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(54) Title: TOUCHPAD INPUT DEVICE

(57) Abstract: An input device, notebook computer, keyed input device, and a method are provided. A touchpad housing is comprised of a touchpad depression area. The touchpad comprised of a movement input area and a button area is attached to the touchpad housing. The touchpad is configured to detect a presence of an input at a location on the touchpad. A switch is located below the button area of the touchpad. A haptic response component is also provided for generating a haptic response in response to application of a pressure from the input to the button area.



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TOUCHPAD INPUT DEVICE

BACKGROUND

[0001] An improved touchpad input device is needed that provides an improved user experience.

SUMMARY

[0002] According to one embodiment, an input device is provided that includes a touchpad housing comprised of a touchpad depression area. A touchpad is attached to the touchpad housing and is comprised of a movement input area, and a button area. The touchpad is configured to detect a presence of an input at a location on the touchpad. A switch is located below the button area of the touchpad. A haptic response component is also provided for generating a haptic response in response to application of a pressure from the input to the button area.

[0003] According to another disclosed embodiment, a computer notebook is provided that includes a keyed input housing as well as a keyboard attached to the keyed input housing. A touchpad housing attached to the keyed input housing is comprised of a touchpad depression area. A touchpad attached to the touchpad housing is provided and comprised of a movement input area, and a button area. The touchpad is configured to detect a presence of an input at a location on the touchpad. A switch is located below the button area of the touchpad. A haptic response component is also provided for generating a haptic response in response to application of a pressure from the input to the button area.

[0004] According to a further embodiment, a keyed input device having a keyed input housing is provided. A keyboard is attached to the keyed input housing. A touchpad

1 housing comprised of a touchpad depression area is attached to the keyed input
2 housing. A touchpad attached to the touchpad housing is provided and comprised of a
3 movement input area, and a button area. The touchpad is configured to detect a
4 presence of an input at a location on the touchpad. A switch is located below the
5 button area of the touchpad. A haptic response component is also provided for
6 generating a haptic response in response to application of a pressure from the input to
7 the button area.

8 **[0005]** According to yet another disclosed embodiment, a method of detecting input
9 through a touchpad is provided. The method includes the steps of detecting a
10 presence of an input, detecting a pressure of the input, and generating a haptic
11 response to the pressure.

12 BRIEF DESCRIPTION

13 **[0006]** Figure 1 is an exploded view of an input device, according to one
14 embodiment.

15 **[0007]** Figure 2A is a top-down view of an input device, according to one
16 embodiment.

17 **[0008]** Figure 2B is a cross-section view of an input device illustrating
18 elements of a pivot support, according to one embodiment.

19 **[0009]** Figure 3 is a top-down view of an electronic input detection device of an
20 input device, according to one embodiment.

21 **[0010]** Figure 4 is an isometric view of an input device, according to one
22 embodiment.

23 **[0011]** Figure 5 is a diagram of an input device connected to an input receiving
24 device, according to one embodiment.

25 **[0012]** Figure 6 is a flowchart detailing a method of detecting an input,
26 according to one embodiment.

27 **[0013]** Figure 7 is a notebook computer including an input device, according to
28 one embodiment.

1 **[0014]** Figure 8 is a keyed input device including an input device, according to
2 one embodiment.

3 DETAILED DESCRIPTION

4 **[0015]** Embodiments of the present disclosure will be described below with
5 reference to the accompanying drawings. It should be understood that the
6 following description is intended to describe exemplary embodiments of the
7 invention, and not to limit the invention.

8 **[0016]** It should be noted that the word “component” as used herein is intended
9 to encompass implementations using one or more lines of software code, and/or
10 hardware implementations, and/or equipment for receiving manual inputs.

11 **[0017]** Referring now to Figure 1. Figure 1 is an exploded view of an input
12 device 105, according to one embodiment. The input device 105 has a touchpad
13 housing 113 configured with a touchpad depression area 114. The input device 105
14 also has a touchpad 104 attached to the touchpad housing 113 with a movement
15 input area 101, a button area (102 and 103 combined), and a haptic response
16 component (109, 111, 104). A switch 111 is located below the touchpad 104. The
17 touchpad 104 detects the presence of an input at a location on the touchpad 104.

