

[0016] In one embodiment, the user of the electronic device is provided with haptic feedback.

[0017] The present invention has several advantages over the prior-art solutions. An alphanumeric keyboard is divided between the touch-sensitive cover and the touch screen so that the size of individual characters is sufficient. Thus, this enables easy inputting with a traditional QWERTY keyboard set.

[0018] A further advantage of the present invention is that characters on the touch-sensitive cover and on the touch screen are on their same familiar places as in the traditional QWERTY keyboard set. This in turn enables faster inputting of characters.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The accompanying drawings, which are included to provide a further understanding of the invention and constitute a part of this specification, illustrate embodiments of the invention and together with the description help to explain the principles of the invention. In the drawings:

[0020] **FIG. 1** illustrates a preferred embodiment of the electronic device in accordance with the present invention, and

[0021] **FIG. 2** is a block diagram illustrating one embodiment of the electronic device of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0022] Reference will now be made in detail to the embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

[0023] **FIG. 1** represents a preferred embodiment of the electronic device of the present invention. **FIG. 1** describes a hand-held electronic device HD. **FIG. 1** is a simplified example of the device so that only relevant parts and features are represented relating to the present invention. The hand-held device HD comprises a touch screen TS and a touch-sensitive cover area HS surrounding the touch screen TS. In one embodiment, the touch screen and the touch-sensitive cover features are enabled with a touch-sensitive panel. Thus, the front cover of the hand-held device consists of the touch-sensitive panel mounted in front of the actual display. There are, e.g. force sensors coupled to the panel, thus yielding the touch-sensitive feature.

[0024] The alphanumeric keyboard set is in essence presented with the hand-held device. The alphanumeric keyboard is divided into two or more parts. The major part, not the entire keyboard, is shown on the touch screen TS. The other parts are placed in the touch-sensitive cover HS. For example, characters "Q", "A", "P" as well as ",", are placed on the touch-sensitive cover HS. These characters form a natural extension to the characters shown on the touch screen TS. There are also other characters on their familiar places: Delete (Del), return (↵), shift (Aa) and space bar SP. By pressing the key "123" it is possible to change the layout on the touch screen TS. When "123" is pressed, numbers and/or special characters appear on the touch screen TS. By pressing the key "ABC" it is possible to change the layout on the touch screen TS back to the alphanumeric keyboard. **FIG. 1** comprises also a portion of the touch screen TS

where input characters are shown. In one embodiment of **FIG. 1**, some or all of the alphanumeric keyboard part(s) outside the touch screen TS are mechanical keys. Therefore, the term touch-sensitive cover can at least partly refer to mechanical keyboard parts.

[0025] In a preferred embodiment, there is also an input area IF on the touch screen TS. The operating system of the electronic device preferably keeps the input area IF in the area of the touch screen TS that is outside the alphanumeric keyboard. The operating system of the electronic device may also comprise such a feature that when alphanumeric input is needed, the alphanumeric keyboard is automatically activated, and the operating system places the input area IF in the area of the touch screen TS that is outside the alphanumeric keyboard.

[0026] **FIG. 1** represents only one embodiment of the solution of the present invention. The keys of the alphanumeric keyboard do not have to be laid out in a form of a regular grid. The layout can also be like in a mechanical QWERTY keyboard where the left side of a key below is not aligned with the left side of the key above.

[0027] In one embodiment of **FIG. 1** the alphanumeric keyboard on the touch screen TS is essentially visible. When, e.g. a web page is displayed on the touch screen TS and the user of the electronic device wants to input text into an input field, the alphanumeric keyboard is automatically activated by the operating system. However, the alphanumeric keyboard on the touch screen TS is placed on the web page so that they are overlapping. Both the web page and the alphanumeric keyboard can be distinguished at the same time.

[0028] **FIG. 2** is a block diagram illustrating one embodiment of the electronic device of the present invention. **FIG. 2** represents only relevant parts of the electronic device. The electronic device comprises a central processing unit CPU that controls the device. The memory MEM is associated with the CPU. Also the touch-sensitive cover HS and touch screen TS are associated with the CPU. In one embodiment, the touch screen and the touch-sensitive cover features are enabled with a touch-sensitive panel. Thus, the front cover of the hand-held device consists of a touch-sensitive panel mounted in front of the actual display. There are, e.g. force sensors coupled to the panel, thus yielding the touch-sensitive feature.

[0029] The central processing unit CPU comprises means for dividing DM the alphanumeric keyboard into two or more parts, means for presenting PM one part of the alphanumeric keyboard on the touch screen TS, means for displaying SM said part of the alphanumeric keyboard on the touch screen TS as overlapping the other content on the touch screen TS, and means for changing CM the keyboard set on the touch screen TS. These means are preferably implemented with various software components with the aid of the memory MEM. In one embodiment, the electronic device comprises also means for generating HM haptic feedback. Means for generating HM haptic feedback consists of a drive circuit DC supplying a drive signal to a vibrating element VIB. The vibrating element is, e.g. a piezo-bender.

[0030] In the present invention, part of the keyboard is soft (on the display) and part of it is preferably painted on the