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(54) INDICATING DEVICE OF DUAL-POWER AUTOMATIC TRANSFER SWITCH AND DUAL-POWER AUTOMATIC TRANSFER SWITCH

ANZEIGEVORRICHTUNG EINES
DOPPELLEISTUNGS-AUTOMATIKÜBERTRAGUNGSSCHALTERS UND
DOPPELLEISTUNGS-AUTOMATIKÜBERTRAGUNGSSCHALTER

DISPOSITIF D'INDICATION DU COMMUTATEUR DE TRANSFERT AUTOMATIQUE À DOUBLE ALIMENTATION ET DU COMMUTATEUR DE TRANSFERT AUTOMATIQUE À DOUBLE ALIMENTATION

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CN-U- 208 142 045 CN-U- 209 071 158

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Description

Technical field

[0001] The present disclosure relates to an indicating device for a dual-power automatic transfer switch and a dual-power automatic transfer switch including the same indicating device.

Background art

[0002] An indicating device of ATSE is a safety-related functional module, which indicates to the user the current opening and closing state of contacts of ATSE, such as being closed to the first power supply (S1 ON) or closed to the second power supply (S2 ON) or being disconnected from the first power supply and the second power supply (OFF). When ATSE has isolation function, users can padlock at OFF position to ensure the isolation between power supply and load terminal, and let maintenance personnel safely maintain load terminal equipment.

[0003] However, in some products of the prior art, the contacts are not rigidly connected with the mechanism drive, which leads to incorrect indication when the indicator is connected with the mechanism drive instead of the contacts rigidly. For example, when the moving contact cannot be separated by the mechanism due to welding or jamming, the driving of the mechanism has reached the OFF position, which is dangerous. If mechanical indicators provide mechanical indication of contact position, then mechanical indicators provide electrical indication of contact position, so their correct design is also very critical.

[0004] CN 209 071 158 U discloses an indicating device in accordance with the preamble of claim 1.

[0005] CN 208 142 045 U provides a switching mechanism that includes switching components for a dual power transfer switch switching components such as a driving disc, an actuating lever, an actuating mechanism and a complementary unit. The driving disc has a curved drive groove, and the actuating lever extends to in the drive groove. Further, a dual power transfer switch including this kind of switching mechanism is disclosed.

Summary

[0006] In order to solve the defects in the prior art, according to one aspect of the present disclosure, there is provided an indicating device of a dual-power automatic transfer switch according to claim 1.

[0007] The indicating device comprises a mechanical indicating device and an electrical indicating device; and an indicating part acting on the mechanical indicating device and the electrical indicating device.

[0008] The first driving component and the second driving component respectively drive the indicating part to move.

[0009] The movement of the indicating part drives the mechanical indicating device to move to a position where the first power supply is switched on, a position where the second power supply is switched on and a position where both the first power supply and the second power supply are switched off.

[0010] The movement of the indicating part correspondingly actuates the electrical indicating device to indicate a switch on signal of the first power supply, a switch on signal of the second power supply and a switch off signal of the first power supply and the second power supply.

[0011] The indicating member is an indicating rod.

[0012] A first end of the indicating rod is provided with an indicating rod groove.

[0013] A mechanical swing rod arranged on the mechanical indicating device can slide in the indicating rod groove.

[0014] With the movement of the indicating rod, the indicating rod groove actuates the mechanical swing rod, so that the mechanical indicating device rotates around a rotating center arranged on the housing of the dual-power automatic transfer switch to a position indicating that the first power supply is switched on, a position indicating that the second power supply is switched on and a position indicating that both the first power supply and the second power supply are switched off.

[0015] According to an embodiment, an indicating rod pressing plate is provided on a second end of the indicating rod.

[0016] The indicating rod pressing plate comprises a pressing plate opening.

[0017] The electric indicating device comprises a first micro switch and a second micro switch.

[0018] When the indicating rod pressing plate simultaneously presses the first micro switch and the second micro switch, both the first micro switch and the second micro switch provide a switch off signal.

[0019] When the indicating rod pressing plate presses the first micro switch and the second micro switch is at the pressing plate opening, the first micro switch provides the switch off signal of the first power supply and the second micro switch provides the switch on signal of the second power supply.

[0020] When the indicating rod pressing plate presses the second micro switch and the first micro switch is at the pressing plate opening, the second micro switch provides the switch off signal of the second power supply, and the first micro switch provides the switch on signal of the first power supply.

[0021] According to an embodiment an indicating rod matching part is provided between the first end and the second end of the indicating rod.

[0022] The indicating rod matching part comprises a first indicating rod joint part and a second indicating rod joint part.

[0023] The first indicating rod joint part engages with the first driving component, and the movement of the first

driving component actuates the first indicating rod joint part so as to drive the indicating rod to move.

[0024] The second indicating rod joint part engages with the second driving component, and the movement of the second driving component actuates second indicating rod joint part so as to drive the indicating rod to move.

[0025] According to an embodiment the first indicating rod joint part is a first protrusion which is engaged with a first groove arranged on the first driving component, and the movement of the first groove actuates the first protrusion so as to drive the indicating rod to move.

[0026] The second indicating rod joint part is a second protrusion which is engaged with a second groove arranged on the second driving component, and the movement of the second groove actuates the second protrusion so as to drive the indicating rod to move.

[0027] According to an embodiment the indicating device further comprises a reset spring.

[0028] One end of the reset spring is installed on a housing of the dual-power automatic transfer switch.

[0029] The other end of the reset spring acts on the indicating rod, and the reset spring exerts its elastic force on the indicating rod in the direction of switching on the first power supply.

[0030] For example, the first driving component connected to the moving contact of the first power supply directly drives the indicating rod to move to the right to switch on, but the indicating rod does not move to the rightmost end because the switch-on is not in place, and the electrical indicating device may not be completely released (the indicating rod pressing plate still presses the first micro switch), resulting in the switch off signal of the first power supply still being indicated. At this time, due to the existence of the rest spring, the indicator rod is returned to a position where the first power supply is switched on (the indicating rod pressing plate will not press the first micro switch, that is, the first micro switch is completely in the pressing plate opening).

[0031] According to an embodiment the indicating rod matching part is a U-shaped groove.

[0032] The first driving component and the second driving component are respectively engaged with the first protrusion and the second protrusion in the U-shaped groove.

[0033] According to an embodiment the first micro switch and the second micro switch are stacked on top of each other.

[0034] The pressing plate openings are arranged to be staggered along the moving direction of the indicating rod and respectively correspond to the first micro switch and the second micro switch.

[0035] Based on the above disclosure, the rigid connection between the indicating device and the moving contact is realized, thus avoiding the situation of incorrect indication. In addition, by providing a double indication device with the mechanical indicating device and electrical indicating device, the situation of incorrect indication

is avoided.

[0036] According to another aspect of the present disclosure, there is provided a dual-power automatic transfer switch, which is characterized in that the dual-power automatic transfer switch comprises the indicating device as described above.

[0037] So far, in order that the detailed description of this disclosure can be better understood and the contribution of this disclosure to the prior art can be better recognized, this disclosure has summarized the content of this disclosure quite broadly. Of course, embodiments of the present disclosure will be described below and will form the subject matter of the appended claims.

Brief description of drawings

[0038] Those skilled in the art will have a better understanding of this disclosure through the following drawings, and the advantages of this disclosure can be more clearly reflected. The drawings described herein are only for illustrative purposes of selected embodiments, not all possible implementations and are not intended to limit the scope of the present disclosure.

Fig. 1 shows an assembled perspective view of a dual power automatic transfer switch including a housing and an indicating device according to the present disclosure;

Fig. 2 illustrates an exploded perspective view of a dual power automatic transfer switch including a housing and an indicating device according to the present disclosure;

Fig. 3 shows an exploded perspective view of an indicating device according to the present disclosure;

Fig. 4 shows that the indicating device according to the present disclosure does not correctly indicate the switching on due to the switch-on is not in place;

Fig. 5 shows that the indicating device according to the present disclosure correctly indicates switching on under the action of the reset spring;

Fig. 6 shows the indicating device according to the present disclosure in a position indicating that the first power supply is switched on;

Fig. 7 shows the indicating device according to the present disclosure in a position indicating that both the first power supply and the second power supply are switched off;

Fig. 8 shows the indicating device according to the present disclosure in a position indicating that the second power supply is switched on.

