such as the profiles that are described above. Applying voltage to the conductive layers provides tactile feedback to user as described above.

[0083] As an example, consider FIG. **8** which continues the FIG. **7** example. There, a voltage has been applied to the conductive layers of material **212**, **214** thus causing an attractive force between the layers and hence, the substrates **208**, **210** respectively, on which they reside. Responsive to the applied voltage, in this example, substrate **208** moves towards substrate **210** thus compressing spring mechanism **220**, **222**. As can be seen by a comparison of FIGS. **7** and **8**, air gap **218** and hence, the distance between substrates **208** and **210** has been reduced.

[0084] When the voltage is removed from the conductive layers of material, the resiliency of spring mechanism **220**, **222** causes substrates **208**, **210** to return to what can be considered as an unbiased disposition relative to one another. The movement of the substrates as just described provides tactile feedback to the user which can simulate a button click or, depending on the voltage profile, any other suitable type of tactile feedback such as a buzz or vibration and the like.

[0085] It is to be appreciated and understood, however, that audio signals can be used to drive the conductive layers.

[0086] Varying Feedback Based Upon User Interface Element

[0087] In one or more embodiments, tactile feedback can be varied based upon the type of user interface element that is engaged by the user. For example, some types of user interface elements such as virtual buttons lend themselves to tactile feedback in the form of a click. This click can be provided by selecting and applying an appropriate electronic signal profile responsive to sensing the user input relative to the virtual button. Ultimately, other types of user interface elements such as sliders and the like lend themselves to tactile feedback of a different nature. For example, perhaps a device designer would like to have their slider elements provide tactile feedback in the form of multiple clicks in rapid succession as the slider is moved along its track. In this case, selection and application of the appropriate electronic signal profile can provide the desired tactile feedback.

[0088] As an example, consider FIG. **9** which is a flow diagram that describes steps in a method in accordance with one or more embodiments. The method can be implemented in connection with any suitable hardware, software, firmware, or combination thereof. In at least some embodiments, the method can be implemented utilizing a system such as the systems described above.

[0089] Step **900** senses user input. This step can be performed in any suitable way. For example, in at least some embodiments, a user's input can be sensed responsive to the user touching a touch surface such as a touch screen or touch pad. In yet other embodiments, a user's input can be sensed relative to a user input mechanism. Examples of user input mechanisms have been provided above. In addition, examples of various technologies that can be utilized to sense a user's input have been provided above.

[0090] Step **902** ascertains an input location associated with the user's input. As an example, consider FIG. **10**. There, the device of FIG. **1** is shown generally at **1000**. Like numerals from the FIG. **1** embodiment have been utilized to depict like components. In this example, three user interface elements are shown at **1002**, **1004**, and **1006**. User interface elements **1002** and **1004** are icons that represent buttons, and user interface element **1006** is a slider. In this particular example, a user has selected user interface element **1004** and, responsively, the method ascertains the input location associated with the user's input.

[0091] Step **904** ascertains a user interface element associated with the input location. In this particular example, the method ascertains that user interface element **1004** corresponds to and is associated with the input location touched by or otherwise engaged by the user. Step **906** selects an electronic signal profile associated with the user interface element ascertained in step **904**. Any suitable electronic signal profile can be used. In this particular example, an electronic signal profile associated with providing tactile feedback in the form of a click can be selected. In an event the user had selected user interface element **1006**, a different electronic signal profile would have been selected, e.g., a signal profile associated with providing tactile feedback in the form of multiple clicks at a rapid frequency.

[0092] Having selected an appropriate electronic signal profile in step **906**, step **908** applies the selected electronic signal profile to conductive layers associated with substrates supporting the conductive layers, such as those substrates described above. Doing so provides tactile feedback to the user in accordance with the selected voltage profile.

CONCLUSION

[0093] In one or more embodiments, two conductive surfaces are utilized and suitably driven to provide movement of at least one of the surfaces through attractive and/or repellant forces. The movement of the surfaces can be harnessed or utilized to provide a variety of functionality. Any suitable type of material can be used for the conductive surfaces. For example, the conductive surfaces can be formed as part of a transparent substrate. Alternately or additionally, the conductive surfaces can be formed from material that is not transparent, e.g., a metal material.

[0094] In one or more embodiments, a device includes a surface and an actuator mechanism operably associated with the surface. The actuator mechanism is configured to provide tactile feedback to a user in contact with the surface. In at least some embodiments, the actuator mechanism comprises a pair of spaced-apart substrates each of which supports a conductive layer of material. In at least some embodiments, a dielectric material and an adjacent air gap are interposed between the substrates. The device also includes drive circuitry operably connected to the spaced-apart substrates. The drive circuitry is configured to drive the conductive layers of material with an electrical signal. Driving the conductive layers with the electrical signal causes one or more of the corresponding substrates to be moved either or both of towards one another or away from one another. In some embodiments, the drive circuitry can use different drive profiles to drive the conductive layers to provide various tactile or audio feedback to the user.

[0095] In other embodiments, a device includes an actuator mechanism that is configured to provide tactile or audio feedback to a user. In at least some embodiments, the actuator mechanism comprises a pair of spaced-apart substrates each of which supports a conductive layer of material. At least one of the substrates supports, either directly or indirectly, or is otherwise in operative contact with a user input mechanism by which a user can provide input to the device. In at least some embodiments, a dielectric material and an adjacent air gap are interposed between the substrates. The device also includes drive circuitry operably connected to the spaced-