18 **[0018]** An example of an input detected by the touchpad 104 may be a human
19 finger. Alternatively, the input detected may be a pencil or a pen. The detection of
20 an input may be done in a variety of different ways. In some embodiments, the
21 touchpad 104 is configured to detect optical input. In other embodiments, the
22 touchpad 104 is configured to detect magnetic input. In yet other embodiments, the
23 touchpad 104 is configured to detect capacitance or conductance. The touchpad
24 104 is configured to detect the movement of an input across the touchpad 104 by
25 detecting the presence of the input at discrete locations over time in either of the
26 movement input area 101 or the button area (102 and 103 combined). The input
27 device 105 is also configured such that the button input area (102 and 103
28 combined) of the touchpad 104 detects the presence of an input, and the switch 111
29 detects depression of itself when the input applies pressure to the button area (102

1 and 103 combined) of the touchpad 104. The depression of the switch 111 and the
2 detection of the input in the button area (102 and 103) in combination indicates a
3 button of the touchpad 104 was intended to be depressed. A haptic response
4 component (109, 111, 104) generates a haptic response in response to the
5 application of the pressure to the button area (102 and 103 combined).

6 **[0019]** In some embodiments, the button area (102 and 103 combined) is
7 comprised of a left button area 103 and a right button area 102. Accordingly,
8 application of pressure by an input detected within the region of the left button area
9 103 as opposed to the region of the right button area 102 is indicative of separate
10 desired button input. The detection of where the input pressure is applied
11 determines which of the buttons represented by the left button area 103 and right
12 button area 102 was intended to be depressed. By way of example, a user may
13 place her finger in the left button area 103 and apply pressure depressing the switch
14 111 under the touchpad 104. Here, the touchpad 104 detects the presence of the
15 finger input in the left button area 103 in combination with the depression of the
16 switch 111, which indicates that the user intended to supply left button input
17 corresponding to the left button area 103. The right button corresponding to the
18 right button area 102 may be similarly activated.

19 **[0020]** The touchpad housing 113 is configured with a touchpad depression
20 area 114. Upon application of pressure to the button area (102 and 103 combined)
21 of the touchpad 104, the touchpad 104 deforms towards and into the touchpad
22 depression area 114 of the touchpad housing 113. The touchpad depression area
23 114 provides a void into which the touchpad 104 assembly may deform. The
24 touchpad housing 113 may be comprised of any number of materials. In some
25 embodiments, the touchpad housing 113 is made from plastic. In other
26 embodiments, the touchpad housing 113 is made of metal such as aluminum.

27 **[0021]** In the illustrated embodiment of Figure 1, the touchpad 104 of the input
28 device 105 is comprised of a cosmetic cover 106, a pivot support 107, and a
29 touchpad circuit board 108.

1 **[0022]** The cosmetic cover 106 is provided to shield the touchpad circuit board
2 108 and the pivot support 107 from the user. Additionally, the cosmetic cover 106
3 adds aesthetic features to the input device 105. Accordingly, the cosmetic cover
4 106 may be provided in any number of different colors. Additionally, in some
5 embodiments, it may be preferable to visually indicate the regions corresponding to
6 the movement input area 101, and the button area (102 and 103 combined) on the
7 cosmetic cover 106. In one embodiment the cosmetic cover 106 is colored one
8 color for the area corresponding to the movement input area 101, and the cosmetic
9 cover 106 is colored another color for the area corresponding to the button area
10 (102 and 103 combined). In yet other embodiments, the cosmetic cover 106 is
11 colored one color for the area corresponding to the movement input area 101, the
12 cosmetic cover 106 is colored another color for the area corresponding to a right
13 button area 102, and the cosmetic cover 106 is colored yet another color for the
14 area corresponding to a left button area 103. The regions corresponding to the
15 movement input area 101 and the button area (102 and 103 combined) may also be
16 indicated through light illumination. Accordingly, in some embodiments the
17 cosmetic cover 106 region corresponding to the movement area 101 is configured
18 to illuminate one color, and the cosmetic cover 106 region corresponding to button
19 area (102 and 103 combined) is configured to illuminate another color. In other
20 embodiments, the cosmetic cover 106 region corresponding to the movement area
21 101 is configured to illuminate one color, the cosmetic cover 106 region
22 corresponding to a right button area 102 is configured to illuminate another color,
23 and the cosmetic cover 106 region corresponding to a left button area 103 is
24 configured to illuminate yet another color. The illumination of the cosmetic cover
25 106 may be provided with any suitable light source such as LEDs. In some
26 embodiments, the LEDs are a conventional semiconductor diode LED. In other
27 embodiments, the LEDs are quantum dot LEDs composed of semiconductor
28 nanocrystals. In yet other embodiments, the LEDs are organic LEDs.

