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(54) **Title:** ADAPTIVE USER INTERFACE PANE OBJECTS

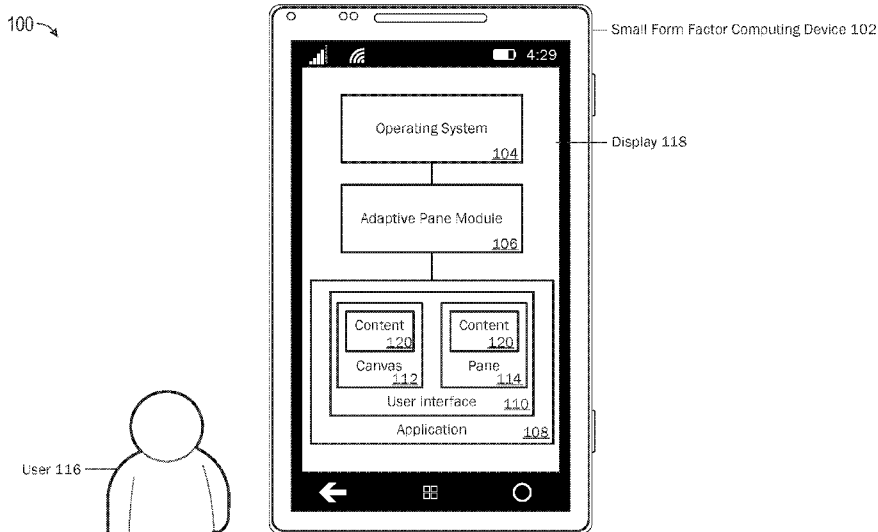


FIG. 1

(57) **Abstract:** Aspects of a system for automatically managing a pane in a user interface on a small form factor computing device include an adaptive pane module for determining when an event that affects the canvas size occurs, such as changing the display configuration or reorienting the display, which in turn affects pane management, or the opening or closing of a pane. The adaptive pane module manages the pane. After managing the pane, the system resizes the canvas and reflows the content as appropriate for a small form factor computing device.

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ADAPTIVE USER INTERFACE PANE OBJECTS

BACKGROUND

[0001] Users are increasingly using small form factor computing devices, for example, mobile phones, for various computing applications. Small form factor computing devices typically have a screen or display size that is a fraction of the screen size of larger form factor devices, for example, tablet computing devices, laptops, desktop computers, etc. Many user interfaces employ panes to expose application functionality and information to users. Panes are often dedicated to a specific feature or function of an application. When a user performs a task utilizing a feature or function supported by a pane, the pane is added to the user interface. In the user interface, the panes share space with the application canvas, which holds the primary application content. While useful, panes reduce the amount of space available for the application canvas. User interfaces that are designed for larger form factor devices may comprise panes that can dominate the user interface on a small form factor computing device.

BRIEF SUMMARY

[0002] This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description section. This summary is not intended to identify key features or essential features, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

[0003] Aspects of a system for automatically managing panes in a user interface on a small form factor computing device include a computing device having at least a processing device, a memory, and a display. The system determines when an event that affects pane management occurs, such as selecting a feature or function supported by a pane, reorienting the display, or closing of a pane. After managing a pane display, the system resizes the canvas and reflows and/or zooms the content as appropriate for a small form factor computing device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Further features, aspects, and advantages of the present disclosure will become better understood by reference to the following figures, wherein elements are not to scale so as to more clearly show the details and wherein like reference numbers indicate like elements throughout the several views:

FIGURE 1 is a block diagram illustrating a system for automatically managing panes in a user interface on a small form factor computing device;

FIGURE 2 is a flow chart showing general stages involved in an example method for automatically managing a pane in a user interface on a small form factor computing device;

FIGURE 3A is a screenshot illustration of an example partial screen pane displayed in a word processing application user interface on a small form factor computing device;

FIGURE 3B is a screenshot illustration of an example full screen pane with a keyboard overlay displayed in a word processing application user interface on a small form factor computing device;

FIGURE 3C is a screenshot illustration of an example partial screen pane displayed in a spreadsheet application user interface on a small form factor computing device;

FIGURE 3D is a screenshot illustration of an example full screen pane with a keyboard overlay displayed in a spreadsheet application user interface on a small form factor computing device;

FIGURE 3E is a screenshot illustration of an example partial screen pane displayed in a spreadsheet application user interface on a small form factor computing device in a landscape orientation;

FIGURE 3F is a screenshot illustration of an example full screen pane with a keyboard overlay displayed in a spreadsheet application user interface on a small form factor computing device in a landscape orientation;

FIGURE 3G is a screenshot illustration of an example partial screen pane displayed in a spreadsheet application user interface on a small form factor computing device;

FIGURE 3H is a screenshot illustration of an example partial screen pane displayed in a spreadsheet application user interface on a small form factor computing device, wherein a portion of the application chrome is pushed off the screen to provide maximal room for the application canvas and the pane;

FIGURE 3I is a screenshot illustration of an example partial screen pane displayed in a spreadsheet application user interface on a small form factor computing device;

FIGURE 3J is a screenshot illustration of an example partial screen pane displayed on a spreadsheet application user interface on a small form factor computing

device prior to a user interface size change event (in a portrait orientation) and after the user interface size change event (in a landscape orientation);

FIGURE 3K is an illustration of an example partial screen pane displayed on a small form factor computing device in portrait orientation;

5 **FIGURE 3L** is an illustration of an example full screen pane with a keyboard overlay displayed on a small form factor computing device in portrait orientation;

FIGURE 3M is an illustration of an example full screen pane with a keyboard overlay displayed on a small form factor computing device in portrait orientation;

10 **FIGURE 3N** is an illustration of an example full screen pane with a keyboard overlay displayed on a small form factor computing device in portrait orientation,;

FIGURE 3O is an illustration of an example partial screen pane displayed on a small form factor computing device in portrait orientation, wherein a plurality of quick commands are displayed in pane header;

15 **FIGURE 3P** is an illustration of an example partial screen pane displayed on a small form factor computing device in landscape orientation;

FIGURE 3Q is an illustration of an example full screen pane with a keyboard overlay displayed on a small form factor computing device in landscape orientation;

FIGURE 4 is a screenshot illustration of an example partial screen transient pane displayed on a small for factor computing device;

20 **FIGURE 5** is an illustration of an example partial screen persistent pane displayed on a small for factor computing device;

FIGURE 6 is an illustration of an example pane close event via a selection of a close command in a persistent pane;

25 **FIGURE 7** is an illustration of an example pane close event via a selection of a close command in a persistent pane;

FIGURE 8 is an illustration of an example pane close event via a selection of a cancel command in a persistent pane;

FIGURE 9 is an illustration of an example pane close event via a selection of a commit command in a persistent pane;

30 **FIGURE 10** is an illustration of an example pane close event via a selection of a back or drill out command in a full screen persistent pane;

FIGURE 11 is an illustration of an example pane close event via a selection of an operating system back command;

FIGURE 12 is a table including various close pane event scenarios;

FIGURE 13 is an illustration of a document list displayed in a task pane on a tablet computing device versus in a full screen pane on a small form factor computing device;

5 **FIGURE 14** is an illustration of an application or file menu displayed in a task pane on a tablet computing device versus in a full screen pane on a small form factor computing device;

FIGURE 15 is an illustration of a drilldown menu displayed in multiple panes on a tablet computing device versus in a single full screen pane on a small form factor computing device;

10 **FIGURE 16** is an illustration of an edit/share list displayed in a task pane on a tablet computing device versus in a full screen pane on a small form factor computing device;

FIGURE 17 is an illustration of the full screen pane of **FIGURE 16** with a keyboard overlay displayed on a small form factor computing device;

15 **FIGURES 18A-C** illustrate an example pane management sequence for an application running on a small form factor computing device;

FIGURES 19A-F illustrate another example pane management sequence for an application running on a small form factor computing device;

20 **FIGURES 20A-D** illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 21A-C illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 22A-E illustrate another example pane management sequence for an application running on a small form factor computing device;

25 **FIGURES 23A-F** illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 24A-F illustrate another example pane management sequence for an application running on a small form factor computing device;

30 **FIGURES 25A-F** illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 26A-C illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 27A-C illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 28A-C illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 29A-D illustrate another example pane management sequence for an application running on a small form factor computing device;

5 **FIGURES 30A-C** illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 31A-B illustrate a pane management sequence associated with scrolling content in a scrollable content area on a small form factor computing device;

10 **FIGURE 32** illustrates a pane management sequence associated with scrolling content in a scrollable content area on a small form factor computing device;

FIGURES 33A-C illustrate another example pane management sequence for an application running on a small form factor computing device;

FIGURES 34A-C illustrate another example pane management sequence for an application running on a small form factor computing device;

15 **FIGURE 35** is a flow chart showing general stages involved in an example method for an example pane close event via a selection of an operating system back command on a small form factor computing device;

FIGURE 36 is a block diagram illustrating one example of the physical components of a computing device;

20 **FIGURE 37A** and **37B** are simplified block diagrams of a mobile computing device; and

FIGURE 38 is a simplified block diagram of a distributed computing system.

DETAILED DESCRIPTION

[0005] Various aspects are described more fully below with reference to the
25 accompanying drawings, which form a part hereof, and which show specific exemplary aspects. However, aspects may be implemented in many different forms and should not be construed as limited to the aspects set forth herein; rather, these aspects are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the aspects to those skilled in the art. Aspects may be practiced as methods, systems, or
30 devices. Accordingly, aspects may take the form of a hardware implementation, an entirely software implementation or an implementation combining software and hardware aspects. The following detailed description is, therefore, not to be taken in a limiting sense.

[0006] Aspects of a system for automatically managing panes in a user interface on a small form factor computing device are described herein and illustrated in the accompanying figures. Aspects of the disclosure are described in terms of a traditional user interface layout merely to provide a standard frame of reference; however, the disclosure is not limited to traditional user interface layouts. As such, usage of a particular orientation (e.g., horizontal, vertical, landscape, portrait, etc.), direction (e.g., left, right, up down), position (e.g., top, bottom, side, above, below, front, back, etc.), and dimension (e.g., height, width, etc.) should not be construed as limiting to that particular orientation, direction, position, or dimension.

[0007] **FIGURE 1** is a block diagram illustrating a system for automatically managing a pane in a user interface on a small form factor computing device **102**. The system **100** includes an adaptive pane module **106** to manage the display of a pane **114** in a user interface **110** of an application **108** based on the display properties of the device being used (e.g., small form factor computing device **102** versus a tablet computing device, laptop computing device, desktop computing device, etc.), properties of the pane **114** (e.g., title, chrome, alignment type, entry behavior, width, etc.), and the current user interface properties (e.g., application user interface **110** size, canvas size, displayed keyboard, etc.). The adaptive pane module **106**, user interface **110**, and application **108** are executed on the small form factor computing device **102**. The small form factor computing device **102** may be one of various types of computing devices (e.g., a mobile communication device, an entertainment appliance, a wearable device, or other type of small form factor computing device) for executing applications for performing a variety of tasks.

[0008] A user **116** utilizes the application **108** on the small form factor computing device **102** for a variety of tasks, for example, to write, calculate, draw, organize, prepare presentations, send and receive electronic mail, take and organize notes, make music, and the like. According to an aspect, applications **108** include thick client applications stored locally on the computing device. According to another aspect, applications **108** include thin client applications (i.e., web applications) that reside on a remote server and are accessible over a network, such as the Internet or an intranet. According to an aspect, a thin client application is hosted in a browser-controlled environment or coded in a browser-supported language and reliant on a common web browser to render the application **108** executable on the small form factor computing device **102**. The small

form factor computing device **102** is configured to receive content for presentation on a display **118**. According to an aspect, the display is a touch screen display.

[0009] The application **108** is configured to enable a user **116** to use a pointing device (e.g., a pen/stylus, etc.) and/or to utilize sensors (e.g., touch sensor, gesture sensor, accelerometer, gyroscope, tilt sensor, etc.) on the small form factor computing device **102** to interact with content **120** via a number of input modes. According to an aspect, content **120** is displayed on an application canvas **112**. According to another aspect, content **120** is displayed in a selectively displayable pane **114**. According to another aspect, a plurality of selectable functionality controls and elements are displayed in a selectively displayable pane **114**. The adaptive pane module **106** automatically controls the display of a pane **114** to provide a user interface that is visually and functionally optimized for a small form factor computing device **102**.

[0010] According to aspects, automatically managing panes **114** increases computational efficiency and decreases an amount of time it takes to complete various tasks by providing a visually and functionally optimized user interface **110** for a small form factor computing device **102**. Further, computing resources are conserved by reducing a number of inputs that must be processed to perform tasks such as manually managing panes **114**.

[0011] **FIGURE 2** is a flow chart showing general stages involved in an example method **200** for automatically managing a pane in a user interface on a small form factor computing device **102**. The method **200** begins with an event that affects pane management, such as opening or closing a pane **114**, changing the orientation of the small form factor computing device **102**, or other event. For example, selection of a functionality displayed in a document or in a user interface (UI) element triggers an open pane event. When such an event occurs, a size check operation **202** collects information about the screen size of the device **102**. For example, the operating system **104** measures the size of the display **118**, and provides information to the adaptive pane module **106** indicating the size of the display **118** and that the device is a small form factor computing device **102**. In some examples, an application user interface **110** size (e.g., a size of an area available to the application UI **110**) is identified and provided to the adaptive pane module **106**. According to an aspect, in some examples, the size of the application user interface **110** is equal to the size of the display **118**. In other examples, operating system UI elements (e.g., a back button, search button, home button, system tray, etc.) take up a portion of the display **118**, and thus reduce the size of the application user interface **110**.

According to an aspect, the application **108** provides information to the adaptive pane module **106** indicating a protected canvas size specifying an application-specific minimum canvas size to ensure that a meaningful amount of user content remains visible. For example, if a call is made to open a specific pane **114**, and the pane properties for the specific pane **114** govern that the specific pane **114** is to be displayed as a partial screen pane (i.e., covers a portion of the display **118**), the size of the canvas **112** cannot be reduced below the protected canvas size. According to an aspect, the protected canvas size is specified in a single dimension (e.g., height). For example, a protected canvas height is specified to protect against encroachment by a partial screen pane **114**.

10 **[0012]** The method **200** continues with a response that depends, at least in part, upon the type of event that occurs. A decision operation **204** determines the type of event that occurred (e.g., open pane, close pane, resize pane). If opening of a pane **114** is requested, a pane property check operation **208** runs through the user interface properties (e.g., whether a keyboard is to be displayed, etc.), pane properties (e.g., alignment type, entry behavior, title, chrome, and width), and pane contents.

15 **[0013]** Alignment type specifies whether a pane **114** is intended to be full screen or partial screen. According to an example, a partial screen pane is aligned to the bottom of the display **118**. According to an aspect, with a small form factor computing device **102**, the intent is to not subdivide the limited screen space unless it is beneficial to the user **116**, for example, in instances where it is beneficial for the user **116** to see or access content **120** in the canvas **112** while the pane **114** is displayed.

20 **[0014]** Entry behavior specifies whether a pane **114** is intended to be persistent or transient. A persistent (i.e., sticky) pane is intended to coexist with the canvas **112** and is docked in the user interface **110**. A persistent pane remains until manually dismissed by the user **116** (e.g., using a close widget or a commit/dismiss command) or programmatically closed by the application **108**. A transient pane exists above the canvas **112**. A transient (i.e., light dismiss or popover) pane remains until a selection is made, when the back button is used, or when the user **116** selects an area outside of the pane **114**. According to an aspect, entry behavior influences treatment of the pane **114** by the adaptive pane module **106**.

25 **[0015]** According to an aspect, a title property specifies whether a title bar for the pane **114** is displayed and the commands that are displayed in the title bar. For example, various pane header configurations are illustrated in **FIGURES 3K-3Q**.

[0016] According to another aspect, a chrome property specifies attributes of the application chrome (i.e., the visible graphical interface features of an application **108** including graphical elements that may be used to interact with the application). For example the chrome property may specify a size of a document title, which commands are displayed in the chrome (e.g., close command, back button, expand/collapse widget, etc.), padding, and whether a portion of the application chrome is moved off the user interface **110** to maximize space in the user interface **110** for the pane **114** and the canvas **112**.

[0017] According to another aspect, a width property specifies for the pane **114** to adapt to the width of the application user interface **110**. The pane property check operation **208** includes a determination of whether the new pane **114** may be added while preserving the protected canvas size. For example if the protected canvas size cannot be preserved, the new pane **114** may be opened as a full-screen pane.

[0018] Continuing with the method **200**, an open pane operation **210** opens the new pane **114** as either a full screen pane or a partial screen pane according to the pane properties (e.g., alignment type, entry behavior, title, chrome, and width). For example, if the pane **114** is a partial screen pane, the partial screen pane is opened as either a persistent pane or a transient pane according to the entry behavior pane property. A canvas reconfiguration operation **212** resizes the canvas and reflows and/or zooms the content **120** as appropriate.

[0019] Returning to the event type decision **204**, if a close pane event occurs, a close pane operation **206** closes the pane **114** freeing up space in the user interface **110**. A close pane event occurs in response to an input from the user **116** or from the system. For example, a close event may occur when a user **116** selects a close command **316** pane property check operation **208**, for example, as illustrated in **FIGURES 6** and **7**. According to another example, a close pane event occurs when a user **116** selects a cancel command **314**, for example, as illustrated in **FIGURE 8**. According to another example, a close pane event occurs when a user **116** selects a commit command **312**, for example, as illustrated in **FIGURE 9**. According to another example, a close pane event occurs when a user **116** selects a back/drill-out command **1002**, for example, as illustrated in **FIGURE 10**. According to another example, a close pane event occurs when a user **116** selects an operating system back command **1102**, for example, as illustrated in **FIGURE 11**. According to another example, a close pane event occurs when a user **116** selects in an area outside of a transient pane. According to another example, a close pane event occurs when the application **108** programmatically closes the pane **114**. The method **200**

continues to the canvas reconfiguration operation **212**, and resizes the canvas **112** and reflows and/or zooms the content **120** as appropriate.

[0020] A table **1200** is illustrated in **FIGURE 12**, which describes various close pane event scenarios. For example, in a pane **114** comprising text entry or multiple selections and where a second action is needed to complete a flow, a commit command **312** (e.g., “done” command, “insert” command, etc.) and a cancel command **314** is provided, such as in **FIGURE 8**. Accordingly, the user **116** is enabled to either save or discard changes. As another example, in a pane **114** comprising text entry where a user **116** needs to navigate after making changes (e.g., entering a comment), only a commit command **312** may be displayed, such as in **FIGURE 9**. As another example, in a pane **114** that includes insta-commit changes, such as settings selections, where the user **116** needs to navigate after making changes, a back/drill-out command **1002** may be displayed, for example, as illustrated in **FIGURE 10**. As another example, in persistent pane **114**, which may be a partial-screen pane or a full-screen pane, a close command **316** may be provided, such as in **FIGURES 6** and **7**.

[0021] Continuing with the method **200** illustrated in **FIGURE 2**, after the close pane operation **206**, a canvas reconfiguration operation **212** resizes the canvas and reflows and/or zooms the content **120** as appropriate.

[0022] Returning to the event type decision **204**, if a user interface size change event occurs, the method **200** continues to a UI size change direction determination **214**. A user interface size change event can occur independently of opening or closing a pane **114**. According to an aspect, a user interface size change event is caused by reconfiguration of the display **118** (e.g., changing the orientation of the display **118**). During the user interface size change direction determination, the adaptive pane module **106** determines whether the small form factor computing device **102** has been repositioned from a portrait orientation to a landscape orientation, or from a landscape orientation to a portrait orientation. The method **200** advances to a resize pane operation **216**, where a currently displayed pane **114** is resized according to the user interface size change event. According to an aspect, the pane **114** adapts to the width of the application user interface **110**. The pane **114** is displayed as either a full screen pane or a partial screen pane according to the pane properties. If the pane **114** is a partial screen pane, the partial screen pane is opened as either a persistent pane or a transient pane according to the pane properties. In some examples, sizing the pane **114** comprises maintaining a minimum size of the pane **114** by limiting the number of persistent panes to one persistent pane that can be displayed in the

application user interface **110** at a time, wherein the size of the pane is a percentage of the size of the display **118**.

[0023] The method **200** continues to a canvas reconfiguration operation **212**, where the adaptive pane module **106** resizes the canvas **112** and reflows and/or zooms the content **120** as appropriate. An example of a user interface size change event is illustrated in **FIGURE 3J**.

[0024] Referring now to **FIGURES 3A-3J**, various screenshot illustrations of example panes **114** displayed in a user interface **110** on a small form factor computing device **102** are provided. According to an aspect and as illustrated in **FIGURE 3A**, in response to a pane management event, in this example, an open pane event, the adaptive pane module **106** updates the application user interface **110** to display a pane **114** sized in accordance with the small form factor computing device **102** and a document (content **120**) displayed in the canvas **112** sized in accordance with the small form factor computing device **102**. For example, the open pane event is triggered by a selection of a content item (e.g., an indication of a feature or function) associated with the pane **114**. In the illustrated example, the open pane event is caused by a selection of a text in the document displayed in the canvas **112**, wherein the selection is associated with a comment. According to an aspect, the pane **114** includes content **120** and functionality for interaction therewith. In the illustrated example, the content **120** includes the comment associated with the selected text. As mentioned above, the adaptive pane module **106** updates the application user interface **110** to display the document (content **120**) in the canvas **112** sized in accordance with the small form factor computing device **102**. For example, the canvas **112** is resized to coexist with the pane **114** while maintaining the protected canvas size to provide contextual information relating to the content and functionality displayed in the pane **114**. The pane **114** is sized to coexist with the canvas **112**, for example, as a partial screen pane **302** aligned to the bottom portion of the user interface **110**.

[0025] Additionally, the adaptive pane module **106** updates the application user interface **110** to display a pane header **304** comprising a plurality of quick commands **308** for functionalities associated with the pane **114** and displayed along the top edge of the pane **114**. According to an aspect, the adaptive pane module **106** updates the application user interface **110** to display a palette hint command **318**. Selection of a palette hint command **318** triggers an open pane event, where the adaptive pane module **106** updates the application user interface **110** to display a palette pane **324** (which are described below

and are illustrated in **FIGURES 21A, 21C, 22A, 22E, 23A-E, 24A-E, 25A-E, 26A-C, and 27C**). In displaying a palette pane **324**, the adaptive pane module **106** sizes the palette pane **324** in accordance with a small form factor computing device **102** and includes a display of palette items that may be selected by a user **116** to add a functionality, capability, or element to a document (i.e., content **120**) displayed in a canvas **112**.
5 According to an aspect, a palette pane **324** may include one or more palette pane selection items, which when selected by a user **116**, cause a display of a lower level or child palette pane **324** in a hierarchy of palette panes **324**. A palette pane **324** may include only palette items, only palette pane selection items, or a combination of palette items and palette pane
10 selection items.

[0026] According to an aspect and as illustrated in **FIGURE 3A**, the adaptive pane module **106** includes functionality to eject a portion of the application chrome off the screen, for example, the application header **320**, to provide maximal room for the application canvas **112** and the partial screen pane **302**. According to an example, if a pane
15 **114** is a persistent partial screen pane, the adaptive pane module **106** updates the application user interface **110** to resize the canvas **112** and eject the application header **320**; if a pane **114** is a persistent full screen pane, the adaptive pane module **106** updates the application user interface **110** to cover the canvas **112** and the application header **320** with the full screen pane; and if a pane **114** is a transient partial screen pane, the adaptive
20 pane module **106** updates the application user interface **110** to cover a bottom portion of the canvas with the partial screen pane **302**, wherein the application header **320** remains displayed in the application user interface **110**.

[0027] As illustrated in **FIGURE 3B**, in response to a pane management event, in this example, an open pane event triggered by a selection of a content item relating to a
25 functionality associated with the pane **114**, the adaptive pane module **106** updates the application user interface **110** to display a pane **114** sized in accordance with the small form factor computing device **102**. In the illustrated example, a user **116** selects to edit the comment displayed in the pane **114** illustrated in **FIGURE 3A**, and the application user interface **110** is updated to display a full screen pane **310** with a keyboard **306** overlaying
30 a portion of the pane enabling the user **116** to edit the comment. According to an aspect, the full screen pane **310** covers the canvas **112**. As illustrated, the adaptive pane module **106** updates the application user interface **110** to display a pane header **304** comprising functionalities associated with the pane **114**, for example, a commit command **312** and a cancel command **314**.

[0028] The examples illustrated in **FIGURES 3A** and **3B** include word processing application user interfaces **110**. The examples illustrated in **FIGURES 3C-3J** include spreadsheet application user interfaces **110**. As illustrated in **FIGURE 3C**, in response to a pane management event, in this example, an open pane even triggered by a selection to view a comment associated with an element in the user interface (e.g., via a selection of a content item associated with a pane **114**), the adaptive pane module **106** updates the application user interface **110** to display a pane **114** sized in accordance with the small form factor computing device **102**, the pane **114** displaying content **120** (e.g., the comment) and functionalities (e.g., quick commands **308**) for interaction therewith. In the illustrated example, the opened pane **114** is a partial screen pane **302** aligned to the bottom portion of the user interface **110** displayed in a portrait orientation. In updating the application user interface **110** to display the pane **114**, the adaptive pane module **106** additionally resizes and reflows the canvas **112** to coexist with the pane **114** while maintaining the protected canvas size. Accordingly, the user interface **110** includes a display of contextual information relating to functional information displayed in the pane **114** (e.g., a portion of a spreadsheet including the element in the spreadsheet associated with the comment displayed in the pane **114**). As illustrated, the application header **320** remains displayed along the top of the canvas **112**. Additionally, the adaptive pane module **106** updates the application user interface **110** to display the pane header **304** comprising a plurality of quick commands **308** for functionalities associated with the comments pane **302**.

[0029] As illustrated in **FIGURE 3D**, in response to a pane management event, in this example, an open pane event triggered by a selection to interact with a functionality associated with the pane **114** (e.g., a user **116** selecting to edit the comment displayed in the pane **114** illustrated in **FIGURE 3C**), the adaptive pane module **106** updates the application user interface **110** to display a pane **114** sized in accordance with the small form factor computing device **102**. In the illustrated example, the application user interface **110** is updated to display a full screen pane **310** with a keyboard **306** overlaying a portion of the pane enabling the user **116** to edit the comment. According to an aspect, the full screen pane **310** covers the canvas **112**. Additionally, a commit command **312** is displayed in the pane **114**, which when selected, triggers a pane management event (i.e., a pane close event).

[0030] The examples illustrated in **FIGURES 3E** and **3F** show the application user interface **110** displayed in a landscape orientation sized in accordance with the small

form factor computing device **102**. With reference now to **FIGURE 3E**, in response to a pane management event, in this example, a pane open event triggered by a selection to view a comment associated with an element in the user interface, the adaptive pane module **106** updates the application user interface **110** to display a pane **114** sized in accordance with the small form factor computing device **102**, the pane **114** displaying content **120** (e.g., the comment) and functionalities (e.g., quick commands **308**) for interaction therewith. Like the example application user interfaces **110** displayed in a portrait orientation illustrated in **FIGURES 3A-3D** and described above, when the small form factor computing device **102** is in a landscape orientation, the user interface **110**, including the pane **114** and the canvas **112**, adapts to the width of the display **118**. Additionally, the canvas **112** maintains a protected canvas size, and the pane **114** is a partial screen pane **302** aligned to the bottom portion of the user interface **110** and includes a pane header **304** comprising one or more quick commands **308** for functionalities associated with the pane **114**. In the illustrated example, the application header **320** is pushed off the user interface **110** to provide maximal room for the application canvas **112** and the pane **114**.

[0031] The example illustrated in **FIGURE 3F** is similar to the example illustrated in **FIGURE 3D** except oriented in a landscape orientation. In response to a pane management event, in this example, an open pane event triggered by a selection to interact with a functionality associated with the pane **114** (e.g., a user **116** selecting to edit the comment displayed in the pane **114** illustrated in **FIGURE 3E**), the adaptive pane module **106** updates the application user interface **110** to display a pane **114** sized in accordance with the small form factor computing device **102**. As described above with respect to **FIGURE 3E**, when the small form factor computing device **102** is oriented in a landscape orientation, the adaptive pane module **106** updates the application user interface **110** to adapt to the width of the application user interface **110** in the display **118**, the application user interface **110** including a full screen pane **310** covering the canvas **112** and a keyboard **306** overlaying a portion of the pane enabling the user **116** to edit the comment. Additionally, a commit command **312** is displayed in the pane **114**, which when selected, causes a pane management event (i.e., a pane close event).

[0032] **FIGURES 3G, 3H, and 3I** include three examples of user interface **110** configurations generated by the adaptive pane module **106**. In response to a pane management event (e.g., an open pane event), the adaptive pane module **106** updates the application user interface **110** to display the pane **114** sized in accordance with the small

form factor computing device **102**, the pane **114** displaying content **120** (e.g., a comment) and functionality for interacting with the content **120**, and a canvas **112** displaying content **120** (e.g., a portion of a document) relating to the content displayed in the pane **114**. The canvas **112** is sized in accordance with the small form factor computing device **102** and maintains a protected canvas size. In the examples illustrated in **FIGURES 3G-3I**, functionalities, such as quick commands **308**, are displayed in an area along the bottom portion of the pane **114**. In the examples illustrated in **FIGURES 3G** and **3I**, the application header **320** is displayed in the canvas **112** and aligned to the top portion of the application **108**. In **FIGURE 3H**, the application header **320** is pushed off the screen to provide maximal room for the application canvas **112** and the pane **114**.

[0033] As illustrated in **FIGURE 3J**, in response to a user interface size change event triggered by changing the orientation of the small form factor computing device **102**, the adaptive pane module **106** updates the application user interface **110** to display the canvas **112** and the pane **114** sized in accordance with the small form factor computing device **102** and adapted to the width of the application user interface **110** in the display **118**. According to an aspect and as illustrated, in updating the application user interface **110** in response to the size change event, the adaptive pane module **106** ejects the application header **320** from the display **118** to maintain the protected canvas size while displaying the pane **114**.

[0034] **FIGURES 3K-3Q** are illustrations of various examples of application user interfaces configurations. **FIGURES 3K-3O** show various example configurations of panes **114** sized in accordance with the small form factor computing device **102** in a portrait orientation. For example, the example illustrated in **FIGURE 3K** shows a partial screen pane **302** coexisting with a canvas **112**. The partial screen pane **302** is a persistent pane aligned to the bottom of the application user interface **110** and includes scrollable content **322** and a pane header **304** aligned to the top of the pane **114** and including a close command **316**. The example illustrated in **FIGURE 3L** shows a full screen pane **310** with a keyboard **306** overlay. The pane **114** includes a pane header **304** including a close command **316**. The example illustrated in **FIGURE 3M** shows a full screen pane **310** with a keyboard **306** overlay. The pane **114** includes a pane header **304** including a plurality of functionality commands, for example, a commit command **312** and a cancel command **314**, similar to the example illustrated in **FIGURE 8**.

[0035] The example illustrated in **FIGURE 3N** shows a full screen pane **310** with a keyboard **306** overlay. The pane **114** includes a pane header **304** including a

functionality command, for example, a commit command **312**, similar to the example illustrated in **FIGURE 9**. The example configuration illustrated in **FIGURE 3O** shows a partial screen pane **302** including a pane header **304** comprising a plurality of quick commands **308** for functionalities associated with the pane. For example, the pane **114** may be a transient pane covering a portion of the canvas **112** until the pane is dismissed, similar to the example illustrated in **FIGURE 4**. **FIGURES 3P-3Q** show various example configurations of panes **114** sized in accordance with the small form factor computing device **102** in a portrait orientation. According to an aspect, the canvas **112** and the pane **114** adapt to the width of the application user interface **110** in the display **118**, and the contents **120** of the pane **114** and the canvas **112** reflow based on the rotation of the device **102**. In **FIGURE 3P**, the canvas **112** maintains a protected canvas size.

[0036] With reference now to **FIGURE 4**, a screenshot illustration of an example application user interface **110** updated by the adaptive pane module **106** to display a partial screen pane **302** covering a portion of a canvas **112** is shown. According to an aspect, the pane **114** is displayed as a transient (i.e., light dismiss or popover) pane. In some examples, a transient pane remains displayed until a selection is made (e.g., a selection of an “explore” command **404** or a “define” command **406**), when a back button is used, or when the user **116** selects an area outside of the pane **114**. In other examples, a transient pane remains displayed after a selection is made. For example, in response to a selection made by a user **116** to view insights relating to content **120** displayed in the canvas **112**, the adaptive pane module **106** updates the application user interface **110** to display a pane **114** sized in accordance with the small form factor computing device **102**, the pane comprising content **120** relating to content displayed in the canvas **112** and functionality for interacting with the content **120**. According to an aspect, the transient pane **114** is aligned to the bottom portion of the application user interface **110**.

[0037] With reference now to **FIGURE 5**, an example application user interface **110** comprising a canvas **112** and a pane **114** is illustrated. In the illustrated example, the pane **114** is a callout pane displayed as a partial screen pane **302** and sized in accordance with the small form factor computing device **102**. According to an aspect, the adaptive pane module **106** updates the user interface **110** to display the callout pane **302** as a persistent pane that remains displayed until manually dismissed by a user **116** (e.g., using the close command **316** or a commit/dismiss command) or programmatically closed by the application **108**. According to an example, a callout pane may include a gallery of selectable functionalities that can be applied to content **120** in the canvas **112**.

[0038] FIGURES 6-11 illustrate various examples of how a pane close event can be invoked. For example, FIGURE 6 is an example of a pane close event triggered via a selection of a close command 316 in a persistent pane 114 (e.g., a view comments pane) displayed in a spreadsheet application user interface 110; FIGURE 7 is an example of a pane close event triggered via a selection of a close command 316 in a persistent pane 114 (e.g., a view comments pane) displayed in a word processing application user interface 110; FIGURE 8 is an example of a pane close event triggered via a selection of a cancel command 314 in a full screen pane 310 (e.g., a hyperlink pane) with a keyboard 306 overlay; FIGURE 9 is an example of a pane close event triggered via a selection of a commit command 312 in a full screen pane 310 (e.g., an edit comments pane) with a keyboard 306 overlay; FIGURE 10 is an example of a pane close event triggered via a selection of a back or drill out command 1002 displayed in a full screen pane 310; and FIGURE 11 is an example of a pane close event triggered via a selection of an operating system back command 1102.

[0039] In response to a pane close event, the adaptive pane module 106 updates the user interface 110 in accordance with which command(s) (e.g., commit command 312, cancel command 314, close command 316, back/drill-out command 1002, operating system back command 1102) are displayed and selected. For example, when a commit command 312 and a cancel command 314 are displayed in a pane 114, and the commit command 312 is selected, any changes made by the user 116 are saved, and the adaptive pane module 106 updates the user interface 110 to navigate back to a previous display. If the cancel command 314 is selected, any changes made by the user 116 are discarded, and the adaptive pane module 106 updates the user interface 110 to navigate back to a previous display. If an operating system back command 1102 is selected, any changes made by the user 116 are discarded, and the adaptive pane module 106 updates the user interface 110 to navigate back to a previous display.

[0040] According to another example, when only a commit command 312 is displayed, for example, a done command, and the commit command 312 is selected, any changes made by the user 116 are saved, and the adaptive pane module 106 updates the user interface 110 to navigate back to a previous display. If the operating system back command 1102 is selected, any changes made by the user 116 are not affected, and the adaptive pane module 106 updates the user interface 110 to navigate back to a previous display.

[0041] According to another example, when a back command **1002** is displayed and selected, the adaptive pane module **106** updates the user interface **110** to navigate back to a previous display. If the operating system back command **1102** is selected, any changes made by the user **116** are not affected, and the adaptive pane module **106** updates the user interface **110** to navigate back to a previous display.

[0042] According to another example, when a close command **316** is displayed and selected, the adaptive pane module **106** updates the user interface **110** to navigate back to a previous display. If the operating system back command **1102** is selected, any changes made by the user **116** are not affected, and the adaptive pane module **106** updates the user interface **110** to navigate back to a previous display.

[0043] **FIGURES 13-17** show examples of how the adaptive pane module **106** manages the display of panes **114** on a tablet computing device **1302** as compared to on a small form factor computing device **102**. For example, as illustrated in **FIGURES 13, 14, and 16**, a pane **114** displayed in a user interface **110** on a larger form factor computing device, such as a tablet computing device **1302**, a laptop computing device, etc., may be aligned to a side of the user interface **110**; whereas on a small form factor computing device **102**, the adaptive pane module **106** updates the application user interface **110** to include a display of the pane **114** sized in accordance with the small form factor computing device **102**, for example, as a full screen pane **310**.

[0044] As illustrated in **FIGURE 15**, multiple panes **114** may be displayed in a user interface **110** on a larger form factor computing device, such as a tablet computing device **1302**, a laptop computing device, etc. For example, a drilldown menu may be displayed in a plurality of panes **114**. In contrast, on a small form factor computing device **102**, the adaptive pane module **106** updates the application user interface **110** to include a display of a single pane **114** sized in accordance with the small form factor computing device **102**, for example, a single full screen pane **310** with a back/drillout button **1002**.

[0045] As illustrated in **FIGURES 16 and 17**, in response to receiving an indication of an open pane event on a small form factor computing device **102**, the adaptive pane module **106** updates the user interface **110** to display a pane **114** sized in accordance with the small form factor computing device **102**. According to an aspect, when interaction with content **120** or functionality associated with the pane **114** includes input of information, for example, textual input, the adaptive pane module **106** updates the user interface **110** to display a keyboard **306** overlay as illustrated in **FIGURE 17**.

[0046] FIGURES 18-35 illustrate various example pane management sequences on a small form factor computing device 102. FIGURES 18A-C illustrate: a drill-in pane management sequence 1800 triggered by a selection to display contents of a history folder from a drilldown menu displayed in a full screen pane 310 (FIGURE 18A); an update of the user interface 110 to display a lower level pane in a hierarchy of panes (i.e., a child pane of the example pane illustrated in FIGURE 18A) as full screen pane 310 including content 120 associated with the selection and functionality for interacting with the content 120 (FIGURE 18B); selection of a document item from the history folder (i.e., content 120) displayed in a full screen pane 310 (FIGURE 18B), and an update of the user interface 110 to display the selected document item (i.e., content 120) in a full screen pane 310 (FIGURE 18C).

[0047] FIGURES 19A-F illustrate: an example pane management sequence 1900 triggered by a selection to edit a comment (i.e., content 120) displayed in a partial screen (view comments) pane 302 coexisting with a canvas 112 in the user interface 110 (FIGURE 19A); an update of the user interface 110 to display a full screen pane 310 including content 120 (e.g., comment) and functionality associated with interacting with the content 120, for example, including a keyboard overlay 306 for enabling a user 116 to edit/add a comment (FIGURE 19B); selection of a palette hint command 318 (FIGURE 19C); an update of the user interface 110 to display a palette pane 324 sized according to the small form factor computing device 102 and coexisting with the full screen pane 310 in the user interface 110 (FIGURE 19D); a selection of a commit command 312 (FIGURE 19E); a commitment of changes made, and an update of the user interface 110 to display a partial screen (view comments) pane 302 coexisting with a canvas 112 in the user interface 110 (FIGURE 19F).

[0048] FIGURES 20A-D illustrate: an example pane management sequence 2000 triggered by a selection to reply to a comment via a selection of a quick command 308 in a partial screen (view comments) pane 302 coexisting with a canvas 112 (FIGURE 20A); an update of the user interface 110 to display a full screen pane 310 including content 120 (e.g., the comment and a reply to the comment) and functionality associated with interacting with the content 120, for example, including a keyboard 306 overlay for enabling a user 116 to input a reply to the comment (FIGURE 20B); a selection of an operating system back command 1102 (FIGURE 20B); an update of the user interface 110 to drop the keyboard 306 overlay (FIGURE 20C); another selection of the operating system back command 1102 (FIGURE 20C); saving the new comment; and an update of

the user interface **110** to display the partial screen (view comments) pane **302** coexisting with the canvas **112** (**FIGURE 20D**), the partial screen pane **302** including a display of the new comment.

[0049] **FIGURES 21A-C** illustrate: an example pane management sequence **2100** triggered by a selection of a palette item **2102** displayed in a palette pane **324**, for example, an insert tab for inserting a hyperlink in a document (i.e., content **120**) displayed in the canvas **112** (**FIGURE 21A**); an update of the user interface **110** to display a full screen pane **310** including content **120** and functionality associated with the pane **114/310** (e.g., fields for entering text and a URL (universal resource locator) associated with the hyperlink to be inserted into the document, a keyboard **306** overlay for enabling a user **116** to input text and the URL, etc.) (**FIGURE 21B**); a selection of a commit command **312** (**FIGURE 21B**); insertion of the hyperlink into the document; and an update of the user interface **110** to display the canvas **112** coexisting with the palette pane **324** (**FIGURE 21C**).

[0050] **FIGURES 22A-E** illustrate: an example pane management sequence **2200** triggered by a selection of a palette item **2102** displayed in a palette pane **324** to insert a hyperlink into a document (i.e., content **120**) displayed in the canvas **112** (**FIGURE 22A**); an update of the user interface **110** to display a full screen pane **310** including content **120** and functionality associated with the pane **114/310** (e.g., fields for entering text and a URL (universal resource locator) associated with the hyperlink to be inserted into the document, a keyboard **306** overlay for enabling a user **116** to input text and the URL, etc.) (**FIGURE 22B**); receiving input from a user **116** and a selection of the operating system back command **1102** (**FIGURE 22C**); an update of the user interface **110** to drop the keyboard **306** (**FIGURE 22D**) from display; another selection of the operating system back command **1102** (**FIGURE 22D**); discarding changes made by the user **116** and an update of the user interface **110** to display the canvas **112** coexisting with the palette pane **324** (**FIGURE 22E**).

[0051] **FIGURES 23A-F** illustrate: an example pane management sequence **2300** triggered by a selection of a palette pane selection item **2304** (e.g., a size item) displayed in a palette pane **324**, wherein in the illustrated example, the palette pane selection item **2304** includes functionalities for modifying the size of an element **2302** (e.g., a shape) displayed in the canvas **112** (**FIGURE 23A**); an update of the user interface **110** to drill in or display a next level palette pane **324** (i.e., a child palette pane) in a hierarchy of palette panes **324**, wherein in the next level palette pane **324** includes a plurality of palette items

2102 associated with functionalities for modifying the size of the element 2302 (FIGURE 23B); a selection of a palette item 2102 (FIGURE 23B); an update of the user interface 110 to display a keyboard 306 in the user interface 110 and to shift the palette pane 324 above the keyboard 306 in the user interface 110 (FIGURE 23C); receiving input from the user 116 and a selection of the operating system back command 1102 (FIGURE 23D);
5 saving the changes made by the user 116 and updating the user interface 110 to modify the size of the element 2302 in the canvas 112 according to the input received from the user 116, dropping the keyboard 306, and shifting the palette pane 324 below the canvas 112 (FIGURE 23E); a selection of the operating system back command 1102 (FIGURE
10 23E); and an update of the user interface 110 to close the palette pane 324, resize the canvas 112 in accordance with the small form factor computing device 102, and reflow the contents 120 of the canvas 112 (FIGURE 23F).

[0052] FIGURES 24A-F illustrate: an example pane management sequence 2400 triggered by a selection of a palette pane selection item 2304 (e.g., a split cells item) displayed in a palette pane 324, wherein in the illustrated example, the palette pane selection item 2304 includes functionalities for splitting cells of an element 2402 (e.g., a table) displayed in the canvas 112 (FIGURE 24A); an update of the user interface 110 to drill in or display a next level palette pane 324 (i.e., a child palette pane) in a hierarchy of palette panes 324, wherein in the next level palette pane 324 includes a plurality of palette items 2102 associated with functionalities for splitting the cells in the table (i.e., element 2402) (FIGURE 24B); a selection of a palette item 2102 (FIGURE 24B); an update of the user interface 110 to display a keyboard 306 in the user interface 110 and to shift the palette pane 324 above the keyboard 306 in the user interface 110 (FIGURE 24C); receiving input from the user 116 and a selection of a commit command 312 (FIGURE
20 24D); saving the changes made by the user 116 and updating the user interface 110 to modify the element 2402 displayed in the canvas 112 according to the input received from the user 116, dropping the keyboard 306, and shifting the palette pane 324 below the canvas 112 (FIGURE 24E); a selection of the operating system back command 1102 (FIGURE 24E); and an update of the user interface 110 to close the palette pane 324,
25 resize the canvas 112 in accordance with the small form factor computing device 102, and reflow the contents 120 of the canvas 112 (FIGURE 24F).
30

[0053] FIGURES 25A-F illustrate: an example pane management sequence 2500 triggered by a selection of a palette pane selection item 2304 (e.g., a split cells item) displayed in a palette pane 324, wherein in the illustrated example, the palette pane

selection item **2304** includes functionalities for splitting cells of an element **2502** (e.g., a table) displayed in the canvas **112** (**FIGURE 25A**); an update of the user interface **110** to drill in or display a next level palette pane **324** (i.e., a child palette pane) in a hierarchy of palette panes **324**, wherein in the next level palette pane **324** includes a plurality of palette items **2102** associated with functionalities for splitting the cells in the table (i.e., element **2502**); a selection of a palette item **2102** (**FIGURE 25B**); an update of the user interface **110** to display a keyboard **306** in the user interface **110** and to shift the palette pane **324** above the keyboard **306** in the user interface **110** (**FIGURE 25C**); receiving input from the user **116** and a selection of the operating system back command **1102** (**FIGURE 25D**); a selection of the operating system back command **1102** and updating the user interface **110** to drop the keyboard **306** (**FIGURE 25D**); another selection of the operating system back command **1102**, discarding changes made by the user **116**, and updating the user interface **110** to shift the palette pane **324** below the canvas **112** (**FIGURE 25E**); and another selection of the operating system back command **1102**, and an update of the user interface **110** to close the palette pane **324**, resize the canvas **112** in accordance with the small form factor computing device **102**, and reflow the contents **120** of the canvas **112** (**FIGURE 25F**).

[0054] **FIGURES 26A-C** illustrate: an example pane management sequence **2600** triggered by a selection of a palette item **2102** displayed in a palette pane **324**, wherein in the illustrated example, the palette item **2102** is associated with a functionality for inserting a hyperlink into a document (i.e., content **120**) displayed in the canvas **112** (**FIGURE 26A**); an update of the user interface **110** to display a full screen pane **310** including content **120** and functionality associated with the pane **114/310** (e.g., fields for entering text and a URL (universal resource locator) associated with the hyperlink to be inserted into the document, a keyboard **306** overlay for enabling a user **116** to input text and the URL, etc.) (**FIGURE 26B**); a selection of a cancel command **314** (**FIGURE 26B**); and updating the user interface **110** to the previous state, where the keyboard **306** is dropped, and the palette pane **324** is displayed below the canvas **112** in the user interface **110** (**FIGURE 26C**).

[0055] **FIGURES 27A-C** illustrate: an example pane management sequence **2700** triggered by an input of text in an editable text box displayed in a full screen pane **310** and a selection of the operating system back command **1102** (**FIGURE 27A**); an update of the user interface **110** to drop the keyboard **306** (**FIGURE 27B**); another selection of the operating system back command **1102** (**FIGURE 27B**); discarding the changes (i.e.,

input), and an update of the user interface **110** to the previous state, where a palette pane **324** is displayed below the canvas **112** in the user interface **110** (**FIGURE 27C**).

[0056] **FIGURES 28A-C** illustrate: an example pane management sequence **2800** triggered by a selection of content **120** (e.g., a comment) displayed in a partial screen pane **302** (**FIGURE 28A**); an update of the user interface **110** to display a full screen pane **310** including content **120** (e.g., the comment and a reply to the comment) and functionality associated with interacting with the content **120**, for example, including a keyboard **306** overlay for enabling a user **116** to input a reply to the comment (**FIGURE 28B**); receiving input from a user **116** and a selection of a commit command **312** (**FIGURE 28B**); saving the new comment; and an update of the user interface **110** to display the partial screen (view comments) pane **302** coexisting with the canvas **112** (**FIGURE 28C**), the partial screen pane **302** including a display of the new comment.

[0057] **FIGURES 29A-D** illustrate: an example pane management sequence **2900** triggered by a selection of content **120** (e.g., a comment) displayed in a partial screen pane **302** (**FIGURE 28A**); an update of the user interface **110** to display a full screen pane **310** including content **120** (e.g., the comment and a reply to the comment) and functionality associated with interacting with the content **120**, for example, including a keyboard **306** overlay for enabling a user **116** to input a reply to the comment (**FIGURE 29B**); receiving input from a user **116** and a selection of the operating system back command **1102** (**FIGURE 29B**); an update of the user interface **110** to drop the keyboard **306** overlay (**FIGURE 29C**); another selection of the operating system back command **1102** (**FIGURE 29C**); saving the new comment; and an update of the user interface **110** to display the partial screen (view comments) pane **302** coexisting with the canvas **112** (**FIGURE 29D**), the partial screen pane **302** including a display of the new comment.

[0058] According to an aspect and as illustrated in the example pane management sequence **3000** in **FIGURES 30A-C**, when a user **116** selects a palette item **2102** associated with a functionality for receiving textual (or numerical) input, for example, an editable text box **3002**, the adaptive pane module **106** updates the user interface **110** to display the palette **324** above a keyboard **306**.

[0059] **FIGURES 31A-B** and **32** illustrate an example pane management sequence **3100** in response to a user **116** scrolling scrollable content **322** in a pane **114**. According to an aspect and as illustrated in **FIGURES 31A-B** and **32**, when a small form factor computing device **102** is in a landscape orientation and a user **116** is scrolling scrollable content **322** displayed in a pane **114**, the adaptive pane module **106** collapses the pane

header **304** (**FIGURE 31B**). When the scrolling stops, the adaptive pane module **106** updates the user interface **110** to display the pane header **304** (**FIGURE 32**).

[0060] **FIGURES 33A-C** illustrate an example pane management sequence **3300** in response to a selection of a back command **1002**. According to an aspect, selection of a back command **1002** navigates a user **116** back to a previous display regardless of whether or not a keyboard **306** is displayed in the user interface **110**. For example and as illustrated in **FIGURES 33A-C**, selections made in specific pane types, such as a pane displaying a settings menu, are instantly saved. In response to a selection of the back command **1002** (**FIGURE 33B**), the adaptive pane module **106** updates the user interface **110** to display the previously displayed pane **114** (**FIGURE 33C**).

[0061] **FIGURES 34A-C** illustrate an example pane management sequence **3400** in response to a selection of a close command **316**. According to an aspect, selection of a close command **316** navigates a user **116** back to a previous display. For example and as illustrated in **FIGURES 34A-C**, in response to a selection of the close command **316** displayed in a pane **114** (**FIGURE 34B**), the adaptive pane module **106** updates the user interface **110** to display the previously displayed palette **324** (**FIGURE 34C**).

[0062] **FIGURE 35** is a flow chart showing general stages involved in an example method **3500** for managing a pane close event on a small form factor computing device **102** triggered by a selection of an operating system back command **1002**. The method **3500** starts with a selection of the operating system back command **1002**.

[0063] In response to the selection of the operating system back command **1002**, a decision operation **3502** determines whether a pane **114** or a palette pane **324** is displayed in the user interface **110**. If the user interface **110** includes a palette pane **324** and a keyboard **306** is displayed, a keyboard drop operation **3504** drops the keyboard **306**, and updates the user interface **110** to display the palette pane **324** as a partial screen palette.

[0064] If the decision operation **3502** determines that the user interface **110** includes a pane **114**, a decision operation **3506** determines whether the keyboard **306** is displayed. If the keyboard **306** is displayed, a keyboard drop operation **3508** drops the keyboard **306**, and updates the user interface **110** to display the portion of the full screen pane **310** previously covered by the keyboard **306**. If the decision operation **3506** determines that the keyboard **306** is not displayed, a decision operation **3510** determines whether the pane **114** comprises a commit command **312** (e.g., a “done” command) or an action and cancel command **314**. If the pane **114** includes a commit command **312** (e.g., a “done” command), a close pane operation **3512** closes the pane **114** and saves any changes

that were made. If the decision operation **3510** determines that the pane **114** includes an action and cancel command **314**, a close pane operation **3514** closes the pane **114** and discards the any changes.

[0065] According to examples, pane configuration in a user interface of an application displayed on a small form factor computing device **102** is provided, a method for pane configuration comprising: displaying an application user interface **110** comprising functionality to interact with a document and a canvas **112** to display the document, wherein the functionality is displayed in an application header **320** or in the canvas **112**; receiving a selection of a functionality; and in response to the selection of the functionality, updating the application user interface **110** by: generating a pane **114** including content **120** and functionality for interaction therewith; sizing the pane **114** in accordance with the small form factor computing device **102** to maintain a minimum size of the canvas **112** for providing contextual information relating to the content **120** displayed in the pane **114**; and displaying the pane **114** sized for the small form factor computing device **102**.

[0066] In some examples, sizing the pane **114** comprises maintaining a minimum size of the pane **114** by limiting the number of persistent panes to one persistent pane that can be displayed in the application user interface **110** at a time, wherein the size of the pane is a percentage of the size of the display **118**.

[0067] While examples have been described in the general context of program modules that execute in conjunction with an application program that runs on an operating system on a computer, those skilled in the art will recognize that examples may also be implemented in combination with other program modules. Generally, program modules include routines, programs, components, data structures, and other types of structures that perform particular tasks or implement particular abstract data types.

[0068] The aspects and functionalities described herein may operate via a multitude of computing systems including, without limitation, desktop computer systems, wired and wireless computing systems, mobile computing systems (e.g., mobile telephones, netbooks, tablet or slate type computers, notebook computers, and laptop computers), hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, minicomputers, and mainframe computers.

