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FIXING DEVICE

Abstract

A fixing device includes a holder base having an accommodating chamber, two slideways, two side guide plates, a buckle groove and a blocking wall respectively formed on front and rear sides of the accommodating chamber, a positioning block formed above the buckle groove and a fixing unit provided at the bottom side, and a clasp having a pushing portion, an operating portion, a horizontal portion, a vertical portion and a connecting plate provided at the bottom side of the pushing portion, an elastic member set in the accommodating chamber and abutted against the vertical portion and the blocking wall, a pivot inserted through the connecting plate and the elastic member with two ends thereof positioned in the slideways and a buckle portion located at the front side of vertical portion and forced by the elastic member to engage with the buckle groove of the holder base.

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Background/Summary

CROSS REFERENCE TO THE RELATED APPLICATIONS [0001] This application is a Continuation-In-Part of application Ser. No. 18/350,210, filed on Jul. 11, 2023; this application is also a Continuation-In-Part of application Ser. No. 18/598,511, filed on Mar. 7, 2024; for which priority is claimed under 35 U.S.C. § 120, the entire contents of all of which are hereby incorporated by reference. [0002] This application claims the priority benefit of Taiwan patent application number 112121101, filed on Jun. 6, 2023.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0003] The present invention discloses a fixing device, particularly a fixing device made of insulating plastic. When the fixing device accidentally falls on the circuit board, it will not cause a short circuit and damage to electronic components, and has excellent safety. Furthermore, when the interface card is first obliquely inserted into the electrical connector on the circuit board, the suspended end of the interface card rotates downward and pushes the clasp in the horizontal direction, and the suspended end of the interface card is confined between the pushing portion of the clasp and the periphery of the positioning block of the holder base, thereby achieving the purpose of stable positioning of the interface card and stable transmission of electronic signals.

2. Description of the Related Art

[0004] The rapid development of the electronics industry has doubled the computing performance of computers or servers. In addition to the main components of the computer including the motherboard, central processing unit, memory and storage devices, the motherboard is also equipped with a variety of connectors with different interfaces to expand various peripheral devices. To expand various peripheral devices, interface cards are equipped with multiple electronic components and corresponding circuit layouts. The terminal is presented with multiple metal contacts. By inserting the interface card into the connector on the motherboard, the two devices can be electrically connected to achieve the purpose of expanding the motherboard's functions.

[0005] Conventional mobile electronic devices (such as laptops) are limited by their small internal space and cannot accommodate various components as extensively as personal computers. In particular, the space for installing the motherboard and related components formed in the C and D sides of the notebook computer case is limited by the thickness, and the assembly of the motherboard and interface cards cannot be assembled vertically like a personal computer. Therefore, the assembly of the motherboard and interface card inside the notebook computer must be carried out in a horizontal direction through a rotary connector. When one end of the interface card is inserted into the rotary connector, the other end of the interface card is suspended. The suspended interface card end is usually locked in and positioned in the motherboard by a screw to form a stable state that is not easy to shake. However, the screw locking structure is not conducive to the removal of the interface card. When the metal screw loosens during disassembly or is shaken

by external forces and accidentally falls on the motherboard, it may cause a short circuit in the motherboard, thereby damaging the electronic components. In addition, the screw locking structure must be unlocked by a hand tool (such as screwdriver), which is inconvenient. Therefore, this problem needs to be developed and solved by those engaged in this industry.

SUMMARY OF THE INVENTION

[0006] Therefore, in view of the above problems and deficiencies, the inventor collected relevant information and, after multiple evaluations and considerations, designed the invention of this fixing device.

