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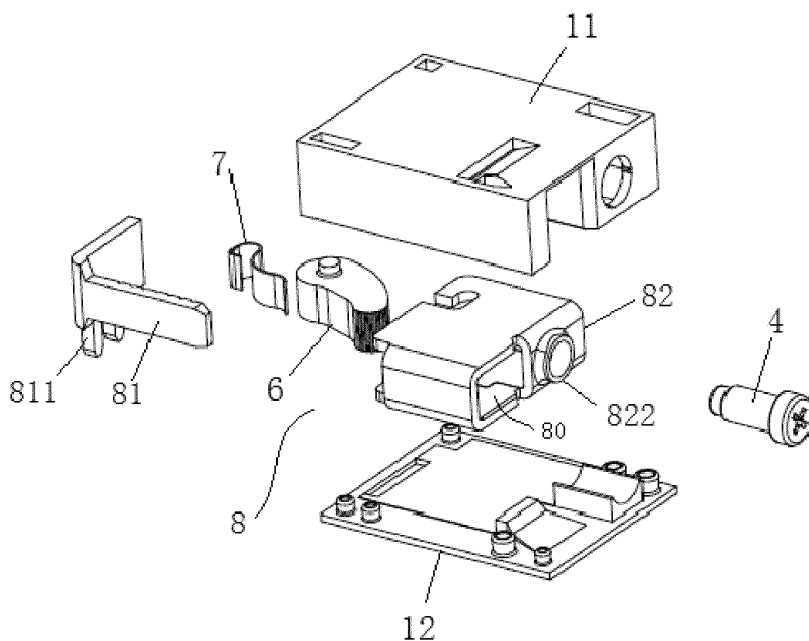
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(54) **FRONT SCREW WIRING STRUCTURE**

(57) The present invention discloses a front screw wiring structure, characterized by comprising a housing, a fastening screw, a rotary press block, a reset spring sheet and an electric conductor, wherein the electric conductor is fixed in the housing, the rotary press block is rotationally connected to one end of the electric conductor, one end of the reset spring sheet is clamped onto the housing and the other end thereof abuts against the rotary press block, the fastening screw is threaded to the

other end of the electric conductor, and one end of the fastening screw abuts against the rotary press block. The present invention can realise front end face wiring, and a wire interface can be opened automatically without the need of a special tool to tighten the screw, which provide reliable long-term operation and a small structural size, and is suitable for a variety of wires and more suitable for front field wiring.



**Fig. 2**

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## Description

### Technical Field

[0001] The present invention relates to a front screw wiring structure.

### Background Art

[0002] In industrial communication and other industries, many devices are needed to transmit control information, etc., so terminals are used to power the devices. With the requirements for equipment miniaturization and modularization, the requirements for power supply devices has grown ever harsher, especially for small size, large wiring range, suitable for a variety of wires, more suitable for field wiring, and to ensure the long-term reliability of power supply, therefore it is necessary to develop a new wiring approach.

### Summary of the Invention

[0003] In order to solve the above problem existing in the prior art, the present invention provides a front screw wiring structure.

[0004] The technical solutions employed by the present invention are as follows. A front screw wiring structure, characterized by comprising a housing, a fastening screw, a rotary press block, a reset spring sheet and an electric conductor, wherein the electric conductor is fixed in the housing, the rotary press block is rotationally connected to one end of the electric conductor, one end of the reset spring sheet is clamped onto the housing and the other end thereof abuts against the rotary press block, the fastening screw is threaded to the other end of the electric conductor, and one end of the fastening screw abuts against the rotary press block.

[0005] Further, the electric conductor comprises a conductive metal piece made of conductive material and a wiring frame made of non-conductive material, wherein the wiring frame is fixed in the housing, one end of the conductive metal piece is inserted into the wiring frame and the other end thereof passes through the housing and extends out and from the housing, and the rotary press block is rotationally connected to the wiring frame.

