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(54) **MECHANISM DEVICE WITH ROTARY HOLDER AND DISPLAY DEVICE THEREWITH**

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(57) **ABSTRACT**

A mechanism device includes a hinge mechanism, a holding base, a guiding member and a fixing member. The holding base is pivoted to the frame by the hinge mechanism and includes a main casing, a first holding casing and a second holding casing. The first holding casing and the second holding casing extend from two opposite sides of the main casing along a direction away from the hinge mechanism, such that the main casing, the first holding casing and the second holding casing cooperatively define a holding slot with openings formed on two sides thereof, so as to hold an electronic device. The guiding member is disposed within the holding slot and for guiding the electronic device into the holding slot. The fixing member is disposed within the holding slot and for fixing the electronic device inside the holding slot after the electronic device enters the holding slot.

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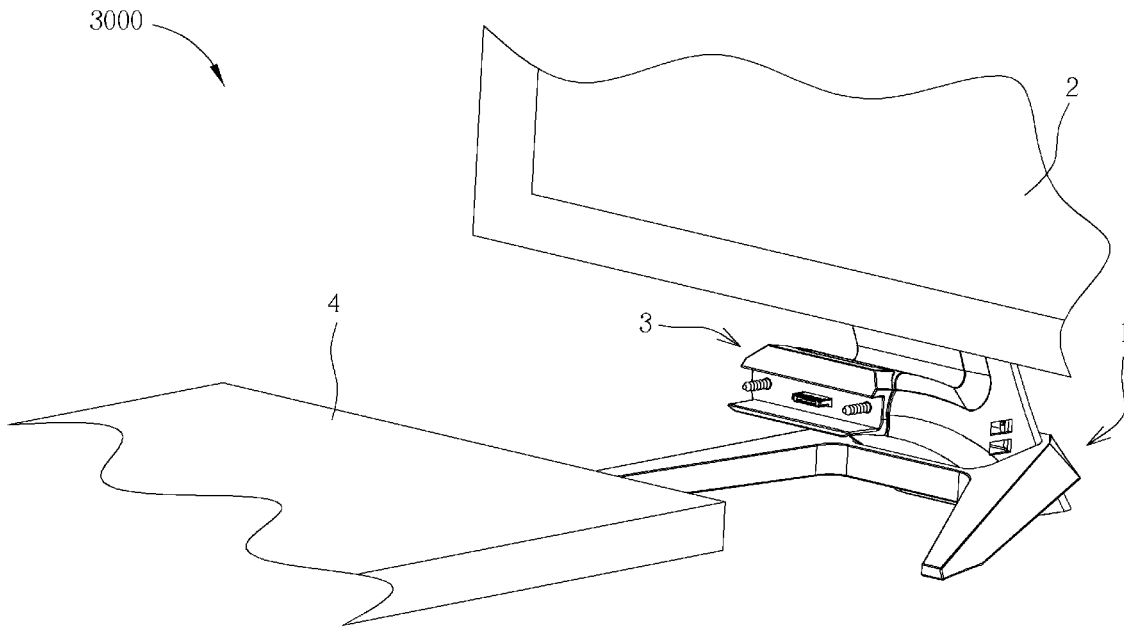
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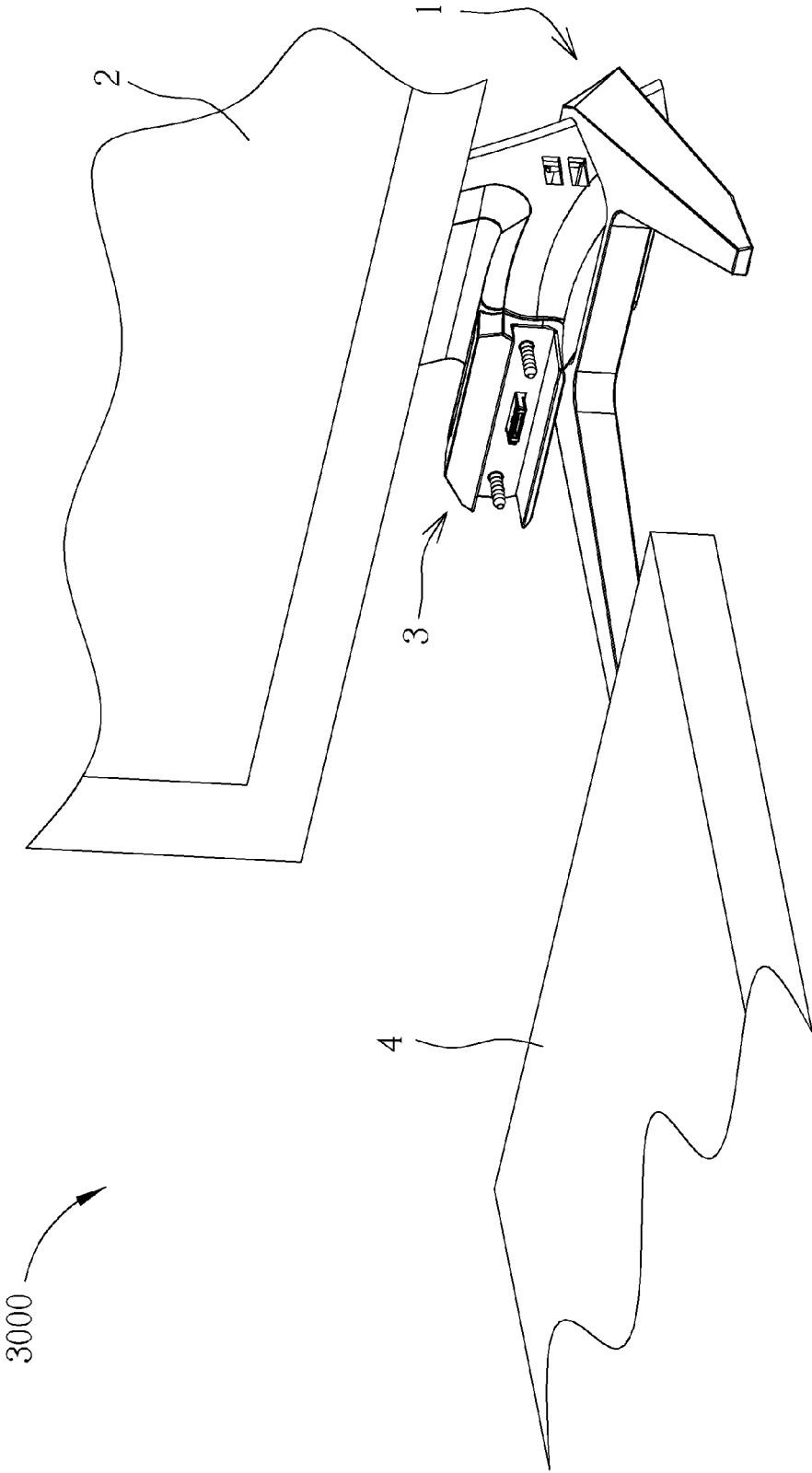


