



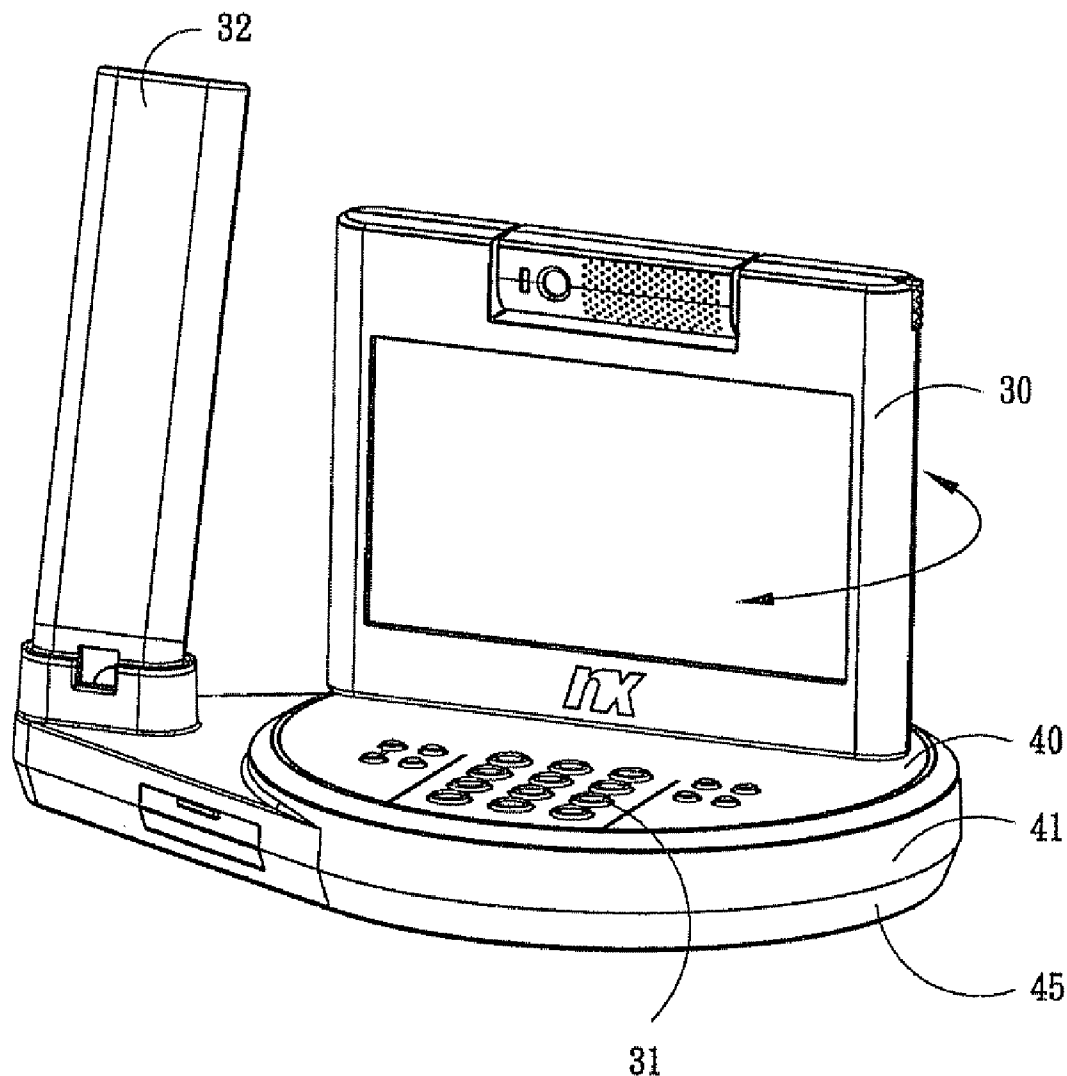
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(19) **United States**(12) **Patent Application Publication**
SHIUE(10) **Pub. No.: US 2008/0099420 A1**(43) **Pub. Date: May 1, 2008**(54) **ROTATABLE STAND WITH ADJUSTABLE TIGHTNESS**(75) Inventor: **Gwo-Hwa SHIUE**, Taipei (TW)

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A47F 5/02 (2006.01)(52) **U.S. Cl.** **211/163**(57) **ABSTRACT**

