

CERTIFICATE OF TRANSLATION ACCURACY

I am a professional translator, reviewer, and coordinator specializing in translating Korean, Japanese, and Chinese to English and vice versa.

I served as Chief Examiner of the certified court interpreter test for the State of California and as a contract translator and interpreter for various federal agencies through the U.S. Department of State of for more than a decade. I served as an instructor at the University of California at Berkeley and the Middlebury Institute of International Studies at Monterey (MIIS).

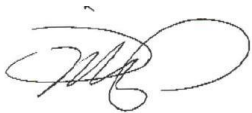
I have more than 30 years of experience translating thousands of technical, legal, and business documents from Korean to English submitted to, among others, Korean judicial authorities, U.S. federal courts, the U.S. International Trade Commission (ITC), and the USPTO Patent Trial and Appeal Board (PTAB).

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I certify under penalty of perjury that the foregoing is true and correct.

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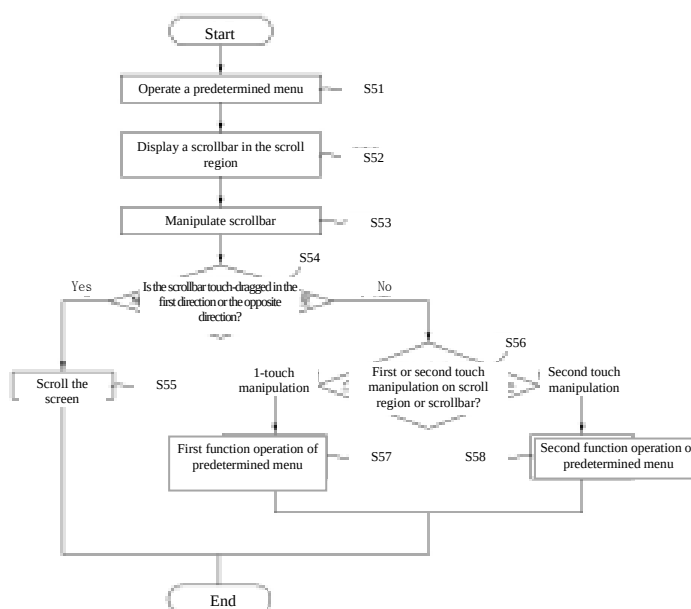
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(54) **MOBILE TERMINAL AND A METHOD OF CONTROLLING THE SAME**

(57) ABSTRACT

The present disclosure relates to a mobile terminal and a method of controlling the same, which allows the use of the terminal to be implemented in a way that is more user-friendly. According to at least one of the embodiments of the present disclosure, it is advantageous to significantly expand the utilization of the scroll bar displayed on the touchscreen, so that the terminal can be associated with various functions and menus, and the terminal user can easily select the desired function or menu.

REPRESENTATIVE DRAWING - FIG. 5



What is claimed:

Claim 1

A mobile terminal comprising: a touchscreen for displaying a screen associated with a predetermined menu of the terminal; and a control unit for displaying on the touchscreen a scroll region extending in a first direction and a scroll bar positioned within the scroll region, the screen being zoomed in or out when the scroll bar is touched and dragged in a first direction or the opposite direction, and at least one of the scroll region and the scroll bar being touched and dragged in a second direction to perform a function associated with the predetermined menu.

Claim 2

The mobile terminal of claim 1, wherein the second direction is perpendicular to the first direction.

Claim 3

The mobile terminal of claim 1, wherein the terminal further comprises a camera, and wherein the first function and the second function are associated with one of adjusting a shooting brightness, adjusting a shooting focus, selecting a flash on/off, and selecting whether to save the shooting image.

Claim 4

The mobile terminal of claim 1, wherein the terminal further comprises a broadcast receiver, and wherein the first function and the second function are related to one of channel adjustment and volume adjustment.

Claim 5

A mobile terminal comprising: a touchscreen for displaying a screen associated with a predetermined menu of the terminal; and a control unit for displaying on the touchscreen a scroll region extending in a first direction and a scroll bar positioned within the scroll region, wherein the screen is zoomed in or out when the scroll bar is touched and dragged in the first direction or the opposite direction, and wherein at least one of the scroll region and the scroll bar is long-touched or tapped with a pointer to perform a function associated with the predetermined menu.

Claim 6

The mobile terminal of claim 5, wherein the terminal further comprises a camera, and wherein the first function and the second function are associated with one of adjusting a shooting brightness, adjusting a shooting focus, selecting a flash on/off, and selecting whether to save the shooting image.

Claim 7

The mobile terminal of claim 5, wherein the terminal further comprises a broadcast receiver, and wherein the first function and the second function are related to one of channel adjustment and volume adjustment.

Claim 8

A mobile terminal comprising: a touchscreen for displaying a screen associated with a predetermined menu of the terminal; and a control unit for displaying on the touchscreen a scroll region extending in a first direction and a scroll bar positioned within the scroll region, the screen scrolling when the scroll bar is touched and dragged in the first direction or the opposite direction, and a function associated with the predetermined menu being performed when at least one of the scroll region and the scroll bar is long-touched or tapped with a pointer.

Claim 9

The mobile terminal of claim 8, wherein the function is a function of zooming in or out of a screen associated with the predetermined menu.

Claim 10

The mobile terminal of claim 9, wherein the predetermined menu is one of broadcasting, playing a still image, playing a video, viewing a phone book, a message, a call log, accessing a web page, viewing text, and viewing a menu list.

Claim 11

A method of controlling a mobile terminal, comprising the steps of displaying on a touch screen a scroll region extending in a first direction and a scroll bar positioned within the scroll region; wherein the screen is zoomed in or out when the scroll bar is touched and dragged in a first direction or the opposite direction; and wherein a function associated with a predetermined menu is performed when at least one of the scroll region and the scroll bar is touched and dragged in a second direction.

Claim 12

A method of controlling a mobile terminal, comprising the steps of displaying on a touch screen a scroll region extending in a first direction and a scroll bar positioned within the scroll region; wherein the screen is zoomed in or out when the scroll bar is touched and dragged in the first direction or the opposite direction; and wherein a function associated with the predetermined menu is performed when at least one of the scroll region and the scroll bar is long-touched or tapped with a pointer.

Claim 13

A method of controlling a mobile terminal, comprising the steps of displaying on a touchscreen a scroll region extending in a first direction and a scroll bar positioned within the scroll region; wherein the screen scrolls when the scroll bar is touched and dragged in a first direction or the opposite direction; and wherein a function associated with the predetermined menu is performed when at least one of the scroll region and the scroll bar is long-touched or tapped with a pointer.

SPECIFICATION***DETAILED DESCRIPTION OF THE INVENTION******FIELD OF TECHNOLOGY***

The present disclosure relates to a mobile terminal and a control method thereof that enables the use of the terminal to be implemented with greater consideration for the convenience of the user.

BACKGROUND TECHNOLOGY

- [0002] Devices such as personal computers, laptops, handheld mobile phones, and the like may be configured to perform a variety of functions. Examples of such various functions include data and voice communication capabilities, the ability to take pictures or videos via a camera, the ability to store voice, the ability to play music files via a speaker system, and the ability to display images or videos. Some devices include the additional capability to run games, while others are implemented as multimedia devices. Moreover, recent devices can receive broadcast or multicast signals to watch videos or television programs.
- [0003] In general, terminals can be divided into mobile terminals and stationary terminals based on whether they are mobile or stationary, and mobile terminals can be further divided into handheld terminals (or portable terminals) and vehicle mount terminals based on whether they can be carried directly by a user.
- [0004] Efforts are ongoing to support and increase the functionality of terminals. These efforts include changes and improvements to the structural components that form the device, as well as improvements to the software or hardware.
- [0005] When a terminal operates as a multimedia device capable of performing complex functions as described above, the terminal has as many different menus as there are complex functions. However, the various functions and menus are often confusing for the user to operate the device. Therefore, there is a continuing need for efforts to organize the various functions and menus so that they are convenient for users to operate.

DESCRIPTION OF THE INVENTION**PROBLEM TO BE SOLVED**

- [0006] The present disclosure is proposed to address the foregoing problems, and is intended to provide a terminal and a control method thereof that allows a terminal user to easily select a desired function or menu and enter a predetermined command within the selected function or menu as needed, even though various functions and menus exist on the terminal.

MEANS TO SOLVE THE PROBLEM

- [0007] To accomplish the object above, the present disclosure provides a touchscreen for displaying a screen associated with a predetermined menu of a terminal; and
- [0008] a mobile terminal comprising: a touchscreen displaying a scroll region extending in a first direction and a scroll bar positioned within the scroll region, the screen zooming in or out when the scroll bar is touched and dragged in the first direction or the opposite direction, and a control unit controlling the screen to perform a function associated with a predetermined menu when at least one of the scroll region and the scroll bar is touched and dragged in the second direction.
- [0009] Further, to accomplish the object above, the present disclosure provides a mobile terminal comprising a touch screen for displaying a screen associated with a predetermined menu of the terminal, and a control unit for controlling that the touch screen displays a scroll region extending in a first direction and a scroll bar positioned within the scroll region, wherein the screen is enlarged or reduced when the scroll bar is touched and dragged in the first direction or the opposite direction, and wherein at least one of the scroll region and the scroll bar is long-touched or tapped with a pointer to perform a function associated with the predetermined menu.
- [0010] Further, to accomplish the object above, the present disclosure provides a mobile terminal comprising a touch screen for displaying a screen associated with a predetermined menu of the terminal, and a control unit for controlling that the touch screen displays a scroll region extending in a first direction and a scroll bar positioned within the scroll region, that the screen scrolls when the scroll bar is touched and dragged in the first direction or the opposite direction, and that a function associated with the predetermined menu is performed when at least one of the scroll region and the scroll bar is long-touched or tapped with a pointer.
- [0011] Further, to achieve the object above, the present disclosure provides a method of controlling a mobile terminal, comprising the steps of displaying on a touch screen a scroll region extending in a first direction and a scroll bar positioned within the scroll region, wherein the scroll bar is touched and dragged in a first direction or the opposite direction to enlarge or reduce the screen, and wherein at least one of the scroll region and the scroll bar is touched and dragged in a second direction to perform a function associated with the predetermined menu.

[0012] Further, to achieve the object above, the present disclosure provides a method of controlling a mobile terminal, comprising the steps of displaying on a touch screen a scroll region extending in a first direction and a scroll bar positioned within the scroll region, wherein the screen is enlarged or reduced when the scroll bar is touched and dragged in the first direction or the opposite direction, and wherein a function associated with a predetermined menu is performed when at least one of the scroll region and the scroll bar is long-touched or tapped with a pointer.

[0013] Further, to achieve the object above, the present disclosure provides a method of controlling a mobile terminal, comprising the steps of displaying on a touch screen a scroll region extending in a first direction and a scroll bar positioned within the scroll region, the screen scrolling when the scroll bar is touched and dragged in the first direction or the opposite direction, and a function associated with a predetermined menu being performed when at least one of the scroll region and the scroll bar is long-touched or tapped with a pointer.

EFFECT OF THE INVENTION

[0014] The effect of a terminal and a control method thereof according to the present disclosure is described below.

[0015] According to at least one of the embodiments of the present disclosure, it is advantageous to greatly expand the utilization of a scroll bar displayed on a touchscreen, which may be associated with a variety of functions and menus on a terminal, allowing the terminal user to easily select the desired function or menu.

SPECIFIC DESCRIPTION FOR PRACTICING THE INVENTION

[0016] Hereinafter, a mobile terminal related to the present disclosure will be described in more detail with reference to the accompanying drawings. The suffixes "module" and "member" for components used in the following description are given merely for ease of drawing and are not intended to confer any particular significance or role on the components themselves. Accordingly, it should be understood that the terms "module" and "member" may be used interchangeably.

[0017] Terminals may be implemented in a variety of forms. For example, terminals described herein include mobile terminals such as mobile phones, smart phones, notebook computers, digital broadcast terminals, personal digital assistants (PDAs), portable multimedia players (PMPs), navigation systems, and the like, and fixed terminals such as digital televisions, desktop computers, and the like. The following description assumes that the terminal is a mobile terminal. However, it will be readily apparent to those skilled in the art that the configurations described below may also be applied to fixed terminals, with the exception of components specifically configured for mobile use.

[0018] FIG. 1 is a block diagram of a mobile terminal associated with one embodiment of the present disclosure.

[0019] The mobile terminal 100 may include a wireless communication member 110, an audio/video (A/V) input member 120, a user input member 130, a sensing member 140, an output member 150, a memory member 160, an interface member 170, a control member 180, and a power supply member 190. FIG. 1 illustrates a mobile terminal with various components. However, not all of the components shown are required. A mobile terminal may be implemented with more components than those shown, or with fewer components.

[0020] Each of these components will be discussed in turn below.

[0021] The wireless communication member 110 may include one or more components that enable wireless communication between the mobile terminal 100 and a wireless communication system, or between the mobile terminal 100 and a network in which the mobile terminal 100 is located. For example, the wireless communication member 110 may include a broadcast reception module 111, a mobile communication module 112, a wireless internet module 113, a Local Area Network module 114, and a geolocation module 115.

[0022] The broadcast receiving module 111 receives broadcast signals and/or broadcast-related information from an external broadcast management server via a broadcast channel. The broadcast channel may include a satellite channel, and/or a terrestrial channel. The broadcast management server may refer to a server that generates and transmits broadcast signals and/or broadcast-related information, or a server that receives and transmits pre-generated broadcast signals and/or broadcast-related information to the terminal. The broadcast-related information may refer to information related to a broadcast channel, a broadcast program, or a broadcast service provider. The broadcast signal may include a television broadcast signal, a radio broadcast signal, a data broadcast signal, as well as a broadcast signal in the form of a television broadcast signal or a radio broadcast signal combined with a data broadcast signal. More than one such broadcast reception module 111 may be provided in the mobile terminal 100 in order to pursue simultaneous reception of two or more broadcast channels or ease of changing broadcast channels.

- [0023] On another note, the broadcast-related information may also be provided via a cellular network, in which case it may be received by the cellular module 112.
- [0024] The broadcast-related information may exist in various forms. For example, it may be in the form of an electronic program guide (EPG) for digital multimedia broadcasting (DMB) or an electronic service guide (ESG) for digital video broadcast-handheld (DVB-H).
- [0025] The broadcast receiving module 111 may receive broadcast signals using various broadcast systems, in particular, it may receive digital broadcast signals using digital broadcast systems such as Digital Multimedia Broadcasting-Terrestrial (DMB-T), Digital Multimedia Broadcasting-Satellite (DMB-S), Media Forward Link Only (MediaFLO), Digital Video Broadcast-Handheld (DVB-H), Integrated Services Digital Broadcast-Terrestrial (ISDB-T), and the like. Of course, the broadcast receiving module 111 is configured to be suitable for any broadcast system that provides broadcast signals, not just the digital broadcast systems described above.
- [0026] Broadcast signals and broadcast-related information received via the broadcast reception module 111 may be stored in the memory member 160.
- [0027] Further, the mobile communication module 112 transmits and receives wireless signals on a mobile communication network with at least one of a base station, an external terminal, and a server. Here, the wireless signals may include various forms of data, such as voice calls, video call signals, or text/multimedia messages sent or received.
- [0028] Wireless Internet module 113 refers to a module for wireless Internet access, and wireless Internet module 113 may be built-in or external. Wireless Internet technologies may include wireless LAN (WLAN) (Wi-Fi), wireless broadband (Wibro), World Interoperability for Microwave Access (Wimax), and high-speed downlink packet access (HSDPA).
- [0029] The short-range communication module 114 refers to a module for short-range communication. Near field communication technologies may include use of Bluetooth, radio frequency identification (RFID), infrared data association (IrDA), ultra wideband (UWB), and ZigBee.
- [0030] Further, the location information module 115 is a module for determining or obtaining the location of the mobile terminal. A representative example of the location information module is a Global Position System (GPS) module. According to current technology, the GPS module 115 can calculate distance information and precise time information from three or more satellites, and then apply trigonometry to the calculated information to accurately calculate three-dimensional current location information based on latitude, longitude, and altitude. Currently, a method of calculating location and time information using three satellites and correcting errors in the calculated location and time information using another satellite is widely used. In addition, the GPS module 115 can calculate speed information by continuously calculating the current position in real time.
- [0031] Meanwhile, the audio/video (A/V) input member 120 is for inputting audio signals or video signals, which may include a camera 121 and a microphone 122. The camera 121 processes an image frame, such as a still image or a movie, obtained by an image sensor in a video call mode or a shooting mode. The processed image frames may then be displayed on the display module 151.
- [0032] The image frames processed by the camera 121 may be stored in the memory member 160 or transmitted externally via the wireless communication member 110. The camera 121 may be equipped with two or more cameras depending on the configuration of the terminal.
- [0033] The microphone 122 receives an external acoustic signal by a microphone in a call mode, a recording mode, a voice recognition mode, or the like, and processes it into electrical voice data. The processed voice data may then be converted to a form that can be transmitted to a mobile communication base station via the mobile communication module 112 in the case of a call mode and output. The microphone 122 may implement various noise reduction algorithms to remove noise generated in the process of receiving the external acoustic signal as input.
- [0034] The user input member 130 allows a user to generate input data for controlling the behavior of the terminal. The user input member 130 may comprise a key pad, a dome switch, a touch pad (constant pressure/electrostatic), a jog wheel, a jog switch, and the like. In particular, when the touch pad is interlaced with the display module 151 described below, it may be referred to as a touch screen.

