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(54) **SOCIAL REMINDERS**

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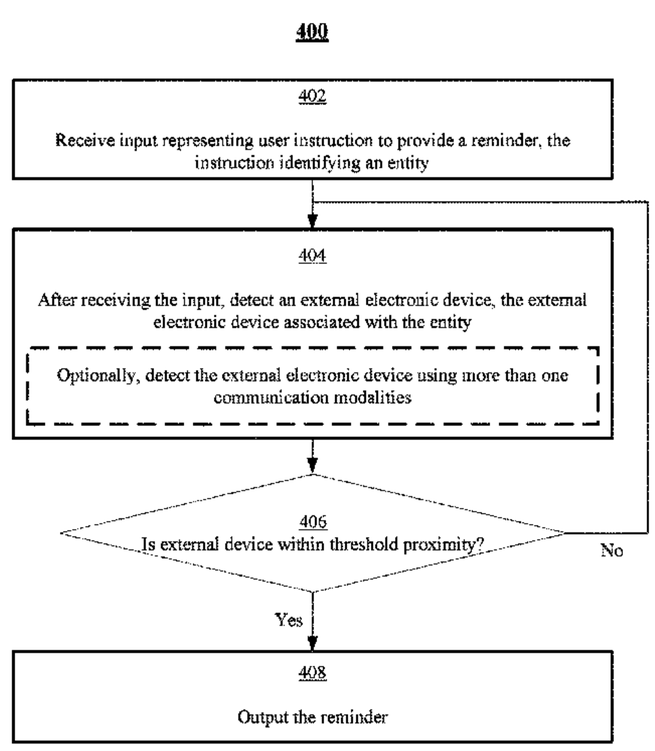
(57) **ABSTRACT**

Techniques for providing reminders based on social interactions between users of electronic devices are described. Social reminders can be set to trigger based on social interactions of users. For example, a user may request to be reminded to discuss a certain discussion topic with a particular phonebook contact, when the user next encounters the contact.

45 Claims, 9 Drawing Sheets



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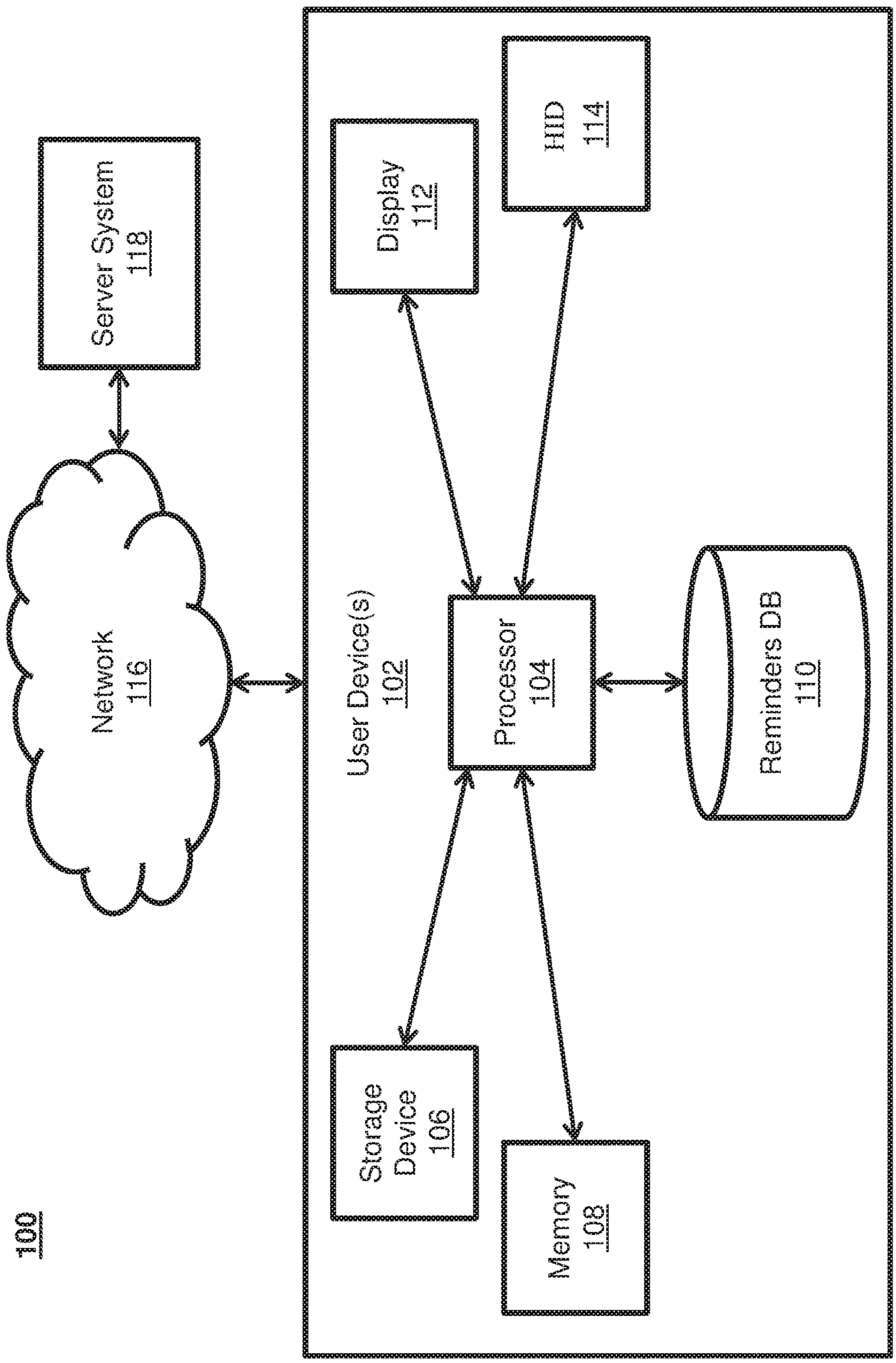
100
Server System
118
Network
116
User Device(s)
102
Display
112
HID
114
Processor
104
Reminders DB
110
Storage
Device
106
Memory
108

FIG. 1

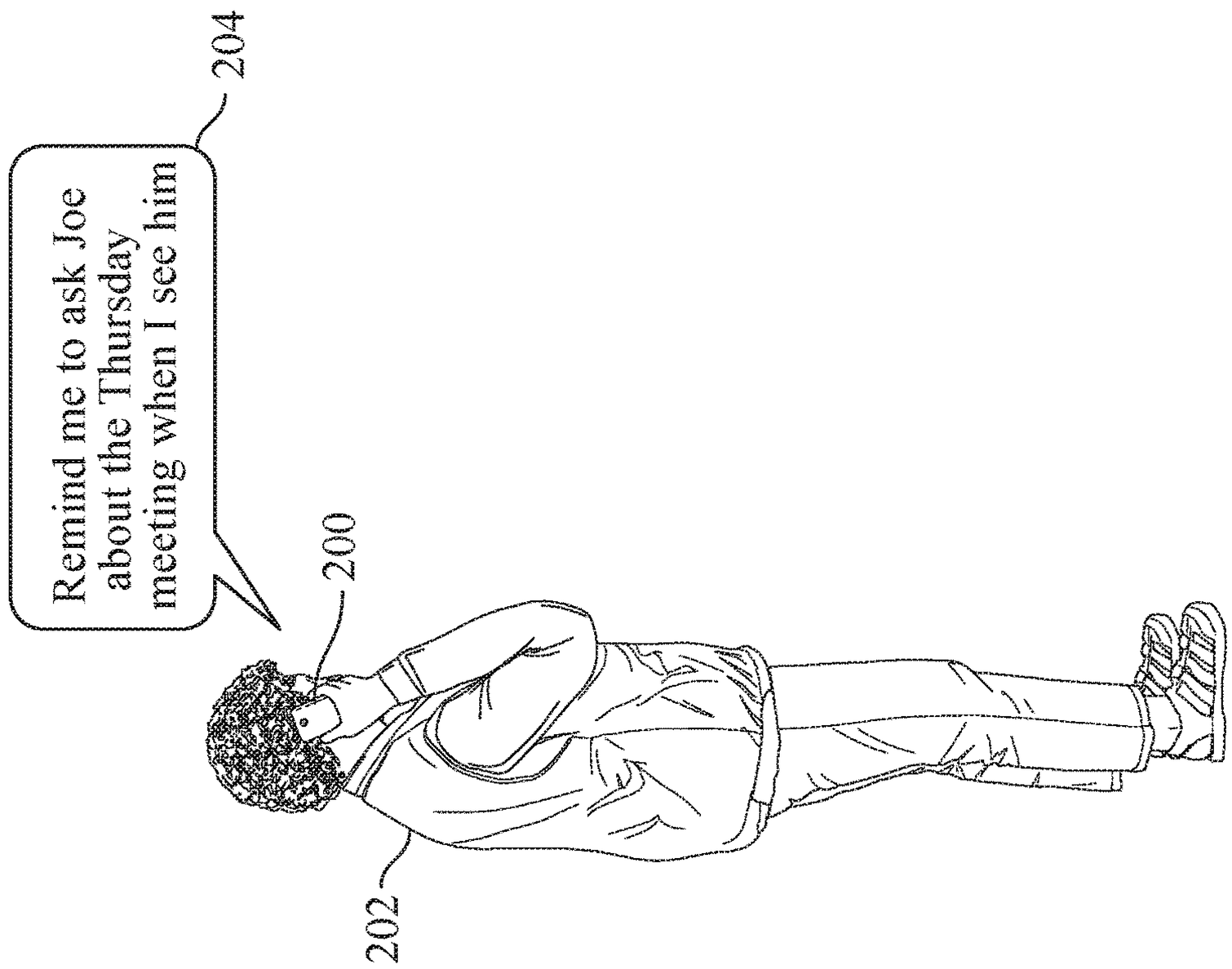
Remind me to ask Joe about the Thursday meeting when I see him
204
200
202

