

(51) International Patent Classification:  
*G06F 3/01* (2006.01)(21) International Application Number:  
PCT/US2010/047733(22) International Filing Date:  
2 September 2010 (02.09.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
12/553,076 2 September 2009 (02.09.2009) US  
12/553,071 2 September 2009 (02.09.2009) US  
12/553,078 2 September 2009 (02.09.2009) US  
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD,

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(54) Title: TOUCH-SCREEN USER INTERFACE

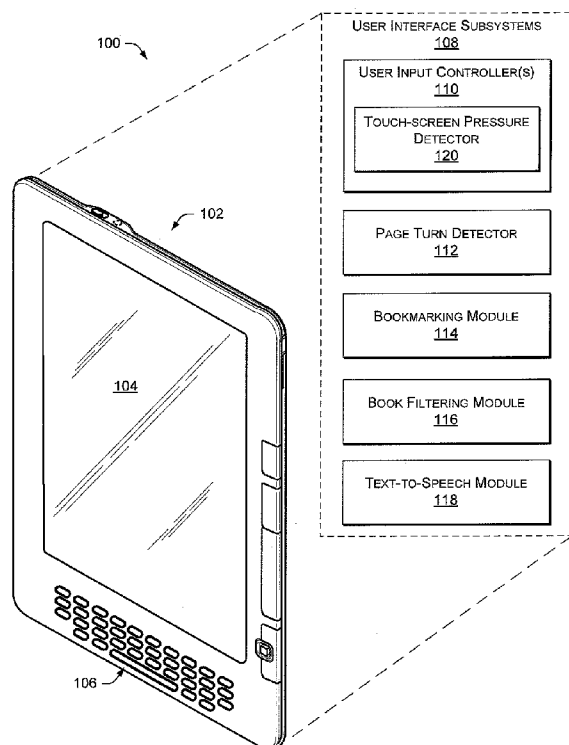


FIG. 1

(57) Abstract: A user interface for a touch-screen display of a dedicated handheld electronic book reader device is described. The user interface detects human gestures manifest as pressure being applied by a finger or stylus to regions on the touch-screen display. The touch-screen user interface enables a user to turn one or more pages in response to applying a force or pressure to the touch-screen display; alternatively, the touch-screen user interface is configured to bookmark a page temporarily by applying a pressure to the display, then allowing a user to turn pages to a new page, but reverting back to a previously-displayed page when the pressure is removed. In another implementation, the touch-screen user interface identifies and filters electronic books based on book size and/or a time available to read a book. In another implementation, the touch-screen user interface converts text to speech in response to a user touching the touch-screen display.



SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

**(84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK,

**Published:**

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

# **TOUCH-SCREEN USER INTERFACE**

## **BACKGROUND**

[0001] A large and growing population of users is enjoying entertainment through the consumption of digital media items, such as music, movies, images, electronic books, and so on. The users employ various electronic devices to consume such media items. Among these electronic devices are electronic book readers, cellular telephones, personal digital assistant (PDA), portable media players, tablet computers, netbooks, and the like. One particular device that is gaining in popularity is the dedicated electronic book (“eBook”) reader device, which attempt to mimic the experience of reading a conventional book through display of electronic information on one or more electronic displays. As the quantity of available media content continues to grow, along with increasing proliferation of such dedicated devices to consume that media content, finding ways to enhance user experience continues to be a priority. As eBook readers continue to evolve, there remains a need for improving a reader’s ability to hold and interact with the readers.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

[0002] The detailed description is described with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The use of the same reference numbers in different figures indicates similar or identical components or features.

[0003] FIG. 1 illustrates one illustrative implementation of a handheld electronic book (“eBook”) reader device and a block diagram showing illustrative components that may be implemented in the eBook reader device.

[0004] FIG. 2 is a flow diagram illustrating an illustrative process of using a touch-screen user interface to initiate various operations.

[0005] FIG. 3 is a front plan view of the eBook reader device illustrating a plurality of microphones positioned near the display.

[0006] FIG. 4 is a front plan view of the eBook reader device illustrating a touch-screen display page turning mechanism.

FIG. 5 illustrates another view of the touch-screen display page turning mechanism.

[0007] FIG. 6 is a flow diagram illustrating an illustrative process of turning pages using the touch-screen display of the eBook reader device.

[0008] FIG. 7 illustrates another page turning mechanism and a mechanism for bookmarking a page.

[0009] FIG. 8 illustrates the touch-screen display after the page turning.

[0010] FIG. 9 illustrates a return to the bookmarked page accompanied by a haptic indication.

[0011] FIG. 10 is a flow diagram illustrating an illustrative process of page turning and returning to a bookmarked page.

[0012] FIG. 11 illustrates a book list displayed on the eBook reader device.

[0013] FIG. 12 illustrates the eBook reader device displaying a subset of the book list in FIG. 11.

[0014] FIG. 13 is a flow diagram illustrating an illustrative process of filtering a book list.

[0015] FIG. 14 illustrates a mechanism for selecting an amount of reading time.

[0016] FIG. 15 illustrates a book list based on the selected amount of reading time in FIG. 14.

[0017] FIG. 16 illustrates a mechanism for the eBook reader device to read text displayed on the touch-screen display.

[0018] FIG. 17 illustrates a mechanism for the eBook reader device to read text displayed on the touch-screen display.

[0019] FIG. 18 is a flow diagram illustrating an illustrative process of using a touch-screen display to facilitate conversion of text to speech for excerpts of displayed text.

[0020] FIG. 19 is a block diagram showing illustrative components that may be implemented in subsystems of the eBook reader device of FIG. 1.

## DETAILED DESCRIPTION

[0021] This disclosure is directed to user interfaces for a handheld electronic book ("eBook") reader device designed to allow users to read electronic content (e.g., text, graphics, multimedia, and the like), such as that found in electronic books, magazines, RSS feeds, newspapers, and the like. To improve user interaction, the display mounted in the eBook reader device is a touch-screen display capable of functioning as both an input and an output device.

[0022] The terms "book" and/or "eBook", as used herein, include electronic or digital representations of printed works, as well as digital content that may include text, multimedia, hypertext, and/or hypermedia. Examples of printed and/or digital works include, but are not limited to, books, magazines, newspapers,

periodicals, journals, reference materials, telephone books, textbooks, anthologies, instruction manuals, proceedings of meetings, forms, directories, maps, web pages etc. Accordingly, the terms book and/or eBook may include any content that is in electronic or digital format.

[0023] With such eBooks, the content may be structured as virtual frames presented on the device and a user may turn or change from one virtual frame or “page” of electronic content to another. It is further noted that various aspects and features described herein may be implemented in other electronic devices or electronic readers besides eBook reader devices including, for example, portable computers, personal digital assistants (PDAs), portable gaming devices, wireless phones, and the like.

[0024] The user interfaces described herein utilize the functionality of a display, which also includes a touch screen. By generating input through touching the displayed “page” the user interfaces described below provide an intuitive mechanism for a user to interact with the eBook reader device.

#### Illustrative eBook Reader Device Architecture

[0025] FIG. 1 illustrates an illustrative device architecture 100 which, in one possible implementation, is a handheld dedicated eBook reader device 102. The eBook reader device 102 has a touch-screen display 104. The eBook reader device 102 may also include a keyboard 106 or other types of actuatable elements that may have dedicated or assigned operations. For instance, the device 102 may have a power on/off button, selection keys, joystick, touchpad, and so forth.

[0026] The touch-screen display 104 presents content in a human-readable format to a user. The content presented in the touch-screen display 104 may take the

form of electronic books, newspapers, or other readable or viewable materials. For example, the touch-screen display 104 provides the text of the electronic books and also depicts any illustrations, tables, or graphic elements that might be contained in the electronic books. The touch-screen display 104 is implemented with touch-sensitive technology which is responsive to user input registered via, for example, a finger, a stylus, or other similar pointing device.

[0027] As illustrated in FIG. 1, the eBook reader device 102 has various internal components, which include user interface subsystems 108. Examples of such components may include one or more user input controller(s) 110, a page turn detector 112, a bookmarking module 114, a book filtering module 116, and a text-to-speech module 118. The one or more user input controllers 110 are also provided to capture user input via the touch-screen 104, the keyboard 106, and any other user input element on the eBook reader device 102.

[0028] In some implementations, the one or more user input controller(s) 110 may include a touch-screen pressure detector 120. The touch-screen pressure detector 120 detects not only the presence of pressure against the touch-screen display 104, but also an amount of pressure applied to the touch-screen display 104. By detecting pressure as a continually-variable input rather than simply as an on/off binary input, the touch-screen pressure detector 120 can differentiate between a soft touch and a hard touch in addition to detecting direction and speed of contact with the touch-screen 104. The touch-screen pressure detector 120 can provide three-dimensional input by detecting where on the screen pressure is applied (i.e., x-dimension and y-dimension) and the amount of pressure applied to that point (i.e., z-dimension). Thus, the same pressure applied to different points on the surface of the

touch-screen (e.g., lower-left hand corner or upper-right hand corner) generates different input signals as well as different pressure applied to the same point on the surface of the touch-screen (e.g., hard versus soft pressure on a point on the screen).

[0029] User input may be further differentiated by duration. In some implementations, the amount of time that the touch-screen display 104 detects pressure generates a different input signal. Duration or time of contact may be thought of as providing an alternative third dimension (i.e., time of contact is the z-dimension instead of pressure) or time may supply a fourth dimension in addition to pressure (i.e., x-dimension, y-dimension, pressure, and time). For example, pressing a location on the display 104 for a short period of time may signal a page-turn command while pressing the same location for a long period of time may signal a bookmark command. Furthermore, a short, hard pressure; a short, soft pressure; a long, hard pressure; and a long, soft pressure may all correspond to a different commands or inputs.

[0030] In addition to pressure at a single point, a force applied to an area may be discernable by the touch-screen pressure detector 120. In some implementations, the force is calculated by summing the pressure detected at several points. For example, a user's thumb may contact several pressure sensors simultaneously due to the size and shape of a thumb. In this example, the pressure detected by all the sensors contacted by the thumb may be summed to determine an amount of force.

[0031] The page turn detector 112 detects an input corresponding to a command to change the displayed page on the eBook reader device 102. The command may be generated by a key on the keyboard 106, an object such as the



user's finger swiped across the touch-screen display 104, a pressure applied to a point on the touch-screen display 104, and the like. Examples of page turning mechanisms are described below in more detail with reference to FIGS. 2-4.

[0032] The term "page" as used herein refers to a collection of content that is presented at one time in the touch-screen display 104. Thus, a "page" as described herein may be understood as a virtual frame of the content, or a visual display window presenting the content to the user. Thus, "pages" as described herein are not fixed permanently, in contrast to the pages of published "hard" books. Instead, pages described herein may be redefined or repaginated when, for example, the user chooses a different font for displaying the content in the touch-screen display 104.

[0033] The bookmarking module 114 bookmarks a page so that the user may rapidly return to the page after viewing other pages. In some implementations, the bookmarking module 114 operates in conjunction with the page turn detector 112. Examples of bookmarking mechanisms are described below in more detail with reference to FIGS. 5-7.

[0034] A book filtering module 116 is provided to identify and filter books stored on, or accessible by, the eBook reader device 102 according to either book size or a time-based parameter. The book filtering module 116 orders a list of books for display on the eBook reader device, and the ordered list may include visual elements to convey length or duration of the books. Responsive to user input, the book filtering module 116 may further filter the list to form subset lists. Examples of filtering mechanisms are provided below in more detail with reference to FIGS. 8-12.

[0035] The text-to-speech module 118 converts text displayed on the touch-screen display 104 into an audible reading of the text. The text for conversion to speech may be indicated by an object on or near the touch-screen display 104 such as the user's finger moving over the displayed text. Examples of user interfaces for text-to-speech conversion are described below in more detail with reference to FIG. 13.

[0036] FIG. 2 shows a process 200 for using a touch-screen user interface to initiate various operations, such as turning pages, bookmarking pages, filtering books according to size, and converting text to speech. For ease of understanding, the process 200 (as well as processes 500 in FIG. 5, 900 in FIG. 9, 1200 in FIG. 12, and 1600 in FIG. 16) is delineated as separate acts or operations represented as independent blocks. However, these separately delineated acts should not be construed as necessarily order dependent in their performance. The order in which the process is described is not intended to be construed as a limitation, and any number of the described process blocks may be combined in any order to implement the process, or an alternate process. Moreover, it is also possible that one or more of the provided processes will be omitted.

[0037] At 202, content is displayed on a touch-screen display 104 of the eBook reader device 102. The content may be text from an electronic document, or it may be a list of items (such as book titles), or other text-based components.

[0038] At 204, a pressure applied by an object on the touch-screen display is detected. As noted above, the object may be a human finger, a stylus, or other type of pointing mechanism. In one implementation, the touch-screen pressure detector 120 detects both placement of the object on the touch-screen display 104 at 204(1),

as well as an amount of pressure being applied by the object to the touch-screen display 104 at 204(2). In some cases, the placement of the object may be a point within a region. In other cases, the placement may be interpreted as a swipe across the touch-screen display.

[0039] At 206, an operation is initiated in response to the application of the object to the touch-screen display. There may be any number of operations that can utilize varying degrees of pressure to execute the operation in different ways. In one scenario, the operation may be turning pages in an electronic book. For instance, the page turning detector 112 may turn one or more pages depending upon the amount of pressure applied to the touch-screen display. In another scenario, the operation may be bookmarking a page, where the bookmarking module 114 interprets pressured applied to a particular region as a command to bookmark the page temporarily. These and other scenarios are described below in more detail.

[0040] At 208, the results of the operation are displayed on the touch-screen display. Depending on the operations being performed, the results will vary widely. Example results for the scenarios just discussed may be a new page, or redisplay of a bookmarked page.

[0041] FIG. 3 shows an alternate implementation of the touch-screen display 104 of the eBook reader device 102 shown in FIG. 1. In this implementation, three-dimensional input may be generated by two or more microphones 302 instead of, or in conjunction with, a touch screen that senses pressure. The microphones 302 may detect the sound of an object tapping the surface of the display 104 of the eBook reader device 102. The object may be a stylus, a fingernail, or the like. Comparison of the relative volume of the sounds detected by each microphone 302 may be used

to calculate a relative distance from each microphone 302, and thus, a position on the surface of the display 104. With two microphones, a quadrant of the display (e.g., upper-right, lower-right) may be identified. With three or more microphones 302, a more specific position on the display 104 may be triangulated. The microphones 302 may be integrated into the housing of the eBook reader device 102 at or near one or more corners of the display 104. The third dimension (i.e., z-dimension) may be determined by distinguishing between a loud tap and a soft tap. A loud tap can be correlated with a greater amount of force and a soft tap can be correlated with a lesser amount of force. The total volume detected by all the microphones 302 may be summed to determine the loudness of a tap.

[0042] These are but a few examples. More details of possible scenarios are provided below with reference to FIGS. 4-19. However, these examples are non-limiting and the architecture 100 may be used to support other configurations and usage scenarios.

#### Page Turning Based on Force

[0043] In the first usage scenario, page turning in an eBook reader device is achieved by sensing pressure applied in different ways to the touch-screen user interface. Depending on the force or gesture, one or more pages may be turned forward or backward. Examples are described below with reference to FIGS. 4-6.

[0044] FIG. 4 shows a user interface representation 400 of the handheld eBook reader device 102 displaying a page of text on the touch-screen display 104. Pressure on the touch-screen display 104 by an object such as the user's finger or a stylus may cause the eBook reader device 102 to display a different page of an electronic document analogous to turning a page of a physical book. The page turn

detector 112 may analyze input received by the touch-screen display 104 to implement a page-turn command.

[0045] Recall from above that a “page” as described herein may be understood as a virtual frame of the content, or a visual display window presenting the content to the user. The pages presented on the eBook reader device 102 and turned using the touch-screen display 104 may not correspond directly to the identical hard pages in the associated physical book. Depending on display capabilities, font size, and other such parameters, any given “page” displayed on the eBook reader device 102 may contain more or less text/graphics than the corresponding hard page. Thus, the page turning mechanism 112 turns pages in the sense of changing from one display frame to another. A visual representation of a “page,” such as a page number 302, may assist the user in distinguishing one page from another. In this example, the page number is “50”. Additionally, a visual representation of turning pages, such as a changing page number, may provide visual confirmation that pages are turning. In other implementations, a graphic element such as a representation of book with turning pages may be displayed instead of or together with the page number to provide a visual representation of the turning pages. Further, in place of page numbers, a progress graphic may be used to represent the user’s progress through the content. Audio and/or haptic feedback may also be used to provide an indication of pages turning. For example, a sound of actual paper pages of a book being turned could be played each time the “page” of an eBook is turned.

[0046] In one implementation, specific regions of the touch-screen display 104 may be configured to be responsive to pressure, such that when pressed by the

user, initiates functions to turn pages forward or backwards. In FIG. 4, the screen UI includes two regions: a region 404 for turning pages forward and a region 406 for turning pages backwards. In one implementation, the region 404 for turning pages forward is located in the lower right side of the touch-screen display 104 and the region 406 for turning pages backwards is located in the lower left side of the touch-screen display 104. In these locations, the user can hold the eBook reader device 102 with two hands, and turn pages of an electronic document using his or her right and left thumbs, similar to how the user would leaf through a physical paperback book. The regions 404 and 406 may be sized appropriately to accommodate the user's thumb.

[0047] In some embodiments, the region 404 for turning pages forward may occupy the entire right half of the touch-screen display 104 and the region 406 for turning pages backwards may occupy the entire left half of the touch-screen display 104. The correlation between right-forward and left-backwards may be switched based on user settings or language of the displayed document. In other implementations, the region for turning pages forwards may be at the bottom of the touch-screen display 104 and the region for turning pages backwards may be at the top of the touch-screen display 104. Location of the regions 404, 406 may also depend on the orientation of the eBook reader device 102 such that if the user rotates the eBook reader device 102 the location of the page-turn regions 404, 406 moves accordingly.

[0048] Orientation of the eBook reader device 102 may be detected, in some implementations, by an accelerometer integrated into the device. For example, the

page-turn regions 404, 406 may stay in the lower-right and lower-left corners of the touch-screen display 104 as the eBook reader device 102 is rotated.

[0049] As discussed above, the touch-screen pressure detector 120 detects an amount of pressure or force applied to the touch-screen display 104. The number of pages turned may be proportional to the amount of pressure placed on one of the page-turn regions 404, 406. As a larger amount of force is applied to a page-turn region 404, 406, a greater number of pages are turned in proportion to the amount of force. Mechanical force may be applied to a page-turn region 404, 406 by any means. For instance, the user may place her thumb on the touch-screen display 104 and “pinch” the eBook reader device 102 between her thumb and her index finger. As another approach, the user may place the eBook reader device 102 on a table and pressing down with a stylus.

[0050] In other implementations, the speed at which pages turn may vary in proportion to the amount of pressure applied to a page-turn region 404, 406. More pressure may cause the pages to turn faster. The number of pages turned and the speed of pages turning may both vary proportionally to the amount of pressure. For example, greater pressure on one of the page-turn regions 404, 406 may cause more pages to turn and the pages to turn faster. A threshold amount of force for turning a greater number of pages and/or for turning pages at a faster speed may be adjustable by the user. For example, the user may define an amount of pressure as the force necessary to turn ten pages at one time. The user may also define an amount of pressure, for example, as the pressure necessary to turn 60 pages a minute.

[0051] Alternatively, the threshold amount may be inferred over time from observing user behavior. If the user consistently pages backwards after applying a

pressure to turn pages, it may be inferred that the user did not want to turn that many pages for the applied pressure. Hence, the next time the same pressure is applied, the device may turn fewer pages.