- [0035] The sensing member 140 senses the current state of the mobile terminal 100, such as whether the mobile terminal 100 is open or closed, the position of the mobile terminal 100, whether the mobile terminal 100 is in contact with a user, the orientation of the mobile terminal, the acceleration/deceleration of the mobile terminal, and the like, and generates a sensing signal to control the behavior of the mobile terminal 100. For example, if the mobile terminal 100 is in the form of a slide phone, it is possible to sense whether the slide phone is open or closed. In addition, it is responsible for sensing functions related to whether the power supply member 190 is supplied with power, whether the interface member 170 is coupled to an external device, and the like. On the other hand, the sensing member 140 may include a proximity sensor 141. This will be described later in connection with the touchscreen.
- [0036] The interface member 170 serves as an interface to any external device that is connected to the mobile terminal 100. For example, it may include a wired/wireless headset port, an external charger port, a wired/wireless data port, a memory card port, a port for connecting a device equipped with an identification module, an audio I/O port, a video I/O port, an earphone port, and the like.
- [0037] In this context, an identification module is a chip that stores various information for authorizing use of the mobile device 100, and may include a User Identify Module ("UIM"), a Subscriber Identify Module ("SIM"), a Universal Subscriber Identity Module ("USIM"), and the like. Further, a device having an identification module (hereinafter referred to as an "identification device") may be in the form of a smart card. Thus, the identification device may be connected to the terminal 100 via a port. Such an interface member 170 receives data from an external device or receives power and delivers it to each component inside the mobile terminal 100, or allows data inside the mobile terminal 100 to be transmitted to an external device.
- [0038] Further, the interface member may be a conduit through which power from the cradle is supplied to the mobile device 100 when the mobile device 100 is connected to an external cradle, or through which various command signals input from the cradle by a user are transmitted to the mobile device 100. The various command signals or power from the cradle may also act as a signal to recognize that the mobile device is correctly mounted in the cradle.
- [0039] The output member 150 is for outputting an audio signal or video signal or an alarm signal, and may include a display module 151, an acoustic output module 152, and an alarm output module 153.
- [0040] The display module 151 displays and outputs information being processed by the mobile terminal 100. For example, if the mobile device is in call mode, it displays a user interface (UI) or graphical user interface (GUI) related to the call. And if the mobile device 100 is in video call mode or recording mode, it displays the recorded and/or received video or UI or GUI.
- [0041] On the other hand, as described above, when the display module 151 and the touchpad are mutually layered to form a touch screen, the display module 151 may be used as an input device in addition to an output device. The display module 151 may include at least one of a liquid crystal display, a thin film transistor-liquid crystal display, an organic light-emitting diode, a flexible display, and a three-dimensional display. Some of these displays may be configured to be transparent so that the outside can be seen through them. These may be referred to as transparent displays, and representative examples of such transparent displays include transparent LCDs and the like. And depending on the implementation of the mobile device 100, there may be more than one display module 151. For example, the mobile terminal 100 may be equipped with an external display module (not shown) and an internal display module (not shown) at the same time. The touchscreen may be configured to detect touch input location and region, as well as touch input pressure.
- [0042] Meanwhile, a proximity sensor 141 may be disposed in or near the touchscreen. The proximity sensor refers to a sensor that detects the presence or absence of an object approaching a predetermined detection surface, or an object present in the vicinity, without mechanical contact using electromagnetic forces or infrared radiation. Therefore, a proximity sensor has a significantly longer lifespan than a contact sensor, and its utilization is significantly higher.
- [0043] Examples of such proximity sensors include transmissive photoelectric sensors, direct reflective photoelectric sensors, mirror reflective photoelectric sensors, high frequency oscillating proximity sensors, capacitive proximity sensors, magnetic proximity sensors, infrared proximity sensors, and the like.
- [0044] To explain one example of the working principle of the above high-frequency oscillating proximity sensor, when a detection object approaches the detection surface of the sensor while oscillating a high frequency of a constant wave in an oscillating circuit, the oscillation amplitude of the oscillating circuit is attenuated or stopped, and the presence or absence of the detection object is detected by converting this change into an electrical signal. Therefore, even if there is any non-metallic material between the high-frequency oscillating proximity sensor and the detection object, the proximity switch can detect the detection object to be detected without interference from the object.
- [0045] Although the proximity sensor is not required to be incorporated, if the touchscreen is capacitive, it may be configured to detect the proximity of the pointer as a change in electric field in response to the proximity of the pointer.

- [0046] Thus, when a pointer is positioned on the touchscreen in proximity to, but not actually touching, the touchscreen, the position of the pointer and the distance between the pointer and the touchscreen may be detected. Hereinafter, for ease of description, the act of proximity of the pointer to the touchscreen such that it is recognized that the pointer is located on the touchscreen will be referred to as "proximity touch" and the act of actual contact of the pointer with the touchscreen will be referred to as "contact touch." Furthermore, the position of the pointer on the touchscreen for proximity touch means the position of the pointer perpendicular to the touchscreen when the pointer is in proximity touch.
- [0047] Using the proximity sensor, a proximity touch and a proximity touch pattern (e.g., a proximity touch distance, a proximity touch direction, a proximity touch speed, a proximity touch time, a proximity touch position, a proximity touch movement state, etc.) can be detected, and corresponding information can be output on the touch screen according to the detected proximity touch behavior and proximity touch pattern.
- [0048] The sound output module 152 outputs audio data received from the wireless communication member 110 or stored in the memory member 160, such as when receiving a call signal, in call mode or recording mode, in voice recognition mode, in broadcast reception mode, and the like. In addition, the sound output modules 152 output sound signals related to functions performed by the mobile terminal 100 (e.g., call signal reception sound, message reception sound, etc.). Such an acoustic output module 152 may include a speaker, a buzzer, and the like.
- [0049] The alarm member 153 outputs a signal to notify the occurrence of an event in the mobile terminal 100. Examples of events occurring in the mobile terminal include receiving a call signal, receiving a message, inputting a key signal, inputting a touch, and the like. The alarm member 153 may output a signal to notify the occurrence of an event in a form other than an audio signal or a video signal. For example, a signal may be output in the form of a vibration. For example, the alarm member 153 may output a vibration to indicate that a call signal has been received or a message has been received. Alternatively, if a key signal is input, the alarm member 153 may output a vibration as feedback to the key signal input. By outputting a vibration as described above, a user can recognize that an event has occurred. Of course, the signal for notifying the occurrence of an event can also be output through the display module 151 or the voice output module 152.
- [0050] The memory member 160 may store programs for processing and controlling the control member 180, and may perform functions for temporary storage of input/output data (e.g., phonebooks, messages, still images, videos, etc.). In addition, the memory member 160 may store data concerning various patterns of vibration and sound output when touch input is made on the touch screen.
- [0051] The memory member 160 may include a flash memory type, a hard disk type, a multimedia card micro type, a card type of memory (e.g., SD or XD memory, etc.), RAM (Random Access Memory), SRAM (static random access memory), ROM (read-only memory), EEPROM (electrically erasable programmable read-only memory), PROM (programmable read-only memory) magnetic memory, and optical discs may include at least one type of storage medium. In addition, the mobile terminal 100 may operate a web storage that performs the storage function of the memory member 160 on the Internet.
- [0052] The control member 180 generally controls the overall operation of the mobile terminal. For example, it performs associated control and processing for voice calls, data communications, video calls, and the like. In addition, the control unit 180 may comprise a multimedia module 181 for multi-media playback. The multimedia module 181 may be implemented within the control unit 180, or may be implemented separately from the control unit 180.
- [0053] Said control unit 180 may perform pattern recognition processing to recognize handwriting input or drawing input performed on the touchscreen as characters and images, respectively.
- [0054] The power supply member 190 is controlled by the control member 180 to authorize external power and internal power to supply the power required for the operation of each component.
- [0055] Various embodiments described herein may be implemented, for example, in a recording medium readable by a computer or similar device using software, hardware, or combinations thereof.
- [0056] In hardware implementations, the embodiments described herein may be implemented using at least one of application specific integrated circuits (ASICs), digital signal processors (DSPs), digital signal processing devices (DSPDs), programmable logic devices (PLDs), field programmable gate arrays (FPGAs), processors, controllers, microcontrollers, microprocessors, and electrical units for performing functions. In some cases, such embodiments may be implemented by the control member 180.

- [0057] In a software implementation, embodiments, such as procedures or functions, may be implemented with distinct software modules that cause the at least one function or operation to be performed. The software code may be implemented by a software application written in a suitable program language. Further, the software code may be stored in the memory member 160 and executed by the control member 180.
- [0058] The mobile terminal related to the present disclosure has been described above from the perspective of components according to function. Hereinafter, with further reference to FIG. 2 and FIG. 3, the mobile terminal related to the present disclosure will be further described from the perspective of components according to appearance. Hereinafter, for simplicity of description, among various types of mobile terminals such as folder type, bar type, swing type, slider type, and the like, a slider type mobile terminal is described as an example. Therefore, the present disclosure is not limited to a slider type mobile terminal, but can be applied to any type of mobile terminal including the above-mentioned types.
- [0059] FIG. 2 is a front perspective view of one example of a mobile terminal associated with the present disclosure.
- [0060] The mobile terminal 100 associated with the present disclosure may be of the slide type, including a first body 200 and a second body 205 configured to slide along at least one direction on the first body 200.
- [0061] A state in which the first body 200 is positioned overlappingly with the second body 205 may be referred to as a closed configuration, and a state in which the first body 200 exposes at least a portion of the second body 205, as illustrated herein, may be referred to as an open configuration.
- [0062] In another aspect, a mobile terminal associated with the present disclosure may be a folder type, although not shown in the drawings, comprising a first body and a second body configured to be folded or unfolded at least at one side of the first body. Here, the state in which the second body is configured to be folded may be referred to as a closed state, and the state in which the second body is configured to be unfolded may be referred to as an open state.
- [0063] Furthermore, although not shown in the drawings, the mobile terminal associated with the present disclosure may also be of the swing type, comprising a first body and a second body configured to swing about the first body. Here, the state in which the first body is arranged superimposed on the second body may be referred to as a closed state, and the state in which the second body is swung so that a portion of the first body is exposed may be referred to as an open state.
- [0064] As it is believed that a terminal according to the above folder type and the above swing type can be easily understood by a person skilled in the art even without a separate description, a detailed description thereof will be omitted.
- [0065] In the closed state, the mobile terminal 100 operates primarily in a standby mode, but may be woken up from the standby mode by a user's operation. In addition, the mobile device 100 operates primarily in a call mode or the like in the open state, but may be switched to a standby mode by a user's operation or the passage of a predetermined time.
- [0066] A case (casing, housing, cover, etc.) forming the exterior of the first body 200 is formed by the first front case 220 and the first rear case 225. Various electronic components are embedded in the space formed by the first front case 220 and the first rear case 225. At least one intermediate case may be further disposed between the first front case 220 and the first rear case 225.
- [0067] The case may be formed by injection molding a synthetic resin or may be formed to have a metallic material, such as stainless steel (STS) or titanium (Ti).
- [0068] The first body 200, specifically the first front case 220, may be disposed with a display module 151, an acoustic output module 152, a camera 121, or a first user input member 210.
- [0069] Since the display module 151 has already been described in connection with FIG. 1, a detailed description will be omitted for the sake of simplicity of this specification.
- [0070] The acoustic output module 152 may be implemented in the form of a speaker.
- [0071] The camera 121 may be implemented as appropriate to capture images or video of a user or the like.
- [0072] As with the first body 200, the cases forming the exterior of the second body 205 are formed by a second front case 230 and a second rear case 235.

- [0073] On the front face of the second body 205, specifically the front face of the second front case 230, a second user input member 215 may be disposed.
- [0074] In at least one of the second front case 230 or the second rear case 235, a third user input member 245, a microphone 122, and an interface member 170 may be disposed.
- [0075] The first through third user input members 210, 215, 245 may be collectively referred to as user input members 130, and may be employed in any manner that allows the user to operate them in a tactile manner.
- [0076] For example, the user inputs may be implemented as dome switches or touch pads that can receive commands or information by push or touch operations of the user, or they may be implemented as wheels that rotate keys, or they may be operated in a jog fashion, such as a joystick.
- [0077] Functionally, the first user input member 210 is for entering commands such as start, end, scroll, and the like, and the second user input member 215 is for entering numbers or letters, symbols, and the like. The first user input member 210 may include so-called softkeys, which are used in conjunction with the icons displayed on the display module 151, and navigation keys for orientation and confirmation, typically comprising four directional keys and a center key.
- [0078] Additionally, the third user input 245 may function as a hot-key to activate specialized functions within the mobile terminal.
- [0079] The microphone 122 may be implemented in any suitable form to receive input from a user's voice, other sounds, or the like.
- [0080] The interface member 170 becomes a passage that enables the mobile terminal 100 related to the present disclosure to exchange data with an external device and the like. Since the interface member 170 has already been described in connection with FIG. 1, a detailed description will be omitted.
- [0081] On the secondary case 235 side, a power supply unit 190 is mounted for supplying power to the (mobile) terminal.
- [0082] The power supply 190 may be removably coupled, for example, to a rechargeable battery for charging or the like.
- [0083] FIG. 3 is a rear perspective view of the mobile terminal of FIG. 2.
- [0084] Referring to FIG. 3, a camera 121 may be further mounted on the rear side of the secondary case 235 of the second body 205. The camera 121 of the second body 205 may have a substantially opposite shooting direction to the camera 121 of the first body 200, and may have different pixels than the camera 121 of the first body 200.
- [0085] For example, the camera 121 of the first body 200 may have a low resolution so that it is easy to capture a user's face and transmit it to the other party in a video call or the like, and the camera 121 of the second body may preferably have a high resolution so that it is easy to capture a general subject and not immediately transmit it.
- [0086] Adjacent to the camera 121 of the second body 205 may be further disposed a flash 250 and a mirror 255. The flash 250 shines light toward a subject when photographing the subject with the camera 121 of the second body 205. The mirror 255 enables the user to see a reflection of the user's own face, etc., when the user wishes to take a picture of themselves (selfie) using the camera 121 of the second body 205.
- [0087] The secondary case 235 may further comprise an acoustic output module 152.
- [0088] The sound output module 152 of the second body 205 may implement stereo functionality in conjunction with the sound output module 152 of the first body 200, and may be used for calls in speakerphone mode.
- [0089] In addition, an antenna 260 for receiving broadcast signals may be disposed on one side of the secondary case 235 in addition to an antenna for making calls or the like. The antenna 260 may be withdrawably mounted on the second body 205.
- [0090] Disposed on the first rear case 225 side of the first body 200 is a portion of a slide module 265 that slidably couples the first body 200 and the second body 205.
- [0091] Other members of the slide module 265 may be disposed on the second front case 230 side of the second body 205, such that they are not externally visible as shown in this figure.

- [0092] While it has been described above that the second camera 121) is disposed on the second body 205, it is not necessarily limited thereto.
- [0093] It is also possible that at least one of the configurations 260, 121 through 250, 152 described as being disposed in the secondary case 235, such as the camera 121 of the second body, is mounted on the first body 200, primarily on the first case 225. In such a case, it is advantageous that the configuration(s) disposed in the first rear case 225 in the closed state are protected by the second body 205. Furthermore, even if the camera 121 of the second body is not separately provided, the camera 121 of the first body may be configured to be rotatably formed so that it can shoot in the shooting direction of the camera 121 of the second body.
- [0094] The terminal 100 illustrated in FIGS. 1 through 3 may be configured to operate in a communication system capable of transmitting data via frames or packets, including wired and wireless communication systems and satellite-based communication systems.
- [0095] Hereinafter, with reference to FIG. 4, a communication system in which a terminal associated with the present disclosure is operable will be discussed.
- [0096] The communication system may utilize different radio interfaces and/or physical layers. For example, radio interfaces utilized by a communication system may include Frequency Division Multiple Access ("FDMA"), Time Division Multiple Access ("TDMA"), Code Division Multiple Access ("CDMA"), Universal Mobile Telecommunications Systems ("UMTS") (in particular, Long Term Evolution (LTE)), Global System for Mobile Communications ("GSM"), and the like. For ease of description, the following discussion will be limited to CDMA. However, it will be appreciated that the present disclosure is applicable to any communication system, including CDMA wireless communication systems.
- [0097] As shown in FIG. 4, a CDMA wireless communication system may include a plurality of terminals 100, a plurality of base stations ("BSs") 270, base station controllers ("BSCs") 275, and a mobile switching center ("MSC") 280. The MSC 280 is configured to be connected to the Public Switched Telephone Network ("PSTN") 290 and is also configured to be connected to the BSCs 275. The BSCs 275 may be paired and connected to the BSs 270 via backhaul lines. The backhaul line may be provided according to at least one of E1/T1, ATM, IP, PPP, Frame Relay, HDSL, ADSL, or xDSL. Thus, a plurality of BSCs 275 may be included in the system illustrated in FIG. 4.
- [0098] Each BS 270 may include at least one sector, and each sector may include an omnidirectional antenna or an antenna pointing in a particular direction radially from the BS 270. Additionally, each sector may include more than one antenna of various shapes. Each BS 270 may be configured to support a plurality of frequency assignments, each of the plurality of frequency assignments having a specific spectrum (e.g., 1.25 MHz, 5 MHz, etc.).
- [0099] The intersection of sectors and frequency assignments may be referred to as a CDMA channel. The BSs 270 may be referred to as Base Station Transceiver Subsystems ("BTSs"). In such cases, the word "base station" may be used to refer to one BSC 275 and at least one BS 270 together. Base station may also refer to a "cell site". Alternatively, each of a plurality of sectors for a particular BS 270 may be referred to as a plurality of cell sites.
- [0100] As shown in FIG. 4, a broadcasting transmitter ("BT") 295 transmits broadcast signals to terminals 100 operating within the system. A broadcast module 111, shown in FIG. 1, is provided within the terminal 100 to receive broadcast signals transmitted by the BT 295.
- [0101] Furthermore, FIG. 4 illustrates a plurality of Global Positioning System ("GPS") satellites 300. The satellites 300 help to determine the location of at least one terminal of the plurality of terminals 100. While two satellites are shown in FIG. 4, useful location information may be obtained from fewer than two or more satellites. The GPS module 115, shown in FIG. 1, cooperates with the satellites 300 to obtain the desired location information. Here, location can be tracked using any technology that can track location, not just GPS tracking technology. Additionally, at least one of the GPS satellites 300 may optionally or additionally be responsible for satellite DMB transmission.
- [0102] During typical operation of a wireless communication system, the BS 270 receives reverse link signals from various terminals 100. The terminals 100 may be establishing an arc, sending or receiving messages, or performing other communication operations. Each of the reverse link signals received by a particular base station 270 is processed within the particular base station 270. The data generated as a result of the processing is transmitted to the associated BSC 275. The BSC 275 provides

call resource allocation and mobility management functions, including the organization of soft handoffs between the base stations 270. The BSC 275 also transmits the received data to the MSC 280, which provides additional transport services for connection to the PSTN 290. Similarly, the PSTN 290 connects with the MSC 280, the MSC 280 connects with the BSCs 275, and the BSCs 275 control the BSs 270 to transmit net link signaling to the terminals 100.