[0007] The main object of the present invention is to provide a fixing device, which comprises a holder base and a clasp. The holder base comprises an accommodating chamber therein, two slideways formed on each of two opposite sides of the accommodating chamber, two side guide plates respectively provided above each of the two slideways, a buckle groove and a blocking wall respectively formed on opposing front and rear sides of the accommodating chamber, a positioning block formed above the buckle groove, and a fixing unit provided at a bottom side of the holder base. The clasp comprises a horizontal portion with a pushing portion at a front end thereof and an operating portion at a rear end thereof, a vertical portion extending downward from a bottom side of the pushing portion and inserted into the accommodating chamber of the holder base, a connecting plate connected to the vertical portion, an elastic member provided in the accommodating chamber with two ends thereof respectively abutting against an inner side of the vertical portion and the blocking wall, a pivot inserted through the connecting plate and the elastic member with two opposite ends thereof respectively positioned in the two slideways to form a positioning, and a buckle portion protruding from a front side of the vertical portion corresponding to the buckle groove of the holder base. The buckle portion is firmly fastened in the buckle groove through the pushing force of the elastic member.

[0008] As described above, the fixing device is generally made of insulating plastic, and when it accidentally falls on the circuit board, it will not cause a short circuit and damage to electronic components, and has excellent safety. Furthermore, when the interface card is first obliquely inserted into the electrical connector on the circuit board, the suspended end of the interface card rotates downward and pushes the clasp in the horizontal direction, and the suspended end of the interface card is confined between the pushing portion of the clasp and the periphery of the positioning block of the holder base, thereby achieving the purpose of stable positioning of the interface card and stable transmission of electronic signals.

[0009] Another object of the present invention is that the clasp further comprises two limiting blocks respectively extended from the horizontal portion toward two opposite sides of the connecting plate for limiting two resisting end portions of the elastic member, and the limiting blocks and the vertical portion have an inner side thereof form a respective limiting space for accommodating one respective resisting end portion of the elastic member.

[0010] Still another object of the present invention is that the connecting plate of the clasp is further provided with an axle hole for the pivot to pass through, and the two positioning ends of the pivot are respectively positioned in the two slideways of the holder base to form a positioning.

[0011] Still another object of the present invention is that the elastic member is a torsion spring. The elastic member has a middle part thereof wound to form two positioning rings with a penetration channel formed in each of the two positioning rings for the pivot to pass through. The elastic member is formed with a deformation metal wire segment with two ends bent against the blocking wall, and the two resisting end portions of the elastic member are formed with the metal free wire ends and stopped against the inner side of the vertical portion of said clasp.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. **1** is a three-dimensional external view of the fixing device of the present invention.

[0013] FIG. **2** is a three-dimensional external view of the fixing device of the present invention from another viewing angle.

[0014] FIG. **3** is a three-dimensional exploded view of the fixing device of the present invention.

[0015] FIG. **4** is a three-dimensional exploded view of the fixing device of the present invention from another viewing angle.

[0016] FIG. **5** is a schematic diagram (I) of the assembly operation of the fixing device of the present invention.

[0017] FIG. **6** is a schematic diagram (II) of the assembly operation of the fixing device of the present invention.

[0018] FIG. **7** is a schematic diagram (III) of the assembly operation of the fixing device of the present invention.

[0019] FIG. **8** is a schematic diagram (IV) of the assembly operation of the fixing device of the present invention.

[0020] FIG. **9** is a three-dimensional external view of a second embodiment of the fixing device of the present invention.

[0021] FIG. **10** is a three-dimensional exploded view of the second embodiment of the fixing device of the present invention.

[0022] FIG. **11** is a three-dimensional exploded view of the second embodiment of the fixing device of the present invention from another viewing angle.

[0023] FIG. **12** is a schematic diagram of the assembly operation of the second embodiment of the fixing device of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0024] In order to achieve the above-mentioned objects and effect, the technical means and structure adopted by the present invention are described in detail with reference to the preferred embodiments of the present invention, and its features and functions are as follows for a complete understanding.

