 6F) and album art 606 that corresponds to the first media item that is being played back on computer system 602. Computer system 600 transmits instructions to computer system 602 that modifies the playback status of computer system 602 when computer system 600 detects selection of a respective playback control in playback controls. As illustrated in FIG. 6O, computer system 600 displays condensed now playing user interface element 676 as overlaid on top of home screen user interface 614. In some embodiments, condensed now playing user interface element 676 includes volume control 658 (e.g., as discussed above in relation to FIG. 6F). In some embodiments, computer system 600 ceases to display home screen user interface as a part of displaying condensed now playing user interface element 676. In some embodiments, condensed now playing user interface 676 includes album art 606 that is representative of a media item computer system 600 is playing back. In some embodiments, condensed now playing user interface 676 includes playback controls 660 for modifying the playback status of computer system 600.

[0201] FIG. 7 is a flow diagram illustrating a method for managing interactions between devices in accordance with some embodiments. Method 700 is performed at a computer system (e.g., 100, 300, 500, 600) (e.g., smartphone, desktop computer, a laptop, a tablet, and/or smartwatch) that is in communication with a display generation component (e.g., a display controller and/or a touch-sensitive display system) and an external device (e.g., 580, 602) (e.g., a smart speaker, a smartphone, a smart watch, desktop computer, and/or a smart device that is manufactured by a third party manufacturer (e.g., a manufacturer that is different from the manufacturer of the computer system)). Some operations in method 700 are, optionally, combined, the orders of some operations are, optionally, changed, and some operations are, optionally, omitted.

[0202] As described below, method 700 provides an intuitive way for managing interactions between devices. The method reduces the cognitive burden on a user for managing interactions between devices, thereby creating a more efficient human-machine interface. For battery-operated computing devices, enabling a user to manage interactions

between devices faster and more efficiently conserves power and increases the time between battery charges.

[0203] The computer system displays (702), via the display generation component, a user interface element (e.g., 604). In some embodiments, the user interface element is displayed around (e.g., encompassing) one or more sensors that are integrated into the computer system).

[0204] While displaying the user interface element (e.g., 604), the computer system (e.g., 600) detects (704) a first change in distance between the computer system and the external device (e.g., 602) (e.g., as described above in relation to FIGS. 6A, 6B, 6C, and 6D). In some embodiments, the change in distance is detected based on a change in signal strength (e.g., wireless signal strength (e.g., Wi-Fi wireless signal, Bluetooth wireless signal, and/or ultra-wideband wireless signal)) exchanged between the computer system and the external device. In some embodiments, the change in distance is detected via one or more sensors (e.g., infrared sensors; optical sensors) integrated into the computer system and/or the external device. In some embodiments, the change in distance is detected via data transmitted to the computer system from a Wi-Fi positioning system, from GPS, and/or from the external device.

[0205] In response to (706) detecting the first change in distance and in accordance with a determination that a distance (e.g., a current distance after the first change in distance has occurred) between the computer system and the external device is greater than a first threshold distance (e.g., 620-1) (e.g., 12 inches), the computer system (e.g., 600) displays (708) the user interface element (e.g., 604) at a first predetermined size (e.g., 604 at FIG. 6A) (e.g., a size that is not proportional to the distance between the computer system and the external device) and in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance (e.g., 15 inches, 12 inches, or 10 inches) and greater than a second threshold distance (e.g., 620-2) (e.g., 6 inches, 4 inches, or 2 inches) (e.g., the distance between the computer system and the external device is less than the upper boundary of a range of distances and greater than the lower boundary of the range of distances) (e.g., the second threshold distance is different (e.g., smaller than) the first threshold distance), the computer system displays (710) the user interface element at a variable size (e.g., 604 at FIGS. 6C and 6D) (e.g., the size of the user interface element is dynamic (e.g., the size of the user interface element changes (e.g., gets

larger or smaller) as the distance between the computer system and the external device changes)) that is based on (e.g., inversely proportional to or proportional to) the distance between the computer system and the external device (e.g., as the distance between the computer system and the external device decreases the size of the user interface element increases and vice versa) and in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance (e.g., and less than the first threshold distance), the computer system displays (712) the user interface element at a second predetermined size (e.g., 604 at FIG. 6F) (e.g., a size that is the same as or different from the first predetermined size). In some embodiments, size of the content included within the user interface element depends on the distance between the computer system and the external device when the distance between the computer system and the external device is less than the first threshold distance and greater than the second threshold distance. In some embodiments, the user interface element is displayed in response to the detection of the initiation of the playback of media (e.g., music, podcast, radio program and/or video) on the computer system. In some embodiments, the user interface element is displayed at the first predetermined size prior to detecting the change in distance and displaying the user interface element includes maintaining the user interface element at the same first predetermined size. In some embodiments, the user interface element is displayed in response to the detection of the initiation of the playback of media on the external device. In some embodiments, the computer system maintains the display of the user interface element while the computer system performs various functions unrelated to the display of the user interface element (e.g., the computer system displays various user interfaces that correspond to various applications that are installed on the computer system). In some embodiments, the user interface element includes an indication of a media item that the computer system and/or the external device is configured to playback (e.g., the computer system and/or the external device is not currently playing back the media item). In some embodiments, the computer system is in communication with one or more input devices (e.g., a touch-sensitive surface). In some embodiments, detecting a change in distance between the computer system and the external device includes detecting that the computer system is moved and the external device is static. In some embodiments, detecting a change in distance between the computer system and the external device includes detecting that the computer system is static and detecting that the external device is moved. In some embodiments, detecting a change in distance between the computer system and the external device includes detecting that both the computer system and the external device moving (e.g., in the same

direction or in opposite directions). Displaying the user interface element at a respective size when a set of conditions are met (e.g., the distance between the computer system and the external device is at a threshold distance) automatically allows the computer system to perform a display operation that indicates to a user the relative positioning of the computer system and the external device, which performs an operation when a set of conditions has been met without requiring further user input. Displaying the user interface element at a respective size that is based on the distance between the computer system and the external device in response to detecting a change in distance between the computer system and the external device provides the user with visual feedback regarding the state of the computer system (e.g., the computer system has detected the change in distance between the computer system and the external device), which provides improved visual feedback.

[0206] In some embodiments, prior to detecting the first change in distance between the computer system and the external device (e.g., as described above in reference to FIG. 6A), the user interface element (e.g., 604) is displayed at the first predetermined size (e.g., 604 at FIG. 6A). In some embodiments, in response to detecting the first change in distance and in accordance with a determination that the distance between the computer system (e.g., 600) and the external device (e.g., 602) transitions from being greater than the first threshold distance (e.g., 620-1) (e.g., the relative positioning of computer system 600 and external device 602 at FIG. 6A) to less than the first threshold distance and greater than the second threshold distance (e.g., 620-2) (e.g., the relative positioning of computer system 600 and external device 602 at FIGS. 6C and 6D) (e.g., the computer system transitions from being greater than the first threshold distance to between the first threshold distance and second threshold distance), the computer system changes the user interface element (e.g., 604) from being displayed with the first predetermined size to being displayed with the variable size (e.g., 604 at FIGS. 6C and 6D) (e.g., the variable size is larger than the first predetermined size). In some embodiments, the computer system displays an animation (e.g., a snapping animation) of the user interface element changing from the first predetermined size to the variable size. In some embodiments, the size of the user interface element changes from the variable size to the first predetermined size in response to the computer system detecting that the distance between the computer system and the external device transitions from being less than the first threshold distance and greater than the second threshold to being greater than the first threshold distance. In some embodiments, size of the user interface element changes from the variable size to the second predetermined size in response to the computer system

detecting that the distance between the computer system and the external device transitions from being less than the first threshold distance and greater than the second threshold distance to less than the second threshold distance. Changing the user interface element from being displayed with the first predetermined size to being displayed with the variable size when a set of conditions are met (e.g., the distance between the computer system and the external device crosses a distance threshold) allows the computer system to automatically perform a display operation that indicates to a user the distance between the computer system and the external device, which performs an operation when a set of conditions has been met without requiring further user input. Changing the user interface element from being displayed with the first predetermined size to being displayed with the variable size in response to detecting the first change in distance provides the user with visual feedback regarding the positioning of the computer system relative to the external device, which provides improved visual feedback.

[0207] In some embodiments, while the distance between the computer system (e.g., 600) and the external device (e.g., 602) is less than the first threshold distance (e.g., 620-1) and greater than the second threshold distance (e.g., 620-2) (e.g., the relative positioning of computer system 600 and external device 602 at FIGS. 6C and 6D), the computer system detects a second change in distance between the computer system and the external device (e.g., as described above in FIGS. 6A, 6B, 6C, and 6D). In some embodiments, in response to detecting the second change in distance (e.g., the second change is distance is detected after the first change in distance) and in accordance with a determination that a second distance (e.g., a current distance after the second change in distance has occurred) between the computer system and the external device has transitioned to being greater than the first threshold distance, the computer system displays a first user interface element snapping animation (e.g., as described above in FIG. 6E) of the user interface element (e.g., 604) transitioning from being displayed with the variable size (e.g., 604 at FIGS. 6C and 6D) to being displayed with the first predetermined size (e.g., 604 at FIGS. 6A and 6F) (e.g., the user interface element goes from the variable size to the first predetermined size as a part of the snapping animation) (e.g., the user interface element animation is displayed upon a detection by the computer system that the distance between any portion of the computer system and the external device is greater than the first threshold distance) and in accordance with a determination that the second distance between the computer system and the external device has transitioned to being less than the second threshold distance, the computer system

displays a second user interface element snapping animation (e.g., as described above in FIG. 6E) of the user interface element transitioning from being displayed with the variable size to being displayed with the second predetermined size (e.g., 604 at FIGS. 6A and 6F) (e.g., the user interface element animation is displayed upon a detection by the computer system that the distance between any portion of the computer system and the external device is less than the second threshold distance). In some embodiments, the computer system forgoes displaying the user interface element snapping animation in response to detecting the second change in distance and in accordance with a determination that the distance between the computer system and the external device remains as less than the first threshold distance and greater than the second threshold distance. Displaying a first user interface element snapping animation or a second user interface element snapping animation when prescribed conditions are met (e.g., the distance between the computer system and the external device transitions across a respective distance threshold) allows the computer system to automatically perform a resizing operation that indicates to the user the positioning of the computer system relative the external device, which performs an operation when a set of conditions has been met without requiring further user input.

[0208] In some embodiments, displaying the second user interface element snapping animation (e.g., as described above in FIG. 6E) includes displaying a sequence (e.g., a sequence of transitions) (e.g., an uninterrupted sequence) of the user interface element (e.g., 604) transitioning from the variable size (e.g., 604 at FIGS. 6C and 6D) to a third predetermined size (e.g., 604 at FIG. 6E) that is smaller than the variable size (e.g., and smaller than the first and second predetermined sizes) and transitioning from the third predetermined size to the second predetermined size (e.g., 604 at FIGS. 6A and 6F), wherein the second predetermined size is larger than the third predetermined size (e.g., the computer system displays an album art graphic and equalizer bars within the user interface element when the computer system displays the user interface element with the variable size and/or the second predetermined size and the computer system does not display the album art graphic and equalizer bars within the user interface element when the computer system displays the user interface element at the third predetermined size). In some embodiments, the computer system displays a first set of content within the user interface element when the computer system displays the user interface element with the variable size and/or the second predetermined size and the computer system displays a second set of content, that is different than the first set of content, within the user interface element when the computer system

displays the user interface at the third predetermined size. In some embodiments, the computer system changes the content that is displayed within the user interface element as part of displaying the snapping animation. Displaying a sequence of the user interface element transitioning to various sizes in response to detecting the second change in distance and in accordance with a determination that the second distance between the computer system and the external device has transitioned across a distance threshold provides the user with visual feedback regarding the positioning of the computer system relative to the external device, which provides improved visual feedback.

[0209] In some embodiments, the first predetermined size (e.g., 604 at FIGS. 6A and 6F) and the second predetermined size (e.g., 604 at FIGS. 6A and 6F) are the same (e.g., both the first predetermined size and the second predetermined size are equal to .25 inches, .5 inches or .75 inches).

[0210] In some embodiments, the computer system (e.g., 600) is playing back a first media item (e.g., 626a) (e.g., 600 at FIG. 6B) (e.g., music media item, podcast, and/or video media item) while the first change in distance between the computer system and the external device (e.g., 602) is detected (e.g., as described above at FIG. 6D). In some embodiments, in accordance with a determination that a first set of criteria is satisfied, the computer system transfers (e.g., ceasing playback at the computer system and initiating playback at the external device) the playback of the first media item from the computer system to the external device (e.g., 602) (e.g., as described above at FIG. 6E). In some embodiments, the computer system ceases playback of the first media item at a first point of the first media item and the external device initiates playback of the first media item at the first point in the first media item). In some embodiments, the external device begins playback of the first media item from the beginning of the first media item. In some embodiments, the computer system maintains playback of the first media item after transferring the playback of the first media item to the external device (e.g., both the computer system and the external device concurrently playback the first media item in sync). In some embodiments, the playback of the first media item is transferred automatically (e.g., without intervening user input). Transferring the playback of the first media item from the computer system to the external device when a set of prescribed conditions are met (e.g., the first set of criteria) allows the computer system to automatically control the playback status of both the computer system

and the external device, which performs an operation when a set of conditions has been met without requiring further user input.

[0211] In some embodiments, the external device (e.g., 602) is playing back a second media item (e.g., 668) (e.g., music media item, podcast, and/or video media item) (e.g., while the computer system plays back the first media item) (e.g., that is different than the first media item) while the first change in distance between the computer system (e.g., 600) and the external device (e.g., 602) is detected (e.g., as described above in reference to FIG. 6L), and wherein the first set of criteria includes a criterion that is satisfied when the computer system detects a first input (e.g., 650m) (e.g., a press and hold input, a tap input, an activation of a hardware button that is coupled to the computer system and/or a swipe gesture) that corresponds to selection of a first transfer selectable user interface object (e.g., 678) (e.g., an affordance). In some embodiments, the external device ceases playback of the second media item as a part of transferring the first media item from the computer system to the external device). In some embodiments, the computer system ceases to display the first transfer selectable user interface object in response to detecting the first input. In some embodiments, the computer system outputs haptic feedback in response to detecting the first input. In some embodiments, the computer system maintains the display of the first transfer selectable user interface object in response to detecting the first input. In some embodiments, the computer system displays a representation of the second media item prior to detecting the first input and the computer system ceases to display the representation of the second media item and displays a representation of the first media item in response to detecting the first input. Transferring the playback of the first media item from the computer system to the external device in response to detecting a first input that corresponds to selection of the first transfer selectable user interface object provides the user with auditory feedback regarding the state of the computer system (e.g., the computer system has detected the first input), which provides improved auditory feedback.

[0212] In some embodiments, the external device (e.g., 602) is not playing back media (e.g., any audio media) (e.g., 602 at FIG. 6A) when the first change in distance between the computer system and the external device is detected, and wherein the first set of criteria includes a criterion that is satisfied when the distance between the computer system (e.g., 600) and the external device transitions from being less than the first threshold distance (e.g., 620) and greater than the second threshold distance (e.g., the relative positioning of computer

system 600 and external device 602 at FIGS. 6C and 6D) (e.g., 620-2) to being less than the second threshold distance (e.g., as described above in reference to FIG. 6E) (e.g., the relative positioning of computer system 600 and external device 602 at FIG. 6E) (e.g., the playback of the first media item is automatically transferred (e.g., without intervening user input) from the computer system to the external device in accordance with a determination that the distance between the computer system and the external device is equal the second threshold distance). In some embodiments, the external device maintains playback of the first media item when the distance between the computer system and the external device is not equal to the second threshold distance. Transferring the playback of the first media item from the computer system to the external device when the distance between the computer system and the external device transitions across a distance threshold allows the user to control the playback status of both the computer system and the external device without displaying additional controls, which provides additional control options without cluttering the user interface.

[0213] In some embodiments, the external device (e.g., 602) is playing back a third media item (e.g., 626b at FIG. 6I) while the first change in distance between the computer system (e.g., 600) and the external device is detected (e.g., as described above in reference to FIG. 6H). In some embodiments, in accordance with a determination that a second set of criteria is satisfied, the computer system transfers the playback of the third media item from the external device to the computer system (e.g., as described above in reference to FIG. 6J) (e.g., the external devices ceases playback of the third media item at a first point of the third media item and the computer system initiates playback of the third media item at the first point in the third media item). In some embodiments, the computer system plays back the third media item from the beginning of the third media item. In some embodiments, the playback of the third media item is automatically transferred (e.g., without intervening user input). In some embodiments, the external device continues to play back the third media item after the third media item is transferred from the external device to the computer system (e.g., the external device and the computer system concurrently playback the third media item in sync). Transferring the playback of the first media item from the computer system to the external device when prescribed conditions are met (e.g., the second set of criteria is met) allows the computer system to automatically control the playback status of both the computer system and the external device, which performs an operation when a set of conditions has been met without requiring further user input.

[0214] In some embodiments, the computer system (e.g., 600) is not playing back media (e.g., 600 at FIGS. 6H and 6I) (e.g., any audio media) while detecting the first change in distance between the computer system and the external device (e.g., 602) (e.g., as described above in reference to FIG. 6H), and wherein the second set of criteria includes a criterion that is satisfied when the computer system detects a second input (e.g., 650i) (e.g., a press and hold input, a tap input, activation of a hardware button that is coupled to the computer system) and/or a swipe input) that corresponds to the selection of a second transfer selectable user interface object (e.g., 652) (e.g., affordance). In some embodiments, the computer system ceases to display the second transfer selectable user interface object in response to detecting the second input. In some embodiments, the computer system outputs haptic feedback in response to detecting the second input. In some embodiments, the computer system maintains the display of the second transfer selectable user interface object in response to detecting the second input. In some embodiments, the computer system displays a representation (e.g., textual and/or graphical representation) of the third media item before and after detection of the second input. Transferring the playback of the third media item from the external device to the computer system in response to detecting a second input that corresponds to the second transfer selectable object provides the user with auditory feedback regarding the state of the computer system (e.g., the computer system has detected the first input), which provides improved auditory feedback.

[0215] In some embodiments, while the distance between the computer system (e.g., 600) and the external device (e.g., 602) is less than the first threshold distance (e.g., 620-1) (e.g., and while the external device and/or the computer system is playing back a media item) and greater than the second threshold distance (e.g., 620-2) (e.g., the relative positioning of computer system 600 and external device 602 at FIG. 6D), the computer system detects a third change in distance between the computer system and the external device (e.g., as described above in reference to FIG. 6D) (e.g., the computer system detects the third change in distance between the computer system and the external device after detecting the first change in distance between the computer system and the external device). In some embodiments, in response to detecting the third change in distance between the computer system and the external device and in accordance with a determination that a third distance between the computer system and the external device, that results from the third change in distance, is less than the second threshold distance (e.g., the relative positioning of computer system 600 and external device at FIG. 6F), the computer system displays, via the display

generation component, a now playing user interface (e.g., 646) (e.g., the now playing user interface animates in from the bottom of the display of the computer system) (e.g., the now playing user interface screen includes playback controls for controlling media that is currently being played back on the computer system or the external device) (e.g., the now playing user interface and the user interface element includes the same graphical representation of a media item that is playing back on the computer system or the external device). In some embodiments, the computer system forgoes displaying the now playing user interface in response to detecting the third change in distance between the computer system and the external device and in accordance with a determination that the distance between the computer system and the external device is greater than the first distance threshold. In some embodiments, the computer system does not display the user interface element while the computer system displays the now playing user interface. In some embodiments, detecting the third change in distance between the computer system and the external device includes detecting that the computer system is moved, and the external device is static. In some embodiments, detecting the third change in distance between the computer system and the external device includes detecting that the computer system is static and detecting that the external device is moved. In some embodiments, detecting the third change in distance between the computer system and the external device includes detecting that both the computer system and the external device moving (e.g., in the same direction or in opposite directions). In some embodiments, the computer system ceases to display the now playing user interface in response to detecting a swipe gesture (e.g., a swipe down and/or a swipe up). Displaying a now playing user interface in response to detecting the third change in distance between the computer system and the external device allows the user to control the display of the now playing user interface without displaying additional controls, which provides additional controls options without cluttering the user interface. Displaying a now playing user interface in response to detecting the third change in distance between the computer system and the external device and in accordance with a determination that the distance between the computer system and the external device crosses a respective distance threshold provides the user with visual feedback regarding the distance between the computer system and the external device, which provides improved visual feedback.