29 **[0023]** Referring now to Figures 2A and 2B in combination with Figure 1.
30 Figure 2A is a top-down view of an input device 105, according to one
31 embodiment. Figure 2B is a cross-sectional view of an input device 105 illustrating

1 elements of the pivot support 107, according to one embodiment. The pivot
2 support 107 is comprised of a pivot point 201 and a switch contact point 202. The
3 touchpad 104 is attached to the touchpad housing 113 at the pivot point 201 of the
4 pivot support 107. The pivot support 107 is provided such that when an input
5 applies pressure on the cosmetic cover 106 of the touchpad 104, the touchpad 104
6 assembly deforms about the pivot point 201 into the touchpad depression area 114
7 of the touchpad housing 113. Upon deformation, the switch contact point 202 of
8 the touchpad 104 assembly contacts the switch 111 if an input applies pressure with
9 sufficient force. Those skilled in the art would appreciate that the pivot point 201
10 may be provided in any number of locations relative to the parts comprising the
11 touchpad 104.

12 **[0024]** Referring now to Figure 3 in combination with Figure 1. Figure 3 is a
13 top-down view of an electronic input detection device of an input device, according
14 to one embodiment. The movement input area 101 and the button area (102 and
15 103 combined of Figure 1) of the touchpad may detect input through a single
16 electronic input detection device or multiple electronic input detection devices.
17 The electrical input detection devices comprising the touchpad 104 may be circuit
18 boards configured to detect the capacitance of an input. Figure 4 illustrates an
19 embodiment where the touchpad circuit board 108 is a single circuit board
20 comprising a movement input capacitance area 301 (corresponding to the
21 movement input area 101 of Figure 1), a left button capacitance area 303
22 (corresponding to the left button area 103 of Figure 1), and a right button
23 capacitance area 302 (corresponding to the right button area 102 of Figure 1). In
24 other embodiments, a touchpad circuit board is comprised of a movement circuit
25 board comprising solely a movement input capacitance area, and a button circuit
26 board comprising the left and right button capacitance areas or a single button area.
27 In yet another embodiment, a touchpad circuit board is comprised of a movement
28 circuit board comprising solely a movement input capacitance area, a left button
29 circuit board comprising solely a left button capacitance area, and a right button
30 circuit board comprising solely a right button capacitance area. The disclosed
31 customization of movement input areas 101, button areas (102 and 103 combined

of Figure 1), and touch sensitive input areas is accomplished by designating a desired input corresponding to a region of an electrical detection input device. The customization of these input areas is discussed in more detail below. Additionally, electrical input detection devices comprising the touchpad 104 may be circuit boards configured to detect conductance, magnetism, and optical input to name but a few of the embodiments.

[0025] Referring back to Figure 1. The input device 105 has a switch 111 located below the touchpad 104. As discussed above, the depression of the switch 111 and the detection of an input in the button area (102 and 103 combined) in combination indicates a button of the touchpad 104 was intended to be depressed. The input device 105 is further configured with a haptic response component (109, 111, 104). The haptic response component (109, 111, 104) generates a haptic response in response to application of pressure to the button area from an input. In some embodiments the switch 111 may be spring-loaded. In other embodiments, the switch may not be spring-loaded. In those embodiments with a spring-loaded switch 111, the switch 111 applies pressure back against an input during the input's application of pressure. Accordingly, in those embodiments where the switch 111 is spring-loaded, the switch 111 may be the haptic response component 111. In such an embodiment, the switch 111 applies pressure to the touchpad 104 assembly when an input applies pressure and the assembly deforms about the pivot point 201 (of Figure 2B) into the touchpad depression area 114 of the touchpad housing 113. The switch's 111 application of pressure against the touchpad 104 generates a haptic response in response to the application of pressure from the input. In this way, the input device provides the feeling of pressing a button to the input through haptic feedback.

