

comprises a first fastener and a second fastener. The first fastener is adapted to attach a display housing to a body case of the electronic device. The second fastener enables a bottom portion of the display housing to become attached to or detached from a display support member of an electronic device.

[0025] In the following description, certain terminology is used to describe certain features of one or more embodiments of the invention. For instance, an “electronic device” is defined as a consumer electronic product with a flat panel display. In this detailed description, for clarity sake and for illustrative purposes only, the electronic device will be illustrated as a portable computer that can be alternatively converted to a tablet computer. However, it is contended herein that the invention may be utilized in a variety of electronic devices including, but not limited or restricted to personal digital assistants, cellular telephones, digital cameras, video cameras, navigation systems, and the like.

[0026] Herein, the terms “rotate,” “pivot,” as well as varying tenses thereof are generally defined as an angular movement about an axis of rotation. Normally, the axis of rotation is fixed. For this detailed description, the terms “vertically” pivoted (or any tenses thereof) generally relates to a rotation along a substantially horizontal axis of rotation. The term “horizontally” pivoted (or any tense thereof) generally relates to rotation along a substantially vertical axis of rotation.

[0027] Referring now to FIG. 1, a perspective view of an illustrative electronic device 100 placed in a CLOSED position is shown. Implemented with an embodiment of an interlocking mechanism as described below, electronic device 100 comprises a display housing 110 that is pivotally coupled to a body case 120 through a hinge assembly 130 and a display support member 140.

[0028] For one embodiment of the invention, body case 120 comprises two main panel sections, namely a front panel section 122 and a back panel section 124 (see also FIG. 3). These panel sections 122 and 124 are brought together to enclose hardware components and stored software of electronic device 100. This provides protection against foreign materials and environmental conditions. For this embodiment of the invention, panel sections 122 and 124 are made of non-pliable material such as hardened plastic.

[0029] Display housing 110 houses a flat panel display 111 as well as circuitry for generating a displayable image on flat panel display 111. Examples of flat panel display 111 include, but are not limited or restricted to a liquid crystal display (LCD), a plasma display or the like.

[0030] Returning still to FIG. 1, for this embodiment of the invention, display housing 110 comprises two panel sections coupled together. These panel sections include a front display panel 112 (see FIG. 3) and a back display panel 114.

[0031] As shown in FIGS. 1 and 2, back display panel 114 includes a recessed area 115 that is sized to accommodate display support member 140 so that, when electronic device 100 is in the CLOSED position as shown in FIG. 1, a top surface 116 of back display panel 114 is substantially coplanar with a top surface 141 of display support member 140.

[0032] Recessed area 115 of back display panel 114 may include one or more recessed portions 117₁-117_N (where N>1). Herein, as an illustrative embodiment, a first recessed portion 117₁ may be an opening to a spacing adapted to maintain the interlocking mechanism as shown in detail in FIG. 6. One of the fasteners from the interlocking mechanism may be configured to protrude from first recessed portion 117₁. In one embodiment of the invention, a second fastener 220 protrudes from first recessed portion 117₁ when disengaged, but would be sized so as to not exceed the depth of recessed area 115. As a result, second fastener 220 will not come into direct contact with the top surface of front panel section 122 of body case 120. In another embodiment, second fastener 220 could be configured so as to not protrude from first portion recessed 117₁ when disengaged from display support member 140.

[0033] As shown, second fastener 220 of the interlocking mechanism is illustrated as a fastener having a plurality of prongs separated by a predetermined distance. However, it is contemplated that second fastener 220 may be configured with a single prong as shown below.

[0034] Additionally, a second recessed portion 117₂ may be adapted to maintain a second hinge unit 155 as shown in detail in FIG. 12. Second hinge unit 155 may be a friction hinge; however, it is contemplated that second hinge unit 155 may be a collection of friction hinges or perhaps one or more hinges without a brake mechanism. Also, one or more spring-loaded retention hooks 113 may be positioned within recessed area 115 as shown.

[0035] For one embodiment of the invention, hinge assembly 130 is configured for coupling to a bottom edge 126 of body case 120 and a first end 142 of a display support member 140. As one embodiment of the invention, hinge assembly 130 is adapted with a brake mechanism, such as a torsion bar mechanism or a frictional hinge, in order to maintain display housing 110 at a selected angle of rotation above body case 120. For instance, hinge assembly 130 may be adapted to maintain display housing 110 at an angle A, where “A” ranges between approximately 30 degrees to 150 degrees (see FIG. 3).

[0036] A first hinge unit 150 is adapted to a second end 144 of display support member 140. As one embodiment of the invention, first hinge unit 150 is generally positioned at a longitudinal center 151 of back display panel 114 of display housing 110. The portion of display housing 110 between longitudinal center 151 established by first hinge unit 150 and hinge assembly 130 is referred to as the “bottom portion” 119 of display housing 110. It is contemplated, however, that first hinge unit 150 may be offset from longitudinal center 151. First hinge unit 150 enables display housing 110 to be vertically pivoted according to the horizontal axis of rotation established by first hinge unit 150. Similarly, second hinge unit 155 provides greater stability in maintain display housing 110 at a viewing angle or in rotating display housing 110.

[0037] Referring now to FIG. 3, a perspective view of electronics device 100 when placed in an OPENED position is shown. Electronic device 100 further comprises a keyboard 180 integrated into body case 120. In addition, a secondary input device 185, such as a touch pad or track ball for example, is integrated into body case 120 as well.

[0038] A first fastener 160 is positioned along a top edge 118 of display housing 110 for fastening to a complimentary