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(54) CRIMP WIRING TERMINAL AND USE METHOD THEREFOR

(57) The present invention discloses a crimping-type wiring terminal, including a base part for mounting a lead wire and a pressing part connected to the base part for pressing the lead wire on the base part. The base part includes an insulating base, a conductive sheet, and an end cover. At least one mounting position is arranged on the insulating base, and a left end of the mounting position is a wire inlet end. The conductive sheet, the end cover, and the pressing part are arranged in the mounting position, the conductive sheet is fixedly mounted in the mounting position by the end cover, and the pressing part is located above the conductive sheet and is hingedly mounted in the mounting position. The pressing part is configured to be fastened with the conductive sheet after being rotated, and the pressing part is configured to tightly press the lead wire on the conductive sheet after the pressing part and the conductive sheet are fastened to each other. In addition, the present invention also discloses a method of using a crimping-type wiring terminal. The present invention can realize the quick fixing of a lead wire in practical use and can prevent the lead wire from being bent during the connection process. The crimping-type wiring terminal is of a simple structure and a smaller volume, and is easy to use, and features low costs.

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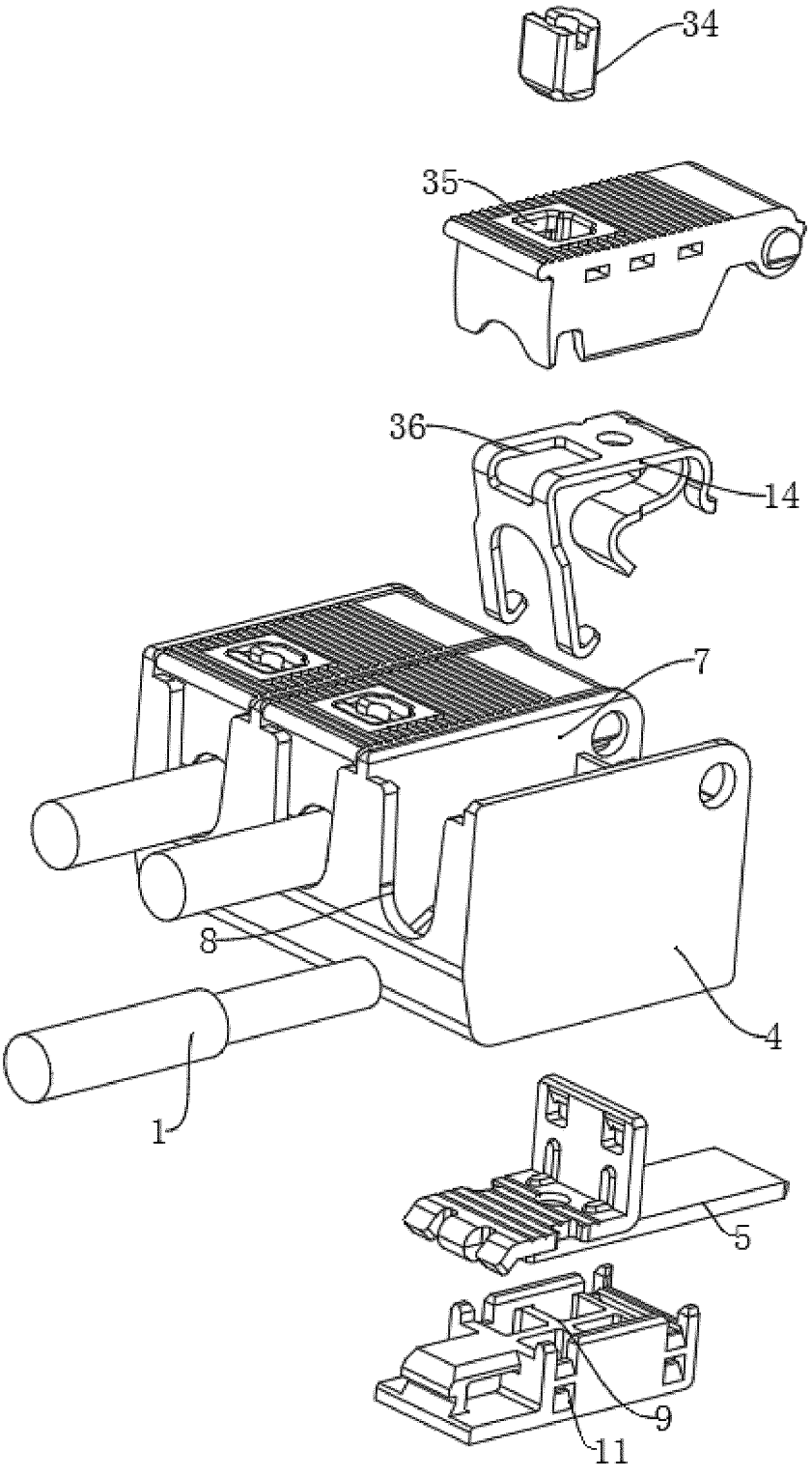

FIG. 5

Description

Technical Field

[0001] The present invention belongs to the technical field of electrical connection, and specifically relates to a crimping-type wiring terminal. In addition, the present invention also relates to a method of using a crimping-type wiring terminal.

Background

[0002] Wiring terminals are a very important type of products in the field of electrical connection. Due to low costs and flexible applications, various novel wiring terminal technologies and related products have been developed in the electrical connection product market. From the original plate-type wiring terminals, to the later wire pressing frame-type wiring terminals, to the current elastic piece-type wiring terminals, no matter how the terminals are upgraded, most of the existing terminals have not made breakthroughs in the wiring method. That is to say, most of the existing terminals are based on the assumption that lead wires on the customer side can be bent, and after the terminal is mounted, a lead wire is inserted into the corresponding terminal hole to realize the connection of the cable.

[0003] In addition, there are also some high-current bulkhead terminals currently available on the market, which does not require bending of the lead wire, but instead, the lead wire is moved in parallel to the vicinity of the conductive sheet of the terminal and then a multi-link mechanism arranged inside the terminal is pulled using a screwdriver, so as to lock the lead wire based on the self-locking principle of the multi-link mechanism. Such a terminal is of a larger volume due to its complex internal mechanism, and requires rotating the screwdriver by a certain angle, which cannot meet the restrictions of special customers on the use space of the terminal. In addition, the multi-link mechanism is a rigid component, and does not allow the terminal to be compatible with a wide range of lead wires.

[0004] To sum up, the existing terminals on the market have the following problems regarding the requirements of special customer groups.

[0005] First, the lead wire needs to be bent and inserted into the wiring hole of the terminal for connection, which cannot meet the requirements of special working conditions.

[0006] Second, such terminals are of a larger volume, which cannot meet the requirements on space.

[0007] Third, such terminals are compatible with only a smaller range of lead wires, and the customer has to choose different types of terminals to adapt to the existing range of lead wires, which is not conducive to the cost reduction of the customer.

[0008] Fourth, such terminals are not easy to dissemble, failing to meet the restrictions of customers on the operation space.

[0009] Fifth, such terminals are of a complex structure, high costs, and low reliability.

Summary

[0010] An objective of the present invention is to provide a crimping-type wiring terminal, which can realize the quick fixing of a lead wire in practical use and can prevent the lead wire from being bent during the connection process. The crimping-type wiring terminal is of a simple structure and a smaller volume, and is easy to use.

[0011] In addition, the present invention also provides a method of using a crimping-type wiring terminal.

[0012] To solve the above technical problems, the following technical solutions are employed in the present invention.

1. The basic concept of the present invention is as follows:

[0013] The present invention mainly includes two parts: a base part, and a pressing part. The base part is connected to the pressing part by a hinge on a protective cover of the pressing part, and the pressing part is rotatable along a hinge hole on an insulating base in the base part.