FIG. 2A

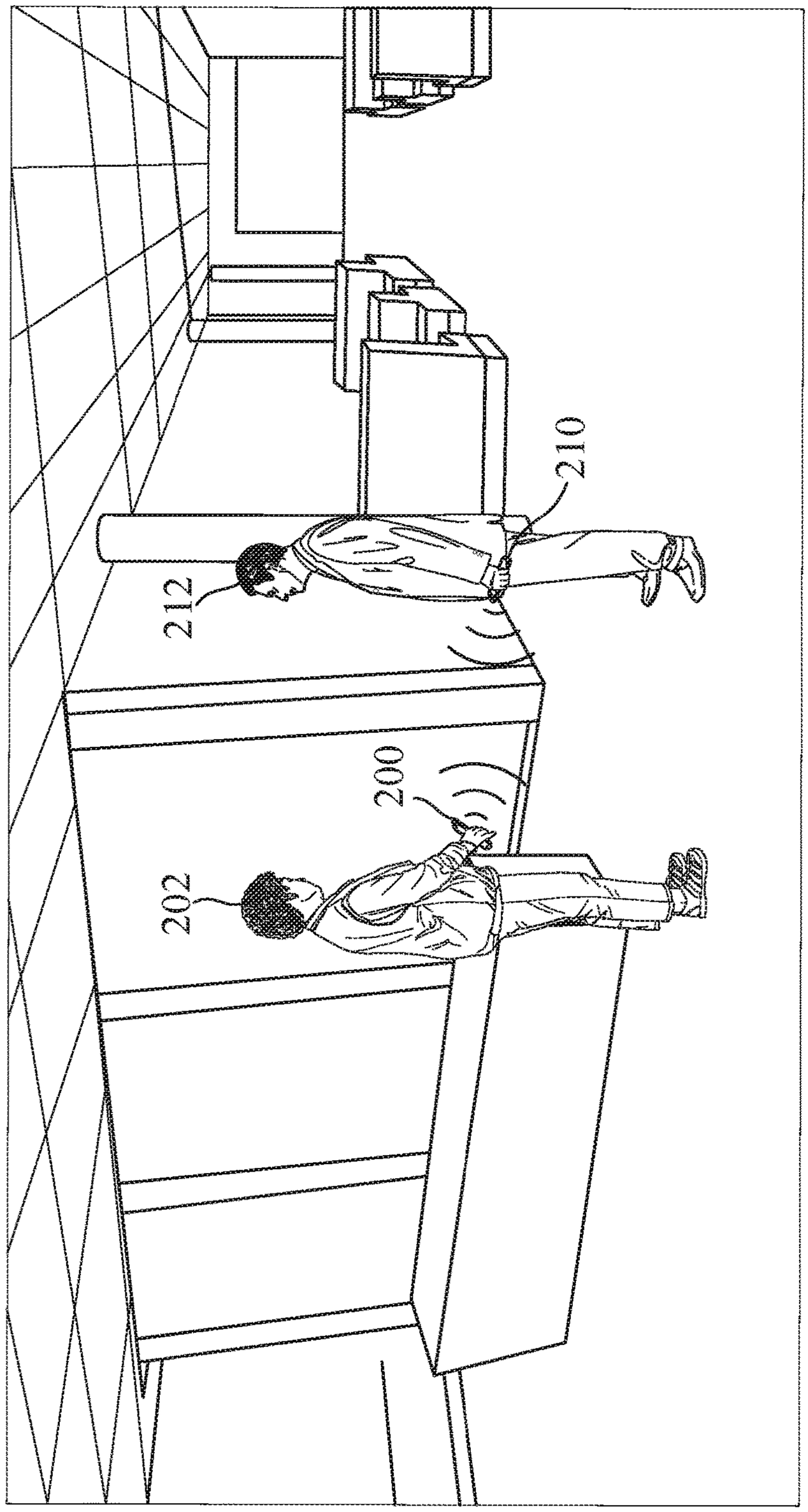

FIG. 2B

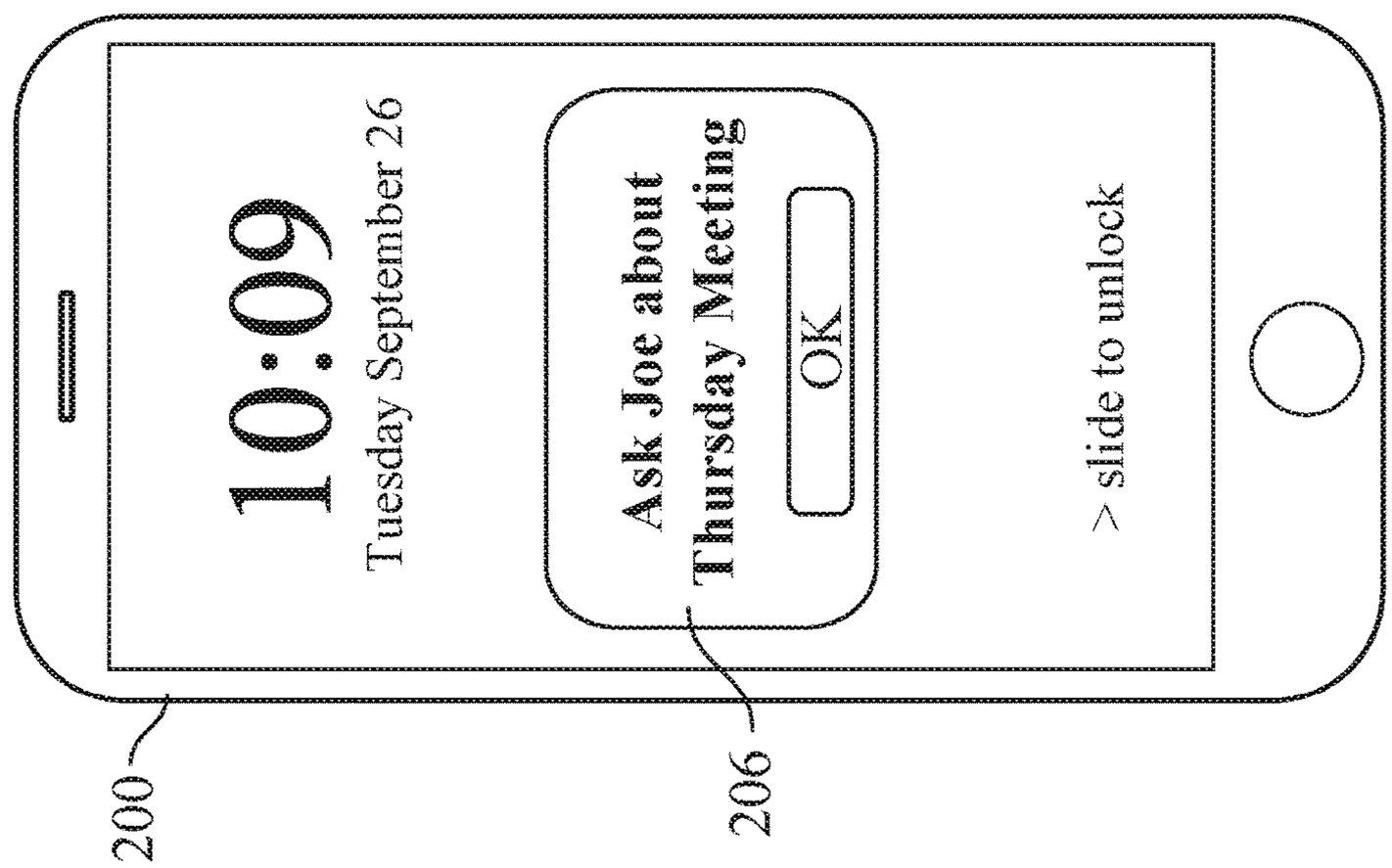
10:09
Tuesday September 26
Ask Joe about
Thursday Meeting
OK
> slide to unlock
200
206