[0216] In some embodiments, in response to detecting the third change in distance (e.g., as described above in reference to FIG. 6H) and in accordance with a determination that the computer system (e.g., 600) was not playing media (e.g., any audio media) (e.g., 600 at FIG.

6H) and the external device (e.g., 602) was playing back a fourth media item (e.g., 626b at FIG. 6H) (e.g., 602 at FIG. 6H) when the third change in distance occurred, the computer system displays, within the now playing user interface (e.g., 646 at FIG. 6I), a transfer to computer system selectable user interface object (e.g., 652) that, when selected, causes playback of the fourth media to be transferred from the external device to the computer system. In some embodiments, the transfer to computer system selectable user interface object includes a representation (e.g., graphical and/or textual representation) of the fourth media item being played back on the external device. In some embodiments, both the now playing user interface and the transfer to computer system selectable user interface object include a representation (e.g., graphical and/or textual representation) (e.g., the same representation) of the fourth media item that is being played back by the external device. In some embodiments, the computer system outputs a haptic alert in response to detecting selection of the transfer to computer system selectable user interface object. Displaying a transfer to computer system selectable user interface object in response to detecting the third change in distance between the computer system and the external device allows the user to control the display of the transfer to computer system selectable user interface object without displaying additional controls, which provides additional controls options without cluttering the user interface. Displaying a transfer to computer system selectable user interface object when a set of prescribed conditions are satisfied (e.g., when the computer system is not playing media and the external device is playing back a fourth media item) allows the computer system to automatically perform a display operation that indicates to the user the playback status of both the computer system and the external device, which performs an operation when a set of conditions has been met without requiring further user input.

[0217] In some embodiments, in response to detecting the third change in distance (e.g., as described above in reference to FIG. 6L) and in accordance with a determination that the computer system (e.g., 600) was playing back a fifth media item (e.g., 626a) when the third change in distance occurred and the external device (e.g., 602) was playing back a sixth media item (e.g., 668) when the third change in distance occurred (e.g., that is different than the fifth media item), the computer system displays, within the now playing user interface (e.g., 646 at FIG. 6M), a transfer from computer system selectable user interface object (e.g., 678), that, when selected causes playback of the fifth media item to be transferred from the computer system to the external device (e.g., selection of the transfer from computer system user interface object cause the external system to cease playback of the sixth media item). In

some embodiments, the computer system concurrently displays the transfer from computer system selectable user interface object and the transfer to computer system selectable user interface object. In some embodiments, the transfer from computer system selectable user interface object includes a representation (e.g., a graphical and/or textual) of the sixth media item. In some embodiments, both the transfer from computer system selectable user interface object and the now playing user interface includes a representation (e.g., the same representation) of the sixth media item. Displaying a transfer from computer system selectable user interface object in response to detecting the third change in distance between the computer system and the external device allows the user to control when the transfer from computer system selectable user interface object is displayed without displaying additional controls, which provides additional controls options without cluttering the user interface. Displaying a transfer from computer system selectable user interface object when a set of prescribed conditions are satisfied (e.g., when the computer system is playing media and the external device is playing back a sixth media item) allows the computer system to automatically perform a display operation that indicates to the user the playback status of both the computer system and the external device, which performs an operation when a set of conditions has been met without requiring further user input.

[0218] In some embodiments, in response to detecting the first change in distance (e.g., as described above in relation to FIG. 6B) and in accordance with a determination that the distance between the computer system (e.g., 600) and the external device (e.g.,602) is less than the first threshold distance (e.g., 620-1) and greater than the second threshold distance (e.g., 620-2) (e.g., the relative positioning of computer system 600 and external device 602 at FIGS. 6C and 6D), the computer system outputs continuous (e.g., ongoing while the distance between the computer system and the external device remains between the two threshold distances) haptic feedback (e.g., 630). In some embodiments, the intensity of the continuous haptic feedback is based on the distance between the external device and the computer system while the distance between the computer system and the external device is less than the first threshold distance and greater than the second threshold distance (e.g., the intensity of the continuous haptic feedback increases as the distance between the computer systema and external device decreases). In some embodiments, the computer system ceases to output the continuous haptic feedback in response to detecting that the distance between the computer system and the external device has transitioned from being less than the first threshold distance and greater than the second threshold distance to being greater than the first

threshold distance or less than the second threshold distance. Outputting continuous haptics when a set of prescribed conditions are met (e.g., the distance between the computer system and the external device is between two distance thresholds) allows the computer system to automatically alert the user to that the distance between the computer system and the external device is between two distance thresholds, which performs an operation when a set of conditions has been met without requiring further user input.

[0219] In some embodiments, in response to detecting the first change in distance (e.g., as described above in reference to FIG. 6A) and in accordance with a determination that the distance between the external device (e.g., 602) and the computer system (e.g., 600) transitions from being greater than the first threshold distance (e.g., 620-1) (e.g., the relative positioning of computer system 600 and external device 602 at FIG. 6A) to being less than the first threshold distance and greater than the second threshold distance (e.g., 620-2) (e.g., the relative positioning of computer system 600 and external device at FIGS. 6C and 6D), the computer system outputs a first discrete haptic alert (e.g., 642 at FIG. 6B) (e.g., a single haptic feedback) and in accordance with a determination that the distance between the external device and the computer system transitions from being less than the first threshold distance and greater than the second threshold distance (e.g., the relative positioning of computer system 600 and external device 602 at FIG. 6E) to being less than the second threshold distance, the computer system outputs a second discrete haptic alert (e.g., 642 at FIG. 6E) (e.g., a single haptic feedback) (e.g., the intensity of the first discrete haptic alert and the second discreet haptic alert are the same). In some embodiments, the computer system outputs a discrete haptic alert in response to detecting that the distance between the computer system and the external device is has transitioned from being less than the first threshold distance and greater than the second threshold distance to greater than the first threshold distance. In some embodiments, the computer system outputs a discrete haptic in in response to detecting that the distance between the computer system and the external device has transitioned from being less than the second threshold distance to being greater than the second threshold distance and less than the first threshold distance. In some embodiments, the computer system outputs the first/second discrete haptic alert concurrently with the transfer of the playback of media. Outputting a discrete haptic alert when a set of prescribed conditions are met (e.g., the distance between the computer system and the external device transitions across an upper distance boundary or a lower distance boundary) allows the computer system to automatically alert the user that the distance between the computer

system and the external device is decreasing, which performs an operation when a set of conditions has been met without requiring further user input.

[0220] In some embodiments, the computer system (e.g., 600) is playing back a seventh media item (e.g., 626a) at a first variable volume level (e.g., as described above in reference to FIGS. 6C and 6D) and the external device (e.g., 602) is playing back the seventh media item (e.g., 626b) at a second variable volume level (e.g., as described above in reference to FIGS. 6C and 6D) different from the first volume level (e.g., the first volume level is louder or quieter than the second volume level) (e.g., both the computer system and the external device are playing the same media item at different volumes). In some embodiments, while the distance between the computer system and the external device is less than the first threshold distance (e.g., 620-1) and greater than the second threshold distance (e.g., 620-2), the computer system detects a fourth change in distance between the computer system and the external device (e.g., as described above in reference to FIG. 6C). In some embodiments, in response to detecting the fourth change in distance and in accordance with a determination that the distance between the computer system and the external device has decreased the computer system decreases the first variable volume level by a first amount that is based on the fourth change in distance (e.g., as described above in reference to FIGS. 6C and 6D) (e.g., the first variable volume level has an inverse relationship with the distance between the external device and the computer system) (e.g., the first volume level dependent upon the distance between the computer system and the external device decreases) and the computer system transmits a first set of instructions that causes the external device to increase the second variable volume level by a second amount that is based on the fourth change in distance (e.g., as described above in reference to FIGS. 6C and 6D) (e.g., the second variable volume level has an direct relationship with the distance between the external device and the computer system (e.g., the second variable volume level is dependent upon the distance between the computer system and the external device) (e.g., the first variable volume level is decreased concurrently with the increase of the second variable volume level). In some embodiments, in response to detecting the fourth change in distance and in accordance with a determination that the distance between the computer system and the external device has increased the computer system increases the first variable volume level volume level by a third amount (e.g., different than the first amount) that is based on the fourth change in distance (e.g., as described above in reference to FIGS. 6C and 6D) and transmits a second set of instructions that causes the external device to decrease the second variable volume

level by a fourth amount that is based on the fourth change in distance (e.g., as described above in reference to FIGS. 6C and 6D) (e.g., the first variable volume level is increased concurrently with the decrease of the second variable volume level). In some embodiments, the first variable volume level is equal to the second variable volume level. In some embodiments, the first and second amounts are the same. Scaling the playback volume of both the computer system and the external device when a set of conditions are met allows the computer system to automatically control the playback status of both the computer system and the external device in such a way that indicates to a user that the device responsible for playback of a respective media item will change as the distance between the computer system and the external device changes, which performs an operation when a set of conditions has been met without requiring further user input. Scaling the playback volume of both the computer system and the external device in response to the detection of a fourth change in distance allows the user to simultaneously control the playback volume of both the computer system and the external device without displaying additional controls, which provides additional control options without cluttering the user interface.

[0221] In some embodiments, the user interface element (e.g., 604) includes a representation (e.g., 606) (e.g., a textual and/or graphical representation) (e.g., album art) of media that is being played back by the computer system (e.g., 600) and/or the external device (e.g., 602). Displaying a representation of media that is being played back by the computer system and/or the external device provides the user with a visual indication of the current playback status of the computer system and/or the external device at a point in time where the playback status of the computer system and/or the external device is of heightened interest to the user, which enhances the operability of the computer system and makes the user-system interface more efficient (by making important information readily available to the user) which, additionally, reduces power usage and improves battery life of the computer system by enabling the user to use the system more quickly and efficiently.

[0222] In some embodiments, the user interface element (e.g., 604) is displayed around one or more sensors (e.g., as described above in reference to FIG. 6A) (e.g., proximity sensor, ambient light sensor, an IR and/or optical camera) e.g., the user interface element encompasses the one or more sensors) (e.g., the user interface element does not visually obstruct the one or more sensors) that are integrated into the computer system (e.g., 600). In some embodiments, the user interface element surrounds the one or more sensors.

[0223] In some embodiments, a first targeted device (e.g., 600 or 602) (e.g., the computer system, the external device and/or a second external device that is in communication (e.g., wireless and/or wired communication) with the computer system) is playing back an eighth media item (e.g., 626a, 626b, or 668). In some embodiments, while displaying the user interface element (e.g., 604) (e.g., while the user interface element is displayed at the first predetermined size or the second predetermined size), the computer system detects a third input (e.g., 650n) (e.g., a press and hold input, a tap input, a swipe input, and/or an activation of a hardware control) that corresponds to selection of the user interface element. In some embodiments, in response to detecting the third input, the computer system displays one or more controls (e.g., 660) (e.g., a next track selectable user interface object (e.g., that when selected causes the initiation of the playback of a subsequent media item in a playlist), a previous track selectable user interface object (e.g., that when selected causes the initiation of the playback of a previous media item in a play list), a pause selectable user interface object (e.g., that when selected pauses the playback of a currently playing media item), and/or a play selectable user interface object (that when selected causes the initiation of the playback of a media item)) for controlling the playback of the eighth media item on the first targeted device. In some embodiments, the computer system ceases the display of one or more controls in response to detecting a swipe gesture (e.g., an upward swipe gesture or a downward swipe gesture). Displaying one or more controls in response to detecting a third input provides the user with visual feedback regarding the state of the computer system (e.g., the computer system has detected the third input), which provides improved visual feedback.

[0224] In some embodiments, the external device (e.g., 602) is in communication with one or more light sources (e.g., the one or more light sources are integrated into the external device). In some embodiments, in response to detecting the first change in distance (e.g., as described above in reference to FIG. 6D) and in accordance with a determination that the distance between the computer system and the external device transitions from being less than the first distance threshold (e.g., 620-1) and greater than the second distance threshold (e.g., 620-2) (e.g., the relative positioning of computer system 600 and external device 602 at FIG. 6D) to being less than the second distance threshold (e.g., the relative positioning of computer system 600 and external device 602 at FIG. 6E), the computer system transmits a third set of instructions to the external device that causes the one or more light sources to output a light animation (e.g., as described above in reference to FIG. 6E). In some embodiments, the light animation is output prior to media being transferred between the

external device and the computer system. In some embodiments, the light animation is output after media is transferred between the external device and the computer system. In some embodiments, the light animation is output concurrently with the transfer of media between the external device and the computer system. In some embodiments, two or more lights are illuminated at the same time as part of the light animation. Transmitting a third set of instructions that causes the external device to output a light animation when a set of conditions are met (e.g., the distance between the computer system and the external device transitions to being between two distance threshold), allows the computer system to automatically control a light operation of the external device, which performs an operation when a set of conditions has been met without requiring further user input. Transmitting a third set of instructions that causes the external device to output a light animation in response to the distance between the computer system and the external device crossing a respective distance threshold allows the user to control a light operation of the external device without displaying additional controls, which provides additional control options without cluttering the user interface.

[0225] In some embodiments, the user interface element (e.g., 604) includes one or more user interface objects (e.g., 618) (e.g., equalizer bars) that indicate (e.g., the equalizer bars animate (e.g., move up and down and/or side to side)) that a second targeted device (e.g., 600 or 602) (e.g., the computer system, the external device, and/or a second external device (e.g., smart speaker, smart phone, desktop computer and/or a smart device that is manufactured by a third party manufacturer)) is actively playing back (e.g., playback is not paused) a ninth media item (e.g., 626a, 626b, or 668). Displaying the user interface element with one or more user interface objects that indicate that a targeted device is actively playing back a media item allows a user to easily and quickly ascertain the playback status of the targeted device which enhances the operability of the computer system and makes the user-system interface more efficient (by making important information readily available to the user) which, additionally, reduces power usage and improves battery life of the computer system by enabling the user to use the system more quickly and efficiently.

[0226] In some embodiments, one or more status bar user interface elements (612a, 612b, and 612c) (e.g., a time user interface element that indicates the current time, a battery user interface element that indicates the current time and/or a cellular signal user interface element that indicates the strength of a cellular signal that the computer system has) are displayed

while the user interface element (e.g., 604) is displayed (e.g., the one or more status bar user interface elements are displayed on one or both sides of the user interface element), and wherein, while the distance between the computer system (e.g., 600) and the external device (e.g., 602) is less than the first threshold distance (e.g., 620-1) and greater than the second threshold distance (620-2) (e.g., the relative positioning of computer system 600 and external device 602 at FIGS. 6C and 6D), the one or more status bar user interface elements are displayed at a variable size that is based on the distance between the computer system and the external device (e.g., as described above in relation to FIGS. 6C and 6D) (e.g., the size of the one or more status bar user interface elements has an direct relationship with the distance between the computer system and the external device (e.g., size of the one or more status bar user interface elements decreases as the distance between the computer system and the external system decreases and the size of the one or more status bar user interface elements increases as the distance between the computer system and the external device increases). Displaying the one or more status bar user interface elements at a variable size that is based on the distance between the computer system and the external device while the distance between the computer system and the external device is between two distance thresholds provides the user with a visual indication regarding the positioning of the computer system relative to the external device when the relative positioning of the computer system relative to the external device is of heightened interest to the user which enhances the operability of the computer system and makes the user-system interface more efficient which, additionally, reduces power usage and improves battery life of the computer system by enabling the user to use the system more quickly and efficiently.

[0227] In some embodiments, while the distance between the computer system (e.g., 600) and the external device (e.g., 602) is less than the first threshold distance (e.g., 620-1) and greater than the second threshold distance (620-2) (e.g., the relative positioning of computer system 600 and external device 602 at FIGS. 6C and 6D), the size of the user interface element (e.g., 604) has an inverse relationship with the distance between the computer system and the external device (e.g., as described above in relation to FIGS. 6C and 6D) (e.g., the size of the user interface element increases as the distance between the computer system and the external device decreases and the size of the user interface element decrease when the distance between the computer system and the external device increases). In some embodiments, the size of the of the user interface element has a direct relationship with the distance between the computer system and the external device (e.g., the size of the user

interface element decreases as the distance between the computer system and the external device decreases and the size of the user interface element increases as the distance between the computer system and the external device increases).

[0228] The foregoing description, for purpose of explanation, has been described with reference to specific embodiments. However, the illustrative discussions above are not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in view of the above teachings. The embodiments were chosen and described in order to best explain the principles of the techniques and their practical applications. Others skilled in the art are thereby enabled to best utilize the techniques and various embodiments with various modifications as are suited to the particular use contemplated.

[0229] Although the disclosure and examples have been fully described with reference to the accompanying drawings, it is to be noted that various changes and modifications will become apparent to those skilled in the art. Such changes and modifications are to be understood as being included within the scope of the disclosure and examples as defined by the claims.

[0230] As described above, one aspect of the present technology is the gathering and use of data available from various sources to improve a user's experience while listening to media. The present disclosure contemplates that in some instances, this gathered data may include personal information data that uniquely identifies or can be used to contact or locate a specific person. Such personal information data can include demographic data, location-based data, telephone numbers, email addresses, social network IDs, home addresses, data or records relating to a user's health or level of fitness (e.g., vital signs measurements, medication information, exercise information), date of birth, or any other identifying or personal information.

[0231] The present disclosure recognizes that the use of such personal information data, in the present technology, can be used to the benefit of users. For example, the personal information data can be used to deliver targeted media that is of greater interest to the user. Accordingly, use of such personal information data enables users to have better tailored media suggestions to generate a personalized playlist for the user. Further, other uses for personal information data that benefit the user are also contemplated by the present

disclosure. For instance, health and fitness data may be used to provide insights into a user's general wellness, or may be used as positive feedback to individuals using technology to pursue wellness goals.

[0232] The present disclosure contemplates that the entities responsible for the collection, analysis, disclosure, transfer, storage, or other use of such personal information data will comply with well-established privacy policies and/or privacy practices. In particular, such entities should implement and consistently use privacy policies and practices that are generally recognized as meeting or exceeding industry or governmental requirements for maintaining personal information data private and secure. Such policies should be easily accessible by users, and should be updated as the collection and/or use of data changes. Personal information from users should be collected for legitimate and reasonable uses of the entity and not shared or sold outside of those legitimate uses. Further, such collection/sharing should occur after receiving the informed consent of the users. Additionally, such entities should consider taking any needed steps for safeguarding and securing access to such personal information data and ensuring that others with access to the personal information data adhere to their privacy policies and procedures. Further, such entities can subject themselves to evaluation by third parties to certify their adherence to widely accepted privacy policies and practices. In addition, policies and practices should be adapted for the particular types of personal information data being collected and/or accessed and adapted to applicable laws and standards, including jurisdiction-specific considerations. For instance, in the US, collection of or access to certain health data may be governed by federal and/or state laws, such as the Health Insurance Portability and Accountability Act (HIPAA); whereas health data in other countries may be subject to other regulations and policies and should be handled accordingly. Hence different privacy practices should be maintained for different personal data types in each country.