[0052] Gestures other than press-and-hold may generate page-turn commands. For example, swiping an object (e.g., finger, stylus, etc.) across the touch-screen 104 may generate a page-turn command. The number of pages turned may increase in proportion an amount of force applied against the touch-screen 104 during the swiping gesture. Turning pages with swiping gestures are described in more detail below with reference to FIG. 7. The number of pages turned may also depend on a number of fingers used for the swiping gesture or pressed against the page-turn regions 404, 406. For example, one finger turns one page, two fingers turns two pages, three fingers turns three pages, and so forth. Alternative correlations between the number of fingers and the number of turned pages are also possible.

[0053] In some circumstances, the user may desire automatic page turning so that the next page will be displayed without user input. In order to allow the user sufficient time to read a page before the automatic turning, but not so much time that the user is waiting excessively for the next page to be displayed, a speed of the automatic page turning may be based on an average of previous manual page turning speeds. For example, if over the last three pages of a displayed document the user has entered a manual page turn command after 20, 21, and 19 second intervals, the eBook reader device 102 may begin automatically turning pages every 20 seconds. In some implementations, a user input initiating automatic page turning is required.



FIG. 5 shows a user interface representation 500 displaying a next page of text on the touch-screen display 104 of the eBook reader device 102, following from a page turning operation by the device 102 as shown in FIG. 4. A visual representation of a displayed page is indicated by a page number 502. In this example, the page number is "51" which represents one page "forward" relative to the page number "50" shown in FIG. 4. The change in pages from FIG. 4 to FIG. 5 resulted from pressure applied to the forward page-turn region 404 such that the amount of force exerted against the touch-screen display 104 correlated with turning one page. In some embodiments, a greater amount of force applied to the page-turn region 404 will turn more than one page at a time. Turning pages backwards functions in analogous manner in response to pressure on the backward page-turn region 406. While the pages are "turning", the eBook reader device 102 and/or the display 104 may require time for processing or refreshing the displayed image. Particularly, when many pages are turned at one time, the transition between pages may not be instantaneous. In embodiments where the user interface displays the visual representation of the turning pages, the visual representation may be displayed during the transition time. For example, changing from page 50 to page 51 may be represented by scrolling numbers similar to digits displayed in an automobile odometer. In other embodiments, page 50 may visually morph to page 51, such as through visual techniques that represent a page turning in a physical book.

[0054] FIG. 6 shows a process 600 for turning pages using the touch-screen display 104 of the eBook reader device 102. At 602, a first page of an electronic document is displayed on the touch-screen display 104 of the eBook reader device

102. This is shown, for example, in the user interface representation 400 in FIG. 4, where a first page “50” is displayed.

[0055] At 604, an amount of pressured is detected within a region on the touch-screen display. In the implementation described above, for example, the pressure may be applied by an object to either the forward page-turn region 404 or the backward page-turn region 406.

[0056] At 606, a determination is made whether the pressure is applied in the first or second region. If applied to the first region (e.g., the “first region” branch from 606), one or more pages are turned forward in proportion to the amount of pressured applied to the first region at 608. If applied to the second region (e.g., the “second region” branch from 606), one or more pages are turned backward in proportion to the amount of pressured applied to the first region at 610.

#### Snapping Back to a Bookmarked Page

[0057] In another usage scenario, a user may wish to mark one page, flip to another page, and then return to the previously marked page. This manipulation may be achieved with a physical book by book marking the page that the user wishes to return to by placing a finger on the page or inserting a bookmark. As described below in reference to FIGS. 7-10, analogous bookmarking may be achieved with the eBook reader device 102. These bookmarking techniques leverage aspects of the touch-screen user interface of the eBook reader device, as will be described below in more detail.

[0058] FIG. 7 shows a user interface representation 700 of the eBook reader device 102 for displaying a page of text on the touch-screen display 104 while receiving a page-turn command. In this implementation, the page-turn command is

generated by a gesture 702 made by an object on or near the touch-screen display 104. The gesture 702 may be generated by a user swiping his finger across the surface of the touch-screen display 104. The user input controller(s) 110 may determine the direction of the swiping gesture. The page turn detector 112 may interpret the received input as a command to turn pages forward or turn pages backwards. FIG. 7 shows a gesture 702 made from right to left. The right-to-left gesture may correlate with a command to turn pages forwards. Similarly, a swiping motion from left to right may correlate with a command to turn pages backwards. Motions from top to bottom and bottom to top may also be used to turn pages. In some implementations, direct contact with the touch-screen display 104 is not necessary for detection of the object making the swiping gesture. For example, a camera may optically track a user's hand, or other object such as a stylus, as it moves across the screen relative to the camera. As an additional or alternative motion tracking mechanism, an infrared light emitting diode may emit light that is reflected back to a detector such that the emitter/detector combination can correlate a disturbance in the emitted light with the location of an object near the screen. Further, in some implementations, the page-turn command may be an actuation of a control that is not part of the touch-screen display, such as a button or joystick along the side of the eBook reader device 102.

[0059] In one implementation, the user interface 700 shown in FIG. 7 may also include a defined area 704 of the touch-screen 104 which, when pressed by the user, indicates that the currently displayed page is a page the user wishes to bookmark. The bookmarking module 114 may function to interpret the pressure applied to the defined area 704 as an indication that the bookmark should be set for

the displayed page. Thus, the defined area 704 serves as a button to bookmark a page. In one implementation, the bookmark button 704 is located in the lower-left corner of the touch-screen display 104. In this configuration, the user may activate the bookmark button 704 with his left thumb while holding the eBook reader device 102 in his left hand. The bookmark button 704 is not limited to any particular shape or placement on the touch-screen display 104. For example, left-handed users may configure the eBook reader device 102 such that the bookmark button 704 is on the lower-right corner of the touch-screen display 104. In some implementations, the page displayed in FIG. 7 may also include a visual representation 706 of a page number corresponding to the displayed page (e.g., “p. 50”).

[0060] FIG. 8 shows another user interface representation 800 of the eBook reader device 102 displaying a page of text following a page-turn command. As described above, the page-turn command is processed by the page turn detector 112 in response to a gesture 702 made by an object on or near the touch-screen display 104, pressure on a page-turn region 404, 406, pressing a button on the keyboard 106, pressing one of the other controls, or the like. In this example, the visual representation 802 of the page number indicates that 10 pages were turned from page “50” shown in FIG. 7 to page “60” shown in FIG. 8.

[0061] In one implementation, page 60 is displayed as long as the pressure of the object (e.g. a finger or stylus) is detected on the bookmark button 704. Once the pressure is no longer detected on the bookmark button 704, the eBook reader device 102 redisplay the bookmarked page, which in this example is page 50 shown in FIG. 7. With this implementation, the user may hold the eBook reader device 102 with his left hand, press on the bookmark button 704 with his left thumb, and flip

through pages by swiping a finger of his right hand across the touch-screen display 104. Upon releasing the left thumb, the eBook reader device 102 "snaps back" to the page that was displayed when the user placed his left thumb on the bookmark button 704.

[0062] FIG. 9 shows a user interface representation 900 in which the eBook reader device 102 redisplay the page originally displayed in FIG. 7, but optionally accompanies this display with a haptic indication. The visual representation 902 of the page number shows that, in this example, the text has been returned to page "50". Redisplaying the bookmarked page once pressure is removed from the touch-screen display 104 may be instantaneous or near instantaneous. In one implementation, the "snap back" may occur without an accompanying visual representation of turning pages. In a same or different implementation, a haptic indication accompanies the redisplaying the bookmarked page. The haptic indication provides the user with tactile feedback analogous to turning a large number of pages of a physical book at one time. In one implementation, the haptic indication may be a vibration created by a vibrator, a low-frequency sound produced by a speaker, or the like. The haptic feedback may be accompanied, or even replaced, by audio feedback.

[0063] FIG. 10 illustrates a process 1000 for bookmarking a page of an electronic document using the touch-screen display 104 of the eBook reader device 102.

[0064] At 1002, a first page of an electronic document is displayed on the touch-screen display 104 of the eBook reader device 102. The display may be similar to the UI representation 600 shown in FIG. 6.

[0065] At 1004, pressure is detected on the touch-screen display 104. The pressure may be detected in a defined area of the touch-screen 104, as described above in FIG. 7. The pressure may be caused by an object, such as a stylus or a user's finger. The pressure is interpreted by the bookmarking module 114 as a command to bookmark the currently displayed page.

[0066] At 1006, a command to turn pages is received. This page-turn command may be received by the page turn detector 112. The command to turn pages may cause one or more pages to be turned forwards or backwards. Page-turn commands are described in more detail above in FIGS. 4-6.

[0067] At 1008, a second page of the electric document is displayed on the eBook reader device 102. The second page is displayed in response to the command to turn pages received at 1006. The second page is not necessarily adjacent to the first page in the pagination of the document. For example, if the command to turn pages is a command to turn 10 pages, or alternatively 10 repetitions of a command to turn one page, the second page of the document displayed in process 1000 will be a page that is 10 pages away from the first page of the document displayed at 1002.

[0068] At 1010, a determination is made as to whether pressure is still detected on the touch-screen display 104. In one implementation, the continued presence or absence of pressure at the bookmark button 704 is detected. The determination may be performed by the bookmarking module 114. If pressure is still detected (i.e., the "Yes" branch from 1010), the second page of the document remains displayed at 1008. When the pressure of the object is no longer detected (i.e., the "No" branch from 1010), the eBook reader device snaps back to the first page of the electronic document and displays it at 1002. As described above in FIG.

9, redisplaying the first page of the electronic document may optionally be accompanied by a haptic and/or audio indication, such as a vibration, at 1012.

#### Searching for Books Based on Size or Available Time

[0069] An eBook reader device 102 may contain a large number of unabridged eBooks. Organizing and sorting the books becomes increasingly important as the number of books stored thereon increases. Users of the eBook reader device 102 may wish to identify books based on size or a time parameter (such as available time to read, or the amount of time it will take to read the book). With physical books, this may be accomplished by simply looking at a book and evaluating its size. However, with eBooks, it is more difficult for a user to gain a sense of size of the electronic documents.

[0070] This section of the disclosure discusses example techniques for searching for documents based on size and/or a time parameter. These searching and filtering parameters may be selected using various gesture inputs via the touch-screen display.

[0071] FIG. 11 shows a user interface representation 1100 for displaying a book list 1102 on the eBook reader device 102. While books are shown in this example, it is noted that the book list 1102 may display lists of other types of electronic documents, including a mixture of document types, without departing from the spirit and scope of the description herein. For example, the book list 1102 may contain books, magazines, newspapers, periodicals, journals, reference materials, telephone books, textbooks, anthologies, instruction manuals, proceedings of meetings, forms, directories, maps, web pages etc.

[0072] In one implementation, the book list 1102 includes visual indicators of book length 1104 along with titles of the books. The visual indicators of book length 1104 may be bars or columns that represent length of the books in the book list 1102. In some implementations, the visual indicator may indicate an amount of the book that remains unread. The visual indicator is not limited to bars or columns, but may include other representations such as a three-dimensional representation of a book that appears larger or taller in proportion to the size of other books. In this example, the length of a horizontal bar corresponds to the length of a book. The book list 1102 may be ordered according to book length. Alternatively, the book list 1102 is ordered based on other factors, such as closeness of match to a search query, alphabetically, by date, price, or the like. In some situations, the book list 1102 may be ordered according to a filter (e.g., search, user preferences, etc.) and secondarily by book length. In the illustration of FIG. 11, five books are shown, with example titles ordered as follows: “Very Large Book”, “Short Book”, “Medium Book”, “Large Book”, and “Very Short Book”.

[0073] The user may select one of the books in the book list 1102 by placing an object (e.g., finger or stylus) on or near a part of the touch-screen display 104 that is, for example, displaying the title of the book. In response, a subset of the book list 1102 is displayed. Books included in the subset of the book list 1102 are determined by a size of the book indicated by the user. In this example, the user is shown selecting the “Medium Book” with his finger. Size may be determined in various ways, such as by number of pages in the book, number of words in the book, number of characters in the book, or the like.



[0074] FIG. 12 shows a user interface representation 1200 that displays a subset 1202 of the book list 1102 shown in FIG. 11 following selection of the "Medium Book". The subset list 1202 may be ordered based on size. In this example, the subset list 1202 is ordered top-to-bottom from larger to smaller. The subset list 1202 may alternatively be ordered top-to-bottom from smaller to larger. In one implementation, the subset list 1202 may also include visual indicators of book length 1204, as described above in FIG. 11.

In this illustration, the subset list 1202 contains eBooks with a size equal to or smaller than the selected "Medium Book". Hence, the books "Short Book" and "Very Short Book" are included in the subset list 1202. In other implementations, eBooks having a size equal to or larger than the size of the selected book, or eBooks are a next size larger or next size smaller, may be included in the subset list 1202. The subset list 1202 may be thought of as the book list 1102 after filtering based on a size of the book indicated by the user.

[0075] As another option, the type of filtering applied to the book list 1102 may depend on a type of object and/or a type of gesture that generates the indication on the touch-screen display 104. For example, selecting a book by pressing the title of "Medium Book" in FIG. 11 with two fingers may filter the book list 1102 by removing books larger than the indicated book. In contrast, indicating a book by pressing the title of "Medium Book" in FIG. 11 with only one finger may filter the book list 1102 by removing books smaller than the indicated book. As a further example, indicating a book by pressing the title of the book and then making a swiping gesture upwards may filter the book list 1102 by removing books smaller

than the indicated book, while making a swiping gesture downwards may filter the book list 1102 by removing books larger than indicated book.

[0076] FIG. 13 shows a process 1300 for filtering a list of electronic documents using the touch-screen display 104 of the eBook reader device 102.

[0077] At 1302, a list of electronic documents is presented to the user on the touch-screen display 104 of the eBook reader device 102. As described above in FIG. 110, the list of documents may include visual indications of document length. The list may be ordered or unordered.

[0078] At 1304, indication corresponding to one of the electronic documents in the list is received. The indication may be generated by an object on or near a portion of the touch-screen display 104 that is displaying a title or other representation of one of the documents in the list. In one implementation, the object is one or more of the user's fingers, but it may also be a stylus or other pointing mechanism.

[0079] At 1306, the list is filtered based on the indication made by the user to remove some of the documents and form a subset list. A subset list 1202 is shown in FIG. 12, for example, following selection of a book title "Medium Book" from the list 1102 of FIG. 11. Creation of a subset list per act 1306 may be implemented in different ways. One example implementation is shown in FIG. 13 with sub-acts 1306(1)-(3). At 1306(1), a determination is made whether the user selected the document listed on the touch-screen display 104 using one finger or two fingers. This is detected through multiple pressure points on the screen. If the user employs two fingers (i.e., the "Two" branch from 1306(1)), electronic documents larger than the indicated electronic document are removed at 1306(2). If he uses one

finger (i.e., the “One” branch from 1306(1)), electronic documents smaller than the indicated electronic document are removed at 1306(3).

[0080] At 1308, the filtered list is presented to the user on the touch-screen display 104. The presentation may be similar to that discussed above in FIG. 12.

[0081] The above features allow users to search for books, and filter lists of books, based on size. Another parameter that may be used is time available to read a book or the time it takes to read a book given at the reader's pace.

[0082] FIG. 14 illustrates a user interface representation 1400 of the eBook reader device 102 that allows a user to select a book based on time. This time parameter may represent different conditions, such as an amount of time available to read (e.g., 15 minutes left on a break) or an amount of time it will likely take the user to read the book (e.g., at reader's rate, books or articles that can be completed in 15 minutes). For such time-based filters, the eBook reader device 102 calculates the user's reading speed. A typical reading speed may be calculated based on time between page-turn commands and a number of words or characters displayed on a page. Thus, the time it will take the user to read the book is directly related to size and time-to-read may be thought of as a proxy for size. However, unlike size, the time it will take to read a book may be different for different users. The eBook reader device 102 may maintain multiple user profiles each associated with a respective reading speed.

[0083] In FIG. 14, the user interface 1400 depicts a graphical clock 1402 on the touch-screen display 104. The user selects an amount of time by making a gesture with her finger (or stylus) in a clockwise circle 1404 around the face of the clock 1402. The selected amount of time corresponds to a distance the user has

moved her finger along the clock face. In this example, the user has moved her finger in a quarter-circle arc, indicating 15 minutes of time. The user interface 1400 may also include a digital clock 1406 to show the selected time. In this example, the digital clock 1406 shows zero hours and 15 minutes. Further, the user may select the time by moving the digits in the digital time representation 1406.

[0084] Once a time is entered by the user, the eBook reader device 102 begins to filter documents based on the time parameter. The eBook reader device 102 determines a document size based on the indicated amount of time and the user's reading speed. In this example, documents that the user can read in 15 minutes or less are identified. The eBook reader device 102 then displays a list of documents that qualify given the time constraint.

[0085] FIG. 15 illustrates a user interface representation 1500 of the eBook reader device 102 that presents a book list 1502 in response to the amount of time entered by the user. The book list 1502 in this example includes a very short book, a magazine article, and a poem. These are all items that the user should be able to read, based on past reading speed, within the indicated amount of time (e.g., 15 minutes). Of course, in any given instance, the user may read slower than his or her typical reading speed, so in some instances the user may in actuality take longer than the indicated amount of time to read items included in the book list 1502.

#### Text-to-Speech Conversion

[0086] In another usage scenario, a user may wish to convert from text to speech. As described below with respect to FIGS. 16-18, the user may employ various input techniques with the touch-screen user interface to initiate this conversion.

[0087] FIG. 16 illustrates a user interface representation 1600 of the eBook reader device 102 for converting text to speech. Processing of the user input and converting text to speech may be performed in whole or part by the text-to-speech module 118. The eBook reader device 102 displays a visible representation of text on the touch-screen display 104. The user may indicate a portion of the text presented on the touch-screen display 104 by placing an object on or near the portion of the touch-screen display 104 that is displaying the text. Upon receiving the user's text selection, the eBook reader device 102 may generate a spoken representation of the text. In some implementations, the spoken representation of the text is a synthesized human voice reading the text aloud. Sounds corresponding to the spoken representation of the text may be generated by an output device such as a speaker or headphones connected to a headphone jack (or wirelessly via Bluetooth or other technologies).

[0088] A speed of the spoken representation of the text corresponds to a speed of the object moving across the touch-screen display 104. The object may be one of the user's fingers, a stylus, or the like. The speed of the spoken representation may increase when the speed of the object increases, or conversely decrease when the speed of the object decreases. In some implementations, the speed of the spoken representation is based on an average speed of the object moving relative to text on the touch-screen display 104 rather than an instantaneous speed of the object. For example, there may be a slight pause when the user moves her finger from the end of one line to the beginning of the next line. To avoid a corresponding pause in the reading of the text, an average speed of the user's finger moving relative to several words in the displayed portion of text may be used to determine the reading speed.

For example, the reading speed may be based on the average speed of the object relative to the previous 10 words so that momentary changes in the speed of the object do not affect the reading speed.

[0089] In one implementation, a visual representation of the text changes when the text is indicated by placing an object on or near the touch-screen display 104, as represented by highlighting area 1602. The change of the visual representation of the text may include highlighting, changing a color of the text, underlining the text, or the like.

[0090] Due to the dual function of the touch-screen display 104 it is possible for the user to indicate a portion of text displayed on the screen by passing an object over words displayed on the touch-screen display 104. Depending on the language and the formatting of the text, there may be horizontal or vertical text. The object, such as the user's finger, is generally moved over the text in the same direction as the text is read. For example, when the text is displayed horizontally on the touch-screen display 104, the object moves in a generally horizontal direction. The direction may be right-to-left or left-to-right depending on the language of the text. When the text is displayed vertically the object moves in a generally vertical direction. Again, the direction may be top-to-bottom or bottom-to-top.

[0091] Concepts such as left/right and top/bottom depend on an orientation of the eBook reader device 102 such that if the user rotates the eBook reader device 102, a horizontal motion becomes a vertical motion. In some implementations, the eBook reader device senses when its orientation is changed and automatically adjusts the layout of the text of the display 104.