A rotatable stand with adjustable tightness includes a turntable, a base, at least one adjustable connecting element, and a resilient element. The turntable has a spindle, which passes through and rotates in an opening of the base. The adjustable connecting element is connected to the turntable, such that the resilient element squeezes the base between the turntable and the resilient element so as to provide a proper squeezing strength and to make it convenient for a user to alter the orientation between the rotatable stand and the base,



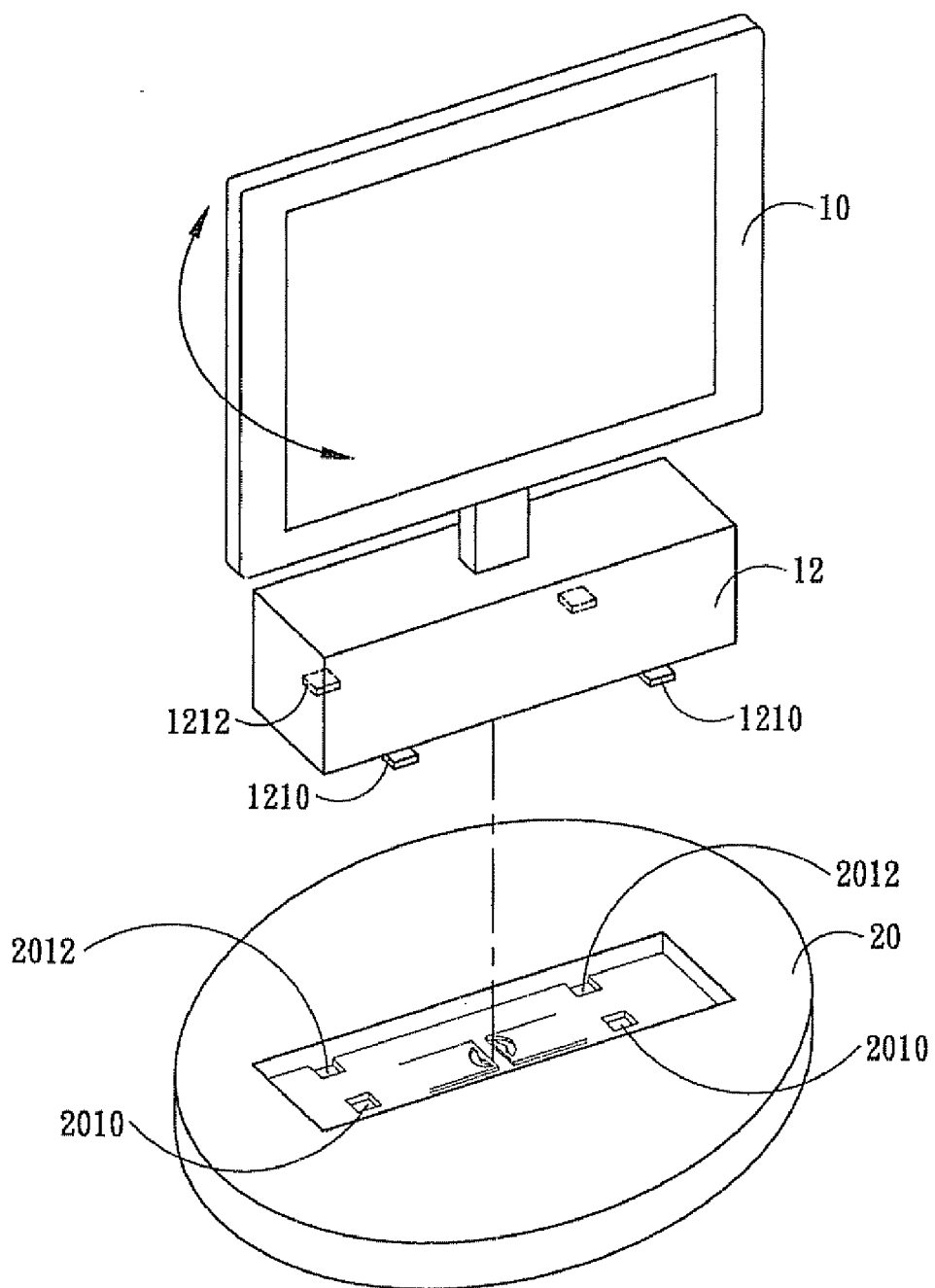


FIG. 1(Prior Art)

