

apart substrates. The drive circuitry is configured to drive the conductive layers of material with an electrical signal. Driving the conductive layers with an electrical signal causes movement of one or both of the substrates. In some embodiments, the drive circuitry can use different drive profiles to drive the conductive layers to provide various tactile feedback to the user through the user input mechanism.

[0096] In at least some embodiments, the electrical signal that drives the conductive layers can be generated responsive to: user input or interaction, software events, and/or external triggers such as interaction with others, alerts, messages, reminders and the like. With respect to user interaction, such can occur through, for example, a touch screen, touch pad, keyboard, key pad, discrete switches (mechanical or digital), linear or rotary motion sensing, proximity, interactive content, invalid entry, limits and the like.

[0097] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

What is claimed is:

1. A device comprising:
 - a housing configured to support a surface;
 - a surface supported by the housing;
 - an actuator mechanism operably associated with the surface, the actuator mechanism comprising a pair of spaced-apart substrates with conductive properties; and
 - drive circuitry operably connected to the spaced-apart substrates and configured to drive the substrates with an electrical signal to cause movement of at least one of the substrates relative to the other of the substrates effective to provide tactile feedback to a user.
2. The device of claim 1, further comprising a dielectric material interposed between the pair of spaced-apart substrates.
3. The device of claim 1, wherein the surface comprises a touch sensitive surface.
4. The device of claim 1, wherein the surface comprises a touch screen.
5. The device of claim 1, wherein the surface comprises a touch pad.
6. The device of claim 1, wherein the surface comprises a keyboard.
7. The device of claim 1, wherein the surface comprises a touch sensitive control panel.
8. The device of claim 1, further comprising a display operably adjacent one of the spaced-apart substrates.
9. The device of claim 1, wherein the device comprises a hand-held device.
10. The device of claim 1, wherein the device is configured for use in a vehicle.
11. The device of claim 1, wherein the actuator mechanism comprises a spring mechanism operably connected to at least one of the spaced-apart substrates.
12. The device of claim 1, wherein the spaced-apart substrates are formed from a clear material.
13. The device of claim 1, wherein at least one substrate is composed of a non-conductive material coated with a conductive layer.
14. The device of claim 1, wherein each substrate is coated with a conductive layer of material comprising indium tin oxide.
15. The device of claim 2, wherein the dielectric material comprises glass or plastic.
16. The device of claim 1, wherein the drive circuitry is configured to utilize different drive profiles.
17. A material assembly comprising:
 - a first substrate with conductive properties;
 - a second substrate with conductive properties operably associated with the first substrate;
 wherein at least one of the first or second substrates is configured to be driven with an electrical signal to cause movement of the first substrate relative to the second substrate effective to provide tactile feedback to a user.
18. The material assembly of claim 17, further comprising a dielectric material interposed between the first and second substrates.
19. The material assembly of claim 17, wherein the material assembly is configured to form part of a hand-held device.
20. The material assembly of claim 17, wherein the first and second substrates comprise a clear material.
21. The material assembly of claim 17 further comprising a spring mechanism interposed between the first and second substrates.
22. The material assembly of claim 17, wherein at least one substrate is composed of a non-conductive material coated with a conductive layer of material.
23. The material assembly of claim 22, wherein the conductive layer of material comprises a clear conductive material.
24. The material assembly of claim 22, wherein the conductive layer of material comprises indium tin oxide.
25. The material assembly of claim 18, wherein the dielectric material comprises glass or plastic.
26. The material assembly of claim 17 further comprising a housing supporting the material assembly.
27. The material assembly of claim 17 further comprising a housing supporting the material assembly, wherein the housing defines a hand-held device.
28. The material assembly of claim 17 further comprising a user input mechanism operably connected to the first substrate.
29. The material assembly of claim 17 further comprising a user input mechanism operably connected to the first substrate, wherein the user input mechanism comprises a touch screen.
30. The material assembly of claim 17 further comprising a user input mechanism operably connected to the first substrate, wherein the user input mechanism comprises a touchpad.
31. The material assembly of claim 17 further comprising a user input mechanism operably connected to the first substrate, wherein the user input mechanism comprises a key on a keyboard.
32. The material assembly of claim 17 further comprising a user input mechanism operably connected to the first substrate, wherein the user input mechanism comprises a touch sensitive control panel.
33. The material assembly of claim 17 further comprising a user input mechanism operably connected to the first substrate, wherein the user input mechanism comprises a knob.