[0069] In addition, according to an aspect, the aspects and functionalities described herein operate over distributed systems (e.g., cloud-based computing systems), where application functionality, memory, data storage and retrieval and various processing

functions are operated remotely from each other over a distributed computing network, such as the Internet or an intranet. According to an aspect, user interfaces and information of various types are displayed via on-board computing device displays or via remote display units associated with one or more computing devices. For example, user interfaces and information of various types are displayed and interacted with on a wall surface onto which user interfaces and information of various types are projected. Interaction with the multitude of computing systems with which aspects are practiced include, keystroke entry, touch screen entry, voice or other audio entry, gesture entry where an associated computing device is equipped with detection (e.g., camera) functionality for capturing and interpreting user gestures for controlling the functionality of the computing device, and the like.

[0070] **FIGURE 36-38** and the associated descriptions provide a discussion of a variety of operating environments in which examples are practiced. However, the devices and systems illustrated and discussed with respect to **FIGURES 36-38** are for purposes of example and illustration and are not limiting of a vast number of computing device configurations that are utilized for practicing examples, described herein.

[0071] **FIGURE 36** is a block diagram illustrating physical components (i.e., hardware) of a computing device **3600** with which examples of the present disclosure are practiced. In a basic configuration, the computing device **3600** includes at least one processing unit **3602** and a system memory **3604**. According to an aspect, depending on the configuration and type of computing device, the system memory **3604** comprises, but is not limited to, volatile storage (e.g., random access memory), non-volatile storage (e.g., read-only memory), flash memory, or any combination of such memories. According to an aspect, the system memory **3604** includes an operating system **3605** and one or more program modules **3606** suitable for running software applications **3650**. According to an aspect, the system memory **3604** includes the adaptive pane module **106**. The operating system **3605**, for example, is suitable for controlling the operation of the computing device **3600**. Furthermore, examples are practiced in conjunction with a graphics library, other operating systems, or any other application program, and is not limited to any particular application or system. This basic configuration is illustrated in **FIGURE 36** by those components within a dashed line **3608**. According to an aspect, the computing device **3600** has additional features or functionality. For example, according to an aspect, the computing device **3600** includes additional data storage devices (removable and/or non-removable) such as, for example, magnetic disks, optical disks, or tape. Such additional

storage is illustrated in **FIGURE 36** by a removable storage device **3609** and a non-removable storage device **3610**.

[0072] As stated above, according to an aspect, a number of program modules and data files are stored in the system memory **3604**. While executing on the processing unit **3602**, the program modules **3606** (e.g., adaptive pane module **106**) performs processes including, but not limited to, one or more of the stages of the method **200** illustrated in **FIGURE 2**. According to an aspect, other program modules are used in accordance with examples and include applications such as electronic mail and contacts applications, word processing applications, spreadsheet applications, database applications, slide presentation applications, drawing or computer-aided application programs, web browser applications, etc.

[0073] According to an aspect, examples are practiced in an electrical circuit comprising discrete electronic elements, packaged or integrated electronic chips containing logic gates, a circuit utilizing a microprocessor, or on a single chip containing electronic elements or microprocessors. For example, examples are practiced via a system-on-a-chip (SOC) where each or many of the components illustrated in **FIGURE 36** are integrated onto a single integrated circuit. According to an aspect, such an SOC device includes one or more processing units, graphics units, communications units, system virtualization units and various application functionality all of which are integrated (or “burned”) onto the chip substrate as a single integrated circuit. When operating via an SOC, the functionality, described herein, is operated via application-specific logic integrated with other components of the computing device **3600** on the single integrated circuit (chip). According to an aspect, aspects of the present disclosure are practiced using other technologies capable of performing logical operations such as, for example, AND, OR, and NOT, including but not limited to mechanical, optical, fluidic, and quantum technologies. In addition, examples are practiced within a general purpose computer or in any other circuits or systems.

[0074] According to an aspect, the computing device **3600** has one or more input device(s) **3612** such as a keyboard, a mouse, a pen, a sound input device, a touch input device, etc. The output device(s) **3614** such as a display, speakers, a printer, etc. are also included according to an aspect. The aforementioned devices are examples and others may be used. According to an aspect, the computing device **3600** includes one or more communication connections **3616** allowing communications with other computing devices **3618**. Examples of suitable communication connections **3616** include, but are not limited

to, RF transmitter, receiver, and/or transceiver circuitry; universal serial bus (USB), parallel, and/or serial ports.

[0075] The term computer readable media as used herein include computer storage media. Computer storage media include volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information, such as computer readable instructions, data structures, or program modules. The system memory **3604**, the removable storage device **3609**, and the non-removable storage device **3610** are all computer storage media examples (i.e., memory storage.) According to an aspect, computer storage media includes RAM, ROM, electrically erasable programmable read-only memory (EEPROM), flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other article of manufacture which can be used to store information and which can be accessed by the computing device **3600**. According to an aspect, any such computer storage media is part of the computing device **3600**. Computer storage media does not include a carrier wave or other propagated data signal.

[0076] According to an aspect, communication media is embodied by computer readable instructions, data structures, program modules, or other data in a modulated data signal, such as a carrier wave or other transport mechanism, and includes any information delivery media. According to an aspect, the term “modulated data signal” describes a signal that has one or more characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, radio frequency (RF), infrared, and other wireless media.

[0077] **FIGURES 37A** and **37B** illustrate a mobile computing device **3700**, for example, a mobile telephone, a smart phone, a tablet personal computer, a laptop computer, and the like, with which examples may be practiced. With reference to **FIGURE 37A**, an example of a mobile computing device **3700** for implementing the aspects is illustrated. In a basic configuration, the mobile computing device **3700** is a handheld computer having both input elements and output elements. The mobile computing device **3700** typically includes a display **3705** and one or more input buttons **3710** that allow the user to enter information into the mobile computing device **3700**. According to an aspect, the display **3705** of the mobile computing device **3700** functions as an input device (e.g., a touch screen display). If included, an optional side input element

3715 allows further user input. According to an aspect, the side input element 3715 is a rotary switch, a button, or any other type of manual input element. In alternative examples, mobile computing device 3700 incorporates more or less input elements. For example, the display 3705 may not be a touch screen in some examples. In alternative examples, the mobile computing device 3700 is a portable phone system, such as a cellular phone. According to an aspect, the mobile computing device 3700 includes an optional keypad 3735. According to an aspect, the optional keypad 3735 is a physical keypad. According to another aspect, the optional keypad 3735 is a “soft” keypad generated on the touch screen display. In various aspects, the output elements include the display 3705 for showing a graphical user interface (GUI), a visual indicator 3720 (e.g., a light emitting diode), and/or an audio transducer 3725 (e.g., a speaker). In some examples, the mobile computing device 3700 incorporates a vibration transducer for providing the user with tactile feedback. In yet another example, the mobile computing device 3700 incorporates input and/or output ports, such as an audio input (e.g., a microphone jack), an audio output (e.g., a headphone jack), and a video output (e.g., a HDMI port) for sending signals to or receiving signals from an external device.

[0078] FIGURE 37B is a block diagram illustrating the architecture of one example of a mobile computing device. That is, the mobile computing device 3700 incorporates a system (i.e., an architecture) 3702 to implement some examples. In one example, the system 3702 is implemented as a “smart phone” capable of running one or more applications (e.g., browser, e-mail, calendaring, contact managers, messaging clients, games, and media clients/players). In some examples, the system 3702 is integrated as a computing device, such as an integrated personal digital assistant (PDA) and wireless phone.

[0079] According to an aspect, one or more application programs 3750 are loaded into the memory 3762 and run on or in association with the operating system 3764. Examples of the application programs include phone dialer programs, e-mail programs, personal information management (PIM) programs, word processing programs, spreadsheet programs, Internet browser programs, messaging programs, and so forth. According to an aspect, the adaptive pane module 106 is loaded into memory 3762. The system 3702 also includes a non-volatile storage area 3768 within the memory 3762. The non-volatile storage area 3768 is used to store persistent information that should not be lost if the system 3702 is powered down. The application programs 3750 may use and store information in the non-volatile storage area 3768, such as e-mail or other messages

used by an e-mail application, and the like. A synchronization application (not shown) also resides on the system **3702** and is programmed to interact with a corresponding synchronization application resident on a host computer to keep the information stored in the non-volatile storage area **3768** synchronized with corresponding information stored at the host computer. As should be appreciated, other applications may be loaded into the memory **3762** and run on the mobile computing device **3700**.

[0080] According to an aspect, the system **3702** has a power supply **3770**, which is implemented as one or more batteries. According to an aspect, the power supply **3770** further includes an external power source, such as an AC adapter or a powered docking cradle that supplements or recharges the batteries.

[0081] According to an aspect, the system **3702** includes a radio **3772** that performs the function of transmitting and receiving radio frequency communications. The radio **3772** facilitates wireless connectivity between the system **3702** and the “outside world,” via a communications carrier or service provider. Transmissions to and from the radio **3772** are conducted under control of the operating system **3764**. In other words, communications received by the radio **3772** may be disseminated to the application programs **3750** via the operating system **3764**, and vice versa.

[0082] According to an aspect, the visual indicator **3720** is used to provide visual notifications and/or an audio interface **3774** is used for producing audible notifications via the audio transducer **3725**. In the illustrated example, the visual indicator **3720** is a light emitting diode (LED) and the audio transducer **3725** is a speaker. These devices may be directly coupled to the power supply **3770** so that when activated, they remain on for a duration dictated by the notification mechanism even though the processor **3760** and other components might shut down for conserving battery power. The LED may be programmed to remain on indefinitely until the user takes action to indicate the powered-on status of the device. The audio interface **3774** is used to provide audible signals to and receive audible signals from the user. For example, in addition to being coupled to the audio transducer **3725**, the audio interface **3774** may also be coupled to a microphone to receive audible input, such as to facilitate a telephone conversation. According to an aspect, the system **3702** further includes a video interface **3776** that enables an operation of an on-board camera **3730** to record still images, video stream, and the like.

[0083] According to an aspect, a mobile computing device **3700** implementing the system **3702** has additional features or functionality. For example, the mobile computing device **3700** includes additional data storage devices (removable and/or non-removable)

such as, magnetic disks, optical disks, or tape. Such additional storage is illustrated in **FIGURE 37B** by the non-volatile storage area **3768**.

[0084] According to an aspect, data/information generated or captured by the mobile computing device **3700** and stored via the system **3702** is stored locally on the mobile computing device **3700**, as described above. According to another aspect, the data is stored on any number of storage media that is accessible by the device via the radio **3772** or via a wired connection between the mobile computing device **3700** and a separate computing device associated with the mobile computing device **3700**, for example, a server computer in a distributed computing network, such as the Internet. As should be appreciated such data/information is accessible via the mobile computing device **3700** via the radio **3772** or via a distributed computing network. Similarly, according to an aspect, such data/information is readily transferred between computing devices for storage and use according to well-known data/information transfer and storage means, including electronic mail and collaborative data/information sharing systems. In yet another example, the mobile computing device **3700** incorporates peripheral device port **3740**, such as an audio input (e.g., a microphone jack), an audio output (e.g., a headphone jack), and a video output (e.g., a HDMI port) for sending signals to or receiving signals from an external device.

[0085] **FIGURE 38** illustrates one example of the architecture of a system for automatically managing a pane in a user interface on a small form factor computing device as described above. Content developed, interacted with, or edited in association with the adaptive pane module **106** is enabled to be stored in different communication channels or other storage types. For example, various documents may be stored using a directory service **3822**, a web portal **3824**, a mailbox service **3826**, an instant messaging store **3828**, or a social networking site **3830**. The adaptive pane module **106** is operable to use any of these types of systems or the like for automatically managing a pane in a user interface on a small form factor computing device, as described herein. According to an aspect, a server **3815** provides the adaptive pane module **106** to clients **3805a,b,c**. As one example, the server **3815** is a web server providing the adaptive pane module **106** over the web. The server **3815** provides the adaptive pane module **106** over the web to clients **3805** through a network **3810**. By way of example, the client computing device is implemented and embodied in a personal computer **3805a**, a tablet computing device **3805b** or a mobile computing device **3805c** (e.g., a smart phone), or other computing device. Any of these

examples of the client computing device are operable to obtain content from the store
3816.

[0086] Examples are described above with reference to block diagrams and/or
operational illustrations of methods, systems, and computer program products according to
5 examples. The functions/acts noted in the blocks may occur out of the order as shown in
any flowchart. For example, two blocks shown in succession may in fact be executed
substantially concurrently or the blocks may sometimes be executed in the reverse order,
depending upon the functionality/acts involved.

[0087] The description and illustration of one or more examples provided in this
10 application are not intended to limit or restrict the scope in any way. The aspects,
examples, and details provided in this application are considered sufficient to convey
possession and enable others to make and use the best mode. The claims should not be
construed as being limited to any aspect, example, or detail provided in this application.
Regardless of whether shown and described in combination or separately, the various
15 features (both structural and methodological) are intended to be selectively included or
omitted to produce an example with a particular set of features. Having been provided
with the description and illustration of the present application, one skilled in the art may
envision variations, modifications, and alternate examples falling within the spirit of the
broader aspects of the general inventive concept embodied in this application that do not
20 depart from the broader scope.

CLAIMS

1. A method of managing a pane configuration in a user interface of an application displayed on a small form factor computing device, the method comprising:
 - displaying an application user interface comprising functionality to interact with a document and a canvas to display the document;
 - receiving a selection of a functionality; and
 - generating a pane including content associated with the functionality;
 - sizing the pane in accordance with the small form factor computing device; and
 - displaying the pane sized for the small form factor computing device.
2. The method of claim 1, wherein sizing the pane in accordance with the small form factor computing device comprises maintaining a minimum pane size that is a specified percentage of the size of a display of the small form factor computing device.
3. The method of claim 1, wherein sizing the pane in accordance with the small form factor computing device comprises displaying the pane below the canvas, the pane displayed as a persistent pane and comprising a pane header including a close command.
4. The method of claim 3, further comprising displaying one or more quick command functionalities in the pane header.
5. The method of claim 3, further comprising updating the application user interface to remove an application header from display when displaying the pane as a persistent pane.
6. The method of claim 3, interface further comprising including a display of a palette hint command in the pane.
7. The method of claim 6, further comprising:
 - receiving a selection of the palette hint command or a functionality displayed in the pane associated with a palette pane; and
 - in response to the selection:
 - updating the application user interface by generating a palette pane including one or more palette pane selection items;
 - sizing the palette pane in accordance with the small form factor computing device; and
 - displaying the palette pane as a partial screen palette pane;
 - receiving a selection of a palette pane selection item; and
 - in response to the selection, updating the application user interface by displaying a child palette pane in a hierarchy of palette panes.

8. The method of claim 7, further comprising:
 - receiving a selection of an operating system back command;
 - in response to the selection:
 - navigating to a previous palette pane in a hierarchy of palette panes; and
 - updating the application user interface by displaying the previous pane in the hierarchy of palette panes.
9. The method of claim 3, further comprising:
 - receiving a selection of the close command or an operating system back command;
 - and
 - in response to the selection, updating the application user interface by closing the pane.
10. The method of claim 3, further comprising:
 - receiving a selection of a functionality displayed in the pane; and
 - in response to the selection, updating the application user interface by displaying:
 - a pane sized in accordance with the small form factor computing device,
 - the pane displayed as a full screen pane and including content and functionality for interaction therewith.
11. The method of claim 1, further comprising:
 - receiving an indication of a change in the display width of the small form factor computing device; and
 - in response to the change in the display width, updating the application user interface by:
 - resizing the pane to the width of the application user interface and in accordance with the small form factor computing device;
 - reflowing the content in the pane;
 - displaying the pane sized for the small form factor computing device;
 - resizing the canvas to the width of the application user interface and in accordance with the small form factor computing device to maintain a minimum size to provide contextual information relating to the content displayed in the pane;
 - reflowing the content in the canvas; and
 - displaying the canvas sized for the small form factor computing device, the canvas displayed above the pane in the application user interface.

12. A computing device for managing a pane configuration in a user interface of an application displayed on a small form factor computing device, the computing device comprising:

a processor, a memory, and an output device for presenting a visual output to a user, the visual output comprising the user interface of the application, the computing device operable to:

display an application user interface comprising functionality to interact with a document and a canvas to display the document;
receive a selection of a functionality; and
generate a pane including content associated with the functionality;
size the pane in accordance with the small form factor computing device;
and
display the pane sized for the small form factor computing device.

13. The computing device of claim 12, wherein in sizing the pane in accordance with the small form factor computing device, the computing device is operable to display a maximum of one pane in the application user interface and maintain a minimum pane size, wherein the minimum pane size is a specified percentage of the size of a display of the small form factor computing device.

14. The computing device of claim 12, wherein in generating the pane, the computing device is further operable to:

generate a persistent pane comprising a pane header including a close command;
remove an application header from display;
display a palette hint command in the pane;
receive a selection of the palette hint command or a functionality displayed in the pane associated with a palette pane;
in response to the selection, update the application user interface by:
generating the palette pane including one or more palette pane selection items;
sizing the palette pane in accordance with the small form factor computing device, the palette pane displayed as a partial screen palette pane; and
displaying the palette pane sized for the small form factor computing device;
receive a selection of a palette pane selection item; and

in response to the selection of the palette pane selection item, update the application user interface by generating and displaying a child palette pane in a hierarchy of palette panes.

15. A small form factor computing device comprising a network connection to connect to a web server providing a web-based application, the small form factor computing device including functionality to:

display an application user interface of the web-based application, the application user interface comprising a canvas including a document and including functionality for interaction with the document; and

in response to receiving a selection of a functionality, update the application user interface by:

generating a pane including content and functionality for interaction therewith;

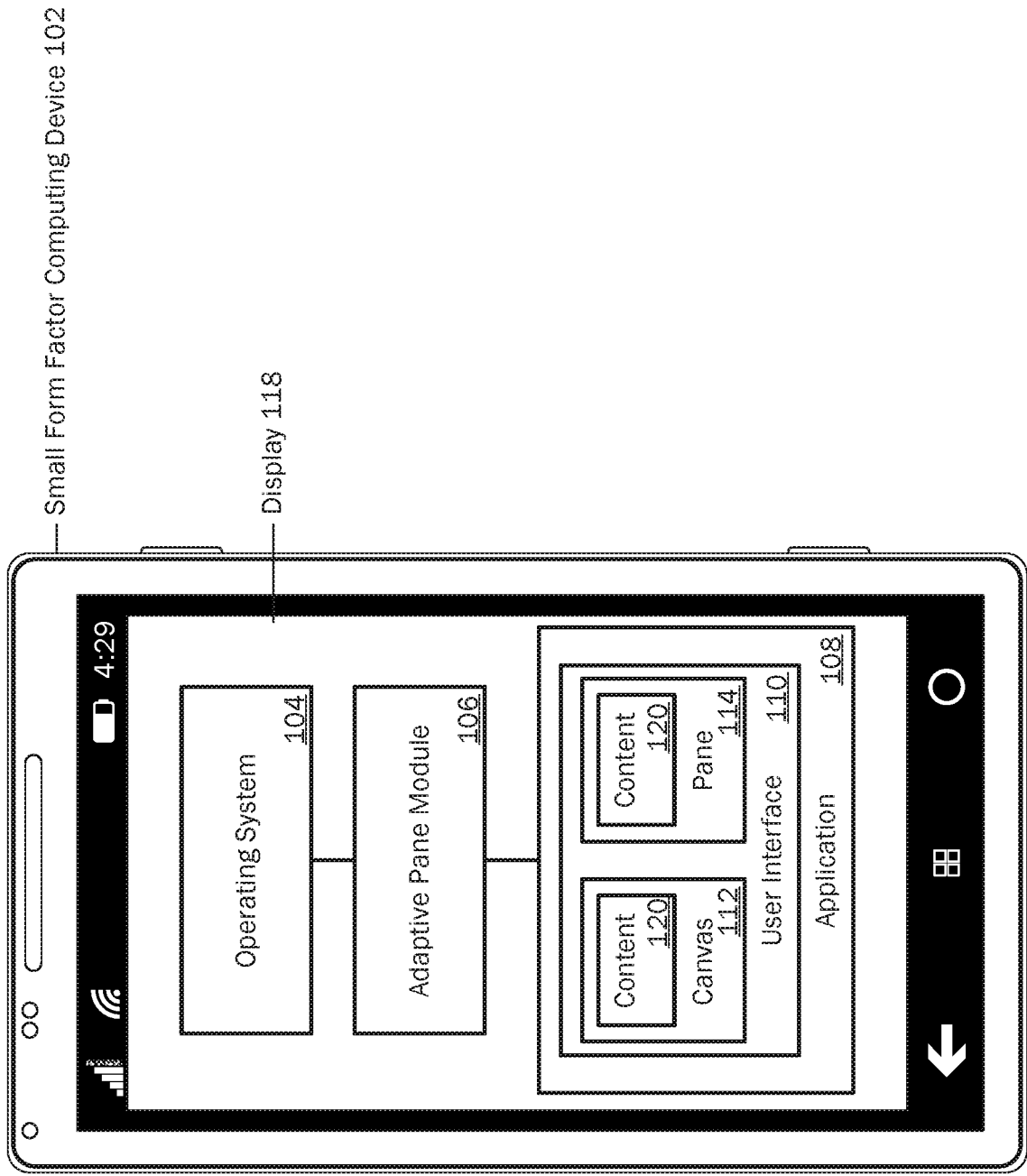
sizing the pane in accordance with the small form factor computing device to maintain a minimum pane size;

in response to receiving a selection of a functionality displayed in the pane, updating the application user interface by:

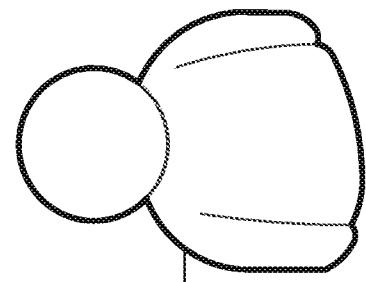
generating a pane including content and functionality for interaction therewith;

sizing the pane as a full screen pane in accordance with the small form factor computing device; and

displaying the pane sized for the small form factor computing device.



