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(54) **ISOLATING SWITCH CLOSING ENERGY STORAGE MECHANISM AND ISOLATING SWITCH**

(57) The present invention belongs to the technical field of low-voltage electrical appliances, and discloses an isolation switch closing energy storage mechanism and an isolation switch. The isolation switch closing energy storage mechanism includes a contact support, a contact bridge, an elastic member and an energy storage structure, wherein the contact support is slidably assembled in a housing; the contact bridge is movably assembled on the contact support; the elastic member is connected to the contact bridge and the contact support; the elastic member is used to drive a moving contact on the contact bridge to move to the static contact; and the energy storage structure is used to make the elastic member store energy first and then release it when the contact support drives the moving contact on the contact bridge to move to the static contact. The elastic member releases energy and can drive the moving contact to quickly contact the static contact, which can reduce the generation of a contact arc and effectively reduce a contact resistance and temperature between the moving contact and the static contact, thereby reducing the degrees of ablation and wear of a contact point and improving the electrical life performance of the isolation switch.

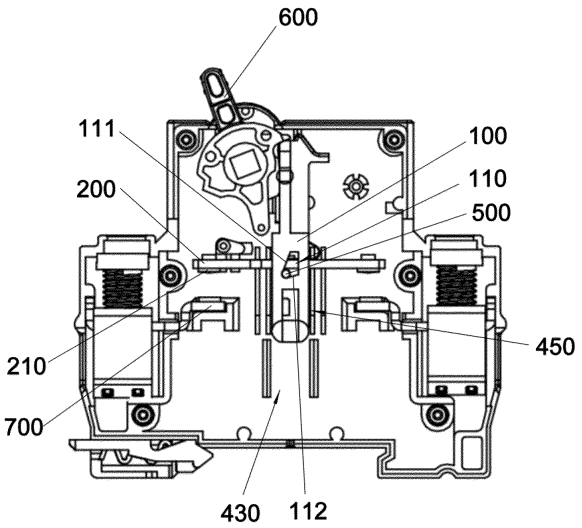

Fig.1

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Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of low-voltage electrical appliances, in particular to an isolation switch closing energy storage mechanism and an isolation switch.

BACKGROUND

[0002] An isolation switch is a common electrical device that is used to play an isolation role in a circuit. The isolation switch has relatively simple working principle and structure, but due to large usage amount, has a great impact on the design, establishment and safe operation of substations and power plants, so the requirements for operational reliability are extremely high.

[0003] An important indicator of the isolation switch is a making-and-breaking capability. Because a slow closing speed will cause a dynamic contact and a static contact to be subjected to a larger pressure in a closing process, and a larger contact resistance leads to very high temperature under the action of a current, ablation of a contact point will occur to shorten the service life of the isolation switch.

[0004] When a moving bridge is matched with a set of static contacts in the isolation switch, a structure in which a screw is configured for one wiring frame is usually provided in the wiring assembly. When a plurality of sets of static contacts is matched with a plurality of moving bridges, a larger current can be allowed to pass through, and the requirements for wiring stability are higher. When two sets of static contacts are configured, the two sets of static contacts need to be connected to one wiring assembly respectively, which will inevitably occupy more space, while the two sets of static contacts share one wiring assembly, especially are wired jointly through one screw, which is prone to the failure of effective wiring and affects the service life.

[0005] The wiring assemblies of the isolation switch are generally connected with the inside, and if they are not wired, external dust, water vapor and other impurities are easy to enter the inside of a housing, so that a working environment of internal parts is relatively harsh, which is not conducive to ensuring safe use.

[0006] Therefore, an isolation switch closing energy storage mechanism and an isolation switch are urgently needed to solve the problems in the prior art.

SUMMARY

[0007] An object of the present invention is to provide an isolation switch closing energy storage mechanism, which can reduce the generation of a contact arc, and can effectively reduce a contact resistance and temperature between a moving contact and a static contact, thereby reducing the degrees of ablation and wear of a contact point and prolonging the service life of an isolation switch.

[0008] In order to achieve the above object, the present invention adopts the following technical solutions:

an isolation switch closing energy storage mechanism, comprising:

a contact support, which is slidably assembled in a housing;

a contact bridge, which is provided with a moving contact and movably assembled on the contact support;

an elastic member, which is connected to the contact bridge and the contact support and used for driving the moving contact on the contact bridge to move to the static contact; and

an energy storage structure, which is configured to make the elastic member store energy first and then release it when the contact support drives the moving contact on the contact bridge to move to the static contact, wherein the elastic member releases energy and drives the moving contact to contact the static contact.