[0092] FIG. 17 illustrates an alternative user interface representation 1700 of the eBook reader device 102 for converting text displayed 1702 on the touch-screen display 104 to speech. In this implementation, the speed of the spoken representation may be based on the speed of the object relative to a progress bar 1704 displayed on the touch-screen display 104. For example, a slider bar or similar display functioning as a progress bar 1704 may be presented alongside the displayed portion of text 1702. By moving the object along the progress bar 1704 the speed of the spoken representation may be controlled. In some implementations of the progress-bar interface, only one motion relative to the progress bar is sufficient to set a reading speed. The eBook reader device 102 may then continue to read the displayed portion of text 1702 without requiring the user to repeatedly move her finger along the progress bar 1704.

[0093] FIG. 18 shows a process 1800 for using a touch-screen display 104 to facilitate conversion of text to speech for excerpts of displayed text. At 1802, text of an electronic document is displayed on the touch-screen display 104 of the eBook reader device 102.

[0094] At 1804, an object is detected as it is moved across the touch-screen display to indicate an excerpt. The object may be the reader's finger, a stylus, or other pointing mechanism. A visual representation of the excerpt may change in response to the reader selection. This is shown, for example, in FIG. 16 where an excerpt 1602 is highlighted in response to the reader's finger being moved across the area.

[0095] At 1806, a speed at which the object is moved across the touch-screen display is calculated. Speed may be computed in different ways. One

approach is to derive an average speed of the object moving relative to several words (e.g., 10 words) in the excerpt of text.

[0096] At 1808, the text in the excerpt is converted to speech. Moreover, the pace of the spoken representation corresponds to the speed of the object calculated at 1806. As the speed of the object increases across the display, the pace of the spoken representation increases. Conversely, as the speed of the object slows down, the pace of the spoken representation slows as well.

#### Illustrative eBook Reader Device

[0097] FIG. 19 illustrates selected functional components 1900 that might be implemented as eBook reader subsystems 1902. In a very basic configuration, the subsystems 1902 include a memory 1904, a processing unit 1906, and a touch-screen display module 1908 for controlling eBook content output to the touch-screen display 104 as well as interpreting commands received by the touch-screen display 104. The memory 1904 typically contains an operating system 1910 of the eBook reader device 102. The memory 1904 may also include one or more electronic documents 1912 such as eBooks.

[0098] As described above, the touch-screen display 104 is adapted for displaying visible representations of textual or graphic content, such as contents of an electronic book in digital form. For convenience only, the touch-screen display 104 is shown in a generally rectangular configuration in the implementations described herein. However, it is understood that the touch-screen display 104 may be implemented in any shape, and may have any ratio of height to width. Also, for stylistic or design purposes, the touch-screen display 104 may be curved or otherwise non-linearly shaped.



[0099] In some implementations, the touch-screen display 104 may be implemented using electronic paper display technology. In general, an electronic paper display is one that has a high resolution (150 dpi or better) and is bi-stable, meaning that it is capable of holding text or other rendered images even when very little or no power is supplied to the display. The electronic paper display technology may also exhibit high contrast substantially equal to that of print on paper. Some illustrative electronic paper displays that may be used with the implementations described herein include bi-stable LCDs, MEMS, cholesteric, pigmented electrophoretic, and others. One illustrative electronic paper display that may be used is an E Ink-brand display.

[0100] In the same or different implementations, the touch-screen display 104 may be a flexible display. The flexible display may be positioned above a touch sensor(s). The touch sensor(s) may be a resistive touch sensitive film. The flexible display may also include a protective layer made of a flexible material such as plastic. The flexible display may also include a flexible backplane layer. The backplane may also be made of a flexible material, such as plastic, metal, glass or a polymer based material. A flexible backplane may be bendable, rollable, light-weight, etc. In one configuration, the flexible backplane is a matrix backplane on a plastic substrate.

[0101] The eBook reader subsystems 108 may also include one or more communication connections 1914 that allow the eBook reader device 102 to communicate with other computer systems or other devices. Electronic books and other content, as well as program modules, may be transferred to the eBook reader device 102 via the communication connection(s) 1914. The communication

connection(s) 1914 support both wired and wireless communications with various types of networks, including the Internet. For example, the eBook reader device 102 may be equipped with an RF transceiver to facilitate wireless communication over a wireless network. The device may further include a communication connection that facilitates communication with other devices via, for example, a Bluetooth or IR connection. The communication connection(s) 1912 are one example of communication media. Communication media may typically be 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.

[0102] One or more user interface subsystems 108 are also provided to capture user input via the touch-screen display 104, the keyboard 106, and any other user input element on the eBook reader device 102. The user interface subsystems 108 are discussed above in more detail in FIG. 1.

The eBook reader subsystems 108 also include a power control unit 1918 and a battery 1920. The power control unit 1918 operatively controls an amount of power, or electrical energy, consumed by the eBook reader device 102. Actively controlling the amount of power consumed by the eBook reader device 102 may achieve more efficient use of electrical energy stored by the battery 1920. The processing unit 1906 supplies computing resources to the power control unit 1918. The power control unit 1918 may further include a clock/timer for accurate control of power consumed by the eBook reader device 102.

[0103] The eBook reader device 102 may have additional features or functionality. For example, the eBook reader device 102 may also include an audio

output module 1922 for controlling the generation of sounds such as synthesized speech. Output from the audio output module 1922 may be directed to an on-board speaker 1924 or another output device such as a head-phone jack. The eBook reader device 102 may also include microphone(s) 1926 for recording sound such as the user's voice and/or for detecting taps on the display to localize a point of contact on the display as described above in relation to FIG. 3. In some implementations the eBook reader device 102 may also include a vibrator 1928 or other output device for creating a haptic output that is detectable by a user touching the eBook reader device 102. The eBook reader device 102 may include, in some implementations, an accelerometer 1930 for detecting the orientation of the device. Other output device(s) such as an auxiliary display, printer, etc. may also be included.

[0104] The memory 1904 is an illustrative example of computer-readable storage media. Thus, computer-readable storage media include, but are not limited to, RAM, ROM, 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 medium which can be used to store the desired information and which can be accessed by the eBook reader device 102. Any such computer-readable storage media may be part of the eBook reader device 102.

[0105] Clause 1. A computer-implemented method comprising:  
under control of an electronic book reader device configured with executable instructions, performing the following:  
displaying content on a touch-screen display of an electronic book reader device;

detecting pressure of an object on the touch-screen display of the electronic book reader device;

detecting a duration of contact of the object with the touch-screen display of the electronic book reader device;

initiating an operation in response to at least one of an amount of pressure applied by the object to the touch-screen display, a placement of the object on the touch-screen display, or the duration of contact of the object with the touch-screen display; and

displaying results of the operation on the touch-screen display of the electronic book reader device.

[0106] Clause 2. The computer-implemented method of clause 1, wherein the object comprises one of a finger or a stylus.

[0107] Clause 3. The computer-implemented method of clause 1, wherein the detecting comprises sensing pressure within a region of the touch-screen display.

[0108] Clause 4. The computer-implemented method of clause 1, wherein the detecting comprises sensing pressure as a swiping motion across the touch-screen display.

[0109] Clause 5. The computer-implemented method of clause 1, wherein the operation comprises turning one or more pages.

[0110] Clause 6. The computer-implemented method of clause 1, wherein the operation comprises turning one or more pages, wherein an increasing number of pages are turned in proportion to increasing pressure applied to the touch-screen display.

**[0111]** Clause 7. The computer-implemented method of clause 1, wherein the operation comprises turning one or more pages, wherein an increasing number of pages are turned in proportion to the duration of the contact.

**[0112]** Clause 8. The computer-implemented method of clause 1, wherein the operation comprises turning one or more pages from a first page to a second while the pressure is applied, and upon removal of the pressure from the object, redisplaying the first page.

**[0113]** Clause 9. The computer-implemented method of clause 1, wherein the operation comprises selecting an electronic document from a list of electronic documents.

**[0114]** Clause 10. The computer-implemented method of clause 1, wherein the operation comprises filtering a list of electronic documents according to book size.

**[0115]** Clause 11. The computer-implemented method of clause 1, wherein the operation comprises filtering a list of electronic documents according to a time-based parameter.

**[0116]** Clause 12. The computer-implemented method of clause 1, wherein the detecting comprises sensing pressure over a region of text, and the operation comprises converting the text in the region to speech.

**[0117]** Clause 13. The computer-implemented method of clause 1, further comprising, generating an audio response in conjunction with the initiating the operation.

[0118] Clause 14. The computer-implemented method of clause 13, wherein the audio responses changes based on at least one of the amount of pressure, the placement, or the duration.

[0119] Clause 15. A dedicated electronic book reader device, comprising:

a processor;

a memory accessible by the processor;

a touch-screen display to present a visible representation of an electronic document, the touch-screen display having a pressure detector to sense pressure applied to the touch-screen display and configured to detect specific locations of pressure being applied; and

a page turn detector to turn one or more pages in the electronic document in response to sensing of pressure on the touch-screen display.

[0120] Clause 16. The dedicated electronic book reader device of clause 15, wherein the page turn detector turns an increasing number of pages in proportion to increasing pressure applied to the touch-screen display.

[0125] Clause 17. The dedicated electronic book reader device of clause 15, wherein the page turn detector turns an increasing number of pages in proportion to increasing duration of the pressure applied to the touch-screen display.

[0126] Clause 18. The dedicated electronic book reader device of clause 15, wherein the page turn detector turns pages in response to pressure being applied to a predefined region of the touch-screen display.

[0127] Clause 19. The dedicated electronic book reader device of clause 15, wherein the page turn detector turns pages in response to a swiping pressure across the touch-screen display.

[0128] Clause 20. The dedicated electronic book reader device of clause 15, further comprising a book filtering module stored in the memory and executable by the processor to identify and filter lists of electronic documents according to one of document size or a time available to read.

[0129] Clause 21. The dedicated electronic book reader device of clause 15, further comprising a bookmarking module stored in the memory and executable by the processor to bookmark a first page of the electronic document temporarily in response to continuous pressure being applied to the touch-screen display, while allowing the page turn detector to turn one or more pages so that a second page is displayed, the bookmarking module causing a return to display of the first page upon removal of the pressure.

[0130] Clause 22. The dedicated electronic book reader device of clause 15, further comprising a text-to-speech (TTS) module to convert to speech a portion of text selected from the electronic document via detection of pressure applied to the touch-screen display.

[0131] Clause 23. An electronic device, comprising:  
a touch-screen display for presenting visible representations of electronic documents;

a processor;

a memory accessible by the processor; and

one or more programs stored in the memory and configured to be executed by the processor, the one or more programs including instructions for: displaying a first page of an electronic document on the touch-screen display;

detecting a pressure of an object on the touch-screen display; turning one or more pages of the electronic document in proportion to the pressure; and

displaying a second page of the electronic document.

[0132] Clause 24. The electronic device of clause 23, wherein the one or more programs detects the pressure while the object is applied to a region on the touch-screen display.

[0133] Clause 25. The electronic device of clause 23, wherein the one or more programs detects the pressure while the object is swiped across the touch-screen display.

[0134] Clause 26. The electronic device of clause 23, wherein an increasing number of pages are turned in proportion to increases in the pressure.

[0135] Clause 27. The electronic device of clause 26, wherein the number of pages turned in proportion to the pressure is adjustable by a user.

[0136] Clause 28. The electronic device of clause 23, wherein a speed of pages turned increases in proportion to increases in the pressure.

[0137] Clause 29. The electronic device of clause 28, wherein the speed of pages turned in proportion to the pressure is adjustable by a user.

[0138] Clause 30. The electronic device of clause 23, wherein the turning one or more pages of the electronic document in proportion to the pressure automatically turns pages at an auto-page-turn speed.



[0139] Clause 31. The electronic device of clause 30, wherein the auto-page-turn speed is based on an average of previous manual page turn speeds.

[0140] Clause 32. The electronic device of clause 23, wherein the program further includes instructions for displaying a visual representation of the turning pages.

[0141] Clause 33. The electronic device of clause 32, wherein the visual representation comprises a changing page number.

[0142] Clause 34. The electronic device of clause 23, wherein the electronic device comprises a dedicated handheld electronic book reader.

[0143] Clause 35. A computer-readable storage medium having stored therein instructions, which when executed by an electronic device, cause the electronic device to generate a user interface comprising:

visible representations of an electronic document presented on a touch-screen display;

a force sensing arrangement for producing one or more input signals when a force is exerted on the touch-screen display by an object;

a first area of the touch-screen display for turning pages of the electronic document forward in proportion to the force; and

a second area of the touch-screen display for turning pages of the electronic document backwards in proportion to the force.

[0144] Clause 36. The computer-readable storage medium of clause 35, wherein the object comprises a finger.

[0143] Clause 37. The computer-readable storage medium of clause 35, wherein the first area is a lower right corner of the touch-screen display and the second area is a lower left corner of the touch-screen display.

[0144] Clause 38. The computer-readable storage medium of clause 35, wherein the first area is located in a right half of the touch-screen display and the second area is located in a left half of the touch-screen display.

[0145] Clause 39. The computer-readable storage medium of clause 35, wherein a number of pages turning forward increases in proportion to the force exerted on the first area and a number of pages turning backwards increases in proportion to the force exerted on the second area.

[0146] Clause 40. The computer-readable storage medium of clause 35, wherein a speed of pages turning forward increases in proportion to the force exerted on the first area and a speed of pages turning backwards increases in proportion to the force exerted on the second area.

[0147] Clause 41. The computer-readable storage medium of clause 35, wherein the user interface further comprises a visual representation of the turning pages.

[0148] Clause 42. The computer-readable storage medium of clause 41, wherein the visual representation of the turning pages comprises an increasing page number when the force is exerted on the first area and a decreasing page number when the force is exerted on the second area.

[0149] Clause 43. A computer-implemented method comprising:  
displaying text of an electronic document on a touch-screen display;

detecting an object as the object moves across the touch-screen display, the object indicating an excerpt of the text being displayed; and  
generating a spoken representation of the excerpted text, wherein a speed of the spoken representation corresponds to a speed of the object across the touch-screen display.

[0150] Clause 44. The computer-implemented method of clause 43, wherein the object comprises at least one of a stylus or a finger.

[0151] Clause 45. The computer-implemented method of clause 43, wherein the electronic document is an electronic book, and the touch-screen display is embodied as part of a dedicated electronic book reader device.

[0152] Clause 46. The computer-implemented method of clause 43, wherein the speed of the spoken representation increases or decreases in proportion to increasing or decreasing the speed of the object across the touch-screen display.

[0153] Clause 47. An electronic device comprising:  
a processor;  
a memory accessible by the process;  
a touch-screen display to present a visible representation of electronic document;  
an audio output device;  
one or more program stored in the memory and configured to be executed by the processor, the one or more programs including instructions for:  
receiving an indication of a text from the electronic document presented on the touch-screen display, the indication generated by movement of an object relative to the touch-screen display; and

generating a spoken representation of the text, wherein a speed of the spoken representation corresponds to a speed of the object.

[0154] Clause 48. The electronic device of clause 47, wherein the object comprises at least one of a stylus or a finger.

[0155] Clause 49. The electronic device of clause 47, wherein the speed of the spoken representation increases when the speed of the object increases.

[0156] Clause 50. The electronic device of clause 47, wherein the speed of the spoken representation decreases when the speed of the object decreases.

[0157] Clause 51. The electronic device of clause 47, wherein the speed of the object is an average speed of the object moving relative to a plurality of words presented on the touch-screen display.

[0158] Clause 52. The electronic device of clause 47, wherein the speed of the object is a speed of the object moving relative to a progress bar presented on the touch-screen display.

[0159] Clause 53. The electronic device of clause 47, wherein the speed of the object is an average speed of the object moving relative to a plurality of characters presented on the touch-screen display.

[0160] Clause 54. The electronic device of clause 47, wherein a visual representation of the text changes when the indication of the text is received.

[0161] Clause 55. The electronic device of clause 47, wherein the audio output device comprises one of a speaker or a headphone jack.

[0162] Clause 56. The electronic device of clause 47, wherein the touch-screen display has a pressure detector to sense pressure applied to the touch-screen display, the electronic device further comprising a page turn detector to turn one or

more pages in the electronic document in response to sensing of pressure on the touch-screen display.

[0163]            Clause 57.     The electronic device of clause 47, further comprising a bookmarking module stored in the memory and executable by the processor to bookmark a first page of the electronic document temporarily in response to continuous pressure being applied to the touch-screen display, while allowing one or more pages to be turned to display a second page, the bookmarking module causing a return to display of the first page upon removal of the pressure.

[0164]            Clause 58.     The electronic device of clause 47, wherein the electronic device comprises a dedicated handheld electronic book reader.

[0165]            Clause 59.     A computer-readable storage medium having stored therein instructions, which when executed by an electronic device, cause the electronic device to generate a user interface comprising:

                  enabling user selection of an excerpt of text displayed on a touch-screen display by moving an object over words in the excerpt; and

                  generating a sound corresponding to a voice reading the excerpt of text, wherein a reading speed of the voice reading is based on a speed of the object moving relative to the words in the excerpt of text.

[0166]            Clause 60.     The computer-readable storage medium of clause 59, wherein the object moves in a generally horizontal direction when the text is displayed horizontally on the touch-screen display.

[0167] Clause 61. The computer-readable storage medium of clause 59, wherein the object moves in a generally vertical direction when the text is displayed vertically on the touch-screen display.

[0168] Clause 62. The computer-readable storage medium of clause 59, wherein the object comprises at least one of a finger or a stylus.

[0169] Clause 63. The computer-readable storage medium of clause 59, wherein the speed of the object moving relative to the words is derived as an average speed of the object moving relative to a plurality of words in the excerpt of text.

[0170] Clause 64. The computer-readable storage medium of clause 59, wherein the reading speed increases when the speed of the object moving relative to the words in the excerpt of text increases.

[0171] Clause 65. The computer-readable storage medium of clause 59, wherein the reading speed decreases when the speed of the object moving relative to the words in the excerpt of text decreases.

[0172] Clause 66. The computer-readable storage medium of clause 59, wherein the excerpt is highlighted during user selection.

[0173] Clause 67. A computer-implemented method comprising:  
presenting a list of electronic documents on a touch-screen display;  
detecting an object applied to the touch-screen display as an indication of user selection of one of the electronic documents in the list;

filtering the list of electronic documents based on a size of the selected one of the electronic documents to create a filtered list of electronic documents; and

presenting the filtered list of electronic documents on the touch-screen display.

[0174] Clause 68. The computer-implemented method of clause 67, wherein the electronic documents comprise electronic books, and the touch-screen display is embodied as part of a dedicated handheld book reader device.

[0175] Clause 69. The computer-implemented method of clause 67, wherein the filtering comprises removing electronic documents larger than the selected one of the electronic documents from the filtered list.

[0176] Clause 70. The computer-implemented method of clause 67, wherein the filtering comprises removing electronic documents smaller than the selected one of the electronic documents from the filtered list.

[0177] Clause 71. The computer-implemented method of clause 67, wherein the object comprises at least one of a stylus or one or more fingers.

[0178] Clause 72. The computer-implemented method of clause 67, wherein the object comprises one or more fingers, and the filtering comprises:

removing electronic documents larger than the indicated one of the electronic documents from the filtered list when two fingers are detected; and

removing electronic documents smaller than the indicated one of the electronic documents from the filtered list when one finger is detected.

[0179] Clause 73. The computer-implemented method of clause 67, wherein the presenting the filtered list of the electronic documents comprises visually ordering the electronic documents on the touch-screen display according to the size.

[0179] Clause 74. The computer-implemented method of clause 67, further comprising visually conveying an indication of size of each of the electronic documents in the filtered list.

[0180] Clause 75. The computer-implemented method of clause 67, wherein the size of the selected one of the electronic documents comprises an amount of the electronic document that remains unread.

[0181] Clause 76. A computer-implemented method comprising:  
presenting a user interface that allows a user to enter a time available to read an electronic document;

filtering a list of electronic documents based on the time available to read to create a filtered list of electronic documents; and

displaying the filtered list of electronic documents.