[0103] Embodiments relating to control methods that may be implemented in a mobile device configured as such will be discussed below with reference to the accompanying drawings. It should be appreciated that the embodiments described herein may be used alone or in combination with each other.

[0104] The following embodiments may be more easily implemented when the display module 151 is configured as a touchscreen. The display screen of the touchscreen 151 will be referred to herein as drawing symbol 400.

[0105] First Embodiment

[0106] Referring now to FIG. 5 through FIG. 23, a first embodiment of a control method of a mobile terminal associated with the present disclosure is described.

[0107] FIG. 5 is a flow diagram of a first embodiment of a control method of a mobile terminal associated with the present disclosure, and FIGS. 6 through 23 are state diagrams of a display screen on which the first embodiment of a control method of a mobile terminal associated with the present disclosure is implemented.

[0108] Referring now to FIG. 6, it is illustrated that in the mobile device 100, for example, an image viewer menu is being executed, and thus an image viewer 410 for viewing images is being displayed on the touchscreen 400. Within the image viewer 410 is a scroll region 413 extending in an upward and downward direction, and within the scroll region 413 a scroll bar 415 is displayed. When the scroll bar 415 is touched by, for example, a pointer (e.g., finger or stylus pen) and dragged in an upward or downward direction, the image being displayed within the image viewer 410 is scrolled in an upward or downward direction along the dragging direction.

[0109] Optionally, the image viewer 410 may also display another scroll region for scrolling the image in a left-to-right direction and another scroll bar within the another scroll region. However, reference to these will be omitted herein for the sake of simplicity of description.

[0110] Said scroll bar 415 is touched (meaning contact touch or proximity touch, as hereinafter defined) with the pointer and dragged, for example, in a downward direction.

[0111] Then, as shown at 6-2 of FIG. 6, the image is scrolled from bottom to top. Of course, although not shown, if the scroll bar 415 is touched again and dragged, for example, in an upward direction, the image will be scrolled from top to bottom.

[0112] Then, as shown at 6-3 in FIG. 6, the scroll bar 415 is touched to flick in one direction (e.g., to the right) perpendicular to the up and down directions. Then, the image is enlarged.

[0113] Alternatively, as shown at 6-4 of FIG. 6, the scroll bar 415 is touched and flicked (or dragged) in a different direction perpendicular to the up and down direction (e.g., to the left). Then, the image is zoomed out.

[0114] It is not necessary that the scroll bar 415 must be touched and flicked in one direction or the other, perpendicular to the up and down directions, in order for the image to be configured to zoom in or out. For example, the image may be configured to zoom in when the scroll bar 415 is merely held without being dragged, and the image may be configured to zoom out when the scroll bar 415 is tapped.

[0115] To summarize, in addition to simply touch-dragging operations being performed on the scroll bar 415 from top to bottom or bottom to top along the up and down directions, two more touch operations may be performed on the scroll bar 415. That is, the two touch operations may include touching and dragging the scroll bar to the left and touching and dragging the scroll bar to the right. Alternatively, the two touch operations may comprise long-touching the cut scroll bar and tapping the scroll bar.

[0116] The at least two touch operations may be used to execute functions associated with the image viewer menu. Hereinafter, one of the at least two touch operations may be referred to as a first touch operation and the other of the at least two touch operations may be referred to as a second touch operation.

- [0117] In a first touch operation or a second touch operation using the flicking, the scroll bar 415 is not necessarily flicked to the right or left after being touched. As illustrated in FIG. 7a, the pointer may be configured to be recognized as a first-touch operation or a second-touch operation when the pointer is flicked left or right after being touched on the touchscreen, even if the pointer only passes over the scroll bar 415.
- [0118] Furthermore, the first touch operation and the second touch operation need not be performed only via the scroll bar 415. For example, although not shown, the pointer may be configured such that flicking left or right after touching the scroll region 413 may be recognized as a first-touch operation and a second-touch operation. Alternatively, as shown in FIG. 7b, the pointer may be configured to be recognized as a first-touch operation or a second-touch operation when the pointer is flicked left or right after being touched on the touchscreen, even if the pointer is only via the scroll region 413.
- [0119] After the image is enlarged (or reduced) by a first touch operation (or second touch operation) on the scroll bar 401, the image may be scrolled by touch dragging the scroll bar 401 up and down.
- [0120] In this case, the system may be configured to scroll while maintaining the enlarged (or reduced) image, as illustrated at (8-1) and (8-2) of FIG. 8, or may be configured to scroll while returning the enlarged (or reduced) image to its original size, as illustrated at (8-1) and (8-3) of FIG. 8.
- [0121] The first touch operation and the second touch operation using the scroll region 413 will be discussed further with reference to FIG. 9.
- [0122] As shown at 9-1 of FIG. 9, the touchscreen 400 is illustrated to display an image viewer 410 for viewing images, and within the image viewer 410 is displayed a scroll region 413 extending in an upward and downward direction, and within the scroll region 413 is displayed a scroll bar 415.
- [0123] As shown in (9-2) of FIG. 9, the top member of the scroll region 413 is touched and flicked to the right. Then, the image is enlarged centered on the member of the image (i.e., the top member of the image) corresponding to the point being touched in the scroll region.
- [0124] Then, as shown in (9-3) of FIG. 9, a bottom member of the scroll region 413 is touched and flicked to the right. Then, the image is enlarged centered on the member of the image (i.e., the bottom member of the image) corresponding to the point being touched in the scroll region.
- [0125] Above, it has been discussed that an image on the touchscreen 400 is enlarged or reduced by a first touch operation or a second touch operation during execution of the image viewer menu (or video playback menu) on the mobile device 100. However, it may also be configured that at least a portion of the screen on the touchscreen associated with the other menu is enlarged or reduced by a first touch operation or a second touch operation during execution of the other menu. the other menu may include viewing a video thumbnail, playing a video, viewing a phonebook, message, call log, accessing a webpage, viewing or writing text, viewing a menu list, and the like. The thumbnails in the video thumbnail view, the phone numbers in the phonebook, the call logs in the call log view, the menus in the menu list view, and the like may be collectively referred to as "objects" as needed.
- [0126] In some embodiments, at least a portion of the screen of the touchscreen is not necessarily zoomed in or out when a first touch operation or a second touch operation is performed on the scroll bar 415. For example, at least a portion of the screen of the touchscreen may be configured to scroll left and right when a first touch operation or a second touch operation is performed on the scroll bar 415.
- [0127] The case where the other menu is the phonebook menu will be discussed below with further reference to FIG. 10.
- [0128] Referring now to FIG. 10, it is illustrated that on the mobile device 100, for example, a phonebook menu is being executed, and thus the touchscreen 400 is displaying a screen related to the phonebook (e.g., a list of contacts). Further, it is illustrated that the touchscreen 400 displays a scroll region 413 and a scroll bar 415.
- [0129] Next, the scroll bar 415 is touched and dragged, as shown at (10-2) of FIG. 10. Then, the opponents displayed on the touchscreen 400 are scrolled in response to the touch-drag. In FIG. 10, it is exemplified that a total of five opponents are displayed in FIGS. 10-1 and 10-2.
- [0130] Next, a first touch operation is performed on the scroll bar 415 (or the scroll region), as shown at (10-3) of FIG. 10. Since the first touch operation has already been described, a detailed description thereof will be omitted. Then, the list of counterparties is expanded. In FIG. 10 (10-3), it is exemplified that the counterpart list is enlarged and a total of three counterparts are displayed.

- [0131] Meanwhile, a second touch operation is performed on the scroll bar 415, as shown at 10-4 of FIG. 10. Then, the list of counterparties is collapsed. In FIG. 10 (10-4), it is exemplified that the counterpart list is enlarged and a total of nine counterparties are displayed.
- [0132] Thus, by performing a first or second touch operation on the scroll bar 415, a terminal user may select between viewing the counterparts zoomed in and viewing many of the counterparts at the same time.
- [0133] The case where the other menu is a video thumbnail viewing menu will be discussed below with further reference to FIG. 11.
- [0134] Referring now to FIG. 11, it is illustrated that on the mobile device 100, for example, a video thumbnail viewing menu is executed, and thus video thumbnails are displayed on the touchscreen 400. Further, it is illustrated that the touchscreen 400 displays a scroll region 413 and a scroll bar 415.
- [0135] Next, the scroll bar 415 is touched and dragged, as shown at (11-2) in FIG. 11. Then, the thumbnails displayed on the touchscreen 400 are scrolled in response to the touch dragging.
- [0136] Then, as shown in (11-3) of FIG. 11, one thumbnail (G) is selected from among the thumbnails (E to J). Selection of the thumbnail may be accomplished, for example, by touching the thumbnail, and deselection of the thumbnail may be accomplished, for example, by touching the thumbnail once more. Alternatively, the selection and deselection of the thumbnails may be performed by operating the navigation keys of the user input.
- [0137] Then, the selected thumbnail G may be visually distinguished from the remaining thumbnails E, F, H, I, and J, as illustrated in FIG. 11 (11-4). In (11-4) of FIG. 11, it is exemplified that the selected thumbnail G is visually distinguished by forming a frame around the selected thumbnail. Then, a first touch operation is performed on the scroll bar 415.
- [0138] Then, the selected thumbnail G becomes larger, as shown in (11-5) of FIG. 11. The selected thumbnail G may be configured to grow larger as the first touch operation is performed. And, although not shown, the scroll bar 415 may be configured so that the selected thumbnail G becomes progressively smaller as a second touch operation is performed on the scroll bar 415. Also, although not shown, it may be configured so that when a first touch operation or a second touch operation is performed on the scroll bar 415 while no thumbnail is selected, all of the thumbnails are enlarged or reduced.
- [0139] A double touch is performed on the above selected thumbnail (G).
- [0140] Then, as shown at 11-6 of FIG. 11, the remaining thumbnails E, F, H, I, and J are not displayed on the touchscreen 400, and the video corresponding to the thumbnail G is displayed.
- [0141] Further reference is made to FIG. 12 for another example of a first touch manipulation or second touch manipulation associated with the above selected thumbnail.
- [0142] Referring now to FIG. 12, it is illustrated that a set of video thumbnails E to J are displayed on the touchscreen 400, of which one thumbnail G is selected. A first touch operation is performed on the scroll bar 415 displayed on the touch screen 400.
- [0143] Then, as shown in (12-2) of FIG. 12, the selected thumbnail G becomes larger, and the remaining thumbnails E, F, H, I, and J become smaller as the selected thumbnail G becomes larger. The selected thumbnail may be configured so that the remaining thumbnails are not obscured when the selected thumbnail grows larger.
- [0144] The case where the other menu is a message menu is discussed below with further reference to FIG. 13.
- [0145] Referring now to FIG. 13, it is illustrated that on the mobile device 100, for example, a message menu is being executed, and thus a list of messages is being displayed on the touchscreen 400. Further, it is illustrated that the touchscreen 400 displays a scroll region 413 and a scroll bar 415. It will be readily apparent to those skilled in the art from the foregoing description that the scroll region 413 and scroll bar 415 allow for scrolling through the messages, and therefore a description thereof will be omitted for the sake of brevity herein.
- [0146] Next, a first touch operation is performed on the scroll bar 415, as shown at (13-2) of FIG. 13. Then, the messages are enlarged and displayed. When the messages are enlarged, it may be contemplated that the font size of the messages is increased together, but it may also be contemplated that the font size of the messages is maintained while the allocated region for one message on the touch screen is increased, so that more of the message content of the one message in the list is visible, as shown in FIG. 13 (13-2).

- [0147] Next, the scroll bar 415 is touched and dragged from top to bottom, as shown at (13-3) in FIG. 13. The messages are then scrolled from the bottom to the top with the messages enlarged. Although not shown, when the scroll bar 415 is touched and dragged from the bottom to the top, the messages may be scrolled from the top to the bottom with magnification.
- [0148] Said messages may not necessarily be scrolled while enlarged. As illustrated at 13-4 of FIG. 13, the scroll bar 415 may be configured to scroll such that when the scroll bar 415 is scrolled, the enlarged messages are returned to their original size.
- [0149] Not all messages need to be configured to zoom in or out at once when a first touch operation or a second touch operation is performed. This is further illustrated with reference to FIG. 14.
- [0150] As shown at 14-1 in FIG. 14, a message is selected from the above messages. Further, it is noted above that the touchscreen 400 displays a scroll region 413 and a scroll bar 415. The process of selecting the message is substantially the same as the thumbnail selection described above, so a detailed description will be omitted for the sake of simplicity of this specification. Alternatively, the system may be configured to default to selecting one of the messages (e.g., a message located at the top, center, or bottom of the list) as the messages are scrolled through.
- [0151] Then, the selected message may be visually distinguished from the remaining messages, as shown at 14-2 of FIG. 14. A first touch operation is performed on the scroll bar 415.
- [0152] Then, as shown at 14-3 in FIG. 14, only the selected message is expanded. Although not shown, if a second touch operation is performed on the scroll bar 415, only the selected message may be collapsed.
- [0153] Then, the scroll bar 415 is touched to scroll from top to bottom. the messages may then be configured to scroll with the enlarged message remaining intact, as illustrated at 14-4 of FIG. 14, or may be configured to scroll with the enlarged message returning to its original size, as illustrated at 14-5 of FIG. 14.
- [0154] When a first touch operation or a second touch operation is performed on the scroll bar 415, at least a portion of the screen of the touchscreen is not necessarily configured to zoom in or out, but may instead be configured to perform other functions. This will be discussed with further reference to FIGS. 15 through 19.
- [0155] First, FIG. 15 is referred to.
- [0156] Referring now to FIG. 15, it is illustrated that the mobile device 100 is executing, for example, a message menu, and thus a list of messages is displayed on the touchscreen 400. The messages may be sorted in an upward or downward direction, for example in order of time received and/or sent. Further, it is illustrated that the touchscreen 400 displays a scroll region 413 and a scroll bar 415.
- [0157] Each item in the list may display a portion of the content of the corresponding message, or may display information of the recipient or sender (e.g., name or phone number). FIG. 15 (15-1) illustrates that each item in the list displays an alphabetical representation of the sender of the message. Further, a number written next to the alphabet is used to differentiate between multiple messages for a single sender.
- [0158] Then, one of the messages is selected from among the messages.
- [0159] Then, the selected message may be visually distinguished from the remaining messages, as shown at 15-2 of FIG. 15. Then, a second touch operation is performed on the scroll bar 415.
- [0160] Then, as shown in (15-3) and (15-4) of FIG. 15, the touched message B-2 slides from right to left to disappear, and another message B-3 slides to appear. The other message (B-3) is a message related to the touched message (B-2). As the related message, for example, the other message (B-3) may be another message sent by the sender (B) of the touched message (B-2) before sending the touched message (B-2).

