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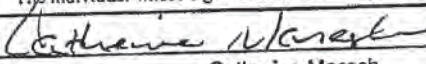
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2	Application Data Sheet	ApplicationDataSheet821825.pdf	383834 6cf6c798e5e594e70bd0966615ea30e90f3c	no	5
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3	Specification	Specification821825.pdf	2213601 9f10181c6726608748c05015ac78e40733c2d4	no	46
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4	Drawings-only black and white line drawings	Drawings821825.pdf	313435 b3d2b41115705cfb233ae12c8fe807af044e24	no	11
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5	Oath or Declaration filed	Declaration821825.pdf	203581 8946f3830afe445a59256b32c9da04f8d170b706	no	4
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6	Assignee showing of ownership per 37 CFR 3.73(b).	StatementUnder37CFR373BWithAssignment821825.pdf	266046 4884bb706a533162f0bf14b5cc097117408eameb	no	6
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## **METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS**

### **CROSS-REFERENCES TO RELATED APPLICATION**

**[0001]** This application is a continuation of co-pending U.S. Patent Application No. 12/894,489, entitled “Method and Apparatus for Providing Tactile Sensations,” which is a continuation of U.S. Patent Application No. 11/693,117, filed March 29, 2007, now U.S. Patent No. 7,808,488, issued October 5, 2010, entitled “Method and Apparatus for Providing Tactile Sensations,” which is a continuation of U.S. Patent Application No. 10/285,450 filed November 1, 2002, now U.S. Patent No. 7,336,260, issued February 26, 2008, entitled “Method and Apparatus for Providing Tactile Sensations”, which claims priority to U.S. Provisional Application No. 60/335,493, filed November 1, 2001, and U.S. Provisional Application No. 60/399,883, filed July 31, 2002, the entirety of all of which are hereby incorporated by reference.

### **FIELD OF THE INVENTION**

**[0002]** The present invention relates to methods and apparatus for providing tactile sensations.

### **BACKGROUND**

**[0003]** Conventional electronic devices, such as mobile telephones and Personal Digital Assistants (PDAs), include visual displays. A user of such devices interacts with the visual display using any one of a number of input devices. Examples of such input devices include computer mice, joysticks, trackballs, steering wheels, stylus, tablets, pressure-sensitive spheres, scroll wheels, keyboards, and keypads. The user provides instructions, responses, and other input to the device using such input devices.

**[0004]** In conventional mobile telephones and PDAs, confirmation of the input provided by the user is primarily limited to visual or audible confirmation. In some such devices, physical feedback is provided by conventional mechanical switches in the form of the conventional mechanical feedback of switches, for example the switch closure force-displacement profile. Typically, in such devices, the mechanical feedback provided by each button is identical. In addition, in such conventional devices, for those buttons that serve multiple functions, the mechanical feedback generally remains the same regardless of the current function of the button.

**[0005]** In addition to providing extremely limited and rudimentary mechanical confirmation of button selection, conventional buttons as used, for example, in keypads for mobile telephones and PDAs, provide simple passive touch cues regarding the alignment of keys. Such cues include raised bumps on the center key of a telephone keypad or on the "F" and "G" keys of a keyboard that assist a user in orienting to the pattern of keys in the keypad and keyboard. Again, these physical queues are very limited, and users typically need to view a keypad or keypad for visual confirmation that the correct instructions or information is being entered.

**[0006]** When a flat surface interface device is used, such as a touchpad for a computer or PDA, these simple mechanical cues are unavailable to the user. Often, touchpads are combined with flat-panel display screens that display one or more graphically generated buttons or softkeys. Normally, the softkeys are visible through the touchpad. A user's contact with the touchpad in an area defined by a softkey provides the electronic device having the touchpad with the input associated with that softkey.

[0007] The use of electronic devices using such conventional mechanical buttons and touchpad arrangements are particularly difficult to use in distracting environments or when the user is attempting to perform another task simultaneously with using the electronic device. For example, if the other task involves operating a motor vehicle or heavy machinery, it may be difficult or impossible for a user to simultaneously use such an electronic device because such devices typically require the user to look at the device, at least briefly, when interacting with the device. In addition, electronic devices relying on softkeys can be difficult to read in bright light environments such as in bright sunlight and can contain very small fonts and graphics that are difficult to read and select.

[0008] Some conventional touchpads include vibratory feedback to the user of the touchpad. U.S. Patent No. 5,977,867 is one example. Such conventional systems and methods are limited, though. They lack a full range of functionality assistance to a user interacting with an electronic device. Moreover, such systems and methods still require considerable visual attention from the user.

### SUMMARY

[0009] The present invention comprises products and processes for providing tactile sensations to input devices or electronic devices. Input devices include mechanical input devices (such as, for example, mechanical switches) and non-mechanical input devices (such as, for example, touchpads). Tactile feedback is provided by using an actuator or other means in communication with the input device or electronic device. A controller may be employed to receive signals from the input devices and to control the actuator. Tactile feedback to an input device or electronic device may be provided in response to one or more events or situations. Such an event or situation may be any one

designated. Examples of such events and situations include the level of pressure placed on an input device; the availability or lack of availability of a function associated with an input device; and the function, menu, or mode of operation associated with an input device's activation. A variety of feedback types and combinations may be selected. Mobile telephones and PDAs benefit from employing such products and processes, but other devices benefit as well. The advantages offered by the various embodiments of the present invention may be understood by examining this specification.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

**[0010]** Figure 1 is a perspective view of an embodiment of an apparatus according to the present invention;

**[0011]** Figure 2 is a plan view of another embodiment of an apparatus according to the present invention;

**[0012]** Figure 3 is a plan view of an electronic device including an embodiment of the present invention;

**[0013]** Figure 4 is a schematic representations through line 4-4 of Figure 3;

**[0014]** Figure 5 is a plan view of another electronic device including another embodiment of the present invention;

**[0015]** Figure 6 is a schematic representations through line 6-6 of Figure 5;

**[0016]** Figure 7 is a block diagram illustrating an embodiment of the apparatus in an electronic device;

**[0017]** Figure 8 is a flow chart illustrating a method according to the present invention;



[0018] Figure 9 is a table illustrating a first set of data to be used in one embodiment of the present invention; and

[0019] Figure 10 is a table illustrating a second set of data to be used in another embodiment of the present invention.

### **DETAILED DESCRIPTION**

[0020] The present invention includes methods and systems for providing tactile sensations. One embodiment includes methods and systems for providing tactile sensations to input devices, both mechanical and non-mechanical (for example soft-keys that are computer generated and displayed on a screen). Embodiments of the present invention can be utilized in wide variety of electronic devices including telephones, mobile telephones, remote controls, gamepads, joystick handles, automotive controls (radios, Compact Disc (CD) players, automobile functions, etc.), consumer electronics devices, Personal Digital Assistants (PDAs), personal computers, laptop computers, portable gaming devices, pagers, I-pagers, audio equipment, televisions, security or alarm systems, Automated Teller Machines (ATM), calculators, home appliances, and white goods.

[0021] Figure 1 shows one embodiment of the present invention. The apparatus 1 shown in Figure 1 includes an input device 2 having multiple positions for communicating a plurality of input signals. The input device 2 can be any device capable of transmitting an input signal. In the embodiment shown, the input device 2 is a rocker-type switch. The rocker switch 2 shown can pivot or rock between two positions in which the rocker switch contacts and activates one of two rubber switches 3 containing conductive pads. The use of rubber switches 3 provides the advantage of allowing the

user to still feel a substantial vibration or force through the input device 2 when the user had fully depressed the switch. Suitable rubber switches are available and known in the art. In other embodiments, the input device may include an analog switch, a force sending resistor, a strain gauge based sensor, a capacitive touch switch, a scroll wheel, a mini-joystick, a touchpad, a touch screen, a 3-way switch, a 4-way switch, a 5-way switch, or other input device. Each position of the input device 2 corresponds to one of the input signals.

**[0022]** The input device 2 and rubber switches 3 are mounted on a Printed Circuit Board (PCB) 4 in the embodiment shown to facilitate electrical communication between the input device 2 and an electronic device (not shown). The PCB 4 can be custom shaped according to the device into which the apparatus 1 is placed. The PCB 4 also provides for secure mounting within the device by including, for example, a plurality of holes 5 to accept fasteners for securing to the electronic device. In another embodiment, the input device 2 can be directly connected or mounted in the electronic device.

**[0023]** The apparatus 1 shown in Figure 1 also includes a vibrotactile actuator 6 in communication with the input device 2. Preferably, the actuator 6 is configured to output a plurality of distinct tactile feedback sensations to the input device 2. Suitable tactile sensations include vibrations, for example, jolts and textures, and a plurality of distinct tactile sensations can be created by varying the frequency, amplitude and waveform output by the actuator 6. The actuator 6 is selected to deliver the desired tactile sensations to the input device 2. The actuator 6 shown in Figure 1 is a voice coil actuator. Other suitable actuators include, for example, piezo-electric actuators, eccentric mass actuators, moving magnet actuators, and friction brakes in contact with metal shafts. In

addition, the actuator can include a flexure, for example an arrangement of flexible material, coupled to the rotating shaft of a DC motor or step motor to transform the rotation of the motor shaft into vibrations or other haptic sensations. Various arrangements of a flexure coupled to a motor may be used as an actuator. For example, U.S. Patent Application No. 09/585,741, filed June 2, 2000, illustrates suitable arrangements of flexures and motors for use as an actuator in embodiments of the present invention. The entire disclosure of the application No. 09/585,741 is incorporated herein by reference. Tactile sensations can also be delivered to the input device 2 from a speaker included with an electronic device into which the apparatus is placed, for example the speaker in a mobile telephone or in a personal computer.

**[0024]** Although the embodiment shown in Fig. 1 includes one input device 2 and one actuator 6, other embodiments include a plurality of input devices, all in communication with a single actuator. Alternatively, an embodiment can include a plurality of actuators each in communication with at least one input device. Various arrangements of actuators in combination with input devices are suitable for use in the present invention. For example, U.S. Patent Application No. 09/263,263, filed July 26, 2001, published on March 21, 2002, as U.S. Patent Pub. No. US2002/0033795 illustrates actuators in combination with input devices that may be used in embodiments of the present invention. The entire disclosure of application No. 09/263,263, Pub. No. 2002/0033795 is incorporated herein by reference.

**[0025]** As mentioned, the actuator 6 is in communication with the input device 2. In the embodiment shown in Figure 1, the actuator 6 is in communication with the input device 2 through a cantilevered beam or lever arms 7 attached to the pivoting rocker,

amplifying the effective forces of the actuator 6 felt by the user. The tactile sensations generated by the actuator 6 propagate through the lever arm 7 to the input device 2. Suitable materials for the lever arm 7 are capable of transmitting the tactile sensations and can be, for example, metal. The lever arm 7 shown includes one or more bends 8 to fit within the electronic device in which the apparatus 1 is disposed. Different shapes of bends may be used to fit within the electronic device. In another embodiment, the actuator 6 is mounted directly to the input device 2 or to any component of the input device. Alternatively, the actuator 6 is mounted to the PCB 4 to which the input device is attached, communicating tactile sensations to the input device through the PCB. In another embodiment, the actuator is an existing eccentric mass motor as is used, for example, as a vibrating ringer in a pager or mobile telephone.

[0026] The vibrotactile actuator 6 can also be mounted to a portion of the case or housing of the electronic device in which the apparatus 1 is disposed, communicating the tactile sensations to the entire electronic device. In one embodiment, two actuators can be incorporated in the case or back of an electronic device, for example the case of a mobile phone in an area that contacts the user's hand. This arrangement effectively doubles the amplitude of the tactile sensation, and the user's fingers do not tend to attenuate the tactile sensation.

[0027] The apparatus 1 also includes a controller 9 in communication with the input device 2 to receive the input signals therefrom. The controller 9 can also receive additional information from the input device 2 including the position of the input device 2 and the amount of pressure applied to the input device 2. In one embodiment, the input signal includes information related to the amount of pressure applied to the input device

2, information related to the position of the input device 2, or a combination of information about pressure and position. In addition to being in communication with the input device 2, the controller 9 is in communication with the actuator 6 to produce a tactile sensation in the actuator 6 corresponding to the input or input signal received by the controller 9 from the input device 2.

**[0028]** The controller 9 is located in a suitable location according to the needs of the device in which the apparatus 1 is placed. In one embodiment, the controller 9 is attached to the PCB 4 as shown in Figure 1. Suitable controllers, include, for example, digital logical processors capable of processing input, execute algorithms, and generate output as necessary to create the desired tactile sensations in the input device in response to the inputs received from that input device. Such controllers may include a microprocessor, an Application Specific Integrated Circuit (ASIC), and state machines. Such controllers include, or may be in communication with, media, for example computer readable media, which stores instructions that, when executed by the controller, cause the controller to perform the steps described herein as carried out, or assisted, by a controller. One embodiment of a suitable computer-readable medium includes an electronic, optical, magnetic, or other storage or transmission device capable of providing a processor, such as the processor in a web server, with computer-readable instructions. Other examples of suitable media include, but are not limited to, a floppy disk, CD-ROM, magnetic disk, memory chip, ROM, RAM, ASIC, configured processor, all optical media, all magnetic tape or other magnetic media, or any other medium from which a computer processor can read. Also, various other forms of computer-readable media may

transmit or carry instructions to a computer, including a router, private or public network, or other transmission device or channel.

**[0029]** In one embodiment, the apparatus 1 includes a dedicated controller 9 for use specifically with the apparatus 1. This embodiment is particularly well suited for applications where the apparatus 1 is retro-fitted into an existing electrical or electronic device. In another embodiment, the controller 9 is the microprocessor or Central Processing Unit (CPU) of the electronic device in which the apparatus 1 is disposed. The apparatus 1 can also include additional circuitry such as the drive circuitry (not shown) necessary to create the tactile sensations in the actuator 6 in response to input from the controller 9 and a memory medium for storing data to be accessed by the controller 9 for example a correlation between the tactile sensations to be produced in the actuator 6 and the input information or input signal received from the input device 2.

**[0030]** Figure 2 shows another embodiment of the present invention. An apparatus 60 shown in Figure 2 includes multiple input devices. These multiple input devices include twelve fixed or pre-assigned alphanumeric input buttons 10a-l, three pre-assigned function buttons 11a-c, and three assignable function buttons 12a-c. The plurality of inputs devices are arranged according to the electronic device in which the apparatus 60 is situated. In the embodiment shown, the plurality of input devices are arranged as the keys in a key pad for a telephone or mobile telephone.

**[0023]** Embodiments of the present invention include an input device having a means for determining or sensing pressure. The input device is capable of resolving multiple levels of pressure placed on the input device, and of transmitting a signal associated with the

level of pressure placed on the input device. These multiple levels of pressure may be defined by, for example, the physical location of, or distance traveled by, a switch-type input device in the x-plane when pressed by a user (higher / lower), the magnitude of pressure placed on a touchpad-type input device, or other means.

**[0031]** The buttons of Figure 2 are illustrative of such an embodiment. Each of the alphanumeric input buttons 10 shown in Figure 2 is a keypad button. Each of the buttons 10 is capable of resolving multiple levels of pressure placed on the buttons 10. For example, the button 10i (corresponding to the number 9 on the keypad) is capable of resolving five levels of pressure placed on the button 10i. In the embodiment shown, the first level is a state in which no pressure is placed on the button by a user, the second level being a first magnitude of pressure placed on the button (greater than no pressure placed by the user), the third level being a second magnitude of pressure placed on the button (where the second magnitude of pressure is different from or greater than the first magnitude), the fourth level being a third magnitude of pressure placed on the button (where the third magnitude is different from or greater than the second magnitude), and the fifth level being a fourth magnitude of pressure placed on the button (where the fourth magnitude is different from or greater than the third).

**[0032]** In button 10i, each of levels two through five is associated with a distinct input signal. When the button 10i is in its first state, then the button 10i does not transmit an input signal. When pressure is applied to the button 10i by a user that exceeds the first magnitude of pressure, the button 10i transmits a first signal to the controller 9. When greater pressure is applied to the button 10i that exceeds the second magnitude of pressure, the button 10i transmits a second signal to the controller. When still greater

pressure is applied to the button 10i that exceeds the third magnitude of pressure, the button 10i transmits a third signal to the controller. When even greater pressure is applied to the button 10i that exceeds the fourth magnitude of pressure, the button 10i transmits a fourth signal to the controller. The structural arrangement of the communication by the button 10i to the controller 6 of an input signal is further illustrated in Fig. 4, described below.

**[0033]** Each of the levels two through five of button 10i (and thus each of their associated signals) is associated with a letter, W-Z. The second level is associated with the letter W, the third level is associated with the letter X, and so on. The second level is associated with the letter W, the third level is associated with the letter X, and so on. In the embodiment shown, the key 10i has five positions corresponding to no pressure, and the letters W, X, Y, and Z. In an alternative embodiment, the key 10i has six positions corresponding to no pressure, the number "9," and the letters W, X, Y, and Z.

**[0034]** In the embodiment shown, the alphanumeric buttons 10 are all capable of resolving five levels of pressure. In alternative embodiments, the various buttons are capable of resolving differing levels of pressure. For example, in an alternative embodiment, while the button 10i is capable of resolving five levels of pressure, the button 10b (corresponding to the number 2 on the keypad) is capable of resolving four levels of pressure placed on the button 10b (the first level being no pressure placed on the button). Like button 10i, the levels resolved by button 10b in the alternative embodiment are each associated with a distinct input signal, and are each associated with a distinct letter of the alphabet, A-C.



**[0035]** The pre-assigned function buttons 11a-c of the apparatus 1 are keypad push buttons. Each of the buttons 11a-c is capable of resolving three levels of pressure placed on the buttons 11a-c no pressure, a first magnitude of pressure (greater than none), and a second magnitude of pressure (greater than the first magnitude). Examples of functions carried out by such pre-assigned function buttons 11 a-c include "Send" 11a, "Power" 11b, and "End Call" 11c.

**[0036]** In the embodiment shown, each of the pre-assigned function buttons 11 a-c is configured such that the first magnitude of pressure is an amount of pressure that signifies that a user's finger is "hovering" over, or touching with more than passing force, the button. Each is also configured such that the second magnitude of pressure is an amount of pressure that signifies that a user's finger applies when the user wishes to activate the button.

**[0037]** Thus, in the embodiment shown, when a user's finger "hovers" over the "Send" button 11c, a first signal is transmitted by the button 11c to the controller. And, when a user's finger activates the "Send" button 11c, a second signal is transmitted by the button 11c to the controller.

**[0038]** The assignable-function buttons 12a, 12b, 12c are buttons whose function depends upon the mode of operation of the device with which the apparatus 1 is associated. For example, when such an apparatus 1 is associated with a mobile telephone, such buttons 12a, 12b, 12c may be used to navigate the menus displayed to carry out various functions, such as scrolling through an address book, selecting a number to dial, editing a number, re-setting the time displayed, and similar functions.

**[0039]** In addition, the assignable-function buttons 12a-c are configured similarly to the pre-assigned buttons 11a, 11b, 11c, in that the buttons 12a, 12b are configured such that the first magnitude of pressure is an amount of pressure that signifies that a user's finger is "hovering" over, or touching with more than passing force, the button, and such that the second magnitude of pressure is an amount of pressure that signifies that a user's finger applies when the user wishes to activate the button. Preferably, the buttons 11a, 11b, 11c, 12a, 12b, 12c are configured such that they receive and analyze other data in determining whether the user is merely hovering or, instead, wishes to activate the button (such as type of, and duration of, contact with the button). Any suitable input-device may be used as an assignable-function input device. Examples of such input-devices include rocker-switches and scroll wheels.

**[0040]** In an alternative embodiment (not shown), the middle assignable-function button 12c, includes the input device of Fig. 1. It is in communication with the actuator 6 (not shown) shown in Fig. 1 as well, and operates in the manner described with reference to Fig. 1. In such an embodiment, the PCB 62 is separated at line 62a, such that the PCB4 of Fig. 1 is not in contact with PCB62.

**[0041]** Referring again to Fig. 2, although in the embodiment shown there the alphanumeric keys have four or five available states (embodying an alphanumeric-character selection), and the pre-assigned buttons 11a, 11b, 11c, and the assignable-function buttons 12a, 12b, 12c are configured to indicate hover / activation signals, in other embodiments, other configurations may be used. Moreover, although the alphanumeric keys 10 have four or five available states, thus allowing them to be associated with three or four (or more) input signals, such keys 10 may be configured to

provide input signals at, for example, only two of the states. In this way, such keys 10 may be configured to provide hover / activation signals similar to that which is provided in the pre-assigned buttons 11a, 11b, 11c, and assignable-function buttons 12a, 12b, 12c in the embodiment shown in Fig. 2.

**[0042]** Moreover, in the embodiment shown, the levels for the alphanumeric input devices 10 correspond to magnitudes of pressure, but in other embodiments the levels resolved can be type of touch, magnitude, physical position of the switch and other attributes of contact with the button, or some combination thereof. The input signals provided by such input devices may be configured accordingly.

**[0043]** In the embodiment shown in Fig. 1, the input signals that are transmitted by the input devices are transmitted to a controller 9. In the embodiment shown, the controller is in communication with storage memory (not shown). Examples of such memory includes Read Only Memory (ROM). The storage memory includes a table in which input signals are associated with various haptic feedback signals. This is explained more fully in relation to Figures 9-10.

**[0044]** The apparatus 1 shown in Fig. 2 also includes an actuator 61. The actuator 61 is shown in representative fashion in Fig. 2, and not to scale or in physical placement. An alternate actuator 61 and physical placement of the actuator 61 is shown in Fig. 4. The actuator 61 is in communication with the various input devices, and is configured to provide vibrations of varying frequencies, magnitudes, and wave-forms to the input devices. The actuator 61 is also in communication with the controller 9. Further description of embodiments of such communication and configuration is provided below.

**[0045]** In the embodiment shown, the controller 9 receives an input signal from one of the input devices. The controller 9 then analyzes the input signal received to determine a signal to transmit to the actuator 61.

**[0046]** For example, the controller 9 of Fig. 2 is configured such that when the controller 9 receives a signal associated with the second level from button 10i (the "9" key), the controller 9 sends a first control output signal to the actuator, and when the controller receives a signal associated with the third level from the button 10i, the controller sends a second control output signal to the actuator 61, and so on. The first control output signal is one that causes the actuator to provide a vibration of a certain, first frequency. The second control output signal is one that causes the actuator to provide a vibration of a certain, higher frequency, and so on. In other embodiments, the vibrations provided may be of the same frequency.

**[0047]** Fig. 3 shows another embodiment of the present invention, in the form of a mobile telephone 14 having the apparatus of Fig. 2. The controller 9, actuator 61, and the PCB 62 of the apparatus 60 of Fig. 2 are encased in a case 18 of the mobile telephone 14. The mobile telephone 14 also includes a display screen 15 capable of displaying graphic objects 16 and alpha-numeric information 17. The alpha-numeric information 17 that may be displayed includes phone numbers and lists, for example of list of entries in a phone book, that are input by the alpha-numeric input buttons 10 and accessed by the assignable function buttons 12a-12c.

**[0048]** Fig. 4 is a schematic representation through line 4-4 of Fig. 3 illustrating that the alpha-numeric input buttons or keys 10 in the mobile telephone pass through the case 18 of the mobile telephone and contact a plurality of switches 19 disposed on the

PCB 62. The switches 19 are in communication with the controller 9 (not shown).

Suitable switches 19 include any analog or digital switch, for example rubber switches, snap dome-type switches, and pressure sensitive switches. Preferably, the switches 19 are capable of producing distinct input signals to the controller. Even more preferably, the switches 19 are capable of producing such signals for two or more positions. In the embodiment shown, the keys 10 contact a plurality of digital switches, each capable of producing four distinct input signals to the controller 9 to correspond to the four levels at which pressure is applied to the buttons 10 by the user.

**[0049]** The PCB 62, on a side opposite the switches, is in communication with the actuator 61. As illustrated, the actuator 61 is a piezo-electric actuator having a metal diaphragm 20 in contact with the PCB 62 through one or more spacers 21 and a piezo ceramic element 22 in contact with the metal diaphragm 20. Alternative actuator embodiments include a flexure coupled to the shaft of a motor, secured to the PCB 62.

**[0050]** As illustrated, the keys 10 are initially in a rest position 23. A biasing member arrangement (not shown) as is available and understood in the art is used to hold the keys in the rest position 23. An object 24, for example the user's finger or a stylus, is used to select one or more of the keys 10 by applying pressure in the direction of arrow A. This pressure causes the selected key to progress through a plurality of positions. As illustrated, after leaving the rest position 23, the keys pass sequentially through a second position 25, a third position, 26, a fourth position 27, and a fifth position, 28 as greater and greater pressure is applied to the button 10. The distance of travel between each position does not have to be equal, and the amount of pressure required to move between each position can vary. In addition, for a given key, the number of positions can vary

from two (no pressure and activated) up to the number of input signals assigned to a given key. Therefore, in the embodiment shown, a key 10i is moveable from a first level (rest) 23 to a second level 25 upon the application of a sufficient amount of pressure to the input device. In the embodiment shown in Fig. 3, the amount of pressure necessary to move the key 10i from rest 23 to the second position 25 is about equal to the amount of pressure that user's finger would exert upon contact with the key without actually selecting the key.

**[0051]** Accordingly, in one method of using the embodiment shown in Fig. 3, when a user of the mobile telephone 14 shown in Fig. 3 presses the "9" key 10i using a relatively light amount of pressure, the button 10i moves from rest state 23 to its second level 25. Such movement causes the button 10i to apply pressure to switch 19a, which is received by switch 19a. The switch 19a is in communication with the controller 9. The switch 19a is configured to transmit a first signal to the controller 9 upon receiving a pressure of magnitude indicating that sufficient pressure has been placed on button 10i to move from its first level 23 to its second level 25. The controller 9 receives this first signal. The controller 9 is configured to transmit a first controller output signal to the actuator 61 upon receipt of this first signal from the switch 19a. The controller transmits the first controller output signal to the actuator 61. The actuator 61 is configured to provide a vibration of a first pre-selected frequency to the metal diaphragm 20 of a pre-selected duration upon receipt of such a first signal. In the embodiment shown, the actuator 61 provides a side-to-side vibration to the diaphragm. The diaphragm 20 thus vibrates at the pre-selected frequency, in turn causing the PCB 62 to vibrate at that same frequency, and thus in turn causing the switches 19 to vibrate at that frequency. The

switch 19a is in communication with the button 10i, thus causing the button 10i to vibrate at that frequency.

**[0052]** When the user applies further pressure to the button 10i sufficient to cause the button to move from the second level 25 to a third level 26, the button's force is applied to switch 19a. Switch 19a receives the force and is configured to transmit a second signal to the controller 9 whenever it receives force to indicate that the button 10i has moved from the second level 25 to the third level 26. The switch 19a does so, and the controller 9 receives the second signal. The controller 9 is configured to transmit a second controller output signal to the actuator 61 upon receipt of this second signal from the switch 19a. The controller 61 transmits the second controller output signal to the actuator 61. The actuator 6 is configured to provide a vibration of a second pre-selected frequency, different from the first pre-selected frequency, for a pre-determined duration to the metal diaphragm 20 upon receipt of such a second signal. In other embodiments, the first and second pre-selected frequencies are the same. As above, the actuator 61 provides a side-to-side vibration to the diaphragm, which is communicated through the PCB 62 and switches 19 to the button 10i.

**[0053]** When a user applies pressure to the button 10i, which is communicated to the switch 19a, at each level 25, 26, 27, 28, a distinct signal is transmitted by the switch 19a to the controller 9. Thus, in the embodiment shown, different signals are transmitted by the switch 19a for each pressure-applied levels 25, 26, 27, 28.

**[0054]** In the embodiment shown, a "dwell to select" function is employed. For example, when a user provides sufficient input to cause the button to move to its second level 25, the first signal is transmitted to the controller 6 continuously while the button

receives pressure to push it at or past the second level 25 but not sufficient pressure to push the button 10i to the third level 26. The controller 9 determines the length of time the button is maintained at the second level 25 by monitoring the length of time the first signal is transmitted to the controller 9. If the first signal is received for greater than a pre-determined length of time, the controller determines that the user wishes to "select" the function associated with the second level 25 by the fact that the user "dwelled" at that level for the pre-determined time. Upon so determining, the controller 9 transmits a signal to a processor (not shown) indicating that the user has selected the function associated with the second level of button 10i, in this case the selection of the letter "W." In embodiments, the controller 9, upon so determining, also transmits a signal to the actuator 61 to cause the actuator 61 to vibrate at a frequency, magnitude, and/or wave-form indicative of selection of the function.

**[0055]** In one embodiment, in addition to providing haptic feedback to the input device, the controller 9 also sends a signal to the display 17 to cause the alphanumeric character associated with the input signal to be displayed. For example, in one embodiment, upon detecting the presence of a first pressure (through receipt of a first input signal) and sufficient dwell time to indicate a selection, the controller sends a signal to the display 17 indicating that the display should display the letter "X." Upon detecting the presence of a second pressure (through receipt of a second input signal) and sufficient dwell time to indicate a selection, the controller sends a signal to the display 17 indicating that the display should display the letter "Y." Upon detecting the presence of a third pressure (through receipt of a third input signal) and sufficient dwell time to indicate a



selection, the controller sends a signal to the display 17 indicating that the display should display the letter "Z." The display 17 then displays each of these characters, X, Y, Z.

**[0056]** Various other embodiments may be employed. For example, instead of having a single actuator to provide feedback to all input devices receiving such feedback, like the embodiments shown in Figs. 2-3, other embodiments have two or more actuators. These two or more actuators may be in communication with all or part of the input devices that provide tactile feedback. The two actuators may each provide significantly different types of feedback to the same set of input devices, or each may be in communication with a different group of input devices to provide the same or different types of feedback. As another example, the actuator and input devices may be configured to provide vibration to only the button that is receiving pressure from the user, or they may be configured to provide vibration to all buttons or at least more buttons than the one(s) receiving pressure from the user.

**[0057]** Moreover, although the actuator 61 is shown as disposed below the PCB 62 in Fig. 4, in other embodiments the actuator 61 may be disposed at other locations within the device having such apparatus, whether the device is a mobile telephone, PDA, or other device. Preferably, the actuator is disposed within the housing of the device. Preferably, it is in communication with the PCB 62, but is placed anywhere in communication with the PCB 62 as the size and space restrictions of the application will allow. In other embodiments, the actuator 61 is located outside the housing of the device (such as beside it). In still other embodiments, the actuator 61 is in communication with the input devices other than through the PCB 62.

**[0058]** In the embodiment shown, a distinct tactile sensation is produced for each of the various levels at each of the various keys. In other embodiments, the controller 6 selects one of a pre-selected group of sensations to provide in response to the various signals received by the controller.

**[0059]** Fig. 5 shows another embodiment of the present invention. Referring to Fig. 5, a PDA 31 having an input device in the form of a pressure-sensitive touchpad 30 is shown. The PDA 31 also includes a plurality of mechanical type buttons 32. The PDA 31 also includes a display panel 33 capable of displaying computer generated graphics. Suitable display panels include flat-panel type displays including a Liquid Crystal Display (LCD), plasma displays, Thin Film Transistor (TFT) type displays or other flat displays, such as are found in laptops and color PDA's, and conventional cathode ray tube displays.

**[0060]** Fig. 6 shows a cross-sectional view of the PDA 31 of Fig. 5 along line 6-6. As is best displayed in Fig. 6, the display 33 is underneath the touchpad 30 and is in communication with the touchpad 30 to transmit tactile sensations thereto. The display 33 is also in communication with an actuator 64 to receive a tactile sensation therefrom for communication to the touchpad 30. Other arrangements of the touchpad 30, display 33 and actuator 64 are also possible including arrangements in which the actuator 64 is in direct contact with the touchpad 30. The display 33 is in communication with the touchpad 30 through two spacers 34. Suitable spacers are constructed of a material that can transmit the tactile sensations between the display 33 and the touchpad 30. In other embodiments, the touchpad 30 and display 33 are in direct physical contact, and the touchpad 30 and display are not in communication. The tactile sensations produced in the

touchpad 30 are transmitted to the object 24 when the object 24 is brought into contact with a surface 35 of the touchpad 30.

**[0061]** Referring again to Fig. 5, the display 33 displays a plurality of software-generated buttons or keys, called softkeys 36a-i. The softkeys 36a-i provide a graphical user interface for the PDA 31 and are arranged in a desired pattern or grid. Each softkey 36 occupies a distinct location on the display panel. As illustrated, the PDA 31 can function as a mobile telephone, and the softkeys 36 are arranged as a telephone keypad to provide the same functionality as the mechanical keys on a conventional telephone keypad. The display 33 of the PDA 31 also includes additional graphical outputs 37 and areas 38 without graphical output. The displayed softkeys 36 are viewable through the touchpad 30 and represent corresponding unique positions on the touchpad 30.

**[0062]** An object 24, for example a human finger, selects a desired softkey 36a-i by contacting the touchpad 30 at the appropriate location. A controller (not shown) is in communication with the touchpad 30. The controller of this embodiment is similar in structure and functionality to the controller described in relation to the embodiment of Fig. 3. The controller is capable of determining the location on the display screen 33 that is touched by the object 24, and the softkey 36 corresponding to the touched location. Based upon this information, the controller causes the actuator 64 to provide a corresponding tactile sensation. The actuator 64 can cause vibrations in the touchpad 35 in a direction parallel to the surface 35 of the touch pad or perpendicular to the surface 35 of the touchpad 30. The controller also determines when an input is ambiguous, such as when two or more softkeys are simultaneously selected or when an area of the display containing no graphics 38 is touched, and causes the actuator to output an appropriate

tactile sensation. Preferably, the same controller that controls the displayed softkeys 36 also controls the tactile feedback sensations produced by the actuator 64.

**[0063]** Certain softkeys 36b-i represent multiple positions or multiple inputs, each input or position corresponding to a distinct amount of pressure applied to the softkey 36b-i. This distinct amount of pressure is detected by the controller in communication with the touchpad 30. Alternatively, the apparatus can include a separate pressure calculator to measure the amount of pressure applied to the touchpad 30. In the embodiment shown, the amount of pressure applied to the touchpad 30 is calculated by the controller based upon the amount of area of the object 24 used to select the softkey that is in contact with the surface 35 of the touchpad 30.

**[0064]** The amount of pressure applied to the input device or to the softkey 36a-i on the touchpad can be determined by reading or determining the size or area of the contact patch created by the object 24, such as the user's finger, on the input device or softkey 36a-i. In addition to reading the current size of the contact patch, the rate of change of the contact patch can also be determined, using dynamic thresholds and to look at how fast the user's pressure is changing. If the contact patch area changes at a sufficiently large rate, the controller can determine that the corresponding input device or softkey 36a-i is being selected.

**[0065]** The functionality of the softkeys shown in Fig. 5 is similar to the mechanical key counter parts described in relation to Figs. 2 and 3. Therefore, the pressure level of a selected softkey may be moveable from a first position to a second position upon the application of a sufficient amount of pressure. The amount of pressure necessary to move the softkey 36a to the second position (the first position being at rest

or no contact) input device to the first position is about equal to the amount of pressure that user's finger would exert upon contact with the touchpad surface and sliding lightly along the surface. In this embodiment, the controller is configured to cause the actuator to produce a first tactile sensation when the softkey 36a is in the second position or when the applied pressure is less than the amount of pressure necessary to indicate that the softkey has been selected, that is the third position. The controller would then cause the actuator 64 to produce a second tactile sensation upon receipt of the input signal associated with the third position or upon detection of a sufficient amount of pressure applied to the softkey 36a. The softkey 36i has five positions associated with four distinct applied pressures and no pressure at the softkey 36i, and corresponding to the input signals for the letters W, X, Y, and Z. A dwell to select feature can be used to determine the desired position and associated input signal.

**[0066]** This functionality facilitates a user moving an object over the various softkeys displayed on the input device and receiving a specific frequency or tactile sensation to signal that a particular softkey has been touched. As the object 24 contacts other softkeys in the display matrix, additional distinct tactile sensations unique to these other softkeys are produced. With continued use, the user can quickly become accustomed to the various distinct tactile sensations and the associations between sensations and specific softkeys, permitting identification and selection of softkeys or buttons by touch alone. In fact, distinct tactile sensations can be used with the same button regardless of the electronic device, creating a universal tactile sensation library similar to for example, a busy signal providing a universal auditory signal that a telephone number is unavailable regardless of the type of telephone equipment used. For

example, a distinct tactile sensation can be played when the object is in contact with the "5" key, providing a "home" key indication. In addition, keys located on the center axis can have a single "pop" while keys in the columns to the left and right of the center axis have two "pops", providing an indication of the general location of the object 24 in a keypad matrix.

[0067] In another example, if the user is moving the object 24 over the "9" key, a relatively high frequency vibration can be output on all the keys. When the pressure associated with the object is detected at the "6" key, a lower frequency vibration can be output, allowing the user to determine which key is presently in contact with the object through the sense of touch. Since it is unlikely that a user would press or contact more than one softkey simultaneously, a single vibrotactile actuator outputting the same sensation to all of the buttons simultaneously can be used. When the user applies increased pressure to a softkey with the object 24 and that pressure is greater than a predetermined threshold pressure level, the function associated with that softkey is activated.

[0068] Fig. 7 is a block level diagram illustrating a representative embodiment of the present invention. The various components communicate across a common communication bus 39. The input devices 40 produce input signals in accordance with the present invention, and the input signals are communicated to the controller 41 across the communication bus 39. The controller 41 can also receive pressure or position information regarding the input devices associated with the received input signal. Based upon the received input signal, pressure and position data, the controller accesses a memory 42 to obtain the necessary data regarding the functionality and tactile feedback

associated with the received input signal. In addition, the controller 41 can update data stored in the memory as for example when the input signal relates to changing the functionality or input options associated with the input device that produced the input signal. Based upon the received functionality, the controller delivers a function signal to the electronic device 43 to which the apparatus is connected. In addition, the controller 41 modifies the output on the display 44 in particular where the display is part of the input device, such as when a touchpad is used. Alternatively, the electronic device controls and updates the display. In addition, the controller can be the CPU associated with the electronic device, and the memory can be the memory associated with the electronic device. The arrangement of the controller, memory and display depends upon whether or not the apparatus is constructed as a standalone device that can be retrofitted into an existing electronic device or is incorporated into the electronic device itself. The controller uses the tactile feedback information received from the memory to provide the necessary input to control circuitry 45 to drive the actuator 46 to produce the desired tactile sensation in the appropriate input device.

**[0069]** Referring to Fig. 8, a flow chart illustrating a method of producing a tactile feedback sensation in an input device according to the present invention is illustrated. A controller monitors an input device in an apparatus 47. When a plurality of input devices are included in the apparatus, the controller can either monitor each input device sequentially or in parallel. Although illustrated as a single pass function, monitoring of the input devices is preferably handled as a continuous loop function.

**[0070]** The input device, in response to user input, provides one or more input signals, position data, and pressure data to the controller. As the controller monitors the

input device, it first detects whether or not an input signal is being generated by the input device 48. If an input signal is being generated, the controller obtains the input signal 49 associated with the input device. The controller then detects if the same input device is generating any position data 50. If position data is being generated, the controller obtains the position data 51 associated with the input device. The controller also detects if the same input device is generating any pressure data 52. If pressure data is being generated, the controller obtains the pressure data 53 associated with the input device. The controller may detect and obtain the three types of data in any order. Preferably, the controller, while obtaining the data, maintains an association among the input device, the input signal, the pressure data, and the positions data. In some embodiments, the input signal includes pressure data, or data from which the pressure applied to the input device may be calculated, position data, or a combination of pressure and position data.

**[0071]** Having obtained the input data from the input device, or from a plurality of input devices, the controller then accesses a memory device 54 in which is stored at least one database containing information necessary to produce the desired function in the electronic device and the predetermined tactile sensation in an input device, and accesses this information 55. In one embodiment, this information is in the form of associations among the detected input data, the functions of the electronic device or apparatus, and the tactile sensations. An exemplars group of associations is represented in tabular form in Fig. 9.

**[0072]** As is shown in the table, for any given input device, a plurality of combinations of input signals, position data, and pressure data is possible, and each combination relates to a specified function of either the electronic device or a distinct



tactile sensation. These combinations vary depending on the type of input device assigned to each input signal and the current functionality of that input device. The controller, using the data obtained from monitoring the input device, reads the table and obtains the associated function and tactile feedback information.

**[0073]** Referring to Fig. 9, in one embodiment, a controller monitors input device number 5. On subsequent monitoring passes, the controller does not detect either an input signal or position data, but detects a distinct pressure, Pressure 1. Based upon the information in the table associated with Pressure 1, the controller obtains the associated function information for selecting the number "2", and information for distinct tactile Sensation 13. The controller delivers the function information to the electronic device 70 which uses that information to display the number "2" or to indicate that the number "2" has been selected. The controller uses the information for distinct tactile Sensation 13 to produce Sensation 13 in an input device 56, by for example, causing an actuator to cause the input device to vibrate at a frequency associated with Sensation 13.

**[0074]** On a later monitoring pass, the controller detects a pressure magnitude of pressure 3 on input device number 5. Similarly, based upon the information in the table associated with Pressure 3, the controller obtains the associated function information for selecting the letter "B" and information for distinct tactile Sensation 15. The controller delivers the function information to the electronic device which uses that information to display the letter "B" or to enter the letter "B" in a program such as a telephone keypad. Therefore, in response to the detection of at least two distinct pressures applied to the input devices, the controller has produced at least two distinct tactile sensations in the input device number 5. The controller can also detect a plurality of distinct pressures

applied to input device number 5 and can produce a plurality of distinct tactile sensations in input device 5, each tactile sensation related to one of the plurality of distinct pressures. Although illustrated for a single input device, the controller can detect two distinct pressures for a plurality of input devices and can produce at least two distinct tactile sensations in each one of these input devices. In another embodiment, the controller can detect a plurality of distinct pressures in the plurality of input devices and produce a plurality of distinct tactile sensations in the plurality of input devices. The distinct pressures can represent either discrete pressures or a range of applied pressure.

**[0075]** In another embodiment, the controller monitors input device number 3, which is capable of inputting a plurality of input signals, Inputs 2A-E, to the apparatus. Each input signal corresponds to a distinct pressure applied to input device number 3, Pressures 1-5. Each input signal and pressure corresponds to a distinct function and a distinct tactile sensation, Sensations 5-9. In one embodiment, each input signal corresponds to an alphanumeric character. In this embodiment, the controller delivers function information to the electronic device related to displaying the proper alphanumeric character on an output device associated with the electronic device. Alternatively, the controller can display the associated alphanumeric character directly on the output device.

**[0076]** Referring still to Fig. 9, in another embodiment of a method according to the present invention, the controller monitors input device number 1 and detects a first pressure being applied on a first location on input device number 1. Preferably, input device number 1 is a touchpad input device. In one embodiment, the first pressure is a discrete pressure, pressure 1. In another embodiment, the first pressure represents a range

of pressures having a value less than Pressure 1. The function associated with the first applied pressure indicates that this is the pressure range associated with a user simply searching or feeling for the location of the desired button or key. Therefore, the controller does not provide a function input to the electronic device. The controller does, however, provide a first tactile sensation, Sensation 1, to input device number 1.

**[0077]** The controller then detects an input signal, Input 1 and a pressure greater than or equal to Pressure 1 at Input 1. In response, the controller delivers a function input corresponding to "Select" to the electronic device and produces a second distinct tactile sensation, Sensation 2, in Input Device 1.

**[0078]** In another embodiment, the controller monitors Input Device 7 and detects a first pressure, Pressure 1, at a first location, Location 1 on the input device. Preferably, the input device is a touchpad input device. In response, the controller provides a first tactile sensation, Sensation 20, in Input Device 7. In addition, the controller detects a second pressure, Pressure 2, applied at a second location, Location 2, on Input Device 7. In response, the controller provides a second tactile sensation, Sensation 21 in Input Device 7. The first pressure can correspond to a first input signal, Input 7, and a first function, Function 1, and the second pressure can correspond to a second input signal, Input 8, and a second function, Function 2. The controller delivers the associated function input to the electronic device in response to each received pressure. Note that the controller may cause the actuator to include a different wave form, frequency, and/or magnitude as tactile feedback in relation to different pressures, modes, menus, and other functionality.

**[0079]** The controller can also determine if any an ambiguous input is received 71. The ambiguous input can represent a combination of input device, input signal, position data, and pressure data that is not represented the data contained in memory. Alternatively, an ambiguous input signal can represent input simultaneously from two input devices or an input from a portion of a touchpad that is not associated with an input device. In response to receiving an ambiguous input signal, the controller obtains the associated ambiguous tactile feedback information 72 and produces the associated distinct tactile sensation, Sensation 22, in one or more input devices associated with the ambiguous input. In one embodiment, when the controller detects both a first and second input, the controller determines if either one of the inputs is ambiguous. If not, then the controller produces the associated first and second tactile sensations. If either input signal is ambiguous, then the controller produces the ambiguous output tactile sensation 56 in the appropriate input device.

**[0080]** Since the function corresponding to the input signals, positions, and pressures detected by the controller may involve modification of the functions associated with a given combination, the controller can also update the database stored in memory 57. In one embodiment, the controller is monitoring Input Device 6, and detects a first pressure, Pressure 1, applied to that input device. The first pressure corresponds to one of a plurality of input signals, Input 4, corresponding to a first set of input functions, Functions 1-3. The controller obtains Function 1 and Sensation 17 information and produces the appropriate tactile sensation at Input Device 6. Function 1 can represent one set of menus from a list of menus or one operating mode out of a plurality of operating

modes. Suitable operating modes include instant messaging, electronic mail, voice mail, games, and missed phone calls.

**[0081]** Since Function 1 represents a menu or mode that may have additional sub-menus or mode functions associated with it, the controller, in response to Function 1 updates the database as illustrated in Figure 10. As the controller continues to monitor Input Device 6, it detects a second pressure 3" corresponding to one of the input signals, Input 6, which corresponds to one function in the second set of functions, Function 6. The controller also obtains the tactile sensation, Sensation 19", associated with the selected second set function and provides this tactile sensation at Input Device 6. In addition, the controller provides an associated function signal to the electronic device. Suitable second set functions include sub-menus and functions corresponding to the selected first set function. In addition, the second set functions can include a function that returns the set of functions to the first set of functions. Although the pressures and tactile sensations associated with the first and second set of functions can be the same, preferably, the first pressures and tactile sensations, Pressures 1-3 and Sensations 17-19, are distinct from the second pressures and tactile sensations, Pressures 1"-3" and Sensations 17"-19".

**[0082]** In an embodiment of the apparatus of the present invention, for example, the apparatus is incorporated into a mobile phone and includes an assignable-function input device and assignable function rocker switch input device. In a main or home screen of the mobile telephone that is displayed upon powering up the mobile telephone, the assigned function for the assignable-function input device is "PHONEBOOK" and the rocker switch has no current function assigned to it. Light searching pressure applied to the assignable input device and the rocker switch will produce first and second distinct

tactile sensations to indicate which input device is being contacted. Selecting the rocker switch will not produce any function in the mobile phone since no function is currently assigned and a function failure tactile sensation, as described herein, will be output through the rocker switch. Selecting the assignable input device will place the mobile telephone in "Phonebook" mode and a third distinct tactile sensation will be output through the assignable input device.

**[0083]** A list of phonebook entries is now displayed on the screen of the mobile telephone. The assignable input device is assigned the function "SELECT" and the rocker switch is assigned a scroll function. Light pressure on the assignable input device or the rocker switch produce a fourth and fifth distinct tactile sensations, indicating that the mobile phone and the input devices are in "Phonebook" mode. Selecting the rocker switch to either scroll up and down produces bumps or clicks associated with scrolling a list of entries in the rocker switch. Special clicks can be output for passing each alphabetical tab in the phonebook or for passing frequently called entries. In one embodiment, an analog switch is included under the rocker switch to provide an analog signal roughly in proportion to the pressure registered on the rocker switch. This allows the list that is being scrolled to be scrolled at a rate that can be controllable with the amount of pressure applied, and which is communicated to the user by corresponding increase in the rate of haptic events played on the rocker switch. Once the rocker switch has been used to highlight the desired entry, the assignable input device is pushed to select that entry and a sixth distinct tactile sensation is output through the assignable input device.