FIG.2C

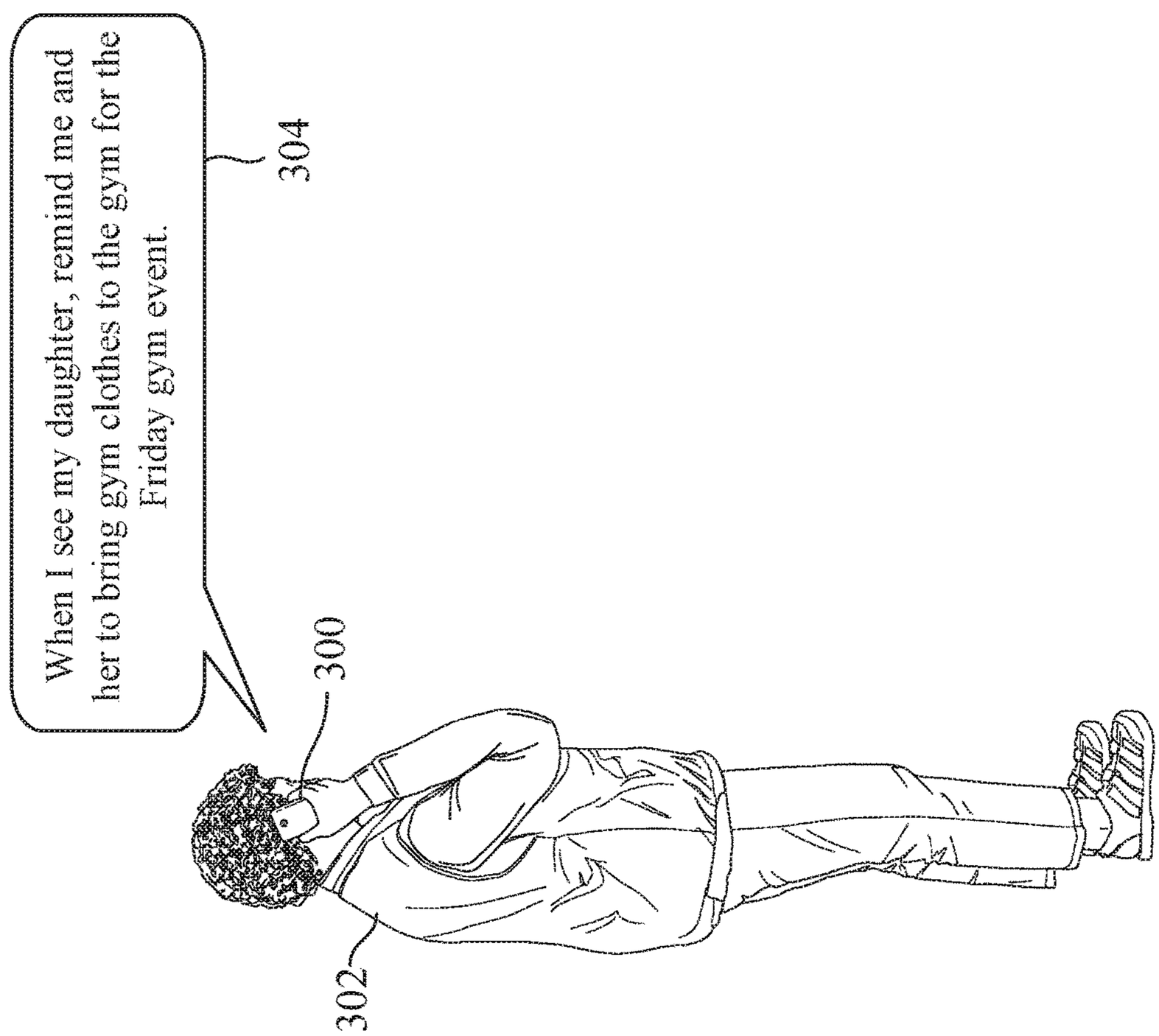
When I see my daughter, remind me and her to bring gym clothes to the gym for the Friday gym event.
304
300
302

FIG. 3A

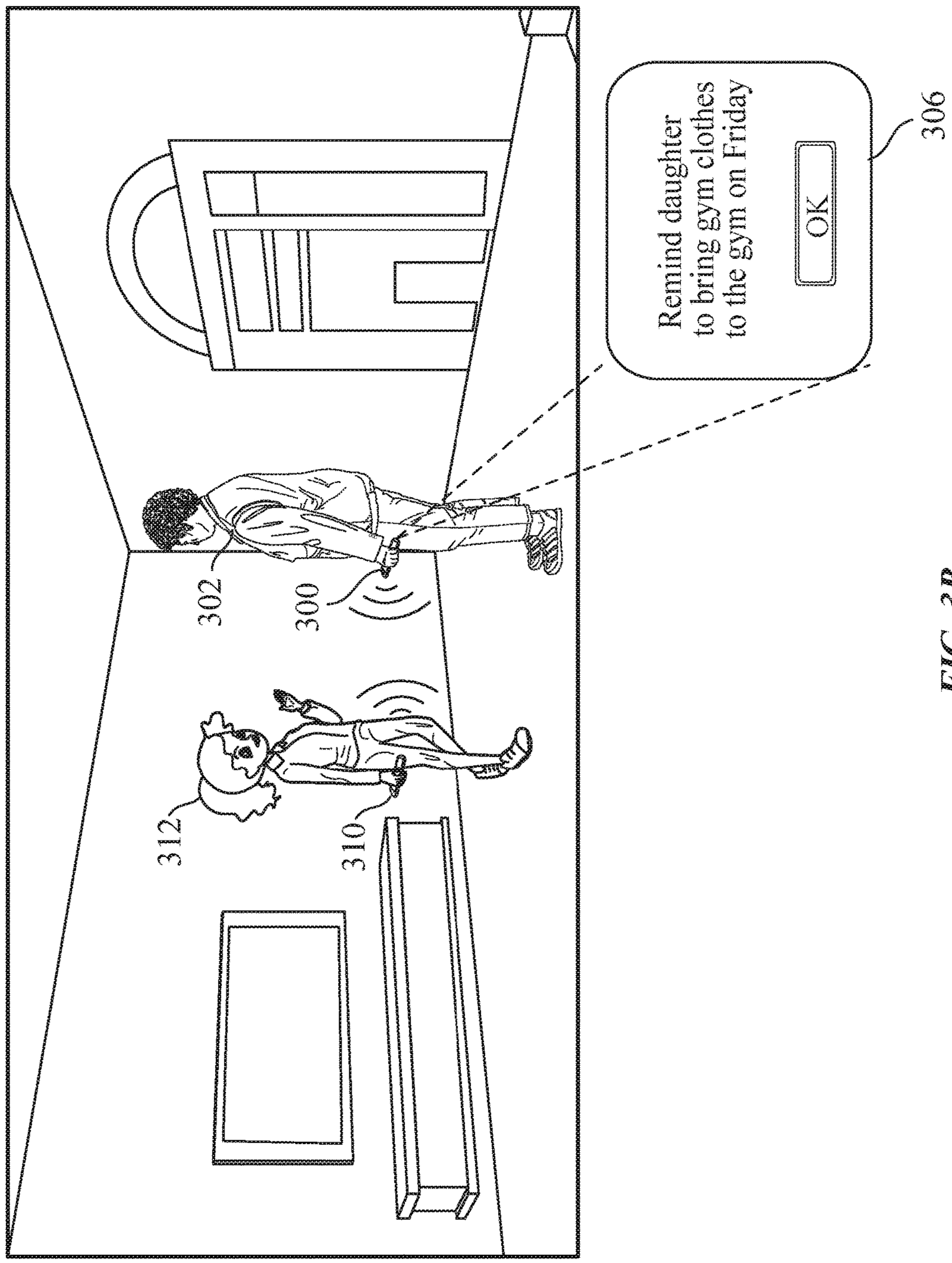
Remind daughter to bring gym clothes to the gym on Friday
OK
306
302
300
312
310