Detailed description

[0039] Embodiments according to the present disclosure will be described below with reference to the drawings.

[0040] Figs. 1 and 2 show an assembled perspective view and an exploded perspective view, respectively, of a dual-power automatic transfer switch including a housing and an indicating device, which includes a first driving component 1 connected to a first moving contact of a first power supply and a second driving component 2 connected to a second moving contact of a second power supply.

[0041] The indicating device comprises a mechanical indicating device 3 and an electrical indicating device 4 (see fig. 2), and an indicating part 5 acting on the mechanical indicating device 3 and the electrical indicating device 4.

[0042] The first driving component 1 and the second driving component 2 respectively drive the indicating part to move.

[0043] The movement of the indicating part 5 drives the mechanical indicating device 3 to move to a position for indicating the first power supply to switch on (as shown in fig. 6), a position for indicating the second power supply to switch on (as shown in fig. 8) and a position for indicating that both the first power supply and the second power supply are switched off (as shown in fig. 7).

[0044] The movement of the indicating part 5 correspondingly actuates the electrical indicating device 4 to indicate the switching on signal of the first power supply, the switching on signal of the second power supply and the switching off signal of the first power supply and the second power supply.

[0045] According to the above embodiment of the present disclosure, the indicating part 5 is an indicating rod 6.

[0046] A first end 6-1 of the indicating rod 6 is provided with an indicating rod groove 6-1-1.

[0047] A mechanical swinging rod 3-1 arranged on the mechanical indicating device 3 can slide in the indicating rod groove 6-1-1.

[0048] With the movement of the indicating rod 6, the indicating rod groove 6-1-1 actuates the mechanical swing rod 3-1, so that the mechanical indicating device 3 rotates around the rotation center provided on a housing 7 of the dual-power automatic transfer switch to the position indicating that the first power supply is switched on (as shown in fig. 6), the position indicating that the second power supply is switched on (as shown in fig. 8) and the position indicating that the first and second power supply are all switched off (as shown in fig. 7)

[0049] According to the above embodiments of the present disclosure, an indicating rod pressing plate 6-2-1 (as shown by the hatching in figs. 4 to 5) is provided on the second end 6-2 of the indicating rod 6.

[0050] The indicating rod pressing plate 6-2-1 includes a pressing plate opening 6-2-1-1 (as shown in figs. 6 and

8).

[0051] The electric indicating device 4 includes a first micro switch 4-1 and a second micro switch 4-2 (as shown in fig. 3).

5 **[0052]** When the indicating rod pressing plate 6-2-1 presses the first micro switch 4-1 and the second micro switch 4-2 at the same time, both the first micro switch 4-1 and the second micro switch 4-2 provide switch off signals.

10 **[0053]** When the indicating rod pressing plate 6-2-1 presses the first micro switch 4-1 and the second micro switch 4-2 is located at the pressing plate opening 6-2-1-1, the first micro switch 4-1 provides a switching-off signal of the first power supply and the second micro switch 4-2 provides a switching-on signal of the second power supply.

15 **[0054]** When the indicating rod pressing plate 6-2-1 presses the second micro switch 4-2 and the first micro switch 4-1 is located at the pressure plate opening 20 6-2-1-1, the second micro switch 4-2 provides a switching-off signal of the second power supply and the first micro switch 4-1 provides a switch-on signal of the first power supply.

25 **[0055]** According to the above embodiments of the present disclosure, an indicating rod matching part 6-3 is provided between the first end 6-1 and the second end 6-2 of the indicating rod 6.

30 **[0056]** The indicating rod matching part 6-3 includes a first indicating rod joint part and a second indicating rod joint part.

[0057] The first indicating rod joint part engages with the first driving component 1 and the movement of the first driving component 1 actuates the first joint part to drive the indicating rod to move.

35 **[0058]** The second indicating rod joint part engages with the second driving component 2 and the movement of the second driving component 2 actuates the second joint part to drive the indicating rod to move.

40 **[0059]** According to the above embodiments of the present disclosure, the first indicating rod joint part is a first protrusion 6-3-1 (as shown in fig. 3), which is engaged with a first groove 1-1 provided on the first driving component 1 and the movement of the first groove 1-1 actuates the first protrusion 6-3-1 so as to drive the movement of the indicating rod 6.

45 **[0060]** The second indicating rod joint part is a second protrusion 6-3-2 (as shown in fig. 3), which is engaged with a second groove 2-1 provided on the second driving component 2 and the movement of the second groove 2-1 actuates the second protrusion 6-3-2 so as to drive the movement of the indicating rod 6.

[0061] According to the above embodiments of the present disclosure, the indicating device further includes a reset spring 8.

50 **[0062]** One end 8-1 of the reset spring 8 is mounted on the housing 7 of the dual-power automatic transfer switch.

[0063] The other end 8-2 of the reset spring 8 acts on

the indicating rod 6, and the reset spring 8 exerts its elastic force on the indicating rod 6 in the direction of switching on the first power supply.

[0064] For example, as shown in fig. 4, when the moving contact of the first power supply is closed, the first driving component 1 connected to the moving contact of the first power supply directly drives the indicating rod 6 to move to the right for switching on, but the indicating rod 6 does not move to the rightmost end because the switch-on is not in place, and the electrical indicating device 4 may not be completely released (the indicating rod pressing plate 6-2-1 still partially presses the first micro switch 4-1, the indicating rod pressing plate 6-2-1 completely presses the second micro switch 4-2), resulting in the switch off signal of the first power supply still being indicated (the mechanical indicator 3 does not move to the position indicating the first power supply to switch on). At this time, due to the presence of the reset spring 8, the indicator rod 6 is returned to a position where the first power supply is fully switched on (the indicator rod pressure plate 6-2-1 will not press the first micro switch 4-1, that is, the first micro switch 4-1 is completely in the pressing plate opening 6-2-1-1, the first micro switch 4-1 provides the switching on signal of the first power supply, while the mechanical indicator 3 moves to a position indicating the first power supply is switched on.

[0065] According to the above embodiments of the present disclosure, the indicating rod matching part 6-3 is a U-shaped groove.

[0066] The first driving component 1 and the second driving component 2 are respectively engaged with the first protrusion 6-3-1 and the second protrusion 6-3-2 in the U-shaped groove.

[0067] According to the above embodiments of the present disclosure, the first micro switch 4-1 and the second micro switch 4-2 are stacked on top of each other.

[0068] The pressing plate openings 6-2-1-1 are arranged to be staggered along the moving direction of the indicating rod 6 and respectively corresponds to the first micro switch 4-1 and the second micro switch 4-2.

[0069] Fig. 6 shows the indicating device according to the present disclosure in a position indicating that the first power supply is switched on. Fig. 7 shows the indicating device according to the present disclosure in a position indicating that the first power supply and the second power supply are all switched off. Fig. 8 shows the indicating device according to the present disclosure in a position indicating that the second power supply is switched on.

[0070] Figs. 6 to 8 also show the movement of the indicating device.

[0071] In fig. 6, the first moving contact 9 corresponding to the first power supply is in the switching on position, while the second moving contact 10 corresponding to the second power supply is in the switching off position. At this time, the mechanical indicating device 3 is in the position of indicating the first power supply to switch on, while the first micro switch 4-1 of the electrical indicating

device 4 is not pressed by the indicating rod pressure plate 6-2-1 but is located in the pressing plate opening 6-2-1. The second micro switch 4-2 is pressed by the indicating rod pressure plate 6-2-1, the first micro switch 4-1 provides the switching on signal of the first power supply, and the second micro switch 4-2 provides the switching off signal of the second power supply.

