

## TABLET INTERLOCKING MECHANISM

### FIELD

[0001] Embodiments of the invention generally relate to the field of flat panel displays.

### GENERAL BACKGROUND

[0002] Over the past decade, there has been increased demand for notebook computers, especially in light of their enhanced data processing capabilities. Operating from either external or portable power sources, conventional notebook computers feature a display housing pivotally connected to a body. Typically, the display housing features a liquid crystal display (LCD) while the body features a keyboard and a secondary input device, such as a roller ball or a touch pad for example.

[0003] In order to access the keyboard and view the LCD, a user places the body on a surface (e.g., the user's lap or a stationary surface) and opens the notebook computer by pivoting the display housing in an upward angular direction away from the body. As a result, the user is able to access the keyboard and secondary input device as well as to read the displayed content from the LCD. To close and transport the notebook computer after use, the user pivots the display housing toward the body and secures the display housing. Such pivoting may be accomplished by a hinge attached to a rear surface of the body.

[0004] Due to the growing popularity of personal digital assistants and tablet computers, notebook computers are now being configured to alternatively operate as a tablet computer, with a stylus operating as the input device. This requires the display housing to be inverted, namely the LCD is positioned to face upward and to rest against the body.

[0005] Japanese Patent JP07-049725 discloses a notebook computer that can have the display screen in a key entry state or a pen input state. In the pen input state the display screen covers the keyboard. The display screen is generally parallel to and facing away from the keyboard. The display screen is supported by two arms that have offset hinge points causing the arms to move into a parallel relationship as the display is rotated between the key entry state and the pen input state. One of the arms is fitted with a cammed lock mechanism that operates to lock the arm when the display screen is either the key entry state or the pen input state thus holding the screen in either of those positions. The lock is released by rotation of the display screen to permit movement to the alternate screen positions.

[0006] Known electronic devices that allow the display to be pivoted to an alternate position for tablet type use may have various disadvantages. For instance, one disadvantage is that conventional display housings may employ two independent locking mechanisms, such as a pair of locking pins to preclude rotation of the LCD and a lock to attach the display housing to the body casing. This may make the locking/unlocking procedure cumbersome. Moreover, independent locking mechanisms may increase overall manufacturing costs and increase the potential likelihood of a structural failure.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Features and advantages of embodiments of the invention will become apparent from the following detailed description in which:

[0008] FIG. 1 is a perspective view of an exemplary embodiment of an electronic device placed in a CLOSED position.

[0009] FIG. 2 is a perspective view of the electronic device of FIG. 1 when placed in a NOTEBOOK position.

[0010] FIG. 3 is a perspective view of the electronic device of FIG. 1 when placed in a TABLET position.

[0011] FIG. 4 is a perspective view of the electronic device of FIG. 1 in the CLOSED position without the display support member.

[0012] FIG. 5A is a schematic cross-section of an exemplary embodiment of the electronic device of FIG. 1 placed in a CLOSED position.

[0013] FIG. 5B is a schematic cross-section of the electronic device of FIG. 5A when placed in a NOTEBOOK position.

[0014] FIG. 5C is a schematic cross-section of the electronic device of FIG. 5A when placed in a TABLET position.

[0015] FIG. 5D is a schematic cross-section of the electronic device of FIG. 5A engaging or disengaging the latch mechanism for a TABLET position.

[0016] FIGS. 6A and 6B are schematic cross-sections of another embodiment of an electronic device having multiple TABLET positions.

### DETAILED DESCRIPTION

[0017] Embodiments of the invention set forth in the following detailed description generally relate to an interlocking mechanism for a flat panel display that provides dual fastening capabilities. Herein, at least one embodiment of the invention relates to an interlocking mechanism that enables a bottom portion of a display housing to become attached to a display support member of an electronic device in a first configuration and to become attached to a body of the electronic device in a second configuration.

[0018] In the following description, certain terminology is used to describe certain features of one or more embodiments. For instance, an "electronic device" is defined as a 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 between a notebook computer and a tablet computer. Embodiments of 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.

[0019] Herein, terms of geometric orientation and relationship such as "up," "down," "front," "back," "top," "bottom," "vertical," and "horizontal" are used in a conventional sense as would be applied to a particular device in a typical operating orientation or as may be shown in the Figures. It will be appreciated that embodiments of the invention may be used with small, portable devices that may be readily placed in any of a wide variety of overall orientations and that such devices may have more than one typical operating orientation. Changes in the overall orientation of a device will, of course, alter the terms of geometric orientation and