[0014] Where, the pressing part mainly includes a push block, a protective cover, and an elastic piece. The elastic piece is directly inserted into a mounting groove provided on the protective cover. The positioning of the elastic piece is realized by a positioning pin on the protective cover and a positioning hole on the elastic piece, and a rigid connection between the protective cover and the elastic piece is realized by a hook on the protective cover. In addition, a fool-proofing notch is provided on the elastic piece, and a fool-proofing column is arranged at a corresponding position on the protective cover, to ensure that the assembly position of the elastic piece is unique, thereby preventing the elastic piece from being mounted at a wrong position. After all the assembly is complete, the push block is finally inserted into the first push block groove on the protective cover.

[0015] The base part mainly includes an end cover, a conductive sheet, and an insulating base. First, the conductive sheet is inserted into a mounting position on the insulating base from a bottom of the insulating base. Then, the end cap is fastened to the conductive sheet. A rigid connection between the end cover, the conductive sheet, and the insulating base is realized by a hook (which is an engagement block herein) on the insulating base.

[0016] As a further improvement, a positioning mechanism is arranged between the protective cover and the insulating base. When the pressing part is opened by 120°, the pressing part can stand up by itself without being supported by a hand. After the lead wire is placed in position, the pressing part is pushed by a hand. When

an angle between the pressing part and an axis of the lead wire is 18°, a tongue of elastic piece (the pressing portion of the elastic piece) is in contact with the lead wire. In this case, none of fastening jaws and tail jaws is in contact with the conductive sheet. As the pressing part continues to be pushed, a main deformation area of the elastic piece undergoes a larger deformation, and an auxiliary deformation area of the elastic piece undergoes an auxiliary deformation, so that the elastic piece tightly presses against the lead wire. In addition, as the pressing part continues to be pushed, each of the fastening jaws of the elastic piece is engaged into a bent feature at a front end of the conductive sheet, and the tail jaw of the elastic piece slides into a groove on a column of the conductive sheet, so that after the elastic piece tightly presses against the lead wire, the final focus points of the tails at both ends of the elastic piece are both on the conductive sheet, thereby greatly improving the reliability and durability of press-fitting of the terminal.

[0017] If it is necessary to disconnect the elastic piece from the conductive sheet, one only needs to use a screwdriver to push the push block. In one aspect, the push block is driven to expand the fastening jaws (the inclined portion of the elastic piece). In the other aspect, after the push block is pressed to a desired position, the pressing part is rotated clockwise by a smaller angle to cause the fastening jaws to detach from the conductive sheet. As such, the disengagement of the fastening jaws from the conductive sheet is ensured from the two aspects.

[0018] As a further improvement, in order to adapt to different space requirements, tails of the conductive sheets need to be configured to protrude in different directions. Without changing any structure of the insulating base, a tail of one conductive sheet is configured to be bent, and a tail of another conductive sheet is configured to be not bent. The two conductive sheets may be fabricated by the same die with different inserts. The end caps that are different from each other only in local features may also be fabricated by the same die with different inserts. In this way, the variations of the product are achieved while reducing the die costs.

2. The specific technical solutions of the present invention are as follows:

[0019] A crimping-type wiring terminal is provided, including a base part for mounting a lead wire and a pressing part hinged to the base part for pressing the lead wire on the base part. The base part includes an insulating base, a conductive sheet, and an end cover, at least one mounting position is arranged on the insulating base, and a left end of the mounting position is a wire inlet end. The conductive sheet, the end cover, and the pressing part are arranged in the mounting position, the conductive sheet is fixedly mounted in the mounting position by the end cover, and the pressing part is located above the conductive sheet and is hingedly mounted in the mounting position. The pressing part is configured to be fastened with the conductive sheet after being rotated, and the pressing part is configured to tightly press the lead wire on the conductive sheet after the pressing part and the conductive sheet are fastened to each other.

[0020] Where, three mounting positions are arranged on the insulating base, and a conductive sheet, an end cover, and a pressing part are arranged in each of the mounting positions.

[0021] As a further improvement, an inlet notch is formed on a left side of the mounting position, and a lower end of the inlet notch is of an arc-shaped structure.

[0022] Where, a positioning groove of a U-shaped structure is provided at an upper end of the end cover, limiting blocks are respectively arranged on two side walls of the mounting position, and after the conductive sheet is mounted in the mounting position, the end cover and the insulating base are engaged with each other to tightly fix the conductive sheet to a lower end of each of the limiting blocks.

[0023] As a further improvement, engagement grooves are respectively provided on side surfaces of the end cover in three directions, engagement blocks are respectively arranged on side walls of the mounting position at positions corresponding to the engagement grooves, and the end cover is engaged with the insulating base through the engagement grooves and the engagement blocks to fix the end cover.

[0024] As a further improvement, the pressing part includes a protective cover, an elastic piece, and a push block, the protective cover is hinged to the insulating base, the elastic piece is mounted on the protective cover, and the elastic piece is configured to be fastened with the conductive sheet.

[0025] As a further improvement, the elastic piece includes a horizontal portion, an inclined portion, and a pressing portion, the inclined portion is connected obliquely to a left end of the horizontal portion, the pressing portion is of an S-shaped structure, and an upper end of the pressing portion is transitionally connected to a right end of the horizontal portion.

[0026] Where, an angle between the inclined portion and the horizontal portion is 70°-80°.

[0027] As a further limitation, the angle between the inclined portion and the horizontal portion is 75°.

[0028] Where, the inclined portion includes a connecting portion and fastening jaws respectively connected to two sides of the connecting portion, an end of each of the fastening jaws includes a first bent structure, and the first bent structure at the end of the each of the fastening jaws is configured to be fastened to the conductive sheet.

[0029] As a further improvement, two tail jaws which are S-shaped are arranged at the right end of the horizontal portion, and each of the two tail jaws is configured to be engaged with a rectangular hole provided on the conductive sheet.

[0030] Where, the conductive sheet includes an L-shaped connecting portion and a first horizontal portion,

the L-shaped connecting portion includes a vertical portion and a flat portion perpendicular to the vertical portion, a left end of the first horizontal portion and a left end of the flat portion are connected by a 180° bending, an upper surface of the first horizontal portion is tightly fitted to a lower surface of the flat portion by riveting, the rectangular hole is provided on the vertical portion, and a second bent structure configured to be fastened to the first bent structure is arranged at the left end of the flat portion.

[0031] Where, in practical use, the left end of the first horizontal portion and the left end of the flat portion are connected by a 180° bending.

[0032] Where, the vertical portion, the flat portion, and the first horizontal portion form an integral structure, which is made by die stamping.

[0033] Where, a mounting groove is provided on the protective cover, a positioning pin is arranged in the mounting groove, and a positioning hole configured to be engaged with the positioning pin is provided on the elastic piece.

[0034] As a further improvement, a hook for fixing the elastic piece is arranged on a side wall of the mounting groove.

[0035] As a further limitation, the hook is a boss arranged on the side wall of the mounting groove, and the boss has a guide chamfer.

[0036] As a further improvement, a fool-proofing column is arranged on a side wall of the mounting groove, and a fool-proofing notch configured to be engaged with the fool-proofing column is provided on a side edge of the horizontal portion.

[0037] Where, an arc-shaped notch is provided on a left end of the protective cover.

[0038] Where, the pressing part further includes a push block, a first push block groove is provided on the protective cover, a second push block groove is provided on the horizontal portion of the elastic piece at a position corresponding to the first push block groove, and the push block is slidably mounted in the first push block groove.

[0039] A rib configured to extend into the second push block groove is arranged in the mounting groove. A limiting boss is arranged on a side wall of the push block. The limiting boss has a guiding chamfer. After the push block is slidably mounted in the first push block groove, the limiting boss on the push block is fastened to the rib, and a left end of the push block is in contact with the inclined portion of the elastic piece.

[0040] Where, an anti-skid texture is arranged on an upper end surface of the protective cover.

[0041] As a further improvement, the first horizontal portion has a right-angle bending portion, a through slot perpendicular to and communicated with the positioning groove is provided at a bottom of the end cover, and the first horizontal portion can pass through the through slot after being bent.

[0042] As a further improvement, the protective cover is hingedly mounted on the insulating base by a shaft.

[0043] As a further improvement, a positioning mechanism is arranged between the protective cover and the insulating base. The positioning mechanism includes a positioning strip arranged on the protective cover and a first positioning groove provided on the insulating base and configured to be engaged with the positioning strip.