**[0084]** The assignable input device continues to be assigned the function of select and the rocker switch is still used as a scrolling device. The display of the mobile

telephone, however, display another menu list containing the functions "EDIT", "VIEW", "CALL", and "DELETE". Light pressure on assignable input device and rocker switch again produces the fourth and fifth tactile sensations, indicating that the "Phonebook" mode or function is still active. Using the rocker switch to scroll up or down through the list again produces a click in the rocker switch as each entry is passed. The magnitude of each click and the spacing between clicks can be varied to indicate that a relatively short list is being scrolled. In addition to a click, seventh, eighth, ninth and tenth distinct tactile sensations as output to the rocker switch as the switch scrolls past "EDIT", "VIEW", "CALL", and "DELETE" respectively. Scrolling is stopped on the "CALL" entry, and the assignable input device is pushed, calling the number associated with the chosen entry from the phonebook. In addition, the ninth tactile sensation is output to the assignable input device. An attempt to active one of the functions, such as "CALL", before the device is ready causes the controller to indicate that the function is available.

**[0085]** Various other functions may be initiated by using the buttons. For example, in a mobile telephone having the functionality of instant messaging, electronic mail, voice mail, games, and missed call read-out, the user may select one of these functions. In an embodiment, a distinct tactile sensation is initiated by the controller whenever the user initiates one of these functions, and the distinct tactile sensation is different for each function.

**[0086]** Regardless of the input device being monitored by the controller, upon detection of first and second input signals, first and second pressures or first and second positions and obtaining the associated first and second functions, the controller can determine if these functions are available for execution 58. Alternatively, the controller

provides the necessary function signals to the electronic device which determines the availability of those functions. If the first and second functions are available, then the controller produces the associated tactile sensations in the appropriate input devices. If one of the first or second functions are not available then the controller obtains the tactile sensation information for the tactile sensation associated with function failure 59, Sensation 23, and produces that sensation in the appropriate input device. Examples of function failure include selecting the re-dial feature on a telephone when no number is stored in the re-dial memory, attempting to access a program or menu for which the user does not have authority to access, and attempting to initiate a mobile telephone call having entered an incomplete phone number.

**[0087]** Figure 11 aids in illustrating another embodiment of the present invention.

In one embodiment of the present invention, a device provides haptic feedback while navigating a menu structure, allowing a user to navigate the menu structure more efficiently, preferably without having to refer to the visual display. In such an embodiment, an actuator generates distinct sensations that represent various sections of the menu structure, specific menu options, and events that occur while navigating the menu structure.

**[0088]** For example, in one embodiment, each of the highest level or main menu options corresponds to a distinct vibrotactile sensation that varies in pitch. As the user navigates between the main menu topics, the actuator produces a distinct number of pulses. The varying pitch combined with the alternating pulses provides feedback that identifies to the user the menu currently selected or highlighted.



**[0089]** In another embodiment, the number of occurrences of a distinct vibrotactile sensation, such as a pop, corresponds to the index number of the menu option within a list of menu options. In such an embodiment, one pop signifies the first option; two pops signifies the second option. In yet another embodiment, a distinct vibrotactile effect signifies that the user is cycling from the end of a particular menu back to the beginning ("rolling over").

**[0090]** Fig. 11 is a front view of a personal digital assistant (PDA) 100 in one such embodiment of the present invention. The PDA 100 includes a display 102, a plurality of buttons, including button 104, for executing specific functions and applications, and a 5-way directional pad (D-pad) 105 for navigation within the various interfaces displayed on the PDA 100. With the 5-way D-pad, a user clicks the directional keys to move up and down and left and right through the menu structure and clicks the center of the D-pad to select a particular option. In the embodiment shown, the active application is displaying a menu structure. The menu structure 108 includes main menu topics 110. Selection of the main menu topics results in either the display of a sub-menu or the execution of an associated function or application. In the embodiment shown, selection of the File menu option on the main menu 110 results in the display of a sub-menu 112. As with the main menu options, selection of any of the topics on the sub-menu 112 results in either the display of a secondary sub-menu or the execution of an associated function or application. For example, selection of the Send To option on sub-menu 112 results in display of secondary sub-menu 114.

**[0091]** In the embodiment shown in Figure 11, a user presses button 104 to activate an application. Within the application, the user utilizes D-pad 106 to navigate to

the main menu 108. An actuator (not shown) as described herein, such as an eccentric rotating mass or voicecoil, provides a brief, distinct haptic effect as the user highlights each of the options in the main menu 108. The effect may change in pitch or in some other manner to alert the user to the fact that the highlighted option has changed. The user may either click the center of the D-pad 106 to select an option or click the down arrow. Performing either of these actions over the File option produces sub-menu 112.

[0092] The user clicks the down arrow to move through the sub-menu 112. In the embodiment shown, when a directional arrow of the D-pad 106 is held down, the menu options in sub-menu 112 scroll at a fixed rate, and a haptic effect plays with each option that appears below the cursor. The longer the directional arrow is held down, the faster the rate of scrolling. The PDA 100 communicates the rate of scrolling by a corresponding change in the haptic effect, such as an increase in frequency. If the user clicks the right arrow when the cursor highlights the Send To option, the secondary sub-menu 114 is displayed. Navigation through the secondary sub-menu 114 occurs in a manner similar to that which occurs in sub-menu 112. To select an option within the secondary sub-menu 114, the user clicks the center of the D-pad 106. Clicking the center of the D-pad 106 triggers the playing of yet another distinct haptic effect. In addition, the D-pad switch 106, either a 5-way or a 4-way, can provide haptic effects indicating the direction that the switch was being pressed.

[0093] The embodiment shown in Figure 11 is applicable to a variety of applications, particularly to applications that display lists. For example, in one embodiment, an address book containing a list of names is displayed on the PDA 100. In such an embodiment, the actuator plays an effect as the user scrolls through the list.

Further, the actuator plays a distinct haptic effect as the user navigates from names starting with one letter, for example A, to the next letter, B. Such an embodiment may also include a distinct effect corresponding to names that the user has previously identified as favorites in the address book.

**[0094]** Another embodiment of the present invention provides the user with distinct haptic effects corresponding to the operational mode of an electronic device. For example, in an embodiment utilizing a PDA, such as PDA 31 in Fig. 5, a user may activate one of many modes, including, for example, the phone interface shown in Fig. 5, the application interface shown in Fig. 11, an address book, email, or other modes. Referring to Fig. 5, in one such embodiment, the user clicks a button 32 to activate the phone application. When the user clicks the button, the PDA 31 displays a phone interface 38. While the PDA 31 is in phone mode, the actuator provides a persistent haptic effect indicating to the user that the phone mode is active. In this way, the user is able to determine the mode of the PDA 31 without visually referring to it.

**[0095]** Another embodiment of the present invention provides the user with distinct haptic effects for modes within a cell phone or other electronic device. Referring to Fig. 3, users of cell phones, such as cell phone 14, often store a list of number that are frequently dialed in a memory associated with one or a combination of number keys 10. In such an embodiment, the user may click a function key before clicking the number key 10, providing a signal to the phone 31 that the user will specify a number to dial by clicking a number key combination. In one embodiment of the present invention, when the user clicks the function button, the actuator provides a persistent haptic effect, indicating to the user that the cell phone is in the rapid-dialing mode. The haptic effect

alerts the user to the fact that when the user selects a number-key combination, the cell phone will dial the phone number associated with the number-key combination in memory. By providing a haptic effect identifying the mode that the cell phone 31 is in, the embodiment minimizes or eliminates the user's need to refer to the cell phone 31 visually.

**[0096]** In another embodiment of the present invention, an actuator provides feedback when an option or function is unavailable (referred to herein as "negative feedback"). In such an embodiment implemented in a cell phone, such as cell phone 31 shown in Fig. 3, the user is able to place calls. The user dials a combination of number keys 10 and then presses the send key 11 to execute the phone call. In an embodiment utilizing negative feedback, if the user enters an invalid phone number, for example, a phone number including only 6 digits, the cell phone provides negative feedback, indicating that the send function is not available. The negative feedback may, for example, comprise a very low frequency buzz. In another embodiment, the actuator provides negative feedback to the user if the user clicks a redial button (not shown) without having previously dialed a number.

**[0097]** Other embodiments and uses of the present invention will be apparent to those skilled in the art from consideration of this application and practice of the invention disclosed herein. The present description and examples should be considered exemplary only, with the true scope and spirit of the invention being indicated by the following claims. As will be understood by those of ordinary skill in the art, variations and modifications of each of the disclosed embodiments, including combinations thereof, can be made within the scope of this invention as defined by the following claims.

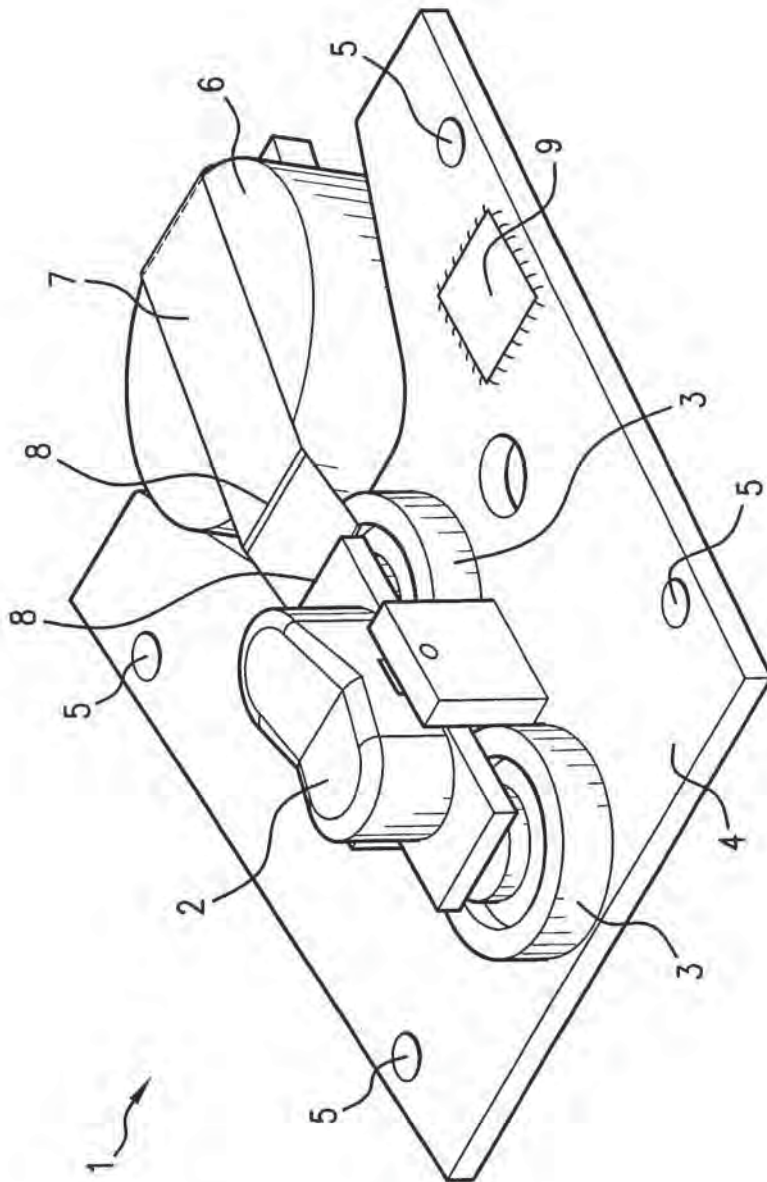


FIG.1

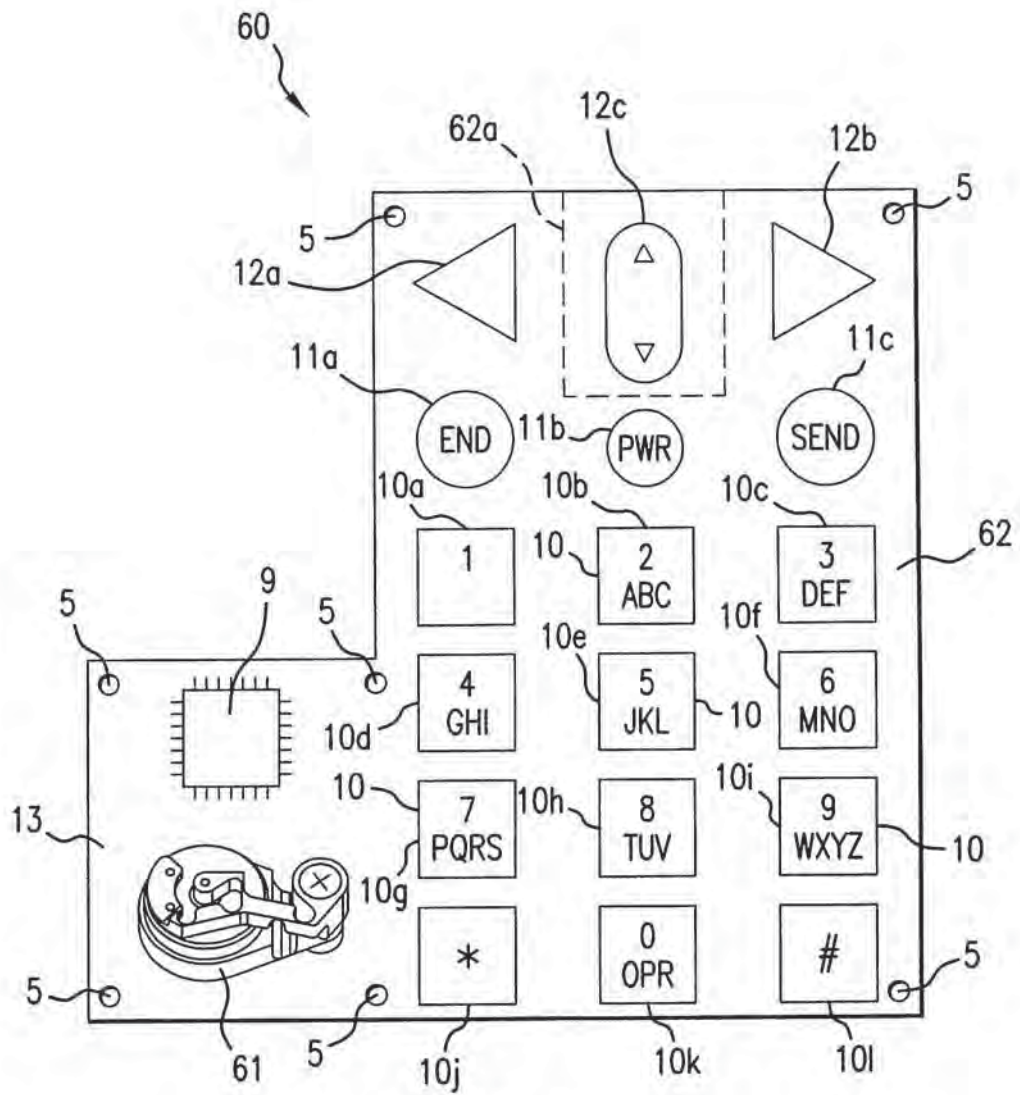


FIG.2

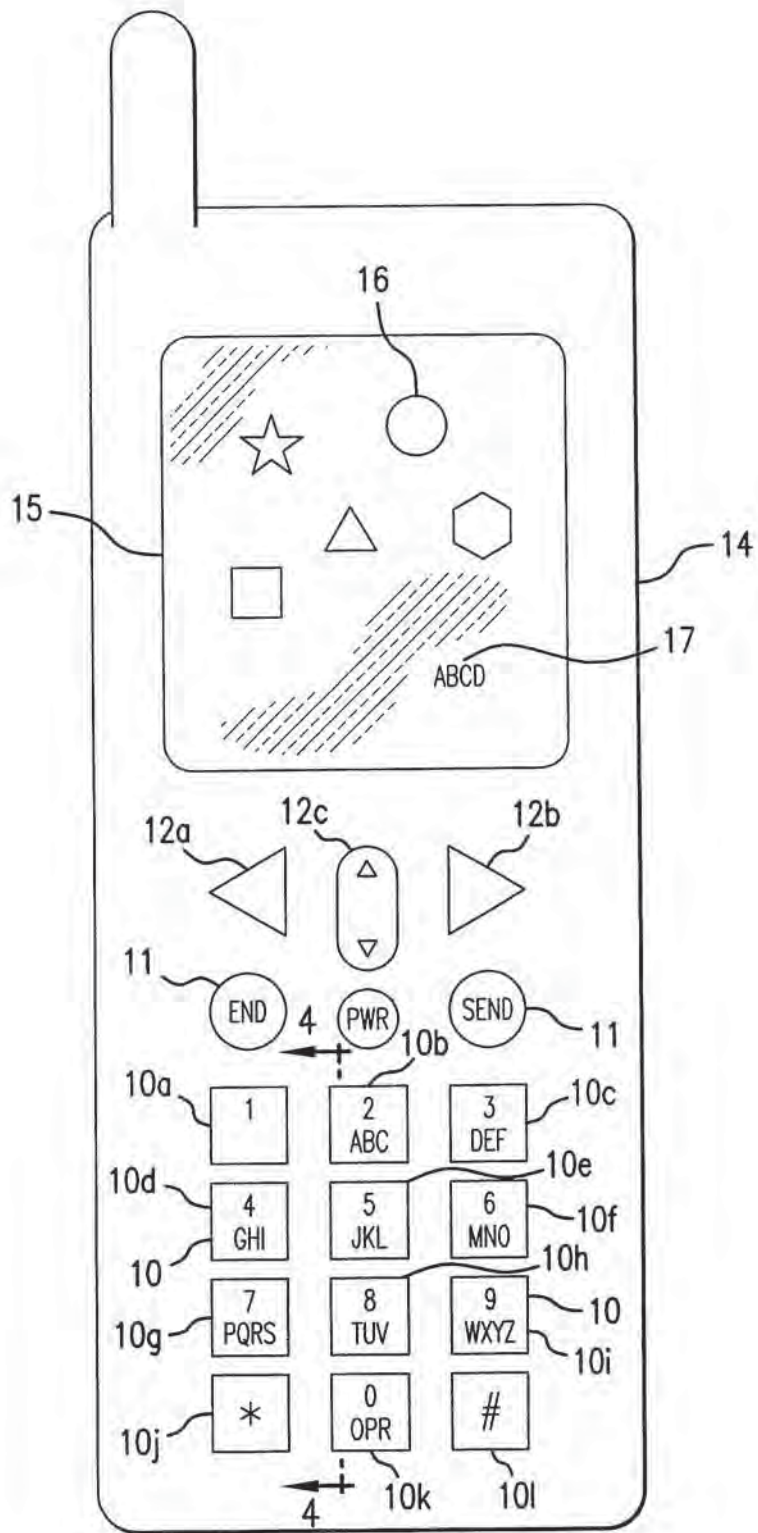


FIG. 3

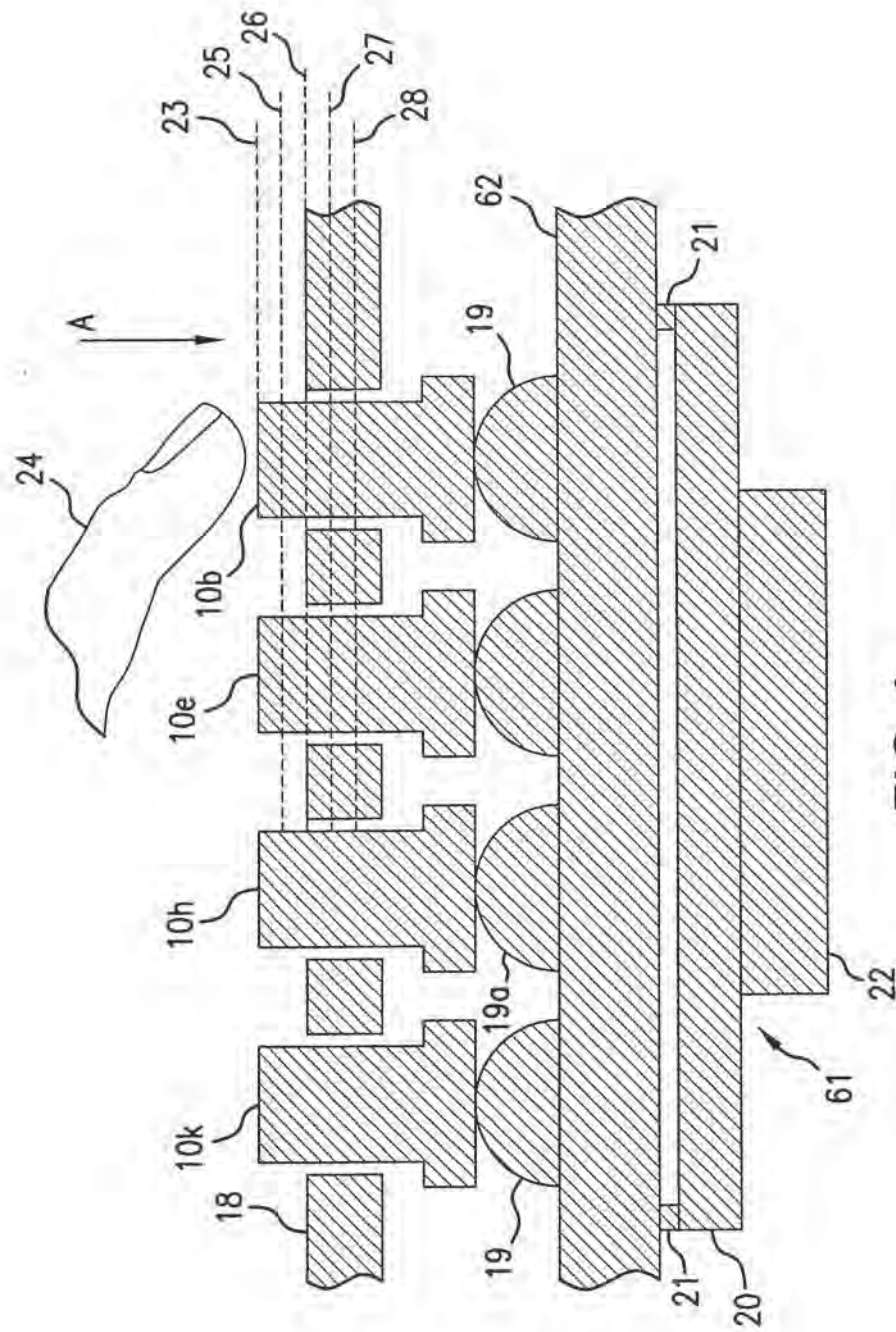


FIG. 4



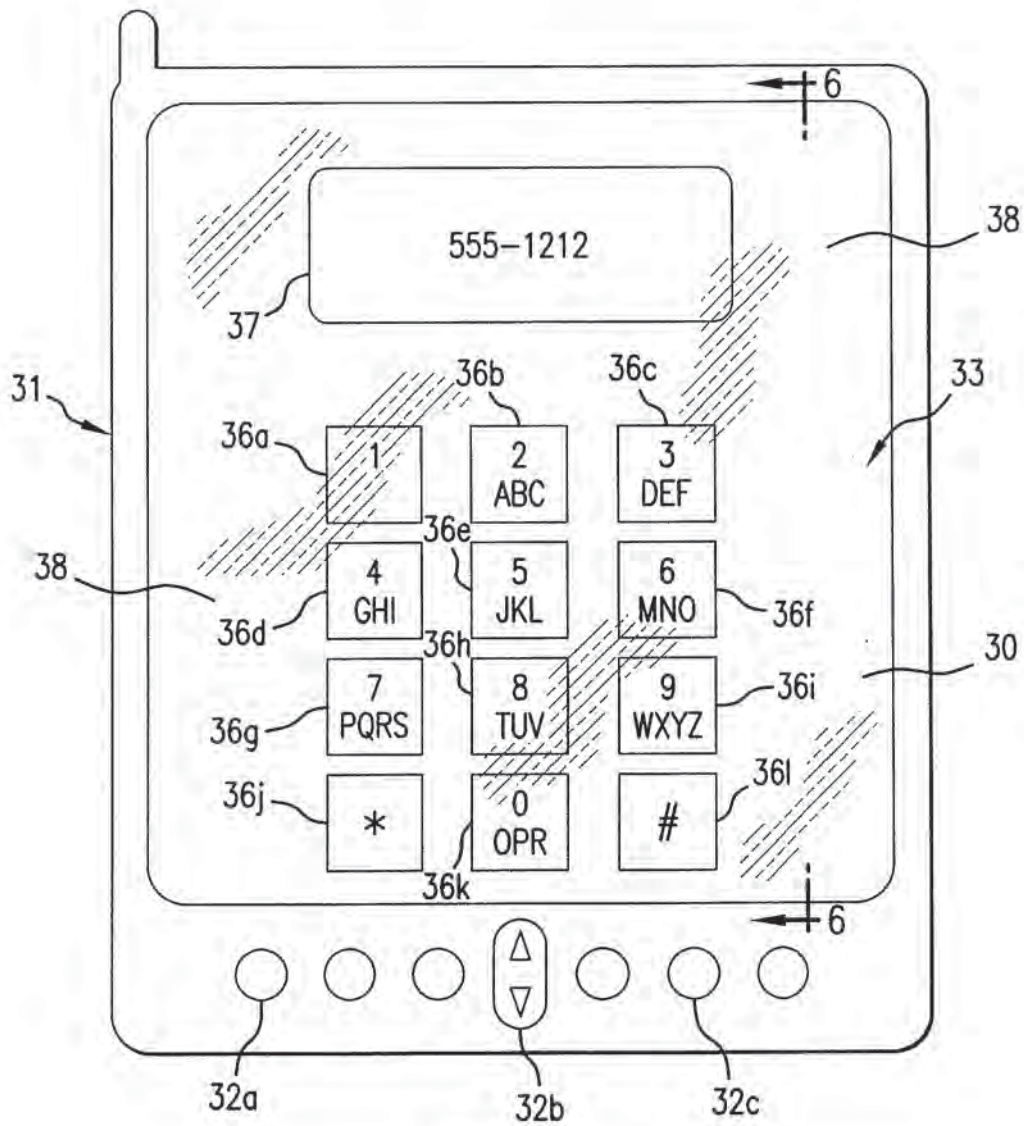


FIG. 5

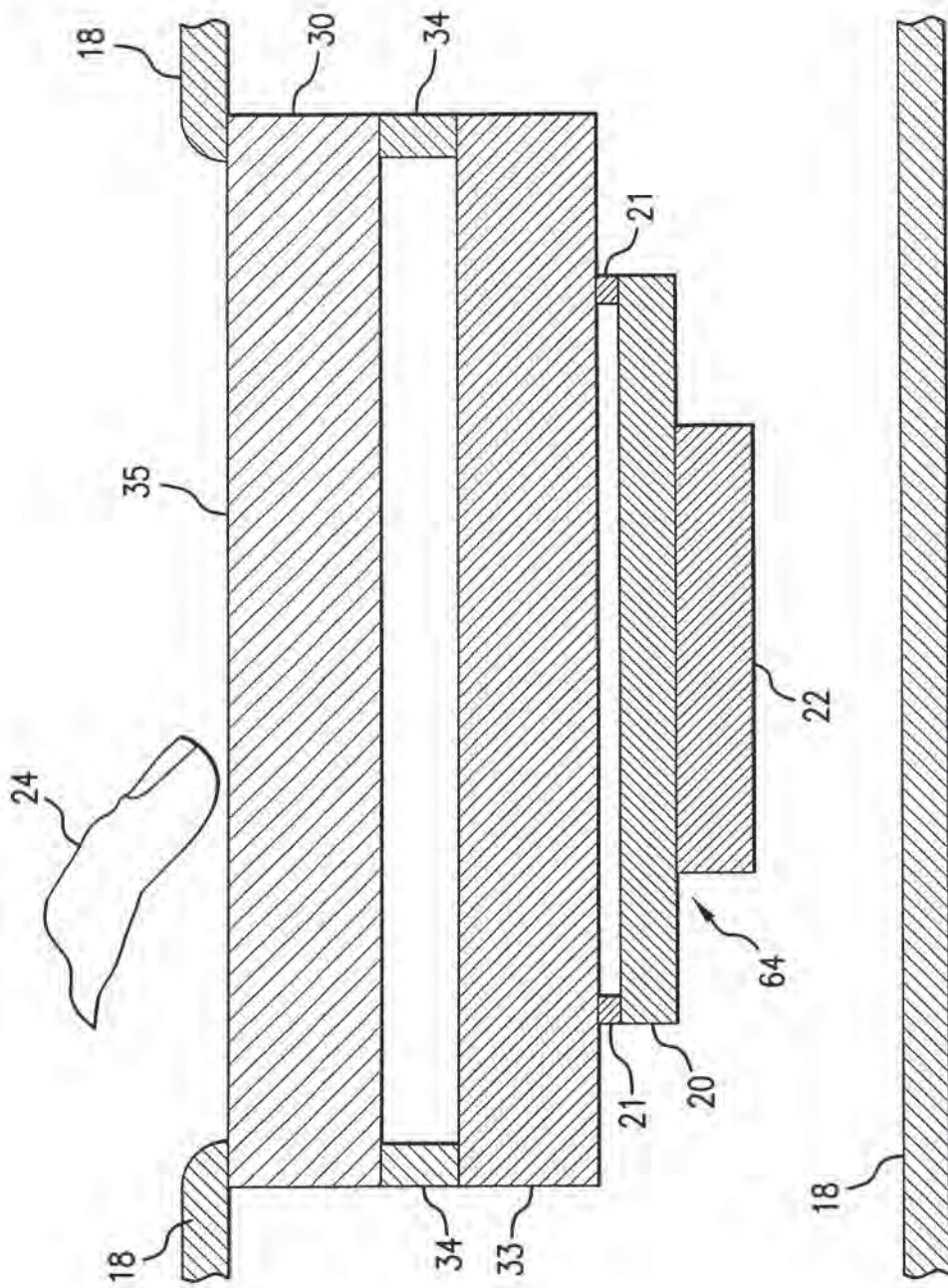


FIG. 6

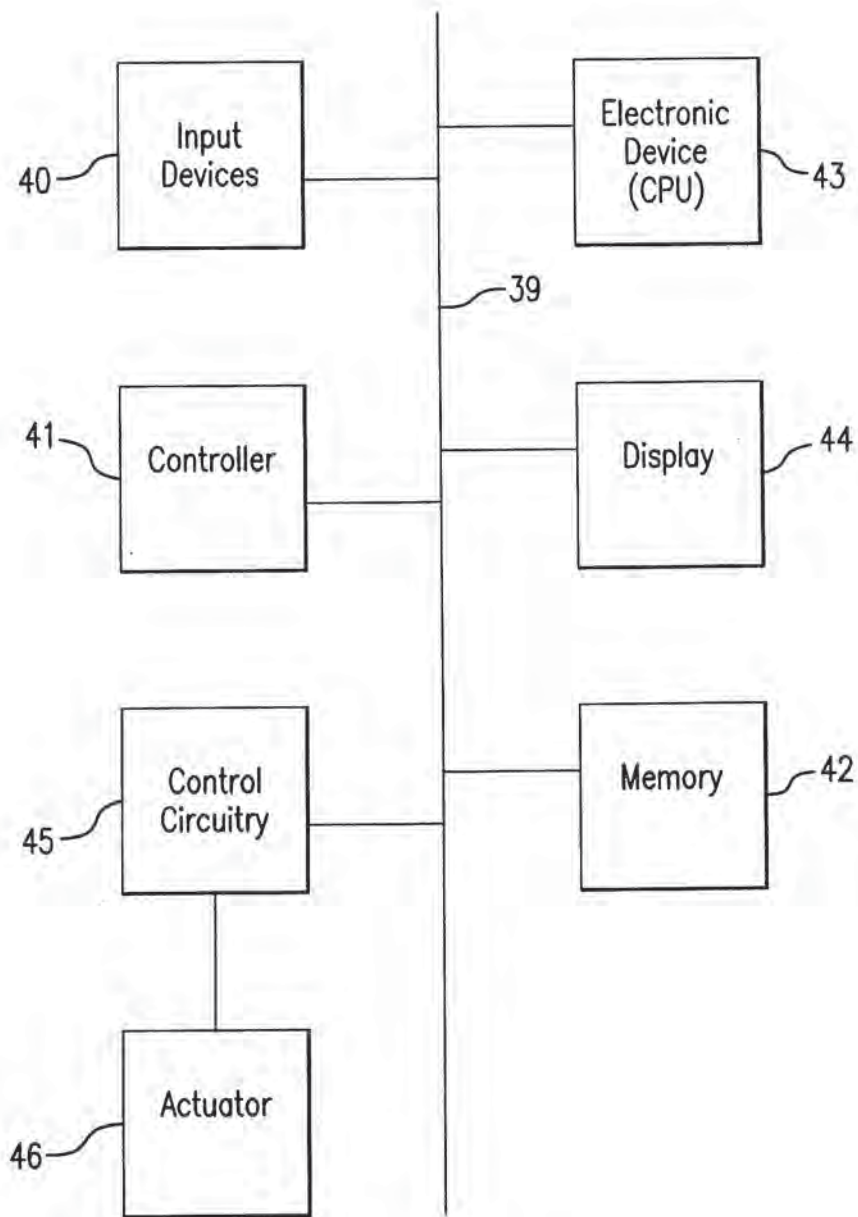


FIG. 7

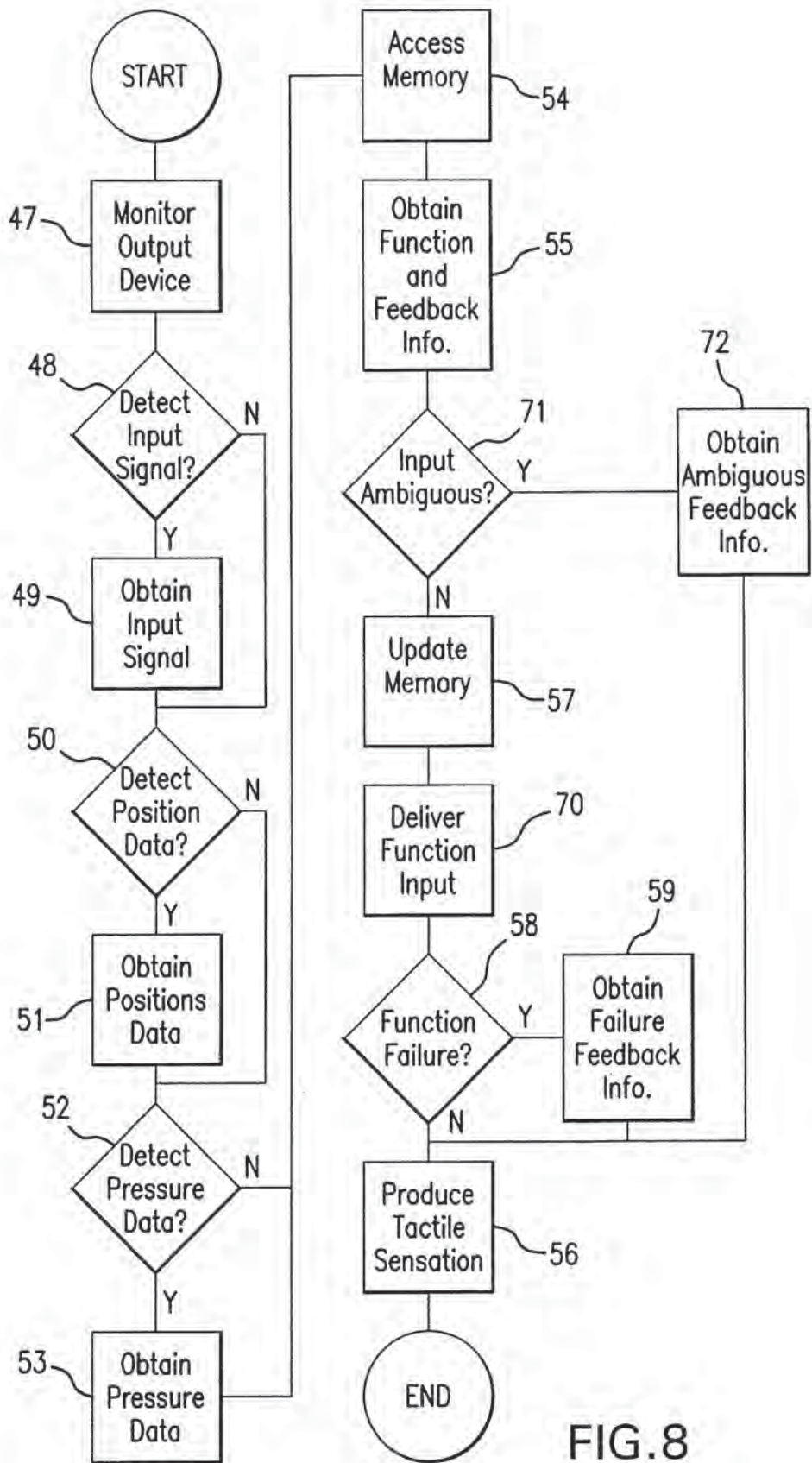


FIG. 8

INPUT DEVICE	INPUT SIGNAL	POSITION DATA	PRESSURE DATA	FUNCTION	TACTILE SENSATION
1	--	Location 1	< Pressure 1	Search	Sensation 1
	Input 1	Location 1	Pressure 1 <=	Select	Sensation 2
2	--	Position 1	--	On	Sensation 3
	--	Position 2	--	Off	Sensation 4
3	Input 2A	--	Pressure 1	9	Sensation 5
	Input 2B	--	Pressure 2	W	Sensation 6
	Input 2C	--	Pressure 3	X	Sensation 7
	Input 2D	--	Pressure 4	Y	Sensation 8
	Input 2E	--	Pressure 5	Z	Sensation 9
4	Input 3	--	Pressure 1	Menu 1	Sensation 10
		--	Pressure 2	Menu 2	Sensation 11
		--	Pressure 3	Menu 3	Sensation 12
5	---	--	Pressure 1	2	Sensation 13
		--	Pressure 2	A	Sensation 14
		--	Pressure 3	B	Sensation 15
		--	Pressure 4	C	Sensation 16
6	Input 4	Position 1	Pressure 1	Function 1	Sensation 17
	Input 5	Position 2	Pressure 2	Function 2	Sensation 18
	Input 6	Position 3	Pressure 3	Function 3	Sensation 19
7	Input 7	Location 1	Pressure 1	Function 1	Sensation 20
	Input 8	Location 2	Pressure 2	Function 2	Sensation 21
--	AMBIGUOUS	--	--	---	Sensation 22
--	Function Failure	--	--	---	Sensation 23

FIG.9

INPUT DEVICE	INPUT SIGNAL	POSITION DATA	PRESSURE DATA	FUNCTION	TACTILE SENSATION
1	-- Input 1	Location 1 Location 1	< Pressure 1 Pressure 1 <=	Search Select	Sensation 1 Sensation 2
2	-- --	Position 1 Position 2	-- --	On Off	Sensation 3 Sensation 4
3	Input 2A Input 2B Input 2C Input 2D Input 2E	-- -- -- -- --	Pressure 1 Pressure 2 Pressure 3 Pressure 4 Pressure 5	9 W X Y Z	Sensation 5 Sensation 6 Sensation 7 Sensation 8 Sensation 9
4	Input 3	-- -- -- --	Pressure 1 Pressure 2 Pressure 3	Menu 1 Menu 2 Menu 3	Sensation 10 Sensation 11 Sensation 12
5	--	-- -- -- --	Pressure 1 Pressure 2 Pressure 3 Pressure 4	2 A B C	Sensation 13 Sensation 14 Sensation 15 Sensation 16
6	Input 4 Input 5 Input 6	Position 1 Position 2 Position 3	Pressure 1' Pressure 2' Pressure 3'	Function 4 Function 5 Function 6	Sensation 17' Sensation 18' Sensation 19'
7	Input 7 Input 8	Location 1 Location 2	Pressure 1 Pressure 2	Function 1 Function 2	Sensation 20 Sensation 21
--	AMBIGUOUS	--	--	--	Sensation 22
--	Function Failure	--	--	--	Sensation 23

FIG.10

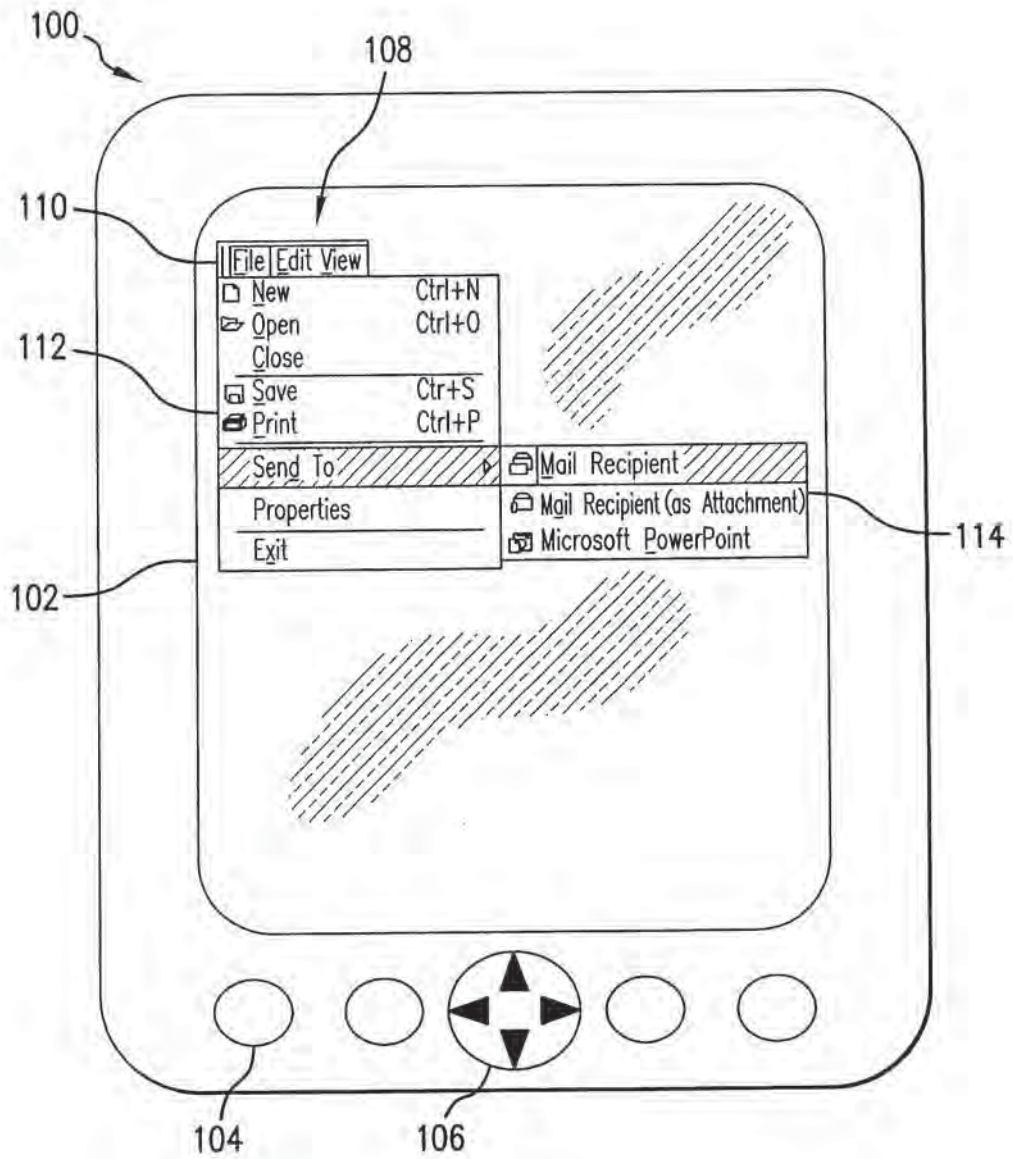


FIG. 11

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<b>DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION</b> <b>(37 CFR 1.63)</b>  <input type="checkbox"/> Declaration Submitted With Initial Filing <input checked="" type="checkbox"/> Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)	Attorney Docket Number	IMM147
	First Named Inventor	Kenneth M. MARTIN
	<b>COMPLETE IF KNOWN</b>	
	Application Number	10/285450
	Filing Date	November 1, 2002
	Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned	

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original and first inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

the specification of which (Title of the Invention)

is attached hereto

OR

was filed on (MM/DD/YYYY) 11/01/2002 as United States Application Number or PCT International Application Number 10/285450 and was amended on (MM/DD/YYYY) 12/19/2002 (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 385(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY) Country	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
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			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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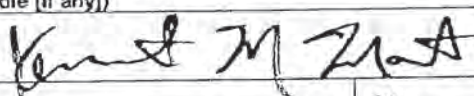
Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

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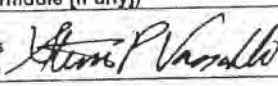
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NAME OF SOLE OR FIRST INVENTOR:			<input type="checkbox"/> A petition has been filed for this unsigned inventor		
Given Name (first and middle [if any])			Kenneth M.		Family Name or Surname
					Martin
Inventor's Signature					Date
					12/19/02
Los Gatos		CA	USA	Canada	
Residence: City		State	Country	Citizenship	
21560 Old Mine Road					
Mailing Address					
Los Gatos		CA	95033	USA	
City		State	Zip	Country	
NAME OF SECOND INVENTOR:			<input type="checkbox"/> A petition has been filed for this unsigned inventor		
Given Name (first and middle [if any])			Steven P.		Family Name or Surname
					Vassallo
Inventor's Signature			Date		
Redwood City		CA	USA	USA	
Residence: City		State	Country	Citizenship	
3632 Jefferson Avenue					
Mailing Address					
Redwood City		CA	94062	USA	
City		State	Zip	Country	
<input checked="" type="checkbox"/> Additional inventors are being named on the one supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.					

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NAME OF SOLE OR FIRST INVENTOR:				<input type="checkbox"/> A petition has been filed for this unsigned inventor			
Given Name (first and middle [if any])			Kenneth M.		Family Name or Surname		
					Martin		
Inventor's Signature					Date		
Los Gatos			CA	USA		Canada	
Residence: City			State	Country		Citizenship	
21560 Old Mine Road							
Mailing Address							
Los Gatos			CA	95033		Canada	
City			State	Zip		Country	
NAME OF SECOND INVENTOR:				<input type="checkbox"/> A petition has been filed for this unsigned inventor			
Given Name (first and middle [if any])			Steven P.		Family Name or Surname		
					Vassallo		
Inventor's Signature					Date		
					12/20/02		
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Residence: City			State	Country		Citizenship	
3632 Jefferson Avenue							
Mailing Address							
Redwood City			CA	94062		USA	
City			State	Zip		Country	
<input checked="" type="checkbox"/> Additional inventors are being named on the <u>one</u> supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto.							