[0182] Clause 77. The computer-implemented method of clause 76, wherein the presenting comprises providing a graphical user interface on a touch-screen display.

[0183] Clause 78. The computer-implemented method of clause 76, wherein the presenting comprises depicting at least one of a representation of an analog clock or a representation of a digital clock.

[0184] Clause 79. The computer-implemented method of clause 76, wherein the analog and digital clocks are depicted on a touch-screen display, and further comprising detecting user input via application of an object on the touch-screen display to enter the time available to read.

[0185] Clause 80. The computer-implemented method of clause 76, further comprising calculating a length of an electronic document as a function of



the time available and a reading speed of the user, and filtering the list of electronic documents in part due to the calculated length.

[0186] Clause 81. The computer-implemented method of clause 76, further comprising ordering the electronic documents in the filtered list according to the length.

[0187] Clause 82. One or more computer-readable storage media having computer-readable instructions stored thereon that, when executed by an electronic device, perform acts comprising:

presenting a list of electronic documents;

receiving a selection of a one of the electronic documents in the list;

in response to receiving the selection, filtering the list of electronic documents based on a size of the selected one of the electronic documents to form a subset of the list; and

presenting the subset of the list of filtered electronic documents.

[0188] Clause 83. The one or more computer-readable storage media of clause 82, wherein the subset of the list of electronic documents comprises at least one of:

electronic documents having a size equal to or larger than the size of the selected one of the electronic documents; or

electronic documents having a size equal to or smaller than the size of the selected one of the electronic documents.

[0189] Clause 84. The one or more computer-readable storage media of clause 82, wherein the subset of the list of electronic documents is ordered based on size.

[0190] Clause 85. The one or more computer-readable storage media of Clause 82, wherein the size is measured by at least one of a number of pages, a number of words, or a number of characters.

[0191] Clause 86. The one or more computer-readable storage media of Clause 82, wherein the size is calculated as a function of how long a user would take to read the electronic document.

[0192] Clause 87. The one or more computer-readable storage media of Clause 82, wherein the receiving a selection comprises detecting an object applied to a touch-screen display.

[0193] Clause 88. The one or more computer-readable storage media of clause 86, wherein the object comprises at least one of a finger or a stylus.

[0194] Clause 89. The one or more computer-readable storage media of clause 86, wherein the object comprises one of one finger or two fingers, the filtering forming different subsets of the list depending upon whether one finger or two fingers are detected.

[0195] Clause 90. An electronic device comprising:  
a processor;  
a memory accessible by the processor;  
a touch-screen display to receive a gesture indicative of one of (1) selection of an electronic document or (2) entry of a time;  
a filter module stored in the memory and executed by the processor to filter, responsive to the gesture, a set of electronic documents according to size to form a filtered list of electronic documents.

[0196] Clause 91. The electronic device of clause 90, wherein the gesture is made relative to a representation on a clock on the touch-screen display to enter the time, and the filter module filters the set of electronic documents to find ones of the electronic documents that can be read within the time.

[0197] Clause 92. The electronic device of clause 90, wherein the size is measured by at least one of a number of pages, a number of words, or a number of characters.

[0198] Clause 93. The electronic device of clause 90 wherein the size is calculated as a function of how long a user would take to read a remaining unread portion of the electronic document.

[0199] Clause 94. The electronic device of clause 90, wherein the size is calculated as a function of how long a user would take to read the electronic document.

[0200] Clause 95. The electronic device of clause 94, wherein the memory stores a plurality of user accounts, each user account being associated with a respective reading speed.

[0201] Clause 96. The electronic device of clause 90, further comprising a bookmarking module stored in the memory and executable by the processor to bookmark a first page of the electronic document temporarily in response to continuous pressure being applied to the touch-screen display, while allowing one or more pages to be turned to display a second page, the bookmarking module causing a return to display of the first page upon removal of the pressure.

[0202] Clause 97. The electronic device of clause 90, further comprising a text-to-speech module to convert to speech a portion of text selected from the electronic document via detection of pressure applied to the touch-screen display.

[0203] Clause 98. A computer-implemented method comprising:  
displaying a first page of an electronic document on a touch-screen display;

detecting a pressure of an object on the touch-screen display;

receiving a command to turn pages of the electronic document to a second page;

displaying the second page of the electronic document on the touch-screen display as long as the pressure of the object is detected; and

whereupon the pressure of the object is no longer detected, redisplaying the first page of the electronic document.

[0204] Clause 99. The computer-implemented method of clause 98, wherein the object comprises at least one of a finger or a stylus.

[0205] Clause 100. The computer-implemented method of clause 98, wherein the command to turn pages comprises a gesture made on the touch-screen display.

[0206] Clause 101. The computer-implemented method of clause 98, wherein the command to turn pages comprises actuation of a control not part of the touch-screen display.

[0207] Clause 102. The computer-implemented method of clause 98, wherein the detecting the pressure of the object comprises sensing pressure in a defined area of the touch-screen display.

[0208] Clause 103. The computer-implemented method of clause 102, wherein the defined area is one of a lower left corner of the touch-screen display or a lower right corner of the touch-screen display.

[0209] Clause 104. The computer-implemented method of clause 98, further comprising initiating a haptic indication in accompaniment of the redisplaying the first page of the electronic document.

[0210] Clause 105. The computer-implemented method of clause 104, wherein the haptic indication comprises a vibration.

[0211] Clause 106. An electronic device comprising:  
a processor;  
a memory accessible by the processor;  
a touch-screen display to present a visible representation of an electronic document;  
a pressure detector to detect a pressure applied to a region on the touch-screen display; and  
a bookmarking module stored in the memory and executable by the processor to bookmark a first page of the electronic document temporarily in response to continuous pressure being applied to the region of the touch-screen display, while allowing one or more pages of the electronic document to be turned to display a second page, the bookmarking module causing a return to display of the first page upon removal of the pressure.

[0212] Clause 107. The electronic device of clause 106, wherein the region comprises one of a lower left corner of the touch-screen display or a lower right corner of the touch-screen display.

[0213] Clause 108. The electronic device of clause 106, further comprising a page turn detector stored in the memory and executable by the processor to detect a gesture on the touch-screen display as a command to turn pages of the electronic document.

[0214] Clause 109. The electronic device of clause 108, wherein the gesture is a swiping action across the touch-screen display.

[0215] Clause 110. The electronic device of clause 108, wherein the gesture is a pressure applied to another region of the touch-screen display, and a number of pages turned is proportional to pressure applied to the another region..

[0216] Clause 112. The electronic device of clause 106, further comprising a control independent of the touch-screen display, wherein the one or more pages are turned in response to user actuation of the control.

[0217] Clause 113. The electronic device of clause 109, wherein a haptic indication accompanies the redisplaying the first page.

[0218] Clause 114. The electronic device of clause 106, wherein the electronic device comprises a dedicated handheld electronic book reader.

[0219] Clause 115. The electronic device of clause 106, further comprising a book filtering module stored in the memory and executable by the processor to identify and filter lists of electronic documents according to at least one of document size or a time available to read.

[0220] Clause 116. The electronic device of clause 106, further comprising a text-to-speech (TTS) module to convert to speech a portion of text selected from the electronic document via detection of pressure applied to the touch-screen display.

[0221] Various instructions, methods, and techniques described herein may be considered in the general context of computer-executable instructions, such as program modules, executed by one or more computers or other devices. Generally, program modules include routines, programs, objects, components, data structures, etc. for performing particular tasks or implement particular abstract data types. These program modules and the like may be executed as native code or may be downloaded and executed, such as in a virtual machine or other just-in-time compilation execution environment. Typically, the functionality of the program modules may be combined or distributed as desired in various embodiments. An implementation of these modules and techniques may be stored on or transmitted across some form of computer readable media.

#### Conclusion

[0222] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described. Rather, the specific features and acts are disclosed as illustrative forms of implementing the claims.

## CLAIMS

### WHAT IS CLAIMED IS:

Claim 1. A computer-implemented method comprising:

under control of an electronic book reader device configured with executable instructions, performing the following:

- displaying content on a touch-screen display of an electronic book reader device;
- detecting pressure of an object on the touch-screen display of the electronic book reader device;
- detecting a duration of contact of the object with the touch-screen display of the electronic book reader device;
- initiating an operation in response to at least one of an amount of pressure applied by the object to the touch-screen display, a placement of the object on the touch-screen display, or the duration of contact of the object with the touch-screen display; and
- displaying results of the operation on the touch-screen display of the electronic book reader device.

Claim 2. The computer-implemented method of claim 1, wherein the object comprises one of a finger or a stylus.

Claim 3. The computer-implemented method of claim 1, wherein the detecting comprises sensing pressure within a region of the touch-screen display.



Claim 4. The computer-implemented method of claim 1, wherein the detecting comprises sensing pressure as a swiping motion across the touch-screen display.

Claim 5. The computer-implemented method of claim 1, wherein the operation comprises turning one or more pages.

Claim 6. The computer-implemented method of claim 1, wherein the operation comprises turning one or more pages, wherein an increasing number of pages are turned in proportion to increasing pressure applied to the touch-screen display.

Claim 7. The computer-implemented method of claim 1, wherein the operation comprises turning one or more pages, wherein an increasing number of pages are turned in proportion to the duration of the contact.

Claim 8. The computer-implemented method of claim 1, wherein the operation comprises turning one or more pages from a first page to a second while the pressure is applied, and upon removal of the pressure from the object, redisplaying the first page.

Claim 9. The computer-implemented method of claim 1, wherein the operation comprises selecting an electronic document from a list of electronic documents.

Claim 10. The computer-implemented method of claim 1, wherein the operation comprises filtering a list of electronic documents according to book size.

Claim 11. The computer-implemented method of claim 1, wherein the operation comprises filtering a list of electronic documents according to a time-based parameter.

Claim 12. The computer-implemented method of claim 1, wherein the detecting comprises sensing pressure over a region of text, and the operation comprises converting the text in the region to speech.

Claim 13. The computer-implemented method of claim 1, further comprising, generating an audio response in conjunction with the initiating the operation.

Claim 14. The computer-implemented method of clause 13, wherein the audio responses changes based on at least one of the amount of pressure, the placement, or the duration.

Claim 15. A dedicated electronic book reader device, comprising:  
a processor;  
a memory accessible by the processor;  
a touch-screen display to present a visible representation of an electronic document, the touch-screen display having a pressure detector to sense

pressure applied to the touch-screen display and configured to detect specific locations of pressure being applied; and

a page turn detector to turn one or more pages in the electronic document in response to sensing of pressure on the touch-screen display.

Claim 16. The dedicated electronic book reader device of claim 15, wherein the page turn detector turns an increasing number of pages in proportion to increasing pressure applied to the touch-screen display.

Claim 17. The dedicated electronic book reader device of claim 15, wherein the page turn detector turns an increasing number of pages in proportion to increasing duration of the pressure applied to the touch-screen display.

Claim 18. The dedicated electronic book reader device of claim 15, wherein the page turn detector turns pages in response to pressure being applied to a predefined region of the touch-screen display.

Claim 19. The dedicated electronic book reader device of claim 15, wherein the page turn detector turns pages in response to a swiping pressure across the touch-screen display.

Claim 20. The dedicated electronic book reader device of claim 15, further comprising a book filtering module stored in the memory and executable by the

processor to identify and filter lists of electronic documents according to one of document size or a time available to read.

Claim 21. The dedicated electronic book reader device of claim 15, further comprising a bookmarking module stored in the memory and executable by the processor to bookmark a first page of the electronic document temporarily in response to continuous pressure being applied to the touch-screen display, while allowing the page turn detector to turn one or more pages so that a second page is displayed, the bookmarking module causing a return to display of the first page upon removal of the pressure.

Claim 22. The dedicated electronic book reader device of claim 15, further comprising a text-to-speech (TTS) module to convert to speech a portion of text selected from the electronic document via detection of pressure applied to the touch-screen display.

Claim 23. An electronic device, comprising:

- a touch-screen display for presenting visible representations of electronic documents;
- a processor;
- a memory accessible by the processor; and
- one or more programs stored in the memory and configured to be executed by the processor, the one or more programs including instructions for:

displaying a first page of an electronic document on the touch-screen display;  
detecting a pressure of an object on the touch-screen display;  
turning one or more pages of the electronic document in proportion to the pressure; and  
displaying a second page of the electronic document.

Claim 24. The electronic device of claim 23, wherein the one or more programs detects the pressure while the object is applied to a region on the touch-screen display.

Claim 25. The electronic device of claim 23, wherein the one or more programs detects the pressure while the object is swiped across the touch-screen display.

Claim 26. The electronic device of claim 23, wherein an increasing number of pages are turned in proportion to increases in the pressure.

Claim 27. The electronic device of claim 26, wherein the number of pages turned in proportion to the pressure is adjustable by a user.

Claim 28. The electronic device of claim 23, wherein a speed of pages turned increases in proportion to increases in the pressure.

Claim 29. The electronic device of claim 28 , wherein the speed of pages turned in proportion to the pressure is adjustable by a user.

Claim 30. The electronic device of claim 23, wherein the turning one or more pages of the electronic document in proportion to the pressure automatically turns pages at an auto-page-turn speed.

Claim 31. The electronic device of claim 30, wherein the auto-page-turn speed is based on an average of previous manual page turn speeds.

Claim 32. The electronic device of claim 23, wherein the program further includes instructions for displaying a visual representation of the turning pages.

Claim 33. The electronic device of claim 32, wherein the visual representation comprises a changing page number.

Claim 34. The electronic device of claim 23, wherein the electronic device comprises a dedicated handheld electronic book reader.

Claim 35. A computer-readable storage medium having stored therein instructions, which when executed by an electronic device, cause the electronic device to generate a user interface comprising:

visible representations of an electronic document presented on a touch-screen display;

a force sensing arrangement for producing one or more input signals when a force is exerted on the touch-screen display by an object;

a first area of the touch-screen display for turning pages of the electronic document forward in proportion to the force; and

a second area of the touch-screen display for turning pages of the electronic document backwards in proportion to the force.

Claim 36. The computer-readable storage medium of claim 35, wherein the object comprises a finger.

Claim 37. The computer-readable storage medium of claim 35, wherein the first area is a lower right corner of the touch-screen display and the second area is a lower left corner of the touch-screen display.

Claim 38. The computer-readable storage medium of claim 35, wherein the first area is located in a right half of the touch-screen display and the second area is located in a left half of the touch-screen display.

Claim 39. The computer-readable storage medium of claim 35, wherein a number of pages turning forward increases in proportion to the force exerted on the first area and a number of pages turning backwards increases in proportion to the force exerted on the second area.

Claim 40. The computer-readable storage medium of claim 35, wherein a speed of pages turning forward increases in proportion to the force exerted on the first area and a speed of pages turning backwards increases in proportion to the force exerted on the second area.

Claim 41. The computer-readable storage medium of claim 35, wherein the user interface further comprises a visual representation of the turning pages.

Claim 42. The computer-readable storage medium of claim 41, wherein the visual representation of the turning pages comprises an increasing page number when the force is exerted on the first area and a decreasing page number when the force is exerted on the second area.

Claim 43. A computer-implemented method comprising:

- displaying text of an electronic document on a touch-screen display;
- detecting an object as the object moves across the touch-screen display, the object indicating an excerpt of the text being displayed; and
- generating a spoken representation of the excerpted text,

wherein a speed of the spoken representation corresponds to a speed of the object across the touch-screen display.

Claim 44. The computer-implemented method of claim 43, wherein the object comprises at least one of a stylus or a finger.



Claim 45. The computer-implemented method of claim 43, wherein the electronic document is an electronic book, and the touch-screen display is embodied as part of a dedicated electronic book reader device.

Claim 46. The computer-implemented method of claim 43, wherein the speed of the spoken representation increases or decreases in proportion to increasing or decreasing the speed of the object across the touch-screen display.

Claim 47. An electronic device comprising:

- a processor;
- a memory accessible by the process;
- a touch-screen display to present a visible representation of electronic document;
- an audio output device;
- one or more program stored in the memory and configured to be executed by the processor, the one or more programs including instructions for:
  - receiving an indication of a text from the electronic document presented on the touch-screen display, the indication generated by movement of an object relative to the touch-screen display; and
  - generating a spoken representation of the text, wherein a speed of the spoken representation corresponds to a speed of the object.

Claim 48. The electronic device of claim 47, wherein the object comprises at least one of a stylus or a finger.

Claim 49. The electronic device of claim 47, wherein the speed of the spoken representation increases when the speed of the object increases.

Claim 50. The electronic device of claim 47, wherein the speed of the spoken representation decreases when the speed of the object decreases.

Claim 51. The electronic device of claim 47, wherein the speed of the object is an average speed of the object moving relative to a plurality of words presented on the touch-screen display.

Claim 52. The electronic device of claim 47, wherein the speed of the object is a speed of the object moving relative to a progress bar presented on the touch-screen display.

Claim 53. The electronic device of claim 47, wherein the speed of the object is an average speed of the object moving relative to a plurality of characters presented on the touch-screen display.

Claim 54. The electronic device of claim 47, wherein a visual representation of the text changes when the indication of the text is received.

Claim 55. The electronic device of claim 47, wherein the audio output device comprises one of a speaker or a headphone jack.

Claim 56. The electronic device of claim 47, wherein the touch-screen display has a pressure detector to sense pressure applied to the touch-screen display, the electronic device further comprising a page turn detector to turn one or more pages in the electronic document in response to sensing of pressure on the touch-screen display.

Claim 57. The electronic device of claim 47, further comprising a bookmarking module stored in the memory and executable by the processor to bookmark a first page of the electronic document temporarily in response to continuous pressure being applied to the touch-screen display, while allowing one or more pages to be turned to display a second page, the bookmarking module causing a return to display of the first page upon removal of the pressure.

Claim 58. The electronic device of claim 47, wherein the electronic device comprises a dedicated handheld electronic book reader.

Claim 59. A computer-readable storage medium having stored therein instructions, which when executed by an electronic device, cause the electronic device to generate a user interface comprising:

enabling user selection of an excerpt of text displayed on a touch-screen display by moving an object over words in the excerpt; and

generating a sound corresponding to a voice reading the excerpt of text, wherein a reading speed of the voice reading is based on a speed of the object moving relative to the words in the excerpt of text.

Claim 60. The computer-readable storage medium of claim 59, wherein the object moves in a generally horizontal direction when the text is displayed horizontally on the touch-screen display.

Claim 61. The computer-readable storage medium of claim 59, wherein the object moves in a generally vertical direction when the text is displayed vertically on the touch-screen display.

Claim 62. The computer-readable storage medium of claim 59, wherein the object comprises at least one of a finger or a stylus.

Claim 63. The computer-readable storage medium of claim 59, wherein the speed of the object moving relative to the words is derived as an average speed of the object moving relative to a plurality of words in the excerpt of text.

Claim 64. The computer-readable storage medium of claim 59, wherein the reading speed increases when the speed of the object moving relative to the words in the excerpt of text increases.

Claim 65. The computer-readable storage medium of claim 59, wherein the reading speed decreases when the speed of the object moving relative to the words in the excerpt of text decreases.

Claim 66. The computer-readable storage medium of claim 59, wherein the excerpt is highlighted during user selection.

Claim 67. A computer-implemented method comprising:

presenting a list of electronic documents on a touch-screen display;

detecting an object applied to the touch-screen display as an indication of user selection of one of the electronic documents in the list;

filtering the list of electronic documents based on a size of the selected one of the electronic documents to create a filtered list of electronic documents; and

presenting the filtered list of electronic documents on the touch-screen display.

Claim 68. The computer-implemented method of claim 67, wherein the electronic documents comprise electronic books, and the touch-screen display is embodied as part of a dedicated handheld book reader device.

Clause 69. The computer-implemented method of claim 67, wherein the filtering comprises removing electronic documents larger than the selected one of the electronic documents from the filtered list.

Claim 70. The computer-implemented method of claim 67, wherein the filtering comprises removing electronic documents smaller than the selected one of the electronic documents from the filtered list.