100 →



User 116

FIG. 1

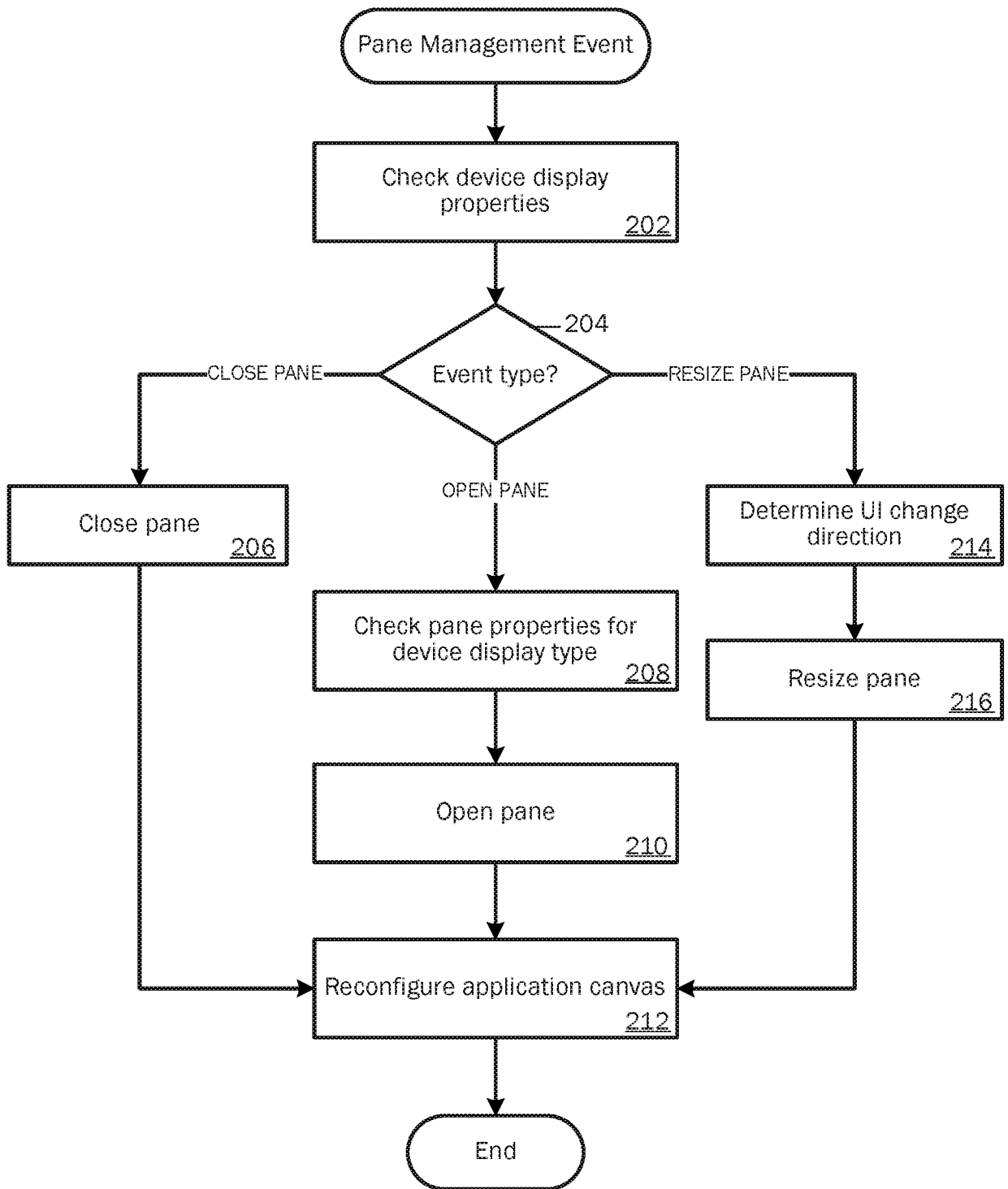


FIG. 2

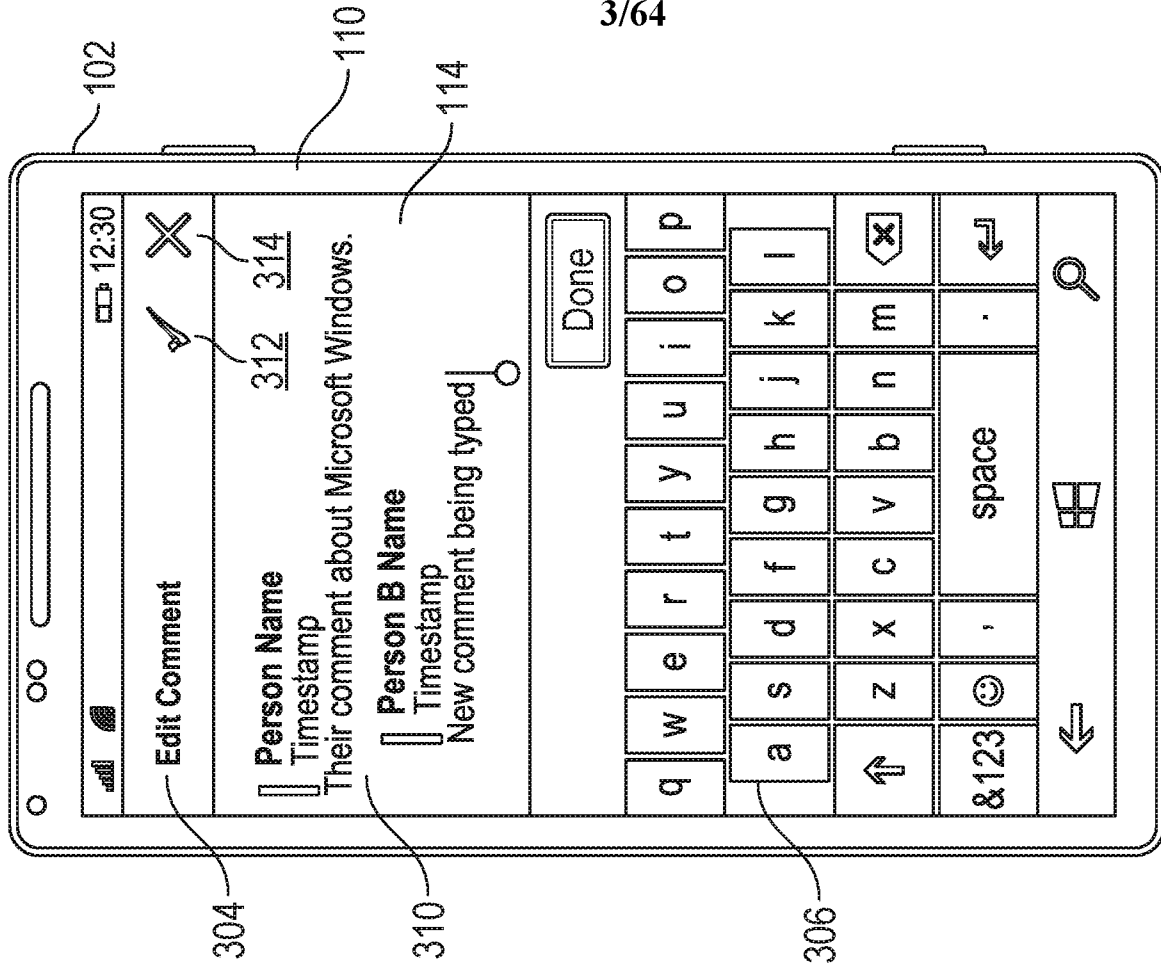


FIG. 3A

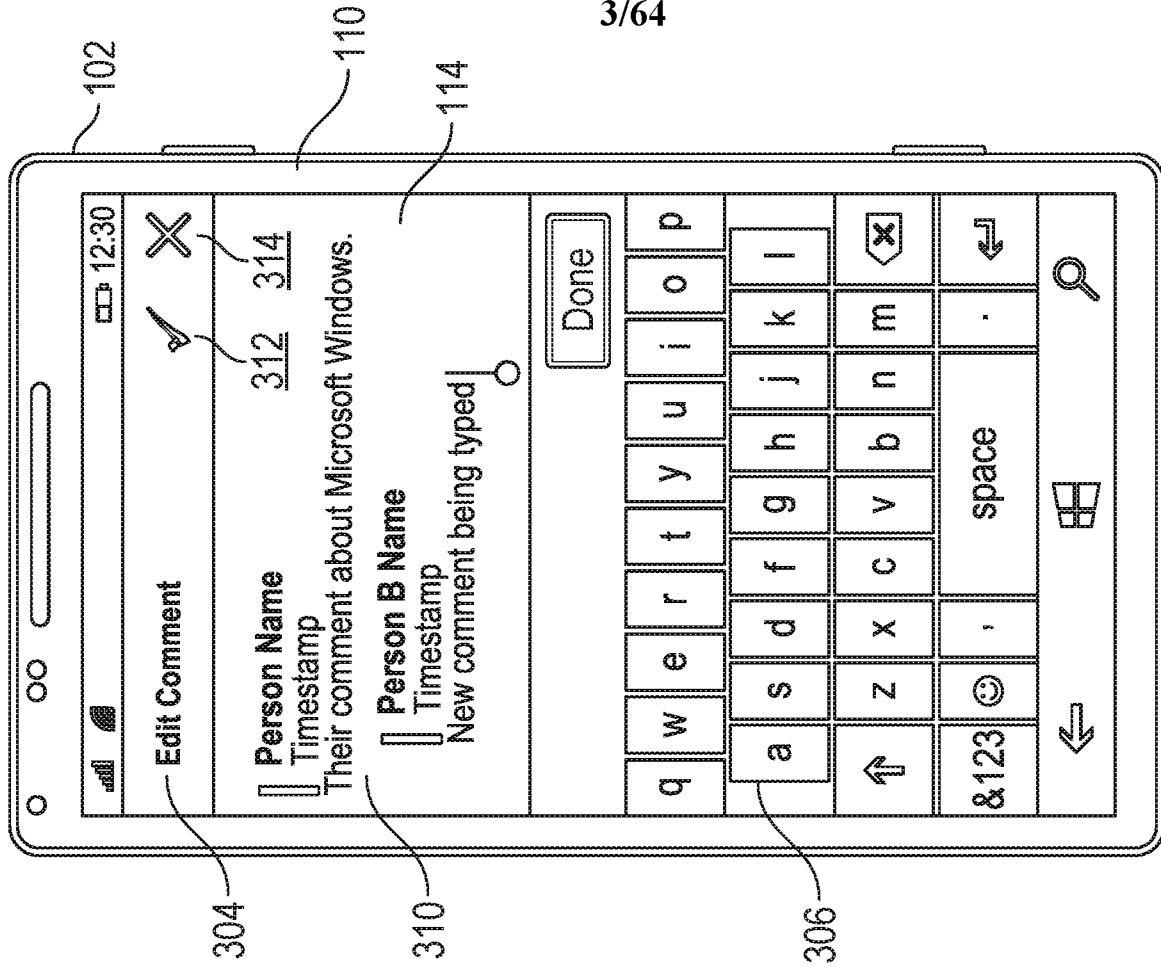


FIG. 3B

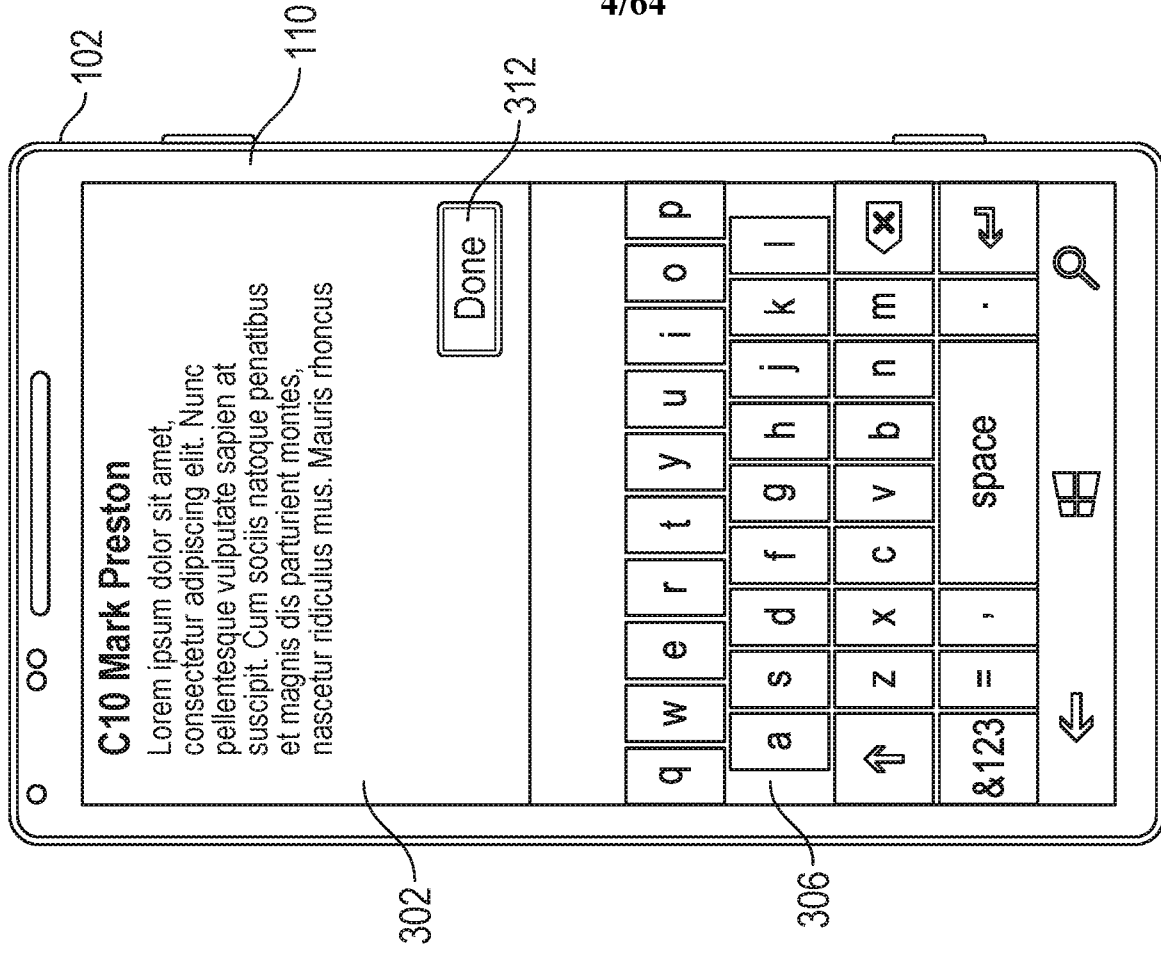


FIG. 3C

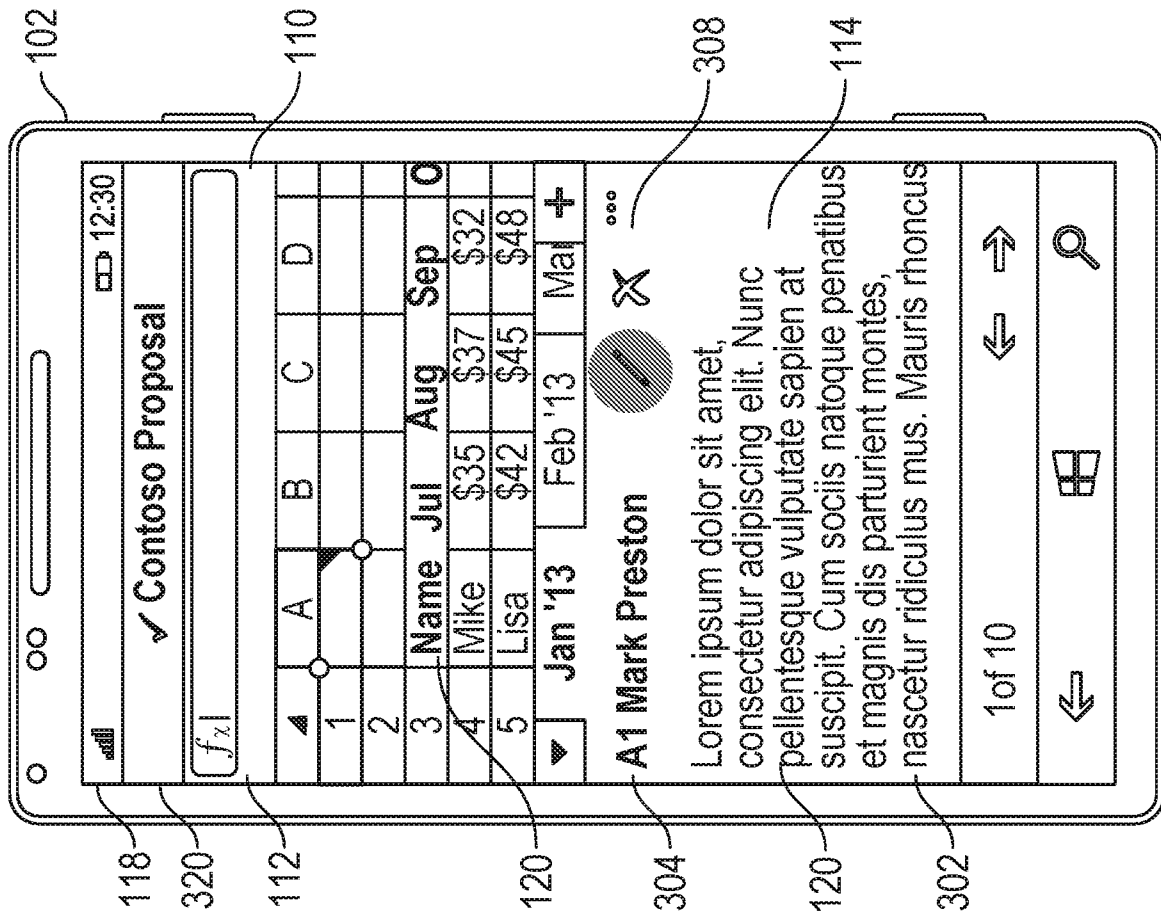


FIG. 3D

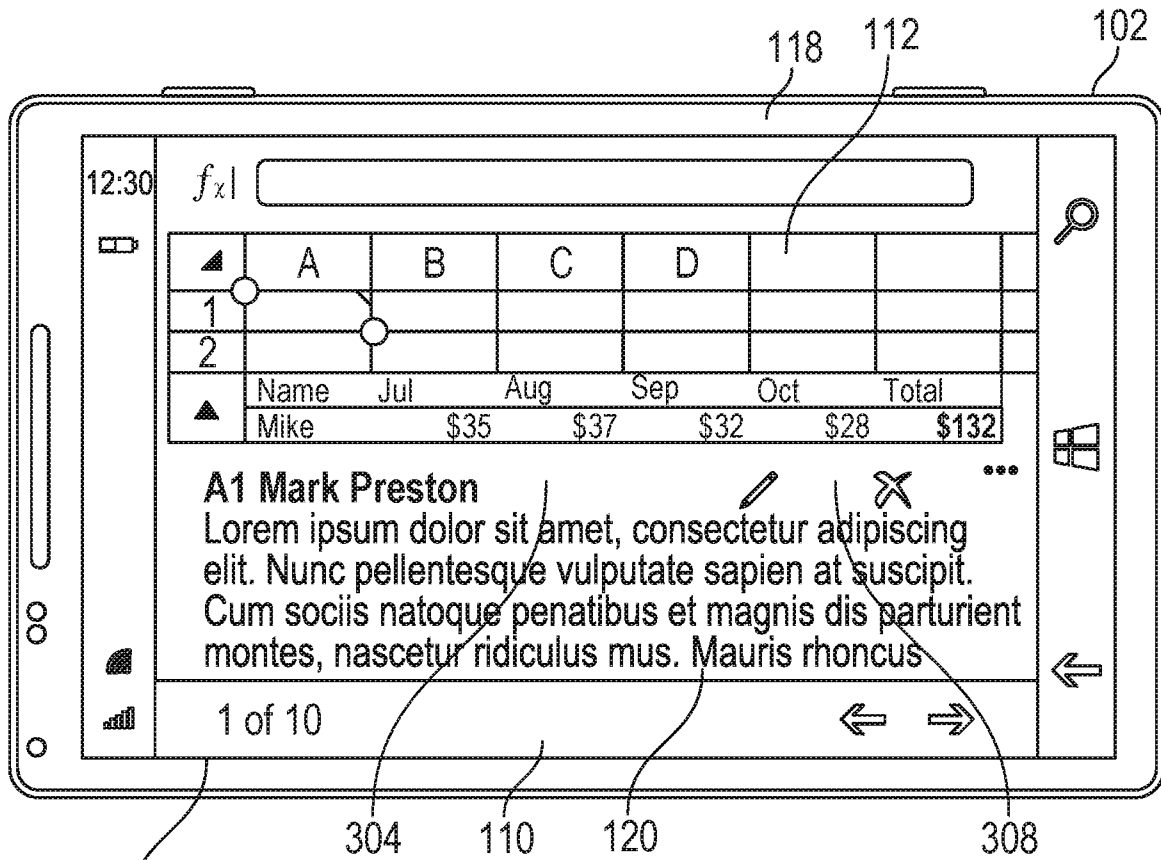


FIG. 3E

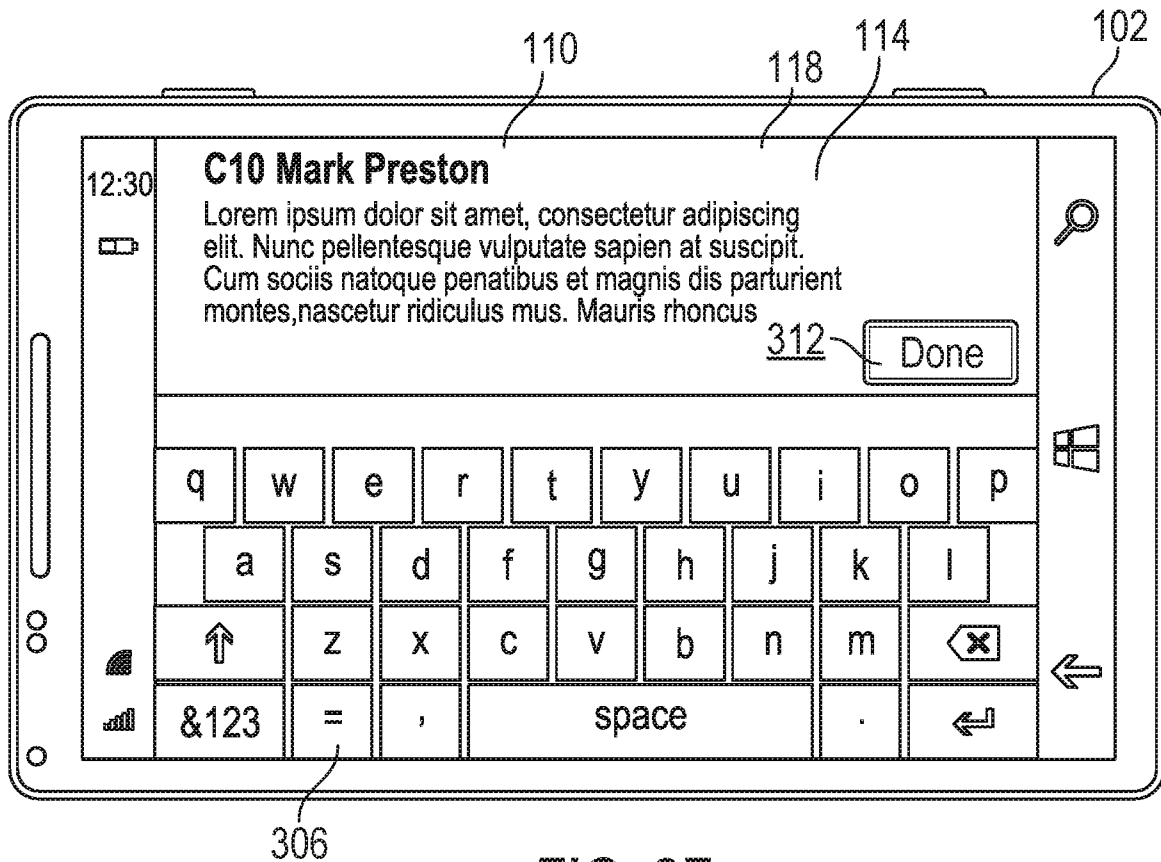


FIG. 3F

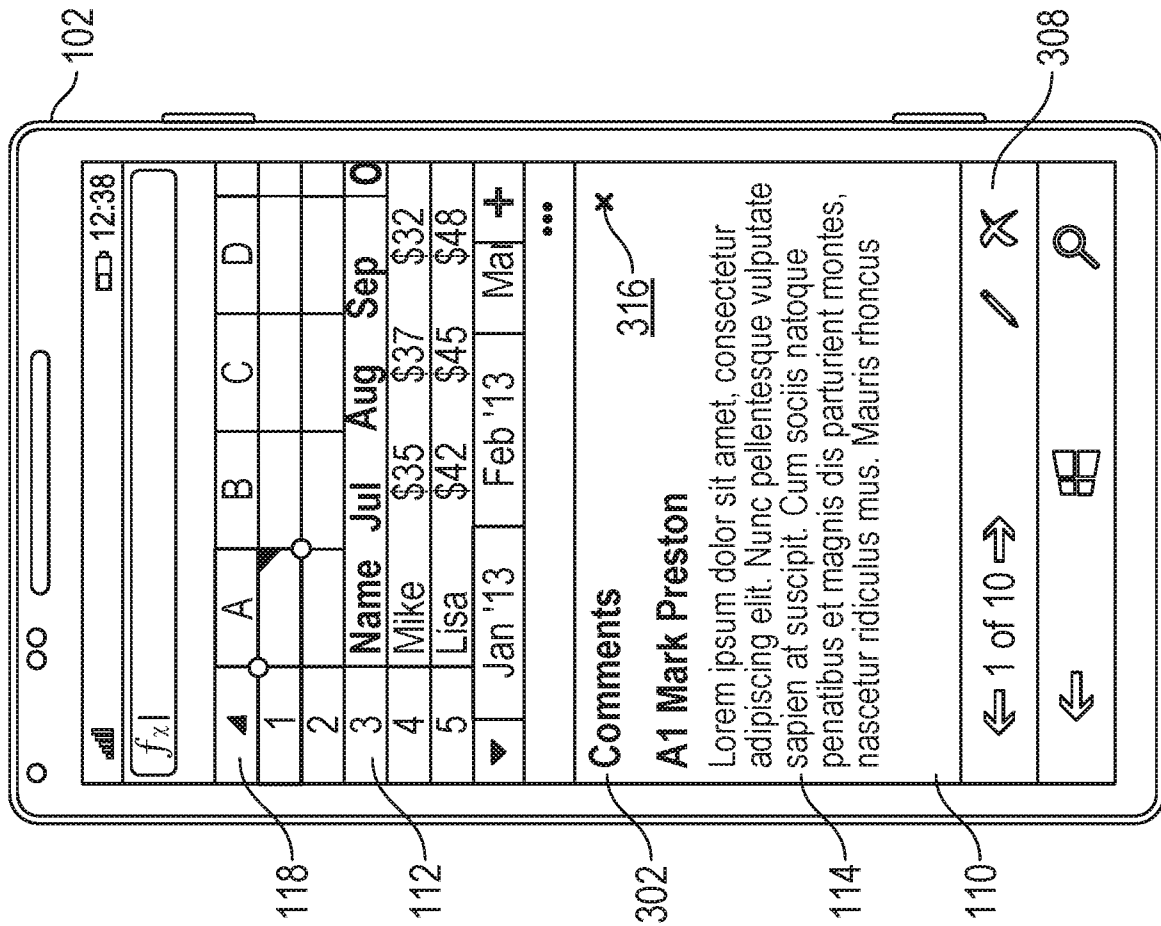


FIG. 3H

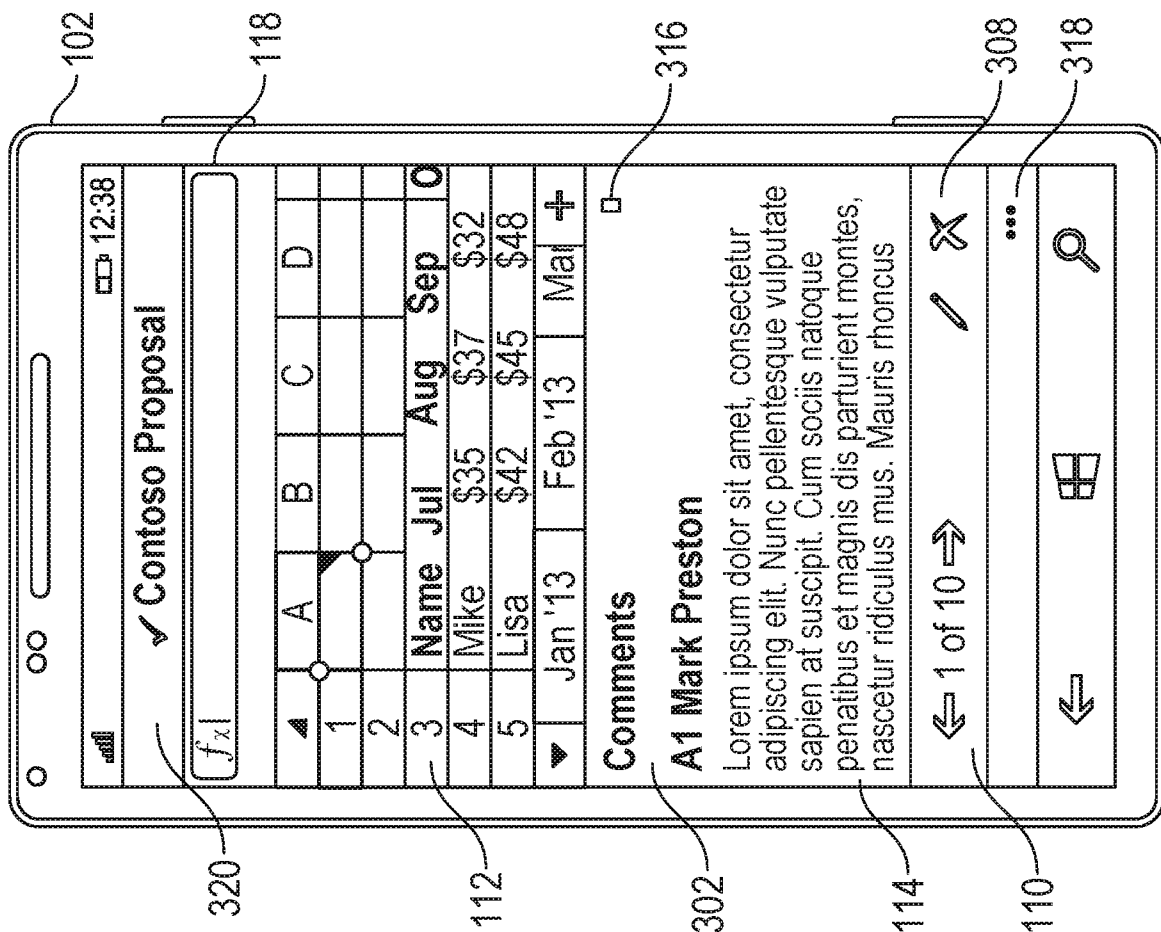


FIG. 3G

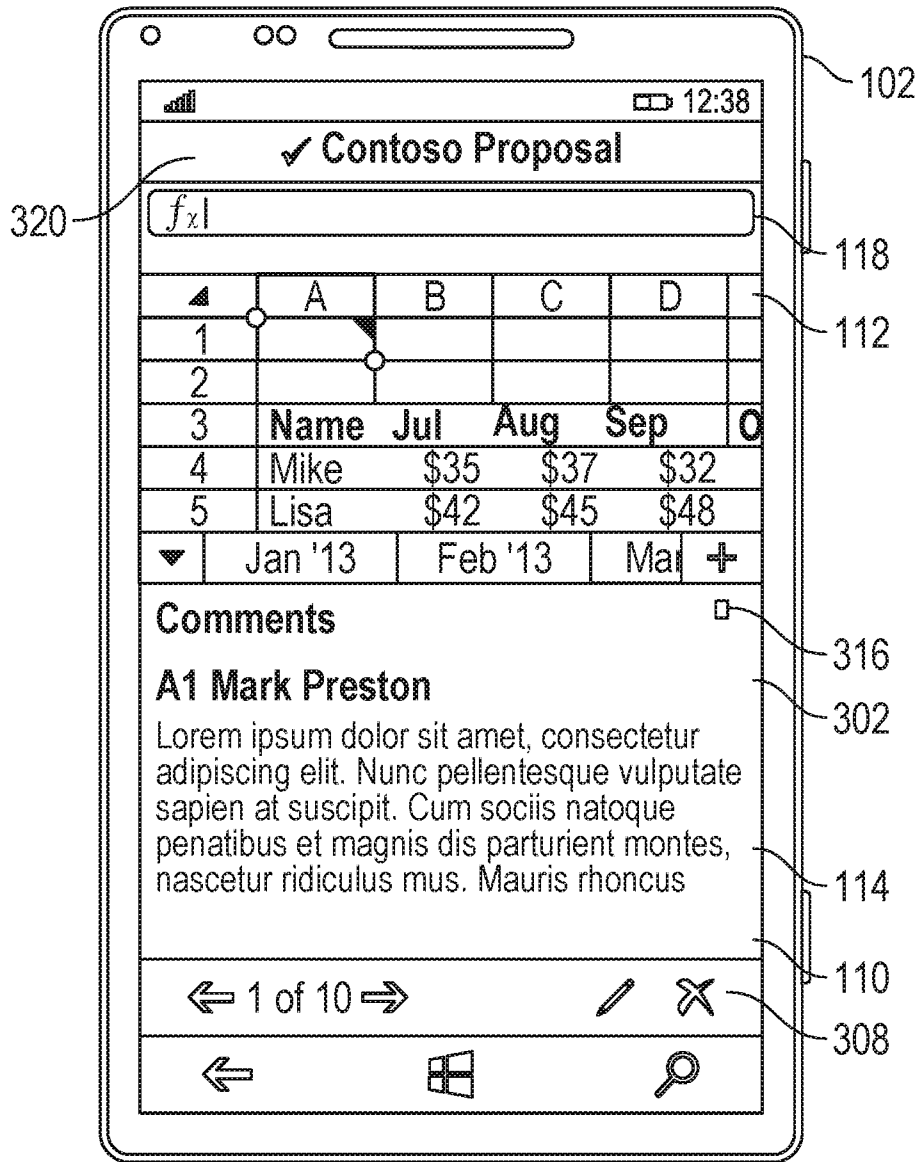


FIG. 3I

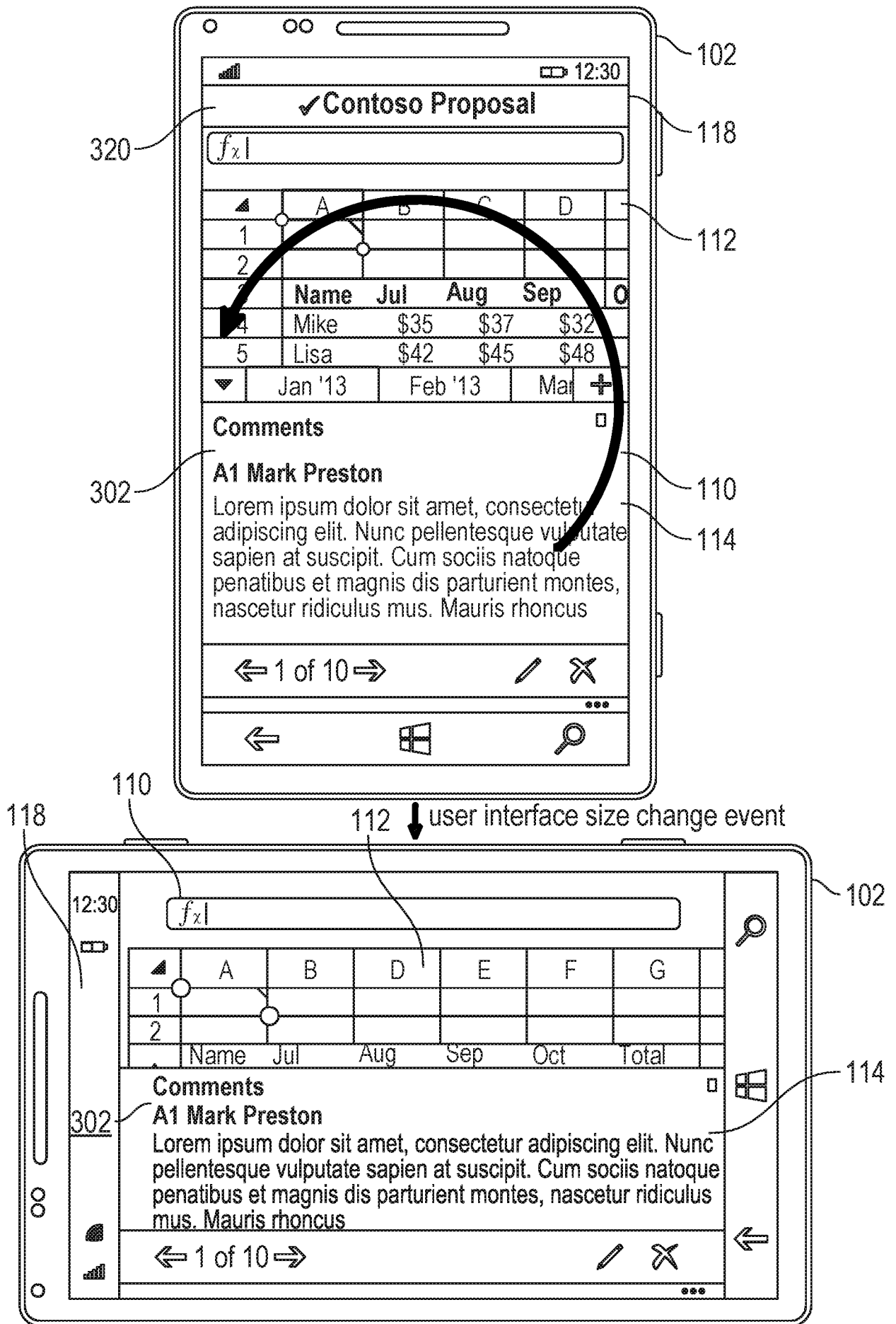


FIG. 3J

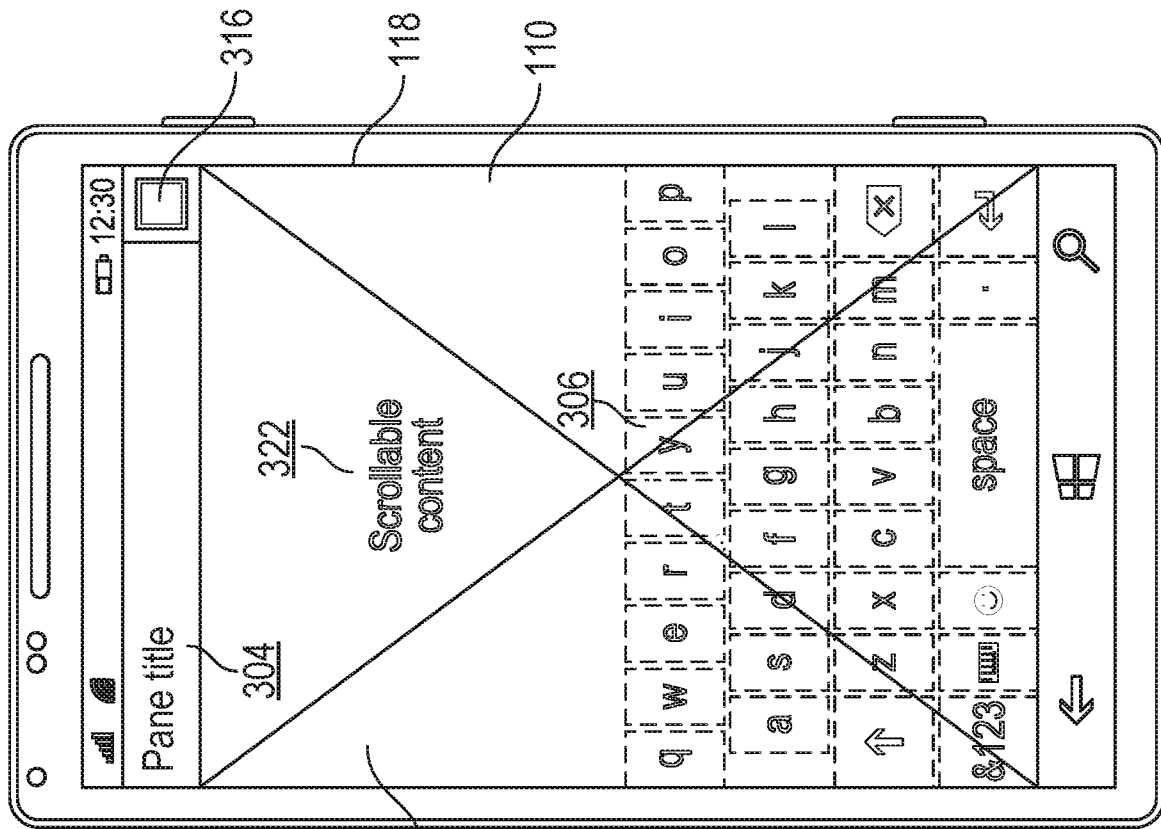


FIG. 3K

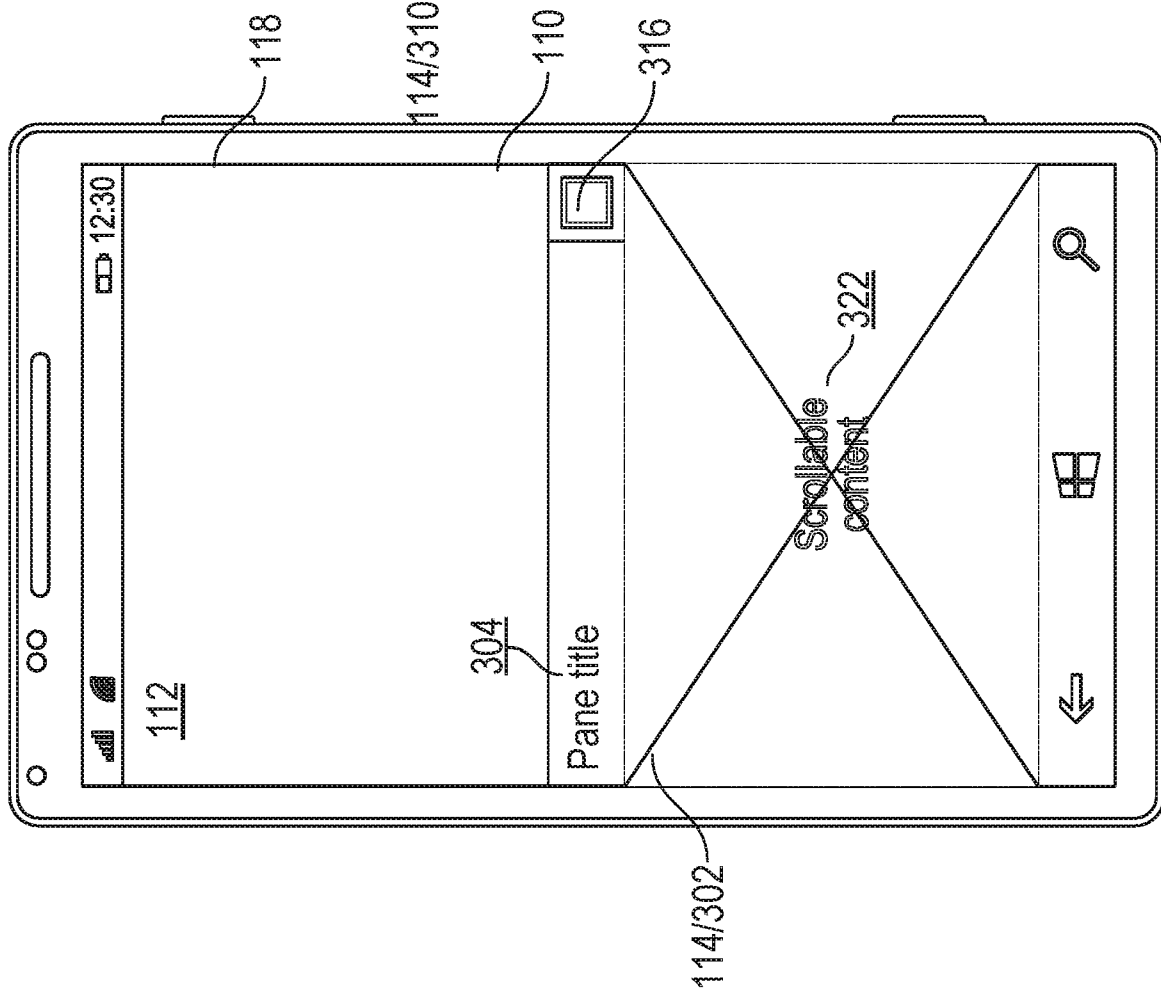


FIG. 3L

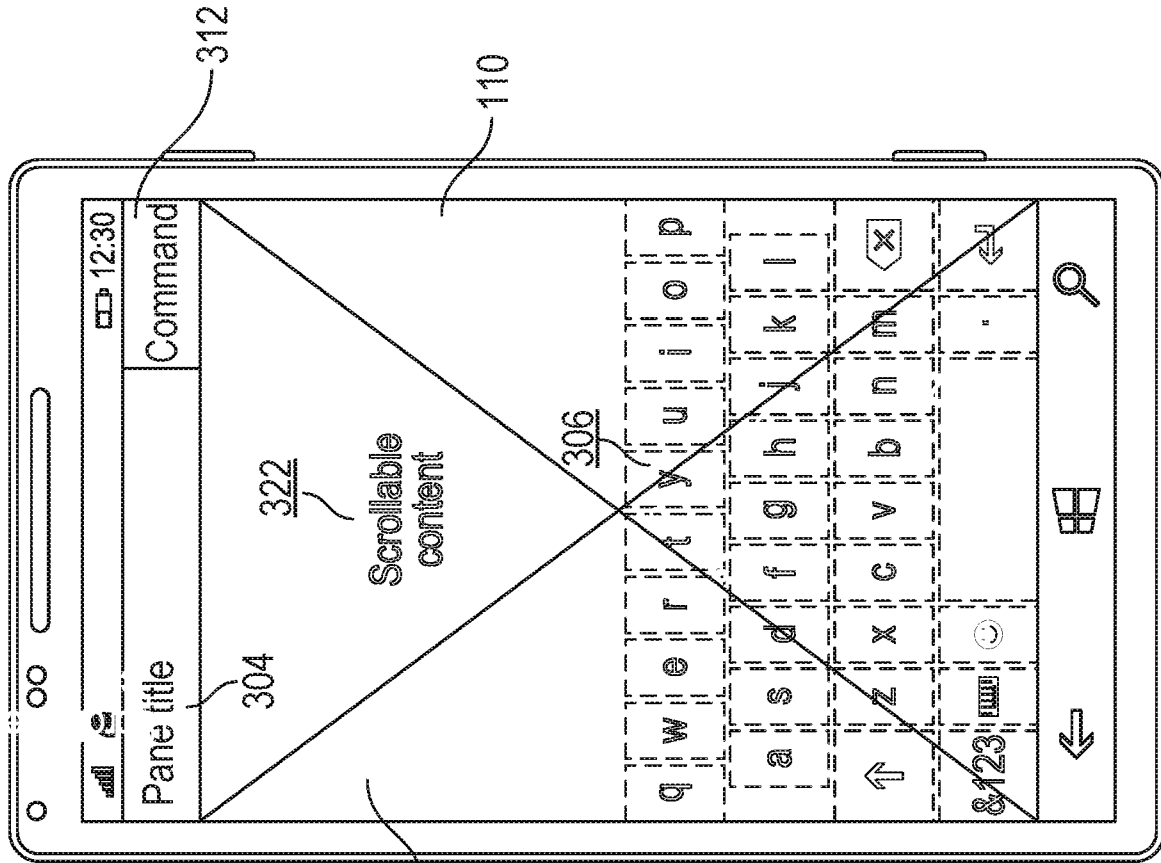


FIG. 3M

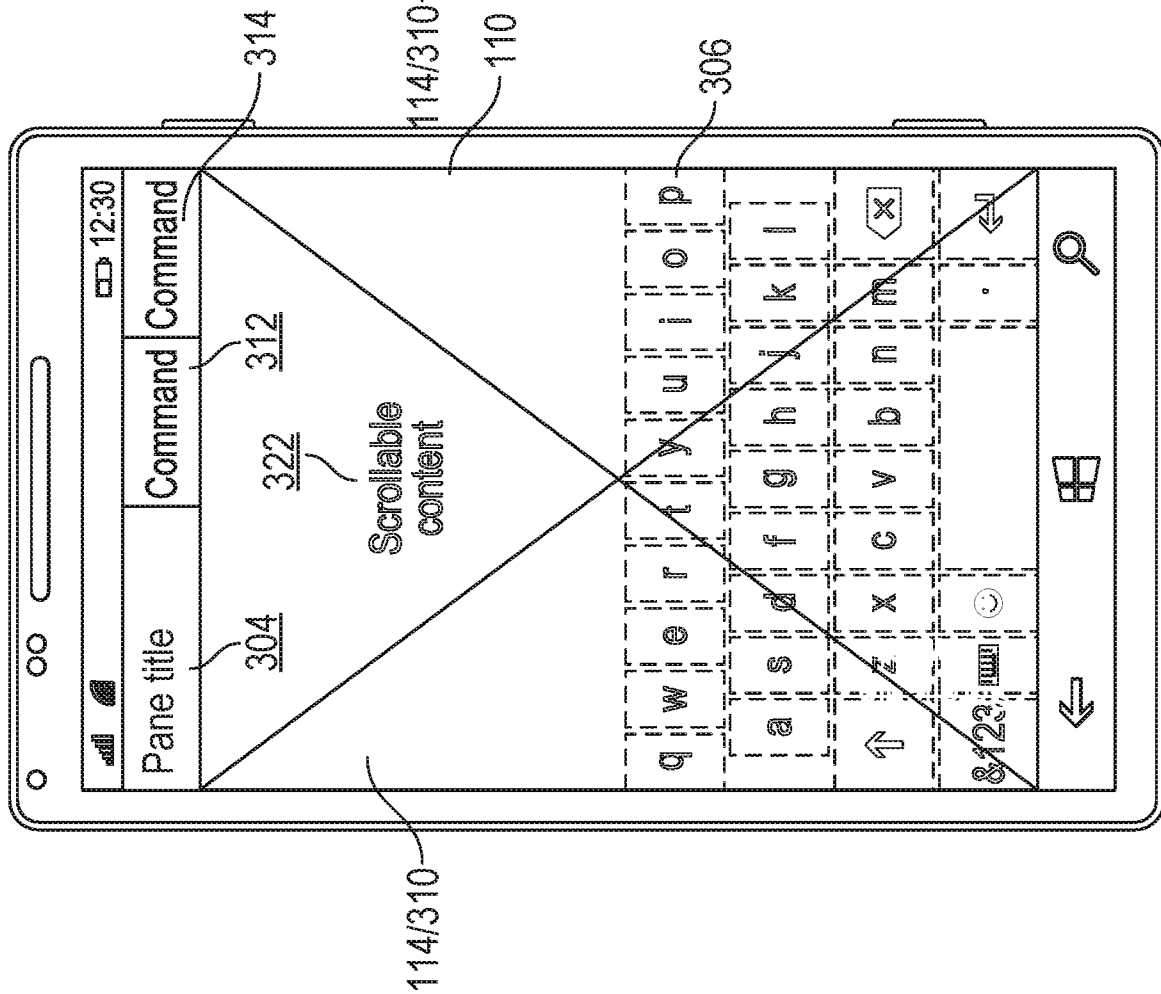


FIG. 3N

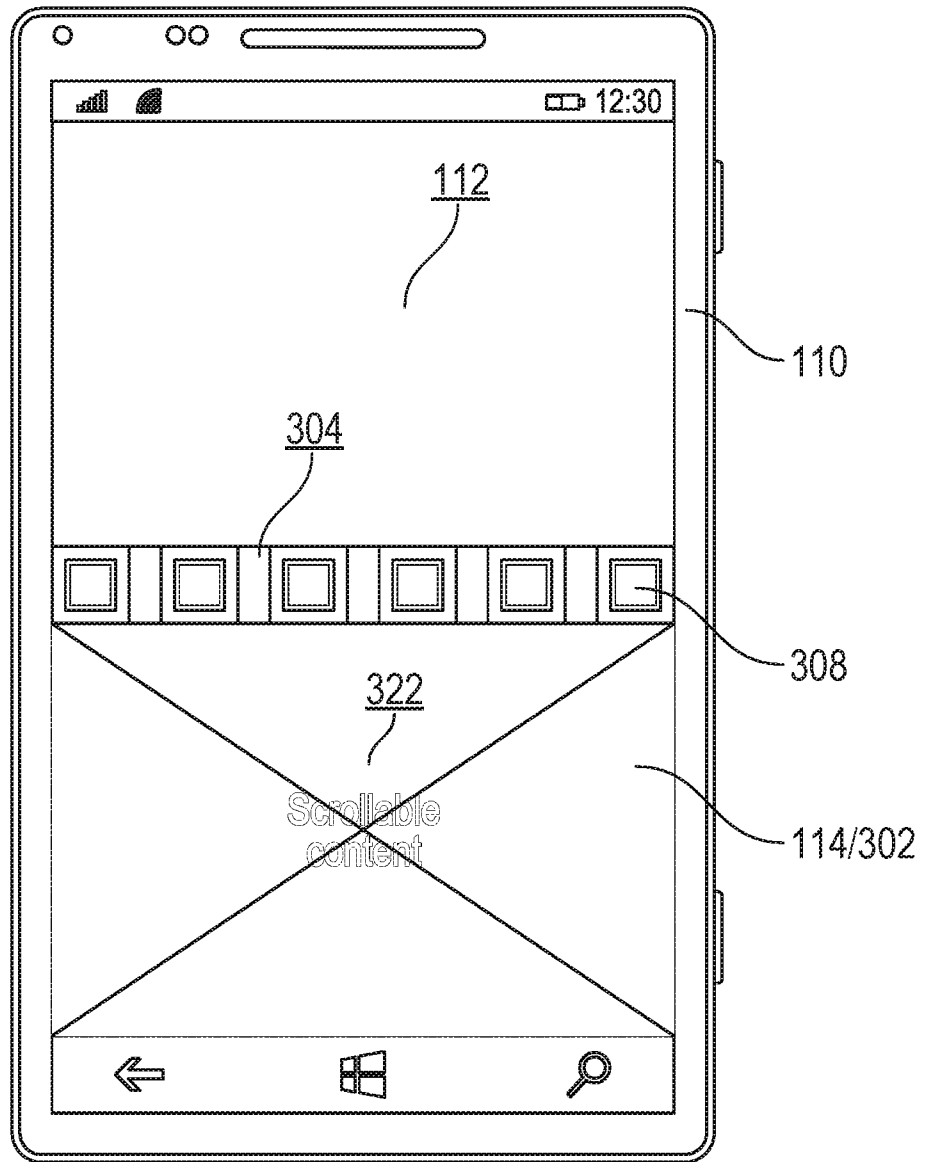
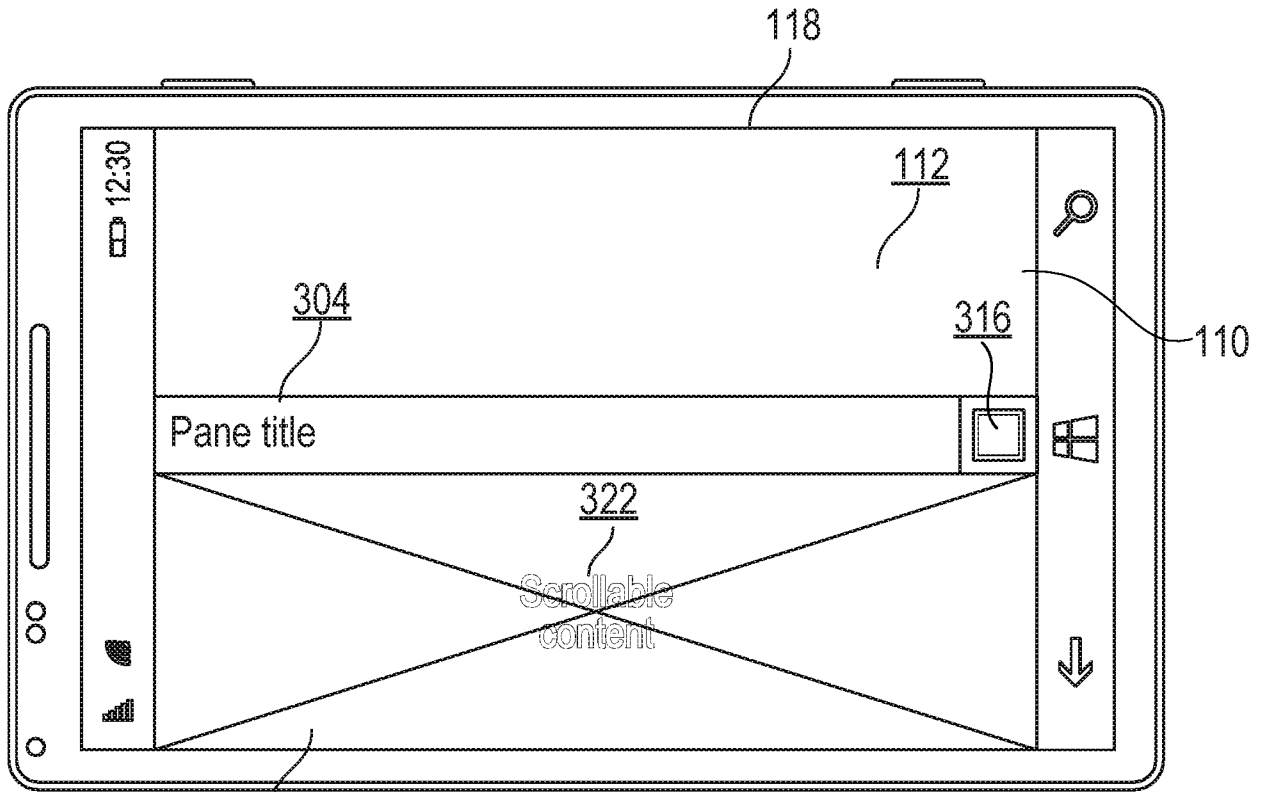


FIG. 30



114/302

FIG. 3P

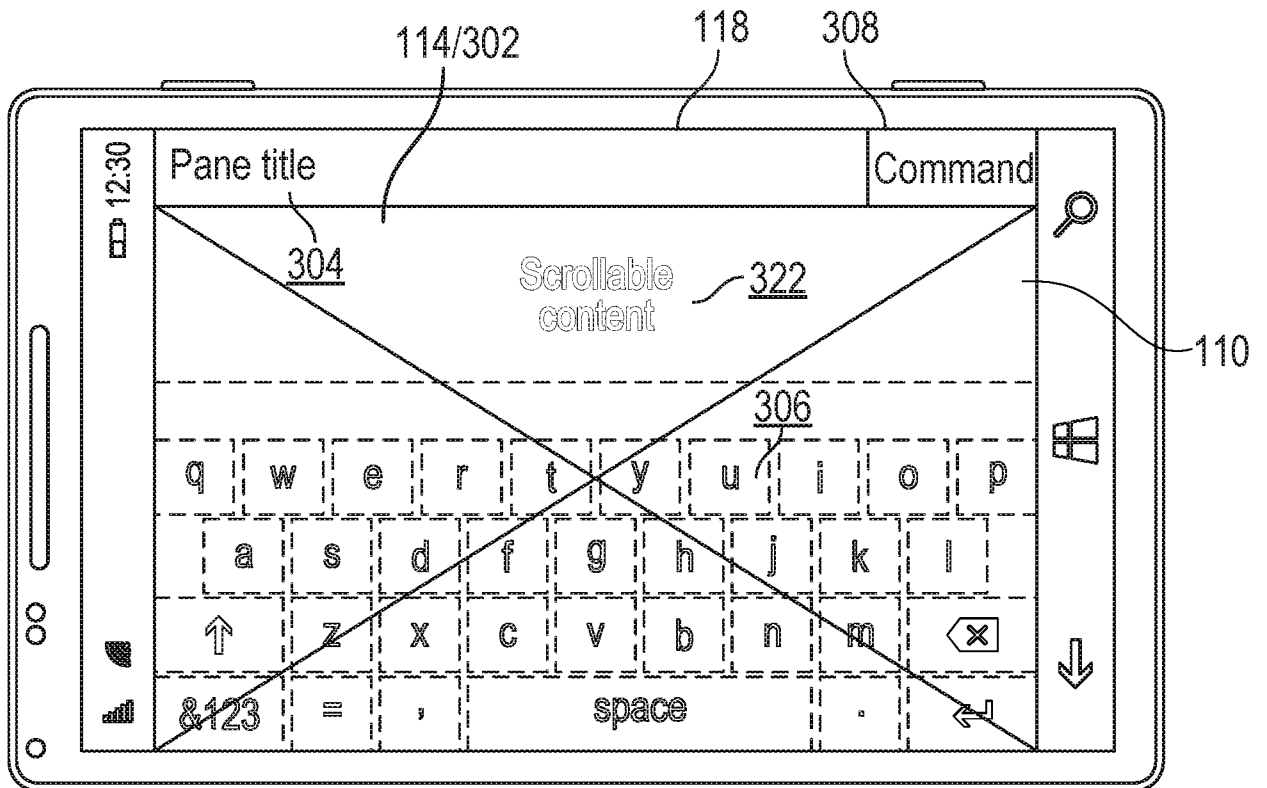


FIG. 3Q

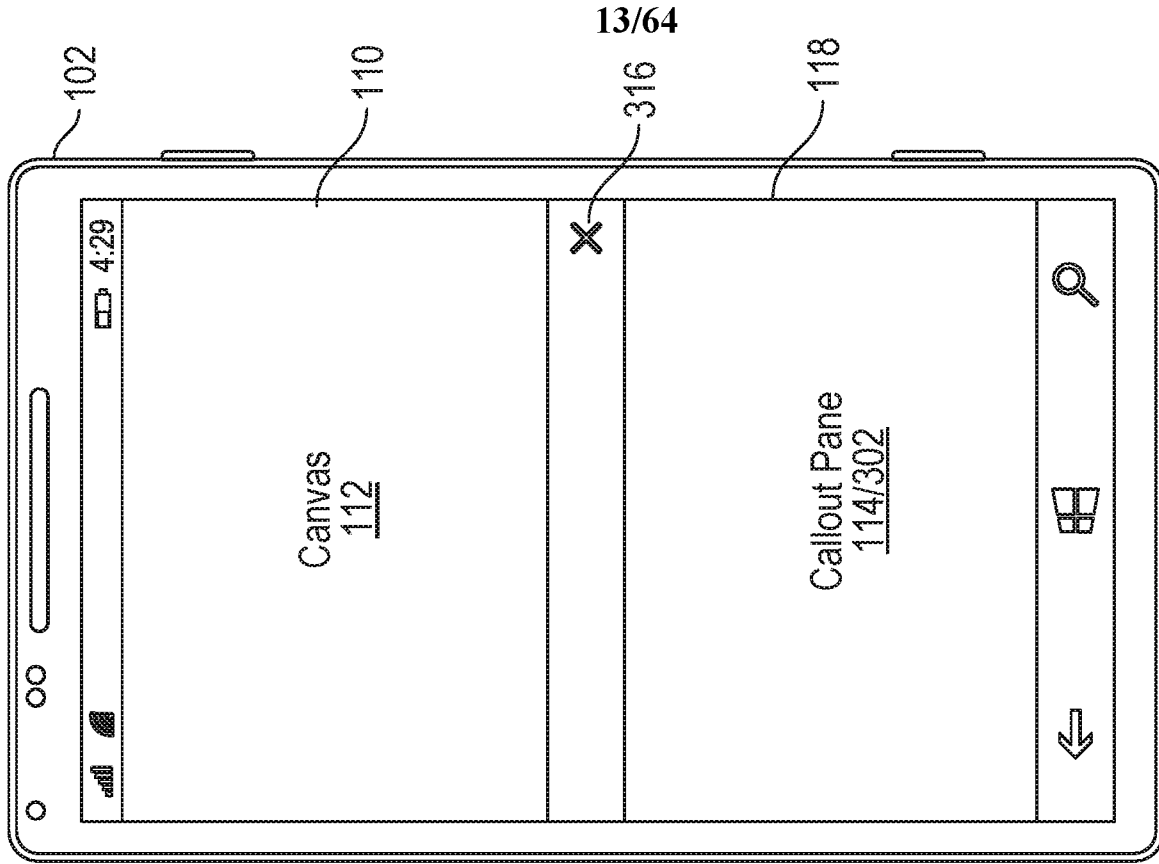


FIG. 5

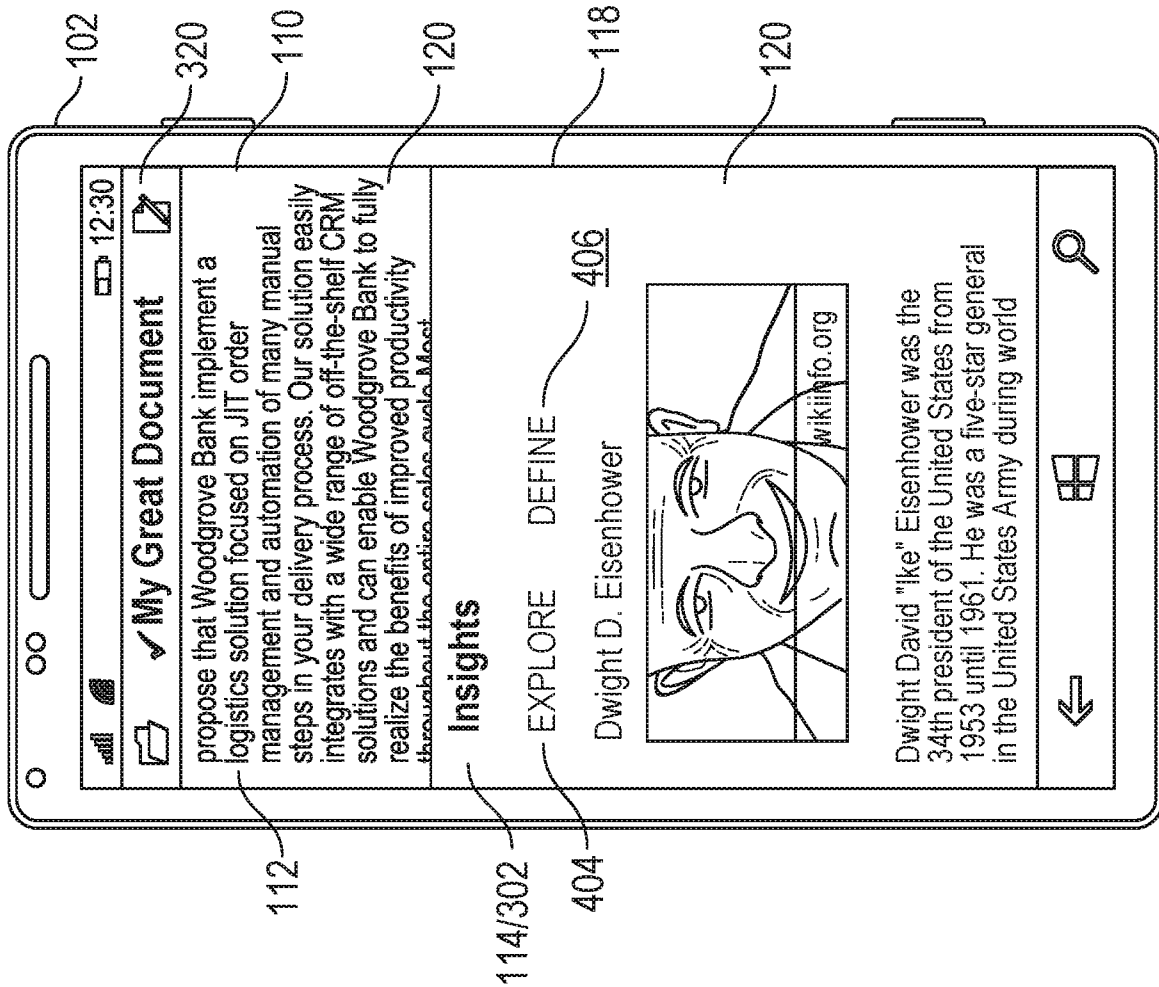


FIG. 4

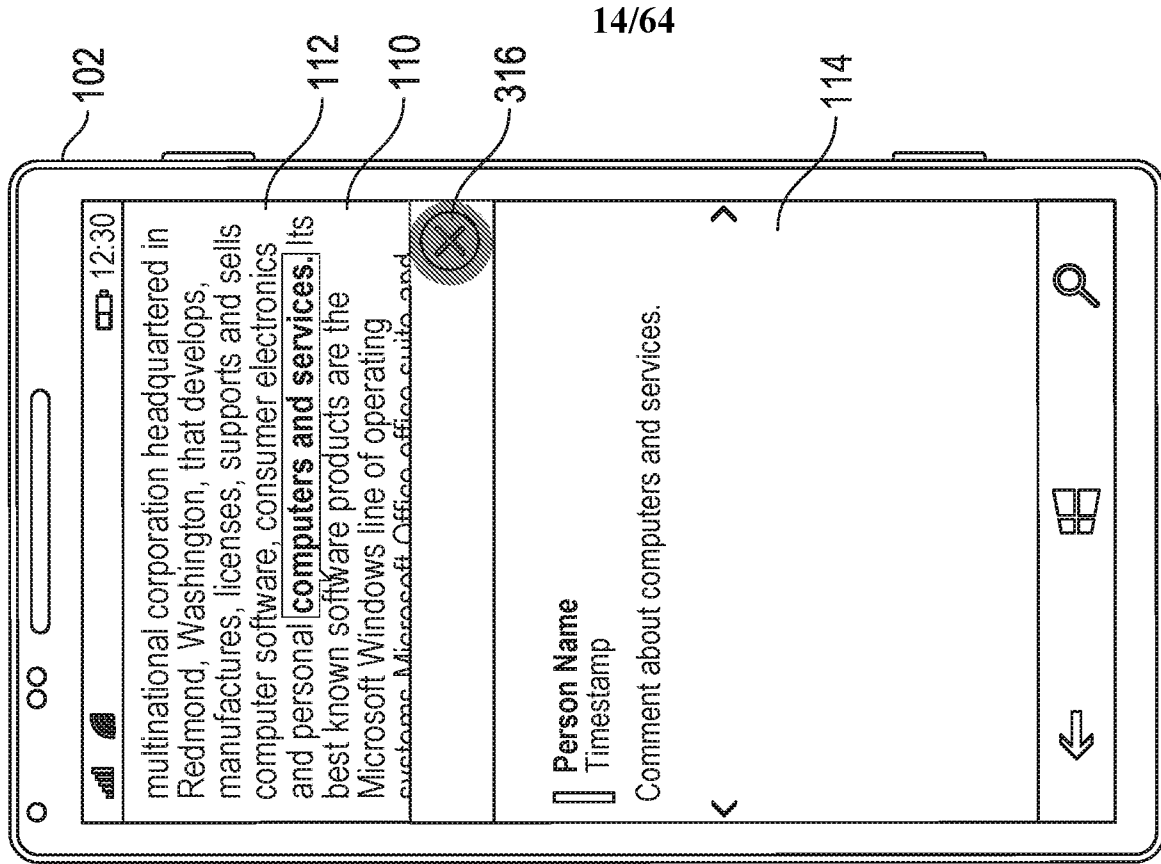


FIG. 6

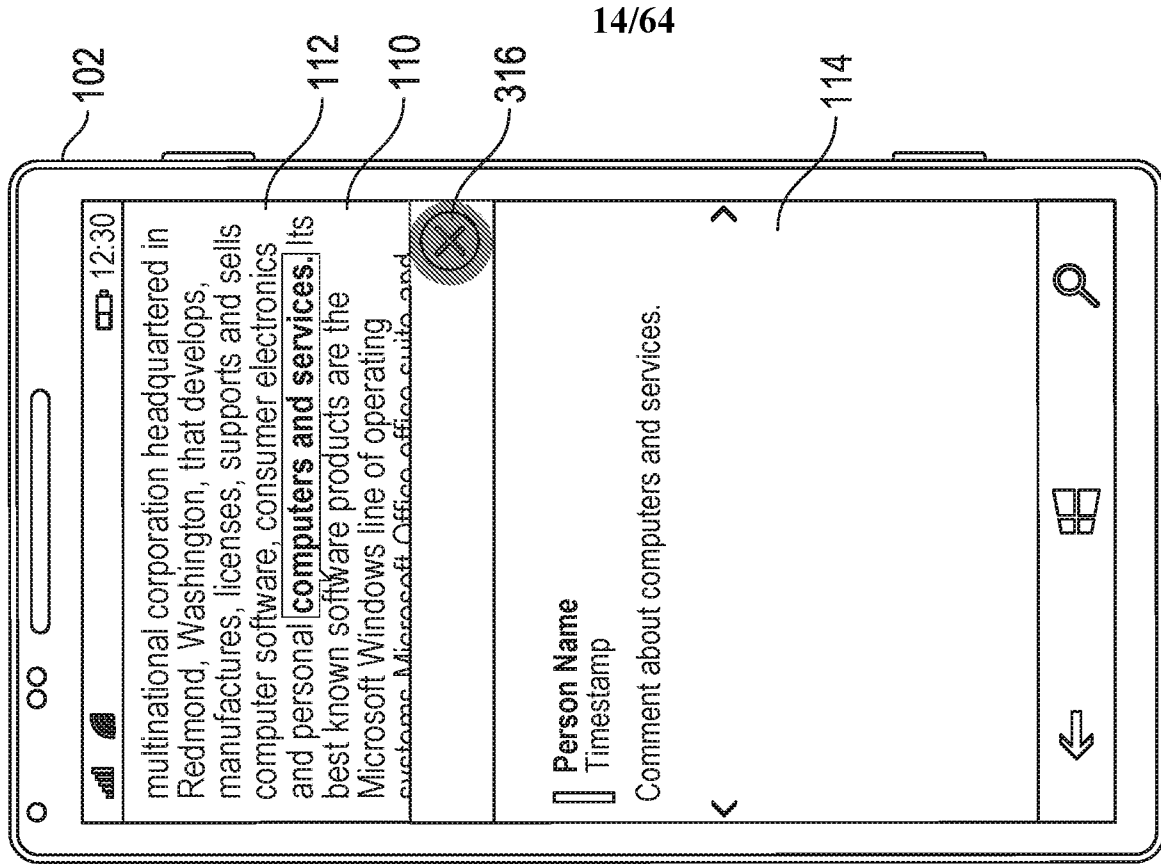


FIG. 7

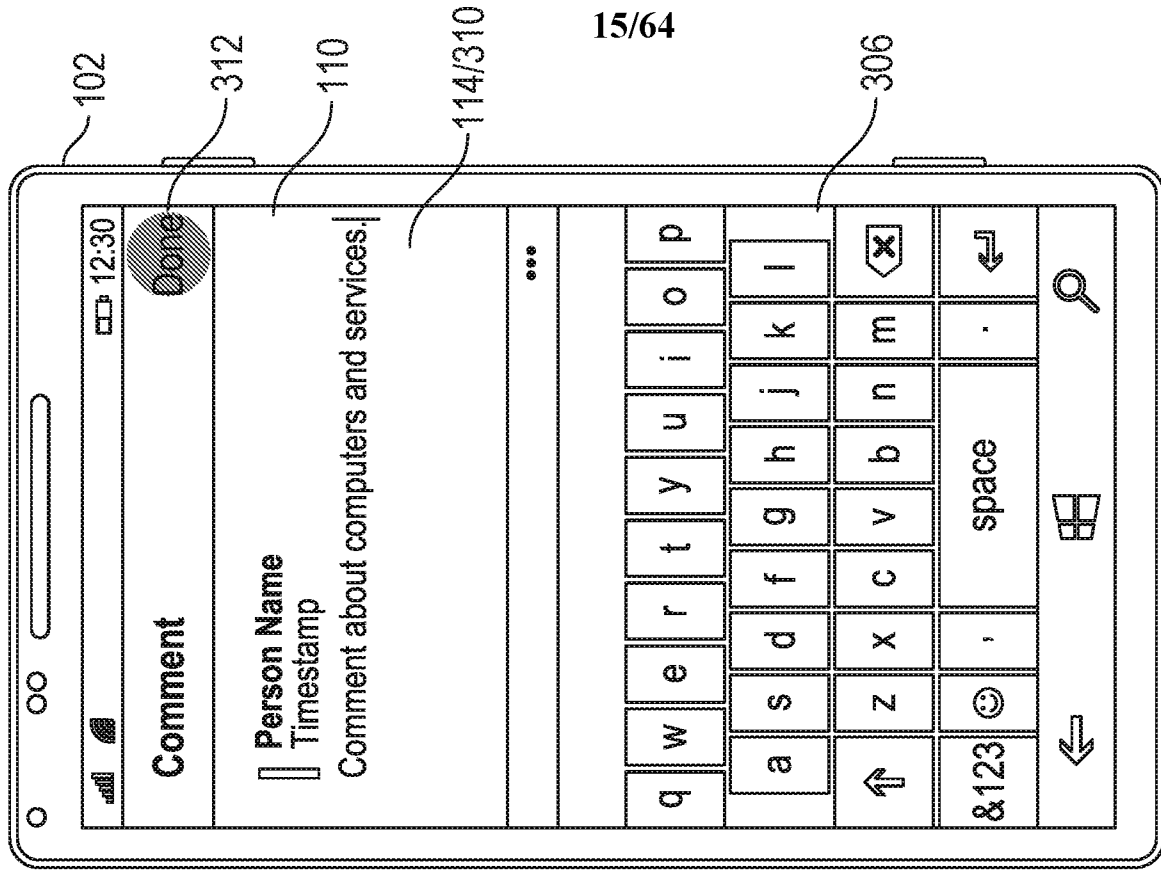


FIG. 9

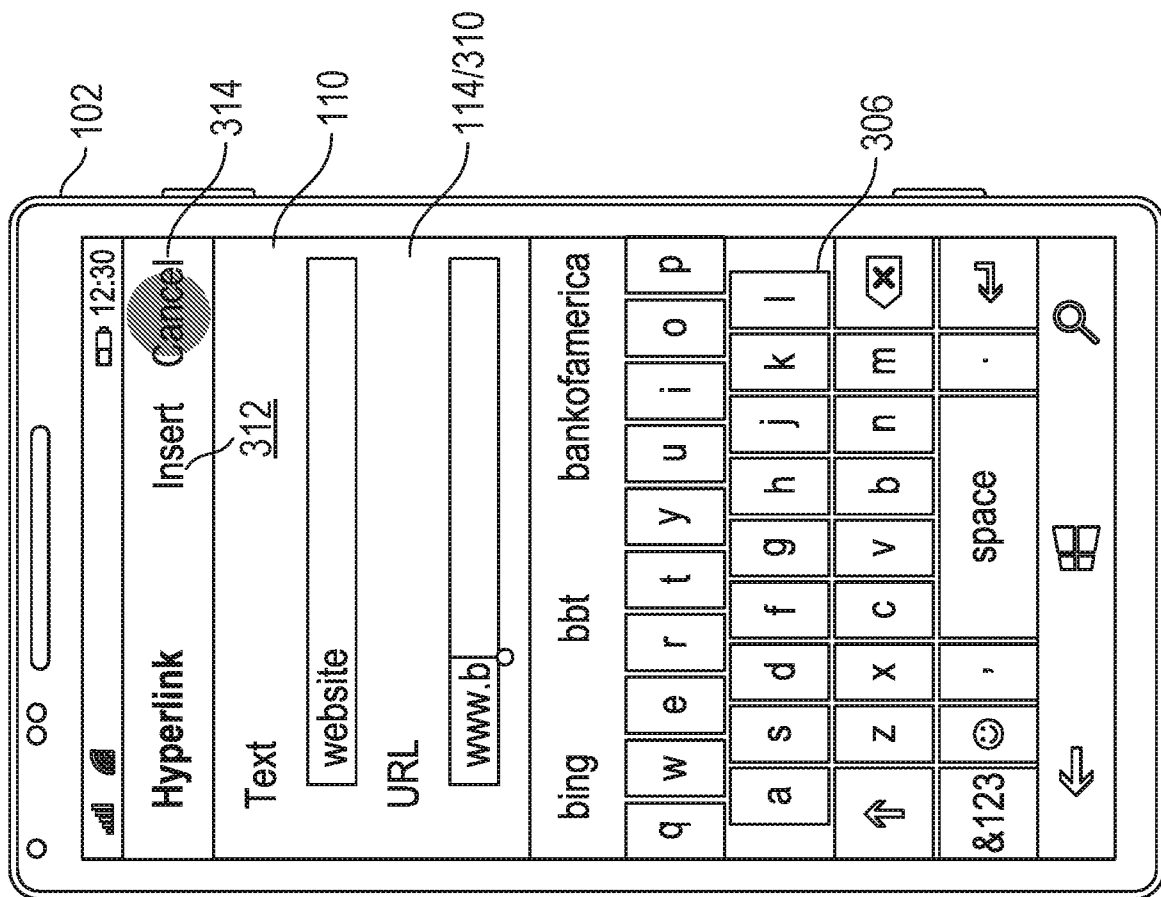


FIG. 8

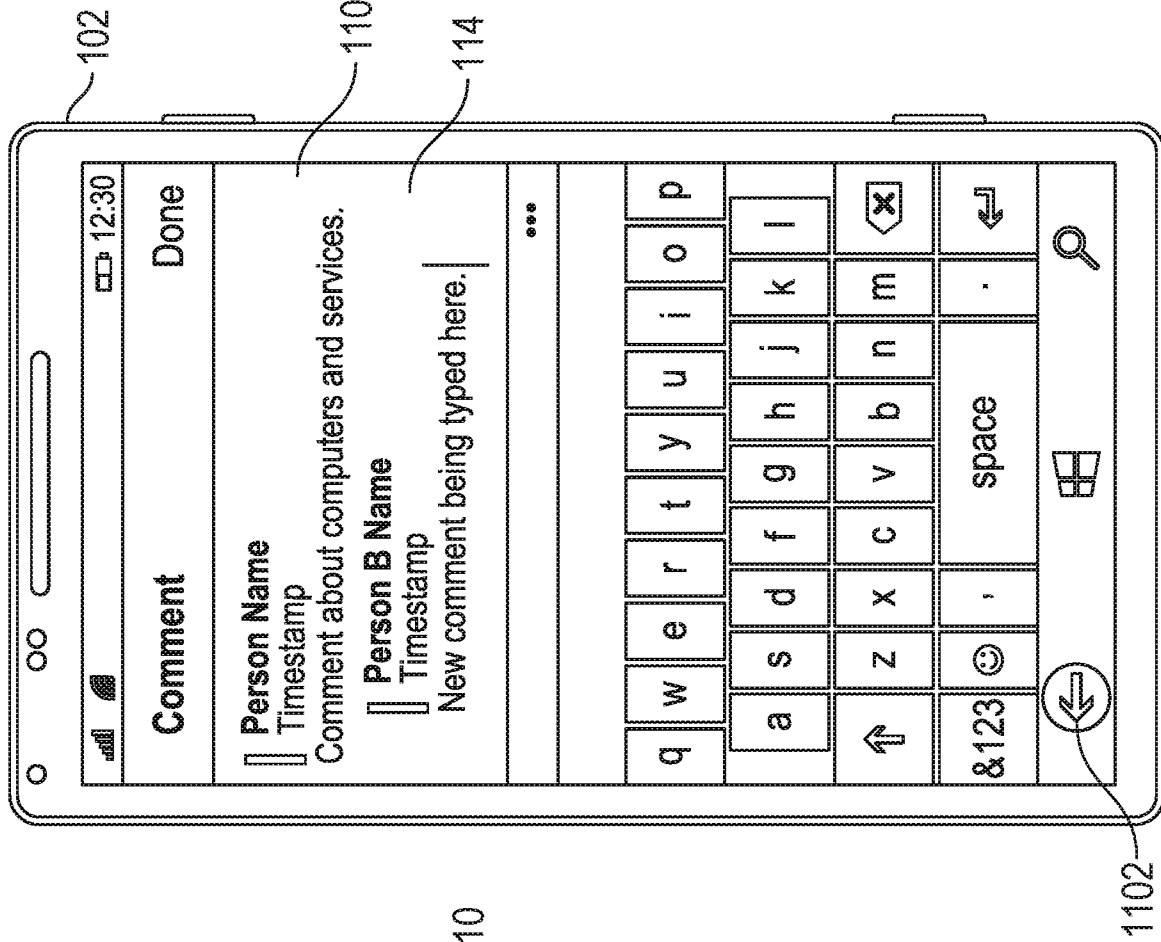


FIG. 10

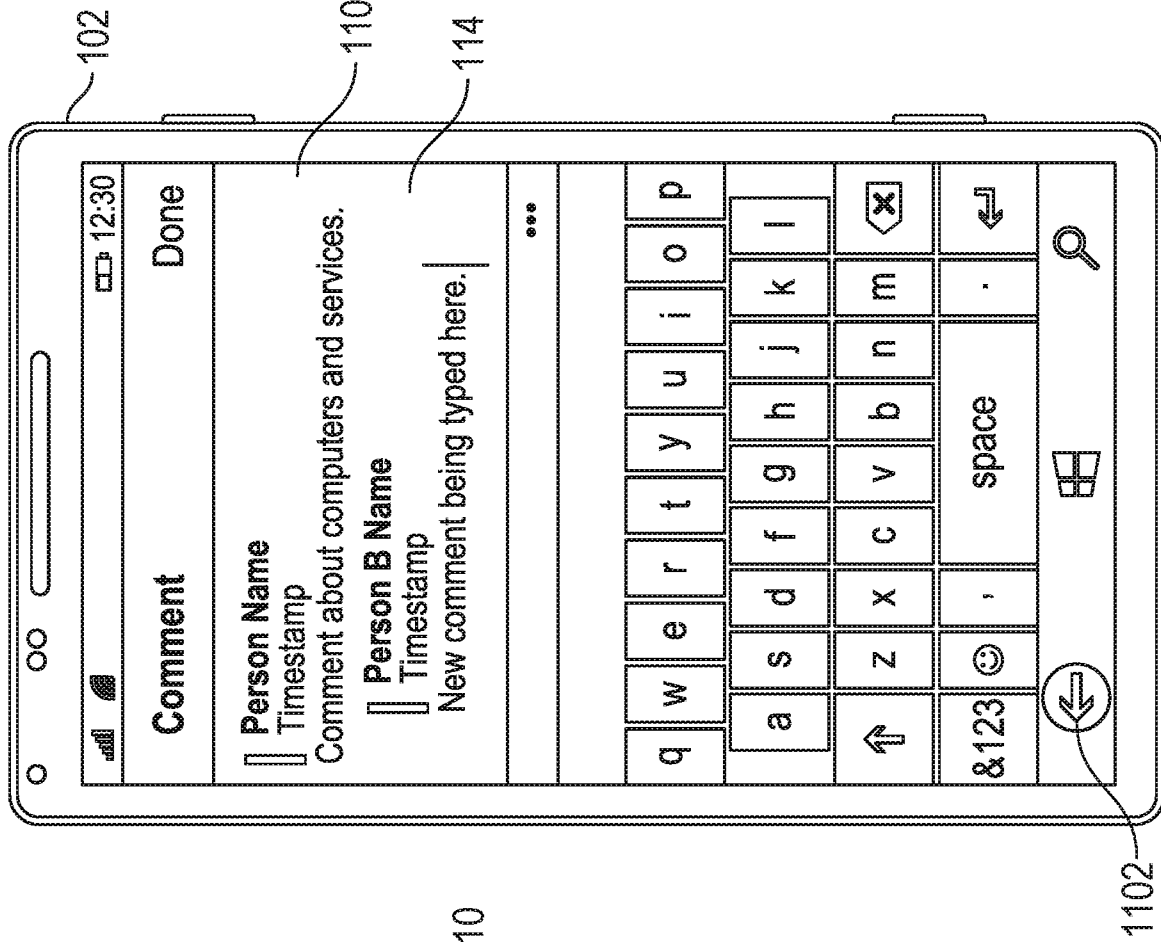


FIG. 11

1200 ↙

Pattern	User Goals	When to use Pattern	Scenario
Commit & Cancel 312 314	<ul style="list-style-type: none"> User needs to save changes User able to discard changes 	<ul style="list-style-type: none"> Scenarios w/ Text Entry, Multi-select Scenario requires second action to complete flow 	<ul style="list-style-type: none"> Edit Hyperlink Alt Text (edit mode) Split Cells
Commit only - Done 312	<ul style="list-style-type: none"> User needs to navigate after making changes 	<ul style="list-style-type: none"> "Insta-commit" changes, particularly text entry 	<ul style="list-style-type: none"> Comment (edit mode) Sort/Filter Shape Size (edit mode)
Back/Drill-out 1002	<ul style="list-style-type: none"> User needs to navigate after making changes 	<ul style="list-style-type: none"> "Insta-commit" scenarios after Drilling-in 	<ul style="list-style-type: none"> Settings
Close (X) 316	<ul style="list-style-type: none"> User needs to navigate 	<ul style="list-style-type: none"> Half Pane Non-editable scenarios 	<ul style="list-style-type: none"> Comment Half Pane Insights Half Pane