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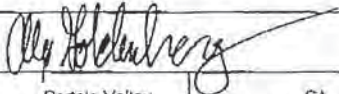
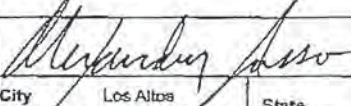
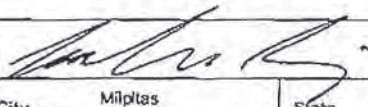
Approved for use through 10/31/2002. OMB 0851-0032

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## DECLARATION

ADDITIONAL INVENTOR(S)  
Supplemental Sheet  
Page 22 of 3

Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
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Mailing Address 271 Gabarda Way			
Mailing Address			
City	Portola Valley	State	CA
ZIP	94028	Country	USA
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])		Family Name or Surname	
Alexander		Jasso	
Inventor's Signature 		Date 12/17/02	
Residence: City	Los Altos	State	CA
Country	USA	Citizenship	USA
Mailing Address 405 Fremont Ave			
Mailing Address			
City	Los Altos	State	CA
Zip	94024	Country	USA
Name of Additional Joint Inventor, if any:		<input type="checkbox"/> A petition has been filed for this unsigned inventor	
Given Name (first and middle [if any])		Family Name or Surname	
Kollin		Tierling	
Inventor's Signature 		Date 12/17/02	
Residence: City	Milpitas	State	CA
Country	USA	Citizenship	USA
Mailing Address 822 Costigan Circle			
Mailing Address			
City	Milpitas	State	CA
Zip	95035	Country	USA

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<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	51851/821825 (IMM147.C3)
		Application Number	
Title of Invention	Method And Apparatus For Providing Tactile Sensations		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

**Secrecy Order 37 CFR 5.2**

Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

**Applicant Information:**

<b>Applicant 1</b>					
<b>Applicant Authority</b> <input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117		<input type="radio"/> Party of Interest under 35 U.S.C. 118	
<b>Prefix</b>	<b>Given Name</b>	<b>Middle Name</b>	<b>Family Name</b>	<b>Suffix</b>	
	Kenneth	M.	Martin		
<b>Residence Information (Select One)</b> <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					
<b>City</b>	Los Gatos	<b>State/Province</b>	CA	<b>Country of Residence</b>	US
<b>Citizenship under 37 CFR 1.41(b)</b>		CA			
<b>Mailing Address of Applicant:</b>					
<b>Address 1</b>		21560 Old Mine Road			
<b>Address 2</b>					
<b>City</b>	Los Gatos	<b>State/Province</b>	CA		
<b>Postal Code</b>	95033	<b>Country</b>	US		
<b>Applicant 2</b>					
<b>Applicant Authority</b> <input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117		<input type="radio"/> Party of Interest under 35 U.S.C. 118	
<b>Prefix</b>	<b>Given Name</b>	<b>Middle Name</b>	<b>Family Name</b>	<b>Suffix</b>	
	Steven	P.	Vassallo		
<b>Residence Information (Select One)</b> <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					
<b>City</b>	Redwood City	<b>State/Province</b>	CA	<b>Country of Residence</b>	US
<b>Citizenship under 37 CFR 1.41(b)</b>		US			
<b>Mailing Address of Applicant:</b>					
<b>Address 1</b>		3632 Jefferson Avenue			
<b>Address 2</b>					
<b>City</b>	Redwood City	<b>State/Province</b>	CA		
<b>Postal Code</b>	94062	<b>Country</b>	US		
<b>Applicant 3</b>					
<b>Applicant Authority</b> <input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117		<input type="radio"/> Party of Interest under 35 U.S.C. 118	
<b>Prefix</b>	<b>Given Name</b>	<b>Middle Name</b>	<b>Family Name</b>	<b>Suffix</b>	
	Alex	S.	Goldenberg		
<b>Residence Information (Select One)</b> <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service					
<b>City</b>	San Francisco	<b>State/Province</b>	CA	<b>Country of Residence</b>	US

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<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	51851/821825 (IMM147.C3)	
		Application Number		
Title of Invention	Method And Apparatus For Providing Tactile Sensations			
<b>Citizenship under 37 CFR 1.41(b)</b>		US		
<b>Mailing Address of Applicant:</b>				
Address 1	129B Riley Avenue			
Address 2				
City	San Francisco	State/Province	CA	
Postal Code	94129	Country	US	
<b>Applicant 4</b>				
<b>Applicant Authority</b>		<input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117
				<input type="radio"/> Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix
	Alexander		Jasso	
<b>Residence Information (Select One)</b> <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service				
City	San Jose	State/Province	CA	Country of Residence
				US
<b>Citizenship under 37 CFR 1.41(b)</b>		US		
<b>Mailing Address of Applicant:</b>				
Address 1	101 E. San Fernando Street, Apt. 228			
Address 2				
City	San Jose	State/Province	CA	
Postal Code	95112	Country	US	
<b>Applicant 5</b>				
<b>Applicant Authority</b>		<input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117
				<input type="radio"/> Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix
	Kollin	M.	Tierling	
<b>Residence Information (Select One)</b> <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service				
City	Milpitas	State/Province	CA	Country of Residence
				US
<b>Citizenship under 37 CFR 1.41(b)</b>		US		
<b>Mailing Address of Applicant:</b>				
Address 1	622 Costigan Circle			
Address 2				
City	Milpitas	State/Province	CA	
Postal Code	95035	Country	US	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the <b>Add</b> button. <span style="float: right;"><input type="button" value="Add"/></span>				

**Correspondence Information:**

Enter either Customer Number or complete the Correspondence Information section below.  
For further information see 37 CFR 1.33(a).

An Address is being provided for the correspondence information of this application.

Customer Number      34300

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	51851/821825 (IMM147.C3)
		Application Number	
Title of Invention	Method And Apparatus For Providing Tactile Sensations		

Email Address		<input type="button" value="Add Email"/>	<input type="button" value="Remove Email"/>
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**Application Information:**

<b>Title of the Invention</b>	Method And Apparatus For Providing Tactile Sensations		
<b>Attorney Docket Number</b>	51851/821825 (IMM147.C3)	<b>Small Entity Status Claimed</b>	<input type="checkbox"/>
<b>Application Type</b>	Nonprovisional		
<b>Subject Matter</b>	Utility		
<b>Suggested Class (if any)</b>		<b>Sub Class (if any)</b>	
<b>Suggested Technology Center (if any)</b>			
<b>Total Number of Drawing Sheets (if any)</b>	11	<b>Suggested Figure for Publication (if any)</b>	

**Publication Information:**

<input type="checkbox"/> Request Early Publication (Fee required at time of Request 37 CFR 1.219)
<input type="checkbox"/> <b>Request Not to Publish.</b> I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application <b>has not and will not</b> be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

**Representative Information:**

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.			
Please Select One:	<input checked="" type="radio"/> Customer Number	<input type="radio"/> US Patent Practitioner	<input type="radio"/> Limited Recognition (37 CFR 11.9)
Customer Number	34300		

**Domestic Benefit/National Stage Information:**

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.					
Prior Application Status					<input type="button" value="Remove"/>
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
	Continuation of	12894489	2010-09-30		
Prior Application Status	Patented				<input type="button" value="Remove"/>
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12894489	Continuation of	11693117	2007-03-29	7808488	2010-10-05

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	51851/821825 (IMM147.C3)		
		Application Number			
Title of Invention	Method And Apparatus For Providing Tactile Sensations				
Prior Application Status	Patented		<input type="button" value="Remove"/>		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11693117	Continuation of	10285450	2002-11-01	7336260	2008-02-26
Prior Application Status	Pending		<input type="button" value="Remove"/>		
Application Number	Continuity Type		Prior Application Number	Filing Date (YYYY-MM-DD)	
10285450	non provisional of		60335493	2001-11-01	
Prior Application Status	Pending		<input type="button" value="Remove"/>		
Application Number	Continuity Type		Prior Application Number	Filing Date (YYYY-MM-DD)	
10285450	non provisional of		60399883	2002-07-31	
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the <b>Add</b> button.					

**Foreign Priority Information:**

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

<input type="button" value="Remove"/>			
Application Number	Country <sup>1</sup>	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			<input type="radio"/> Yes <input checked="" type="radio"/> No
Additional Foreign Priority Data may be generated within this form by selecting the <b>Add</b> button.			

**Assignee Information:**

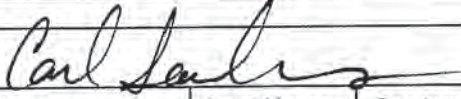
Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

<b>Assignee 1</b>			
If the Assignee is an Organization check here. <input checked="" type="checkbox"/>			
Organization Name	Immersion Corporation		
<b>Mailing Address Information:</b>			
Address 1	30 Rio Robles		
Address 2			
City	San Jose	State/Province	CA
Country <sup>1</sup>	US	Postal Code	95134
Phone Number		Fax Number	
Email Address			
Additional Assignee Data may be generated within this form by selecting the <b>Add</b> button.			

**Signature:**

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

<b>Application Data Sheet 37 CFR 1.76</b>		Attorney Docket Number	51851/821825 (IMM147.C3)		
		Application Number			
Title of Invention	Method And Apparatus For Providing Tactile Sensations				
Signature				Date (YYYY-MM-DD)	January 31, 2012
First Name	Carl	Last Name	Sanders	Registration Number	57203

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>UTILITY PATENT APPLICATION TRANSMITTAL</b>	<i>Attorney Docket No.</i> IMM147.C3 (51851/821825)
	<i>First Inventor</i> Kenneth M. Martin
	<i>Title</i> Method And Apparatus For. . .
<i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>	<i>Express Mail Label No.</i>

<b>APPLICATION ELEMENTS</b> <i>See MPEP chapter 600 concerning utility patent application contents.</i>	<b>ADDRESS TO:</b> Commissioner for Patents P.O. Box 1450 Alexandria VA 22313-1450
--	---

1.  **Fee Transmittal Form** (e.g., PTO/SB/17)
2.  **Applicant claims small entity status.**  
See 37 CFR 1.27.
3.  **Specification** [Total Pages 46 ]  
Both the claims and abstract must start on a new page  
*(For information on the preferred arrangement, see MPEP 608.01(a))*
4.  **Drawing(s)** (35 U.S.C. 113) [Total Sheets 11 ]
5. **Oath or Declaration** [Total Sheets 4 ]
  - a.  Newly executed (original or copy)
  - b.  A copy from a prior application (37 CFR 1.63(d))  
*(for continuation/divisional with Box 18 completed)*
    - i.  **DELETION OF INVENTOR(S)**  
Signed statement attached deleting inventor(s)  
name in the prior application, see 37 CFR  
1.63(d)(2) and 1.33(b).
6.  **Application Data Sheet.** See 37 CFR 1.76
7.  **CD-ROM or CD-R** in duplicate, large table or  
Computer Program *(Appendix)*  
 Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**  
*(if applicable, items a. - c. are required)*
  - a.  Computer Readable Form (CRF)
  - b. **Specification Sequence Listing on:**
    - i.  CD-ROM or CD-R (2 copies); or
    - ii.  Paper
  - c.  Statements verifying identity of above copies

**ACCOMPANYING APPLICATION PARTS**

9.  **Assignment Papers** (cover sheet & document(s))  
Name of Assignee \_\_\_\_\_
10.  **37 CFR 3.73(b) Statement**  **Power of Attorney**  
*(when there is an assignee)*
11.  **English Translation Document** *(if applicable)*
12.  **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)  
 Copies of citations attached
13.  **Preliminary Amendment**
14.  **Return Receipt Postcard** (MPEP 503)  
*(Should be specifically itemized)*
15.  **Certified Copy of Priority Document(s)**  
*(if foreign priority is claimed)*
16.  **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i).  
Applicant must attach form PTO/SB/35 or equivalent.
17.  **Other:** \_\_\_\_\_

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:

Continuation     Divisional     Continuation-in-part (CIP)    of prior application No.: 12/894,489.....

Prior application information:    Examiner Osorio, Ricardo    Art Unit: 2629

**19. CORRESPONDENCE ADDRESS**

The address associated with Customer Number: 34300    OR     Correspondence address below

Name				
Address				
City	State	Zip Code		
Country	Telephone	Email		

Signature		Date	<u>January 31, 2012</u>
Name (Print/Type)	Carl Sanders	Registration No. (Attorney/Agent)	57,203

This collection of information is required by 37 CFR 1.63(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.  
 If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**STATEMENT UNDER 37 CFR 3.73(b)**

Applicant/Patent Owner: Immersion Corporation

Application No./Patent No.: To be assigned Filed/Issue Date: Herewith

Titled: Method And Apparatus For Providing Tactile Sensations

Immersion Corporation, a corporation  
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

- 1.  the assignee of the entire right, title, and interest in;
- 2.  an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is \_\_\_\_\_ %); or
- 3.  the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A.  An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy therefore is attached.

OR

B.  A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: \_\_\_\_\_ To: \_\_\_\_\_

The document was recorded in the United States Patent and Trademark Office at Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

2. From: \_\_\_\_\_ To: \_\_\_\_\_

The document was recorded in the United States Patent and Trademark Office at Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

3. From: \_\_\_\_\_ To: \_\_\_\_\_

The document was recorded in the United States Patent and Trademark Office at Reel \_\_\_\_\_, Frame \_\_\_\_\_, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet(s).

As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Carl Sanders  
Signature

January 31, 2010  
Date

Carl Sanders  
Printed or Typed Name

Attorney for Applicant  
Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

## ASSIGNMENT OF PATENT APPLICATION

Whereas I/we the undersigned inventor(s) have invented certain new and useful improvements as set forth in the patent application entitled:

### METHOD AND APPARATUS FOR PROVIDING TACTILE FEEDBACK SENSATIONS

for which I (we) have executed an application for a United States Letters Patent which was filed in the U.S. Patent and Trademark Office on November 1, 2002, and which bears the Application No. 10/285,450.

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I/we the undersigned inventor(s) hereby:

- 1) Sell(s), assign(s) and transfer(s) to Immersion Corporation, a Delaware corporation having a place of business at 801 Fox Lane, San Jose, CA 95131, (hereinafter referred to as "ASSIGNEE"), the entire right title and interest in any and all improvements and inventions disclosed in, application(s) based upon, and Patent(s) (including foreign patents) granted upon the information which is disclosed in the above referenced application.
- 2) Authorize and request the Commissioner of Patents to issue any and all Letters Patents resulting from said application or any division(s), continuation(s), substitute(s) or reissue(s) thereof to the ASSIGNEE.
- 3) Agree to execute all papers and documents and, entirely at the ASSIGNEE'S expense, perform any acts which are reasonably necessary in connection with the prosecution of said application, as well as any derivative and applications thereof, foreign applications based thereon, and/or the enforcement of patents resulting from such applications.
- 4) Agree that the terms, covenants and conditions of this assignment shall inure to the benefit of the Assignee, its successors, assigns and other legal representative, and shall be binding upon the inventor(s), as well as the inventor's heirs, legal representatives and assigns.
- 5) Warrant and represent that I/we have not entered, and will not enter into any assignment, contract, or understanding that conflicts with this assignment.

Signed on the date(s) indicated beside my (our) signature(s).

1) Signature: Kenneth M. Martin Date: 09/15/03  
Typed Name: Kenneth M. Martin

METHOD AND APPARATUS FOR PROVIDING  
TACTILE FEEDBACK SENSATIONS

2) Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Typed Name: Steven P. Vassallo

3) Signature:  \_\_\_\_\_ Date: 6/2/03  
Typed Name: Alex S. Goldenberg

4) Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Typed Name: Alexander Jasso

8181:51851-279590  
WINLIB01:995871.1

METHOD AND APPARATUS FOR PROVIDING  
TACTILE FEEDBACK SENSATIONS

2) Signature: *Steven P. Vassallo* Date: 6.2.03  
Typed Name: Steven P. Vassallo

3) Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Typed Name: Alex S. Goldenberg

4) Signature: *Alexander Jasso* Date: 6/4/03  
Typed Name: Alexander Jasso

8181:51851-279590  
WINLIB01:995871.1

**ASSIGNMENT OF INTELLECTUAL PROPERTY RIGHTS IN  
PATENT APPLICATION**

Whereas, I, the undersigned inventor, have invented certain new and useful innovations as set forth in the patent application:

**METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS**

for which I have filed United States Patent Application No. 11/693,117;

and also the patent application:

**METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS**

for which I have filed United States Patent Application No. 10/285,450.

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the undersigned inventor, hereby:

1) Agree to sell, assign, transfer, and convey, and hereby do sell, assign, transfer, and convey, to Immersion Corporation, a Delaware corporation having a place of business at 801 Fox Lane, San Jose, CA, (hereinafter referred to as "ASSIGNEE"), the entire right, title, and interest in and to (a) any intellectual property (including without limitation any innovation, information, invention, discovery, product, process, work, copyright, or design) disclosed, embodied, affixed, shown, or claimed in the above-referenced patent application, implicitly or explicitly; (b) the above-referenced patent application, any application based in whole or in part upon the above-referenced patent application, and any application claiming priority to the above-referenced patent application (including without limitation any continuation, continuation-in-part, reissue, reexamination, or foreign patent application based in whole or in part on the above-referenced patent application or claiming priority to the above-referenced patent application); and (c) any Patent (including without limitation domestic and foreign patents, utility models, industrial designs, divisionals, reissues, and reexaminations) that is granted or issued upon, or that claims priority to, any and all applications under (b) of this paragraph or that discloses or claims intellectual property under (a) of this paragraph, in whole or in part.

2) Authorize and request the Commissioner of Patents or any other agency, domestic or foreign, to issue any and all Letters or other Patent(s), or other document(s), resulting from patent applications or intellectual property under paragraph 1 (including without limitation any division(s), continuation(s) (in whole or in part), substitute(s), or reissue(s) thereof) to the ASSIGNEE.

3) Agree to execute all papers and documents, including without limitation applications, declarations, oaths, petitions, and other papers, and, entirely at the

ASSIGNEE'S expense, perform any acts which are necessary in connection with the prosecution of patent applications or intellectual property under paragraph 1 and/or the enforcement of patents or other rights resulting from such applications or intellectual property.

4) Agree that the terms, covenants and conditions of this assignment shall inure to the benefit of the ASSIGNEE, its successors, assigns and other legal representative, and shall be binding upon the inventor, as well as the inventor's heirs, legal representatives, and assigns.

5) Warrant and represent that I have not entered, and will not enter into, any assignment, contract, or understanding that conflicts with this assignment.

Signed on the date indicated beside my signature.

10/22/10  
Date

  
Kollin Tierling

State of California

County of SANTA CLARA

On October 22, 2010 before me, AMANDEEP KAUR, NOTARY PUBLIC  
(Here insert name and title of the officer)

personally appeared Kollin Tierling, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

(Notary Seal)

WITNESS my hand and official seal.

A Kaur  
Signature of Notary Public



**ABSTRACT**

Products and processes for providing tactile sensations to input devices or electronic devices are provided. Input devices include mechanical input devices (such as, for example, mechanical switches) and non-mechanical input devices (such as, for example, touchpads). Tactile feedback is provided by using an actuator or other means in communication with the input device or electronic device. A controller may be employed to receive signals from the input devices and control the actuator. Tactile feedback to an input device or electronic device may be provided in response to one or more events or situations. Such an event or situation may be any one designated. Examples of such events and situations include the level of pressure placed on an input device; the availability or lack of availability of a function associated with an input device; and the function, menu, or mode of operation associated with an input device's activation. A variety of feedback types and combinations may be selected.



That which is claimed is:

1. A method, comprising:
  - outputting a display signal configured to display a graphical object on a touch-sensitive input device;
  - receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
  - determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and
  - generating an actuator signal based at least in part on the interaction; and
2. The method of claim 1 wherein, the actuator signal is configured to cause a haptic effect to be output.
3. The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.
4. The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.
5. The method of claim 1, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

6. The method of claim 5, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
7. The method of claim 5, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
8. The method of claim 5, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
9. The method of claim 1, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.
10. A system, comprising:
  - a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device;
  - an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface based at least in part on the actuator signal; and

a processor in communication with the sensor and the actuator, the processor configured to:

- output a display signal configured to display a graphical object on the touch-sensitive input device;
- receive the sensor signal from the touch-sensitive input device;
- determine an interaction between the object contacting the touch-sensitive surface and the graphical object,
- generate the actuator signal based at least in part on the interaction; and
- transmit the actuator signal to the actuator.

11. The system of claim 10, wherein the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object.

12. The system of claim 10, wherein the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

13. The system of claim 10, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

14. The system of claim 13, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
15. The method of claim 13, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
16. The method of claim 13, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
17. The method of claim 10, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.
18. A computer-readable medium comprising program code, comprising:
  - program code for outputting a display signal configured to display a graphical object on a touch-sensitive input device;
  - program code for receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
  - program code for determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and

program code for generating an actuator signal based at least in part on the interaction, the actuator signal configured to cause a haptic effect to be output.

19. The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.

20. The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
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P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)

**CONFIRMATION NO. 3915**

34300  
PATENT DEPARTMENT (51851)  
KILPATRICK TOWNSEND & STOCKTON LLP  
1001 WEST FOURTH STREET  
WINSTON-SALEM, NC 27101

**FORMALITIES LETTER**



Date Mailed: 02/14/2012

**NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION**

**FILED UNDER 37 CFR 1.53(b)**

*Filing Date Granted*

**Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.  
*Applicant must submit \$380 to complete the basic filing fee for a non-small entity. If appropriate, applicant may make a written assertion of entitlement to small entity status and pay the small entity filing fee (37 CFR 1.27).*

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A replacement abstract not exceeding 150 words in length and commencing on a separate sheet in compliance with 37 CFR 1.72(b) and 37 CFR 1.121 is required.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of \$130 for a non-small entity, must be submitted.

**SUMMARY OF FEES DUE:**

Total fee(s) required within **TWO MONTHS** from the date of this Notice is \$1380 for a non-small entity

- \$380 Statutory basic filing fee.
- \$130 Surcharge.
- The application search fee has not been paid. Applicant must submit \$620 to complete the search fee.

- The application examination fee has not been paid. Applicant must submit **\$250** to complete the examination fee for a non-small entity.

Replies should be mailed to:

Mail Stop Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.  
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tle/

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Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

**PATENT APPLICATION FEE DETERMINATION RECORD**  
Substitute for Form PTO-875

Application or Docket Number  
13/362,113

**APPLICATION AS FILED - PART I**

	(Column 1)	(Column 2)
FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 = *
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

SMALL ENTITY	
RATE(\$)	FEE(\$)
N/A	
N/A	
N/A	
TOTAL	

OTHER THAN SMALL ENTITY	
RATE(\$)	FEE(\$)
N/A	380
N/A	620
N/A	250
x 60 =	0.00
x 250 =	0.00
	0.00
	0.00
TOTAL	1250

\* If the difference in column 1 is less than zero, enter "0" in column 2.

**APPLICATION AS AMENDED - PART II**

	(Column 1)		(Column 2)		(Column 3)
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY	
RATE(\$)	ADDITIONAL FEE(\$)
x	=
x	=
TOTAL ADD'L FEE	

OTHER THAN SMALL ENTITY	
RATE(\$)	ADDITIONAL FEE(\$)
x	=
x	=
TOTAL ADD'L FEE	

	(Column 1)		(Column 2)		(Column 3)
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY	
RATE(\$)	ADDITIONAL FEE(\$)
x	=
x	=
TOTAL ADD'L FEE	

OTHER THAN SMALL ENTITY	
RATE(\$)	ADDITIONAL FEE(\$)
x	=
x	=
TOTAL ADD'L FEE	

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
 \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".  
 \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".  
 The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.





UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY,DOCKET,NO	TOT CLAIMS	IND CLAIMS
13/362,113	01/31/2012	2629	0.00	51851/821825 (IMM147.C3)	20	3

CONFIRMATION NO. 3915

34300  
PATENT DEPARTMENT (51851)  
KILPATRICK TOWNSEND & STOCKTON LLP  
1001 WEST FOURTH STREET  
WINSTON-SALEM, NC 27101

FILING RECEIPT



Date Mailed: 02/14/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

- Kenneth M. Martin, Los Gatos, CA;
- Steven P. Vassallo, Redwood City, CA;
- Alex S. Goldenberg, San Francisco, CA;
- Alexander Jasso, San Jose, CA;
- Kollin Tierling, Milpitas, CA;

Assignment For Published Patent Application

Immersion Corporation, San Jose, CA

Power of Attorney: The patent practitioners associated with Customer Number 34300

Domestic Priority data as claimed by applicant

This application is a CON of 12/894,489 09/30/2010  
which is a CON of 11/693,117 03/29/2007 PAT 7808488  
which is a CON of 10/285,450 11/01/2002 PAT 7336260  
which claims benefit of 60/335,493 11/01/2001  
and claims benefit of 60/399,883 07/31/2002

Foreign Applications (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see <http://www.uspto.gov> for more information.)

If Required, Foreign Filing License Granted: 02/10/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/362,113**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

**Early Publication Request:** No  
**Title**

Method And Apparatus For Providing Tactile Sensations

**Preliminary Class**

345

## **PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

### **LICENSE FOR FOREIGN FILING UNDER**

**Title 35, United States Code, Section 184**

**Title 37, Code of Federal Regulations, 5.11 & 5.15**

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The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where

the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

#### **NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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### ***SelectUSA***

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage, facilitate, and accelerate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit [SelectUSA.gov](http://SelectUSA.gov).



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
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Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)

**CONFIRMATION NO. 3915**

**POA ACCEPTANCE LETTER**

34300  
PATENT DEPARTMENT (51851)  
KILPATRICK TOWNSEND & STOCKTON LLP  
1001 WEST FOURTH STREET  
WINSTON-SALEM, NC 27101



Date Mailed: 02/14/2012

**NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 01/31/2012.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/hngo/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Kenneth M. Martin  
Ser. No. : 13/362,113  
Filing Date : January 31, 2012  
For : Method And Apparatus For Providing Tactile Sensations  
Examiner : To Be Assigned  
Art Unit : 2629  
Conf. No. : 3915

Mail Stop: Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

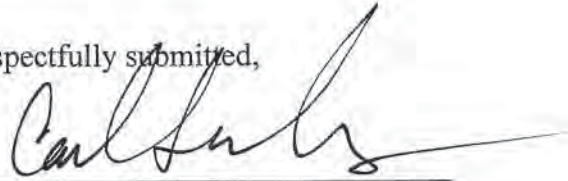
**RESPONSE TO NOTICE TO FILE MISSING PARTS**

A Notice to File Missing Parts for the above-referenced Non-Provisional Patent Application was mailed on February 14, 2012. The Notice requires that Applicant submit a replacement abstract and satisfy the following supplemental fees: \$380.00 – Statutory Basic Filing Fee; \$130.00 – Surcharge; \$620.00 – Search Fee and \$250.00 – Examination Fee for a total of \$1,380.00. In addition, Applicant submits a two-month Petition for Extension of Time extending the period of time to reply to June 14, 2012.

In response Applicant includes a replacement abstract, the required supplemental fees of \$1,380.00 and a two-month Petition for Extension of Time with a fee of \$560.00 for total fees due of \$1,940.00.

Date: June 14, 2012

Respectfully submitted,



Carl E. Sanders  
Registration No. 57,203

Kilpatrick Townsend & Stockton LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7300

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	13019192
<b>Application Number:</b>	13362113
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	3915
<b>Title of Invention:</b>	Method And Apparatus For Providing Tactile Sensations
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Customer Number:</b>	34300
<b>Filer:</b>	Carl E. Sanders/Amber Johnson
<b>Filer Authorized By:</b>	Carl E. Sanders
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)
<b>Receipt Date:</b>	14-JUN-2012
<b>Filing Date:</b>	31-JAN-2012
<b>Time Stamp:</b>	17:32:49
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1940
RAM confirmation Number	4878
Deposit Account	
Authorized User	

### File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Immersion	Pages (Exp)

1	Miscellaneous Incoming Letter	Transmittal.pdf	44042 fe7407c90145e0b904967143e32b02999f2dc473	no	1
<b>Warnings:</b>					
<b>Information:</b>					
2	Extension of Time	EOT.pdf	74998 ce8840c5ed9ccee2801c8c5ba3c9cndfca1c307c	no	1
<b>Warnings:</b>					
<b>Information:</b>					
3	Applicant Response to Pre-Exam Formalities Notice	Response.pdf	42623 5ba8829bab2943a0880323d3292d728508a4f6b9	no	1
<b>Warnings:</b>					
<b>Information:</b>					
4	Preliminary Amendment	PrelAmend.pdf	102254 a339f64d9fb18876291cfd6ca2ee0fad047489260	no	4
<b>Warnings:</b>					
<b>Information:</b>					
5	Fee Worksheet (SB06)	fee-info.pdf	38383 a6f7fb103e04f9275ac1226e6abab701b1b554aa1	no	2
<b>Warnings:</b>					
<b>Information:</b>					
<b>Total Files Size (in bytes):</b>			302300		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

**REMARKS**

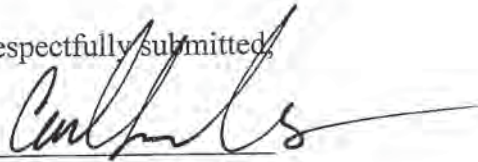
Applicant has amended the abstract to include fewer than 150. Applicant respectfully asserts that the amended Abstract complies with the appropriate rules.

Should the Office have any comments, questions, or suggestions regarding this application, the Office is courteously requested to telephone the undersigned at the number listed below.

Date:

June 14, 2012

Respectfully submitted,



Carl Sanders  
Reg. No. 57,203

KILPATRICK TOWNSEND & STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7474 (voice)  
(336) 734-2629 (fax)



**ABSTRACT**

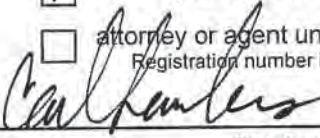
Products and processes for providing tactile sensations to input devices or electronic devices are provided. Input devices include mechanical input devices (such as, for example, mechanical switches) and non-mechanical input devices (such as, for example, touchpads). Tactile feedback is provided by using an actuator or other means in communication with the input device or electronic device. A controller may be employed to receive signals from the input devices and control the actuator. Tactile feedback to an input device or electronic device may be provided in response to one or more events or situations. Such an event or situation may be any one designated. Examples of such events and situations include the level of pressure placed on an input device; the availability or lack of availability of a function associated with an input device; and the function, menu, or mode of operation associated with an input device's activation. A variety of feedback types and combinations may be selected.

Systems and methods for providing tactile sensations are disclosed. For example, one disclosed method includes the steps of outputting a display signal configured to display a graphical object on a touch-sensitive input device; receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device; determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and generating an actuator signal based at least in part on the interaction.

**AMENDMENTS TO THE SPECIFICATION**

Please replace the Abstract with the Abstract set forth on the following page.

Under the paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)</b>		Docket Number (Optional) 51851/821825 (IMM147.C3)	
Application Number 13/362,113		Filed January 31, 2012	
For Method And Apparatus For Providing Tactile Sensations			
Art Unit 2629		Examiner To Be Assigned	
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.			
The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):			
		<u>Fee</u>	<u>Small Entity Fee</u>
<input type="checkbox"/>	One month (37 CFR 1.17(a)(1))	\$150	\$75      \$ _____
<input checked="" type="checkbox"/>	Two months (37 CFR 1.17(a)(2))	\$560	\$280      \$ <u>560</u>
<input type="checkbox"/>	Three months (37 CFR 1.17(a)(3))	\$1270	\$635      \$ _____
<input type="checkbox"/>	Four months (37 CFR 1.17(a)(4))	\$1980	\$990      \$ _____
<input type="checkbox"/>	Five months (37 CFR 1.17(a)(5))	\$2690	\$1345      \$ _____
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.			
<input type="checkbox"/> A check in the amount of the fee is enclosed.			
<input checked="" type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.			
<input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.			
<input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>20-1430</u> .			
<b>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</b>			
I am the <input type="checkbox"/> applicant/inventor.			
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).			
<input checked="" type="checkbox"/> attorney or agent of record. Registration Number <u>57,203</u>			
<input type="checkbox"/> attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____			
		June 14, 2012	
Signature		Date	
Carl Sanders		336/607-7300	
Typed or printed name		Telephone Number	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
<input type="checkbox"/> Total of _____ forms are submitted.			

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth M. Martin  
Application No. : 13/362,113  
Filed : January 31, 2012  
For : Method And Apparatus For Providing  
Tactile Sensations  
Examiner : To Be Assigned  
Art Unit : 2629  
Confirmation No. : 3915

Mail Stop: Missing Parts  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL**

Sir:

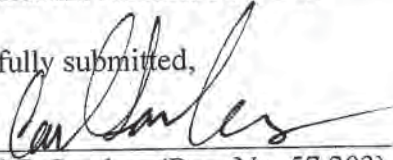
Transmitted herewith are the following documents for filing in the above-identified application:

1. Transmittal;
2. Petition for Extension of Time (2 month);
3. Response to Notice to File Missing Parts;
4. Preliminary Amendment; and
5. EFS-Web Payment in the amount of \$1,940.00  
(\$560.00 – Extension of Time; \$380.00 – Statutory Basic Filing  
Fee; \$130.00 – Surcharge; \$620.00 – Search Fee; and \$250.00 –  
Examination Fee)

The Commissioner is hereby authorized to charge any additional fees required by this action, or credit any overpayment, to Deposit Account Number 20-1430.

Respectfully submitted,

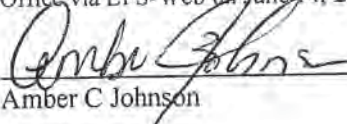
Date: June 14, 2012

By:   
Carl E. Sanders (Reg. No. 57,203)

KILPATRICK TOWNSEND &  
STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7300

**Certificate of Electronic Filing**

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS-Web on June 14, 2012.

  
Amber C. Johnson

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Kenneth M. Martin  
Application No. : 13/362,113  
For : **Method and Apparatus for Providing Tactile Sensations**  
Filed : January 31, 2012  
Examiner : Ricardo Osorio  
Art Unit : 2629  
Confirmation No. : 3915

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**PRELIMINARY AMENDMENT**

Sir:

Please amend application as follows

**Amendments to the Specification** begin on page 2 of this paper.

**Remarks** begin on page 4 of this paper.

## Electronic Patent Application Fee Transmittal

<b>Application Number:</b>	13362113			
<b>Filing Date:</b>	31-Jan-2012			
<b>Title of Invention:</b>	Method And Apparatus For Providing Tactile Sensations			
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin			
<b>Filer:</b>	Carl E. Sanders/Amber Johnson			
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)			
Filed as Large Entity				
<b>Utility under 35 USC 111(a) Filing Fees</b>				
<b>Description</b>	<b>Fee Code</b>	<b>Quantity</b>	<b>Amount</b>	<b>Sub-Total in USD(\$)</b>
<b>Basic Filing:</b>				
Utility application filing	1011	1	380	380
Utility Search Fee	1111	1	620	620
Utility Examination Fee	1311	1	250	250
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
Late filing fee for oath or declaration	1051	1	130	130
<b>Petition:</b>				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				
Extension - 2 months with \$0 paid	1252	1	560	560
<b>Miscellaneous:</b>				
<b>Total in USD (\$)</b>				<b>1940</b>

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875	Application or Docket Number <b>13/362,113</b>	Filing Date <b>01/31/2012</b>	<input type="checkbox"/> To be Mailed
---	---	----------------------------------	---------------------------------------

APPLICATION AS FILED – PART I			OTHER THAN SMALL ENTITY				
	(Column 1)	(Column 2)	SMALL ENTITY <input type="checkbox"/>	OR			
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)
<input checked="" type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A			N/A	<b>380</b>
<input checked="" type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A			N/A	<b>620</b>
<input checked="" type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A			N/A	<b>250</b>
TOTAL CLAIMS <small>(37 CFR 1.16(j))</small>	20 minus 20 =	* 0	X \$ =		OR	X \$60 =	<b>0</b>
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	3 minus 3 =	* 0	X \$ =			X \$250 =	<b>0</b>
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	<b>1250</b>

APPLICATION AS AMENDED – PART II					OTHER THAN SMALL ENTITY				
	(Column 1)	(Column 2)	(Column 3)		SMALL ENTITY	OR			
AMENDMENT	06/14/2012	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 20	Minus ** 20	= 0	X \$ =		OR	X \$60 =	<b>0</b>
	Independent (37 CFR 1.16(h))	* 3	Minus *** 3	= 0	X \$ =		OR	X \$250 =	<b>0</b>
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))						OR		
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	<b>0</b>

	(Column 1)	(Column 2)	(Column 3)		SMALL ENTITY	OR			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	X \$ =		OR	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus ***	=	X \$ =		OR	X \$ =	
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))						OR		
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
 \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".  
 \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".  
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:  
/ROBERT TALBERT/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.







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Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY,DOCKET.NO, TOT CLAIMS, IND CLAIMS. Row 1: 13/362,113, 01/31/2012, 2629, 1380, 51851/821825 (IMM147.C3), 20, 3

CONFIRMATION NO. 3915

UPDATED FILING RECEIPT

34300
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101



Date Mailed: 10/22/2012

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections

Inventor(s)

Kenneth M. Martin, Los Gatos, CA;
Steven P. Vassallo, Redwood City, CA;
Alex S. Goldenberg, San Francisco, CA;
Alexander Jasso, San Jose, CA;
Kollin Tierling, Milpitas, CA;

Applicant(s)

Kenneth M. Martin, Los Gatos, CA;
Steven P. Vassallo, Redwood City, CA;
Alex S. Goldenberg, San Francisco, CA;
Alexander Jasso, San Jose, CA;
Kollin Tierling, Milpitas, CA;

Assignment For Published Patent Application

Immersion Corporation, San Jose, CA

Power of Attorney: The patent practitioners associated with Customer Number 34300

Domestic Priority data as claimed by applicant

This application is a CON of 12/894,489 09/30/2010 PAT 8159461
which is a CON of 11/693,117 03/29/2007 PAT 7808488
which is a CON of 10/285,450 11/01/2002 PAT 7336260
which claims benefit of 60/335,493 11/01/2001
and claims benefit of 60/399,883 07/31/2002

Foreign Applications (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.)

**If Required, Foreign Filing License Granted:** 02/10/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/362,113**

**Projected Publication Date:** 01/31/2013

**Non-Publication Request:** No

**Early Publication Request:** No

**Title**

Method And Apparatus For Providing Tactile Sensations

**Preliminary Class**

345

## **PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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**Title 35, United States Code, Section 184**  
**Title 37, Code of Federal Regulations, 5.11 & 5.15**

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)

**CONFIRMATION NO. 3915**

34300  
PATENT DEPARTMENT (51851)  
KILPATRICK TOWNSEND & STOCKTON LLP  
1001 WEST FOURTH STREET  
WINSTON-SALEM, NC 27101

**PUBLICATION NOTICE**



**Title:**Method And Apparatus For Providing Tactile Sensations

**Publication No.**US-2013-0027324-A1

**Publication Date:**01/31/2013

**NOTICE OF PUBLICATION OF APPLICATION**

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at [www.uspto.gov](http://www.uspto.gov). The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at [www.uspto.gov](http://www.uspto.gov) using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915
34300                      7590                      03/07/2013 PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101			EXAMINER	
			OSORIO, RICARDO	
			ART UNIT	PAPER NUMBER
			2692	
			MAIL DATE	DELIVERY MODE
			03/07/2013	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

<b>Application No.</b> 13/362,113	<b>Applicant(s)</b> MARTIN ET AL.	
<b>Examiner</b> RICARDO L. OSORIO	<b>Art Unit</b> 2692	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1)  Responsive to communication(s) filed on 31 January 2012.
- 2a)  This action is **FINAL**.
- 2b)  This action is non-final.
- 3)  An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 5)  Claim(s) 1-20 is/are pending in the application.  
5a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 6)  Claim(s) \_\_\_\_\_ is/are allowed.
- 7)  Claim(s) 1-20 is/are rejected.
- 8)  Claim(s) \_\_\_\_\_ is/are objected to.
- 9)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

\* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

**Application Papers**

- 10)  The specification is objected to by the Examiner.
- 11)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1)  Notice of References Cited (PTO-892)
- 2)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 3)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4)  Other: \_\_\_\_\_

**DETAILED ACTION*****Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.



Art Unit: 2692

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 8,159,461. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-20 of the instant application and claims 1-23 of U.S. Patent No. 8,159,461 have common limitations. However, claims 1-20 of the instant application are broader than claims 1-23 of U.S. Patent No. 8,159,461.

The omission of an element and its function where not needed is obvious. *Ex parte Rainu*, 168 USPQ 375 (PTO Bd. Of App. 1969). The omission of an element and its function in a combination is an obvious expedient if the remaining elements perform the same as before. *In re Karlson*, 136 USPQ 184 (CCPA 1963).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICARDO L. OSORIO whose telephone number is (571)272-7676. The examiner can normally be reached on MONDAY-THURSDAY 7:00 am-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LUNYI LAO can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2692

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RICARDO L OSORIO/  
Primary Examiner, Art Unit 2692

<b>Search Notes</b> 	<b>Application/Control No.</b> 13362113	<b>Applicant(s)/Patent Under Reexamination</b> MARTIN ET AL.
	<b>Examiner</b> RICARDO L OSORIO	<b>Art Unit</b> 2692

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	163, 167-169	3/1/2013	RLO

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	3/1/2013	RLO

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Kenneth M. Martin  
Application No. : 13/362,113  
For : **Method and Apparatus for Providing Tactile Sensations**  
Filed : January 31, 2012  
Examiner : Ricardo Osorio  
Art Unit : 2692  
Confirmation No. : 3915

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE TO NON-FINAL OFFICE ACTION**

Sir:

The following Amendment and Remarks are submitted in response to the Office Action mailed March 7, 2013.

**Listing of the Claims** begin on page 2 of this paper.

**Remarks** begin on page 7 of this paper.

## Electronic Patent Application Fee Transmittal

<b>Application Number:</b>	13362113
<b>Filing Date:</b>	31-Jan-2012
<b>Title of Invention:</b>	Method And Apparatus For Providing Tactile Sensations
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Filer:</b>	Carl E. Sanders/Laura Smith
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)

Filed as Large Entity

### Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				
Extension - 1 month with \$0 paid	1251	1	200	200

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Miscellaneous:</b>				
Statutory or Terminal Disclaimer	1814	1	160	160
<b>Total in USD (\$)</b>				<b>360</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	16246146
<b>Application Number:</b>	13362113
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	3915
<b>Title of Invention:</b>	Method And Apparatus For Providing Tactile Sensations
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Customer Number:</b>	34300
<b>Filer:</b>	Carl E. Sanders/Laura Smith
<b>Filer Authorized By:</b>	Carl E. Sanders
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)
<b>Receipt Date:</b>	08-JUL-2013
<b>Filing Date:</b>	31-JAN-2012
<b>Time Stamp:</b>	09:37:30
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$360
RAM confirmation Number	4783
Deposit Account	
Authorized User	

### File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Page	Pages

1	Transmittal Letter	Transmittal821825.pdf	51756 7037052c54770039b0531074a678860e4ac533fa	no	2
<b>Warnings:</b>					
<b>Information:</b>					
2	Extension of Time	ExtensionofTime821825.pdf	73811 030ff03308907a5aa3e5c0b0ea81b842d35eb9	no	1
<b>Warnings:</b>					
<b>Information:</b>					
3	Terminal Disclaimer Filed	TerminalDisclaimer821825.pdf	82124 bba3a0383814007bbde2339864a0b3af773ac1e4	no	1
<b>Warnings:</b>					
<b>Information:</b>					
4	Amendment Copy Claims/Response to Suggested Claims	Response821825.pdf	205205 e1cc5cba7103f95d35ad37feab1aab8f7323b0b3	no	7
<b>Warnings:</b>					
<b>Information:</b>					
5	Fee Worksheet (SB06)	fee-info.pdf	31774 304d9a4328e9bd6a99d895980425712aa67f8890	no	2
<b>Warnings:</b>					
<b>Information:</b>					
<b>Total Files Size (in bytes):</b>				444670	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth M. Martin  
 Application No. : 13/362,113  
 Filed : January 31, 2012  
 For : Method And Apparatus For Providing  
 Tactile Sensations  
 Examiner : Ricardo Osorio  
 Art Unit : 2692  
 Confirmation No. : 3915

Mail Stop Amendment  
 Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

**TRANSMITTAL**

Sir:

Transmitted herewith are the following documents for filing in the above-identified application:

1. Transmittal;
2. Petition for Extension of Time (1 month);
3. Terminal Disclaimer;
4. Response to Non-Final Office Action; and
5. EFS-Web Payment in the amount of \$360.00  
 (\$200.00 – Extension of Time; \$160.00 – Disclaimer)

Shown below are the fees for the presentation of the amended claims:

	Claims Remaining	Highest # Previously Paid For	Extra	Rate	Fee
TOTAL	20	20	0	\$ 80	\$ 0
Ind. Cls.	3	3	0	\$420	\$ 0
Multiple Dependent Claim Added..... NO					
TOTAL					\$0

The Commissioner is hereby authorized to charge any additional fees required by this action, or credit any overpayment, to Deposit Account Number 20-1430.

Respectfully submitted,

Date: July 8, 2013

By: Carl Sanders  
Carl E. Sanders (Reg. No. 57,203)

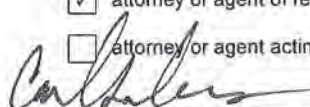
KILPATRICK TOWNSEND &  
STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7300

**Certificate of Electronic Filing**

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS-Web on July 8, 2013.

Laura J. Smith  
Laura J. Smith

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)</b>		Docket Number (Optional) <b>IMM147.C3 (51851/821825)</b>																														
Application Number <b>13/362,113</b>	Filed <b>January 31, 2012</b>																															
For <b>Method And Apparatus for Providing Tactile Sensations</b>																																
Art Unit <b>2692</b>	Examiner <b>Ricardo Osorio</b>																															
<p>This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.</p> <p>The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;"></th> <th style="text-align: center; border-bottom: 1px solid black;">Fee</th> <th style="text-align: center; border-bottom: 1px solid black;">Small Entity Fee</th> <th style="text-align: center; border-bottom: 1px solid black;">Micro Entity Fee</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))</td> <td style="text-align: center;">\$200</td> <td style="text-align: center;">\$100</td> <td style="text-align: center;">\$50</td> <td style="text-align: right;">\$ <u>200.00</u></td> </tr> <tr> <td><input type="checkbox"/> Two months (37 CFR 1.17(a)(2))</td> <td style="text-align: center;">\$600</td> <td style="text-align: center;">\$300</td> <td style="text-align: center;">\$150</td> <td style="text-align: right;">\$ _____</td> </tr> <tr> <td><input type="checkbox"/> Three months (37 CFR 1.17(a)(3))</td> <td style="text-align: center;">\$1,400</td> <td style="text-align: center;">\$700</td> <td style="text-align: center;">\$350</td> <td style="text-align: right;">\$ _____</td> </tr> <tr> <td><input type="checkbox"/> Four months (37 CFR 1.17(a)(4))</td> <td style="text-align: center;">\$2,200</td> <td style="text-align: center;">\$1,100</td> <td style="text-align: center;">\$550</td> <td style="text-align: right;">\$ _____</td> </tr> <tr> <td><input type="checkbox"/> Five months (37 CFR 1.17(a)(5))</td> <td style="text-align: center;">\$3,000</td> <td style="text-align: center;">\$1,500</td> <td style="text-align: center;">\$750</td> <td style="text-align: right;">\$ _____</td> </tr> </tbody> </table> <p><input type="checkbox"/> Applicant asserts small entity status. See 37 CFR 1.27.</p> <p><input type="checkbox"/> Applicant certifies micro entity status. See 37 CFR 1.29. Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.</p> <p><input type="checkbox"/> A check in the amount of the fee is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.</p> <p><input checked="" type="checkbox"/> The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>20-1430</u>.</p> <p><input checked="" type="checkbox"/> Payment made via EFS-Web.</p> <p><b>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</b></p> <p>I am the</p> <p><input type="checkbox"/> applicant/inventor.</p> <p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. 37 CFR 3.73(b) statement is enclosed (Form PTO/SB/96).</p> <p><input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>57,203</u>.</p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number _____.</p> <p style="text-align: center;">       _____      Signature   </p> <p style="text-align: center;"> <u>July 8, 2013</u>      _____      Date   </p> <p style="text-align: center;"> <u>Carl Sanders</u>      _____      Typed or printed name   </p> <p style="text-align: center;"> <u>(336) 607-7300</u>      _____      Telephone Number   </p> <p><b>NOTE:</b> This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.</p> <p><input type="checkbox"/> * Total of _____ forms are submitted.</p>				Fee	Small Entity Fee	Micro Entity Fee		<input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$200	\$100	\$50	\$ <u>200.00</u>	<input type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$600	\$300	\$150	\$ _____	<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$1,400	\$700	\$350	\$ _____	<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$2,200	\$1,100	\$550	\$ _____	<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$3,000	\$1,500	\$750	\$ _____
	Fee	Small Entity Fee	Micro Entity Fee																													
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<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$3,000	\$1,500	\$750	\$ _____																												

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

**LISTING OF THE CLAIMS**

1. (Original) A method, comprising:
  - outputting a display signal configured to display a graphical object on a touch-sensitive input device;
  - receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
  - determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and
  - generating an actuator signal based at least in part on the interaction; and
2. (Original) The method of claim 1 wherein, the actuator signal is configured to cause a haptic effect to be output.
3. (Original) The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.
4. (Original) The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.
5. (Original) The method of claim 1, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

6. (Original) The method of claim 5, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
7. (Original) The method of claim 5, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
8. (Original) The method of claim 5, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
9. (Original) The method of claim 1, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.
10. (Original) A system, comprising:
  - a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device;
  - an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface basted at least in part on the actuator signal; and
  - a processor in communication with the sensor and the actuator, the processor configured to:

output a display signal configured to display a graphical object on the touch-sensitive input device;

receive the sensor signal from the touch-sensitive input device;

determine an interaction between the object contacting the touch-sensitive surface and the graphical object,

generate the actuator signal based at least in part on the interaction; and

transmit the actuator signal to the actuator.