[0233] Despite the foregoing, the present disclosure also contemplates embodiments in which users selectively block the use of, or access to, personal information data. That is, the present disclosure contemplates that hardware and/or software elements can be provided to prevent or block access to such personal information data. For example, in the case of media streaming services, the present technology can be configured to allow users to select to "opt in" or "opt out" of participation in the collection of personal information data during registration for services or anytime thereafter. In another example, users can select not to

provide media preference data for targeted media suggestions. In yet another example, users can select to limit the length of time media preference data is maintained or entirely prohibit the development of a baseline media preference profile. In addition to providing "opt in" and "opt out" options, the present disclosure contemplates providing notifications relating to the access or use of personal information. For instance, a user may be notified upon downloading an app that their personal information data will be accessed and then reminded again just before personal information data is accessed by the app.

[0234] Moreover, it is the intent of the present disclosure that personal information data should be managed and handled in a way to minimize risks of unintentional or unauthorized access or use. Risk can be minimized by limiting the collection of data and deleting data once it is no longer needed. In addition, and when applicable, including in certain health related applications, data de-identification can be used to protect a user's privacy. De-identification may be facilitated, when appropriate, by removing specific identifiers (e.g., date of birth, etc.), controlling the amount or specificity of data stored (e.g., collecting location data a city level rather than at an address level), controlling how data is stored (e.g., aggregating data across users), and/or other methods.

[0235] Therefore, although the present disclosure broadly covers use of personal information data to implement one or more various disclosed embodiments, the present disclosure also contemplates that the various embodiments can also be implemented without the need for accessing such personal information data. That is, the various embodiments of the present technology are not rendered inoperable due to the lack of all or a portion of such personal information data. For example, media can be selected and delivered to users by inferring preferences based on non-personal information data or a bare minimum amount of personal information, such as the content being requested by the device associated with a user, other non-personal information available to the media streaming services, or publicly available information.

CLAIMS

What is claimed is:

1. A method comprising:

at a computer system that is in communication with a display generation component and an external device:

displaying, via the display generation component, a user interface element;

while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and

in response to detecting the first change in distance:

in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size;

in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and

in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

2. The method of claim 1, wherein, prior to detecting the first change in distance between the computer system and the external device, the user interface element is displayed at the first predetermined size, the method further comprising:

in response to detecting the first change in distance and in accordance with a determination that the distance between the computer system and the external device transitions from being greater than the first threshold distance to less than the first threshold distance and greater than the second threshold distance, changing the user interface element from being displayed with the first predetermined size to being displayed with the variable size.

3. The method of any one of claims 1-2, further comprising:

while the distance between the computer system and the external device is less than the first threshold distance and greater than the second threshold distance, detecting a second change in distance between the computer system and the external device;

in response to detecting the second change in distance:

in accordance with a determination that a second distance between the computer system and the external device has transitioned to being greater than the first threshold distance, displaying a first user interface element snapping animation of the user interface element transitioning from being displayed with the variable size to being displayed with the first predetermined size; and

in accordance with a determination that the second distance between the computer system and the external device has transitioned to being less than the second threshold distance, displaying a second user interface element snapping animation of the user interface element transitioning from being displayed with the variable size to being displayed with the second predetermined size.

4. The method of claim 3, wherein displaying the second user interface element snapping animation includes displaying a sequence of the user interface element transitioning from the variable size to a third predetermined size that is smaller than the variable and transitioning from the third predetermined size to the second predetermined size, wherein the second predetermined size is larger than the third predetermined.

5. The method of any one of claims 1-4, wherein the first predetermined size and the second predetermined size are the same.

6. The method of any one of claims 1-5, wherein the computer system is playing back a first media item while the first change in distance between the computer system and the external device is detected, the method further comprising:

in accordance with a determination that a first set of criteria is satisfied, transferring the playback of the first media item from the computer system to the external device.

7. The method of claim 6, wherein the external device is playing back a second media item while the first change in distance between the computer system and the external device is detected, and wherein the first set of criteria includes a criterion that is satisfied when the computer system detects a first input that corresponds to selection of a first transfer selectable user interface object.

8. The method of claim 6, wherein the external device is not playing back media when the first change in distance between the computer system and the external device is detected, and wherein the first set of criteria includes a criterion that is satisfied when the distance between the computer system and the external device transitions from being less than the first threshold distance and greater than the second threshold distance to being less than the second threshold distance.

9. The method of any one of claims 1-8, wherein the external device is playing back a third media item while the first change in distance between the computer system and the external device is detected, the method further comprising:

in accordance with a determination that a second set of criteria is satisfied, transferring the playback of the third media item from the external device to the computer system.

10. The method of claim 9, wherein the computer system is not playing back media while detecting the first change in distance between the computer system and the external device, and wherein the second set of criteria includes a criterion that is satisfied when the computer system detects a second input that corresponds to the selection of a second transfer selectable user interface object.

11. The method of any one of claims 1-10, further comprising:

while the distance between the computer system and the external device is less than the first threshold distance and greater than the second threshold distance, detecting a third change in distance between the computer system and the external device;

in response to detecting the third change in distance between the computer system and the external device and in accordance with a determination that a third distance between the computer system and the external device, that results from the third change in distance, is less than the second threshold distance, displaying, via the display generation component, a now playing user interface

12. The method of claim 11, wherein in response to detecting the third change in distance and in accordance with a determination that the computer system was not playing media and the external device was playing back a fourth media item when the third change in distance occurred, displaying, within the now playing user interface, a transfer to computer system selectable user interface object that, when selected, causes playback of the fourth media to be transferred from the external device to the computer system.

13. The method of claim 11, wherein in response to detecting the third change in distance and in accordance with a determination that the computer system was playing back a fifth media item when the third change in distance occurred and the external device was playing back a sixth media item when the third change in distance occurred, displaying, within the now playing user interface, a transfer from computer system selectable user interface object, that, when selected causes playback of the fifth media item to be transferred from the computer system to the external device.

14. The method of any one of claims 1-13, further comprising:

in response to detecting the first change in distance and in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than the second threshold distance, outputting continuous haptic feedback.

15. The method of any one of claims 1-14, further comprising:

in response to detecting the first change in distance:

in accordance with a determination that the distance between the external device and the computer system transitions from being greater than the first threshold

distance to being less than the first threshold distance and greater than the second threshold distance, outputting a first discrete haptic alert; and

in accordance with a determination that the distance between the external device and the computer system transitions from being less than the first threshold distance and greater than the second threshold distance to being less than the second threshold distance, outputting a second discrete haptic alert.

16. The method of any one of claims 1-15, wherein the computer system is playing back a seventh media item at a first variable volume level and the external device is playing back the seventh media item at a second variable volume level different from the first volume level, the method further comprising:

while the distance between the computer system and the external device is less than the first threshold distance and greater than the second threshold distance:

detecting a fourth change in distance between the computer system and the external device;

in response to detecting the fourth change in distance:

in accordance with a determination that the distance between the computer system and the external device has decreased:

decreasing the first variable volume level by a first amount that is based on the fourth change in distance; and

transmitting a first set of instructions that causes the external device to increase the second variable volume level by a second amount that is based on the fourth change in distance

in accordance with a determination that the distance between the computer system and the external device has increased:

increasing the first variable volume level volume level by a third amount that is based on the fourth change in distance; and

transmitting a second set of instructions that causes the external device to decrease the second variable volume level by a fourth amount that is based on the fourth change in distance.

17. The method of any one of claims 1-16, wherein the user interface element includes a representation of media that is being played back by the computer system and/or the external device.

18. The method of any one of claims 1-17, wherein the user interface element is displayed around one or more sensors that are integrated into the computer system.

19. The method of any one of claims 1-18, wherein a first targeted device is playing back an eighth media item, the method further comprising:

while displaying the user interface element, detecting a third input that corresponds to selection of the user interface element; and

in response to detecting the third input, displaying one or more controls for controlling the playback of the eighth media item on the first targeted device.

20. The method of any one of claims 1-19, wherein the external device is in communication with one or more light sources, the method further comprising:

in response to detecting the first change in distance and in accordance with a determination that the distance between the computer system and the external device transitions from being less than the first distance threshold and greater than the second distance threshold to being less than the second distance threshold, transmitting a third set of instructions to the external device that causes the one or more light sources to output a light animation.

21. The method of any one of claims 1-20, wherein the user interface element includes one or more user interface objects that indicate that a second targeted device is actively playing back a ninth media item.

22. The method of any one of claims 1-21, wherein one or more status bar user interface elements are displayed while the user interface element is displayed, and wherein, while the distance between the computer system and the external device is less than the first threshold distance and greater than the second threshold distance, the one or more status bar user

interface elements are displayed at a variable size that is based on the distance between the computer system and the external device.

23. The method of any one of claims 1-22, wherein, while the distance between the computer system and the external device is less than the first threshold distance and greater than the second threshold distance, the size of the user interface element has an inverse relationship with the distance between the computer system and the external device.

24. A non-transitory computer-readable storage medium storing one or more programs configured to be executed by one or more processors of a computer system that is in communication with a display generation component and an external device, the one or more programs including instructions for performing the method of any one of claims 1 - 23.

25. A computer system that is configured to communicate with a display generation component and an external device, the computer system comprising:

one or more processors; and

memory storing one or more programs configured to be executed by the one or more processors, the one or more programs including instructions for performing the method of any one of claims 1 - 23.

26. A computer system that is configured to communicate with a display generation component and an external device, comprising:

means for performing the method of any one of claims 1 - 23.

27. A computer program product, comprising one or more programs configured to be executed by one or more processors of a computer system that is in communication with a display generation component and an external device, the one or more programs including instructions for performing the method of any one of claims 1 - 23.

28. A non-transitory computer-readable storage medium storing one or more programs configured to be executed by one or more processors of a computer system that is in communication with a display generation component and an external device, the one or more programs including instructions for:

displaying, via the display generation component, a user interface element;

while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and

in response to detecting the first change in distance:

in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size;

in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and

in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

29. A computer system configured to communicate with a display generation component and an external device, comprising:

one or more processors; and

memory storing one or more programs configured to be executed by the one or more processors, the one or more programs including instructions for:

displaying, via the display generation component, a user interface element;

while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and

in response to detecting the first change in distance:

in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size;

in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater

than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and

in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

30. A computer system configured to communicate with a display generation component and an external device, comprising:

means for displaying, via the display generation component, a user interface element;

means for while displaying the user interface element detecting a first change in distance between the computer system and the external device; and

means, responsive to detecting the first change in distance, for:

in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size;

in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and

in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

31. A computer program product, comprising one or more programs configured to be executed by one or more processors of a computer system that is in communication with a display generation component and an external device, the one or more programs including instructions for:

displaying, via the display generation component, a user interface element;

while displaying the user interface element, detecting a first change in distance between the computer system and the external device; and

in response to detecting the first change in distance:

in accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, displaying the user interface element at a first predetermined size;

in accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, displaying the user interface element at a variable size that is based on the distance between the computer system and the external device; and

in accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, displaying the user interface element at a second predetermined size.

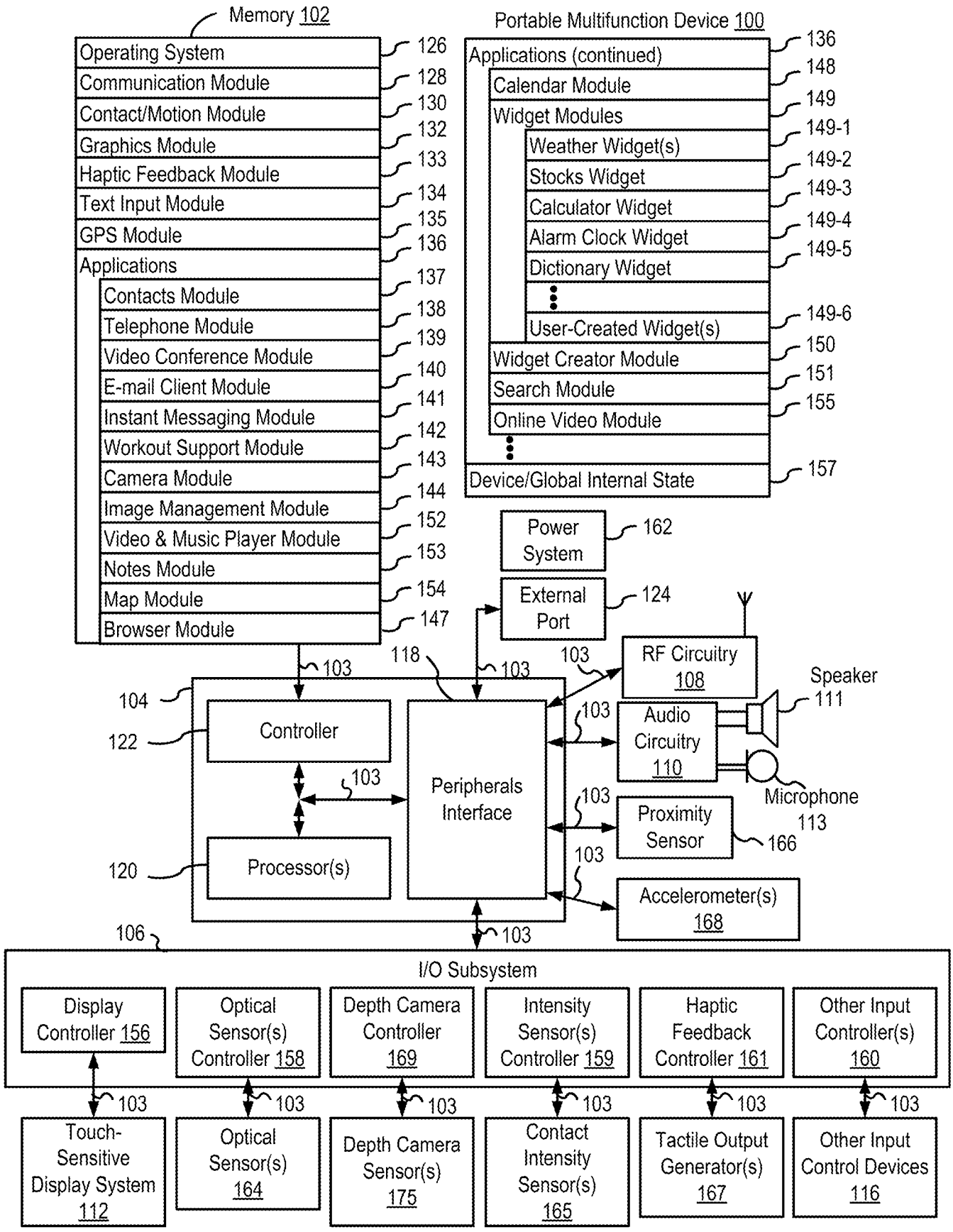

Memory 102
Operating System
Communication Module
Contact/Motion Module
Graphics Module
Haptic Feedback Module
Text Input Module
GPS Module
Applications
Contacts Module
Telephone Module
Video Conference Module
E-mail Client Module
Instant Messaging Module
Workout Support Module
Camera Module
Image Management Module
Video & Music Player Module
Notes Module
Map Module
Browser Module
126
128
130
132
133
134
135
136
137
138
139
140
141
142
143
144
152
153
154
147
Portable Multifunction Device 100
Applications (continued)
Calendar Module
Widget Modules
Weather Widget(s)
Stocks Widget
Calculator Widget
Alarm Clock Widget
Dictionary Widget
User-Created Widget(s)
Widget Creator Module
Search Module
Online Video Module
Device/Global Internal State
136
148
149
149-1
149-2
149-3
149-4
149-5
149-6
150
151
155
157
Power System
162
External Port
124
RF Circuitry 108
Speaker 111
Audio Circuitry 110
Microphone 113
Proximity Sensor
166
Accelerometer(s) 168
Peripherals Interface
Controller
Processor(s)
104
122
120
118
103
106
I/O Subsystem
Display Controller 156
Optical Sensor(s) Controller 158
Depth Camera Controller 169
Intensity Sensor(s) Controller 159
Haptic Feedback Controller 161
Other Input Controller(s) 160
Touch-Sensitive Display System 112
Optical Sensor(s) 164
Depth Camera Sensor(s) 175
Contact Intensity Sensor(s) 165
Tactile Output Generator(s) 167
Other Input Control Devices 116

FIG. 1A

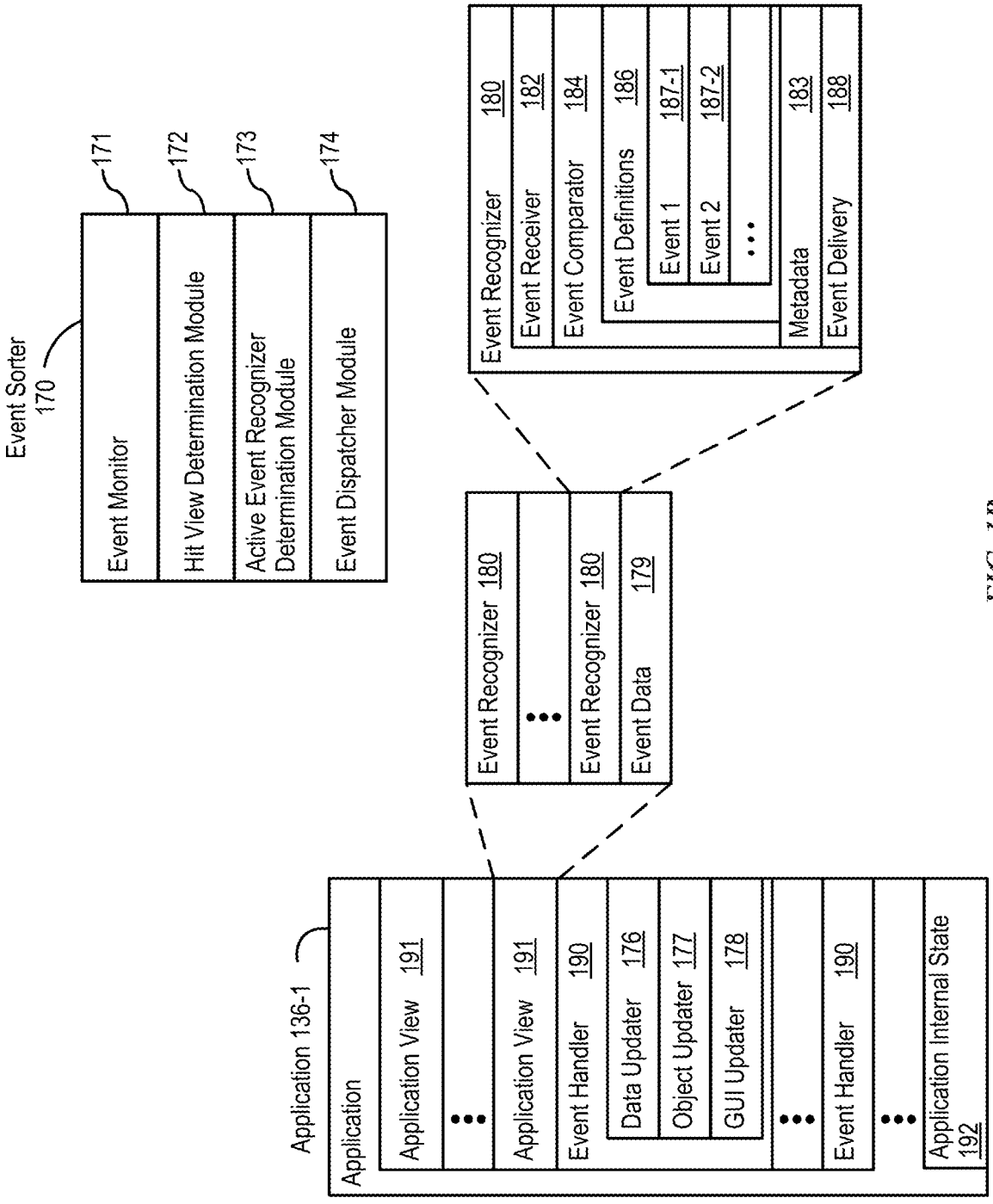

Event Sorter
170
171
Event Monitor
172
Hit View Determination Module
173
Active Event Recognizer Determination Module
174
Event Dispatcher Module
Event Recognizer 180
Event Receiver 182
Event Comparator 184
Event Definitions 186
Event 1 187-1
Event 2 187-2
...
Metadata 183
Event Delivery 188
Event Recognizer 180
...
Event Recognizer 180
Event Data 179
Application 136-1
Application
Application View 191
...
Application View 191
Event Handler 190
Data Updater 176
Object Updater 177
GUI Updater 178
...
Event Handler 190
...
Application Internal State 192