- [0161] In addition, when one of the messages is selected from among the above messages at 15-1 of FIG. 15, a second touch operation may be performed on the scroll bar 415, as shown at 15-5 of FIG. 15.
- [0162] Then, as shown in (15-6) and (15-7) of FIG. 15, the touched message B-2 slides from left to right to disappear, and another message B-1 sent by the sender B of the touched message B-2 after sending the touched message B-2 may be configured to slide to appear.
- [0163] Hereinafter, FIG. 16a will be described.
- [0164] As shown at 16a-1 in FIG. 16a, the touchscreen 400 is illustrated to display a list of incoming messages. the received messages may be sorted in an upward or downward direction, for example, in order of time of receipt and/or transmission. Further, it is illustrated that the touchscreen 400 displays a scroll region 413 and a scroll bar 415.
- [0165] A first touch operation or a second touch operation is performed on the scroll bar 413.
- [0166] Then, as shown in (16a-2) and (16-3) of FIG. 16a, the list of incoming messages slides away to reveal a list of outgoing messages.
- [0167] This is described below with reference to FIG. 16b.
- [0168] Referring now to FIG. 16b, it is illustrated that messages are displayed on the touchscreen 400, and that one of the messages is selected and visually distinguished from the others. It is further illustrated that the touchscreen 400 displays a scroll region 413 and a scroll bar 415. A first touch operation may be performed on the scroll bar 415.
- [0169] A first touch operation may be performed on the scroll bar 415.
- [0170] A window 415 is then displayed, as shown at 16b-2 in FIG. 16b, asking if the user wishes to delete the selected message. The selected message may be deleted via the window.
- [0171] Meanwhile, a second touch operation may be performed on the scroll bar 415.
- [0172] The content of the selected message is then displayed, as shown in (16b-3) of FIG. 16b.
- [0173] FIGS. 13, 14, 15, 16a, and 16b may, in some cases, be applied with variations to the message menu as well as the phonebook menu, the call log view menu, and the menu list view menu.
- [0174] For example, with respect to FIGS. 13 and 14, the scenario in which all or a portion of the message list is expanded or collapsed may be transformed into a scenario in which all or a portion of the phone book, all or a portion of the call log, all or a portion of the menu list is expanded or collapsed.
- [0175] With respect to FIG. 15, the scenario of the sliding display of a relevant message may be transformed into a scenario of the sliding display of a relevant party phone number, call log, or menu item.
- [0176] Alternatively, with respect to FIG. 16a, the scenario of sliding a list of outgoing messages in place of the list of incoming messages may be varied to a scenario of sliding a list of other menus in place of any menu list, for example.
- [0177] Alternatively, and with reference to FIG. 16b, the scenario in which the message is deleted or opened may be transformed into a scenario in which one party selected from the phonebook is deleted and/or details of the party are displayed in detail.
- [0178] This is described below with reference to FIG. 17.
- [0179] Referring now to FIG. 17, it is illustrated that on the mobile device 100, for example, a message menu (in particular, a message composing menu) or a text composing menu is being executed, and thus a text input screen is being displayed on the touchscreen 400. Further, it is illustrated that a scroll region 413 and a scroll bar 415 are displayed on the touchscreen 400.
- [0180] It will be readily apparent to one of ordinary skill in the art that scrolling of the scroll bar 415 within the scroll region 413 in an upward or downward direction scrolls the sentence entered on the character input screen, and a detailed description thereof will be omitted for the sake of brevity herein.

- [0181] The touchscreen 400 also displays an indicator 417 indicating a type of character that can be entered. In FIG. 17 at (17-1), the indicator 417 indicates that the type of character that can be entered is "English."
- [0182] Next, a first touch operation is performed on the scroll bar 415, as shown at (17-2) of FIG. 17. Then, the indicator 417 of the touch screen 400 indicates that the type of character that can be entered has changed from "English" to "Korean".
- [0183] Meanwhile, when the indicator 417 in FIG. 17 (17-1) indicates that the type of character that can be input is English, a second touch operation is performed on the scroll bar 415 as shown in FIG. 17 (17-3). Then, the indicator 417 of the touch screen 400 indicates that the type of character that can be input is changed from "English" to "numeral".
- [0184] Hereinafter, FIG. 18 will be described.
- [0185] Referring now to FIG. 18, it is illustrated that a call log view menu is executed on the mobile device 100, and thus a list of call logs is displayed on the touchscreen 400. Further, it is illustrated that the touchscreen 400 displays a scroll region 413 and a scroll bar 415.
- [0186] It will be readily apparent to one of ordinary skill in the art that the call records are scrolled as the scroll bar 415 within the scroll region 413 is scrolled in an upward or downward direction, and a detailed description thereof will be omitted for the sake of brevity herein.
- [0187] And, as illustrated in (18-1) of FIG. 18, one of the call records is selected such that the selected call record is visually distinguished from the remaining call records. Since the selection of the call records is substantially the same as the thumbnail selection described above, a detailed description thereof will be omitted for the sake of simplicity of this specification.
- [0188] Then, a first touch operation or a second touch operation is performed on the scroll bar 415, as illustrated at (18-2) and (18-3) of FIG. 18. Then, the touch screen 400 displays a photo 430 associated with the other party of the selected call record.
- [0189] This is described below with reference to FIG. 19.
- [0190] Referring now to FIG. 19, it is illustrated that a call log view menu is being executed on the mobile device 100, and thus a list of call logs is being displayed on the touchscreen 400. Further, it is illustrated that the touchscreen 400 displays a scroll region 413 and a scroll bar 415.
- [0191] It will be readily apparent to one of ordinary skill in the art that the call records are scrolled as the scroll bar 415 within the scroll region 413 is scrolled in an upward or downward direction, and therefore a detailed description thereof will be omitted for the sake of brevity herein.
- [0192] And, as illustrated in (19-1) of FIG. 19, one of the call records is selected such that the selected call record is visually distinguished from the remaining call records. Since the selection of the call records is substantially the same as the thumbnail selection described above, a detailed description thereof will be omitted for the sake of simplicity of this specification.
- [0193] And, in (19-1) of FIG. 19, it is illustrated that the phone number of the other party is displayed as the selected call record, unlike the other call records, because the information of the other party is not stored in the the phone book with respect to the the selected call record.
- [0194] As shown at 19-2 in FIG. 19, a first touch is operated on the scroll bar 415. Then, a window 420 for deleting the selected call record is displayed on the touchscreen 400. By utilizing the window 420 for deleting the call log, the terminal user can delete the selected call log.
- [0195] Meanwhile, prior to the first touch operation on the scroll bar 415, a second touch operation may be performed on the scroll bar 415, as illustrated at 19-3 of FIG. 19. Then, a window 425 for recording the selected call record to the phone book is displayed on the touch screen 400. By utilizing the window 425 for saving the call record, a terminal user may save the selected call record.
- [0196] FIG. 20 is described below.

- [0197] As shown at 20-1 of FIG. 20, it is illustrated that a video playback menu is being executed on the mobile device 100, and thus a video viewer 403 is being displayed on the touchscreen 400.
- [0198] The video viewer 403 displays a scroll region 413 extending from side to side and a scroll bar 415 within the scroll region 413.
- [0199] As shown at (20-1) and (20-2) of FIG. 20, when the scroll bar 415 is touched and scrolled by dragging left and right, the playback position of the movie is scrolled according to the position of the scroll bar 415. As this will be readily apparent to those skilled in the art, a detailed description thereof will be omitted for the sake of simplicity of this specification.
- [0200] In one aspect, a first touch operation and a second touch operation may be performed on the scroll bar 415, as illustrated in lines 20-3 of FIG. 20.
- [0201] For example, one of the first touch operation and the second touch operation may be performed by touching the scroll bar 415 and dragging (or flicking) from top to bottom, and the other of the first touch operation and the second touch operation may be performed by touching the scroll bar 415 and dragging (or flicking) from bottom to top. Alternatively, one of the first-touch operation and the second-touch operation may be performed by long-touching the scroll bar 415, and the other of the first-touch operation and the second-touch operation may be performed by tapping the scroll bar 415. Since this has already been described above, a detailed description will be omitted.
- [0202] Upon first touch operation and second touch operation of the scroll bar 415, other functions may be performed in connection with the movie playback menu. For example, the other functions may include zooming in and out of the playback screen, adjusting the playback volume of the movie, moving through keyframes of the playback screen, fine scrolling of the playback screen, and the like.
- [0203] Turning to keyframe screen movement, among other functions, it is noted that two or more major keyframe screens of the movie may be preset during the movie playback. Thus, a first touch operation and a second touch operation on the scroll bar 415 during the movie playback may change the playback position from the currently playing movie playback position to the adjacent keyframe screen before or after it.
- [0204] Turning now to the fine scroll adjustment, among other features, during the movie playback, a first touch operation and a second touch operation on the scroll bar 415 may change the playback position by a predetermined number of frames forward or backward from the current movie playback position, or by a predetermined amount of time (e.g., 5 seconds). Thus, the above fine scrolling control may be useful when a user wants to change the playback position (or scroll) a small amount forward or backward from the current video playback position.
- [0205] And, with the exception of the above keyframe screen movement and the above fine scrolling adjustment, the other functions are either described above or are readily apparent to those skilled in the art, and a detailed description will be omitted for the sake of brevity herein.
- [0206] Hereinafter, FIG. 21 will be described.
- [0207] In FIG. 21, it is illustrated that a webpage browsing function is being executed on the mobile device. When a webpage is displayed on the mobile device, it will be readily apparent to a person skilled in the art, even without further description, that the webpage is enlarged or reduced to a whole when the first touch operation or the second touch operation is performed on the scroll bar, as shown in the foregoing example. When the first touch operation or the second touch operation is performed on the scroll bar, the web page is not necessarily enlarged or reduced to the whole. This will be explained with further reference to FIG. 21.
- [0208] Referring now to FIG. 21, it is illustrated that a web browser 405 is displayed on the touchscreen 400, and that the web browser 405 displays a webpage accessed via the wireless communication unit 110. Further, it is illustrated that a scroll region 413 and a scroll bar 415 are displayed on the touchscreen 400.
- [0209] Further, it is illustrated that one image 405-1 of the webpage is selected. The image on the webpage may be selected by touching it, or the image may be selected by default at a particular location on the web browser.
- [0210] Next, the scroll bar 415 is touched and dragged from top to bottom, as shown at 21-2 in FIG. 21. Then, the webpage is scrolled from bottom to top. In (21-2) of FIG. 21, it is illustrated that another image 405-2 is selected.

- [0211] Next, a first touch operation is performed on the scroll bar 415, as shown at 21-3 in FIG. 21. Then, only the selected other image 405-2 is enlarged, while the rest of the webpage remains unchanged. the other image 405-2 may be configured to be promemberally enlarged as the first touch operation is performed.
- [0212] Although not shown in FIG. 21, a second touch operation on the scroll bar 415 may collapse the other selected image 405-2.
- [0213] Next, the scroll bar 415 is touched and dragged from bottom to top, as shown at 21-4 in FIG. 21. Then, the other image 405-2 is returned to its original size, and the webpage may be scrolled from top to bottom. Of course, the webpage may still be scrolled from top to bottom with the other image 405-2 enlarged.
- [0214] It should be noted, however, that the scroll bar 415 need not necessarily be configured to zoom in or out of at least a portion of the webpage when the first touch operation or second touch operation is performed. For example, the scroll bar 415 may be configured to move the web browser screen to an earlier web page or a later web page of the currently displayed web page when the first touch operation or second touch operation is performed. Alternatively, the scroll bar 415 may be configured to scroll the webpage to the left or right when the first touch operation or second touch operation is performed.
- [0215] FIG. 22 is described below.
- [0216] Referring now to FIG. 22, it is illustrated that a web browser 405 is displayed on the touchscreen 400, and that the web browser 405 displays a web page accessed via the wireless communication unit 110. Further, it is illustrated that a scroll region 413 and a scroll bar 415 are displayed on the touchscreen 400.
- [0217] Next, a cursor is generated on the webpage, as shown at 22-2 in FIG. 22. Generation of the cursor may be accomplished via appropriate keystrokes of the user input member 140. Alternatively, although not shown in the drawings, a separate icon for generating the cursor may be provided on the touchscreen and configured to generate the cursor by touching the icon. Alternatively, it may be configured to be generated by simply double-clicking on the scroll bar 405.
- [0218] Next, the scroll bar 415 is touched and dragged from top to bottom, as illustrated at 22-3 in FIG. 22. Then, when the cursor is generated, it may be configured so that the cursor is moved from top to bottom in response to the dragging of the scroll bar 415, rather than the webpage being scrolled. Although not shown in the drawings, when the scroll bar 415 is touched and dragged from bottom to top, the cursor may be moved from bottom to top.
- [0219] Next, a first touch operation is performed on the scroll bar 415, as shown at 22-4 in FIG. 22. Then, the cursor is moved from left to right. Although not shown, a second touch operation on the scroll bar 415 may cause the cursor to move from right to left.
- [0220] Then, as shown in (22-5) of FIG. 22, the cursor disappears. After the cursor disappears, when the scroll bar is touch-dragged up and down, the webpage is scrolled up and down.
- [0221] This is described below with reference to FIG. 23.
- [0222] Referring now to FIG. 23, it is illustrated that a web browser 405 is displayed on the touchscreen 400, and that the web browser 405 displays a web page accessed via the wireless communication unit 110. Further, it is illustrated that a scroll region 413 and a scroll bar 415 are displayed on the touchscreen 400.
- [0223] Next, a cursor is generated on the webpage and a touch input device (e.g., a virtual trackball) 417 for moving the cursor, as shown at 23-2 in FIG. 23. Generation of the cursor and the touch input device may be accomplished via appropriate keystrokes of the user input device 140. Alternatively, although not shown in the drawings, separate icons for generating the cursor and the touch input may be provided on the touchscreen and configured to generate the cursor and the touch input by touching the icons. Alternatively, it may be configured to be generated simply by double-clicking on the scroll bar 405.
- [0224] Said touch inputter 417 may be generated to be positioned above the scroll bar 415. If the touch input device 417 is a virtual trackball, it will be readily apparent to those skilled in the art that the cursor can be moved by rolling the virtual trackball up, down, left, and right, and thus a detailed description will be omitted for the sake of brevity herein.

[0225] Embodiment 2

[0226] Referring now to FIGS. 24 through 26, a second embodiment of a control method for a mobile terminal associated with the present disclosure is described.

[0227] FIG. 24 is a flow diagram of a second embodiment of a control method of a mobile terminal associated with the present disclosure, and FIG. 25 and FIG. 26 are state diagrams of a display screen on which the second embodiment of a control method of a mobile terminal associated with the present disclosure is implemented.

[0228] Referring now to FIG. 25, it is illustrated that a photo-taking menu is executed on the mobile device 100, and thus a preview image for taking a photo is displayed on the touch screen 400. Further, the touch screen 400 has a scroll region 413 extending in an upward and downward direction and a scroll bar 415 displayed within the scroll region 413. A focus region indicator (419) is displayed on the preview image. the focus region indicator 419 is for indicating an region that is focused when taking a photo via the camera module 121 on the mobile device 100. In FIG. 25 (25-1), it is illustrated that the focus region indicator 419 is arranged to correspond to the left person among the two people in the preview image.

[0229] As shown at 25-2 of FIG. 25, the scroll bar 415 is touched and dragged from bottom to top. Then, the preview image is enlarged. the scroll bar 415 may also be configured to collapse the preview image when touched and dragged from bottom to top. Additionally, the scroll bar 415 may be configured to zoom in on the preview video when the scroll bar 415 is touched and dragged from top to bottom.

[0230] Next, a first touch operation or a second touch operation is performed on the scroll bar 415, as shown at 25-3 of FIG. 25. Then, the focus region indicator 419 is moved to correspond to the right person of the two people in the preview image.

[0231] Thus, the device user can easily adjust the focus of the desired member of the picture when taking the picture.

[0232] The first touch operation and the second touch operation on the scroll bar are not necessarily configured to adjust the focus region. For example, the first touch operation and the second touch operation on the scroll bar may be configured to adjust exposure, adjust brightness, select flash on/off, select whether to save the captured photo, etc.

[0233] Hereinafter, FIG. 26 will be described.

[0234] Referring now to FIG. 26, it is illustrated that a broadcast menu is being executed on the mobile device 100, and thus a received broadcast image is being displayed on the touch screen 400. Further, the touch screen 400 has a scroll region 413 extending in an upward and downward direction and a scroll bar 415 displayed within the scroll region 413. And, in the upper left corner of the touch screen 400, information of a currently received broadcast channel is illustrated being displayed.

[0235] Next, the scroll bar 415 is touched and dragged from the bottom to the top, as shown at (26-2) of FIG. 26. Then, the broadcast image is enlarged. the scroll bar 415 may also be configured to reduce the broadcast video when touched and dragged from the bottom to the top. Additionally, the scroll bar 415 may be configured to zoom in on the broadcast video when the scroll bar 415 is touched and dragged from top to bottom.

[0236] Then, a first touch operation or a second touch operation is performed on the scroll bar 415, as shown at 26-3 in FIG. 26. Then, the received broadcast channel may be changed. Alternatively, although not shown, the volume of the received broadcast channel may be adjusted.

[0237] It will be apparent to those skilled in the art that the invention may be embodied in other specific forms without departing from the spirit and essential features of the invention.

[0238] For example, in the above, a touch dragging operation may be replaced by a flick operation.

[0239] It is also possible, for example, to implement the foregoing disclosure as computer-readable code on a program- written medium. A computer-readable medium includes any type of recording device that stores data that can be read by a computer system. Examples of computer-readable media include ROM, RAM, CD-ROM, magnetic tape, floppy disks, optical data storage devices, and the like, and also include implementations in the form of carrier waves (e.g., transmission over the Internet). The computer may also include a terminal control unit 180.

[0240] Accordingly, the detailed description above is not to be construed as limiting in any respect and should be considered exemplary. The scope of the invention is to be determined by a reasonable interpretation of the appended claims, and all changes within the equivalents of the invention are included in the scope of the invention.

A BRIEF DESCRIPTION OF THE DRAWINGS

[0241] FIG. 1 is a block diagram of one example of a mobile terminal associated with the present disclosure.

[0242] FIG. 2 is a front perspective view of one example of a mobile terminal associated with the present disclosure.

[0243] FIG. 3 is a rear perspective view of the mobile terminal of FIG. 2.

[0244] FIG. 4 is a block diagram of a wireless communication system in which a mobile terminal associated with the present disclosure may operate.

[0245] FIG. 5 is a flow diagram of a first embodiment of a control method for a mobile terminal associated with the present disclosure.

[0246] FIG. 6 through FIG. 23 are state diagrams of a display screen on which a first embodiment of a control method of a mobile terminal associated with the present disclosure is implemented.

