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(19) **United States**(12) **Patent Application Publication****Shen et al.**(10) **Pub. No.: US 2009/0145337 A1**(43) **Pub. Date: Jun. 11, 2009**(54) **SLIDABLE HINGE****Publication Classification**(75) Inventors: **Wen-Bin Shen**, Shulin City (TW);
Chih-Kuang Chuan, Shulin City (TW)(51) **Int. Cl.**
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(52) **U.S. Cl.** **108/39**(57) **ABSTRACT**Correspondence Address:
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A slidable hinge has a stationary leaf and a sliding leaf being respectively mounted to a base and a cover of a portable electronic device. The stationary leaf has at least two guiding grooves singularly formed substantially perpendicularly therethrough in a curved manner. The sliding leaf has at least two guiding elements slidably mounted respectively in the guiding grooves of the stationary leaf. With the guiding elements sliding along the guiding grooves, the sliding leaf slidably rotates relative to the stationary leaf to a perpendicular angle relative to the stationary leaf. Therefore, the portable electronic device as a whole presents a novel posture for adapting developed functions or programs.

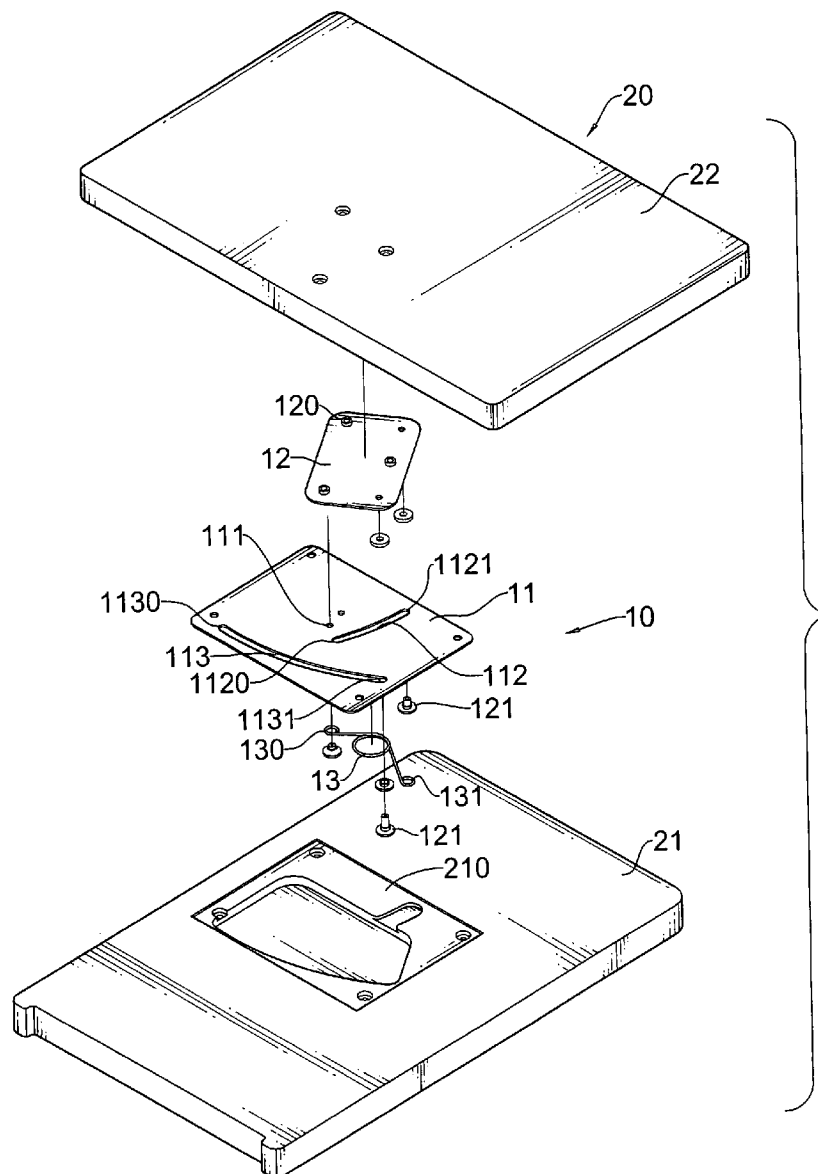
(73) Assignee: **SHIN ZU SHING CO., LTD.**(21) Appl. No.: **11/987,882**(22) Filed: **Dec. 5, 2007**