[0026] In other embodiments, the haptic response component is a spring finger or a plurality of spring fingers. The illustrated embodiment of Figure 1 has a plurality of spring fingers 109. The spring fingers 109 apply pressure to the touchpad 104 assembly when an input applies pressure and the assembly deforms about the pivot point 201 (of Figure 2B) into the touchpad depression area 114 of the touchpad housing 113. The spring fingers' application of pressure against the

1 touchpad 104 generates a haptic response in response to the application of pressure
2 from the input. In this way, the input device provides the feeling of pressing a
3 button to the input through haptic feedback. Those skilled in the art appreciate that
4 the spring fingers 109 of the illustrated embodiment may be provided in any
5 number of locations or not provided at all. Those skilled in the art will also
6 appreciate that embodiments of the disclosed input device 105 may be comprised
7 of many switches located in any number of locations relative to the touchpad 104
8 assembly.

9 **[0027]** In some embodiments, a spring finger or plurality of spring fingers 109
10 in combination with a switch 111 are the haptic response component, and may
11 generate a haptic response in response to the application of pressure from the input.
12 In further embodiments, the touchpad 104 assembly may be the haptic response
13 component, and the tendency of the touchpad 104 assembly to return to its original
14 position generates haptic feedback. In yet other embodiments, the touchpad 104
15 assembly in combination with a switch 111 may be the haptic response component.
16 Further, in another embodiment, the touchpad 104 assembly in combination with a
17 spring finger or a plurality of spring fingers 109 may be the haptic response
18 component. In yet other embodiments, the touchpad 104 and a switch 111 in
19 combination with a spring finger or a plurality of spring fingers 109 may be the
20 haptic response component.

21 **[0028]** Referring now to Figure 5. Figure 5 is a diagram of an input device 105
22 connected to an input receiving device 501, according to one embodiment. The
23 input device 105 is designed to be connected through a communication channel 502
24 to an input receiving device 501, such that the input device 105 supplies input
25 communications comprised of specific input messages to the input receiving device
26 501. In some embodiments, the communication channel 502 may be simplex or
27 duplex. The communications channel 502 may be a directly wired electrical
28 connection or the communication channel 502 may be wireless. By way of
29 example, Figure 7 illustrates an embodiment of a notebook computer including an
30 input device 105 attached to the chassis 702, a screen 701 attached to the chassis
31 702, and a keyboard 703 attached to the chassis 702. Further, Figure 8 illustrates

1 another embodiment of a keyed input device including an input device 105 attached
2 to a keyed input housing 801, and a keyboard 802 attached to the keyed input
3 housing 801. In yet other embodiments, the input device 105 may be connected to
4 a communication device such as a personal digital assistant, cellular telephone, or a
5 wireless e-mail device.

6 **[0029]** As an example application, the input device 105 may be connected to a
7 notebook computer (input receiving device 501 of Figure 5). The notebook
8 computer may be configured with a window-based operating system as is well
9 known in the art. As is well known in the art, a user interacts with a window-based
10 operating system through a keyed input device as well as a movement device such
11 as a touchpad or a computer mouse. The input device 105 may provide the
12 movement device to interact with the window-based operating system. The input
13 device 105 provides the ability to move a cursor in the window-based operating
14 system environment by detecting movement of an input from a user across the
15 touchpad 104 by detecting the presence of the input in either of the movement input
16 area 101 or the button area (102 and 103 combined). Additionally, the input device
17 105 allows a user to provide button input by detecting the presence of an input from
18 the user in the button area (102 and 103 combined) in combination with the
19 depression of a switch 111 located under the touchpad 104.

20 **[0030]** An additional feature of some embodiments of the disclosed input
21 device 105 is the ability to provide graduated button input. In such embodiments,
22 the switch 111 is configured to detect thresholds of pressure applied by an input to
23 the button area (102 and 103 combined). The detection of thresholds of pressure
24 applied is accomplished by determining how far down the switch 111 is depressed.
25 In an example embodiment, the input device 105 could be used to provide for more
26 precise interaction with multimedia components of a communication device (input
27 receiving device 501 of Figure 5) to which an input device 105 is attached. For
28 instance, graduated button input could provide variable fast-forward or reverse for a
29 multimedia component. Alternatively, such graduated button input may be used in
30 a variety of different application components, such as medical testing components
31 as well as video games.