FIG. 1

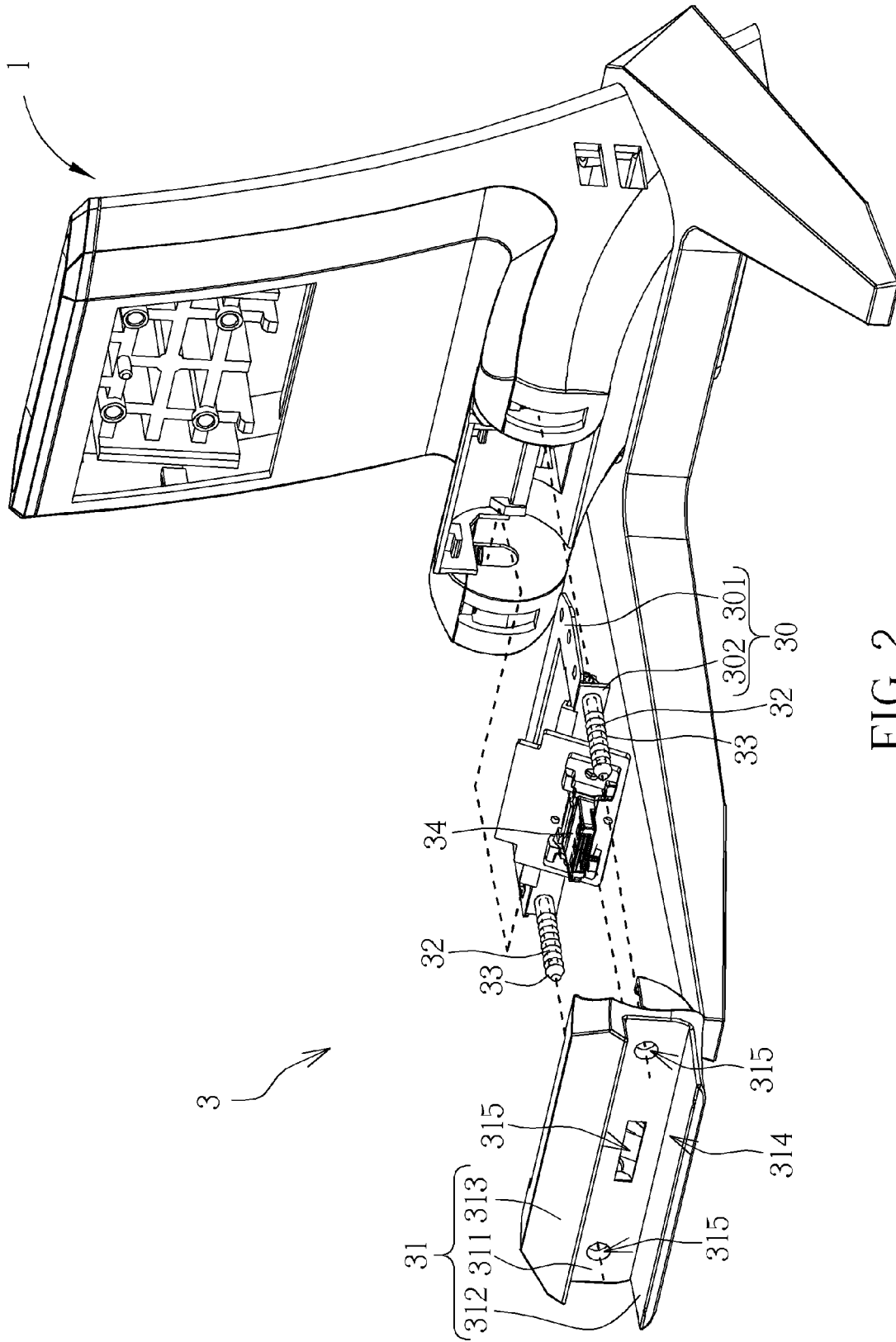


FIG. 2

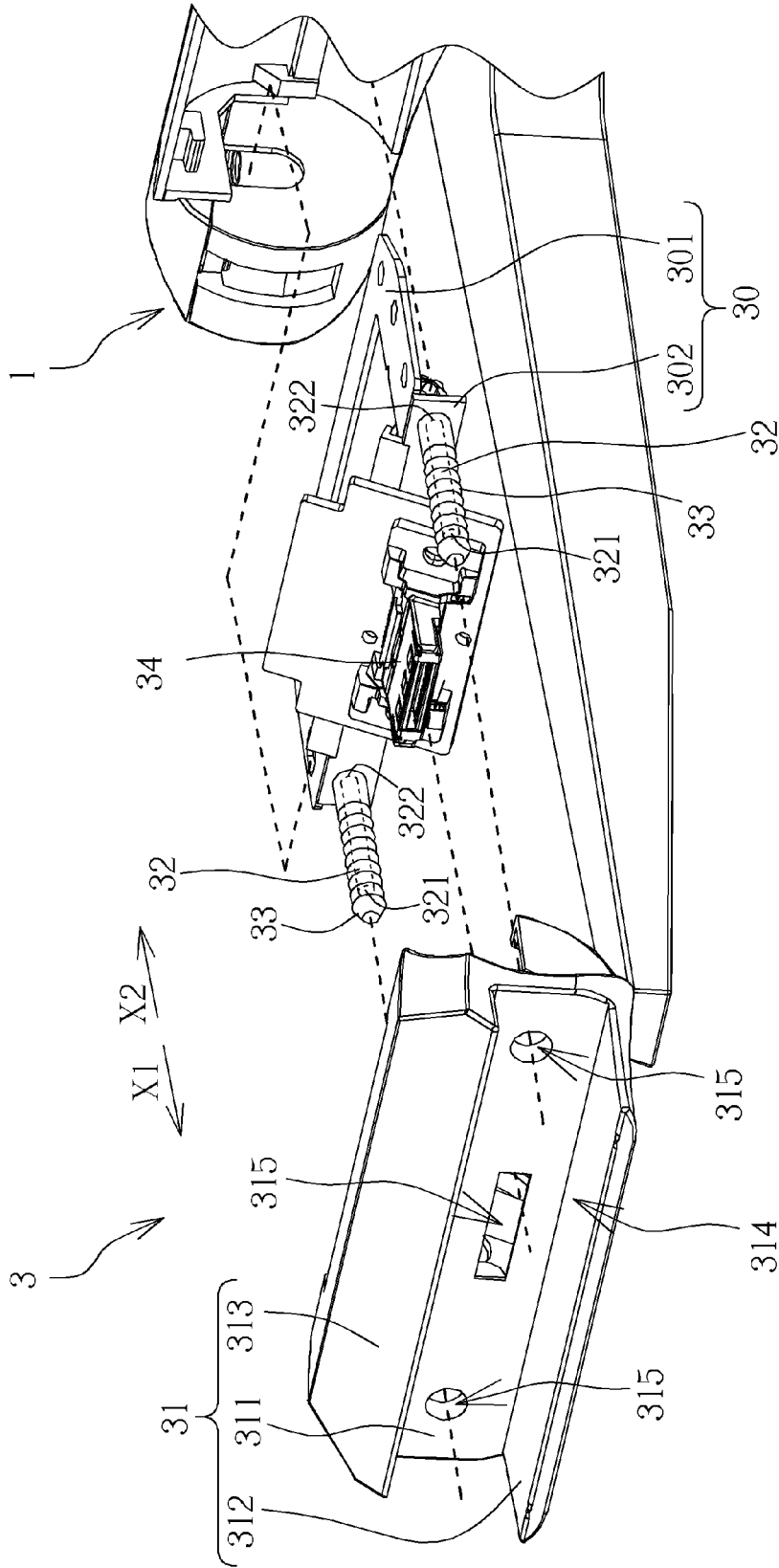


FIG. 3

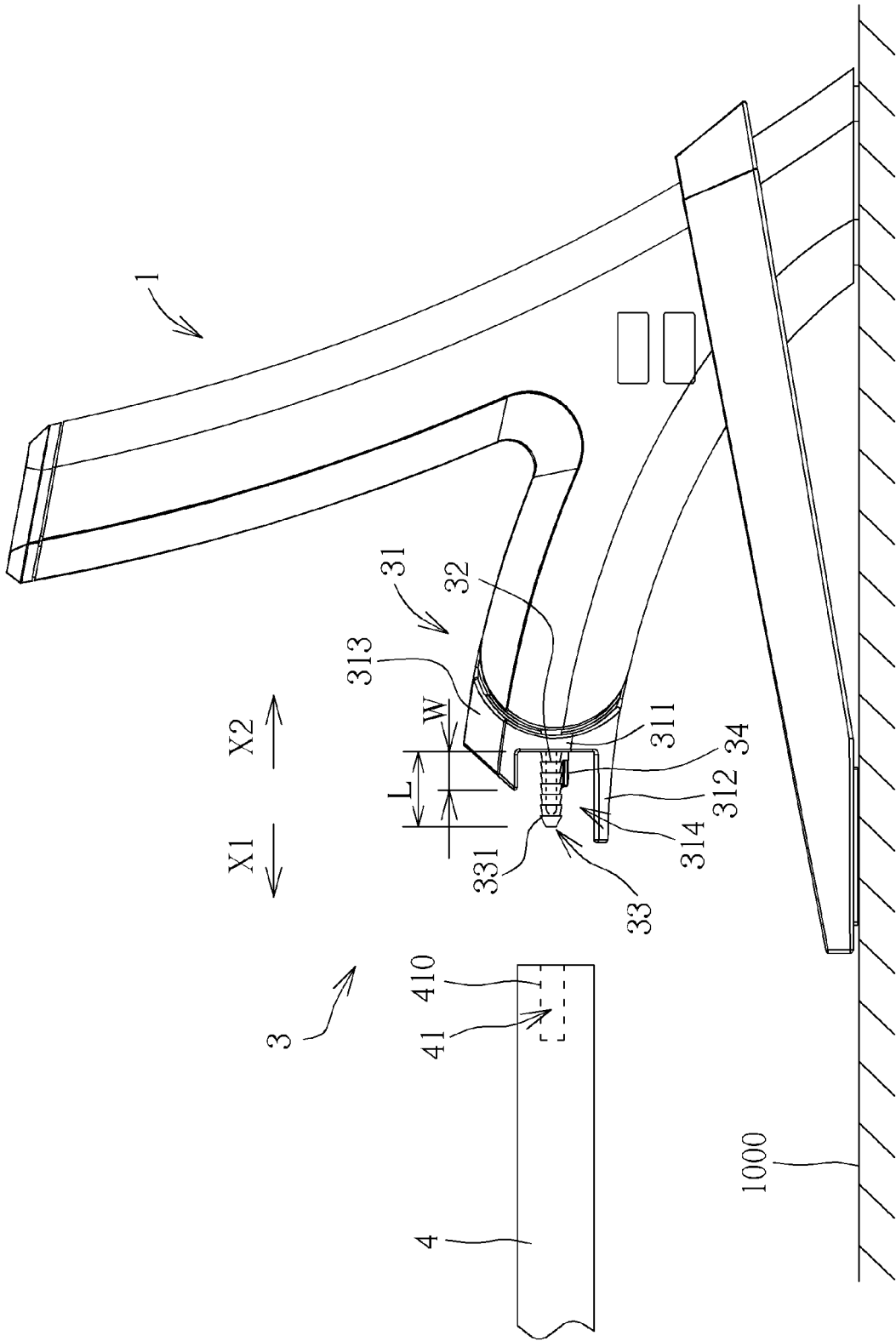


FIG. 4

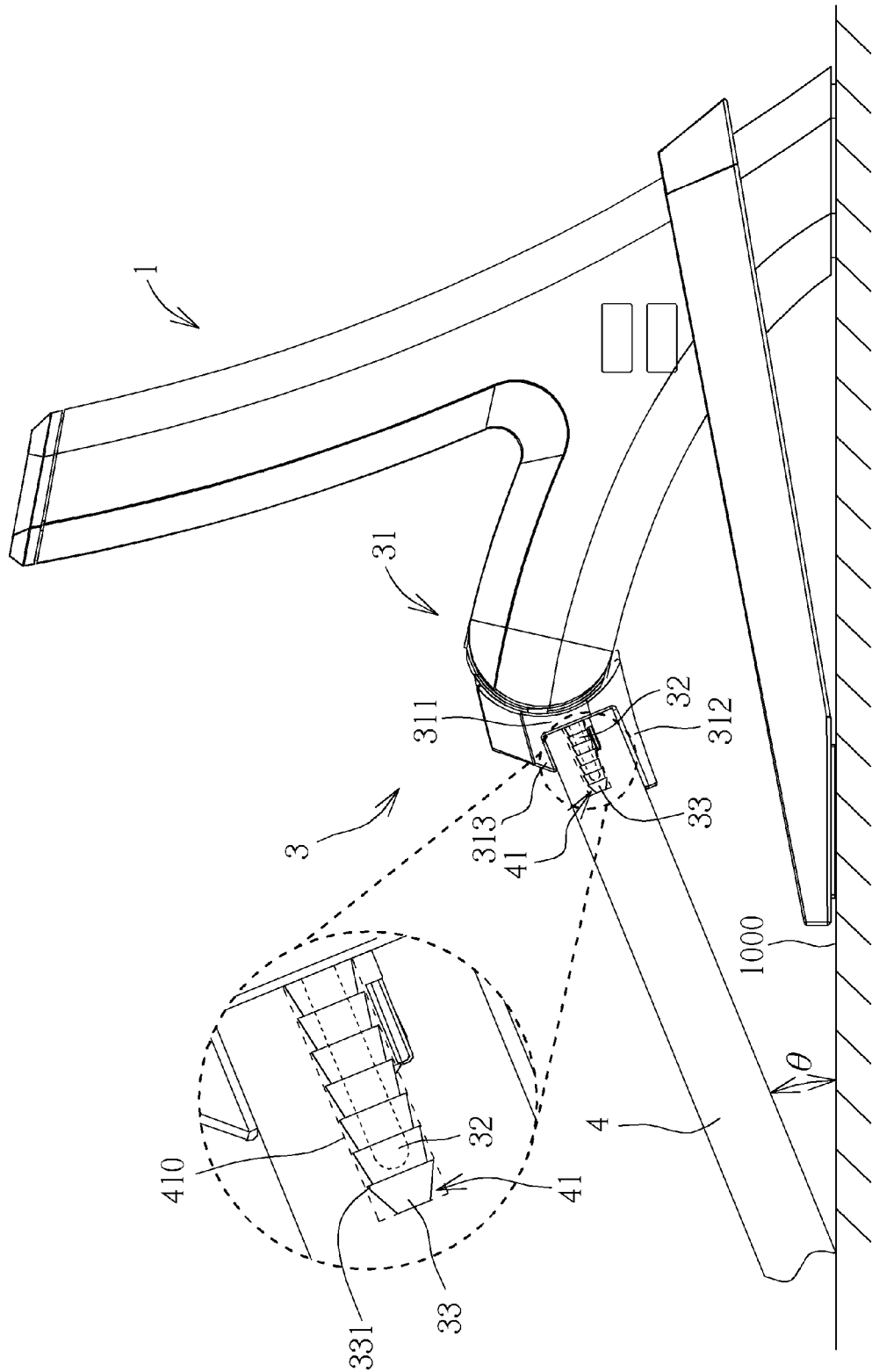


FIG. 5

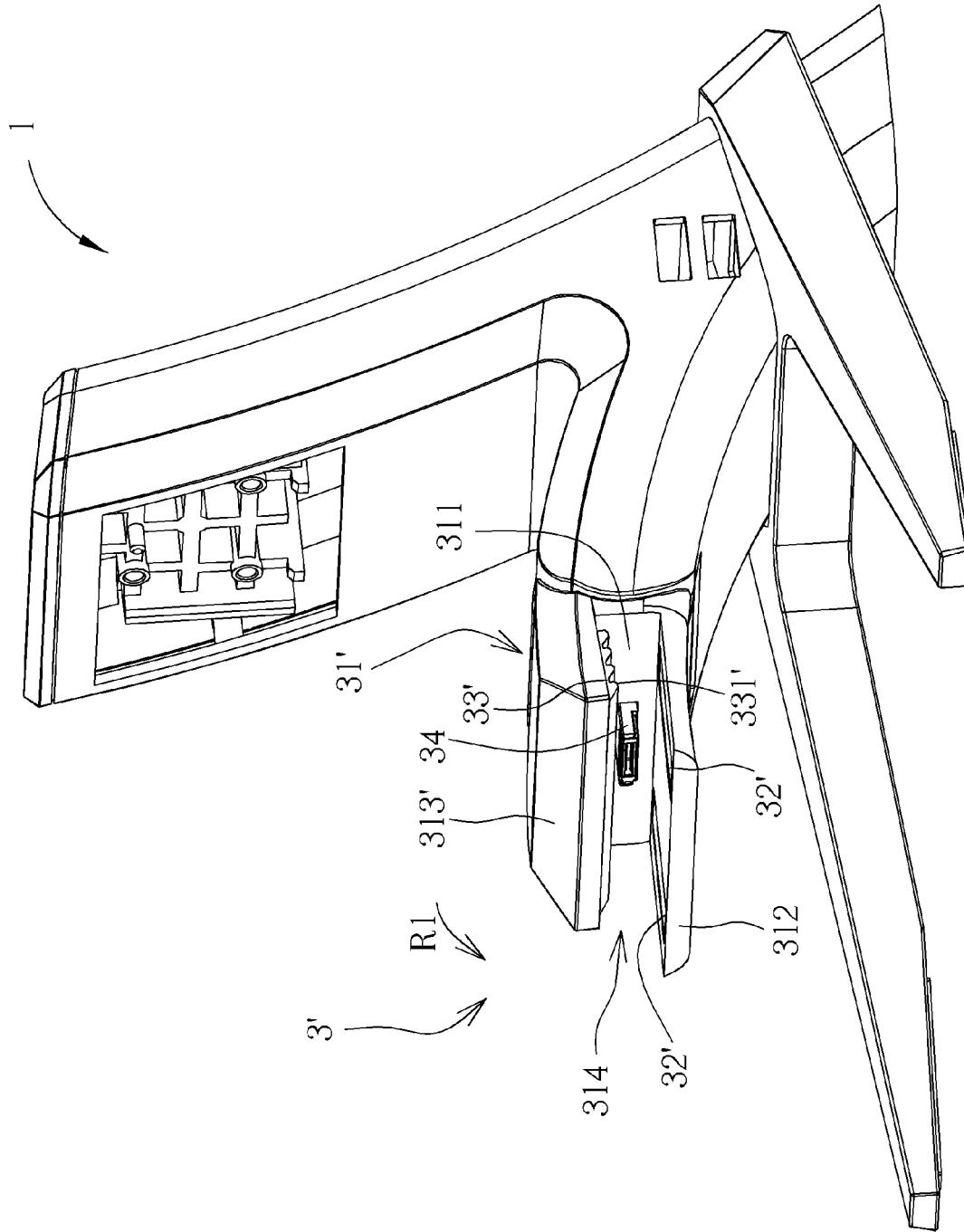


FIG. 6

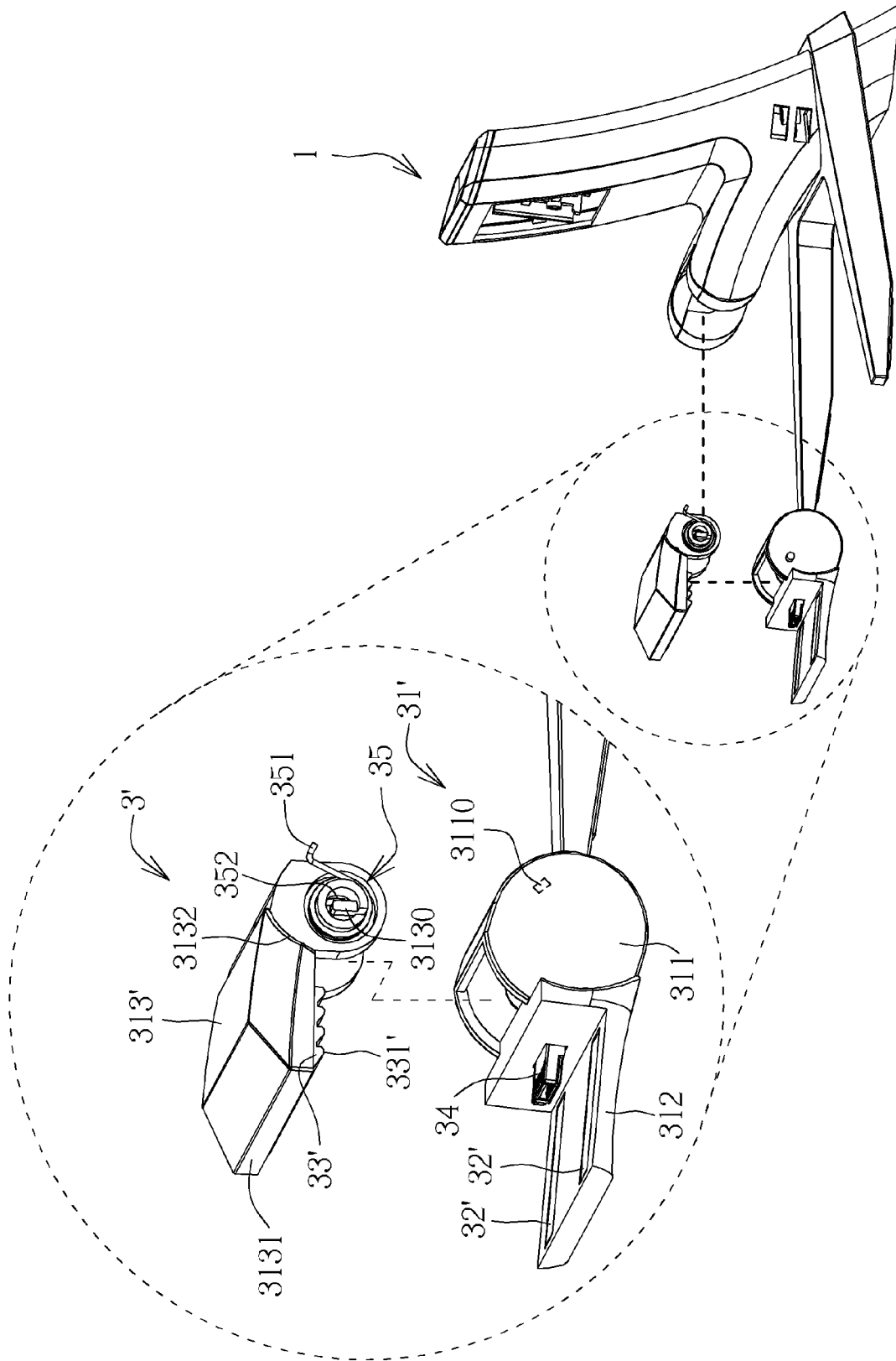


FIG. 7A



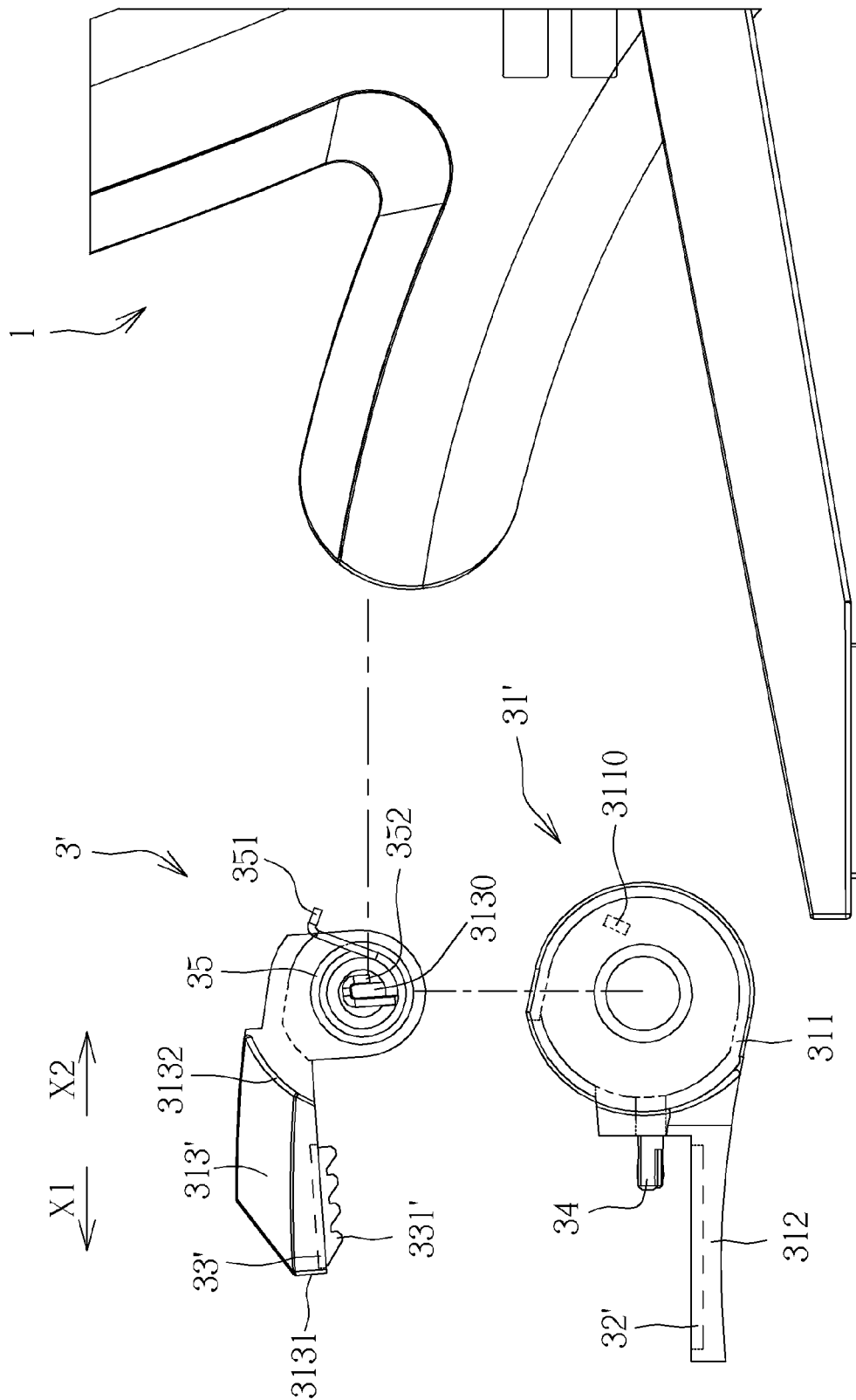


FIG. 7B







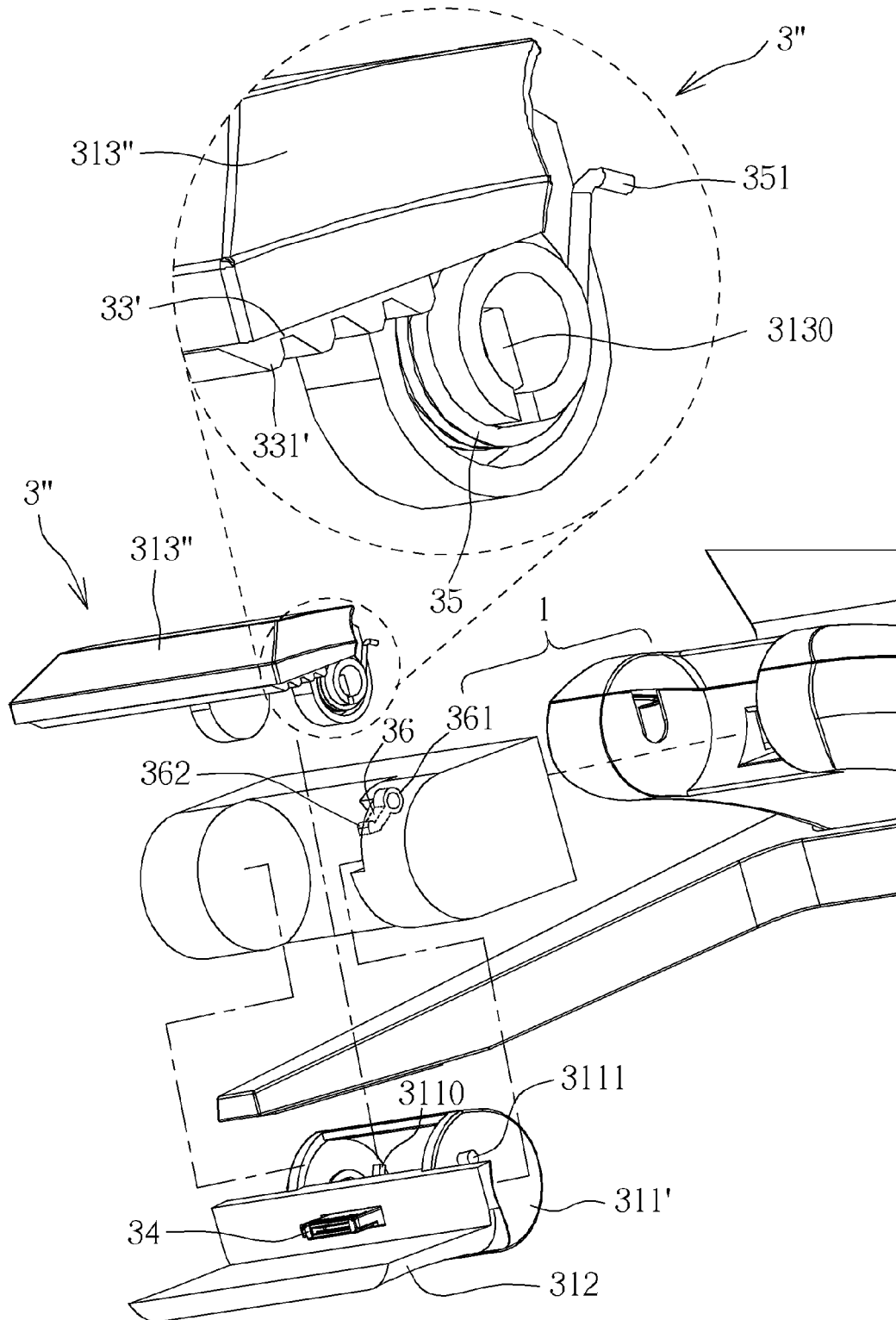


FIG. 10B

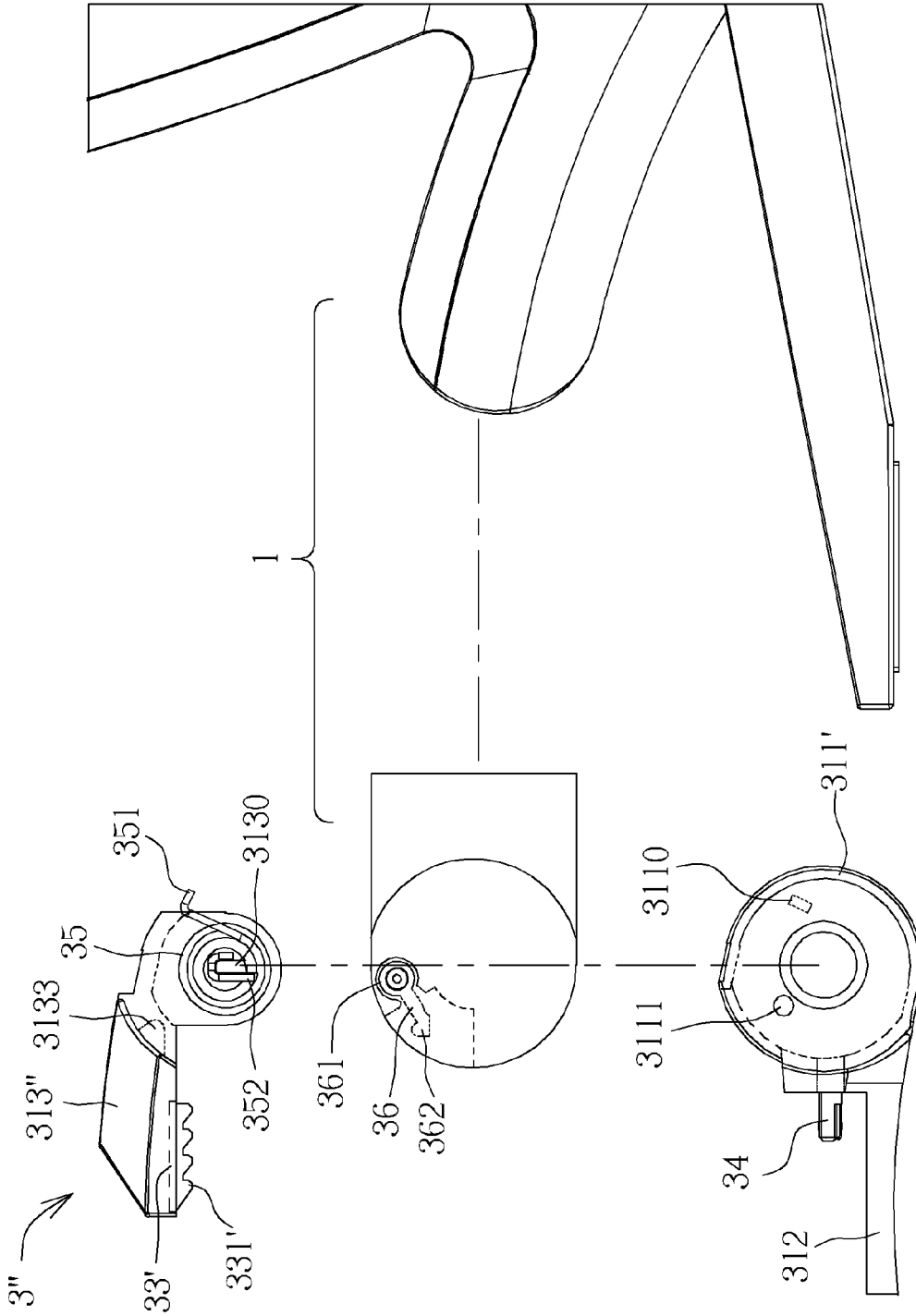


FIG. 10C

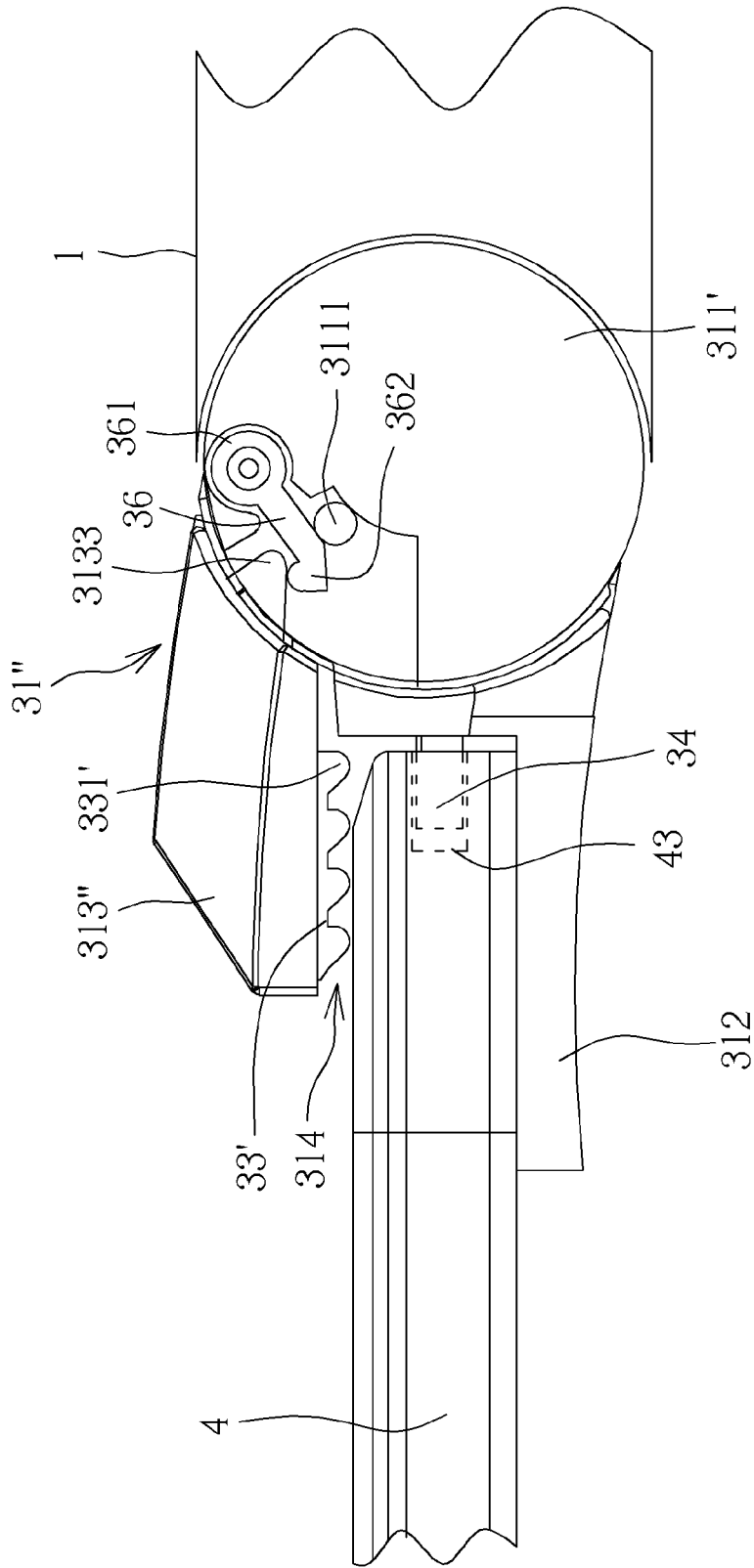


FIG. 11





**MECHANISM DEVICE WITH ROTARY  
HOLDER AND DISPLAY DEVICE  
THEREWITH**

BACKGROUND OF THE INVENTION

**[0001]** 1. Field of the Invention

**[0002]** The present invention relates to a mechanism device and a display device, and more particularly, to a mechanism device with capability of guiding electronic devices with different sizes and with clamping stability and a display device therewith.

**[0003]** 2. Description of the Prior Art

**[0004]** With development of touch panel industry, a tablet computer has been gradually implemented into people's daily life. A docking device is utilized for coupling the tablet computer to a display device, such that the display device is able to display a working interface on the tablet computer as the tablet computer is in use. However, since the conventional docking device adopts a connector to mate with another connector of the tablet computer, it leads to damage of the connector of the docking device and the connector of the tablet computer duo to improper alignment during the above-mentioned mating process.

SUMMARY OF THE INVENTION