FIG. 1

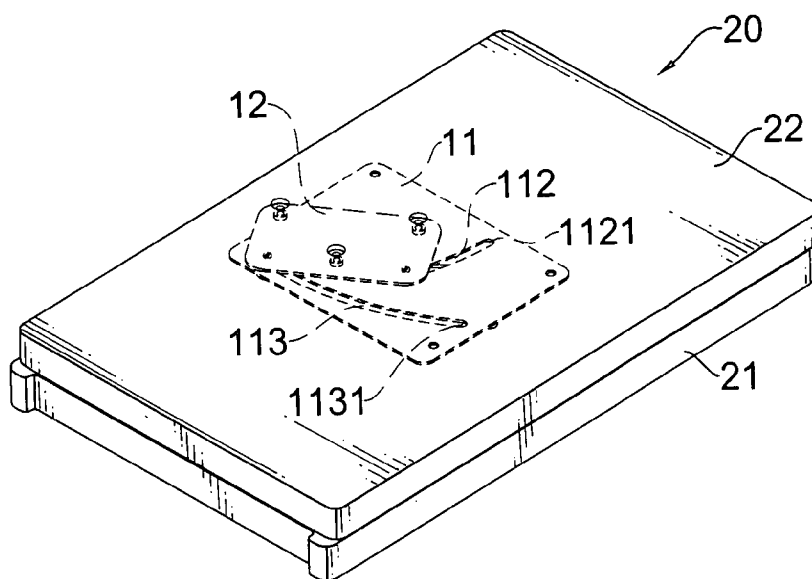


FIG. 2

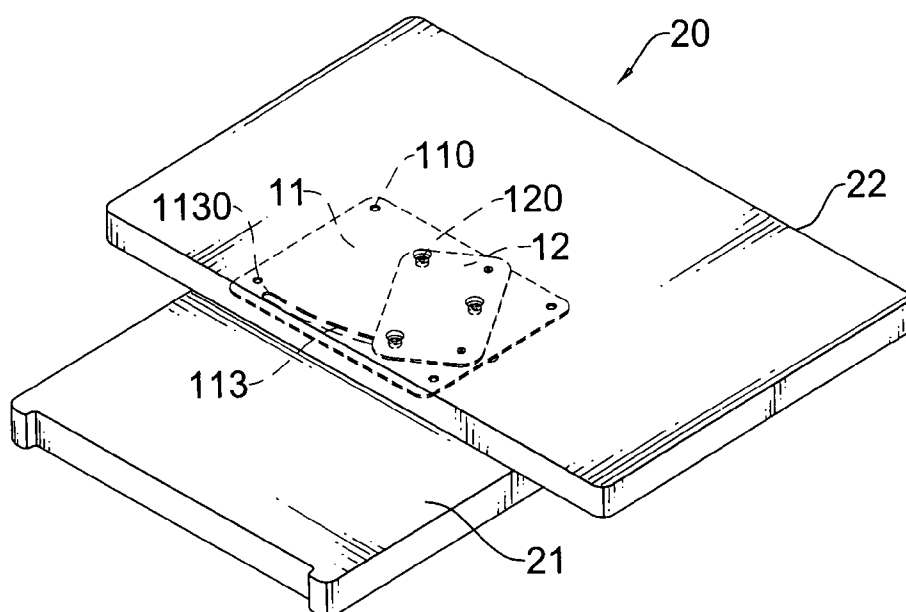


FIG. 3

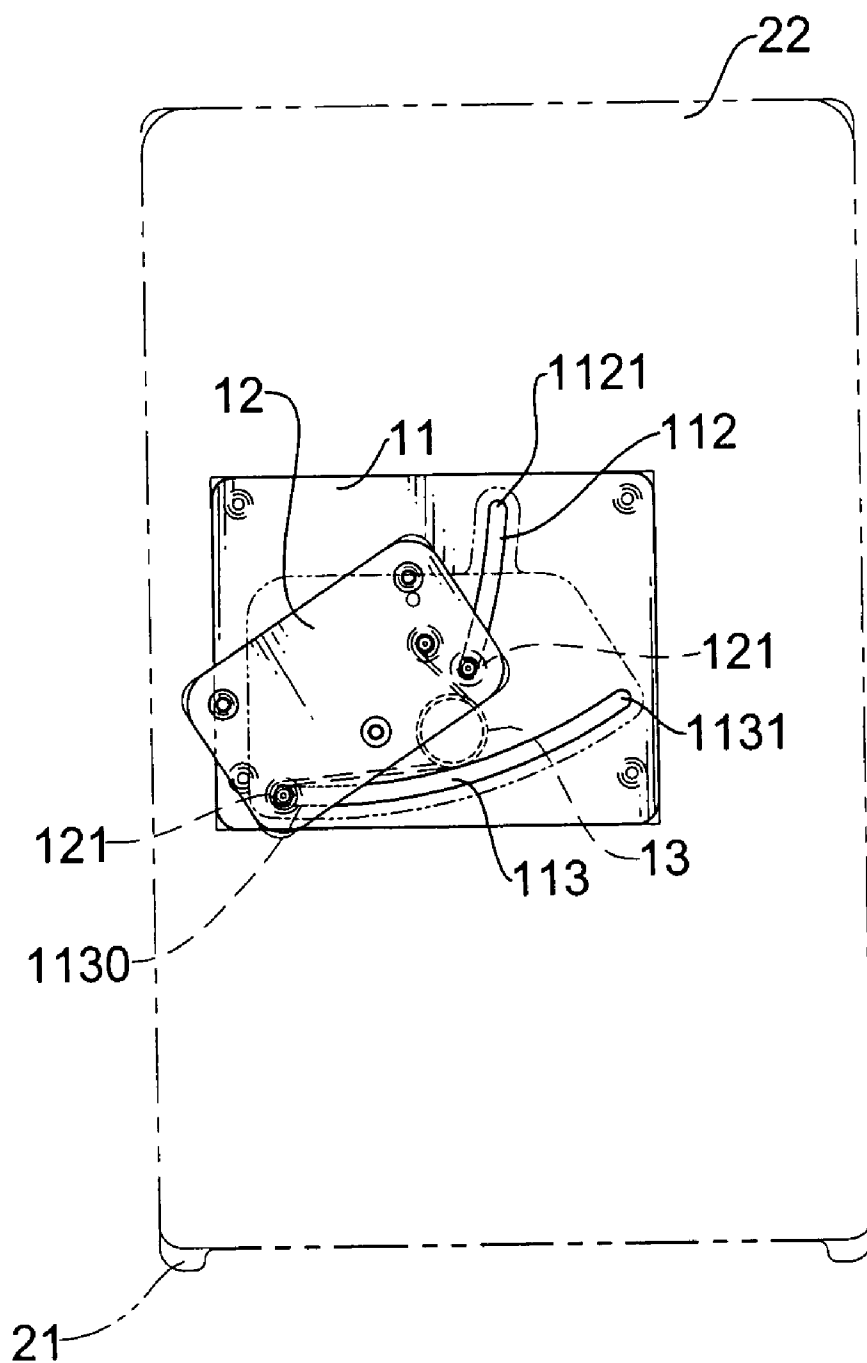


FIG. 4

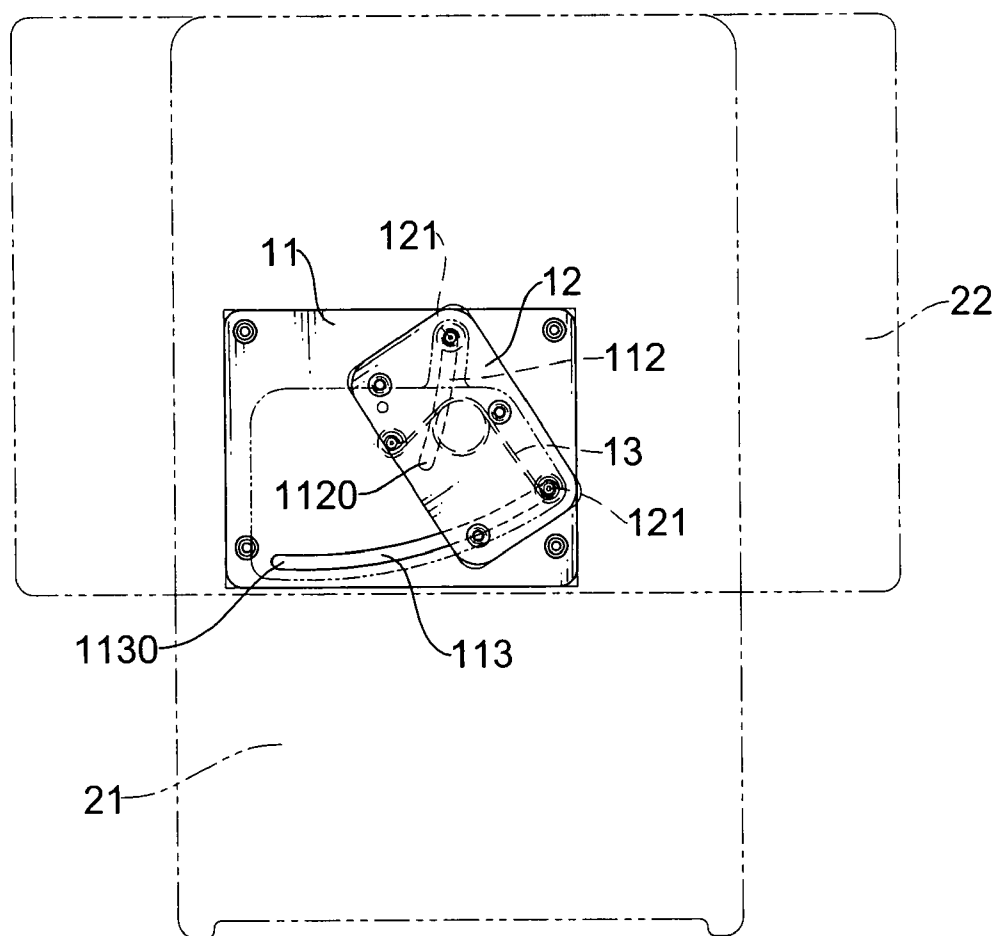


FIG. 5

SLIDABLE HINGE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a hinge, and more particularly to a slidable hinge for a portable electronic device that allows a cover of the portable electronic device to move upon and rotate relative to a base to provide more applicability.

[0003] 2. Description of Related Art

[0004] Portable electronic devices such as notebook computers, cellular phones and the like are commonly used in daily life. Generally, a portable electronic device comprises a base, a cover and a hinge. The cover usually has a display. The hinge pivotally connects the cover to the base, and allows the cover to pivot away from the base when the electronic device is in use.

[0005] However, as more and more functions or programs in the portable electronic device have been developed, said conventional hinges that pivot the cover in a single axis gradually become inadequate to use. For example, the conventional hinge provides no function to make the