[0072] In the changing process from fig. 6 to fig. 7, the first moving contact 9 corresponding to the first power supply starts to move toward the opening position, and the movement of the first moving contact 9 drives the first driving component 1 to move, and then the movement of the first groove 1-1 drives the first protrusion 6-3-1 to drive the movement of the indicating rod 6. With the movement of the indicating rod 6, the indicating rod groove 6-1-1 actuates the mechanical swing rod 3-1, so that the mechanical indicating device 3 rotates around the rotation center provided on the housing 7 of the dual-power automatic transfer switch to a position indicating that both the first power supply and the second power supply are switched off (as shown in fig. 7). At the same time, the first micro switch 4-1 and the second micro switch 4-2 of the electrical indicating device 4 are both pressed by the indicating rod pressing plate 6-2-1, the first micro switch 4-1 provides the switching off signal of the first power supply, and the second micro switch 4-2 provides the switching off signal of the second power supply.

[0073] In the changing process from fig. 7 to fig. 8, the second moving contact 10 corresponding to the second power supply starts to move towards the closing position, and the movement of the second moving contact 10 drives the second driving component 2 to move, and then the movement of the second groove 2-1 actuates the second protrusion 6-3-2 to drive the movement of the indicating rod 6. With the movement of the indicating rod 6, the indicating rod groove 6-1-1 actuates the mechanical swing rod 3-1, so that the mechanical indicating device 3 rotates around the rotation center provided on the housing 7 of the dual-power automatic transfer switch to a position indicating that the second power supply is switched on (as shown in fig. 8). At the same time, the first micro switch 4-1 of the electrical indicating device 4 is pressed by the indicating rod pressing plate 6-2-1, while the second micro switch 4-2 is not pressed by the indicating rod pressing plate 6-2-1. The first micro switch 4-1 provides the switching off signal of the first power supply and the second micro switch 4-2 provides the switching on signal of the second power supply.

[0074] Based on the above disclosure, the rigid connection between the indicating device and the moving contact is realized, thus avoiding the situation of incorrect indication. In addition, by setting the double indication devices with the mechanical indication device and the electrical indication device, the situation of incorrect indication is avoided.

[0075] According to another embodiment of the present disclosure, there is provided a dual power auto-

matic transfer switch, which includes the indicating device as described above.

Claims

1. An indicating device suitable for a dual-power automatic transfer switch that comprises a first driving component (1) connected to a first moving contact of a first power supply and a second driving component (2) connected to a second moving contact of a second power supply, wherein the first driving component and the second driving component are adapted to respectively drive the indicating part to move, wherein:

the indicating device comprises a mechanical indicating device (3) and an electrical indicating device (4); and

an indicating part (5) acting on the mechanical indicating device and the electrical indicating device;

the movement of the indicating part (5) drives the mechanical indicating device (3) to move to a position indicating where the first power supply is switched on, a position indicating where the second power supply is switched on and a position indicating where both the first power supply and the second power supply are switched off;

the movement of the indicating part (5) correspondingly actuates the electrical indicating device (4) to indicate a switch on signal of the first power supply, a switch on signal of the second power supply and a switch off signal of the first power supply and the second power supply,

characterized in that

the indicating part (5) is an indicating rod (6); a first end (6-1) of the indicating rod (6) is provided with an indicating rod groove (6-1-1);

a mechanical swing rod (3-1) arranged on the mechanical indicating device (3) is slidably received in the indicating rod groove (6-1-1);

the indicating rod groove (6-1-1) is configured to actuate the mechanical swing rod (3-1) with the movement of the indicating rod (6) to rotate the mechanical indicating device (3) around a rotating center arranged on a housing (7) of the dual-power automatic transfer switch among the position indicating that the first power supply is switched on, the position indicating that the second power supply is switched on and the position indicating that both the first power supply and the second power supply are switched off.

2. The indicating device of the dual-power automatic transfer switch according to claim 1, wherein

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a second end (6-2) of the indicating rod is provided with an indicating rod pressing plate (6-2-1);

the indicating rod pressing plate comprises a pressing plate opening (6-2-1-1);

the electric indicating device comprises a first micro switch (4-1) and a second micro switch (4-2);

when the indicating rod pressing plate (6-2-1) presses the first micro switch (4-1) and the second micro switch (4-2) simultaneously, both the first micro switch and the second micro switch provide a switch off signal;

when the indicating rod pressing plate (6-2-1) presses the first micro switch (4-1) and the second micro switch (4-2) is at the pressing plate opening, the first micro switch (4-1) provides the switch off signal of the first power supply and the second micro switch (4-2) provides the switch on signal of the second power supply;

when the indicating rod pressing plate presses (6-2-1) the second micro switch (4-2) and the first micro switch (4-1) is at the pressing plate opening, the second micro switch (4-2) provides the switch off signal of the second power supply, and the first micro switch (4-1) provides the switch on signal of the first power supply.

3. The indicating device of the dual-power automatic transfer switch according to claim 1 or 2, wherein

an indicating rod matching part (6-3) is arranged between the first end and the second end of the indicating rod;

the indicating rod matching part (6-3) comprises a first indicating rod joint part and a second indicating rod joint part;

the first indicating rod joint part engages with the first driving component, and the movement of the first driving component actuates the first indicating rod joint part so as to drive the indicating rod to move;

the second indicating rod joint part engages with the second driving component, and the movement of the second driving component actuates the second indicating rod joint part so as to drive the indicating rod to move.

4. The indicating device of the dual-power automatic transfer switch according to claim 3, wherein

the first indicating rod joint part is a first protrusion (6-3-1) which is engaged with a first groove (1-1) arranged on the first driving component, and the movement of the first groove actuates the first protrusion so as to drive the indicating rod to move;

the second indicating rod joint part is a second

protrusion (6-3-2) which is engaged with a second groove (2-1) arranged on the second driving component, and the movement of the second groove actuates the second protrusion so as to drive the indicating rod to move.

5. The indicating device of the dual-power automatic transfer switch according to claim 3, wherein

the indicating device further comprises a reset spring (8);

one end (8-1) of the reset spring is installed on the housing of the double-power automatic transfer switch;

the other end (8-2) of the reset spring acts on the indicating rod, and the reset spring exerts its elastic force on the indicating rod in the direction of switching on the first power supply.

6. The indicating device of the dual-power automatic transfer switch according to claim 4, wherein

the indicating rod matching part (6-3) is a U-shaped groove;

the first driving component and the second driving component engages with the first protrusion and

the second protrusion in the U-shaped groove respectively.

7. The indicating device of the dual-power automatic transfer switch according to claim 2, wherein

the first micro switch (4-1) and the second micro switch (4-2) are stacked on top of each other;

the pressing plate openings (6-2-1-1) are arranged to be staggered along the moving direction of the indicating rod and correspond to the first micro switch and the second micro switch respectively.

8. A dual-power automatic transfer switch, wherein the dual-power automatic transfer switch comprises an indicating device according to one of claims 1 to 7.

Patentansprüche

1. Anzeigevorrichtung, die für einen automatischen Doppelleistungsumschalter geeignet ist, der eine erste Antriebskomponente (1), die mit einem ersten beweglichen Kontakt einer ersten Stromversorgung verbunden ist, und eine zweite Antriebskomponente (2), die mit einem zweiten beweglichen Kontakt einer zweiten Stromversorgung verbunden ist, umfasst, wobei die erste Antriebskomponente und die zweite Antriebskomponente so ausgelegt sind, dass sie jeweils das Anzeigeteil zur Bewegung antreiben, wo-

bei:

die Anzeigevorrichtung eine mechanische Anzeigevorrichtung (3) und eine elektrische Anzeigevorrichtung (4) umfasst; und

ein Anzeigeteil (5) auf die mechanische Anzeigevorrichtung und die elektrische Anzeigevorrichtung einwirkt;

die Bewegung des Anzeigeteils (5) die mechanische Anzeigevorrichtung (3) antreibt, um sich in eine Position zu bewegen, die anzeigt, wo die erste Stromversorgung eingeschaltet ist, in eine Position, die anzeigt, wo die zweite Stromversorgung eingeschaltet ist, und in eine Position, die anzeigt, wo sowohl die erste als auch die zweite Stromversorgung ausgeschaltet sind;

die Bewegung des Anzeigeteils (5) entsprechend die elektrische Anzeigevorrichtung (4) betätigt, um ein Einschaltsignal der ersten Stromversorgung, ein Einschaltsignal der zweiten Stromversorgung und ein Ausschaltsignal der ersten Stromversorgung und der zweiten Stromversorgung anzuzeigen,

dadurch gekennzeichnet, dass

das Anzeigeteil (5) ein Anzeigestab (6) ist; ein erstes Ende (6-1) des Anzeigestabs (6) mit einer Anzeigestabnut (6-1-1) versehen ist;

ein an der mechanischen Anzeigevorrichtung (3) angeordneter mechanischer Schwenkstab (3-1) gleitend in der Anzeigestabnut (6-1-1) aufgenommen ist;

die Anzeigestabnut (6-1-1) so konfiguriert ist, dass sie den mechanischen Schwenkstab (3-1) mit der Bewegung des Anzeigestabs (6) betätigt, um die mechanische Anzeigevorrichtung (3) um ein Drehzentrum, das an einem Gehäuse (7) des automatischen Doppelleistungsumschalters angeordnet ist, zwischen der Position, die anzeigt, dass die erste Stromversorgung eingeschaltet ist, der Position, die anzeigt, dass die zweite Stromversorgung eingeschaltet ist, und der Position, die anzeigt, dass sowohl die erste Stromversorgung als auch die zweite Stromversorgung ausgeschaltet sind, zu drehen.