**[0005]** Thus, the present invention provides a mechanism device with capability of guiding electronic devices with different sizes and with clamping stability and a display device therewith for solving above drawbacks.

**[0006]** According to the claimed invention, a mechanism device with rotary holder installed on a frame includes a hinge mechanism, a holding base, at least one guiding member and at least one fixing member. The hinge mechanism is installed on the frame. The holding base is pivoted to the frame by the hinge mechanism and includes a main casing, a first holding casing and a second holding casing. The first holding casing and the second holding casing extend from two opposite sides of the main casing along a direction away from the hinge mechanism, such that the main casing, the first holding casing and the second holding casing cooperatively define a holding slot with openings formed on two sides thereof for holding an electronic device. The at least one guiding member is disposed inside the holding slot and for guiding the electronic device into the holding slot. The at least one fixing member is disposed inside the holding slot and for fixing the electronic device inside the holding slot when the electronic device enters the holding slot.

**[0007]** According to the claimed invention, the at least one guiding member is a guiding post disposed through the main casing and diving into the clamping slot, and the guiding post is for inserting into a guiding hole on the electronic device. The hinge mechanism includes a base and a rotating member. The base is fixed on the frame. The rotating member is pivoted to the base, and the guiding post protrudes from the rotating member. The holding base is installed on the rotating member and capable of rotating with the rotating member, wherein two through holes are formed on the main casing for allowing the guiding post to pass through and dive into the clamping slot.

**[0008]** According to the claimed invention, the at least one fixing member is a bushing structure covering the guiding

post, and the bushing structure tightly fits a wall surrounding the guiding hole when the guiding post inserts into the guiding hole.

**[0009]** According to the claimed invention, the guiding post has a front end and a rear end, and the guiding post passes through the main casing along a direction from the rear end toward the front end. The bushing structure has a plurality of engaging protrusions, and a cross section of each of the engaging protrusions gradually increases along a direction from the front end toward the rear end.

**[0010]** According to the claimed invention, each of the engaging protrusions is substantially a triangular structure.

**[0011]** According to the claimed invention, the bushing structure is made of rubber material.

**[0012]** According to the claimed invention, the at least one guiding member is a first magnetic member disposed on the first holding casing, and the first magnetic member is for abstracting a second magnetic member of the electronic device, so as to guide the electronic device into the clamping slot.

**[0013]** According to the claimed invention, the at least one fixing member is a pad structure disposed on the second holding casing, and the pad structure presses an upper surface of the electronic device when the first magnetic member guides the electronic device into the clamping slot.

**[0014]** According to the claimed invention, the second holding casing has a front side and a rear side, and the rear side is coupled to the main casing. The pad structure has a plurality of engaging protrusions, and a cross section of each of the engaging protrusions gradually increases along a direction from the front side toward the rear side.

**[0015]** According to the claimed invention, the pad structure is made of rubber material.

**[0016]** According to the claimed invention, the main casing has a fixing rib. The second holding casing is rotably disposed on the main casing and has an abutting rib. The mechanism device further includes a driving member with a fixing end and a free end. The fixing end abuts against the fixing rib and the free end abutting against the abutting rib, such that the driving member drives the second holding casing to rotate toward the first holding casing, so as to make the pad structure press the upper surface of the electronic device.

**[0017]** According to the claimed invention, the mechanism device further includes a rotating arm rotably disposed on the frame. The rotating arm drives the second holding casing to rotate away from the first holding casing when the holding base rotates to a detaching position, so as to activate the pad structure to depart from the upper surface of the electronic device. The rotating arm releases the second holding casing when the holding base rotates to a usage position, such that the driving member drives the second holding casing to rotate toward first holding casing.