FIG. 3B

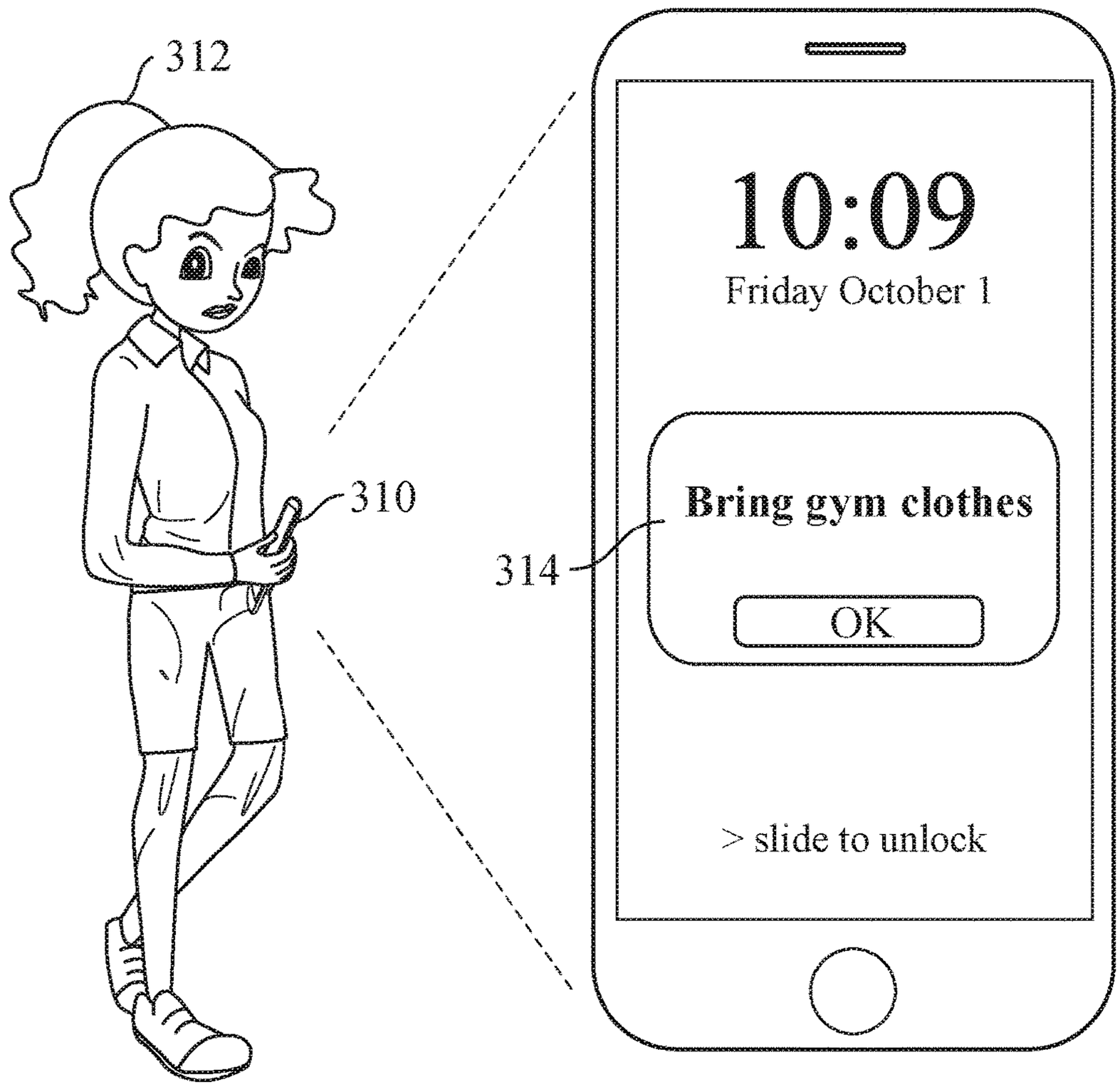
312
310
314
10:09
Friday October 1
Bring gym clothes
OK
> slide to unlock

FIG. 3C

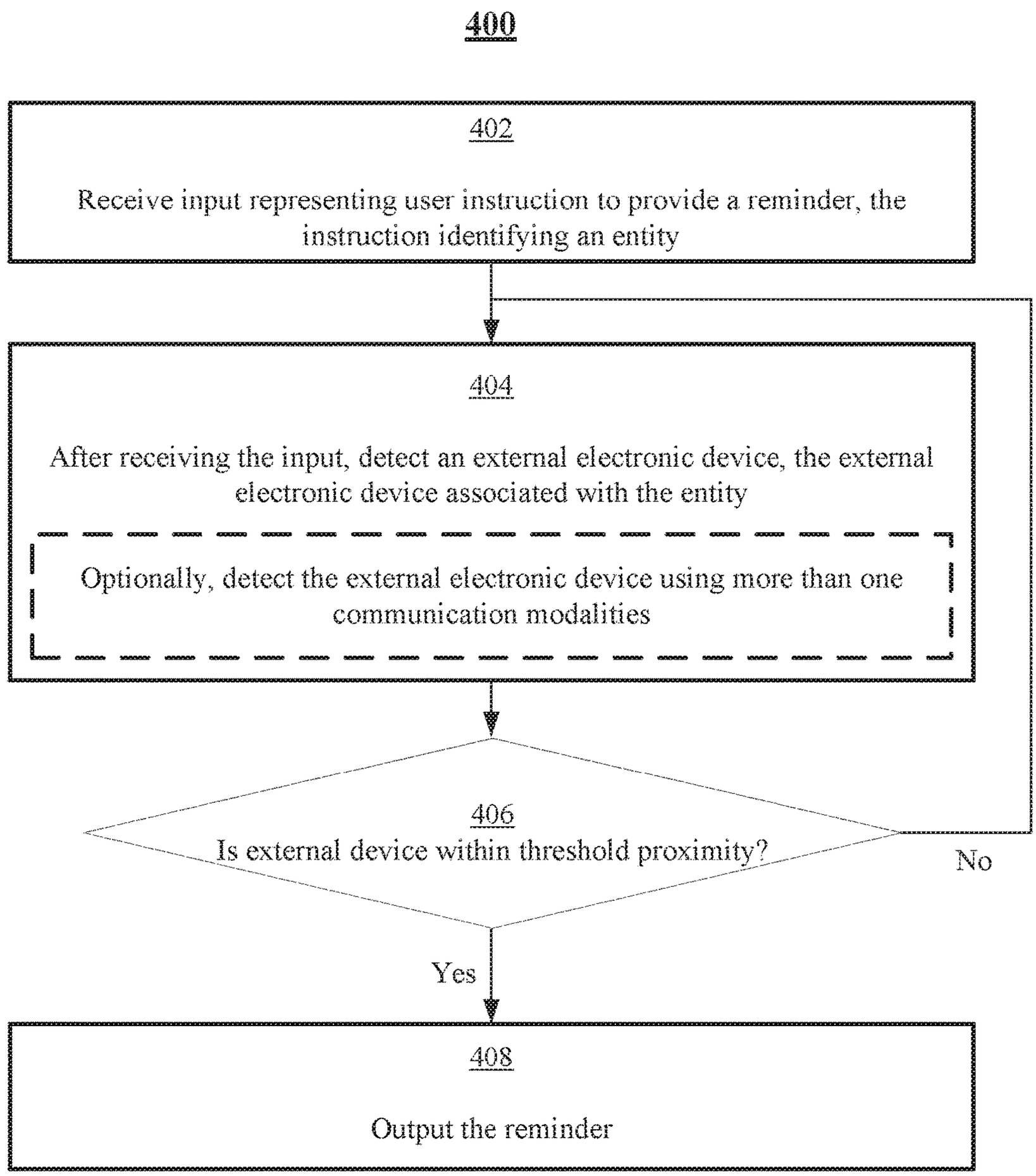
400
402
Receive input representing user instruction to provide a reminder, the instruction identifying an entity
404
After receiving the input, detect an external electronic device, the external electronic device associated with the entity
Optionally, detect the external electronic device using more than one communication modalities
406
Is external device within threshold proximity?
No
Yes
408
Output the reminder