cover transversely rotate relative to the base. Such that when games are played or a movie is displayed, the portable electronic device should be rotated to provide a best viewing angle.

[0006] To overcome the shortcomings, the present invention provides a slidable hinge for a portable electronic device to obviate or mitigate the aforementioned problems.

SUMMARY OF THE INVENTION

[0007] The main objective of the present invention is to provide a slidable hinge for a portable electronic device that allows a cover of the portable electronic device to move upon and rotate relative to a base to provide more applicability.

[0008] To achieve the objective, the slidable hinge in accordance with present invention comprises a stationary leaf and a sliding leaf being mounted respectively to the base and the cover.

[0009] The stationary leaf has at least two guiding grooves singularly formed substantially perpendicularly therethrough in a curved, manner. The sliding leaf has at least two guiding elements slidably mounted respectively in the guiding grooves of the stationary leaf. With the guiding elements sliding along the guiding grooves, the sliding leaf slidably rotates relative to the stationary leaf a perpendicular angle relative to the stationary leaf.

[0010] Therefore, the portable electronic device as a whole presents a novel posture for adapting developed functions or programs.

[0011] Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is an exploded perspective view of a slidable hinge in accordance with the present invention mounted in a portable electronic device;

[0013] FIG. 2 is a perspective view of the slidable hinge in FIG. 1, partially shown in phantom lines;

[0014] FIG. 3 is an operational perspective view of the slidable hinge in FIG. 2;

[0015] FIG. 4 is a top view of the slidable hinge in FIG. 2, the electronic device shown in phantom lines; and

[0016] FIG. 5 is an operational top view of the slidable hinge in FIG. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] With reference to FIGS. 1 and 2, a portable electronic device (20) may be a cellular phone, or the like and comprises a base (21) and a cover (22). The base (21) has a front end, a rear end, a top surface and a recess (210). The recess (210) is formed on the top surface. The cover (22) is mounted on the base (21) and has a bottom surface.