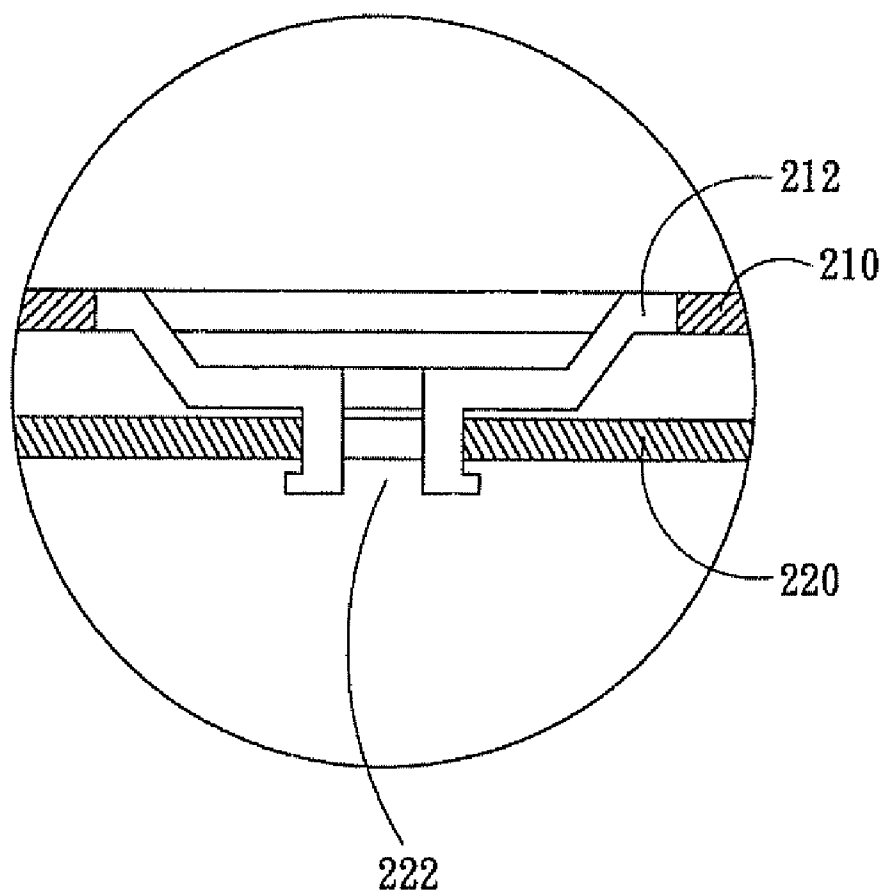


FIG. 2(Prior Art)