FIG. 12

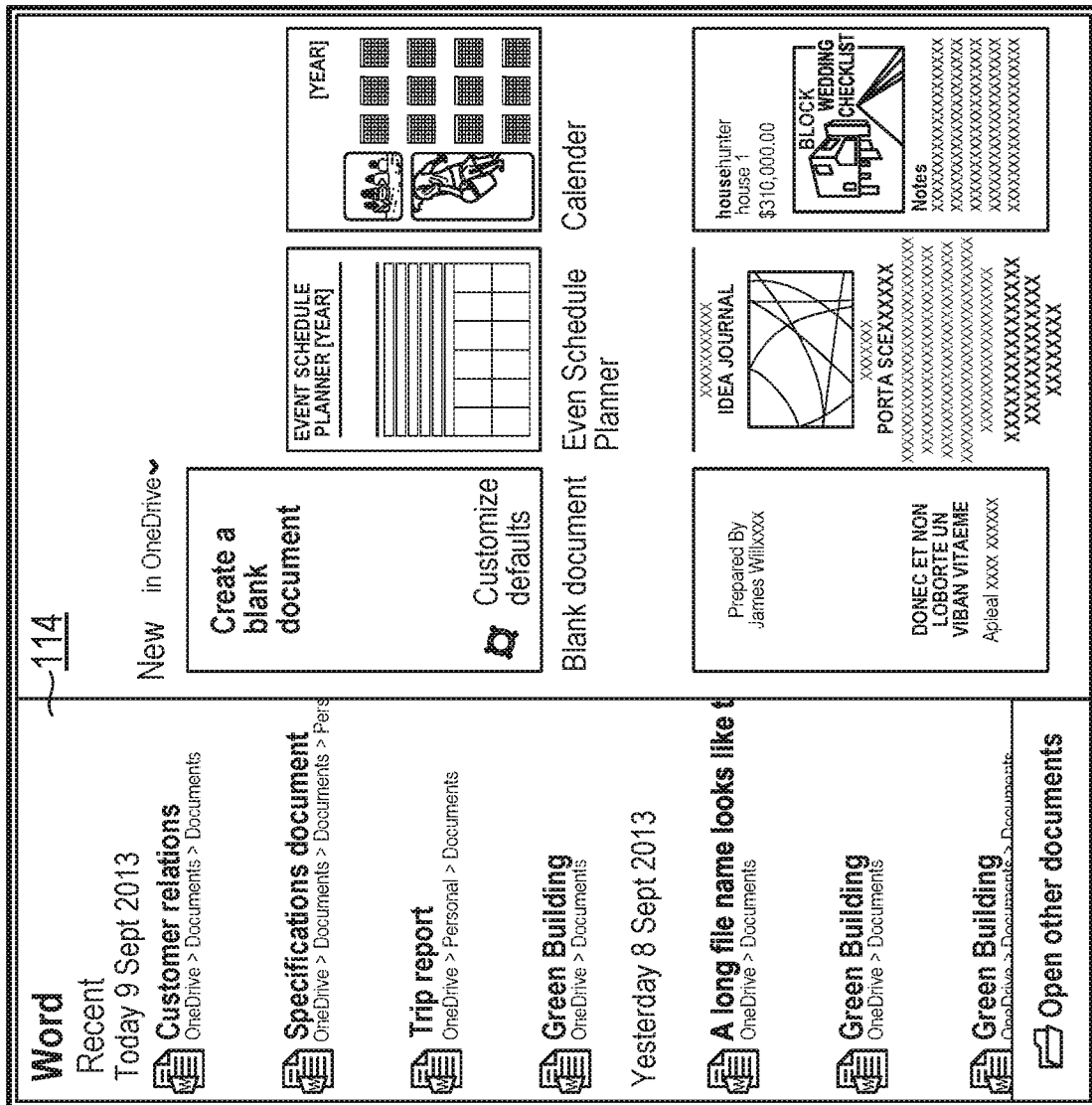
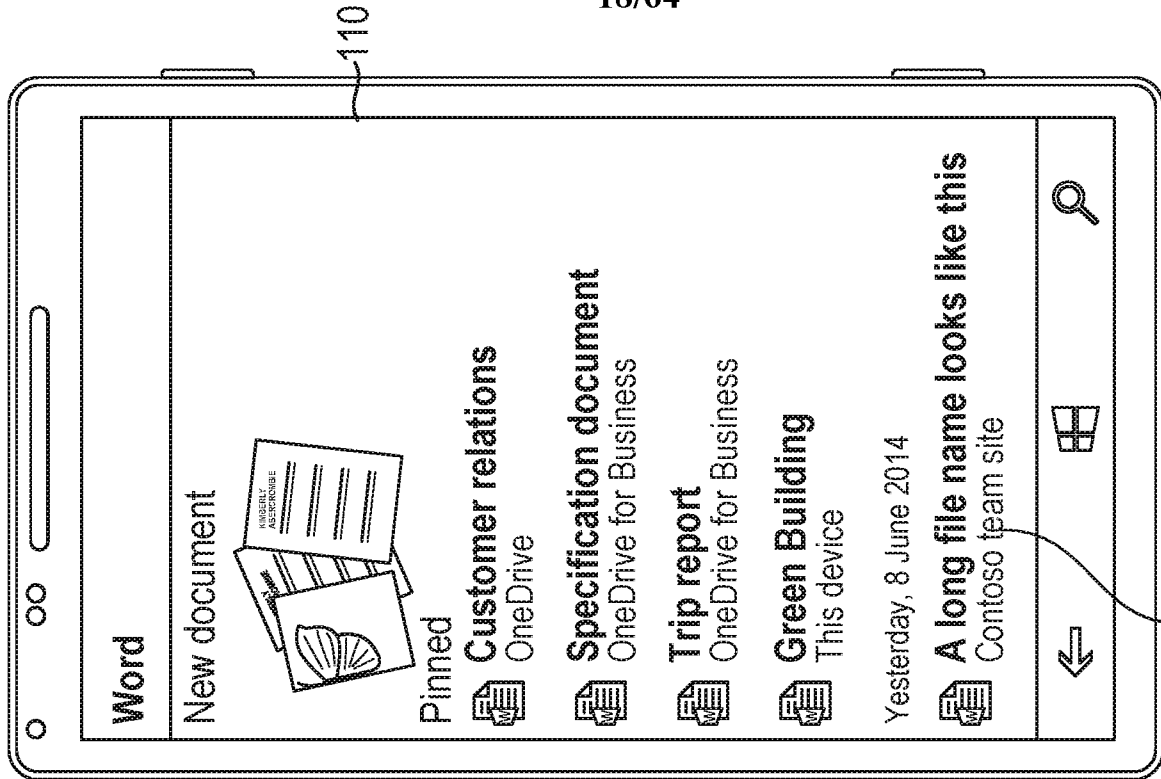


FIG. 13

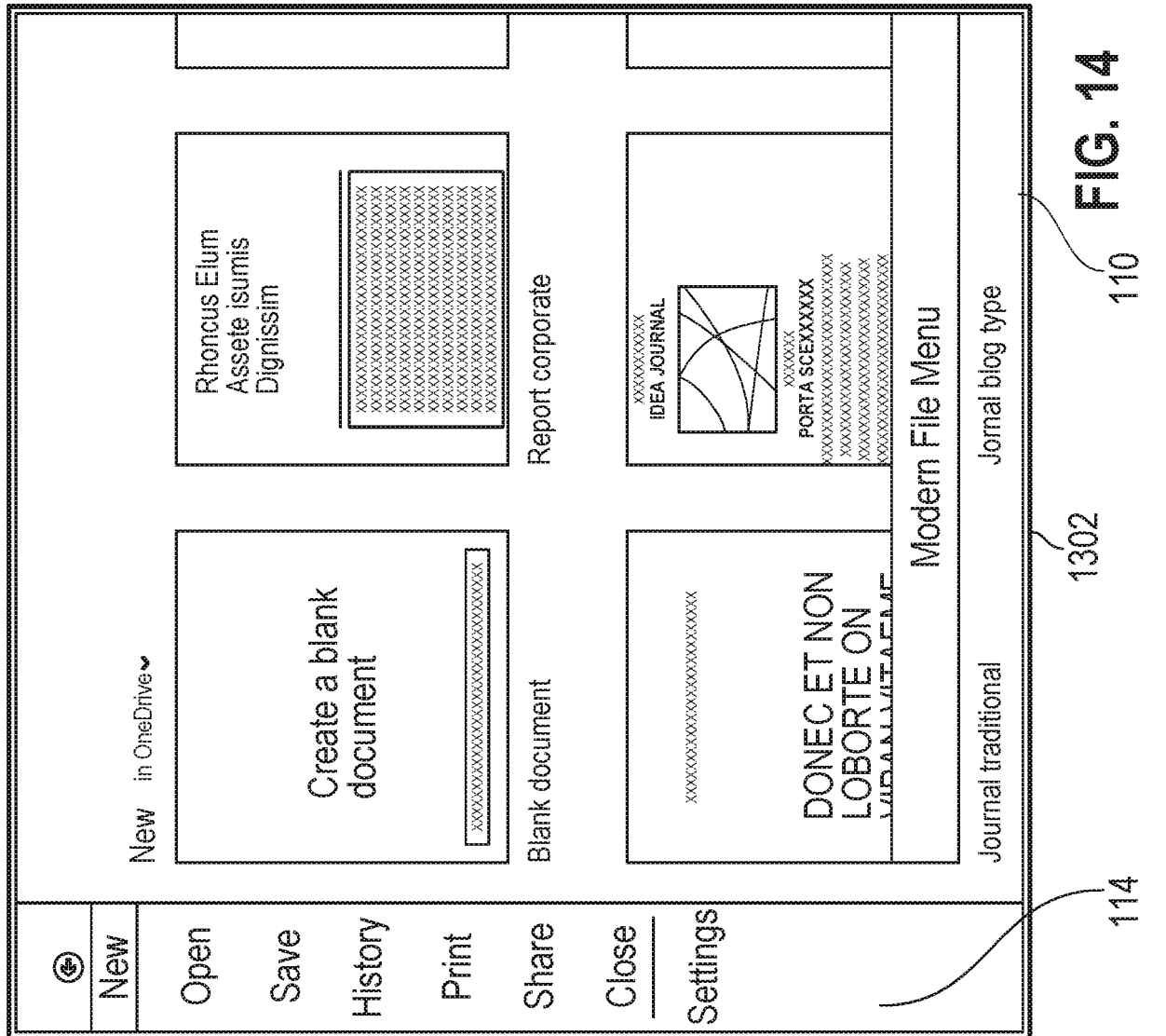
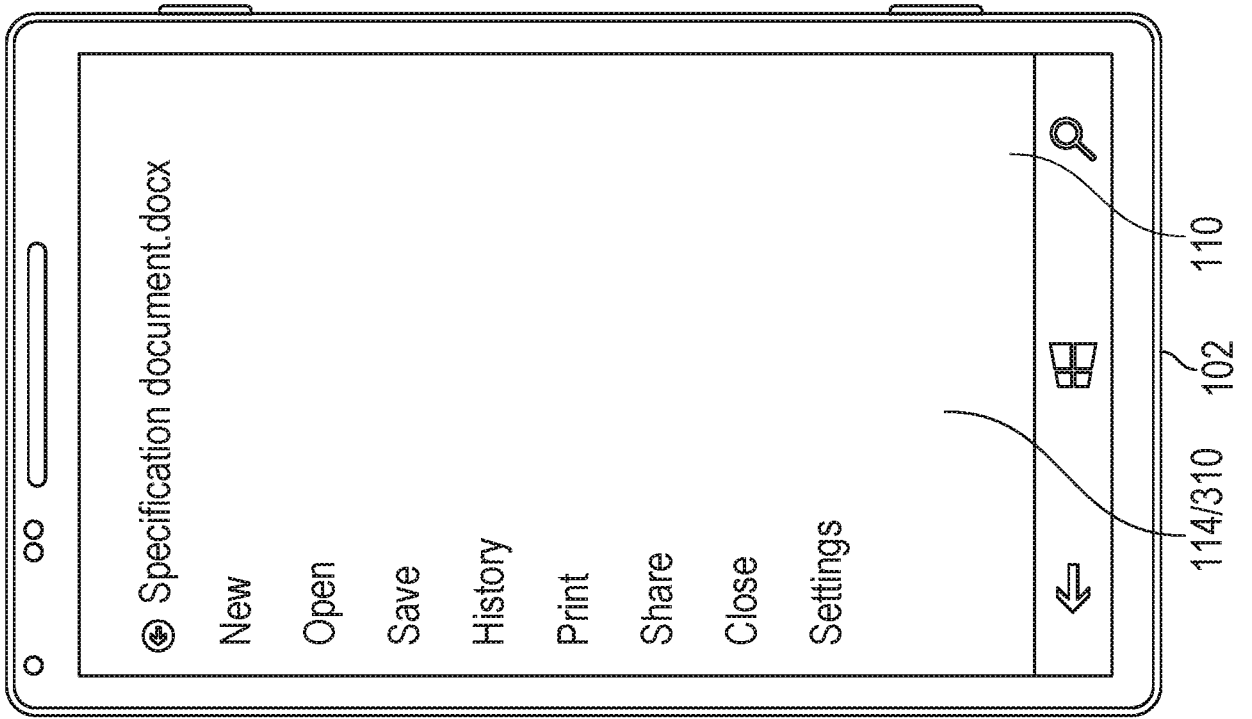


FIG. 14

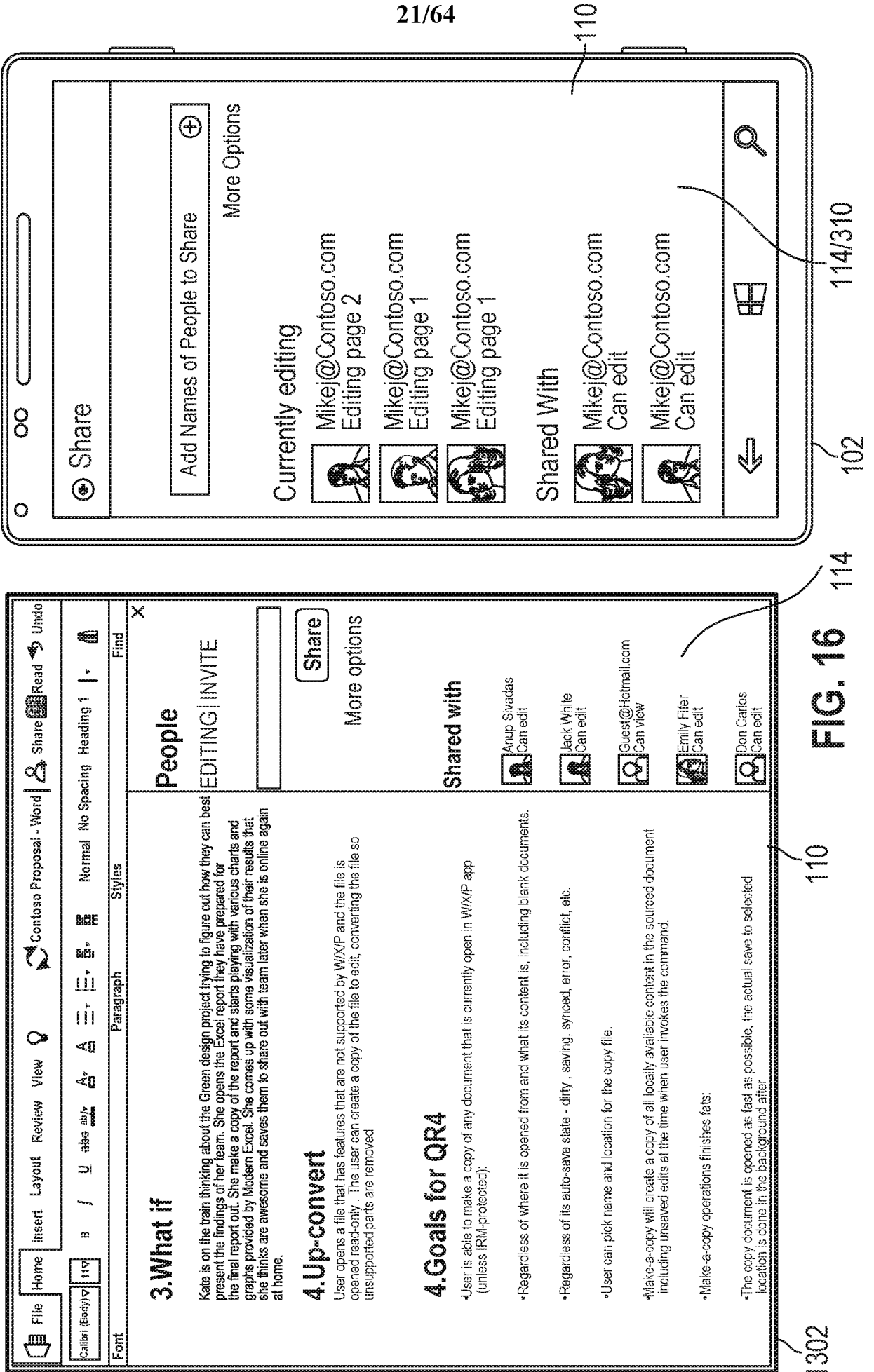


FIG. 16

1302

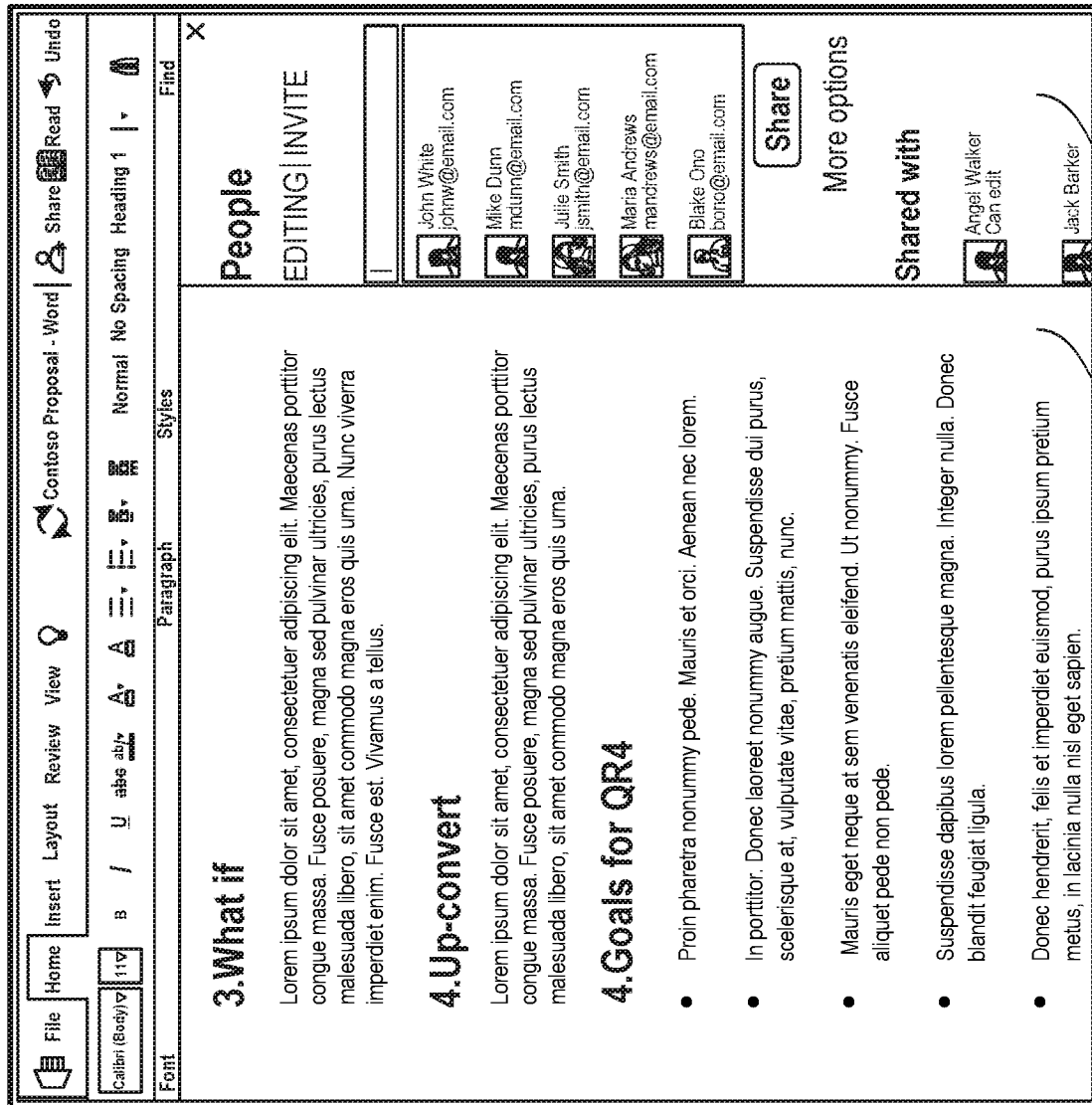
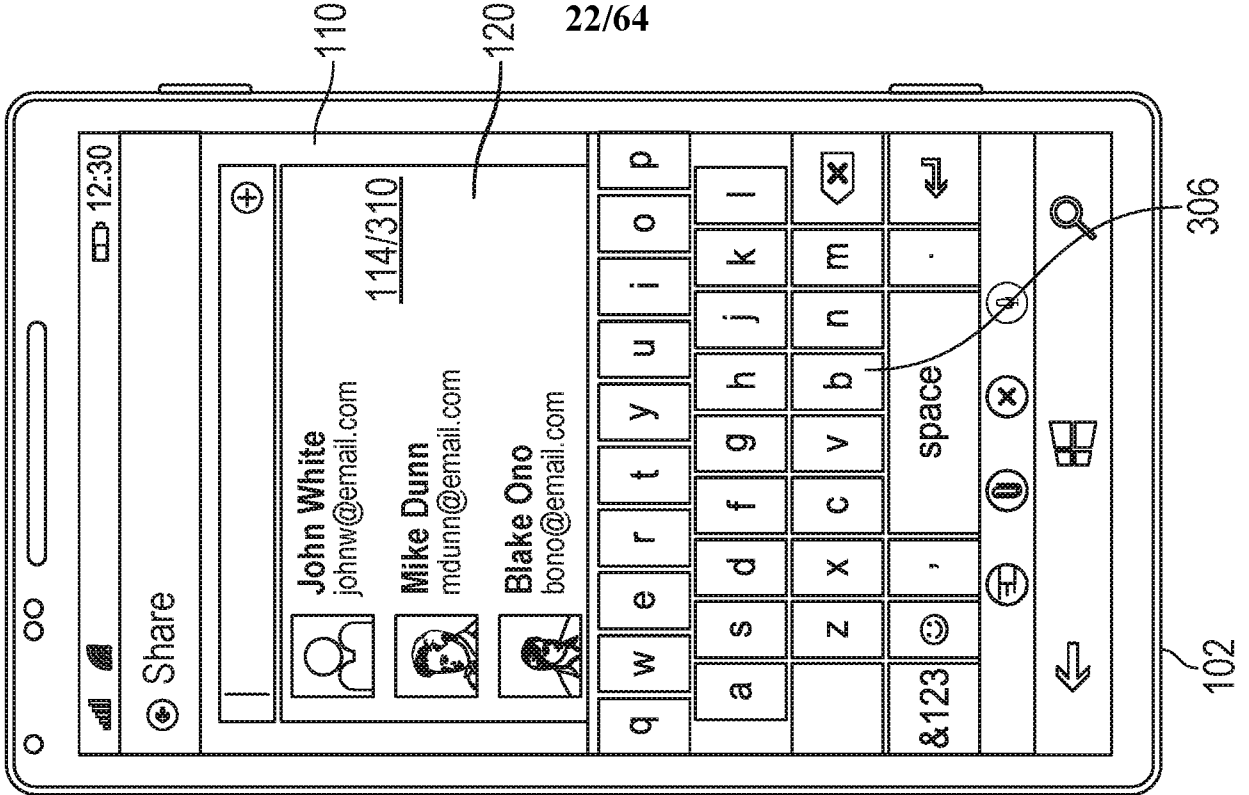
110

114

102

114/310

110



114 FIG. 17

110

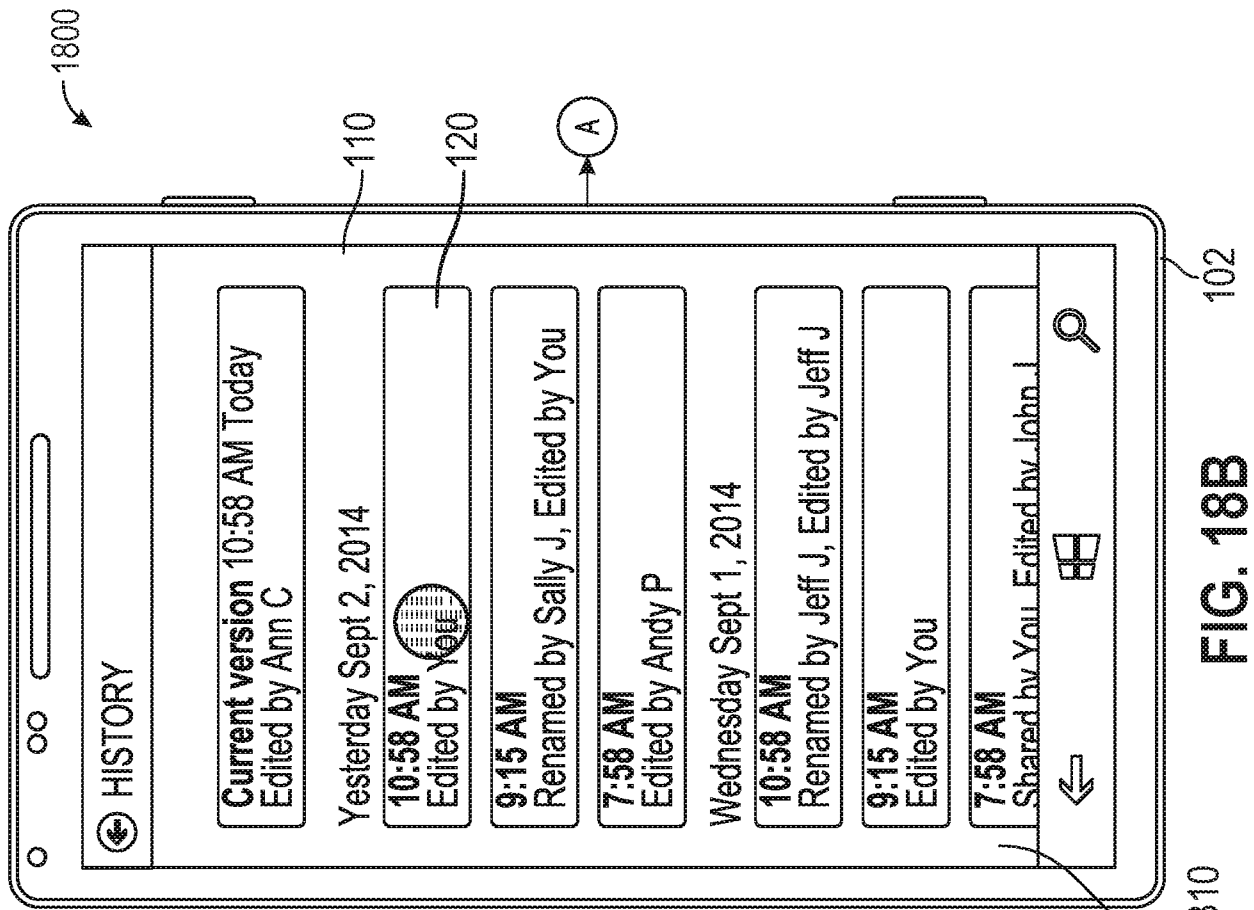


FIG. 18B

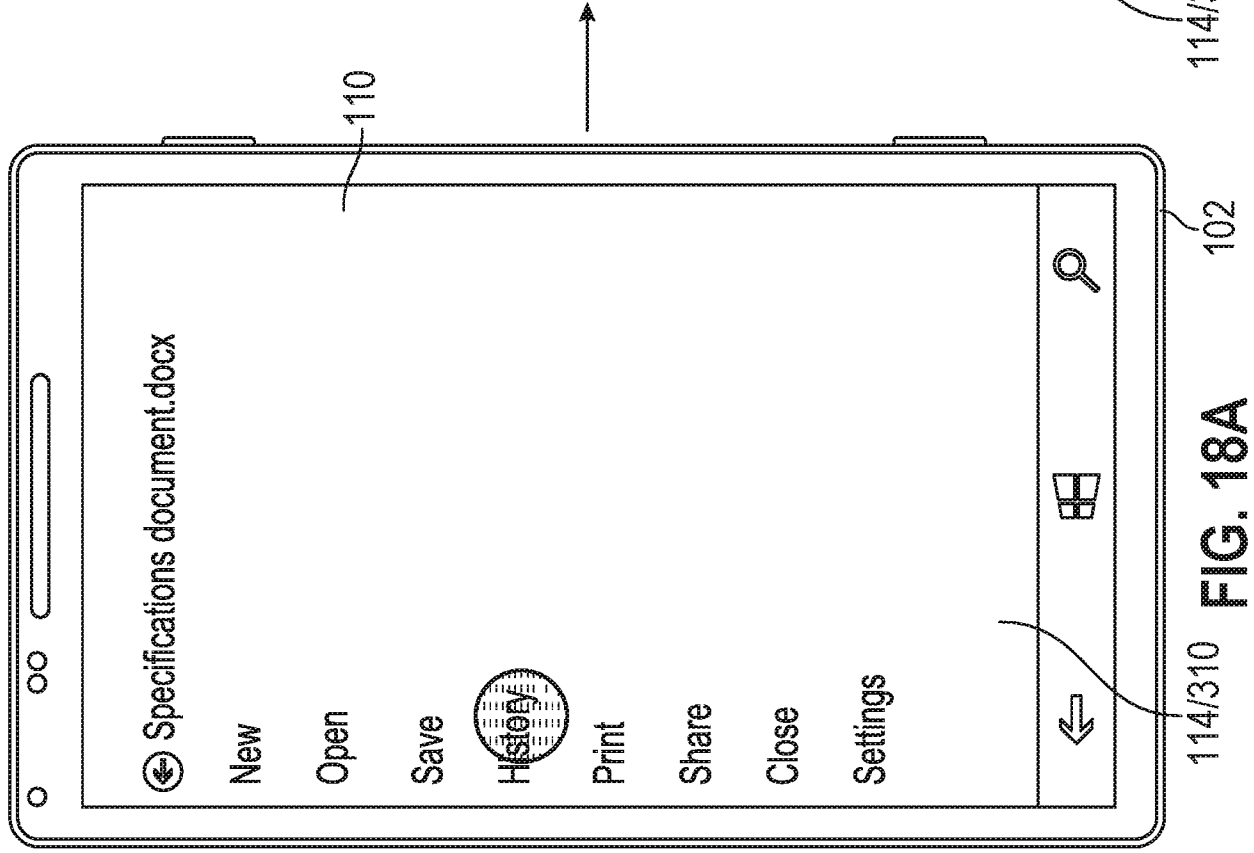
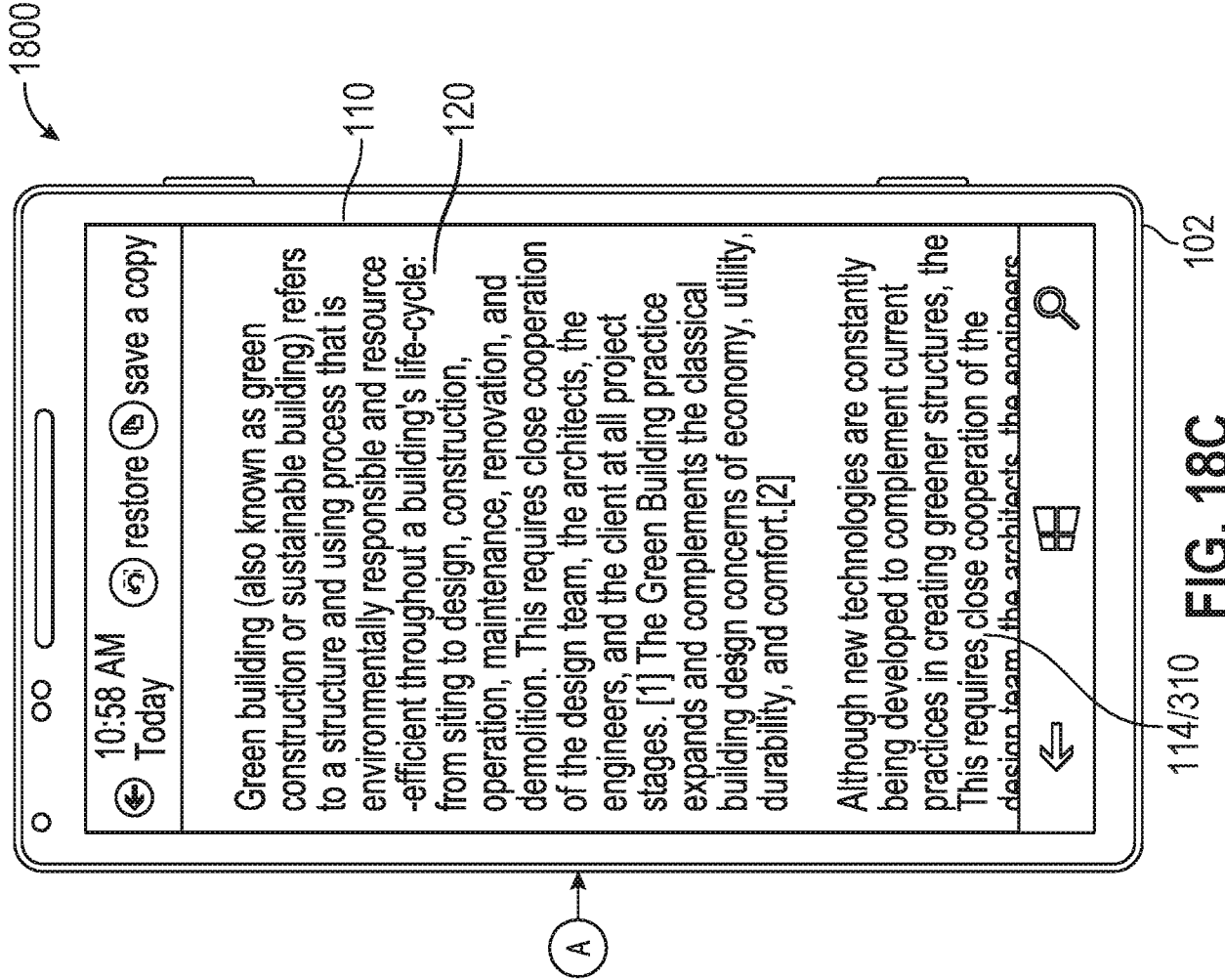
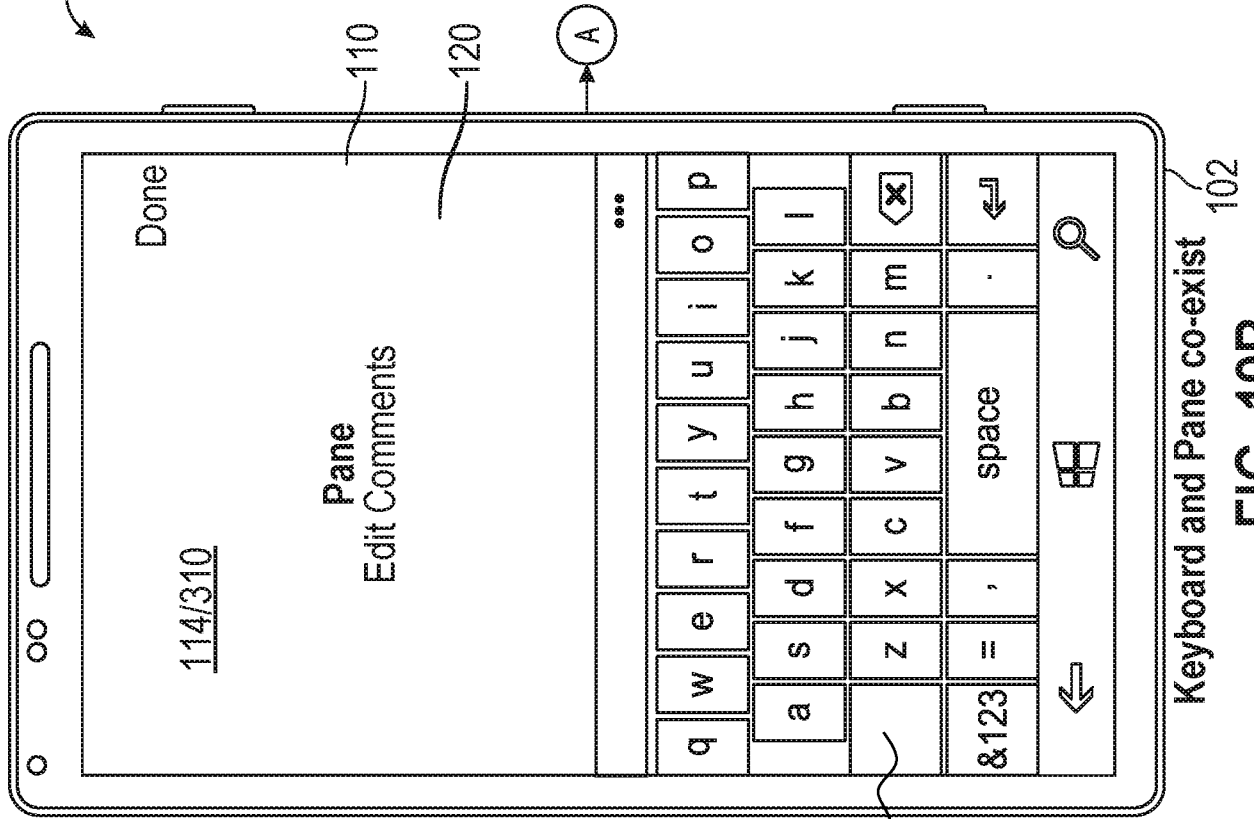
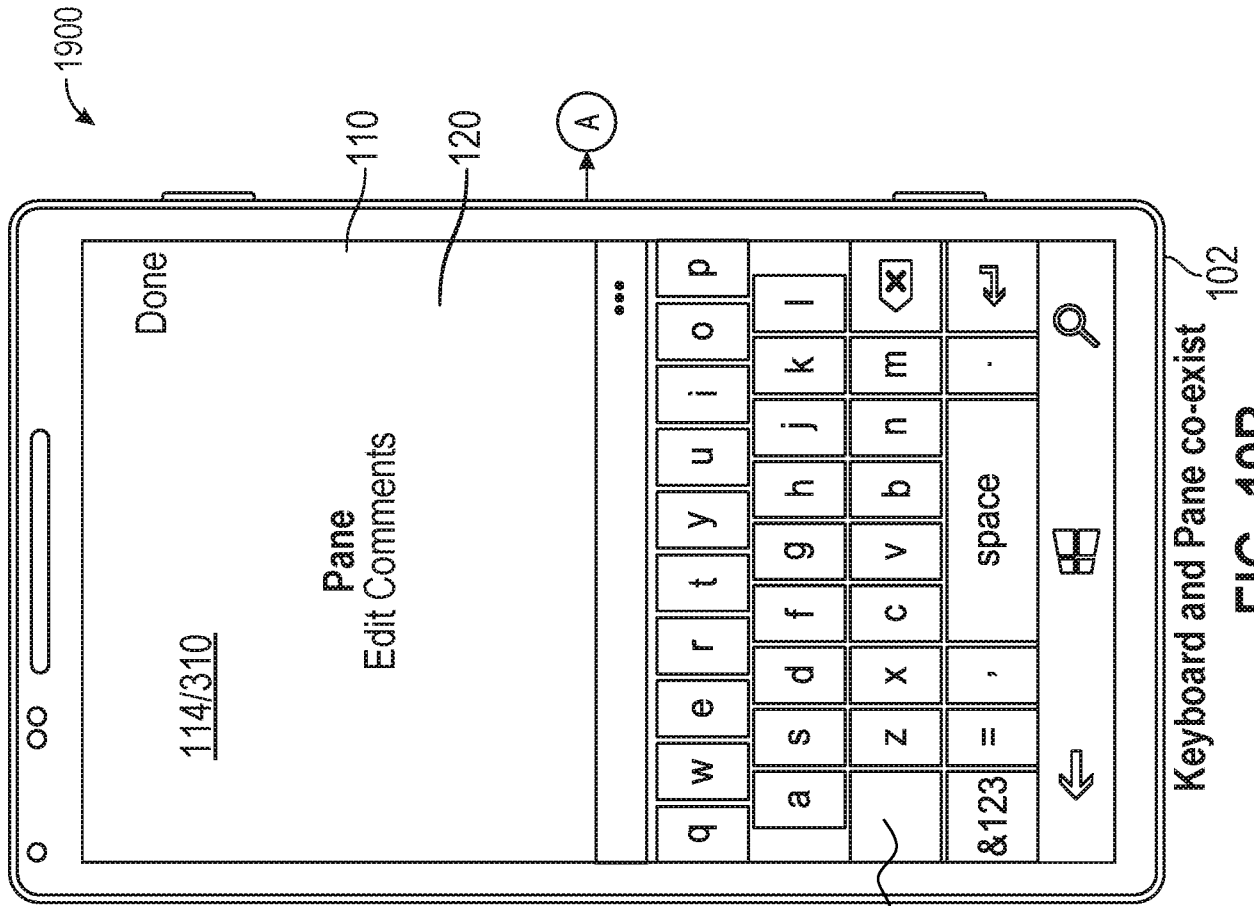
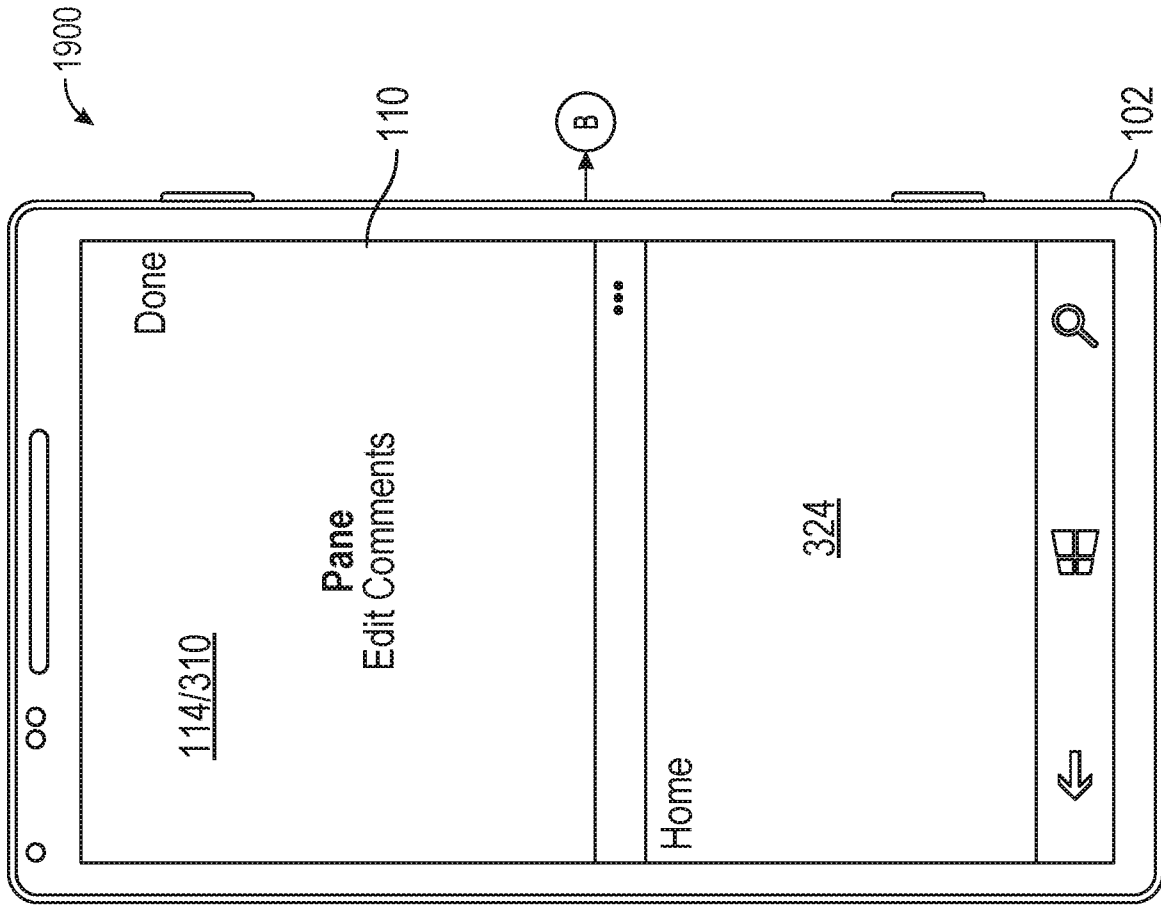