2. Anzeigevorrichtung des automatischen Doppelleistungsumschalters nach Anspruch 1, wobei

ein zweites Ende (6-2) des Anzeigestabs mit einer Anzeigestab-Druckplatte (6-2-1) versehen ist;

die Anzeigestab-Druckplatte eine Druckplattenöffnung (6-2-1-1) umfasst;

die elektrische Anzeigevorrichtung einen ersten Mikroschalter (4-1) und einen zweiten Mikroschalter (4-2) umfasst;

wenn die Anzeigestab-Druckplatte (6-2-1) den

- ersten Mikroschalter (4-1) und den zweiten Mikroschalter (4-2) gleichzeitig drückt, sowohl der erste Mikroschalter als auch der zweite Mikroschalter ein Ausschaltsignal bereitstellen; wenn die Anzeigestab-Druckplatte (6-2-1) den ersten Mikroschalter (4-1) drückt und der zweite Mikroschalter (4-2) sich an der Druckplattenöffnung befindet, der erste Mikroschalter (4-1) das Ausschaltsignal der ersten Stromversorgung bereitstellt und der zweite Mikroschalter (4-2) das Einschaltsignal der zweiten Stromversorgung bereitstellt; wenn die Anzeigestab-Druckplatte (6-2-1) den zweiten Mikroschalter (4-2) drückt und der erste Mikroschalter (4-1) sich an der Druckplattenöffnung befindet, der zweite Mikroschalter (4-2) das Ausschaltsignal der zweiten Stromversorgung bereitstellt und der erste Mikroschalter (4-1) das Einschaltsignal der ersten Stromversorgung bereitstellt.
3. Anzeigevorrichtung des automatischen Doppelleistungsumschalters nach Anspruch 1 oder 2, wobei
- ein Anzeigestab-Anpassungsteil (6-3) zwischen dem ersten Ende und dem zweiten Ende des Anzeigestabs angeordnet ist;
- das Anzeigestab-Anpassungsteil (6-3) ein erstes Anzeigestab-Verbindungsteil und ein zweites Anzeigestab-Verbindungsteil umfasst;
- das erste Anzeigestab-Verbindungsteil mit der ersten Antriebskomponente in Eingriff kommt und die Bewegung der ersten Antriebskomponente das erste Anzeigestab-Verbindungsteil betätigt, um den Anzeigestab zur Bewegung anzutreiben;
- das zweite Anzeigestab-Verbindungsteil mit der zweiten Antriebskomponente in Eingriff kommt und die Bewegung der zweiten Antriebskomponente das zweite Anzeigestab-Verbindungsteil betätigt, um den Anzeigestab zur Bewegung anzutreiben.
4. Anzeigevorrichtung des automatischen Doppelleistungsumschalters nach Anspruch 3, wobei
- das erste Anzeigestab-Verbindungsteil ein erster Vorsprung (6-3-1) ist, der in eine erste Nut (1-1) eingreift, die an der ersten Antriebskomponente angeordnet ist, und die Bewegung der ersten Nut den ersten Vorsprung betätigt, um den Anzeigestab zur Bewegung anzutreiben;
- das zweite Anzeigestab-Verbindungsteil ein zweiter Vorsprung (6-3-2) ist, der in eine zweite Nut (2-1) eingreift, die an der zweiten Antriebskomponente angeordnet ist, und die Bewegung der zweiten Nut den zweiten Vorsprung betätigt, um den Anzeigestab zur Bewegung anzutreiben.
- ben.
5. Anzeigevorrichtung des automatischen Doppelleistungsumschalters nach Anspruch 3, wobei
- die Anzeigevorrichtung außerdem eine Rückstellfeder (8) umfasst;
- ein Ende (8-1) der Rückstellfeder am Gehäuse des automatischen Doppelleistungsumschalters angebracht ist;
- das andere Ende (8-2) der Rückstellfeder auf den Anzeigestab einwirkt, und die Rückstellfeder ihre elastische Kraft auf den Anzeigestab in Richtung des Einschaltens der ersten Stromversorgung ausübt.
6. Anzeigevorrichtung des automatischen Doppelleistungsumschalters nach Anspruch 4, wobei
- das Anzeigestab-Anpassungsteil (6-3) eine U-förmige Nut ist;
- die erste Antriebskomponente und die zweite Antriebskomponente mit dem ersten Vorsprung bzw. dem zweiten Vorsprung in der U-förmigen Nut in Eingriff kommen.
7. Anzeigevorrichtung des automatischen Doppelleistungsumschalters nach Anspruch 2, wobei
- der erste Mikroschalter (4-1) und der zweite Mikroschalter (4-2) übereinander gestapelt sind;
- die Druckplattenöffnungen (6-2-1-1) so angeordnet sind, dass sie entlang der Bewegungsrichtung des Anzeigestabs versetzt angeordnet sind und dem ersten Mikroschalter bzw. dem zweiten Mikroschalter entsprechen.
8. Automatischer Doppelleistungsumschalter, bei dem der automatische Doppelleistungsumschalter eine Anzeigevorrichtung nach einem der Ansprüche 1 bis 7 umfasst.

Revendications

1. Dispositif indicateur approprié pour un commutateur de transfert automatique à double alimentation qui comprend un premier composant d'entraînement (1) connecté à un premier contact mobile d'une première alimentation électrique et un second composant d'entraînement (2) connecté à un second contact mobile d'une seconde alimentation électrique, dans lequel le premier composant d'entraînement et le second composant d'entraînement sont adaptés à amener respectivement la partie indicatrice à se déplacer, dans lequel :

le dispositif indicateur comprend un dispositif in-

dicateur mécanique (3) et un dispositif indicateur électrique (4) ; et

une partie indicatrice (5) agissant sur le dispositif indicateur mécanique et le dispositif indicateur électrique ;

le mouvement de la partie indicatrice (5) amène le dispositif indicateur mécanique (3) à se déplacer vers une position indiquant que la première alimentation électrique est activée, une position indiquant que la seconde alimentation électrique est activée et une position indiquant que la première alimentation électrique et la seconde alimentation électrique sont toutes deux désactivées ;

le mouvement de la partie indicatrice (5) actionne de manière correspondante le dispositif indicateur électrique (4) pour indiquer un signal d'activation de la première alimentation électrique, un signal d'activation de la seconde alimentation électrique et un signal de désactivation de la première alimentation électrique et de la seconde alimentation électrique,

caractérisé en ce que

la partie indicatrice (5) est une tige indicatrice (6) ;

une première extrémité (6-1) de la tige indicatrice (6) est pourvue d'une rainure de tige indicatrice (6-1-1) ;

une tige oscillante mécanique (3-1) agencée sur le dispositif indicateur mécanique (3) est reçue de manière coulissante dans la rainure de tige indicatrice (6-1-1) ;

la rainure de tige indicatrice (6-1-1) est configurée pour actionner la tige oscillante mécanique (3-1) avec le mouvement de la tige indicatrice (6) pour faire tourner le dispositif indicateur mécanique (3) autour d'un centre de rotation agencé sur un boîtier (7) du commutateur de transfert automatique à double alimentation parmi la position indiquant que la première alimentation électrique est activée, la position indiquant que la seconde alimentation électrique est activée et la position indiquant que la première alimentation électrique et la seconde alimentation électrique sont toutes deux désactivées.