1 **[0031]** A further additional feature in some embodiments of the disclosed input
2 device 105 is customization of the movement input area 101 and the button area
3 (102 and 103 combined) of the touchpad 104. In such embodiments, a user can
4 designate which regions of the touchpad 104 correspond to the movement input
5 area 101 and the button area (102 and 103 combined). Further, in those
6 embodiments with a left button area 103 and right button area 102, a user may
7 specify which regions correspond to the left button area 103 and the right button
8 area 102. In yet further embodiments, the user may specify any number of button
9 areas by specifying which regions correspond to those button areas. By way of
10 example, a user in such an embodiment could specify a first, second, third, and
11 fourth button area. The user may then specify a desired input message to be
12 communicated to an input receiving device 501 (of Figure 5) to which the input
13 device 105 is connected when an input is supplied to a defined button area.

14 **[0032]** User designation may be accomplished in a variety of different ways. In
15 one embodiment, a user may designate regions of the touchpad 104 in a user
16 configuration component of a notebook computer (input receiving device 501 of
17 Figure 5) to which the input device 105 is attached. The designation of regions
18 comprises identifying a bounded region that encompasses an area of the touchpad
19 104. The bounded region is expressed in terms of coordinates within the touchpad
20 104. For example, the designation of a movement input area 101 and a button area
21 (102 and 103 combined) for a touchpad 104 of the dimensions 5 centimeters by 5
22 centimeters square with the x and y axes intersecting and equaling 0 at the bottom
23 left corner of the touchpad 104 could be: movement input area 101 is the area
24 bounded by the region defined by the coordinates $(x=0, 5 \Rightarrow y \geq 3)$ and $(x=5,$
25 $5 \Rightarrow y \geq 3)$; the button area (102 and 103 combined) is the area bounded by the
26 region defined by the coordinates $(x=0, y \leq 3)$ and $(x=5, y \leq 3)$. The bounded area
27 is not required to be composed of four sides.

28 **[0033]** The user designations may be stored as data in the hardware of the
29 notebook computer. In such an embodiment, detection of an input in a region of
30 the touchpad 104 may be accomplished by the input device 105 sending a
31 communication to the notebook computer indicating that a user input is present in

1 the bottom left corner of the touchpad 104, e.g. coordinates (x=1, y=1).
2 Accordingly, the notebook computer may access the stored user designations to
3 determine that the communication indicates that the input is located in the button
4 area (102 and 103 combined) of the touchpad 104.

5 **[0034]** In an alternative embodiment, the data representing the user
6 designations may be stored in hardware of the input device 105. In such an
7 embodiment, the determination of where an input is present may be performed by
8 the input device 105, and a communication indicating the region in which the input
9 is located is communicated to the notebook computer. Alternatively, the input
10 device 105 may transmit the data of the user designations of the regions of the
11 touchpad 104 and the location of the input detected to the notebook computer, and
12 the notebook computer may determine the location of the input based on the
13 communications.

14 **[0035]** Another further feature of some embodiments of the disclosed input
15 device 105 is a touch sensitive input area of the touchpad 104. The touch sensitive
16 input area may be located within the movement input area 101 or the button area
17 (102 and 103 combined). The touch sensitive input area may be configured to turn
18 the input device 105 on or off upon the detection of the presence of an input. In
19 other embodiments, the touch sensitive input area may be configured to turn a
20 wireless radio on or off upon the detection of the presence of an input in the touch
21 sensitive area. In some embodiments, the touch sensitive input area is
22 customizable to provide customized input to the input receiving device 501 (of
23 Figure 5) to which the input device 105 is attached. By way of example, the touch
24 sensitive input area may be customized to mute or turn on a sound device of an
25 input receiving device 501 (of Figure 5) upon the application of an input by a user.

26 **[0036]** In further embodiments, the touch sensitive input area is customizable to
27 provide multiple touch sensitive input regions within the touch sensitive input area
28 each with their own customizable input to be provided to an input receiving device
29 501 (of Figure 5). Similar to the disclosed features of movement input area 101
30 and button area (102 and 103 combined) customization, touch sensitive input area
31 customization may be accomplished in a variety of different ways. Additionally,

1 the region corresponding to the touch sensitive input area may be visually indicated
2 as disclosed in the discussion of Figure 1 above.