FIG. 18A



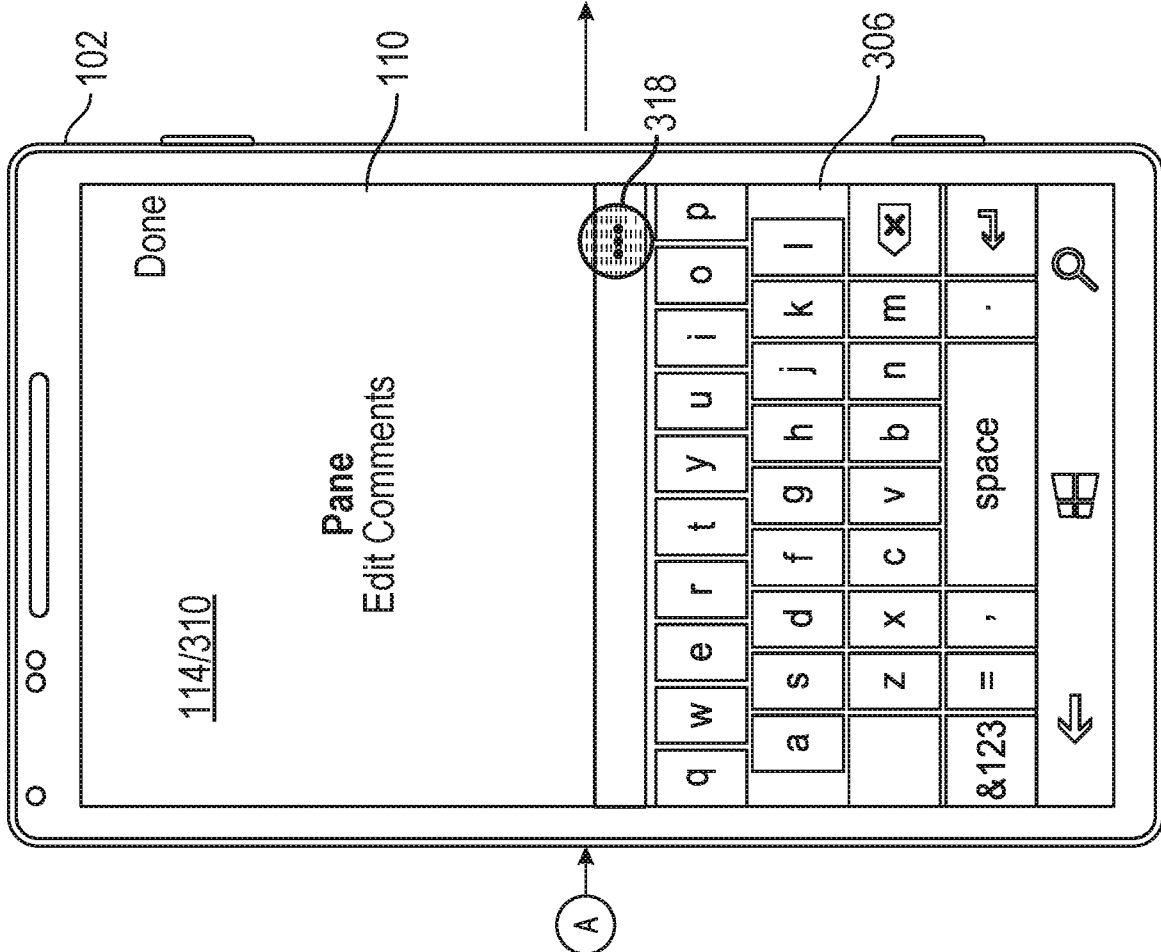


26/64



Palette and pane co-exist

FIG. 19D



Open palette

FIG. 19C

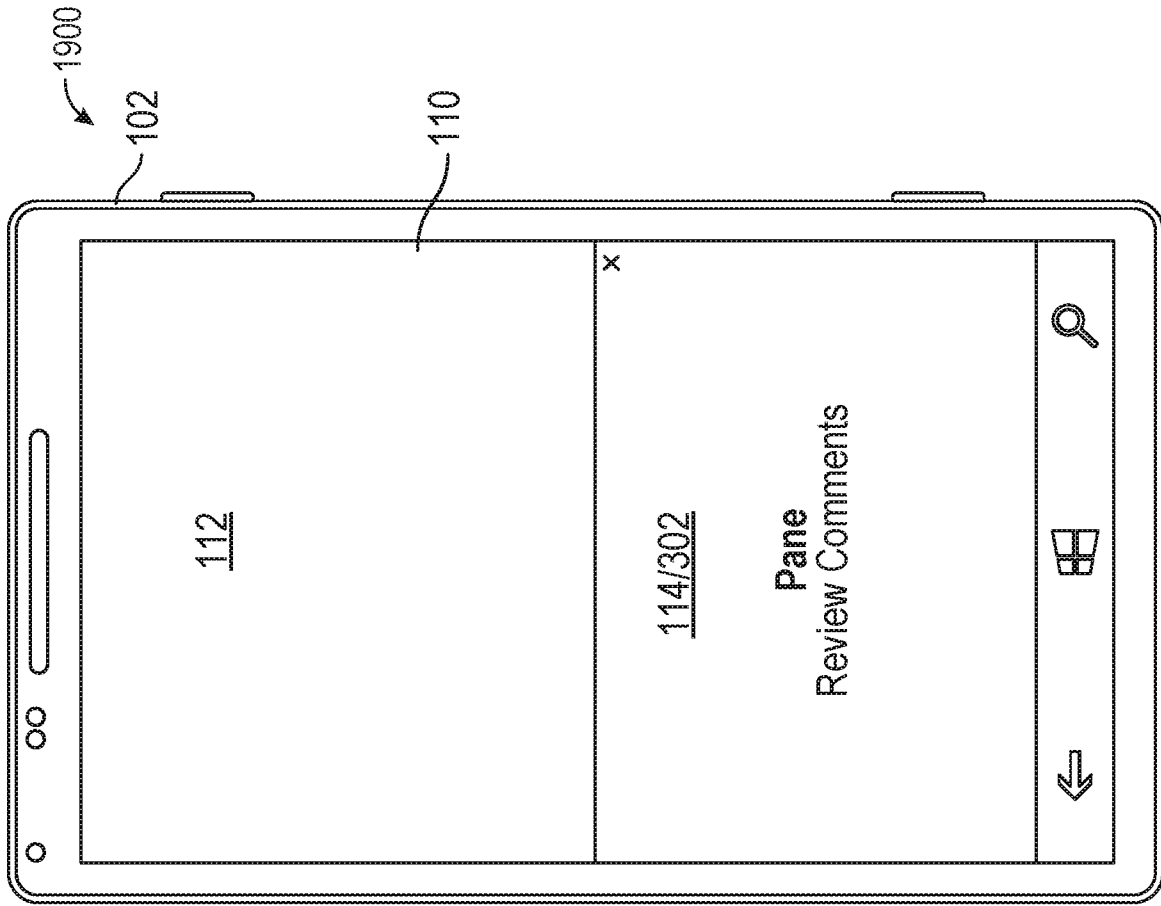


FIG. 19E

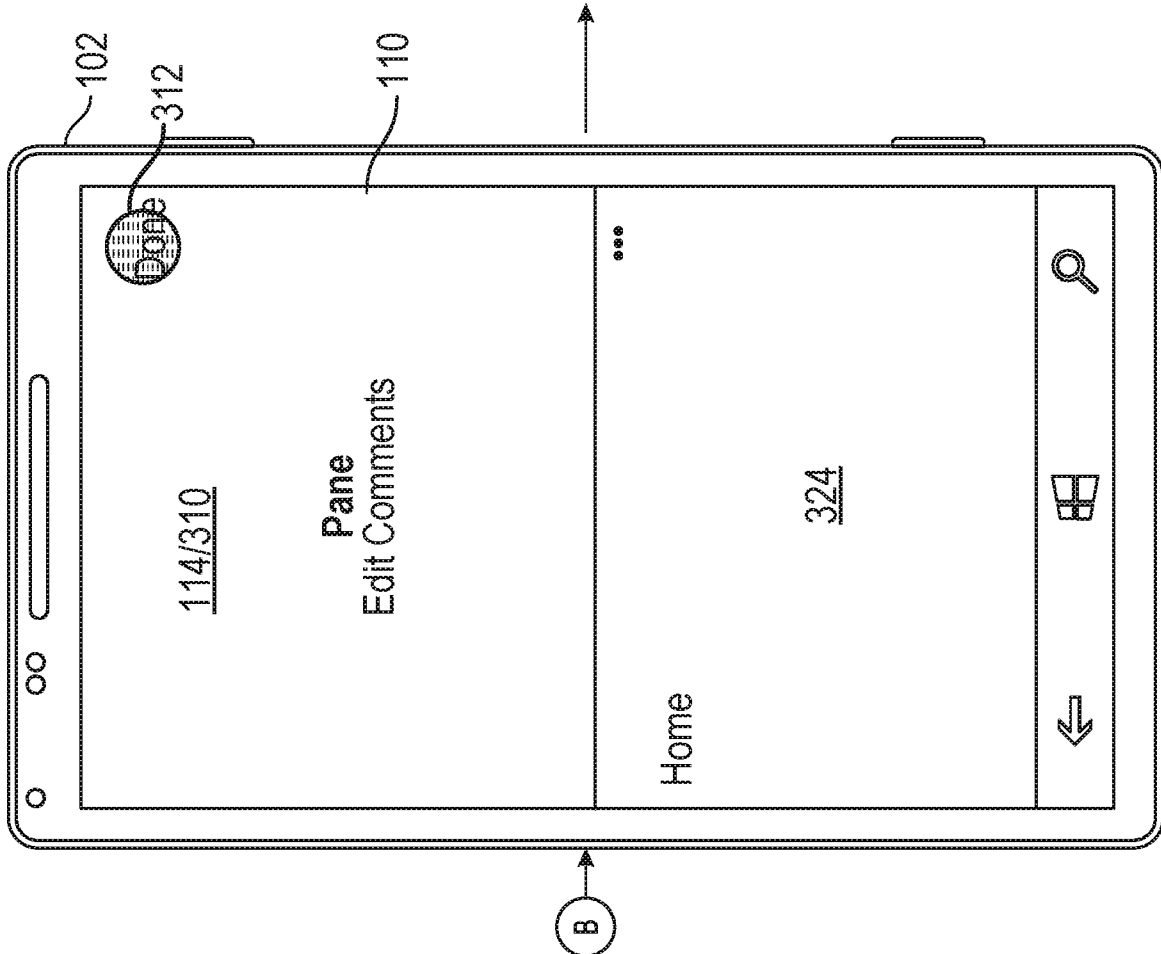
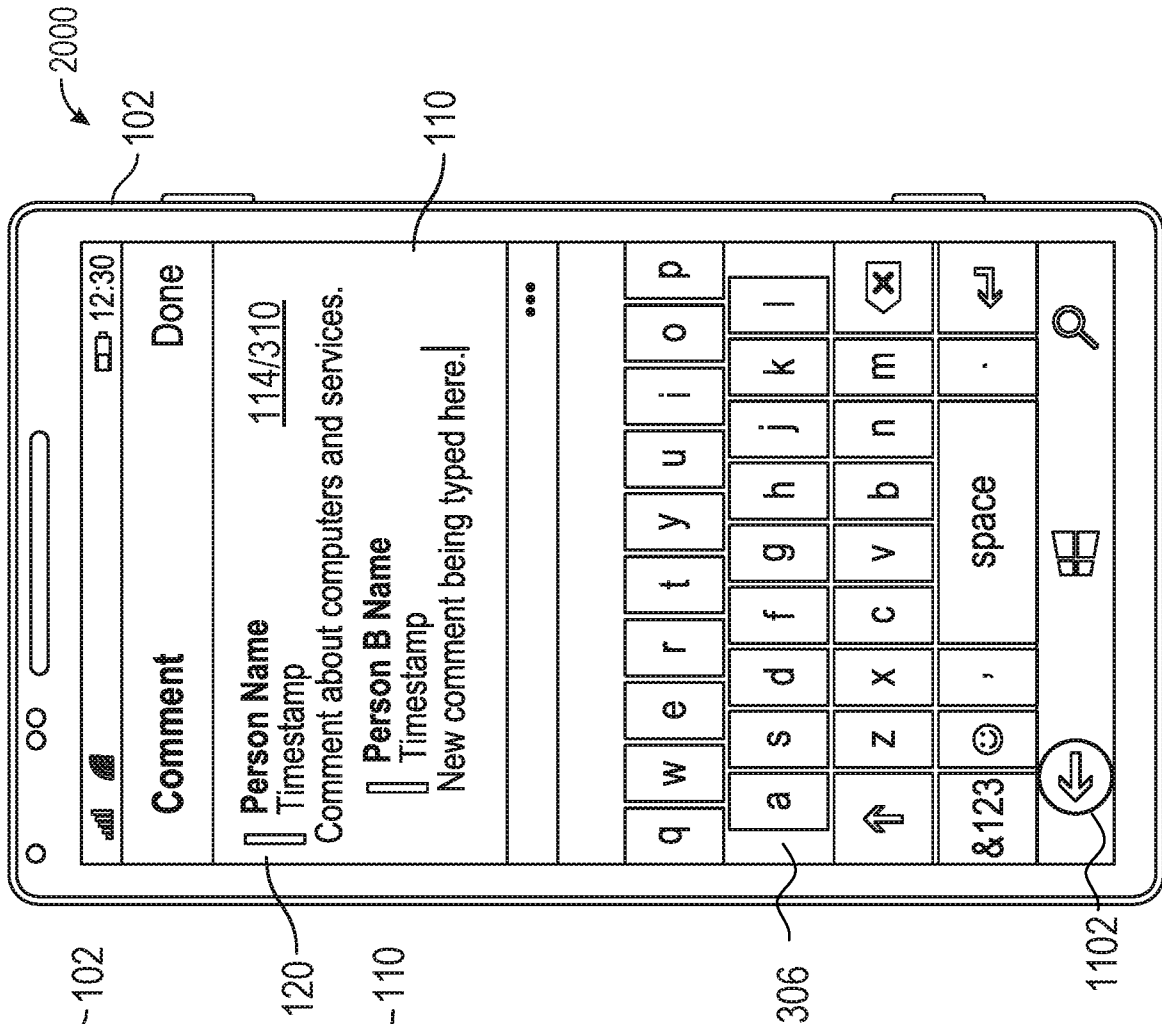
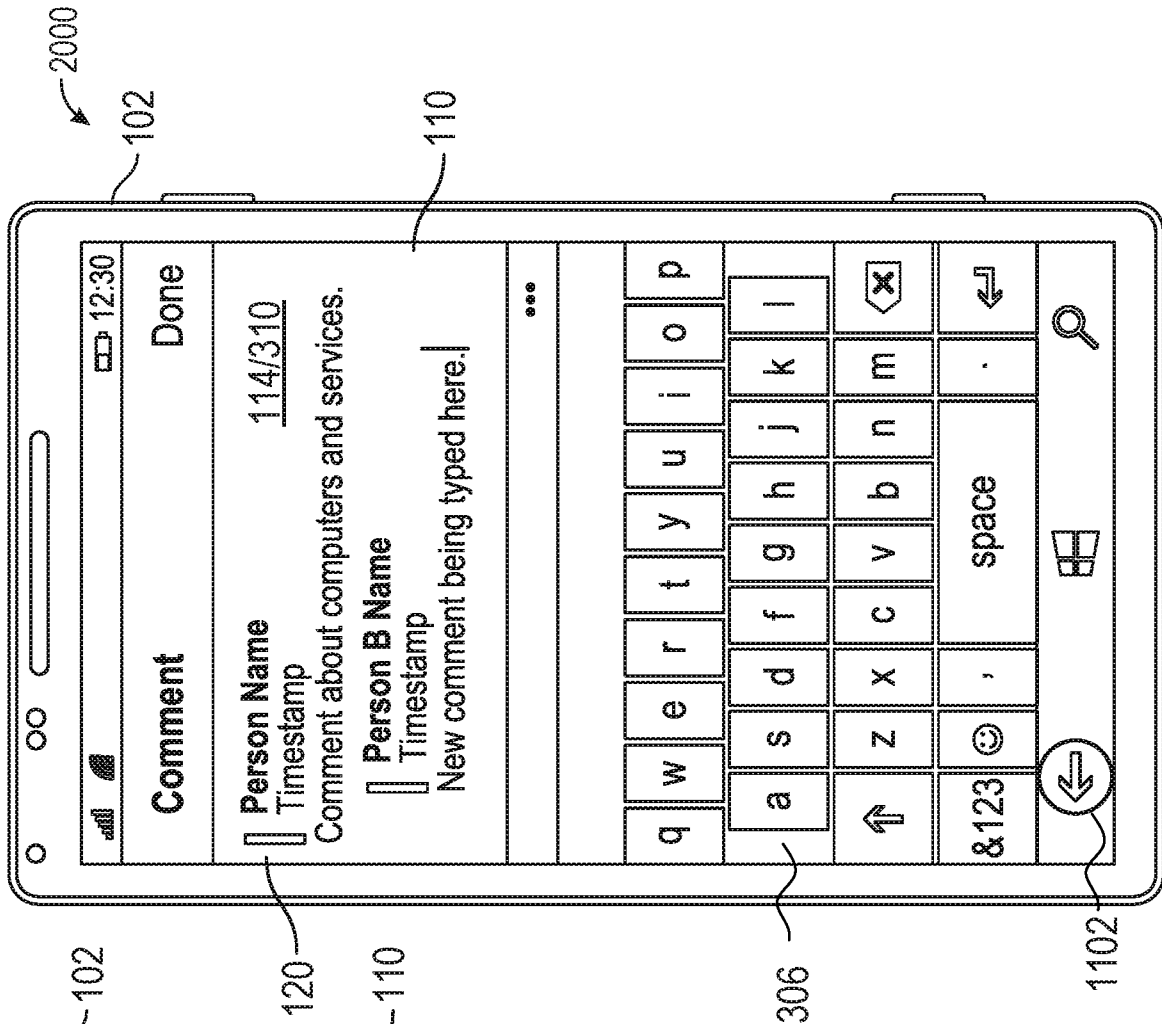


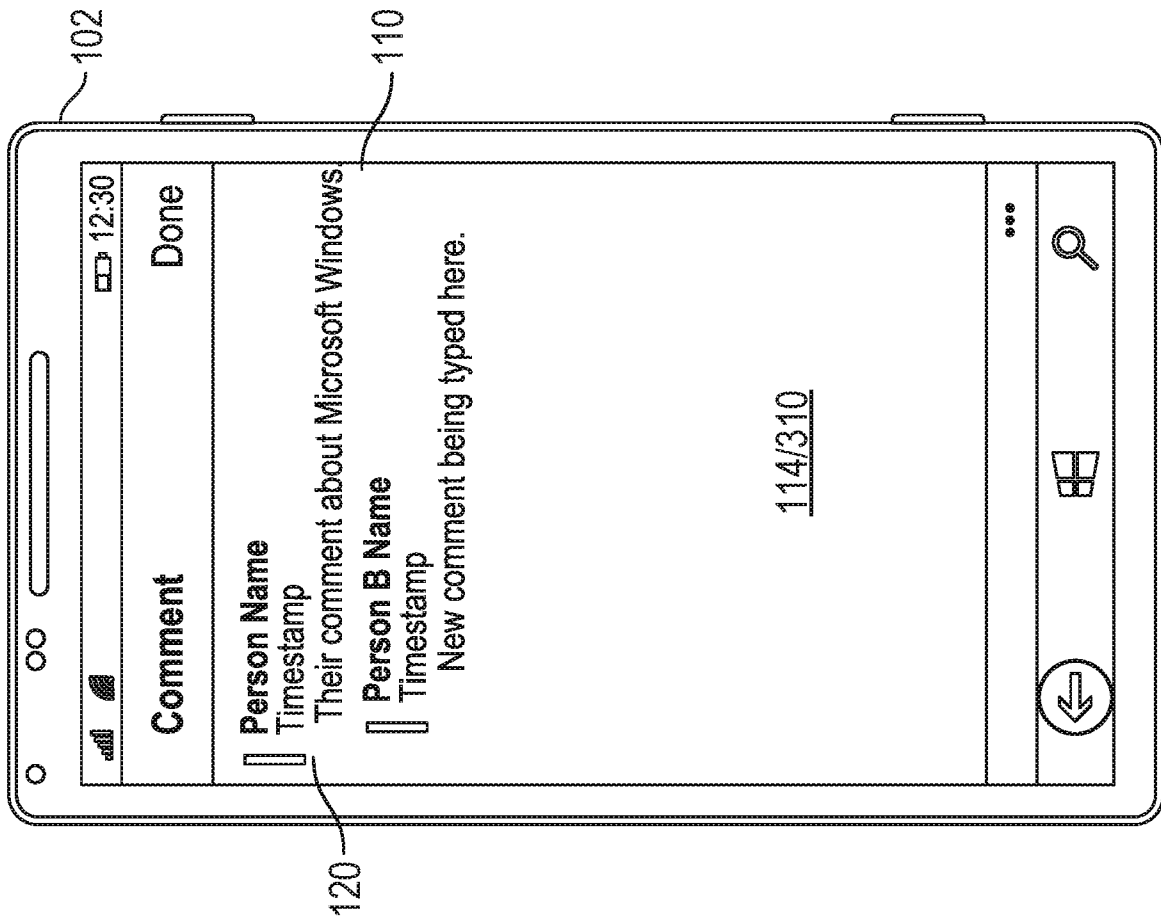
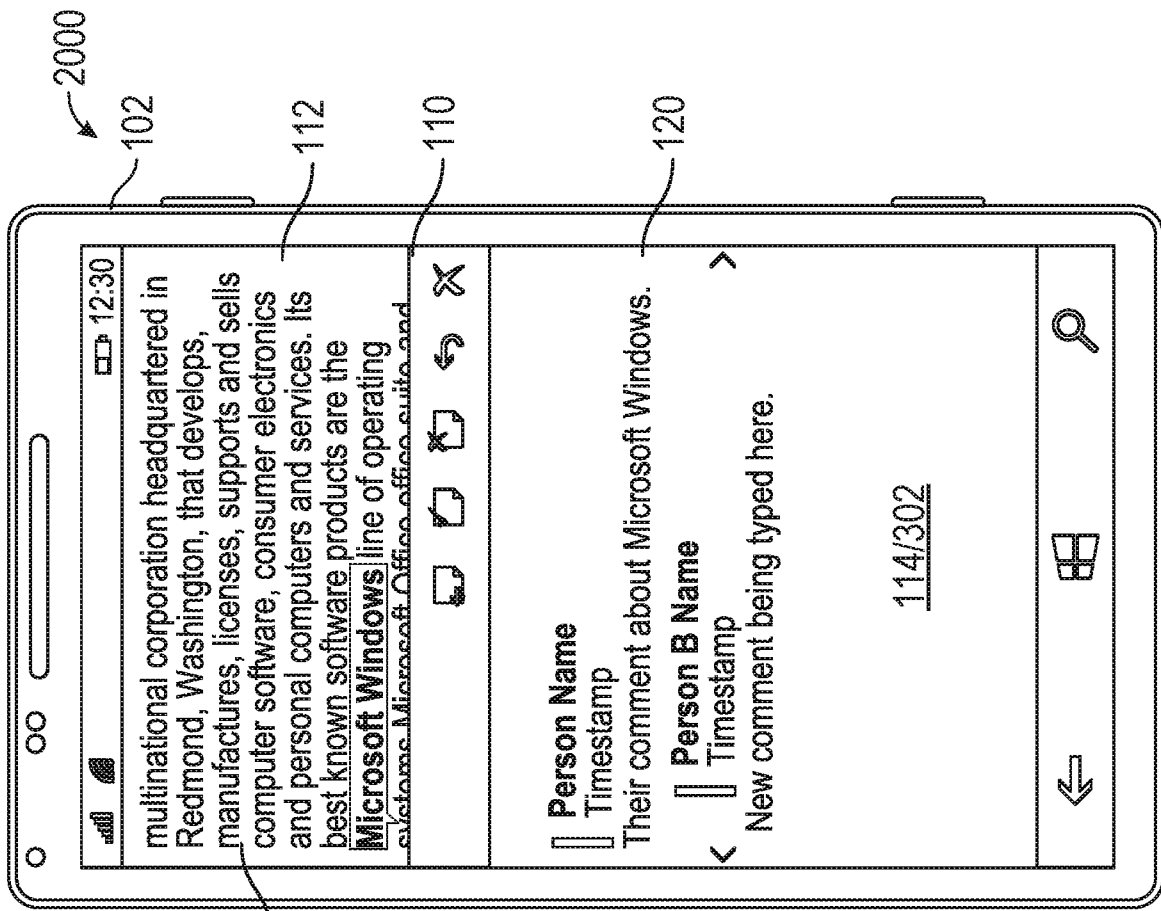
FIG. 19F



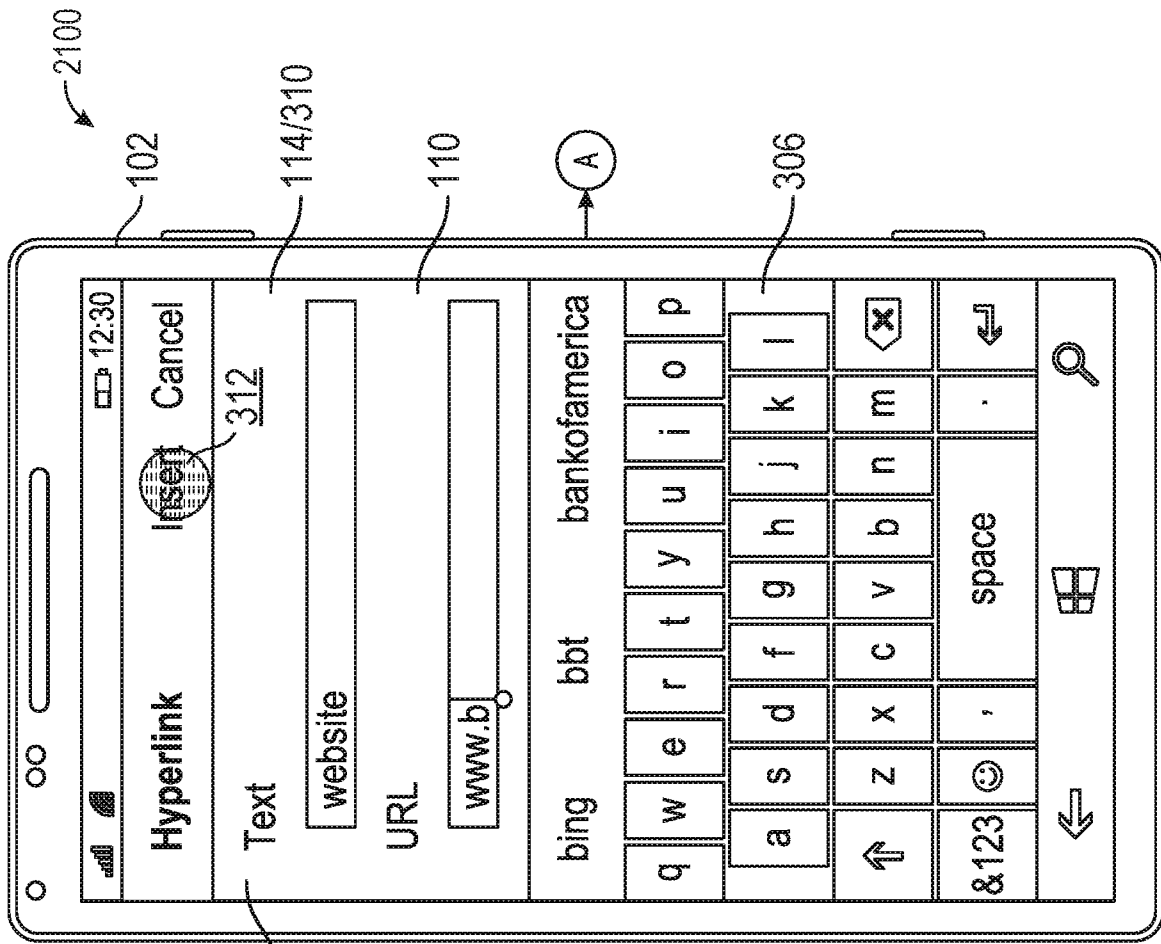
Commenting Partial Pane Select "reply"
FIG. 20A



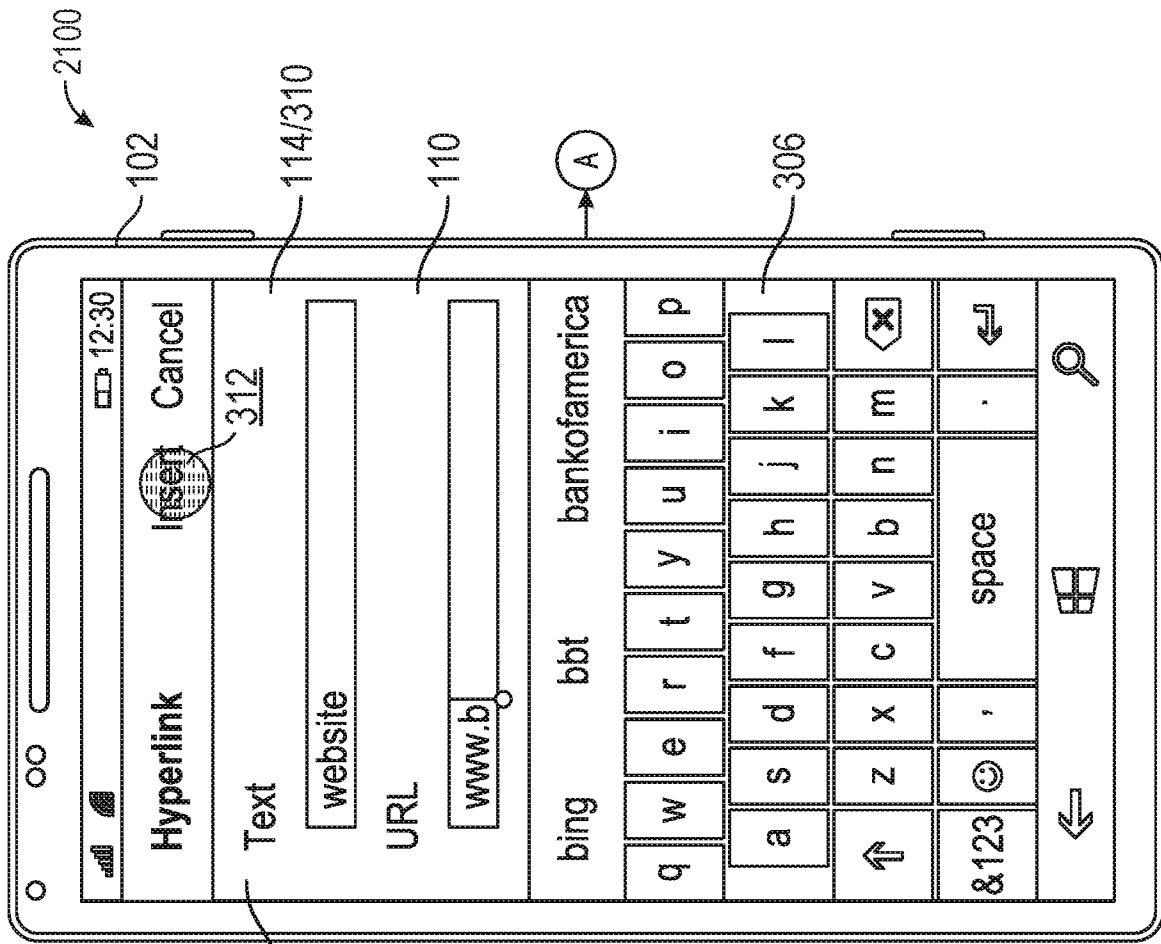
Full pane User types reply and selects OS back command
FIG. 20B



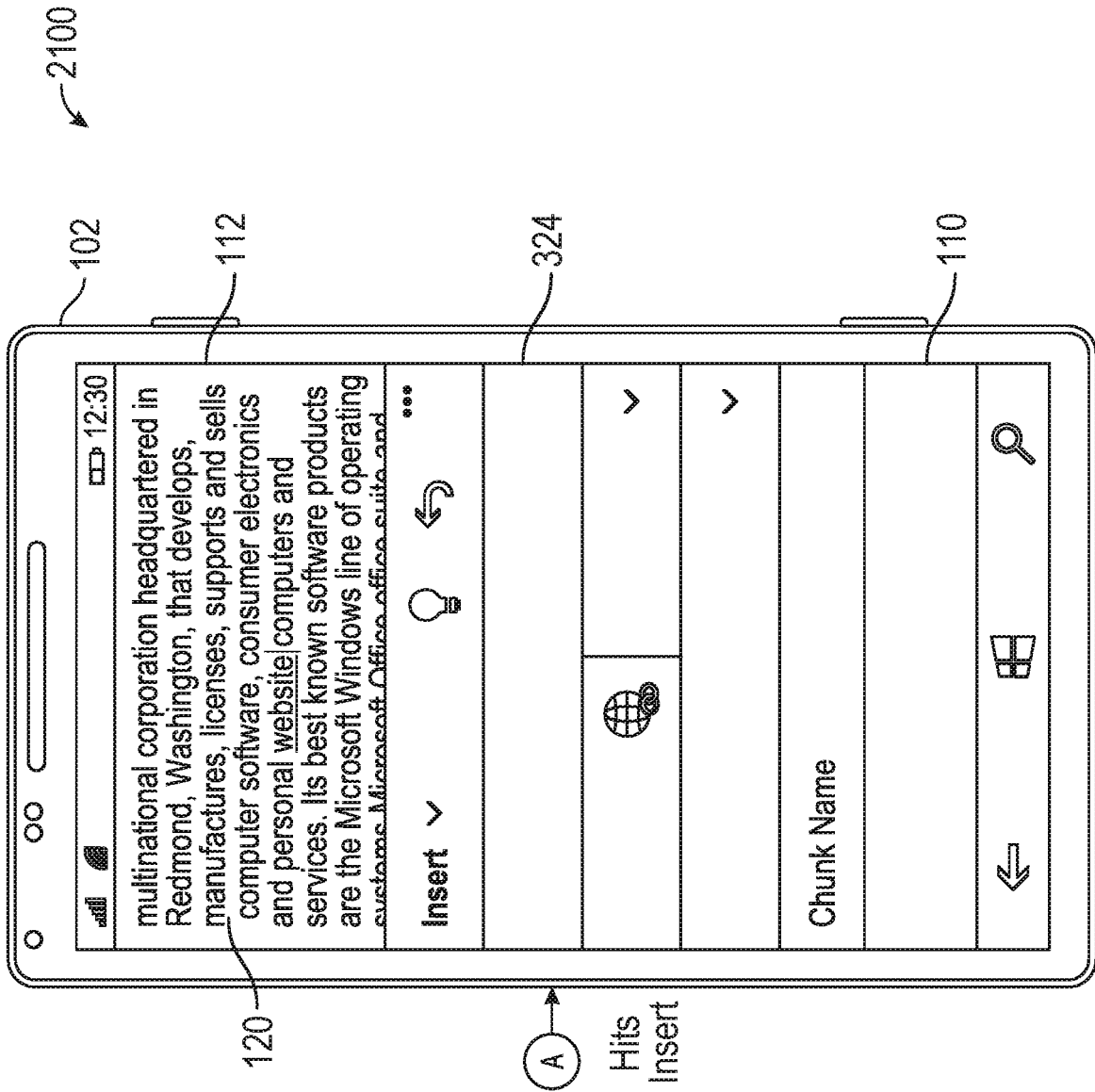
Keyboard drops, and user selects OS back command
 Comment is saved Partial comment is displayed
FIG. 20C
FIG. 20D



Insert Tab in Palette
FIG. 21A

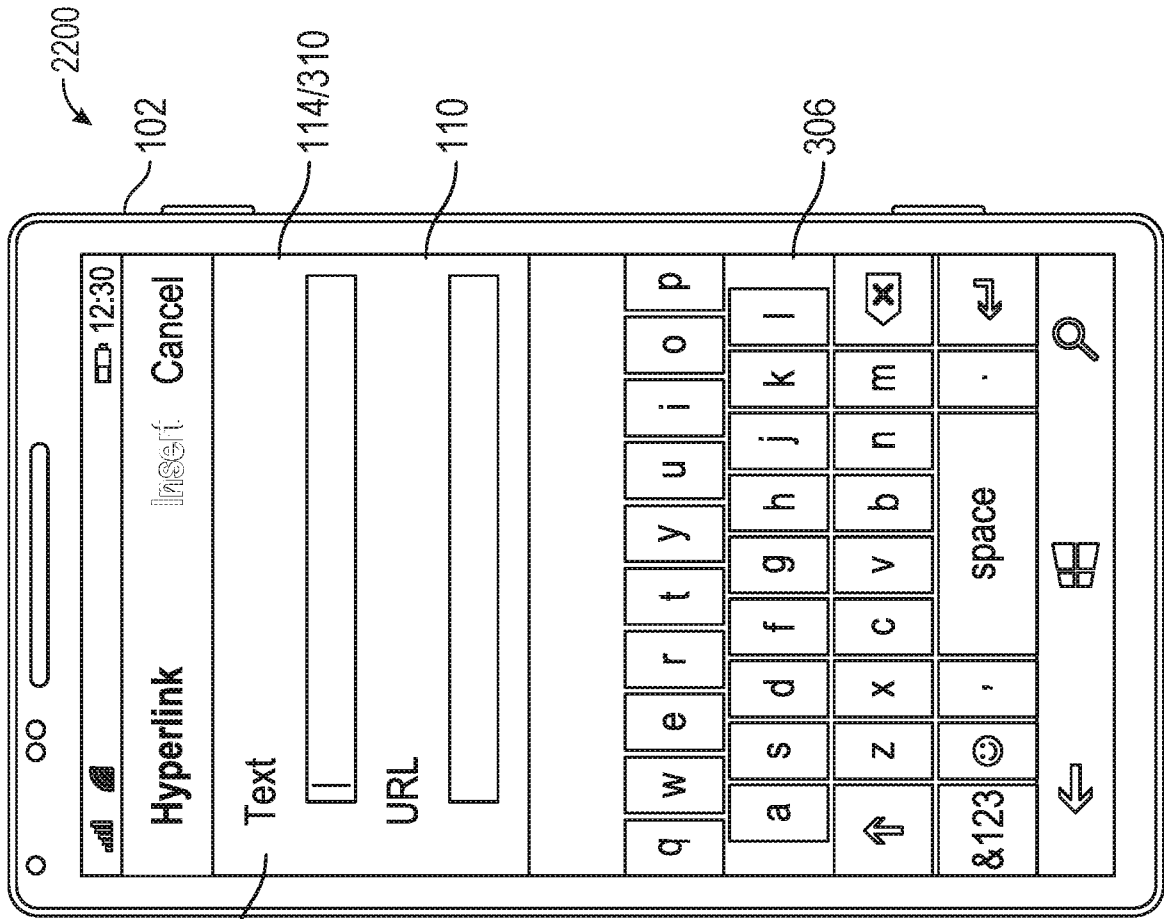


Type Display Text and URL
FIG. 21B

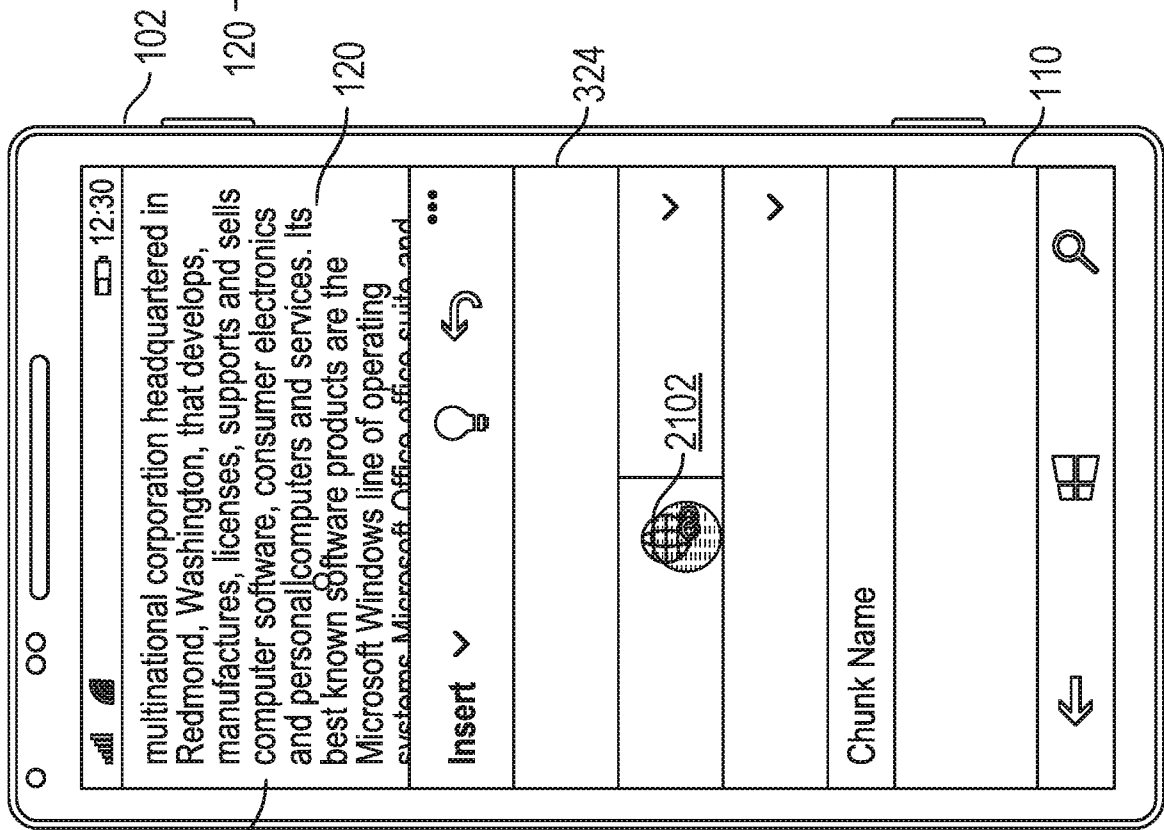


Link Inserted into Document

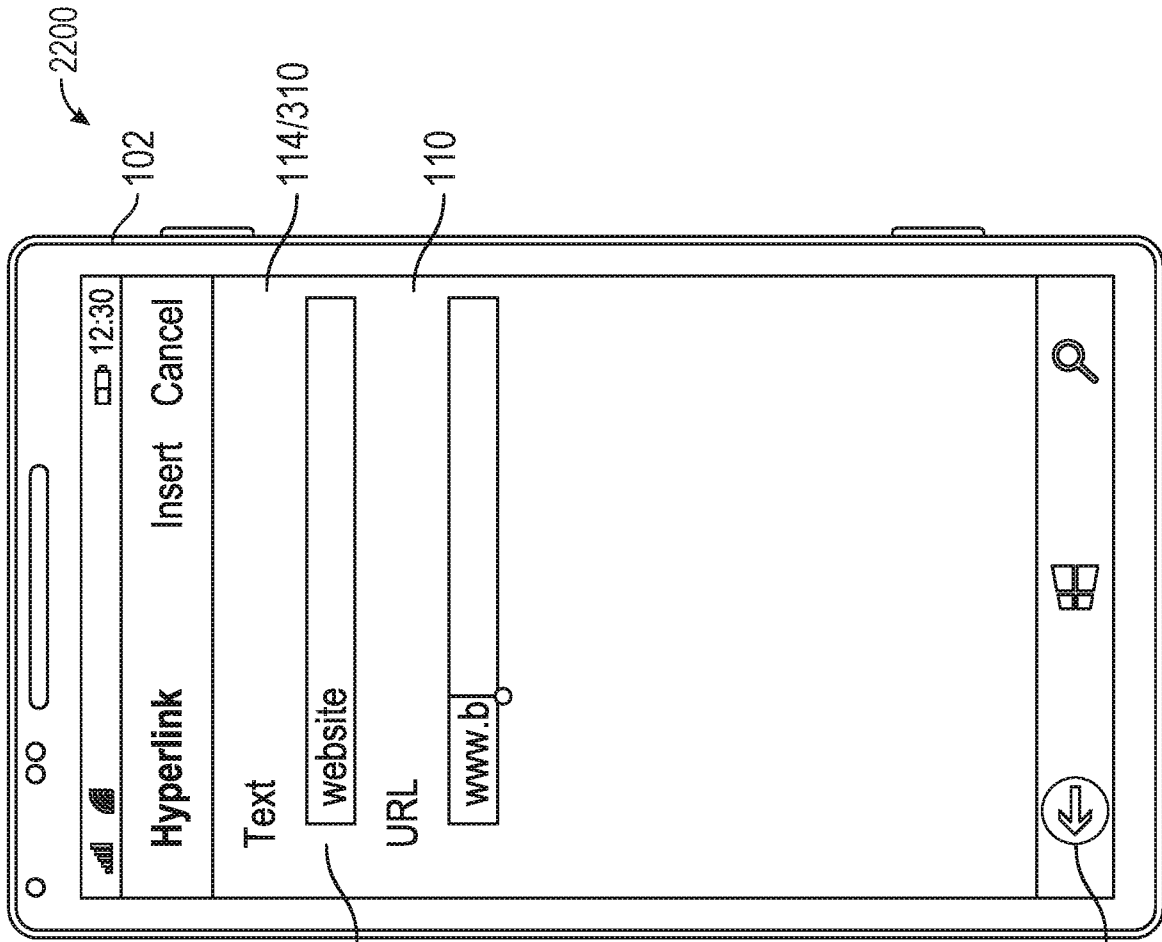
FIG. 21C



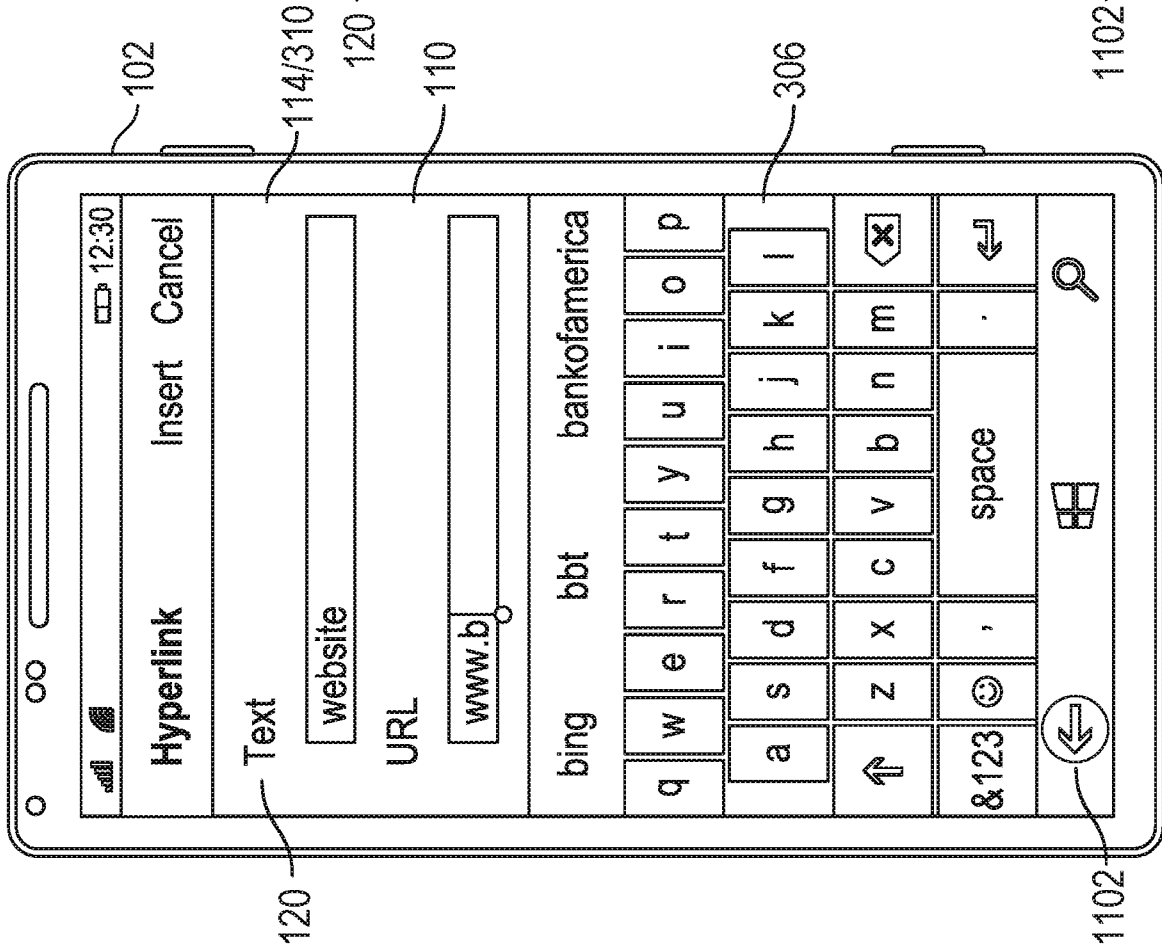
Full Pane opens
FIG. 22B



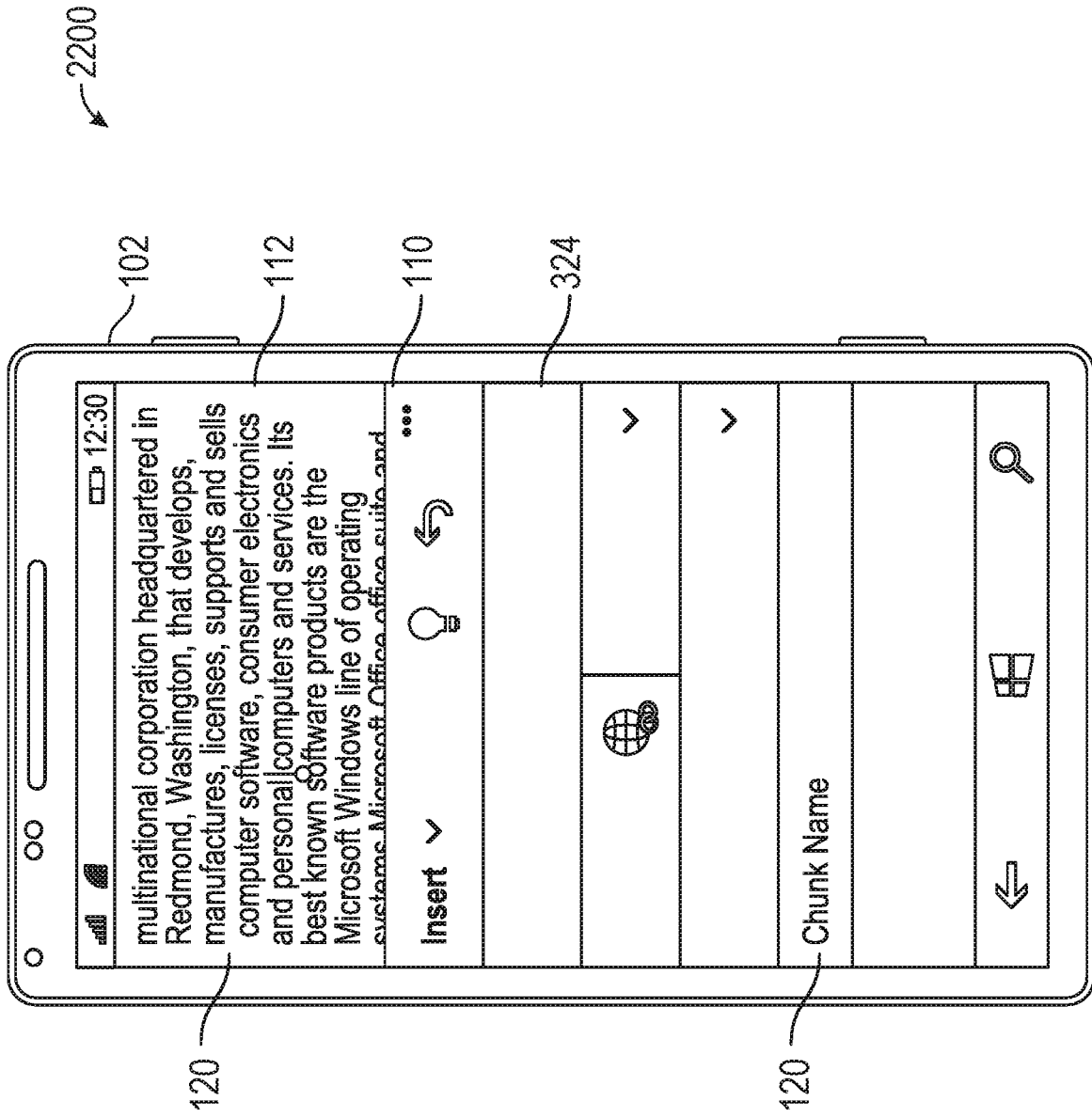
Insert Tab on Palette - hit Insert Hyperlink
FIG. 22A



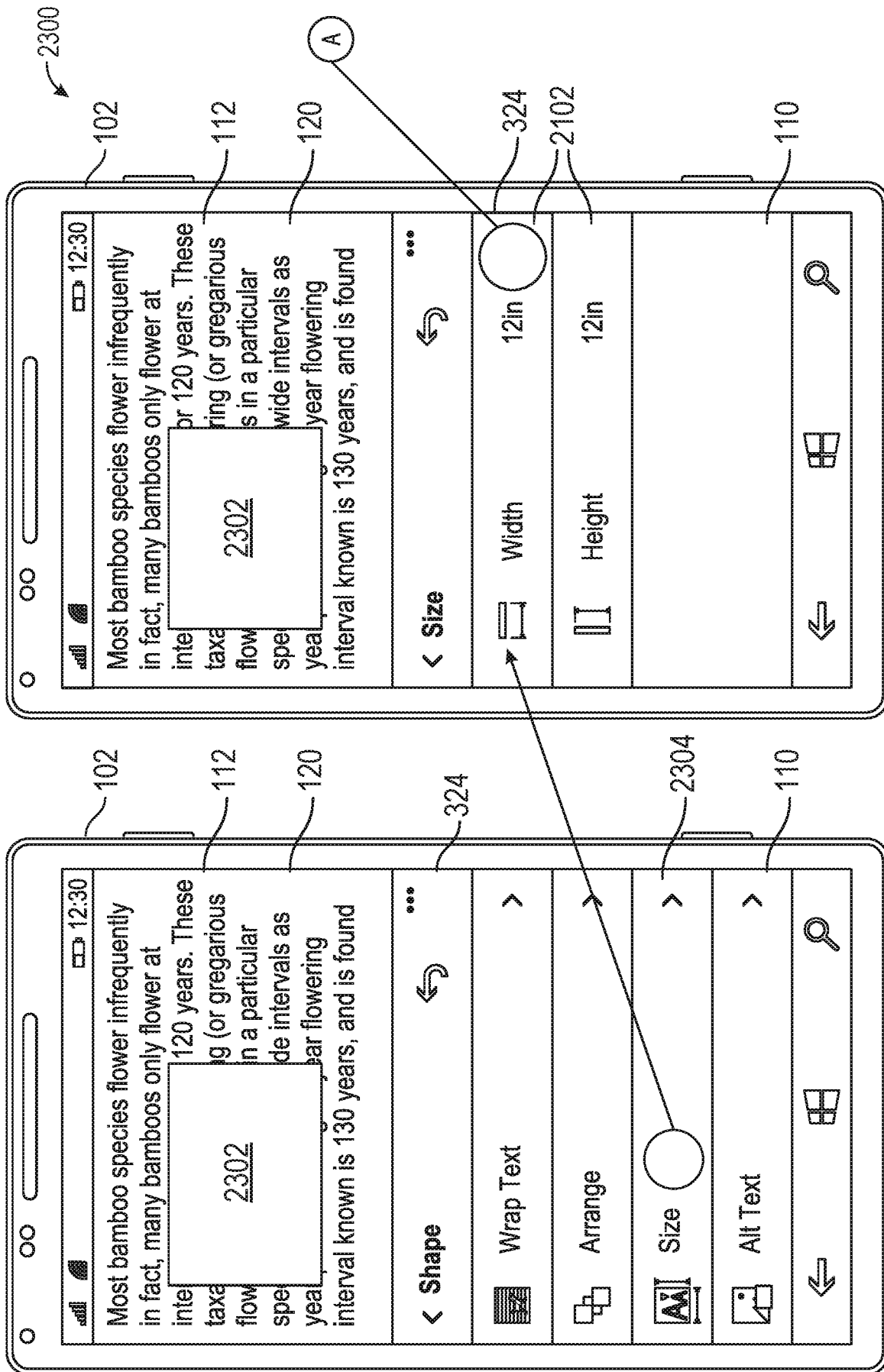
Keyboard drops, user hits OS Back again
FIG. 22D