[0044] Compared with the prior art, the present invention has the following beneficial effects:

(1) The present invention mainly includes the base part and the pressing part. In practical use, after a lead wire is mounted in the mounting position on the insulating base, the lead wire can be fixed and tightly pressed by rotating the pressing part, which is convenient to use.

(2) The present invention can prevent the lead wire from being bent during the connection process, and can meet the customers' requirements of special working conditions.

(3) The present invention has the advantages of smaller volume, convenient detachment, and reliable press-fitting, and can meet the restrictions of customers on space.

(4) The present invention requires a smaller number of parts and has a high degree of integration of the functions of the parts, thereby effectively reducing the product costs.

Brief Description of the Drawings

[0045] In order to more clearly explain the technical solutions in the embodiments of the present invention, the drawings used in the description of the embodiments will be briefly described below. It should be understood that the drawings depicted below merely show some embodiments of the present invention and should not be construed as limiting the scope of the present invention, and those of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

FIG. 1 is a schematic view of an overall structure of the present invention.

FIG. 2 is a schematic state view of the present invention after a pressing part in one of the mounting positions is rotated.

FIG. 3 is a top view of FIG. 1 according to the present invention.

FIG. 4 is a cross-sectional view taken along line A-A in FIG. 3 according to the present invention.

FIG. 5 is a schematic exploded view of some components according to the present invention.

FIG. 6 is a schematic view of an overall structure of the end cover according to the present invention.

FIG. 7 is a schematic view of an overall structure of the elastic piece according to the present invention.

FIG. 8 is a schematic structural view of the conductive sheet according to the present invention.

FIG. 9 is a schematic view showing an engagement relationship between the conductive sheet and the end cover according to Embodiment 3 of the present invention.

FIG. 10 is a schematic view of an overall structure of the conductive sheet according to Embodiment 3 of the present invention.

FIG. 11 is a schematic structural view of the insulating base according to the present invention.

[0046] Reference numerals: 1 - lead wire; 2 - base part; 3 - pressing part; 4 - insulating base; 5 - conductive sheet; 6 - end cover; 7 - mounting position; 8 - inlet notch; 9 - positioning groove; 10 - limiting block; 11 - engagement groove; 12 - engagement block; 13 - protective cover; 14 - elastic piece; 15 - horizontal portion; 16 - inclined portion; 17 - pressing portion; 18 - fastening jaw; 19 - first bent structure; 20 - tail jaw; 21 - rectangular hole; 22 - L-shaped connecting portion; 23 - first horizontal portion; 24 - vertical portion; 25 - flat portion; 26 - second bent structure; 27 - mounting groove; 28 - positioning pin; 29 - positioning hole; 30 - hook; 31 - fool-proofing column; 32 - fool-proofing notch; 33 - arc notch; 34 - push block; 35 - first push block groove; 36 - second push block groove; 37 - rib; 38 - limiting boss; 39 - anti-skid texture; 40 - through slot; 41 - positioning mechanism; 42 - positioning strip; 43 - positioning groove; 44 - limiting area.

Detailed Description of the Embodiments

[0047] The present invention will be described in detail below with reference to the accompanying drawings. The embodiments described are merely some embodiments, rather than all of the embodiments of the present invention. All other embodiments obtained by those of ordinary skill in the art without creative efforts based on the embodiments of the present invention shall fall within the protection scope of the present invention.

Embodiment 1

[0048] The present invention discloses a crimping-type wiring terminal, including a base part 2 for mounting a lead wire 1 and a pressing part 3 connected to the base part 2 for pressing the lead wire 1 on the base part 2. The base part 2 includes an insulating base 4, a conductive sheet 5, and an end cover 6. At least one mounting position 7 is arranged on the insulating base 4. A left end of the mounting position 7 is a wire inlet end. The conductive sheet 5, the end cover 6, and the pressing part 3 are arranged in the mounting position 7. The conductive sheet 5 is fixedly mounted in the mounting position 7 by the end cover 6. The pressing part 3 is located above the conductive sheet 5 and is hingedly mounted in the mounting position 7. The pressing part 3 is configured to be fastened with the conductive sheet 5 after being rotated. The pressing part 3 is configured to tightly press the lead wire 1 on the conductive sheet 5 after the pressing part 3 and the conductive sheet 5 are fastened to each other.

[0049] In this embodiment, three mounting positions 7 are arranged on the insulating base 4, and a conductive sheet 5, an end cover 6, and a pressing part 3 are arranged in each of the mounting positions 7. It should be noted that in practical use, the number of mounting positions 7 is set according to the number of lead wires 1 that need to be pressed, and the number of mounting positions 7 may be 2, 4, 5, or more.

[0050] Where, an inlet notch 8 is formed on a left side of the mounting position 7, and a lower end of the inlet notch 8 is of an arc-shaped structure, which facilitates the insertion of the lead wire 1 into the mounting position 7 in order to press the lead wire 1.

[0051] As a further improvement, a positioning groove 9 of a U-shaped structure is provided at an upper end of the end cover 6, limiting blocks 10 are respectively arranged on two side walls of the mounting position 7, and after the conductive sheet 5 is mounted in the mounting position 7, the end cover 6 and the insulating base 4 are engaged with each other to tightly fix the conductive sheet 5 to a lower end of each of the limiting blocks 10.

[0052] In this way, the conductive sheet 5 can be limited by the limiting blocks 10 arranged, thereby achieving the purpose of fixing the conductive sheet 5 after the end cover 6 is engaged with the insulating base 4. The end cover 6 can effectively fix the conductive sheet 5 after pressing the conductive sheet 5 on the limiting blocks 10, to prevent detachment of the conductive sheet 5. The positioning groove 9 of the U-shaped structure can position and limit the conductive sheet 5.

[0053] Where, engagement grooves 11 are respectively provided on side surfaces of the end cover 6 in three directions, engagement blocks 12 are respectively arranged on side walls of the mounting position 7 at positions corresponding to the engagement grooves 11, and the end cover 6 is engaged with the insulating base 4 through the engagement grooves 11 and the engagement blocks 12 to fix the end cover 6. The configuration of the engagement grooves 11 and the engagement blocks 12 facilitates the fixing of the end cover 6, and makes the mounting operation more convenient and simpler. The mounting operation can be realized by simply aligning the engagement grooves with the engagement blocks and pressing the mounting cover.

[0054] As a further limitation, in this embodiment, the pressing part 3 includes a protective cover 13 and an elastic piece 14, the protective cover 13 is hinged to the insulating base 4, and the elastic piece 14 is mounted on the protective cover 13. The elastic piece 14 can be fastened to the conductive sheet 5, and after the protective cover 13 is rotated, the elastic piece 14 can tightly press the lead wire 1, to prevent detachment of the lead wire 1,

[0055] As a further improvement, in this embodiment, the structure of the elastic piece 14 is as follows.

[0056] The elastic piece 14 includes a horizontal portion 15, an inclined portion 16, and a pressing portion 17, the inclined portion 16 is connected obliquely to a left end

of the horizontal portion 15, the pressing portion 17 is of an S-shaped structure, and an upper end of the pressing portion 17 is connected to a right end of the horizontal portion 15 through a horizontal transition.

[0057] Where, an angle between the inclined portion 16 and the horizontal portion 15 is 70°-80°. In this embodiment, the angle between the inclined portion 16 and the horizontal portion 15 is 75°. In this way, the inclined portion 16 can be better fastened to the conductive sheet 5.

[0058] As a further improvement, the inclined portion 16 includes a connecting portion and fastening jaws 18 respectively connected to two sides of the connecting portion, an end of each of the fastening jaws 18 includes a first bent structure 19, and the first bent structure 19 at the end of the each of the fastening jaws 18 is configured to be fastened to the conductive sheet 5.