FIG. 4

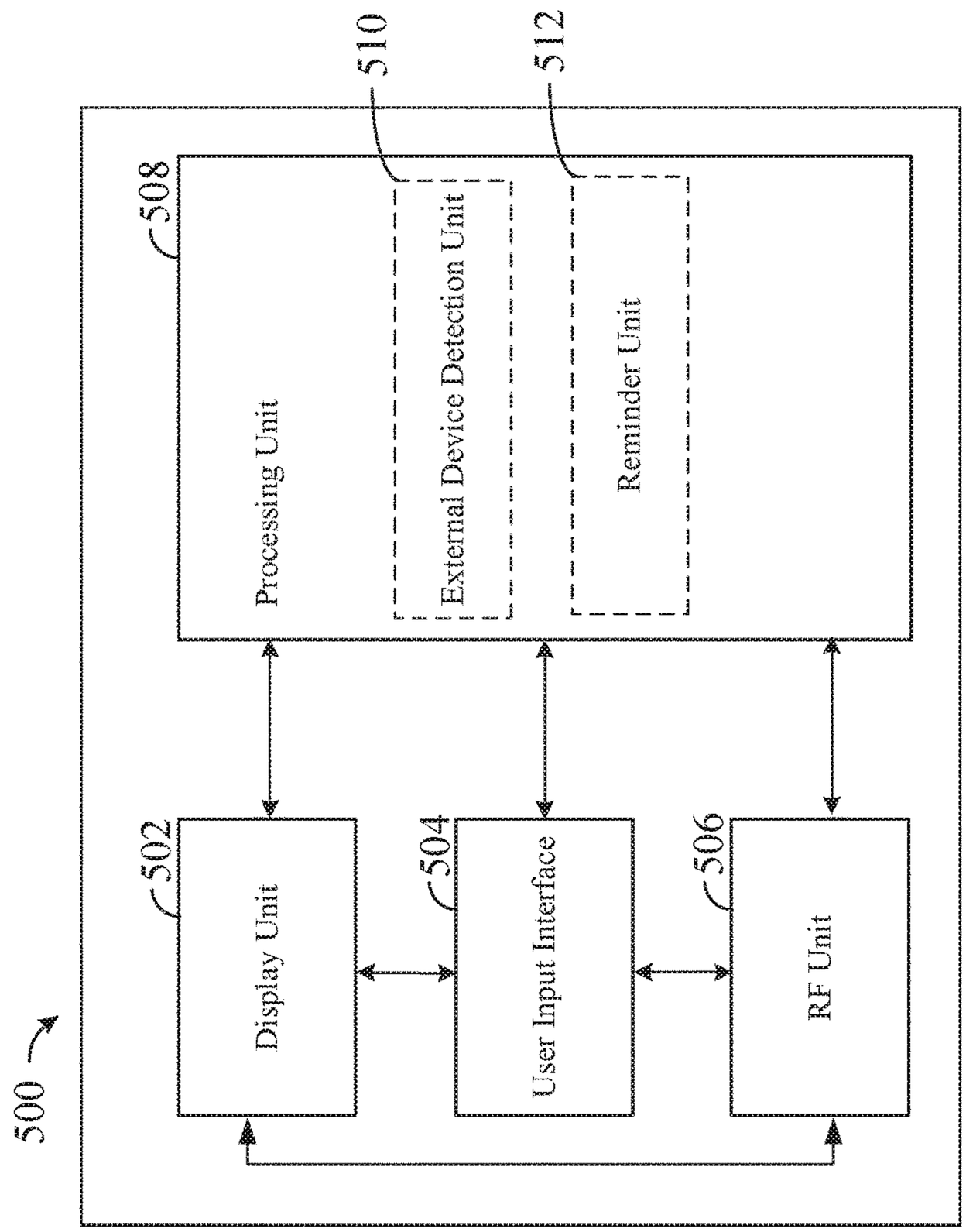
500
502
Display Unit
504
User Input Interface
506
RF Unit
508
Processing Unit
510
External Device Detection Unit
512
Reminder Unit

FIG. 5

SOCIAL REMINDERS

CROSS-REFERENCE TO RELATED APPLICATION

This application is a Continuation Application of U.S. application Ser. No. 14/835,540, entitled SOCIAL REMINDERS, filed on Aug. 25, 2015 which claims priority to U.S. Provisional Ser. No. 62/057,996, filed on Sep. 30, 2014, entitled SOCIAL REMINDERS, both of which are hereby incorporated by reference in their entirety for all purposes.

FIELD

The present disclosure relates generally to computer-based reminders, and more specifically to providing reminders based on social interactions between users.

RELATED ART

Electronic devices can display reminder alerts that remind users to take certain actions at certain times. For example, a meeting reminder reminds a user to attend a scheduled meeting. A conventional reminder is created by specifying a date and/or time with a reminder message. The reminder may then be displayed at the specified date and/or time. Conventional reminders are not as helpful when it is infeasible for the user to specify a date and/or time ahead of time.

SUMMARY

Techniques for providing (e.g., creating and outputting) reminders that are based on social interactions between users are described below. These types of reminders may be referred to as social reminders. Social reminders need not be created based on a pre-determined date and time; for example, a social reminder can be set to display when the user comes within range of another user (e.g., when the devices of both users come within a threshold range).

In some embodiments, a method for managing social reminders at an electronic device includes: receiving input representing user instruction to provide a reminder in the future, the instruction identifying an entity; after receiving the input, detecting an external electronic device, the external electronic device associated with the entity; in response to detecting the external electronic device, determining whether the external electronic device is within a threshold proximity; and in accordance with a determination that the external electronic device is within the threshold proximity, providing the reminder.

DESCRIPTION OF THE FIGURES

FIG. **1** illustrates an exemplary system for managing social reminders.

FIGS. **2**A-**2**C illustrate an exemplary social reminder.

FIGS. **3**A-**3**C illustrate an exemplary social reminder.

FIG. **4** illustrates an exemplary process for managing social reminders.

FIG. **5** illustrates a functional block diagram of an electronic device configured to manage social reminders.

DETAILED DESCRIPTION

In the following description, reference is made to the accompanying drawings in which it is shown by way of

illustration specific examples that can be practiced. It is to be understood that other examples can be used and structural changes can be made without departing from the scope of the various examples.

Attention is directed to techniques for providing reminders based on social interactions between users of electronic devices. These reminders may be referred to as social reminders. User instructions to create social reminder may be received through graphical user interface input and/or voice input. The instruction includes a social setting in which the electronic device should provide the reminder. The condition can be, for example, physical proximity with another person. For instance, an exemplary social reminder can be created in response to the instruction "create a reminder reminding me to ask Joe about the promised documents, the next time I see him." In this way, electronic devices can provide reminders based on social context, without relying on the a priori input of a specific date and/or time at which the reminder should be displayed. Social reminders are particularly helpful when it is infeasible to predict when the user will next see Joe.

FIG. **1** illustrates exemplary system **100** for providing social reminders in some embodiments. Exemplary system **100** includes user device **102** (or multiple user devices **102**) that can provide a user input interface or environment. User device **102** can include any of a variety of devices, such as a cellular telephone (e.g., smartphone), tablet computer, laptop computer, desktop computer, portable media player, wearable digital device (e.g., digital glasses, wristband, wristwatch, brooch, armbands, etc.), television, set top box (e.g., cable box, video player, video streaming device, etc.), gaming system, or the like. User device **102** can have display **112**. Display **112** can be any of a variety of displays, and can also include a touchscreen, buttons, or other interactive elements. In some embodiments, display **112** is incorporated within user device **102** (e.g., as in a touchscreen, integrated display, etc.). In some embodiments, display **112** is external to—but communicatively coupled to—user device **102** (e.g., as in a television, external monitor, projector, etc.).

User device **102** can include or be communicatively coupled to human interface device (HID) **114**, which can capture user-input (e.g., text input, touch input, voice input, etc.). In some embodiments, HID **114** is a keyboard. For example, HID **114** can be a virtual keyboard on a touchscreen capable of receiving text entry from a user (e.g., detecting character selections from touch). In another example, HID **114** is a virtual keyboard shown on a display (e.g., display **112**), and a pointer or other indicator is used to indicate character selection (e.g., indicating character selection using a mouse, remote control, pointer, button, gesture, eye tracker, etc.). In some embodiments, HID **114** is a handwriting recognition device. For example, HID **114** can include a touch sensitive device capable of recognizing handwritten characters. In some embodiments, HID **114** is a voice input device, for example a microphone.

User device **102** can also include processor **104**, which can receive text entry from a user (e.g., from HID **114**) and interact with other elements of user device **102** as shown. In one example, processor **104** can be configured to perform any of the methods discussed herein, such as creating and outputting social reminders. In other examples, processor **104** can cause data (e.g., entered text, user data, etc.) to be transmitted to server system **118** through network **116**. Network **116** can include any of a variety of networks, such as a cellular telephone network, WiFi network, wide area network, local area network, the Internet, or the like. Server system **118** can include a server, storage devices, databases,

and the like and can be used in conjunction with processor **104** to perform any of the methods discussed herein. For example, processor **104** can cause an interface to be provided to a user for create a reminder and can transmit some or all of the user input to server system **118**, and can cause reminders to be displayed on display **112**.

In some embodiments, user device **102** includes storage device **106**, memory **108**, reminders database **110**. Reminders database **110** may be stored on storage device **106**. The functions or methods discussed herein can be performed by a system similar or identical to system **100**. It should be appreciated that system **100** can include instructions stored in a non-transitory computer readable storage medium, such as memory **108** or storage device **106**, and executed by processor **104**. The instructions can also be stored and/or transported within any non-transitory computer readable storage medium for use by or in connection with an instruction execution system, apparatus, or device, such as a computer-based system, processor-containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions. In the context of this document, a "non-transitory computer readable storage medium" can be any medium that can contain or store the program for use by or in connection with the instruction execution system, apparatus, or device. The non-transitory computer readable storage medium can include, but is not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, or device, a portable computer diskette (magnetic), a read-only memory (ROM), an erasable programmable read-only memory (EPROM), a portable optical disc such as CD, CD-R, CD-RW, DVD, DVD-R, or DVD-RW, or flash memory such as compact flash cards, secured digital cards, USB memory devices, memory sticks, and the like.