[0018] With further reference to FIG. 3, the slidable hinge (10) in accordance with present invention comprises a stationary leaf (11), a sliding leaf (12) and a resilient element (13).

[0019] The stationary leaf (11) has a top, a bottom, a resilient mount (111), a longitudinal guiding groove (112) and a transverse guiding groove (113). The resilient mount (111) is formed in the stationary leaf (11) and may have a fastener mounted therein. The longitudinal guiding groove (112) is curved and formed through the stationary leaf (11) and has a proximal end (1120) and a distal end (1121). The transverse guiding groove (113) is curved and formed through the stationary leaf (11), substantially perpendicularly to the longitudinal guiding groove (112) and has a proximal end (1130) and a distal end (1131). A linear separation of the proximal ends (1120)(1130) of the longitudinal and transverse guiding grooves (112)(113) is equal to a linear separation between the distal ends (1121)(1131) of the longitudinal and transverse guiding grooves (112)(113), and the linear separations are perpendicular to each other.

[0020] The sliding leaf (12) is mounted slidably on the stationary leaf (11) and has a bottom and two guiding elements (121). The bottom of the sliding leaf (12) is disposed adjacent to the top of the stationary leaf (11). The guiding elements (121) are attached to the bottom of the sliding leaf (12) and are slidably mounted respectively in the longitudinal and transverse guiding grooves (112)(113).

[0021] The resilient element (13) may be a helical torsion spring, is mounted on the bottom of the stationary leaf (11) and has a stationary end (130) and a sliding end (131). The stationary end (130) is connected securely to the stationary leaf (11), may be mounted securely on the resilient mount (111). The sliding end (131) is connected securely to one of the guiding elements (121) of the sliding leaf (12), thereby providing the sliding leaf (12) with a resilient force to retain the sliding leaf (12) in position.

[0022] With further reference to FIG. 4, while in a regular condition, the cover (22) is mounted flush on the base (21) and the guiding elements (121) are disposed in the proximal ends (1120)(1130) of the longitudinal and transverse guiding grooves (112)(113).

[0023] With further reference to FIG. 5, when the portable electronic device (20) is opened, the cover (22) can be turned to rotate relative to the base (21). The guiding elements (121) respectively slide along and move toward the distal ends (1121)(1131) of the longitudinal and transverse guiding grooves (112)(113). Once the guiding elements (121) have been stopped by the distal ends (1121)(1131) of the longitudinal and transverse guiding grooves (112)(113), the cover (22) is perpendicularly positioned on the base (21) and the

portable electronic device (20) as a whole presents a novel posture for adapting developed functions or programs.

[0024] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description together with details of the structure and function of the invention, the disclosure is illustrative only. Changes may be made in detail especially in matters of shape, size and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A slidable hinge comprising

a stationary leaf having

a top;

a bottom;

a longitudinal guiding groove being curved and formed through the stationary leaf and having a proximal end and a distal end; and

a transverse guiding groove being curved and formed through the stationary substantially perpendicularly to the longitudinal guiding groove and having a proximal end and a distal end;

a sliding leaf being mounted slidably on the stationary leaf and having

a bottom being disposed adjacent to the top of the stationary leaf; and

two guiding elements being attached to the bottom of the sliding leaf and being slidably mounted respectively in the longitudinal and transverse guiding grooves; and

a resilient element being mounted on the bottom of the stationary leaf and having

a stationary end being connected securely to the stationary leaf; and

a sliding end being connected securely to one of the guiding elements of the sliding leaf.

2. The slidable hinge as claimed in claim 1, wherein

a linear separation is defined between the proximal ends of the longitudinal and transverse guiding grooves; and

a linear separation is defined between the distal ends of the longitudinal and transverse guiding grooves and is equal to the separation between the proximal ends of the longitudinal and transverse guiding grooves.

3. The slidable hinge as claimed in claim 1, wherein

the stationary leaf further has a resilient mount being formed in the stationary leaf; and the stationary end of the resilient element is mounted securely on the resilient mount.

4. The slidable hinge as claimed in claim 1, wherein the resilient element is a helical torsion spring.

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