MULTI-FUNCTIONAL ELECTRONIC DEVICE WITH A CONTINUOUSLY ACCESSIBLE POINTING DEVICE

FIELD

Embodiments of the invention generally relate to the field of electronics. More specifically, embodiments of this invention relate to a multi-functional electronic device that comprises a pointing device that is always accessible to the user, regardless of the position of the display relative to the body case of the electronic device.

GENERAL BACKGROUND

Over the past few years, there has been increased demand for portable computers, especially in light of their enhanced data processing functionality. Operating from either external or portable power sources, conventional portable computers feature a liquid crystal display (LCD) connected to and mounted on a body case with an integrated keyboard.

According to one type of conventional portable computer, the LCD is rotationally attached to the body case along a vertical axis of rotation. As a result, the computer can generally operate either as a tablet computer when the LCD is positioned directly above the body case or as a laptop computer when the LCD is rotated and offset from the body case.

As shown, this conventional portable computer fails to provide any pointing device that enables omni-directional movement of a pointer. Even if a pointing device were ever deployed into the portable computer with this architecture, it would be completely hidden when the portable computer is used as a tablet computer. Rather, in order to use the pointing device, the portable computer would need to be situated as a laptop computer with the keyboard uncovered as well.

According to another type of conventional portable computer, the LCD is attached to the body case by mechanical guides. These guides are positioned on opposite sides of the body case and are in contact with the edges of the LCD. When laterally moved along these guides, the LCD remains generally in parallel with the body case. Alternatively, a topside of the LCD may be raised as the bottom side of the LCD is moved within the mechanical guides.

Similarly, this conventional portable computer features maneuver buttons that provide limited input for scrolling through data. These maneuver buttons appear to refresh the displayed page and do not constitute a pointing device adapted for omni-directional, continuous movement of the pointer.

BRIEF DESCRIPTION OF THE DRAWINGS

Features and advantages of embodiments of the invention will become apparent from the following detailed description in which:

FIG. **1** is a side view of an exemplary embodiment of an electronic device placed in a TABLET position.

FIG. **2** is an overhead perspective view of an exemplary embodiment of the electronic device of FIG. **1** placed in the TABLET position.

FIG. **3** is a bottom side perspective view of an exemplary embodiment of the electronic device of FIG. **1** placed in the TABLET position.

FIGS. **4** and **5** are first perspective views of an exemplary embodiment of the electronic device of FIG. **1** placed in the FREE-STANDING position.

FIGS. **6**A–**6**B are exploded views of exemplary embodiments of the coupling member adapted to be interposed between the display and body case of the electronic device.

FIG. **7** is an overhead view of a first exemplary embodiment of the body case with the electronic device placed in the TABLET position.

FIG. **8** is an exemplary embodiment of multiple layers of an interconnect area within the body case of the electronic device placed in the TABLET position.

FIG. **9** is a cross-sectional view of the electronic device of FIG. **7** along a cross-sectional line A—A.

FIG. **10** is a cross-sectional view of a slot positioned within the second body of FIG. **7** along a cross-sectional line B—B.

FIG. **11** is an exemplary embodiment of the electronic device **100** placed in a TABLET position for illustration of the operations for placement into a FREE-STANDING position.

FIG. **12** is an exemplary embodiment of the electronic device being rotated for illustration of the operations for placement into a FREE-STANDING position.

FIG. **13** is an exemplary embodiment of the electronic device being placed in the INTERMEDIARY position for illustration of the operations for placement into a FREE-STANDING position.

FIG. **14** is a cross-sectional view of the electronic device of FIG. **12** along a cross-sectional line A—A.

FIG. **15** is an exemplary embodiment of the electronic device being placed in the FREE-STANDING position for illustration of the operations performed on the electronic device.

FIG. **16** is a cross-sectional view of the electronic device of FIG. **15** along a cross-sectional line A—A.

FIG. **17** is an exemplary embodiment of a cover being placed over the display of the electronic device for functionality as a keypad.

FIG. **18** is an exemplary embodiment of the display of the electronic device adapted with the cover shown in FIG. **17**.

DETAILED DESCRIPTION

Embodiments of the invention set forth in the following detailed description generally relate to an electronic device with a pointing device being accessible to the user regardless of the position of the display relative to the body case of the electronic device. The electronic device further comprises a camera for capturing one or more digital images and one or more hot keys to perform certain tasks without reliance on menu-driven selection by the pointing device.

In addition, operating in cooperation with sensors, a software application may be loaded within the electronic device in order to detect rotation (or lack thereof) of the display housing. Such detection may be used to control what input devices are permitted to provide input data when the electronic device is placed in a certain position.

In the following description, certain terminology is used to describe various features of one or more embodiments of the invention. For instance, an "electronic device" is defined as an electronic product with a flat panel display that can be rotated and translated. In this detailed description, for clarity sake, the electronic device is illustrated as a hand-held tablet computer that can be converted to a free-standing, portable computer. However, it is evident that the invention may be utilized in other types of electronic devices including, but