FIG. 1B

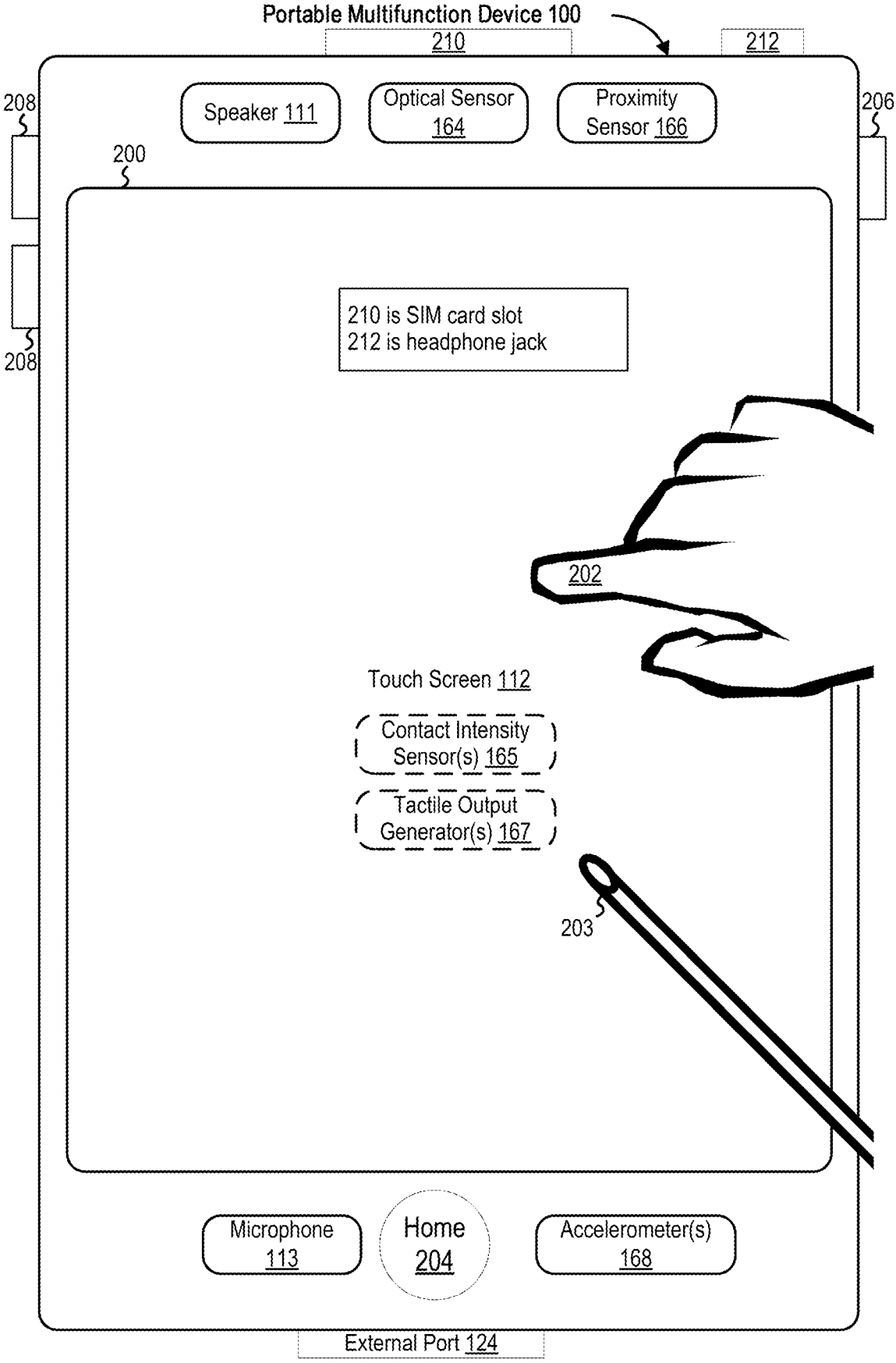

Portable Multifunction Device 100
210
212
208
Speaker 111
Optical Sensor 164
Proximity Sensor 166
206
200
210 is SIM card slot
212 is headphone jack
208
202
Touch Screen 112
Contact Intensity Sensor(s) 165
Tactile Output Generator(s) 167
203
Microphone 113
Home 204
Accelerometer(s) 168
External Port 124

FIG. 2

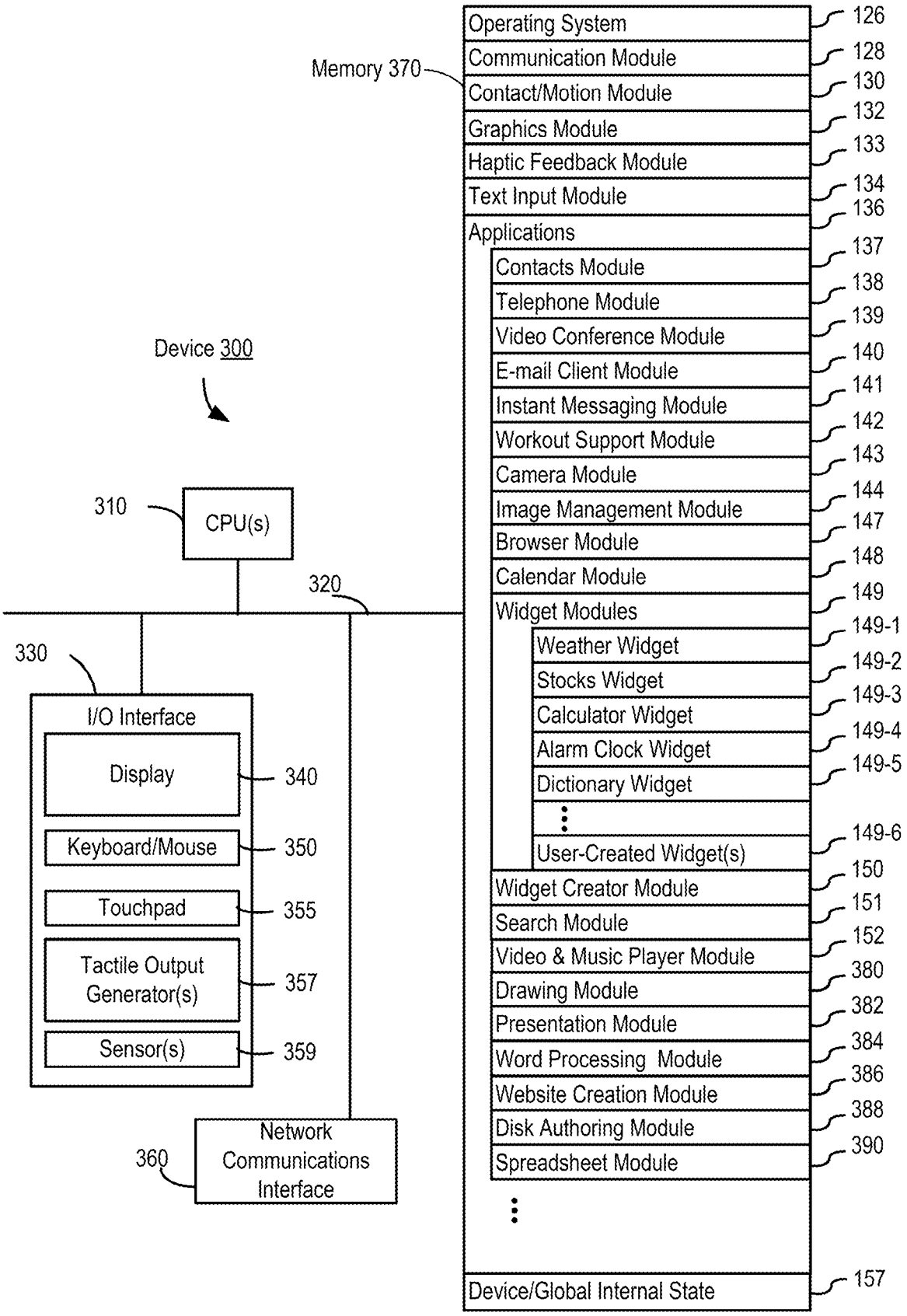

Memory 370
Operating System
126
Communication Module
128
Contact/Motion Module
130
Graphics Module
132
Haptic Feedback Module
133
Text Input Module
134
Applications
136
Contacts Module
137
Telephone Module
138
Video Conference Module
139
E-mail Client Module
140
Instant Messaging Module
141
Workout Support Module
142
Camera Module
143
Image Management Module
144
Browser Module
147
Calendar Module
148
Widget Modules
149
Weather Widget
149-1
Stocks Widget
149-2
Calculator Widget
149-3
Alarm Clock Widget
149-4
Dictionary Widget
149-5
User-Created Widget(s)
149-6
Widget Creator Module
150
Search Module
151
Video & Music Player Module
152
Drawing Module
380
Presentation Module
382
Word Processing Module
384
Website Creation Module
386
Disk Authoring Module
388
Spreadsheet Module
390
Device/Global Internal State
157
Device 300
310
CPU(s)
320
330
I/O Interface
Display
340
Keyboard/Mouse
350
Touchpad
355
Tactile Output Generator(s)
357
Sensor(s)
359
360
Network Communications Interface

FIG. 3

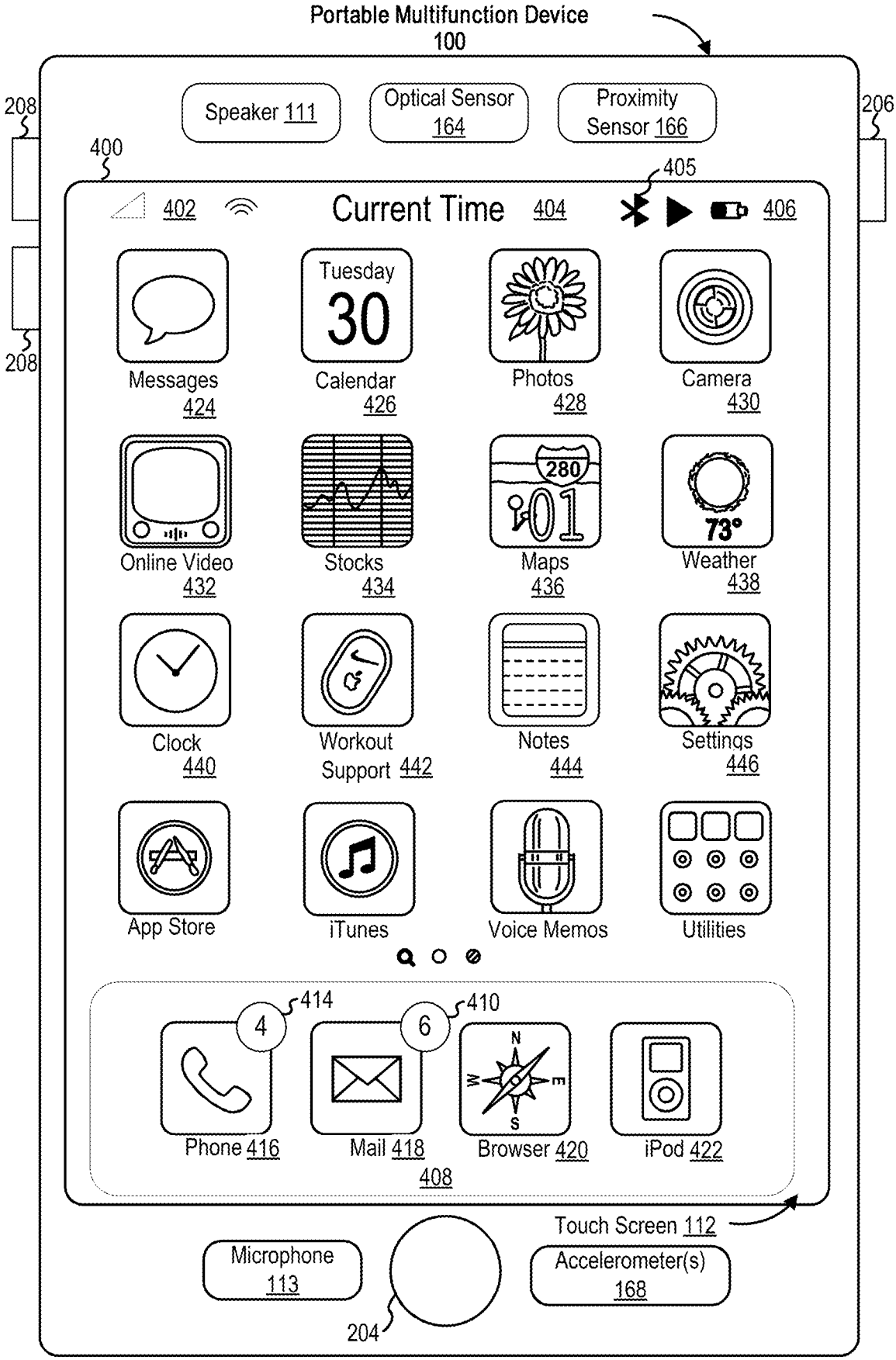
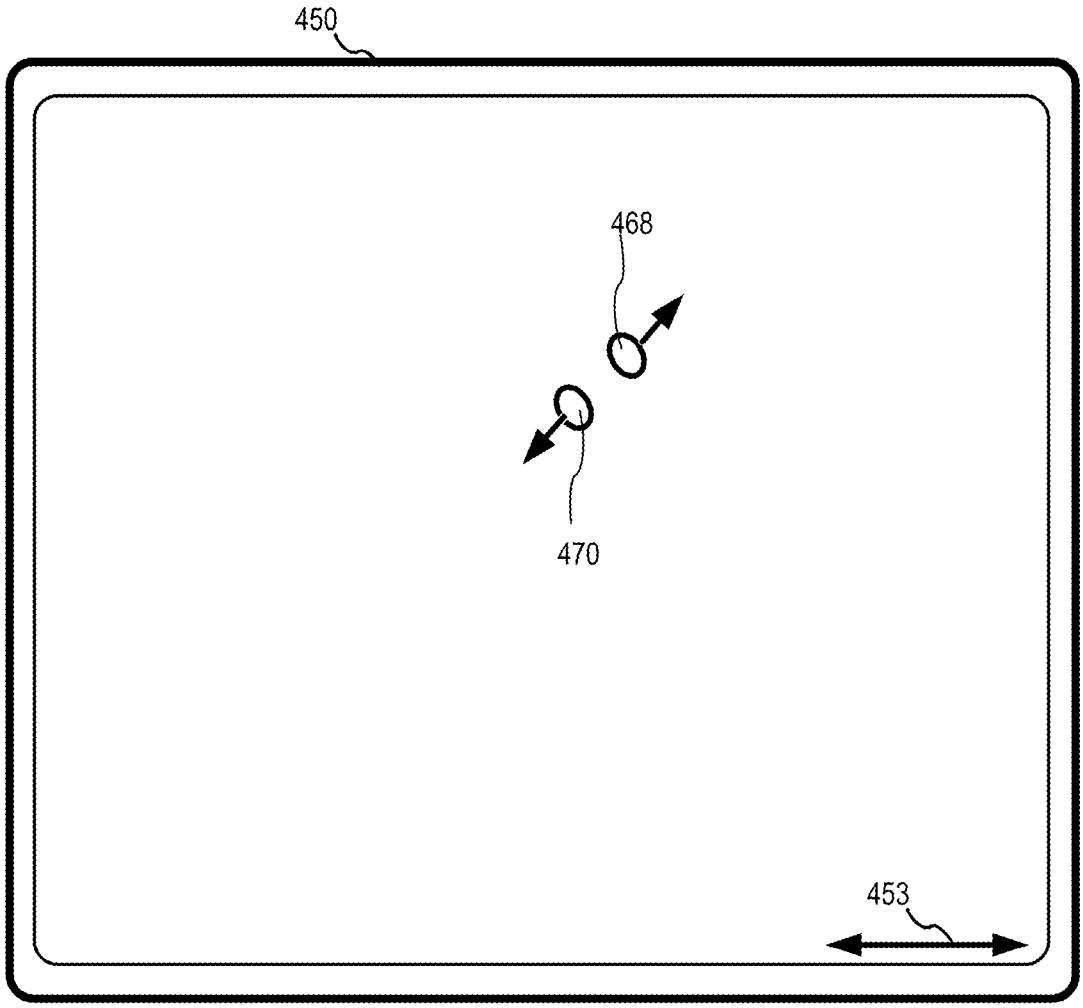

Portable Multifunction Device
100
Speaker 111
Optical Sensor 164
Proximity Sensor 166
208
206
400
405
402
Current Time 404
406
Messages 424
Tuesday 30
Calendar 426
Photos 428
Camera 430
Online Video 432
Stocks 434
280
Maps 436
73°
Weather 438
Clock 440
Workout Support 442
Notes 444
Settings 446
App Store
iTunes
Voice Memos
Utilities
414
410
4
6
Phone 416
Mail 418
Browser 420
iPod 422
408
Touch Screen 112
Microphone 113
Accelerometer(s) 168
204