[0059] In this way, in practical use, after the pressing portion 17 of the elastic piece 14 is in contact with the lead wire 1, because the pressing portion 17 is of the S-shaped structure, the pressing portion 17 has a main deformation area and a secondary deformation area formed in its bent part. The secondary deformation area is close to a pressing end of the pressing portion 17. After the protective cover 13 is rotated so that the pressing end of the pressing portion 17 enters into contact with the lead wire 1, the main deformation area of the elastic piece 14 undergoes a larger deformation, and the auxiliary deformation area of the elastic piece 14 undergoes an auxiliary deformation, so that the elastic piece 14 tightly presses against the lead wire 1.

[0060] As a further improvement, in this embodiment, two tail jaws 20 which are S-shaped are arranged at the right end of the horizontal portion 15, and each of the two tail jaws 20 is configured to be engaged with a rectangular hole 21 provided on the conductive sheet 5.

[0061] In this way, after the pressing portion 17 of the elastic piece 14 tightly presses against the lead wire 1, and the first bent structure 19 at the end of each of the fastening jaws 18 on the elastic piece 14 is fastened to the conductive sheet 5, the tail jaw 20 can slide into the rectangular hole 21 on the conductive sheet 5, so that after the elastic piece tightly presses against the lead wire 1, the final focus points of the tails at both ends of the elastic piece 14 are both on the conductive sheet 5, thereby greatly improving the reliability and durability of press-fitting of the terminal.

[0062] Where, the structure of the conductive sheet 5 is as follows.

[0063] The conductive sheet 5 includes an L-shaped connecting portion 22 and a first horizontal portion 23. The L-shaped connecting portion 22 includes a vertical portion 24 and a flat portion 25 perpendicular to the vertical portion 24. A left end of the first horizontal portion 23 and a left end of the flat portion 25 are connected by 180° bending. An upper surface of the first horizontal portion 23 is tightly fitted to a lower surface of the flat portion 25 by riveting. The rectangular hole 21 is provided on the vertical portion. A second bent structure 26 configured to be fastened to the first bent structure 19 is arranged at the left end of the flat portion 25.

[0064] In this way, after the first bent structure 19 and the second bent structure 26 are fastened to each other, the connection between the elastic piece 14 and the conductive sheet 5 is realized. In addition, the L-shaped connecting portion 22 can be inserted into the limiting area 44 formed between the limiting blocks 10 and the mounting position 7, to provide a limiting effect to prevent the conductive sheet 5 from sliding out of the insulating base 4 after being pulled during use.

[0065] Where, the vertical portion, the flat portion 25, and the first horizontal portion 23 form an integral structure, which is made by die stamping.

[0066] As a further improvement, a mounting groove 27 is provided on the protective cover 13, a positioning pin 28 is arranged in the mounting groove 27, and a positioning hole 29 configured to be engaged with the positioning pin 28 is provided on the elastic piece 14.

[0067] Where, a hook 30 for fixing the elastic piece 14 is arranged on a side wall of the mounting groove 27.

[0068] As a further improvement, the hook 30 is a boss arranged on the side wall of the mounting groove 27, and the boss has a guide chamfer. The configuration of the guide chamfer provides a guiding effect, which facilitates the mounting of the elastic piece 14.

[0069] As a further improvement, a fool-proofing column 31 is arranged on a side wall of the mounting groove 27, and a fool-proofing notch 32 configured to be engaged with the fool-proofing column 31 is provided on a side edge of the horizontal portion 15.

[0070] In this way, when the elastic piece 14 is directly inserted into the mounting groove 27 provided on the protective cover 13, the positioning of the elastic piece 14 is realized by the positioning pin 28 on the protective cover 13 and the positioning hole 29 on the elastic piece 14, and a rigid connection between the protective cover 13 and the elastic piece 14 is realized by the hook 30 on the protective cover 13. In addition, the configuration of the fool-proofing notch 32 on the elastic piece 14 and the configuration of the fool-proofing column 31 at the corresponding position on the protective cover 13 ensure that the assembly position of the elastic piece 14 is unique, thereby preventing the elastic piece 14 from being mounted at a wrong position.

[0071] As a further improvement, an arc-shaped notch 33 is provided on a left end of the protective cover 13. In this way, the arc-shaped notch 33 and the inlet notch 8 form a wire accommodating hole, and after the pressing part 3 is fastened to the base part 2, foreign objects can be prevented from entering the mounting position 7.

[0072] Where, the protective cover 13 is hinged in the insulating base 4 by a hinge. Still further, the protective cover 13 is hingedly mounted on the insulating base 4 by a shaft.

Embodiment 2

[0073] This embodiment is an improvement based on Embodiment 1. In this embodiment, the pressing part 3 further includes a push block 34, a first push block groove 35 is provided on the protective cover 13, a second push block groove 36 is provided on the horizontal portion 15 of the elastic piece 14 at a position corresponding to the first push block groove 35, and the push block 34 is slidably mounted in the first push block groove 35.

[0074] A rib 37 configured to extend into the second push block groove 36 is arranged in the mounting groove 27. A limiting boss 38 is arranged on a side wall of the push block 34. The limiting boss 38 has a guiding chamfer. After the push block 34 is slidably mounted in the first push block groove 35, the limiting boss 38 on the push block 34 is fastened to the rib 37, and a left end of the push block 34 is in contact with the inclined portion 16 of the elastic piece 14.

[0075] As a further improvement, an anti-skid texture 39 is arranged on an upper end surface of the protective cover 13.

[0076] In this way, in practical use, the fastening structure formed between the first bent structure 19 and the second bent structure 26 can be opened as required, thereby achieving quick detachment.

[0077] The present invention mainly includes two parts: a base part 2, and a pressing part 3. The base part 2 is connected to the pressing part 3 by a hinge on a protective cover 13 of the pressing part 3, and the pressing part 3 is rotatable along a hinge hole on an insulating base 4 in the base part 2.

[0078] Where, the pressing part 3 mainly includes a push block 34, a protective cover 13, and an elastic piece 14. The elastic piece 14 is directly inserted into a mounting groove 27 provided on the protective cover 13. The positioning of the elastic piece 14 is realized by a positioning pin 28 on the protective cover 13 and a positioning hole 29 on the elastic piece 14, and a rigid connection between the protective cover 13 and the elastic piece 14 is realized by a hook 30 on the protective cover 13. In addition, a fool-proofing notch 32 is provided on the elastic piece 14, and a fool-proofing column 31 is arranged at a corresponding position on the protective cover 13, to ensure that the assembly position of the elastic piece 14 is unique, thereby preventing the elastic piece 14 from being mounted at a wrong position. After all the assembly is complete, the push block 34 is finally inserted into the first push block groove 35 on the protective cover 13.

[0079] If it is necessary to disconnect the elastic piece 14 from the conductive sheet 5, one only needs to use a screwdriver to push the push block 34. In one aspect, the push block 34 is driven to expand the inclined portion 16 of the elastic piece 14. In the other aspect, after the push block 34 is pressed to a desired position, the pressing part 3 is rotated clockwise by a smaller angle to cause the fastening jaws 18 to detach from the conductive sheet 5. As such, the disengagement of the fastening jaws 18 from the conductive sheet 5 is ensured from the two aspects.

Embodiment 3

[0080] This embodiment is substantially similar to Embodiment 1 or Embodiment 2, except that, the first horizontal portion 23 has a right-angle bending portion, a through slot 40 perpendicular to and communicated with the positioning groove 9 is provided at a bottom of the end cover 6, and the first horizontal portion 23 can pass through the through slot 40 after being bent.

[0081] In order to adapt to different space requirements, a tail of one conductive sheet 5 is configured to be bent, and a tail of another conductive sheet 5 is configured to be not bent. The two conductive sheets 5 may be fabricated by the same die with different inserts. For the end cover 6, only local features are changed, so the end covers 6 for the conductive sheets 5 may also be fabricated by the same die with different inserts. In this way, the variations of the product are achieved while minimizing the die costs.

Embodiment 4

[0082] This embodiment is an improvement based on Embodiment 4. In this embodiment, a positioning mechanism 41 is arranged between the protective cover 13 and the insulating base 4. The positioning mechanism 41 includes a positioning strip 42 arranged on the protective cover 13 and a first positioning groove 43 provided on the insulating base 4 and configured to be engaged with the positioning strip 42.