[0006] Further, the wiring frame is provided with a rotary hole for connecting the rotary press block, the rotary hole being a slotted hole in the shape of "r".

[0007] Further, the conductive metal piece is in a right-angle shape, several protruding tabs are arranged on one side of the conductive metal piece, and a second toothed face is arranged on a side wall of the other side of the conductive metal piece.

[0008] Further, the electric conductor comprises a body integrally formed and made of conductive material, and several insertion tabs are arranged on the body.

[0009] Further, the body is provided with a rotary hole for connecting the rotary press block, the rotary hole be-

ing of a circular through-hole structure.

[0010] Further, the rotary press block is in a cam shape, and a first toothed face is arranged on an arc wall of one side of the rotary press block.

[0011] Further, the side face of the rotary press block is provided with a rotating shaft or a connecting pin.

[0012] Further, the fastening screw comprises a threaded portion and a smooth portion, the diameter of the smooth portion is smaller than the diameter of the threaded portion, and the smooth portion of the fastening screw abuts against the rotary press block.

[0013] Further, the housing is made of plastic and comprises an upper housing and a lower housing, the upper housing and the lower housing being engaged with each other.

[0014] The present invention has the following beneficial effects: The present invention can realise front end face wiring, and a wire interface can be opened automatically without the need of a special tool to tighten the screw, which provide reliable long-term operation and a small structural size, and is suitable for a variety of wires and more suitable for field wiring.

### Description of the Drawings:

[0015]

Fig. 1 is a structural diagram of a first embodiment of the present invention.

Fig. 2 is an exploded view of Fig. 1.

Fig. 3 is an installation structural diagram of the electrical conductor, the reset spring sheet and the fastening screw in the first embodiment of Fig. 1.

Fig. 4 and Fig. 5 is a mating structure diagram of the electrical conductor, the rotary press block, the reset spring sheet and the fastening screw in the first embodiment of Fig. 1.

Fig. 6 is an exploded view of a second embodiment of the present invention.

Fig. 7 is a structural diagram of the electrical conductor in the second embodiment of Fig. 6.

### Detailed Description of the Embodiments

[0016] The present invention is hereinafter further described in conjunction with the accompanying drawings.

[0017] The present invention discloses a front screw wiring structure, which comprises a housing 1, a fastening screw 4, a rotary press block 6, a reset spring sheet 7 and an electric conductor 8, wherein the electric conductor 8 is fixed in the housing 1, the rotary press block 6 is rotationally connected to one end of the electric conductor 8, one end of the reset spring sheet 7 is clamped onto the housing 1 and the other end of the reset spring sheet 7 abuts against the rotary press block 6, the fastening screw 4 is threaded to the other end of the electric conductor 8, and one end of the fastening screw 4 abuts against the rotary press block 6.

**[0018]** In the present invention, the electric conductor 8 comprises two structures, and the two structures of the electric conductor 8 are described hereinafter in detail in combination with the accompanying drawings.

**[0019]** As shown in Figs. 1-5, the electric conductor 8 comprises a conductive metal piece 81 made of conductive material and a wiring frame 82 made of non-conductive material, wherein the wiring frame 82 is fixed in the housing 1, one end of the conductive metal piece 81 is inserted into the wiring frame 82 and the other end thereof passes through the housing 1 and extends out from the housing 1, the rotary press block 6 is placed within the wiring frame 82, and one end of the rotary press block 6 is rotationally connected to the wiring frame 82, and the fastening screw 4 is threaded to the wiring frame 82.

**[0020]** A wiring hole 80 is arranged in the wiring frame 82, one end of the conductive metal piece 81 stretches into the wiring hole 80, and when in use, a wiring stud 400 stretches into the wiring hole 80, the fastening screw 4 is rotated to make the rotary press block 6 tightly abut against the wiring stud 400.