[0025] Please refer to FIGS. **1**, **2**, **3**, and **4**, which are a three-dimensional external view of the fixing device of the present invention, a three-dimensional external view of the fixing device of the present invention from another viewing angle, a three-dimensional exploded view of the fixing device of the present invention and a three-dimensional exploded view of the fixing device of the present invention from another viewing angle. The fixing device of a first embodiment of the present invention mainly comprises a base member **1** and a positioning fastener **2**, and the connection relationship between the aforementioned components is as follows:

[0026] The base member **1** comprises a bottom plate **11** with a positioning portion **111** at the front end and a positioning hole **1110** on the positioning portion **111** for a preset fastener (not shown in the figure) to be penetrated and fixed, two side plates **112** respectively extended upward from the outer walls on both sides of the other end of the bottom plate **11**, a resisting plate **1121** connected between the two side plates **112**, a flexible space **110** surrounded by the two side plates **112** and the resisting plate **1121**, and two assembly structures **12** respectively located on the two side plates **112** at an inner side corresponding to each other. Each assembly structure **12** comprises a positioning bump **121** relatively protruding inward, and a stop arm **122** located between the positioning bump **121** and the resisting plate **1121** and extending to both sides. The stop arm **122** has a stop block **1221** protruding in the direction of the positioning bump **121**.

[0027] The positioning fastener **2** comprises a holder base **21**, a clasp **22**, a first elastic member **2151**, a second elastic member **23**, and a pivot **24**. The holder base **21** comprises an accommodating chamber **210**, two slideways **2101** respectively formed on two opposite sides of the accommodating chamber **210**, two side guide plates **211** respectively formed above the two

slideways **2101**, two finger rods **2111** respectively protruding from the outer wall surfaces of the two side guide plates **211**, two connecting portions **212** respectively extended below the two side guide plates **211** for assembly with the two assembly structures **12**, two connecting blocks **2121** respectively protruding downward from the two connecting portions **212**, two positioning grooves **2120** respectively formed between the holder base **21** and the connecting blocks **2121** for the respective positioning bumps **121** to pass through and position, a buckle groove **2102** and a blocking wall **2103** respectively formed corresponding to the front and rear sides of the accommodating chamber **210**, a first positioning block **213** formed above the buckle groove **2102**, a locating unit **214** located on the bottom side of the holder base **21** and positioned between the two side plates **112** of the base member **1**, a protruding portion **2141** protruding from the front end of the locating unit **214**, a resisting groove **2140** formed between the holder base **21** and the protruding portion **2141**, a second positioning block **2142** located in the resisting groove **2140**, two buckle blocks **2143** respectively protruding from two opposite sides at the other end of the protruding portion **2141**, an elastic member groove **215** provided on the rear side of the holder base **21** corresponding to the position of the flexible space **110**, and a cover plate **216** resisting above the resisting plate **1121**. The first elastic member **2151** is set in the elastic member groove **215** with its one end against the wall surface of the resisting plate **1121**.

[0028] The clasp **22** comprises a horizontal portion **221** with a pushing portion **2211** at the front end and an operating portion **2212** at the rear end, a vertical portion **222** extending downward from the bottom side of the pushing portion **2211** and inserted into the accommodating chamber **210** of the holder base **21**, a connecting plate **223** connected to the vertical portion **222**, and a buckle portion **2221** protruding from the front side of the vertical portion **222** corresponding to the buckle groove **2102** of the holder base **21**. The buckle portion **2221** is firmly engaged in the buckle groove **2102** through the pushing force of the second elastic member **23**. The second elastic member **23** is set in the accommodating chamber **210** with its two ends respectively resisting the inner side of the vertical portion **222** and the blocking wall **2103**. The pivot **24** is inserted through the connecting plate **223** and the second elastic member **23** with its two ends respectively positioned in the two slideways **2101** to form a positioning.