It should be understood that system **100** is not limited to the components and configuration of FIG. **1**, but can include other or additional components in multiple configurations according to various embodiments. For example, user device **102** can include a variety of other mechanisms for receiving input from a user, such as an optical sensor, camera, gesture recognition sensor, proximity sensor, ambient light sensor, or the like. Additionally, the components of system **100** can be included within a single device, or can be distributed among multiple devices. For example, although FIG. **1** illustrates reminders database **110** as part of user device **102**, it should be appreciated that, in other embodiments, one or more parts of database **110** can be stored remotely as part of a remote storage system such as server system **118**.

Attention is now directed to an exemplary provision of social reminders, with reference to FIGS. **2**A-**2**C. As shown FIG. **2**A, electronic device **200** receives input **204**, from user **202**, instructing the device to create a reminder. In some embodiments, device **200** is user device **102** (FIG. **1**). Notably, the user's instructions **204** to create a reminder do not provide a specific time or date for the reminder to occur; rather, the instructions identify a social context in which the reminder should be triggered: namely, the device is to provide a reminder when user **202** meets someone named "Joe."

In the illustrated embodiment, user input **204** to electronic device **200** is provided verbally. U.S. Non-Provisional patent application Ser. No. 12/987,982, entitled "Intelligent Automated Assistant," filed Jan. 10, 2011, describes techniques for accepting verbal commands. The application is hereby incorporated-by-reference in its entirety for all purposes. In some embodiments, other types of input modalities, such as touchscreen input, are accepted for purposes of managing social reminders.

Also, even though user instructions **204** refer to social interactions with a person named Joe (who may be a phonebook contact), the underlying computing processes carried out by device **200** may rely on (among other things) interactions with electronic device(s) that are associated with and Joe. More specifically, in some embodiments, device **200** considers Joe to be present when an electronic device associated with Joe is detected. Restated, the presence of Joe's electronic device(s) is taken as a proxy for Joe's presence. In some embodiments, device **200** considers Joe to be present when actual detection of Joe's presence is made, such as through voiceprint identification as received through a microphone of device **200**.

Turning to FIG. **2**B, user **202** encounters Joe (user **212**) later in the day at the company cafeteria. The encounter may be a chance encounter, meaning that user **202** did not have prior knowledge of Joe's whereabouts. As device **200** (of user **202**) and Joe's electronic device **210** come into proximity, device **200** is able to detect and identify electronic device **210** as being associated with Joe. This determination may be made in various ways. For example, device **200** may recognize Joe as a phonebook contact who is associated with a cellular telephone number and/or an e-mail address. Device **210** may transmit (e.g., broadcast or other communicate) an identification token to device **200** that permits device **200** to determine that device **210** belongs to the phonebook contact known as Joe. In some embodiments, external electronic device **210** is user device **102** (FIG. **1**), and the relevant communication between devices **200** and **210** occurs over one or more communications modalities such as Bluetooth Low Energy and/or WiFi.

Turning to FIG. **2**C, as device **200** detects Joe's device **210**, electronic device **200** displays reminder **206**. Reminder **206** reminds user **202** to ask Joe about an upcoming meeting, in accordance with user instructions **204** depicted in FIG. **2**A. In this way, electronic device **200** provides user **202** with a relevant reminder, based on the social context of user **202** and Joe (user **212**) being physically proximate.

Attention is now directed to another exemplary provision of social reminders, with reference to FIGS. **3**A-**3**C. As shown in FIG. **3**A, electronic device **300** receives input **304** from user **302** instructing the device to remind user **302** and his daughter about bringing gym clothes to a gym event. In some embodiments, device **300** is device **102** (FIG. **1**). As shown in FIG. **3**B, when user **302** encounters external electronic device **310**—which is associated with his daughter (user **312**)—electronic device **300** performs two actions: First, electronic device **300** displays social reminder **306** alerting user **302** to remind his daughter about bringing gym clothes. Second, electronic device **300** transmits instructions to his daughter's electronic device **310**, instructing device **310** to create a reminder. As depicted in FIG. **3**C, this additional reminder **314** is displayed by the daughter's electronic device **310** on Friday, alerting her to bring her gym clothes. In this way, electronic device **300** is able to provide user **302** with a relevant reminder based on the context of meeting his daughter. In addition, electronic device **300** enables the daughter's electronic device **310** to provide a relevant reminder on the day of the relevant event.

Attention is now directed to FIG. **4**, which illustrates exemplary process **400** for providing social reminders. In some embodiments, process **400** is performed by electronic devices **200** and **300** to carry out the social reminder functionalities discussed above with reference to FIGS. **2**-**3**.

At block **402** of process **400**, input representing user instructions to provide a reminder in the future is received. The instructions identify a social context in which the reminder should be triggered. In some embodiments the instruction specifies a social context involving an entity. As used herein, an "entity" refers to a person or thing. In the above-described examples of FIGS. **2-3**, the social context is physical proximity with a person, such as Joe (user **212**). In another example, the instruction may be to "remind me to disconnect and take my AppleTV when I am near it." In this instance, the entity is the AppleTV device. Optionally, in response to receiving the instruction, a record representing the reminder is stored into a database such as reminder database **110** (FIG. **1**).

At block **404** of process **400**, the electronic device that is performing process **400** detects an external electronic device associated with the entity specified at block **402**. In some embodiments, the detection is made wirelessly via a direct communication link between the two devices, such as via a Bluetooth, Bluetooth Low Energy, ad hoc WiFi connection, and the like. In some embodiments, the detection is made over a shared network, such as a local area network having one or more WiFi access points. In some embodiments, the electronic device that is performing process **400** recognizes an external electronic device as being associated with a specified entity based on contacts information. For instance, in the example of FIGS. **2A-2C**, electronic device **200** may recognize "Joe" as a phonebook contact, possibly even a user-designated (e.g., favorite) contact. In that instance, the phonebook provides information such as telephone number and/or e-mail address usable to identify those devices of the contact. In some embodiments, association between an entity and a device is determined based on information being broadcasted by the device(s). For instance, a phone or network-enabled television set-top device may broadcast information usable to determine its identity, such as by broadcasting a universally unique identifier (UUID) or other suitable token.

At block **406**, responsive to detecting the external electronic device, a determination is made as to whether the external electronic device is within a threshold proximity. As used herein, "threshold proximity" refers to physical proximity. In some embodiments, physical proximity is determined based on distance between devices. Distance can be measured in various ways. In some examples, distance is measured by having the external electronic device emit sound at a certain loudness (e.g., sound pressure level, or SPL), and detecting how loudly (e.g., in terms of SPL) the emitted sound is received at the location of the electronic device, in order to determine the distance based on attenuation of the sound. In some examples, distance is measured by comparing GPS output as determined by two relevant devices. In some examples, distance is measured by obtaining location information from a location service, such as a location beacon and comparing the obtained location information against that obtained by other devices. Distances of one to twenty feet is generally useful as thresholds for deciding whether two people are physically proximate for purposes of social reminders.

In some embodiments, physical proximity is determined based on the ability of devices to communicate via limited-range communication modalities. For example, the Bluetooth Low Energy (BTLE) communication technology is commonly accepted as having a range of about 30 inches in some operational settings, and the Near Field Communication (NFC) technology is commonly accepted as having a range of about 5 inches in some operational settings. Two devices that are in communication via the BTLE or NFC protocols can be considered to be proximate for purposes of social reminders based on these understood ranges.

In some embodiments, physical proximity between two devices is determined by comparing environmental conditions as perceived by the devices. For example, both the electronic device (that is performing process **400**) and the external device can record their respective microphone inputs, and the recordings are then compared to determine if a common sound source is within the microphone range of both devices. In another example, both the electronic device (that is performing process **400**) and an external device can capture camera input, and the captured visual information are then compared to determine if a common object is present in the field of view of both devices. In these examples, the presence of common element(s) in the environment can be interpreted as indicators of physical proximity between the devices.

At block **408**, in accordance with a determination that the external electronic device is within the threshold proximity, the reminder is provided. In some embodiments, providing the reminder involves displaying a visual message alerting the user to the reminder, such as the display of reminder **206** (FIG. **2**C). In some embodiments, providing the reminder involves audibly informing the user of the reminder using a speaker of the electronic device. In some embodiments, providing the reminder involves providing a haptic output. Alternatively, in accordance with a determination that the external electronic device is not within the threshold proximity, processing returns to block **406** where the device awaits a more appropriate time for providing the reminder.

