substantial portion of touch sensor **115** remains uncovered and can be used like a conventional touch screen. In some embodiments, the uncovered portion can be large enough to allow viewing of an entire display screen. Touch-generating pads **121-126** and tactile buttons **131-136** enhance the utility of touch sensor **115** by providing tactile feedback to users. Touch-generating pads **121-126** and tactile buttons **131-136** may be selectively installed at the time of manufacturing, depending on the application. This allows the manufacturing process to be simplified, even for multiple applications. Touch-generating pads **121-126** and tactile buttons **131-136** may also be configured for installation by users to maximize versatility.

[**0036**] It is to be understood that tactile touch-sensing system **100** provides a simple way to configure a touch-sensing system to provide users with tactile feedback. Conventional touch screens typically provide a smooth surface for receiving touches, which essentially provide no tactile feedback. Some electronic devices combine a touch-sensing system with a conventional control circuit with buttons and switches to achieve the above-mentioned advantages for having tactile feedback. However, these types of hybrid setups are much more complicated and expensive to manufacture and configure than simply having one touch sensor.

[**0037**] Tactile buttons may also be configured to provide texturing on their surfaces. The texturing can enable users to determine the function of the buttons by touching them. For example, tactile buttons **134** and **136** are shown textured with elevated symbols, which intuitively communicate the functions of the buttons to users by a sense of touch. In applications where users may suffer from visual or hearing impairments, buttons **131-133** and **135**, which are textured with Braille, may be used.

[**0038**] **FIGS. 4 and 5** are highly schematic cross-sectional views of an exemplary tactile button **403** and a touch-generating pad **407**. For ease of illustration, tactile button **403** is shown as a snap dome button. However, many other types of buttons that provide similar tactile characteristics are covered by the invention. Also, **FIGS. 4 and 5** illustrate a configuration of tactile button **403** and touch-generating pad **407** with a capacitive touch sensor **410**. It is to be understood that similar tactile buttons and touch-generating pads may be configured on other types of touch sensors to provide tactile feedback to users.

[**0039**] **FIG. 4** shows tactile button **403** and touch-generating pad **407** in an inactive state. In this state, touch-generating pad **407** is floating so it does not generate a touch on touch sensor **410**. For capacitive touch sensors, touch-generating pad **407** can be floating when it is not tied to an electrical potential that will generate a signal on the touch sensor **410**. As another example, in capacitive touch sensors, the touch-generating pad can be driven with a guard or shield signal that is ignored by the controller. For other types of touch sensors, any configuration such that touch-generating pad **407** does not generate a touch on touch sensor **410** when touch-generating pad **407** is in an inactive state is considered floating and within the scope of the invention.

[**0040**] **FIG. 5** shows touch-generating pad **407** in an activated state. Tactile button **403**, which is shown as being grounded in this example, has an electrical potential that is different from that of touch-generating pad **407**. As shown in the figure, tactile button **403** is pressed by a user, which causes tactile button **403** to electrically connect to touch-generating pad **407**. This connection results in a change in electrical potential of touch-generating pad **407** and, thus, causing a touch on touch sensor **410**.

[**0041**] The mechanical property of tactile button **403**, which is shown as a snap dome button in this example, causes a responsive force **415** in the opposite direction of the force exerted by the user to press button **403**. Responsive force **415**, which has the tendency to snap button **403** back to the inactive state, is felt by the user as a tactile feedback. It is to be appreciated that buttons with similar tactile feedback properties are well known in the art and will not be described in more detail. However, these buttons are all within the scope of the present invention.

[**0042**] The above specification, examples and data provide a complete description of the invention. Since many embodiments of the invention can be made without departing from the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

What is claimed is:

1. A touch-sensing system comprising:

a touch sensor configured to produce an electrical signal in response to a touch input;

a touch-generating pad proximate to at least a portion of the touch sensor; and

a tactile button associated with the touch-generating pad, the tactile button configured to provide tactile feedback and to couple to the touch-generating pad upon activation by a user, the touch sensor configured to detect the coupling of the tactile button with the touch-generating pad.

2. The touch-sensing system of claim 1, wherein the tactile button is configured to provide a responsive force in response to being pressed by the user, the responsive force being operative to provide tactile feedback to the user.

3. The touch-sensing system of claim 1, wherein coupling the tactile button with the touch-generating pad electrically couples the touch-generating pad to the touch sensor.

4. The touch-sensing system of claim 1, wherein the tactile button is located remotely from the touch pad.

5. The touch-sensing system of claim 1, wherein the tactile button is located behind the touch senor.

6. The touch-sensing system of claim 1, wherein the tactile button has an electrical potential different than that of the touch-generating pad, and wherein the tactile button activates the touch-generating pad by electrically connecting to and changing the electrical potential of the touch-generating pad.

7. The touch-sensing system of claim 6, wherein the electrical potential of the tactile button is circuit ground.

8. The touch-sensing system of claim 1, wherein when the tactile button couples the touch-generating pad, the touch-generating pad is configured to mechanically contact the touch sensor sufficient to cause a detectable touch on the touch sensor.

9. The touch-sensing system of claim 1, wherein when the tactile button couples the touch-generating pad, the touch-generating pad is configured to break a light beam emitted by the touch sensor sufficient to cause a detectable touch on the touch sensor.