User types content, but hits OS Back
FIG. 22C



Pane closes, changes are discarded
FIG. 22E

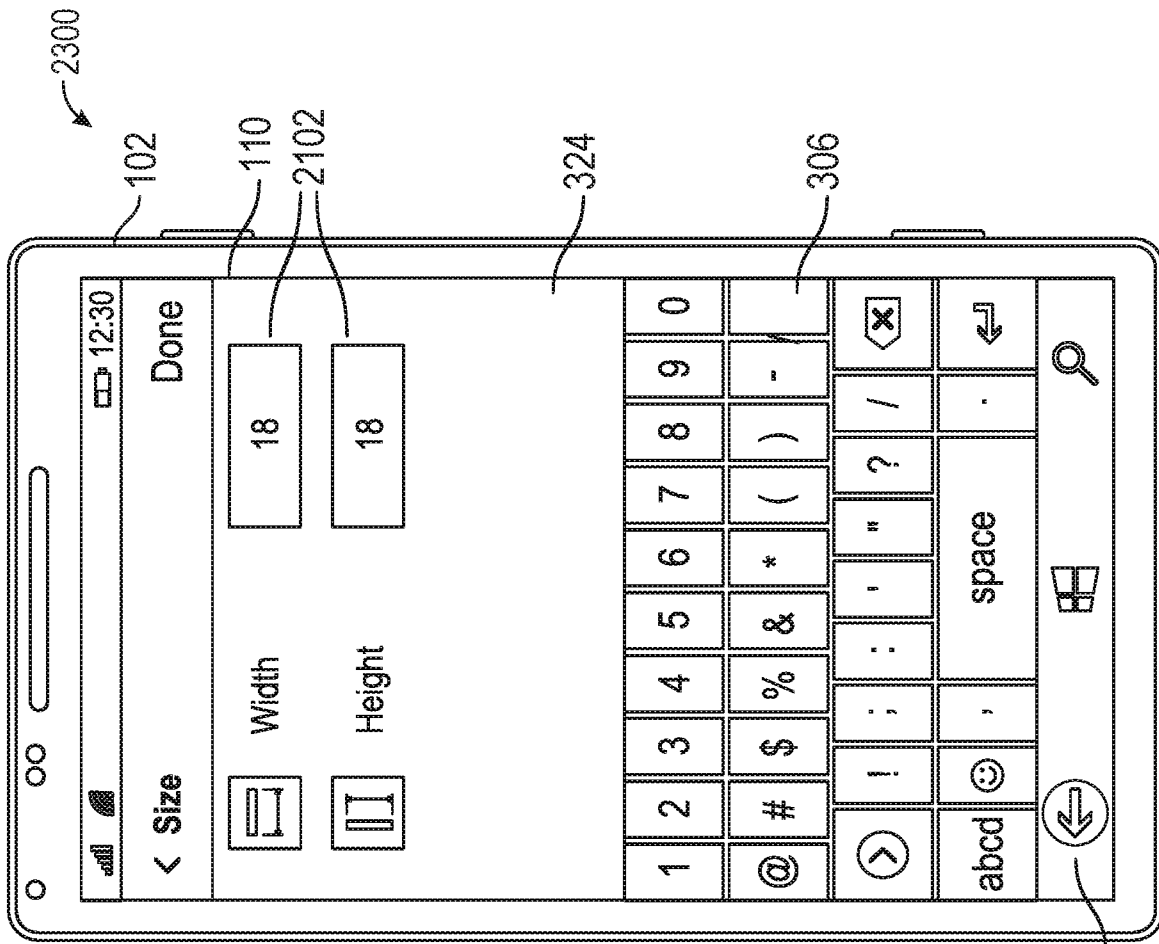


Shape Tab on Palette – hit Size

Palette drills in – tap in Width box

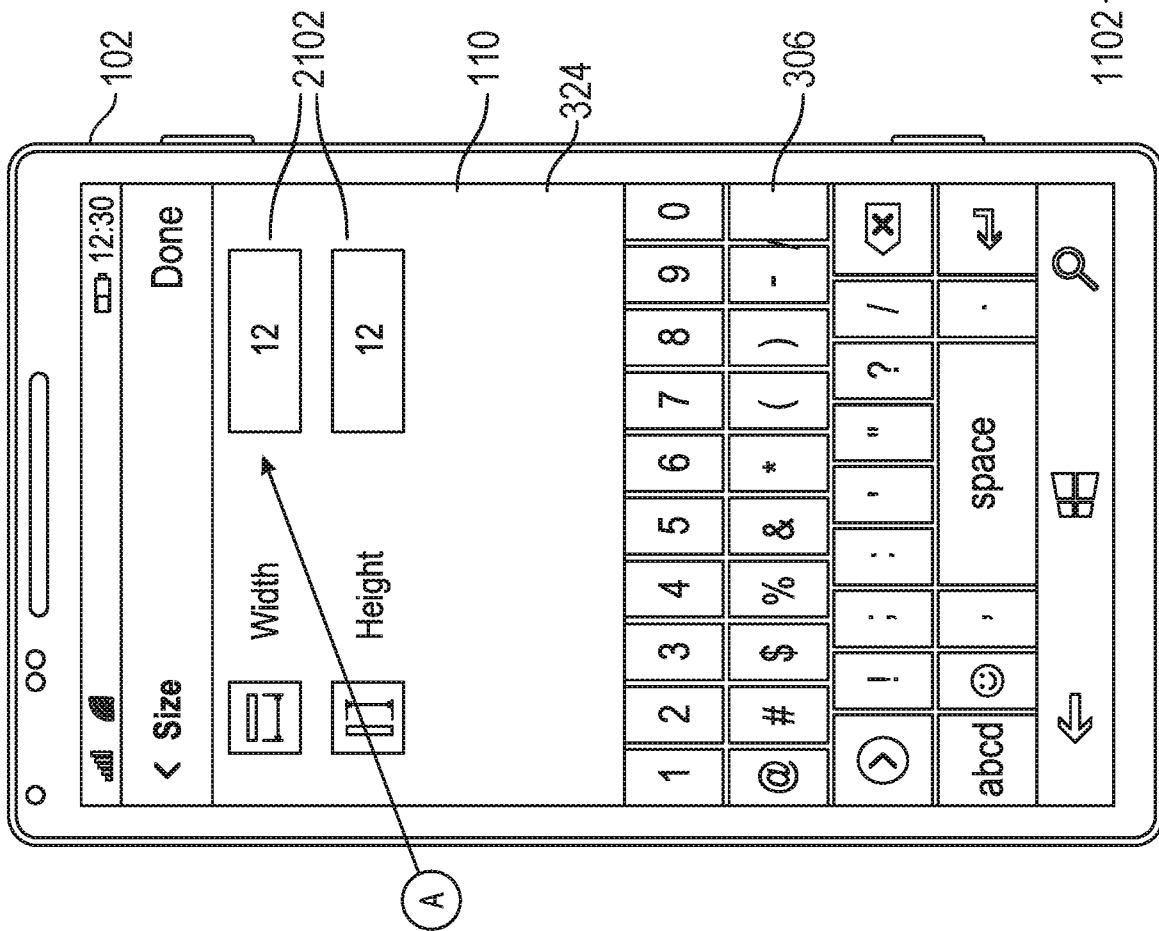
FIG. 23A

FIG. 23B



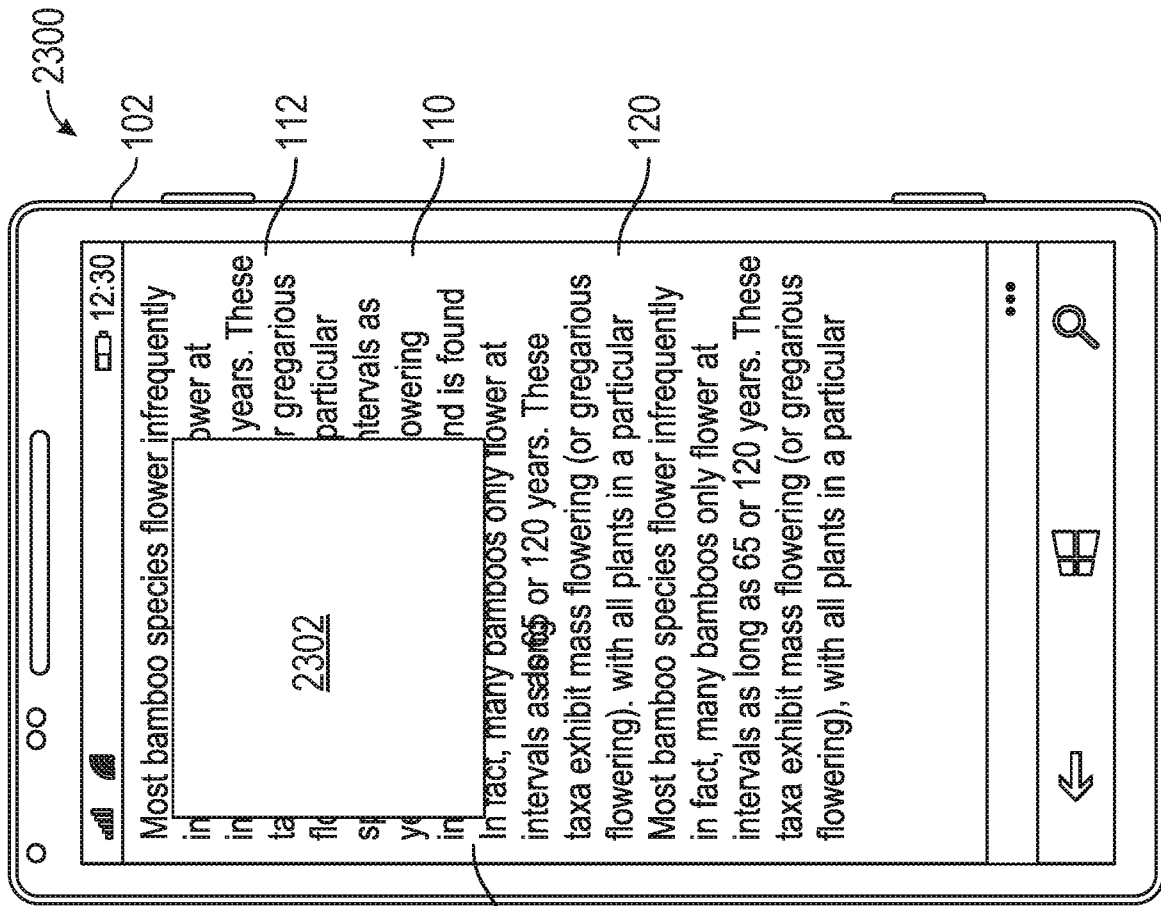
Palette raises above keyboard

FIG. 23C

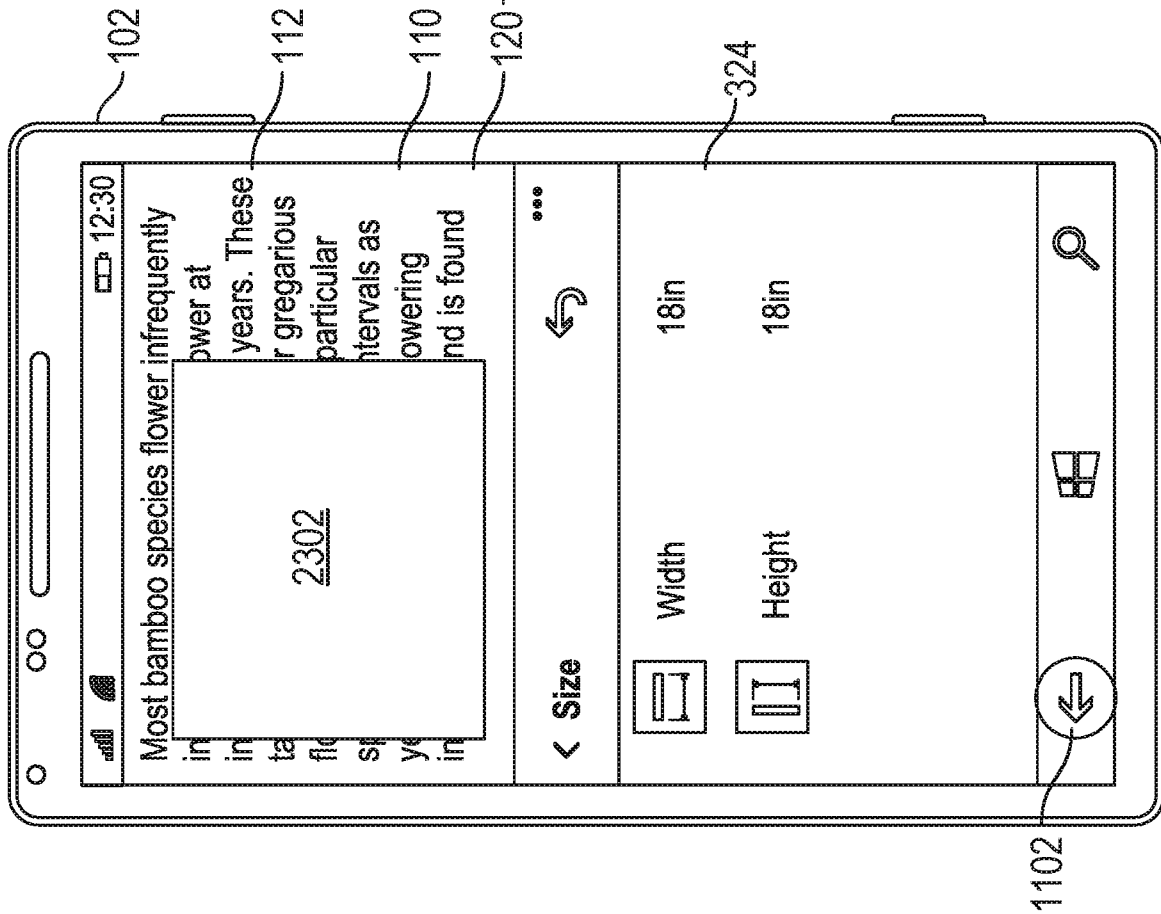


User makes changes and hits OS Back

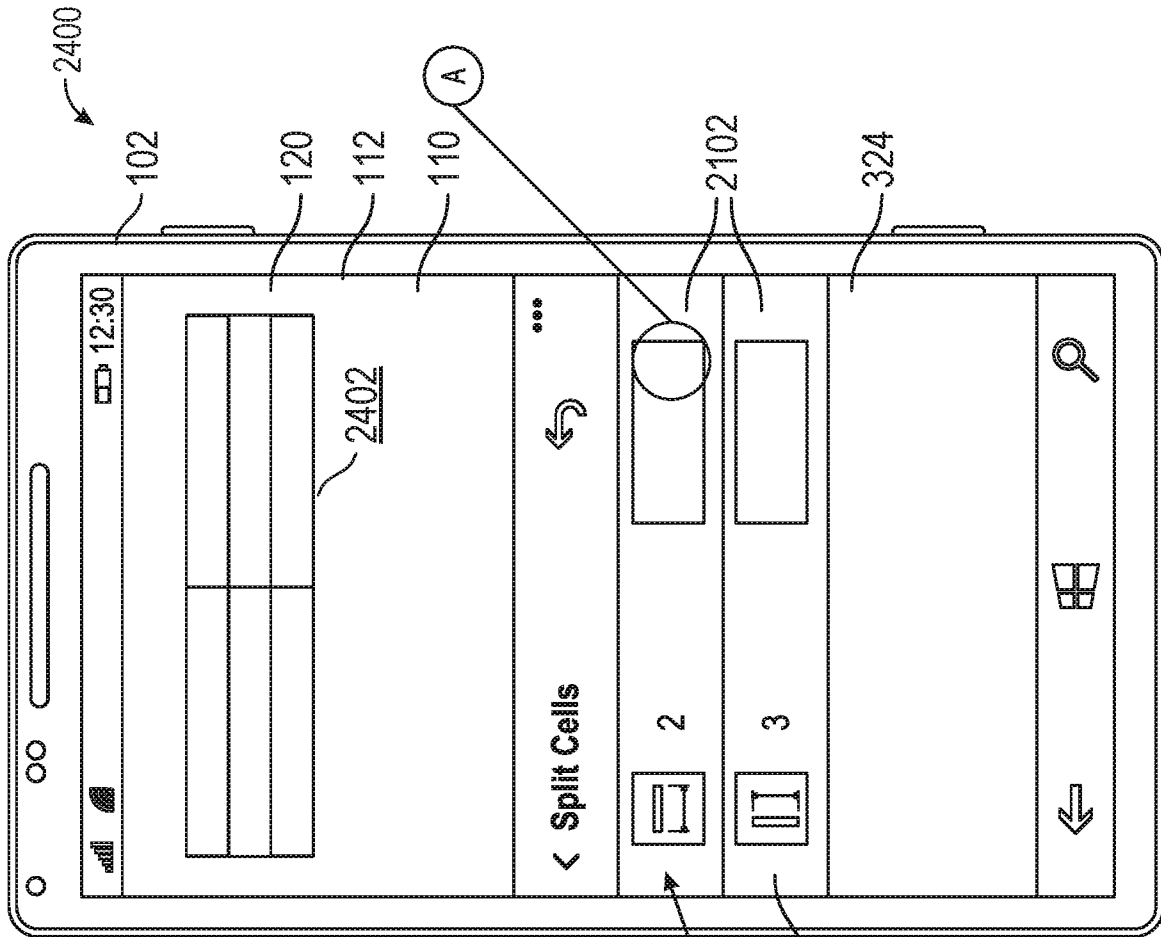
FIG. 23D



Keyboard and Palette drop; Changes Saved
FIG. 23E

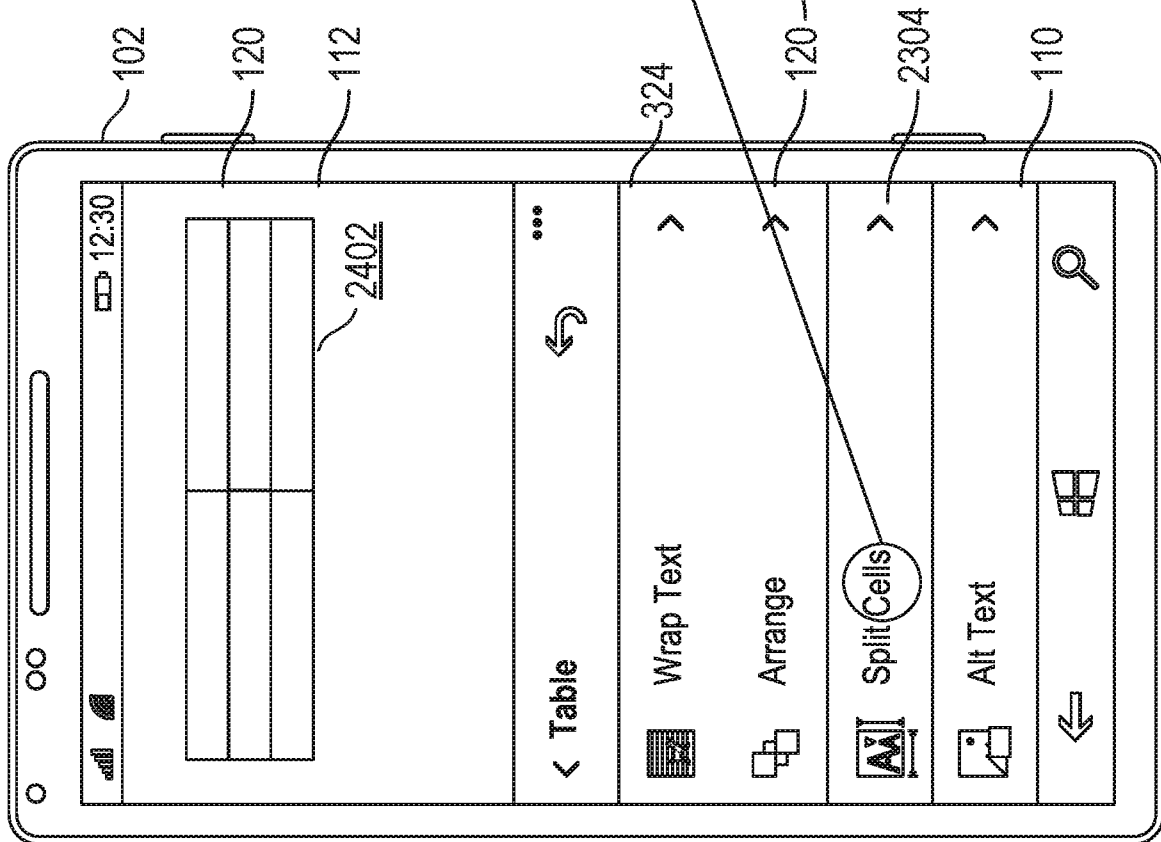


OS back closes the Palette
FIG. 23F



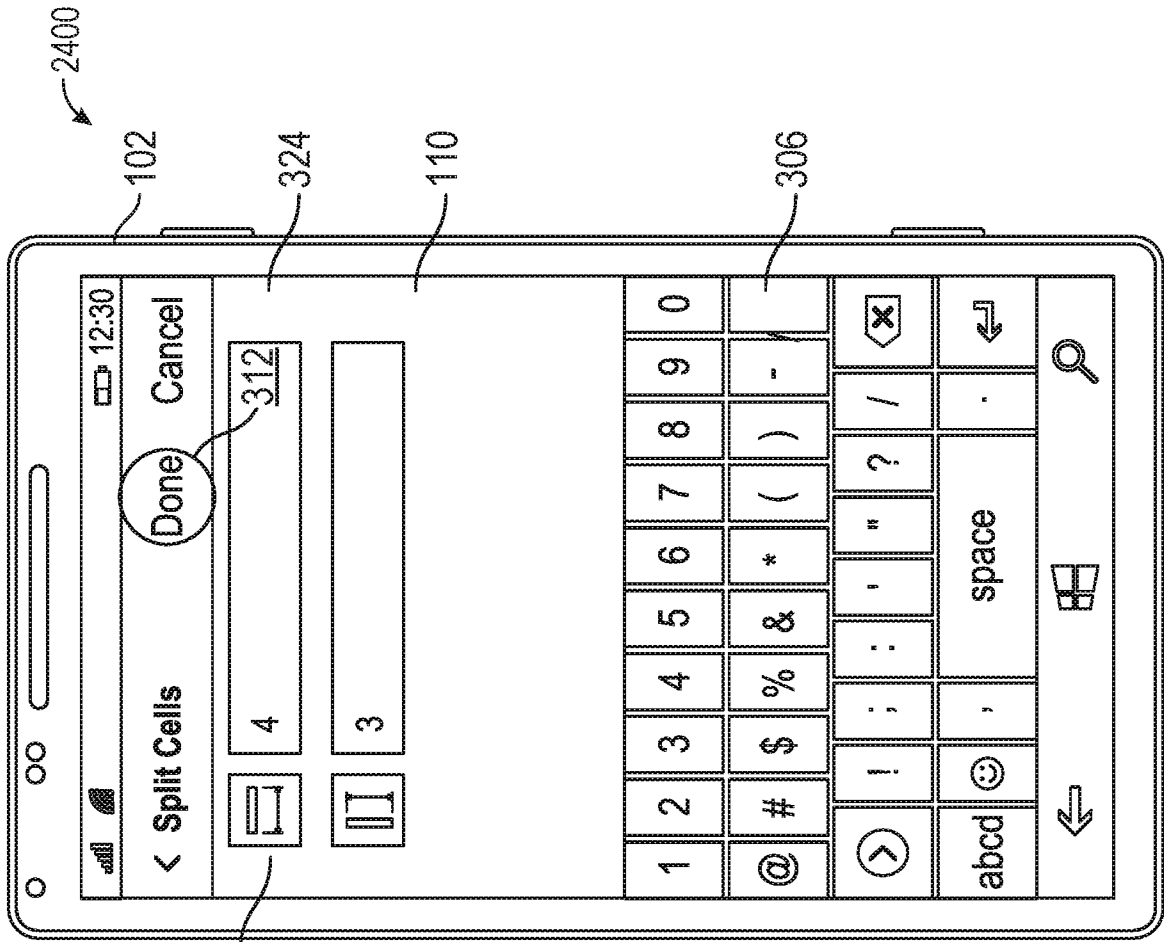
Shape Tab on Palette - hit Size

FIG. 24A



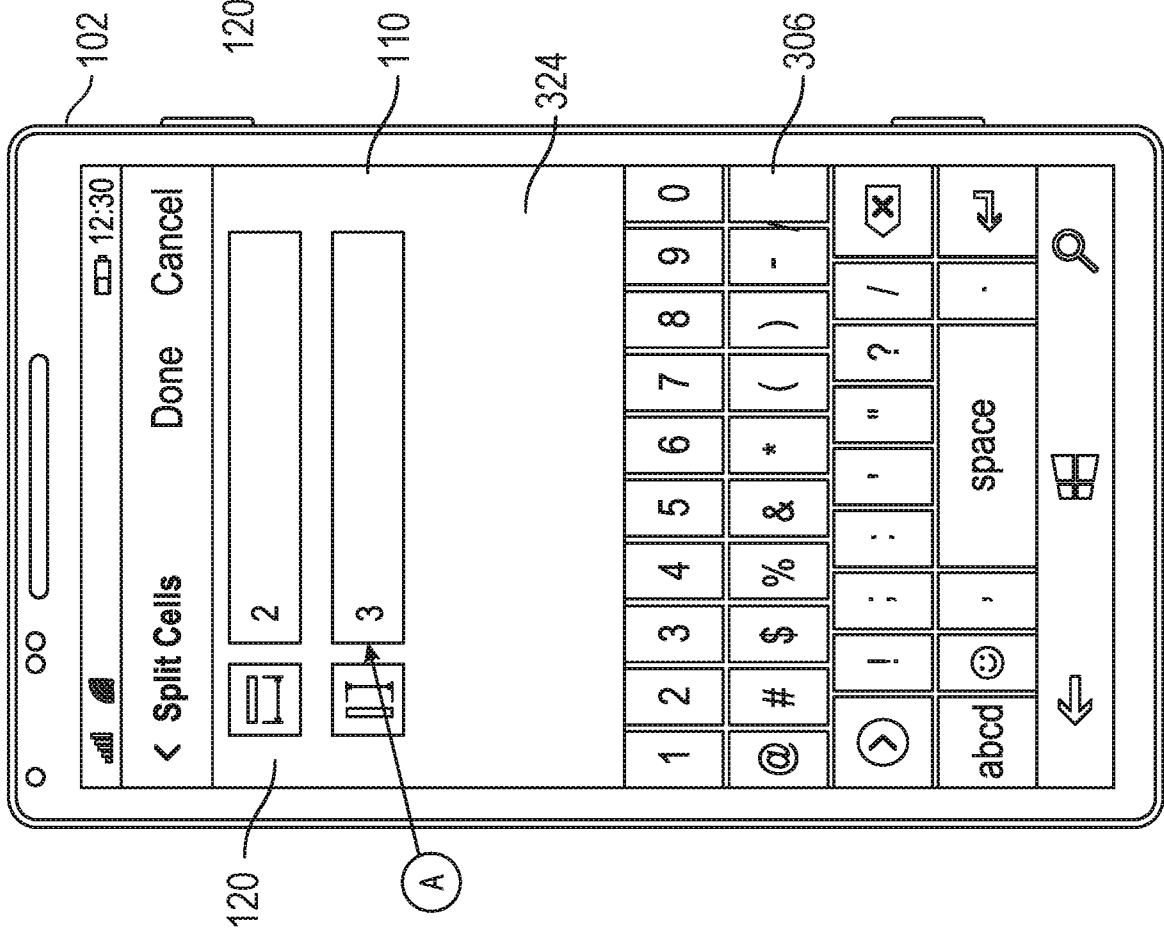
Palette drills in - tap in Width box

FIG. 24B



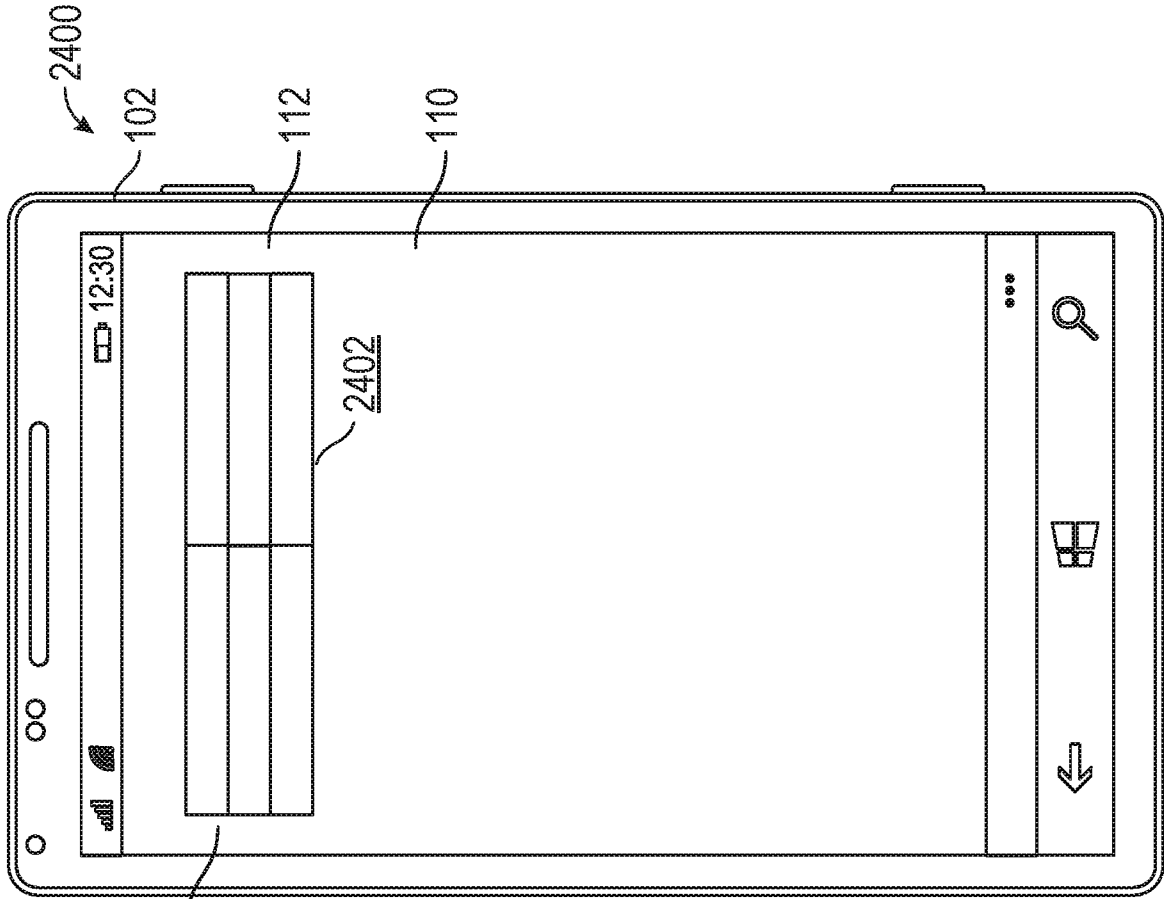
User makes changes, hits Done

FIG. 24D



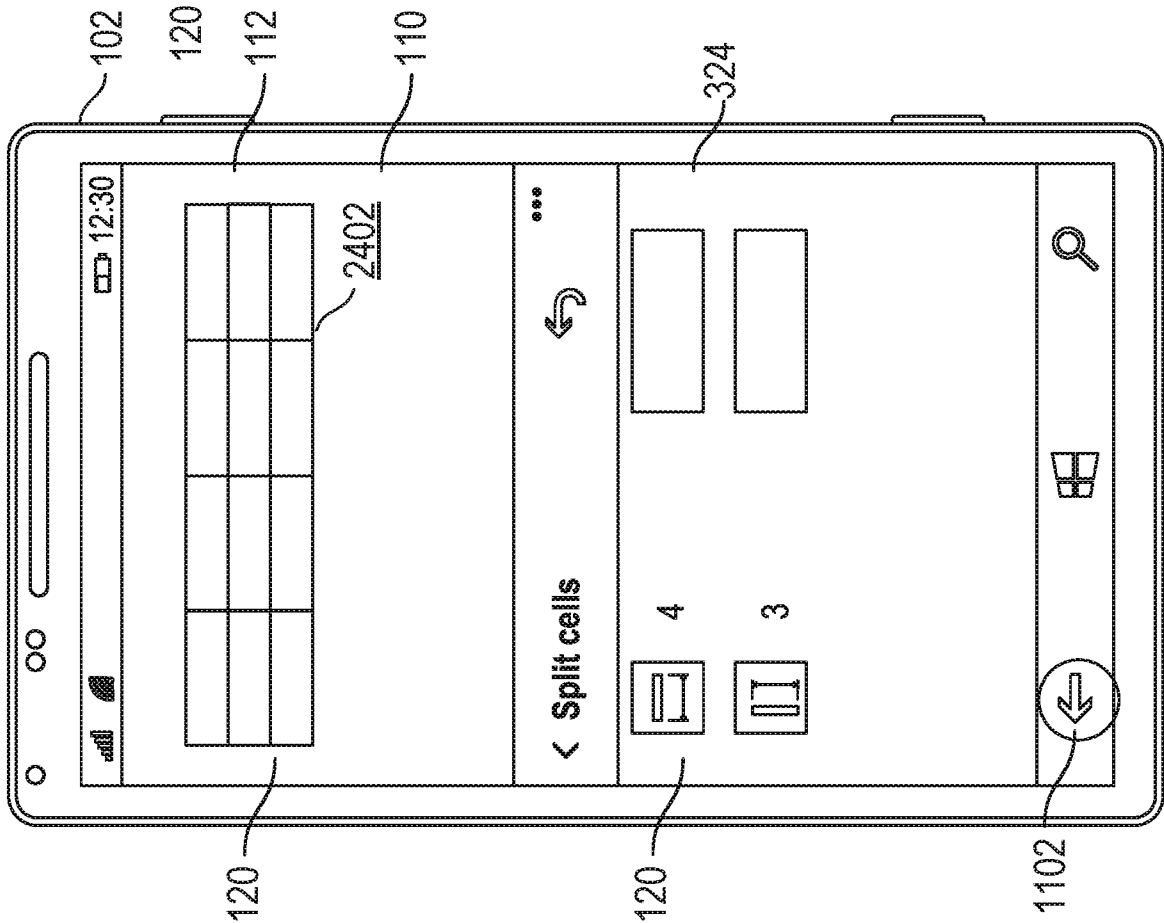
Palette raises above keyboard

FIG. 24C



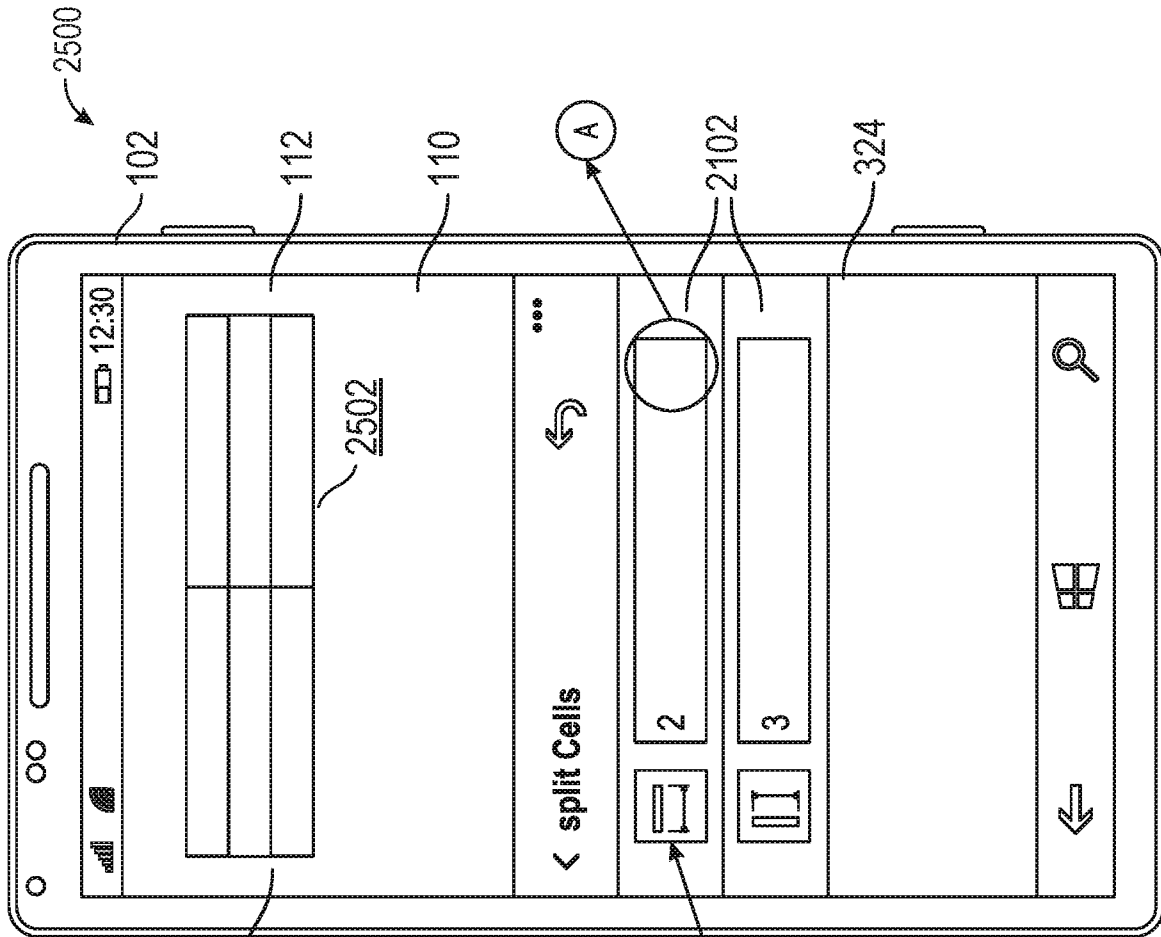
OS back closes the Palette

FIG. 24F



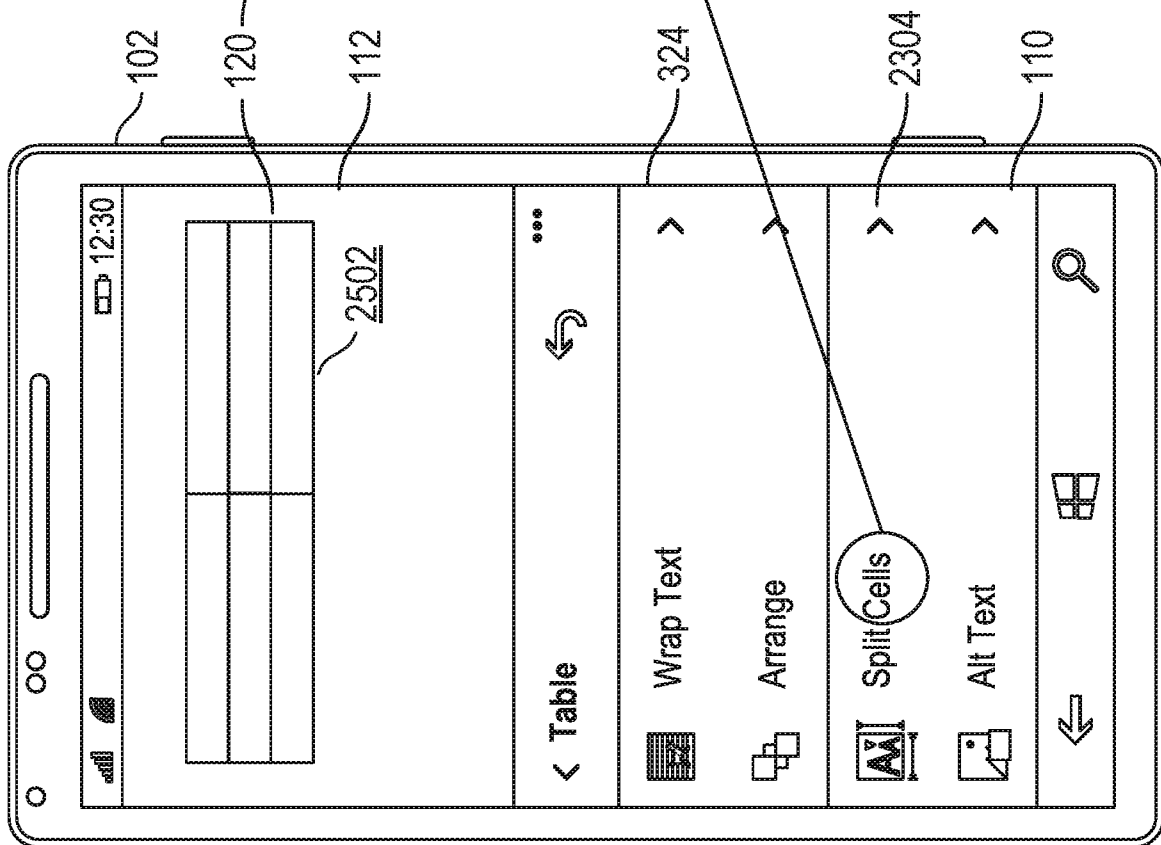
Keyboard and Palette drop; Changes Saved

FIG. 24E



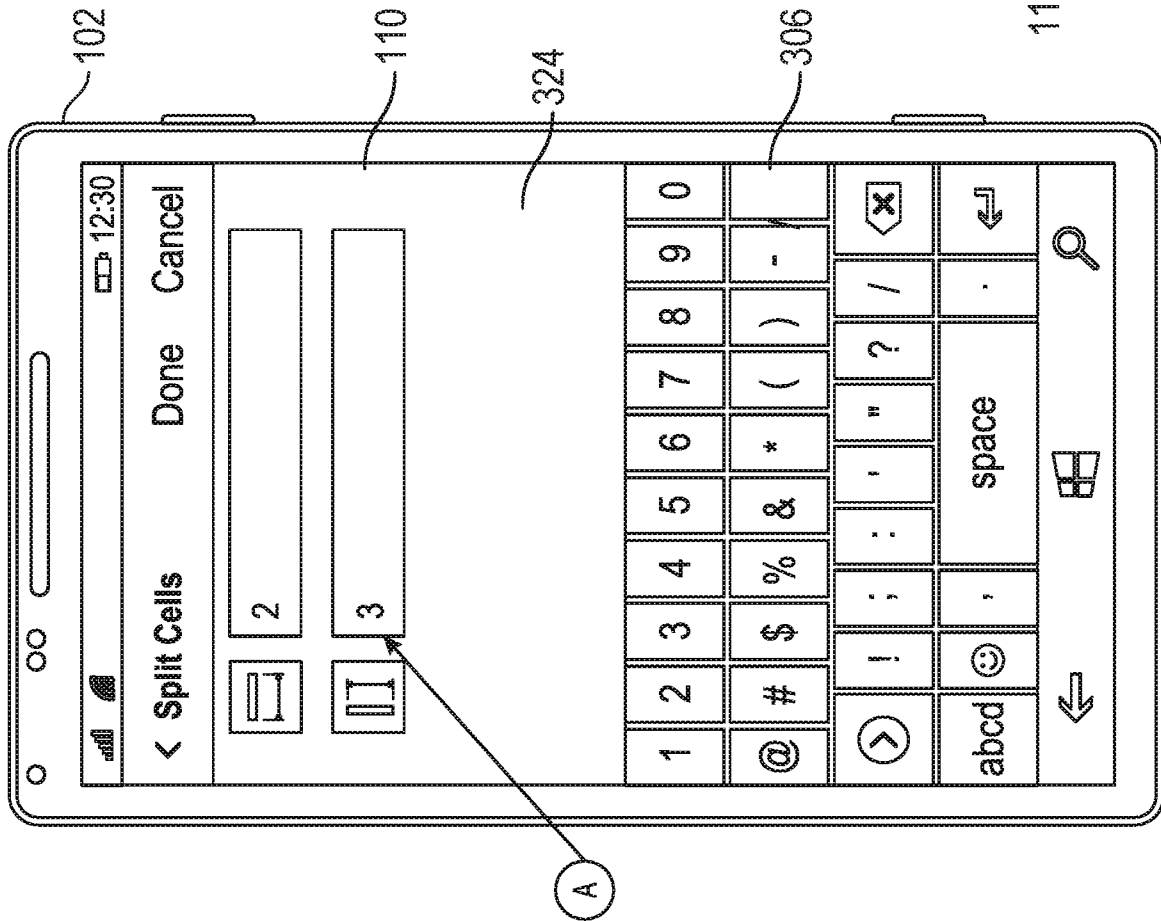
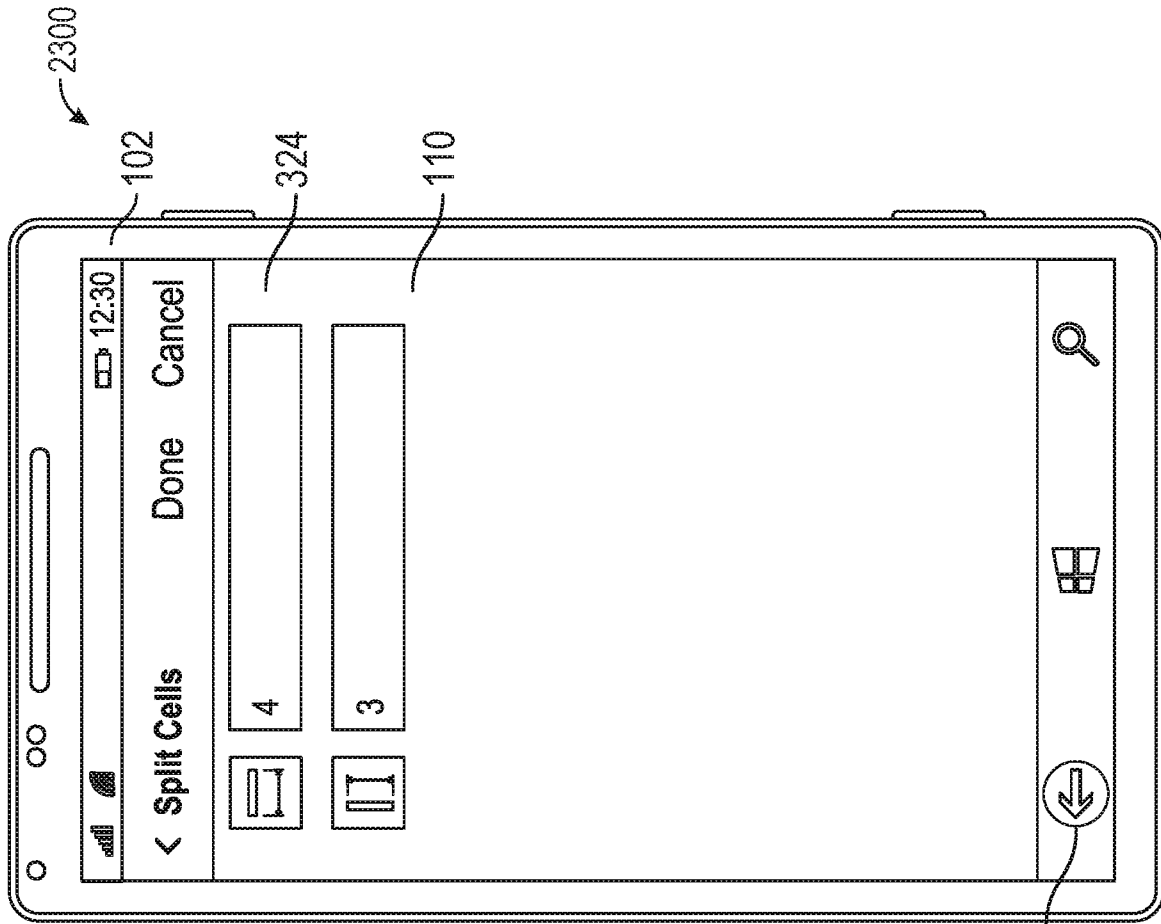
Palette drills in -- tap in Width box

FIG. 25B



Shape Tab on Palette -- hit Size

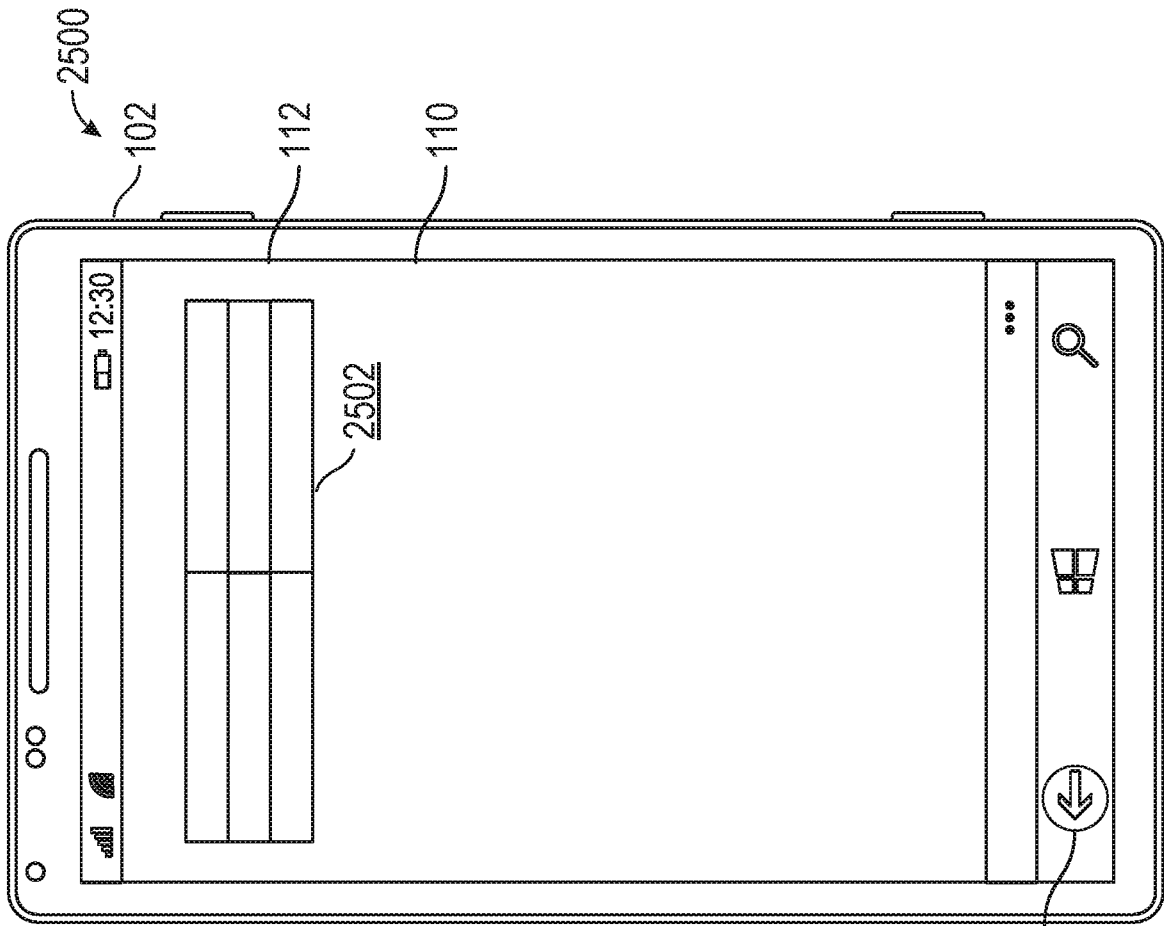
FIG. 25A



Palette and keyboard raise. User makes changes. Hits OS Back to drop Keyboard, still in edit mode