Optionally, at block **408**, an instruction is sent, from the electronic device that is performing process **400** to an external electronic device, instructing the external device to create a reminder. In some embodiments, this additional reminder is related to the initial reminder (displayed at block **408**) in that the two reminders at least partially overlap in content. For example, additional reminder **314** shown in FIG. **3**C is a follow-on reminder to reminder **306** shown in FIG. **3**B, and both reminders stemmed from user input **304** (FIG. **3**A).

Attention is now directed to additional, e.g., optional, aspects of social reminders. As discussed above, a social reminder may be created when a user identifies an entity (among other things) by name. The examples of FIGS. **2A-2C** are directed to this approach in that user **202** identifies user **212** as the subject of reminder **206** by the proper name of "Joe." In addition to this approach, in some embodiments, an entity that is associated with a reminder can be identified by profile information instead of by name. As used herein, "profile information" is information describing an entity other than the proper name (e.g., proper noun) of the entity. For example, profile information can indicate whether a user is a soccer fan. Put another way, it is possible to create a social reminder whereby an electronic device reminds its user "to refrain from mentioning the current score when I next encounter a soccer fan".

In some embodiments, as part of detecting the presence of an external electronic device, at least two communication modalities are utilized. Consider, for instance, that in order to reduce power consumption, an electronic device may forego detection using a second (subsequent) communication modality until a first (initial) communication modality has detected a relevant electronic device. In some examples, an electronic device uses GPS information to initially determine if it is near an external electronic device. When the GPS information indicates proximity, the electronic device

additionally powers up a NFC wireless communication module requesting further communication with the external electronic device. Restated, the NFC detection modality may remain (partially if not entirely) powered down until GPS information indicates that a likelihood that a nearby device is within NFC communication range.

In some embodiments, the first communication modality is predetermined. For example, when social reminders are provided using a cellular phone, the first communication modality may be a cellular-based modality because cellular communication circuitry is very likely to be consistently powered-on by the cellular phone. In another example the first communication modality can be Bluetooth or Bluetooth Low Energy as these protocols are generally accepted as having low power requirements. In some embodiments, the first communication modality is a changeable default modality. For example, when social reminders are provided using a smartphone having multiple communication capacities, the first communication modality may be cellular- or WiFi-based depending on whether the smartphone is in the airplane mode.

In some embodiments, the first and second communication modalities utilize application data objects to determining whether an external electronic device is likely nearby. The application data objects can be calendar data objects, for example, meaning that the electronic device can parse calendar entries to determine if a user of the electronic device is scheduled to meet with a particular contact at the current time. A finding that the users are scheduled to meet can be interpreted as increasing the likelihood of the two users being nearby. Use of the other data objects, such as emails and text messages, are also possible.

In some embodiments, the first and second communication modalities include a modality that relies upon comparing the Service Set Identifier (SSID) of a network connected to the electronic device against the SSID of a network connected to an external electronic device to determine if the two devices are connected to the same wireless network and thus likely proximate to one another.

In some embodiments, the first and second communication modalities include a modality that relies upon comparing the cell identification of a cellular phone network connected to the electronic device against the cell identification of a cellular phone network connected to an external electronic device to determine if the two devices are in the same cell and thus likely proximate to one another.

In some embodiments, the first and second communication modalities include a modality that relies on recorded sound. For example, an electronic device can record ambient sound using its microphone and determine if the recording contains an identifiable voice of a known contact. Voice identification (e.g., voiceprints) may be stored with or otherwise associated with phonebook contacts that are accessible to the electronic device. As another example, an external electronic device can emit an ultrasound signal that registers on the microphone input of an electronic device (if the two devices are sufficiently proximate) and be used by the electronic device to identify the external electronic device. Sound frequencies that are above generally-accepted human hearing thresholds at reasonable SPLs, such as frequencies higher than 15 kHz, can be used. Preferably, frequencies that are producible by mass-produced speakers and detectable by mass-produced microphones, yet outside of the human-hearing threshold at those producible SPLs, are employed (e.g., 15-20 kHz).

In some embodiments, the first and second communication modalities include a modality that relies on recorded images. For example, an electronic device can record images and/or video using its camera and determine whether the recorded imagery includes an identifiable face. Face recognition data, including data useful for SIFT-based image comparison technologies, may be associated with phonebook contacts accessible to the electronic device.

In some embodiments, the providing of a reminder includes sending a data object to the external electronic device. For example, a document or a contact vCard can be sent from the electronic device to the external electronic device. In some embodiments, the providing of a reminder includes activating a feature on the electronic device and/or the external electronic device. For example, both the electronic device and the external electronic device can begin to play the same song to support a music flash mob.

FIG. **5** shows a functional block diagram of exemplary electronic device **500** configured in accordance with the principles of the various described examples. The functional blocks of device **500** can be implemented by hardware, software, or a combination of hardware and software to carry out the principles of the various described examples, including those described with reference to process **400** of FIG. **4**. As shown, device **500** includes display unit **502**. Display unit **502** is configured to display interfaces for providing social reminders. User input interface **504** is configured to receive user input including instructions to create reminders. In some embodiments, user input interface **504** is integrated with display unit **502** to form a touchscreen for receiving user input via a virtual keyboard. In some embodiments, user input interface **504** includes a microphone for receiving verbal instructions from a user. Electronic device **500** further includes RF unit **506** which may have circuitry for communicating with external electronic devices using one or more communication modalities, such as cellular, WiFi, Bluetooth, Bluetooth Low Energy, NFC communications, and the like.

Display unit **502**, user input interface **504**, and RF unit **506** are coupled to processing unit **508** which includes an external device detection unit **510** and reminder unit **512**. Processing unit **508** can be configured to receive input from a user such as spoken input described with reference to FIGS. **2-3**. Upon receiving user instructions to create a reminder, reminder unit **512** may register into a storage location (such as reminders database **110** depicted in FIG. **1**) a corresponding record of reminder. Reminder unit **512** is also configured to trigger an output of the reminder at the appropriate time, e.g., by displaying a visual reminder on display unit **502**.

External device detection unit **510** is configured to aid in the determining when a reminder should be triggered. External device detection unit **510** may receive communication data from RF unit **506** indicating the presence of the nearby devices. External device detection unit **510** may be configured to determine whether an external device is physically proximate, using the techniques discussed above with reference to FIG. **4** (e.g., block **404** and **406**). For example, external device detection unit **510** may be configured to power up a second communication modality (for obtaining a finer determination of the proximity a nearby device) only after a first communication modality has identified the relevant device as being likely nearby. Based on information obtained through one or more communication modalities, external device detection unit **510** can indicate to reminder unit **512** that a relevant external electronic device is physically proximate.

Based in information received from external device detection unit **510**, reminder unit **512** may cause device **500** to

provide an indication of the reminder (e.g., by displaying a visual reminder on display unit **502**, by providing a haptic feedback, by providing audible output through a speaker (not shown) of device **500**, so forth). In some embodiments, reminder unit **512** may also cause device **500** to send an instruction to the detected external electronic device to create a corresponding reminder, such as reminder **313** described with respect to FIGS. **3A-3C**.

It is understood by persons of skill in the art that the functional blocks described in FIG. **5** can be combined or separated into sub-blocks to implement the principles of the various described examples. Therefore, the description herein optionally supports any possible combination or separation or further definition of the functional blocks described herein.

Although examples have been fully described with reference to the accompanying drawings, it is to be noted that various changes and modifications will become apparent to those skilled in the art (e.g., modifying any of the systems or processes discussed herein according to the concepts described in relation to any other system or process discussed herein). Such changes and modifications are to be understood as being included within the scope of the various examples as defined by the appended claims.

What is claimed is:

1. An electronic device comprising:

one or more processors;

memory storing computer-readable instructions, which when executed by the one or more processors, cause the one or more processors to:

receive input representing user instruction to provide a reminder in the future, the instruction identifying an entity; and

after receiving the input:

detect, by a microphone of the electronic device, an audio input;

identify, in the detected audio input, a voice corresponding to the entity; and

in response to identifying the voice, provide the reminder.

2. The device of claim **1**, wherein identifying the voice corresponding to the entity is performed using a voiceprint of the entity stored in association with the electronic device.

3. The device of claim **1**, wherein the computer-readable instructions further cause the one or more processors to:

determine whether an external electronic device associated with the entity is within a threshold proximity; and

in accordance with a determination that the external electronic device is within the threshold proximity, provide the reminder.

4. The device of claim **1**, wherein providing the reminder comprises causing the reminder to be provided on an external electronic device associated with the entity.

5. The device of claim **1**, wherein providing the reminder comprises providing an audio output.

6. The device of claim **1**, wherein providing the reminder comprises providing visual output on a display of the electronic device.

7. The device of claim **1**, wherein the computer-readable instructions further cause the one or more processors to:

send an instruction, from the electronic device to an external electronic device associated with the entity, instructing the external electronic device to create a second reminder corresponding to the reminder represented by the input received at the electronic device.