**[0021]** The conductive metal piece 81 is in a right-angle shape, several protruding tabs 811 are arranged on one side of the conductive metal piece 81, and the protruding tabs 811 pass through the housing 1 and extend out from the housing 1. In order to ensure the connection reliability of the wiring stud, a second toothed face 812 is arranged on the side wall of the other end of the conductive metal piece 81. The fastening screw 4 is rotated such that the rotary press block 6 presses the wiring stud 400 tightly against the second toothed face 812.

**[0022]** As in Fig. 6 and Fig. 7, the electric conductor 8 comprises a body integrally formed and made of conductive material, the body is provided with a wiring hole 80 and several insertion tabs 83, and the insertion tabs 83 pass through the housing 1 and extend out from the housing 1. As an alternative implementation of the present invention, the extension direction of the insertion tab 83 may be parallel or perpendicular to the thread tightening direction of the fastening screw 4. The rotary press block 6 is placed in the body, one end of the rotary press block 6 is rotationally connected to the body, and the fastening screw 4 is threaded to the body.

**[0023]** In the present invention, the rotary press block 6 is in a cam shape, and in order to further ensure the reliability of the connection, a first toothed face 62 is arranged on an arc wall of one side of the rotary press block 6. The fastening screw 4 is rotated so that the fastening screw 4 makes the first toothed face 62 of the rotary press block 6 tightly abut against the wiring stud 400.

**[0024]** In order to facilitate the rotary press block 6 to be rotationally connected to the electric conductor 8, the side face of the rotary press block 6 is provided with a rotating shaft 61 or a connecting pin (in Figs. 2 and 6, the rotary press block 6 is a rotating shaft structure).

**[0025]** To facilitate the installation of the rotary press block 6, a rotary hole 821 is arranged in the wiring frame 82 of the electric conductor 8 or the body, the rotary hole

821 being a slotted hole in the shape of "r" or being of a circular through-hole structure respectively.

**[0026]** In order to facilitate the connection of the fastening screw 4, the electric conductor 8 is provided with a boss portion 822, the boss portion 822 is provided with a threaded hole, and the fastening screw 4 is threaded to the boss portion 822.

**[0027]** In the present invention, the fastening screw 4 comprises a threaded portion and a smooth portion, the diameter of the smooth portion is smaller than the diameter of the threaded portion, and the smooth portion of the fastening screw 4 abuts against the rotary press block 6.

**[0028]** The housing 1 is made of plastic and comprises an upper housing 11 and a lower housing 12, the upper housing 11 and the lower housing 12 being engaged with each other.

**[0029]** When in use, the wiring stud 400 passes through the housing 1 and stretches into the wiring hole 80 of the electric conductor 8. During wiring, the fastening screw 4 is rotated, the fastening screw 4 presses the outer arc surface of the rotary press block 6 via the smooth portion at the front end and makes the rotary press block 6 to rotate. The force of the fastening screw will be greater than that of the reset spring sheet 7, so that the wiring stud is pressed tightly by the first toothed face 62 of the rotary press block 6. When the fastening screw 4 is unscrewed, the reset spring sheet 7 will push the rotary press block 6 back.

**[0030]** The above implementations are only preferred implementations of the present invention, and it should be noted that for those of ordinary skill in the art, improvements can also be made without departing from the principle of the present invention, and these improvements shall also be deemed as being within the protection scope of the present invention.