[0247] FIG. 24 is a flow diagram of a second embodiment of a control method for a mobile terminal associated with the present disclosure.

[0248] FIG. 25 and FIG. 26 are state diagrams of a display screen in which a second embodiment of a control method of a mobile terminal associated with the present disclosure is implemented.

DRAWINGS

FIG. 1

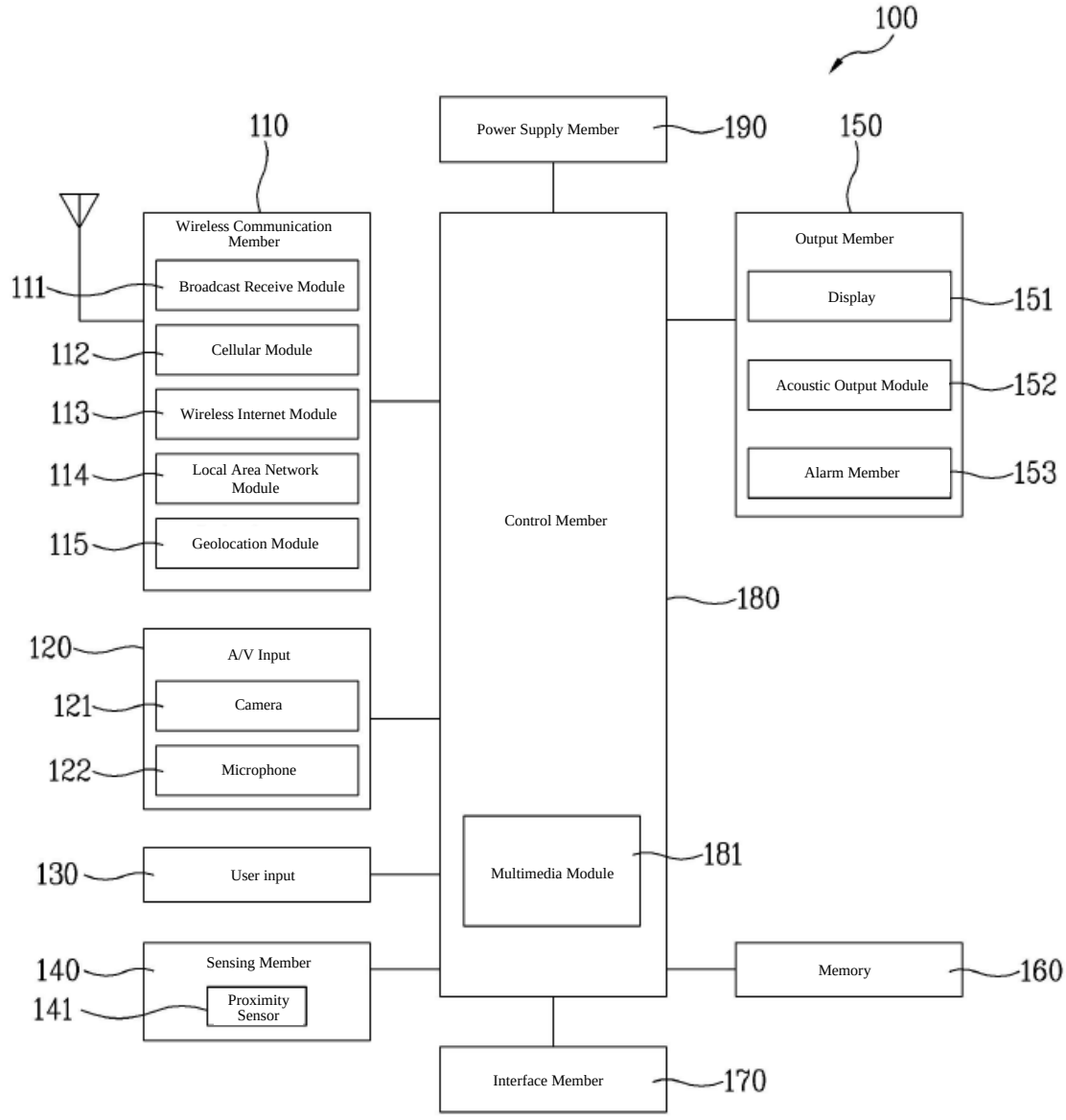


FIG. 2

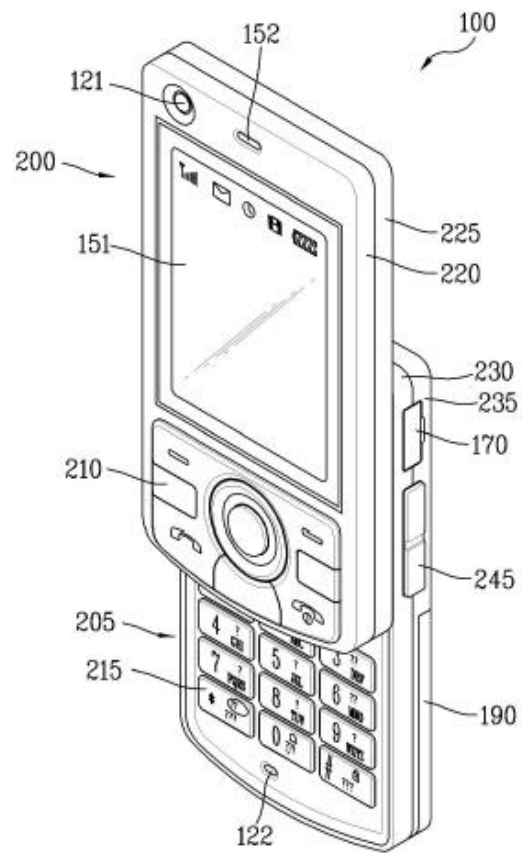


