by reference. Also, thin polymer films may be laminated to or otherwise disposed on surface **107**, for example to provide resistance to damage.

[**0031**] Another embodiment of a touch display in accordance with the present invention is illustrated in **FIG. 2**. In **FIG. 2**, an EL display **201** of a variety of types such as those described above, is provided. Force sensors **203** are provided on a surface of the EL display **201** on the side where light is emitted from the EL display **201**. A touch surface **205** is supported by the force sensors **203** and spaced a distance apart from the emitting surface of the EL display **201**. When a force is applied to the top surface **207** of the touch surface **205**, the touch surface **205** is displaced in a direction towards the EL display **201**. In this manner, the force applied to the top surface **207** of the touch surface **205** is passed to the force sensors **203**. Based on the relative amounts of force passed to the force sensors **203**, a location of the touch on the touch surface **207** is determined.

[**0032**] As described above in connection with the top surface **107** of the EL display **101** in connection with **FIG. 1**, the touch surface **205** may include additional functionality such as any or all of the above described functionality.

[**0033**] Because the touch surface **205** is separate from the EL display **201**, the touch surface **205** can be easily manufactured to have a variety of different properties. Moreover, the touch surface element may be any of glass, polymers, acrylics, and the like.

[**0034**] The force sensor that may be used in connection with one particular embodiment of the present invention is illustrated in **FIG. 3**. As noted above, two such force sensors can be used to determine the touch location in one direction. The distance of a touch from the sensors can be determined using the magnitude of the force sensed by the sensors. Three or more touch sensors can be used to determine the location of a touch in both the x and y direction of the plane of the touch surface. It is generally preferable to have four or more touch sensors as described in the above-referenced International Publications WO 2002/084580, WO 2002/084579, WO 2002/084578, and WO 2002/084244. The force sensor depicted in **FIG. 3** includes two conductive elements. The first conductive element **301** is formed of a metal material having a generally spring like behavior. The metal material forms a peak, which contacts the bottom surface of an element sitting on the force sensor **305**. As described previously in connection with **FIGS. 1 and 2**, the bottom surface may be either the bottom surface of a separate touch element or of the EL display itself.

[**0035**] A second conductive element **303** is provided beneath the first conductive element **301**. As a force is applied to element **305**, the first conductive element **301** is displaced in a downward direction as indicated by arrow **307**. In this manner, the first conductive element **301** is brought closer to the second conductive element **303**. In this configuration, the conductive elements **301** and **303** are arranged to function as a capacitor. As the top portion of the first conductive element **301** is displaced towards the second conductive element **303**, a change in capacitance is determined. This change in capacitance can be used to determine the amount of force applied to the particular sensor. As described above, when multiple sensors are used, one can then determine the relative forces applied to each of the sensors, and hence, the location of a touch.

[**0036**] **FIG. 4** illustrates in block diagram form the various components of a touch-enabled display in accordance with the present invention. An EL display **401** is coupled to a display driver **403**. The display driver **403** is coupled to a processing unit **405**, which controls the information to be displayed on the EL display **401**. The processor **405** may be a general-purpose computer or a special purpose computer, depending upon the application for which the touch display is to be used. The touch controller **407** is coupled to the central processing unit **405** and to the force sensors **409***a* and **409***b*. While only two force sensors are shown, it should be understood that as many force sensors as are needed to accomplish the touch sensing operation can be used. Furthermore, while the processor **405** and touch controller **407** are illustrated separately, it will also be recognized that a single processor unit could accomplish the functions of these two elements. In operation, the sensors **409** sense the magnitude of the applied force. The output of the sensors may be a relative change in capacitance between the various sensors, for example, when the sensors illustrated in **FIG. 3** are used. The touch controller then processes this information to determine the location of a touch. This information is provided by the touch controller **407** to the CPU **405**, which uses the information in accordance with an application program running on the processor **405**. Typically in response to a touch, some element displayed on the EL display **401** is changed as the processing unit **405** controls the display driver **403** to alter the information displayed on the EL display **401**. In this manner, a touch display using an EL display **401** and a force-based sensor can be used.

[**0037**] From the above description it will be appreciated that in accordance with the present invention the combination of a highly durable relatively thin display element with force sensors that are also durable and can be made thin, provides a touch display with significant advantages over that previously known. Such displays may be used in fixed applications as illustrated in **FIG. 5**. The kiosk **500** includes a touch display **501** disclosed within a housing **503**. Force sensors (not shown) may be disposed between the surface of an EL display and a touch element over the display as described in the exemplary embodiment of **FIG. 2**, or maybe disposed behind the EL display within the housing **503** as described in connection with **FIG. 1**. It will be appreciated that where the force sensors are disposed behind the EL display, the optics of the display is optimally presented since there are no intervening surfaces between the display and the viewer.

[**0038**] **FIG. 6** illustrates a hand-held embodiment of a touch display in accordance with the present invention. A hand-held or portable device incorporates a touch display in accordance with the present invention. The touch display includes an EL display element **601** and force-based sensors used to determine the location of a touch on the display. When the touch display in accordance with the present invention is used in mobile devices, the impact of inertial forces of the display must be taken into account because such forces may impact the force sensors used to determine the pressure of and the location of a touch. Such inertial forces are particularly present in hand-held devices and devices that are installed in moving vehicles such as automobile navigation systems. Returning to **FIG. 4**, an optional inertial force sensor (e.g., accelerometer) can be incorporated into the touch display. This inertial force sensor senses the amount, magnitude and various attributes of inertial