[0029] The above-mentioned two side guide plates **211** of the holder base **21** each have a guide inclined edge **2112** which is smoothly curved downward toward the rear side. The first positioning block **213** of the holder base **21** is composed of a semicircular arc-shaped sheet body. The bottom plate **11** of the base member **1** is positioned on a preset circuit board **31** through the positioning portion **111**. A preset first interface card **32** and a preset second interface card **33** are plugged into respective preset electrical connectors (not shown in the figures) provided on the preset circuit board **31**. After the preset first interface card **32** and the preset second interface card **33** are respectively rotated and pushed against the pushing portion **2211** of the clasp **22**, the first resisting end **321** of the suspended end of the preset first interface card **32** is stopped against the first positioning block **213**, and the second resisting end **331** of the suspended end of the preset second interface card **33** is stopped against the second positioning block **2142**, thereby completing the positioning of the preset first interface card **32** and the preset second interface card **33** in the present invention.

[0030] The top side of the pushing portion **2211** of the clasp **22** has a guide bevel **2213** that guides the preset first interface card **32** and the preset second interface card **33** to rotate downward, and the guide bevel **2213** is in the shape of an arc. A limiting surface **2214** is formed on the bottom side of the pushing portion **2211**, and a sliding surface **2215** is formed on the bottom side of the operating portion **2212** relative to the other side of the pushing portion **2211**. The clasp **22** further comprises two limiting blocks **224** respectively extended from the horizontal portion **221** toward both sides of the connecting plate **223** for limiting two resisting end portions **231** of the second elastic member **23**. The opposite inner sides of the limiting blocks **224** and the vertical portion **222** form a respective limiting space **2240** for accommodating the resisting end portions **231** of the second

elastic member **23**. The connecting plate **223** of the clasp **22** is further provided with an axle hole **2230** for the pivot **24** to pass through, and the two opposite positioning ends **241** of the pivot **24** are positioned in the two slideways **2101** of the holder base **21** to form a positioning.

[0031] The above-mentioned second elastic member **23** is a torsion spring. The second elastic member **23** is wound in the middle to form two positioning rings **233**, and a penetration channel **2330** is formed in each positioning ring **233** for the pivot **24** to pass through. The second elastic member **23** is formed with a deformation metal wire segment **232** with two ends bent against the blocking wall **2103**, and the two resisting end portions **231** are formed with metal free wire ends and stopped against the inside of the vertical portion **222** of the clasp **22**.

[0032] When assembling the present invention, first assemble the positioning portion **111** of the base member **1** on the preset circuit board **31**, and then set the locating unit **214** of the holder base **21** on the bottom plate **11** between the two side plates **112** and position the positioning bumps **121** of the assembly structures **12** on the two side plates **112** in the positioning grooves **2120** formed between the holder base **21** and the connecting blocks **2121**. The two buckle blocks **2143** of the locating unit **214** are then respectively accommodated on the bottom side of the two stop arms **122**, and the first elastic member **2151** located in the elastic member groove **215** on the rear side of the holder base **21** is stopped against the resisting plate **1121**, and the buckle blocks **2143** on both sides of the holder base **21** pushed by the first elastic member **2151** are blocked by the stop blocks **1221** protruding from one end of the stop arms **122** and cannot be pushed out of the base member **1**. Then respectively extend the two resisting end portions **231** of the second elastic member **23** into the limiting spaces **2240** on both sides of the connecting plate **223** of the clasp **22**, and then use the limiting blocks **224** to limit the two resisting end portions **231**. Then the two penetration channels **2330** of the second elastic member **23** are simultaneously aligned with the axle hole **2230** located on the connecting plate **223**. Then press the vertical portion **222** and the connecting plate **223** of the clasp **22** and the second elastic member **23** from top to bottom simultaneously into the accommodating chamber **210** of the holder base **21**, so that the resisting end portions **231** of the second elastic member **23** are resisted on the inner side of the vertical portion **222** and the deformation metal wire segment **232** is resisted on the blocking wall **2103**, and the two penetration channels **2330** of the second elastic member **23** and the axle hole **2230** of the connecting plate **223** are aligned with the two slideways **2101** of the holder base **21** at the same time. The pivot **24** is then passed through the two slideways **2101**, the two penetration channels **2330** and the axle hole **2230**, and the two positioning ends **241** of the pivot **24** are positioned in the two slideways **2101** to complete the assembly of the fixing device.