FIG. 3

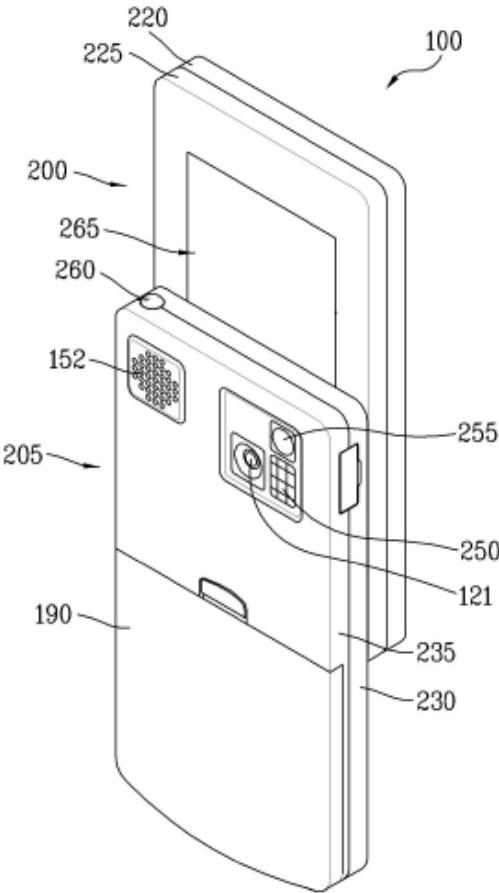


FIG. 4

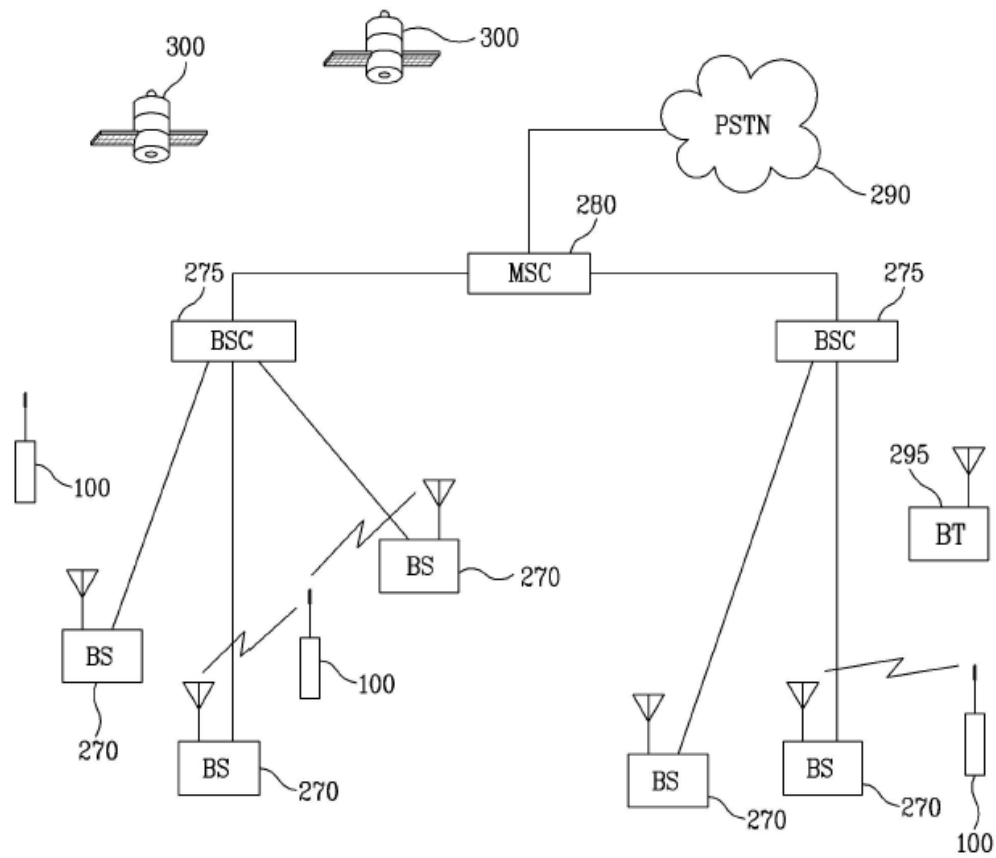


FIG. 5

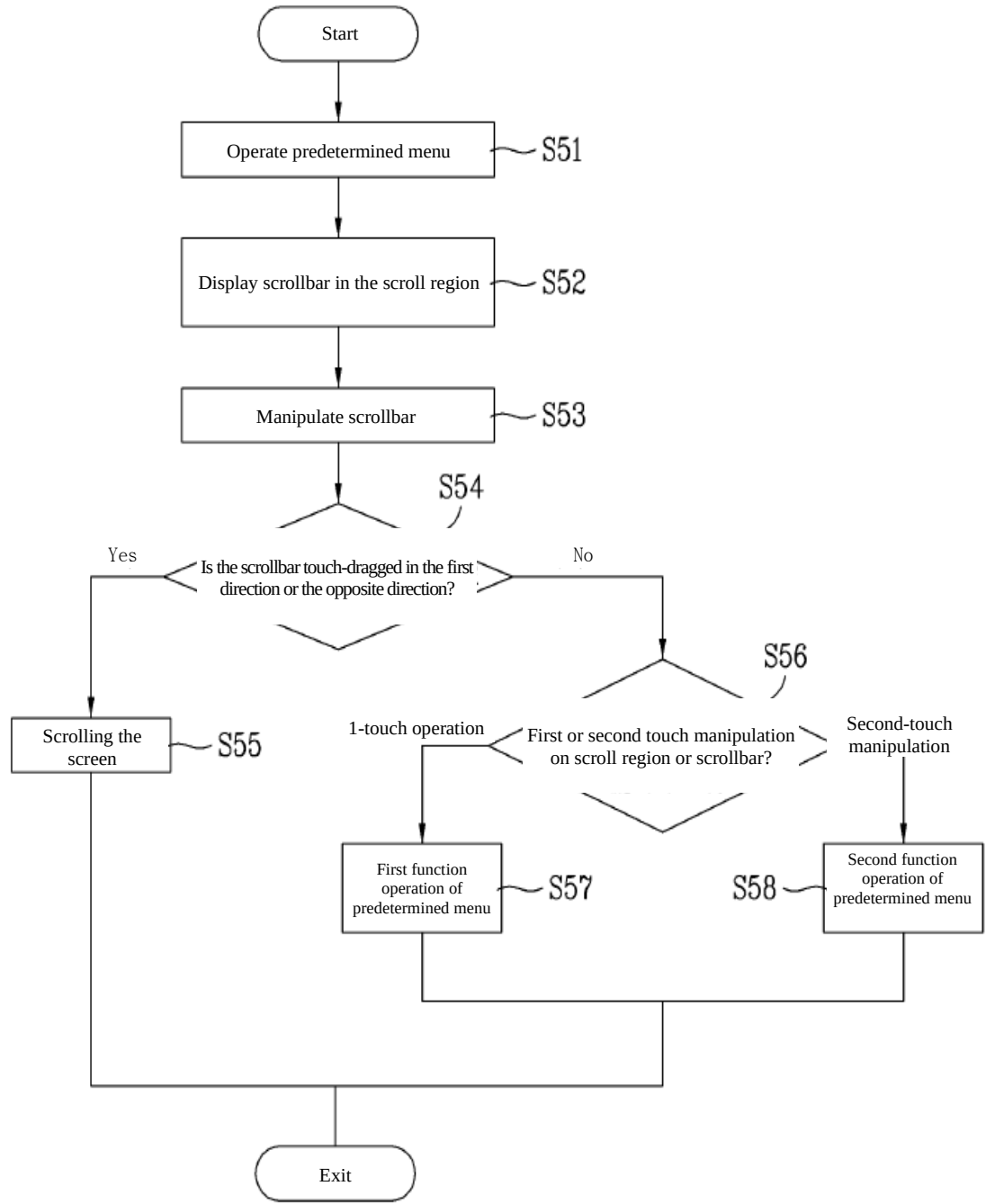


FIG. 6

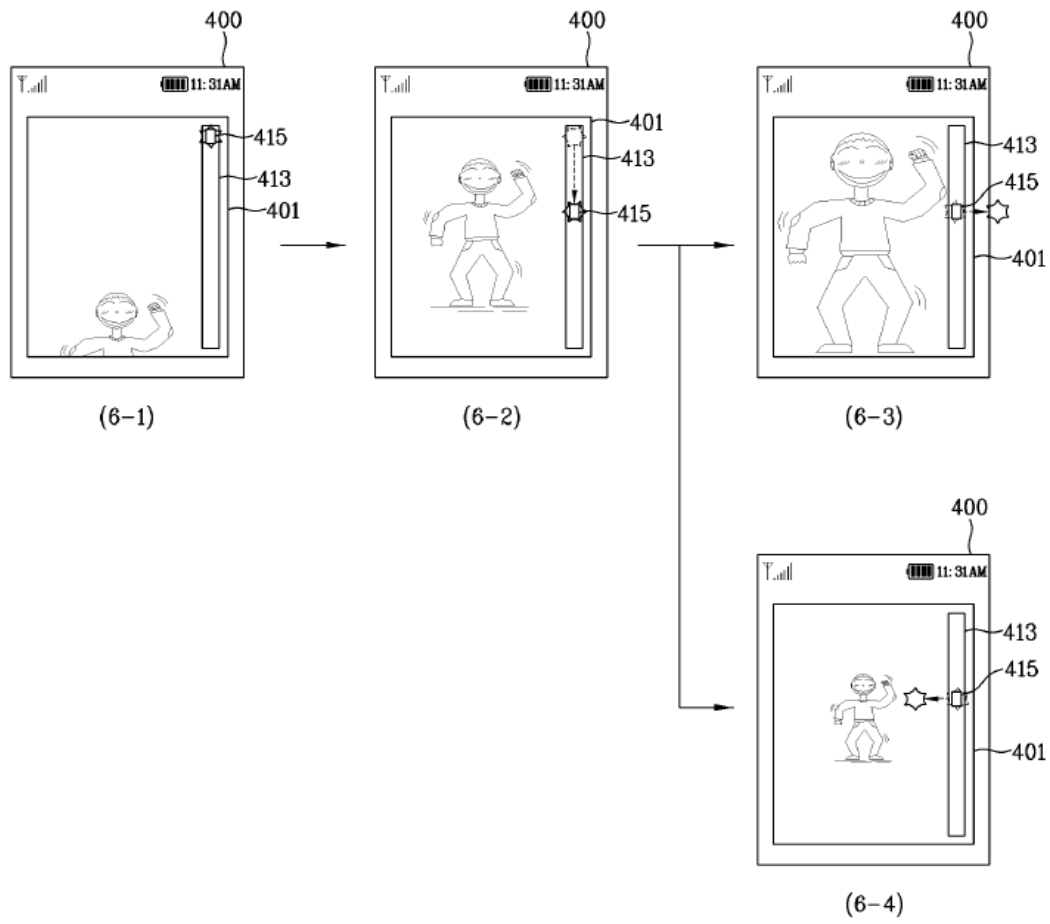


FIG. 7a

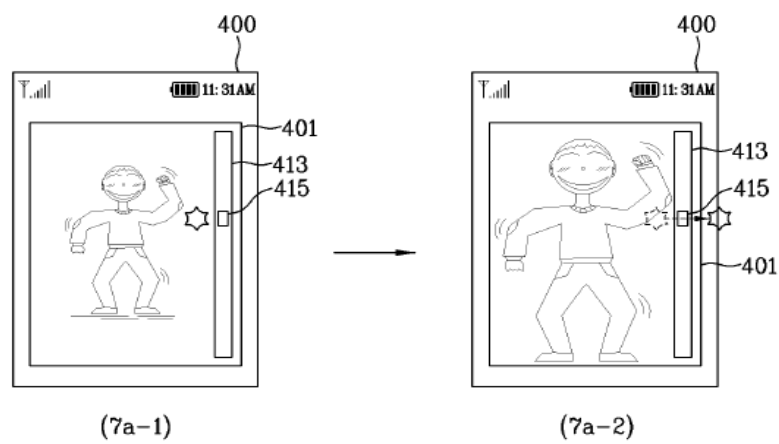


FIG. 7b

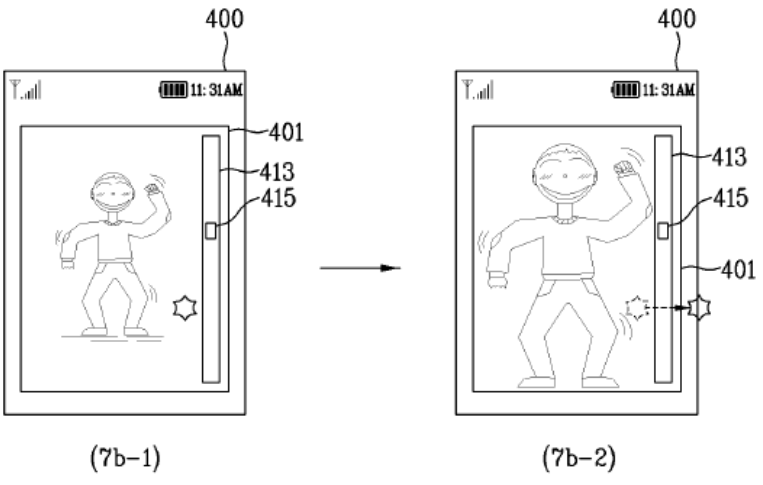


FIG. 8

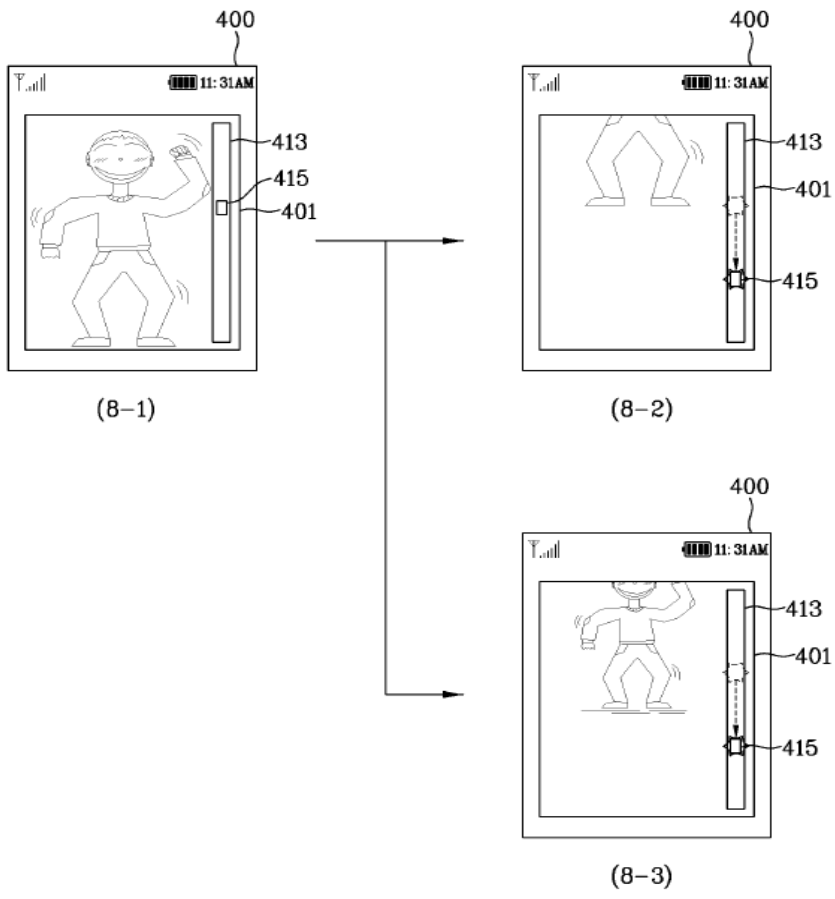


FIG. 9

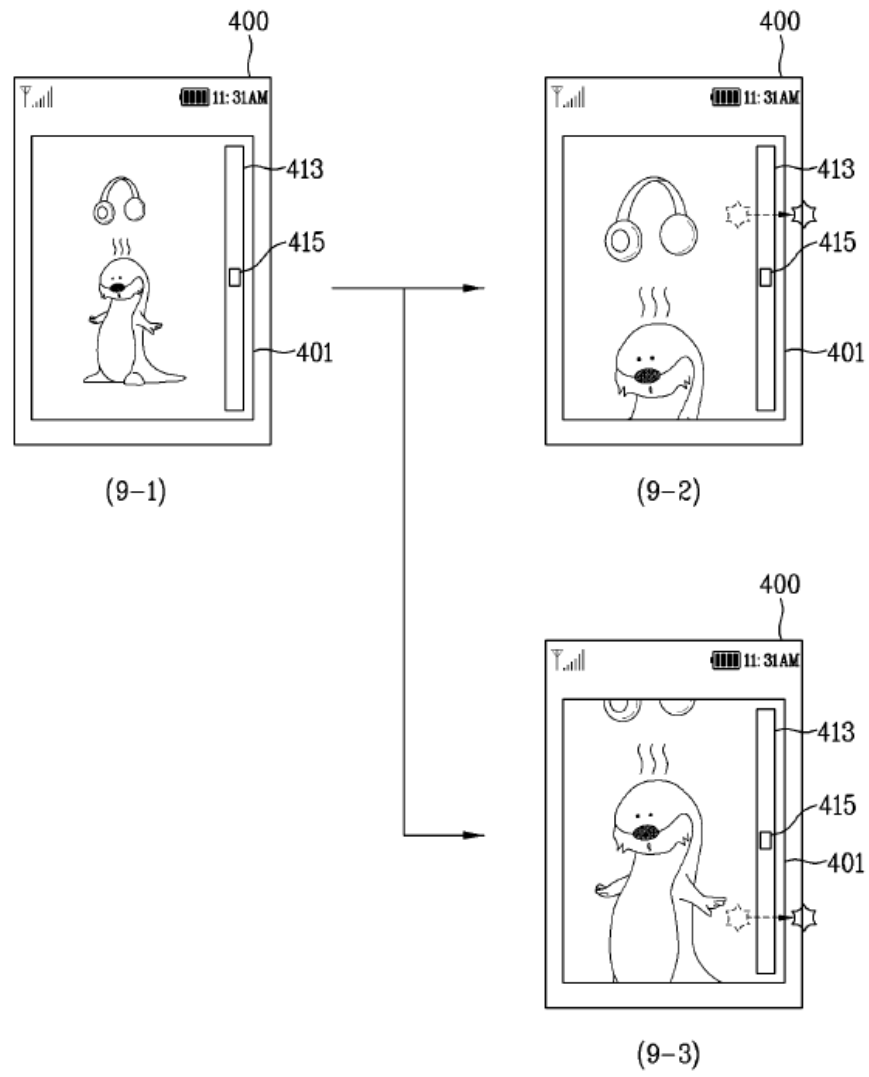


FIG. 10