## Claims

1. A front screw wiring structure, **characterized by** comprising a housing (1), a fastening screw (4), a rotary press block (6), a reset spring sheet (7) and an electric conductor (8), wherein the electric conductor (8) is fixed in the housing (1), the rotary press block (6) is rotationally connected to one end of the electric conductor (8), one end of the reset spring sheet (7) is clamped onto the housing (1) and the other end thereof abuts against the rotary press block (6), the fastening screw (4) is threaded to the other end of the electric conductor (8), and one end of the fastening screw (4) abuts against the rotary press block (6).
2. The front screw wiring structure of claim 1, **characterized in that** the electric conductor (8) comprises a conductive metal piece (81) made of conductive material and a wiring frame (82) made of non-con-

ductive material, wherein the wiring frame (82) is fixed in the housing (1), one end of the conductive metal piece (81) is inserted into the wiring frame (82) and the other end thereof passes through the housing (1) and extends out from the housing (1), and the rotary press block (6) is rotationally connected to the wiring frame (82). 5

3. The front screw wiring structure of claim 2, **characterized in that** the wiring frame (82) is provided with a rotary hole (821) for connecting the rotary press block (6), the rotary hole (821) being a slotted hole in the shape of "r". 10
4. The front screw wiring structure of claim 3, **characterized in that** the conductive metal piece (81) is in a right-angle shape, several protruding tabs (811) are arranged on one side of the conductive metal piece (81), and a second toothed face (812) is arranged on a side wall of the other side of the conductive metal piece (81). 15  
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5. The front screw wiring structure of claim 1, **characterized in that** the electric conductor (8) comprises a body integrally formed and made of conductive material, and several insertion tabs (83) are arranged on the body. 25
6. The front screw wiring structure of claim 5, **characterized in that** the body is provided with a rotary hole (821) for connecting the rotary press block (6), the rotary hole (821) being of a circular through-hole structure. 30
7. The front screw wiring structure of claim 1, **characterized in that** the rotary press block (6) is in a cam shape, and a first toothed face (62) is arranged on an arc wall of one side of the rotary press block (6). 35
8. The front screw wiring structure of claim 1, **characterized in that** a side face of the rotary press block (6) is provided with a rotating shaft or a connecting pin. 40
9. The front screw wiring structure of claim 1, **characterized in that** the fastening screw (4) comprises a threaded portion and a smooth portion, the diameter of the smooth portion is smaller than the diameter of the threaded portion, and the smooth portion of the fastening screw (4) abuts against the rotary press block (6). 45  
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10. The front screw wiring structure of claim 1, **characterized in that** the housing (1) is made of plastic and comprises an upper housing (11) and a lower housing (12), the upper housing (11) and the lower housing (12) being engaged with each other. 55