Claim 71. The computer-implemented method of claim 67, wherein the object comprises at least one of a stylus or one or more fingers.

Claim 72. The computer-implemented method of claim 67, wherein the object comprises one or more fingers, and the filtering comprises:

removing electronic documents larger than the indicated one of the electronic documents from the filtered list when two fingers are detected; and  
removing electronic documents smaller than the indicated one of the electronic documents from the filtered list when one finger is detected.

Claim 73. The computer-implemented method of claim 67, wherein the presenting the filtered list of the electronic documents comprises visually ordering the electronic documents on the touch-screen display according to the size.

Claim 74. The computer-implemented method of claim 67, further comprising visually conveying an indication of size of each of the electronic documents in the filtered list.

Claim 75. The computer-implemented method of claim 67, wherein the size of the selected one of the electronic documents comprises an amount of the electronic document that remains unread.

Claim 76. A computer-implemented method comprising:

- presenting a user interface that allows a user to enter a time available to read an electronic document;
- filtering a list of electronic documents based on the time available to read to create a filtered list of electronic documents; and
- displaying the filtered list of electronic documents.

Claim 77. The computer-implemented method of claim 76, wherein the presenting comprises providing a graphical user interface on a touch-screen display.

Claim 78. The computer-implemented method of claim 76, wherein the presenting comprises depicting at least one of a representation of an analog clock or a representation of a digital clock.

Claim 79. The computer-implemented method of claim 76, wherein the analog and digital clocks are depicted on a touch-screen display, and further comprising detecting user input via application of an object on the touch-screen display to enter the time available to read.

Claim 80. The computer-implemented method of claim 76, further comprising calculating a length of an electronic document as a function of the time available and a reading speed of the user, and filtering the list of electronic documents in part due to the calculated length.

Claim 81. The computer-implemented method of claim 76, further comprising ordering the electronic documents in the filtered list according to the length.

Claim 82. One or more computer-readable storage media having computer-readable instructions stored thereon that, when executed by an electronic device, perform acts comprising:

presenting a list of electronic documents;

receiving a selection of a one of the electronic documents in the list;

in response to receiving the selection, filtering the list of electronic documents based on a size of the selected one of the electronic documents to form a subset of the list; and

presenting the subset of the list of filtered electronic documents.

Claim 83. The one or more computer-readable storage media of claim 82, wherein the subset of the list of electronic documents comprises at least one of:

electronic documents having a size equal to or larger than the size of the selected one of the electronic documents; or



electronic documents having a size equal to or smaller than the size of the selected one of the electronic documents.

Claim 84. The one or more computer-readable storage media of claim 82, wherein the subset of the list of electronic documents is ordered based on size.

Claim 85. The one or more computer-readable storage media of Claim 82, wherein the size is measured by at least one of a number of pages, a number of words, or a number of characters.

Claim 86. The one or more computer-readable storage media of Claim 82, wherein the size is calculated as a function of how long a user would take to read the electronic document.

Claim 87. The one or more computer-readable storage media of Claim 82, wherein the receiving a selection comprises detecting an object applied to a touch-screen display.

Claim 88. The one or more computer-readable storage media of claim 86, wherein the object comprises at least one of a finger or a stylus.

Claim 89. The one or more computer-readable storage media of claim 86, wherein the object comprises one of one finger or two fingers, the filtering forming

different subsets of the list depending upon whether one finger or two fingers are detected.

Claim 90. An electronic device comprising:

a processor;

a memory accessible by the processor;

a touch-screen display to receive a gesture indicative of one of  
(1) selection of an electronic document or (2) entry of a time;

a filter module stored in the memory and executed by the  
processor to filter, responsive to the gesture, a set of electronic documents according  
to size to form a filtered list of electronic documents.

Claim 91. The electronic device of claim 90, wherein the gesture is made  
relative to a representation on a clock on the touch-screen display to enter the time,  
and the filter module filters the set of electronic documents to find ones of the  
electronic documents that can be read within the time.

Claim 92. The electronic device of claim 90, wherein the size is measured by at  
least one of a number of pages, a number of words, or a number of characters.

Claim 93. The electronic device of claim 90 wherein the size is calculated as a  
function of how long a user would take to read a remaining unread portion of the  
electronic document.

Claim 94. The electronic device of claim 90, wherein the size is calculated as a function of how long a user would take to read the electronic document.

Claim 95. The electronic device of claim 94, wherein the memory stores a plurality of user accounts, each user account being associated with a respective reading speed.

Claim 96. The electronic device of claim 90, further comprising a bookmarking module stored in the memory and executable by the processor to bookmark a first page of the electronic document temporarily in response to continuous pressure being applied to the touch-screen display, while allowing one or more pages to be turned to display a second page, the bookmarking module causing a return to display of the first page upon removal of the pressure.

Claim 97. The electronic device of claim 90, further comprising a text-to-speech module to convert to speech a portion of text selected from the electronic document via detection of pressure applied to the touch-screen display.

Claim 98. A computer-implemented method comprising:  
displaying a first page of an electronic document on a touch-screen display;  
detecting a pressure of an object on the touch-screen display;  
receiving a command to turn pages of the electronic document to a second page;

displaying the second page of the electronic document on the touch-screen display as long as the pressure of the object is detected; and  
whereupon the pressure of the object is no longer detected, redisplaying the first page of the electronic document.

Claim 99. The computer-implemented method of claim 98, wherein the object comprises at least one of a finger or a stylus.

Claim 100. The computer-implemented method of claim 98, wherein the command to turn pages comprises a gesture made on the touch-screen display.

Claim 101. The computer-implemented method of claim 98, wherein the command to turn pages comprises actuation of a control not part of the touch-screen display.

Claim 102. The computer-implemented method of claim 98, wherein the detecting the pressure of the object comprises sensing pressure in a defined area of the touch-screen display.

Claim 103. The computer-implemented method of claim 102, wherein the defined area is one of a lower left corner of the touch-screen display or a lower right corner of the touch-screen display.

Claim 104. The computer-implemented method of claim 98, further comprising initiating a haptic indication in accompaniment of the redisplaying the first page of the electronic document.

Claim 105. The computer-implemented method of claim 104, wherein the haptic indication comprises a vibration.

Claim 106. An electronic device comprising:

a processor;

a memory accessible by the processor;

a touch-screen display to present a visible representation of an electronic document;

a pressure detector to detect a pressure applied to a region on the touch-screen display; and

a bookmarking module stored in the memory and executable by the processor to bookmark a first page of the electronic document temporarily in response to continuous pressure being applied to the region of the touch-screen display, while allowing one or more pages of the electronic document to be turned to display a second page, the bookmarking module causing a return to display of the first page upon removal of the pressure.

Claim 107. The electronic device of claim 106, wherein the region comprises one of a lower left corner of the touch-screen display or a lower right corner of the touch-screen display.

Claim 108. The electronic device of claim 106, further comprising a page turn detector stored in the memory and executable by the processor to detect a gesture on the touch-screen display as a command to turn pages of the electronic document.

Claim 109. The electronic device of claim 108, wherein the gesture is a swiping action across the touch-screen display.

Claim 110. The electronic device of claim 108, wherein the gesture is a pressure applied to another region of the touch-screen display, and a number of pages turned is proportional to pressure applied to the another region.

Claim 111. The electronic device of claim 106, further comprising a control independent of the touch-screen display, wherein the one or more pages are turned in response to user actuation of the control.

Claim 112. The electronic device of claim 109, wherein a haptic indication accompanies the redisplaying the first page.

Claim 113. The electronic device of claim 106, wherein the electronic device comprises a dedicated handheld electronic book reader.

Claim 114. The electronic device of claim 106, further comprising a book filtering module stored in the memory and executable by the processor to identify

and filter lists of electronic documents according to at least one of document size or a time available to read.

Claim 115. The electronic device of claim 106, further comprising a text-to-speech (TTS) module to convert to speech a portion of text selected from the electronic document via detection of pressure applied to the touch-screen display.

RECTIFIED SHEET (RULE 91)

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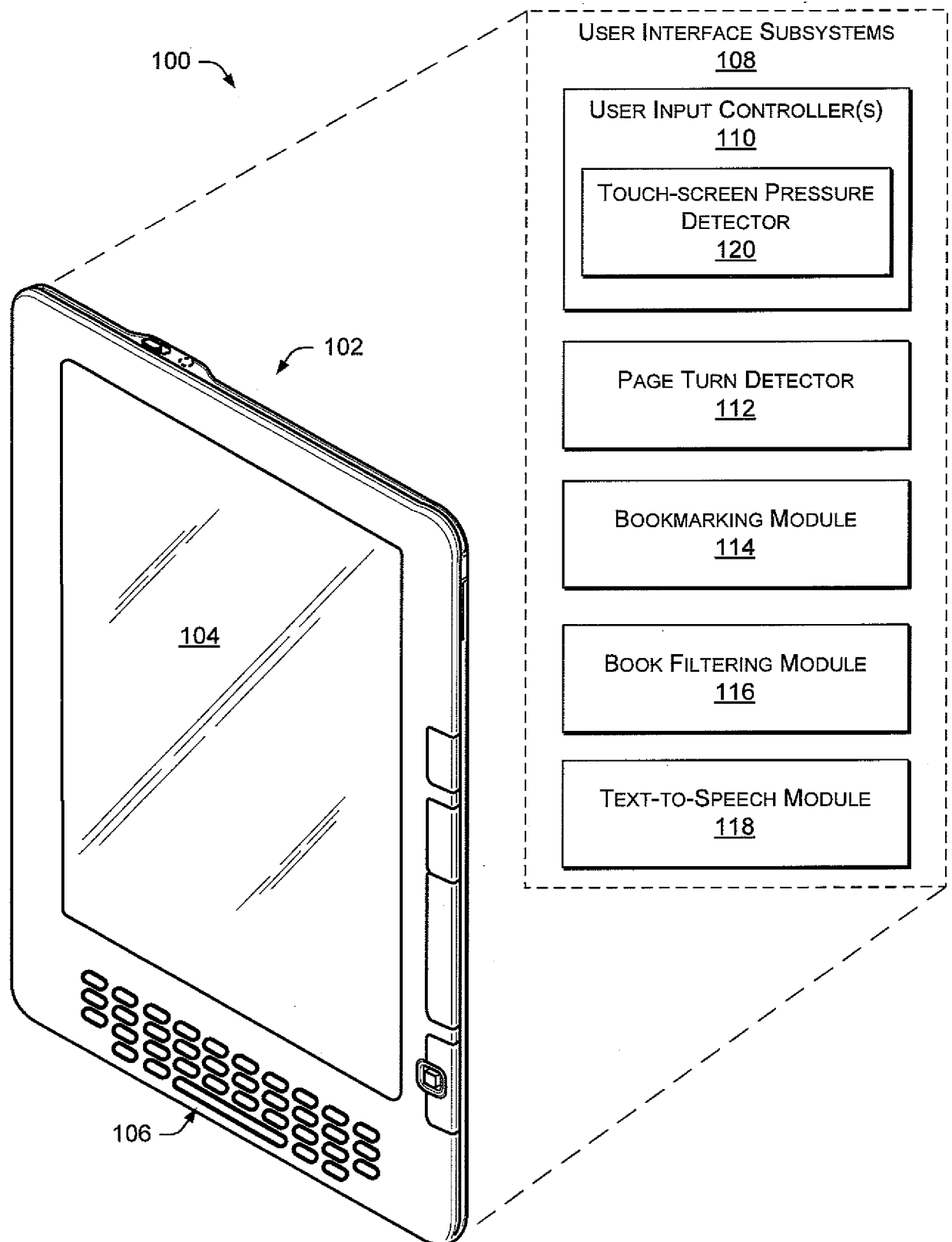


FIG. 1



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200

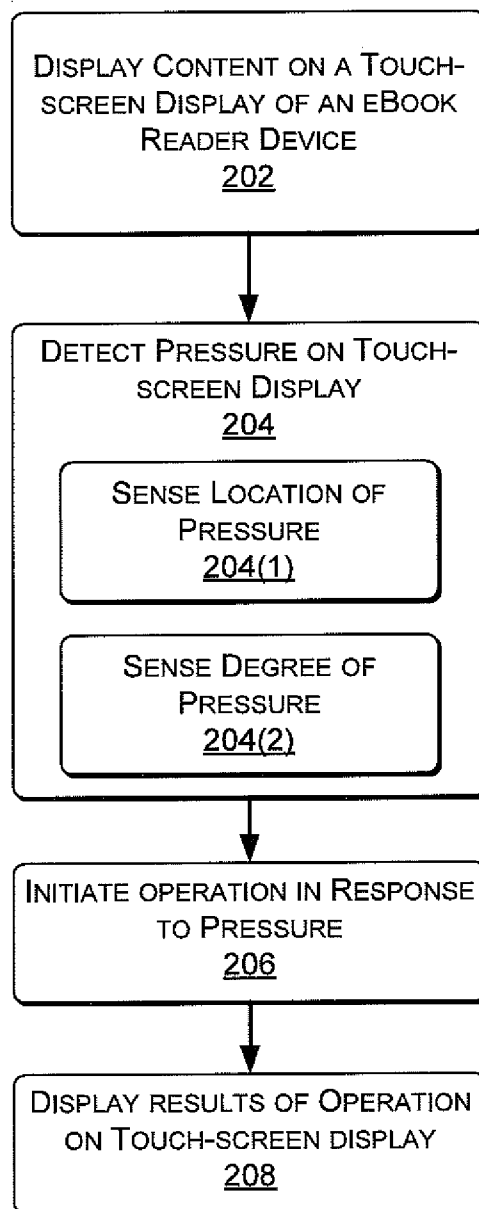


FIG. 2

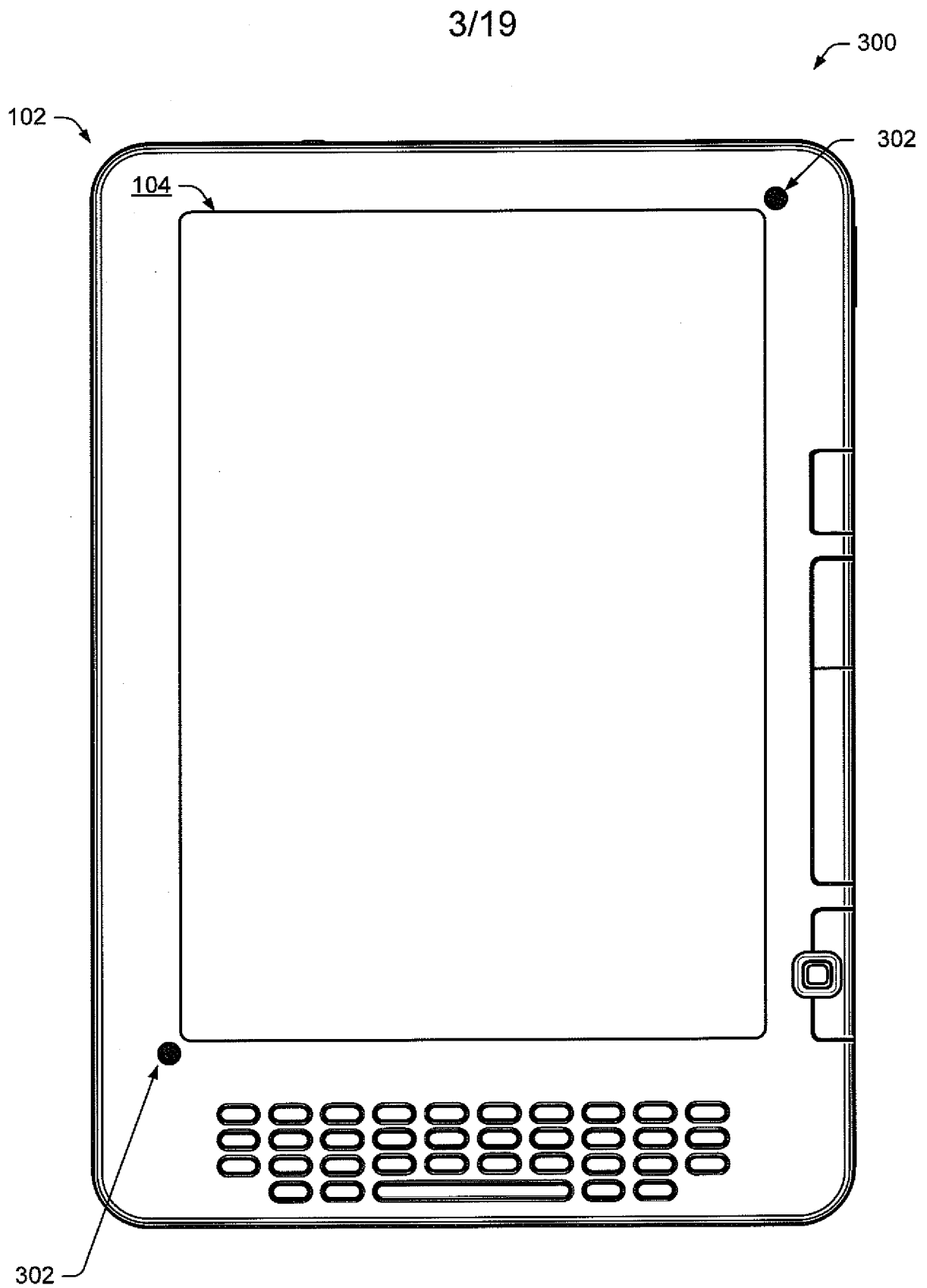
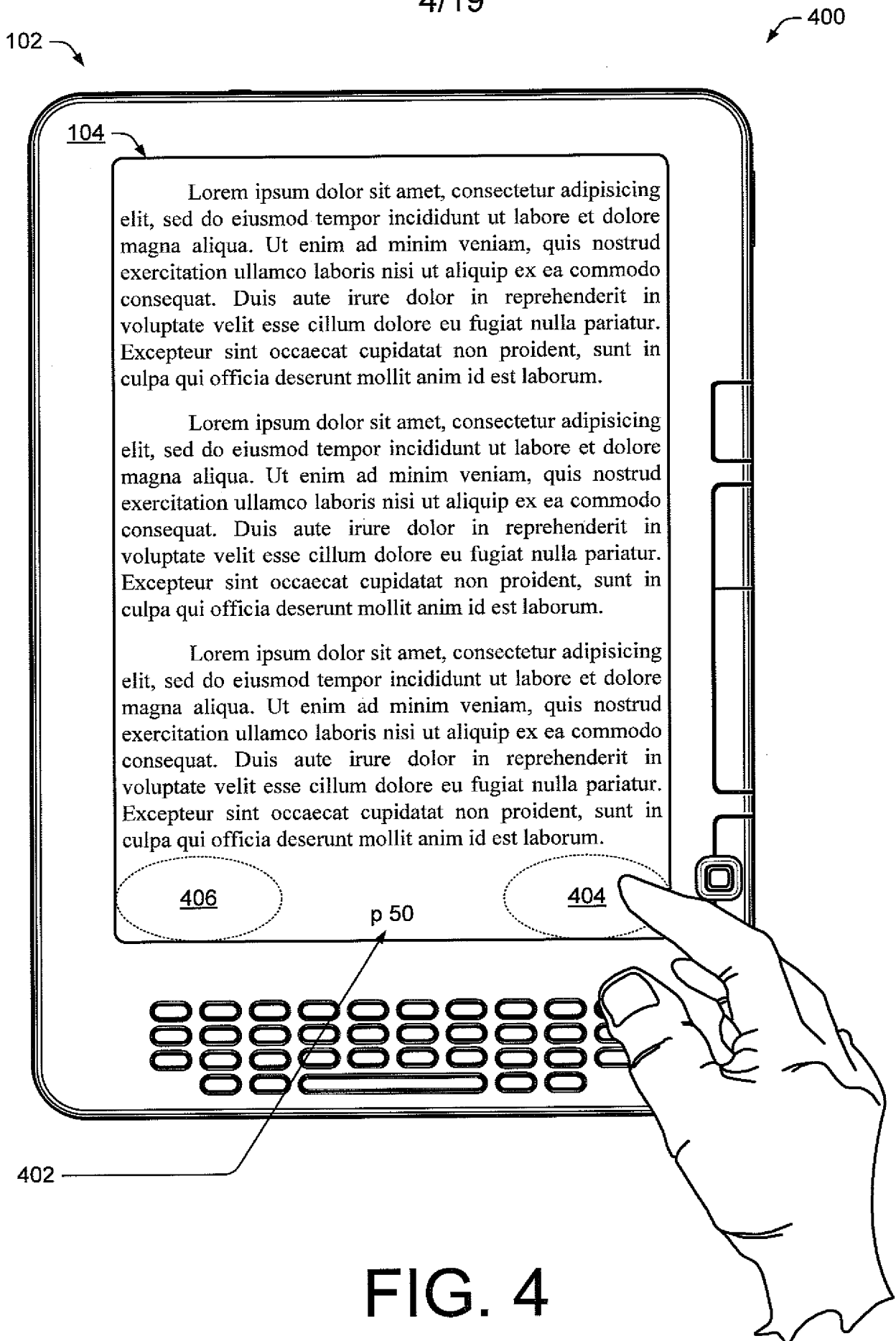