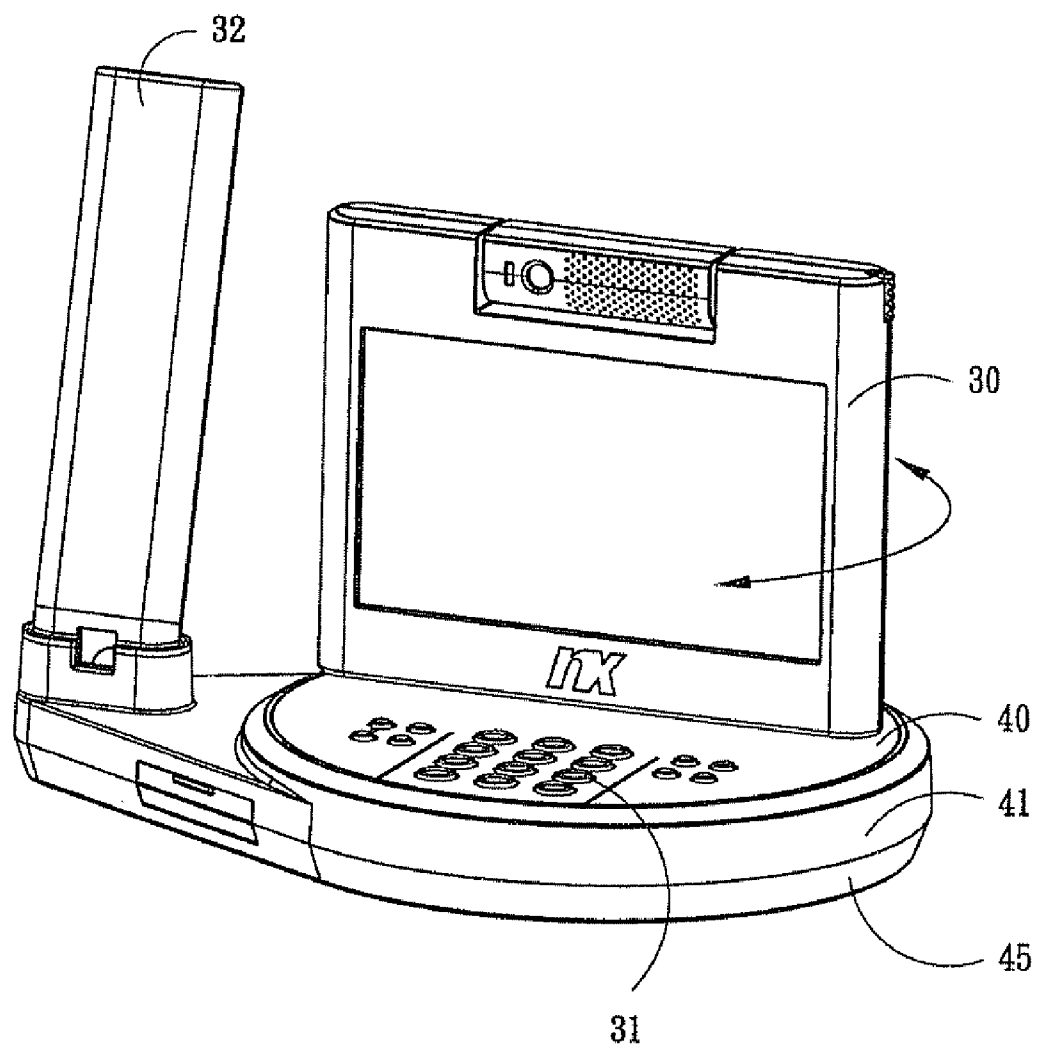


FIG. 3

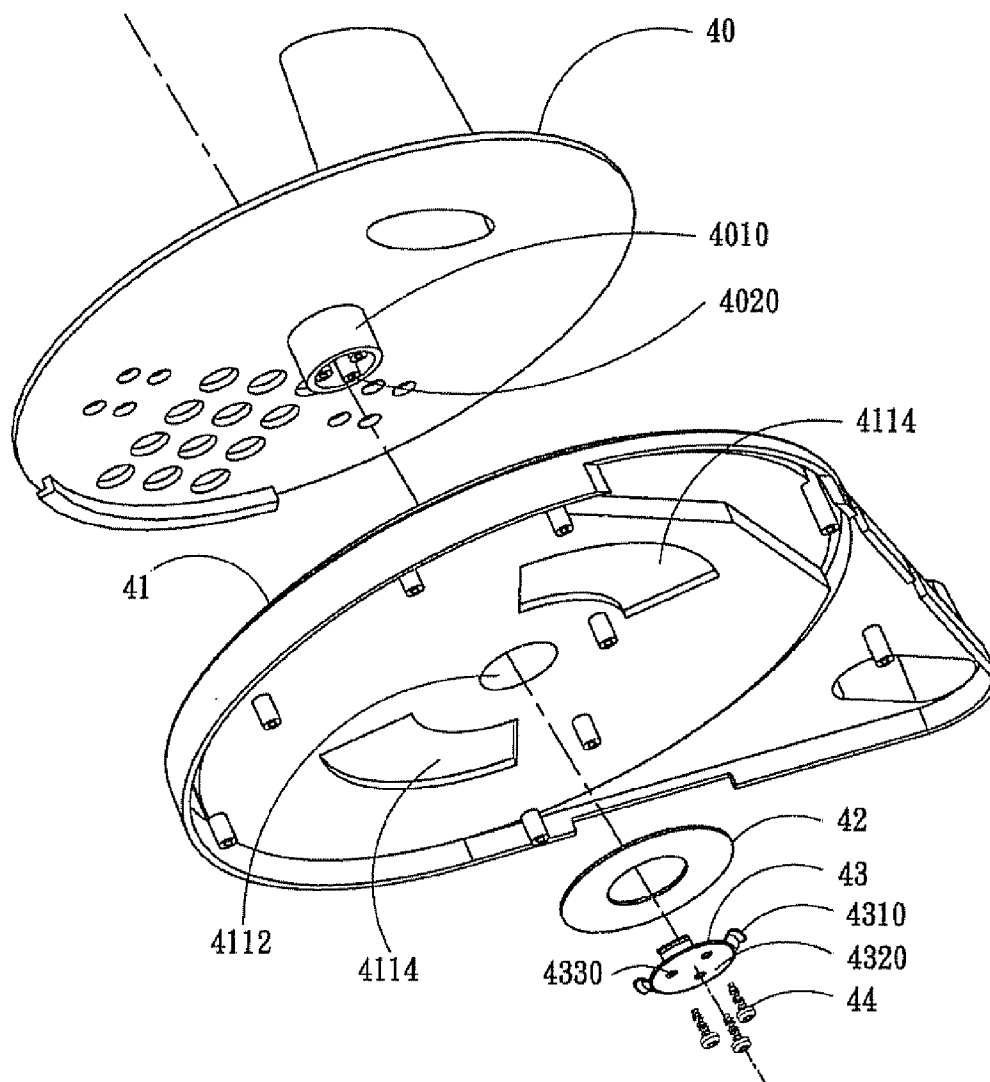


FIG. 4

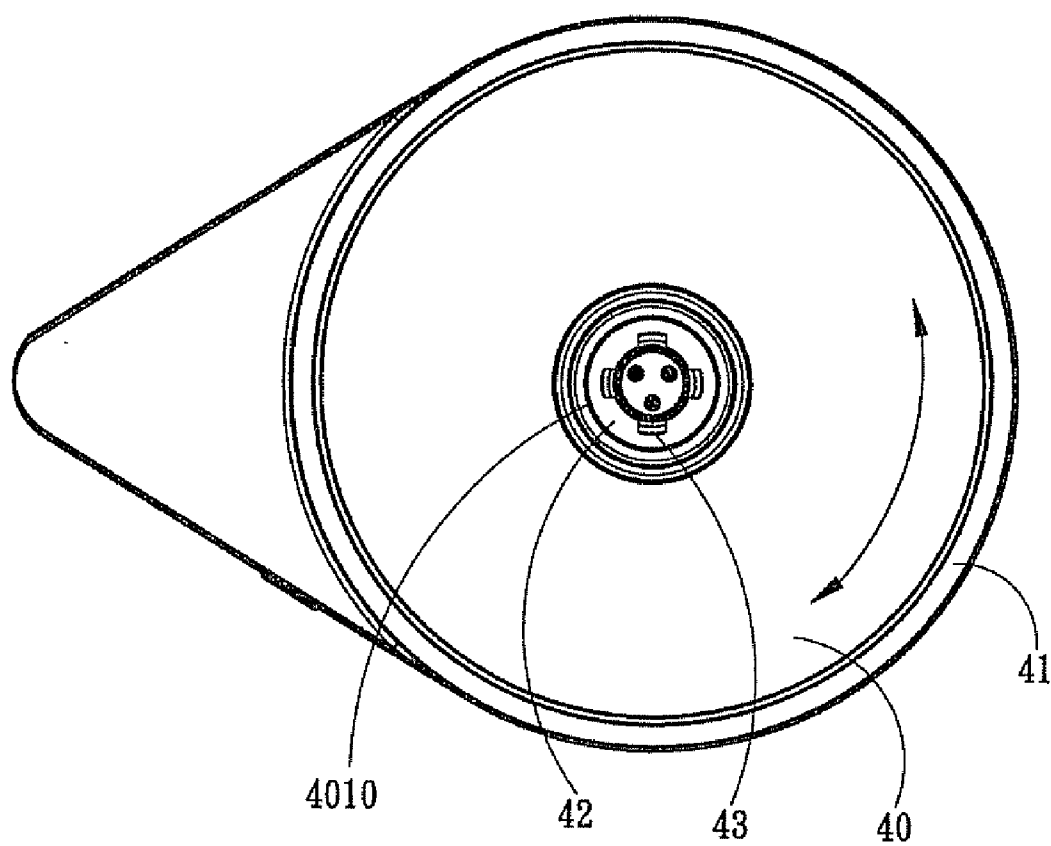


FIG. 5

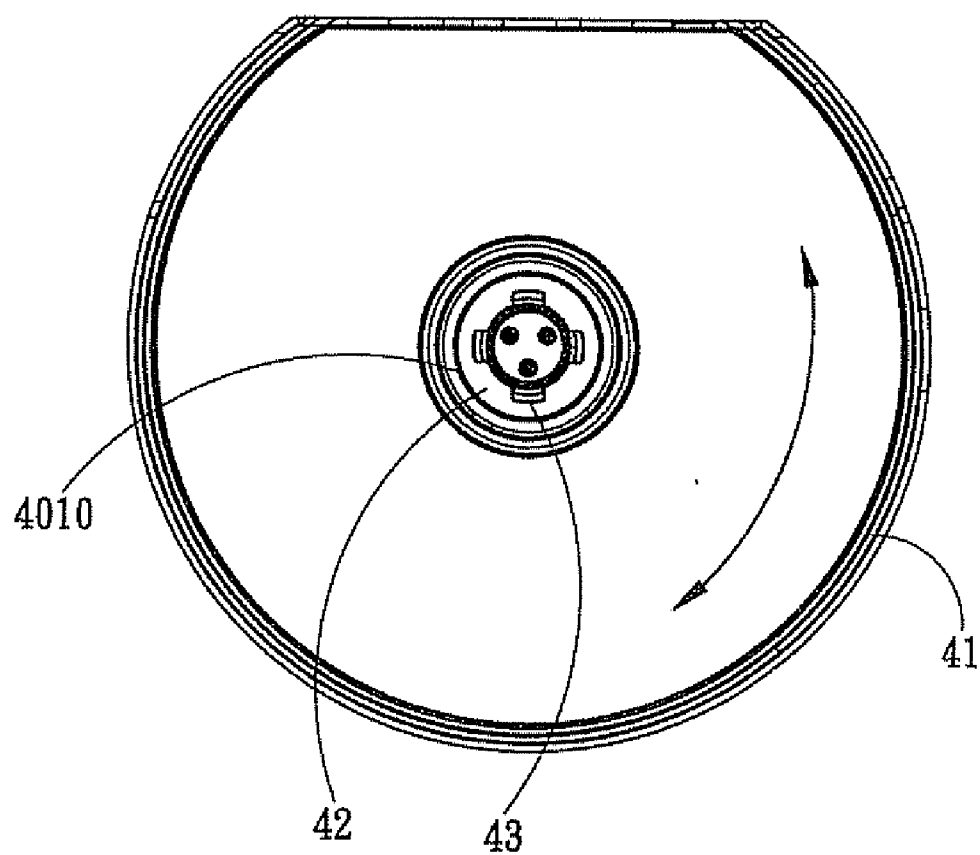


FIG. 6

ROTATABLE STAND WITH ADJUSTABLE TIGHTNESS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a rotatable stand with adjustable tightness, and more particularly to an electronic device having a rotatable stand with adjustable tightness

[0003] 2. Description of the Prior Art

[0004] In order to allow a user to set for a preferred orientation, a lot of communication or home electronic devices, such as computers, televisions, image phones, are designed to have a rotatable base. One of the examples is provided in the Taiwan patent application No.450499, entitled "Rotary stand that can stably loads the home electronic equipment" An exploded perspective view thereof is shown in FIG. 1. The assembled structure of the display panel 10 and the panel base 12 can be lodged into the rotatable stand 20 through the mergence of front male members 1210, the rear male members 1212, and the hollows 2010 and 2012, so as to be rotatable through the rotatable stand 20.