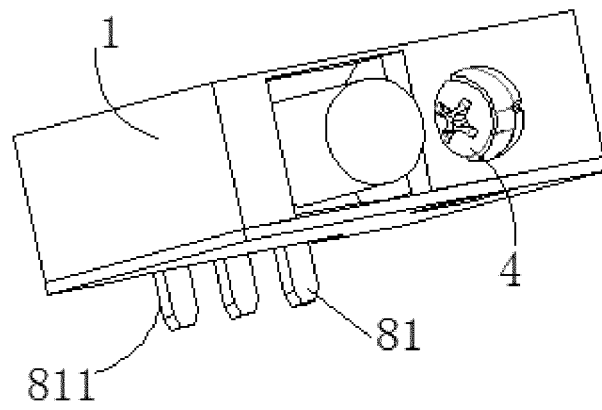


Fig. 1

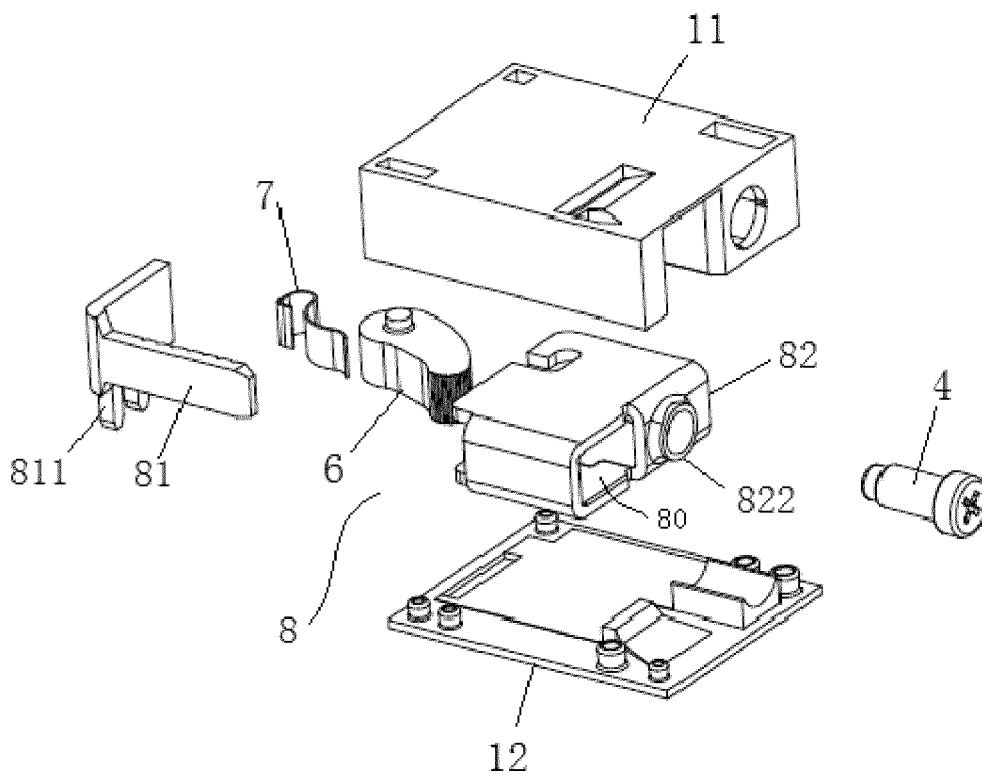


Fig. 2

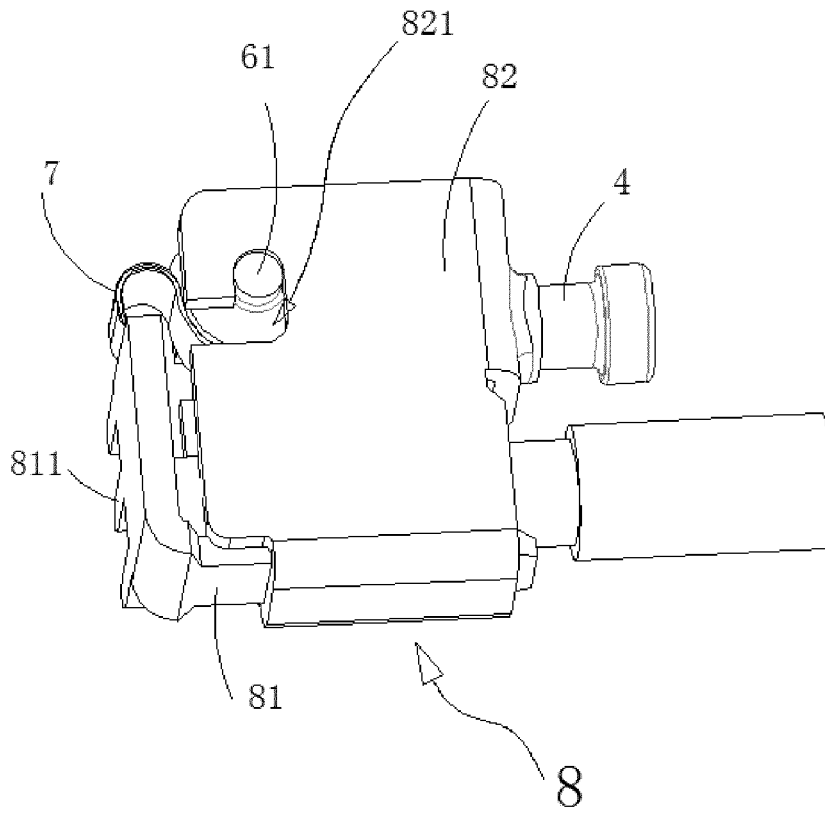


Fig. 3

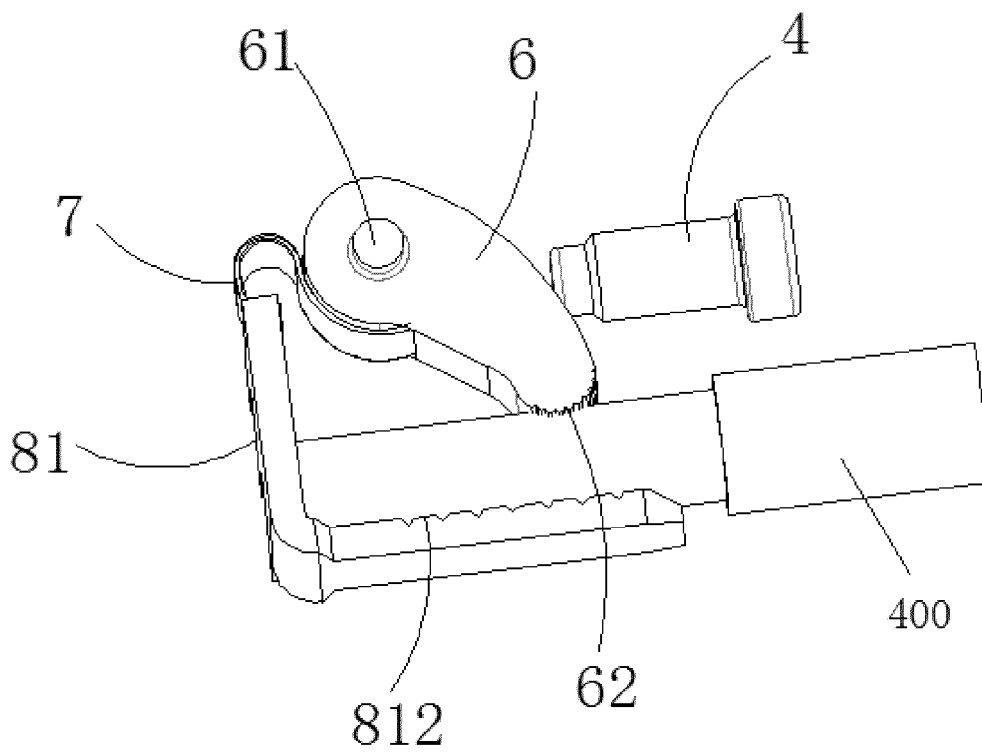


Fig. 4