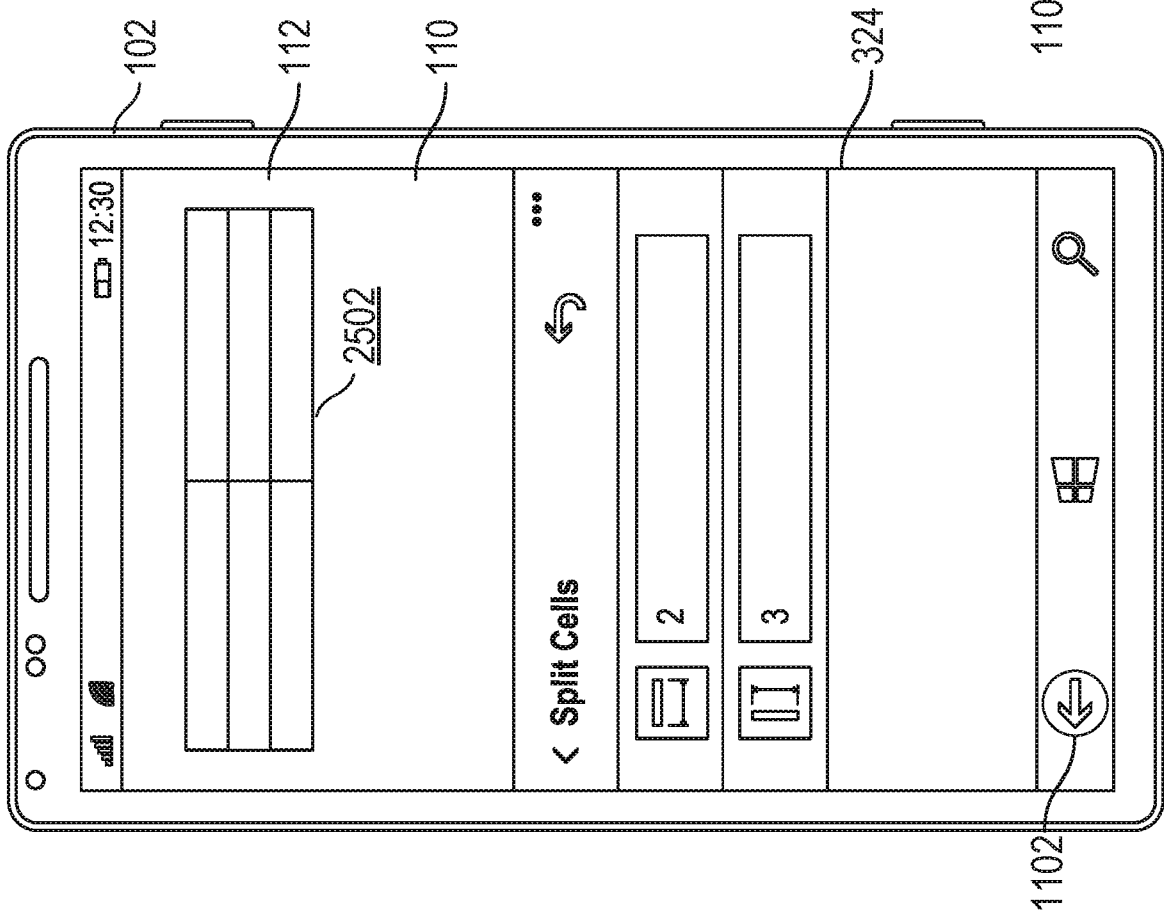
FIG. 25D

FIG. 25C



OS back closes the Palette

FIG. 25F



Hits OS Back again, changes discarded

FIG. 25E

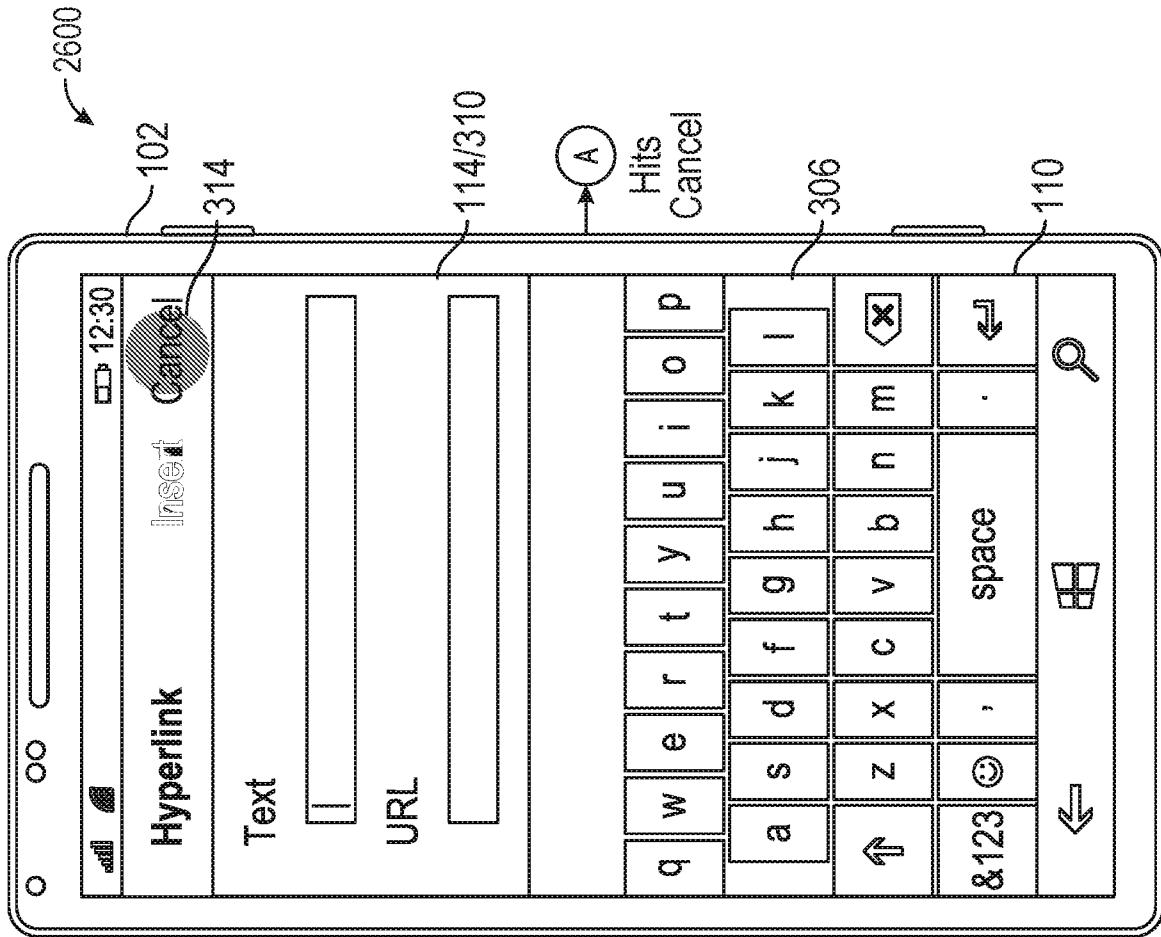
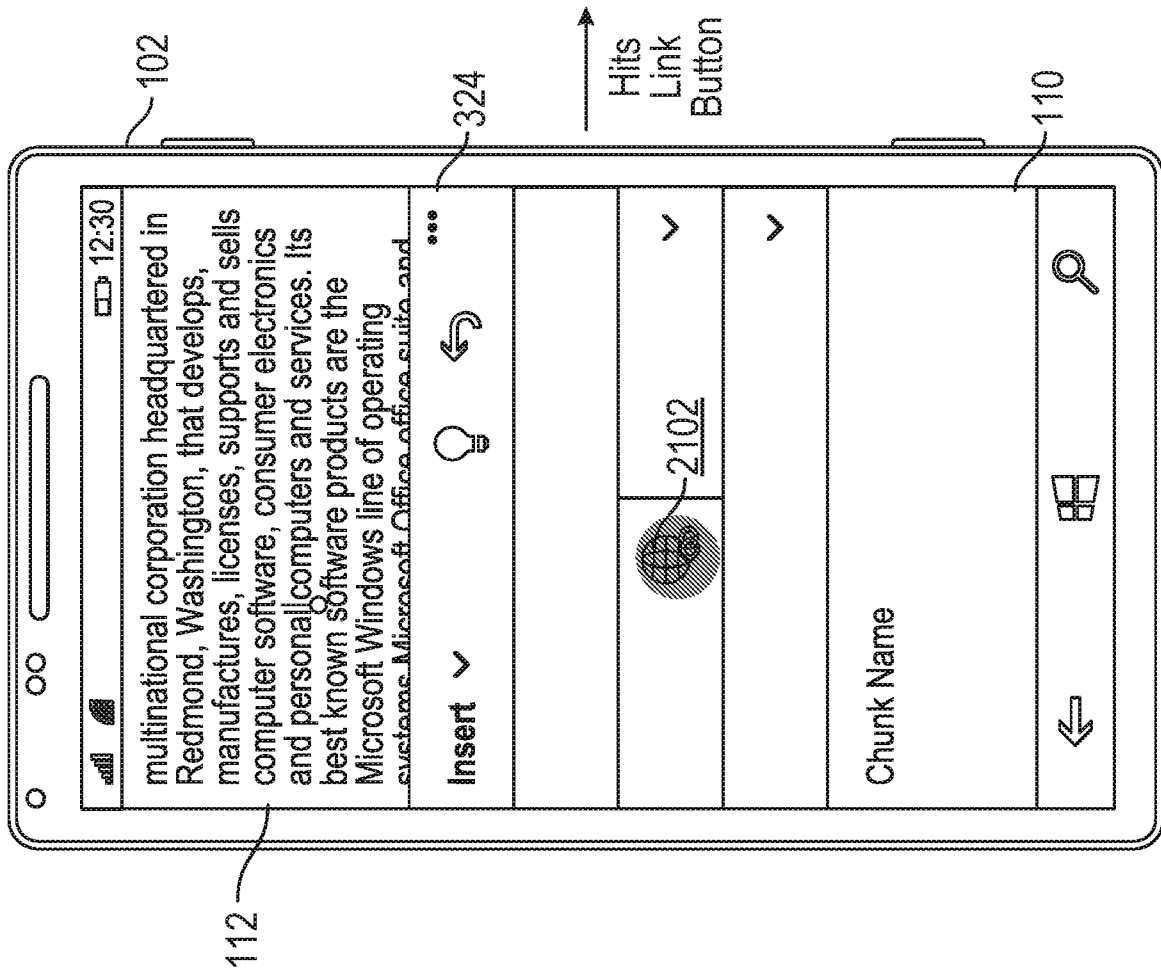
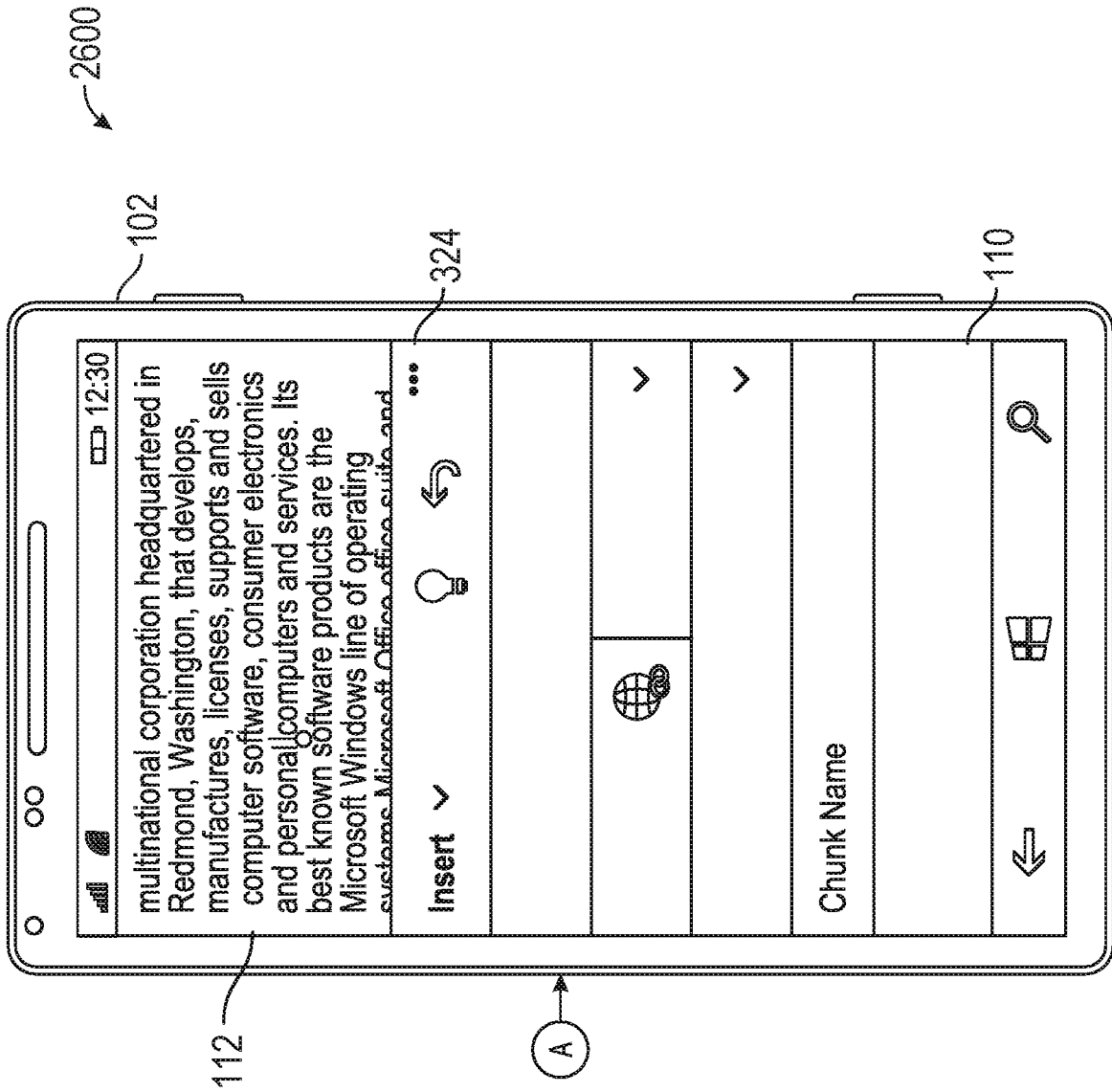


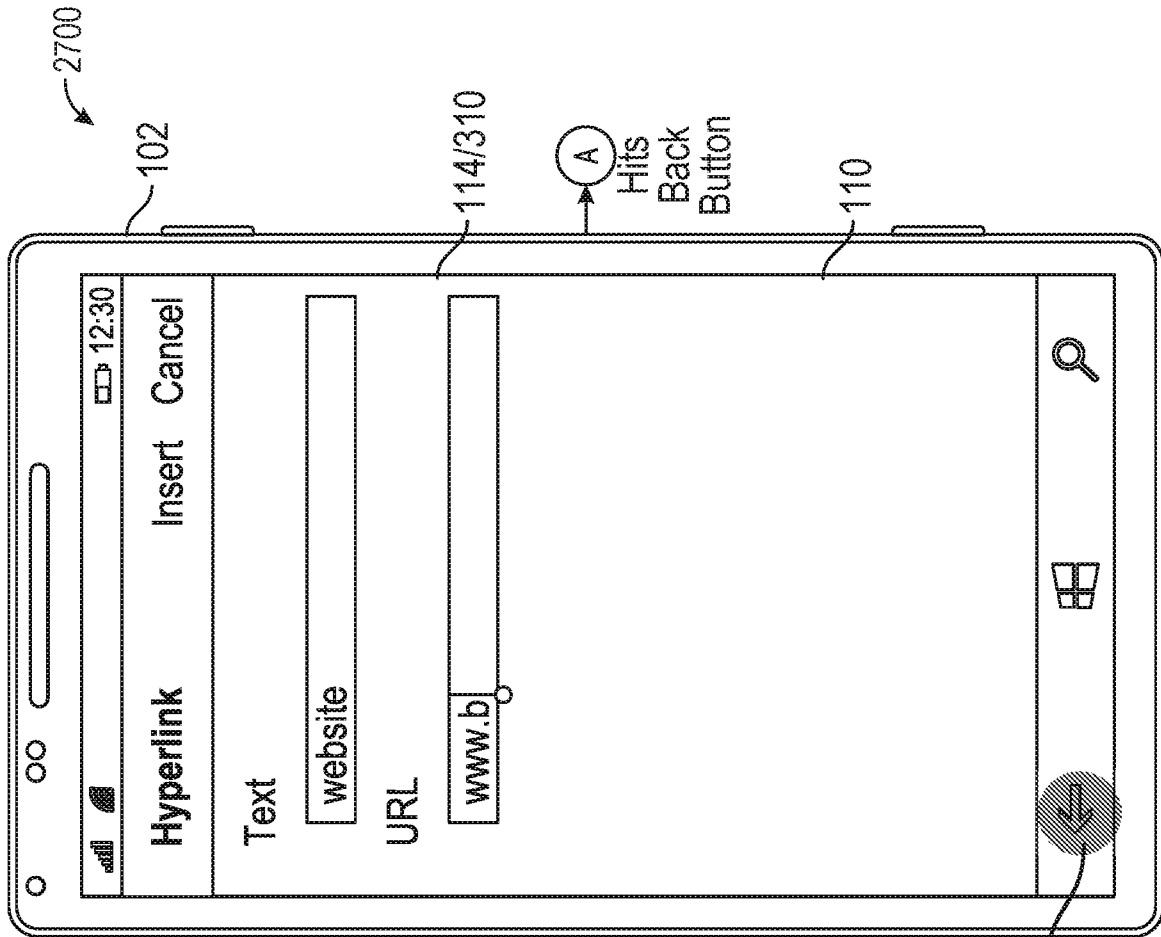
FIG. 26B



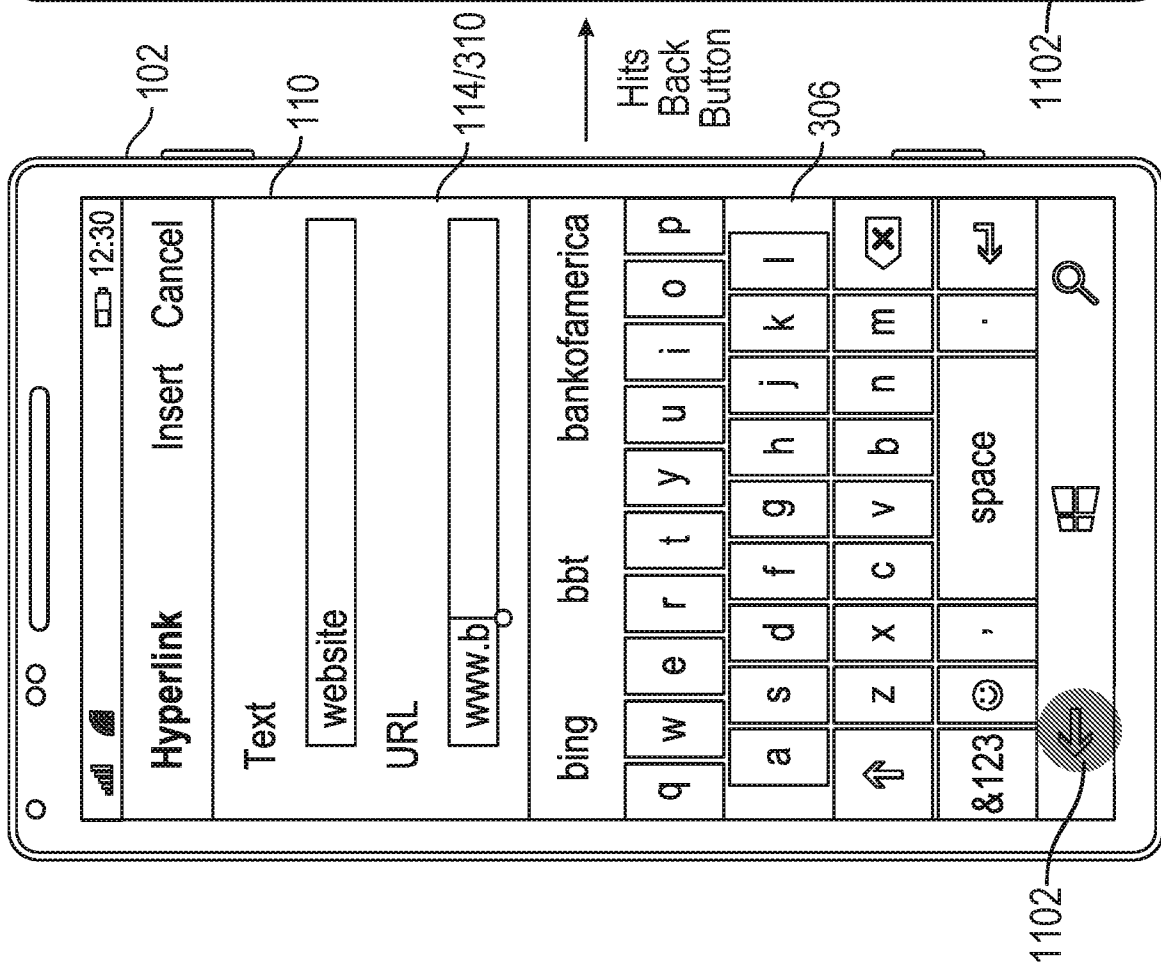
Insert Tab in Palette
FIG. 26A



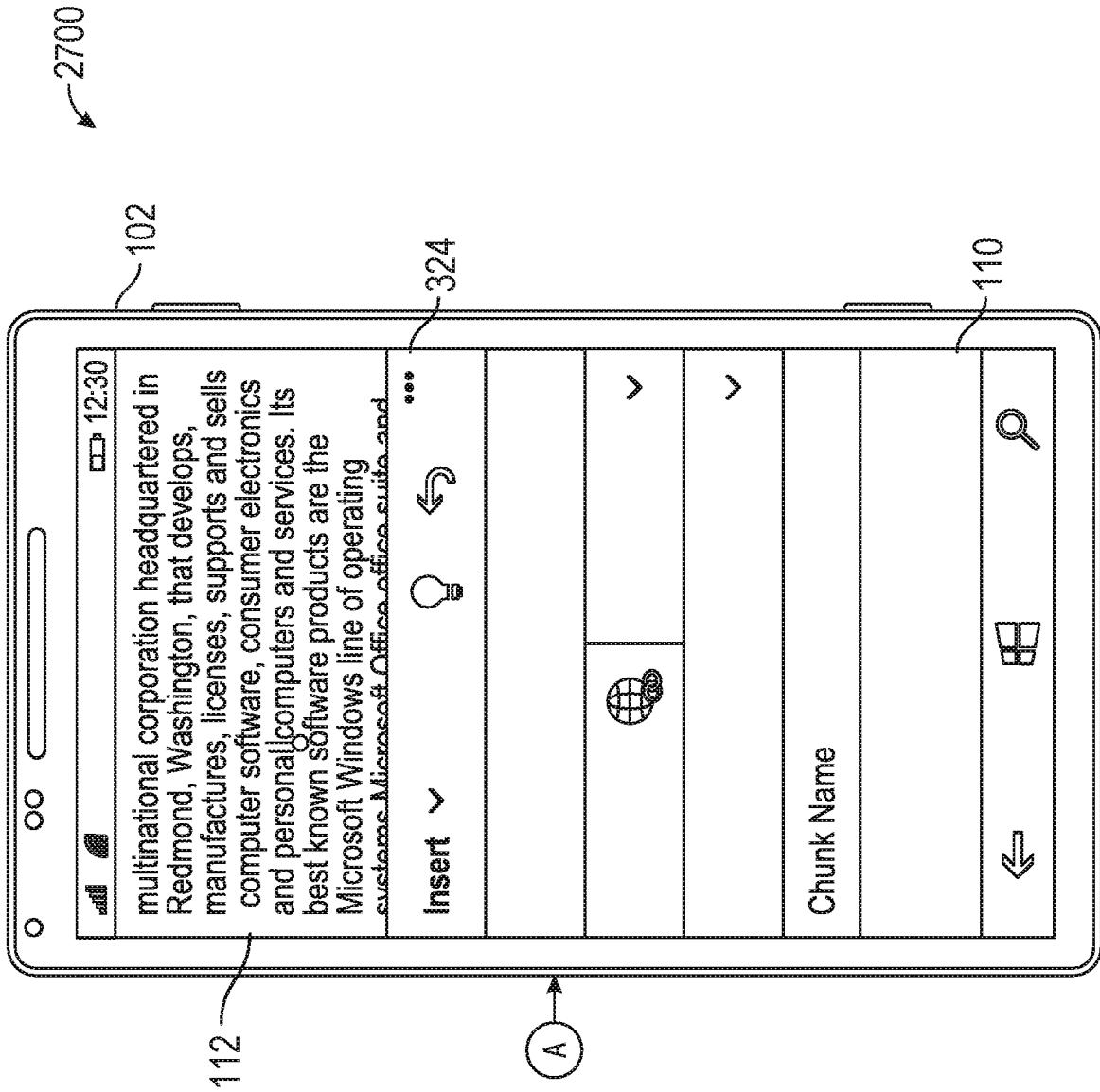
Back to Previous State in Palette
FIG. 26C