2. Dispositif indicateur du commutateur de transfert automatique à double alimentation selon la revendication 1, dans lequel

une seconde extrémité (6-2) de la tige indicatrice est pourvue d'une plaque de pression de tige indicatrice (6-2-1) ;

la plaque de pression de tige indicatrice comprend une ouverture de plaque de pression (6-2-1-1) ;

le dispositif indicateur électrique comprend un premier micro-commutateur (4-1) et un second

micro-commutateur (4-2) ;

lorsque la plaque de pression de tige indicatrice (6-2-1) appuie simultanément sur le premier micro-commutateur (4-1) et le second micro-commutateur (4-2), le premier micro-commutateur et le second micro-commutateur fournissent tous deux un signal de désactivation ;

lorsque la plaque de pression de tige indicatrice (6-2-1) appuie sur le premier micro-commutateur (4-1) et que le second micro-commutateur (4-2) se trouve à l'ouverture de la plaque de pression, le premier micro-commutateur (4-1) fournit le signal de désactivation de la première alimentation électrique et le second micro-commutateur (4-2) fournit le signal d'activation de la seconde alimentation électrique ;

lorsque la plaque de pression de tige indicatrice (6-2-1) appuie sur le second micro-commutateur (4-2) et que le premier micro-commutateur (4-1) se trouve à l'ouverture de la plaque de pression, le second micro-commutateur (4-2) fournit le signal de désactivation de la seconde alimentation électrique, et le premier micro-commutateur (4-1) fournit le signal d'activation de la première alimentation électrique.

3. Dispositif indicateur du commutateur de transfert automatique à double alimentation selon la revendication 1 ou 2, dans lequel

une partie d'adaptation de tige indicatrice (6-3) est agencée entre la première extrémité et la seconde extrémité de la tige indicatrice ;

la partie d'adaptation de tige indicatrice (6-3) comprend une première partie de joint de tige indicatrice et une seconde partie de joint de tige indicatrice ;

la première partie de joint de tige indicatrice est en prise avec le premier composant d'entraînement, et le mouvement du premier composant d'entraînement actionne la première partie de joint de tige indicatrice de manière à amener la tige indicatrice à se déplacer ;

la seconde partie de joint de tige indicatrice est en prise avec le second composant d'entraînement, et le mouvement du second composant d'entraînement actionne la seconde partie de joint de tige indicatrice de manière à amener la tige indicatrice à se déplacer.

4. Dispositif indicateur du commutateur de transfert automatique à double alimentation selon la revendication 3, dans lequel

la première partie de joint de tige indicatrice est une première saillie (6-3-1) qui est en prise avec une première rainure (1-1) agencée sur le premier composant d'entraînement, et le mouve-

- ment de la première rainure actionne la première saillie de manière à amener la tige indicatrice à se déplacer ;
 la seconde partie de joint de tige indicatrice est une seconde saillie (6-3-2) qui est en prise avec une seconde rainure (2-1) agencée sur le second composant d'entraînement, et le mouvement de la seconde rainure actionne la seconde saillie de manière à amener la tige indicatrice à se déplacer.
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5. Dispositif indicateur du commutateur de transfert automatique à double alimentation selon la revendication 3, dans lequel
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le dispositif indicateur comprend en outre un ressort de réinitialisation (8) ; une extrémité (8-1) du ressort de réinitialisation est installée sur le boîtier du commutateur de transfert automatique à double alimentation ;
 l'autre extrémité (8-2) du ressort de réinitialisation agit sur la tige indicatrice, et le ressort de réinitialisation exerce sa force élastique sur la tige indicatrice dans la direction d'activation de la première alimentation électrique.
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6. Dispositif indicateur du commutateur de transfert automatique à double alimentation selon la revendication 4, dans lequel
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la partie d'adaptation de tige indicatrice (6-3) est une rainure en forme de U ;
 le premier composant d'entraînement et le second composant d'entraînement sont en prise respectivement avec la première saillie et la seconde saillie dans la rainure en forme de U.
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7. Dispositif indicateur du commutateur de transfert automatique à double alimentation selon la revendication 2, dans lequel
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le premier micro-commutateur (4-1) et le second micro-commutateur (4-2) sont empilés l'un sur l'autre ;
 les ouvertures de plaque de pression (6-2-1-1) sont agencées de manière à être décalées le long de la direction de déplacement de la tige indicatrice et correspondent respectivement au premier micro-commutateur et au second micro-commutateur.
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8. Commutateur de transfert automatique à double alimentation, dans lequel
 le commutateur de transfert automatique à double alimentation comprend un dispositif indicateur selon l'une des revendications 1 à 7.
- 55