[0005] FIG. 2 shows a cross-sectional magnified view of a portion of the rotatable stand 20, composed of an upper base 210 and a lower base 220. A lock pin 212 and an opening 222 are respectively formed on the upper base 210 and the lower base 220. When the upper base 210 is merged with the lower base 220, the lock pin 212 goes through the opening 222 with the lock arms extended such that the upper base 210 and the lower base 220 can be joined tightly and the assembled structure of the display panel 10 and the panel base 12 can rotate stably on the rotatable stand 20.

[0006] The degree of tightness (related to the degree of difficulty to rotate) of the conventional rotatable stand 20 is not allowed to be adjusted. Tightness over or under a feasible range usually causes a bad user experience In other words, the tightness of the rotatable stand of a conventional electronic device is not allowed to be changed after manufacturing phase After long-time use, it tends to spin too easily due to the departure from the factory setting tightness range, so as to impact the rotation friendliness. In view of foregoing drawback, the present invention set forth a rotatable stand with adjustable tightness.

SUMMARY OF THE INVENTION

[0007] An object of the present invention is to provide a rotatable stand, and more particularly to a rotatable stand with suitable adjustability on tightness and flexibility for a manufacturer to alter the orientation thereof.

[0008] According to the object, the present invention provides a rotatable stand with adjustable tightness, including a turntable, a base, at least one adjustable connecting element, and a resilient element. The turntable has a spindle which passes through and rotates in an opening of the base. The adjustable connecting element is connected to the turntable, such that the resilient element squeezes the base between the turntable and the resilient element so as to

provide a proper squeezing strength and to make it convenient for a user to alter the orientation between the rotatable stand and the base.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 shows a perspective view of a display panel with a rotatable stand according to the prior art.