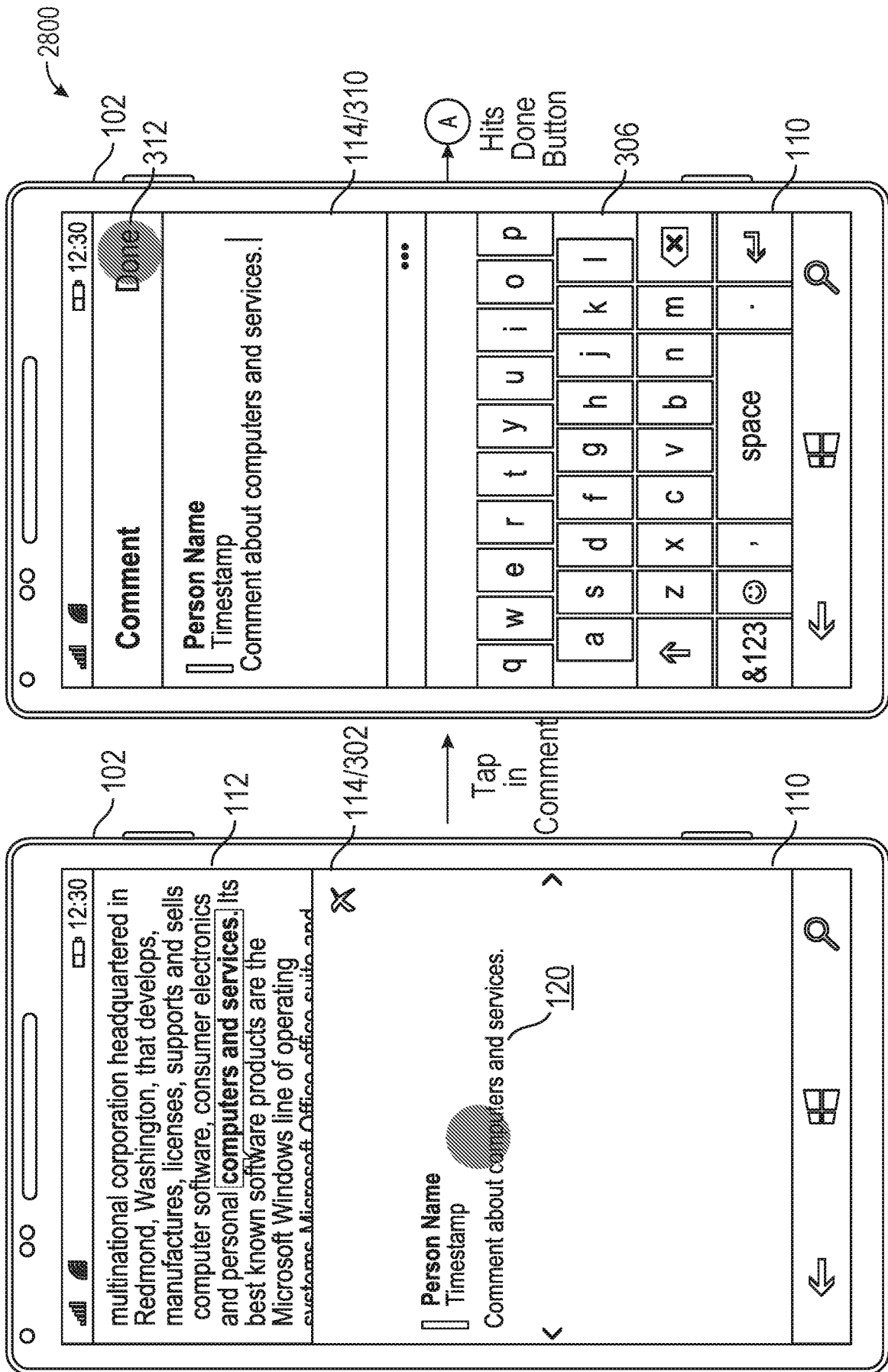
Keyboard drops
FIG. 27B



Type Display Text and URL
FIG. 27A

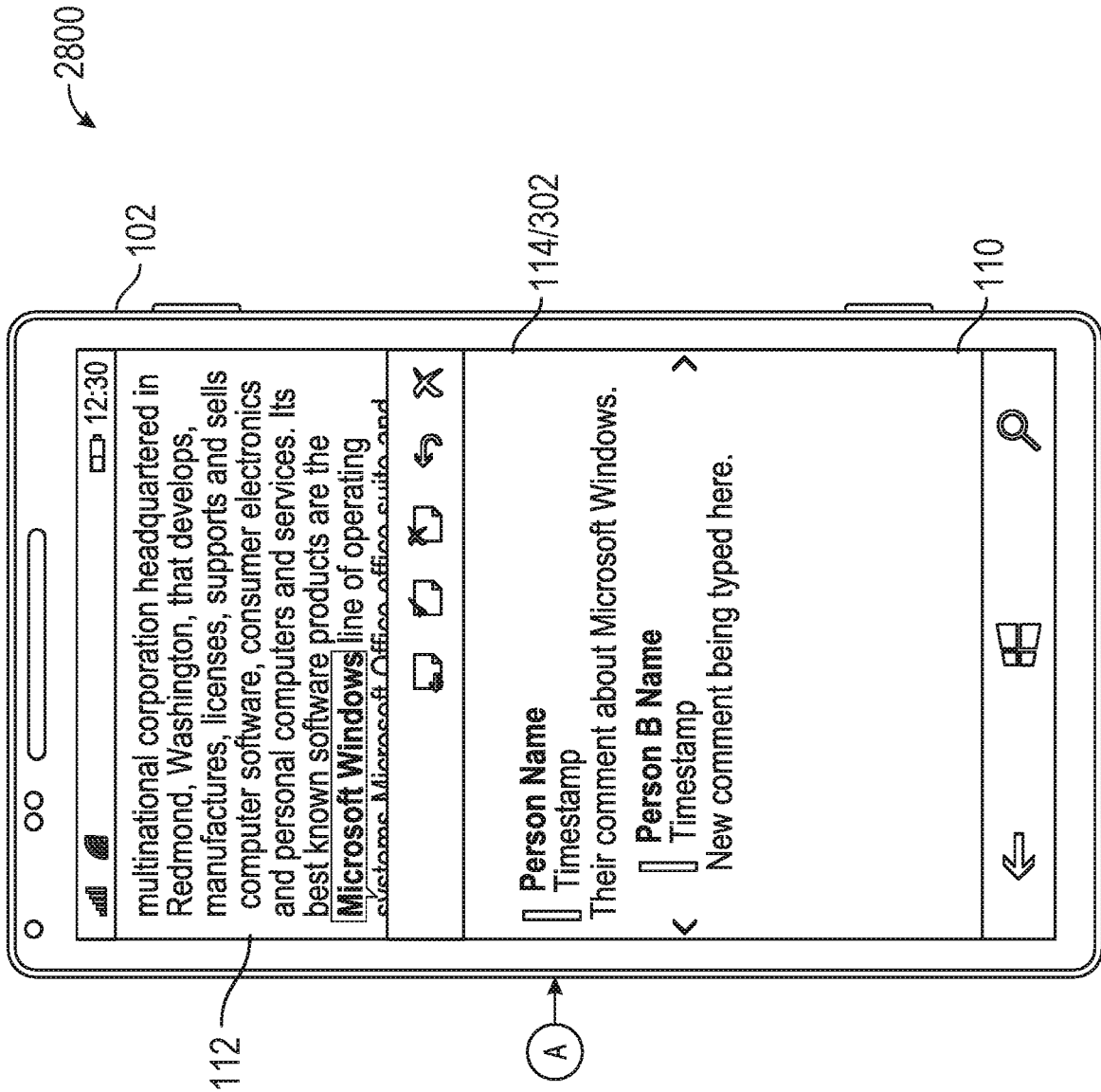


Changes discarded, taken Back to Palette
FIG. 27C

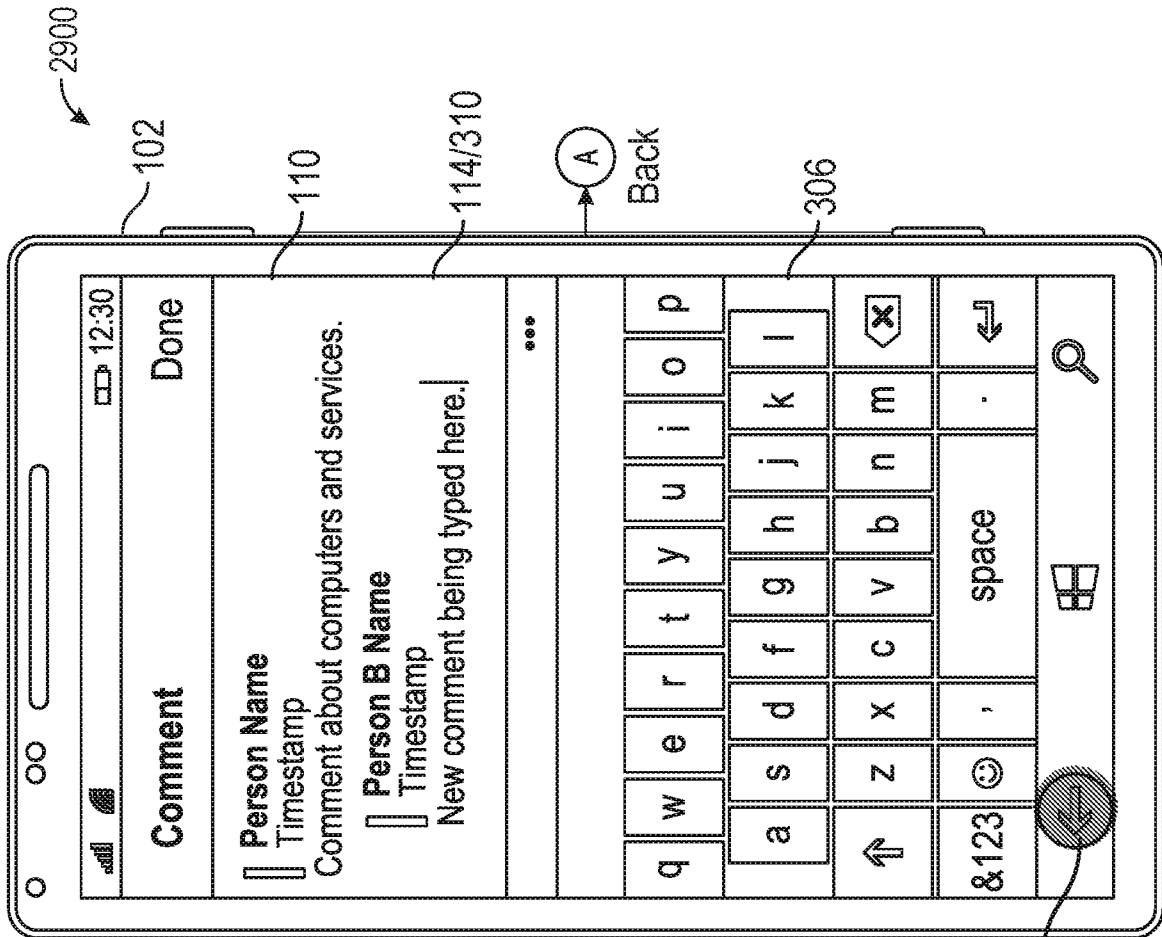


Add Reply to Comment
FIG. 28B

Enter Commenting Half Pane
FIG. 28A

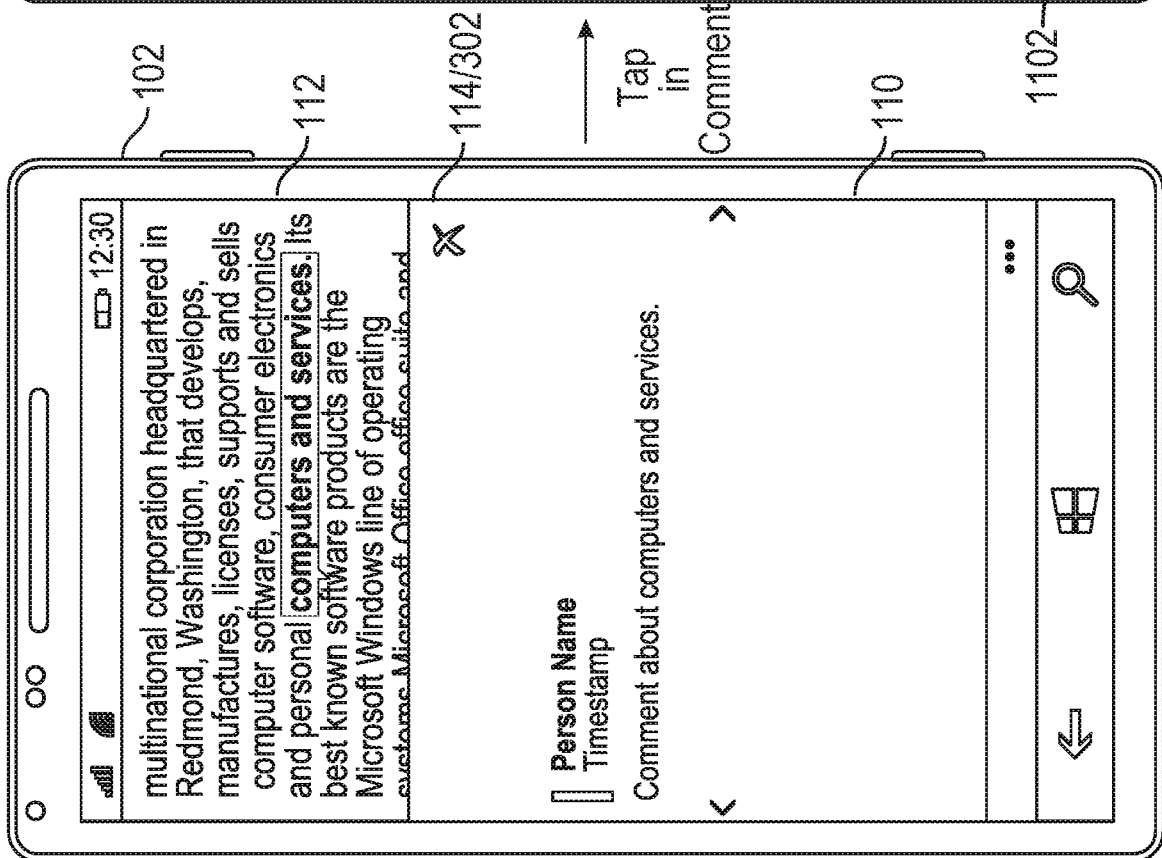


Changes Saved, taken back to Pane
FIG. 28C



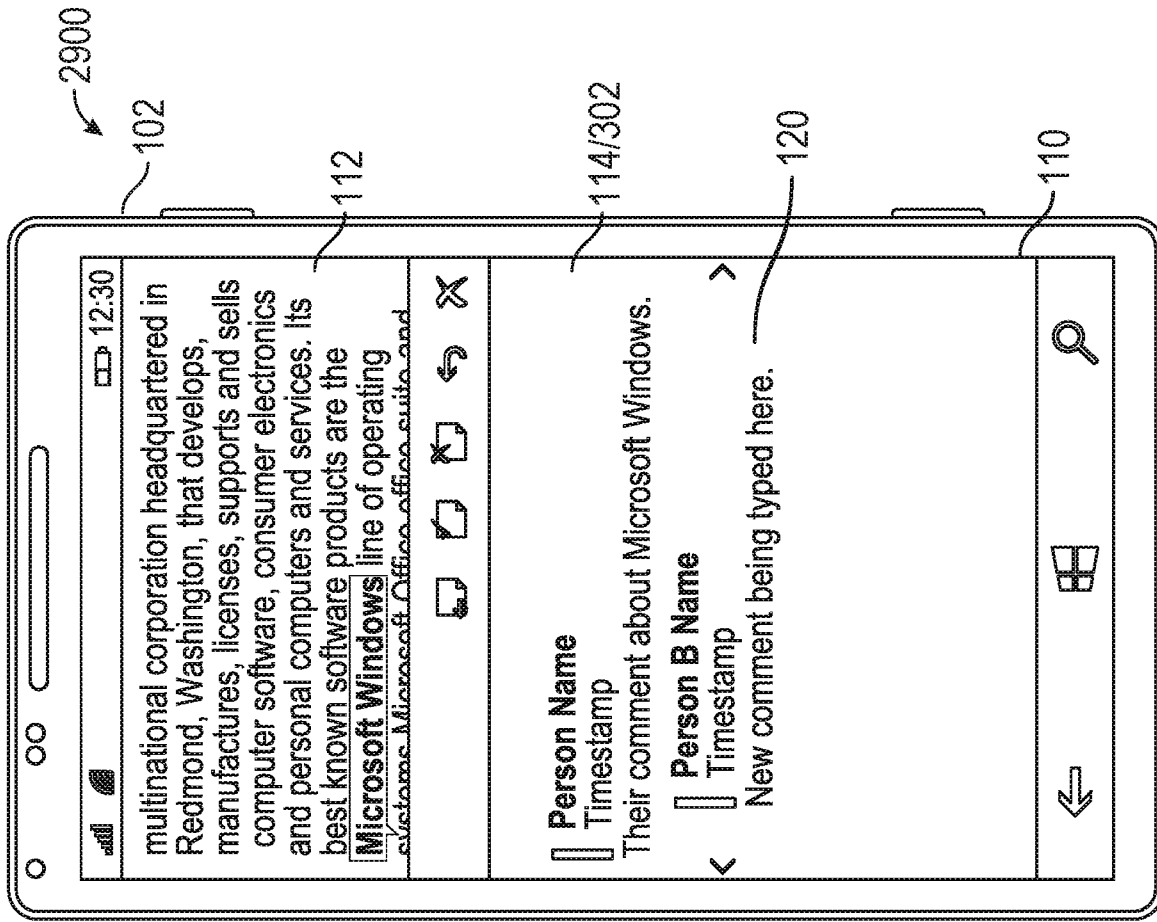
Enter Commenting Half Pane

FIG. 29A

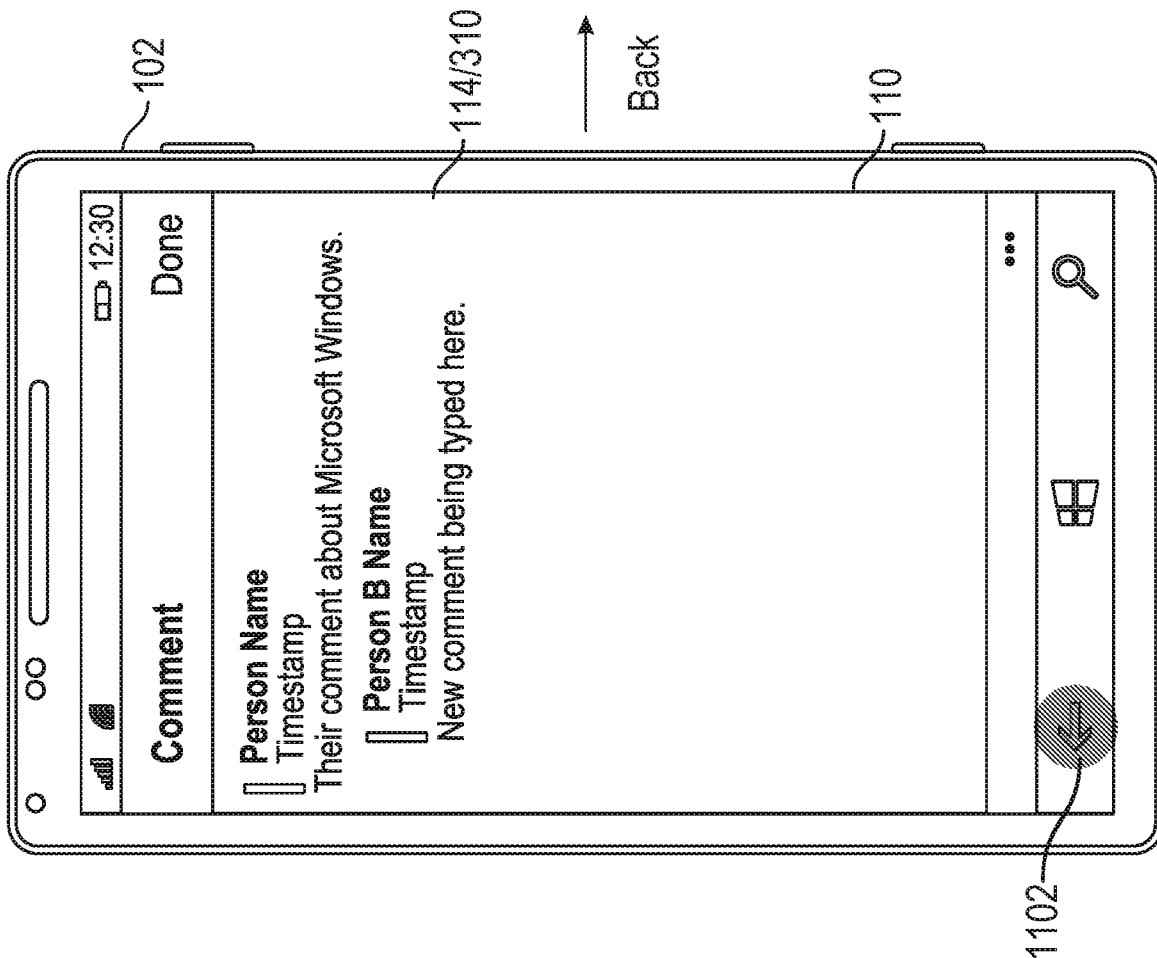


Add Reply to Comment

FIG. 29B



Keyboard drops
FIG. 29C



Changes Saved, taken back to Pane
FIG. 29D

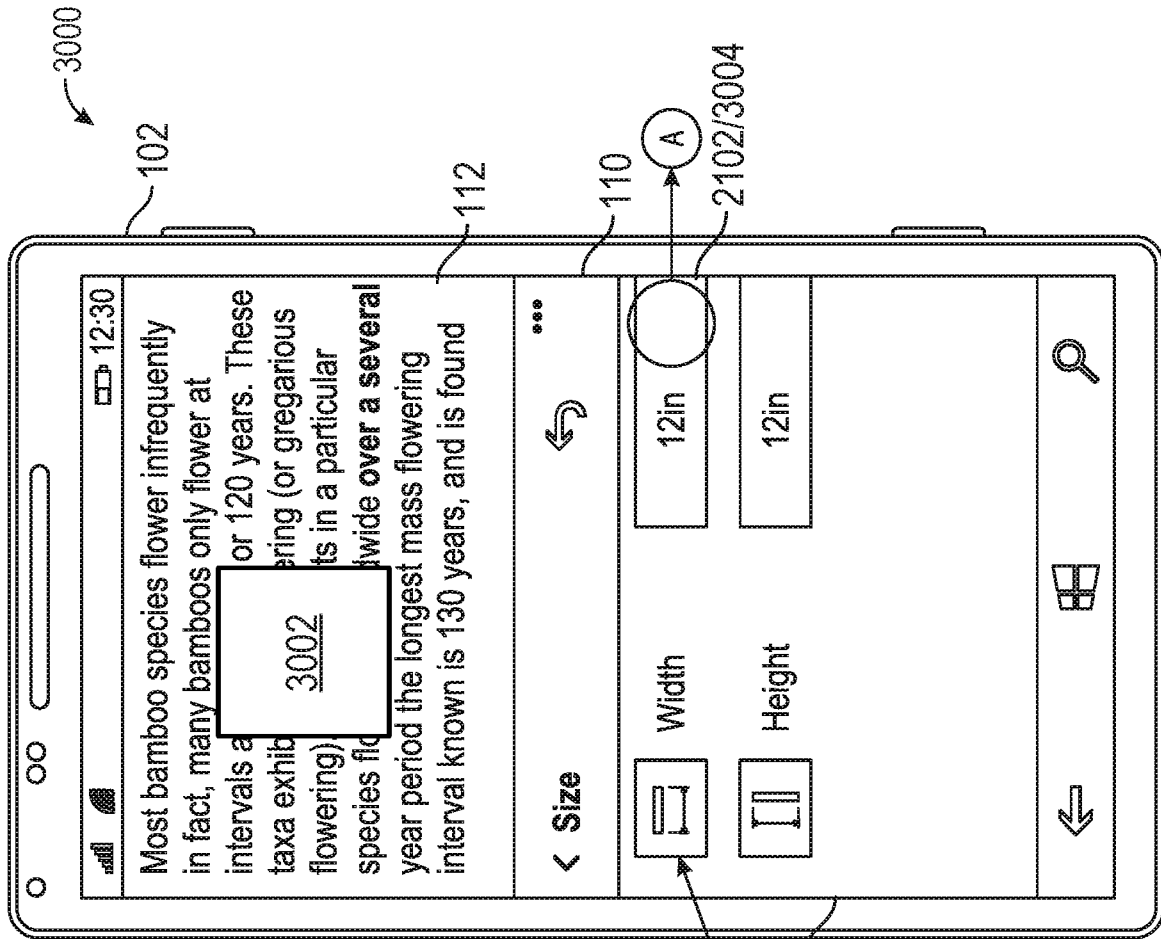


FIG. 30A

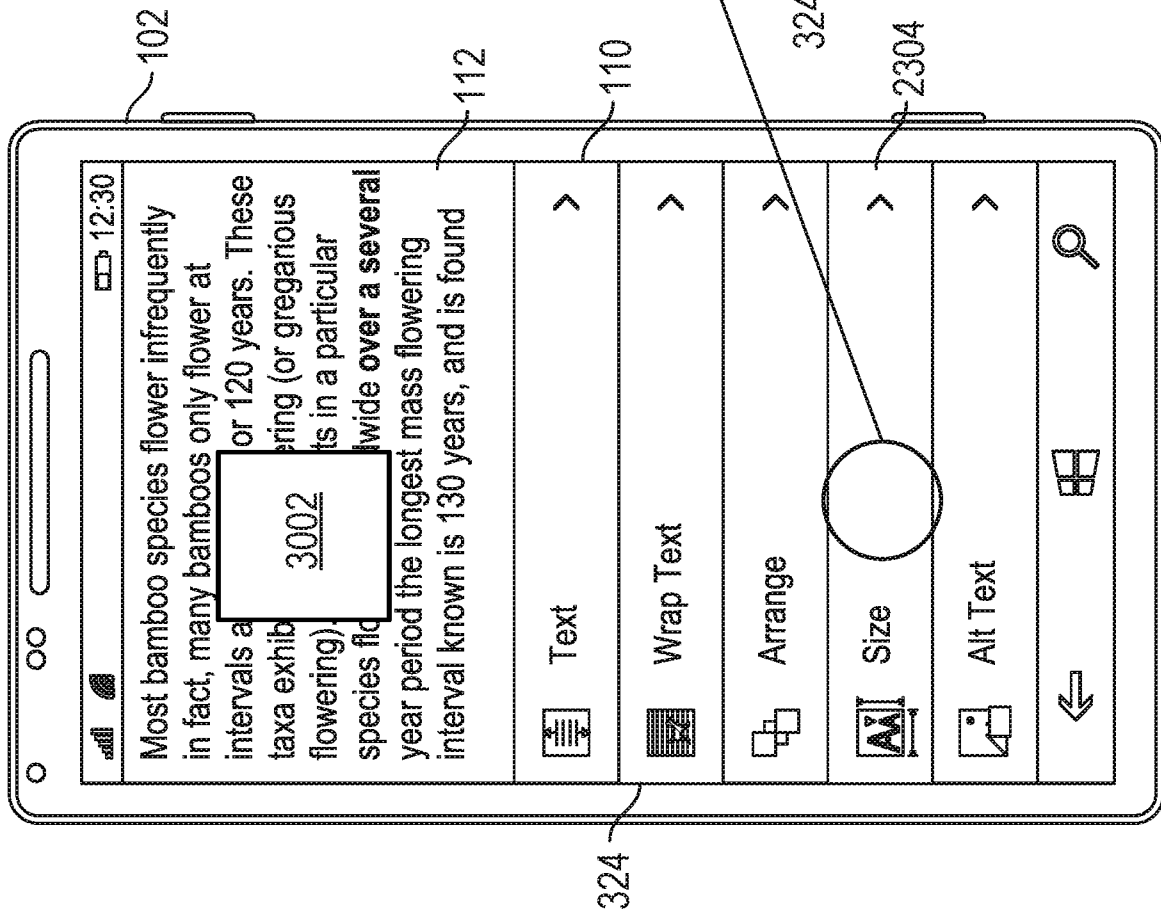


FIG. 30B

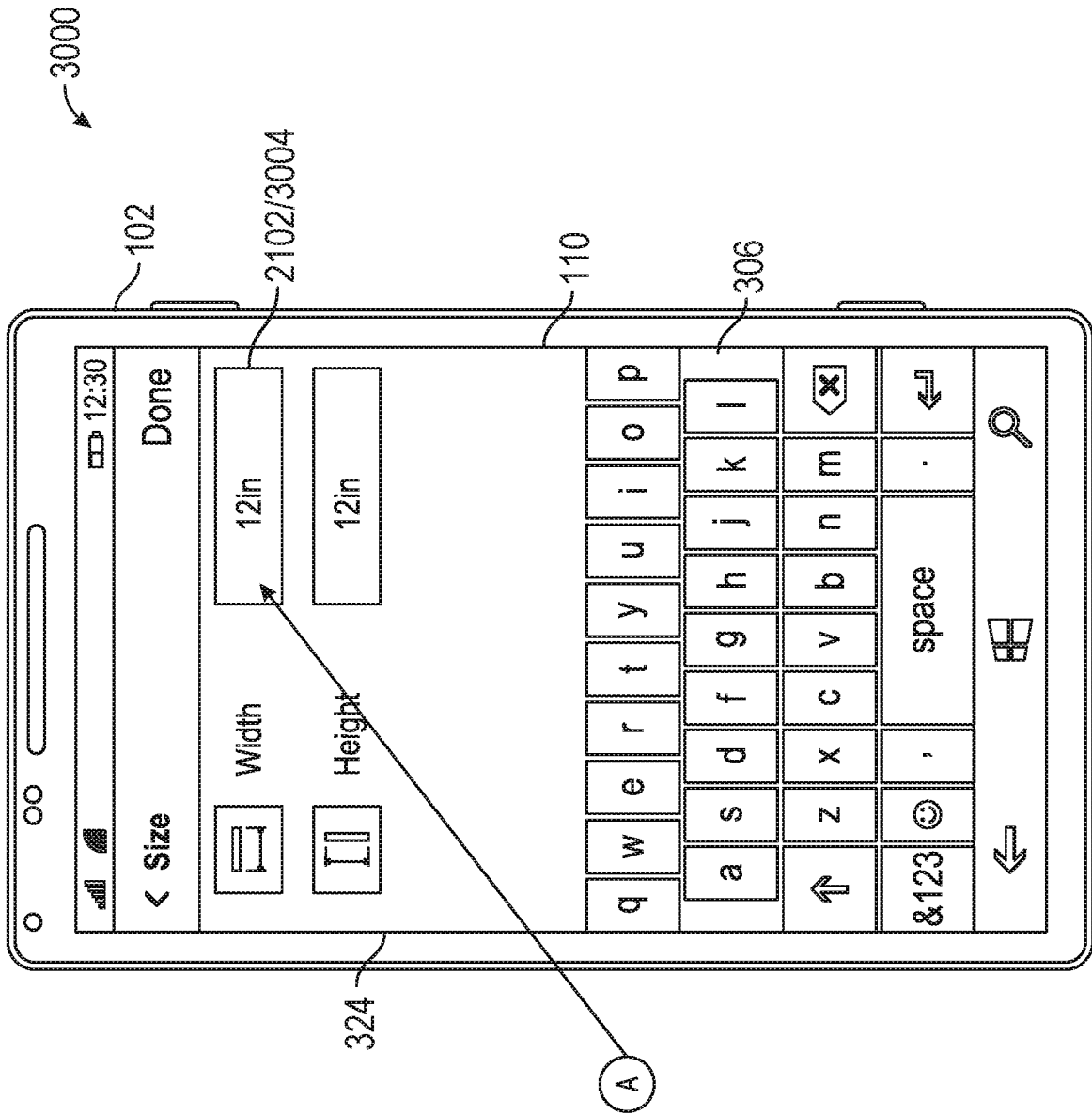


FIG. 30C

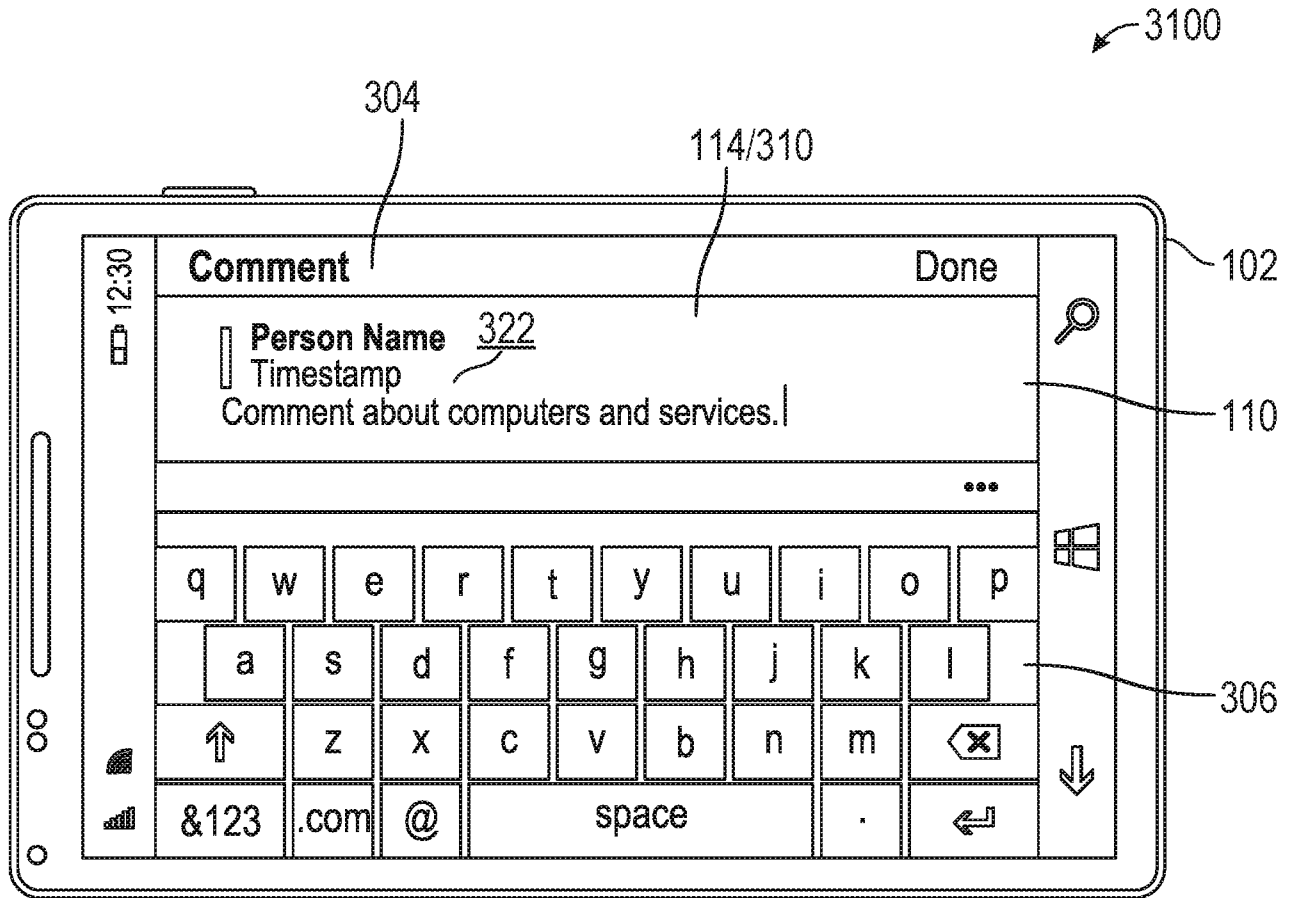


FIG. 31A

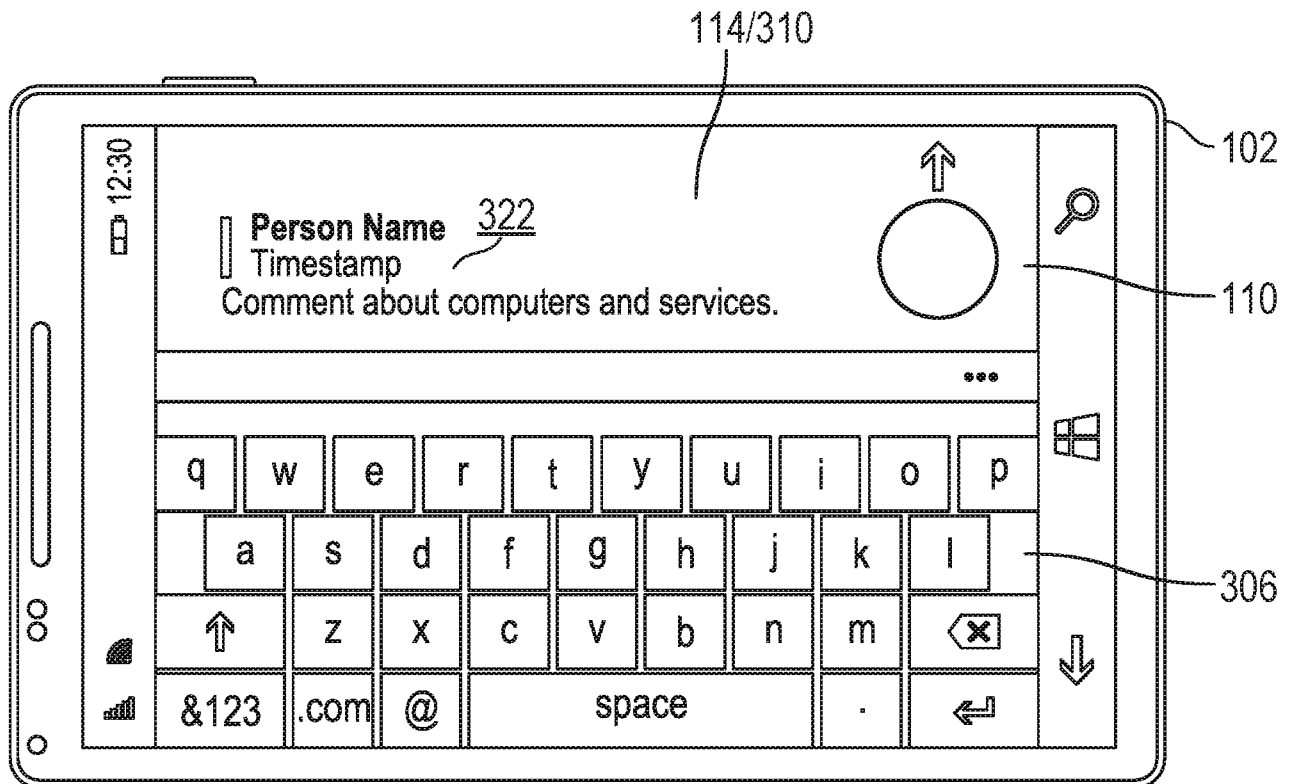


FIG. 31B

3100

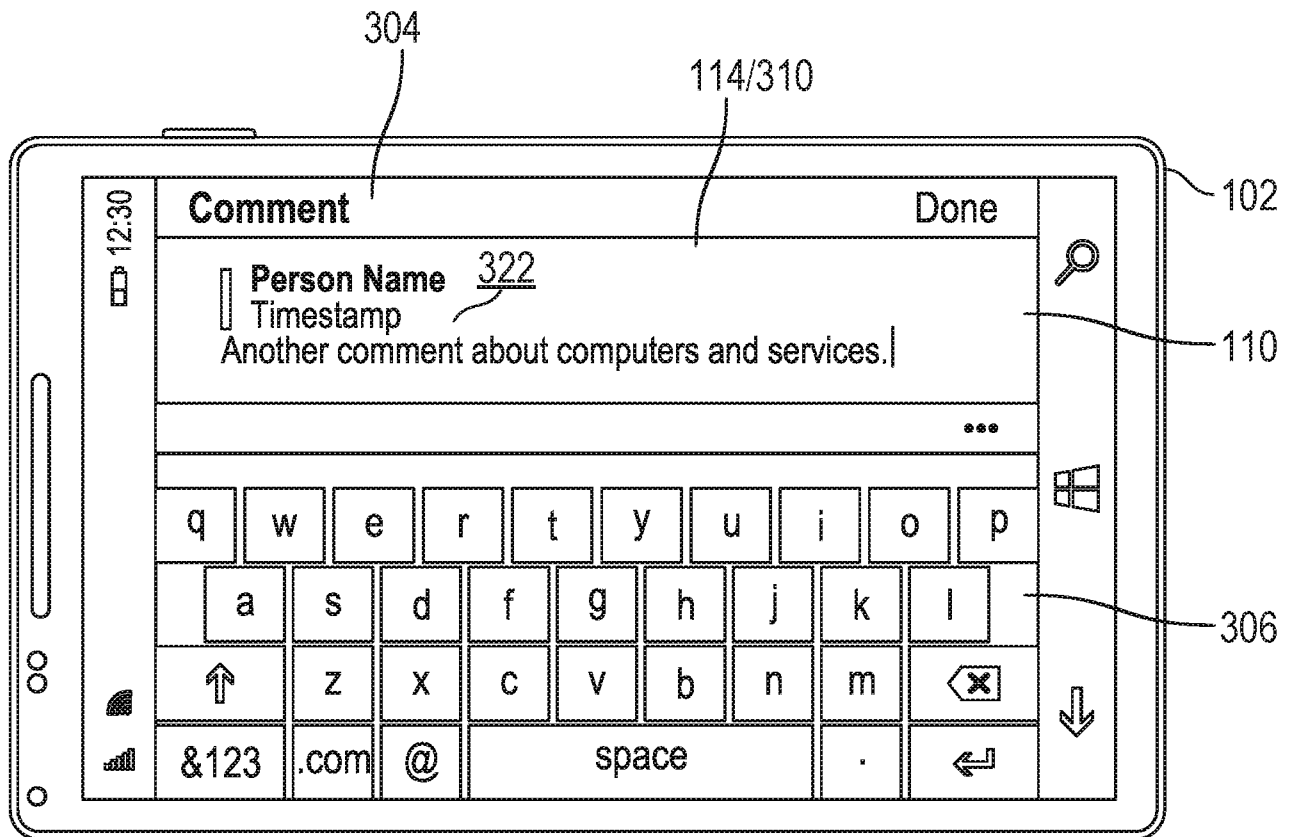
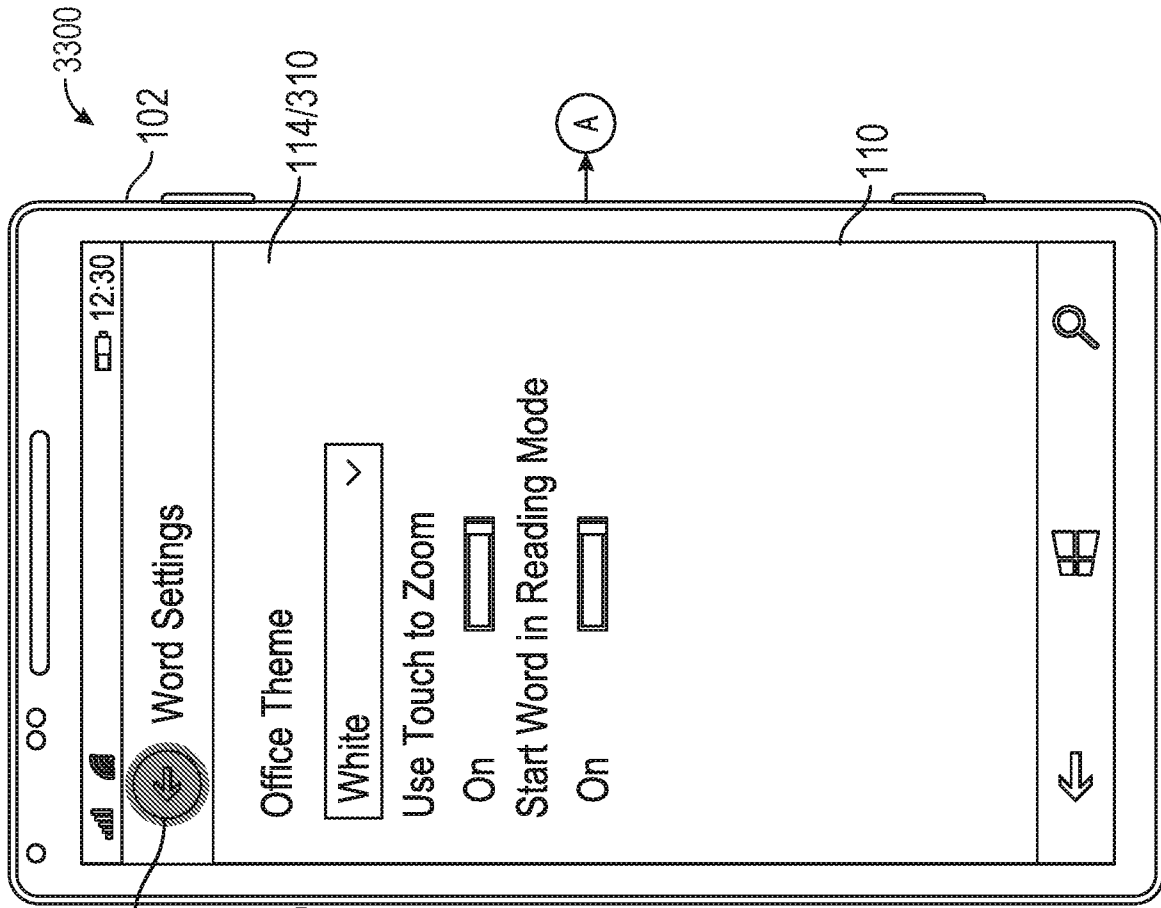
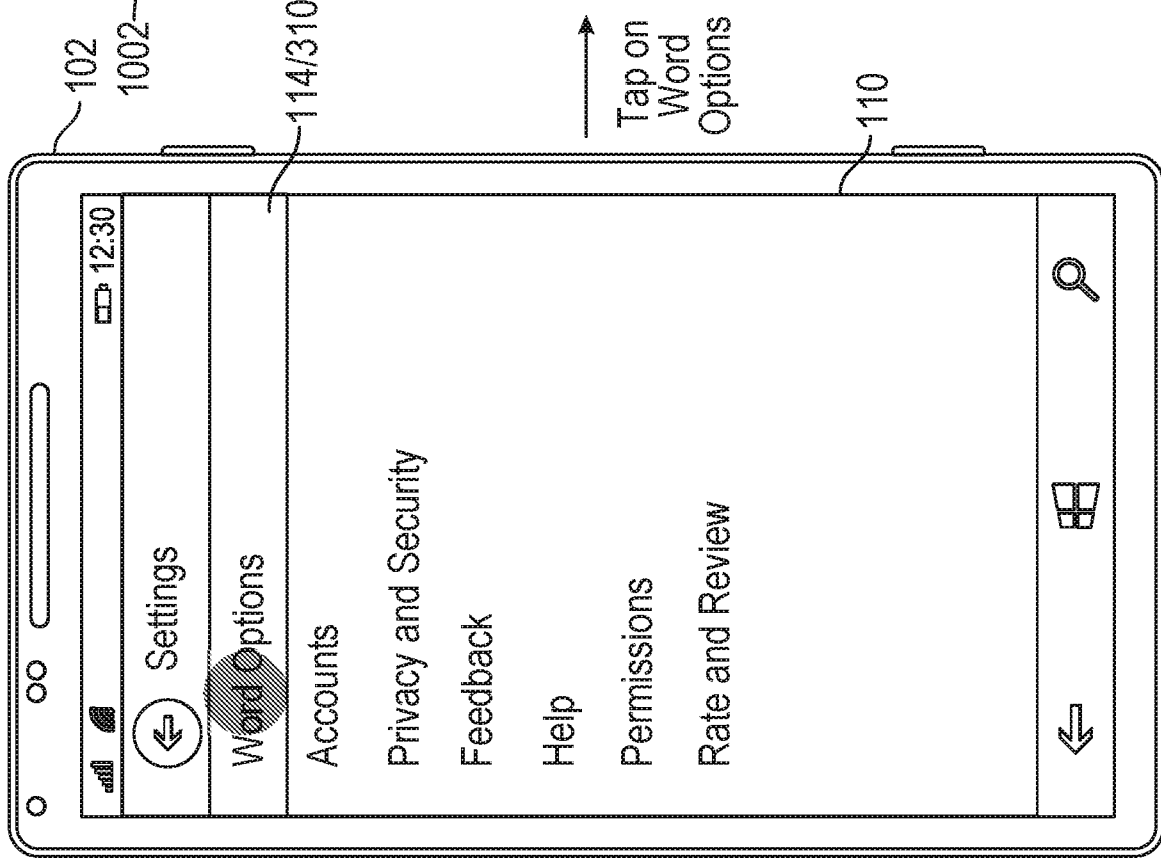


FIG. 32



Enter Settings Pane
FIG. 33A



Make change in Settings, changes are instantly saved
FIG. 33B

3300

102

114/310

A

110

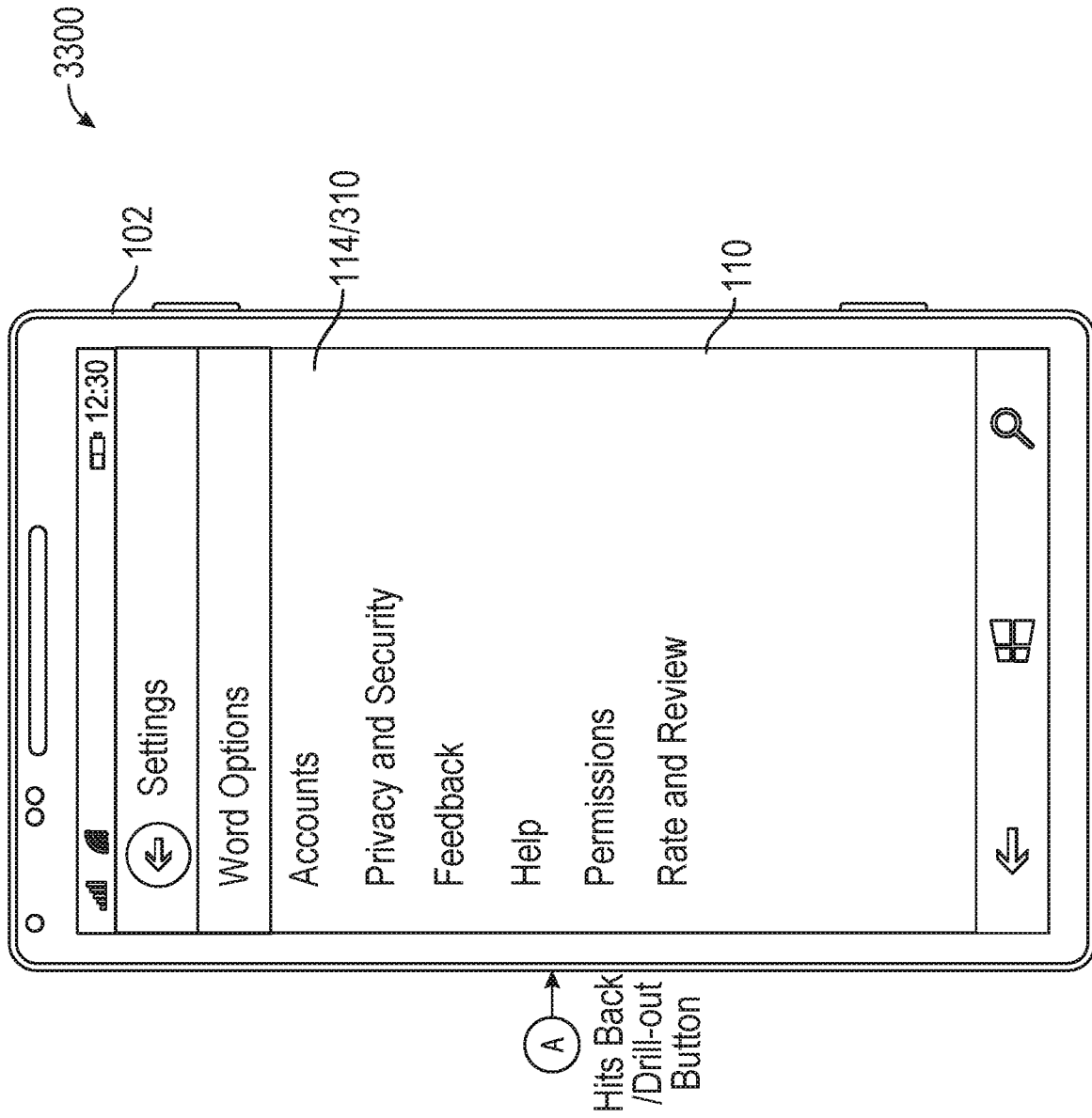
102

1002

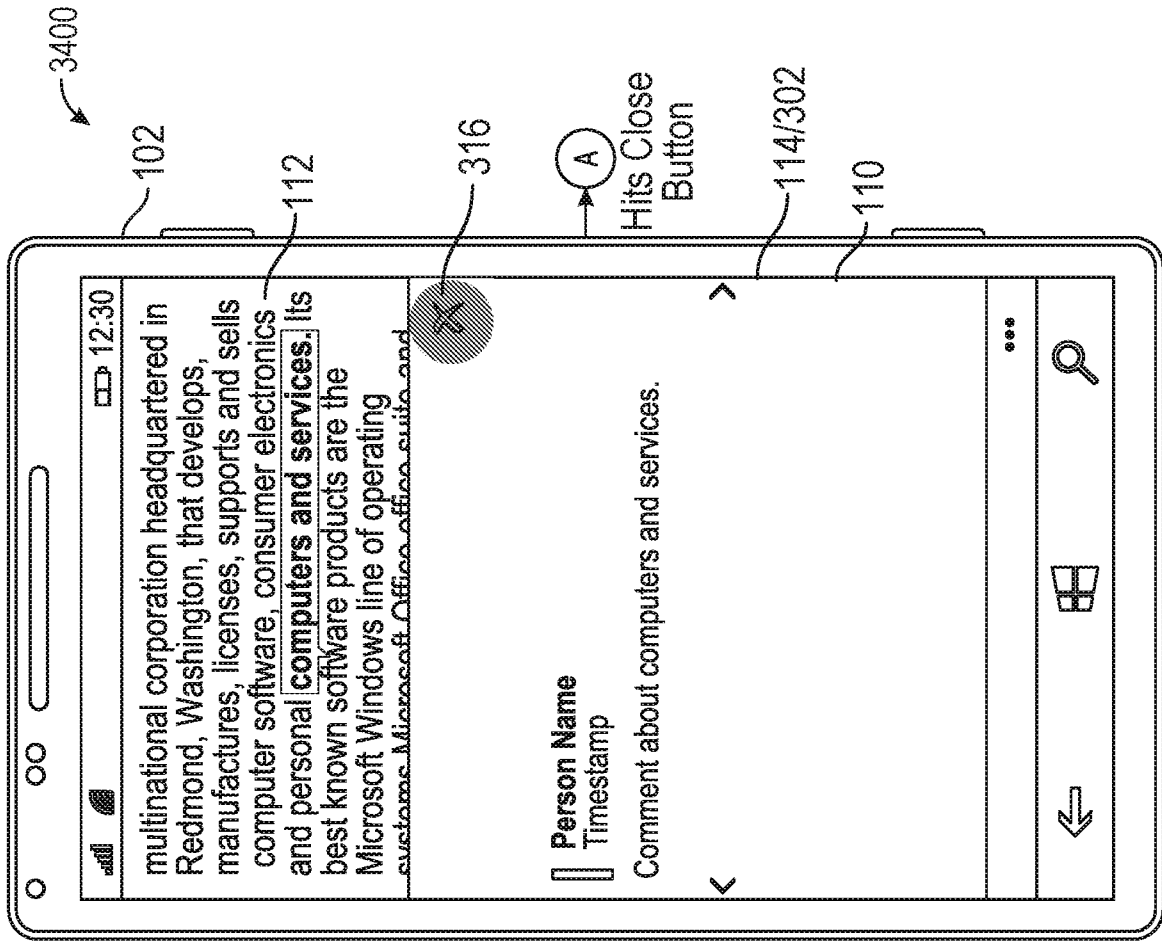
114/310

110

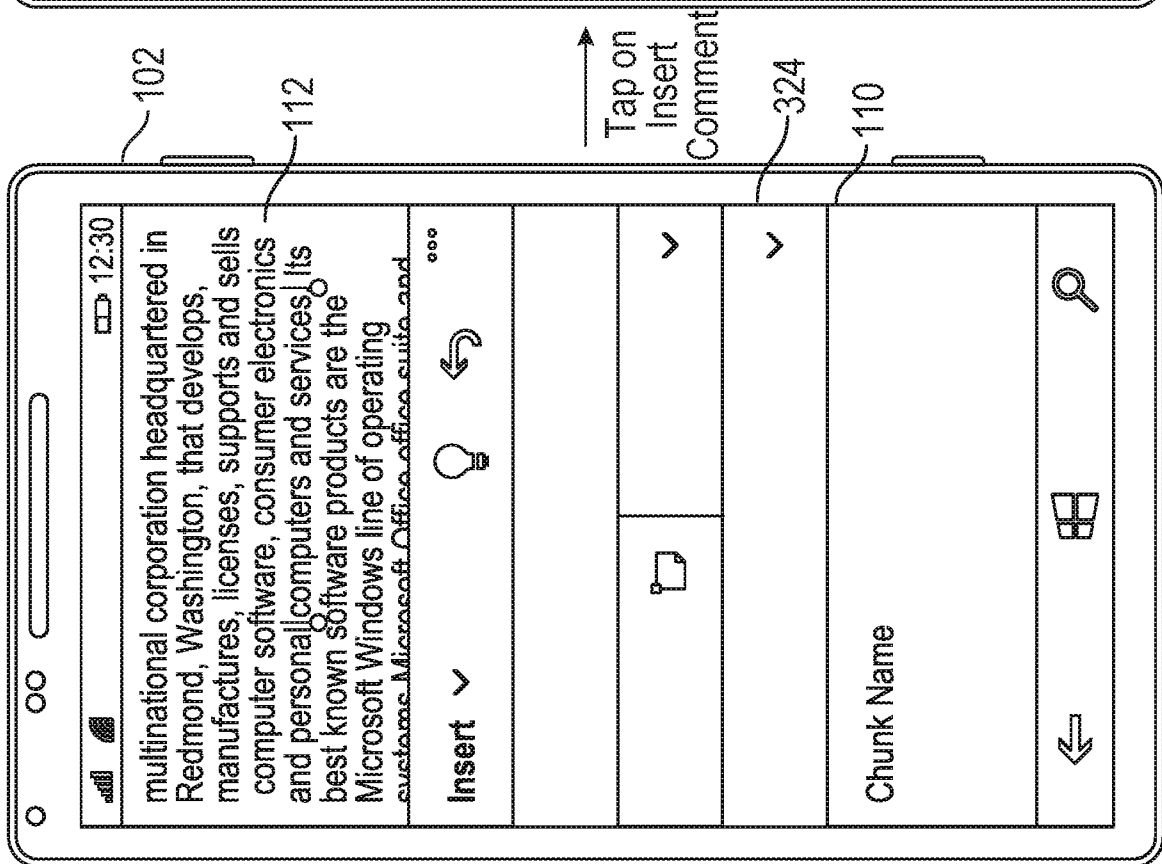
Tap on
Word
Options



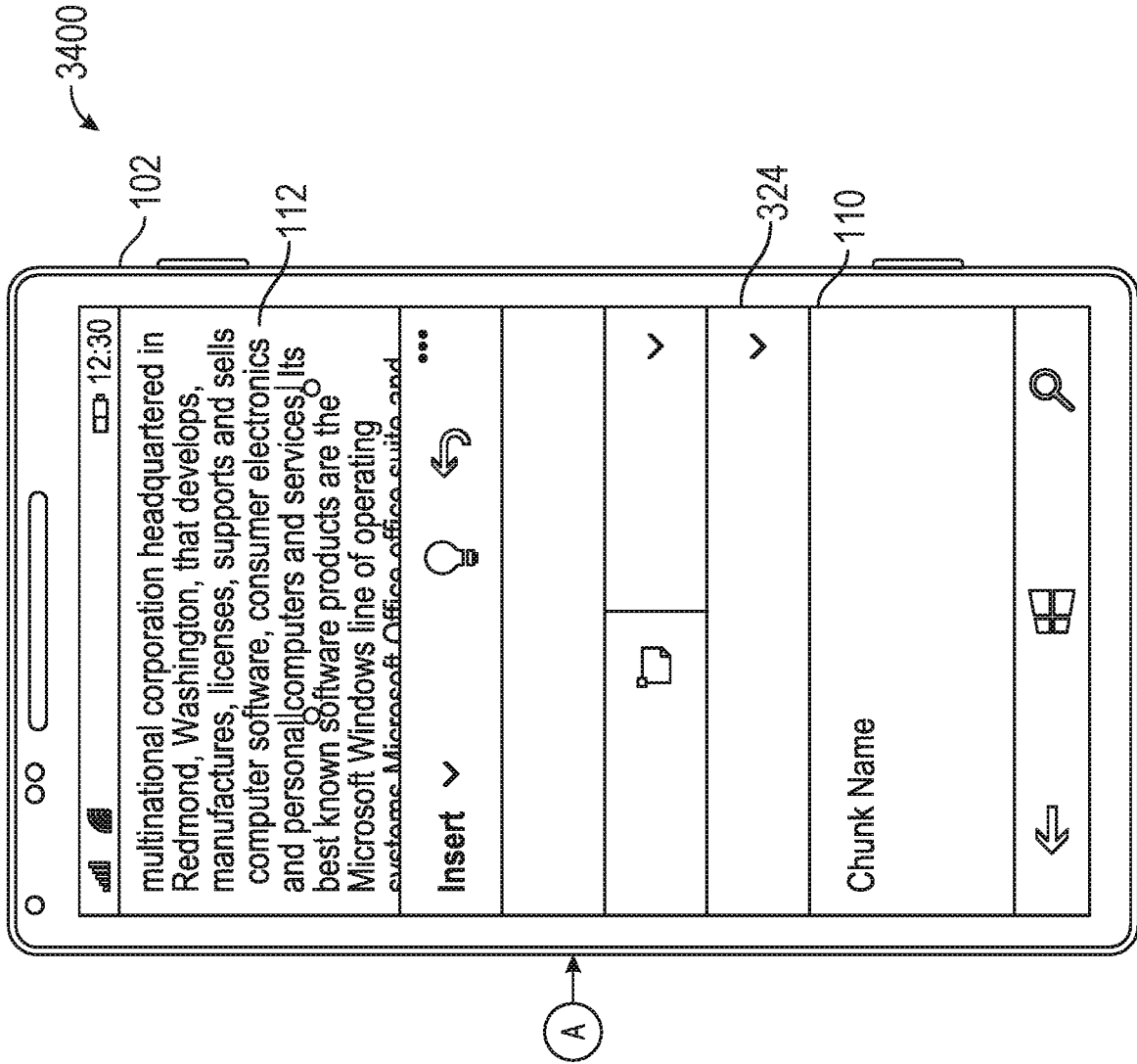
Taken Back to Settings Pane
FIG. 33C



Commenting Half Pane Opens
FIG. 34B



Insert Tab in Palette
FIG. 34A



Taken back to Palette

FIG. 34C

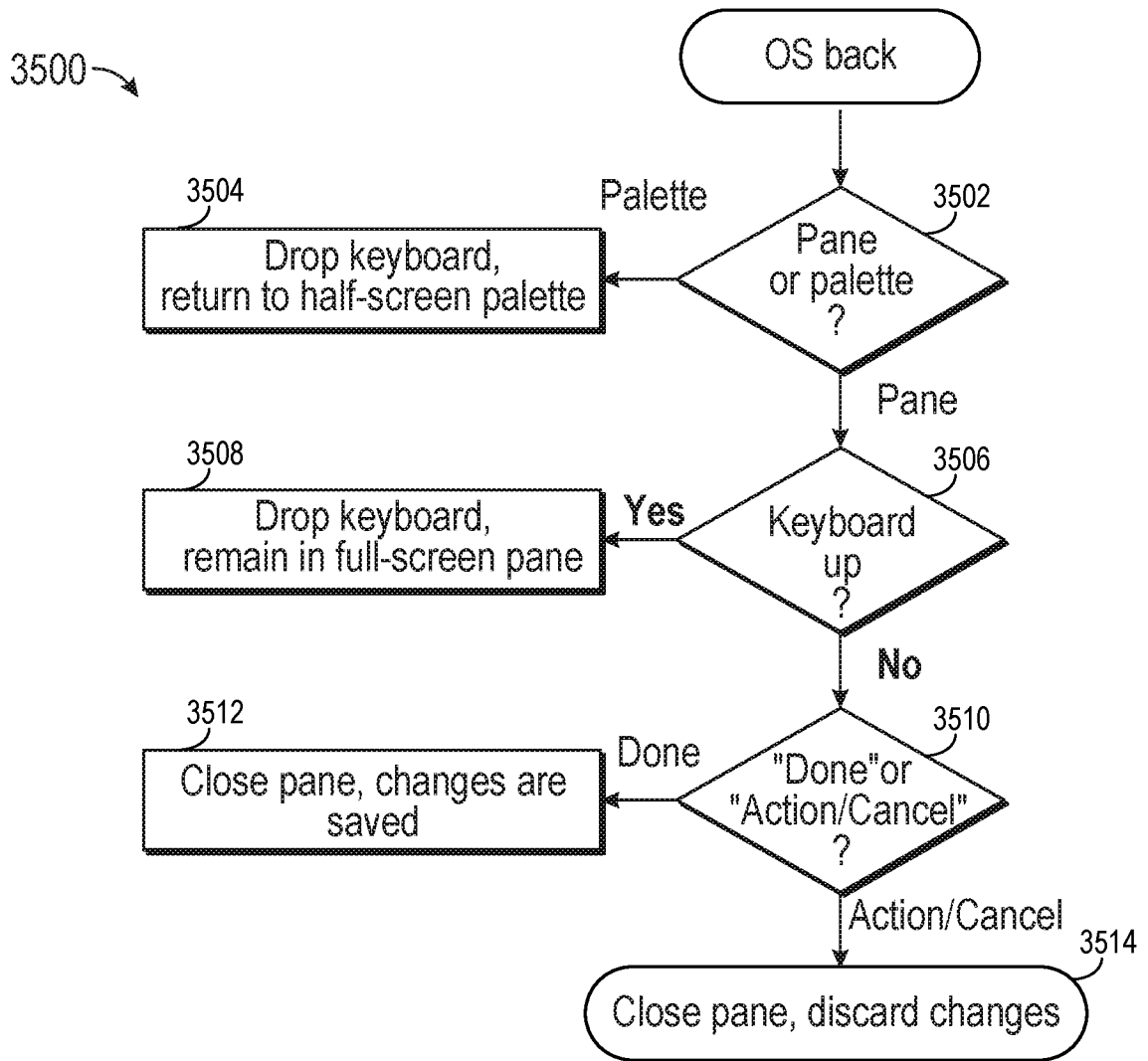


FIG. 35

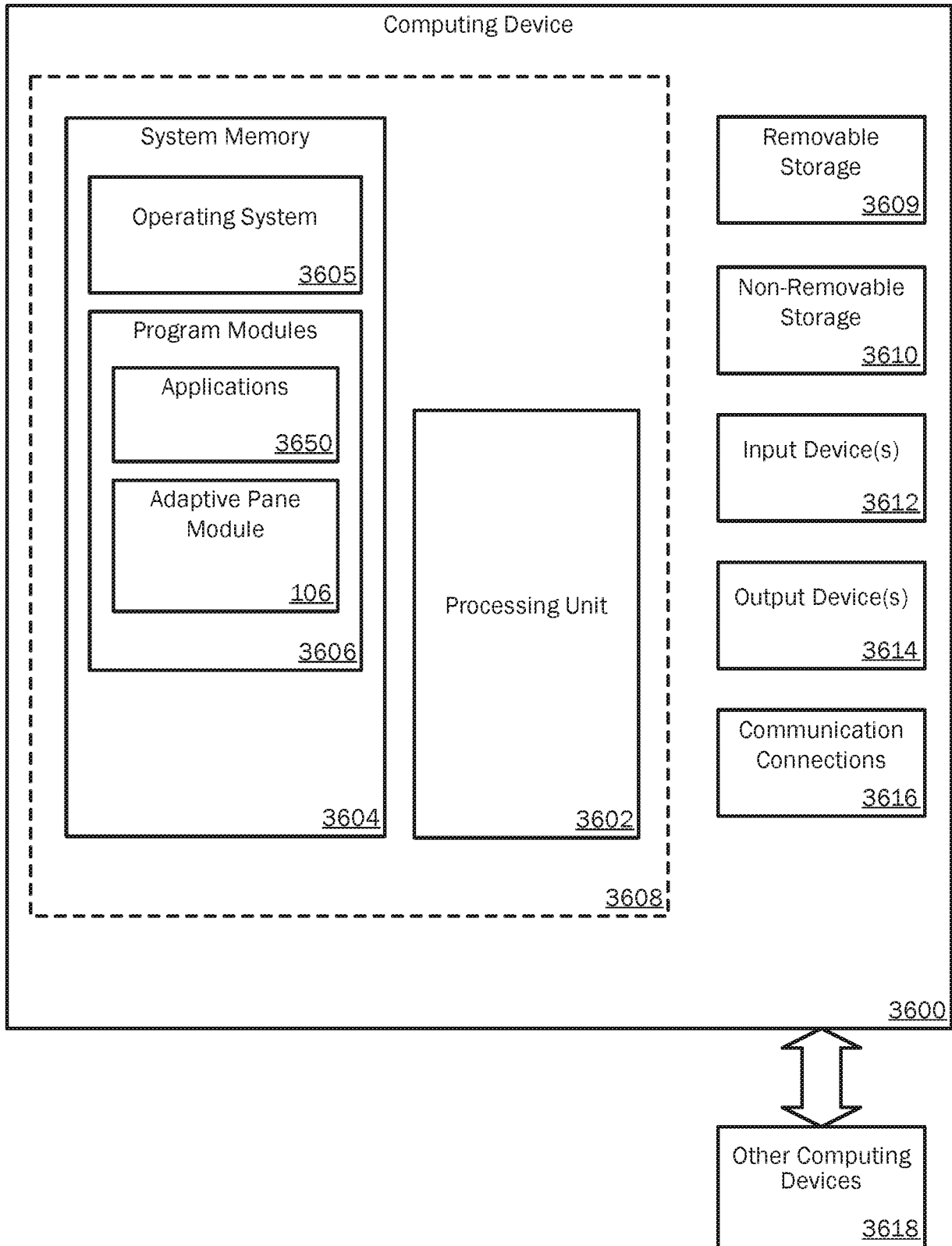


FIG. 36

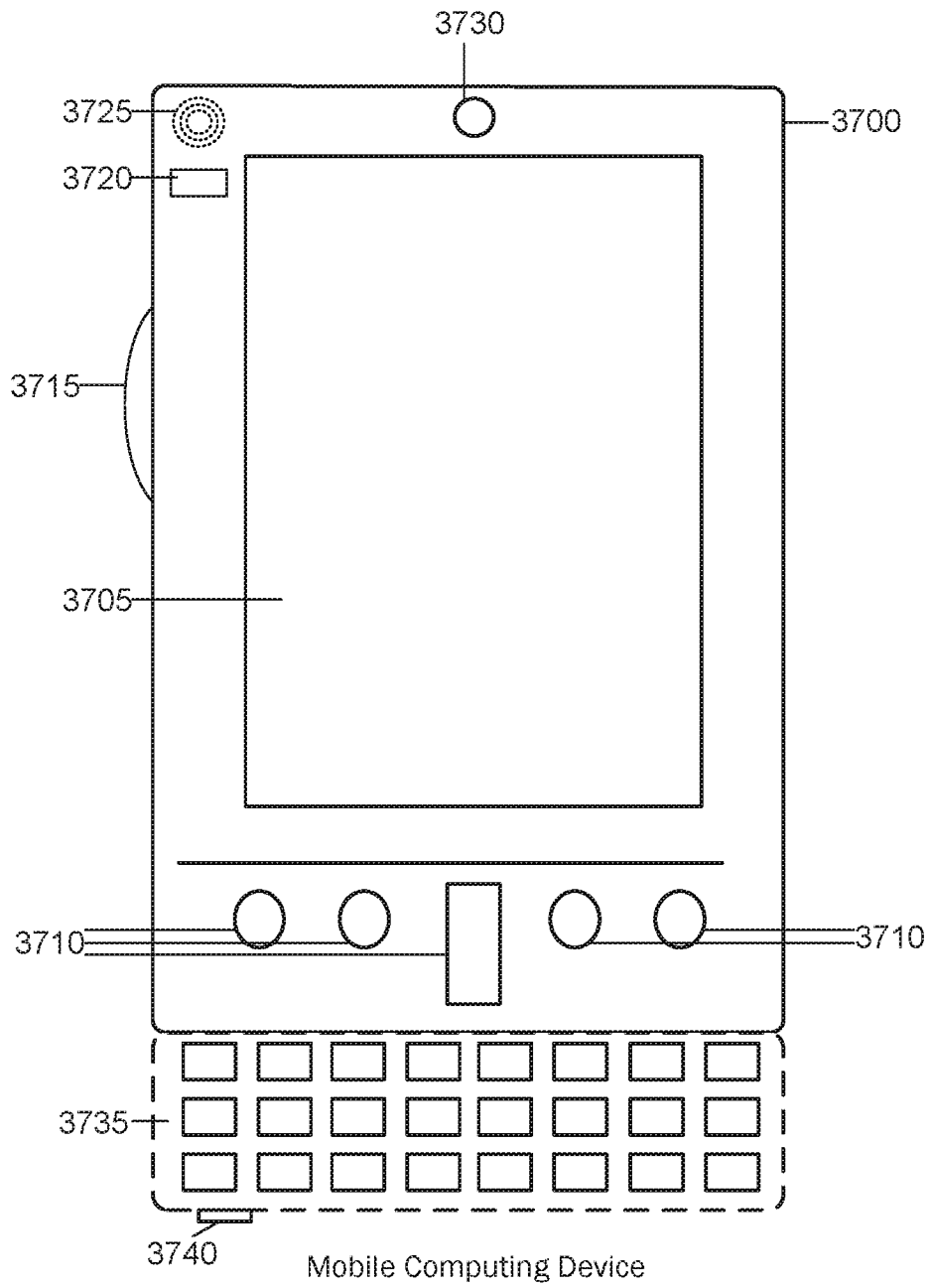


FIG. 37A

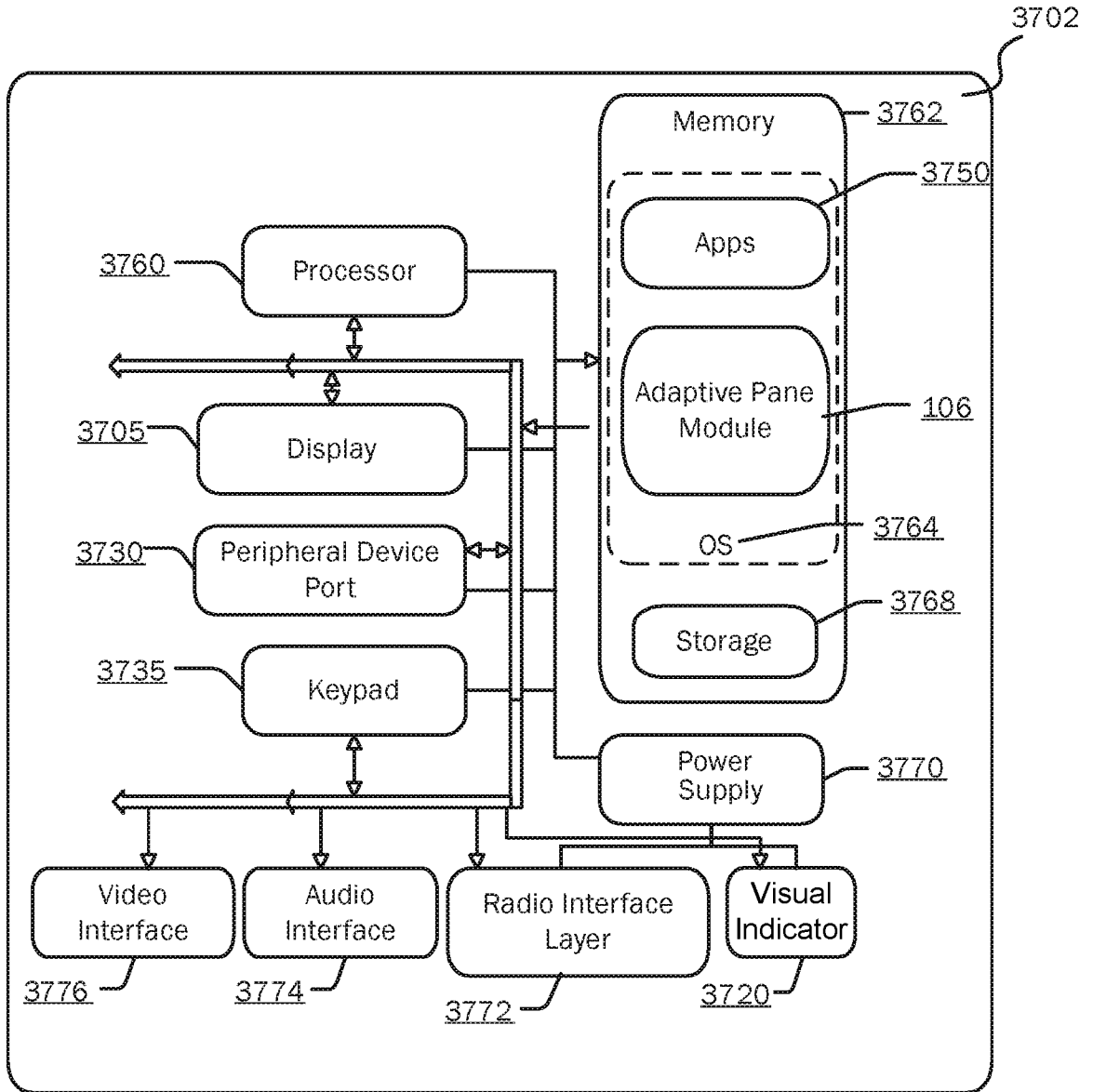


FIG. 37B

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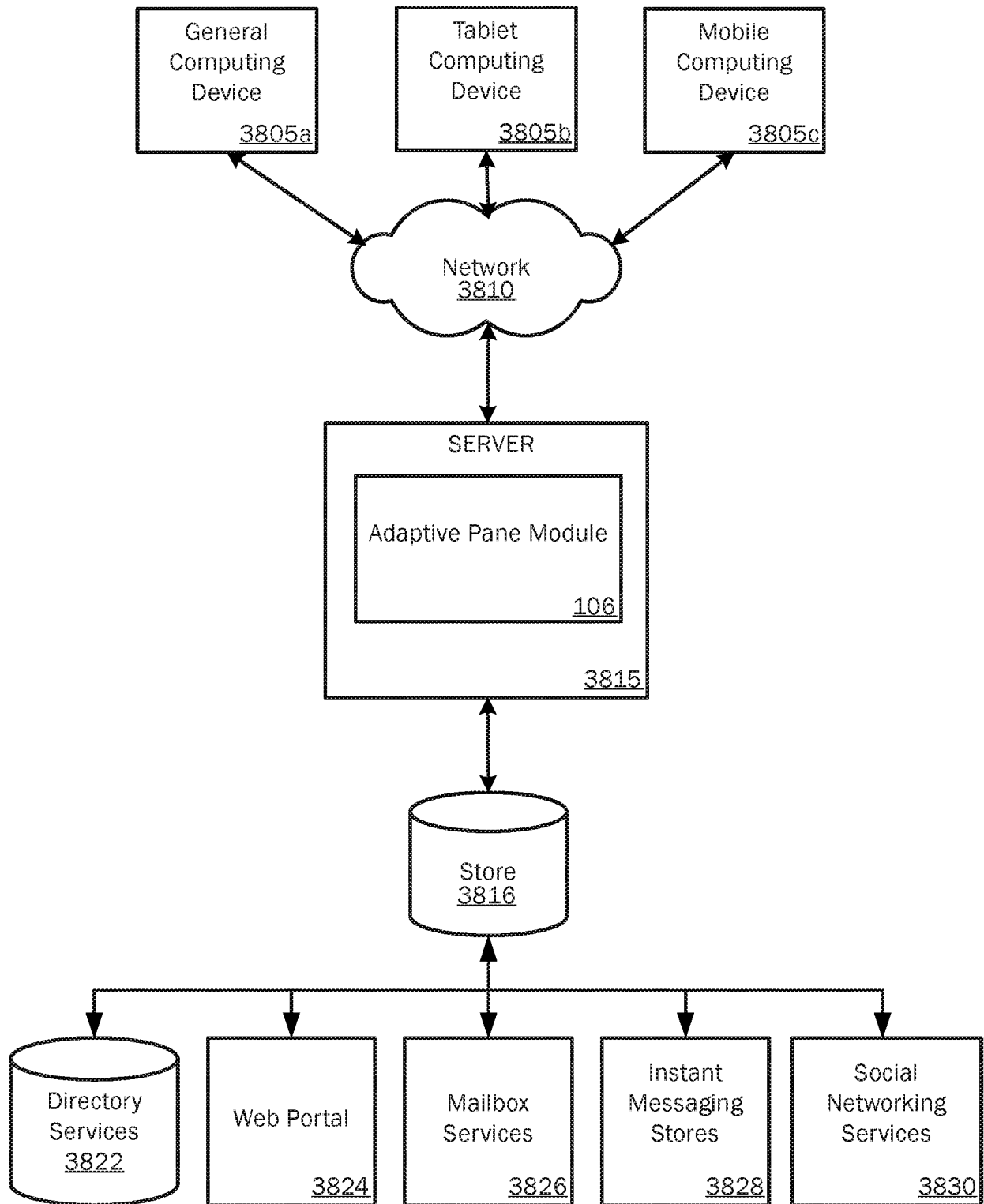


FIG. 38

INTERNATIONAL SEARCH REPORT

International application No PCT/US2016/014201
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A. CLASSIFICATION OF SUBJECT MATTER INV. G06F3/0481 ADD.				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) G06F				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	WO 2008/030879 A2 (APPLE INC [US]; ORNING BAS [US]; FORSTALL SCOTT [US]; CHRISTIE GREG [U] 13 March 2008 (2008-03-13) the whole document -----	1-15		
A	NATASA MILIC-FRAYLING ET AL: "SmartView: Enhanced Document Viewer for Mobile Devices", INTERNET CITATION, 15 November 2002 (2002-11-15), XP002462835, Retrieved from the Internet: URL:ftp://ftp.research.microsoft.com/pub/tr/tr-2002-114.pdf [retrieved on 2007-12-17] the whole document ----- -/--	1-15		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
* Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; border: none; vertical-align: top;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>			
Date of the actual completion of the international search	Date of mailing of the international search report			
18 April 2016	26/04/2016			
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Ghidini, Mario			

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/014201

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	LARS ERIK HOLMQUIST: "The Zoom Browser Showing Simultaneous Detail and Overview in Large Documents", INTERNET CITATION, 1998, XP002462982, Retrieved from the Internet: URL:http://www.hb.se/bhs/ith/3-98/leh.htm [retrieved on 2007-12-17] the whole document	1-15
A	AMIR KHELLA ET AL: "Pocket PhotoMesa: A Zoomable Image Browser for PDAs", INTERNATIONAL CONFERENCE ON MOBILE AND UBIQUITOUS MULTIMEDIA, ACM, US, 29 October 2004 (2004-10-29), pages 1-6, XP002462595, the whole document	1-15
A	WO 02/082418 A2 (T MOBILE DEUTSCHLAND GMBH [DE]; KELLER WALTER [DE]) 17 October 2002 (2002-10-17) the whole document	1-15
A	PATRICK BAUDISCH ET AL: "Collapse-to-Zoom: Viewing Web Pages on Small Screen Devices by Interactively Removing Irrelevant Content", UIST 04. PROCEEDINGS OF THE 17TH. ANNUAL ACM SYMPOSIUM ON USER INTERFACE SOFTWARE AND TECHNOLOGY. SANTA FE, NM, OCT. 24 - 27, 2004; [ACM SYMPOSIUM ON USER INTERFACE SOFTWARE AND TECHNOLOGY], NEW YORK, NY : ACM PRESS, US, 24 October 2004 (2004-10-24), pages 1-4, XP002462837, ISBN: 978-1-58113-957-0 the whole document	1-15
A	US 2005/114788 A1 (FABRITIUS HENNA [FI]) 26 May 2005 (2005-05-26) the whole document	1-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2016/014201

Patent document cited in search report	Publication date	Patent family member(s)	Publication date				
WO 2008030879	A2	13-03-2008	AU 2007292383 A1	13-03-2008			
			AU 2009100760 A4	10-09-2009			
			CA 2662134 A1	13-03-2008			
			CA 2894056 A1	13-03-2008			
			CN 101727275 A	09-06-2010			
			CN 103176701 A	26-06-2013			
			CN 103226444 A	31-07-2013			
			DE 112007002107 T5	02-07-2009			
			EP 2078239 A2	15-07-2009			
			EP 2166438 A1	24-03-2010			
			EP 2495647 A1	05-09-2012			
			EP 2508976 A1	10-10-2012			
			JP 5559538 B2	23-07-2014			
			JP 5615956 B2	29-10-2014			
			JP 2010503124 A	28-01-2010			
			JP 2013157016 A	15-08-2013			
			JP 2015018566 A	29-01-2015			
			KR 20090057421 A	05-06-2009			
			KR 20090066315 A	23-06-2009			
			KR 20110104123 A	21-09-2011			
			KR 20110125680 A	21-11-2011			
			KR 20130137689 A	17-12-2013			
			KR 20140119742 A	10-10-2014			
			US 2008094368 A1	24-04-2008			
			US 2011154188 A1	23-06-2011			
			US 2015046849 A1	12-02-2015			
			WO 2008030879 A2	13-03-2008			
			WO 02082418	A2	17-10-2002	AU 2002257548 A1	21-10-2002
						CZ 20032993 A3	14-01-2004
DE 10117457 A1	17-10-2002						
EP 1456833 A2	15-09-2004						
US 2004131043 A1	08-07-2004						
WO 02082418 A2	17-10-2002						
US 2005114788	A1	26-05-2005	CN 1882905 A	20-12-2006			
			EP 1687701 A2	09-08-2006			
			HK 1098855 A1	12-09-2008			
			KR 20060091321 A	18-08-2006			
			US 2005114788 A1	26-05-2005			
WO 2005052773 A2	09-06-2005						