[0033] Please refer to FIGS. 5, 6 and 7, which are schematic diagrams (I), (II) and (III) of the assembly operation of the fixing device of the present invention. It can be clearly seen from the figures that when the present invention is actually applied, the preset first interface card **32** and the preset second interface card **33** need to be plugged into the docking spaces of the respective electrical connectors (not shown in the figures) on the preset circuit board **31** to create an electrical connection. When the first resisting end **321** and the second resisting end **331** extending from the suspended board edges of the preset first interface card **32** and the preset second interface card **33** are to be positioned in the positioning fastener **2** on the preset circuit board **31**, first, use the preset electrical connectors as the rotation axis, and rotate the preset first interface card **32** and the preset second interface card **33** toward the pushing portion **2211** and the protruding portion **2141** respectively. By pulling the finger rods **2111** on the outer walls of the two side guide plates **211**, the holder base **21** can be pushed toward the resisting plate **1121**, thereby driving the first elastic member **2151** in the holder base **21** to undergo elastic compression deformation. After the second resisting end **331** of the preset second interface card **33** and the resisting groove **2140** of the locating unit **214** are aligned, the finger rods **2111** are released, so that the first elastic member **2151** can push the holder base **21** back to its original position through the force of elastic recovery, and then the second resisting end **331** can extend into the resisting groove **2140** and resist the

second positioning block **2142** to form a resisting position (as shown in FIGS. 5 and 6). At this time, the pushing portion **2211** will be retracted by the horizontal stress of the preset first interface card **32** and drive the pivot **24** to move along the two slideways **2101** toward the rear direction of the holder base **21**, and make the second elastic member **23** produce elastic compression deformation, so that the first resisting end **321** of the preset first interface card **32** can be moved vertically downward into the bottom side of the limiting surface **2214** of the pushing portion **2211**. The first positioning block **213** of the holder base **21** corresponding to the limiting surface **2214** is composed of a semicircular arc-shaped sheet body. The first positioning block **213** provides a resisting positioning for the first resisting end **321** of the preset first interface card **32** (as shown in FIGS. 6 and 7). At the same time, the clasp **22** removes the resisting force of the preset first interface card **32**, causing the second elastic member **23** to generate an elastic restoring force, thereby driving the pushing portion **2211**, the second elastic member **23** and the pivot **24** to return to their original positions. The top surface of the preset first interface card **32** is limited by the limiting surface **2214** of the clasp **22**, and the side and the bottom surfaces of the preset first interface card **32** are stored at the periphery of the first positioning block **213**. Through the above, the positioning structure of the fixing device with the preset first interface card **32** and the preset second interface card **33** is completed.

[0034] Please refer to FIG. 8, which a schematic diagram (IV) of the assembly operation of the fixing device of the present invention. When you want to perform unlocking between the positioning fastener **2** and the preset first interface card **32** and the preset second interface card **33**, first, apply force to the operating portion **2212** of the clasp **22** toward the rear side of the holder base **21**, so that the buckle portion **2221** is detached from the buckle groove **2102** of the holder base **21**, and the pivot **24** is moved in the slideways **2101** a predetermined distance, then apply force again to rotate the operating portion **2212** downward with the pivot **24** as the center, thereby causing the second elastic member **23** to produce a great amount of compression, and also causing the sliding surface **2215** on the bottom side of the operating portion **2212** to slide toward the rear side of the holder base **21** along the guide inclined edges **2112** of the two side guide plates **211**. At this time, the clasp **22** will generate a predetermined tilt angle and push the pushing portion **2211** upward, so that the preset first interface card **32** is affected by the elastic restoring force of the preset conductive terminals in the preset electrical connector, so that the end face away from the preset electrical connector is tilted. Then the first resisting end **321** of the preset first interface card **32** is rotated upward and separated from the first positioning block **213** and the pushing portion **2211**. After the preset first interface card **32** is detached, by pulling the finger rods **2111** on the outer walls of the two side guide plates **211**, the holder base **21** is pushed toward the resisting plate **1121**. This then drives the first elastic member **2151** in the holder base **21** to undergo elastic compression deformation, so that the preset second interface card **33** is affected by the elastic restoring force of the preset conductive terminals in the preset electrical connector, causing the end surface away from the preset electrical connector to tilt. Then the second resisting end **331** of the preset second interface card **33** is rotated upward and separated from the second positioning block **2142**. The preset first interface card **32** and the preset second interface card **33** can be detached and taken out from the respective preset electrical connectors. Then by removing the force on the operating portion **2212** of the clasp **22** and the finger rods **2111** of the two side guide plates **211**, the pushing portion **2211**, the second elastic member **23**, the pivot **24** and the holder base **21** are returned to their original positions, and the buckle portion **2221** of the clasp **22** is buckled into the buckle groove **2102** of the holder base **21** to achieve the purpose of separating the preset first interface card **32** and the preset second interface card **33**.