3 **[0037]** Continuing to refer to Figure 1. The illustrated embodiment of Figure 1
4 includes a controller integrated circuit 110. The controller integrated circuit 110
5 may be configured to coordinate input detection by collecting signals from the
6 touchpad circuit board 108 and the switch 111. Additionally, the controller
7 integrated circuit 110 may be configured to send communications to an input
8 receiving device 501 (of Figure 5) to which the input device 105 is attached.
9 Further, in some embodiments, the controller integrated circuit device 110 may
10 control the illumination of the cosmetic cover 106 as disclosed above. The
11 controller integrated circuit 110 may also store data representing customization of
12 input areas as previously discussed. In such an embodiment, the controller
13 integrated circuit 110 may also combine the data representing customization of
14 input areas with signals received from the touchpad 104 to determine the input
15 desired by a user. In other embodiments, the controller integrated circuit 110
16 communicates the data representing the customization of input areas in
17 combination with signals received from the touchpad 104 to an input receiving
18 device 501 (of Figure 5) to which the input device 105 is connected, and the input
19 receiving device 501 (of Figure 5) determines the desired input. However, in some
20 embodiments, the input device 105 may not have the device or devices that
21 coordinate input detection or send communications to an input receiving device
22 501.

23 **[0038]** Referring now to Figure 6. Figure 6 is a flowchart detailing a method of
24 detecting an input, according to one embodiment. In step 601, the presence of an
25 input at a location in the button area of a touchpad 104 is detected. In step 602, an
26 input pressing down on the button area of the touchpad is detected. In step 603, a
27 haptic response is generated and provided directly or indirectly to the person
28 applying the input by means of a haptic response component.

29 **[0039]** In one embodiment, the disclosed input device provides an aesthetically
30 pleasing all-in-one design while maintaining the ability to provide a haptic response
31 to a user. Additionally, some embodiments of the disclosed input device provide a

1 maximized area over which movement of an input may be detected by detecting
2 movement of an input in both the movement input area as well as the button area.
3 The disclosed input device in some embodiments may also provide graduated
4 button input. Features of some other embodiments include customization of the
5 input areas of the input device, and visual indication of the regions comprising
6 input areas.

7 **[0040]** The foregoing description of embodiments of the invention has been
8 presented for purposes of illustration and description. It is not intended to be
9 exhaustive or to limit the invention to the precise form disclosed, and modifications
10 and variations are possible in light of the above teachings or may be acquired from
11 practice of the invention. The embodiments were chosen and described in order to
12 explain the principals of the invention and its practical application to enable one
13 skilled in the art to utilize the invention in various embodiments and with various
14 modifications as are suited to the particular use contemplated.

1

WHAT IS CLAIMED IS:

1. An input device, comprising:
 - a touchpad housing comprised of a touchpad depression area;
 - a touchpad attached to the touchpad housing, comprised of a movement input area, and a button area, wherein the touchpad is configured to detect a presence of an input at a location on the touchpad;
 - a switch located below the button area of the touchpad; and
 - a haptic response component for generating a haptic response in response to application of a pressure from the input to the button area.
2. The input device of claim 1, wherein the switch and the haptic response component are the same.
3. The input device of claim 1, wherein the haptic response component is a spring finger.
4. The input device of claim 1, wherein the touchpad and the haptic response component are the same.
5. The input device of claim 1, wherein regions of the touchpad comprising the movement input area and the button area are customizable.
6. The input device of claim 1, wherein the button area is comprised of a left button area and a right button area.
7. A computer notebook, comprising:
 - a chassis;
 - a screen attached to the chassis;
 - a keyboard attached to the chassis;
 - a touchpad housing comprised of a touchpad depression area;

a touchpad attached to the touchpad housing, comprised of a movement input area, and a button area, wherein the touchpad is configured to detect a presence of an input at a location on the touchpad;

a switch located below the button area of the touchpad; and

a haptic response component for generating a haptic response in response to application of a pressure from the input to the button area.

8. A keyed input device, comprising:

a keyed input housing;

a keyboard attached to the keyed input housing; and

a touchpad housing attached to the keyed input housing comprised of a touchpad depression area;

a touchpad attached to the touchpad housing, comprised of a movement input area, and a button area, wherein the touchpad is configured to detect a presence of an input at a location on the touchpad;

a switch located below the button area of the touchpad; and

a haptic response component for generating a haptic response in response to application of a pressure from the input to the button area.

9. A method of detecting input through a touchpad, comprising the steps of:

detecting a presence of an input;

detecting a pressure of the input; and

generating a haptic response to the pressure.

10. An input device comprising:

means for detecting a presence of an input;

means for detecting a pressure of the input; and

means for generating a haptic response to the pressure.