FIG. 4A


450
468
470
453

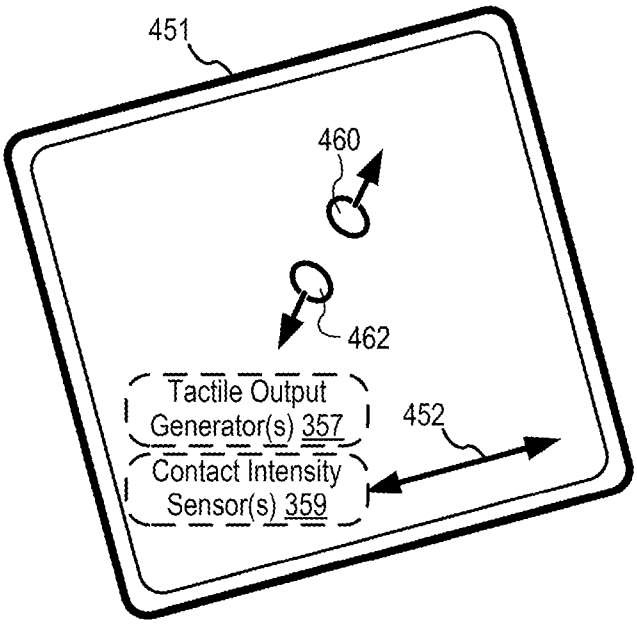

451
460
462
Tactile Output Generator(s) 357
Contact Intensity Sensor(s) 359
452

FIG. 4B

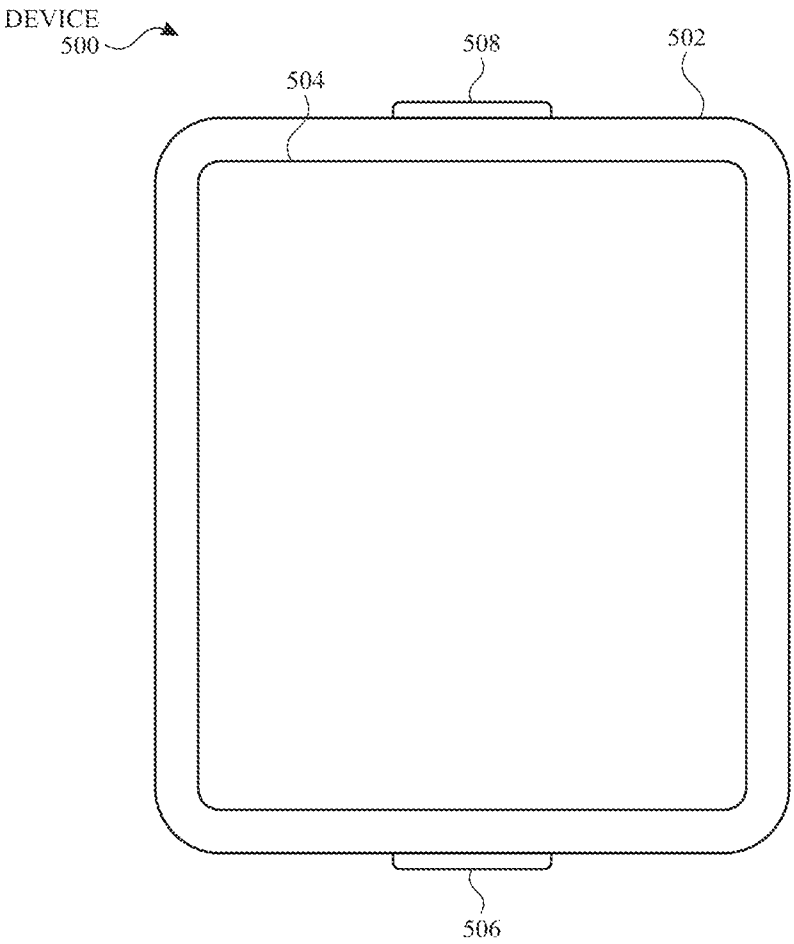


FIG. 5A

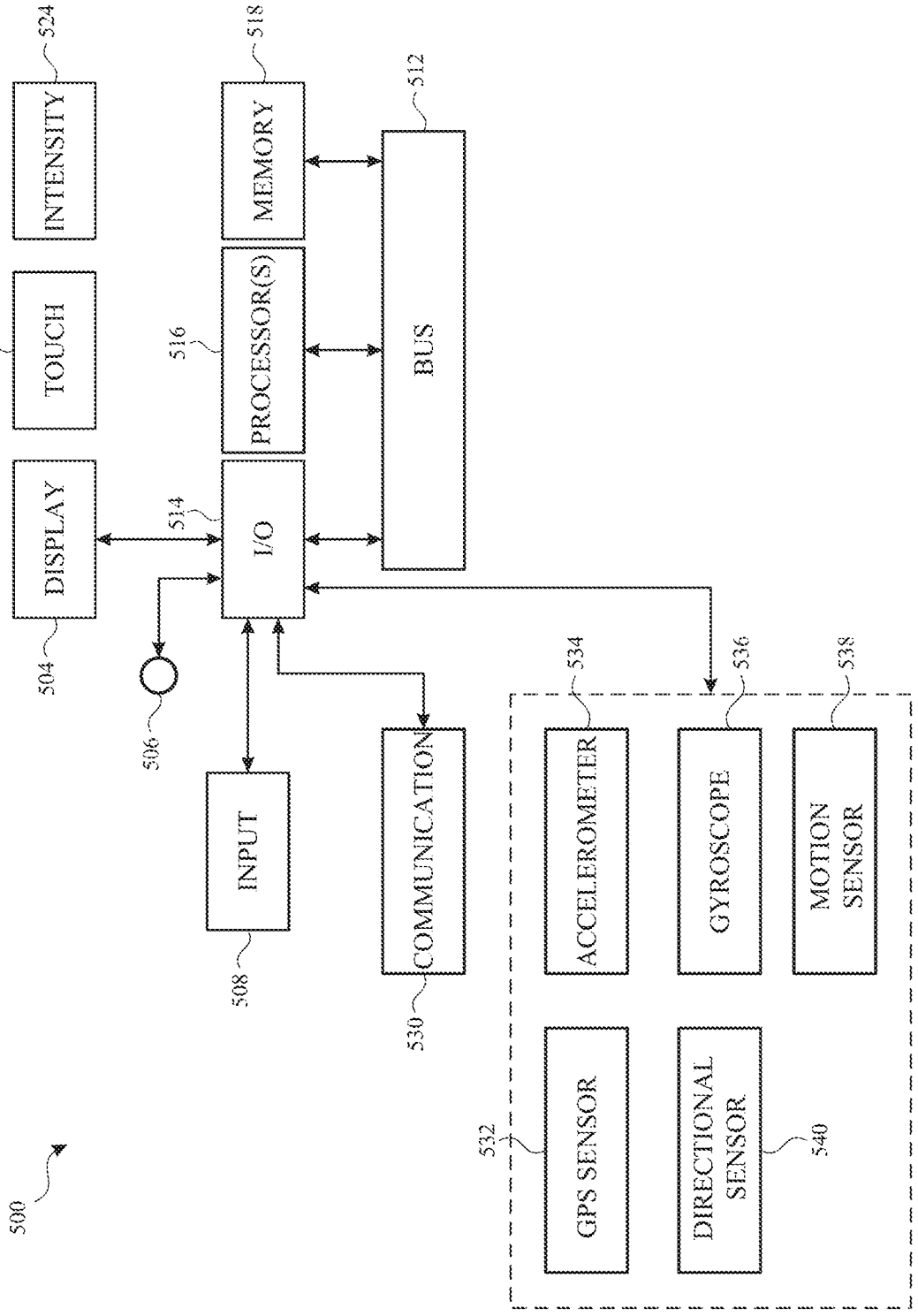

500
DISPLAY
504
TOUCH
522
INTENSITY
524
I/O
514
PROCESSOR(S)
516
MEMORY
518
BUS
512
INPUT
508
COMMUNICATION
530
506
ACCELEROMETER
534
GYROSCOPE
536
MOTION SENSOR
538
GPS SENSOR
532
DIRECTIONAL SENSOR
540

FIG. 5B

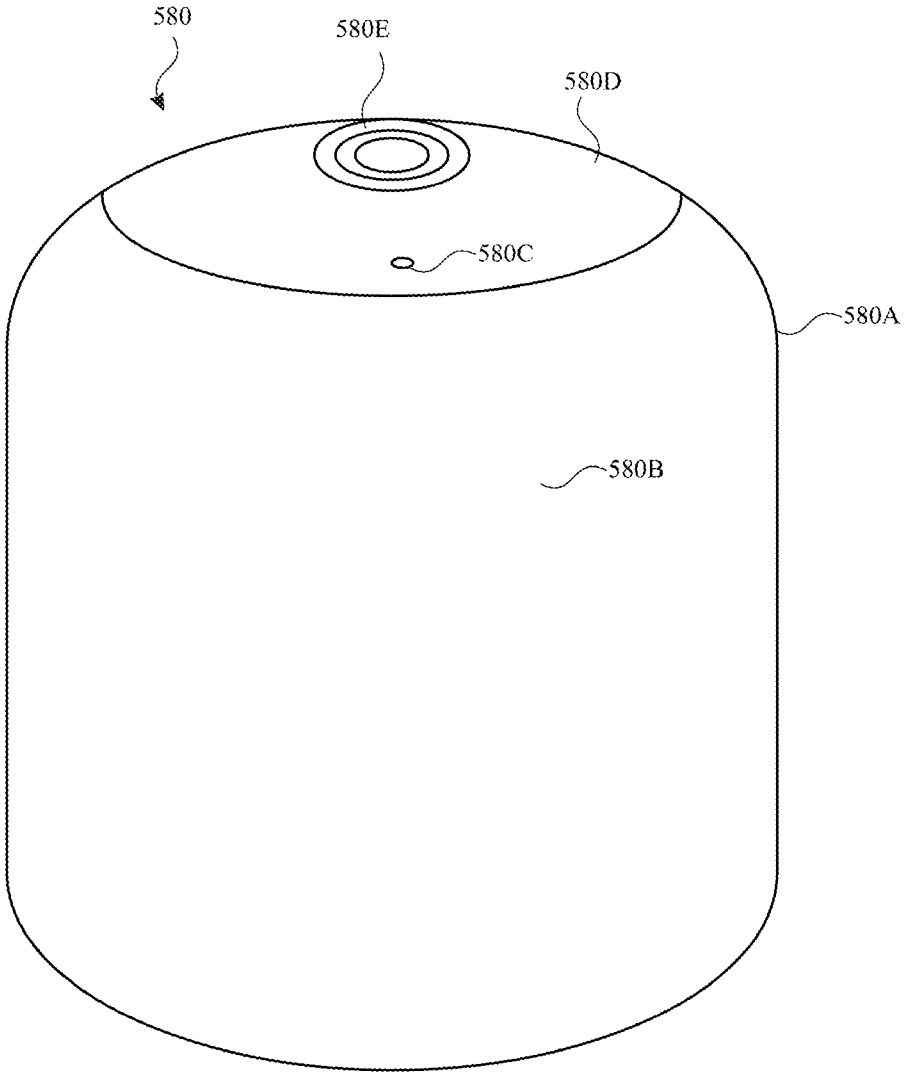


FIG. 5C

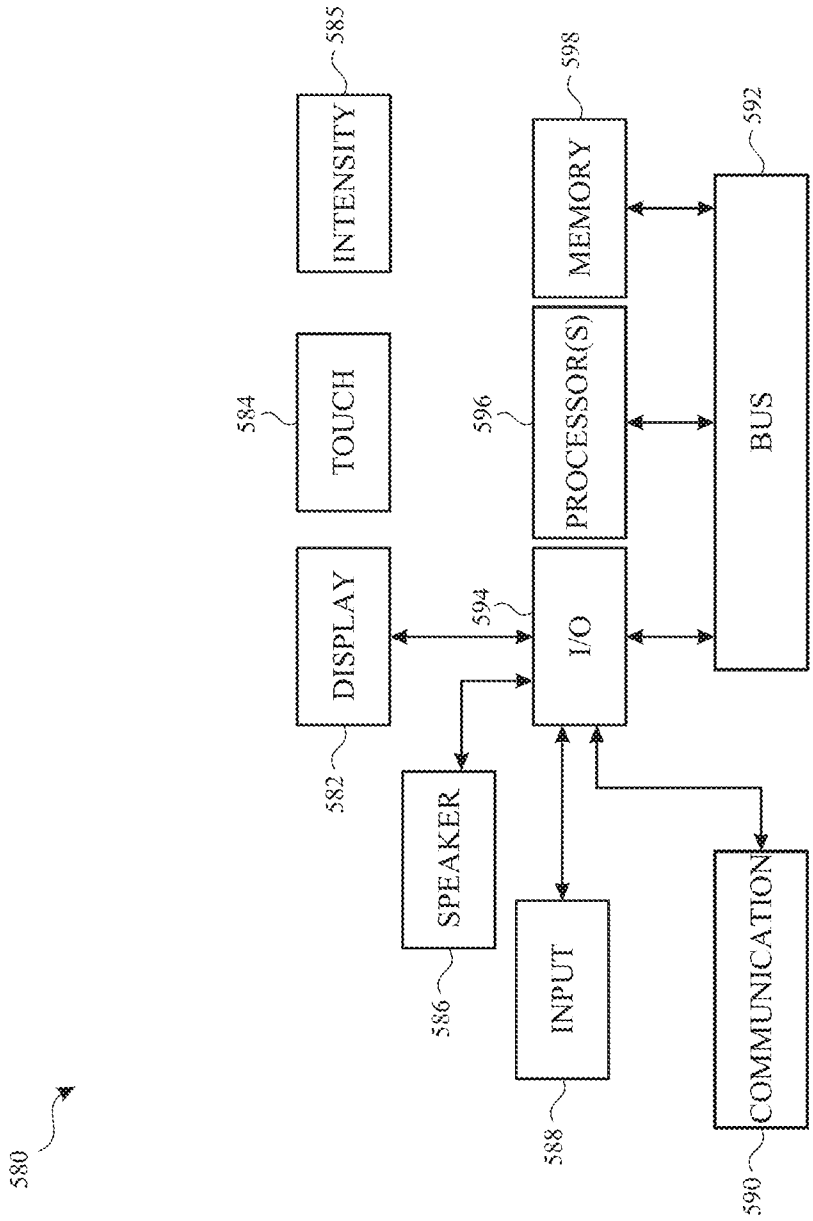

580
582
DISPLAY
584
TOUCH
585
INTENSITY
586
SPEAKER
588
INPUT
590
COMMUNICATION
592
BUS
594
I/O
596
PROCESSOR(S)
598
MEMORY

FIG. 5D

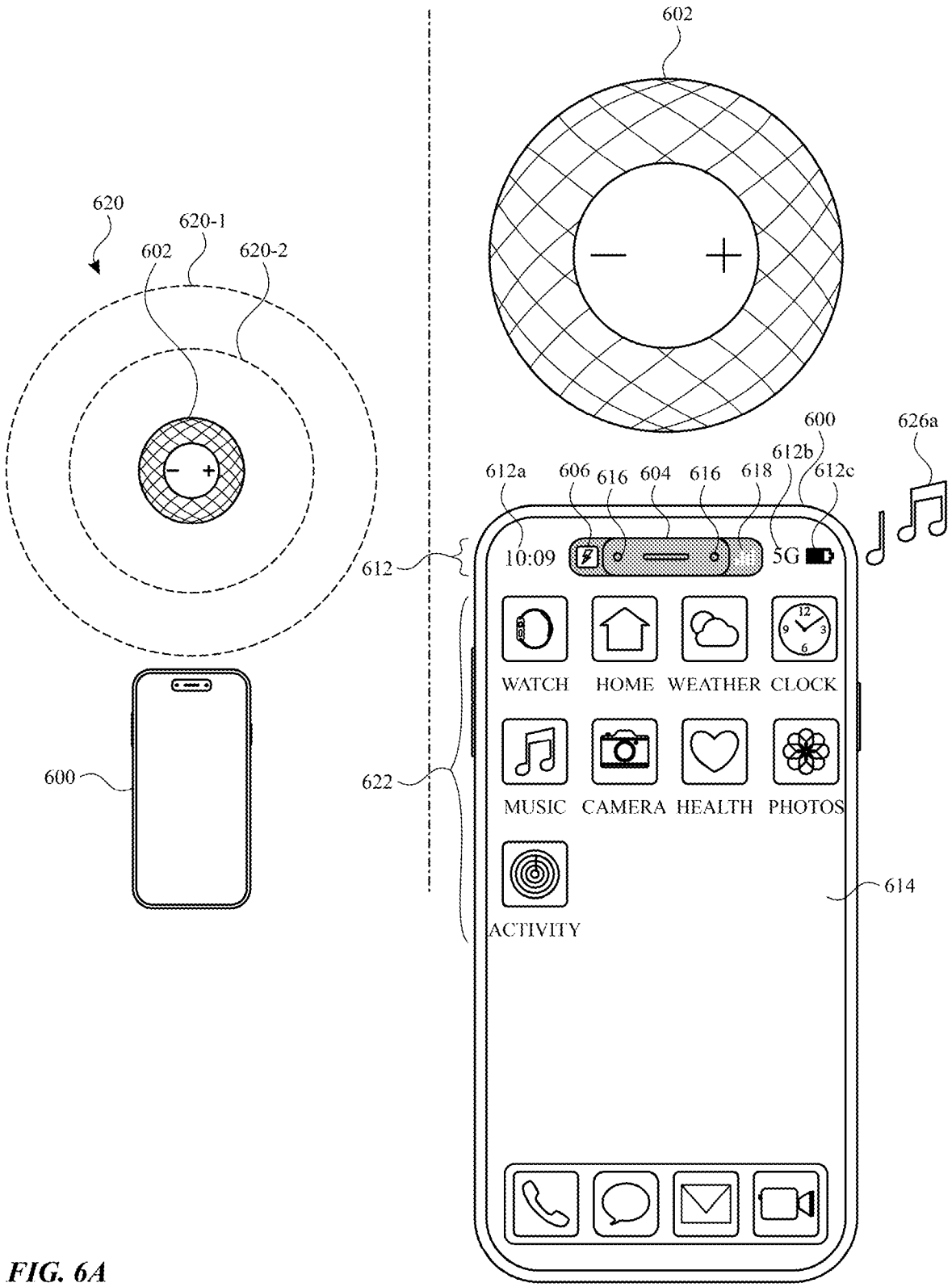

602
620
620-1
602
620-2
600
612
622
600
626a
612a
606
616
604
616
618
612b
612c
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
614