11. (Original) The system of claim 10, wherein the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object.

12. (Original) The system of claim 10, wherein the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

13. (Original) The system of claim 10, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

14. (Original) The system of claim 13, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.

15. (Original) The method of claim 13, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
  
16. (Original) The method of claim 13, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
  
17. (Original) The method of claim 10, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.
  
18. (Original) A computer-readable medium comprising program code, comprising:
  - program code for outputting a display signal configured to display a graphical object on a touch-sensitive input device;
  - program code for receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
  - program code for determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and
  - program code for generating an actuator signal based at least in part on the interaction, the actuator signal configured to cause a haptic effect to be output.

19. (Original) The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.

20. (Original) The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.



**REMARKS**

This paper is filed in response to the Office Action mailed March 7, 2013 (the "Office Action").

Claims 1-20 are pending in this application. Claims 1-20 were rejected under the judicially-created doctrine of obviousness-type double patenting over U.S. Patent No. 8,159,461 to Martin ("Martin").

In response to the rejection of claims 1-20, Applicant submits herewith a Terminal Disclaimer over Martin. Applicant respectfully requests the Examiner withdraw the rejection of claims 1-20.

**CONCLUSION**

Applicant respectfully asserts that in view of the amendments and remarks above, all pending claims are allowable and Applicant respectfully requests the allowance of all claims.

Should the Examiner have any comments, questions, or suggestions of a nature necessary to expedite the prosecution of the application, or to place the case in condition for allowance, the Examiner is courteously requested to telephone the undersigned at the number listed below.

Date: July 8, 2013

Respectfully submitted,



Carl Sanders  
Reg. No. 57,203

KILPATRICK TOWNSEND & STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7474 (voice)  
(336) 734-2629 (fax)

**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING  
REJECTION OVER A "PRIOR" PATENT**Docket Number (Optional)  
IMM147.C3 (51851/821825)

In re Application of: Kenneth M. Martin et al

Application No.: 13/362,113

Filed: January 31, 2012

For: Method And Apparatus For Providing Tactile Sensations

The owner\*, Immersion Corporation, of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,159,461 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1.  For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2.  The undersigned is an attorney or agent of record. Reg. No. 57,203



Signature

July 8, 2013  
Date

Carl Sanders

Typed or printed name

336/607-7300  
Telephone Number

- Terminal disclaimer fee under 37 CFR 1.20(d) included.

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

\*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).  
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Martin et al.  
Appl. No.: 13/362,113  
For: Method and Apparatus for Providing Tactile Sensations  
Filed: January 31, 2012  
Examiner: R. Osorio  
Art Unit: 2692  
Confirmation No: 3915

INFORMATION DISCLOSURE STATEMENT  
(SUBMISSION AFTER FILING OF AN APPLICATION  
BUT BEFORE FINAL REJECTION OR NOTICE OF ALLOWANCE  
OR CONCURRENTLY WITH A RULE 1.114 RCE APPLICATION)

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, applicant(s) hereby submit(s) an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications, or other information submitted for consideration by the Office are listed on the PTO/SB/08A(s), attached hereto.

II. COPIES (check at least one box)

- a.  This application was filed before June 30, 2003. Accordingly, submitted herewith is a legible copy of (i) each U.S. and foreign patent; (ii) each publication or that portion which caused it to be listed; and (iii) all other information or that portion which caused it to be listed.
- b.  This application was filed on or after June 30, 2003. Accordingly, copies of cited U.S. patents and patent application publications therefore are not included. Copies of foreign patent documents and non-patent literature are included.

- c.  Some or all of the documents listed on the attached PTO/SB/08A are not enclosed pursuant to 37 C.F.R. § 1.98(d) because the documents were previously cited or submitted to the Office in prior Application Serial No. 12/894,489 (now U.S. Patent 8,159,461) to which the above identified application claim priority under 35 U.S.C. § 120. If copies are needed, please contact the undersigned.

III. CONCISE EXPLANATION OF THE RELEVANCE  
(check at least one box)

- a.  **DOCUMENTS IN THE ENGLISH LANGUAGE**

The patents, publications, or other information listed on the attached PTO/SB/08A are in the English language and therefore, do not require a statement of relevancy.

- b.  **DOCUMENTS NOT IN THE ENGLISH LANGUAGE**

A concise explanation of the relevance of all patents, publications, or other information listed that is not in the English language is as follows:

- c.  **ENGLISH LANGUAGE SEARCH REPORT**

An English language version of the search report or action that indicates the degree of relevance found by the foreign office is attached, thereby satisfying the requirement for a concise explanation. See MPEP 609(III)(A)(3).

- d.  **OTHER**

The following additional information is provided for the Examiner's consideration.

FEES

IV.  THIS IDS IS BEING FILED UNDER 37 C.F.R. § 1.97(b):  
(check one box)

- a.  within three months of the filing date of a national application (37 C.F.R. § 1.97(b)(1)). No fee or statement is required. *(This section is not to be used with RCE's.)*
- b.  within three months of the date of entry of the national stage as set forth in § 1.491 in an international application (37 C.F.R. § 1.97(b)(2)). No fee or statement is required.
- c.  concurrently with the filing of a Request for Continued Examination under § 1.114 (37 C.F.R. § 1.97(b)(4)). No fee or statement is required.
- d.  before the mailing date of a first Action on the merits (37 C.F.R. § 1.97(b)(3)). No fee or statement is required.

In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the statement under 37 C.F.R. § 1.97(e) below, or, if no statement has been made, charge our deposit account in the amount of \$180.00 as required by 37 C.F.R. § 1.17(p).

V.  THIS IDS IS BEING FILED UNDER 37 C.F.R. § 1.97(c):  
(check one box)

before the mailing date of a Final Office Action under 37 C.F.R. § 1.113 (See 37 C.F.R. § 1.97(c)(1)) or before the mailing date of a Notice of Allowance under 37 C.F.R. § 1.311 (See 37 C.F.R. § 1.97(c)(2)).

- a.  No statement; therefore, a fee in the amount of \$180.00 as required by 37 C.F.R. § 1.17(p).
- or
- b.  See the statement below. No fee is required.

VI. STATEMENT UNDER 37 C.F.R. § 1.97(e) (check only one box)

The undersigned hereby states that

- a.  each item of information contained in the IDS was first cited in any communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS; or
- b.  no item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of the IDS.
- c.  Some of the items of information were cited in a communication from a foreign Patent Office. As to this information, the undersigned states that each item of information contained in the IDS was first cited in a communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby states that no item of this remaining information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application and, to the best of my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this statement.

VII. PAYMENT OF FEES (check one box)

- Payment by credit card Form PTO-2038 in the amount of \$180 required by 37 C.F.R. § 1.17(p) is enclosed for the above-identified fee.
- Please charge Deposit Account No. 20-1430 in the amount required by 37 C.F.R. § 1.17(p) for the above-indicated fee. A triplicate copy of this paper is attached.
- No fee is required.


If the Examiner has any questions concerning this IDS, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule and charge the appropriate fee to Deposit Account No. 20-1430.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 20-1430 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17.

Respectfully submitted,

KILPATRICK TOWNSEND & STOCKTON LLP

Date: July 8, 2013

By:   
Carl Sanders (Reg. No. 57,203)  
1001 West Fourth Street  
Winston-Salem, NC 27101-2400

Attachment(s):       PTO/SB/08A  
                               Documents  
                               Fee  
                               Other:

Substitute for form 1449A/PTO

# Information Disclosure Statement by Applicant

(use as many sheets as necessary)

Complete if Known

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

Sheet 1 of 12

## U.S. PATENT DOCUMENTS

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
	1	2,972,140	2/14/1961	Hirsch	
	2	3,157,853	11/17/1964	Hirsch	
	3	3,220,121	11/30/1965	Cutler	
	4	3,497,668	02/24/1970	Hirsch	
	5	3,517,446	06/30/1970	Corlyon et al.	
	6	3,623,064	11/23/1970	Kagen	
	7	3,902,687	09/02/1975	Hightower	
	8	3,903,614	09/09/1975	Diamond et al.	
	9	3,911,416	10/07/1995	Feder	
	10	4,127,752	11/28/1978	Lowthorp	
	11	4,160,508	07/10/1979	Salsbury	
	12	4,236,325	12/02/1980	Hall et al.	
	13	4,262,549	04/21/1981	Schwellenbach	
	14	4,311,980	01/19/1982	Prudenziati	
	15	4,333,070	06/01/1982	Barnes	
	16	4,362,408	12/07/1982	Cordes et al.	
	17	4,464,117	08/07/1984	Forest	
	18	4,484,191	11/20/1984	Vavra	
	19	4,513,235	04/23/1985	Acklam et al.	
	20	4,581,491	04/08/1986	Boothroyd	
	21	4,581,972	04/15/1986	Hoshino	
	22	4,599,070	07/08/1986	Hladky et al.	
	23	4,692,756	09/08/1987	Clark	
	24	4,708,656	11/24/1987	De Vries et al.	
	25	4,713,007	12/15/1987	Alban	
	26	4,725,817	02/16/1988	Jay	
	27	4,795,296	01/03/1989	Wijlborg	
	28	4,791,416	12/13/1988	Adler	
	29	4,794,392	12/27/1988	Selinko	
	30	4,798,919	01/17/1989	Suita	
	31	4,821,030	04/11/1989	Batson	
	32	4,823,106	04/16/1989	Pope	
	33	4,840,634	06/20/1989	Muller	
	34	4,885,565	1208/1989	Embach	

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Considered

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# Information Disclosure Statement by Applicant

(use as many sheets as necessary)

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Complete if Known

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

## U.S. PATENT DOCUMENTS

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
	35	4,891,764	01/02/1990	McIntosh	
	36	4,930,770	06/05/1990	Baker	
	37	4,934,694	06/19/1990	McIntosh	
	38	4,982,918	01/08/1991	Kaye	
	39	4,983,786	01/08/1991	Stevens	
	40	5,019,761	05/28/1991	Kraft	
	41	5,022,384	06/11/1991	Freels	
	42	5,022,407	06/11/1991	Horch et al.	
	43	5,035,242	07/30/1991	Franklin, et al.	
	44	5,038,089	08/06/1991	Szakaly	
	45	5,053,585	10/01/1991	Yaniger	
	46	5,078,152	01/07/1992	Bond	
	47	5,116,051	05/26/1992	Moncrief	
	48	5,165,897	11/24/1992	Johnson	
	49	5,175,459	12/29/1992	Danial et al.	
	50	5,182,557	01/26/1993	Lang	
	51	5,186,685	02/16/1993	Grossman et al.	
	52	5,212,473	05/18/1993	Louis	
	53	5,223,658	06/29/1993	Suzuki	
	54	5,237,327	08/17/1993	Saitoh	
	55	5,283,970	02/08/1994	Aigner	
	56	5,240,417	08/31/1993	Smithson et al.	
	57	5,241,308	08/31/1993	Young	
	58	5,246,316	09/21/1993	Smith	
	59	5,271,290	12/21/1993	Fischer	
	60	5,275,174	01/4/1994	Cook	
	61	5,289,273	02/22/1994	Lang	
	62	5,299,810	04/05/1994	Pierce, et al.	
	63	5,309,140	05/03/1994	Everett	
	64	5,334,027	08/02/1994	Wherlock	
	65	5,355,148	10/11/1994	Anderson	
	66	5,390,128	02/14/1995	Ryan	
	67	5,390,296	02/14/1995	Crandall	

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Sheet 3 of 12

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Application Number	13/362,113
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Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

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		Number Kind Code <sup>2</sup> (if known)			
	68	5,402,499	03/28/1995	Robinson	
	69	5,402,680	04/04/1995	Korenaga	
	70	5,436,622	07/25/1995	Gutman et al.	
	71	5,437,607	08/01/1995	Taylor	
	72	5,451,924	09/19/1995	Massimino	
	73	5,461,711	10/24/1995	Wang	
	74	5,466,213	11/14/1995	Hogan, et al.	
	75	5,489,812	02/06/1996	Furuhata	
	76	5,496,174	03/05/1996	Garner	
	77	5,514,150	05/07/1996	Rostoker	
	78	5,521,336	05/28/1996	Buchanan	
	79	5,547,382	08/20/1996	Yamasaki, et al.	
	80	5,575,761	11/19/1996	Hajianpour	
	81	5,631,861	05/20/1997	Kramer	
	82	5,684,722	11/04/1997	Thorner	
	83	5,691,747	11/25/1997	Amano	
	84	5,709,219	01/20/1998	Chen	
	85	5,729,249	03/17/1998	Yasutake	
	86	5,766,016	06/16/1998	Sinclair, et al.	
	87	5,767,457	06/16/1998	Gerpheide	
	88	5,785,630	07/28/1998	Bobick et al.	
	89	5,791,992	08/11/1998	Crump	
	90	5,844,392	12/01/1998	Peurach	
	91	5,857,986	01/12/1999	Moriyasu	
	92	5,887,995	03/30/1999	Holehan	
	93	5,889,670	03/30/1999	Schuler	
	94	5,889,672	03/30/1999	Schuler	
	95	5,917,906	06/29/1999	Thornton	
	96	5,943,044	08/24/1999	Martinelli	
	97	5,945,772	08/31/1999	Macnak	
	98	5,977,867	11/02/1999	Bouin	
	99	5,988,902	11/23/1999	Holehan	
	100	6,078,126	06/20/2000	Rollins	

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# Information Disclosure Statement by Applicant

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Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

101	6,097,964	08/01/2000	Nuovo
102	6,059,506	05/09/2000	Kramer
103	6,160,489	12/12/2000	Perry et al.
104	6,111,577	08/29/2000	Zilles et al.
105	6,118,435	09/12/2000	Fujita et al.
106	6,198,206	03/06/2001	Saarmaa
107	6,131,097	10/10/2000	Peurah
108	6,195,592	02/27/2001	Schuler
109	6,160,489	12/12/2000	Perry et al.
110	6,198,206	03/06/2001	Saarmaa
111	6,218,966	04/17/2001	Goodwin
112	6,219,034	04/17/2001	Elbing, et al.
113	6,225,976	05/01/2001	Yates
114	6,292,173	09/18/2001	Rambaldi et al.
115	6,307,465	10/23/2001	Kayma et al.
116	6,344,791	02/05/2002	Armstrong
117	6,369,803	04/09/2002	Brisebois et al.
118	6,373,463	04/16/2002	Beeks
119	6,374,255	04/16/2002	Peurah
120	6,388,655	05/14/2002	Leung
121	6,422,941	07/23/2002	Thorner, et al.
122	6,429,846	08/06/2002	Rosenberg
123	6,543,487	05/13/2003	Bazinet
124	6,597,347	07/22/2003	Yasutake
125	6,657,617	12/02/2003	Paolini et al.
126	6,735,307	05/11/2004	Volckers
127	6,781,569	08/24/2004	Gregorio et al.
128	6,801,191	10/05/2004	Mukai et al.
129	6,976,562	12/20/2005	Perret, Jr. et al.
130	7,202,851	04/10/2007	Cunningham et al.
131	2002/0033795	03/21/2002	Shahoian
132	2002/0171621	11/21/2002	Johnson
133	2002/177471	11/28/2002	Kaaresoja
134	2002/0128048	09/12/2002	Aaltonen
135	2002/0149561	10/17/2002	Fukumoto et al.
136	2005/0099393	05/12/2005	Johnson
137	2008/0068350	03/20/2008	Rosenberg et al.

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT***(use as many sheets as necessary)*

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Application Number	13/362,113
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First Named Inventor	Martin et al.
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Examiner Name	Osorio, R.
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Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
	138.	EP	0349086		01/03/1990	Stork Kwant B.V.	
	139.	EP	0817110		01/07/1998	Nokia Mobile Phones Ltd.	
	140.	GB	2180342		03/25/1987	Alcorn United	
	141.	JP	01-003664		07/19/1990	Taito Corporation	
	142.	JP	02-109714		01/13/1992	Epoch Co. and Key- Planning Co.	
	143.	JP	04-007371		08/03/1993	Taito Corporation	
	144.	JP	05-193862		01/27/1995	Sega Corporation	
	145.	JP	H2-185278		07/19/1990	Yamada	
	146.	JP	H4-8381		01/13/1992	Endo	
	147.	JP	H5-192449		08/03/1993	Koma et al.	
	148.	JP	H7-24147		01/27/1995	Yokoyama	
	149.	JP	8221173		08/30/1996	Hitachi Ltd.; Hitachi Device Eng.	
	150.	JP	10171586		06/26/1998	Sharp KK	
	151.	JP	1124834		01/29/1999	Fujiyama Teruhi	
	152.	JP	11085400		03/30/1999	Sony Corp.	
	153.	JP	2001-222379		08/17/2001	Fujitsu Ltd.	
	154.	JP	2001-265485		09/28/2001	Sharp KK	
	155.	JP	2001-290572		10/19/2001	Fuji Xerox Co. Ltd.	
	156.	JP	2001-296950		10/26/2001	Fuji Xerox Co. Ltd.	
	157.	JP	2002-259059		09/13/2002	Motoyama et al.	
	158.	JP	2001-350592		12/21/2001	Ryo et al.	
	159.	KR	2001-0028369		04/06/2001	Sim Jae Boong	
	160.	WO	95/20787		08/03/1995	Exos, Inc.	
	161.	WO	97/18546		05/22/1997	Cirque Corporation	
	162.	WO	99/49443		09/30/1999	Immersion Corporation	
	163.	WO	01/54109		07/26/2001	Immersion Corporation	
	164.	WO	02/31807		04/18/2002	Motorola, Inc.	
	165.	WO	02/19110		11/29/2002	Immersion Corporation	
	166.	WO	02/27645		04/04/2002	Siemens Aktiengesellschaft	
Examiner Signature				Date Considered			

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**INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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Sheet 6 of 12

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Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Group Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	167.	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.
	168.	ADELSTEIN, "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances in Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.
	169.	AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.
	170.	BAIGRIE, "Electric Control Loading - A Low Cost, High Performance Alternative," Proceedings, pp. 247-254, November 6-8, 1990.
	171.	BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.
	172.	BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-IFTOMM, Sep. 8-12, 1981.
	173.	BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.
	174.	BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989.
	175.	BLISS, "Optical-to-Tactile Image Conversion for the Blind," IEEE Transactions on Man-Machine Systems, Vol. MMS-11, No. 1, March 1970.
	176.	BROOKS et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," JPL Publication 85-11; NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985.

Examiner Signature	Date Considered
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Substitute for form 1449A/PTO		<i>Complete if Known</i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>		Application Number	13/362,113
		Filing Date	January 31, 2012
		First Named Inventor	Martin et al.
		Group Art Unit	2692
		Examiner Name	Osorio, R.
		Attorney Docket Number	51851-821825 (IMM147.C3)
Sheet	7	of	12

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	177.	BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.	
	178.	CADLER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," Bachelor of Science Thesis, MIT, June 23, 1983.	
	179.	CALDWELL et al., "Enhanced Tactile Feedback (Tele-Traction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993.	
	180.	EBERHARDT et al., "OMAR - A Haptic display for speech perception by deaf and def-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993.	
	181.	EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control; Volume 1, ASME 1994.	
	182.	FUKUMOTO, "Active Click: Tactile Feedback For Touch Panels," ACM CHI2001 Extended Abstracts, pp. 121-122, April 2001.	
	183.	GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Journal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1995.	
	184.	GOTOW et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337	
	185.	HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992.	
	186.	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990.	
	187.	International Search Report filed 11/1/02 corresponding to PCT/US02/35016	
	188.	IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.	
	189.	JACOBSEN et al., "High Performance, Dexterous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.	

Examiner Signature	Date Considered
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<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

Substitute for form 1449A/PTO			<i>Complete if Known</i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>			Application Number	13/362,113
			Filing Date	January 31, 2012
			First Named Inventor	Martin et al.
			Group Art Unit	2692
			Examiner Name	Osorio, R.
			Attorney Docket Number	51851-821825 (IMM147.C3)
Sheet	8	of	12	

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	190.	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990.	
	191.	JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990.	
	192.	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.	
	193.	KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemanipulator Technology and Space Telerobotics, Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.	
	194.	KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," PRESENCE, 4(4):387-402, 1995.	
	195.	LAKE, "Cyberman from Logitech," GameBytes, 1994.	
	196.	MARCUS, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994.	
	197.	MCAFFEE, "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," JPL D-5172, pp. 1-50, A1-A36, B1-B5, C1-C36, January 1988.	
	198.	MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Textue for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.	
	199.	OUIH-YOUNG, "Force Display in Molecular Docking," Order No. 9034744, p. 1-369, 1990.	
	200.	OUIH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995.	
	201.	OUIH-YOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
	202.	PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics in Space, Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>			Application Number	13/362,113
			Filing Date	January 31, 2012
			First Named Inventor	Martin et al.
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	203.	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	
	204.	RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contactor area," Journal of The Acoustical Society of America, Vol. 82, No. 4, October 1987.	
	205.	RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives 08/14/1990, pp. 1-131, May 1990.	
	206.	RUSSO, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, Advances in Robotics, pp. 63-70, ASME 1992.	
	207.	SCANNELL, "Taking a Joystick Ride", Computer Currents, Nov. 1994, Boston Edition, Vol. 9 No. 11	
	208.	SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration, Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.	
	209.	SMK Corporation, "Multi-Functional Touch Panel, Force-Feedback Type, Developed: A Touch Panel Providing a Clicking Feeling," <a href="http://www.smk.co.jp/whatsnew_e/628csc_e.html">http://www.smk.co.jp/whatsnew_e/628csc_e.html</a> , September. 30, 2002.	
	210.	SMK Corporation, "Force Feedback Type Optical Touch Panel Developed," SMK Corporation Website, October 30, 2002	
	211.	SNOW et al., "Model-X Force-Reflecting-Hand-Controller," NT Control no. MPO-17851; JPL Case No. 5348, pp. 1-4, 06/15/1989.	
	212.	STANLEY et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSV-Vol. 42, Advances in Robotics, pp. 55-61, ASME 1992.	
	213.	TADROS, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," MIT Archive@ Massachusetts Institute of Technology, pp. 1-88, February 1990.	
	214.	TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988.	
	215.	WAKIWAKA, et al., "Influence of Mover Support Structure on Linear Oscillatory Actuator for Cellular Phones," The Third International Symposium on Linear Drives for Industry Applications, 2001, p. 260-263, Nagano, Japan	
	216.	WIKER, "Teletouch Display Development: Phase 1 Report," Technical Report 1230, Naval Ocean Systems Center, San Diego, April 17, 1989.	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>			<i>Application Number</i>	13/362,113
			<i>Filing Date</i>	January 31, 2012
			<i>First Named Inventor</i>	Martin et al.
			<i>Art Unit</i>	2692
			<i>Examiner Name</i>	Osorio, R.
			<i>Attorney Docket Number</i>	51851-821825 (IMM147.C3)
Sheet	10	of	12	

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	217.	Notification of First Office Action mailed September 5, 2007 for corresponding Chinese Application 02821854.X.	
	218.	Notice of Reasons for Rejection for January 29, 2008 mailed February 20, 2008 for corresponding Japanese Patent Application No. 2003-540973.	
	219.	Notice of Reasons for Rejection of September 11, 2007 mailed September 11, 2007 for corresponding Japanese Patent Application No. 2003-540973.	
	220.	United States Patent and Trademark Office, Office Action mailed December 23, 2005 for corresponding US Application No. 10/285,450.	
	221.	United States Patent and Trademark Office, Office Action mailed May 18, 2006 for corresponding US Application No. 10/285,450.	
	222.	United States Patent and Trademark Office, Office Action mailed November 15, 2006 for corresponding US Application No. 10/285,450.	
	223.	United States Patent and Trademark Office, Office Action mailed June 1, 2007 for corresponding US Application No. 10/285,450.	
	224.	European Supplemental Search Report mailed July 1, 2008 for corresponding European Patent Application No. 02773960.6.	
	225.	Notice of Preliminary Rejection mailed March 28, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	
	226.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2009-7017838.	
	227.	Office Action mailed May 10, 2010 for corresponding Korean Patent Application No. 10-2009-7017838.	
	228.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	

Examiner Signature	Date Considered
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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT***(Use as many sheets as necessary)*

Sheet 11 of 12

**Complete if Known**

Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Art Unit	2692
Examiner Name	Osorio, R.
Attorney Docket Number	51851-821825 (IMM147.C3)

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	229.	Office Action mailed July 2, 2010 for corresponding Korean Patent Application No. 10-2009-7006555.	
	230.	Office Action mailed June 19, 2009 for corresponding Chinese Application No. 200810008845.X.	
	231.	Office Action mailed November 1, 2010 for corresponding Chinese Application No. 200810008845.X.	
	232.	Office Action mailed November 23, 2010 for corresponding Chinese Application No. 02821854.X.	
	233.	Office Action mailed March 5, 2009 for corresponding US Patent Application No. 11/693,117.	
	234.	Office Action mailed June 24, 2009 for corresponding US Patent Application No. 11/693,117.	
	235.	Office Action mailed December 29, 2009 for corresponding US Patent Application No. 11/693,117.	
	236.	Office Action mailed July 7, 2011 for corresponding Chinese Application No. 200810008815.X.	
	237.	Office Action mailed December 5, 2012 for corresponding Korean Patent Application No. 10-2011-7025866.	
	238.	Office Action mailed August 23, 2011 for corresponding Korean Patent Application No. 10-2010-7006555.	
	239.	Office Action mailed October 26, 2010 for corresponding Korean Patent Application No. 10-2009-7017838.	

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Application Number	13/362,113
Filing Date	January 31, 2012
First Named Inventor	Martin et al.
Art Unit	2692
Examiner Name	Osorio, R.
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Sheet 12 of 12

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	241.	Communication pursuant to Article 94(3) EPC mailed May 10, 2012 for corresponding European Application No. 08007837.1.	
	242.	Notification of Reexamination mailed March 9, 2012 for corresponding Chinese Application 02821854.X.	
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## Electronic Patent Application Fee Transmittal

<b>Application Number:</b>	13362113			
<b>Filing Date:</b>	31-Jan-2012			
<b>Title of Invention:</b>	Method And Apparatus For Providing Tactile Sensations			
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin			
<b>Filer:</b>	Carl E. Sanders/Amber Johnson			
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)			
Filed as Large Entity				
<b>Utility under 35 USC 111(a) Filing Fees</b>				
<b>Description</b>	<b>Fee Code</b>	<b>Quantity</b>	<b>Amount</b>	<b>Sub-Total in USD(\$)</b>
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
<b>Extension-of-Time:</b>				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Miscellaneous:</b>				
Submission- Information Disclosure Stmt	1806	1	180	180
<b>Total in USD (\$)</b>				<b>180</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	16253013
<b>Application Number:</b>	13362113
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	3915
<b>Title of Invention:</b>	Method And Apparatus For Providing Tactile Sensations
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Customer Number:</b>	34300
<b>Filer:</b>	Carl E. Sanders/Amber Johnson
<b>Filer Authorized By:</b>	Carl E. Sanders
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)
<b>Receipt Date:</b>	08-JUL-2013
<b>Filing Date:</b>	31-JAN-2012
<b>Time Stamp:</b>	16:07:21
<b>Application Type:</b>	Utility under 35 USC 111(a)

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3	Information Disclosure Statement (IDS) Form (SB08)	08A.pdf	903897 992f077c5def6ebb18fca110292ba9b91cfc4a1	no	12
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**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

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Korean Patent Application No. 10-2009-7017838  
Kilpatrick Stockton Ref.: IMM147.KR.DIV (51851/380531)  
Enclosure Page 1

**Korean Intellectual Property Office**

**Notice of Reconsideration Result**

Case: Patent Application No. 10-2009-7017838  
Trial No. 2010 WON 6093

Title of Invention: METHOD AND APPARATUS FOR PROVIDING TACTILE  
SENSATIONS

Applicant's Name: IMMERSION CORPORATION.  
Address: 801 Fox Lane, San Jose, CA 95131, U.S.A.

Attorney's Name: Tae-Jun Suh, *et al.*  
Address: Kim & Chang, Hungkuk Building, Sinmunno 1-ga, Jongno-gu, Seoul,  
Korea

Upon examining the present application on reconsideration, it has been decided to maintain the final rejection for the reasons set forth below.

**GROUND FOR MAINTAINING THE FINAL REJECTION**

Article 29, Paragraph 2: Claims 1, 2 and 4-9

**A. Notice of Final Rejection dated May 10, 2010**

Claim 1 as amended on March 25, 2010 is directed to an apparatus comprising (i) a plurality of input devices to communicate a plurality of input signals (each input device corresponding to one of the input signals and having multiple positions), (ii) at least one actuator to output a plurality of distinct tactile sensations to all of the input devices, and (iii) at least one controller to receive the input signals, detect the position of each input device and produce tactile sensations corresponding to both the received input signal and the detected position of the associated input device. However, this apparatus could have easily been conceived by those skilled in the art in view of a combination of Cited References 1 and 2.

Cited Reference 1 (U.S. Patent No. 5,977,867) discloses providing different tactile sensation (vibration) feedbacks to input devices in response to different input signals, and Cited Reference 2 (Korean Patent Application Publication No. 10-2001-0028369) discloses that an input button may be provided at multiple different positions depending on the depth of depression and the applied force, and that multiple different input signals corresponding to the respective depths of depression of the input button (or force and position) are generated. In particular, the input device, actuator and controller of Claim 1 correspond to the touch screen (10), vibrator (16) and CPU (13) disclosed in Cited Reference 1. Further, the input device of Claim 1, which has multiple positions, is practiced in the form of a multi-step

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button unit (210) in Cited Reference 2. Thus, those skilled in the art could have easily conceived the technical feature of Claim 1 by applying the technical essence of Cited Reference 1 to the input button of Cited Reference 2 or by adopting the input button of Cited Reference 2 as the input device of Cited Reference 1.

Accordingly, since Claim 1 could have easily been conceived by those skilled in the art in view of a combination of Cited References 1 and 2, the Examiner decided to finally reject Claim 1.

**B. Amendment filed on August 10, 2010 along with Appeal from Final Rejection**

(1) Claim 1 in the Amendment dated August 10, 2010 is the same as that in the Amendment dated March 25, 2010 as follows: An apparatus comprising (i) a plurality of input devices to communicate a plurality of input signals (each input device corresponding to one of the input signals and having multiple positions), (ii) at least one actuator to output a plurality of distinct tactile sensations to all of the input devices, and (iii) at least one controller to receive the input signals, detect the position of each input device and produce tactile sensations corresponding to both the received input signal and the detected position of the associated input device.

(2) Comparison with Cited References 1 and 2

(a) In Cited Reference 1, Fig. 1 discloses a CPU (3) that communicates with input devices, such as a touch pad (1) and a touch controller (2), and a tactile feedback unit (4) generating a tactile feedback, while controlling the tactile feedback unit (4) such that it generates different vibration patterns (frequency, amplitude and pulse width modulation) depending on the user depressed position on the touch pad (1) and feeds the patterns back to the input device (touch pad 1). Obviously, the CPU (3) and the tactile feedback unit (4) disclosed in Fig. 1 of Cited Reference 1, are identical to the controller and actuator of amended Claim 1.

(b) Cited Reference 2 discloses an input button that may be provided at multiple different positions depending on the depth of depression and the force applied by a user while generating multiple different input signals corresponding to the respective depths (or force and position). Thus, the input device provided at multiple different positions and transmitting multiple input signals, as disclosed in Claim 1, corresponds to the input button provided at multi-step positions, as disclosed in Cited Reference 2.

(c) Whether it would have been easy to combine Cited References 1 and 2

- (i) Cited Reference 1 relates to providing different tactile feedbacks to an input device (user) to allow the user to identify different input actions by type.
- (ii) Cited Reference 2 relates to providing an input device that may be provided at multiple positions and generates multiple different input signals corresponding to the multiple positions.

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Since the two inventions are independent from each other in terms of technical feature and objective, Claim 1 would have easily been conceived by those skilled in the art by applying the multi-step input button of Cited Reference 2 to Cited Reference 1 and modifying the CPU control program disclosed in Cited Reference 1. Accordingly, those skilled in the art would have had no difficulty in combining Cited References 1 and 2.

(3) Appeal Brief

In the appeal brief, Applicant argues that Cited Reference 1 does not provide any motivation in relation to the object of the present invention to provide different tactile sensations in response to different input signals and that Cited Reference 1 merely discloses providing the same tactile sensation having a predetermined frequency and amplitude to the entire touch surface through a single vibrator (16) upon depressing the touch pad, while not disclosing the feature of the present invention that multiple different tactile sensations are provided in response to multiple input signals.

Contrary to the above argument, however, Cited Reference 1, col. 1, lines 16-38 discloses a motivation to provide such sensations. In particular, lines 23-26 read as follows: "In addition, touch screens are flat, they do not have any curvature, and therefore no feedback or key travel occurs during a key stroke." In other words, Cited Reference 1 mentions the inconvenience of failing to tell from a tactile sensation which position on the touch screen is depressed by a user.

Further, Cited Reference 1, col. 2, lines 48-56 describes the function of the CPU (3). In particular, lines 52-56 read as follows: "The activation is based on the conditions predefined in the system user interface such as the location of the key pressed. The CPU 3 also controls the vibration frequency, amplitude and pulse length." In other words, Cited Reference 1 also discloses providing a vibration having a frequency, amplitude, and pulse width modulated to correspond to the depressed position on the touch screen (input signal).

Accordingly, Applicant's argument above is not acceptable.

(4) Sub-conclusion

In light of the above, Claim 1 as amended still could have easily been conceived by those skilled in the art in view of a combination of Cited References 1 and 2.

C. Dependent Claims 2 and 4-9

No amendments to Claims 2 and 4-9 have been made in response to the preliminary rejection dated November 25, 2009. Accordingly, upon further examination, every ground of rejection has not been overcome.

D. Conclusion

As discussed above, since Claims 1, 2 and 4-9 still could have easily been conceived

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by those skilled in the art in view of a combination of Cited References 1 and 2 despite the appeal brief and amendment, the final rejection of the present application shall be held.

(Notes: For New Claims 10-12 added by the Amendment dated March 25, 2010, the grounds for preliminary rejection of these claims were separately discussed in the Examiner's Remarks of the Notice of Final Rejection. Upon further examination, no reason to reverse the grounds of preliminary rejection has been found. These claims are not finally rejected because Applicant has not been given an opportunity to respond to the preliminary rejection. However, they still stand preliminarily rejected for lack of inventiveness over a combination of Cited References 1 and 2.)

October 8, 2010

The Korean Intellectual Property Office

Information & Communication Examination Bureau  
Computer Examination Division

Patent Examiner: Dae-Sik Chun

038093

발송번호: 9-5-2010-044979831  
발송일자: 2010. 10. 08

수신 서울 종로구 신문로1가 흥국생명빌딩9층  
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서태준

KP2. by

심사전치

YOUR INVENTION PARTNER

특 허 청

심사전치출원의 심사결과통지서



출원번호	10-2009-7017838
심판번호	2010 원 6093
발명의명칭	촉각을 제공하기 위한 방법 및 장치
출원인명칭	임머슨 코퍼레이션
	주소 미국, 캘리포니아 95131, 산조세 폭스레인 801
대리인명칭	서태준 외 3명
	주소 서울 종로구 신문로1가 흥국생명빌딩9층(김, 장 법률사무소)

위 심사전치된 출원에 대한 심사결과 다음과 같이 원결정을 유지하기로 하였음을 통지합니다.

[원결정을 유지하는 이유]

특허법 제29조제2항 : 청구항 제1항, 제2항, 제4항 내지 제9항

- 아래 -

가. 본 출원에 대한 2010.05.10.자 거절결정서에서,

(1)2010.03.25.자 보정된 본 출원의 제1항은,

- ①복수의 입력신호를 전달하는 복수의 입력장치(각 입력장치는 서로 다른 복수의 입력신호에 대응되는 서로 다른 복수의 위치를 가짐),
- ②각 입력장치들 모두에 서로 다른 복수의 별개의 촉각을 출력하는 1개 이상의 작동장치,
- ③입력신호를 수신하고, 입력장치의 위치를 검출하며, 수신된 입력신호 및 관련된 입력장치의 검출된 위치 모두에 대응하는 촉각들을 생성하는 1개 이상의 제어기 ; 둘 포함하는 장치이나,

(2)이는,

- ①서로 다른 입력신호에 응답하여 서로 다른 촉각 피드백(진동)을 입력장치에 제공하는 기술이 개시된 인용발명1(미국특허공보 05977867호) 및,
- ②하나의 입력버튼이 눌러지는 깊이나 힘에 따라 서로 상이한 복수개의 위치에 존재할 수 있으며, 상기 입력버튼의 눌러진 깊이(또는 힘, 위치)에 대응하는 서로 다른 복수개의 입력신호가 생성되는 입력버튼을 기술요지로 하는 인용발명2(공개특허 제 2001-28369호);의 기술 구성을 결합함으로써 당업자가 용이하게 발명할 수 있는 것으로서,
- ③본 출원 제1항의 입력장치, 작동장치, 제어기는 각각 인용발명1의 touch screen(10), vibrator(16), CPU(3)에 상응하고, 본 출원 제1항의 복수의 위치를 갖는 입력장치는

인용발명2의 다단의 버튼부(210)에 의해 그 실시예가 공개되어 있는 바, 제1항의 모든 구성적 특징은 인용발명1의 기술요지를 인용발명2의 입력버튼에 채용하거나, 인용발명2의 입력버튼을 인용발명1의 입력장치로 채용함으로써 통상의 기술자가 용이하게 유출할 수 있으며,

④따라서, 본 출원의 제1항은 본 발명이 속하는 기술분야에서 통상의 지식을 가진 자가 인용발명1,2의 결합을 통해서 용이하게 발명할 수 있어, 특허 받을 수 없는 것으로 거절결정하였습니다.

나. 이에 대해 출원인은 2010.08.10.자 보정서 및 심판청구(이유)서를 제출하였는데, 이에 대해서 살펴보면 다음과 같습니다.

(1)상기 보정서에서 보정된 독립항 제1항은 2010.03.25.자 보정된 제1항과 실질적으로 동일하며, 재 언급하면,

①복수의 위치를 가지고 복수의 입력신호를 전달하는 복수의 입력장치,

②상기 복수의 입력장치와 통신하여 상기 복수의 입력장치 모두에 복수의 별개의 촉각을 출력하는 1개 이상의 작동장치,

③상기 복수의 입력장치 및 작동장치와 통신하고, 입력장치의 위치를 검출하고 입력신호를 수신하며, 입력신호 및 검출된 위치에 대응하는 촉각을 생성하는 1개 이상의 제어기;를 포함하는 장치입니다.

(2)이를 인용발명1 및 인용발명2의 기술내용과 비교하면 다음과 같습니다.

①인용발명1 Fig.1의 CPU(3)는, 입력장치인 터치패드(1) 및 터치컨트롤러(2), 촉각 피드백 생성장치인 촉각 피드백 유닛(4)과 통신하며, 사용자에게 의해 눌러진 터치패드(1)의 위치(이는 곧 상이한 입력신호 생성과 동일한 의미)에 따라 서로 다른 진동 패턴(주파수, 진폭, 펄스폭 변조)을 생성하여 입력장치(터치패드 1)에 피드백하도록 촉각 피드백 유닛(4)을 제어하는 바, 인용발명1 Fig.1의 CPU(3) 및 촉각 피드백 유닛(4)이 본 출원의 상기 보정된 제1항의 제어기 및 작동장치와 동일한 구성임은 명백합니다.

②한편 인용발명2에는, 사용자에게 의해 눌러지는 깊이나 가해진 힘에 따라 서로 상이한 복수개의 위치를 가지며, 상기 각각의 깊이(또는 힘, 위치)에 대응하는 서로 다른 복수 개의 입력신호를 생성하는 입력버튼이 공개되어 있는 바, 본 출원 제1항의 상기 "복수의 위치를 가지고 복수의 입력신호를 전달하는 입력장치"는 인용발명2의 "다단의 위치를 갖는 입력버튼"에 상응합니다.

③상기 인용발명1,2의 기술내용을 결합하는 것이 용이하나 여부에 대해서 살펴보면,

(a)인용발명1의 기술내용은, '서로 다른 입력행위에 대응하여 그 입력행위의 종류를 사용자가 식별할 수 있도록 서로 다른 촉각 피드백을 입력장치(사용자)에 제공하는 것' 이고,

(b)인용발명2의 기술내용은, '하나의 입력장치가 복수의 위치에 존재할 수 있으며, 각 위치에 상응하는 서로 다른 복수의 입력신호를 생성하는 입력장치를 제공하는 것' 인 바,

(c)상기 양 발명의 기술내용들은 목적과 구성이 서로 간에 독립적이므로 그 결합을 난이하게 특별한 상호 관련성이 없으며, 그 결합된 발명인 본 출원 제1항의 구성은 인용발명1에 인용발명2의 다단 입력버튼을 채용하고 인용발명1의 CPU 제어 프로그램을 변경하는 것만으로 통상의 기술자가 용이하게 발명할 수 있는 바, 인용발명1,2의 결합은 통상의 기술자에게 용이한 것으로 판단됩니다.

(3)출원인은 상기 심판청구이유서를 통해서,

①인용발명1에는, 상이한 입력신호에 대응하는 상이한 촉각을 제공하는 본 출원 발명의 목적과 관련된 어떠한 동기도 제시되지 않았고,

②인용발명1에는 또한, 터치패드를 누르는 경우에 단일한 진동기(16)에 의해 터치표면 전체에 사전 정의된 주파수 및 진폭을 가지는 동일한 촉각을 제공할 뿐, 본 출원발명의 구성과 같이, 복수의 입력신호에 대응하는 서로 다른 복수의 촉각을 제공하는 구성에 대해서는 전혀 개시되어 있지 않다고 주장합니다.

③그러나, 인용발명1의 col 1, line 16-38에 걸쳐서 동기가 개시되어 있는데, 특히 "In addition, touch screens are flat, they do not have any curvature, and therefore no feedback or key travel occurs during a key stroke."(line 23-26)라고 기재되어, 사용자가 터치스크린(입력장치)을 누르는 위치를 촉각으로 알 수 없는 불편함에 대해서 언급하고 있으며,

④인용발명1의 column 2, line 48~56에 걸쳐서 CPU(3)의 기능을 설명하는데, 특히 "The activation is based on the conditions predefined in the system user interface such as the location of the key pressed. The CPU 3 also controls the vibration frequency, amplitude and pulse length."(line 52~56) 라고 기재되어, 터치스크린을 누르는 위치(입력신호)에 상응하도록 변조된 주파수, 진폭, 펄스폭을 갖는 진동을 제공하는 구성이 개시되어 있는 바,

⑤출원인의 상기 주장은 인정될 수 없습니다.

(4)따라서, 상기 보정된 본 출원의 제1항은 여전히 통상의 기술자가 인용발명1,2의 결합을 통해서 용이하게 발명할 수 있는 것으로 판단됩니다.

다. 기타 종속 청구범위(제2,4-9항)

종속 청구범위 제2,4-9항은 보정된 바 없고, 이에 대한 거절이유는 2009.11.25.자 의견제출통지서를 통해서 이미 통지하였고, 재심사한바 상기 의견제출통지서의 거절이유를 반복할 특별한 사유가 없는 것으로 판단됩니다.

라. 상기와 같이 본 출원의 제1,2,4-9항은, 본 발명이 속하는 기술분야에서 통상의 지식을 가진 자가 인용발명1,2의 결합을 통해서 용이하게 발명할 수 있는 것으로서, 상기 심판 청구이유서 및 보정서에 의해서도 상기의 거절이유를 여전히 해소하지 못한 것으로 판단되어, 본 출원에 관한 원결정을 유지합니다.

#### [참 고]

종속 청구범위 제10~12항은 2010.03.25.자 보정서를 통해서 추가되었고, 이에 대한 거절이유는 상기 거절결정서에서 참고사항으로 통지한바 있고, 재심사한바 상기 거절결정서의 거절이유를 반복할 특별한 사유가 없는 것으로 판단됩니다. 출원인의 의견제출 기회 미부여 사유로 상기 거절결정서에서 거절대상에 포함되지는 않았지만, 인용발명1,2의 결합된 구성과 대비하여 진보성이 없다는 거절이유는 여전히 유효합니다. 끝.

2010.10.08

특허청

정보통신심사국  
컴퓨터심사과

심사관

천대식



#### << 안내 >>

※ 더 자세한 사항은 ☎ 042-481-5871(담당심사관 천대식)로 문의하시기 바랍니다. 서식 또는 절차에 대하여는 특허고객 상담센터(☎1544-8080)를 이용하여 주십시오.  
※ 우 302-701 대전광역시 서구 선사로 139, 정부대전청사 특허청

Korean Patent Application No. 10-2012-7019836  
KT&S Ref.: 51851/846627(IMM147.KRD4)  
Enclosure Page 1

**KIPO'S NOTICE OF PRELIMINARY REJECTION**  
**(ENGLISH TRANSLATION)**

**RESULTS OF KIPO EXAMINATION -- SUMMARY**

- Examined Claims: Claims 1-31
- Rejected Portions and Relevant Provisions

Rejected Portions	Relevant Provisions
Claims 1, 4-12, 15-22, and 25-31	Article 29, Paragraph 2 of the Korean Patent Act

- Allowable Claims: Claims 2, 3, 13, 14, 23, and 24

\* **NOTE:** With respect to the above allowable claims, another notice of preliminary rejection may be issued later if new grounds of rejection are found. In addition, if the present application is to be allowed, all rejections outlined below must be overcome.

**EXAMINER'S DETAILED GROUNDS FOR REJECTION**

The present application cannot be allowed because Claims 1, 4-12, 15-22, and 25-31 fail to meet the inventiveness requirements under Article 29, Paragraph 2 of the Korean Patent Act, as set forth below.

- A. The claimed invention and the Cited Reference attached hereto relate to similar technical fields in that they provide an input device for providing different tactile sensation feedbacks in response to different inputs by a user.
- B. The constitution of **independent Claims 1, 12, and 22** are compared with that of the Cited Reference as follows.

**Claim 1** is directed to a method for generating a tactile sensation feedback, comprising: (i) outputting a display signal configured to display software-generated buttons or keys on a touch-sensitive input device; (ii) receiving a sensor signal indicating an object contacting the touch-sensitive input device; (iii) determining an interaction between the object contacting the touch-sensitive input device and the software-generated buttons or keys; and (iv) generating/outputting an actuator signal based on the interaction.