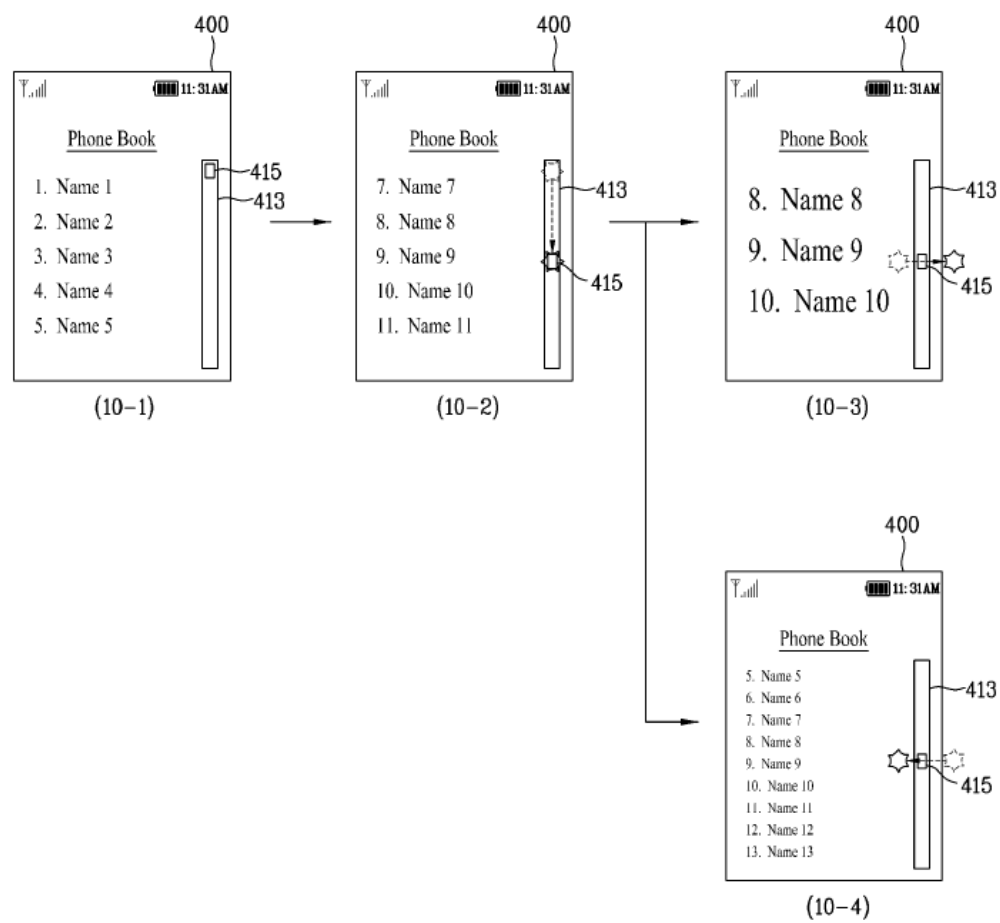


FIG. 11

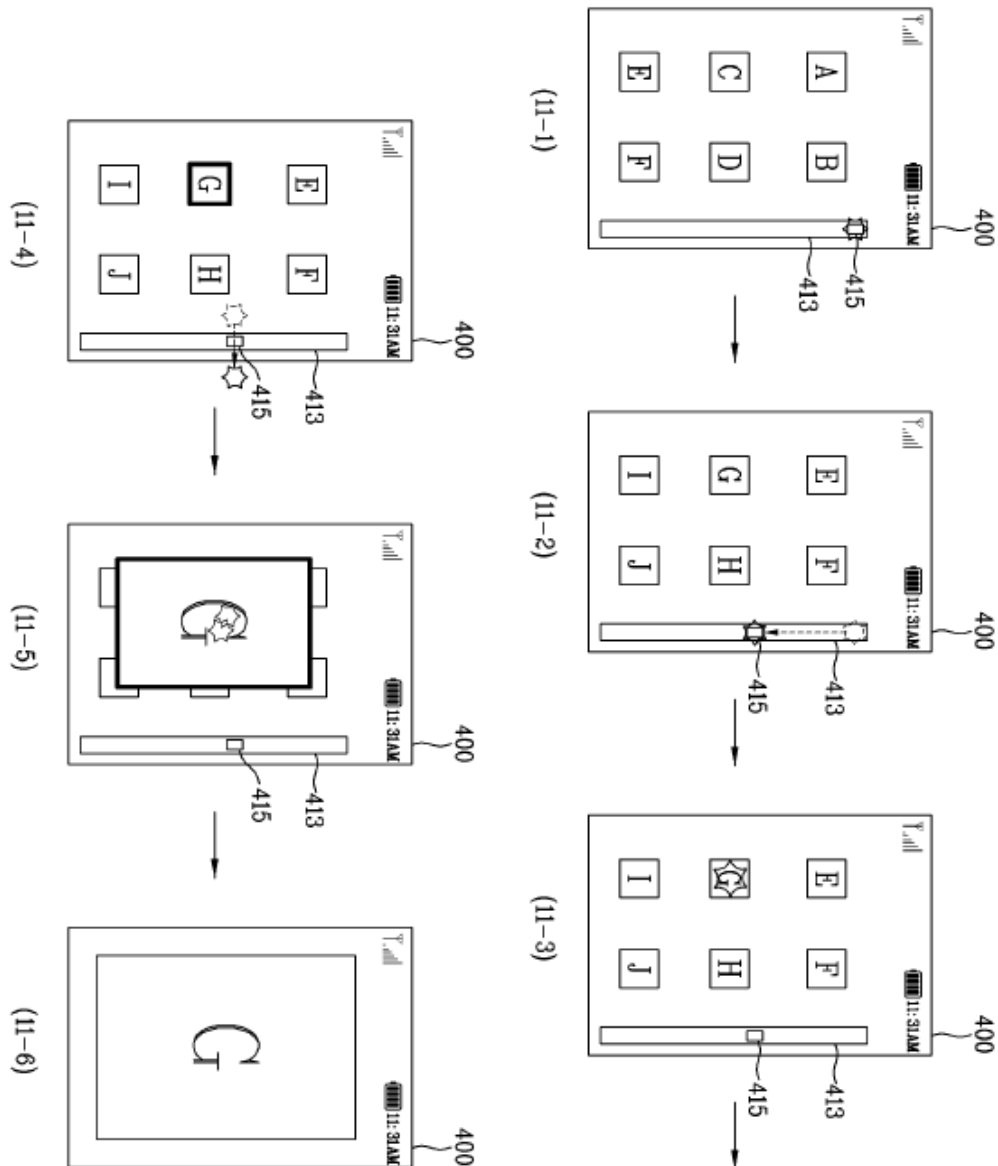


FIG. 12

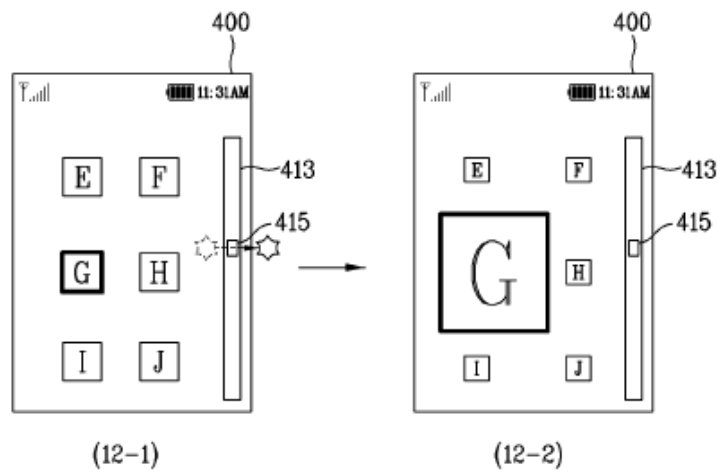


FIG. 12

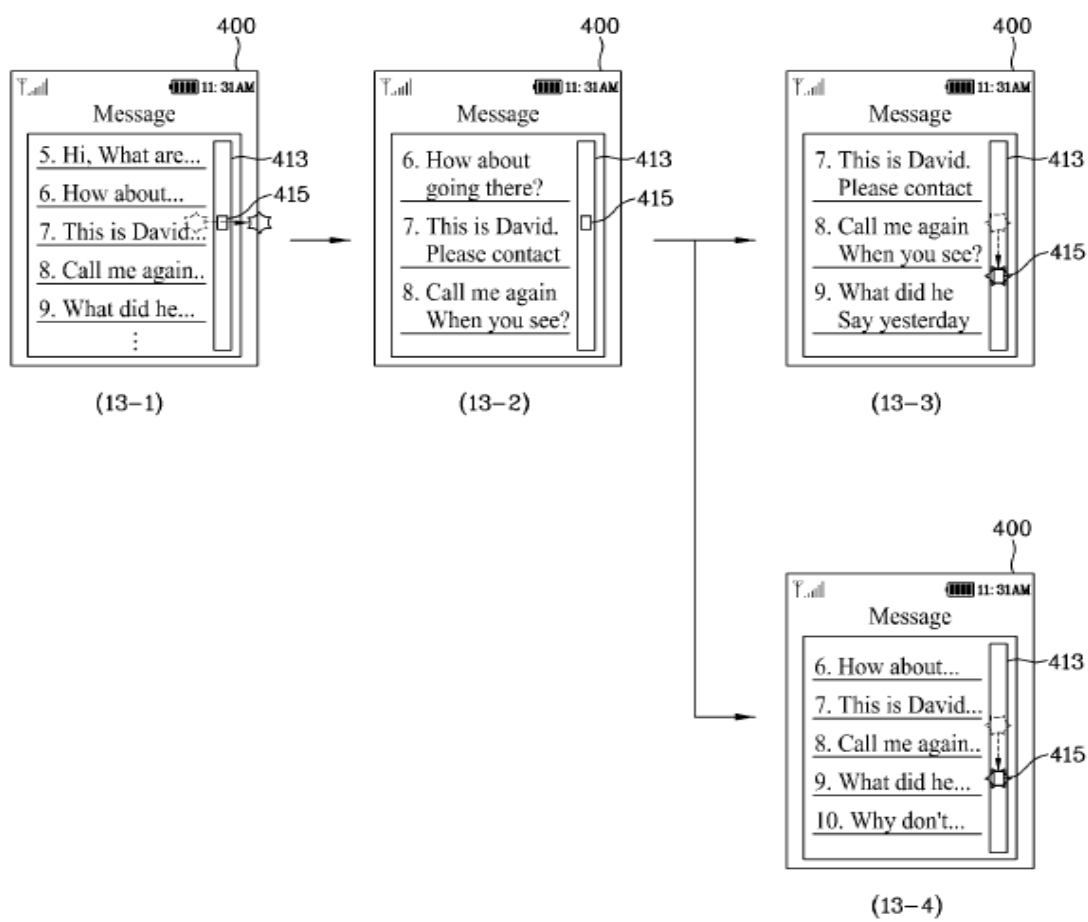


FIG. 14

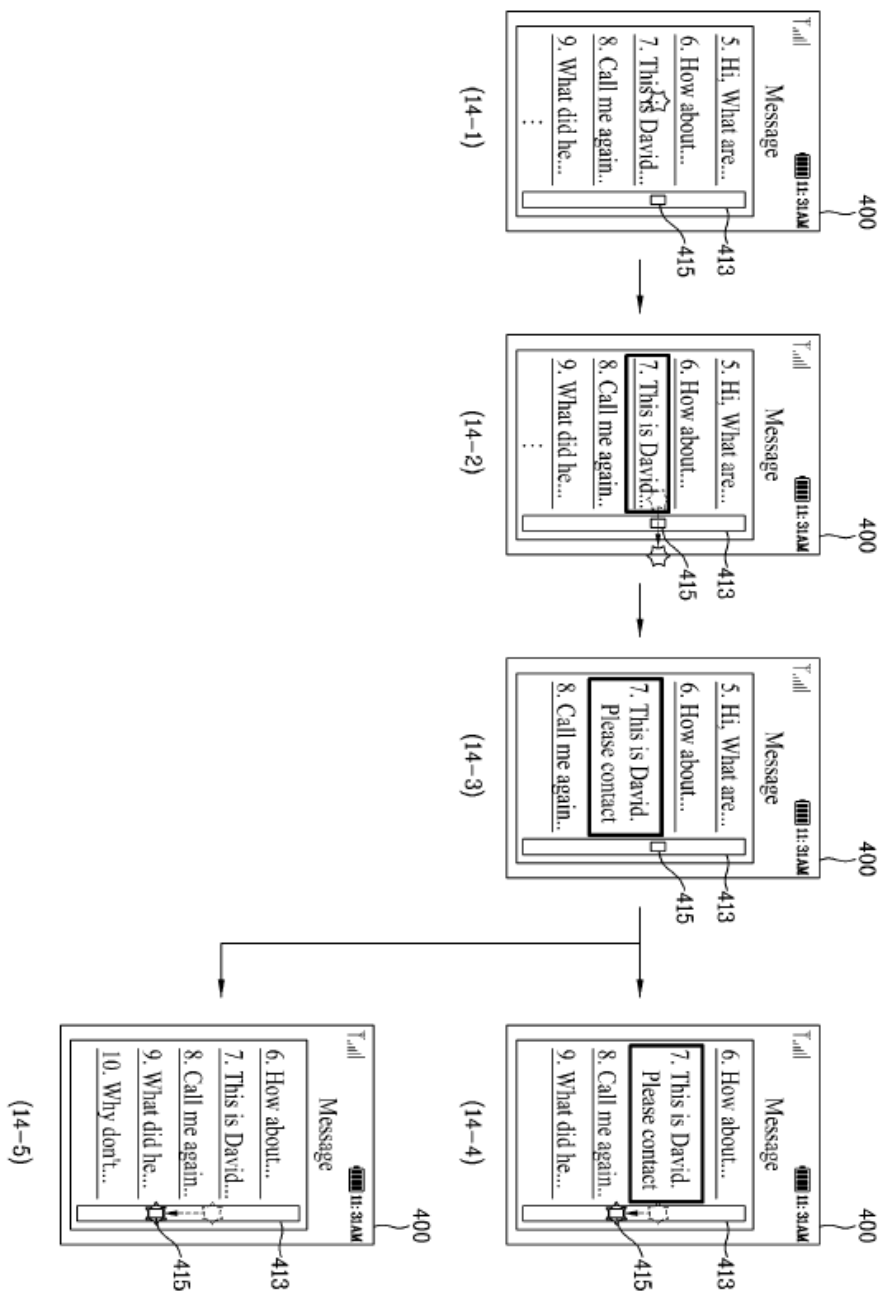


FIG. 15

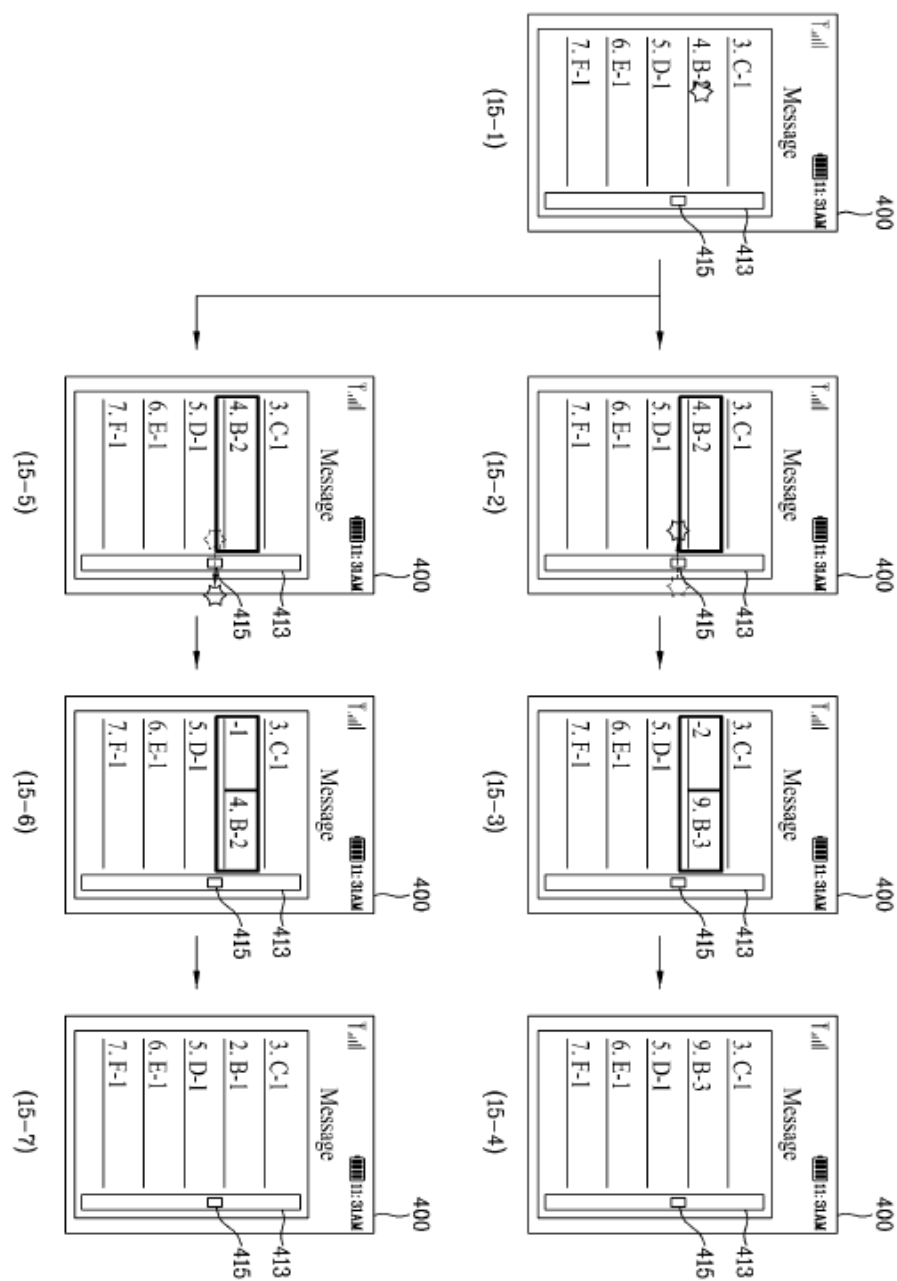


FIG. 16a

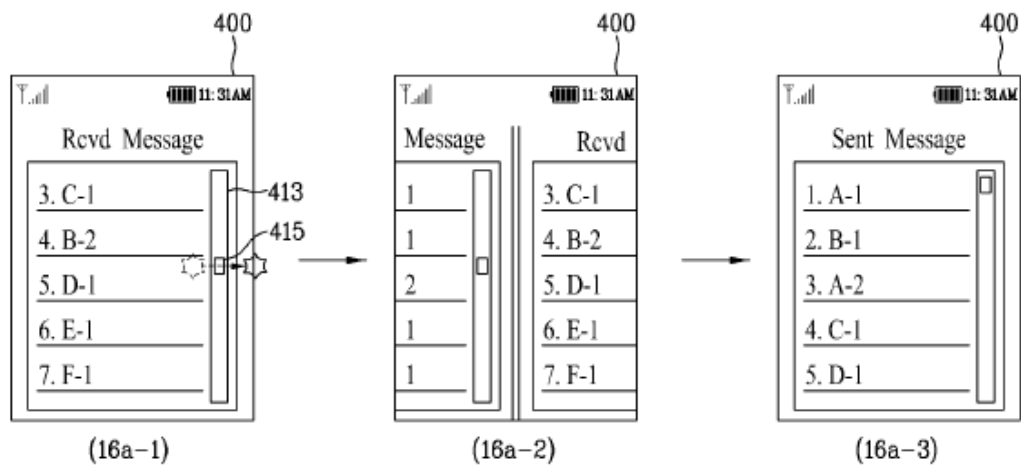


FIG. 16b

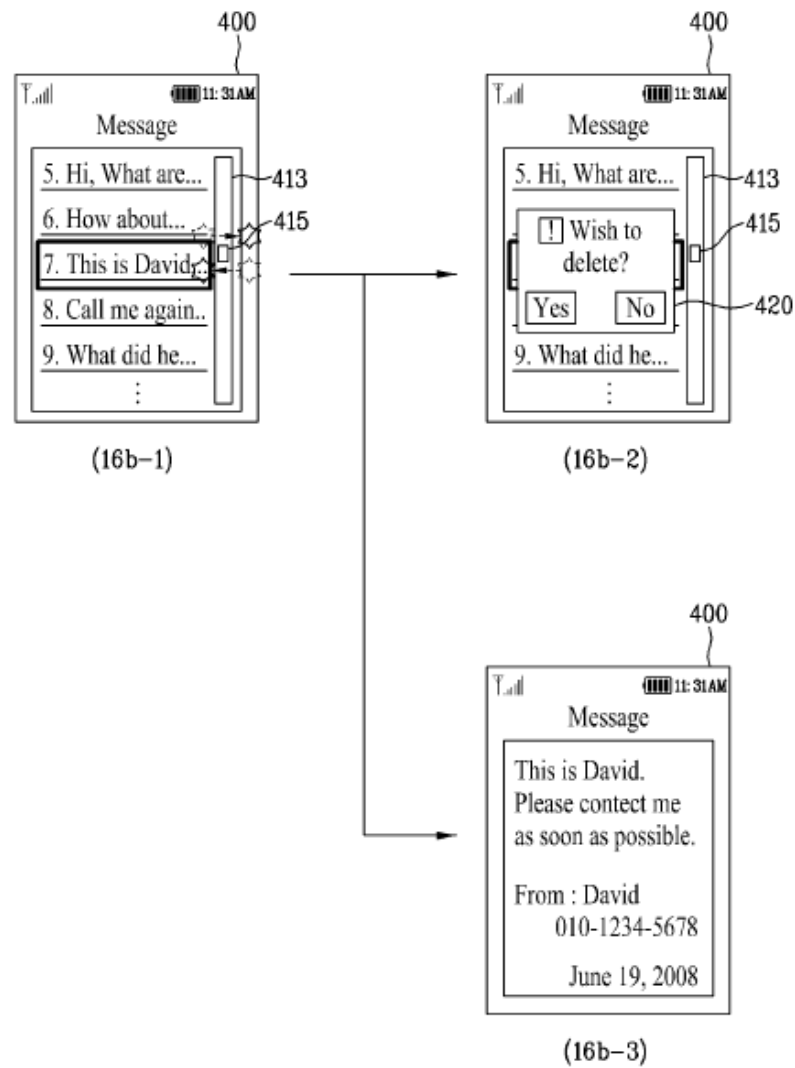


FIG. 17

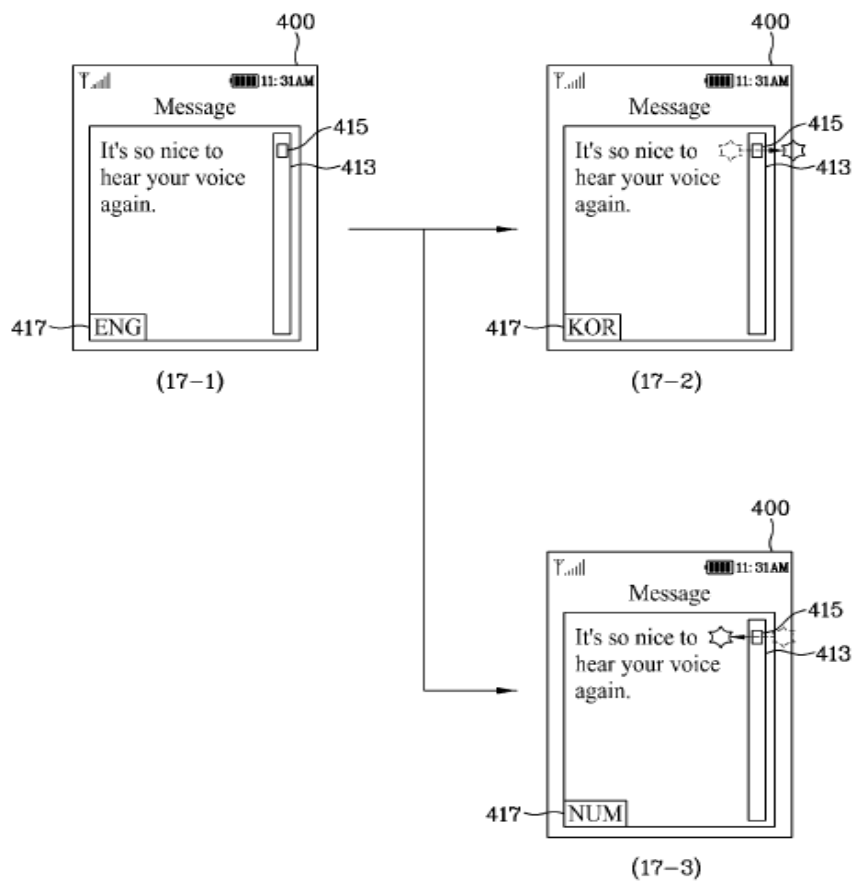