[0083] In this embodiment, through the configuration of the positioning mechanism 41 on the protective cover 13 and the insulating base 4, when the pressing part 3 is opened by 120°, the pressing part 3 can stand up by itself without being supported by a hand. After the lead wire 1 is placed in position, the lead wire 1 can be fixed by simply pushing the pressing part 3 by a hand. Therefore, the operation process is more convenient.

Embodiment 5

[0084] This embodiment discloses a method of using a crimping-type wiring terminal. A specific process is as follows.

[0085] Step 1: A conductive sheet 5 is placed into a mounting position 7 from a lower end of an insulating base 4, so that a vertical portion 24 of an L-shaped connecting portion 22 of the conductive sheet 5 passes through a limiting area 44 defined by limiting blocks 10 and the mounting position 7, and a flat portion 25 of the L-shaped connecting portion 22 is in contact with the limiting blocks 10. An end cover 6 is fastened to the insulating base 4 so that the end cover 6 tightly presses the conductive sheet 5 on the limiting blocks 10.

[0086] Step 2: An elastic piece 14 is mounted in a

mounting groove 27 of a protective cover 13, and the protective cover 13 is hinged to the insulating base 4.

[0087] Step 3: A lead wire 1 is placed horizontally into the mounting position 7. The lead wire 1 is positioned by an end of the lead wire 1 and the vertical portion 24 of the L-shaped connecting portion 22. The protective cover 13 is rotated, so that a pressing portion 17 of the elastic piece 14 tightly presses the lead wire 1 on the flat portion 25 of the conductive sheet 5, and a first bent structure 19 arranged on the elastic piece 14 and a second bent structure 26 arranged on the conductive sheet 5 are fastened to each other to realize fixing of the lead wire 1.

[0088] In practical use, the present invention is easy and convenient to use.

[0089] Although the preferred embodiments of the present invention have been described, those skilled in the art can make additional changes and modifications to these embodiments once they learn the basic creative concept. Therefore, the appended claims are intended to be interpreted as including the preferred embodiments and all the changes and modifications falling within the scope of the present invention. The present invention has been described in detail with reference to preferred embodiments, which however are not intended to limit the present invention. It should be noted that any modifications, equivalent replacements, and improvements made without departing from the spirit and principle of the present invention shall fall within the protection scope of the present invention.

Claims

1. A crimping-type wiring terminal, **characterized by** comprising a base part for mounting a lead wire and a pressing part connected to the base part for pressing the lead wire on the base part, wherein the base part comprises an insulating base, a conductive sheet, and an end cover, at least one mounting position is arranged on the insulating base, and a left end of the mounting position is a wire inlet end; the conductive sheet, the end cover, and the pressing part are arranged in the mounting position, the conductive sheet is fixedly mounted in the mounting position by the end cover, and the pressing part is located above the conductive sheet and is hingedly mounted in the mounting position; and the pressing part is configured to be fastened with the conductive sheet after being rotated, and the pressing part is configured to tightly press the lead wire on the conductive sheet after the pressing part and the conductive sheet are fastened to each other.

2. The crimping-type wiring terminal according to claim 1, **characterized in that** a positioning groove of a U-shaped structure is provided at an upper end of the end cover, limiting blocks are respectively arranged on two side walls of the mounting position, and after the conductive sheet is mounted in the mounting position, the end cover and the insulating base are engaged with each other to tightly fix the conductive sheet to a lower end of each of the limiting blocks.

3. The crimping-type wiring terminal according to claim 1, **characterized in that** engagement grooves are respectively provided on side surfaces of the end cover in three directions, engagement blocks are respectively arranged on side walls of the mounting position at positions corresponding to the engagement grooves, and the end cover is engaged with the insulating base through the engagement grooves and the engagement blocks to fix the end cover.

4. The crimping-type wiring terminal according to claim 1, 2, or 3, **characterized in that** the pressing part comprises a protective cover and an elastic piece, the protective cover is hinged to the insulating base, the elastic piece is mounted on the protective cover, and the elastic piece is configured to be fastened with the conductive sheet.

5. The crimping-type wiring terminal according to claim 4, **characterized in that** the elastic piece comprises a horizontal portion, an inclined portion, and a pressing portion, the inclined portion is connected obliquely to a left end of the horizontal portion, the pressing portion is of an S-shaped structure, and an upper end of the pressing portion is transitionally connected to a right end of the horizontal portion.

6. The crimping-type wiring terminal according to claim 5, **characterized in that** the inclined portion comprises a connecting portion and fastening jaws respectively connected to two sides of the connecting portion, an end of each of the fastening jaws comprises a first bent structure, and the first bent structure at the end of the each of the fastening jaws is configured to be fastened to the conductive sheet.

7. The crimping-type wiring terminal according to claim 6, **characterized in that** two tail jaws which are S-shaped are arranged at the right end of the horizontal portion, and each of the two tail jaws is configured to be engaged with a rectangular hole provided on the conductive sheet.

8. The crimping-type wiring terminal according to claim 7, **characterized in that** the conductive sheet comprises an L-shaped connecting portion and a first horizontal portion, the L-shaped connecting portion comprises a vertical portion and a flat portion perpendicular to the vertical portion, a left end of the first horizontal portion and a left end of the flat portion are connected by a 180° bending, an upper surface of the first horizontal portion is tightly fitted to a lower

surface of the flat portion by riveting, the rectangular hole is provided on the vertical portion, and a second bent structure configured to be fastened to the first bent structure is arranged at the left end of the flat portion.

9. The crimping-type wiring terminal according to claim 1, **characterized in that** a mounting groove is provided on the protective cover, a positioning pin is arranged in the mounting groove, a positioning hole configured to be engaged with the positioning pin is provided on the elastic piece, a hook for fixing the elastic piece is arranged on a side wall of the mounting groove, the hook is a boss arranged on the side wall of the mounting groove, and the boss has a guide chamfer.

10. A method of using a crimping-type wiring terminal, **characterized by** comprising the following steps:

step 1: placing a conductive sheet into a mounting position from a lower end of an insulating base, so that a vertical portion of an L-shaped connecting portion of the conductive sheet passes through a limiting area defined by limiting blocks and the mounting position, and a flat portion of the L-shaped connecting portion is in contact with the limiting blocks; and fastening an end cover to the insulating base so that the end cover tightly presses the conductive sheet on the limiting blocks;
step 2: mounting an elastic piece in a mounting groove of a protective cover, and hinging the protective cover to the insulating base; and
step 3: placing a lead wire horizontally into the mounting position, positioning the lead wire by an end of the lead wire and the vertical portion of the L-shaped connecting portion, and rotating the protective cover, so that a pressing portion of the elastic piece tightly presses the lead wire on the flat portion of the conductive sheet, and a first bent structure arranged on the elastic piece and a second bent structure arranged on the conductive sheet are fastened to each other to realize fixing of the lead wire.