In other words, the foregoing feature of Claim 1 amounts to: (i) displaying an object (soft keys or buttons) on a touch screen (touch-sensitive input device); (ii) receiving a detection signal generated when a finger or a touch pen (object contacting the touch-sensitive



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input device) contacts the touch screen; (iii) computing a touched position from the detection signal to determine which object (which soft key or button) is selected (i.e., determining interaction); and (iv) generating/outputting a drive signal for a tactile sensation feedback generator (actuator) in accordance with the selected object (based on the interaction).

The above features of Claim 1, however, are similar to the method and operation of **the Cited Reference**, which discloses a touch screen 10 as a touch-sensitive input device, a vibrator 16 as an actuator, and a processor 2 or 3 configured to generate a tactile sensation feedback (vibration) in response to an input.

Thus, Claim 1 could have been easily conceived by those skilled in the art in view of the Cited Reference.

**Claim 12** relates to a system for performing the method of Claim 1 that comprises a processor, an actuator, and a touch sensitive input device, and thus, is unpatentable for the same reasons as in Claim 1.

**Claim 22** relates to a recording medium that comprises program codes for performing the method of Claim 1, and thus, is unpatentable for the same reasons as in Claim 1.

C. The examination results of **dependent Claims 4-11, 15-21, and 25-31** are as follows.

**Claim 4** recites that the actuator signal is configured to cause a haptic effect to be output. This, however, is the same as the feature of the Cited Reference residing in vibrating the vibrator 16 to provide a tactile sensation feedback to a user.

**Claims 5, 6, 8, 15, 16, 18, 25, 26, and 28** recite that the actuator signal or haptic effect is generated or configured to be output (a) when an object or a user contacts the touch-sensitive device at a location corresponding (Claims 5, 15, and 25) to one of software-generated buttons or keys; (b) when an object or a user contacts the touch-sensitive device at a location not corresponding (Claims 6, 16, and 26) to one of software-generated buttons or keys; or (c) when an object or a user contacts a soft key in a home position (Claims 8, 18, and 28). This means that when there is a correct or incorrect touch input or when selecting a specific object, a user is provided with a tactile sensation feedback with respect to each of the inputs. The above features, however, fall within the technical essence of the Cited Reference residing in generating different vibrations in response to different inputs.

**Claims 7, 9, 10, 17, 19, 20, 27, 29, and 30** limit the graphical object on the GUI to a keypad (Claims 7, 17, and 27), a numeric key (Claims 9, 19, and 29), and a standard 101-key keyboard (Claims 10, 20, and 30). However, it is up to the user's discretion and has no technical significance in limiting how many virtual buttons will be generated and how they will be arranged. Thus, the above claims would have been obvious (for example, in view of FIG. 3 of U.S. Patent No. 5,988,902 A).

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**Claims 11, 21, and 31** recite that the selection of different soft keys (buttons) results in the generation of different haptic effects. However, this could have been easily conceived by those skilled in the art in view of the technical essence of the Cited Reference residing in generating different vibrations in response to different inputs.

D. For the foregoing reasons, **Claims 1, 4-12, 15-22, and 25-31** could have been easily conceived by those skilled in the art in view of the Cited Reference.

**[Document Annexed]**

U.S. Patent No. 5,977,867 (November 2, 1999)

*[ == End of Translation == ]*

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출원번호 10-2012-7019836  
 발명명의 명칭 측각을 제공하기 위한 방법 및 장치

1. 이 출원에 대한 심사결과 다음과 같은 거절이유가 있어 특허법 제63조에 따라 이를 통지 하오니 의견이 있거나 보정이 필요할 경우에는 상기 제출기일까지 의견(답변, 소명)서[특허법시행규칙 별지 제24호서식] 또는/및 보정서[특허법시행규칙 별지 제9호서식]를 제출하여 주시기 바랍니다.

2. 상기 제출기일에 대하여 1월 단위로 4개월까지 지정기간연장신청을 할 수 있으며, 필요한 경우 4개월 범위 내에서 2개월 이상을 일괄하여 연장신청할 수 있습니다. 불가피한 사유의 발생(하단의 안내참조)으로 4개월을 초과하여 지정기간을 연장받고자 하는 때에는 그 사유를 기재한 소명서를 추가로 첨부해서 연장신청을 해야 합니다.

[심사결과]

- 심사 대상 청구항 : 제1-31항
- 이 출원의 거절이유가 있는 부분과 관련 법조항

순번	거절이유가 있는 부분	관련 법조항
1	청구항 제1항, 제4항 내지 제12항, 제15항 내지 제22항, 제25항 내지 제31항	특허법 제29조제2항

□ 특허 가능한 청구항 : 제2, 3, 13, 14, 23, 24항

※ 위 특허 가능한 청구항은 의견제출통지시점에서의 심사의견이며 추후 변경될 수 있습니다. 이 출원이 특허결정을 받기 위해서는 이 출원에 대해 지적된 거절이유가 모두 해소되어야 합니다.

[구체적인 거절이유]

이 출원의 특허청구범위의 청구항 제1항, 제4항 내지 제12항, 제15항 내지 제22항, 제25항 내지 제31항에 기재된 발명은 아래와 같이 그 출원 전에 이 발명이 속하는 기술분야에서 통상의 지식을 가진 자가 용이하게 발명할 수 있는 것이므로 특허법 제29조제2항에 따라 특허를 받을 수 없습니다.

- 아 래 -

가. 본 발명과 하기에 첨부된 인용발명은 모두, 사용자의 서로 다른 입력행위에 서로 다른 촉각 피드백을 제공하는 입력장치를 제공하는 기술들로서, 발명의 목적이 유사합니다.

나. 본 발명의 독립청구범위 제1,12,22항과, 인용발명의 구성을 비교하면 다음과 같습니다.

(1)본 발명의 제1항은,

- ①촉감 입력장치 상에 소프트 키(버튼)의 표시신호를 출력하는 단계,
- ②촉감 입력장치와 접촉하는 오브젝트의 (접촉)센서신호를 수신하는 단계,
- ③촉감 입력장치와 접촉하는 오브젝트와 소프트 키(버튼) 사이의 상호작용을 결정하는 단계,
- ④상기 상호작용에 기초하여 작동장치 신호를 생성/출력하는 단계를 포함한 (촉각 피드백 생성) 방법입니다.

(2)상기 제1항의 내용을 해석하면,

- ①터치스크린(촉감 입력장치) 상에 객체(소프트 키(버튼))를 표시하고,
- ②손가락이나 터치펜(촉감 입력장치와 접촉하는 오브젝트)이 터치스크린에 접촉할 때 발생하는 검출 신호를 수신하며,
- ③검출신호로부터 터치위치를 계산하여 어떤 객체(소프트 키(버튼))가 선택되었는지를 결정하고(상호작용 결정),
- ④선택된 객체에 상응하여(상호작용에 기초하여), 촉각 피드백 생성장치(작동장치) 구동신호를 생성/출력 한다는 것인바;
- ⑤이는, 촉감 입력장치로써 터치스크린(10)을 구비하고, 작동장치로써 바이브레이터(16)을 구비하며, 입력에 상응하는 촉각 피드백(진동)을 생성하도록 제어하는 프로세서(2,3)를 구비한 인용발명의 동작순서/방법과 매우 유사합니다.
- ⑥따라서, 제1항은 당업자가 인용발명을 통해서 용이하게 발명할 수 있습니다.

(3)본 발명의 제12항은, 제1항의 방법을 수행하는 프로세서, 작동장치, 촉감입력장치를 포함하는 시스템을 청구하는바, 제1항의 경우와 마찬가지로 당업자가 인용발명을 통해서 용이하게 발명할 수 있습니다.

(4)본 발명의 제22항은, 제1항의 방법을 수행하는 프로그램 코드들을 저장하는 저장매체를 청구하는 바, 그 기술적 진보성 여부는 제1항의 경우와 동일합니다.

다. 본 발명의 기타 종속청구범위(제4~11, 15~21, 25~31항)에 대해서 살펴보면 다음과 같습니다.

(1)본 발명의 제4항은 작동장치 신호가 햅틱효과를 출력시키는 것을 특징으로 하나, 이는 인용

발명의 바이브레이터(16)가 진동하여 사용자에게 촉각 피드백을 제공하는 구성과 동일합니다.

(2)본 발명의 제5,6,8, 15, 16, 18,25,26,28항은,

- ①소프트 키(버튼)의 위치에 대응하거나(제5, 15,25항) 대응하지 않는(제6, 16,26항) 위치를 접촉할 때, 또는 홈 위치의 소프트 키에 접촉할 때(제8, 18,28항), 작동장치신호(햅틱 효과)가 생성되는 것을 특징으로 하나,
- ②이는, 바르거나 바르지 않은 터치 입력이 있을 때, 또는 특정 객체를 선택할 때, 상기 각각의 입력에 대해 사용자에게 촉각 피드백을 제공한다는 것으로, 결국 서로 다른 입력에 대해 서로 다른 진동을 발생시키는 인용발명의 기술사상에 포함되는 것으로 판단됩니다.

(3)본 발명의 제7,9, 10, 17, 19,20,27,29,30항은,

- ①GUI상의 그래픽 오브젝트가 키패드(제7, 17,27항), 숫자키(제9, 19,29항), 표준 101-키 키보드(제10,20,30항)인 것을 특징으로 하나,
- ②터치스크린상의 가상 버튼 개수와 배열은 실시자가 임의로 만들 수 있고 기술적 의미가 없는바, 상기 청구항들에 기술적 진보성이 내포되었다고 볼 수 없습니다.(예를들어, US 5,988,902 A의 Fig.3)

(4)본 발명의 제11,21,31항은,

- ①서로 다른 소프트 키(버튼)가 선택될 때 서로 다른 햅틱 효과가 생성되는 것을 특징으로 하나,
- ②이는, 서로 다른 입력에 대해 서로 다른 진동을 발생시키는 인용발명의 기술사상을 통해서 통상의 기술자가 용이하게 도출할 수 있습니다.

라. 상기의 이유로 본 발명의 제1,4~12, 15~22,25~31항은 인용발명을 통해서, 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자가 용이하게 발명할 수 있는 것으로 판단됩니다.

#### [첨 부]

첨부1 - 인용발명 : 미국 특허공보 US5977867(1999.11.02.) 끝.


2012. 11. 26

특허청

정보통신심사국

컴퓨터심사과

심사관 천대식

천대식 

&lt;&lt; 안내 &gt;&gt;

1. 특허법 제47조제2항에 따라 특허출원서에 최초로 첨부된 명세서 또는 도면에 기재된 사항의 범위 안에서 명세서 또는 도면을 보정할 수 있음을 알려드립니다.  
(참고 : 최후거절이유통지 후 및 특허거절결정에 대한 심판 청구 후 30일내의 보정에 대해서는 특허법 제47조제2항 및 제3항의 규정이 추가로 적용됩니다.)
2. 보정료 납부안내
- 명세서 또는 도면을 보정하기 위하여 명세서등 보정서를 전자문서로 제출할 경우 매건 4,000원, 서면으로 제출할 경우 매건 14,000원의 보정료를 납부하여야 합니다.
  - 보정료는 접수번호를 부여받아 이를 납부번호로 "특허료등의 징수규칙" 별지 제1호서식에 기재하여, 접수번호를 부여받은 날의 다음 날까지 납부하여야 합니다. 다만, 납부일이 공휴일(토요일을 포함한다)에 해당하는 경우에는 그날 이후의 첫 번째 근무일까지 납부하여야 합니다.
  - 보정료는 국고수납은행(대부분의 시중은행)에 납부하거나, 인터넷지로(www.giro.or.kr)로 납부할 수 있습니다. 다만, 보정서를 우편으로 제출하는 경우에는 보정료에 상응하는 통상환을 동봉하여 제출하시면 특허청에서 납부해드립니다.
3. 지정기간연장 안내 : 연장가능기간(4개월)을 초과하여 지정기간을 연장하고자 소명서를 첨부하여 지정기간연장신청서를 제출한 경우 심사관은 아래의 사유에 해당되는지를 판단하여 지정기간연장의 승인 여부 및 연장할 수 있는 기간을 정하여 통지합니다.
- 【4개월을 초과하여 지정기간연장을 할 수 있는 사유】**
- ① 기간만료 전 1개월 이내에 최초로 대리인을 선임하거나 선임된 대리인 모두를 해임·변경한 경우
  - ② 기간만료 전 1개월 이내에 출원인변경신청서를 제출한 경우
  - ③ 기간만료 전 2개월 이내에 외국특허청의 심사결과를 받은 경우로서 동 심사결과를 보정서에 반영하고자 하는 경우(이 경우 신청서 제출 시 해당 심사결과 사본 및 그 기초가 된 청구범위 사본도 같이 제출해야 함)
  - ④ 의견제출통지서의 송달이 1개월 이상 지연된 경우(1개월 추가 연장 가능)
  - ⑤ 원출원 또는 분할출원이 심판이나 소송에 계류 중인 경우
  - ⑥ 거절이유와 관련된 시험 및 결과측정에 기간이 더 필요한 경우
  - ⑦ 기타 불가피하게 기간연장이 필요하다고 인정되는 경우
- 단, 제3자가 심사청구한 때에는 ①-⑤의 경우라도 불승인
- ※ 이 통지서의 내용에 대해 문의사항이 있으시면 특허청 ☎ 042-481-5871(담당심사관 천대식)로, 서식 또는 절차에 대하여는 특허고객상담센터 ☎1544-8080로 문의하시기 바랍니다.
- ※ 우 302-701 대전광역시 서구 청사로 189, 4동 (둔산동, 정부대전청사)



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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 12/894,489, 09/30/2010, Kenneth M. Martin, IMM147.C2 (51851/349725), 6069
Row 2: 34300, 7590, 08/17/2011, PATENT DEPARTMENT (51851), KILPATRICK TOWNSEND & STOCKTON LLP, 1001 WEST FOURTH STREET, WINSTON-SALEM, NC 27101, EXAMINER OSORIO, RICARDO
Row 3: ART UNIT 2629, PAPER NUMBER
Row 4: MAIL DATE 08/17/2011, DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.
The time period for reply, if any, is set in the attached communication.





**DETAILED ACTION**

***Terminal Disclaimer***

1. The terminal disclaimer filed on 6/2/2011 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 7,808,488 has been reviewed and is accepted. The terminal disclaimer has been recorded.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless—

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosenberg et al (US 2008/0060350).

Regarding claims 1, 2, 10 and 18, Rosenberg discloses A system, method and program code comprising:

a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device (see Fig. 8, character 82 and paragraph 32, lines 1-6); an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface based at least in part on the actuator signal (paragraph 32, lines 1-9); and a processor in communication with the sensor and the actuator (paragraph 32, lines 1-12);, the processor configured to: output a display signal

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configured to display a graphical object on the touch-sensitive input device (par. 56, lines 1-2); receive the sensor signal from the touch-sensitive input device; determine an interaction between the object contacting the touch-sensitive surface and the graphical object, generate the actuator signal based at least in part on the interaction; and transmit the actuator signal to the actuator (see paragraphs 57 and 59).

As to claims 3, 11 and 19, Rosenberg teaches of the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object (see paragraphs 57 and 59).

As to claims 4, 12, and 20, Rosenberg teaches of the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object (see paragraphs 57 and 59).

As to claims 5 and 13, Rosenberg teaches of the display signal is configured to display a keypad comprising a plurality of softkeys (see Fig. 8A).

As to claims 6 and 14, Rosenberg teaches of the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position (see paragraphs 57 and 59).

As to claims 7 and 15, Rosenberg teaches of the plurality of softkeys comprises one softkey for each digit from 0 to 9 (Rosenberg teaches of a PDA, Fig 8A, and also of a cellular phone having touch screen (see paragraph 71). It is inherent for a cell phone having touchscreen to also have a softkey for each digit from 0 to 9 for a user to make a phone call.

As to claims 8 and 16, Rosenberg teaches of the plurality of softkeys comprises the key configuration of a standard 101-key keyboard (In paragraphs 71-73, Rosenberg mentions other optional devices that include from a standard computer screen to a cell phone and many different types of graphical objects. Although not specifically mentioning a standard 101-key keyboard, it is inherent that such a graphic keyboard can also be used having more graphic objects being the only difference.

As to claims 9 and 17, Rosenberg discloses that the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object (see paragraphs 57 and 59).

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3. This is a Continuation of applicant's earlier Application No. 11/693,117. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICARDO L. OSORIO whose telephone number is (571)272-7676. The examiner can normally be reached on **MONDAY-THURSDAY 7:00 am-5:30 PM**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LUNYI LAO can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RICARDO L OSORIO/  
Primary Examiner, Art Unit 2629

<b>Notice of References Cited</b>	Application/Control No. 12/894,489	Applicant(s)/Patent Under Reexamination MARTIN ET AL.	
	Examiner RICARDO L. OSORIO	Art Unit 2629	Page 1 of 1

**U.S. PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-7,148,875	12-2006	Rosenberg et al.	345/156
*	B US-6,262,717	07-2001	Donohue et al.	345/173
*	C US-2008/0068350	03-2008	Rosenberg et al.	345/173
*	D US-7,202,851	04-2007	Cunningham et al.	345/156
*	E US-6,429,846	08-2002	Rosenberg et al.	345/156
*	F US-			
*	G US-			
*	H US-			
*	I US-			
*	J US-			
*	K US-			
*	L US-			
*	M US-			

**FOREIGN PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
*	N				
*	O				
*	P				
*	Q				
*	R				
*	S				
*	T				

**NON-PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
*	U				
*	V				
*	W				
*	X				

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Receipt date: 06/02/2011

12894489 - GAU: 2629

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Substitute for form 1449A/PTO		<i>Complete if Known</i>	
		Application Number	12/894,489
<b>Information Disclosure Statement by Applicant</b>  <i>(use as many sheets as necessary)</i>		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
		Attorney Docket Number	IMM147C2 (51851-349725)
Sheet	1	of	11

U.S. PATENT DOCUMENTS						
Examiner	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	1	2,972,140		2/14/1961	Hirsch	
	2	3,157,853		11/17/1964	Hirsch	
	3	3,220,121		11/30/1965	Cutler	
	4	3,497,668		02/24/1970	Hirsch	
	5	3,517,446		06/30/1970	Corlyon et al.	
	6	3,623,064		11/23/1970	Kagen	
	7	3,902,687		09/02/1975	Hightower	
	8	3,903,614		09/09/1975	Diamond et al.	
	9	3,911,416		10/07/1995	Feder	
	10	4,127,752		11/28/1978	Lowthorp	
	11	4,180,508		07/10/1979	Salsbury	
	12	4,238,325		12/02/1980	Hall et al.	
	13	4,262,549		04/21/1981	Schwellenbach	
	14	4,311,980		01/19/1982	Prudenziati	
	15	4,333,070		06/01/1982	Barnes	
	16	4,362,408		12/07/1982	Cordes et al.	
	17	4,464,117		08/07/1984	Forest	
	18	4,484,191		11/20/1984	Vavra	
	19	4,513,235		04/23/1985	Acklam et al.	
	20	4,581,491		04/08/1986	Boothroyd	
	21	4,581,972		04/15/1986	Hoshino	
	22	4,599,070		07/08/1986	Hladky et al.	
	23	4,692,756		09/08/1987	Clark	
	24	4,708,656		11/24/1987	De Vries et al.	
	25	4,713,007		12/15/1987	Alban	
	26	4,725,817		02/16/1988	Jay	
	27	4,785,296		01/03/1989	Wijlborg	
	28	4,791,416		12/13/1988	Adler	
	29	4,794,392		12/27/1988	Selinko	
	30	4,798,919		01/17/1989	Suita	
	31	4,821,030		04/11/1989	Batson	
	32	4,823,106		04/16/1989	Pope	
	33	4,840,634		08/20/1989	Muller	
	34	4,885,565		1208/1989	Embach	
Examiner Signature	/Ricardo Osorio/			Date Considered	08/10/2011	

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<b>Information Disclosure Statement by Applicant</b> (use as many sheets as necessary)		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
Sheet	2	of	11
		Attorney Docket Number	IMM147C2 (51851-349725)

U.S. PATENT DOCUMENTS					
Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
	35	4,891,764	01/02/1990	McIntosh	
	36	4,930,770	06/05/1990	Baker	
	37	4,934,894	06/19/1990	McIntosh	
	38	4,982,918	01/08/1991	Kaye	
	39	4,983,786	01/08/1991	Stevens	
	40	5,019,761	05/28/1991	Kraft	
	41	5,022,384	06/11/1991	Freels	
	42	5,022,407	06/11/1991	Horch et al.	
	43	5,035,242	07/30/1991	Franklin, et al.	
	44	5,038,089	08/06/1991	Szakaly	
	45	5,053,585	10/01/1991	Yaniger	
	46	5,078,152	01/07/1992	Bond	
	47	5,116,051	05/26/1992	Moncrief	
	48	5,165,897	11/24/1992	Johnson	
	49	5,175,459	12/29/1992	Danial et al.	
	50	5,182,557	01/26/1993	Lang	
	51	5,186,685	02/16/1993	Grossman et al.	
	52	5,212,473	05/18/1993	Louis	
	53	5,223,658	06/29/1993	Suzuki	
	54	5,237,327	08/17/1993	Saitoh	
	55	5,283,970	02/08/1994	Aigner	
	56	5,240,417	08/31/1993	Smithson et al.	
	57	5,241,308	08/31/1993	Young	
	58	5,246,316	09/21/1993	Smith	
	59	5,271,290	12/21/1993	Fischer	
	60	5,275,174	01/4/1994	Cook	
	61	5,289,273	02/22/1994	Lang	
	62	5,289,810	04/05/1994	Pierce, et al.	
	63	5,309,140	05/03/1994	Everett	
	64	5,334,027	08/02/1994	Wherlock	
	65	5,355,148	10/11/1994	Anderson	
	66	5,390,128	02/14/1995	Ryan	
	67	5,390,296	02/14/1995	Crandall	

Examiner Signature	/Ricardo Osorio/	Date Considered	08/10/2011
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		Number	Kind Code <sup>2</sup> (if known)			
	68	5,402,499		03/28/1995	Robinson	
	69	5,402,680		04/04/1995	Korenaga	
	70	5,436,622		07/25/1995	Gutman et al.	
	71	5,437,607		08/01/1995	Taylor	
	72	5,451,824		09/19/1995	Massimino	
	73	5,481,711		10/24/1995	Wang	
	74	5,468,213		11/14/1995	Hogan, et al.	
	75	5,489,812		02/06/1996	Furuhata	
	76	5,496,174		03/05/1996	Garner	
	77	5,514,150		05/07/1996	Rostoker	
	78	5,521,336		05/28/1996	Buchanan	
	79	5,547,382		08/20/1996	Yamasaki, et al.	
	80	5,575,761		11/19/1996	Hajianpour	
	81	5,631,861		05/20/1997	Kramer	
	82	5,684,722		11/04/1997	Thomer	
	83	5,691,747		11/25/1997	Amano	
	84	5,709,219		01/20/1998	Chen	
	85	5,729,249		03/17/1998	Yasutake	
	86	5,766,016		06/16/1998	Sinclair, et al.	
	87	5,767,457		08/18/1998	Gerpheide	
	88	5,785,630		07/28/1998	Bobick et al.	
	89	5,791,892		08/11/1998	Crump	
	90	5,844,392		12/01/1998	Peurach	
	91	5,857,988		01/12/1999	Moriyasu	
	92	5,887,995		03/30/1999	Holehan	
	93	5,889,670		03/30/1999	Schuler	
	94	5,889,672		03/30/1999	Schuler	
	95	5,917,906		06/29/1999	Thornton	
	96	5,943,044		08/24/1999	Martinelli	
	97	5,945,772		08/31/1999	Macnak	
	98	5,977,867		11/02/1999	Bouin	
	99	5,988,902		11/23/1999	Holehan	
	100	6,078,126		06/20/2000	Rollins	
Examiner Signature	/Ricardo Osorio/			Date Considered	08/10/2011	

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		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
Sheet	4	of	11
		Attorney Docket Number	IMM147C2 (51851-349725)

101	8,087,964	08/01/2000	Nuovo
102	8,059,506	05/09/2000	Kramer
103	8,160,489	12/12/2000	Perry et al.
104	8,111,577	08/29/2000	Zilles et al.
105	8,118,435	09/12/2000	Fujita et al.
106	8,198,206	03/06/2001	Saamaa
107	8,131,097	10/10/2000	Peurah
108	8,195,592	02/27/2001	Schuler
109	8,160,489	12/12/2000	Perry et al.
110	8,198,206	03/06/2001	Saamaa
111	8,218,966	04/17/2001	Goodwin
112	8,219,034	04/17/2001	Elbing, et al.
113	8,225,876	05/01/2001	Yates
114	8,292,173	09/18/2001	Rambaldi et al.
115	8,307,465	10/23/2001	Kayma et al.
116	8,344,791	02/05/2002	Armstrong
117	8,369,803	04/09/2002	Brisebois et al.
118	8,373,483	04/18/2002	Beeks
119	8,374,255	04/18/2002	Peurah
120	8,388,655	05/14/2002	Leung
121	8,422,941	07/23/2002	Thorner, et al.
122	8,429,846	08/06/2002	Rosenberg
123	8,543,487	05/13/2003	Bazinet
124	8,597,347	07/22/2003	Yasutake
125	8,657,817	12/02/2003	Paolini et al.
126	8,735,307	05/11/2004	Volckers
127	8,781,589	08/24/2004	Gregorio et al.
128	8,801,191	10/05/2004	Mukai et al.
129	8,978,582	12/20/2005	Perret, Jr. et al.
130	7,202,851	04/10/2007	Cunningham et al.
131	2002/0033795	03/21/2002	Shaholian
132	2002/0171621	11/21/2002	Johnson
133	2002/177471	11/28/2002	Kaaresoja
134	2002/0128048	09/12/2002	Aaltonen
135	2002/0149561	10/17/2002	Fukumoto et al.
136	2005/0099393	05/12/2005	Johnson
137	2008/0068350	03/20/2008	Rosenberg et al.

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Substitute for form 1449A/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
Sheet	5	of	11
		Attorney Docket Number	IMM147C2 (51851-349725)

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>2</sup>	Number <sup>4</sup>	Kind Code <sup>3</sup> (if known)			
	138.	EP	0349086		01/03/1990	Stork Kwant B.V.	
	139.	EP	0817110		01/07/1998	Nokia Mobile Phones Ltd.	
	140.	GB	2180342		03/25/1987	Alcom United	
	141.	JP	01-003684		07/19/1990	Taito Corporation	
	142.	JP	02-108714		01/13/1992	Epoch Co. and Key-Planning Co.	
	143.	JP	04-007371		08/03/1993	Taito Corporation	
	144.	JP	05-193862		01/27/1995	Sega Corporation	
	145.	JP	H2-185278		07/19/1990	Yamada	
	146.	JP	H4-8381		01/13/1992	Endo	
	147.	JP	H5-192449		08/03/1993	Koma et al.	
	148.	JP	H7-24147		01/27/1995	Yokoyama	
	149.	JP	8221173		08/30/1996	Hitachi Ltd.; Hitachi Device Eng.	
	150.	JP	10171586		06/26/1998	Sharp KK	
	151.	JP	1124834		01/29/1999	Fujiyama Teruhi	
	152.	JP	11085400		03/30/1999	Sony Corp.	
	153.	JP	2001-222379		08/17/2001	Fujitsu Ltd.	
	154.	JP	2001-265485		09/28/2001	Sharp KK	
	155.	JP	2001-290572		10/19/2001	Fuji Xerox Co. Ltd.	
	156.	JP	2001-296950		10/26/2001	Fuji Xerox Co. Ltd.	
	157.	JP	2002-259059		09/13/2002	Motoyama et al.	
	158.	JP	2001-350592		12/21/2001	Ryo et al.	
	159.	KR	2001-0028388		04/06/2001	Sim Jae Boong	
	160.	WO	95/20787		08/03/1995	Exos, Inc.	
	161.	WO	97/18546		05/22/1997	Cirque Corporation	
	162.	WO	99/49443		09/30/1999	Immersion Corporation	
	163.	WO	01/54109		07/26/2001	Immersion Corporation	
	164.	WO	02/31807		04/18/2002	Motorola, Inc.	
	165.	WO	02/19110		11/29/2002	Immersion Corporation	
	166.	WO	02/27845		04/04/2002	Siemens Aktiengesellschaft	
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Immersion Ex. 2005-170

Amit Agarwal v. Immersion Corp., IPR2016-00807

Receipt date: 06/02/2011

12894489 - GAU: 2629

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
Sheet 6 of 11	Attorney Docket Number	IMM147C2 (51851-349725)	

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	167.	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.	
	168.	ADELSTEIN, "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances in Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.	
	169.	AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.	
	170.	BAIGRIE, "Electric Control Loading – A Low Cost, High Performance Alternative," Proceedings, pp. 247-254, November 6-8, 1990.	
	171.	BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.	
	172.	BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-IFTOMM, Sep. 8-12, 1981.	
	173.	BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.	
	174.	BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989.	
	175.	BLISS, "Optical-to-Tactile Image Conversion for the Blind," IEEE Transactions on Man-Machine Systems, Vol. MMS-11, No. 1, March 1970.	
	176.	BROOKS et al., "Hand Controllers for Teleoperation – A State-of-the-Art Technology Survey and Evaluation," JPL Publication 85-11; NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985.	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
		Attorney Docket Number	IMM147C2 (51851-349725)
Sheet	7	of	11

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	177.	BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and Its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.	
	178.	CADLER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," Bachelor of Science Thesis, MIT, June 23, 1983.	
	179.	CALDWELL et al., "Enhanced Tactile Feedback (Tele-Traction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993.	
	180.	EBERHARDT et al., "OMAR - A Haptic display for speech perception by deaf and def-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993.	
	181.	EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1, ASME 1994.	
	182.	FUKUMOTO, "Active Click: Tactile Feedback For Touch Panels," ACM CHI2001 Extended Abstracts, pp. 121-122, April 2001.	
	183.	GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Journal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1995.	
	184.	GOTOW et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337	
	185.	HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992.	
	186.	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990.	
	187.	International Search Report filed 11/1/02 corresponding to PCT/US02/35016	
	188.	IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.	
	189.	JACOBSEN et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
		Attorney Docket Number	IMM147C2 (51851-349725)
Sheet	8	of	11

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	190.	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990.	
	191.	JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990.	
	192.	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.	
	193.	KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemanipulator Technology and Space Telerobotics, Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.	
	194.	KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," PRESENCE, 4(4):387-402, 1995.	
	195.	LAKE, "Cyberman from Logitech," GameBytes, 1994.	
	196.	MARCUS, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994.	
	197.	MCAFFEE, "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," JPL D-5172, pp. 1-50, A1-A38, B1-B5, C1-C36, January 1988.	
	198.	MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.	
	199.	OUH-YOUNG, "Force Display in Molecular Docking," Order No. 9034744, p. 1-369, 1990.	
	200.	OUH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995.	
	201.	OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
	202.	PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics in Space, Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.	

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		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
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		Attorney Docket Number	IMM147C2 (51851-349725)
Sheet	9	of	11

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	203.	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
	204.	RABINOWITZ et al., "Multidimensional tactile displays: Identification of Vibratory intensity, frequency, and contactor area," Journal of The Acoustical Society of America, Vol. 82, No. 4, October 1987.
	205.	RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives 08/14/1990, pp. 1-131, May 1990.
	206.	RUSSO, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, Advances in Robotics, pp. 63-70, ASME 1992.
	207.	SCANNELL, "Taking a Joystick Ride", Computer Currents, Nov. 1994, Boston Edition, Vol. 9 No. 11
	208.	SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration, Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.
	209.	SMK Corporation, "Multi-Functional Touch Panel, Force-Feedback Type, Developed: A Touch Panel Providing a Clicking Feeling," <a href="http://www.smk.co.jp/whatsnew_e/628csc_e.html">http://www.smk.co.jp/whatsnew_e/628csc_e.html</a> , September, 30, 2002.
	210.	SMK Corporation, "Force Feedback Type Optical Touch Panel Developed," SMK Corporation Website, October 30, 2002
	211.	SNOW et al., "Model-X Force-Reflecting-Hand-Controller," NT Control no. MPO-17851; JPL Case No. 5348, pp. 1-4, 06/15/1989.
	212.	STANLEY et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSV-Vol. 42, Advances in Robotics, pp. 55-61, ASME 1992.
	213.	TADROS, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," MIT Archive@ Massachusetts Institute of Technology, pp. 1-88, February 1990.
	214.	TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988.
	215.	WAKIWAKA, et al., "Influence of Mover Support Structure on Linear Oscillatory Actuator for Cellular Phones," The Third International Symposium on Linear Drives for Industry Applications, 2001. p. 260-263, Nagano, Japan
	216.	WIKER, "Teletouch Display Development: Phase 1 Report," Technical Report 1230, Naval Ocean Systems Center, San Diego, April 17, 1989.

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		<i>Filing Date</i>	September 30, 2010
		<i>First Named Inventor</i>	Martin et al.
		<i>Art Unit</i>	2629
		<i>Examiner Name</i>	Ricardo Osorio
		<i>Attorney Docket Number</i>	IMM147C2 (51851-349725)
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	217.	Notification of First Office Action mailed September 5, 2007 for corresponding Chinese Application 02821854.X.	
	218.	Notice of Reasons for Rejection for January 29, 2008 mailed February 20, 2008 for corresponding Japanese Patent Application No. 2003-540973.	
	219.	Notice of Reasons for Rejection of September 11, 2007 mailed September 11, 2007 for corresponding Japanese Patent Application No. 2003-540973.	
	220.	United States Patent and Trademark Office, Office Action mailed December 23, 2005 for corresponding US Application No. 10/285,450.	
	221.	United States Patent and Trademark Office, Office Action mailed May 18, 2008 for corresponding US Application No. 10/285,450.	
	222.	United States Patent and Trademark Office, Office Action mailed November 15, 2008 for corresponding US Application No. 10/285,450.	
	223.	United States Patent and Trademark Office, Office Action mailed June 1, 2007 for corresponding US Application No. 10/285,450.	
	224.	European Supplemental Search Report mailed July 1, 2008 for corresponding European Patent Application No. 02773960.6.	
	225.	Notice of Preliminary Rejection mailed March 28, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	
	226.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2009-7017838.	
	227.	Office Action mailed May 10, 2010 for corresponding Korean Patent Application No. 10-2009-7017838.	
	228.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	

Examiner Signature	/Ricardo Osorio/	Date Considered	08/10/2011
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<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Substitute for form 1449B/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Art Unit	2629
		Examiner Name	Ricardo Osorio
		Attorney Docket Number	IMM147C2 (51851-349725)
Sheet	11	of	11

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	229.	Office Action mailed July 2, 2010 for corresponding Korean Patent Application No. 10-2009-7006555.	
	230.	Office Action mailed June 19, 2009 for corresponding Chinese Application No. 200810008845.X.	
	231.	Office Action mailed November 1, 2010 for corresponding Chinese Application No. 200810008845.X.	
	232.	Office Action mailed November 23, 2010 for corresponding Chinese Application No. 02821854.X.	
	233.	Office Action mailed March 5, 2009 for corresponding US Patent Application No. 11/693,117.	
	234.	Office Action mailed June 24, 2009 for corresponding US Patent Application No. 11/693,117.	
	235.	Office Action mailed December 29, 2009 for corresponding US Patent Application No. 11/693,117.	

Examiner Signature	/Ricardo Osorio/	Date Considered	08/10/2011
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Substitute for form 1449A/PTO		<b>Complete if Known</b>	
<b>Information Disclosure Statement by Applicant</b> <i>(use as many sheets as necessary)</i>		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
Sheet 1 of 11	Attorney Docket Number		IMM147C2 (51851-349725)

U.S. PATENT DOCUMENTS						
Examiner	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	1	2,372,140		2/14/1961	Hirsch	
	2	3,157,853		11/17/1964	Hirsch	
	3	3,220,121		11/30/1965	Cutler	
	4	3,487,668		02/24/1970	Hirsch	
	5	3,517,446		06/30/1970	Cortyon et al.	
	6	3,623,064		11/23/1970	Kagen	
	7	3,902,687		09/02/1975	Hightower	
	8	3,903,614		09/09/1975	Diagnond et al.	
	9	3,911,416		10/07/1995	Feder	
	10	4,127,752		11/28/1978	Lowthorp	
	11	4,160,508		07/10/1979	Salsbury	
	12	4,236,325		12/02/1980	Hall et al.	
	13	4,262,549		04/21/1981	Schwellenbach	
	14	4,311,980		01/19/1982	Prudenziati	
	15	4,333,070		06/01/1982	Barnes	
	16	4,362,408		12/07/1982	Cordes et al.	
	17	4,464,117		08/07/1984	Forest	
	18	4,484,191		11/20/1984	Vavra	
	19	4,513,235		04/23/1985	Acklam et al.	
	20	4,581,491		04/08/1986	Boothroyd	
	21	4,581,872		04/15/1986	Hoshino	
	22	4,599,070		07/08/1986	Hladky et al.	
	23	4,692,758		09/08/1987	Clark	
	24	4,708,656		11/24/1987	De Vries et al.	
	25	4,713,007		12/15/1987	Alban	
	26	4,725,817		02/16/1988	Jay	
	27	4,795,296		01/03/1989	Wijlbarg	
	28	4,791,416		12/13/1988	Adler	
	29	4,794,392		12/27/1988	Selinko	
	30	4,798,916		01/17/1989	Suita	
	31	4,821,030		04/11/1989	Batson	
	32	4,823,106		04/16/1989	Pope	
	33	4,840,634		06/20/1989	Muller	
	34	4,885,565		12/08/1989	Embach	

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<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449A/PTO		<b>Complete If Known</b>	
<b>Information Disclosure Statement by Applicant</b> <i>(use as many sheets as necessary)</i>		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
Sheet 2 of 11	Attorney Docket Number	IMM147C2 (51851-349725)	

**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	35	4,891,764		01/02/1990	McIntosh	
	36	4,930,770		06/05/1990	Baker	
	37	4,934,694		06/19/1990	McIntosh	
	38	4,982,918		01/08/1991	Kaye	
	39	4,983,786		01/08/1991	Stevens	
	40	5,019,761		05/28/1991	Kraft	
	41	5,022,384		06/11/1991	Freels	
	42	5,022,407		06/11/1991	Horch et al.	
	43	5,035,242		07/30/1991	Franklin, et al.	
	44	5,038,089		08/06/1991	Szakaly	
	45	5,053,585		10/01/1991	Yaniger	
	46	5,078,152		01/07/1992	Bond	
	47	5,116,051		05/26/1992	Moncrief	
	48	5,165,897		11/24/1992	Johnson	
	49	5,175,459		12/29/1992	Daniel et al.	
	50	5,182,557		01/26/1993	Lang	
	51	5,186,685		02/16/1993	Grossman et al.	
	52	5,212,473		05/18/1993	Louis	
	53	5,223,658		06/29/1993	Suzuki	
	54	5,237,327		08/17/1993	Saitoh	
	55	5,283,970		02/08/1994	Ajner	
	56	5,240,417		08/31/1993	Smithson et al.	
	57	5,241,308		08/31/1993	Young	
	58	5,246,316		09/21/1993	Smith	
	59	5,271,290		12/21/1993	Fischer	
	60	5,275,174		01/14/1994	Cook	
	61	5,289,273		02/22/1994	Lang	
	62	5,299,810		04/05/1994	Pierce, et al.	
	63	5,309,140		05/03/1994	Everett	
	64	5,334,027		08/02/1994	Wherlock	
	65	5,365,148		10/11/1994	Anderson	
	66	5,390,128		02/14/1995	Ryan	
	67	5,390,296		02/14/1995	Crandall	

Examiner Signature	Date Considered
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<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449A/PTO		<b>Complete if Known</b>	
<b>Information Disclosure Statement by Applicant</b> <i>(use as many sheets as necessary)</i>		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
Sheet 3 of 11	Attorney Docket Number	IMM147C2 (51851-349725)	

U.S. PATENT DOCUMENTS						
Examiner	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Column, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	68	5,402,499		03/28/1995	Robinson	
	69	5,402,680		04/04/1995	Korenaga	
	70	5,438,622		07/25/1995	Gulman et al.	
	71	5,437,607		08/01/1995	Taylor	
	72	5,451,924		09/19/1995	Massimino	
	73	5,481,711		10/24/1995	Wang	
	74	5,468,213		11/14/1995	Hogan et al.	
	75	5,489,812		02/06/1996	Fujihata	
	76	5,496,174		03/05/1996	Gamer	
	77	5,514,150		05/07/1996	Rostoker	
	78	5,521,338		05/28/1996	Buchanan	
	79	5,547,382		08/20/1996	Yamasaki, et al.	
	80	5,575,761		11/19/1996	Hajianpour	
	81	5,631,861		05/20/1997	Kramer	
	82	5,684,722		11/04/1997	Thomer	
	83	5,691,747		11/25/1997	Amano	
	84	5,709,219		01/20/1998	Chen	
	85	5,729,249		03/17/1998	Yasutake	
	86	5,766,016		06/16/1998	Sindair, et al.	
	87	5,767,457		06/16/1998	Gerpheide	
	88	5,785,630		07/28/1998	Bobick et al.	
	89	5,791,992		08/11/1998	Crump	
	90	5,844,392		12/01/1998	Peurach	
	91	5,857,988		01/12/1999	Moriyasu	
	92	5,887,995		03/30/1999	Holehan	
	93	5,889,670		03/30/1999	Schuler	
	94	5,889,672		03/30/1999	Schuler	
	95	5,917,906		06/29/1999	Thornton	
	96	5,943,044		08/24/1999	Martinelli	
	97	5,945,772		08/31/1999	Macnak	
	98	5,977,667		11/02/1999	Bouin	
	99	5,996,902		11/23/1999	Holehan	
	100	6,078,126		06/20/2000	Rollins	

Examiner Signature	Date Considered
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<sup>1</sup> EXAMINER: Initial reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>2</sup> Applicant's unique citation designation number (optional). <sup>3</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>4</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>5</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>6</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>7</sup> Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449A/PTO		<b>Complete if Known</b>	
<b>Information Disclosure Statement by Applicant</b>  (Use as many sheets as necessary)		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
Sheet 4 of 11	Attorney Docket Number	IMM147C2 (51851-349725)	

101	6,097,964	08/01/2000	Nuovo
102	6,059,508	05/09/2000	Kramer
103	6,160,489	12/12/2000	Perry et al.
104	6,111,577	08/29/2000	Zillas et al.
105	6,116,435	09/12/2000	Fujita et al.
106	6,198,206	03/06/2001	Saarmaa
107	6,131,097	10/10/2000	Peurah
108	6,195,592	02/27/2001	Schuler
109	6,180,489	12/12/2000	Perry et al.
110	6,198,206	03/06/2001	Saarmaa
111	6,218,986	04/17/2001	Goodwin
112	6,219,034	04/17/2001	Elbing, et al.
113	6,225,976	05/01/2001	Yates
114	6,292,173	09/18/2001	Rambaldi et al.
115	6,307,465	10/23/2001	Kayma et al.
116	6,344,791	02/05/2002	Armstrong
117	6,369,803	04/09/2002	Brisebois et al.
118	6,373,463	04/16/2002	Beeks
119	6,374,255	04/16/2002	Peurah
120	6,388,655	05/14/2002	Leung
121	6,422,941	07/23/2002	Thomer, et al.
122	6,429,846	08/06/2002	Rosenberg
123	6,543,487	05/13/2003	Bazinet
124	6,597,347	07/22/2003	Yasutake
125	6,657,617	12/02/2003	Paolini et al.
126	6,735,307	05/11/2004	Volckers
127	6,781,569	08/24/2004	Oregorio et al.
128	6,801,191	10/05/2004	Mukai et al.
129	6,976,582	12/20/2005	Perret, Jr, et al.
130	7,202,851	04/10/2007	Cunningham et al.
131	2002/0033795	03/21/2002	Shaholian
132	2002/0171621	11/21/2002	Johnson
133	2002/177471	11/28/2002	Kaaresoja
134	2002/0126048	09/12/2002	Aallonen
135	2002/0149561	10/17/2002	Fukumoto et al.
136	2003/0099393	05/12/2005	Johnson
137	2008/0068350	03/20/2008	Rosenberg et al.

Examiner Signature	Date Considered
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		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
		Attorney Docket Number	IMM147C2 (51851-349725)
<i>(use as many sheets as necessary)</i>			
Sheet	5	of	11

Examiner Initials <sup>a</sup>	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>2</sup>	Number <sup>3</sup>	Kind Code <sup>4</sup> (if known)			
	138.	EP	0349088		01/03/1990	Stork Kwant B.V.	
	139.	EP	0817110		01/07/1998	Nokia Mobile Phones Ltd.	
	140.	GB	2180342		03/25/1987	Alcom United	
	141.	JP	01-003664		07/19/1990	Taito Corporation	
	142.	JP	02-109714		01/13/1992	Epoch Co. and Key-Planning Co.	
	143.	JP	04-007371		08/03/1993	Taito Corporation	
	144.	JP	05-193862		01/27/1995	Sega Corporation	
	145.	JP	H2-185278		07/19/1990	Yamada	
	146.	JP	H4-8381		01/13/1992	Endo	
	147.	JP	H5-192449		08/03/1993	Koma et al.	
	148.	JP	H7-24147		01/27/1995	Yokoyama	
	149.	JP	8221173		08/30/1996	Hitachi Ltd.; Hitachi Device Eng.	
	150.	JP	10171588		06/26/1998	Sharp KK	
	151.	JP	1124834		01/29/1999	Fujiyama Teruhi	
	152.	JP	11085400		03/30/1999	Sony Corp.	
	153.	JP	2001-222379		08/17/2001	Fujitsu Ltd.	
	154.	JP	2001-265485		09/28/2001	Sharp KK	
	155.	JP	2001-290572		10/19/2001	Fuji Xerox Co. Ltd.	
	156.	JP	2001-296950		10/26/2001	Fuji Xerox Co. Ltd.	
	157.	JP	2002-259059		09/13/2002	Motoyama et al.	
	158.	JP	2001-350592		12/21/2001	Ryo et al.	
	159.	KR	2001-0026369		04/06/2001	Sim Jae Boong	
	160.	WO	95/20787		08/03/1995	Exgs, Inc.	
	161.	WO	97/18546		05/22/1997	Cirque Corporation	
	162.	WO	99/49443		08/30/1999	Immersion Corporation	
	163.	WO	01/54109		07/26/2001	Immersion Corporation	
	164.	WO	02/31807		04/18/2002	Motorola, Inc.	
	165.	WO	02/19110		11/29/2002	Immersion Corporation	
	166.	WO	02/27645		04/04/2002	Siemens Aktiengesellschaft	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)		Application Number	12/894,489
		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
		Attorney Docket Number	IMM147C2 (51851-349725)
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	167.	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.
	168.	ADELSTEIN, "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances In Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.
	169.	AUKSTAKALNIS et al., "Shicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.
	170.	BAIGRIE, "Electric Control Loading – A Low Cost, High Performance Alternative," Proceedings, pp. 247-254, November 6-8, 1990.
	171.	BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.
	172.	BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-IFTOMM, Sep. 8-12, 1981.
	173.	BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.
	174.	BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989.
	175.	BLISS, "Optical-to-Tactile Image Conversion for the Blind," IEEE Transactions on Man-Machine Systems, Vol. MMS-11, No. 1, March 1970.
	176.	BROOKS et al., "Hand Controllers for Teleoperation – A State-of-the-Art Technology Survey and Evaluation," JPL Publication 85-11; NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985.

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	177.	BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and Its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 45-44, 05/02/1993.
	178.	CADLER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," Bachelor of Science Thesis, MIT, June 23, 1983.
	179.	CALDWELL et al., "Enhanced Tactile Feedback (Tele-Traction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993.
	180.	EBERHARDT et al., "OMAR - A Haptic display for speech perception by deaf and def-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 16-22, 1993.
	181.	EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1, ASME 1994.
	182.	FUKUMOTO, "Active Click: Tactile Feedback For Touch Panels," ACM CHI2001 Extended Abstracts, pp. 121-122, April 2001.
	183.	GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Journal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1995.
	184.	GOTOW et al, "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337
	185.	HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992.
	186.	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990.
	187.	International Search Report filed 11/1/02 corresponding to PCT/US02/35016
	188.	IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.
	189.	JACOBSEN et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.