FIG. 3

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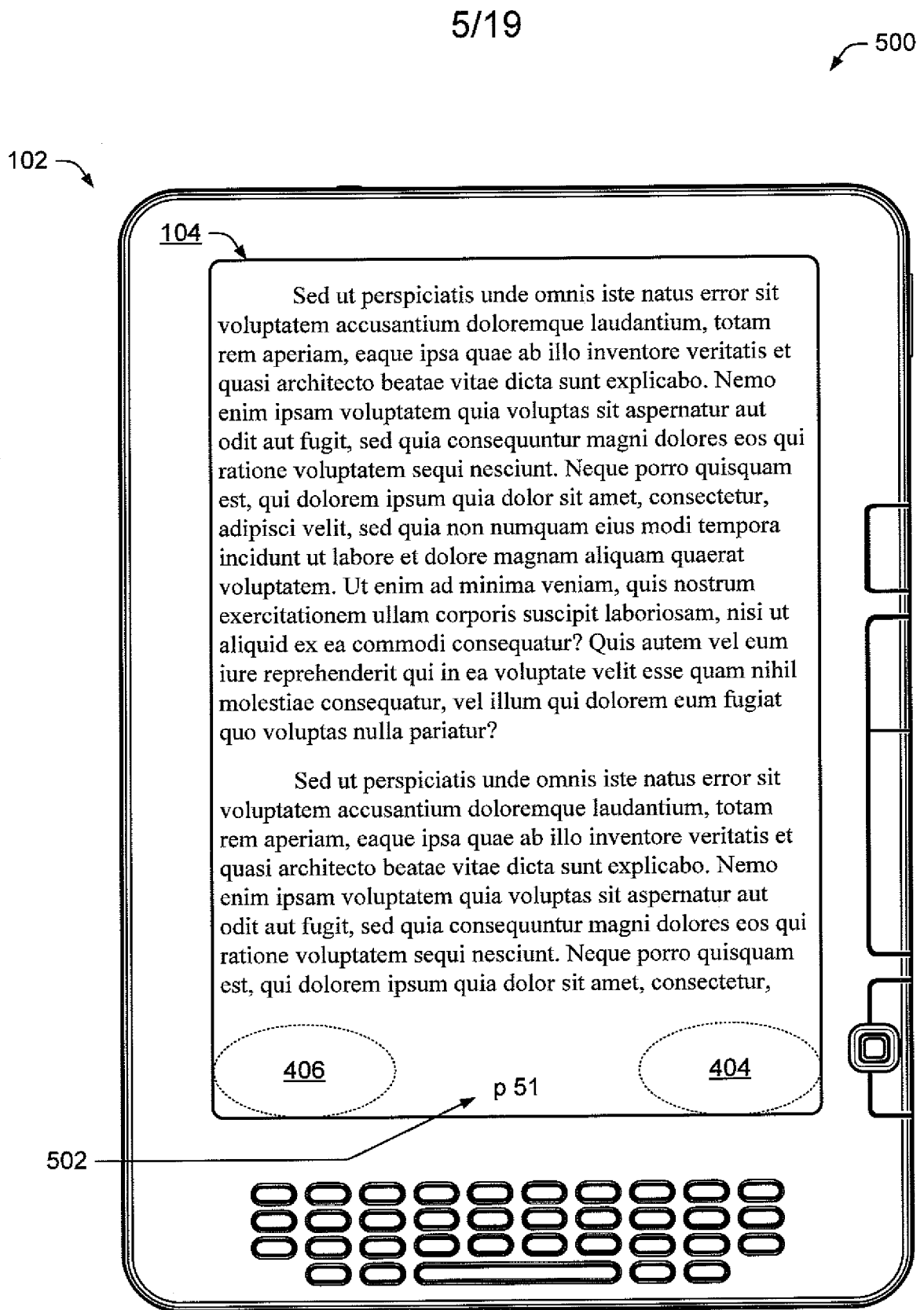


FIG. 5

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600

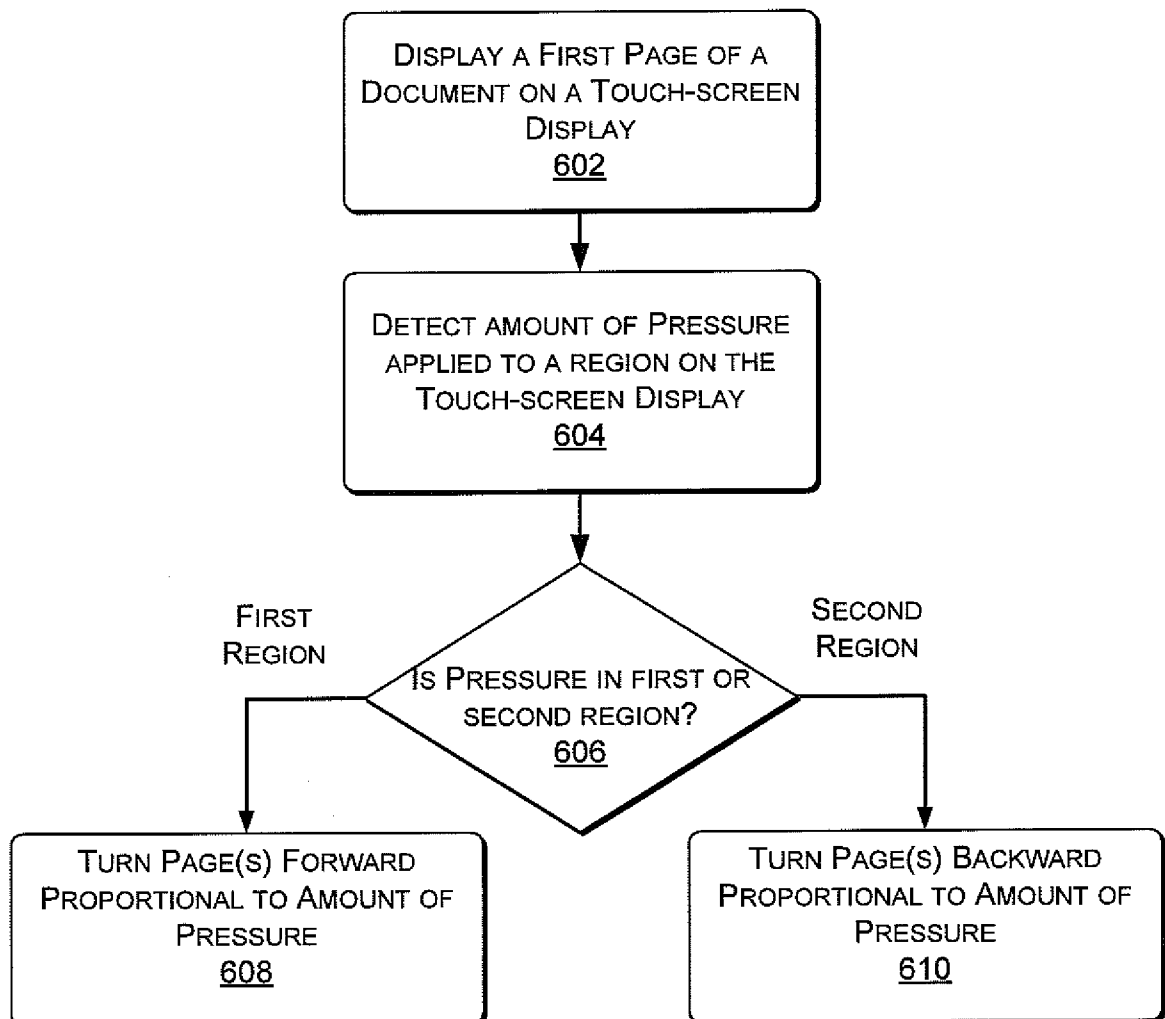
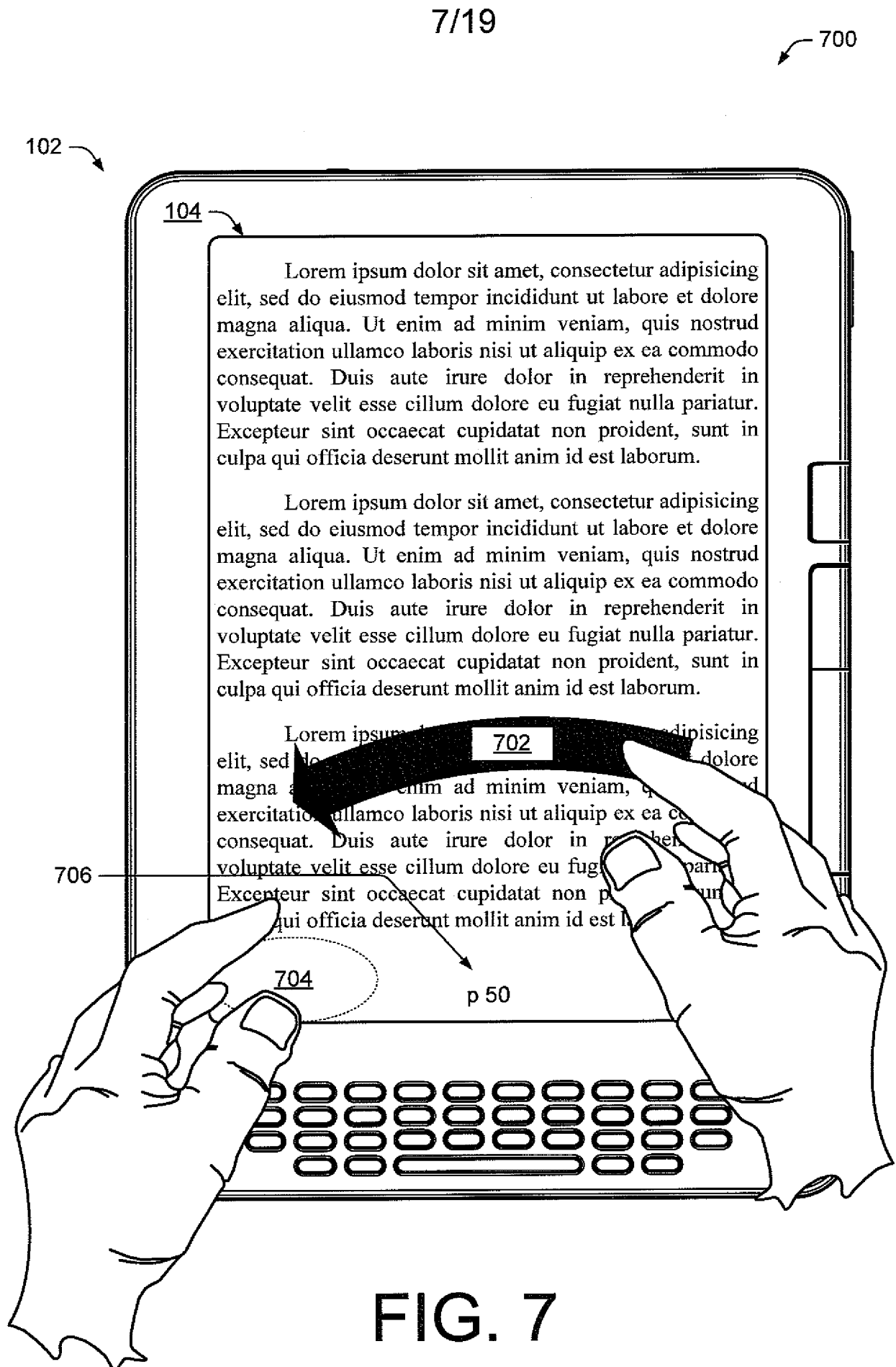
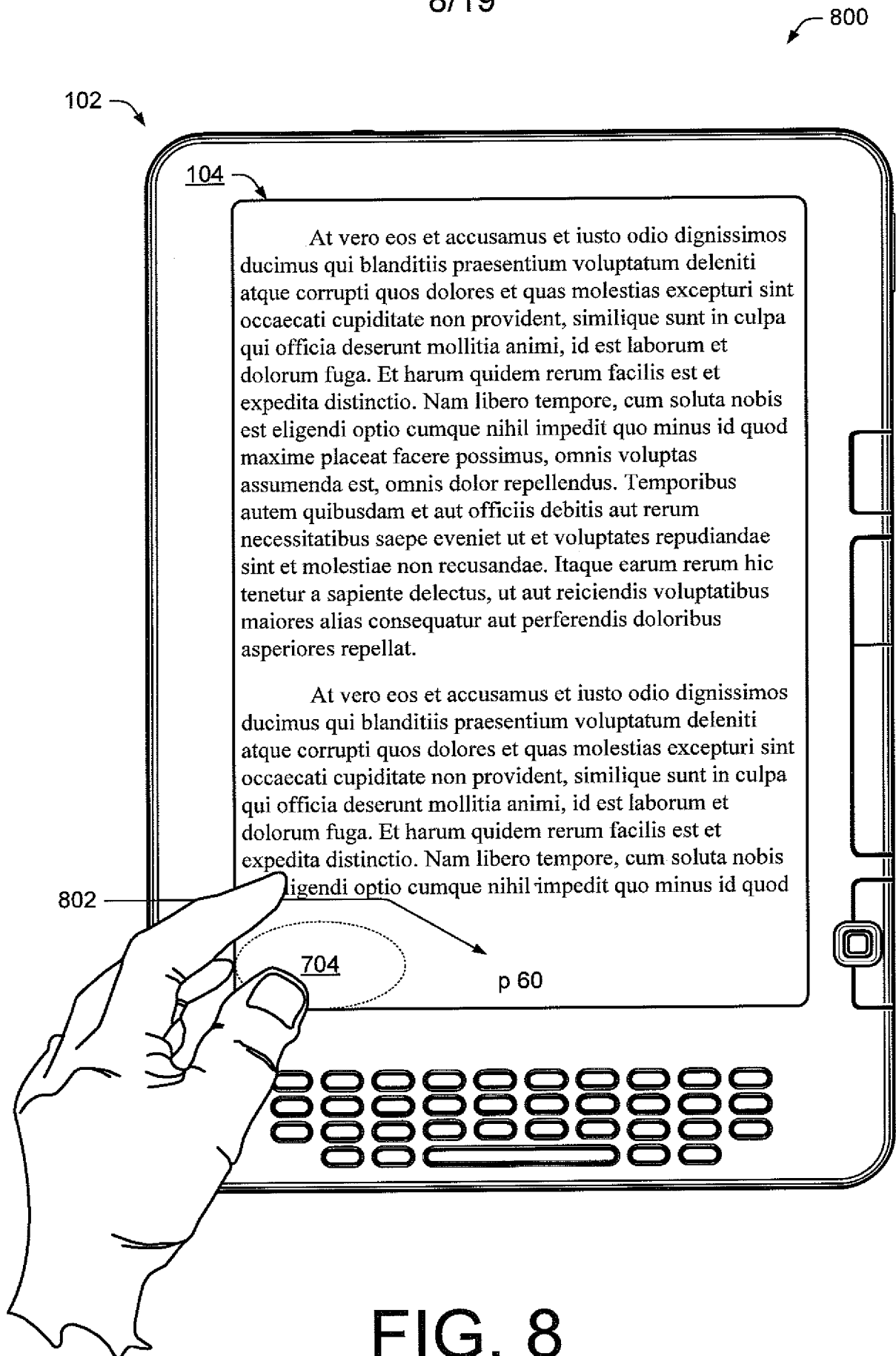


FIG. 6



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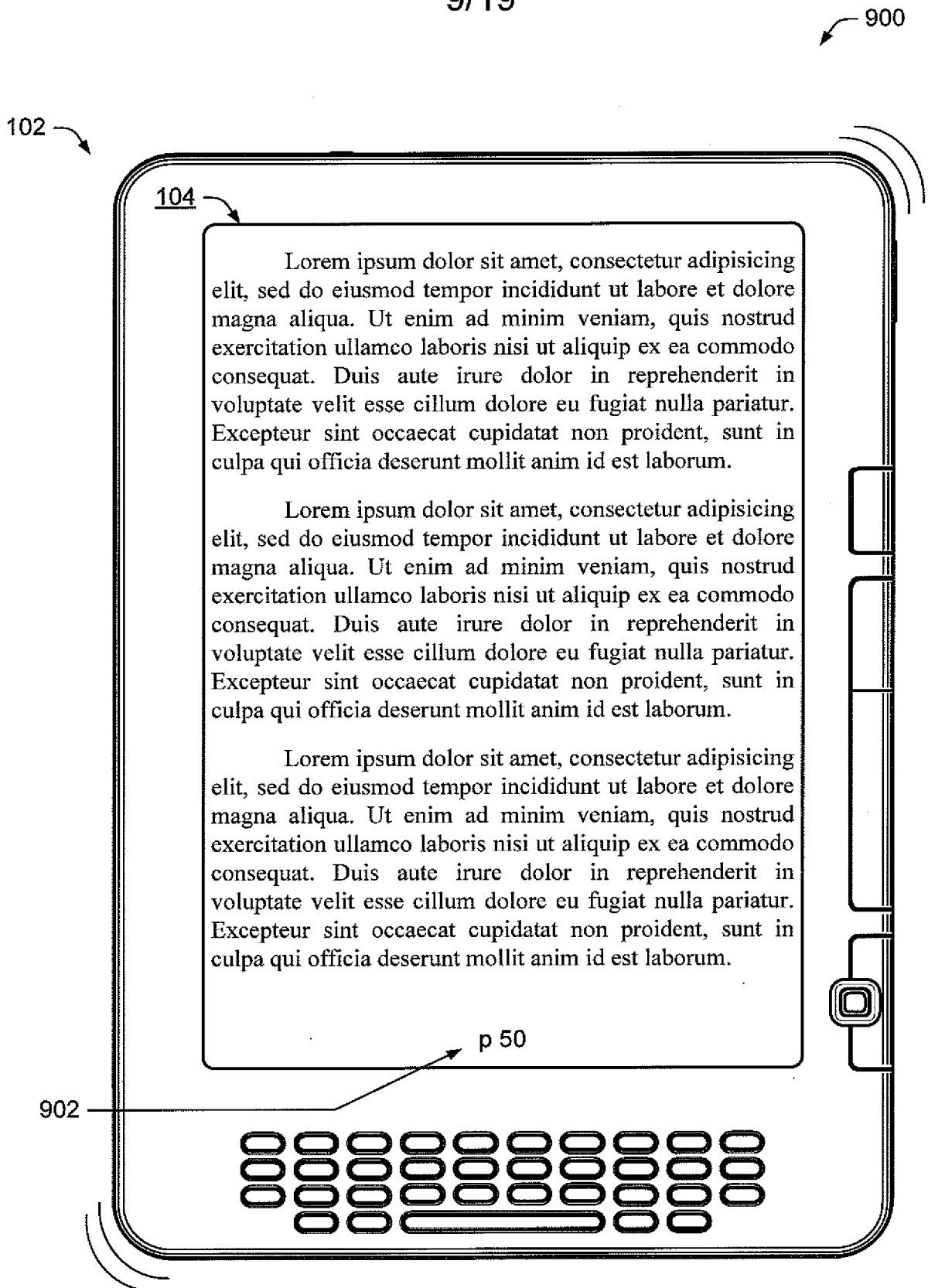