**[0018]** According to the claimed invention, the main casing further has a pushing block, and the second holding casing further has a pushed structure. The rotating arm has a pivotal end and an abutting end, and the pivotal end is for pivoting the frame. When the holding base rotates to the detaching position, the pushed structure moves to where the pushed structure abuts against the abutting end and the pushing block pushes the rotating arm, such that the rotating arm activates the abutting end to push the pushed structure, so as to make the second holding casing to rotate away from the first holding casing. When the holding base rotates to the usage position, the pushing block departs from the rotating arm and the

abutting end releases the pushed structure, such that the driving member drives the second holding casing to rotate toward the first holding casing.

**[0019]** According to the claimed invention, a length of the guiding member is greater than a width of the second holding casing.

**[0020]** According to the claimed invention, the mechanism device further includes a connector disposed inside the clamping slot and coupled to a display unit installed on the frame. The connector is for coupling the electronic device to the display unit.

**[0021]** According to the claimed invention, a display device includes a frame, a display unit and a mechanism device. The display unit is installed on the frame, and the mechanism device is installed on the frame. The mechanism device includes a hinge mechanism, a holding base, at least one guiding member and at least one fixing member. The hinge mechanism is installed on the frame. The holding base is pivoted to the frame by the hinge mechanism and includes a main casing, a first holding casing and a second holding casing. The first holding casing and the second holding casing extend from two opposite sides of the main casing along a direction away from the hinge mechanism, such that the main casing, the first holding casing and the second holding casing cooperatively define a holding slot with openings formed on two sides thereof for holding an electronic device. The at least one guiding member is disposed inside the holding slot and for guiding the electronic device into the holding slot. The at least one fixing member is disposed inside the holding slot and for fixing the electronic device inside the holding slot when the electronic device enters the holding slot.

**[0022]** In summary, the present invention utilizes the guiding member for properly orienting and guiding the electronic device into the clamping slot on the holding base. In such a manner, the connector of the electronic device is able to be aligned with the connector of the mechanism device properly during the aforesaid process, so as to prevent the connector of the mechanism device and the connector of the electronic device from damage due to improper alignment. Furthermore, when the electronic device is guided into the clamping slot on the holding base, the present invention further utilizes the fixing member to fix the electronic device inside the clamping slot, so as to prevent the electronic device from detaching from the clamping slot. Thus, it further prevents the connectors from improper mating. In addition, since the clamping slot for holding the electronic device has the openings formed on the two sides thereof, the openings on the two sides of the clamping slot do not constrain a width of the electronic device that is held by the clamping slot. In other words, the holding base of the present invention is able to hold electronic devices with different sizes by design of the clamping slot with the openings formed on the two sides thereof.

**[0023]** These and other objectives of the present invention will no doubt become obvious to those of ordinary skill in the art after reading the following detailed description of the preferred embodiment that is illustrated in the various figures and drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0024]** FIG. 1 is a schematic diagram of a display device according to a first embodiment of the present invention.

**[0025]** FIG. 2 is an exploded diagram of a frame and a mechanism device according to the first embodiment of the present invention.

**[0026]** FIG. 3 is a partly exploded diagram of the frame and the mechanism device according to the first embodiment of the present invention.

**[0027]** FIG. 4 is a diagram of the frame and the mechanism device in a detaching status according to the first embodiment of the present invention.

**[0028]** FIG. 5 is a diagram of the frame and the mechanism device in a usage status according to the first embodiment of the present invention.

**[0029]** FIG. 6 is an assembly diagram of a mechanism device and the frame according to a second embodiment of the present invention.

**[0030]** FIG. 7A is an exploded diagram of the mechanism device and the frame according to the second embodiment of the present invention.

**[0031]** FIG. 7B is a partly exploded perspective diagram of the mechanism device and the frame according to the second embodiment of the present invention.

**[0032]** FIG. 8 is a diagram of the mechanism device and the frame in a detaching status according to the second embodiment of the present invention.

**[0033]** FIG. 9 is a diagram of the mechanism device and the frame in a usage status according to the second embodiment of the present invention.

**[0034]** FIG. 10A is an exploded diagram of a mechanism device and the frame according to a third embodiment of the present invention.

**[0035]** FIG. 10B is a partly exploded diagram of the mechanism device and the frame in another view according to the third embodiment of the present invention.

**[0036]** FIG. 10C is a partly exploded perspective diagram of the mechanism device and the frame according to the third embodiment of the present invention.

**[0037]** FIG. 11 is a diagram of the frame 1 and the mechanism device in a detaching status according to the third embodiment of the present invention.

**[0038]** FIG. 12 is a diagram of the frame 1 and the mechanism device in a usage status according to the third embodiment of the present invention.

#### DETAILED DESCRIPTION

**[0039]** In the following detailed description of the embodiments, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration specific embodiments in which the invention may be practiced. In this regard, directional terminology, such as “top,” “bottom,” etc., is used with reference to the orientation of the Figure(s) being described. The components of the present invention can be positioned in a number of different orientations. As such, the directional terminology is used for purposes of illustration and is in no way limiting. On the other hand, the drawings are only schematic and the sizes of components may be exaggerated for clarity. It is to be understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention. Also, it is to be understood that the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting. The use of “including,” “comprising,” or “having” and variations thereof herein is meant to encompass the items listed thereafter and equivalents thereof as well as additional items. Unless limited otherwise, the terms “connected,” and “installed” and variations thereof herein are used broadly and encompass direct

and indirect connections and installations. Accordingly, the drawings and descriptions will be regarded as illustrative in nature and not as restrictive.

**[0040]** Please refer to FIG. 1. FIG. 1 is a schematic diagram of a display device 3000 according to a first embodiment of the present invention. As shown in FIG. 1, the display device 3000 includes a frame 1, a display unit 2 and a mechanism device 3. The display unit 2 and the mechanism device 3 are installed on the frame 1. The frame 1 is used for supporting the display unit 2 and the mechanism device 3 on a supporting surface (not shown in figures), such as a desktop, a ground and so on. The mechanism device 3 is used for coupling the display unit 2 to an electronic device 4, such that the display unit 2 displays an interface of the electronic device 4 for allowing the user to deal with the desired affairs executed by the electronic device 4 by utilizing the display unit 2. In this embodiment, the display unit 2 is a liquid crystal display module, such as a liquid crystal monitor, a liquid crystal television and so on, and the electronic device 4 is a portable electronic device, such as a tablet computer and so on.

**[0041]** Please refer to FIG. 1 to FIG. 3. FIG. 2 is an exploded diagram of the frame 1 and the mechanism device 3 according to the first embodiment of the present invention. FIG. 3 is a partly exploded diagram of the frame 1 and the mechanism device 3 according to the first embodiment of the present invention. As shown in FIG. 1 to FIG. 3, the mechanism device 3 includes a hinge mechanism 30, a holding base 31, two guiding members 32, two fixing members 33 and a connector 34. The hinge mechanism 30 is installed on the frame 1. The holding base 31 is pivoted to the frame 1 by the hinge mechanism 30, such that the holding base 31 is able to pivot relative to the frame 1. Furthermore, the holding base 31 includes a main casing 311, a first holding casing 312 and a second holding casing 313. The first holding casing 312 and the second holding casing 313 extend from two opposite sides of the main casing 311 along a direction away from the hinge mechanism 30. Accordingly, the main casing 311, the first holding casing 312 and the second holding casing 313 cooperatively define a clamping slot 314 with openings formed on two sides thereof, such that the holding base 31 holds the electronic device 4 by utilizing the clamping slot 314.

**[0042]** It should be noticed that since the openings are formed on the two sides of the clamping slot 314 on the holding base 31 of the present invention, the openings on the two sides of the clamping slot 314 do not constrain a width of the electronic device 4 that is held by the clamping slot 314. In other words, the holding base 31 of the present invention is able to hold electronic devices with different sizes by design of the clamping slot 314 with the openings formed on the two sides thereof. Furthermore, the two guiding members 32, the two fixing members 33 and the connector 34 are all disposed inside the clamping slot 314, and the connector 34 is coupled to the display unit 2. Those amounts and configuration of the guiding member 32 and the fixing member 33 are not limited to those illustrated in figures in this embodiment. The mechanism device 3 can include one guiding member 32 and one fixing member 33 as well, and it depends on practical demands.

**[0043]** Please refer to FIG. 3 to FIG. 5. FIG. 4 is a diagram of the frame 1 and the mechanism device 3 in a detaching status according to the first embodiment of the present invention. FIG. 5 is a diagram of the frame 1 and the mechanism device 3 in a usage status according to the first embodiment of the present invention. As shown in FIG. 3 to FIG. 5, the two

guiding members 32 are respectively a guiding post, and the two fixing members 33 are respectively a bushing structure covering the guiding post (i.e. the guiding member 32). In this embodiment, the hinge mechanism 30 includes a base 301 and a rotating member 302. The rotating member 302 is pivoted to the base 301, and the base 301 is fixed on the frame 1 for providing foundation that the rotating member 302 is able to pivot relative to the frame 1. The guiding post protrudes from the rotating member 302 and the holding base 31 and the connector 34 are both installed on the rotating member 302. Accordingly, the guiding post, the holding base 31 and the connector 34 are able to be activated to rotate relative to the frame 1 with the rotating member 302 simultaneously. In addition, three through holes 315 are formed on the main casing 311 of the holding base 31, wherein the through holes 315 on two lateral sides of the main casing 311 are circular holes for allowing the guiding posts to pass through and dive into the clamping slot 314; the through hole 315 in the middle of the main casing 311 is a rectangular hole for allowing the connector 34 to pass through and dive into the clamping slot 314.

**[0044]** Furthermore, guiding post (i.e. the guiding member 32) has a front end 321 and a rear end 322. During assembly, the guiding post passes through the main casing 311 along a direction from the rear end 322 toward the front end 321 (i.e. a first direction X1). In addition, the bushing structure (i.e. the fixing member 33) has a plurality of engaging protrusions 331. A cross section of each of the engaging protrusions 331 gradually increases along a direction from the front end 321 toward the rear end 322 (i.e. a second direction X2). In other words, each of the engaging protrusions 331 is substantially a triangular structure, as shown in FIG. 4. In this embodiment, the bushing structure (i.e. the fixing member 33) is made of rubber material (e.g. carbon rubber material).