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		Filing Date	September 30, 2010
		First Named Inventor	Martin et al.
		Group Art Unit	2629
		Examiner Name	Ricardo Osorio
		Attorney Docket Number	IMM147C2 (51851-349/25)
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	190.	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-80-039, August, 1990.	
	191.	JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-155, 1990.	
	192.	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.	
	193.	KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemanipulator Technology and Space Telerobots, Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.	
	194.	KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," PRESENCE, 4(4):387-402, 1995.	
	195.	LAKE, "Cyberman from Logitech," GameBytes, 1994.	
	196.	MARCUS, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994.	
	197.	MCAFFEE, "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," JPL D-5172, pp. 1-50, A1-A35, B1-B5, C1-C36, January 1988.	
	198.	MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.	
	199.	OUH-YOUNG, "Force Display in Molecular Docking," Order No. 903474, p. 1-369, 1990.	
	200.	OUH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995.	
	201.	OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
	202.	PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics In Space, Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.	

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		First Named Inventor	Martin et al.
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	203.	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	
	204.	RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contactor area," Journal of The Acoustical Society of America, Vol. 82, No. 4, October 1987.	
	205.	RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives 08/14/1990, pp. 1-131, May 1990.	
	208.	RUSSO, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, Advances in Robotics, pp. 63-70, ASME 1992.	
	207.	SCANNELL, "Taking a Joystick Ride", Computer Currents, Nov. 1994, Boston Edition, Vol. 9 No. 11	
	208.	SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telem Manipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration, Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.	
	209.	SMK Corporation, "Multi-Functional Touch Panel, Force-Feedback Type, Developed: A Touch Panel Providing a Clicking Feeling," <a href="http://www.smk.co.jp/whatsnew_e/028csc_e.html">http://www.smk.co.jp/whatsnew_e/028csc_e.html</a> , September, 30, 2002.	
	210.	SMK Corporation, "Force Feedback Type Optical Touch Panel Developed," SMK Corporation Website, October 30, 2002	
	211.	SNOW et al., "Model-X Force-Reflecting-Hand-Controller," NT Control no. MPO-17851; JPL Case No. 5348, pp. 1-4, 08/15/1989.	
	212.	STANLEY et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSV-Vol. 42, Advances in Robotics, pp. 55-61, ASME 1992.	
	213.	TADROS, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," MIT Archive@ Massachusetts Institute of Technology, pp. 1-88, February 1990.	
	214.	TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988.	
	215.	WAKIWAKA et al., "Influence of Mover Support Structure on Linear Oscillatory Actuator for Cellular Phones," The Third International Symposium on Linear Drives for Industry Applications, 2001, p. 260-263, Nagano, Japan	
	216.	WIKER, "Teletouch Display Development: Phase 1 Report," Technical Report 1230, Naval Ocean Systems Center, San Diego, April 17, 1989.	

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		Filing Date	September 30, 2010
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	217.	Notification of First Office Action mailed September 5, 2007 for corresponding Chinese Application 02821854.X.	
	218.	Notice of Reasons for Rejection for January 29, 2008 mailed February 20, 2008 for corresponding Japanese Patent Application No. 2003-540973.	
	219.	Notice of Reasons for Rejection of September 11, 2007 mailed September 11, 2007 for corresponding Japanese Patent Application No. 2003-540973.	
	220.	United States Patent and Trademark Office, Office Action mailed December 23, 2005 for corresponding US Application No. 10/285,450.	
	221.	United States Patent and Trademark Office, Office Action mailed May 18, 2006 for corresponding US Application No. 10/285,450.	
	222.	United States Patent and Trademark Office, Office Action mailed November 15, 2006 for corresponding US Application No. 10/285,450.	
	223.	United States Patent and Trademark Office, Office Action mailed June 1, 2007 for corresponding US Application No. 10/285,450.	
	224.	European Supplemental Search Report mailed July 1, 2008 for corresponding European Patent Application No. 02773960.8.	
	225.	Notice of Preliminary Rejection mailed March 28, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	
	226.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2009-7017838.	
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	229.	Office Action mailed July 2, 2010 for corresponding Korean Patent Application No. 10-2009-7006555.	
	230.	Office Action mailed June 19, 2009 for corresponding Chinese Application No. 200810008845.X.	
	231.	Office Action mailed November 1, 2010 for corresponding Chinese Application No. 200810008845.X.	
	232.	Office Action mailed November 23, 2010 for corresponding Chinese Application No. 02821854.X.	
	233.	Office Action mailed March 5, 2009 for corresponding US Patent Application No. 11/693,117.	
	234.	Office Action mailed June 24, 2009 for corresponding US Patent Application No. 11/693,117.	
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SEEN BY RECORDS  
ACTION NEEDED?  YES  NO  
ACTION: RESPOND TO OA  
DEADLINE: 10 SEP 12  
REMINDER: 10 AUG 12  
ENTERED: AH CHECKED: [Signature]

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Application No 08 007 837.1 - 2224	Pat. No. 28138-506 EP2	Date 10.05.2012
Applicant Immersion Corporation		

**Communication pursuant to Article 94(3) EPC**

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(2) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

**of 4 months**

from the notification of this communication, this period being computed in accordance with Rules 126(2) and 131(2) and (4) EPC. One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (R. 50(1) EPC).

If filing amendments, you must identify them and indicate the basis for them in the application as filed. Failure to meet either requirement may lead to a communication from the Examining Division requesting that you correct this deficiency (R. 137(4) EPC).

**Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Art. 94(4) EPC).**

**The notification of this communication starts the 24-month period according to Rule 36(1)(a) EPC for filing a voluntary divisional application divided from this application or from any sequential application. For further information see Guidelines for Examination, A-IV, 1.1.1.2 and 1.1.1.4.**

SEEN BY RECORDS  
ACTION NEEDED?  YES  NO  
ACTION: FILE DIV  
DEADLINE: 10 MAY 14  
REMINDER: 10 APR 14  
ENTERED: AH CHECKED: [Signature]



Hauber, Jörg  
Primary Examiner  
For the Examining Division

Enclosure(s): 7 page/s reasons (Form 2906)  
Additional documents D8 and D9.  
US-6198473-B1, US-6128012-A1

Datum  
Date 10.05.2012  
Date

Blatt  
Sheet 1  
Feuille

Anmelde-Nr.  
Application No: 08 007 837.1  
Demande n°:

The examination is being carried out on the following application documents

**Description, Pages**

1-40 as originally filed

**Claims, Numbers**

1-12 received on 29-11-2010 with letter of 29-11-2010

**Drawings, Sheets**

1/11-11/11 as originally filed

The following documents are cited by the Examiner. A copy of the documents is annexed to the communication and the numbering will be adhered to in the rest of the procedure.

- D8** US 6 128 012 A (SEIDENSTICKER JR ROBERT B [US] ET AL) 3 October 2000 (2000-10-03)
- D9** US 6 198 473 B1 (ARMSTRONG BRAD A [US]) 6 March 2001 (2001-03-06)

**1 Amendments (Article 123(2) EPC)**

The amendments filed with the letter dated 29.11.2010 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 123(2) EPC. The amendments concerned are the following:

**1.1 Claim 1** includes the following amended passage:

[...]

a biasing element (7) comprising a first end and a second end, the first end in communication with the switch and the second end in communication with the actuator, the biasing element arranged to amplify haptic feedback provided by the actuator.

- 1.1.1** In the letter dated 29.11.2010, for support of amended claim 1, the applicant points at original claims 8, 9, and 12, as well as the paragraph bridging pages 7 and 8 of the description.

Original claims 8, 9 and 12 do not mention an amplification of haptic feedback. The aspect of amplification is only stated once in the stated passage of the description. Here, it is disclosed that:

*In the embodiment shown in Figure 1, the actuator 6 is in communication with the input device 2 through a cantilevered beam or lever arms 7 attached to the pivoting rocker, amplifying the effective forces of the actuator 6 felt by the user.*

From this passage, it is however not directly and unambiguously derivable, that a biasing element is arranged to amplify haptic feedback, contrary to the requirements of Article 123(2) EPC. It is also noted that, despite having been claimed in the original claim 12, the description remains entirely silent about a "biasing element" in combination with a switch, rendering this feature as such unclear in that it is not supported by the description as required by Article 84 EPC.

- 1.1.2 Moreover, in anticipation of a likely amendment of the wording of claim 1 in line with the wording of the description, the following comments are submitted with regard to an "amplification" of "effective forces" by means of a "cantilevered beam or lever arms 7".

The applicant appears to consider "effective forces" to be synonymous with the "strength" of haptic feedback, therefore concluding that if the effective forces are amplified, the strength of the haptic feedback is amplified (see claim 1, also see letter dated 29.11.2010., page 3, end of 3rd par., "The invention as claimed in claim 1 solves this problem by providing such a biasing element and this element has an advantage that the feedback received by the user can be more easily interpreted in view of its amplification").

However, the perceived strength of a haptic feedback stimulus also and primarily depends on the amplitude of the haptic stimulus. Following the lever principle, if the "effective force" is amplified by means of a cantilevered bar as disclosed in the description, such force amplification necessarily comes at the cost of a smaller displacement, i.e. a reduction of the amplitude of the haptic feedback. This may effectively make it harder for a user to feel the haptic stimulus when touching the switch.

Therefore, based on what is disclosed in the description, the examining division does not concur with the applicant's assertion that "haptic feedback" is amplified in the switch (2) depicted in Fig. 1 of the present application.

- 1.2 Newly filed **claim 5** defines:

A feedback apparatus according to any preceding claims, further comprising the contact assembly operable to be displaced upon receiving the processor-controlled force.

1.2.1 As support, the applicant points at original claim 1. However, the examining division does not find the necessary basis there. The feedback apparatus according to original claim 1 does not comprise a "contact assembly", and it is therefore not directly and unambiguously derivable from original claim 1 that the contact assembly is operable to be displaced upon receiving the processor controlled-force. The additional claim 5, hence, is not allowable under Article 123 (2) EPC.

1.3 Additionally filed **claim 6** defines:

A feedback apparatus according to any preceding claim, wherein said rate of change is in proportion to a length of time or a pressure.

1.3.1 The applicant sees basis for the features of this claim in the paragraph bridging pages 33 and 34 and figure 8. The only relevant passage mentioning a rate of change is the following:

*In one embodiment, an analog switch is included under the rocker switch to provide an analog signal roughly in proportion to the pressure registered on the rocker switch.*

*This allows the list that is being scrolled to be scrolled at a rate that can be controllable with the amount of pressure applied, and which is communicated to the user by corresponding increase in the rate of haptic events played on the rocker switch.*

1.3.2 Firstly, it is not directly and unambiguously derivable from the passage of the description stated by the applicant, that a rate of change is in proportion to a "length of time", contrary to the requirements of Article 123(2)EPC.

1.3.3 Secondly, it is clear from the above cited passage, that pressure can only be sensed by means of an additional analog switch. Such an analog switch is however nowhere defined in the current set of claims, rendering a pressure related change of a rate unclear. Additional claim 6, hence, is also not allowable, because it introduces lack of clarity (Article 123(2) EPC with 84 EPC).

1.3.4 Finally, the combination of features defined in claim 1 and claim 6 does not find the necessary basis in the description, because the features relate to incompatible embodiments of the description:



Claim 1 defines a feedback apparatus comprising switch (2) depicted in Fig. 1 of the application, wherein "the switch comprising a first contact disposed at a first contact position, a second contact disposed at a second contact position, an input element mounted for pivoting about a pivot axis between first and second input element positions associated with the first and second contact positions".

Claim 6, however, comprises features that relate to the operation of the "5-way D-pad" (106) of the embodiment depicted in Fig. 11 of the application. Evidently, the D-pad switch (106) is substantially different to the switch (2) depicted in Fig. 1.

Claim 6 is thus also not allowable, Article 123(2) EPC, in that a combination of the features of claim 6 and claim 1 is not directly and unambiguously derivable from the application documents as filed.

- 1.4 The above mentioned objections under Article 123(2) EPC with respect to apparatus claims 1, 5 and 6 also apply, mutatis mutandis, to corresponding method **claims 7, 11, and 12.**

## 2 **Clarity (Article 84 EPC)**

The application does not meet the requirements of Article 84 EPC, because **claims 1, 2, 7 and 8** include subject-matter that is unclear for the reasons that follow.

### 2.1 **Claim 1** defines, inter alia,

A switch (2) operable to output a first signal to a processor (9) operable to associate a value with a setting of the switch in a first mode and to control a rate of change of the value in a second mode

Claim 1 does not meet the requirements of Article 84 EPC, because the meaning of "a value" and of "rate of change of the value" is unclear. The examining division can only find the following two passages in the description that relate to a "change of a rate":

- see description, p. 34, l. 2-6

*In one embodiment, an analog switch is included under the rocker switch to provide an analog signal roughly in proportion to the pressure registered on the rocker switch. This allows the list that is being scrolled to be scrolled at a rate that can be controllable with the amount of pressure applied*

◦ see description, p. 37, l. 19-23

*In the embodiment shown, when a directional arrow of the D-pad 106 is held down, the menu options in sub-menu 112 scroll at a fixed rate, and a haptic effect plays with each option that appears below the cursor. The longer the directional arrow is held down, the faster the rate of scrolling.*

These passages both disclose the changing of a scrolling rate, but remain silent about changing the rate of a "value". Even when assuming that the "rate of the value" corresponds to the "scrolling rate", it would then be unclear what the "value" as such represents in the so called "first mode".

Based on the above cited passages of the description, the examining division can also not find support for dedicated first and second operation modes. Rather, the different interpretation of button signals appear to relate to different functionalities implemented by different embodiments. This renders the "first mode" and "second mode" as claimed unclear in the sense of Article 84 EPC, in that it does not find support in the description.

Also, the term "setting of the switch" is not unambiguously clear. In particular, it is not clear whether the "setting" relates to a hardware configuration of the switch, or, alternatively, to the manner the signals that are output by the switch are interpreted by the processor. The description does not explicitly mention a "setting" of a switch.

Finally, as has been previously noted with respect to claim 6, it appears that the features of the above cited passage of claim 1 relate to the embodiment depicted in Fig. 11 utilising a 5-way D-pad switch 106 for user input, whereas the "switch" claimed in claim 1 actually refers to switch 2 depicted in Fig. 1. The combination combination of features of claim 1 is thus unclear in the sense of Article 84 EPC in that the claimed combination of features is not supported by the description.

2.2 Also, **claim 1** defines a switch (2) comprising, inter alia,

a contact assembly (7,8) operable to communicate with the first and second contacts;

The claimed "contact assembly" is unclear for the following reasons:

The description does not disclose a "contact assembly" to be comprised in the switch (2) depicted in Fig. 1. Instead, this switch comprises "a cantilevered beam or lever arms 7 attached to the pivoting rocker", wherein "The lever arm 7 shown includes one or more bends 8 to fit within the electronic device in which the apparatus 1 is disposed." ( see description, p. 7, l. 19 - p. 8, l. 5). Hence, even if the claimed "contact assembly" is assumed to correspond to

the lever arm 7 having one or more bends 8, as suggested by the reference signs (7,8), it is still not supported by the description as required by Article 84 EPC that such a "contact assembly" is operable "to communicate with the first and second contacts". Instead, according to the description, the lever arm is attached to the pivoting rocker, not the first and second contacts.

It is furthermore noted that the naming of the lever arm 7 as "contact assembly" is misleading, Article 84 EPC, in that a "contact" may be wrongly interpreted as an "electrical contact", e.g. for transmitting electrical signals, which however does not appear to be the case here.

2.2.1 The use of the term "contact assembly" for defining the lever arm 7 that is in *mechanical* contact with the actuator and the pivoting rocker further renders it unclear what the applicant means by the previously stated "first contact" and "second contact" of claim 1, which also do not find literal support in the description. Here, reference signs should be added for clarification.

2.3 **Claim 2** defines

A feedback apparatus according to claim 1, characterised by further comprising a processor operable to receive the first signal and to communicate the second signal to the actuator.

However, claim 1, on which claim 2 depends, already defines a processor (9) to which a first signal is output from the switch (2), and from which a second signal is received by the actuator. It therefore appears that the features defined by claim 2 are redundant. The set of claims as a whole therefore does not meet the requirements of Article 84 EPC with respect to conciseness.

2.4 The above mentioned clarity objections apply, *mutatis mutandis*, to corresponding method **claims 7 and 8**.

3 **Inventive step (Article 56 EPC)**

In view of the above objections, a detailed assessment as to inventive step of the claimed subject-matter is presently not meaningful. Nevertheless, in this respect it is noted that documents **D8** and **D9** may become highly relevant for any new claim that fulfils the requirements of Article 123(2) EPC and 84 EPC in particular because they disclose the rate of scrolling to change with the amount of time a button is pressed (see **D8**, col. 12, l. 49-63), or with the amount of pressure that is applied to a button (see **D9**, col 5, l. 60 - col. 6, l. 51).

#### 4 Next steps

It is not at present apparent which part of the application could serve as a basis for new, allowable claims. If despite the above considerations the procedure should be continued and the applicant intends to file a new set of clarified claims he is requested to take into consideration also the following remarks:

- 4.1 When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims. Care should be taken during revision, especially of the introductory portion and of any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Article 123(2) EPC).
- 4.2 The applicant should also limit the application to the inventions searched and excise those parts of the application relating to other inventions.
- 4.3 The expression "The entire disclosure of the application [...] is incorporated herein by reference" used on page 7, I. 3-4, and I. 16-17 should be deleted (cf. Guidelines C-II 4.19).
- 4.4 Moreover, on page 7 of the description, reference is made to "Appendix A" and "Appendix B" of the present application. However, no appendix could be found in the application documents as filed. For sake of clarity, the reference to the appendices should thus be deleted.
- 4.5 To meet the requirements of Rule 43(1) EPC any amended independent claim should be properly recast in the two-part form, with those features which in combination are part of the prior art (see document D1) being placed in the preamble and with the remaining features being included in the characterising part.
- 4.6 The features of the claims should be provided with reference signs placed in parentheses to increase the intelligibility of the claims (Rule 43(7) EPC). This applies to both the preamble and characterising portion (see Guidelines C-III, 4.19).
- 4.7 In order to comply with the requirements of Rule 137(4) EPC, the applicant should clearly identify the amendments made, irrespective of whether they concern amendments by addition, replacement or deletion, and indicate the passages of the application as filed on which these amendments are based (see Guidelines E-II, 1).

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 Your Ref.: IMM147.KR.DIV2 (51851/388319)  
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**KIPO'S Notice of Final Rejection (Translation)**

The present application has been re-examined based on the response (the response to the Preliminary Rejection, etc.) and the amendment (the amendment to the specification, etc.) filed on December 30, 2010. However, the Preliminary Rejection dated July 2, 2010 has not been overcome. Thus, this Final Rejection is being issued pursuant to Article 62 of the Korean Patent Act.

[Result of Examination]

- Examined Claims: Claims 1-26, 29 and 44-46
- Rejected Portions and Relevant Provisions

Rejected Portions	Relevant Provisions
Claims 1-26 and 29	Article 29, Paragraph 2 of the Korean Patent Act

[Examiner's Grounds for Final Rejection]

**The present application cannot be allowed because Claims 1-26 and 29 fail to meet the inventiveness requirements under Article 29, Paragraph 2 of the Korean Patent Act, as set forth below.**

**1. Summary of the Notice of Preliminary Rejection dated July 2, 2010**

The present invention is similar to Cited Reference 1 (U.S. Patent No. 5,977,867) in terms of the objective to provide different tactile feedback corresponding to different inputs of a user and thereby to allow the user to check the input content without seeing the input device.

In terms of structure, all of the features of the claimed invention recited in Claims 1-43 (before the Amendment) could have been easily conceived by those skilled in the art in view of a selective combination of the elements disclosed in Cited References 1-3 (Cited References 2 and 3: Korean Patent Application Publication Nos. 2001-28369 and 1998-42097).

Accordingly, Claims 1-43 of the present application (before the Amendment) could have been easily conceived in view of a selective combination of Cited References 1-3.

**2. Argument and Amendment filed on December 30, 2010 in response to the Notice of Preliminary Rejection**

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(1) Regarding Independent Claim 1

According to Applicant's Argument, independent Claim 1 has been amended to further qualify Claim 1.

Specifically, Claim 1 as amended relates to a (tactile sensation feedback generating) method comprising: (i) outputting a display signal configured to display a plurality of graphical objects on a touch-sensitive input device; (ii) receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device; (iii) determining an interaction between the object contacting the touch-sensitive input device and one of graphical objects based on the sensor signal; (iv) generating an actuator signal based at least in part on the interaction and a tactile sensation database, the tactile sensation database comprising a plurality of tactile sensations corresponding to the graphical objects; and (v) outputting the actuator signal.

Upon reviewing the claimed invention, the features of the claimed invention described in (i)-(iv) are interpreted to mean respectively: (a) displaying an object (graphical object: soft key, icon etc.) on a touch screen (a tactile sensation input device); (b) receiving a detected signal generated when a finger or a touch pen (an object contacting the tactile sensation input device) contacts the touch screen; (c) determining what object (soft key, icon, etc.) is selected by calculating the contacted position from the detected signal (determining an interaction); and (d) generating/outputting a drive signal of a tactile sensation generator (actuator; corresponding to the vibrator 16 in Cited Reference 1), which corresponds to the selected object (based on the interaction, i.e., corresponding to the user input or selected object).

However, the features of the claimed invention as interpreted above are very similar to the operation or method of Cited Reference 1, which discloses a touch screen (10) as a touch-sensitive input device, a vibrator (16) as an actuator, and a processor (2, 3) for producing a tactile feedback (vibration) corresponding to the input.

With reference to feature (v) of the claimed invention, Applicant argues that since Cited Reference 1 discloses no corresponding feature, Claim 1 has inventiveness.

Contrary to the foregoing argument, however, Cited Reference 1 (*see* col. 3, lines 24-26) discloses that the CPU 3 controls both the pulse width and the amplitude of mechanical vibrations of a vibrator. From this disclosure, it would have been obvious that a specific type of vibration mode is mapped to a specific input. Accordingly, Applicant's argument above cannot be accepted.

In conclusion, Claim 1 still could have been easily conceived by those skilled in the art in view of Cited Reference 1.

(2) Regarding Independent Claims 10 and 18

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Claim 10 relates to an apparatus (system) for performing the method of Claim 1, and Claim 18 relates to a computer readable recording medium having stored a program thereon, which causes a computer to execute the method of Claim 1.

Accordingly, Claims 10 and 18 have the same obviousness issues as Claim 1.

(3) Regarding Independent Claim 26

Claim 26 relates to an apparatus comprising a touch-sensitive input device moveable to the first and second position, an actuator giving tactile feedback to the touch-sensitive input device, and a processor in communication with the touch-sensitive input device and the actuator, wherein the processor is configured to generate a first or second actuator signal depending on the first or second position (i.e., user's first or second input).

The foregoing feature, however, could have been easily conceived by those skilled in the art in view of the combination of Cited Reference 1, which discloses giving different tactile feedback to different inputs, and Cited Reference 2, which discloses that a single button generates a plurality of input signals depending on the force applied.

3. Remaining Claims (Claims 2-9, 11-17, 19-25 and 29)

Since no substantive amendments have been made to Claims 9, 11-12, 17, 19-20, and 25, these claims remain virtually the same as before the Amendment.

As for Claims 2-8, 13-16, 21-24, and 29, no amendments have been made.

Upon reviewing these claims once again, not every ground of the Preliminary Rejection thereof has been overcome.

4. Conclusion

Despite the filing of the Argument and Amendment, Claims 1-25 could have been easily conceived in view of Cited Reference 1, and Claims 26 and 29 could have been easily conceived in view of the combination of Cited References 1 and 2. Accordingly, it is hereby decided that the present invention shall be finally rejected.

[Examiner's Remarks]

New Claims 44-46 are found to be unpatentable for the following reasons:

I. Claim 44

Claim 44 further limits the touch-sensitive input device of Claim 26. Specifically,

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Claim 44 recites that the touch-sensitive input device is moveable to a third position and the processor is configured to generate a third actuator signal that corresponds to the third position.

However, this feature could have been easily conceived by adding a further input step at a multistage input device in view of Cited Reference 2.

2. Claims 45 and 46

Claims 45 and 46 relate to an electronic device equipped with the system or apparatus of Claims 10 and 26, such as a mobile telephone and a personal computer. Accordingly, Claims 45 and 46 have the same obviousness issues as Claims 10 and 26.

[== End of Translation ==]



발송번호: 9-5-2011-042647023  
발송일자: 2011.07.29

수신 서울 종로구 내자동 세양빌딩 (김.장법률  
사무소)

주성민

110-720

YOUR INVENTION PARTNER

특 허 청  
특허거절결정서

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출원번호 10-2010-7006555  
발명의명 칭 촉각을 제공하기 위한 방법 및 장치

2010.12.30.자 접수된 [영세서등 보정]보정서 및 [거절이유 등 통지에 따른 의견]의견(답변, 소명)서에 의하여 다시 심사한바 2010.07.02.자 거절이유를 해소하지 못하였으므로 이 출원에 대하여 특허법 제62조에 따라 거절결정합니다.

[다시 심사한 결과]

- 심사 대상 청구항 : 제1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 29, 44, 45, 46항
- 이 출원의 거절이유가 해소되지 않은 부분과 관련 법조항

순번	거절이유가 해소되지 않은 부분	관련 법조항
1	청구항 제1항 내지 제26항, 제29항	특허법 제29조제2항

[거절결정의 이유]

1. 이 출원의 특허청구범위의 청구항 제1항 내지 제26항, 제29항에 기재된 발명은 아래와 같이 그 출원 전에 이 발명이 속하는 기술분야에서 통상의 지식을 가진 자가 용이하게 발명할 수 있는 것이므로 특허법 제29조제2항에 따라 특허를 받을 수 없습니다.

- 아 래 -

가. 본 출원에 대한 2010.07.02.자 의견제출통지서에서,

- (1)본 출원발명과 인용발명1(미국특허공보 05977867호), 사용자의 서로 다른 입력행위마다 서로 다른 촉각 피드백을 제공함으로써 사용자가 입력장치를 보지 않고도 쉽게 입력 내용을 확인할 수 있는 입력장치를 제공하는 기술들로서, 발명의 목적이 유사하고,

(2)발명의 구성 면에서, 보정 전 본 출원의 제1~43항에 기재된 모든 구성적 특징은 인용발명1, 인용발명2(공개특허 제2001-28369호) 및 인용발명3(공개특허 제1998-42097호)에 공개된 기술구성을 선택적으로 결합함으로써 통상의 기술자가 용이하게 발명할 수 있는 바,

(3)보정 전 본 출원의 제1~43항은 통상의 기술자가 인용발명1,2,3의 선택적 결합을 통해서 용이하게 발명할 수 있음을 통지하였습니다.

나. 이에 대해 출원인은 2010.12.30.자 의견서 및 보정서를 제출하였는데, 이에 대해서 살펴보면 다음과 같습니다.

(1)상기 보정된 본 출원의 독립청구범위 제1항은, 보정 전 제1항을 더욱 한정했다고 출원인이 주장하는 것으로, 그 내용은,

- ①촉각 입력장치 상에 복수의 그래픽 오브젝트를 표시하는 표시신호 출력 단계,
- ②촉각 입력장치와 접촉하는 오브젝트를 나타내는 센서신호 수신 단계,
- ③센서신호에 기초하여 촉각 입력장치와 접촉하는 오브젝트와 그래픽 오브젝트 중 하나 사이의 상호작용을 결정하는 단계,
- ④상호작용 및 촉각 데이터베이스에 적어도 부분적으로 기초하여 작동장치 신호를 생성 및 출력하는 단계를 포함하되,
- ⑤상기 촉각 데이터베이스는 그래픽 오브젝트들에 대응하는 복수의 촉각을 포함하는 것을 특징으로 하는, (촉각 피드백 생성) 방법입니다.

(2)상기 제1항의 내용(상기 나.(1)①~⑤항의 기재 내용)을 재해석하면, 그 내용은

- ①터치스크린(촉각 입력장치) 상에 객체(그래픽 오브젝트; 소프트 키, 아이콘 등)를 표시하고,
- ②손가락이나 터치펜(촉각 입력장치와 접촉하는 오브젝트)이 터치스크린에 접촉할 때 발생하는 검출 신호를 수신하며,
- ③검출신호로부터 터치위치를 계산하여 어떤 객체(소프트 키, 아이콘 등)가 선택되었는지를 결정하고(상호작용 결정),
- ④선택된 객체에 상응하여(상호작용에 기초하여; 이는 곧 사용자가 입력한 내용 또는 선택한 객체에 상응하여), 촉각 피드백 생성장치(작동장치; 인용발명1의 vibrator 16) 구동신호를 생성하고 출력한다는 것인바, (이상 상기 나.(1)①~④항의 내용)
- ⑤이는, 촉각 입력장치로써 터치스크린(10)을 구비하고, 작동장치로써 바이브레이터(16)을 구비하며, 입력에 상응하는 촉각 피드백(진동)을 생성하도록 제어하는 프로세서(2,3)를 구비한 인용발명1의 동작순서/방법과 매우 유사합니다.

(3)출원인은 상기 의견서에서,

- ①상기 나.(1)⑤항의 내용(촉각 데이터베이스)을 들어, 인용발명1에 그와 상응하는 구성요소가 없으므로 본 출원의 제1항의 진보성이 인정되어야 한다고 주장하나,
- ②인용발명1의 컬럼3, 24~26줄에 CPU(3)가 촉각을 제공하는 진동의 펄스폭과 진폭을 제어한다고 기재되어 있는바, 이는 특정한 입력에 특정한 유형의 진동 모드가 맵핑되어 있음이 자명하고, 따라서 출원인의 상기 주장은 인정될 수 없습니다.

(4)상기의 이유로, 본 출원의 제1항은 여전히 통상의 기술자가 인용발명1을 통해서 용이하게 발명할 수 있는 것으로 판단됩니다.

(5)독립 청구범위 제10, 18항

- ①본 출원의 제10항은 제1항의 방법을 실행하는 장치(시스템)를 청구하고, 본 출원의 제18

함은 제1항의 방법을 실행하는 프로그램의 저장매체를 청구하는바,

②그 진보성 여부는 제1항의 경우와 동일합니다.

(6)독립청구범위 제26항

①제26항의 내용을 정리하면, 가해지는 힘에 따라 제1,2 위치로 이동 가능한 촉각 입력장치, 촉각 입력장치에 촉각 피드백을 부여하는 작동장치, 촉각 입력장치 및 작동장치와 통신하는 프로세서를 구비하며, 제1,2 위치 여부(이는 곧 사용자의 제1,2 입력행위)에 따라서 제1,2 작동장치 신호를 생성(이는 곧, 제1,2 촉각 피드백을 부여)하는 장치를 청구하는바,

②이는, 서로 다른 입력 행위에 서로 다른 촉각 피드백을 부여하는 인용발명1의 기술사상과, 가해지는 힘에 따라 하나의 버튼이 복수의 입력신호를 생성하는 구성이 개시된 인용발명2의 실시예를 결합함으로써, 통상의 기술자가 용이하게 발명할 수 있습니다.

다. 기타 종속청구범위 (제2-9, 11-17, 19-25, 29항) 관련

(1)상기 청구항 중,

①제9, 11, 12, 17, 19, 20, 25항은 상기 보정서에서 보정되었으나 실질적으로 발명의 내용이 다르다고 볼 수 없고,

②제2-8, 13-16, 21-24, 29항은 보정되지 않았으며,

(2)재경토한바, 상기 의견제출통지서의 거절이유를 반복할만한 특별한 사유가 없는 것으로 판단됩니다.

라, 상기의 이유로, 본 출원의 제1-25항은 인용발명1을 통해서, 본 출원의 제26, 29항은 인용발명1, 2의 결합을 통해서, 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자가 용이하게 발명할 수 있는 것으로, 상기 의견서 및 보정서를 통해서도 상기의 거절이유를 여전히 해소하지 못한 것으로 판단되어, 본 출원을 거절결정합니다.

[참 고]

상기 보정에 의해 신설된 제44-46항에는 다음과 같은 거절이유가 있습니다.

(1)제44항 관련

①제44항은, 제26항의 촉각 입력장치가 제3 위치로 이동가능하고 제3 위치에 상응하는 제3 작동장치 신호를 더 생성하는 것을 특징으로 하나,

②이는, 다단의 입력장치에서 입력 단수를 하나 더 늘린 것에 불과하며 인용발명2의 실시예로부터 통상의 기술자가 용이하게 확장할 수 있는 구성입니다.

(2)제45, 46항 관련

①제45, 46항은, 제10, 26항의 시스템 또는 장치를 구비한 이동 전화기, PC 등의 전자장치를 청구하는바,


②그 진보성 여부는 제10, 26항의 경우와 동일합니다. 끝.

2011.07.29

특허청 정보통신심사국

컴퓨터심사과

심사관 천대식

천대식 

<< 안내 >>

1. 이 거절결정에 불복이 있는 때에는 거절결정서를 송달 받은 날부터 30일 이내에 특허심판원에 심판을 청구할 수 있으며 또한, 심판청구일로부터 30일 이내에 명세서 또는 도면을 보정할 수 있습니다. 이 경우 특허법제47조제2항 및 제3항에 따른 범위 이내에서 명세서 등을 보정할 수 있음을 알려드립니다.
2. 거절결정불복심판 청구기간은 특허법 제15조제1항에 따라 연장할 수 있습니다. 거절결정불복심판 청구기간을 연장하려는 경우에는 심판청구기간 만료일 7일 전까지 법정기간 연장신청서(특허법 시행규칙 별지 제10호서식)를 특허심판원으로 제출해 주시기 바랍니다.
3. 명세서 등의 보정은 반드시 특허법 시행규칙 별지 제9호서식을 이용해야 합니다.

※ 이 통지서의 내용에 대해 문의사항이 있으시면 특허청 ☎042-481-5871(담당심사관 천대식)로, 서식 또는 절차에 대하여는 특허고객 상담센터 ☎1544-8080로 문의하시기 바랍니다.

☞ 특허청 주소 : (302-701) 대전광역시 서구 청사로 189(둔산동 920번지) 정부대전청사 4동

발송번호: 9-5-2010-019029581  
발송일자: 2010.05.04

수신 서울 종로구 내자동 세양빌딩 (김.장법률  
사무소)

주성민

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**심사전치**

특 허 청

## 심사전치출원의 심사결과통지서

출원번호	10-2004-7006627
심판번호	2010 원 1434
발명의명칭	촉각을 제공하기 위한 방법 및 장치
출원인명칭	임머슨 코퍼레이션
주소	미국, 캘리포니아 95131, 산조세 폭스레인 801
대리인성명	주성민 외 2명
주소	서울 종로구 내자동 세양빌딩 (김.장법률사무소)

위 심사전치된 출원에 대한 심사결과 다음과 같이 원결정을 유지하기로 하였음을 통지합니다.

### [원결정을 유지하는 이유]

특허법 제29조제2항 : 청구항 전항

- 아래 -

가. 본 출원에 대한 2009.11.25.자 거절결정서에서,

(1)본 출원의 제1,66항은,

- ①사용자가 가하는 서로 다른 압력에 서로 다른 입력신호를 생성하는 하나 이상의 입력 장치 (입력 단계),
- ②서로 다른 입력에 상응하는 서로 다른 촉각 피드백을 상기 입력장치에 제공하는 작동 장치 (촉각 제공 단계),
- ③입력의 종류를 검출하고 검출된 입력의 종류에 상응하는 촉각 피드백을 제공하도록 상기 입력장치와 작동 장치를 제어하는 제어기;를 포함하는 장치(제66항) 및 상기 방법을 실행하는 프로그램 저장매체(제1항)인 바,

(2)이는,

- ①서로 다른 입력신호에 응답하여 서로 다른 촉각 피드백을 제공하는 기술이 개시된 인용발명 1(미국특허공보 05977867호) 및,
- ②하나의 입력버튼이 눌러지는 깊이나 힘에 따라 서로 다른 복수 개의 입력신호가 생성되는 것을 기술요지로 하는 인용발명2(공개특허 제2001-28369호);의 기술 구성을 결합함으로써

당업자가 용이하게 발명할 수 있는 것으로서,

③본 출원의 제1,66항은 본 발명이 속하는 기술분야에서 통상의 지식을 가진 자가 인용발명 1,2의 결합을 통해서 용이하게 발명할 수 있어, 특허 받을 수 없는 것으로 결정하였습니다. 나. 이에 대해 출원인은 2010.03.29.자 보정서 및 2010.04.02.자 심판청구이유서를 제출하였는데 이에 대해서 살펴보면 다음과 같습니다.

(1)상기 보정서에서 보정된 독립항 제1항을 정리하면,

①제1 입력장치 상의 제1 압력 검출단계,

②상기 제1 압력이 검출되면 상기 제1 입력장치에 제1 촉각 제공단계,

③상기 제1 압력이 검출되면 상기 제1 입력장치에 제2 압력 검출단계(제2 압력은 제1 압력보다 큼.),

④상기 제2 압력이 검출되면 상기 제1 입력장치에 제2 촉각 제공단계;로 구성된 방법을 실행하는 프로그램 저장매체로서,

⑤상기 제1,2 촉각은 각각, (입력 데이터와 촉각 피드백 데이터의 상호 연관관계가 저장된 데이터베이스에 기초해서, 제1,2 압력에 관련된 것을 특징으로 합니다.

(2)상기 보정서에서 보정된 독립항 제66항을 정리하면,

①감지된 제1,2 압력 및 제1,2 입력신호에 상응하는 제1,2 위치를 포함하는 1개 이상의 입력 장치,

②상기 입력장치에 촉각을 제공하는 1개 이상의 작동장치,

③제1,2 입력신호를 검출하여 제1,2 위치와 연관된 제1,2 촉각을 생성하는 제어기;를 포함하는 장치로서,

④상기 제1,2 촉각은 각각, (입력 데이터와 촉각 피드백 데이터의 상호 연관관계가 저장된 데이터베이스에 기초해서, 제1,2 입력신호에 관련된 것을 특징으로 합니다.

(3)이를 인용발명1 및 인용발명2의 기술내용과 비교하면 다음과 같습니다.

①본 출원 제1,66항의 제1,2 압력에 대응되는 제1,2 입력신호 및 제1,2 위치는, 입력 버튼이 눌러진 깊이를 복수개의 단계로 나누어 감지하고 상기 각 단계에 상응하는 입력신호를 생성하도록 구성된 인용발명2의 도면2,3,5,7 등에 개시된 버튼부의 기능을 통해서 확인 할 수 있고,

②본 출원 제1,66항의 제1,2 입력신호(압력, 위치)에 관련된 제1,2 촉각은, 서로 다른 입력신호(사용자의 입력동작)에 연관된 서로 다른 촉각 피드백을 입력장치(및 사용자)에 제공한다라는 의미로, 사용자의 터치패드 입력동작에 상응하여 진동 피드백을 터치패드에 제공하는 진동자(vibrator 16) 및 진동의 주파수, 펄스폭, 진폭을 변조하도록 제어하는 CPU(3)를 구비한 인용발명1의 기술내용(컬럼2 라인48-56, 컬럼3 라인24-38 등)을 통해서 당업자가 용이하게 유추할 수 있습니다.

③정리하면,

(a)본 출원 제66항의 입력장치, 작동장치, 제어기는 각각, 인용발명2의 다단 입력 버튼, 인용발명1의 진동자(vibrator 16), 인용발명1의 CPU(3)에 상응하는 구성요소이고,

(b)본 출원 제1항의 제1,2 압력 검출단계는, 인용발명2의 다단 입력버튼의 입력 종류 검출 단계에 상응하며,

(c)본 출원 제1항의 제1,2 촉각 제공단계는, 인용발명1의 사용자의 입력 종류에 상응하도록 진동(촉각 피드백)의 주파수, 펄스폭, 진폭의 변조 및 제공 단계에 대응됩니다.

④한편, 인용발명1의 입력 장치를 인용발명2의 다단 입력 버튼으로 대체하면, Immersion Ex. 2005-206 Amit Agarwal v. Immersion Corp., IPR2016-00807

발명2의 다단 입력 버튼에 인용발명1의 촉각 피드백을 추가하는 것은, 서로 독립적인 두 기술사상의 결합인 바, 당업자 수준에서 추가적인 기술적 사상의 부가 없이 용이하게 도달할 수 있습니다.

(4) 출원인은 상기 심판청구이유서를 통해서,

- ① 인용발명1에는 접촉 압력에 상응하는 별개의 입력신호가 생성되는 구성이 없고,
- ② 인용발명2에는 입력장치에 촉각 피드백이 제공되지 않으며,
- ③ 상기 보정에 의하여 추가된 특징(입력과 촉각이 연관된 데이터베이스)을 인용발명1,2가 시사하고 있지 않다고 주장합니다.
- ④ 그러나, 상기 나.(4)①,②의 주장은, 본 출원 제1,66항과 상관관계가 있는 기술적 특징들(서로 다른 입력에 상응하는 서로 다른 촉각 피드백을 제공하는 인용발명1 및, 압력에 상응하는 서로 다른 입력신호를 생성하는 인용발명2)을 의도적으로 간과한 주장이며,
- ⑤ 상기 나.(4)③에서 주장하는 본 출원 제1,66항의 입력과 촉각이 연관된 "데이터베이스"는, 인용발명1 컬럼2 라인52~54 "The activation is based on conditions predefined in the system user interface such as the location of the key pressed."라는 내용으로부터 자명하게 유추되는 바,
- ⑥ 본 출원의 제1,66항이, 인용발명1,2의 결합으로부터 용이하게 도달할 수 없으며, 인용발명1,2의 결합된 기술과 비교해도 구성이 상이하고 더 나은 효과를 갖는다는 출원인의 상기 주장은 인정될 수 없습니다.

(5) 따라서, 상기 보정된 본 출원의 제1,66항은 여전히 당업자가 인용발명1,2의 결합을 통해서 용이하게 발명할 수 있는 것으로 판단됩니다.

다. 기타 종속 청구범위(제2~16,44,45항 및 제67~73항)

(1) 상기 종속 청구항들 중, 제71,72항은 그 인용항을 보정한 것 외에는 실질적으로 보정된 내용이 없고, 나머지 종속 청구항들은 보정되지 않았습니다. 이에 대해서는 2009.03.26. 의견제출 통지서에서 이미 거절이유를 상세히 밝혔고,

(2) 재심사 한 바, 그 거절이유를 번복할만한 사유가 없는 것으로 판단됩니다.(2009.3.26.자 의견제출통지서 참고)

라. 상기와 같이 본 출원의 제1~16,44,45,66~73항(전항)은, 본 발명이 속하는 기술분야에서 통상의 지식을 가진 자가 인용발명1,2의 결합을 통해서 용이하게 발명할 수 있는 것으로서, 상기 심판청구이유서 및 보정서에 의해서도 상기의 거절이유를 여전히 해소하지 못한 것으로 판단되어, 본 출원에 관한 원결정을 유지합니다. 끝.

특허청

2010.05.04

정보통신심사국  
컴퓨터심사과

심사관

천대식



<< 안내 >>

※ 서식 또는 절차에 대하여는 특허고객 상담센터(☎1544-8080)로 문의하시기 바라며, 기타 문의사항이 있으시면 ☎ 042-481-5871(담당심사관 천대식)로 문의하시기 바랍니다.

Immersion Ex. 2005-208

※ 2010. 7. 31. 개정된 특허법 제 122조 제 2항 제 2호에 따라 Amit Agarwal v. Immersion Corp., IPR2016-00807



**THE STATE INTELLECTUAL PROPERTY OFFICE  
OF THE PEOPLE'S REPUBLIC OF CHINA**

Address : Receiving Section of the Chinese Patent Office, No. 6 Tucheng Road West, Haidian District, Beijing, Postal code: 100088

Zip Code: 100140 China Sinda Intellectual Property Ltd. B11th Floor, Focus Place, Financial Street, Xicheng District, Beijing, China. <b>Qiang Zhong Weimin Fan</b>	Date of Issuing:  July 7, 2011
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Application No:	<b>200810008845.X</b>	Document Series No.	<b>2011070400532130</b>
Applicant:	<b>IMMERSION CORPORATION</b>		
Title of Invention:	<b>METHOD AND SYSTEM FOR PROVIDING TACTILE SENSATIONS</b>		

**NOTIFICATION OF THE FOURTH OFFICE ACTION**

1.  The further examination is conducted on the basis of the Response submitted on Mar. 16, 2011 by the applicant.  
 The further examination is conducted on the basis of the reexamination decision made on \_\_\_ by the Patent Reexamination Board.

2.  The amendment documents submitted by the applicant on \_\_\_\_\_ do not meet the requirement of the Paragraph 3 of Rule 51 of the Implementing Regulations of the Chinese Patent Law.

3. The further examination is conducted on the basis of the following application documents:  
 Amended documents enclosed with the response.  
 Application documents covered in the preceding Office Action and amended documents enclosed with the response.  
 Application documents covered in the preceding Office Action.  
 Application documents determined in the reexamination decision.  
 \_\_\_\_\_

4.  No new reference is cited in the notification.  
 The following references are cited in the notification (the reference No. will be used in the further procedure of examination):

No.	References or Titles	Publication Date (or Filing Date of the Conflict Application )

5. Conclusive opinion:

**Regarding the Description**

- The content of the application belongs to the scope of Article 5 of the Chinese Patent Law, which cannot be granted.  
 The description is unconformity with the provisions of Paragraph 3 of Article 26 of the Chinese Patent Law.  
 The amendment of the Description is unconformity with Article 33 of the Chinese Patent Law.  
 The presentation manner of the description is unconformity with Rule 18 of the Implementing Regulations of the Chinese Patent Law.

**Regarding the Claims**

- Claims \_\_\_\_\_ do not possess the novelty under Paragraph 2 of Article 2 of the Chinese Patent Law.  
 Claims \_\_\_\_\_ do not possess the novelty under Paragraph 1 of Article 9 of the Chinese Patent Law.  
 Claims \_\_\_\_\_ do not possess the novelty under Paragraph 2 of Article 22 of the Chinese Patent Law.

- Claims \_\_\_\_ do not possess the inventiveness under Paragraph 3 of Article 22 of the Chinese Patent Law.
  - Claims \_\_\_\_ do not possess the practical applicability under Paragraph 4 of Article 22 of the Chinese Patent Law.
  - Claims \_\_\_\_ fall in the scope of Article 25 of the Patent Law which can not be granted.
  - Claims 1, 3, 7, 9, 10, 14 do not meet the requirement of Paragraph 4 of Article 26 of the Chinese Patent Law.
  - Claims \_\_\_\_ do not meet the requirement of Paragraph 1 of Article 31 of the Chinese Patent Law.
  - The amendments of claims 1, 9 do not meet the requirement of Article 33 of the Chinese Patent Law.
  - Claims \_\_\_\_ do not comply with the interpretation of invention under Paragraph 1 of Rule 2 of the Implementing Regulations of the Chinese Patent Law.
  - Claims \_\_\_\_ do not meet the requirements of Paragraph 1 of Rule 13 of the Implementing Regulations of the Chinese Patent Law.
  - Claims \_\_\_\_ do not meet the requirements of Rule 20 of the Implementing Regulations of the Chinese Patent Law.
  - Claims \_\_\_\_ do not meet the requirements of Rule 21 of the Implementing Regulations of the Chinese Patent Law.
  - Claims \_\_\_\_ do not meet the requirements of Rule 22 of the Implementing Regulations of the Chinese Patent Law.
  - Claims \_\_\_\_ do not meet the requirements of Rule 23 of the Implementing Regulations of the Chinese Patent Law.
  - Claims \_\_\_\_ do not meet the requirements of Rule 51 of the Implementing Regulations of the Chinese Patent Law.
- 
- The application does not meet the requirement of Paragraph 5 of Article 26 of the Chinese Patent Law or Rule 26 of the Implementing Regulations of the Chinese Patent Law.
  - The application does not meet the requirement of Paragraph 1 of Article 20 of the Chinese Patent Law.
  - The divisional application does not meet the requirement of Paragraph 1 of Rule 43 of the Implementing Regulations of the Chinese Patent Law.

