

button 310 may include a locking mechanism 315 to lock the button 310 into the actuated state to prevent the fluid from moving back into the button 310 and away from the cavity 125, as shown in FIGS. 19 and 20. To return the cavity 125 into the retracted state, the user preferably disengages the locking mechanism 315. In the variation wherein the button 310 is a push button, the locking mechanism 315 may include a sliding tab 317 that engages with the top of the button 310 to keep the button 310 in the actuated state, as shown in FIGS. 19a and 19b. In the variation that includes a slider 312, the locking mechanism 315 may be an engager 317 that engages the slider when the cavity 125 is expanded, as shown in FIGS. 20a and 20b. The engager 317 may be a hook that engages with a hole or a ledge in the slider, a peg that engages with the slider, or a clamp that engages with the slider, or any other suitable type of engagement geometry. The engager 317 may also include a spring to facilitate the engagement of the slider. However, the locking mechanism 315 may be of any other suitable method or system. In the second version, because the devices that have a flip cover generally have a biasing spring such as a torsional spring to keep the flip cover in the open position, the user interface enhancement system 100 preferably utilizes this biasing force to maintain the expanded state of the cavity 125. However, any other system or method suitable to maintain the expanded state of the cavity 125 without further power input from the user may be used.

3. Actuation of the Expansion of the Cavity

[0049] The displacement device 130 of both preferred embodiments may be actuated by the device, but may alternatively be actuated by the user. In the variation where the displacement device 130 is actuated by the device, the user interface enhancement system 100 functions to communicate with the device 10 and the device 10 functions to actuate the expansion of the cavity 125. In this preferred embodiment, the device 10 actuates the expansion of the cavity 125 whenever the device 10 determines that tactile guidance is to be provided to the user. The device 10 may alternatively actuate the expansion of the cavity 125 when the user inputs into the device 10 that tactile guidance is desired. The device 10 also preferably determines the length of time the cavity 125 is to be expanded, the rate of expansion of the cavity 125, the level of expansion of the cavity 125, and/or any other characteristic of the expansion of the cavity 125 that may affect the tactile guidance provided to the user may be controlled by the device 10. In the variation wherein the user interface enhancement system 100 includes a second cavity 125b, the device 10 may also function to selectively actuate the expansion of one of or both of the cavity 125 and the second cavity 125b. The selection of the cavity or cavities to be expanded may depend on whether tactile guidance is to be provided to the user at the location of the corresponding particular regions 113. However, any other factors suitable to determining the actuation of the expansion of the cavity 125 and/or the second cavity 125b may be used.

[0050] As shown in FIG. 2, the variation where the device 10 actuates the expansion of the cavity 125 preferably includes a data-link 205 that functions as the communication bus between the device 10 and the user interface enhancement system 100. The data-link 205 may include a wire that interfaces to an I/O port of the device 10 through a connector 210 or any other suitable wired connection, but may alternatively include a wireless transmitter and/or receiver that establishes a wireless connection with the device 10 using a protocol such

as Bluetooth, ZigBee, WiFi, or any other suitable wireless protocol. However, the data-link 205 may be of any other suitable type that allows the user interface enhancement system 100 to communicate with device 10 to result in the actuation of the expansion or retraction of the cavity 125 at the desired time. The user interface enhancement system 100 may also include a processor (not shown) that communicates with the device 10 and relays instructions received from the device 10 to the displacement device 130 to expand the cavity 125. The user interface enhancement system 100 may also transmit data to the device 10 that indicates the state of the cavity 125, the power remaining in the native power source 200, and/or any other data suitable to indicate the state of the user interface enhancement system 100. However, any other suitable communication arrangement between the user interface enhancement system 100 and the device 10 may be used. In the first preferred embodiment, the data-link 205 may also function to allow power from the device 10 to transfer to the user interface system 100.

[0051] Alternatively, the user may actuate the displacement device 130. By allowing the user to actuate the expansion of the cavity 125, a data-link 205 is not necessary as in the variation where the device 10 actuates the displacement device 130 because communication between the user interface enhancement system 100 and the device 10 is not required for operation of the user interface enhancement system 100. Because electronic devices from different manufacturers generally have different criteria for communication, removing the need to communicate with the device 10 upon which the user interface enhancement system 100 is appended may allow the user interface enhancement system 100 of the second preferred embodiment to be applicable to a wider variety of electronic device with substantially little development time. In general, to adapt the user actuated variation of the user interface enhancement system 100 to different electronic devices, relatively simple changes in the placement of the cavity 125, the geometry of cavity 125, the overall size of the user interface enhancement system 100, and the number of cavities 125 and 125b may be made.

[0052] Because of the manually powered nature of the second preferred embodiment, the displacement device 130 of the second preferred embodiment is preferably user actuated. The displacement device 130 of the first preferred embodiment may also be user actuated. For example, the user interface enhancement system 100 of the first preferred embodiment may include a button (or a switch) that functions to allow the user to activate the expansion of the cavity 125. The button may be a two state button that functions to signal the displacement device 130 to expand the cavity 125 and/or to retract the cavity 125, but may alternatively be a button with more than two states that function to allow the user to select the level of expansion of the cavity 125. The actuation of the button may signal the displacement device 130 to expand the cavity 125 until a second actuation of the button is received, wherein the second actuation of the button signals the displacement device 130 to retract the cavity 125. Alternatively, the actuation of the button may result in the expansion of the cavity 125 until the button is released or returned to an initial state (for example, a slider button that remains in one position until the user moves the slider into a second position). The actuation of the expansion of the cavity 125 may alternatively be of any other suitable sequence. In the variation wherein the user interface enhancement system 100 includes a second cavity 125b, the button may also function to signal to the