**[0045]** As shown in FIG. 4 and FIG. 5, when the mechanism device 3 is desired to couple the electronic device 4 to the display unit 2, the electronic device 4 is inserted into the clamping slot 314 on the holding base 31, which is in a detaching position shown in FIG. 4, along the second direction X2. During the aforesaid process, the guiding post (i.e. the guiding member 32) is able to insert into a guiding hole 41 on the electronic device 4, such that the electronic device 4 is guided from a position represented by solid lines to a position represented by dash lines, as shown in FIG. 4. In other words, the guiding member 32 is used for guiding the electronic device 4 to enter the clamping slot 314 by the aforesaid cooperation of the guiding post and the guiding hole 41, such that the holding base 31 is able to hold the electronic device 4.

**[0046]** It should be noticed that a length L of the guiding member 32 can be designed to be greater than a width W of the second holding casing 313 of the holding base 31 for the sake of facilitating the guiding hole 41 on the electronic device 4 to be aligned with the guiding post inside the clamping slot 314. Accordingly, the connector 34 is able to exceed an area covered by the second holding casing 313 for enabling a user to see the front end 321 of the guiding member 32 from a side above holding base 31. It facilitates the guiding hole 41 on the electronic device 4 to be aligned with the guiding post (i.e. the guiding member 32), so as to smoothly guide and properly orient the electronic device 4 into the clamping slot 314. In such a manner, a connector (not shown in figures) of the electronic device 4 is able to be aligned with the connector 34 properly during the aforesaid process, so as to prevent the

connector **34** of the mechanism device **3** and the connector of the electronic device **4** from damage due to improper alignment.

[0047] Furthermore, since an outer diameter of the bushing structure (i.e. the fixing member **33**) is slightly greater than a bore diameter of the guiding hole **41** and the bushing structure is made of flexible material (e.g. the rubber material), the bushing structure (i.e. the fixing member **33**) is compressed by a wall **410** surrounding the guiding hole **41** and thus it leads the bushing structure to tightly fit the wall **410** surrounding the guiding hole **41** during the process that the guiding post (i.e. the guiding member **32**) inserts into the guiding hole **41**. In other words, for the sake of the wall **410** surrounding the guiding hole **41** compressing the bushing structure (i.e. the fixing member **33**), the fixing member **33** is able to fix the electronic device **4** inside the clamping slot **314** when the electronic device **4** enters the clamping slot **314**, so as to prevent the electronic device **4** from detaching from the clamping slot **314**.

[0048] In addition, since the cross section of the engaging protrusion **331** of the bushing structure (i.e. the fixing member **33**) gradually increases along the direction from the front end **321** toward the rear end **322** (i.e. the second direction **X2**), i.e. a direction, which the cross section of the engaging protrusion **331** increases, is reverse to a detaching direction that the electronic device **4** detaches from the mechanism device **3** (i.e. the first direction **X1**). As a result, it facilitates to increase resistance of the guiding hole **41** on the electronic device **4** detaching from the fixing member **33** of the mechanism device **3** that the cross-section increasing direction of the engaging protrusion **331** is reverse to the detaching direction that the electronic device **4** detaches from the mechanism device **3** (i.e. the first direction **X1**). Accordingly, the fixing member **33** fits the wall **410** surrounding the guiding hole **41** more tightly. As mentioned above, the engaging protrusion **331** with reverse structure of the present invention enables the electronic device **4** to fix inside the clamping slot **314** more stably.

[0049] In summary, when the holding base **31** holds the electronic device **4**, the weight of the electronic device **4** itself drives the holding base **31** to rotate relative to the frame **1**, such that the electronic device **4** and the holding base **31** rotate relative to the frame **1** to a usage position, as shown in FIG. 5. Meanwhile, a side of the electronic device **4** is supported by a supporting surface **1000**, such that an angle  $\theta$  is included between the electronic device **4** and the supporting surface **1000** for adjusting an angle between the electronic device **4** and the user, leading to convenience of operation of the electronic device **4**.

[0050] Please refer to FIG. 6, FIG. 7A and FIG. 7B. FIG. 6 is an assembly diagram of a mechanism device **3'** and the frame **1** according to a second embodiment of the present invention. FIG. 7A is an exploded diagram of the mechanism device **3'** and the frame **1** according to the second embodiment of the present invention. FIG. 7B is a partly exploded perspective diagram of the mechanism device **3'** and the frame **1** according to the second embodiment of the present invention. As shown in FIG. 6, FIG. 7A and FIG. 7B, the main difference between the mechanism device **3'** and the aforesaid mechanism device **3** is that a guiding member **32'** of the mechanism device **3'** is a first magnetic member disposed on the first holding casing **312** of a holding base **31'**, and a fixing member **33'** of the mechanism device **3'** is a pad structure disposed on a second holding casing **313'** of the holding base **31'**. The

main casing **311** of the holding base **31'** has a fixing rib **3110**. The second holding casing **313'** is rotably disposed on the main casing **311** and has an abutting rib **3130**. The mechanism device **3'** further includes a driving member **35**. In this embodiment, the driving member **35** is a torsion spring with a fixing end **351** and a free end **352**. The fixing end **351** abuts against the fixing rib **3110**, and the free end **352** abuts against the abutting rib **3130**. Accordingly, the driving member **35** (i.e. the torsion spring) is able to drive the second holding casing **313'** to rotate toward the first holding casing **312**. In other words, the driving member **35** of the mechanism device **3'** is used for driving the second holding casing **313'** to rotate along a first rotating direction **R1**, as shown in FIG. 6.

[0051] Please refer to FIG. 7A, FIG. 8 and FIG. 9. FIG. 8 is a diagram of the mechanism device **3'** and the frame **1** in a detaching status according to the second embodiment of the present invention. FIG. 9 is a diagram of the mechanism device **3'** and the frame **1** in a usage status according to the second embodiment of the present invention. As shown in FIG. 7A, FIG. 8 and FIG. 9, the second holding casing **313'** has a front side **3131** and a rear side **3132**. The rear side **3132** is coupled to the main casing **311**. The pad structure (i.e. the fixing member **33'**) has a plurality of engaging protrusions **331'**. A cross section of each of the engaging protrusions **331'** gradually increases along a direction from the front side **3131** toward the rear side **3132** (i.e. the second direction **X2**). In other words, each of the engaging protrusions **331'** is substantially a triangular structure, as shown in FIG. 8. In this embodiment, the pad structure (i.e. the fixing member **33'**) is made of rubber material (e.g. the carbon rubber material).

[0052] As shown in FIG. 8 and FIG. 9, when the mechanism device **3'** is desired to couple the electronic device **4** to the display unit **2**, the electronic device **4** is inserted into the clamping slot **314** on the holding base **31'** in a detaching position, as shown in FIG. 8, along the second direction **X2**. During the aforesaid process, the first magnetic member (i.e. the guiding member **32'**) is able to abstract a second magnetic member **42** of the electronic device **4**, such that the electronic device **4** is guided from a position shown in FIG. 8 to a position shown in FIG. 9. In other words, the guiding member **32'** is used for guiding the electronic device **4** to enter the clamping slot **314** by the aforesaid cooperation of the first magnetic member (i.e. the guiding member **32'**) and the second magnetic member **42**, such that the holding base **31'** is able to hold the electronic device **4**.

[0053] It should be noticed that a length **L'** of the guiding member **32'** can be designed to be greater than a width **W'** of the second holding casing **313'** of the holding base **31'** for the sake of facilitating the electronic device **4** to be aligned with the first magnetic member inside the clamping slot **314**. Accordingly, the guiding member **32'** is able to exceed an area covered by the second holding casing **313'** for enabling a user to see the guiding member **32'** from a side above the holding base **31'**. It facilitates the electronic device **4** to be aligned with the first magnetic member (i.e. the guiding member **32'**), so as to smoothly guide and properly orient the electronic device **4** into the clamping slot **314**. In such a manner, a connector **43** of the electronic device **4** is able to be aligned with the connector **34** properly during the aforesaid process, so as to prevent the connector **34** of the mechanism device **3'** and the connector **43** of the electronic device **4** from damage due to improper alignment.

[0054] Furthermore, since the pad structure (i.e. the fixing member **33'**) is made of rubber material, the driving member

**35** drives the second holding casing **313'** to rotate along the first rotating direction **R1** to press the upper surface of the electronic device **4**. It leads the pad structure to resiliently abut against the electronic device **4** when the electronic device **4** is guided into the clamping slot **314**. In other words, for the sake of the pad structure (i.e. the fixing member **33'**) resiliently abutting against the electronic device **4**, the fixing member **33'** is able to fix the electronic device **4** inside the clamping slot **314** when the electronic device **4** enters the clamping slot **314**, so as to prevent the electronic device **4** from detaching from the clamping slot **314**.

**[0055]** Please refer to FIG. 10A, FIG. 10B and FIG. 10C. FIG. 10A is an exploded diagram of a mechanism device **3''** and the frame **1** according to a third embodiment of the present invention. FIG. 10B is a partly exploded diagram of the mechanism device **3''** and the frame **1** in another view according to the third embodiment of the present invention. FIG. 10C is a partly exploded perspective diagram of the mechanism device **3''** and the frame **1** according to the third embodiment of the present invention. As shown in FIG. 10A, FIG. 10B and FIG. 10C, the main difference between the mechanism device **3''** and the aforesaid mechanism device **3'** is that the mechanism device **3''** further includes a rotating arm **36** rotatably disposed on the frame **1**, a main casing **311'** of a holding base **31''** further has a pushing block **3111**, and a second holding casing **313''** of the mechanism device **3''** further has a pushed structure **3133**. In addition, the rotating arm **36** has a pivotal end **361** and an abutting end **362**. The pivotal end **361** is pivoted to the frame **1**.