8. The device of claim **1**, wherein the computer-readable instructions further cause the one or more processors to:

identify, based on the input, a phonebook contact corresponding to the entity, wherein the voice corresponding to the entity is identified based on the identified phonebook contact.

9. The device of claim **1**, wherein the computer-readable instructions further cause the one or more processors to:

identify, based on the input, profile information corresponding to the entity, wherein the voice corresponding to the entity is identified based on the identified profile information.

10. The device of claim **1**, wherein the computer-readable instructions further cause the one or more processors to:

detect, using at least two communication modalities, an external electronic device associated with the entity; and

in response to detecting the external electronic device using the at least two communication modalities, provide the reminder.

11. The device of claim **10**, wherein the at least two communication modalities comprise a first and a second modality, and wherein detecting the external electronic device further comprises, at the electronic device:

detecting the external electronic device using the first modality; and

foregoing detection of the external electronic device using the second modality until the electronic device has detected the external electronic device using the first modality.

12. The device of claim **11**, wherein the first modality is selected from the group consisting of Bluetooth communication and WiFi communication.

13. The device of claim **10**, wherein detecting the external electronic device using the at least two communication modalities comprises:

comparing a first Service Set Identifier (SSID) name with a second SSID name, the first SSID name representing a current WiFi connection of the electronic device and the second SSID name representing a current WiFi connection of the external electronic device.

14. The device of claim **10**, wherein detecting the external electronic device using the at least two communication modalities comprises, at the electronic device:

detecting a sound emission from the external electronic device;

determining whether the sound emission is within a predetermined frequency range; and

in response to determining that the sound emission is within a predetermined frequency range, providing the reminder.

15. The device of claim **10**, wherein detecting the external electronic device using the at least two communication modalities comprises, at the electronic device:

detecting, by the microphone of the electronic device, a first audio input;

receiving data representing a second audio input, the second audio input detected by the external electronic device;

determining whether the first and the second audio inputs contain an audio component in common; and

in response to a determination that the first and the second audio inputs contain an audio component in common, providing the reminder.

16. A non-transitory computer-readable storage device comprising computer-readable instructions, which when executed by one or more processors of an electronic device, causes the one or more processors to: receive input representing user instruction to provide a reminder in the future,

the instruction identifying an entity; and after receiving the input: detect, by a microphone of the electronic device, an audio input; identify, in the detected audio input, a voice corresponding to the entity; and in response to identifying the voice, provide the reminder.

17. The non-transitory computer-readable storage medium of claim **16**, wherein identifying the voice corresponding to the entity is performed using a voiceprint of the entity stored in association with the electronic device.

18. The non-transitory computer-readable storage medium of claim **16**, wherein the computer-readable instructions further cause the one or more processors to:

determine whether an external electronic device associated with the entity is within a threshold proximity; and

in accordance with a determination that the external electronic device is within the threshold proximity, provide the reminder.

19. The non-transitory computer-readable storage medium of claim **16**, wherein providing the reminder comprises causing the reminder to be provided on an external electronic device associated with the entity.

20. The non-transitory computer-readable storage medium of claim **16**, wherein providing the reminder comprises providing an audio output.

21. The non-transitory computer-readable storage medium of claim **16**, wherein providing the reminder comprises providing visual output on a display of the electronic device.

22. The non-transitory computer-readable storage medium of claim **16**, wherein the computer-readable instructions further cause the one or more processors to:

send an instruction, from the electronic device to an external electronic device associated with the entity, instructing the external electronic device to create a second reminder corresponding to the reminder represented by the input received at the electronic device.

23. The non-transitory computer-readable storage medium of claim **16**, wherein the computer-readable instructions further cause the one or more processors to:

identify, based on the input, a phonebook contact corresponding to the entity, wherein the voice corresponding to the entity is identified based on the identified phonebook contact.

24. The non-transitory computer-readable storage medium of claim **16**, wherein the computer-readable instructions further cause the one or more processors to:

identify, based on the input, profile information corresponding to the entity, wherein the voice corresponding to the entity is identified based on the identified profile information.

25. The non-transitory computer-readable storage medium of claim **16**, wherein the computer-readable instructions further cause the one or more processors to:

detect, using at least two communication modalities, an external electronic device associated with the entity; and

in response to detecting the external electronic device using the at least two communication modalities, provide the reminder.

26. The non-transitory computer-readable storage medium of claim **25**, wherein the at least two communication modalities comprise a first and a second modality, and wherein detecting the external electronic device further comprises, at the electronic device:

detecting the external electronic device using the first modality; and

foregoing detection of the external electronic device using the second modality until the electronic device has detected the external electronic device using the first modality.

27. The non-transitory computer-readable storage medium of claim **26**, wherein the first modality is selected from the group consisting of Bluetooth communication and WiFi communication.

28. The non-transitory computer-readable storage medium of claim **26**, wherein detecting the external electronic device using the at least two communication modalities comprises:

comparing a first Service Set Identifier (SSID) name with a second SSID name, the first SSID name representing a current WiFi connection of the electronic device and the second SSID name representing a current WiFi connection of the external electronic device.

29. The non-transitory computer-readable storage medium of claim **25**, wherein detecting the external electronic device using the at least two communication modalities comprises, at the electronic device:

detecting a sound emission from the external electronic device;

determining whether the sound emission is within a predetermined frequency range; and in response to determining that the sound emission is within a predetermined frequency range, providing the reminder.

30. The non-transitory computer-readable storage medium of claim **25**, wherein detecting the external electronic device using the at least two communication modalities comprises, at the electronic device:

detecting, by the microphone of the electronic device, a first audio input;

receiving data representing a second audio input, the second audio input detected by the external electronic device;

determining whether the first and the second audio inputs contain an audio component in common; and

in response to a determination that the first and the second audio inputs contain an audio component in common, providing the reminder.

31. A method comprising:

at an electronic device:

receiving input representing user instruction to provide a reminder in the future, the user instruction identifying an entity; and

after receiving the input:

detecting, by a microphone of the electronic device, an audio input;

identifying, in the detected audio input, a voice corresponding to the entity; and

in response to identifying the voice, providing the reminder.

32. The method of claim **31**, wherein identifying the voice corresponding to the entity is performed using a voiceprint of the entity stored in association with the electronic device.

33. The method of claim **31**, further comprising:

determining whether an external electronic device associated with the entity is within a threshold proximity; and

in accordance with a determination that the external electronic device is within the threshold proximity, providing the reminder.

34. The method of claim **31**, wherein providing the reminder comprises causing the reminder to be provided on an external electronic device associated with the entity.

35. The method of claim **31**, wherein providing the reminder comprises providing an audio output.

36. The method of claim **31**, wherein providing the reminder comprises providing visual output on a display of the electronic device.

37. The method of claim **31**, further comprising:

sending an instruction, from the electronic device to an external electronic device associated with the entity, instructing the external electronic device to create a second reminder corresponding to the reminder represented by the input received at the electronic device.

38. The method of claim **31**, further comprising:

identifying, based on the input, a phonebook contact corresponding to the entity, wherein the voice corresponding to the entity is identified based on the identified phonebook contact.

39. The method of claim **31**, further comprising:

identifying, based on the input, profile information corresponding to the entity, wherein the voice corresponding to the entity is identified based on the identified profile information.

40. The method of claim **31**, further comprising:

detecting, using at least two communication modalities, an external electronic device associated with the entity; and

in response to detecting the external electronic device using the at least two communication modalities, providing the reminder.

41. The method of claim **40**, wherein the at least two communication modalities comprise a first and a second modality, and wherein detecting the external electronic device further comprises, at the electronic device:

detecting the external electronic device using the first modality; and

foregoing detection of the external electronic device using the second modality until the electronic device has detected the external electronic device using the first modality.

42. The method of claim **41**, wherein the first modality is selected from the group consisting of Bluetooth communication and WiFi communication.

43. The method of claim **40**, wherein detecting the external electronic device using the at least two communication modalities comprises:

comparing a first Service Set Identifier (SSID) name with a second SSID name, the first SSID name representing a current WiFi connection of the electronic device and the second SSID name representing a current WiFi connection of the external electronic device.

44. The method of claim **40**, wherein detecting the external electronic device using the at least two communication modalities comprises, at the electronic device:

detecting a sound emission from the external electronic device;

determining whether the sound emission is within a predetermined frequency range; and

in response to determining that the sound emission is within a predetermined frequency range, providing the reminder.

45. The method of claim **40**, wherein detecting the external electronic device using the at least two communication modalities comprises, at the electronic device:

detecting, by the microphone of the electronic device, a first audio input;

receiving data representing a second audio input, the second audio input detected by the external electronic device;

determining whether the first and the second audio inputs contain an audio component in common; and

in response to a determination that the first and the second audio inputs contain an audio component in common, providing the reminder.

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