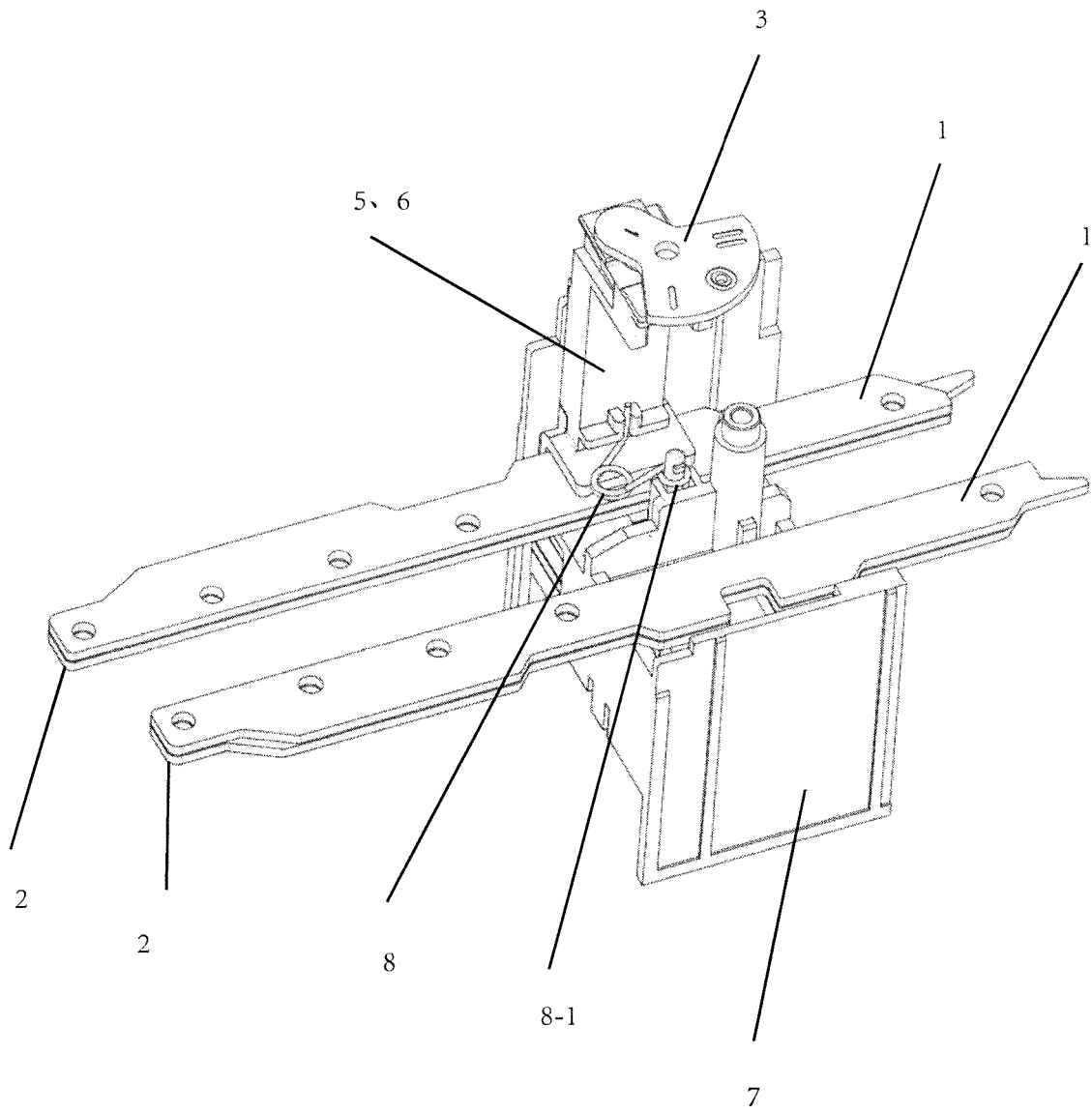


FIG. 1

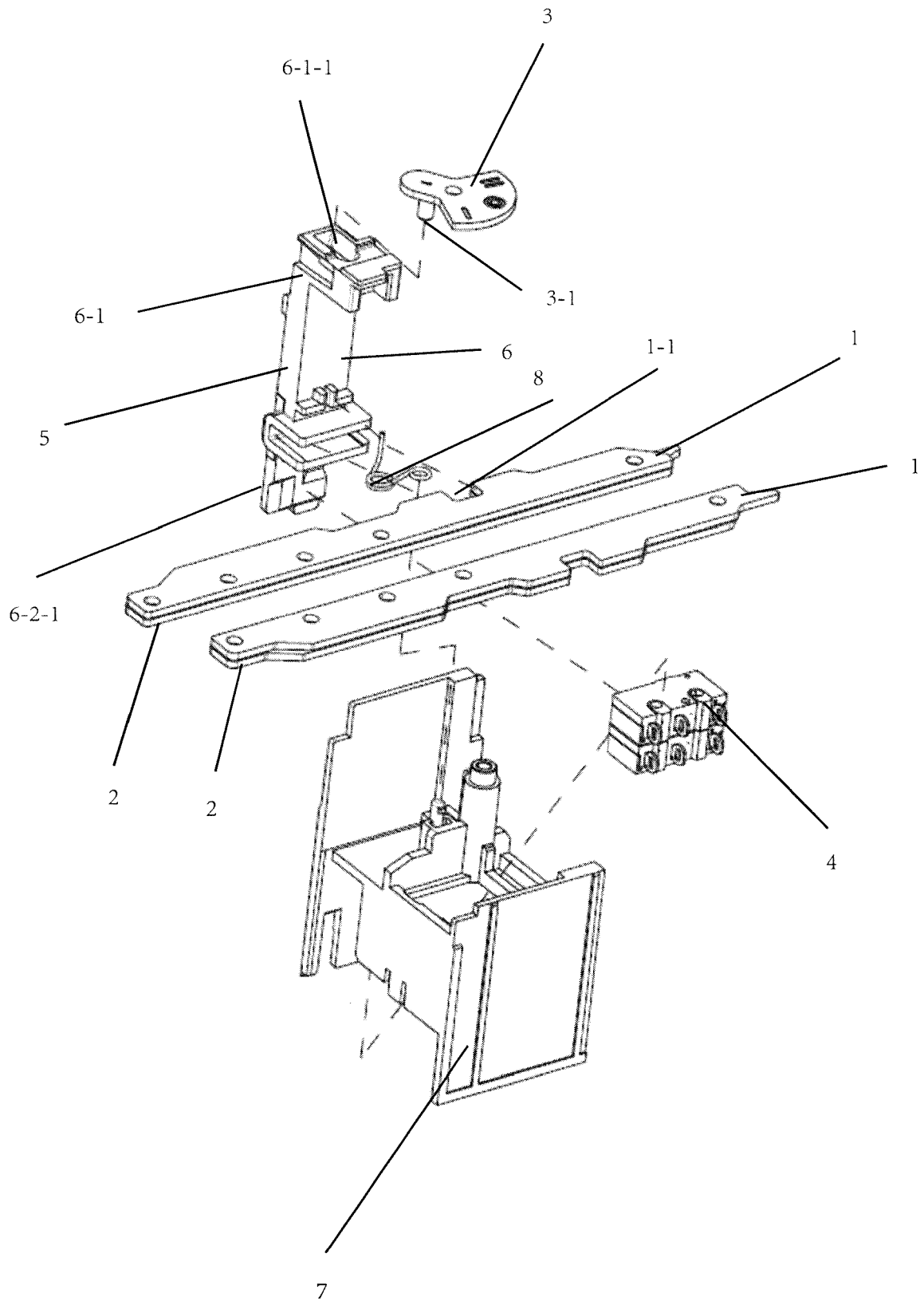


FIG. 2

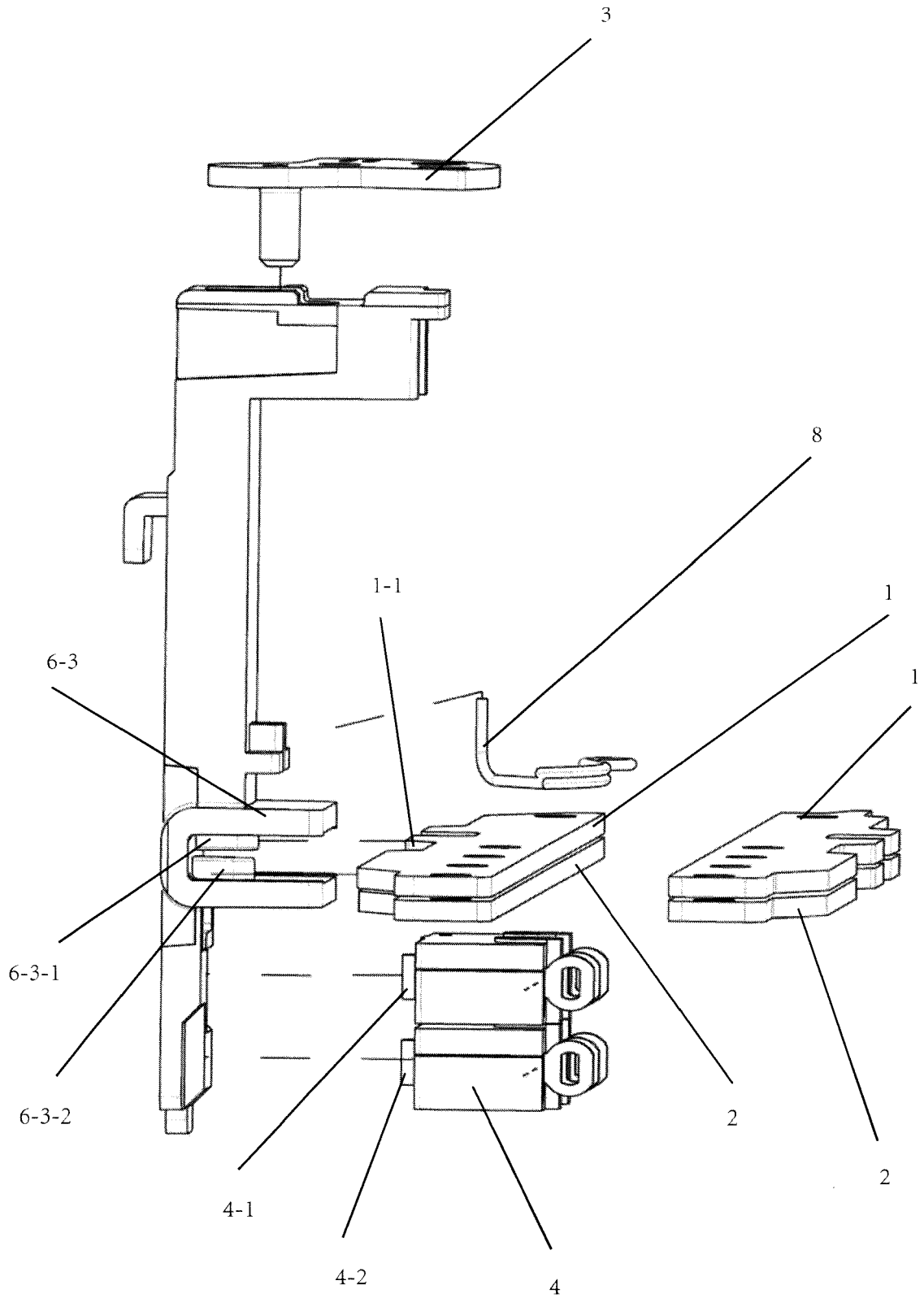


FIG. 3