[0035] The fixing device of the above-described first embodiment of the present invention shown in FIGS. 1 to 8 has the following advantages: Provide a quick positioning and disassembly structure for multiple interface cards. The integrated first positioning block **213** and the second positioning block **2142** are provided on the holder base **21** to resist the first resisting end **321** of the

suspended end of the preset first interface card **32** and the second resisting end **331** of the suspended end of the preset second interface card **33**, and the holder base **21**, the preset first interface card **32** and the preset second interface card **33** are firmly positioned by the elastic push of the first elastic member **2151** and the second elastic member **23**. And by moving the holder base **21** and the operating portion **2212**, the first elastic member **2151** and the second elastic member **23** can respectively retreat and tilt through elastic compression deformation. Then, the preset first interface card **32** and the preset second interface card **33** can be separated from the positioning fastener **2**, so as to achieve the purpose of quick positioning and disassembly of multiple interface cards in the present invention.

[0036] Please refer to FIGS. **9** to **12**, which are the second embodiment of the fixing device of the present invention. Compared with the first embodiment disclosed in FIGS. **1** to **8**, the difference is that in the second embodiment, only one positioning block **42** is provided and only one interface card **83** can be used for positioning, and the bottom side of the holder base **4** is provided with an integrated fixing unit **43**, and the remaining components are the same as those of the first embodiment. The structure of the second embodiment comprises the following:

[0037] The holder base **4** comprises an accommodating chamber **40** therein, a slideway **401** formed on each of two opposite sides of the accommodating chamber **40**, a side guide plate **41** provided above each of the two slideways **401**, a buckle groove **402** and a blocking wall **403** respectively formed on the front and rear sides of the accommodating chamber **40**, a positioning block **42** formed above the buckle groove **402**, and a fixing unit **43** provided at the bottom side of the holder base **4**.

[0038] The clasp **5** comprises a horizontal portion **51** with a pushing portion **511** at the front end and an operating portion **512** at the rear end, a vertical portion **52** extending downward from the bottom side of the pushing portion **511** and inserted into the accommodating chamber **40** of the holder base **4**, a connecting plate **53** connected to the vertical portion **52**, an elastic member **6** provided in the accommodating chamber **40** with its two ends thereof respectively abutting against the inner side of the vertical portion **52** and the blocking wall **403**, a pivot **7** inserted through the connecting plate **53** and the elastic member **6** with its two ends thereof respectively positioned in the two slideways **401** to form a positioning, and a buckle portion **521** protruding from the front side of the vertical portion **52** corresponding to the buckle groove **402** of the holder base **4**. The buckle portion **521** is firmly fastened in the buckle groove **402** through the pushing force of the elastic member **6**.