**[0056]** Please refer to FIG. 11 and FIG. 12. FIG. 11 is a diagram of the frame **1** and the mechanism device **3''** in a detaching status according to the third embodiment of the present invention. FIG. 12 is a diagram of the frame **1** and the mechanism device **3''** in a usage status according to the third embodiment of the present invention. As shown in FIG. 11 and FIG. 12, during the frame **1** and the mechanism device **3''** is rotated from a usage position shown in FIG. 12 to a detaching position shown in FIG. 11, the pushed structure **3133** of the second holding casing **313''**, the pushed structure **3133** of the second holding casing **313''** is moved from a position shown in FIG. 12 to a position where the pushed structure **3133** abuts against the abutting end **362** of the rotating arm **36**, and the pushing block **3111** of the main casing **311'** is moved from a position shown in FIG. 12 to a position where the pushing block **3111** pushes the rotating arm **36**. Accordingly, when the frame **1** and the mechanism device **3''** further moves to the detaching position shown in FIG. 11, the pushing block **3111** pushes the rotating arm **36**, so as to activate the abutting end **362** to push the pushed structure **3133**. In such a manner, the rotating arm **36** is able to drive the second holding casing **313''** to rotate away from the first holding casing **312** and toward the detaching position shown in FIG. 11, so as to activate the pad structure (i.e. the fixing member **33'**) to depart from an upper surface of the electronic device **4**. As a result, the second holding casing **313''** and the pad structure (i.e. the fixing member **33'**) is no longer press the upper surface of the electronic device **4**, so as to be able to detach the electronic device **4** from the clamping slot **314** on the holding base **31''**.

**[0057]** On the other hand, during the frame **1** and the mechanism device **3''** is rotated from the detaching position shown in FIG. 11 to the usage position shown in FIG. 12, the pushing block **3111** of the main casing **311'** departs from the rotating arm **36**. Accordingly, the pushing block **3111** is no longer push the rotating arm **36**, and thus the rotating arm **36**

falls due to attraction by gravity itself. As a result, the abutting end **362** of the rotating arm **36** releases the pushed structure **3133** of the second holding casing **313''**. In such a manner, the frame **1** and the mechanism device **3''** is able to move toward the usage position shown in FIG. 12. Meanwhile, the driving member **35** (as shown in FIG. 10A) of the mechanism device **3''** drives the second holding casing **313''** to rotate toward the first holding casing **312**, such that the second holding casing **313''** and the pad structure (i.e. the fixing member **33'**) presses the upper surface of the electronic device **4**, so as to fix the electronic device **4** inside the clamping slot **314** on the holding base **31''**.

**[0058]** Compared to the prior art, the present invention utilizes the guiding member for properly orienting and guiding the electronic device into the clamping slot on the holding base. In such a manner, the connector of the electronic device is able to be aligned with the connector of the mechanism device properly during the aforesaid process, so as to prevent the connector of the mechanism device and the connector of the electronic device from damage due to improper alignment. Furthermore, when the electronic device is guided into the clamping slot on the holding base, the present invention further utilizes the fixing member to fix the electronic device inside the clamping slot, so as to prevent the electronic device from detaching from the clamping slot. Thus, it further prevents the connectors from improper mating. In addition, since the clamping slot for holding the electronic device has the openings formed on the two sides thereof, the openings on the two sides of the clamping slot do not constrain a width of the electronic device that is held by the clamping slot. In other words, the holding base of the present invention is able to hold electronic devices with different sizes by design of the clamping slot with the openings formed on the two sides thereof.

**[0059]** Those skilled in the art will readily observe that numerous modifications and alterations of the device and method may be made while retaining the teachings of the invention. Accordingly, the above disclosure should be construed as limited only by the metes and bounds of the appended claims.

What is claimed is:

1. A mechanism device with rotary holder installed on a frame, comprising:

- a hinge mechanism installed on the frame;
- a holding base pivoted to the frame by the hinge mechanism and comprising a main casing, a first holding casing and a second holding casing, the first holding casing and the second holding casing extending from two opposite sides of the main casing along a direction away from the hinge mechanism, such that the main casing, the first holding casing and the second holding casing cooperatively define a holding slot with openings formed on two sides thereof for holding an electronic device;
- at least one guiding member disposed inside the holding slot and for guiding the electronic device into the holding slot; and
- at least one fixing member disposed inside the holding slot and for fixing the electronic device inside the holding slot when the electronic device enters the holding slot.

2. The mechanism device of claim 1, wherein the at least one guiding member is a guiding post disposed through the main casing and diving into the clamping slot, the guiding post is for inserting into a guiding hole on the electronic device, and the hinge mechanism comprises:

- a base fixed on the frame; and

a rotating member pivoted to the base, the guiding post protruding from the rotating member, the holding base being installed on the rotating member and capable of rotating with the rotating member, wherein two through holes are formed on the main casing for allowing the guiding post to pass through and dive into the clamping slot.

**3.** The mechanism device of claim **2**, wherein the at least one fixing member is a bushing structure covering the guiding post, and the busing structure tightly fits a wall surrounding the guiding hole when the guiding post inserts into the guiding hole.

**4.** The mechanism device of claim **3**, wherein the guiding post has a front end and a rear end, the guiding post passes through the main casing along a direction from the rear end toward the front end, the bushing structure has a plurality of engaging protrusions, and a cross section of each of the engaging protrusions gradually increases along a direction from the front end toward the rear end.

**5.** The mechanism device of claim **4**, wherein the engaging protrusion is substantially a triangular structure.

**6.** The mechanism device of claim **4**, wherein the bushing structure is made of rubber material.

**7.** The mechanism device of claim **1**, wherein the at least one guiding member is a first magnetic member disposed on the first holding casing, and the first magnetic member is for abstracting a second magnetic member of the electronic device, so as to guide the electronic device into the clamping slot.

**8.** The mechanism device of claim **7**, wherein the at least one fixing member is a pad structure disposed on the second holding casing, and the pad structure presses an upper surface of the electronic device when the first magnetic member guides the electronic device into the clamping slot.

**9.** The mechanism device of claim **8**, wherein the second holding casing has a front side and a rear side, the rear side is coupled to the main casing, the pad structure has a plurality of engaging protrusions, and a cross section of each of the engaging protrusions gradually increases along a direction from the front side toward the rear side.

**10.** The mechanism device of claim **9**, wherein the engaging protrusions is substantially a triangular structure.

**11.** The mechanism device of claim **8**, wherein the pad structure is made of rubber material.

**12.** The mechanism device of claim **8**, wherein the main casing has a fixing rib, the second holding casing is rotably disposed on the main casing and has an abutting rib, and the mechanism device further comprises:

a driving member with a fixing end and a free end, the fixing end abutting against the fixing rib and the free end abutting against the abutting rib, such that the driving member drives the second holding casing to rotate toward the first holding casing, so as to make the pad structure press the upper surface of the electronic device.

**13.** The mechanism device of claim **12**, further comprising: a rotating arm rotably disposed on the frame, the rotating arm driving the second holding casing to rotate away from the first holding casing when the holding base rotates to a detaching position, so as to activate the pad structure to depart from the upper surface of the electronic device; the rotating arm releasing the second holding casing when the holding base rotates to a usage position, such that the driving member drives the second holding casing to rotate toward first holding casing.

**14.** The mechanism device of claim **13**, wherein the main casing further has a pushing block, the second holding casing further has a pushed structure, the rotating arm has a pivotal end and an abutting end, the pivotal end is for pivoting the frame, when the holding base rotates to the detaching position, the pushed structure moves to where the pushed structure abuts against the abutting end and the pushing block pushes the rotating arm, such that the rotating arm activates the abutting end to push the pushed structure, so as to make the second holding casing to rotate away from the first holding casing; when the holding base rotates to the usage position, the pushing block departs from the rotating arm and the abutting end releases the pushed structure, such that the driving member drives the second holding casing to rotate toward the first holding casing.

**15.** The mechanism device of claim **1**, wherein a length of the guiding member is greater than a width of the second holding casing.

**16.** The mechanism device of claim **1**, further comprising: a connector disposed inside the clamping slot and coupled to a display unit installed on the frame, the connector being for coupling the electronic device to the display unit.

**17.** A display device, comprising:

a frame;

a display unit installed on the frame; and

a mechanism device installed on the frame, comprising:

a hinge mechanism installed on the frame;

a holding base pivoted to the frame by the hinge mechanism and comprising a main casing, a first holding casing and a second holding casing, the first holding casing and the second holding casing extending from two opposite sides of the main casing along a direction away from the hinge mechanism, such that the main casing, the first holding casing and the second holding casing cooperatively define a holding slot with openings formed on two sides thereof for holding an electronic device;

at least one guiding member disposed inside the holding slot and for guiding the electronic device into the holding slot; and

at least one fixing member disposed inside the holding slot and for fixing the electronic device inside the holding slot when the electronic device enters the holding slot.

**18.** The display device of claim **17**, wherein the at least one guiding member is a guiding post disposed through the main casing and diving into the clamping slot, the guiding post is for inserting into a guiding hole on the electronic device, the at least one fixing member is a bushing structure covering the guiding post, and the busing structure tightly fits a wall surrounding the guiding hole when the guiding post inserts into the guiding hole.

**19.** The display device of claim **17**, wherein the at least one guiding member is a first magnetic member disposed on the first holding casing, the first magnetic member is for abstracting a second magnetic member of the electronic device, so as to guide the electronic device into the clamping slot, the main casing has a fixing rib, the second holding casing is rotably disposed on the main casing and has an abutting rib, and the mechanism device further comprises:

a driving member having a fixing end and a free end, the fixing end abutting against the fixing rib and the free end abutting against the abutting rib, such that the driving

member drives the second holding casing to rotate toward the first holding casing.

**20.** The display device of claim **19**, wherein the mechanism device further comprises:

a rotating arm rotably disposed on the frame, the rotating arm driving the second holding casing to rotate away from the first holding casing when the holding base rotates to a detaching position; the rotating arm releases the second holding casing when the holding base rotates to a usage position, such that the driving member drives the second holding casing to rotate toward first holding casing.

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