

[0042] FIG. 10 discloses yet another approach to mounting frame 102 to telephone housing 16. In this embodiment, frame 102 includes tongues raised ridges 130 and 131 disposed on opposing frame members. Each of tongues 130 and 131 slidably engage a respective one of grooves 132 and 133, disposed on the face of telephone housing 16 adjacent the edges of touch screen 20.

[0043] In another embodiment shown in FIGS. 3a through 3d, left slot 203 and right slot 207 disposed on the face of telephone housing 16 are used to removably maintain flexible membrane 101 disposed above touch screen 20. In this embodiment, a first series of holes 200 located in left edge region 201 of membrane 101 and a second series of holes 204 located in right edge region 205 of membrane 101 in combination with left and right sprockets 202 and 206 and means for rotating the left and right sprockets simultaneously at the same rate of rotation to ensure that flexible membrane 101 is ultimately positioned in its desired position.

[0044] As shown in FIGS. 4, 5 and 6, left and right sprockets 202 and 206 are disposed within telephone housing 16. Both sprockets have the same number of teeth which engage a respective one of first and second series of holes 200 and 204. These sprockets are rotated by rotating means, which may comprises common axle 215 coupled to either reversible electric motor 210 (see FIG. 5) or manually actuated knob 220 (see FIG. 6). In this manner, flexible membrane 101 is deployed via left and right slots 203 and 207 disposed on the face of housing 16, in a sequence shown in FIGS. 3a through 3d, until the membrane is in its desired position (not shown). To protect flexible membrane against damage caused by repeated deployment, left and right edge regions 201 and 205 may be formed of a semi-rigid material or may comprise the same material as the remainder of membrane 101, but with additional thickness to resist wear.

[0045] As shown in FIG. 4, in this embodiment, flexible membrane 101 may be disposed within membrane storage chamber 208 disposed within housing 16 when it is not in use. Membrane storage chamber 208 has an opening 209, which extends substantially parallel and proximate to bottom edge 23 of rigid contact surface 21. The left and right slots 203 and 207 are each positioned substantially parallel to each other and substantially perpendicular to membrane storage chamber opening 209. These slots extending from opening 209 to a location proximate an opposite edge of rigid contact surface 21. As shown in FIG. 4, flexible membrane 101 can be biased by spring 211 to retract into membrane storage chamber 208. In such an embodiment, fastening means such as an eyelet-hook pairs 200/121a and 204/121b are used to maintain membrane 101 in its predetermined position. It is also contemplated that a user can physically grasp the lead end of flexible membrane 101 and guide it along left and right slots 203 and 207 until the lead hole in the first and second series of holes engages hooks or posts 121a and 121b.

[0046] In the embodiment shown in FIG. 7, flexible membrane 101 is removably maintained in association with rigid contact surface 21 using a band of adhesive disposed about the periphery of the membrane. In particular, the adhesive has been disposed at a location that will apply outside the rigid contact surface on housing 16. It is also conceivable that flexible membrane 101 may have inherent

properties that cause it to removeably adhere to housing 16, such as a propensity to store static electricity.

[0047] In the embodiment shown in FIG. 8, flexible membrane 101 is removably maintained in association with rigid contact surface 21 using a mated pair of hook and loop fasteners, commercially known as VELCRO.

[0048] In the embodiment shown in FIG. 9, flexible membrane 101 is removably maintained in association with rigid contact surface 21 using mated pairs of snaps 308 and 309.

[0049] The foregoing description and drawings are merely to explain and illustrate the invention and the invention is not limited thereto except insofar as the appended claims are so limited, as those skilled in the art who have the disclosure before them will be able to make modifications and variations therein without departing from the scope of the invention.

1. A touch screen overlay apparatus for use in association with a user input apparatus having a touch screen with a rigid contact surface with one or more indicia displayed thereon, said contact surface having a periphery with a top edge, a bottom edge, a left edge and a right edge, said touch screen being disposed within a housing, said touch screen overlay apparatus comprising:

a membrane of a size sufficient to cover one or more desired ones of said one or more indicia displayed on said rigid contact surface, said membrane being formed of a flexible material; and

means for removably maintaining said membrane in a predetermined position in which said membrane is superimposed on at least said desired ones of said one or more indicia.

2. The invention according to claim 1 wherein said membrane includes one or more domes, each of said one or more domes being disposed on said membrane so as to be in substantial registration with a respective one of said desired ones of said one or more indicia.

3. The invention according to claim 2 wherein each of said domes are formed integrally to said membrane.

4. The invention according to claim 2 wherein each of said domes are formed by adding additional material to said membrane.

5. The invention according to claim 1 wherein said means for removably maintaining said membrane in a predetermined position comprises:

a frame having one or more frame members, each of said frame members being formed of a semi-rigid material, said membrane being attached about its entire periphery to each of said one or more frame members; and

means for mounting said frame to said housing.

6. The invention according to claim 5 wherein said mounting means comprises a hinge connected between said housing and said frame.

7. The invention according to claim 5 wherein said mounting means comprises a groove disposed adjacent said touch screen on said housing and a tongue associated with said frame slidably disposed within said groove.

8. The invention according to claim 1 wherein said membrane has a left edge region and a right edge region,