[0039] Please refer to FIG. **12**, in which the fixing unit **43** of the holder base **4** comprises two resisting plates **431** that are supported on the upper surface of the preset circuit board **81**, and a fixing column **432** and two wing plates **433** that extend into the positioning grooves **810** of the preset circuit board **81** and perform a rotational positioning. The preset circuit board **81** is further provided with an electrical connector **82**. The bottom side of each resisting plate **431** is convexly further provided with a supporting bump **4311** which is smoothly abutted against the upper surface of the preset circuit board **81**. The top surface of each wing plate **433** is further convexly provided with a supporting rib **4331** which is smoothly pressed against the lower surface of the preset circuit board **81**. The two side guide plates **41** of the holder base **4** each have a guide inclined edge **411** which is smoothly curved downward toward the rear side. The positioning block **42** of the holder base **4** is composed of a semicircular arc-shaped sheet body. After the preset interface card **83** is plugged into the electrical connector **82** provided on the preset circuit board **81** and rotated to push against the pushing portion **511** of the clasp **5**, the semicircular resisting groove **831** that is correspondingly provided on the suspended end of the preset interface card **83** and extends into and presses against the positioning block **42**.

[0040] The pushing portion **511** of the clasp **5** is provided with a guide bevel **5111** on the top side for guiding the preset interface card **83** to rotate downward, and the guide bevel **5111** is in the shape of an arc. A limiting surface **5112** is formed on the bottom side of the pushing portion **511**,

and a sliding surface 5121 is formed on the bottom side of the operating portion 512 on the other side of the pushing portion 511. The clasp 5 further comprises two limiting blocks 54 respectively extended from the horizontal portion 51 toward both sides of the connecting plate 53 for limiting two resisting end portions 61 of the elastic member 6. The respective inner sides of the limiting blocks 54 and the vertical portion 52 form a respective limiting space 540 for accommodating the resisting end portions 61 of the elastic member 6. The connecting plate 53 of the clasp 5 is further provided with an axle hole 530 for the pivot 7 to pass through, and the two opposite positioning ends 71 of the pivot 7 are respectively positioned in the two slideways 401 of the holder base 4 to form a positioning.

[0041] The above-mentioned elastic member 6 is a torsion spring. The elastic member 6 is wound in the middle to form two positioning rings 63, and a penetration channel 630 is formed in each positioning ring 63 for the pivot 7 to pass through. The elastic member 6 is formed with a deformation metal wire segment 62 with two ends bent against the blocking wall 403, and the two resisting end portions 61 are formed with metal free wire ends and stopped against the inner side of the vertical portion 52 of the clasp 5.

[0042] When assembling the second embodiment of the fixing device of the present invention, firstly, the two resisting end portions 61 of the elastic member 6 are inserted into the limiting spaces 540 on both sides of the connecting plate 53 of the clasp 5, and the two resisting end portions 61 are limited by the limiting blocks 54. At the same time, the two penetration channels 630 of the elastic member 6 are aligned with the axle hole 530 of the connecting plate 53. Then, the vertical portion 52 of the clasp 5, the connecting plate 53 and the elastic member 6 are simultaneously pressed into the accommodating chamber 40 of the holder base 4 from top to bottom, so that the resisting end portions 61 of the elastic member 6 are pressed against the inner side of the vertical portion 52 and the deformation metal wire segment 62 is pressed against the blocking wall 403, and the two penetration channels 630 of the elastic member 6 and the axle hole 530 of the connecting plate 53 are simultaneously aligned with the two slideways 401 of the holder base 4. Then, the pivot 7 is passed through the two slideways 401, the two penetration channels 630 and the axle hole 530, and the two positioning ends 71 of the pivot 7 are respectively positioned in the two slideways 401 to form a positioning, and the assembly of the fixing device is completed by the above.

[0043] The above are only preferred embodiments of the present invention, and do not limit the patent scope of the present invention. Therefore, all simple modifications and equivalent structural changes made by using the contents of the description and drawings of the present invention should be included in the patent scope of the present invention and should be declared.