**Please refer to the text of the notification in detail for the above.**

6. Based on the above conclusive opinion, the examiner points out that

- Applicant should amend the application documents according to the requirements of the text of the notification.
- Applicant should state the reason that the application may be granted in his observation and amend the application documents according to the teaching of the text of the notification, otherwise, the application may not be granted.
- No any substantive contents to be granted are presented in the application. If the applicant does not submit his observation or his observation is not reasonable, the application will be rejected.

**7. Following items shall come to applicant's attention:**

- ( 1 ) According to Article 37 of the Chinese Patent Law, applicant should submit his observation within **TWO** months from the date he receives the notification. If, without any justified reason, the time limit for making a response is not met, the application will be deemed to be withdrawn.
- ( 2 ) The amendments to the application documents should meet the requirements of Article 33 of the Chinese Patent Law and of Rule 51 thereof. The amendment text should be submitted in two copies and the amending manner should comply with the relevant regulations of the Examination Guide.
- ( 3 ) The observation and / or amendment documents should be mailed to or submitted directly to the Receiving Section of the China Patent Office, otherwise, the submitted documents have no legal effect.
- ( 4 ) The applicant and / or attorney may not meet the examiner if an appointment has not been made.

\_\_\_\_\_

8. The text of this notification consists of 2 page(s), including the following annexes:

\_\_\_\_\_ pages of \_\_\_\_\_ copies of the cited reference.

\_\_\_\_\_

### Text of the Fourth Office Action

Upon examination, the Examiner further gives the following comments:

1. Claims 1 and 9 do not comply with Article 33 of the Chinese Patent Law.

Claims 1 and 9 include the feature “each of the plurality of softkeys is associated with at least three positions based on at least three pressures”.

The original Description contains the following relevant disclosure: “each of the buttons 10 is capable of resolving multiple levels of pressure placed on the buttons 10”, “the alphanumeric buttons 10 are all capable of resolving five levels of pressure; in alternative embodiments, the various buttons are capable of resolving differing levels of pressure”, and “the softkey 36i has five positions associated with four distinct applied pressures and no pressure at the softkey 36i, and corresponding to the input signals for the letters W, X, Y, and Z; a dwell to select feature can be used to determine the desired position and associated input signal”, and take the distinct buttons as example, such as resolving five levels of pressure applied on the button 10i, and the 2-5 levels of pressure being associated with positions W-Z, and resolving three levels of pressure on the function buttons 11a-c, and Fig. 10 lists the corresponding table of the input signals with pressures and functions.

As can be seen, the original Description records conditions where the buttons can resolve multiple levels of pressure and distinct buttons are associated with five or three levels of pressure and with five positions; it does not explicitly record the feature that each of the softkeys is associated with three or more than three positions and the feature that each of the softkeys is associated with at least three positions based on three pressures as contained in the above features of claims 1 and 9. Besides, these features cannot be directly and unambiguously determined from the original Description and Claims. Therefore, the amendments to the features of claims 1 and 9 go beyond the original disclosure under Article 33 of the Chinese Patent Law.

2. Claims 1, 3, 7, 9, 10 and 14 do not comply with Paragraph 4, Article 26 of the Chinese Patent Law.

Claims 1 and 9 both include the following expressions: “determining a position of the softkey based on the pressure”, and “generating an actuator signal based on the location on the touchpad, the corresponding softkey, and the position of the softkey”. However, before the above expression, the claims have recited “determining a location on the touchpad touched by an object”, “determining a pressure of the contact by the object on the touchpad at the location” and “determining a softkey corresponding to the location on the touchpad”. That means, the softkey is determined by the touched position, then logically, the “touched position” is just the position of the softkey. However, the above expressions recite determining “a position of the softkey” based on the pressure, making the specific meaning of the “position of the softkey” unclear.

Claims 3 and 10 both include the expression “wherein the actuator signal is generated when the object contacts the touchpad at a location corresponding to a graphical object”, while claim 1 or 9 to which claim 3 or 10 refers sets forth that the actuator signal is generated based on the touched softkey. As a result, the relationship between the “graphical object” in the above expression and the “softkey” is unclear.

The expression “the plurality of softkeys comprise one softkey for each digit from 0 to 9” in claims 7 and 14 is unclear.

The above defects make the protecting scopes of claims 1, 3, 7, 9, 10 and 14 unclear under Paragraph 4, Article 26 of the Chinese Patent Law.

The applicant should, within the time limit specified in the OA, make a response to all the defects raised in the OA and where necessary, amend the application. Otherwise, the application will hardly be granted. Note that the amendments to the application shall not go beyond the scope of the original Description and Claims under Article 33 of the Chinese Patent Law.



# 中华人民共和国国家知识产权局

080226-57

**100140**

北京市西城区金融街19号富凯大厦B座11层 中原信达知识产权代理有限责任公司  
钟强 樊卫民

发文日:

2011年07月07日



206

2011-09-22



申请号或专利号: 200810008845.X

发文序号: 2011070400532130

申请人或专利权人: 伊梅森公司

发明创造名称: 用于提供触感的方法和系统

## 第四次审查意见通知书

1.  审查员已经收到申请人于 2011 年 3 月 16 日提交的意见陈述书, 在此基础上审查员对上述专利申请继续进行实质审查。

根据国家知识产权局专利复审委员会于 \_\_\_\_ 年 \_\_\_\_ 月 \_\_\_\_ 日作出的复审决定, 审查员对上述专利申请继续进行实质审查。

2.  经审查, 申请人于 \_\_\_\_ 提交的修改文件, 不符合专利法实施细则第 51 条第 3 款的规定, 不予接受。

3. 继续审查是针对下列申请文件进行的:

上述意见陈述书中所附的经修改的申请文件。

前次审查意见通知书所针对的申请文件以及上述意见陈述书中所附的经修改的申请文件替换文件。

前次审查意见通知书所针对的申请文件。

上述复审决定所确定的申请文件。

4.  本通知书未引用新的对比文件。

本通知书引用下列对比文件(其编号续前, 并在今后的审查过程中继续沿用):

编号	文件号或名称	公开日期 (或抵触申请的申请日)

5. 审查的结论性意见:

关于说明书:

申请的内容属于专利法第 5 条规定的不授予专利权的范围。

说明书不符合专利法第 26 条第 3 款的规定。

说明书的修改不符合专利法第 33 条的规定。

说明书的撰写不符合专利法实施细则第 17 条的规定。

关于权利要求书:

权利要求 \_\_\_\_ 不符合专利法第 2 条第 2 款的规定。

权利要求 \_\_\_\_ 不符合专利法第 9 条第 1 款的规定。



210403  
2010.2

纸件申请, 回函请寄: 100088 北京市海淀区蓟门桥西土城路 6 号 国家知识产权局专利局受理处收  
电子申请, 应当通过电子专利申请系统以电子文件形式提交相关文件。除另有规定外, 以纸件等 Immersion Ex. 2005-213  
文件视为未提交。  
Amit Agarwal v. Immersion Corp., IPR2016-00807



# 中华人民共和国国家知识产权局

- 权利要求\_\_\_\_\_不具备专利法第 22 条第 2 款规定的新颖性。
- 权利要求\_\_\_\_\_不具备专利法第 22 条第 3 款规定的创造性。
- 权利要求\_\_\_\_\_不具备专利法第 22 条第 4 款规定的实用性。
- 权利要求\_\_\_\_\_属于专利法第 25 条规定的不授予专利权的范围。
- 权利要求 1, 3, 7, 9, 10, 14 不符合专利法第 26 条第 4 款的规定。
- 权利要求\_\_\_\_\_不符合专利法第 31 条第 1 款的规定。
- 权利要求 1, 9 的修改不符合专利法第 33 条的规定。
- 权利要求\_\_\_\_\_不符合专利法实施细则第 19 条的规定。
- 权利要求\_\_\_\_\_不符合专利法实施细则第 20 条的规定。
- 权利要求\_\_\_\_\_不符合专利法实施细则第 21 条的规定。
- 权利要求\_\_\_\_\_不符合专利法实施细则第 22 条的规定。
- \_\_\_\_\_



OP6

- 申请不符合专利法第 26 条第 5 款或者实施细则第 26 条的规定。
- 申请不符合专利法第 20 条第 1 款的规定。
- 分案申请不符合专利法实施细则第 43 条第 1 款的规定。

上述结论性意见的具体分析见本通知书的正文部分。

6. 基于上述结论性意见, 审查员认为:

- 申请人应当按照通知书正文部分提出的要求, 对申请文件进行修改。
- 申请人应当在意见陈述书中论述其专利申请可以被授予专利权的理由, 并对通知书正文部分中指出的不符合规定之处进行修改, 否则将不能授予专利权。
- 专利申请中没有可以被授予专利权的实质性内容, 如果申请人没有陈述理由或者陈述理由不充分, 其申请将被驳回。
- \_\_\_\_\_

7. 申请人应注意下列事项:

(1) 根据专利法第 37 条的规定, 申请人应当在收到本通知书之日起的 2 个月内陈述意见, 如果申请人无正当理由逾期不答复, 其申请将被视为撤回。

(2) 申请人对其申请的修改应当符合专利法第 33 条的规定, 不得超出原说明书和权利要求书记载的范围, 同时申请人对专利申请文件进行的修改应当符合专利法实施细则第 51 条第 3 款的规定, 按照本通知书的要求进行修改。

(3) 申请人的意见陈述书和/或修改文本应当邮寄或递交国家知识产权局专利局受理处, 凡未邮寄或递交给受理处的文件不具备法律效力。

(4) 未经预约, 申请人和/或代理人不得前来国家知识产权局与审查员举行会晤。

8. 本通知书正文部分共有 2 页, 并附有下列附件:

- 引用的对比文件的复印件共\_\_\_\_\_份\_\_\_\_\_页。
- \_\_\_\_\_

审查员: 唐嫣

联系电话: 010-62413145



210403  
2010.2

纸件申请, 回函请寄: 100088 北京市海淀区蓟门桥西土城路 6 号 国家知识产权局专利局受理处收  
电子申请, 应当通过电子专利申请系统以电子文件形式提交相关文件。除另有规定外, 以纸件等附件形式提交的文件视为未提交。



第四次审查意见通知书

申请号:200810008845X

经审查,现提出如下审查意见。

1、权利要求1,9不符合专利法第三十三条的规定

权利要求1和9中存在“所述多个软键中的每一个均与基于至少三种压力的至少三个位置相关联”的特征。

在原说明书中的相关记载有:“每个按钮10能够分辨施加到按钮10上的多种级别的压力”、“字母数字按钮10都能够分辨5种级别的压力。在另一实施例中,各个按钮能够分辨不同级别的压力”、“软键36i具有与在软键36i上的4个各别的所施加的压力以及无压力相关联且与关于字母W、X、Y和Z的输入信号对应的5个位置。停留进行选择的特征被用来确定所需的位置和相关联的输入信号”,并分别以个别按钮为例,如分辨施加到按钮10i上的5级压力,且2-5级压力与W-Z位置关联,分辨功能按钮11a-c上的三种级别压力,图10列出了输入信号与压力、功能的对应表等。

可见,原说明书中记载了按钮可分辨多种级别的压力,以及个别按钮与5级或3级压力关联、与5个位置关联的情况,而并未明确记载上述特征中所含概的:每个软键均与三个、或三个以上位置相关联的特征,以及对于每一个软键均与基于三种压力的至少三个位置相关的特征。同时,这些特征也不能根据原说明书或权利要求书直接、毫无疑问地确定。因此,上述特征修改超范围,不符合专利法第三十三条的规定。

2、权利要求1,3,7,9,10,14不符合专利法第二十六条第四款的规定

权利要求1和9中都存在:“根据所述压力来确定所述软键的位置”、“据触摸板上的所述位置、所述相对应的软键、以及所述软键的位置来生成致动器信号”的表述,而在上述表述之前,均有说明:确定对象所触摸的触摸板上的位置;确定所述对象在触摸板上的所述位置处接触的压力;确定与触摸板上的所述位置相对应的软键。即由触摸的位置来确定了软键,那么,在逻辑上“触摸的位置”即为软键所在的位置,而上述表述中又由压力来确定“软键的位置”,导致不清楚“软键的位置”的具体含义;

权利要求3和10中都存在“其中当所述对象在与图形对象相对应的位置接触所述触摸板时,生成所述致动器信号”的表述,而在其引用的权利要求1或9中说明的是根据软键生成致动器信号,因此,不清楚该表述中的“图形对象”与“软键”是何关



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# 中华人民共和国国家知识产权局

权利要求 7 和 14 存在“所述多个软键包括一个用于从 0 到 9 的每一数字的软键”的表述，该表述含义不清楚，不清楚是软键中具有一个可用于输入 0 到 9 的软键，还是软键中具有用于输入 0 到 9 每一个的软键。

上述缺陷导致权利要求 1, 3, 7, 9, 10, 14 的保护范围不清楚，不符合专利法第二十六条第四款的规定。

申请人应当在本通知书指定的答复期限内对本通知书提出的问题逐一进行答复，必要时应修改专利申请文件，否则本申请将难以获得批准。申请人对申请文件的修改应当符合专利法第三十三条的规定，不得超出原说明书和权利要求书记载的范围。



IR6

审查员姓名:唐嫣



210403  
2010.2

纸质申请，回函请寄：100088 北京市海淀区蓟门桥西土城路 6 号 国家知识产权局专利局受理处收  
电子申请，应当通过电子专利申请系统以电子文件形式提交相关文件。除另有规定外，以纸件等其他形式提交的  
文件视为未提交。

Ex. 2005-216  
Amit Agarwal v. Immersion Corp., IPR2016-00807



XT0414PP-57



中华人民共和国国家知识产权局

100140

北京市西城区金融街19号富凯大厦B座11层  
中原信达知识产权代理有限责任公司

信 号 字 号

邹璐, 谷慧敏

2012-03-09

发文日:

2012年03月09日

绝 限

2012-04-24



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316



申请号或专利号: 02821854.X

发文序号: 2012030600548570

案件编号: 1F115000

发明创造名称: 用于提供触感的方法和装置

复审请求人: 伊梅森公司

复 审 通 知 书

复审请求人:

专利复审委员会对上述专利申请的复审请求已经开始审理。

请在收到本通知书之日起1个月内陈述意见; 期满未答复的, 根据专利法实施细则第63条第1款的规定, 该复审请求视为撤回。

在对专利复审委员会的复审通知书作出答复时, 可以修改专利申请文件, 修改应当符合专利法第33条、专利法实施细则第61条的规定及审查指南第4部分第2章第4.2节有关修改文本的审查的规定。修改的申请文件应当提交一式两份。

对专利复审委员会发出的复审通知书, 复审请求人应当在收到该通知书之日起1个月内针对通知书指出的缺陷进行书面答复; 期满未进行书面答复的, 其复审请求视为撤回。复审请求人提交无具体答复内容的意见陈述书的, 视为对复审通知书中的审查意见无反对意见。

通知的具体内容请见正文。

附: 通知书正文4页。

注: 陈述意见时请注明案件编号及专利申请号。

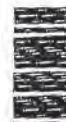
合议组组长: 陈力 主审员: 马晓 参事员: 王小东



200908 纸件申请, 回函请寄: 100088 北京市海淀区蓟门桥西土城路8号 国家知识产权局专利复审委员会收  
2009.10 电子申请, 应当通过电子专利申请系统以电子文件形式提交相关文件。除另有规定外, 以纸件等其他形式提交的文件视为未提交。



复审通知书正文



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本复审请求涉及申请号为 02821854.X 号, 名称为“用于提供触感的方法和装置”的发明专利申请(下称本申请), 其申请日为 2002 年 11 月 01 日, 最早优先权日为 2001 年 11 月 01 日, 申请人为伊梅森公司。

国家知识产权局专利实质审查部门依法对本申请进行了实质审查, 于 2010 年 11 月 23 日以本申请权利要求 1-23 不具备创造性, 不符合专利法第 22 条第 3 款的规定为驳回了本申请。其中引用了如下 1 篇对比文件:

对比文件 1: US5977867A 号美国专利文献, 其公开日为 1999 年 11 月 02 日。

申请人“伊梅森公司”(下称复审请求人)对上述驳回决定不服, 于 2011 年 03 月 04 日向专利复审委员会提出复审请求, 同时提交了权利要求书的全文修改替换页, 修改后的权利要求书共包括 20 项权利要求。

基于上述复审请求, 专利复审委员会依法成立合议组对其进行了审理, 并提出以下复审意见:

(1) 审查文本的认定

复审请求人在提出复审请求时, 提交了权利要求书全文修改替换页。因此, 本复审通知书所针对的文本为: 复审请求人于 2007 年 12 月 18 日提交的说明书第 1-28 页、说明书摘要、2004 年 08 月 16 日提交的说明书附图第 1-11 页、摘要附图及 2011 年 03 月 04 日提交的权利要求第 1-20 项。

(2) 具体审查意见

(2.1) 修改后的权利要求 1 超出了原说明书和权利要求书记载的范围, 不符合专利法第 33 条的规定

经审查, 修改后权利要求 1 中的特征: ①“用于显示多个软键的装置, 其与所述用于确定压力的装置通信”在原说明书和权利要求书中均没有记载。原申请说明书第 15 页第 3 行至第 16 页第 7 行记载的是“显示屏 33 显示软件生成的多个按钮或键, 称为软键 36a-i”, 可见显示软键的装置是显示屏, 原说明书第 16 页第 10 行记载了“控制器(未示出)与触摸板 30 通信”, 原说明书第 16 页第 22-24 行记载了“压力的这个特定大小由与触摸板 30 通信的控制器检测”, 可见确定压力的装置是控制器, 原说明书第 15 页第 23-24 行记载了“显示屏 33 通过两个隔片 34 与触摸板 30 通信”。由此可见, 确定压力的装置即控制器与触摸板通信, 显示软键的装置即显示屏通过两个隔片与触摸板通信, 由上述内容并不能直接地、毫无意义



地确定上述控制器与显示屏之间通信,上述控制器与触摸板之间的通信以及显示屏与触摸板之间所通的信息并不一定相同,所以上述控制器并不必然同上述显示屏通信,即使有证据表明所通的信息相同,该通信也是经过触摸板中转实现的,并非上述控制器与显示屏之间的通信;虽然原说明书第16页第2段记载了“这个实施例的控制器在结构和功能上与如上参考图3的实施例所描述的控制器相同”,但图3所涉及的实施例,即原申请说明书第14页第8-9行记载的“控制器9还发送信号至显示屏17,以致使显示与输入信号相关联的字母数字字符”,仅是控制器发送信号给显示屏,并不是显示屏与控制器通信,两者含义并不相同;故,修改后权利要求1中出现的上述特征无法从原申请文件记载的内容中直接地、毫无疑问地确定。

修改后权利要求1中的特征:②“致动器,其与用于确定压力的装置通信并且能够响应于来自用于确定压力的装置的至少三个对应压力输入信号而创建至少三个各别触感和指示三个功能的三个输出信号,所述至少三个压力输入信号对应于所述多个软键中的选定的软键的三个位置”在原说明书和权利要求书中没有记载。原申请权利要求46记载的是“致动器,其与用于确定压力的装置通信并且能够响应于来自用于确定压力的装置的至少三个对应压力输入信号而创建至少三个各别触感”,并未记载致动器响应确定压力的装置的至少三个对应压力输入信号而创建指示三个功能的三个输出信号;且特征“所述至少三个压力输入信号对应于所述多个软键中的选定的软键的三个位置”在原申请文件中也没有文字记载,原申请文件并未记载至少三个压力输入信号对应软键的三个位置,原说明书第17页第5-17行也仅记载的是“软键36i具有与在软键36i上的4个各别的所施加的压力以及无压力相关联且与关于字母W、X、Y和Z的输入信号对应的5个位置”,即5种压力输入对应的是5种软键位置;由此可见,修改后权利要求1中出现的上述特征无法从原申请文件记载的内容中直接地、毫无疑问地确定。

修改后权利要求1中的特征:③“其中所述三个触感包括在统一的触感库中的触感,并且所述三个触感中的至少一个触感包括“归属”键标识”(该特征通顺的表述应当是“其中所述三个触感包括在统一的触感库中的触感,并且所述三个触感中的至少一个触感包括“归属”键标识”),在原说明书和权利要求书并没有记载。原申请文件仅在原说明书第17页第24-28行记载有“事实上,不管是什么电子设备,各别的触感都可以结合同一按钮而使用,从而创建了统一的触感库,其与例如忙信号(其不管所使用的电话设备为何种类型都会提供表示电话号码不可用的统一音频信号)类似。例如,可以在对象与“5”键接触的时候播



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放一各别触感，从而提供了“归属”键标识”，而对所述三个触感中的至少一个是否包括在统一的触感库的上述内容并无记载，对是否所述三个触感中的至少一个触感包括“归属”键标识的上述内容并无记载。由此可见，修改后权利要求 1 中的上述特征是复审请求人重新概括得出的，其概括的内容无法从原申请文件记载的内容中直接地、毫无疑问地确定。

此外，修改后权利要求 1 请求保护的输入设备包括了“用于确定压力的装置”、“与用于确定压力的装置和致动器通信的控制器”、“用于显示多个软键的装置”，根据其表述，该“用于确定压力的装置”与该“控制器”应该是两个不同的装置。但根据原说明书和权利要求书的记载，原说明书第 15-16 页、图 5-6 公开的实施例涉及软键，原说明书第 16 页第 10-14 行、22-23 行记载的“控制器（未示出）与触摸板 30 通信”、“根据这个信息，控制器致使致动器 64 提供对应的触感”、“压力的这个特定大小由与触摸板 30 通信的控制器检测”，可以得到用于确定压力的装置就是控制器，并非除了该控制器以外，还有其它用于确定压力的装置，且与致动器通信的也是控制器。由此可见，修改后权利要求 1 中的上述特征表述的含义无法从原申请文件记载的内容中直接地、毫无疑问地确定，其超出了原说明书和权利要求书记载的范围。

综上所述，权利要求 1 的修改超出了原说明书和权利要求书记载的范围，不符合专利法第 33 条的规定。

#### (2.2) 关于意见陈述

复审请求人认为：对权利要求 1 的修改依据是原权利要求 4、18 以及说明书中，例如，在原始说明书第 15 页第 23-24 行、第 15 页第 30 行至第 16 页第 7 行、第 16 页第 10-19 行、第 17 页第 5-14 行及 24-28 行，因此修改没有超出原权利要求书和说明书记载的范围，符合专利法第三十三条的规定。

经审查，合议组认为：修改后权利要求 1 请求保护一种输入设备，该设备包括用于确定压力的装置、用于显示多个软键的装置、致动器、控制器，其中涉及触感库及“归属”键标识的内容，原权利要求 4 引用原权利要求 1，原权利要求 1 请求保护一种具有指令的可读介质，该指令包括致使处理器执行以下步骤的指令：检测第一输入设备上的第一压力；提供第一触感至第一输入设备；检测第一输入设备上的第二压力，第二压力大于第一压力；以及提供第二触感至第一输入设备。原权利要求 4 的附加技术特征是：第一触感与第二触感不同，（参见 2004 年 04 月 30 日进入中国国家阶段提交的中文译文的权利要求 4），可见，修改后权利要求 1 的内容在原权利要求 4 中并无记载，也不能由其直接地、毫无疑问地确定；原权



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权利要求 18 引用原权利要求 17，原权利要求 17 请求保护一种一种具有所存储的指令的可读介质，所存储的指令包括当被处理器执行时致使处理器执行以下步骤的指令：检测包含请求一个功能的第一输入设备上的第一压力；以及提供第一触感至第一输入设备，表示启动该功能；原权利要求 18 的附加技术特征是：该功能包含启动菜单，（参见 2004 年 04 月 30 日进入中国国家阶段提交的中文译文的权利要求 18），可见，修改后权利要求 1 的内容在原权利要求 18 中并无记载，也不能由其直接地、毫无疑问地确定；至于上述修改后权利要求 1 的内容在原说明书第 15 页第 23-24 行、第 15 页第 30 行至第 16 页第 7 行、第 16 页第 10-19 行、第 17 页第 5-14 行及 24-28 行中没有记载且也不能直接地、毫无疑问地确定的理由，已在上评述各特征时予以阐述，此处不再赘述。综上，合议组对于复审请求人的意见不予支持。

复审请求人应在收到本通知之日起一个月内作出答复。如果复审请求人不能在上述期限内提出本申请符合专利法及其实施细则规定的充分理由，或者所提交的修改文件仍不符合专利法及其实施细则的相关规定，合议组将作出维持驳回决定的复审决定。逾期不答复，该复审请求将被视为撤回。复审请求人如若修改权利要求，应使用原始申请文件的表述，并具体说明所修改的特征在原申请文件中的出处，阐述修改后权利要求不超范围的具体理由。



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/894,489	09/30/2010	Kenneth M. Martin	IMM147.C2 (51851/349725)	6069
34300                      7590                      03/02/2011 PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101			EXAMINER	
			OSORJO, RICARDO	
			ART UNIT	PAPER NUMBER
			2629	
			MAIL DATE	DELIVERY MODE
			03/02/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	12/894,489	MARTIN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	RICARDO L. OSORIO	2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1)  Responsive to communication(s) filed on 30 September 2010.
- 2a)  This action is **FINAL**.                                      2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4)  Claim(s) 1-20 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5)  Claim(s) \_\_\_\_\_ is/are allowed.
- 6)  Claim(s) 1-20 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a)  All    b)  Some \*    c)  None of:
    - 1.  Certified copies of the priority documents have been received.
    - 2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    - 3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1)  Notice of References Cited (PTO-892)
- 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3)  Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4)  Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 5)  Notice of Informal Patent Application
- 6)  Other: \_\_\_\_\_

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).



Art Unit: 2629

2. Claims 1-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-29 of U.S. Patent No. 7,808,488. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-20 of the instant application and claims 1-29 of U.S. Patent No. 7,808,488 have common limitations. However, claims 1-20 of the instant application are broader than claims 1-29 of U.S. Patent No. 7,808,488.

The omission of an element and its function where not needed is obvious. *Ex parte Rainu*, 168 USPQ 375 (PTO Bd. Of App. 1969). The omission of an element and its function in a combination is an obvious expedient if the remaining elements perform the same as before. *In re Karlson*, 136 USPQ 184 (CCPA 1963).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICARDO L. OSORIO whose telephone number is (571) 272-7676. The examiner can normally be reached on MONDAY-THURSDAY 7:00 am-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AMARE MENGISTU can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2629

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RICARDO L OSORIO/  
Primary Examiner, Art Unit 2629

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Martin et al.  
Application No. : 13/362,113  
Filed : January 31, 2012  
For : **Method and Apparatus for Providing Tactile Sensations**  
Examiner : Osorio, R.  
Art Unit : 2692  
Conf. No. : 3915

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL**

Sir:

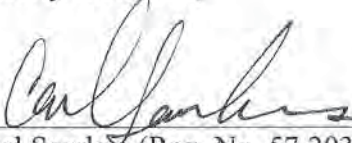
Transmitted herewith is a copy of the following document(s) for filing in the above-identified application:

1. Transmittal;
2. Information Disclosure Statement;
3. Form PTO/SB/08a listing Two Hundred and Forty-Four (244) Documents;
4. Nine (9) Non Patent Literature Documents; and
5. EFS-Web payment in the amount of \$180 (IDS Fee).

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

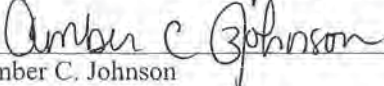
Date: July 8, 2013

By:   
Carl Sanders (Reg. No. 57,203)

KILPATRICK TOWNSEND &  
STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7300

**Certificate of Electronic Filing**

I hereby certify that this correspondence is being electronically filed with The United States Patent Office via EFS-Web, on July 8, 2013.

  
Amber C. Johnson

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875	Application or Docket Number <b>13/362,113</b>	Filing Date <b>01/31/2012</b>	<input type="checkbox"/> To be Mailed
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ENTITY:  LARGE  SMALL  MICRO

**APPLICATION AS FILED – PART I**

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(l))</small>	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

**APPLICATION AS AMENDED – PART II**

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
<b>AMENDMENT</b>	<b>07/08/2013</b>	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total <small>(37 CFR 1.16(i))</small>	* 20	Minus	** 20	= 0	X \$80 = 0
	Independent <small>(37 CFR 1.16(h))</small>	* 3	Minus	***3	= 0	X \$420 = 0
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	<b>0</b>

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
<b>AMENDMENT</b>		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total <small>(37 CFR 1.16(i))</small>	-	Minus	**	=	X \$ =
	Independent <small>(37 CFR 1.16(h))</small>	-	Minus	***	=	X \$ =
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	


\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
 \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".  
 \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE  
/THUY TA/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

<b>Application Number</b> 	<b>Application/Control No.</b> 13/362,113	<b>Applicant(s)/Patent under Reexamination</b> MARTIN ET AL.	


<b>Document Code - DISQ</b>	<b>Internal Document – DO NOT MAIL</b>
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<b>TERMINAL DISCLAIMER</b>	<input checked="" type="checkbox"/> <b>APPROVED</b>	<input type="checkbox"/> <b>DISAPPROVED</b>
Date Filed : 7/08/13	<b>This patent is subject to a Terminal Disclaimer</b>	

<b>Approved/Disapproved by:</b>
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jean proctor          
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U.S. Patent and Trademark Office

<b>Application Number</b> 	<b>Application/Control No.</b> 13/362,113	<b>Applicant(s)/Patent under Reexamination</b> MARTIN ET AL.

<b>Document Code - DISQ</b>	<b>Internal Document – DO NOT MAIL</b>
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<b>TERMINAL DISCLAIMER</b>	<input checked="" type="checkbox"/> <b>APPROVED</b>	<input type="checkbox"/> <b>DISAPPROVED</b>
Date Filed : 7/08/13	<b>This patent is subject to a Terminal Disclaimer</b>	

**Approved/Disapproved by:**

jean proctor



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 13/362,113, 01/31/2012, Kenneth M. Martin, 51851/821825 (IMM147.C3), 3915
Row 2: 34300, 7590, 09/17/2013, PATENT DEPARTMENT (51851), KILPATRICK TOWNSEND & STOCKTON LLP, 1001 WEST FOURTH STREET, WINSTON-SALEM, NC 27101, EXAMINER OSORIO, RICARDO, ART UNIT 2692, PAPER NUMBER
Row 3: MAIL DATE 09/17/2013, DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.





Art Unit: 2692

1. The present application is being examined under the pre-AIA first to invent provisions.

#### DETAILED ACTION

#### Terminal Disclaimer

1. The terminal disclaimer filed on 7/8/2013 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 8,159,461 has been reviewed and is accepted. The terminal disclaimer has been recorded.

#### Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-20 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Rosenberg et al (US 2008/0060350).

Regarding claims 1, 2, 10 and 18, Rosenberg discloses a system, method and program code comprising:

a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device (see Fig. 8, character 82 and paragraph 32, lines 1-6); an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface based at least in part on the actuator

Art Unit: 2692

signal (paragraph 32, lines 1-9); and a processor in communication with the sensor and the actuator (paragraph 32, lines 1-12);, the processor configured to: output a display signal configured to display a graphical object on the touch-sensitive input device (par. 56, lines 1-2); receive the sensor signal from the touch-sensitive input device; determine an interaction between the object contacting the touch-sensitive surface and the graphical object, generate the actuator signal based at least in part on the interaction; and transmit the actuator signal to the actuator (see paragraphs 57 and 59).

As to claims 3, 11 and 19, Rosenberg teaches of the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object (see paragraphs 57 and 59).

As to claims 4, 12, and 20, Rosenberg teaches of the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object (see paragraphs 57 and 59).

As to claims 5 and 13, Rosenberg teaches of the display signal is configured to display a keypad comprising a plurality of softkeys (see Fig. 8A).

As to claims 6 and 14, Rosenberg teaches of the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position (see paragraphs 57 and 59).

Art Unit: 2692

As to claims 7 and 15, Rosenberg teaches of the plurality of softkeys comprises one softkey for each digit from 0 to 9 (Rosenberg teaches of a PDA, Fig 8A, and also of a cellular phone having touch screen (see paragraph 71). It is inherent for a cell phone having touchscreen to also have a softkey for each digit from 0 to 9 for a user to make a phone call.

As to claims 8 and 16, Rosenberg teaches of the plurality of softkeys comprises the key configuration of a standard 101-key keyboard (In paragraphs 71-73, Rosenberg mentions other optional devices that include from a standard computer screen to a cell phone and many different types of graphical objects. Although not specifically mentioning a standard 101-key keyboard, it is inherent that such a graphic keyboard can also be used having more graphic objects being the only difference.

As to claims 9 and 17, Rosenberg discloses that the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object (see paragraphs 57 and 59).

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICARDO L. OSORIO whose telephone number is (571)272-7676. The examiner can normally be reached on MONDAY-THURSDAY 7:00 am-5:30 PM.


Art Unit: 2692

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LUNYI LAO can be reached on (571) 272-7671. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RICARDO L OSORIO/

Primary Examiner, Art Unit 2629

<b>Search Notes</b> 	<b>Application/Control No.</b> 13362113	<b>Applicant(s)/Patent Under Reexamination</b> MARTIN ET AL.
	<b>Examiner</b> RICARDO L OSORIO	<b>Art Unit</b> 2692

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	163, 167-169 and 173	9/12/2013	RLO

SEARCH NOTES		
Search Notes	Date	Examiner
EAST	9/12/2013	RLO

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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Substitute for form 1449A/PTO  <b>Information Disclosure Statement by Applicant</b>  (use as many sheets as necessary)				Complete if Known	
				Application Number	13/362,113
				Filing Date	January 31, 2012
				First Named Inventor	Martin et al.
				Group Art Unit	2692
				Examiner Name	Osorio, R.
Sheet	1	of	12	Attorney Docket Number	51851-821825 (IMM147.C3)

U.S. PATENT DOCUMENTS					
Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
	1	2,972,140	2/14/1961	Hirsch	
	2	3,157,853	11/17/1964	Hirsch	
	3	3,220,121	11/30/1965	Cutler	
	4	3,497,668	02/24/1970	Hirsch	
	5	3,517,446	06/30/1970	Corlyon et al.	
	6	3,623,064	11/23/1970	Kagen	
	7	3,902,687	09/02/1975	Hightower	
	8	3,903,614	09/09/1975	Diamond et al.	
	9	3,911,416	10/07/1995	Feder	
	10	4,127,752	11/28/1978	Lowthorp	
	11	4,160,508	07/10/1979	Salsbury	
	12	4,236,325	12/02/1980	Hall et al.	
	13	4,262,549	04/21/1981	Schwellenbach	
	14	4,311,980	01/19/1982	Prudenziati	
	15	4,333,070	06/01/1982	Barnes	
	16	4,362,408	12/07/1982	Cordes et al.	
	17	4,464,117	08/07/1984	Forest	
	18	4,484,191	11/20/1984	Vavra	
	19	4,513,235	04/23/1985	Acklam et al.	
	20	4,581,491	04/08/1986	Boothroyd	
	21	4,581,972	04/15/1986	Hoshino	
	22	4,599,070	07/08/1986	Hladky et al.	
	23	4,692,756	09/08/1987	Clark	
	24	4,708,656	11/24/1987	De Vries et al.	
	25	4,713,007	12/15/1987	Alban	
	26	4,725,817	02/16/1988	Jay	
	27	4,795,296	01/03/1989	Wijlborg	
	28	4,791,416	12/13/1988	Adler	
	29	4,794,392	12/27/1988	Selinko	
	30	4,798,919	01/17/1989	Suita	
	31	4,821,030	04/11/1989	Batson	
	32	4,823,106	04/16/1989	Pope	
	33	4,840,634	06/20/1989	Muller	
	34	4,885,565	1208/1989	Embach	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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<sup>1</sup> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>2</sup> Applicant's unique citation designation number (optional). <sup>3</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>4</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>5</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>6</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>7</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

Substitute for form 1449A/PTO  <b>Information Disclosure Statement by Applicant</b>  <i>(use as many sheets as necessary)</i>		<b>Complete if Known</b>	
		Application Number	13/362,113
		Filing Date	January 31, 2012
		First Named Inventor	Martin et al.
		Group Art Unit	2692
		Examiner Name	Osorio, R.
Sheet	2	of	12
		Attorney Docket Number	51851-821825 (IMM147.C3)

U.S. PATENT DOCUMENTS					
Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
	35	4,891,764	01/02/1990	McIntosh	
	36	4,930,770	06/05/1990	Baker	
	37	4,934,694	06/19/1990	McIntosh	
	38	4,982,918	01/08/1991	Kaye	
	39	4,983,786	01/08/1991	Stevens	
	40	5,019,761	05/28/1991	Kraft	
	41	5,022,384	06/11/1991	Freels	
	42	5,022,407	06/11/1991	Horch et al.	
	43	5,035,242	07/30/1991	Franklin, et al.	
	44	5,038,089	08/06/1991	Szakaly	
	45	5,053,585	10/01/1991	Yaniger	
	46	5,078,152	01/07/1992	Bond	
	47	5,116,051	05/26/1992	Moncrief	
	48	5,165,897	11/24/1992	Johnson	
	49	5,175,459	12/29/1992	Danial et al.	
	50	5,182,557	01/26/1993	Lang	
	51	5,186,685	02/16/1993	Grossman et al.	
	52	5,212,473	05/18/1993	Louis	
	53	5,223,658	06/29/1993	Suzuki	
	54	5,237,327	08/17/1993	Saitoh	
	55	5,283,970	02/08/1994	Aigner	
	56	5,240,417	08/31/1993	Smithson et al.	
	57	5,241,308	08/31/1993	Young	
	58	5,246,316	09/21/1993	Smith	
	59	5,271,290	12/21/1993	Fischer	
	60	5,275,174	01/4/1994	Cook	
	61	5,289,273	02/22/1994	Lang	
	62	5,299,810	04/05/1994	Pierce, et al.	
	63	5,309,140	05/03/1994	Everett	
	64	5,334,027	08/02/1994	Wherlock	
	65	5,355,148	10/11/1994	Anderson	
	66	5,390,128	02/14/1995	Ryan	
	67	5,390,296	02/14/1995	Crandall	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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<sup>1</sup> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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				Application Number	13/362,113	
Sheet		3	of	12	Examiner Name	Osorio, R.
				Attorney Docket Number	51851-821825 (IMM147.C3)	

U.S. PATENT DOCUMENTS						
Examiner	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)				
	68	5,402,499		03/28/1995	Robinson	
	69	5,402,680		04/04/1995	Korenaga	
	70	5,436,622		07/25/1995	Gutman et al.	
	71	5,437,607		08/01/1995	Taylor	
	72	5,451,924		09/19/1995	Massimino	
	73	5,461,711		10/24/1995	Wang	
	74	5,466,213		11/14/1995	Hogan, et al.	
	75	5,489,812		02/06/1996	Furuhata	
	76	5,496,174		03/05/1996	Garner	
	77	5,514,150		05/07/1996	Rostoker	
	78	5,521,336		05/28/1996	Buchanan	
	79	5,547,382		08/20/1996	Yamasaki, et al.	
	80	5,575,761		11/19/1996	Hajianpour	
	81	5,631,861		05/20/1997	Kramer	
	82	5,684,722		11/04/1997	Thorner	
	83	5,691,747		11/25/1997	Amano	
	84	5,709,219		01/20/1998	Chen	
	85	5,729,249		03/17/1998	Yasutake	
	86	5,766,016		06/16/1998	Sinclair, et al.	
	87	5,767,457		06/16/1998	Gerpheide	
	88	5,785,630		07/28/1998	Bobick et al.	
	89	5,791,992		08/11/1998	Crump	
	90	5,844,392		12/01/1998	Peurach	
	91	5,857,986		01/12/1999	Moriyasu	
	92	5,887,995		03/30/1999	Holehan	
	93	5,889,670		03/30/1999	Schuler	
	94	5,889,672		03/30/1999	Schuler	
	95	5,917,906		06/29/1999	Thornton	
	96	5,943,044		08/24/1999	Martinelli	
	97	5,945,772		08/31/1999	Macnak	
	98	5,977,867		11/02/1999	Bouin	
	99	5,988,902		11/23/1999	Holehan	
	100	6,078,126		06/20/2000	Rollins	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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Substitute for form 1449A/PTO				<i>Complete if Known</i>	
				Application Number	13/362,113
<b>Information Disclosure Statement by Applicant</b> <i>(use as many sheets as necessary)</i>				Filing Date	January 31, 2012
				First Named Inventor	Martin et al.
				Group Art Unit	2692
				Examiner Name	Osorio, R.
				Attorney Docket Number	51851-821825 (IMM147.C3)
Sheet	4	of	12		

101	6,097,964	08/01/2000	Nuovo
102	6,059,506	05/09/2000	Kramer
103	6,160,489	12/12/2000	Perry et al.
104	6,111,577	08/29/2000	Zilles et al.
105	6,118,435	09/12/2000	Fujita et al.
106	6,198,206	03/06/2001	Saarmaa
107	6,131,097	10/10/2000	Peurah
108	6,195,592	02/27/2001	Schuler
109	6,160,489	12/12/2000	Perry et al.
110	6,198,206	03/06/2001	Saarmaa
111	6,218,966	04/17/2001	Goodwin
112	6,219,034	04/17/2001	Elbing, et al.
113	6,225,976	05/01/2001	Yates
114	6,292,173	09/18/2001	Rambaldi et al.
115	6,307,465	10/23/2001	Kayma et al.
116	6,344,791	02/05/2002	Armstrong
117	6,369,803	04/09/2002	Brisebois et al.
118	6,373,463	04/16/2002	Beeks
119	6,374,255	04/16/2002	Peurah
120	6,388,655	05/14/2002	Leung
121	6,422,941	07/23/2002	Thorner, et al.
122	6,429,846	08/06/2002	Rosenberg
123	6,543,487	05/13/2003	Bazinet
124	6,597,347	07/22/2003	Yasutake
125	6,657,617	12/02/2003	Paolini et al.
126	6,735,307	05/11/2004	Volckers
127	6,781,569	08/24/2004	Gregorio et al.
128	6,801,191	10/05/2004	Mukai et al.
129	6,976,562	12/20/2005	Perret, Jr. et al.
130	7,202,851	04/10/2007	Cunningham et al.
131	2002/0033795	03/21/2002	Shahoian
132	2002/0171621	11/21/2002	Johnson
133	2002/177471	11/28/2002	Kaaresoja
134	2002/0128048	09/12/2002	Aaltonen
135	2002/0149561	10/17/2002	Fukumoto et al.
136	2005/0099393	05/12/2005	Johnson
137	2008/0068350	03/20/2008	Rosenberg et al.

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Filing Date		January 31, 2012			
First Named Inventor		Martin et al.			
Group Art Unit		2692			
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Attorney Docket Number		51851-821825 (IMM147.C3)			
Sheet	5	of	12		

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		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
	138.	EP	0349086		01/03/1990	Stork Kwant B.V.	
	139.	EP	0817110		01/07/1998	Nokia Mobile Phones Ltd.	
	140.	GB	2180342		03/25/1987	Alcorn United	
	141.	JP	01-003664		07/19/1990	Taito Corporation	
	142.	JP	02-109714		01/13/1992	Epoch Co. and Key-Planning Co.	
	143.	JP	04-007371		08/03/1993	Taito Corporation	
	144.	JP	05-193862		01/27/1995	Sega Corporation	
	145.	JP	H2-185278		07/19/1990	Yamada	
	146.	JP	H4-8381		01/13/1992	Endo	
	147.	JP	H5-192449		08/03/1993	Koma et al.	
	148.	JP	H7-24147		01/27/1995	Yokoyama	
	149.	JP	8221173		08/30/1996	Hitachi Ltd.; Hitachi Device Eng.	
	150.	JP	10171586		06/26/1998	Sharp KK	
	151.	JP	1124834		01/29/1999	Fujiyama Teruhi	
	152.	JP	11085400		03/30/1999	Sony Corp.	
	153.	JP	2001-222379		08/17/2001	Fujitsu Ltd.	
	154.	JP	2001-265485		09/28/2001	Sharp KK	
	155.	JP	2001-290572		10/19/2001	Fuji Xerox Co. Ltd.	
	156.	JP	2001-296950		10/26/2001	Fuji Xerox Co. Ltd.	
	157.	JP	2002-259059		09/13/2002	Motoyama et al.	
	158.	JP	2001-350592		12/21/2001	Ryo et al.	
	159.	KR	2001-0028369		04/06/2001	Sim Jae Boong	
	160.	WO	95/20787		08/03/1995	Exos, Inc.	
	161.	WO	97/18546		05/22/1997	Cirque Corporation	
	162.	WO	99/49443		09/30/1999	Immersion Corporation	
	163.	WO	01/54109		07/26/2001	Immersion Corporation	
	164.	WO	02/31807		04/18/2002	Motorola, Inc.	
	165.	WO	02/19110		11/29/2002	Immersion Corporation	
	166.	WO	02/27645		04/04/2002	Siemens Aktiengesellschaft	
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		Filing Date	January 31, 2012
		First Named Inventor	Martin et al.
		Group Art Unit	2692
		Examiner Name	Osorio, R.
<i>(use as many sheets as necessary)</i>		Attorney Docket Number	51851-821825 (IMM147.C3)
Sheet	6	of	12

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
	167.	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.	
	168.	ADELSTEIN, "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances in Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.	
	169.	AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.	
	170.	BAIGRIE, "Electric Control Loading - A Low Cost, High Performance Alternative," Proceedings, pp. 247-254, November 6-8, 1990.	
	171.	BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.	
	172.	BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-IFTOMM, Sep. 8-12, 1981.	
	173.	BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.	
	174.	BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989.	
	175.	BLISS, "Optical-to-Tactile Image Conversion for the Blind," IEEE Transactions on Man-Machine Systems, Vol. MMS-11, No. 1, March 1970.	
	176.	BROOKS et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," JPL Publication 85-11; NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985.	

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		First Named Inventor	Martin et al.
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	177.	BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.	
	178.	CADLER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," Bachelor of Science Thesis, MIT, June 23, 1983.	
	179.	CALDWELL et al., "Enhanced Tactile Feedback (Tele-Traction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993.	
	180.	EBERHARDT et al., "OMAR - A Haptic display for speech perception by deaf and def-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993.	
	181.	EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control; Volume 1, ASME 1994.	
	182.	FUKUMOTO, "Active Click: Tactile Feedback For Touch Panels," ACM CHI2001 Extended Abstracts, pp. 121-122, April 2001.	
	183.	GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Journal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1995.	
	184.	GOTOW et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337	
	185.	HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992.	
	186.	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990.	
	187.	International Search Report filed 11/1/02 corresponding to PCT/US02/35016	
	188.	IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.	
	189.	JACOBSEN et al., "High Performance, Dexterous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.	

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	190.	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990.	
	191.	JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990.	
	192.	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.	
	193.	KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemanipulator Technology and Space Telerobotics, Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.	
	194.	KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," PRESENCE, 4(4):387-402, 1995.	
	195.	LAKE, "Cyberman from Logitech," GameBytes, 1994.	
	196.	MARCUS, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994.	
	197.	MCAFFEE, "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," JPL D-5172, pp. 1-50, A1-A36, B1-B5, C1-C36, January 1988.	
	198.	MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Textue for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.	
	199.	OUIH-YOUNG, "Force Display in Molecular Docking," Order No. 9034744, p. 1-369, 1990.	
	200.	OUIH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995.	
	201.	OUIH-YOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
	202.	PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics in Space, Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.	