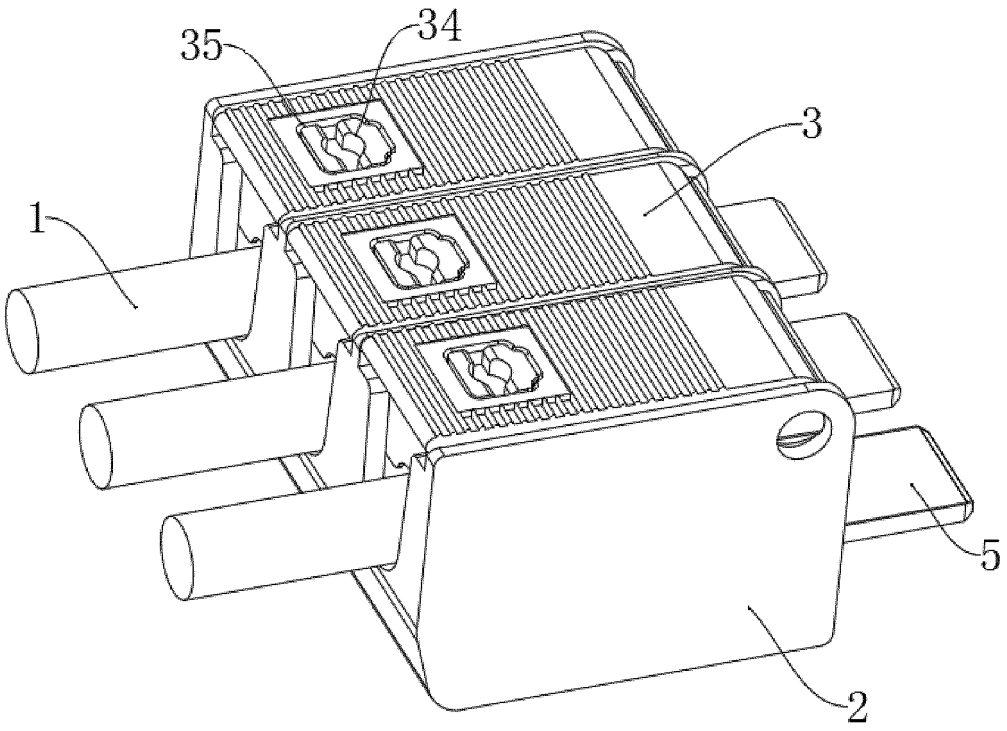

FIG. 1

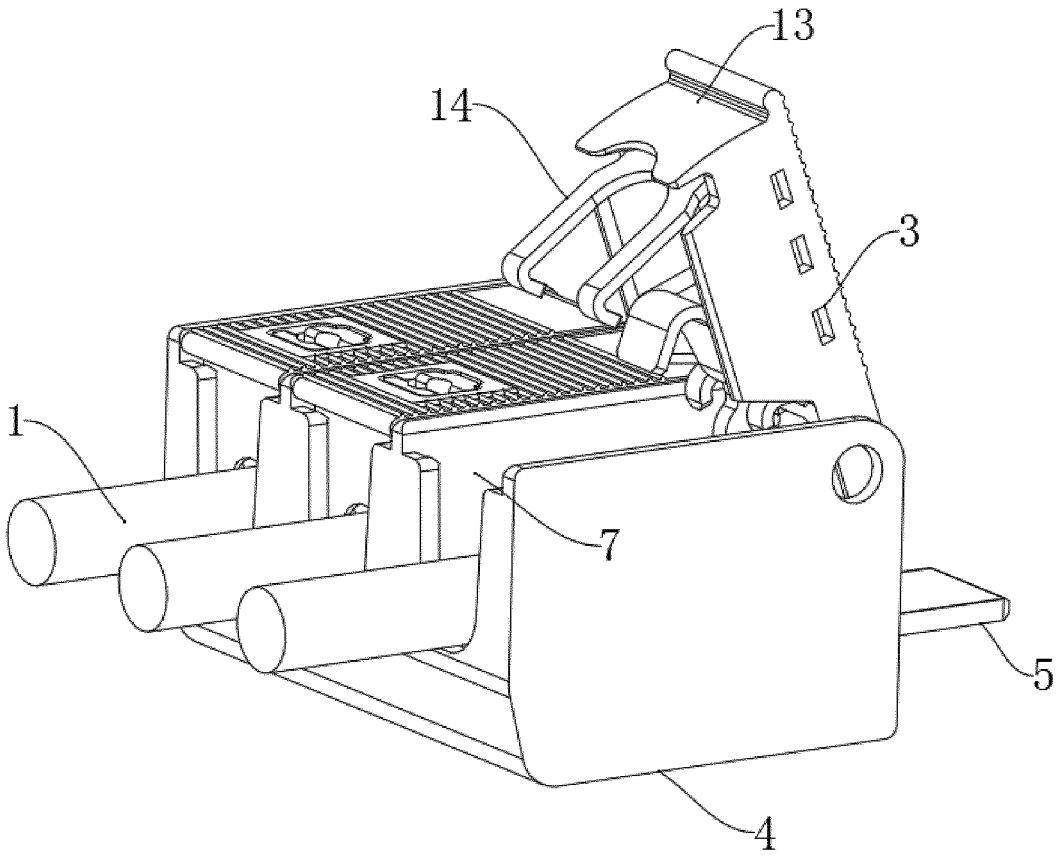

FIG. 2

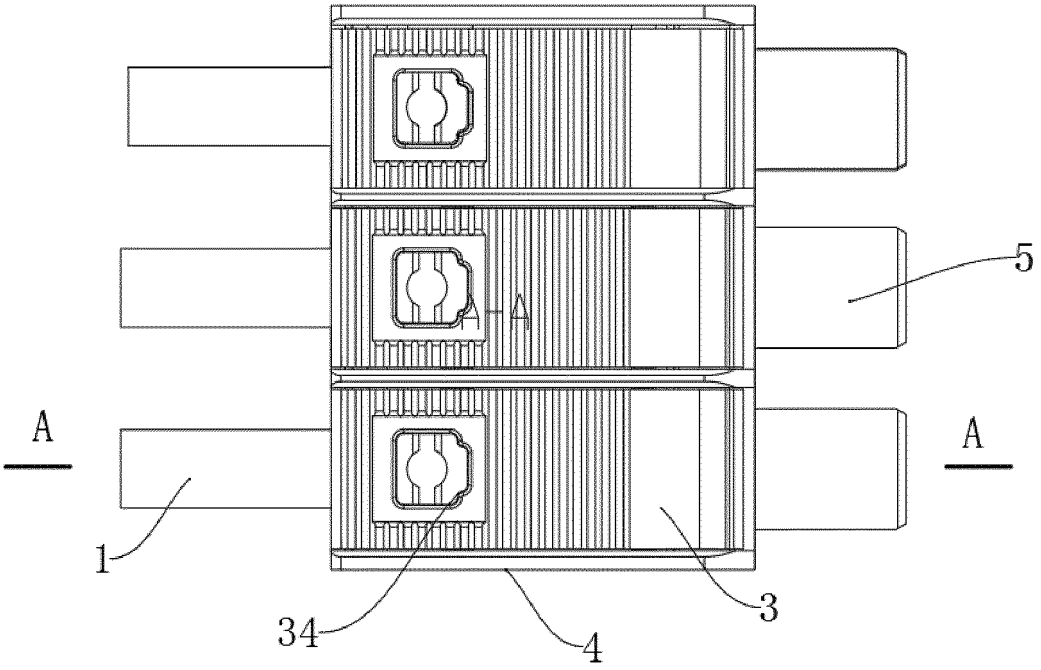

FIG. 3

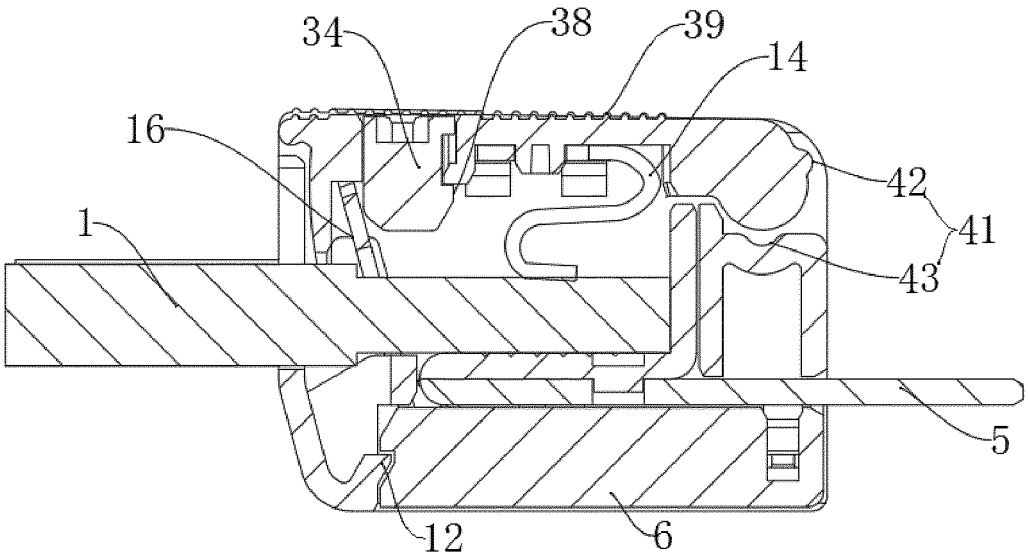

FIG. 4

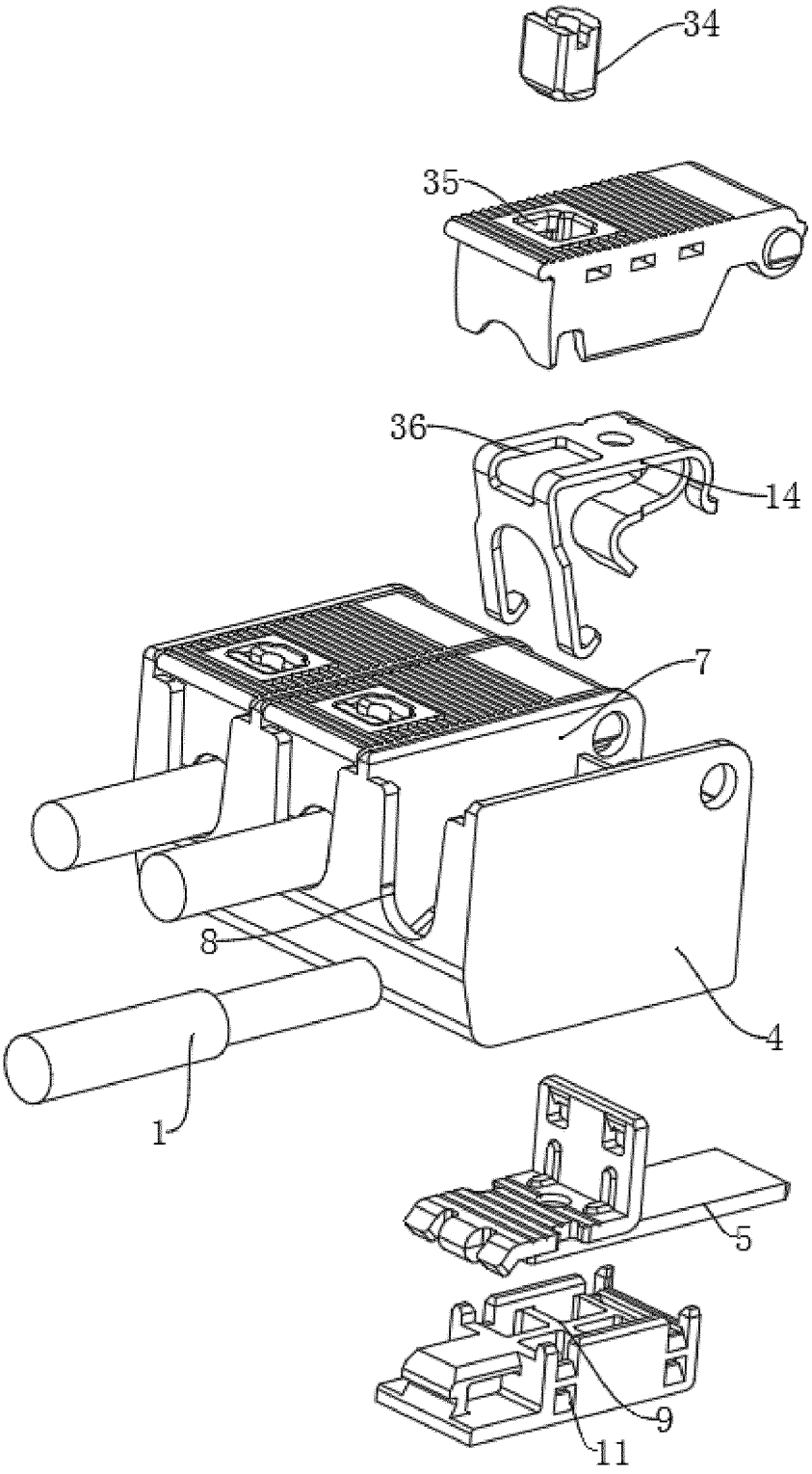

FIG. 5

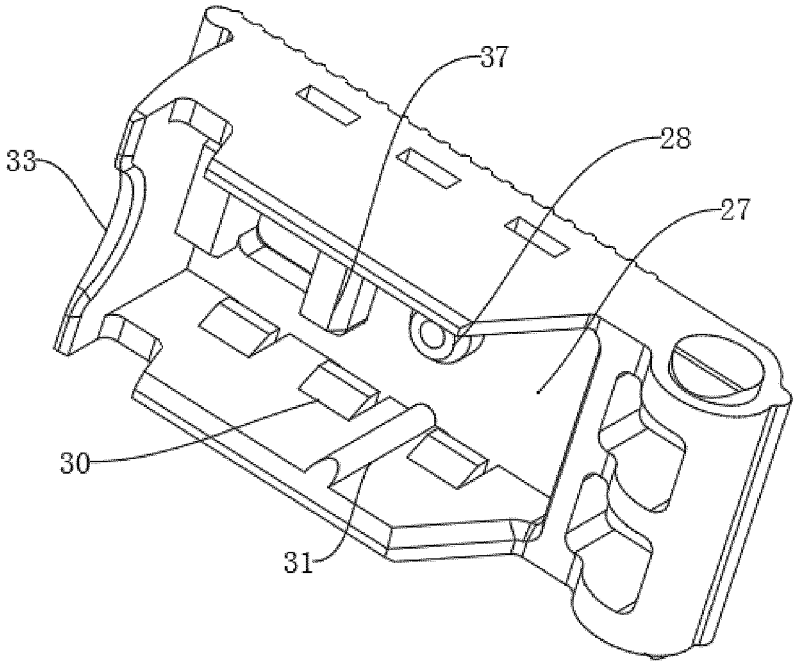

FIG. 6

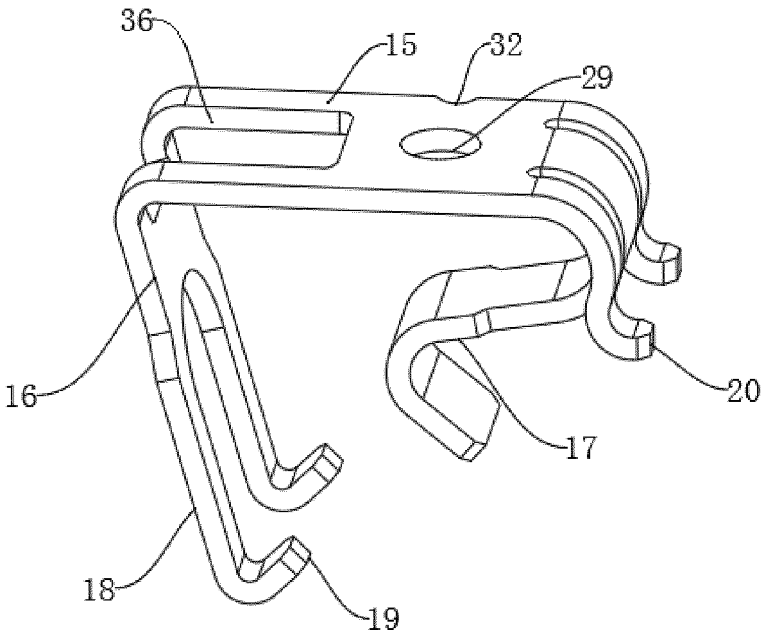

FIG. 7

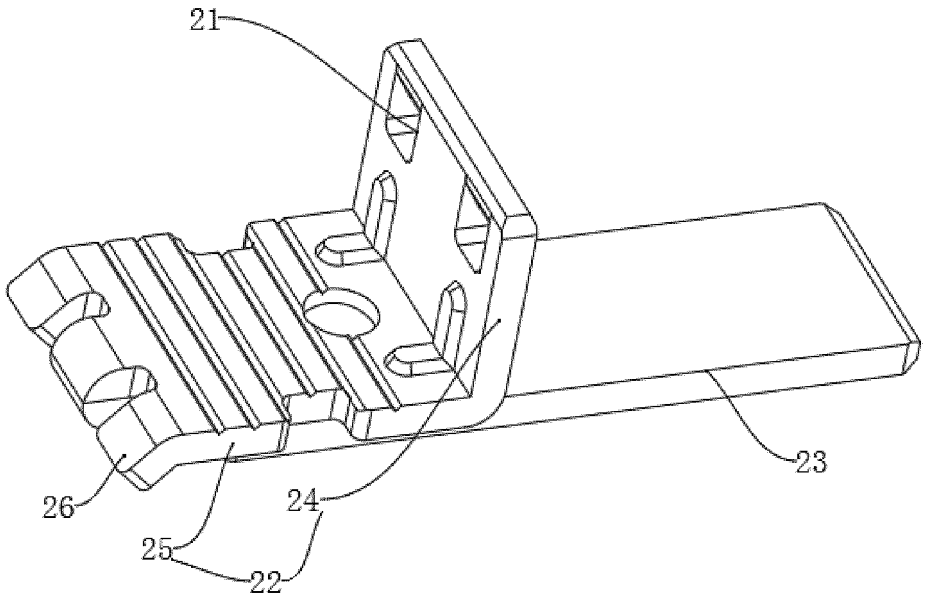

FIG. 8

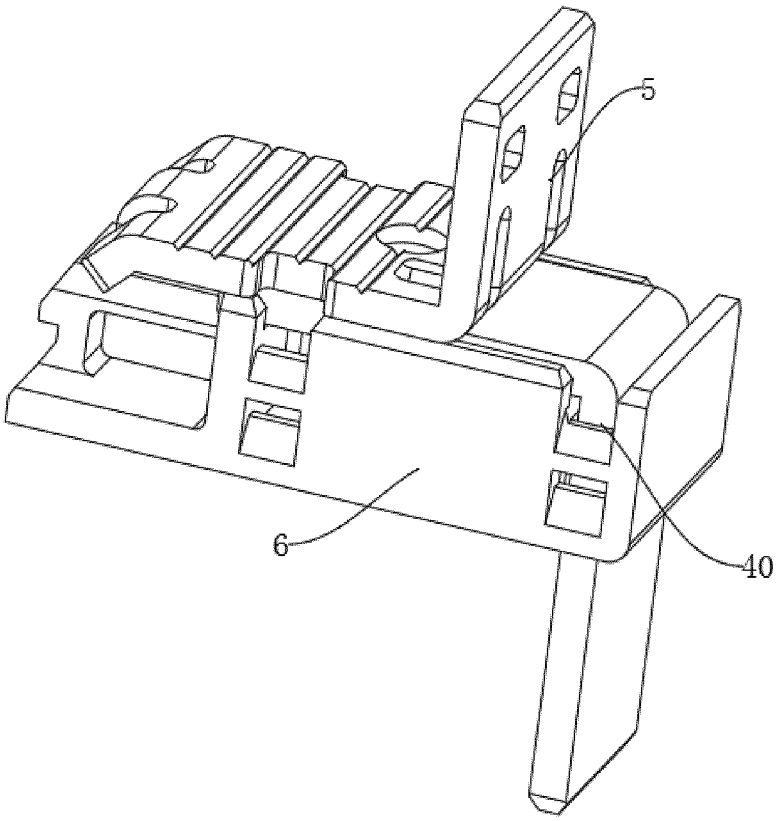

FIG. 9

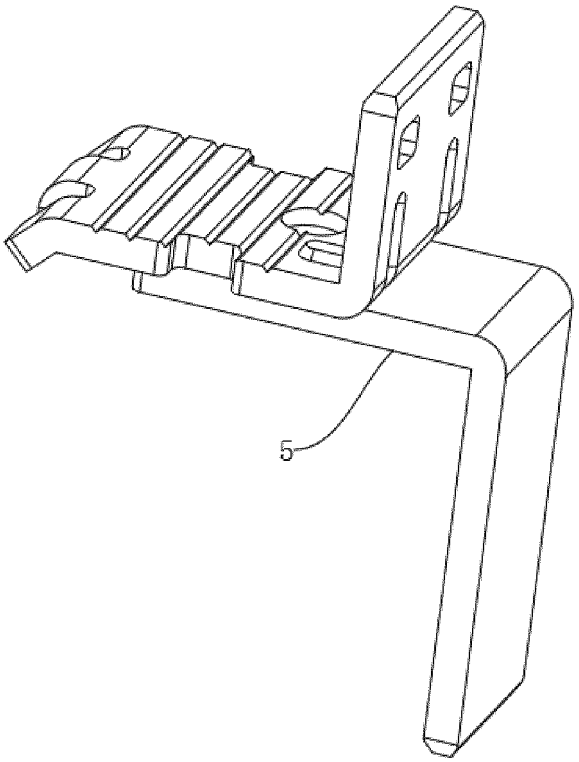

FIG. 10

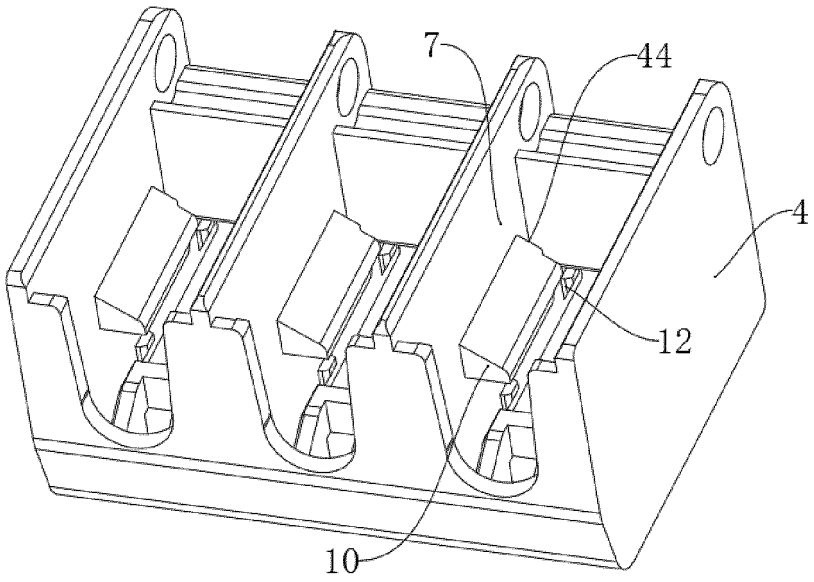

FIG. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2021/124133

A. CLASSIFICATION OF SUBJECT MATTER

