

surface forms. Patterning the insulating layer **24** thus results in that the minimum distance between the first and second electrodes **20**, **24** is not constant on the contact surface. Accordingly, the capacitance increase is different from the case where the insulating layers **24** are both of uniform thickness. Examples of patterned insulating layers **24** are shown in FIG. 3.

[0029] FIGS. 4 to 6 show various examples of a capacitive pressure sensor **10** carried out as a touchpad. The touchpad **10** of FIG. 4 comprises a laminated structure of a first carrier film **12**, a second carrier film **14**, a spacer **16**, sandwiched between the first and second carrier films **12**, **14** so as to keep them spaced apart, and a protective thermoplastic film **34**. The spacer **16** has a matrix-like arrangement of openings **18** therein, which define keys of the touchpad **10**. To each key is associated a pair of a first capacitor electrode **20** and a second capacitor electrode **22** arranged on the first and second carrier films **12**, **14**, respectively. Each first capacitor electrode **20** is arranged opposite its second-capacitor-electrode counterpart **22**, with respect to the associated opening **18** of the spacer **16**. The first capacitor electrodes **20** are arranged on the side of the first carrier film that faces the spacer film **16** and the second carrier film **14**. The second capacitor electrodes **22**, however, are arranged on the side of the second carrier film that faces away from the spacer film **16** and the first carrier film **12**. The protective thermoplastic film **34** is laminated onto that same side of the second carrier film, so to prevent contamination of the second capacitor electrodes. In the embodiment of FIG. 4, a short-circuit between any one of the first capacitor electrodes and the corresponding second capacitor electrode is effectively prevented due to the presence of the insulating second carrier film **14** between the first and second capacitor electrodes.

[0030] In the touchpad **10** of FIG. 5, the first and second capacitor electrodes **20**, **22** are arranged on the interior sides of the first and second carrier films **12**, **14**, respectively. Instead of openings carried out as through-holes as in FIGS. 1, 2 and 4, the spacer **16** of FIG. 5 has a plurality of recesses **19** therein, whose depth is inferior to the thickness of the spacer. As a result, the second capacitor electrodes **22** are separated from the first capacitor electrodes not only by gas-filled gaps but also by those portions of the spacer film **16** that define the bottom of recesses **19**.

[0031] FIG. 6 shows a touchpad **10**, in which the comprises a laminated arrangement of a first carrier film **12**, a second carrier film **14** and a spacer film **16**, sandwiched between the first and second carrier films **12**, **14** so as to keep these spaced apart. The spacer **16** has openings **18** therein, which define the active zones ("keys") of the touchpad **10**. To each key is associated a first capacitor electrode **20** arranged on the first carrier film **12**. A common second capacitor electrode **22** extends over all the keys of the touchpad **10**. The touchpad **10**. To prevent short-circuits each one of the first capacitor electrodes is covered with a thin electrically insulating layer **24**.

[0032] FIG. 7 shows a variant of the touchpad of FIG. 6. In this variant, it is the common second capacitor electrode **22**, which is covered with a thin electrically insulating layer. Moreover, the touchpad **10** of FIG. 7 has an opening **18** that defines a common active zone, in which at least some of the first capacitor electrodes **20** are arranged. The present variant is especially suitable for applications in which a user presses on the first and/or the second carrier film and performs a continuous sliding movement while maintaining the pressure. It should be noted that the first capacitor electrodes

could be arranged along a line, a curve or in a grid-like configuration. FIG. 8a-8c and 9a-9d show several possible layouts of the first capacitor electrodes in top view.

[0033] The touchpads of FIGS. 4-7 are advantageously connected to an evaluation circuit (not shown), which determines, in a first mode of operation, a quantity indicative of capacitance between individual ones of the first capacitor electrodes **20** and ground and, in a second mode of operation, a quantity indicative of a capacitance between individual ones of the first capacitor electrodes **20** and the corresponding second capacitor electrode(s).

[0034] In the first mode of operation, the position of a user's finger could, for instance be detected by determining, for each one of the first capacitor electrodes, the quantity indicative of capacitive coupling between this electrode and ground. The position may e.g. be computed as the centroid of the positions of the first capacitor electrodes, weighed with the corresponding quantity indicative of capacitance. The first mode of operation is suitable, for instance, when the user controls a cursor (e.g. on the display of an appliance). The second mode of operation is associated to actuation of a key of the touchpad, e.g. by a user's finger or a stylus.

[0035] In FIGS. 8a-8c the first capacitor electrodes are arranged along a straight line, whereas in FIGS. 9a-9d, they are arranged in a circle. In the arrangements of FIGS. 8a, 8b, 9a and 9b, the first capacitor electrodes **20** are separately connectable to an evaluation circuit. Accordingly, it is possible to detect the position of the user's finger in both the first and second modes of operation. In the arrangements of FIGS. 8c, 9c and 9d, the first capacitor electrodes are not separately connected to the control circuit. Instead, there are three groups of first capacitor electrodes **20**. The first capacitor electrodes **20** of each group are conductively interconnected. Along the active zone, a first capacitor electrode of the first group is followed by one of the second group, which is, in turn, followed by one of the third group, after which the succession starts again with a first capacitor electrode of the first group. In these configurations, detection of the (absolute) position of a user's finger or stylus is not possible. Nevertheless, such slider can detect a movement of the user's finger or stylus (in both modes of operation). When the user's finger or stylus moves from the left to the right in FIG. 8c or in the clockwise sense in FIGS. 9c and 9d, the succession of the groups of first capacitor electrodes that have increased capacitive coupling to ground or to the second capacitor electrode is 2-3-1 (and cyclically continued). When the user's finger moves from the right to the left in FIG. 8c or in the clockwise sense in FIGS. 9c and 9d, the succession of the groups of first capacitor electrodes that have increased capacitive coupling to ground or to the second capacitor electrode is 3-2-1 (and cyclically continued). Given the reduced number of external connectors, the configurations of FIGS. 8c, 9c and 9d is particularly interesting if the absolute position does not need to be known, e.g. for navigating through list-based menus (scrolling through a list of items displayed and selecting an item to enter a sub-menu or start a certain function). The action of selecting an item from the list can e.g. take place when the user presses on the slider with a force that causes the quantity indicative of capacitance between the first and second capacitor electrodes to exceed the predetermined threshold.

[0036] FIGS. 10a-10c schematically show possible layouts for the first and second capacitor electrodes for detecting position or movement in 2 dimensions.