FIG. 9



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1000

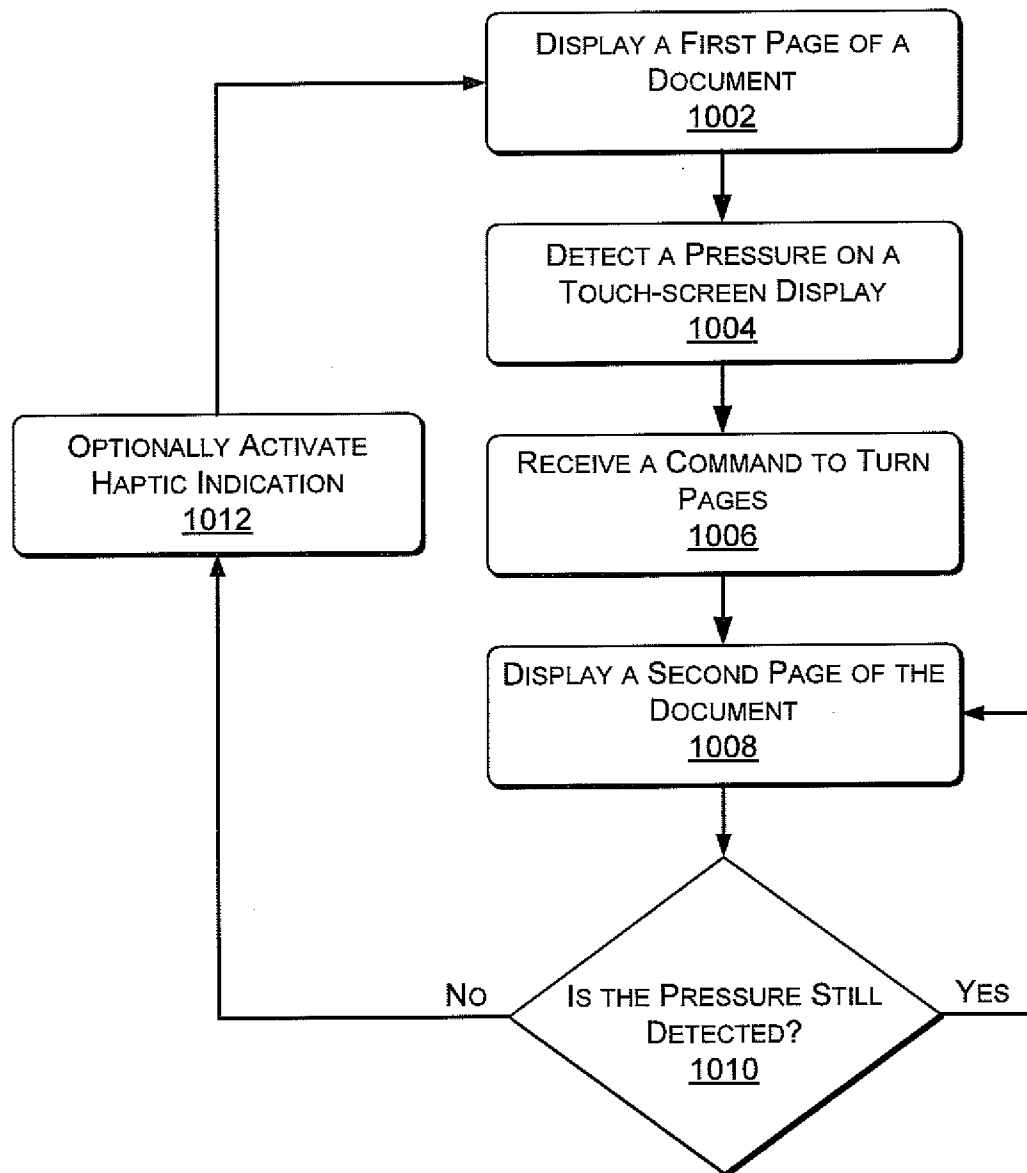


FIG. 10

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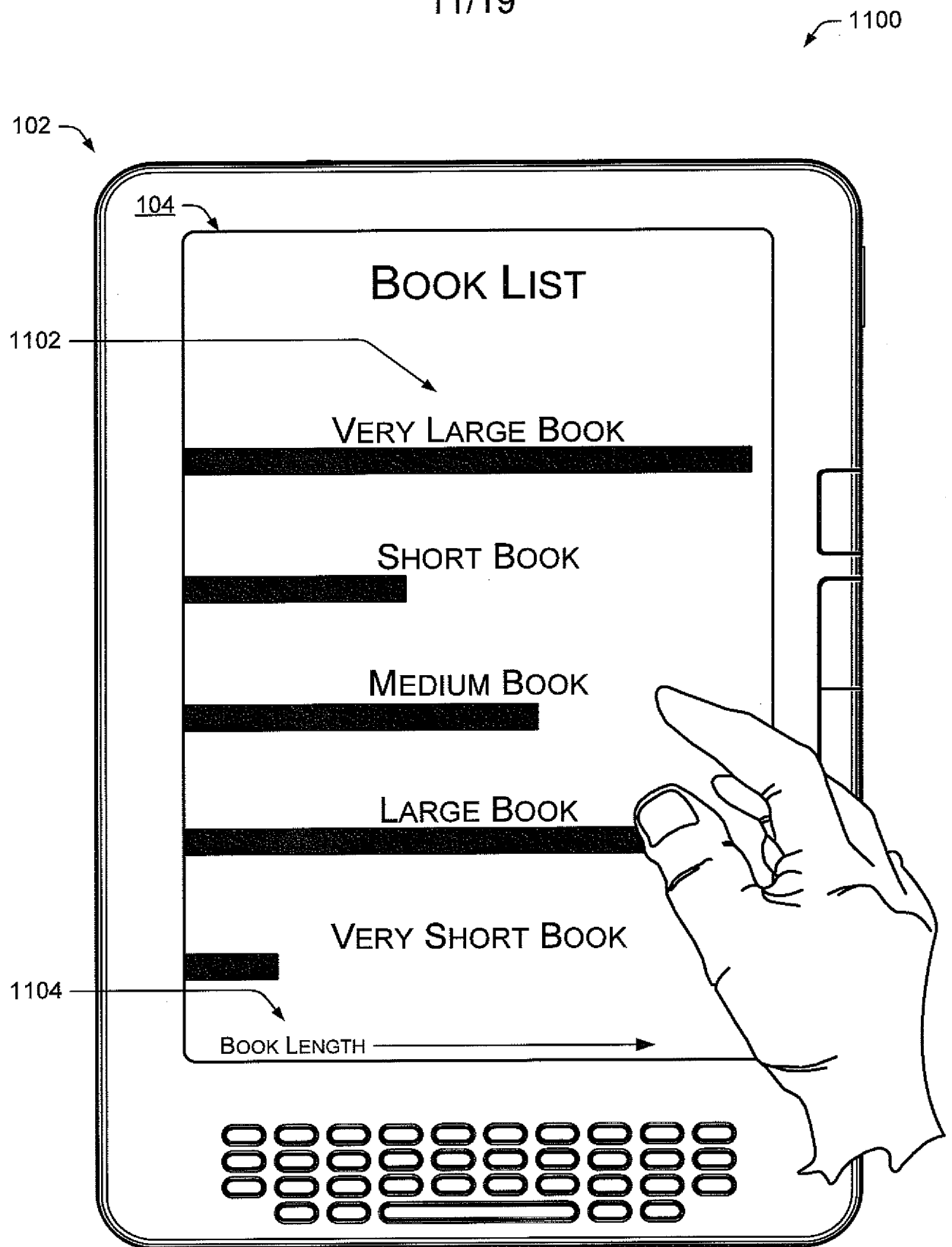