H01R 4/48(2006.01)i; H01R 9/24(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, CNTXT, VEN: crimp, terminal, connector, spring, wire, cable, metal, conductive, pivotal, press, 端子, 压接, 线, 缆, 导电片, 金属, 铰接, 簧

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 102204015 A (PHOENIX CONTACT GMBH & CO., KG.) 28 September 2011 (2011-09-28) description, paragraphs 0029-0039	1-4, 9, 10
A	CN 110600897 A (AVIC JONHON OPTRONIC TECHNOLOGY CO., LTD.) 20 December 2019 (2019-12-20) entire document	1-10
A	CN 109713463 A (SUZHOU HUAZHAN SPACE APPLIANCE CO., LTD.) 03 May 2019 (2019-05-03) entire document	1-10
A	EP 3457498 A1 (DINKLE ELECTRIC MACHINERY CHINA CO., LTD. et al.) 20 March 2019 (2019-03-20) entire document	1-10
PX	CN 112563776 A (CHENGDU RELIANCE ELECTRIC CO., LTD.) 26 March 2021 (2021-03-26) description, paragraphs 0064-0109, figures 1-11	1-10

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 January 2022	**18 January 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2021/124133

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		WO 2020093263 A1	14 May 2020
EP 3457498 A1	20 March 2019	EP 3457498 B1	28 August 2019
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Form PCT/ISA/210 (patent family annex) (January 2015)