FIG. 18

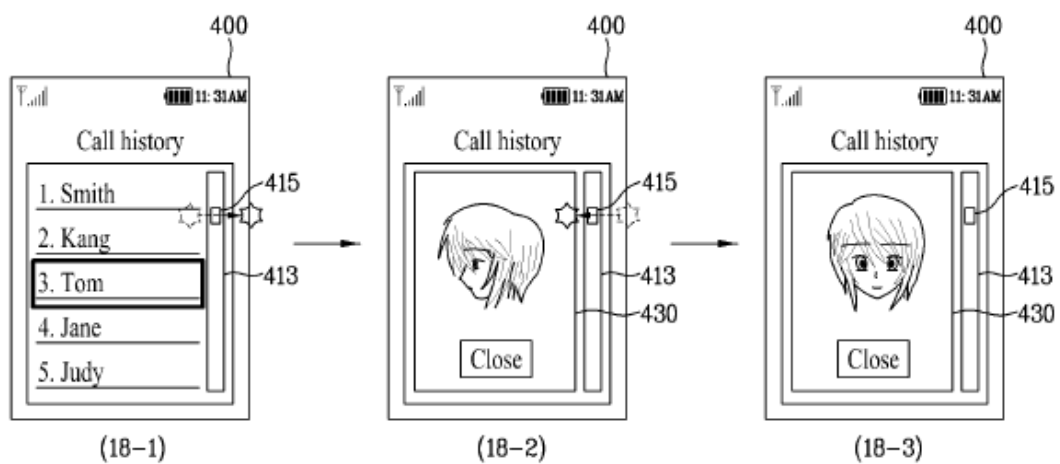


FIG. 19

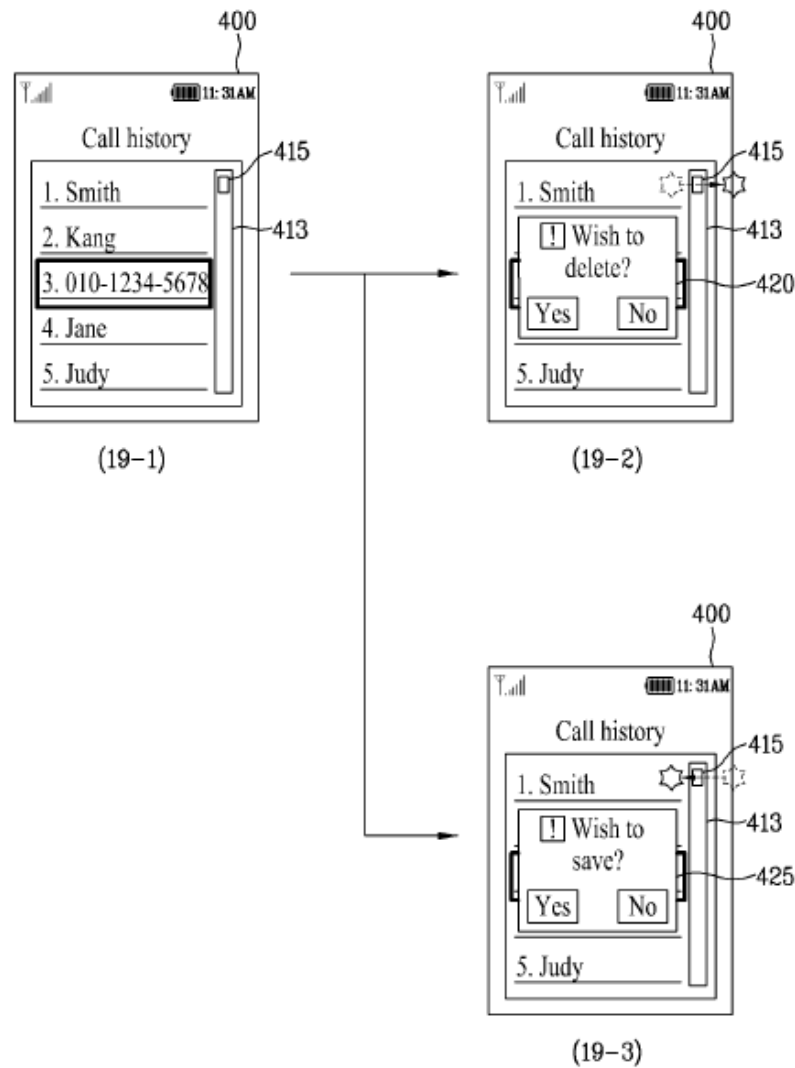


FIG. 20

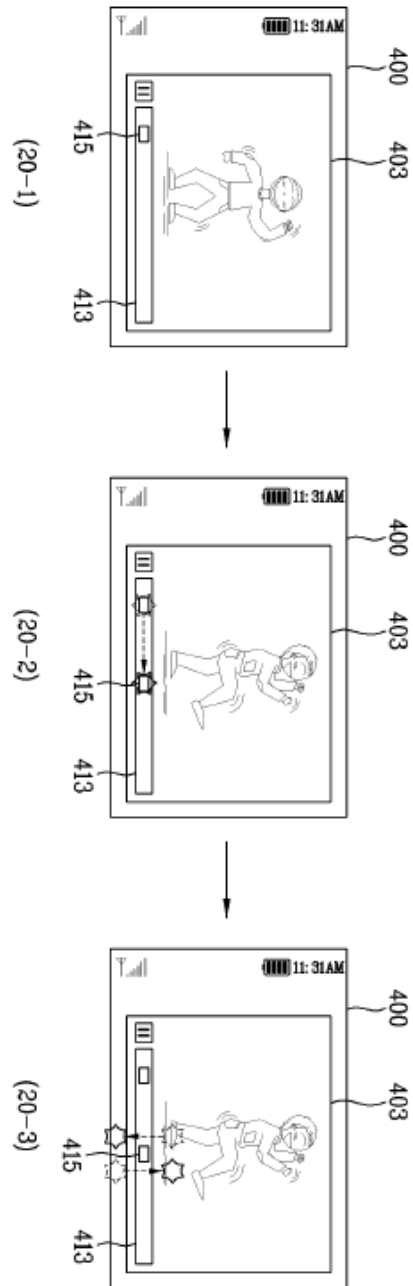


FIG. 21

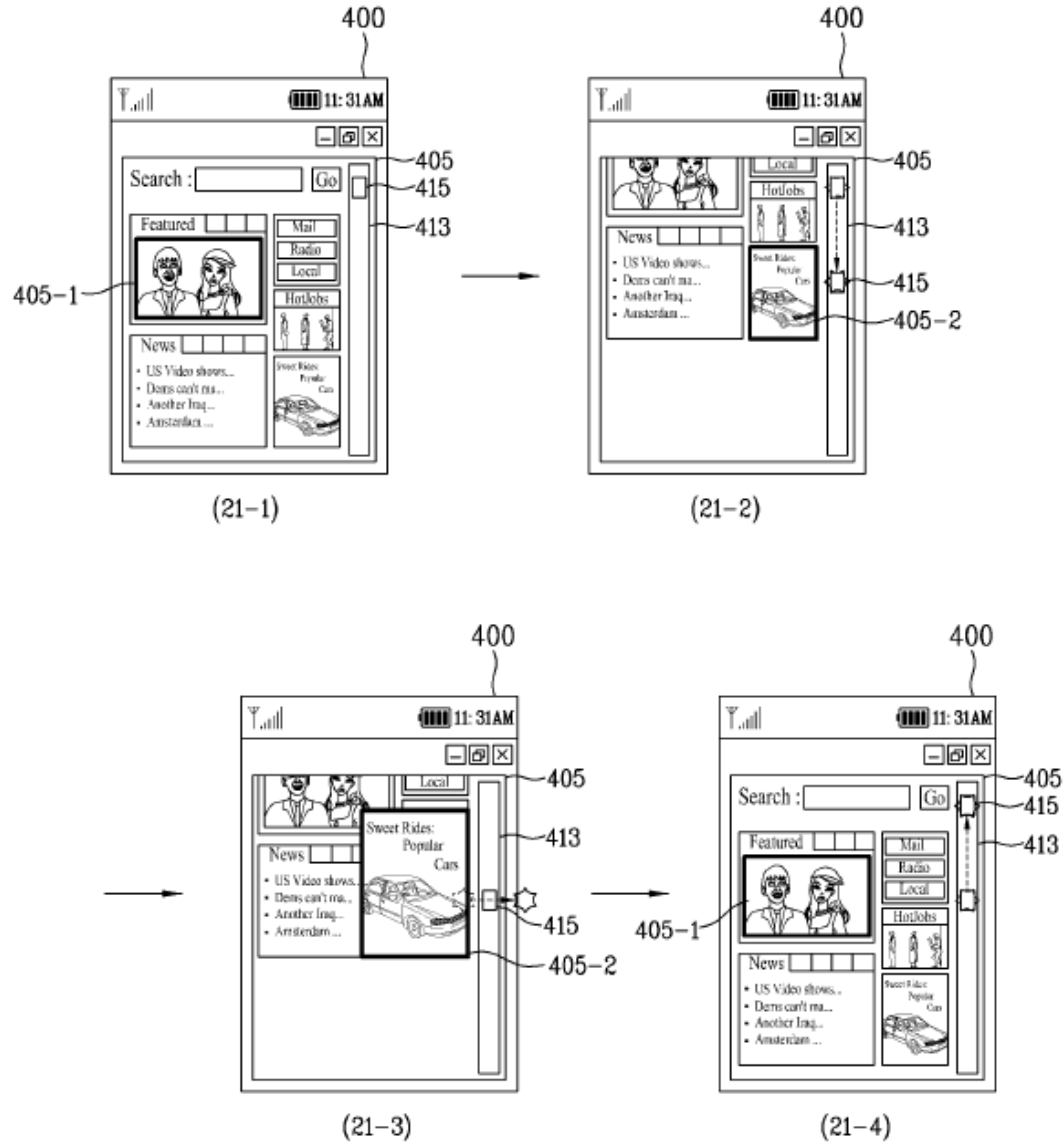


FIG. 22

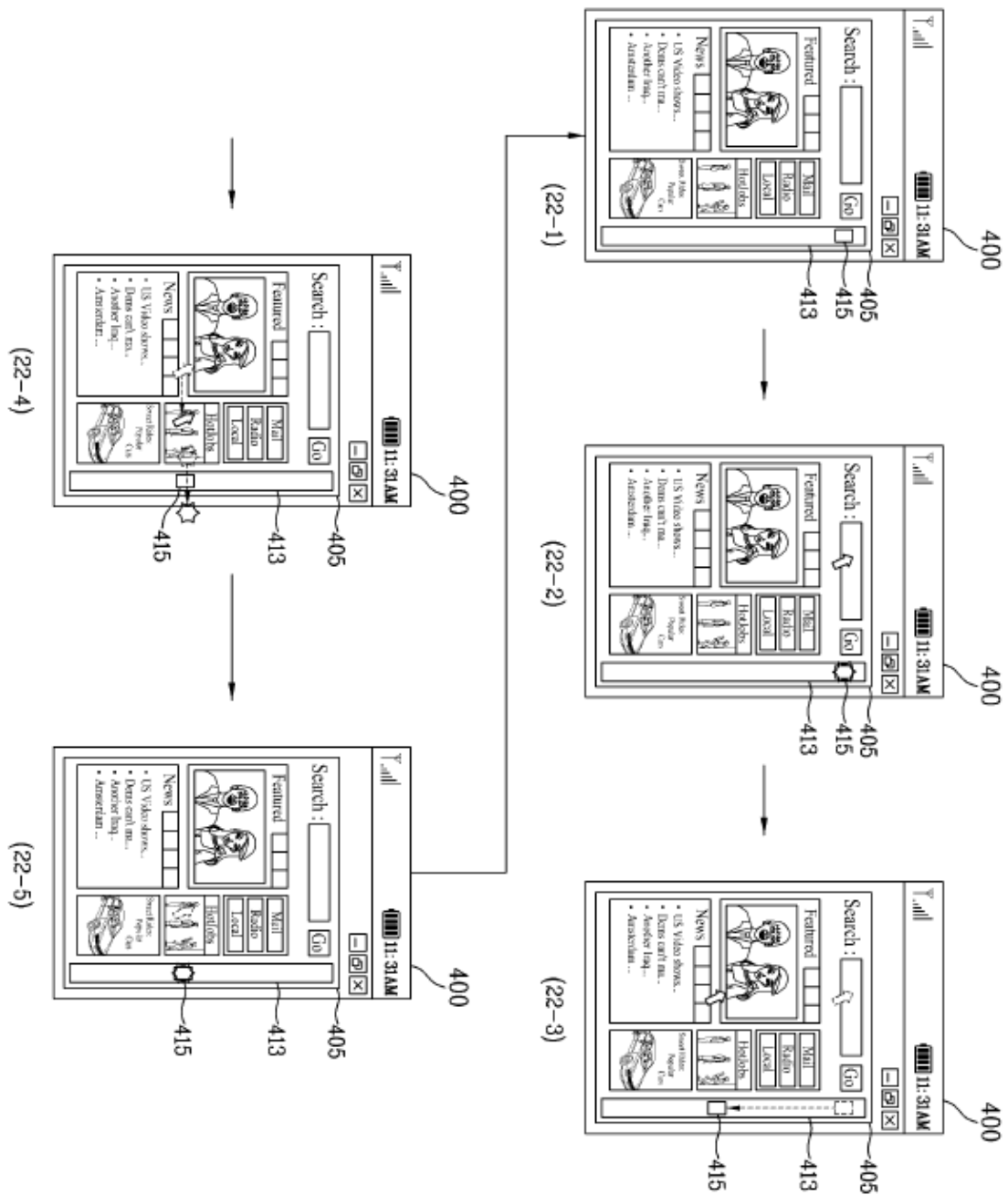


FIG. 23

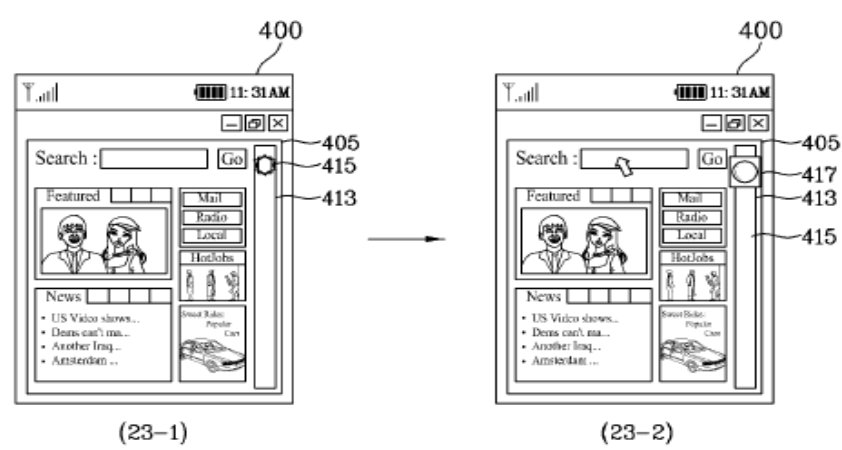


FIG. 24

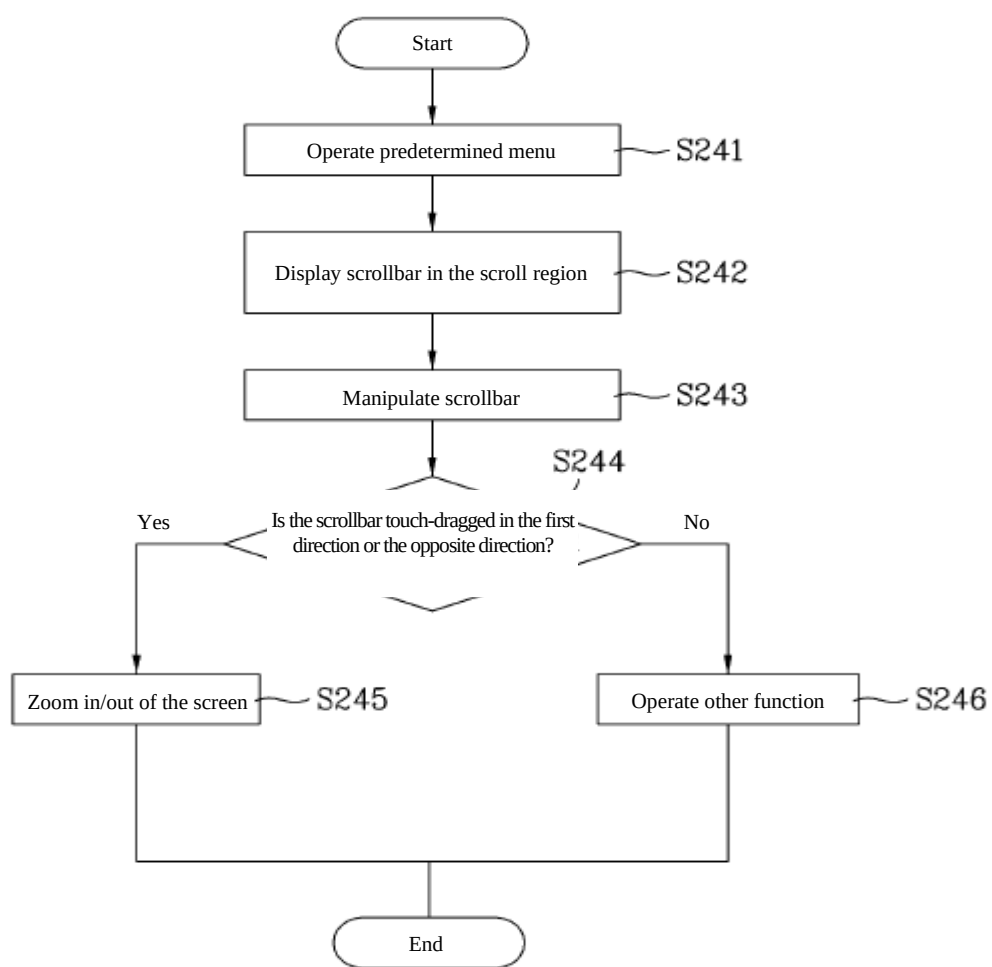


FIG. 25

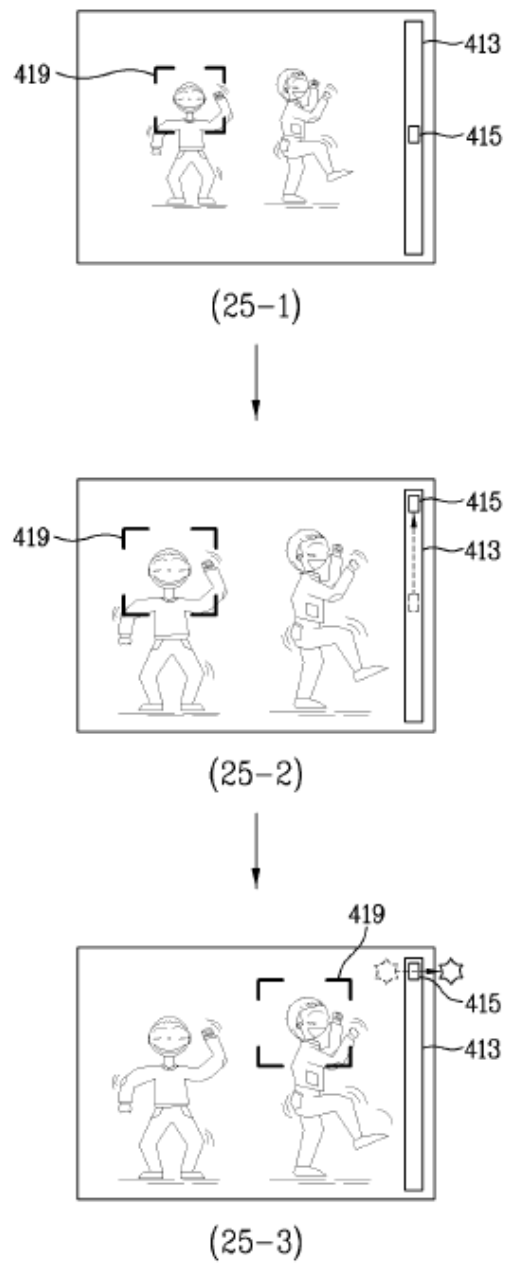


FIG. 26

