ber provided between the first and second electrically conducting layers, and a display provided below said resistive touch panel, wherein said chamber comprises a transparent liquid.

[0021] Still other implementations of the present invention provide a portable electronic device having an improved resistive touch panel.

[0022] According to an eleventh aspect of the present invention, a portable electronic device including a resistive touch panel having: a first flexible electrically conducting layer, a second electrically conducting layer, and a separating chamber provided between the first and second electrically conducting layers, wherein said chamber comprises a transparent liquid.

[0023] A twelfth aspect of the present invention is directed to a portable electronic device including the features of the eleventh aspect, in which it is a portable communication device.

[0024] A thirteenth aspect of the present invention is directed to a portable electronic device includes the features of the twelfth aspect, in which it is a cellular phone.

[0025] Implementations of the invention may allow the provision of clearer images that exhibit superior contrast in high ambient lighting for an associated display. Other implementations may enable the removal of troublesome optical defects, such as Newton's rings. Still other implementations may obviate the need for spacers and other elements designed to counter optical distortions, such as diffusive anti-Newton's ring layers.

[0026] It should be emphasized that the term "comprises/comprising" when used in this specification is taken to specify the presence of stated features, integers, steps or components, but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] The present invention will now be described in more detail in relation to the enclosed drawings, in which:

[0028] FIG. **1** shows an exemplary device in which systems and methods described herein may be implemented;

[0029] FIG. **2** schematically shows a side view of a component of the exemplary device of FIG. **1**, in which systems and methods described herein may be implemented; and

[0030] FIG. **3** is a graph of reflectivity as a function of refractive indexes of a liquid used in the component of FIG. **2**.

DETAILED DESCRIPTION OF EMBODIMENTS

[0031] An electronic device according to an implementation of the present invention will now be described in relation to a mobile phone. The electronic device may be a portable communication device of some other type, like a cordless phone, a communication module, a PDA (personal digital assistant), or any other type of portable device, for example, for communicating via radio waves. In other implementation, the device may include a gaming machine, a notepad, or any other type of portable electronic device.

[0032] FIG. **1** schematically shows a front view of a phone according to one implementation. Phone **10** may include an information presenting device **12**, which may include a touch panel provided over a display. The display may display information in the form of a keypad **14**, and when the touch panel is touched in an area where a key is provided, information corresponding to the key may be registered by the touch panel and entered into phone **10**.

[0033] FIG. **2** schematically shows a side view of the structure of information presenting device **12** according to one implementation. Information presenting device **12** may include a resistive touch panel **32** which may include a substantially transparent shielding layer **16** having an upper side facing the exterior of phone **10**. Shielding layer **16** may be used when a user touches it for entering information. Shielding layer **16** may include a hard coat top film and, for instance, made from a plastic material, such as PET. Shielding layer **16** may include a bottom side adjacent an upper side of a flexible first electrically conducting layer **18**, which may be provided, for example, in the form of an ITO film, or some other material that is substantially transparent.

[0034] The bottom side of first electrically conducting layer **18** may face an upper side of a second electrically conducting layer **22**. The two sides may be provided at a predetermined distance from each other. Second electrically conducting layer **22** may include an ITO film. In one embodiment, where touch panel **32** is combined with a display, second layer **22** may be substantially transparent. Alternatively, second layer **22** need not be transparent where no display is to be combined with touch panel **32**. To a bottom side of second electrically conducting layer **22**, a carrier **28** may be provided, which may be made from glass, plastic, or some other material, including a composite. In some embodiments, carrier **28** may be transparent and, alternatively, may not be, for example, for reasons similar to those given with respect to second electrically conducting layer **22**.

[0035] Carrier **28** may attach to a display **30**. Display **30** may include an LCD (liquid crystal display). Between carrier **28** and display **30**, an air gap or a chamber that may contain an adhesive and/or a liquid may be provided. Alternatively, second electrically conducting layer **22** may be provided directly on display **30**.

[0036] The short sides of first and second electrically conducting layers **18** and **22** that are essentially perpendicular to the top and bottom sides of these layers may connect to each other using two sealing members **24** and **26**. Sealing members **24** and **26**, together with the bottom side of first electrically conducting layer **18** and the upper side of second electrically conducting layer **22**, may form the walls of a chamber **20**. Chamber **20** may be filled with a fluid or liquid L. Chamber **20** may be substantially sealed so that liquid L cannot escape from therefrom. In one implementation, chamber **20** may include some fractions of gas, such as air. In one implementation of the invention, no other elements are present in chamber **20**, for example, diffusive-type layers and/or spacers.

[0037] Liquid L may be characterized by a number of physical, chemical, and/or electrical properties. For example, liquid L may be substantially transparent, for example, so that it readily transmits light. Liquid L may provide electrical isolation, i.e., act as an insulator between first and second electrically conducting layers **18** and **20** in a non-input state. In one implementation, liquid L may be a chemically inert or non-reactive substance, at least regarding the material(s) that comprise the walls of the chamber, i.e., liquid L may not react chemically with first and second electrically conducting layers **18** and **22**, as well as sealing members **24** and **26**. Liquid L may be thermodynamically invariant relative to temperature and pressure, i.e., liquid L may occupy a substantially constant volume when subjected to varying pressures and