of the electroactive polymer in a cavity based on this pressing down in order to change the shape of the electroactive polymer in question.

[0023] A twentieth aspect of one embodiment may be directed towards a portable electronic device including the features of the tenth aspect, wherein it is a portable communication device.

[0024] A twenty-first aspect of one embodiment may be directed towards a portable electronic device including the features of the twentieth aspect, wherein it is a cellular phone.

[0025] 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

[0026] Embodiments will now be described in more detail in relation to the enclosed drawings, in which:

[0027] FIG. **1** schematically shows a front view of an exemplary portable electronic device in the form of a cellular phone having a data input device according to one embodiment,

[0028] FIG. **2** schematically shows a side view of the exemplary data input device provided above a display,

[0029] FIG. **3** schematically shows a side view of one exemplary key provided in the data input device in a normal non-raised mode,

[0030] FIG. **4** schematically shows a side view of the exemplary key provided in the data input device in a raised mode, and

[0031] FIG. **5** shows a block schematic of units in the exemplary portable electronic device provided in order to raise a key in the data input device.

DETAILED DESCRIPTION OF EMBODIMENTS

[0032] Embodiments disclosed herein may enable a user to use the keys of interest in a simple manner, without the user having to look at a keypad in order to select the keys to use. Materials have evolved that change shape based on applied electrical voltages. These materials are electroactive polymers. These materials have been suggested for use in for instance the field of biomimetics.

[0033] A portable electronic device according to one embodiment will now be described in relation to a cellular phone, which is one embodiment of such a device. The portable electronic device may be a portable communication device of some other type, like a cordless phone, a communication module, a PDA or any other type of portable device communicating with radio waves. It can also be a gaming machine, a notepad or any other type of portable electronic device.

[0034] FIG. **1** schematically shows a front view of a phone according to one embodiment. The phone **10** may include display **12**. The display **12** here may include an area where a data input device **14** in the form of a keypad is provided. When the data input device **14** is touched in an area where a key is provided, information corresponding to this key may be registered by the data input device **14** and entered into the phone **10**. The data input device **14** may have a special configuration, which will be described below.

[0035] FIG. **2** schematically shows a side view of the structure of an embodiment of an exemplary data input device **14** according to one embodiment. The device **14** may include a transparent elastic shielding layer **16** having an upper side facing the exterior of the phone. This layer may be flexible and may be provided through silicone. This layer **16** may be the part of the phone that a user touches when entering information. The shielding layer **16** may have a bottom side attached to an upper side of a solid material layer **18**. The solid material layer may be made of a solid plastics material like PET. The solid material layer **18** may include a number of cavities **20**, where there may be a cavity **20** provided for each key in the keypad that is to be provided. Each cavity **20** here may go through the whole of the solid material layer **18**. Each such cavity **20** may also be filled with an electroactive polymer **22**. Below the solid material layer **18** there may be a key sensing mechanism that may touch input sensing layer combination **24**, which may be provided through a resistive or a capacitive touch panel. In the case of a resistive touch panel this combination may be provided through a first elastic electrically conducting layer and a second electrically conducting layer that are distanced from each other. These may both be provided in the form of ITO films. Each cavity **20** may be formed as a box bounded by walls provided through the solid material layer **18**, a bottom provided by the touch input sensing layer combination **24** and a top provided by the shielding layer **16**. The bottom, which may be made up of the first elastic electrically conducting layer of the touch input sensing layer combination **24**, may be less flexible than the shielding layer **16**, i.e. it may not be as elastic as the shielding layer **16**. The cavities **20** with electroactive polymers **22** and the touch input sensing layer combination **24** may form a keypad with a number of keys. Below the touch input sensing layer combination **24** there may be a display **26**, which may be a liquid crystal display in order to display information relating to the keys.

[0036] FIGS. **3** and **4** schematically show an exemplary side views of one key **27** provided in the data input device in a normal non-raised mode as well as in a raised mode. The cavity **20** may be, as was mentioned before filled, and may be completely filled, with an electroactive polymer **28**. This polymer **28** may be provided in gel form and may be surrounded by an electrolyte **22** that may also be in the form of a gel. The electrolyte **28** may be provided as a shell in order to protect the electroactive polymer **28**. In the cavity **20** there may furthermore be a first and a second electrode **30** and **32**, where the first electrode **30** may be connected to one of the walls of the cavity **20**, while the second may be connected to a second opposing wall. Therefore these electrodes **30** and **32** may be provided opposite each other. By applying a voltage between these two electrodes **30** and **32**, the electroactive polymer **22** may react and changes its shape. Because the shielding layer **16** may be more flexible than the bottom of the cavity and the walls are solid, the change in shape may be made only in relation to this shielding layer **16**, which may lead to the polymer **28** expanding or contracting and thus raising or lowering the flexible shielding layer **16** so that a raised or lowered key **27** may be provided.

[0037] In this way a raised key **27** may be provided, which may enable a user to more easily locate and use the key that may be of interest for him/her to use. This may be of advantage in keypads that are small and where the number of different keys are many. This may also provide a user with tactile feedback of the key.