FIG. 6A

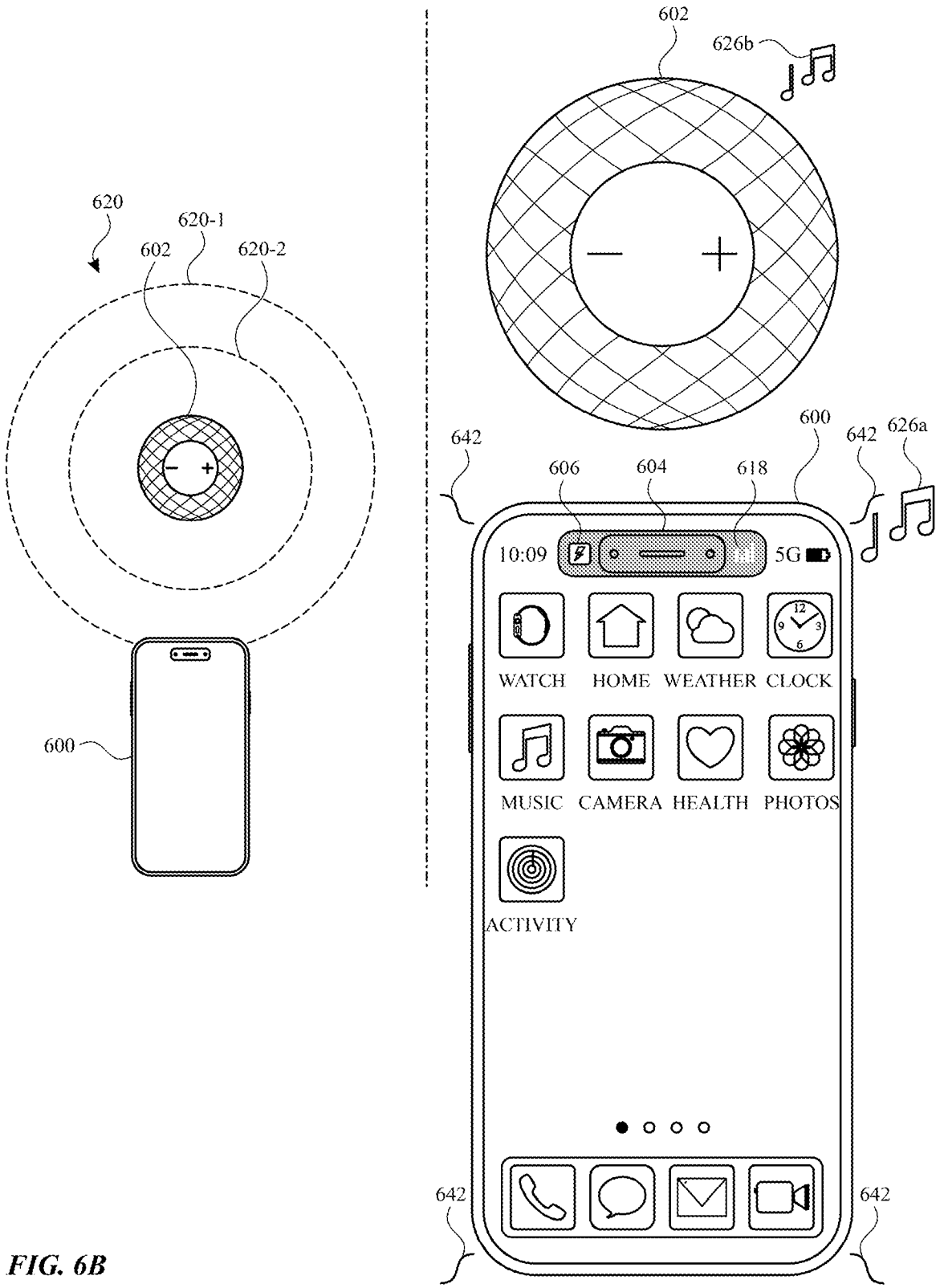
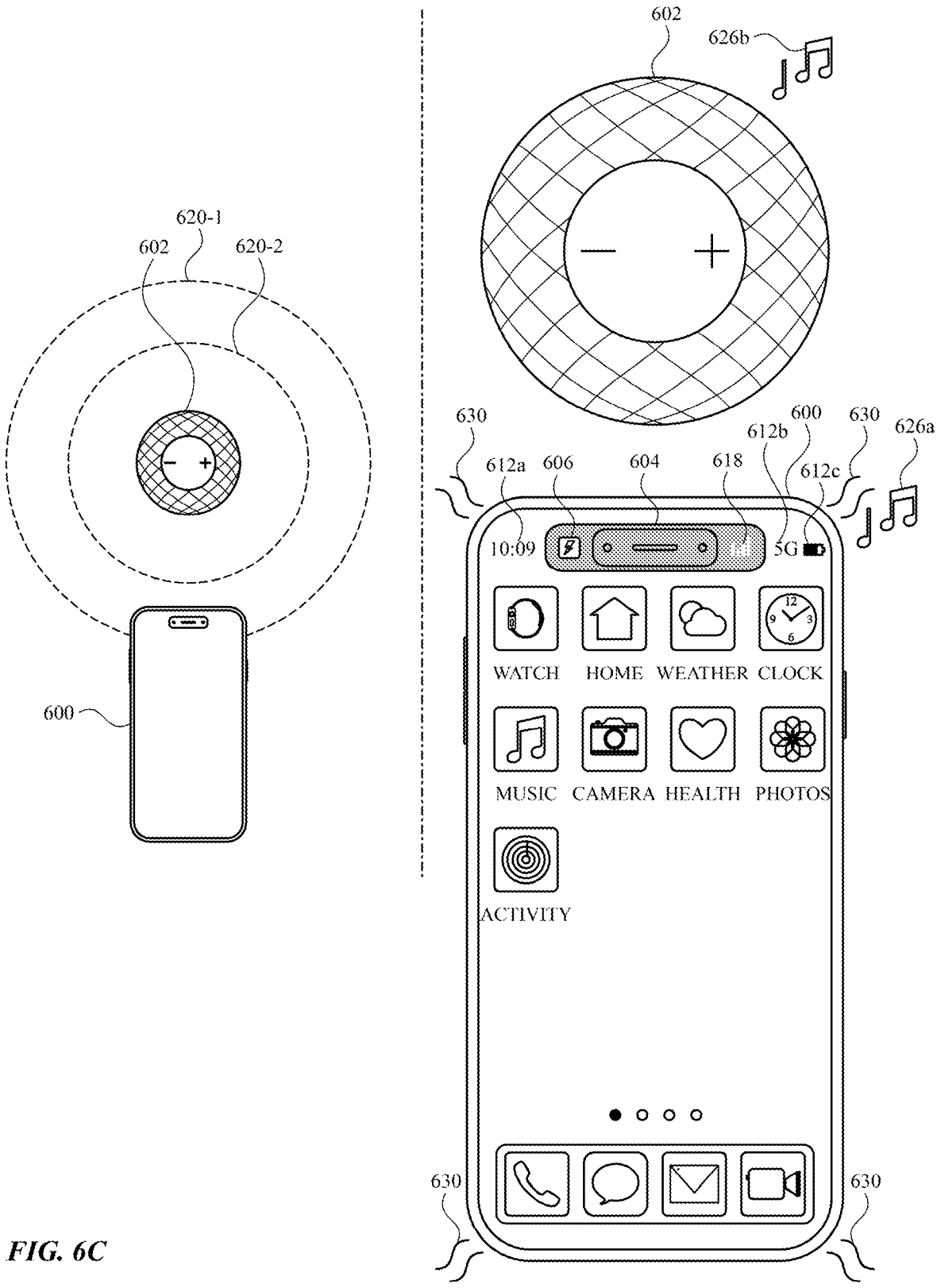

620
620-1
602
620-2
600
602
626b
642
606
604
618
600
642
626a
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
642
642

FIG. 6B


620-1
602
620-2
600
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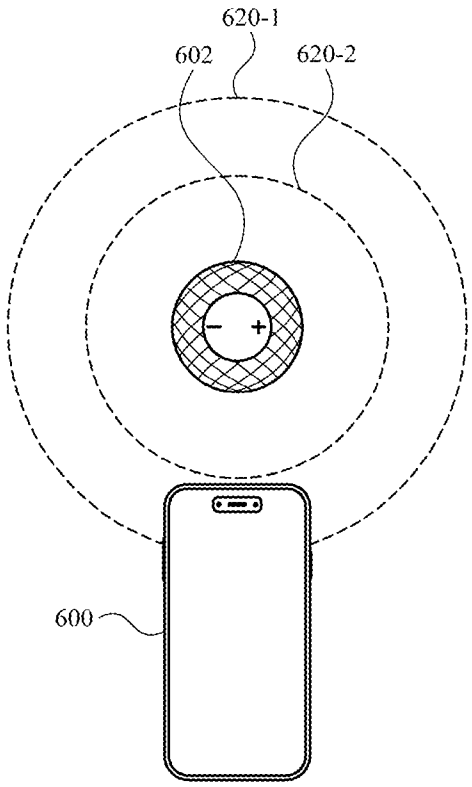
626b
630
600
630
626a
612b
612a
606
604
618
612c
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
630
630

FIG. 6C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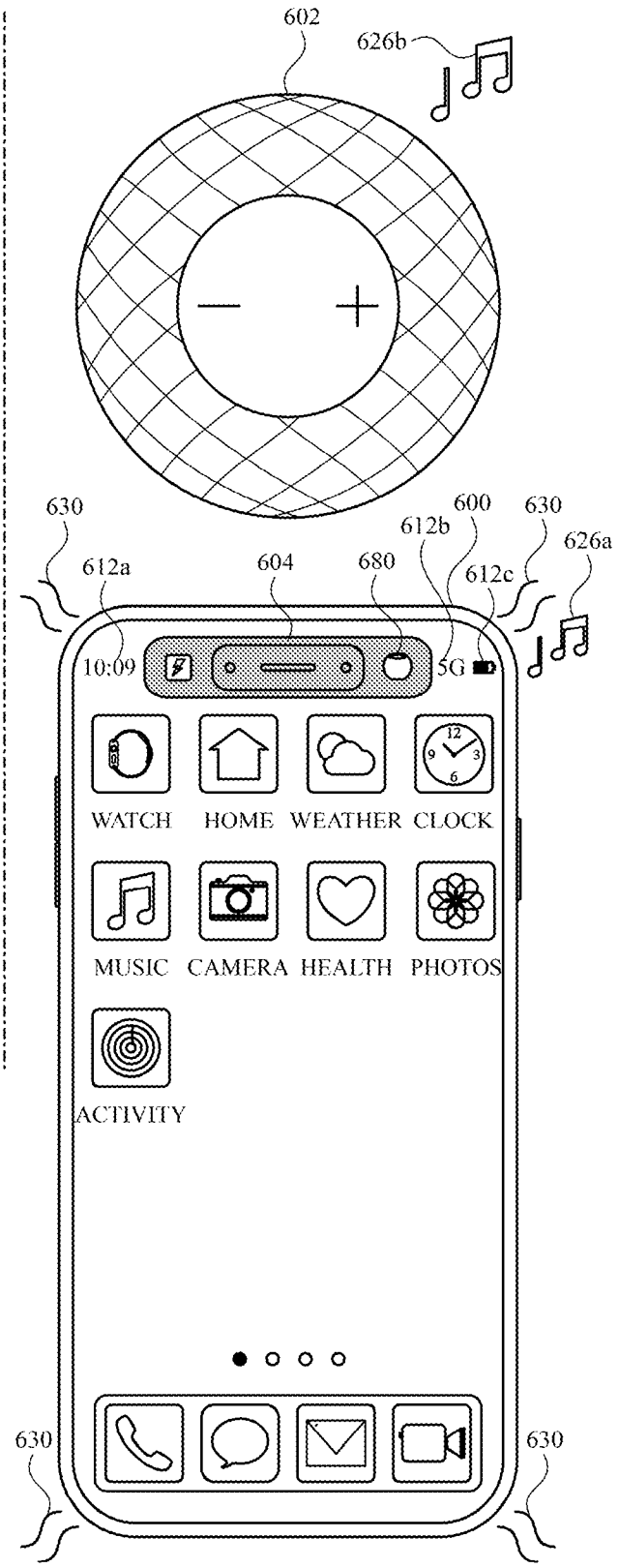
602
626b
630
612a
604
680
600
612b
612c
630
626a
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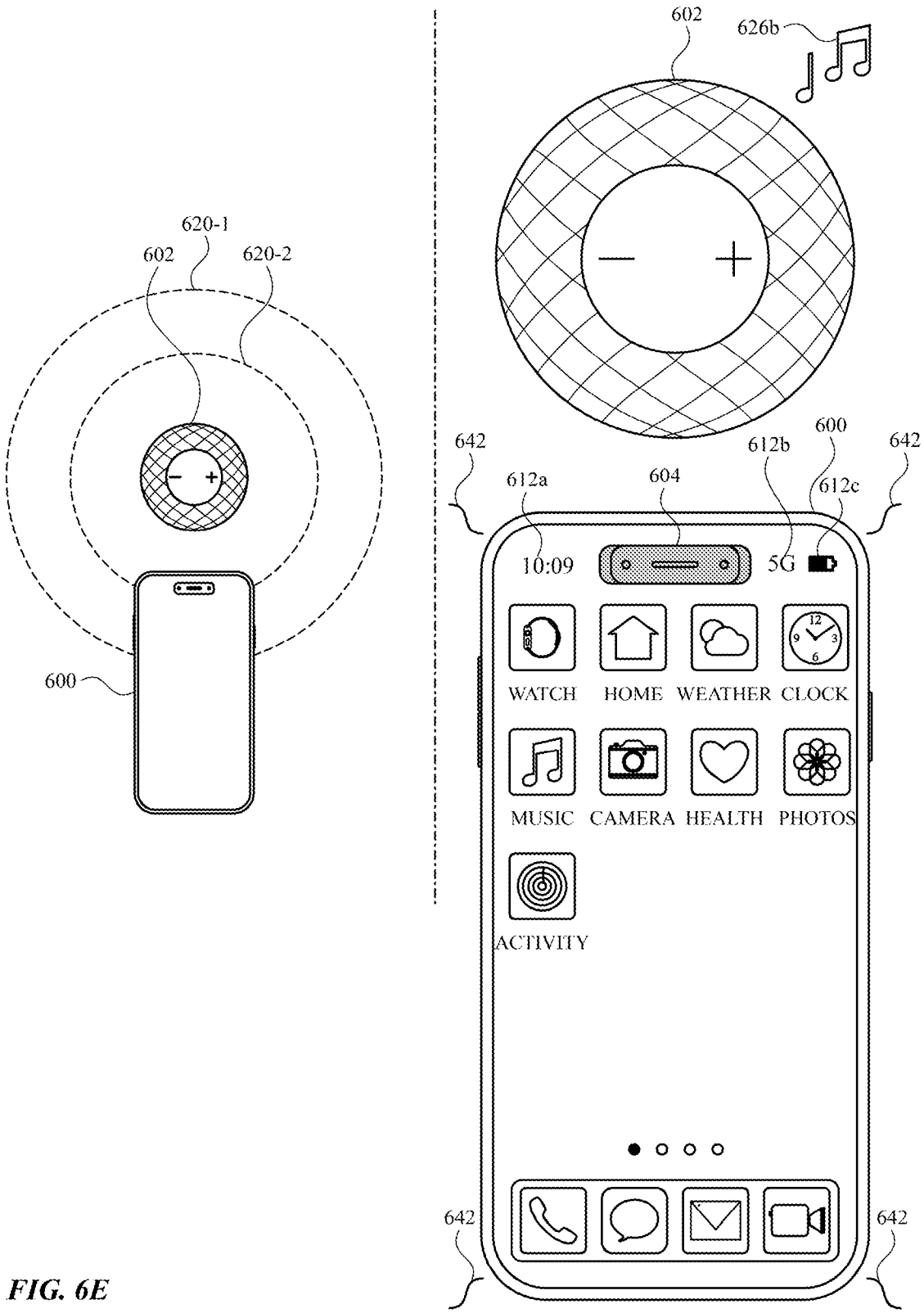
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
630
630

FIG. 6D


620-1
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620-2
600
602
626b
642
612a
604
612b
600
612c
642
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
642
642

FIG. 6E

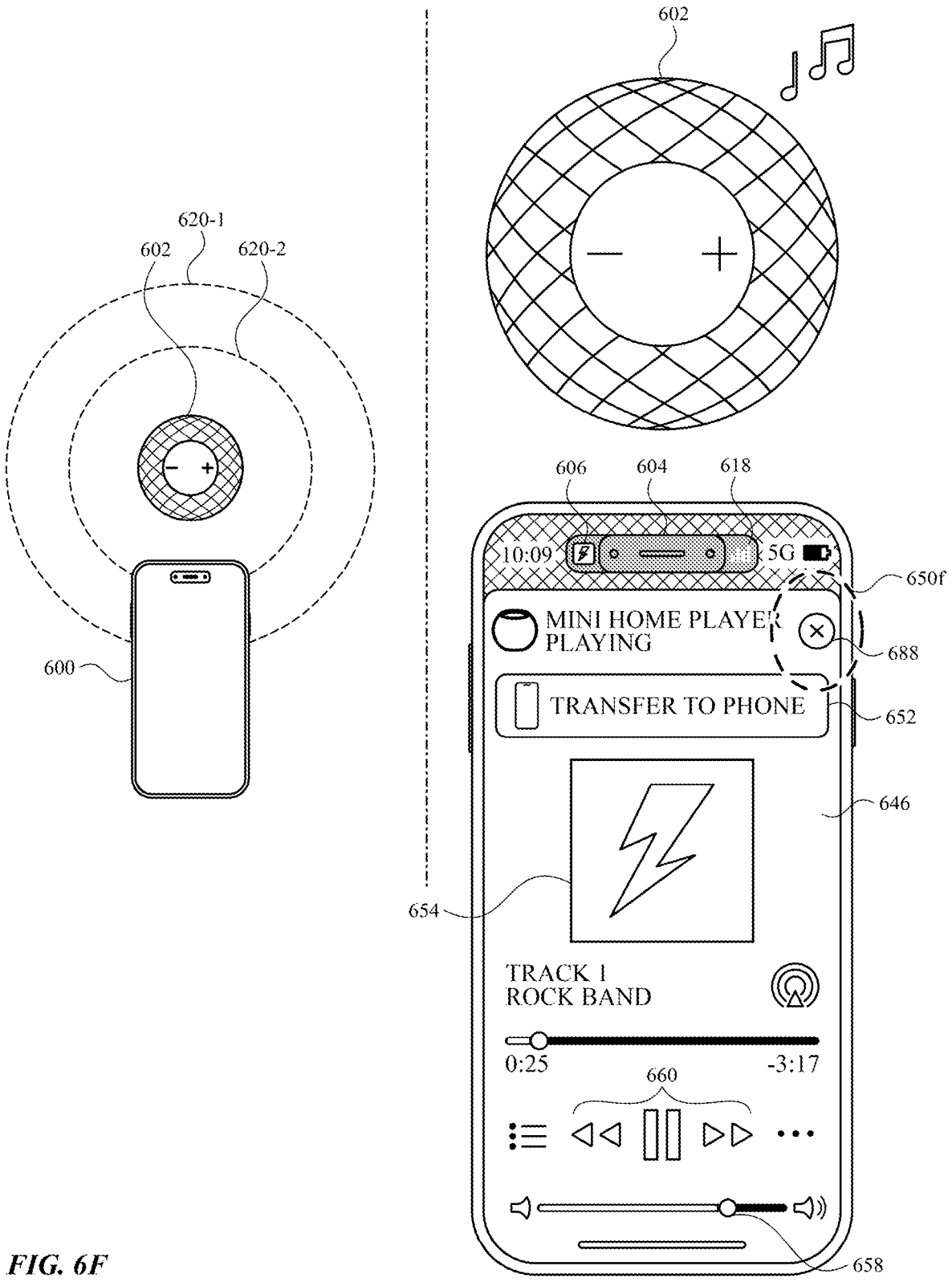
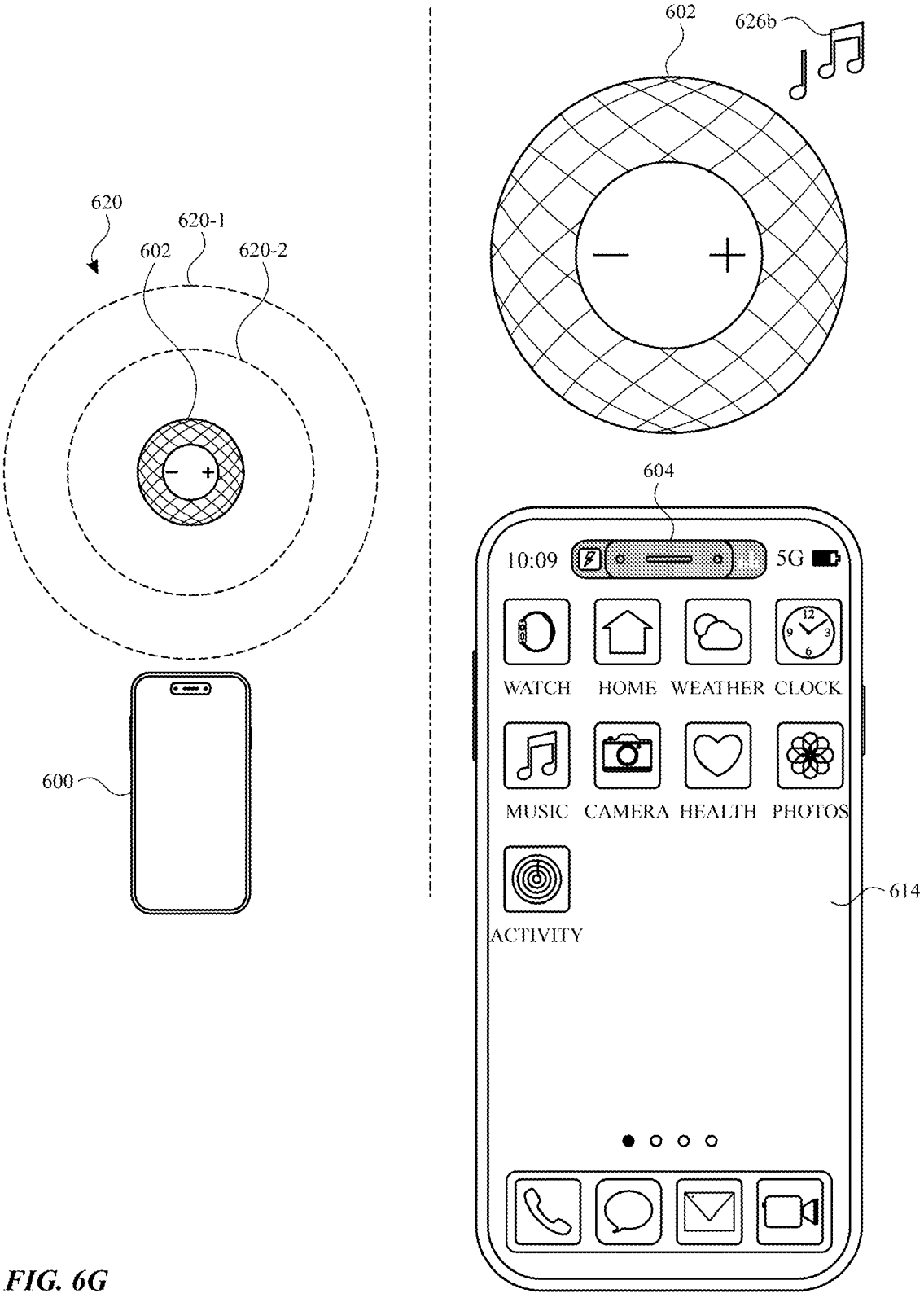