[0010] FIG. 2 shows a cross-sectional magnified view of a portion of the rotatable stand of FIG. 1.

[0011] FIG. 3 shows a perspective view of an IP phone (Internet Protocol phone) in accordance with an embodiment of the present invention.

[0012] FIG. 4 shows an exploded perspective view of the major rotatable structure of the IP phone shown in FIG. 3.

[0013] FIG. 5 shows a bottom view of the embodiment of FIG. 3.

[0014] FIG. 6 shows a bottom view of another embodiment in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0015] FIG. 3 shows a perspective view of an IP phone (Internet Protocol phone) in accordance with an embodiment of the present invention, including a turntable 40, a base (41,45), a display panel 30, and a telephone handset 32. The turntable 40 is configured on and rotatable with respect to the base (41,45). The display panel 30 is mounted on and pivotally connected to the turntable 40 such that the angle of elevation or depression of the display panel 30 with respect to the turntable 40 is adjustable and that the display panel 30 and the turntable 40 are collectively allowed to be rotated clockwise or counter-clockwise with respect to the base (41, 45) (as indicated by the arrow sign in FIG. 3). A user can find out an appropriate view angle to the display panel 30 by rotating the turntable 40. The telephone handset 32 is connected to another end of the base (41, 45).

[0016] In this embodiment, the base (41, 45) is composed of the upper base 41 and the lower base 45. The lower base 45, however, may be omitted such that only the upper base 41 constitutes the whole base. The telephone buttons 31 are located on the turntable 40. Although it is illustrated by an IP phone in the embodiment, the present invention is applicable to communication or home electronic devices such as computers, televisions, image phones, and any other rotatable appliances.

[0017] FIG. 4 shows an exploded perspective view of the major rotatable structure of the IP phone shown in FIG-3, comprising a turntable 40, an upper base 41, a resilient element 43, at least one adjustable connecting element 44, and a spacing pad 42.

[0018] A spindle 4010 is formed on the rear side of the turntable 40 in the form of a hollow cylinder in this embodiment. At least one screw hole 4020 is formed in the spindle 4010 so as to be screwed with the adjustable connecting element 44. The position of the screw hole 4020 is not limit to the inner side of the spindle 4010.

[0019] An opening 4112 is formed through the base 41 and the internal diameter thereof is slightly greater than the outer diameter of the spindle 4010 such that the spindle 4010 can pass through the opening 4112 and rotate without moving transversely. In this embodiment, a pair of symmetric arc-shaped notches 4114 are formed inside the upper base 41 to limit the rotating angle of the turntable 40.

[0020] The resilient element **43** is located under the opening **4112** so as to provide a squeezing strength (or a normal force) to secure the base **41** between the turntable **40** and the resilient element **43**. In this embodiment, the resilient element **43** is a resilient pad which includes a plate portion **4320** and a plurality of supporting legs **4310** extended from the plate portion **4320**. Each of the supporting legs **4310** forms an angle with the plate portion **4320**.

[0021] Responsible for both connectivity and adjustability in this embodiment, the adjustable connecting element **44** is, but not limit to, a screw. The number of the at least one adjustable connecting element **44** is corresponding to the number of through holes **4330** through the plate portion **4320**.

[0022] The spacing pad **42** is located between the upper base **41** and the resilient element **43**. In this embodiment, the spacing pad **42**, such as washer, has an opening with inner diameter less than the outer diameter of the circle defined by the supporting legs **4310**. The area of the opening of the spacing pad **42**, however, can accommodate the through holes **4330**.

[0023] To assemble or implement this embodiment, one or more adjustable connecting elements **44** (e.g., screws) are connected into the screw holes **4020** in the spindle **4010** through the through holes **4330** on the surface of the plate portion **4320** of the resilient element **43**. In this regard, the adjustable connecting element **44** makes the supporting legs **4310** deformed to produce the squeezing strength. The extent of screwing the adjustable connecting element **44** into the screw hole **4020** and the screw thread length determine the extent of the deformation of the supporting legs **4310** as well as the squeezing strength.