FIG. 11

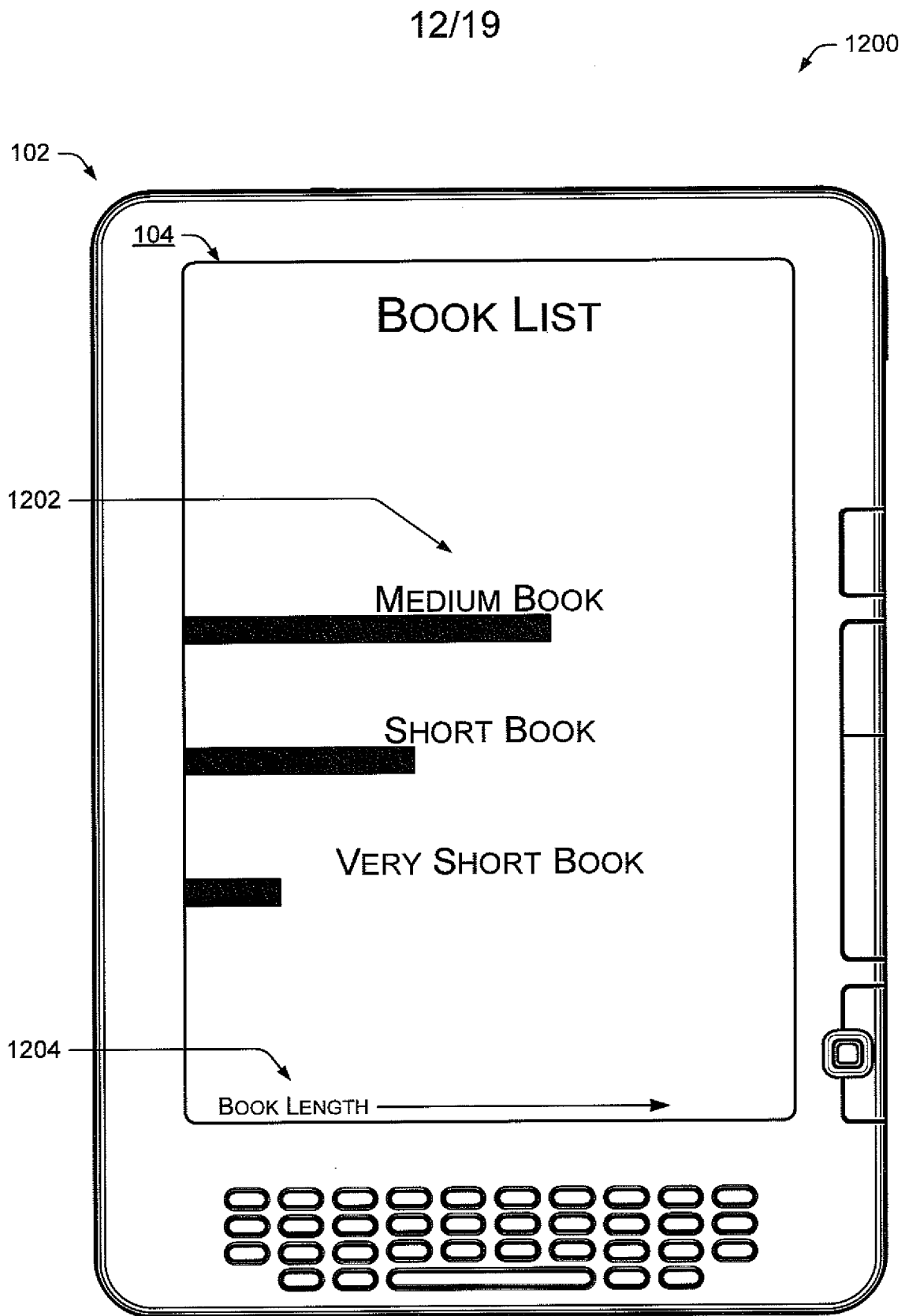


FIG. 12

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1300

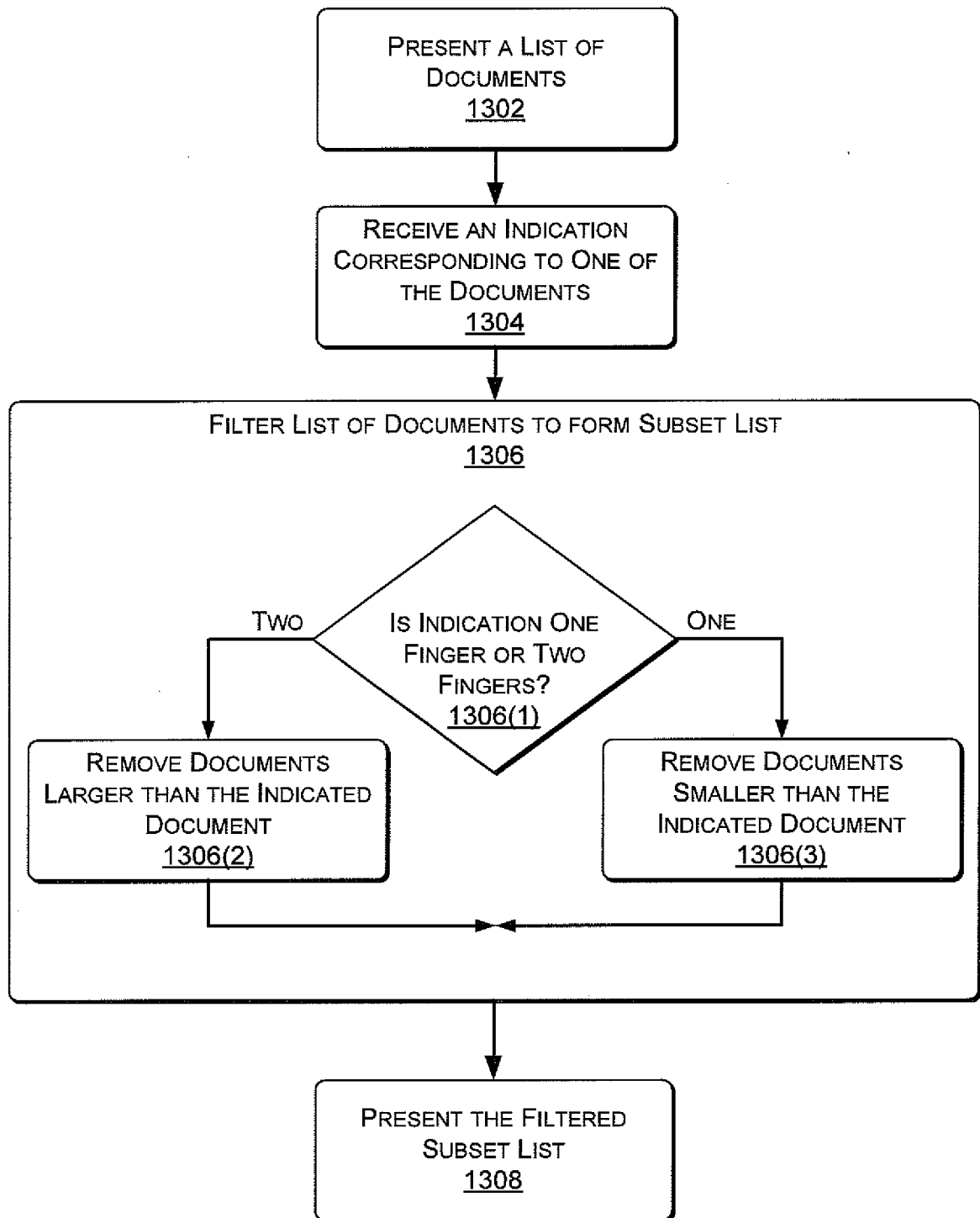


FIG. 13

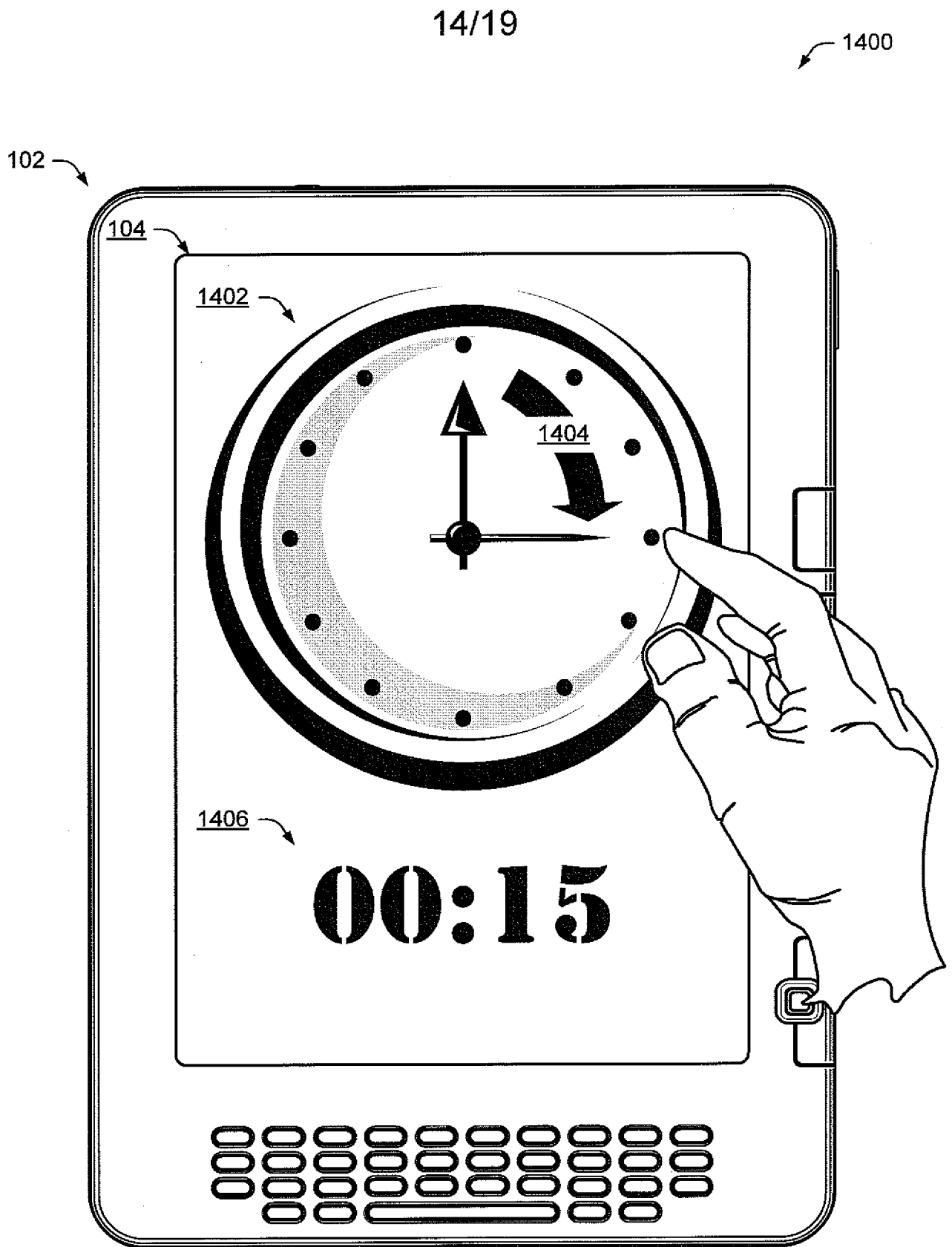


FIG. 14

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1500

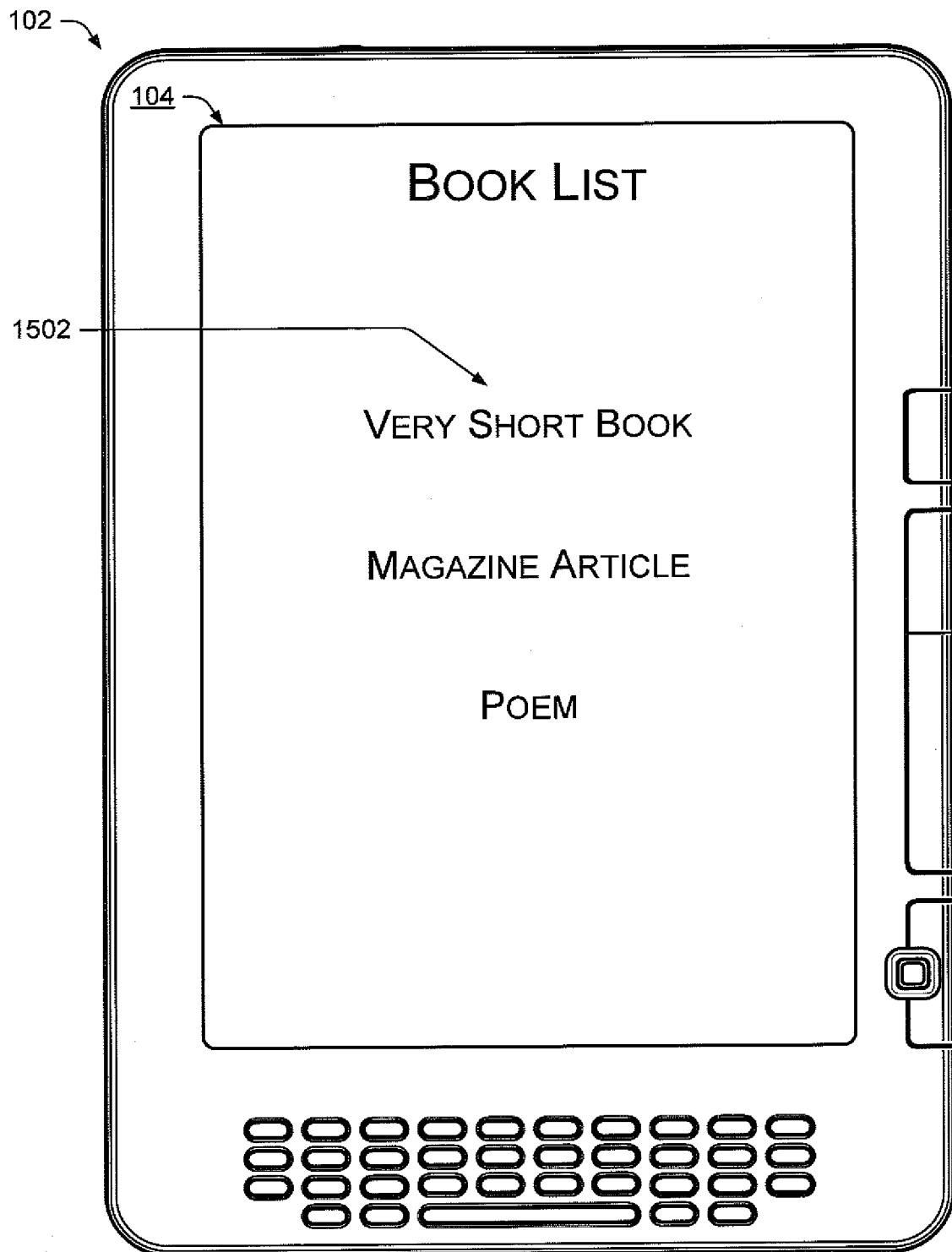


FIG. 15

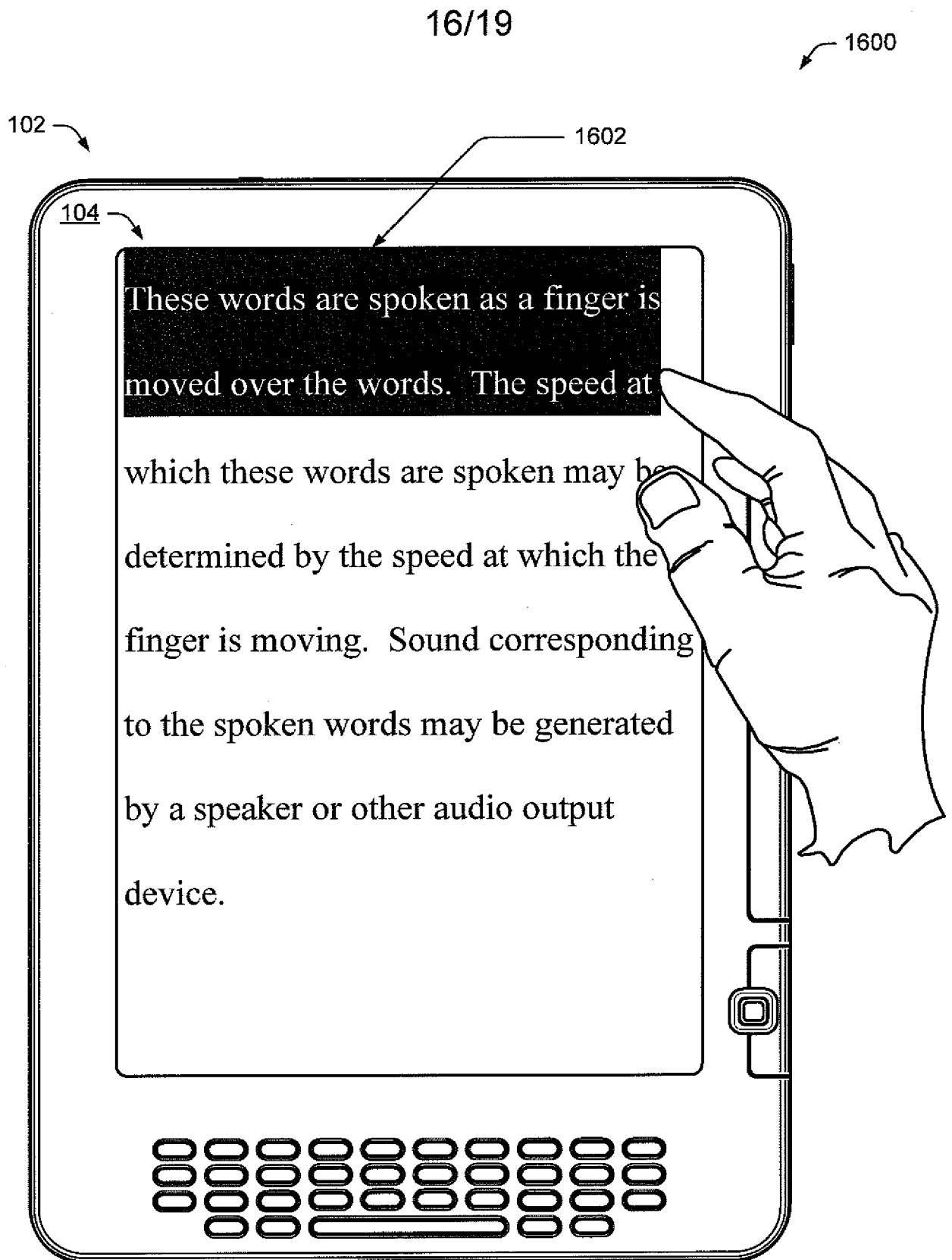
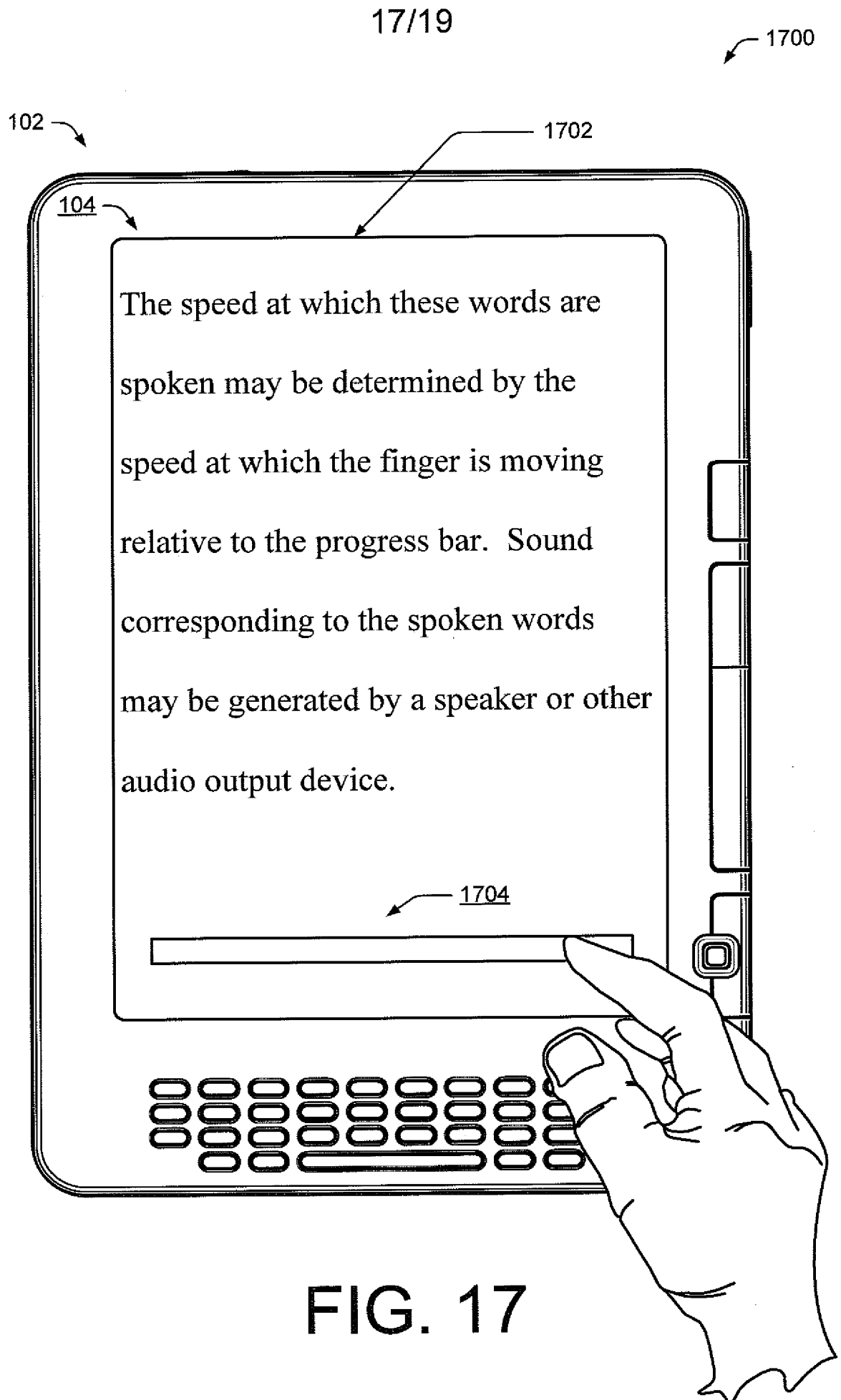


FIG. 16





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1800

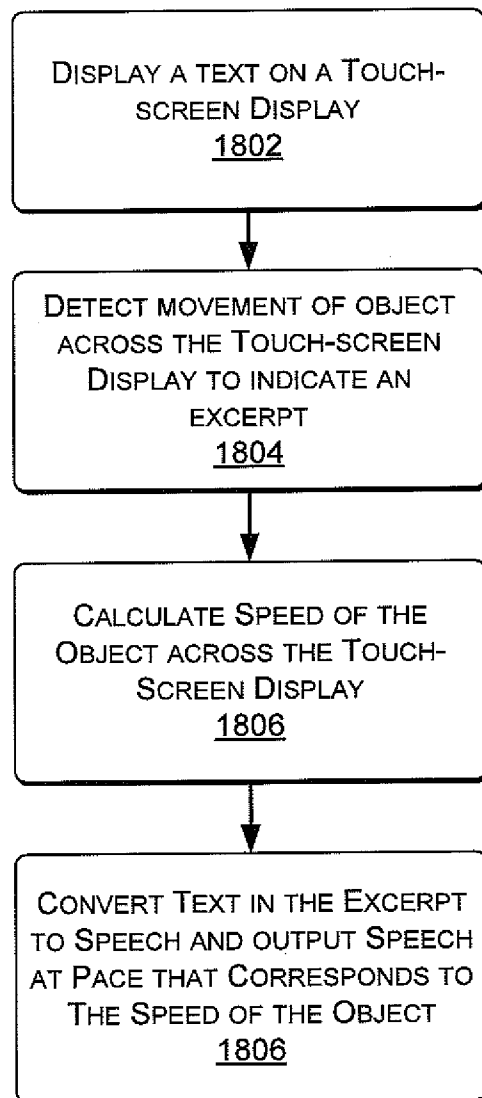


FIG. 18

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1900

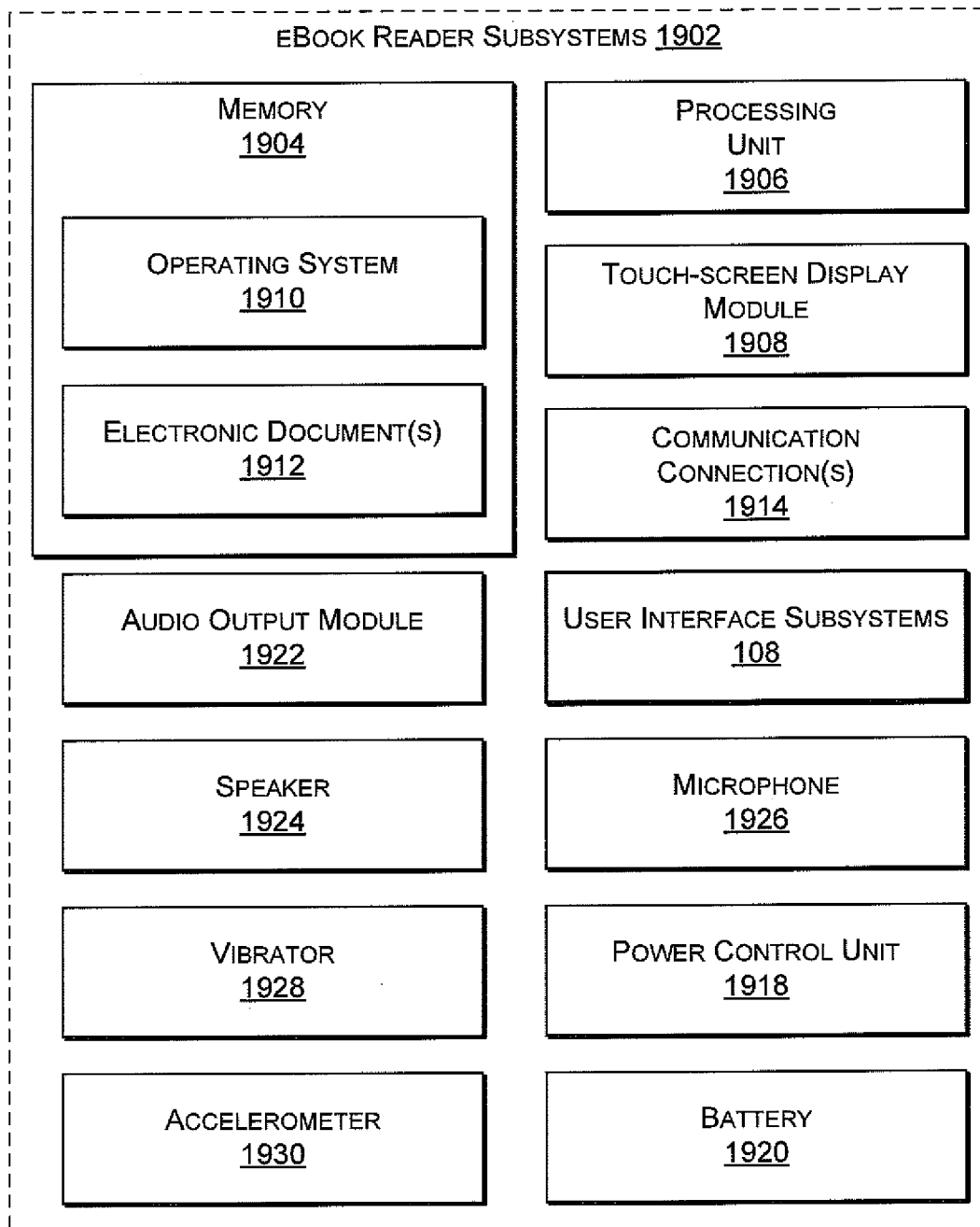


FIG. 19

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(8) - G06F 3/01 (2010.01)

USPC - 715/702

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

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): G06F 3/01 (2010.01)

USPC: 715/702

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
USPC: 345/173, 901 715/701, 702, 776 (keyword limited; terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
PubWest; Google Scholar; Google Patents; FreePatentsOnline. Search terms used: electronic-book digital-book e-book tablet ipad apad, method, device apparatus reader hand-held handheld portable mobile dedicated, wireless radio cell Wi-Fi, processor microprocessor DSP CPU SPU ASIC, memory storage flash non-volatile nonvolatile, touch-screen...

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0098899 A1 (KING et al.) 11 May 2006 (11.05.2006) entire document, especially Abstract; para [0019], [0040], [0057], [0060], [0062], [0069], [0071]-[0073], [0131], [0142], [0274], [0344], [0346], [0450], [0527], [0540], [0566], [0590]-[0592], [0643], [0672], [0674], [0676], [0680], [0748], [0764], [0769], [0776], [0784]	1-42, 98-110, 112-116
Y	US 2008/0040692 A1 (SUNDAY et al.) 14 February 2008 (14.02.2008) entire document, especially Abstract; Figs. 1, 2, 7A-7C; para [0002], [0003], [0025], [0030], [0031], [0034], [0039], [0040], [0050], [0051], [0054], [0055], [0058], [0060]-[0062]	1-42, 98-110, 112-116
Y	US 2006/0041839 A1 (KASSAN) 23 February 2006 (23.02.2006) entire document, especially Abstract; para [0019], [0026], [0037], [0066]	22-34, 98-105, 116
A	US 2008/0141180 A1 (REED et al.) 12 June 2008 (12.06.2008) entire document	1-42, 98-110, 112-116
A	US 2002/0184189 A1 (HAY et al.) 05 December 2002 (05.12.2002) entire document	1-42, 98-110, 112-116
A	US 2001/0050658 A1 (ADAMS) 13 December 2001 (13.12.2001) entire document	1-42, 98-110, 112-116

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

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

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

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

"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

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

"&" document member of the same patent family

Date of the actual completion of the international search

04 January 2011 (04.01.2011)

Date of mailing of the international search report

01 FEB 2011

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents  
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300  
PCT OSP: 571-272-7774

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 10/47733

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-42, 98-116: a touch-screen display for presenting visible representations of electronic documents; detecting a pressure of an object on the touch-screen display; turning one or more pages of the electronic document in proportion to the pressure

Group II: Claims 43-66, 82-89: a touch-screen display to present a visible representation of electronic document; receiving an indication of a text from the electronic document presented on the touch-screen display, the indication generated by movement of an object relative to the touch-screen display; and generating a spoken representation of the text, wherein a speed of the spoken representation corresponds to a speed of the object.

--PLEASE SEE EXTRA SHEET--

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-42, 98-110, 112-116

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 10/47733

## Box No. III Observations where unity of invention is lacking

Group III: Claims 67-81, 90-97: a touch-screen display to receive a gesture indicative of one of (1) selection of an electronic document or (2) entry of a time; a filter module stored in the memory and executed by the processor to filter, responsive to the gesture, a set of electronic documents according to size to form a filtered list of electronic documents.

The inventions listed as Groups I - III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Group I is directed towards turning the pages of a document based on how the pressure of an object such as finger or stylus is applied to a touch screen, which is not present in Group II or III. Group II is directed towards generating spoken text corresponding to the speed and location of an object / finger sliding across a touch screen, which is not present in Group I or III. Group III is directed towards filtering a list of documents based on a size / time selection corresponding to the amount a user desires to read, which is not present in Group I or II. There is no common technical feature between Group I to III. None of the technical features of each group is common to the other groups, nor do they correspond to a special technical feature in the other groups. Accordingly, unity of invention is lacking under PCT Rule 13.1.