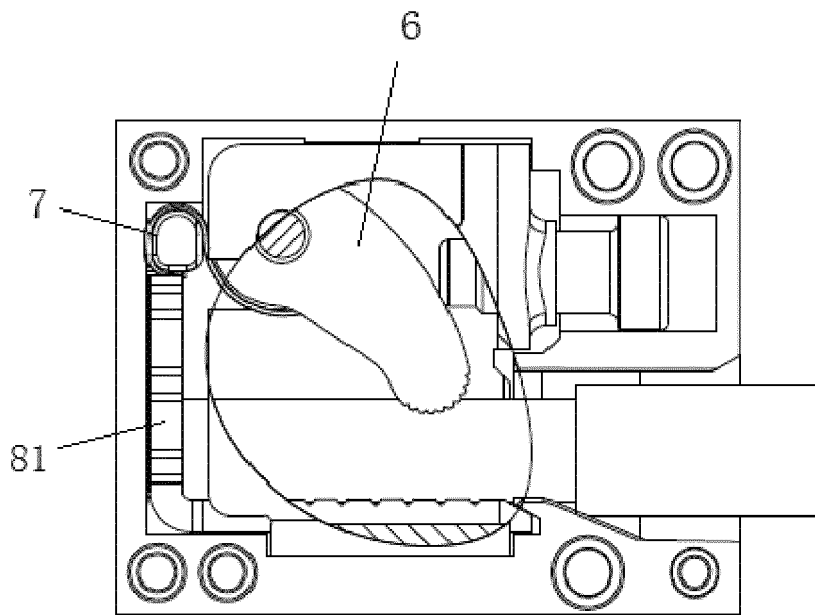


Fig. 5

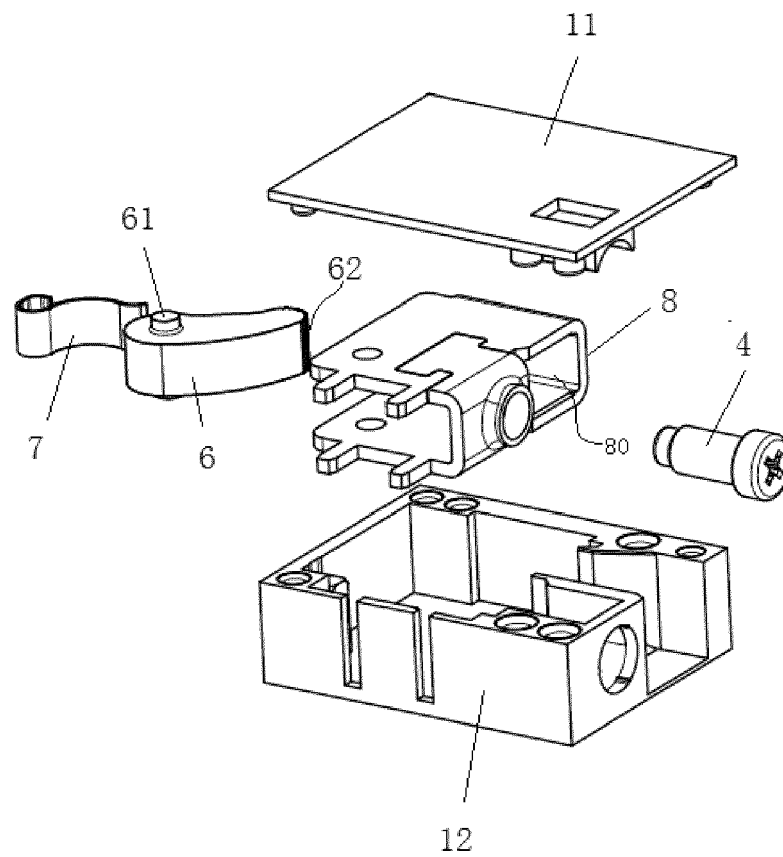


Fig. 6

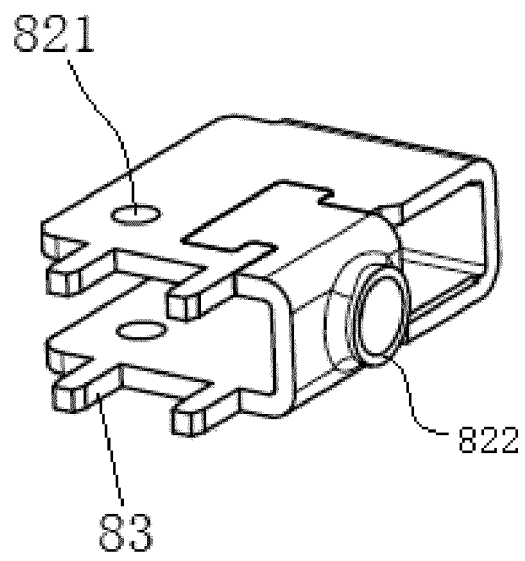


Fig. 7





EUROPEAN SEARCH REPORT

Application Number  
EP 19 15 5849

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ANNEX TO THE EUROPEAN SEARCH REPORT  
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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