[0024] The squeezing strength provides the friction between the turntable **40** and the upper base **41** so as to control the degree of tightness or the degree of difficulty to rotate the turntable **40** in accordance with the state of the resilient element **43** and to provide users a friendly experience on using the turntable **40**. The spacing pad **42** between the upper base **41** and the resilient element **43** makes the squeezing strength produced by the supporting legs **4310** uniformly distributed over the upper base **41**. The arc-shaped notches **4114** located inside the upper base **41** can limit the maximum rotation angle reachable by the turntable **40**. With such a rotation angle limitation, the interconnecting lines therein are protecting from damage due to improper usage.

[0025] FIG. 5 shows a bottom view of the present embodiment. Only major structure is depicted for illustration purpose. The upper base **41** has a cone-like shape. The turntable **40** may rotate with respect to the upper base **41** clockwise or counter-clockwise (as illustrated by the arrow sign in FIG. 5). FIG. 5 shows the interrelationship after assembling among the resilient element **43**, the spacing pad **42** and the spindle **4010**. FIG. 6 shows a bottom view of another embodiment in accordance with the present invention. The upper base **41** has a circle-like shape. Likewise, the figure shows the interrelationship after assembling among the resilient element **43**, the spacing pad **42** and the spindle **4010**.

[0026] It should be understood, however, that there is no intention to limit the invention to the preferred embodiments disclosed, but on the contrary, the invention is to cover all modifications, alternate constructions and equivalents falling within the spirit and scope of the invention as expressed in the appended claims.

What is claimed is:

1. A rotatable stand with adjustable tightness, comprising:
 - a turntable having a spindle;
 - a base having an opening for the spindle to pass through and rotate therein;
 - at least one adjustable connecting element connecting to said turntable; and
 - a resilient element, in combination with said at least one adjustable connecting element, for providing a squeezing strength to secure said base between said turntable and said resilient element.
2. The rotatable stand as claimed in claim 1, wherein said spindle is a hollow cylinder.
3. The rotatable stand as claimed in claim 1, wherein said base comprises an upper base and a lower base.
4. The rotatable stand as claimed in claim 1, wherein said resilient element is a resilient pad.
5. The rotatable stand as claimed in claim 4, wherein said resilient pad comprises:
 - a plate portion; and
 - a plurality of supporting legs, extended from said plate portion and forming an angle with said plate portion.
6. The rotatable stand as claimed in claim 4, wherein said plate portion comprises at least one through hole.
7. The rotatable stand as claimed in claim 6, wherein said spindle comprises at least one screw hole.
8. The rotatable stand as claimed in claim 7, wherein said adjustable connecting element is a screw passing through said through hole to screw into said screw hole.
9. The rotatable stand as claimed in claim 1, further comprising a spacing pad located between said base and said resilient element to make the squeezing strength provided by said resilient element uniformly distributed over said base.
10. The rotatable stand as claimed in claim 3, wherein at least one arc-shaped notch is formed inside said base to limit a maximum rotation angle reachable by said turntable.
11. An electronic device with a tightness adjustable rotatable stand, comprising:
 - a turntable having a spindle;
 - a display panel mounted on and connected pivotally to said turntable;
 - a base comprising an opening for the spindle to pass through and rotate therein such that said display panel and said turntable are collectively allowed to be rotated clockwise or counter-clockwise with respect to said base;
 - at least one adjustable connecting element connecting to said turntable; and
 - a resilient element for providing a squeezing strength in combination with said at least one adjustable connecting element to secure said base between said turntable and said resilient element.
12. The electronic device as claimed in claim 11, further comprising a telephone handset connecting to said base.
13. The electronic device as claimed in claim 12, further comprising a plurality of telephone buttons located on said turntable.

14. The electronic device as claimed in claim **11**, wherein said base comprises an upper base and a lower base.

15. The electronic device as claimed in claim **11**, wherein said resilient element is a resilient pad.

16. The electronic device as claimed in claim **15**, wherein said resilient pad comprises:

a plate portion; and

a plurality of supporting legs, extended from said plate portion and forming an angle with said plate portion.

17. The electronic device as claimed in claim **16**, wherein said plate portion comprises at least one through hole.

18. The electronic device as claimed in claim **17**, wherein said spindle comprises at least one screw hole.

19. The electronic device as claimed in claim **18**, wherein said adjustable connecting element is a screw passing through said through hole to screw into said screw hole.

20. The electronic device as claimed in claim **11**, further comprising a spacing pad located between said base and said resilient element to make the squeezing strength provided by said resilient element uniformly distributed over said base.

21. The electronic device as claimed in claim **14**, wherein at least one arc-shaped notch is formed inside said base to limit a maximum rotation angle reachable by said turntable.

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