[0044] In summary, the fixing device of the present invention can achieve its effect and purpose when used. Therefore, this invention is truly an invention with excellent practicality. In order to meet the application requirements for invention patents, we have filed an application in accordance with the law. We hope that the review committee will approve this case as soon as possible to protect the inventor's hard work in research and development. If the review committee has any questions, please feel free to write to us for instructions. The inventor will do his best to cooperate and we will be very grateful.

Claims

1. A fixing device, comprising a holder base comprising an accommodating chamber therein and two slideways respectively formed on each of two opposite sides of said accommodating chamber, two side guide plates respectively provided above each of said two slideways, a buckle groove and a blocking wall respectively formed on opposing front and rear sides of said accommodating chamber, a positioning block formed above said buckle groove, and a fixing unit provided at a bottom side of said holder base; and a clasp comprising a horizontal portion with a pushing portion

at a front end thereof and an operating portion at a rear end thereof, a vertical portion extending downward from a bottom side of said pushing portion and inserted into said accommodating chamber of said holder base, a connecting plate connected to said vertical portion, an elastic member provided in said accommodating chamber with two ends thereof respectively abutting against an inner side of said vertical portion and said blocking wall, a pivot inserted through said connecting plate and said elastic member with two opposite ends thereof respectively positioned in said two slideways to form a positioning and a buckle portion protruding from a front side of said vertical portion corresponding to said buckle groove of said holder base, said buckle portion being firmly fastened in said buckle groove through the pushing force of said elastic member.

2. The fixing device as claimed in claim 1, wherein said fixing unit of said holder base comprises two resisting plates supported on an upper surface of a preset circuit board being provided with an electrical connector, and a fixing column and two wing plates that extend into respective positioning grooves of said preset circuit board and perform a rotational positioning.

3. The fixing device as claimed in claim 2, wherein each of said two resisting plates has a bottom side thereof convexly provided with a supporting bump which is smoothly abutted against the upper surface of said preset circuit board.

4. The fixing device as claimed in claim 2, wherein each of said two wing plates has a top surface thereof convexly provided with a supporting rib that is smoothly abutted against an opposing lower surface of said preset circuit board.

5. The fixing device as claimed in claim 1, wherein each of said two side guide plates of said holder base forms a guide inclined edge which is smoothly curved downward toward a rear side of said holder base.

6. The fixing device as claimed in claim 1, wherein said positioning block of said holder base is composed of a semicircular arc-shaped sheet body, so that after a preset interface card is plugged into said electrical connector provided on said preset circuit board and rotated to push against said pushing portion of said clasp, a semicircular resisting groove correspondingly provided on a suspended end of said preset interface card and extends into and resists against said positioning block.

7. The fixing device as claimed in claim 1, wherein said pushing portion of said clasp has a top side thereof provided with a guide bevel in the shape of an arc for guiding said preset interface card connected to said electrical connector of said preset circuit board to rotate downward, an opposing bottom side thereof provided with a limiting surface; said operating portion has a sliding surface formed on a bottom side thereof opposite to said pushing portion.

8. The fixing device as claimed in claim 1, wherein said clasp further comprises two limiting blocks respectively extended from said horizontal portion toward two opposite sides of said connecting plate for limiting two resisting end portions of said elastic member, said two limiting blocks and said vertical portion having a respective inner side thereof forming a respective limiting space for accommodating said two resisting end portions of said elastic member.

9. The fixing device as claimed in claim 1, wherein said connecting plate of said clasp is further provided with an axle hole for said pivot to pass through, and two positioning ends of said pivot are respectively positioned in said two slideways of said holder base to form a positioning.

10. The fixing device as claimed in claim 1, wherein said elastic member is a torsion spring, said elastic member having a middle part thereof wound to form two positioning rings with a penetration channel formed in each of said two positioning rings for said pivot to pass through, said elastic member being formed with a deformation metal wire segment with two ends bent against said blocking wall, and said two resisting end portions of said elastic member being formed with metal free wire ends and stopped against the inner side of said vertical portion of said clasp.