620-1
602
620-2
600
602
606
604
618
10:09
5G
650f
MINI HOME PLAYER
PLAYING
688
TRANSFER TO PHONE
652
646
654
TRACK 1
ROCK BAND
0:25
-3:17
660
658

FIG. 6F


620
620-1
602
620-2
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602
626b
604
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
614

FIG. 6G

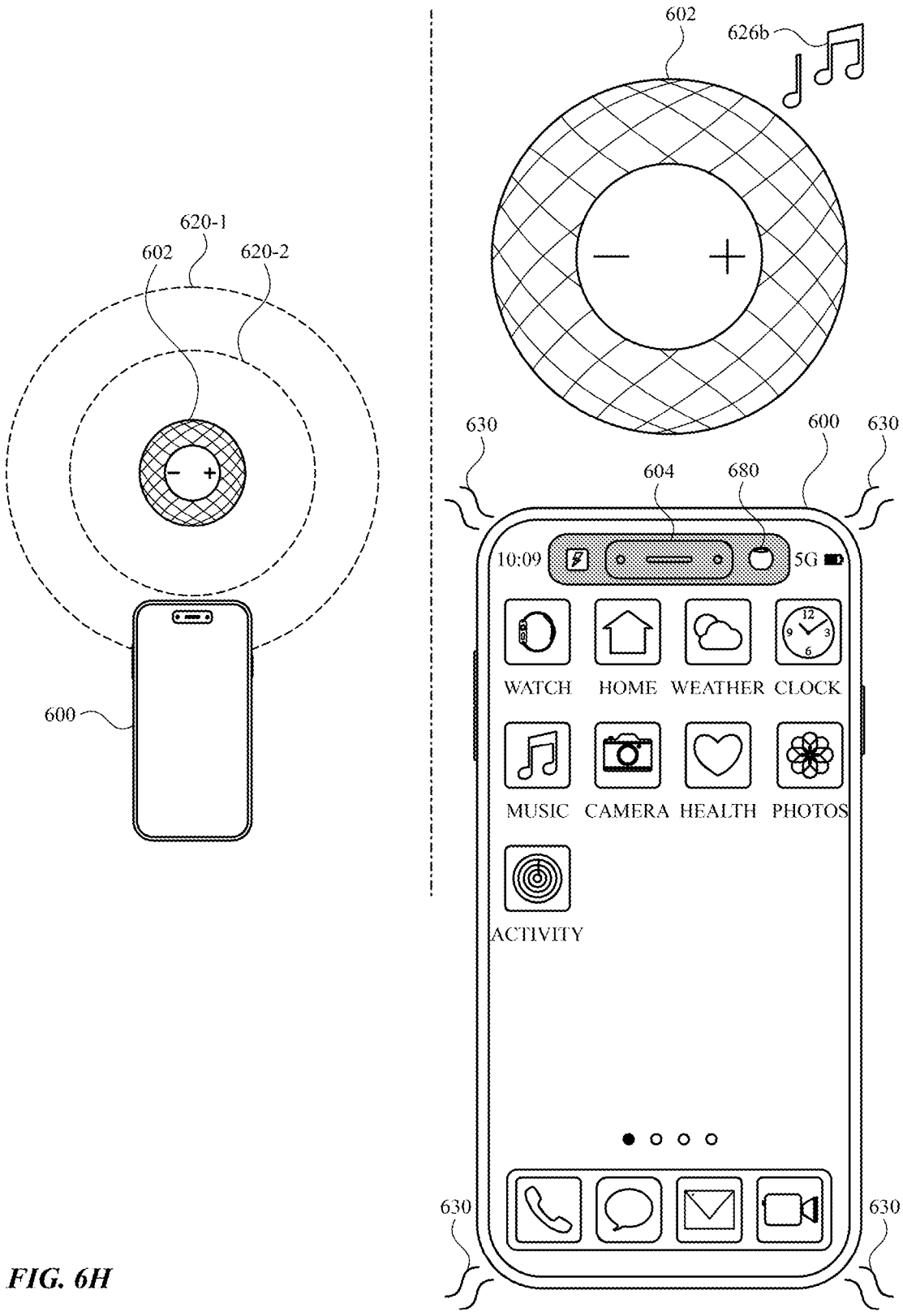
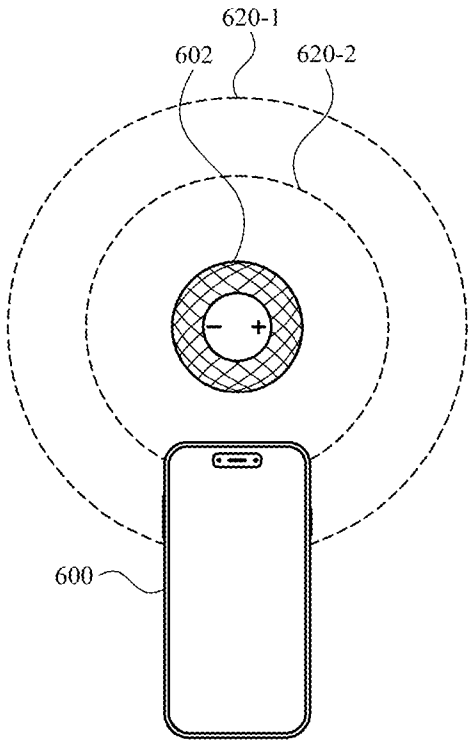

620-1
602
620-2
600
602
626b
630
600
630
604
680
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
630
630

FIG. 6H


620-1
602
620-2
600

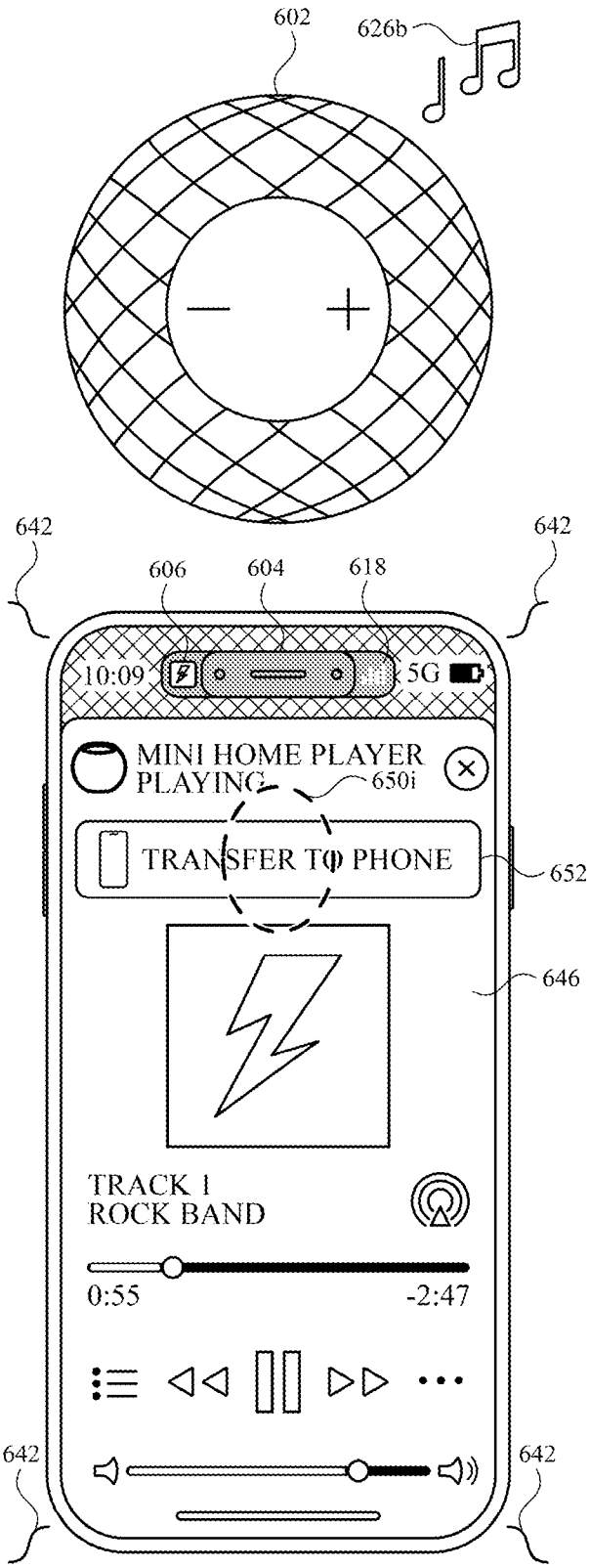

602
626b
642
642
606
604
618
10:09
5G
MINI HOME PLAYER
PLAYING
650i
TRANSFER TO PHONE
652
646
TRACK 1
ROCK BAND
0:55
-2:47
642
642

FIG. 6I

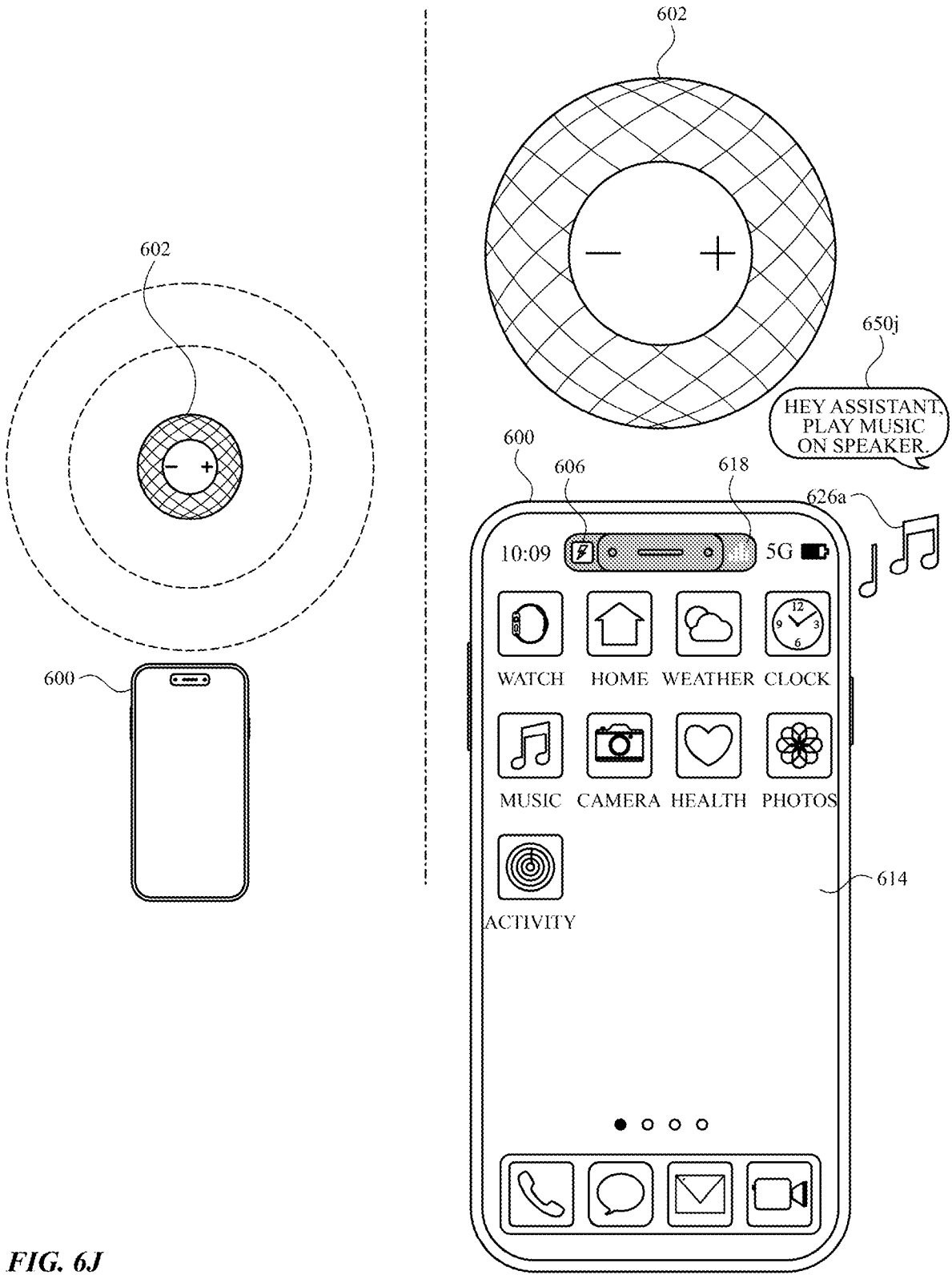

602
600
602
650j
HEY ASSISTANT, PLAY MUSIC ON SPEAKER.
600
606
618
626a
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
614

FIG. 6J

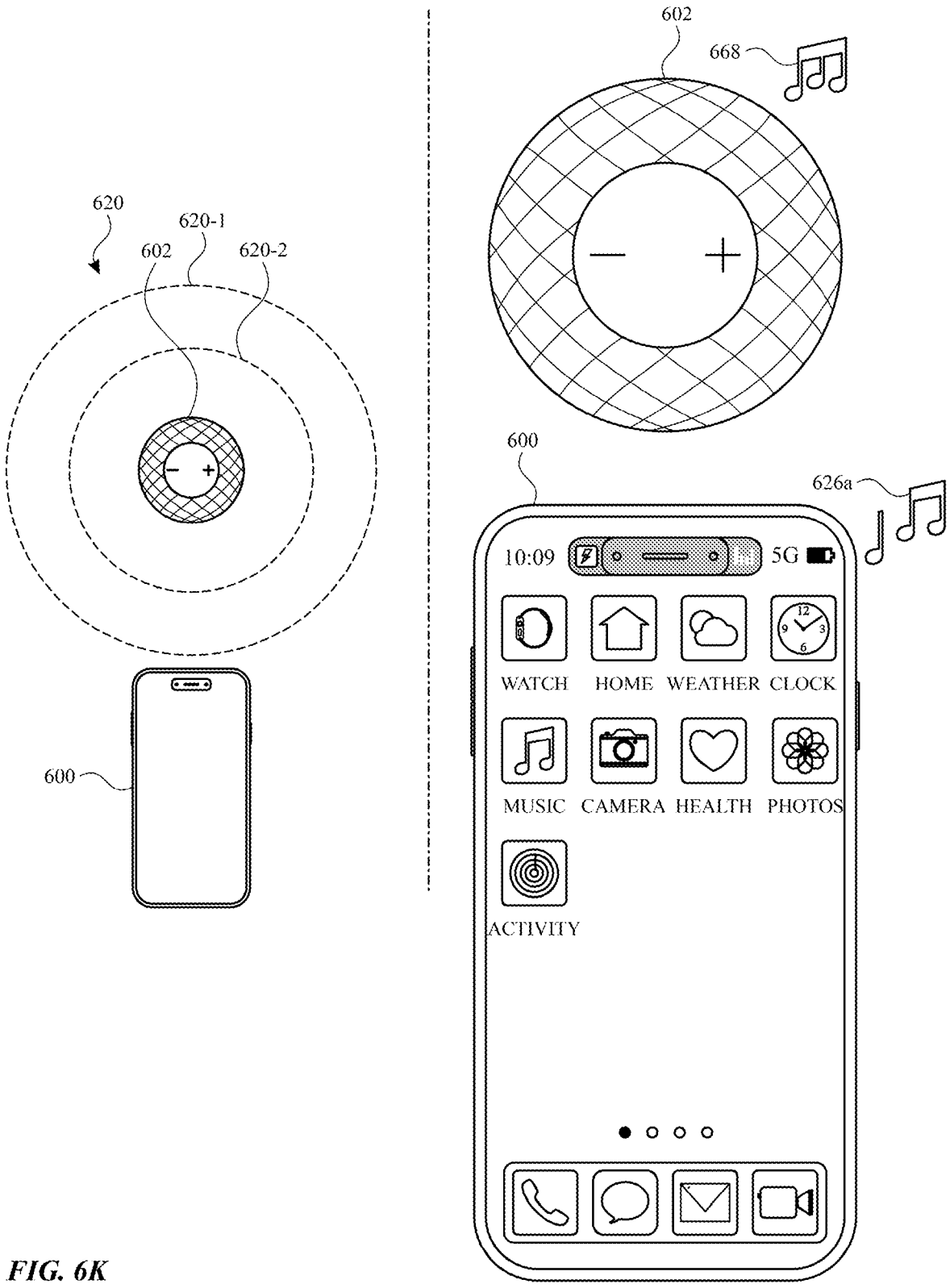

620
620-1
602
620-2
600
602
668
600
626a
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY

FIG. 6K

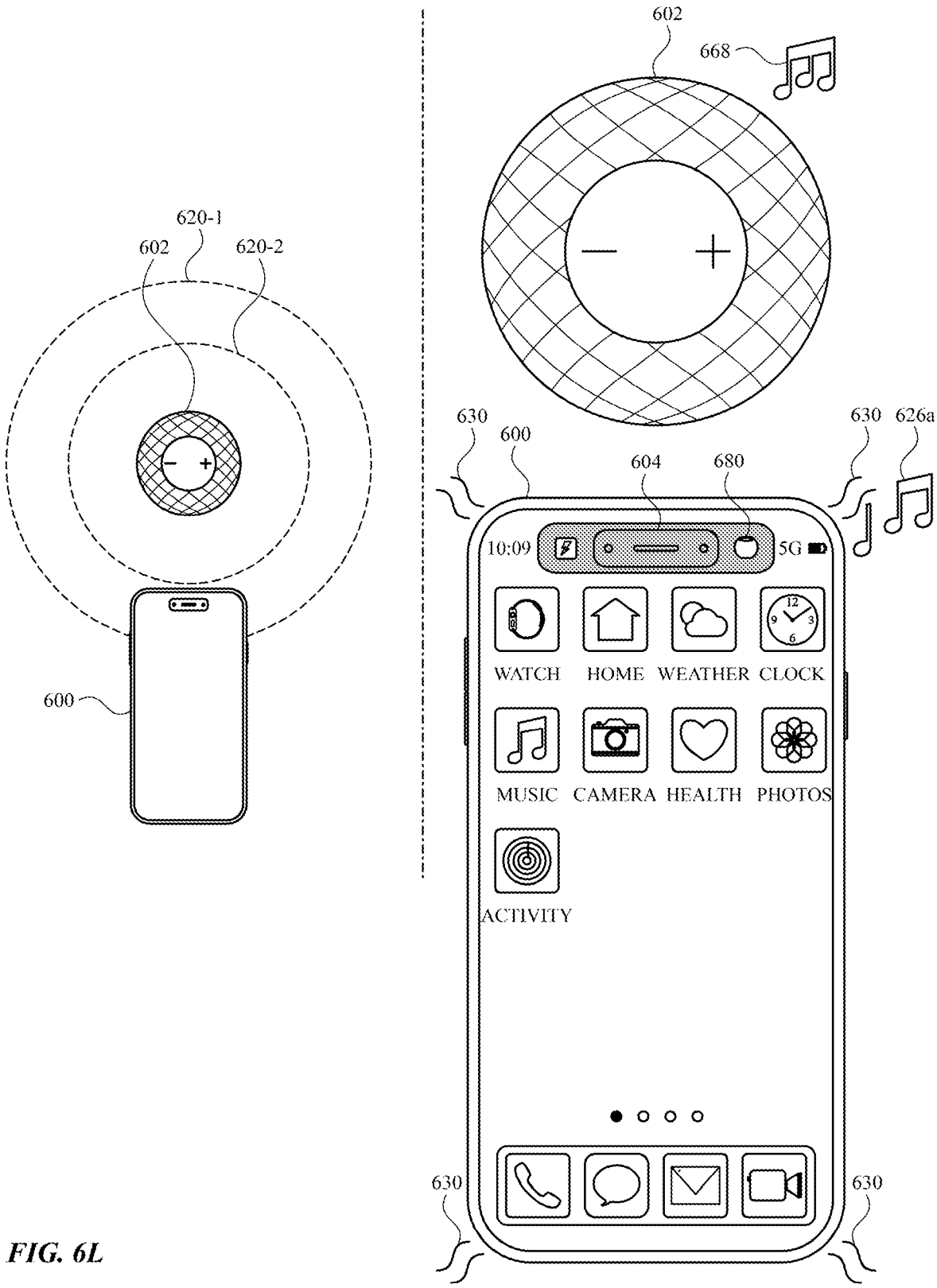

620-1
602
620-2
600
602
668
630
600
604
680
630
626a
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
630
630

FIG. 6L

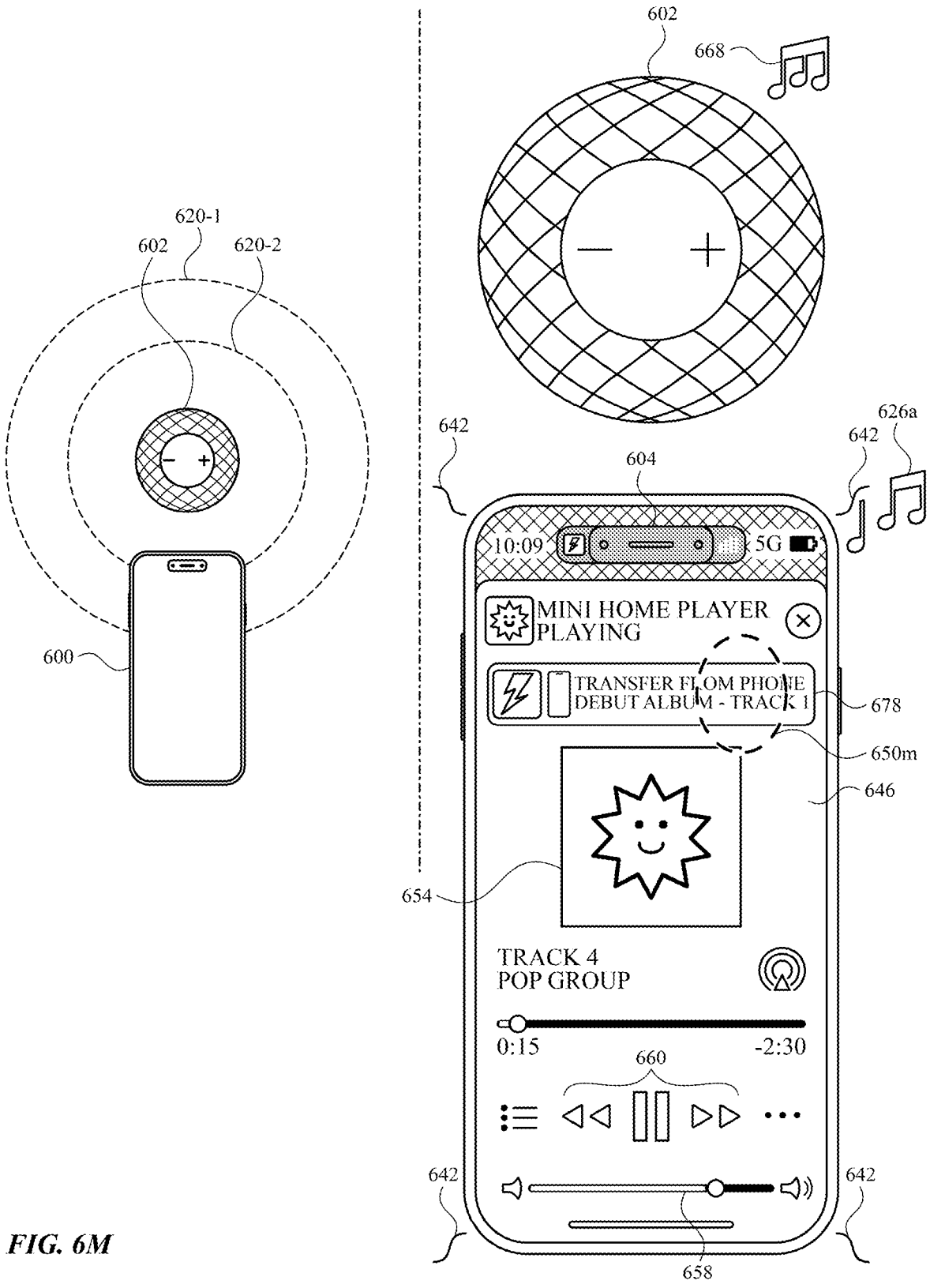

602
668
620-1
602
620-2
600
642
604
626a
642
10:09
5G
MINI HOME PLAYER
PLAYING
TRANSFER FROM PHONE
DEBUT ALBUM - TRACK 1
678
650m
646
654
TRACK 4
POP GROUP
0:15
-2:30
660
642
642
658

FIG. 6M

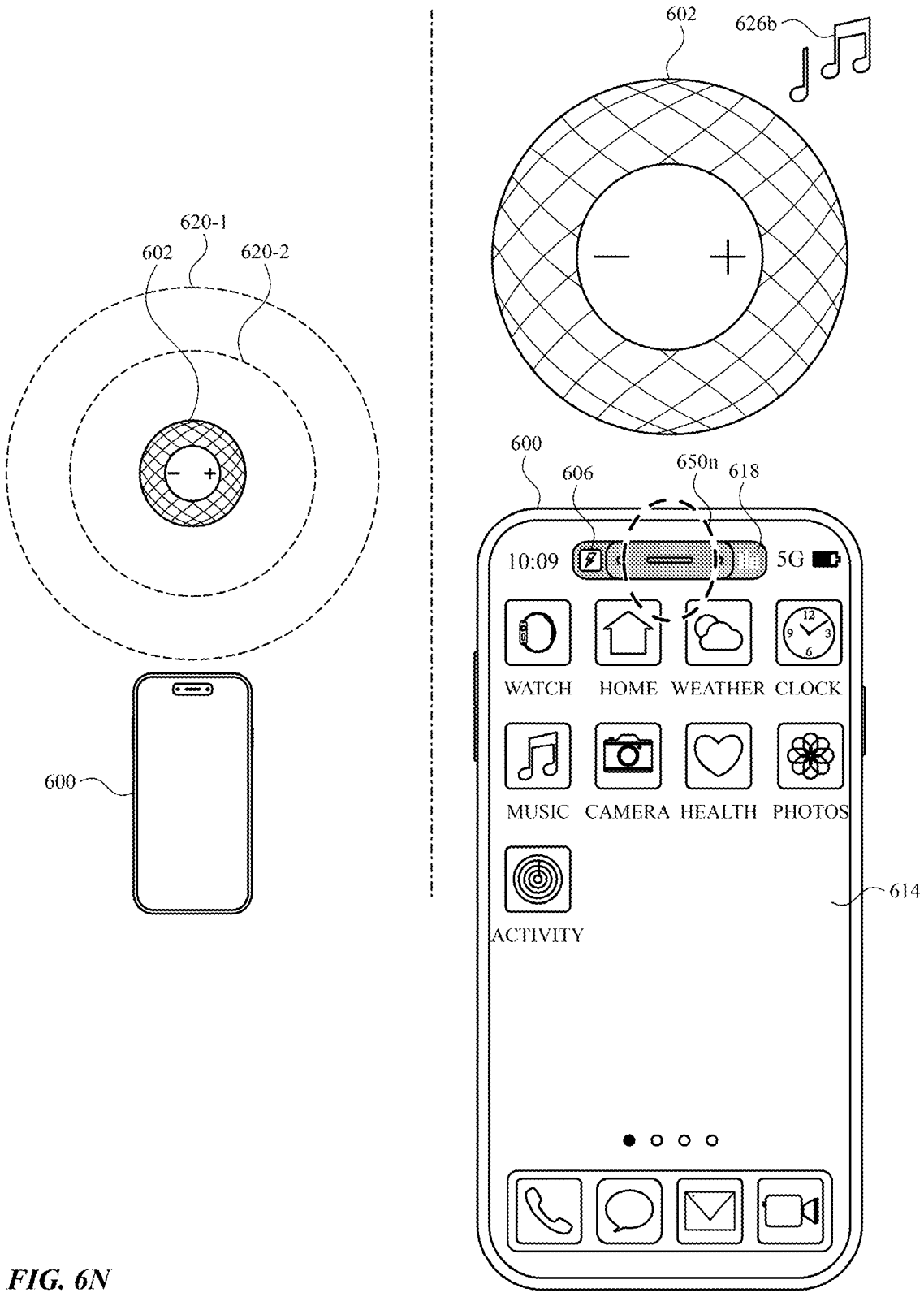

620-1
602
620-2
600
602
626b
600
606
650n
618
10:09
5G
WATCH
HOME
WEATHER
CLOCK
MUSIC
CAMERA
HEALTH
PHOTOS
ACTIVITY
614

FIG. 6N

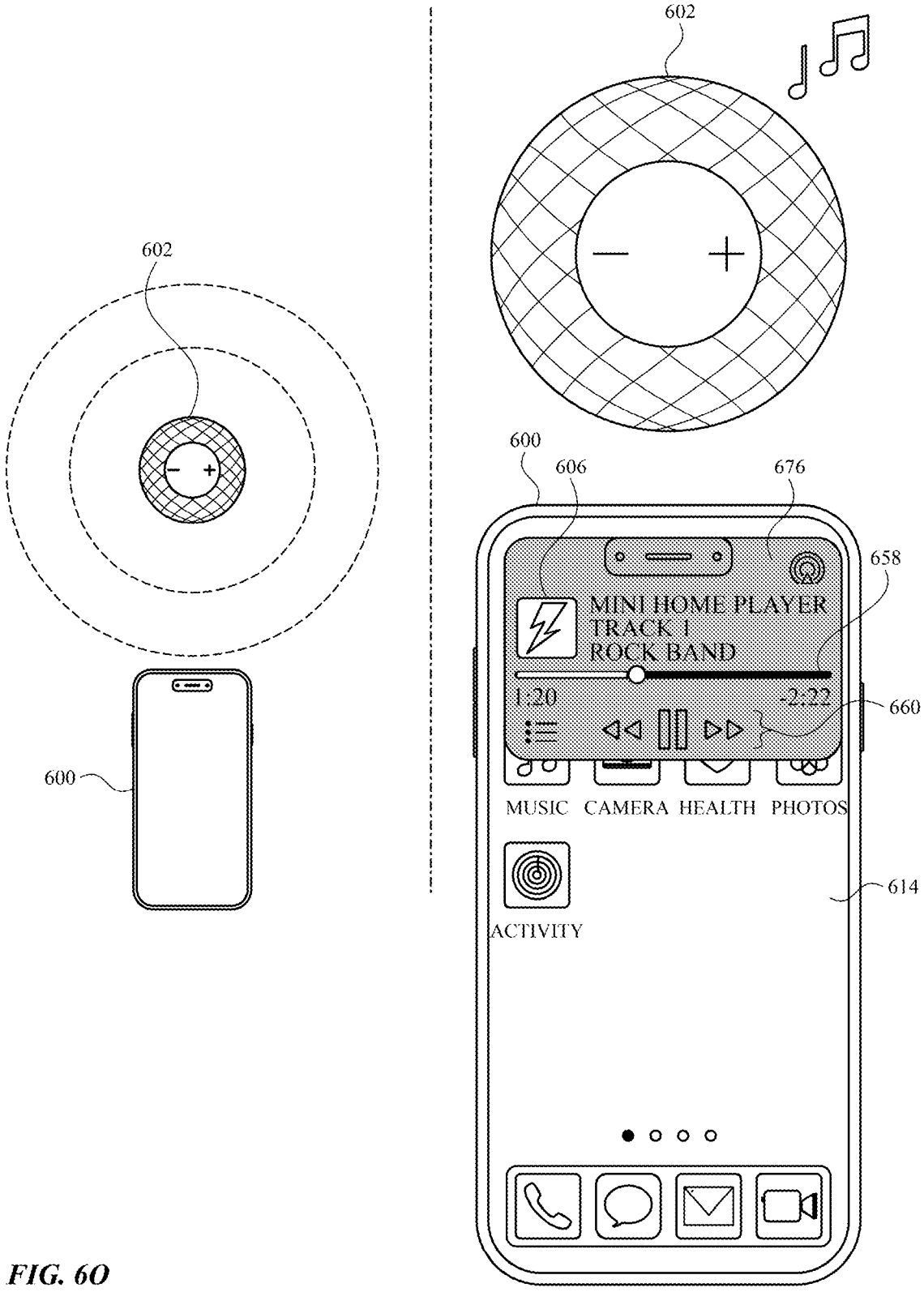

602
600
602
600
606
676
658
MINI HOME PLAYER
TRACK 1
ROCK BAND
1:20
-2:22
660
MUSIC
CAMERA
HEALTH
PHOTOS
614
ACTIVITY

FIG. 6O

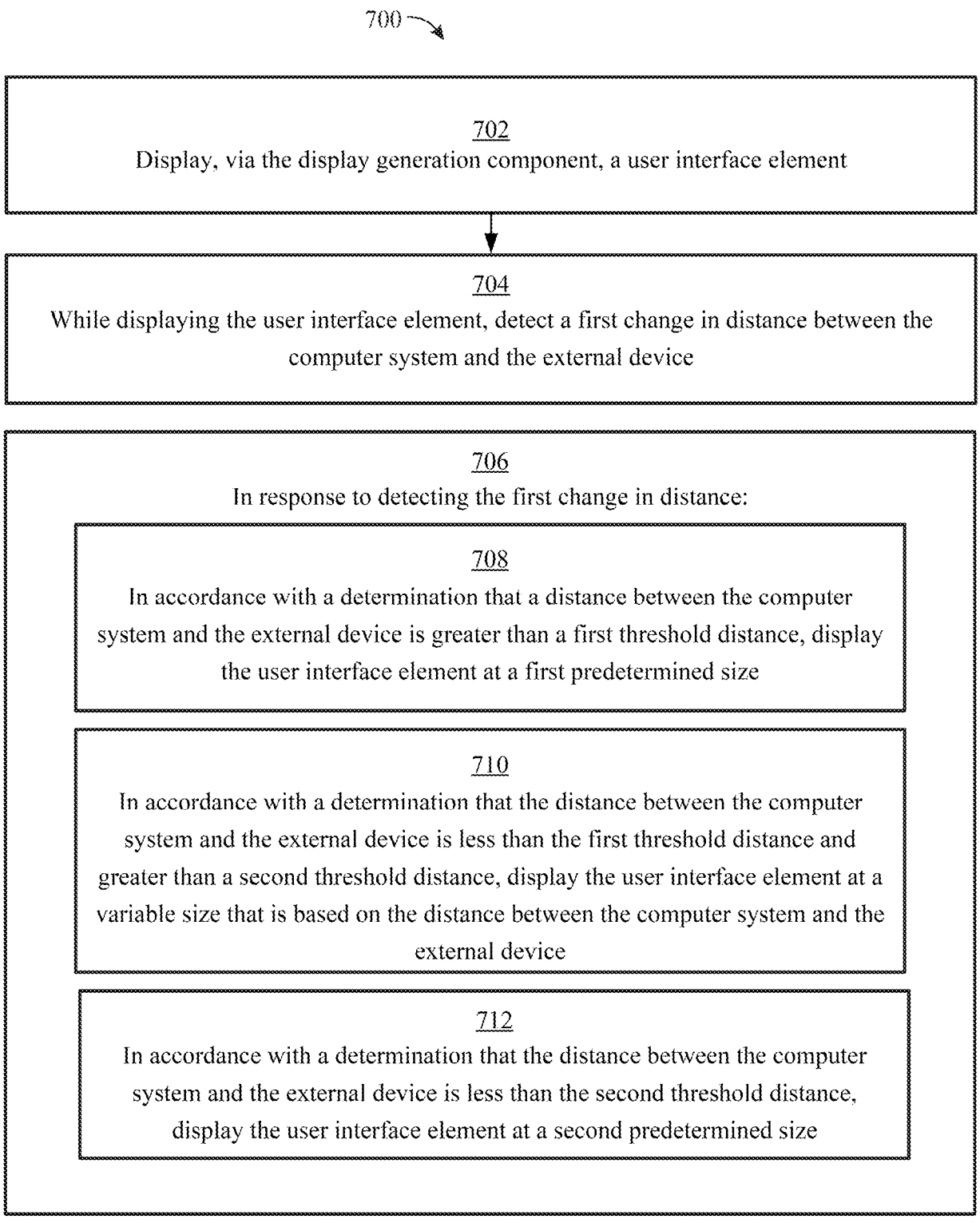

700
702
Display, via the display generation component, a user interface element
704
While displaying the user interface element, detect a first change in distance between the computer system and the external device
706
In response to detecting the first change in distance:
708
In accordance with a determination that a distance between the computer system and the external device is greater than a first threshold distance, display the user interface element at a first predetermined size
710
In accordance with a determination that the distance between the computer system and the external device is less than the first threshold distance and greater than a second threshold distance, display the user interface element at a variable size that is based on the distance between the computer system and the external device
712
In accordance with a determination that the distance between the computer system and the external device is less than the second threshold distance, display the user interface element at a second predetermined size

FIG. 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2023/032084

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/16 G06F3/01
ADD.

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)
G06F H04M H04S

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2022/100367 A1 (CARRIGAN TAYLOR G [US] ET AL) 31 March 2022 (2022-03-31) paragraph [0210] - paragraph [0332] figures 5-8	1-31
A	CN 113 835 583 A (VIVO MOBILE COMMUNICATION CO LTD) 24 December 2021 (2021-12-24) paragraph [0030] - paragraph [0103] figures 1-4	1-31

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 November 2023	27/11/2023

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Kochev, Miroslav

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2023/032084

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2022100367 A1	31-03-2022	CN 116888555 A	13-10-2023
		EP 4217833 A1	02-08-2023
		EP 4250697 A2	27-09-2023
		US 2022100367 A1	31-03-2022
		US 2022350482 A1	03-11-2022
		WO 2022066372 A1	31-03-2022
CN 113835583 A	24-12-2021	NONE	