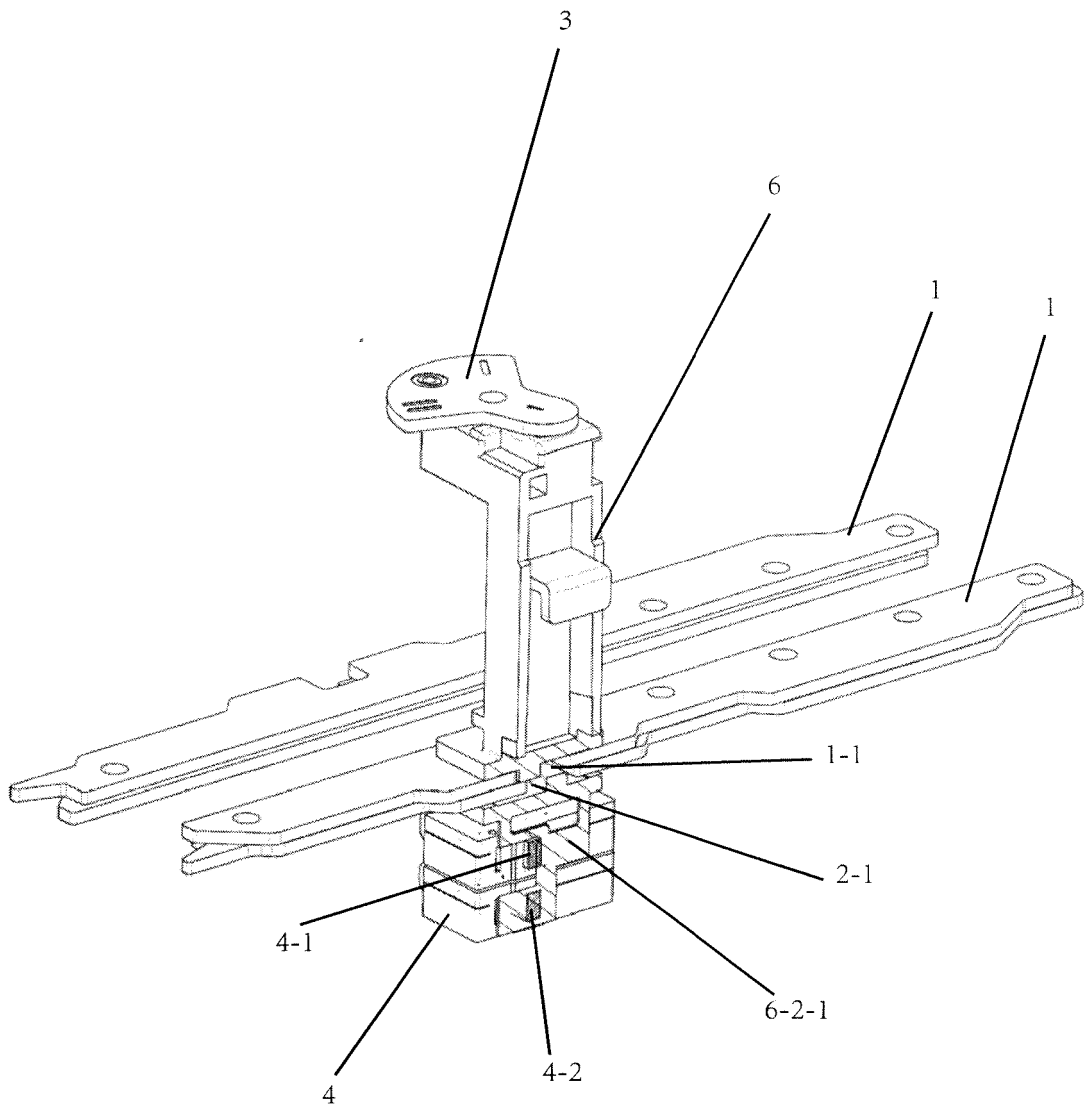


FIG. 4

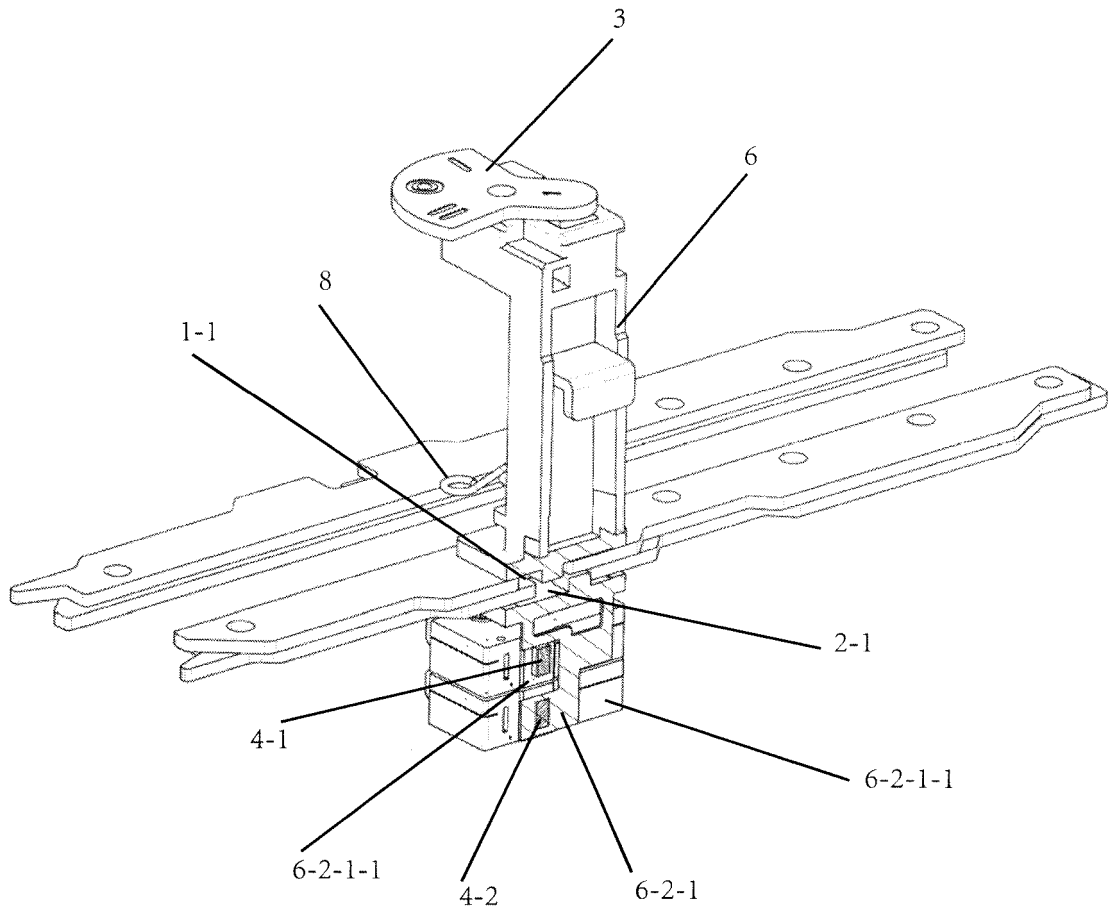


FIG. 5

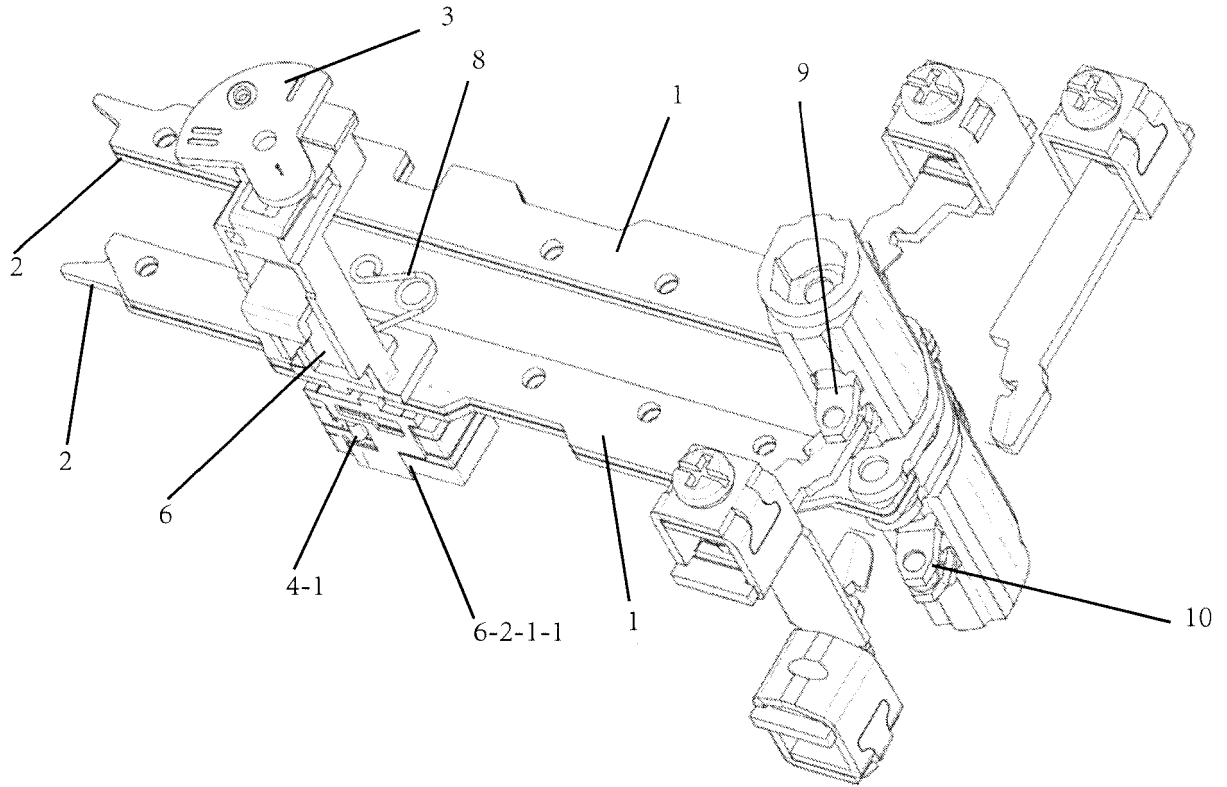


FIG 6

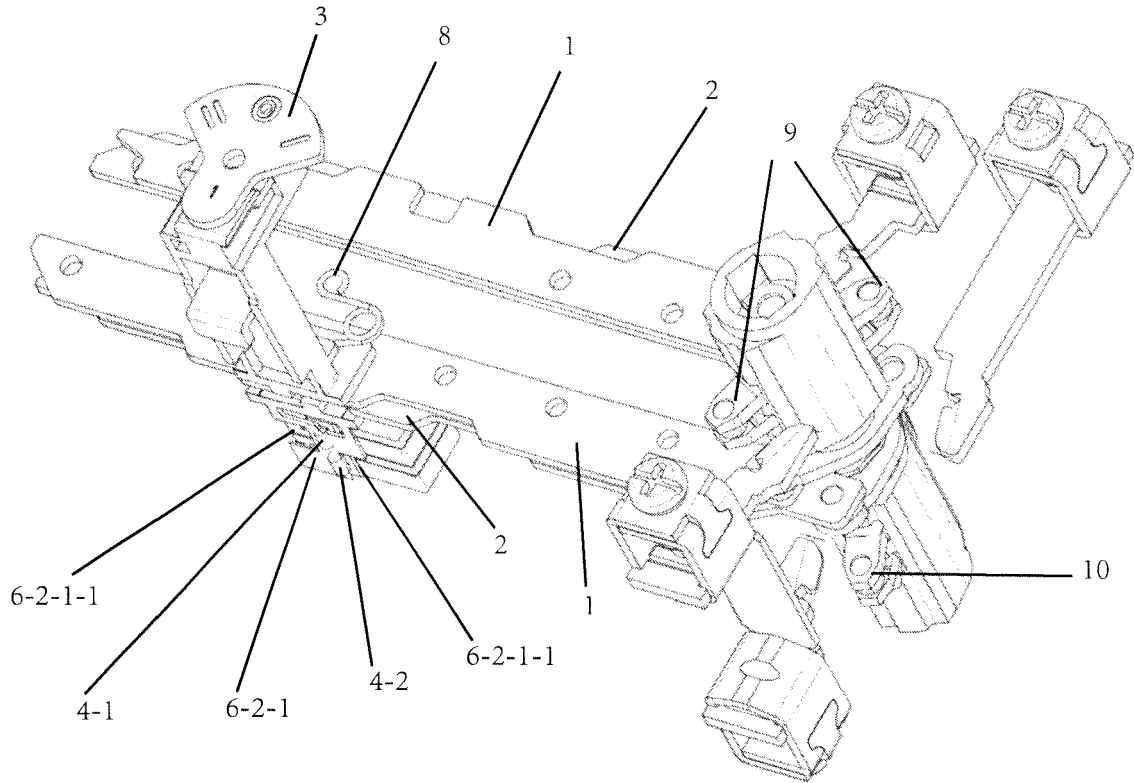