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			First Named Inventor	Martin et al.	
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	203.	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	
	204.	RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contactor area," Journal of The Acoustical Society of America, Vol. 82, No. 4, October 1987.	
	205.	RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives 08/14/1990, pp. 1-131, May 1990.	
	206.	RUSSO, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, Advances in Robotics, pp. 63-70, ASME 1992.	
	207.	SCANNELL, "Taking a Joystick Ride", Computer Currents, Nov. 1994, Boston Edition, Vol. 9 No. 11	
	208.	SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration, Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.	
	209.	SMK Corporation, "Multi-Functional Touch Panel, Force-Feedback Type, Developed: A Touch Panel Providing a Clicking Feeling," <a href="http://www.smk.co.jp/whatsnew_e/628csc_e.html">http://www.smk.co.jp/whatsnew_e/628csc_e.html</a> , September. 30, 2002.	
	210.	SMK Corporation, "Force Feedback Type Optical Touch Panel Developed," SMK Corporation Website, October 30, 2002	
	211.	SNOW et al., "Model-X Force-Reflecting-Hand-Controller," NT Control no. MPO-17851; JPL Case No. 5348, pp. 1-4, 06/15/1989.	
	212.	STANLEY et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSV-Vol. 42, Advances in Robotics, pp. 55-61, ASME 1992.	
	213.	TADROS, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," MIT Archive@ Massachusetts Institute of Technology, pp. 1-88, February 1990.	
	214.	TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988.	
	215.	WAKIWAKA, et al., "Influence of Mover Support Structure on Linear Oscillatory Actuator for Cellular Phones," The Third International Symposium on Linear Drives for Industry Applications, 2001, p. 260-263, Nagano, Japan	
	216.	WIKER, "Teletouch Display Development: Phase 1 Report," Technical Report 1230, Naval Ocean Systems Center, San Diego, April 17, 1989.	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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<sup>1</sup> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>2</sup> Applicant's unique citation designation number (optional). <sup>3</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>4</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>5</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>6</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>7</sup> Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449B/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)			<b>Complete if Known</b>		
			Application Number	13/362,113	
			Filing Date	January 31, 2012	
			First Named Inventor	Martin et al.	
			Art Unit	2692	
			Examiner Name	Osorio, R.	
			Attorney Docket Number	51851-821825 (IMM147.C3)	
Sheet	10	of	12		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	217.	Notification of First Office Action mailed September 5, 2007 for corresponding Chinese Application 02821854.X.	
	218.	Notice of Reasons for Rejection for January 29, 2008 mailed February 20, 2008 for corresponding Japanese Patent Application No. 2003-540973.	
	219.	Notice of Reasons for Rejection of September 11, 2007 mailed September 11, 2007 for corresponding Japanese Patent Application No. 2003-540973.	
	220.	United States Patent and Trademark Office, Office Action mailed December 23, 2005 for corresponding US Application No. 10/285,450.	
	221.	United States Patent and Trademark Office, Office Action mailed May 18, 2006 for corresponding US Application No. 10/285,450.	
	222.	United States Patent and Trademark Office, Office Action mailed November 15, 2006 for corresponding US Application No. 10/285,450.	
	223.	United States Patent and Trademark Office, Office Action mailed June 1, 2007 for corresponding US Application No. 10/285,450.	
	224.	European Supplemental Search Report mailed July 1, 2008 for corresponding European Patent Application No. 02773960.6.	
	225.	Notice of Preliminary Rejection mailed March 28, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	
	226.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2009-7017838.	
	227.	Office Action mailed May 10, 2010 for corresponding Korean Patent Application No. 10-2009-7017838.	
	228.	Office Action mailed November 25, 2009 for corresponding Korean Patent Application No. 10-2004-7006627.	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Substitute for form 1449B/PTO			<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>			<i>Application Number</i>	13/362,113
			<i>Filing Date</i>	January 31, 2012
			<i>First Named Inventor</i>	Martin et al.
			<i>Art Unit</i>	2692
			<i>Examiner Name</i>	Osorio, R.
			<i>Attorney Docket Number</i>	51851-821825 (IMM147.C3)
Sheet	11	of	12	

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	229.	Office Action mailed July 2, 2010 for corresponding Korean Patent Application No. 10-2009-7006555.	
	230.	Office Action mailed June 19, 2009 for corresponding Chinese Application No. 200810008845.X.	
	231.	Office Action mailed November 1, 2010 for corresponding Chinese Application No. 200810008845.X.	
	232.	Office Action mailed November 23, 2010 for corresponding Chinese Application No. 02821854.X.	
	233.	Office Action mailed March 5, 2009 for corresponding US Patent Application No. 11/693,117.	
	234.	Office Action mailed June 24, 2009 for corresponding US Patent Application No. 11/693,117.	
	235.	Office Action mailed December 29, 2009 for corresponding US Patent Application No. 11/693,117.	
	236.	Office Action mailed July 7, 2011 for corresponding Chinese Application No. 200810008815.X.	
	237.	Office Action mailed December 5, 2012 for corresponding Korean Patent Application No. 10-2011-7025866.	
	238.	Office Action mailed August 23, 2011 for corresponding Korean Patent Application No. 10-2010-7006555.	
	239.	Office Action mailed October 26, 2010 for corresponding Korean Patent Application No. 10-2009-7017838.	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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		<i>Filing Date</i>	January 31, 2012
		<i>First Named Inventor</i>	Martin et al.
		<i>Art Unit</i>	2692
		<i>Examiner Name</i>	Osorio, R.
		<i>Attorney Docket Number</i>	51851-821825 (IMM147.C3)
Sheet	12	of	12

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	240.	Office Action mailed May 18, 2010 for corresponding Korean Patent Application No. 10-2004-7006627.	
	241.	Communication pursuant to Article 94(3) EPC mailed May 10, 2012 for corresponding European Application No. 08007837.1.	
	242.	Notification of Reexamination mailed March 9, 2012 for corresponding Chinese Application 02821854.X.	
	243.	United States Patent and Trademark Office, Office Action mailed March 2, 2011 for corresponding US Application No. 12/894,489.	
	244.	United States Patent and Trademark Office, Office Action mailed August 17, 2011 for corresponding US Application No. 12/894,489.	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth M. Martin  
Application No. : 13/362,113  
Filed : January 13, 2012  
For : Methods and Apparatus for Providing  
Tactile Sensations  
Examiner : Ricardo Osorio  
Art Unit : 2692  
Conf. No. : 3915

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL**

Commissioner:

Transmitted herewith are the following documents for filing in the above-identified application:

1. Amendment and Response to Non-Final Office Action;
2. Petition for Extension of Time Under 37 CFR 1.136(a);
3. Payment in the amount of \$1,080 (\$600 extension fee; \$480 claim fee).

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

Date: 2/10/2014

By: /Zachary S. Kelton/  
Zachary S. Kelton (Reg. No. 71,345)

Kilpatrick Townsend & Stockton LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7300

**Certificate of Electronic Filing**

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS Web, on February 10, 2014.

/Catherine A. Anderson/  
Catherine A. Anderson

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	18155857
<b>Application Number:</b>	13362113
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	3915
<b>Title of Invention:</b>	Method And Apparatus For Providing Tactile Sensations
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Customer Number:</b>	34300
<b>Filer:</b>	Zachary S. Kelton/Catherine Anderson
<b>Filer Authorized By:</b>	Zachary S. Kelton
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)
<b>Receipt Date:</b>	10-FEB-2014
<b>Filing Date:</b>	31-JAN-2012
<b>Time Stamp:</b>	13:43:14
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1080
RAM confirmation Number	10972
Deposit Account	
Authorized User	

### File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Page	Pages

1	Miscellaneous Incoming Letter	821825transmittal.pdf	66556 7926af5a4ad616c4b9fe9c64b8517c01be1e e500	no	1
<b>Warnings:</b>					
<b>Information:</b>					
2	Extension of Time	821825EOT.pdf	186796 f4afe47a1c69fda58f5227b0bcbf94f11a9f 64c0	no	2
<b>Warnings:</b>					
<b>Information:</b>					
3		821825response.pdf	117350 0d68b3712c56c6f01aa0ca75fb1c9bfc6579a 601	yes	10
<b>Multipart Description/PDF files in .zip description</b>					
<b>Document Description</b>		<b>Start</b>	<b>End</b>		
Amendment/Req. Reconsideration-After Non-Final Reject		1	7		
Applicant Arguments/Remarks Made in an Amendment		8	10		
<b>Warnings:</b>					
<b>Information:</b>					
4	Fee Worksheet (SB06)	fee-info.pdf	31897 4c59dcb1e5fe4de41394530144f79059aa1 f275	no	2
<b>Warnings:</b>					
<b>Information:</b>					
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<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b>  If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b>  If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b>  If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

## Electronic Patent Application Fee Transmittal

<b>Application Number:</b>	13362113
<b>Filing Date:</b>	31-Jan-2012
<b>Title of Invention:</b>	Method And Apparatus For Providing Tactile Sensations
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Filer:</b>	Zachary S. Kelton/Catherine Anderson
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)

Filed as Large Entity

### Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
Claims in Excess of 20	1202	6	80	480

**Miscellaneous-Filing:**

**Petition:**

**Patent-Appeals-and-Interference:**

**Post-Allowance-and-Post-Issuance:**

**Extension-of-Time:**

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 2 months with \$0 paid	1252	1	600	600
<b>Miscellaneous:</b>				
<b>Total in USD (\$)</b>				<b>1080</b>



**REMARKS**

**I. General**

This paper is filed in response to the Non-Final Office Action mailed September 17, 2013 (the “Office Action”).

Following the amendments above, claims 1-20 are pending in this application. Claims 1-20 were rejected as allegedly being anticipated under pre-AIA 35 USC § 102(b) by U.S. Patent Publication No. 2008/0068350 to Rosenberg et al. (“Rosenberg”).

Applicant has amended claims 1, 10, and 18. No new matter is added by these amendments, and support may be found in the specification and claims as originally filed.

Applicants respectfully traverse each of the rejections of the claims and respectfully requests withdrawal of all rejections and allowance of all pending claims in view of the amendments above and the remarks below.

**II. Claim Amendments**

Applicant has amended claims 1, 10, and 18 to recite elements relating to haptic effect data in a lookup table. Such subject matter may be found in the specification as filed, such as in paragraphs [0043] and [0071] as well as in Figures 9 and 10.

Applicant has also added new claims 21-26, which depend from and further limit amended claims 1, 10, and 18. Such subject matter may be found in the specification as filed, such as in paragraphs [0073]-[0086] as well as in Figures 9 and 10.

Further, Applicant has amended claims 2, 15, 16, and 17 to fix typographical errors.

**III. 35 USC § 102(b) – Claims 1-20 – Rosenberg**

Applicant respectfully traverses the rejection of claims 1-20 under pre-AIA 35 USC § 102(b) as allegedly being anticipated by Rosenberg.

To anticipate a claim under 35 U.S.C. § 102(b), the invention must be described in a printed publication more than one year prior to the date of the application for patent

in the United States. In addition, the reference must disclose each and every element of the claimed invention.<sup>1</sup>

The present application is a continuation of three prior applications: 12/894,489, filed March 29, 2007, 11/693,117, filed March 29, 2007, and 10/285,450, filed November 1, 2001, which in turn claims priority to two provisional applications: 60/399,883, filed July 31, 2002, and 60/335,493, filed November 1, 2001. The Rosenberg reference relied upon by the Examiner was published on March 20, 2008, after the earliest claimed priority date. Thus, Rosenberg is not available as prior art under 35 U.S.C. § 102(b). However, Rosenberg claims priority as a continuation to several prior applications, the earliest of which, U.S. Patent Application 09/487,737, now U.S. Patent No. 6,563,487, was filed on January 19, 2000 and first published on November 1, 2011. Applicant notes that Rosenberg claims priority to earlier applications, but only as a continuation-in-part (CIP). Thus, because the rejection of claims 1-20 was based on Rosenberg rather than these earlier CIP applications, Applicant has not analyzed these earlier continuation-in-part priority applications to determine whether the subject matter relied upon by the Examiner was disclosed in these earlier applications. Thus, based on the respective priority chains of the present application and Rosenberg, Applicant respectfully asserts that under the above analysis Rosenberg is only available for use under 35 U.S.C. § 102(e).

However, with respect to 35 U.S.C. § 102(e), Rosenberg does not disclose or suggest “receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device; determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and generating an actuator signal based at least in part on the interaction and haptic effect data in a lookup table.” Rosenberg may discuss outputting haptic effects based on user inputs (or graphical objects), but it does not discuss determining which specific haptic effect to output for given a user input (or graphical object) based on data in a lookup table. Thus, claim 1 is patentable over Rosenberg. Applicant respectfully requests the Examiner withdraw the rejection of claim 1.

---

<sup>1</sup> See 35 U.S.C. § 102(b), M.P.E.P. § 2131.

Because independent claims 10 and 18 each recite similar elements as those discussed above, each of claims 10 and 18 is patentable over Rosenberg for at least the same reasons. Applicant respectfully requests the Examiner withdraw the rejection of claims 10 and 18.

Because claims 2-9, 11-17, and 19-26 each depend from and further limit one of claims 1, 10, or 18, each of claims 2-9, 11-17, and 19-26 is patentable over Rosenberg for at least the same reasons. Applicant respectfully requests the Examiner withdraw the rejection of claims 2-9, 11-17, and 19-20.

**CONCLUSION**

Applicants respectfully assert that in view of the amendments and remarks above, all pending claims are allowable and Applicants respectfully request the allowance of all claims.

Should the Examiner have any comments, questions, or suggestions of a nature necessary to expedite the prosecution of the application, or to place the case in condition for allowance, the Examiner is courteously requested to telephone the undersigned at the number listed below.

Respectfully submitted,

Date: 2/10/2014

/Zachary Kelton/  
Zachary S. Kelton  
Reg. No. 71,345

KILPATRICK TOWNSEND & STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7498 (voice)  
(336) 734-2756 (fax)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Kenneth M. Martin  
Application No. : 13/362,113  
For : **Method and Apparatus for Providing Tactile Sensations**  
Filed : January 13, 2012  
Examiner : Ricardo Osorio  
Art Unit : 2692  
Confirmation No. : 3915

Mail Stop **Amendment**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**AMENDMENT AND RESPONSE TO NON-FINAL OFFICE ACTION**

Commissioner:

The following Amendment and Remarks are submitted in response to the Office Action mailed September 17, 2013.

**Amendments to the Claims** begin on page 2 of this paper.

**Remarks** begin on page 8 of this paper.

**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A method, comprising:
  - outputting a display signal configured to display a graphical object on a touch-sensitive input device;
  - receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;
  - determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and
  - generating an actuator signal based at least in part on the interaction and haptic effect data in a lookup table.
  
2. (Currently Amended) The method of claim 1, wherein[[;]] the actuator signal is configured to cause a haptic effect to be output.
  
3. (Original) The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.

4. (Original) The method of claim 1, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

5. (Original) The method of claim 1, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.

6. (Original) The method of claim 5, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.

7. (Original) The method of claim 5, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.

8. (Original) The method of claim 5, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.

9. (Original) The method of claim 1, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.

10. (Currently Amended) A system, comprising:

a touch sensitive input device configured to output a sensor signal indicating an object contacting the touch-sensitive input device;

an actuator coupled to the touch-sensitive input device, the actuator configured to receive an actuator signal and output a haptic effect to the touch-sensitive surface based at least in part on the actuator signal; and

a processor in communication with the sensor and the actuator, the processor configured to:

output a display signal configured to display a graphical object on the touch-sensitive input device;

receive the sensor signal from the touch-sensitive input device;

determine an interaction between the object contacting the touch-sensitive surface and the graphical object;

generate the actuator signal based at least in part on the interaction and haptic effect data in a lookup table; and

transmit the actuator signal to the actuator.

11. (Original) The system of claim 10, wherein the processor is configured to generate the actuator signal when the object contacts the touch-sensitive input device at a location corresponding to the graphical object.

12. (Original) The system of claim 10, wherein the processor is configured to output the actuator signal when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.
13. (Original) The system of claim 10, wherein the display signal is configured to display a keypad comprising a plurality of softkeys.
14. (Original) The system of claim 13, wherein the haptic effect is caused to be output when a user contacts the touch-sensitive device at a location corresponding to a softkey in a home position.
15. (Currently Amended) The ~~method~~ system of claim 13, wherein the plurality of softkeys comprises one softkey for each digit from 0 to 9.
16. (Currently Amended) The ~~method~~ system of claim 13, wherein the plurality of softkeys comprises the key configuration of a standard 101-key keyboard.
17. (Currently Amended) The ~~method~~ system of claim 10, wherein the graphical object comprises a first graphical object and a second graphical object, the haptic effect comprises a first haptic effect and a second haptic effect, and wherein the first haptic effect is configured to be output when the object contacts the first graphical object, and the second haptic effect is configured to be output when the object contacts the second graphical object.



18. (Currently Amended) A computer-readable medium comprising program code, comprising:

program code for outputting a display signal configured to display a graphical object on a touch-sensitive input device;

program code for receiving a sensor signal from the touch-sensitive input device, the sensor signal indicating an object contacting the touch-sensitive input device;

program code for determining an interaction between the object contacting the touch-sensitive input device and the graphical object; and

program code for generating an actuator signal based at least in part on the interaction and haptic effect data in a lookup table, the actuator signal configured to cause a haptic effect to be output.

19. (Original) The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location corresponding to the graphical object.

20. (Original) The computer-readable medium of claim 18, wherein the actuator signal is generated when the object contacts the touch-sensitive device at a location not corresponding to the graphical object.

21. (New) The method of claim 1, wherein the haptic effect data comprises a plurality of haptic effects.

22. (New) The method of claim 1, wherein the lookup table comprises one or more of input device data, position data, pressure data, or function data.

23. (New) The system of claim 10, wherein the haptic effect data comprises a plurality of haptic effects.

24. (New) The system of claim 10, wherein the lookup table comprises one or more of input device data, position data, pressure data, or function data.

25. (New) The computer-readable medium of claim 18, wherein the haptic effect data comprises a plurality of haptic effects.

26. (New) The computer-readable medium of claim 18, wherein the lookup table comprises one or more of input device data, position data, pressure data, or function data.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PATENT APPLICATION FEE DETERMINATION RECORD</b> Substitute for Form PTO-875	Application or Docket Number <b>13/362,113</b>	Filing Date <b>01/31/2012</b>	<input type="checkbox"/> To be Mailed
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ENTITY:  LARGE  SMALL  MICRO

**APPLICATION AS FILED – PART I**

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(l))</small>	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

**APPLICATION AS AMENDED – PART II**

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
<b>AMENDMENT</b>	<b>02/10/2014</b>	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total <small>(37 CFR 1.16(i))</small>	* 26	Minus	** 20 = 6	X \$80 =	480
	Independent <small>(37 CFR 1.16(h))</small>	* 3	Minus	***3 = 0	X \$420 =	0
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	<b>480</b>

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
<b>AMENDMENT</b>		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total <small>(37 CFR 1.16(i))</small>	-	Minus	** =	X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	-	Minus	*** =	X \$ =	
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
 \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".  
 \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE  
/BRENDA HARRISON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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BIB DATA SHEET

CONFIRMATION NO. 3915

<b>SERIAL NUMBER</b> 13/362,113	<b>FILING or 371(c) DATE</b> 01/31/2012 <b>RULE</b>	<b>CLASS</b> 345	<b>GROUP ART UNIT</b> 2692	<b>ATTORNEY DOCKET NO.</b> 51851/821825 (IMM147.C3)	
<b>APPLICANTS</b> <b>INVENTORS</b> Kenneth M. Martin, Los Gatos, CA; Steven P. Vassallo, Redwood City, CA; Alex S. Goldenberg, San Francisco, CA; Alexander Jasso, San Jose, CA; Kollin Tierling, Milpitas, CA;					
<b>** CONTINUING DATA *****</b> This application is a CON of 12/894,489 09/30/2010 PAT 8159461 which is a CON of 11/693,117 03/29/2007 PAT 7808488 which is a CON of 10/285,450 11/01/2002 PAT 7336260 which claims benefit of 60/335,493 11/01/2001 and claims benefit of 60/399,883 07/31/2002					
<b>** FOREIGN APPLICATIONS *****</b> <b>** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **</b> 02/10/2012					
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Verified and Acknowledged <u>/RICARDO OSORIO/</u> Examiner's Signature	<input type="checkbox"/> Met after Allowance Initials	<b>STATE OR COUNTRY</b> CA	<b>SHEETS DRAWINGS</b> 11	<b>TOTAL CLAIMS</b> 20	<b>INDEPENDENT CLAIMS</b> 3
<b>ADDRESS</b> PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101 UNITED STATES					
<b>TITLE</b> METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS					
<b>FILING FEE RECEIVED</b> 1860	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit			

<b>Search Notes</b> 	<b>Application/Control No.</b> 13362113	<b>Applicant(s)/Patent Under Reexamination</b> MARTIN ET AL.
	<b>Examiner</b> RICARDO L OSORIO	<b>Art Unit</b> 2692

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
345	163, 167-169 and 173	2/24/2014	RLO


SEARCH NOTES		
Search Notes	Date	Examiner
EAST and inventor search and interference search history	2/24/2014	RLO

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
345	163, 167	2/24/2014	RLO

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<b>Issue Classification</b> 	<b>Application/Control No.</b> 13362113	<b>Applicant(s)/Patent Under Reexamination</b> MARTIN ET AL.
	<b>Examiner</b> RICARDO L OSORIO	<b>Art Unit</b> 2692

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant		<input type="checkbox"/> CPA		<input type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47									
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	19	17												
2	2	22	18												
3	3	23	19												
4	4	24	20												
5	5	10	21												
6	6	11	22												
7	7	20	23												
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12	10	26	26												
13	11														
14	12														
15	13														
16	14														
17	15														
18	16														

NONE		<b>Total Claims Allowed:</b>	
		26	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/RICARDO L OSORIO/ Primary Examiner.Art Unit 2692	2/24/2014	1	9
(Primary Examiner)	(Date)		





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NOTICE OF ALLOWANCE AND FEE(S) DUE

34300 7590 03/06/2014
PATENT DEPARTMENT (51851)
KILPATRICK TOWNSEND & STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101

EXAMINER
OSORIO, RICARDO
ART UNIT PAPER NUMBER

2692
DATE MAILED: 03/06/2014

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 13/362,113, 01/31/2012, Kenneth M. Martin, 51851/821825 (IMM147.C3), 3915
TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE
Row 1: nonprovisional, UNDISCOUNTED, \$960, \$0, \$0, \$960, 06/06/2014

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.
If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.
If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".
For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

**PART B - FEE(S) TRANSMITTAL**

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**  
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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

34300 7590 03/06/2014  
**PATENT DEPARTMENT (51851)**  
**KILPATRICK TOWNSEND & STOCKTON LLP**  
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**Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915

TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	06/06/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
OSORIO, RICARDO	2692	345-163000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a <b>Customer Number is required.</b></p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____</p> <p>(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____</p> <p>3 _____</p>
---	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: \_\_\_\_\_ (B) RESIDENCE: (CITY and STATE OR COUNTRY) \_\_\_\_\_

Please check the appropriate assignee category or categories (will not be printed on the patent):  Individual  Corporation or other private group entity  Government

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
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5. Change in Entity Status (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

**NOTE:** Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

**NOTE:** If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

**NOTE:** Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_



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13/362,113 01/31/2012 Kenneth M. Martin 51851/821825 (IMM147 C3) 3915

34300 7590 03/06/2014
PATENT DEPARTMENT (51851)
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1001 WEST FOURTH STREET
WINSTON-SALEM, NC 27101

EXAMINER

OSORIO, RICARDO

ART UNIT PAPER NUMBER

2692

DATE MAILED: 03/06/2014

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

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The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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The information provided by you in this form will be subject to the following routine uses:

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

<b>Notice of Allowability</b>	<b>Application No.</b> 13/362,113	<b>Applicant(s)</b> MARTIN ET AL.	
	<b>Examiner</b> RICARDO L. OSORIO	<b>Art Unit</b> 2692	<b>AIA (First Inventor to File) Status</b> No

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to 2/10/2014.  
 A declaration(s)/affidavit(s) under 37 CFR 1.130(b) was/were filed on \_\_\_\_\_.
2.  An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.
3.  The allowed claim(s) is/are 1-26. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/oph/index.iso](http://www.uspto.gov/patents/init_events/oph/index.iso) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).
4.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

**Certified copies:**

- a)  All    b)  Some    \*c)  None of the:
1.  Certified copies of the priority documents have been received.
  2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Examiner's Amendment/Comment                  |
| 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 7. <input type="checkbox"/> Other _____                                   |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____                      |   |

/RICARDO L OSORIO/  
Primary Examiner, Art Unit 2692



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915
34300                      7590                      05/05/2014 PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101			EXAMINER	
			OSORIO, RICARDO	
			ART UNIT	PAPER NUMBER
			2692	
			MAIL DATE	DELIVERY MODE
			05/05/2014	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
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Application No. : 13362113  
Applicant : Martin  
Filing Date : 01/31/2012  
Date Mailed : 05/05/2014

### NOTICE TO FILE CORRECTED APPLICATION PAPERS

#### *Notice of Allowance Mailed*

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

**Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.**

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to  
"Mail Stop Issue Fee, Commissioner for Patents,  
P.O. Box 1450, Alexandria, VA 22313-1450".*

/Lois Stone/  
Publication Branch  
Office of Data Management  
(571) 272-4200

**Application No. 13362113**

**IDENTIFICATION OF SPECIFICATION/DRAWING INCONSISTENCIES**

- On Page of the specification there is a brief description of FIG. , but the drawings filed do not include a drawing with that designation. Applicant must respond either by supplying the omitted drawing or by amending the specification to remove all references to that drawing.
- The drawings filed 01/31/2012 include FIG. 11, but the specification's brief description of the drawings does not describe a drawing with that designation. Applicant must respond either by amending the specification to add a brief description of that drawing or by correcting the drawings to remove the drawing in question.
- Drawings are present in the application and are referred to in the detailed description of the invention, but the specification does not contain a brief description of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(8).
- Page of the specification refers to FIG. , but no drawing with that designation is described in the brief description of the drawings and no drawing with that designation is present in the application. Applicant must respond either by amending the specification to remove all references to that drawing, or by supplying that drawing and amending the specification to add a brief description of it.
- OTHER:
- COMMENTS:



## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	18997611
<b>Application Number:</b>	13362113
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	3915
<b>Title of Invention:</b>	METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Customer Number:</b>	34300
<b>Filer:</b>	Zachary S. Kelton/Catherine Anderson
<b>Filer Authorized By:</b>	Zachary S. Kelton
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)
<b>Receipt Date:</b>	12-MAY-2014
<b>Filing Date:</b>	31-JAN-2012
<b>Time Stamp:</b>	09:23:05
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	no
------------------------	----

### File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	821825transmittal.pdf	64918 <small>3a2cb326/c931ac7727e7895331013f78f78127f</small>	no	1

**Warnings:**

**Information:**

2	Amendment after Notice of Allowance (Rule 312)	821825response.pdf	88011 <small>078c4d831fae0ff4ae4353773ad502a764ce 1aeff</small>	no	3
<b>Warnings:</b>					
<b>Information:</b>					
3	Miscellaneous Incoming Letter	821825notice.pdf	231472 <small>8bb56f19fc85bec28a5308d53bf092be75 2f80d</small>	no	3
<b>Warnings:</b>					
<b>Information:</b>					
<b>Total Files Size (in bytes):</b>			384401		
<p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b>  <b>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b>  <b>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b>  <b>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</b></p>					

**AMENDMENTS TO THE SPECIFICATION**

Please replace paragraph 18 with the following paragraph:

**[0018]** Figure 9 is a table illustrating a first set of data to be used in one embodiment of the present invention;~~and~~

Please replace paragraph 19 with the following paragraph:

**[0019]** Figure 10 is a table illustrating a second set of data to be used in another embodiment of the present invention[.]; and

Please add the following paragraph immediately following paragraph 19:

**[0020]** Figure 11 shows a device for providing tactile sensations according to one embodiment of the present invention.



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915
34300 7590 05/05/2014 PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101			EXAMINER OSORIO, RICARDO	
			ART UNIT 2692	PAPER NUMBER
			MAIL DATE 05/05/2014	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents  
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Application No. : 13362113  
Applicant : Martin  
Filing Date : 01/31/2012  
Date Mailed : 05/05/2014

**NOTICE TO FILE CORRECTED APPLICATION PAPERS**

*Notice of Allowance Mailed*

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

**Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.**

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to "Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450".*

/Lois Stone/  
Publication Branch  
Office of Data Management  
(571) 272-4200

Application No. 13362113

**IDENTIFICATION OF SPECIFICATION/DRAWING INCONSISTENCIES**

- On Page of the specification there is a brief description of FIG. , but the drawings filed do not include a drawing with that designation. Applicant must respond either by supplying the omitted drawing or by amending the specification to remove all references to that drawing.
- The drawings filed 01/31/2012 include FIG. 11, but the specification's brief description of the drawings does not describe a drawing with that designation. Applicant must respond either by amending the specification to add a brief description of that drawing or by correcting the drawings to remove the drawing in question.
- Drawings are present in the application and are referred to in the detailed description of the invention, but the specification does not contain a brief description of the drawings as required by 37 CFR 1.74 and 37 CFR 1.77(b)(8).
- Page of the specification refers to FIG. , but no drawing with that designation is described in the brief description of the drawings and no drawing with that designation is present in the application. Applicant must respond either by amending the specification to remove all references to that drawing, or by supplying that drawing and amending the specification to add a brief description of it.
- OTHER:
- COMMENTS:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Kenneth M. Martin  
Application No. : 13/362,113  
For : **Method and Apparatus for Providing Tactile Sensations**  
Filed : January 31, 2012  
Examiner : Ricardo Osorio  
Art Unit : 2692  
Confirmation No. : 3915

Mail Stop **Issue Fee**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS**

Dear Sir,

The following Amendments and Remarks are submitted in response to the Notice to File Corrected Application Papers mailed May 5, 2014 (the "Notice").

**Amendments to the Specification** begin on page 2 of this paper.

**Remarks** begin on page 3 of this paper.

**REMARKS**

This paper is filed in response to the Notice to File Corrected Application Papers (the "Notice") mailed May 5, 2014.

The Notice objected to the specification on the basis of Figure 11 not being described in the brief description of the drawings in the as-filed specification. Applicant has amended the specification to add a new paragraph to the Brief Description of the Drawings to refer to Figure 11. The added paragraph recites the same description of Figure 11 as may be found in U.S. Patent No. 7,808,488 (the "'488 patent"), to which the present application claims priority and incorporates by reference. Specification, ¶ 1 (incorporating the '488 patent by reference); '488 patent, col. 2 l. 66-67 (describing Figure 11). Thus, no new matter is added by this amendment. Applicant respectfully asserts that the identified inconsistencies have been fully addressed by these amendments.

Should the Office have any comments, questions, or suggestions regarding this application, the Office is courteously requested to telephone the undersigned at the number listed below.

Respectfully submitted,

Date: 5/12/2014

/Zachary Kelton/  
Zachary S. Kelton  
Reg. No. 71,345

KILPATRICK TOWNSEND & STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7498 (voice)  
(336) 734-2756 (fax)



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth Martin et al.  
Application No. : 13/362,113  
Filed : January 31, 2012  
For : Method and Apparatus for Providing Tactile Sensations  
Examiner : Ricardo Osorio  
Art Unit : 2692  
Conf. No. : 3915

Mail Stop Issue Fee  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL**

Commissioner:

Transmitted herewith are the following documents for filing in the above-identified application:

1. Response to Notice to File Corrected Application Papers;
2. Copy of Notice to File Corrected Application Papers.

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

Date: 5/12/2014  
KILPATRICK TOWNSEND  
& STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7300

By: /Zachary Kelton/  
Zachary S. Kelton  
Reg. No. 71,345

**Certificate of Electronic Filing**

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS Web on May 12, 2014.

/Catherine A. Anderson/  
Catherine A. Anderson

**PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to:** Mail **Mail Stop ISSUE FEE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450**  
or Fax **(571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

34300      7590      03/06/2014  
**PATENT DEPARTMENT (51851)  
 KILPATRICK TOWNSEND & STOCKTON LLP  
 1001 WEST FOURTH STREET  
 WINSTON-SALEM, NC 27101**

**Certificate of Mailing or Transmission**  
 I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

_____ (Depositor's name)
_____ (Signature)
_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915

TITLE OF INVENTION: METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	06/06/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
OSORIO, RICARDO	2692	345-163000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).  
 Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list  
 (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 KILPATRICK TOWNSEND & STOCKTON LLP  
 (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)  
 PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE IMMERSION CORPORATION  
 (B) RESIDENCE: (CITY and STATE OR COUNTRY) SAN JOSE, CA

Please check the appropriate assignee category or categories (will not be printed on the patent) :  Individual  Corporation or other private group entity  Government

4a. The following fee(s) are submitted:  
 Issue Fee  
 Publication Fee (No small entity discount permitted)  
 Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)  
 A check is enclosed.  
 Payment by credit card. Form PTO-2038 is attached.  
 The Director is hereby authorized to ~~accept the fee~~ or credits any overpayment, to Deposit Account Number 20-1430 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)  
 Applicant certifying micro entity status. See 37 CFR 1.29  
 Applicant asserting small entity status. See 37 CFR 1.27  
 Applicant changing to regular undiscounted fee status.

**NOTE:** Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.  
**NOTE:** If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.  
**NOTE:** Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

**NOTE:** This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature Zachary S. Kelton Date 5/19/2014  
 Typed or printed name Zachary S. Kelton Registration No. 71,345

## Electronic Patent Application Fee Transmittal

<b>Application Number:</b>	13362113
<b>Filing Date:</b>	31-Jan-2012
<b>Title of Invention:</b>	METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Filer:</b>	Zachary S. Kelton/Amber Johnson
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)

Filed as Large Entity

### Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
<b>Basic Filing:</b>				
<b>Pages:</b>				
<b>Claims:</b>				
<b>Miscellaneous-Filing:</b>				
<b>Petition:</b>				
<b>Patent-Appeals-and-Interference:</b>				
<b>Post-Allowance-and-Post-Issuance:</b>				
Utility Appl Issue Fee	1501	1	960	960

**Extension-of-Time:**

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
<b>Total in USD (\$)</b>				<b>960</b>

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	19064389
<b>Application Number:</b>	13362113
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	3915
<b>Title of Invention:</b>	METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Customer Number:</b>	34300
<b>Filer:</b>	Zachary S. Kelton/Amber Johnson
<b>Filer Authorized By:</b>	Zachary S. Kelton
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)
<b>Receipt Date:</b>	19-MAY-2014
<b>Filing Date:</b>	31-JAN-2012
<b>Time Stamp:</b>	14:26:32
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$960
RAM confirmation Number	676
Deposit Account	
Authorized User	

### File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Page	Pages

1	Miscellaneous Incoming Letter	Transmittal.pdf	35536 ac53ec851b55a9c76b00e463786587c8a4982120	no	1
<b>Warnings:</b>					
<b>Information:</b>					
2	Issue Fee Payment (PTO-85B)	IssueFee.pdf	98947 b1f5aaf66b5d267d11b7af502e8a5009fdb08950	no	1
<b>Warnings:</b>					
<b>Information:</b>					
3	Fee Worksheet (SB06)	fee-info.pdf	30703 7610f41d7ad2a4bd5bb1cc778a79dbs7c6f5c507	no	2
<b>Warnings:</b>					
<b>Information:</b>					
<b>Total Files Size (in bytes):</b>				165186	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of : Kenneth Martin et al.  
Application No. : 13/362,113  
Filed : January 31, 2012  
For : Method and Apparatus for Providing Tactile Sensations  
Examiner : Ricardo Osorio  
Art Unit : 2692  
Conf. No. : 3915

Mail Stop Issue Fee  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL**

Sir:

Transmitted herewith are the following document(s) for filing in the above-identified application:

1. Transmittal;
2. Part B – Fee Transmittal (PTOL-85); and
3. Payment in the amount of \$960.

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

Date: 5/19/2014  
KILPATRICK TOWNSEND  
& STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7300

By: Zac Kelton  
Zachary S. Kelton  
Reg. No. 71,345

**Certificate of Electronic Filing**

I hereby certify that this correspondence is being electronically filed with the United States Patent Office via EFS Web on May 19, 2014.

Amber C Johnson  
Amber C Johnson



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	01/31/2012	Kenneth M. Martin	51851/821825 (IMM147.C3)	3915
34300 7590 05/30/2014 PATENT DEPARTMENT (51851) KILPATRICK TOWNSEND & STOCKTON LLP 1001 WEST FOURTH STREET WINSTON-SALEM, NC 27101			EXAMINER	
			OSORIO, RICARDO	
			ART UNIT	PAPER NUMBER
			2692	
			MAIL DATE	DELIVERY MODE
			05/30/2014	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



<b>Response to Rule 312 Communication</b>	Application No.	Applicant(s)
	13/362,113	Martin et al.
	Examiner	Art Unit

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1.  The amendment filed on 12 May 2014 under 37 CFR 1.312 has been considered, and has been:
- a)  entered.
  - b)  entered as directed to matters of form not affecting the scope of the invention.
  - c)  disapproved because the amendment was filed after the payment of the issue fee.  
Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.
  - d)  disapproved. See explanation below.
  - e)  entered in part. See explanation below.

*Charles Bowen*  
Publishing Division

Substitute for form 1449A/PTO				<i>Complete if Known</i>		
				Application Number	13/362,113	
<b>Information Disclosure Statement by Applicant</b> (use as many sheets as necessary)				Filing Date	January 31, 2012	
				First Named Inventor	Martin et al.	
				Group Art Unit	2692	
				Examiner Name	Osorio, R.	
				Attorney Docket Number	51851-821825 (IMM147.C3)	
Sheet	4	of	12			

101	6,097,964	08/01/2000	Nuovo
102	6,059,506	05/09/2000	Kramer
103	6,160,489	12/12/2000	Perry et al.
104	6,111,577	08/29/2000	Zilles et al.
105	6,118,435	09/12/2000	Fujita et al.
106	6,198,206	03/06/2001	Saarmaa
107	6,131,097	10/10/2000	Peurah
108	6,195,592	02/27/2001	Schuler
109	6,160,489	12/12/2000	Perry et al.
110	6,198,206	03/06/2001	Saarmaa
111	6,218,966	04/17/2001	Goodwin
112	6,219,034	04/17/2001	Elbing, et al.
113	6,225,976	05/01/2001	Yates
114	6,292,173	09/18/2001	Rambaldi et al.
115	6,307,465	10/23/2001	Kayma et al.
116	6,344,791	02/05/2002	Armstrong
117	6,369,803	04/09/2002	Brisebois et al.
118	6,373,463	04/16/2002	Beeks
119	6,374,255	04/16/2002	Peurah
120	6,388,655	05/14/2002	Leung
121	6,422,941	07/23/2002	Thorner, et al.
122	6,429,846	08/06/2002	Rosenberg
123	6,543,487	<del>05/13/2003</del> April 8, 2003	Bazinet
124	6,597,347	07/22/2003	Yasutake
125	6,657,617	12/02/2003	Paolini et al.
126	6,735,307	05/11/2004	Volckers
127	6,781,569	08/24/2004	Gregorio et al.
128	6,801,191	10/05/2004	Mukai et al.
129	6,976,562	12/20/2005	Perret, Jr. et al.
130	7,202,851	04/10/2007	Cunningham et al.
131	2002/0033795	03/21/2002	Shahoian
132	2002/0171621	11/21/2002	Johnson
133	2002/177471	11/28/2002	Kaaresoja
134	2002/0128048	09/12/2002	Aaltonen
135	2002/0149561	10/17/2002	Fukumoto et al.
136	2005/0099393	05/12/2005	Johnson
137	2008/0068350	03/20/2008	Rosenberg et al.

Change(s) applied to document /S.H./ 5/7/2014

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
				Application Number	13/362,113
<b>Information Disclosure Statement by Applicant</b> <i>(use as many sheets as necessary)</i>				Filing Date	January 31, 2012
				First Named Inventor	Martin et al.
				Group Art Unit	2692
				Examiner Name	Osorio, R.
				Attorney Docket Number	51851-821825 (IMM147.C3)
Sheet	1	of	12		

U.S. PATENT DOCUMENTS					
Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
	1	2,972,140	2/14/1961	Hirsch	
	2	3,157,853	11/17/1964	Hirsch	
	3	3,220,121	11/30/1965	Cutler	
	4	3,497,668	02/24/1970	Hirsch	
	5	3,517,446	06/30/1970	Corlyon et al.	
	6	3,623,064	<del>11/29/1970</del>	Kagen	November 23, 1971
	7	3,902,687	09/02/1975	Hightower	
	8	3,903,614	09/09/1975	Diamond et al.	
	9	3,911,416	10/07/1995	Feder	
	10	4,127,752	11/28/1978	Lowthorp	
	11	4,160,508	07/10/1979	Salsbury	
	12	4,236,325	12/02/1980	Hall et al.	
	13	4,262,549	04/21/1981	Schwellenbach	
	14	4,311,980	01/19/1982	Prudenziati	
	15	4,333,070	06/01/1982	Barnes	
	16	4,362,408	12/07/1982	Cordes et al.	
	17	4,464,117	08/07/1984	Forest	
	18	4,484,191	11/20/1984	Vavra	
	19	4,513,235	04/23/1985	Acklam et al.	
	20	4,581,491	04/08/1986	Boothroyd	
	21	4,581,972	04/15/1986	Hoshino	
	22	4,599,070	07/08/1986	Hladky et al.	
	23	4,692,756	09/08/1987	Clark	
	24	4,708,656	11/24/1987	De Vries et al.	
	25	4,713,007	12/15/1987	Alban	
	26	4,725,817	02/16/1988	Jay	
	27	4,795,296	01/03/1989	Wijlborg	
	28	4,791,416	12/13/1988	Adler	
	29	4,794,392	12/27/1988	Selinko	
	30	4,798,919	01/17/1989	Suita	
	31	4,821,030	04/11/1989	Batson	
	32	4,823,106	04/16/1989	Pope	
	33	4,840,634	06/20/1989	Muller	
	34	4,885,565	1208/1989	Embach	

Examiner Signature	/Ricardo Osorio/	Date Considered	09/12/2013
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<sup>1</sup> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>2</sup> Applicant's unique citation designation number (optional). <sup>3</sup> Kinds of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>4</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>5</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>6</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>7</sup> Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

Change(s) applied to document /S.H/ 5/6/2014



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/362,113	07/08/2014	8773356	51851/821825 (IMM147.C3)	3915

34300 7590 06/18/2014  
PATENT DEPARTMENT (51851)  
KILPATRICK TOWNSEND & STOCKTON LLP  
1001 WEST FOURTH STREET  
WINSTON-SALEM, NC 27101

### ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

#### **Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)** (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Kenneth M. Martin, Los Gatos, CA;  
Steven P. Vassallo, Redwood City, CA;  
Alex S. Goldenberg, San Francisco, CA;  
Alexander Jasso, San Jose, CA;  
Kollin Tierling, Milpitas, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit [SelectUSA.gov](http://SelectUSA.gov).

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	21215192
<b>Application Number:</b>	13362113
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	3915
<b>Title of Invention:</b>	METHOD AND APPARATUS FOR PROVIDING TACTILE SENSATIONS
<b>First Named Inventor/Applicant Name:</b>	Kenneth M. Martin
<b>Customer Number:</b>	34300
<b>Filer:</b>	Zachary S. Kelton/Renee Prevette
<b>Filer Authorized By:</b>	Zachary S. Kelton
<b>Attorney Docket Number:</b>	51851/821825 (IMM147.C3)
<b>Receipt Date:</b>	15-JAN-2015
<b>Filing Date:</b>	31-JAN-2012
<b>Time Stamp:</b>	10:21:06
<b>Application Type:</b>	Utility under 35 USC 111(a)

### Payment information:

Submitted with Payment	no
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### File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	IMM147C3-Transmittal.pdf	68106 <small>c83f359fce13da50b7b9c2002964c7362882bae</small>	no	1

**Warnings:**

**Information:**

2	Request for Certificate of Correction	IMM147C3-RequestCOC.pdf	86466 1bfe7ae7477c7ae66bee93655c902bfda65 bd8	no	2
<b>Warnings:</b>					
<b>Information:</b>					
3	Request for Certificate of Correction	IMM147C3-COC.pdf	164329 f58c079728e063fa05adbb7e4002f77b2309 7399	no	2
<b>Warnings:</b>					
<b>Information:</b>					
<b>Total Files Size (in bytes):</b>			318901		
<p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b>  <b>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b>  <b>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b>  <b>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</b></p>					

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 8,773,356 B2

APPLICATION NO.: 13/362,113

ISSUE DATE : July 8, 2014

INVENTOR(S) : Kenneth M. Martin et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 20, line 67, Please delete "basted", please insert -- based --.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

KILPATRICK TOWNSEND & STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101-2400

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

## Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Patentees : Kenneth M. Martin et al.  
 Patent No. : 8,773,356 B2  
 Issued : July 8, 2014  
 Title of Invention : METHOD AND APPARATUS FOR PROVIDING  
 TACTILE SENSATIONS

ATTN: Certificate of Corrections Branch  
 Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

**REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT FOR PATENT  
 OFFICE MISTAKES (37 C.F.R. § 1.322)**

Commissioner:

U.S. Patent Application Number 13/362,113, from which the above-referenced patent issued, was filed on January 31, 2012. This communication is being submitted to request that a Certificate of Correction under 37 C.F.R. § 1.322 be issued for the above-referenced U.S. Patent to correct errors made by the Patent Office.

Attached is Form PTO/SB/44 stating the text of the correction. The exact column and line numbers where the errors are in the patent and in the application as filed for the USPTO errors and Applicant errors are enumerated below.

Patent Office Errors:

I. Under "That which is claimed is:"

<u>PATENT</u>	<u>APPLICATION</u>
a. Column 20, Line 67	Amendment filed February 10, 2014, Claim 10, line 6, Claims allowed by Examiner on March 6, 2014.

Please direct any questions regarding this request, and send the Certificate of Correction,  
to the undersigned,

Respectfully submitted,

/Zachary S. Kelton/

Zachary Kelton  
Reg. No. 71,345

Dated: 1/15/2014

Kilpatrick Townsend & Stockton LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101  
(336) 607-7300 phone  
(336) 607-7500 facsimile

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: : Kenneth M. Martin et al.  
Patent No. : 8,773,356 B2  
Issued : July 8, 2014  
Application No. : 13/362,113  
Filing Date : January 31, 2012  
Title : METHOD AND APPARATUS FOR PROVIDING  
TACTILE SENSATIONS  
Confirmation No. : 3915

ATTN: Certificate of Corrections Branch  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL**

Commissioner:

Transmitted herewith are copies of the following documents for filing in the above-identified application:

- (1) Request for Certificate of Correction of Patent for Patent Office Mistakes Under 37 C.F.R. § 1.322; and
- (2) Form PTO/SB/44.

The Commissioner is hereby authorized to charge any deficiency to Deposit Account Number 20-1430.

Respectfully submitted,

/Zachary S. Kelton/

Date: 1/15/2015

By: Zachary Kelton (Reg. 71,345)

KILPATRICK TOWNSEND &  
STOCKTON LLP  
1001 West Fourth Street  
Winston-Salem, NC 27101-2400  
Tel. (336) 607-7300  
Fax. (336) 607-7500

**Certificate of Electronic Filing**

I hereby certify that this correspondence is being electronically filed with The United States Patent Office via EFS-Web on January 15, 2015.

/Renee S. Prevette/  
Renee S. Prevette

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 8,773,356 B2  
APPLICATION NO. : 13/362113  
DATED : July 8, 2014  
INVENTOR(S) : Kenneth M. Martin et al.

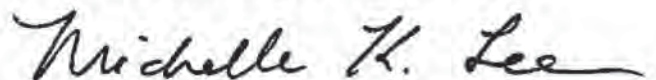
Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

**In the Claims**

Column 20, line 67, claim 12, delete "basted", insert -- based --.

Signed and Sealed this  
Seventh Day of April, 2015



Michelle K. Lee  
*Director of the United States Patent and Trademark Office*