FIG. 7

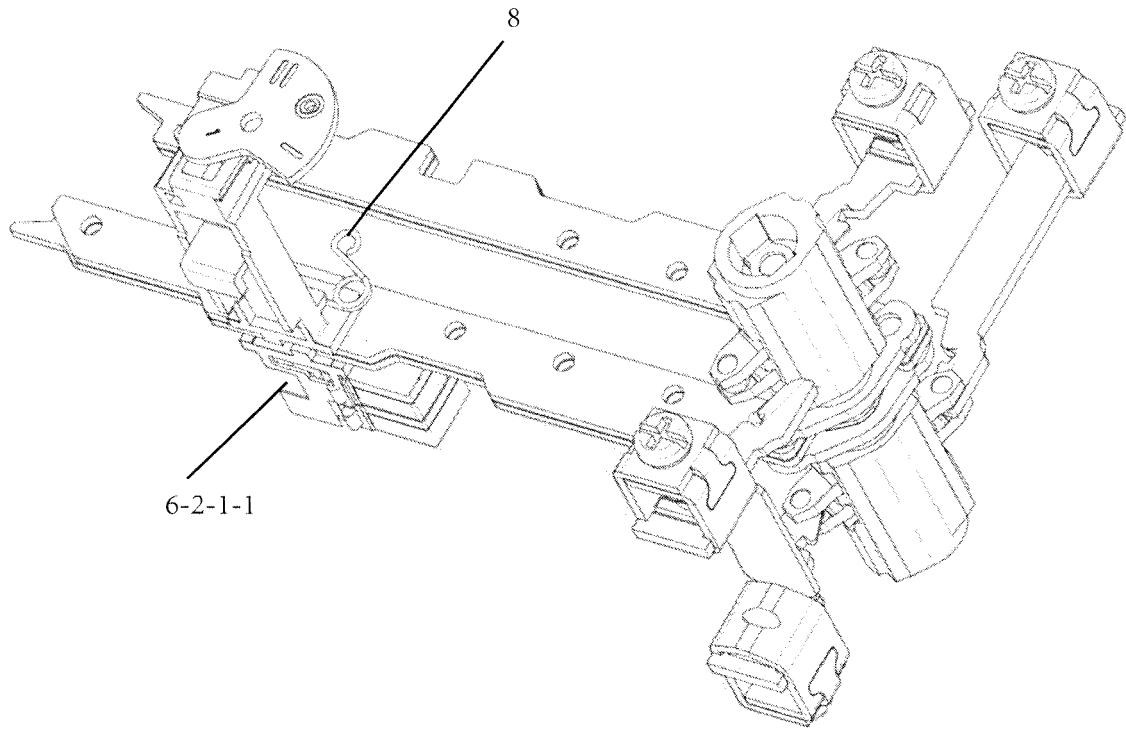


FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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