[0009] Optionally, the energy storage structure comprises:

an energy storage boss, which is arranged on an inner wall of the housing in a moving direction of the contact support; and

an energy storage shaft, which is arranged on one side of the contact bridge away from the elastic member, wherein the contact support is provided with an energy storage hole, a hole wall of the energy storage hole is provided with an energy release slope, the energy storage shaft is located in the energy storage hole, and both ends of the energy storage shaft are slidably arranged in the housing, wherein

the energy storage boss is configured to limit the energy storage shaft from sliding in a closing direction of the contact support when the contact support moves in a closing direction, so as to prevent the contact bridge from continuing to move, so that the elastic member stores energy; and the energy release slope can drive the energy storage shaft to deviate from the energy storage boss, such that the elastic member releases energy and drives the contact bridge to drive the moving contact to move to a closing position.

[0010] Optionally, a guide groove, wherein the guide groove is formed in an inner wall of the housing in opening and closing directions of the contact support.

[0011] Optionally, an energy storage groove is formed inside the guide groove; and the contact support is located inside the guide groove and abuts against the energy storage groove in an opening process.

[0012] Optionally, the energy storage structure further

comprises a reset slope; the reset slope is arranged on the hole wall of the energy storage hole; and when the contact support moves in an opening direction, the reset slope resets the energy storage shaft.

[0013] Optionally, an arc transition surface is arranged at a junction between the energy release slope and the reset slope.

[0014] Optionally, the arc transition surface is located on one side close to the energy storage boss; and the energy storage shaft slides to a position on the arc transition surface corresponding to the energy storage boss in a closing process.

[0015] Optionally, the contact support is provided with an assembling hole; the moving contact is movably assembled in the assembling hole; one end of the elastic member abuts against the moving contact; and the other end of the elastic member abuts against a top wall of the assembling hole.

[0016] Another object of the present invention is to provide an isolation switch, which reduces the closing time and the generation of the contact arc, and improves the electrical life and reliability of the isolation switch.

[0017] In order to achieve this object, the present invention adopts the following technical solutions:

An isolation switch comprises a housing, a handle, static contacts and the isolation switch closing energy storage mechanism as aforementioned, wherein the handle is pivotally connected to the housing, the contact support can be in linkage with the handle, and the two static contacts are respectively arranged in the housing in correspondence to the moving contacts at both ends of the contact bridge.

[0018] Optionally, the isolation switch further includes an indication mechanism that is used for displaying that the isolation switch is in an opening or closing position.

[0019] Optionally, the indication mechanism includes an indicator pivotally connected into the housing. The indicator is provided with a first identifier and a second identifier. An indication window is formed in the housing. A driving portion is arranged on one side of the contact support close to the indicator. The driving portion can drive the indicator to rotate such that the first identifier or the second identifier moves into the indication window as the contact support moves up and down.

[0020] Optionally, the indicator includes a pivoting portion, a power portion, a link portion and an indication portion. The pivoting portion is rotatably connected to the housing. The power portion and the link portion are arranged on the pivoting portion at an included angle. The indication portion is connected to one end of the link portion that is not connected to the pivoting portion. The first identifier and the second identifier are sequentially arranged on the indication portion.

[0021] Optionally, the isolation switch further includes a torsional elastic member, wherein one end of the torsional elastic member is connected to the housing, and the other end of the torsional elastic member is connected to a handle. The torsional elastic member is configured to keep the handle in a closing position or an opening position.

[0022] Another object of the present invention is to provide an isolation switch, which is used in conjunction with two static contacts to improve a space utilization rate, wiring effectiveness and reliability of the isolation switch.

[0023] An isolation switch comprises a housing, a handle, static contacts and two isolation switch closing energy storage mechanisms as aforementioned, wherein the handle is pivotally connected to the housing; the two isolation switch closing energy storage mechanism are arranged at intervals and share one contact support; the contact support can be in linkage with the handle; at least two contact bridges are arranged on the contact support at intervals; and both ends of each contact bridge respectively correspond to the two static contacts arranged in the housing;

the isolation switch further comprises at least two pairs of wiring assemblies, wherein each pair of wiring assemblies is arranged at opposite two ends in the housing at intervals, and the isolation switch closing energy storage mechanism is located between each pair of wiring assemblies; each wiring assembly is correspondingly connected to two adjacent static contacts, respectively; and the housing is provided with wiring holes corresponding to the wiring assemblies.

[0024] Optionally, each wiring assembly comprises a wiring frame and two wiring screws; the wiring frame is provided with a wiring space and the wiring space corresponds to one wiring hole; the two wiring screws are arranged side by side; and a tail end of each wiring screw extends into the wiring space through a screw hole formed in the wiring frame.

[0025] Optionally, further comprising a conductive plate, wherein one end of the conductive plate extends into the wiring space and reserves a fixed gap with a tail end of each wiring screw respectively; the other end of the conductive plate is divided into two conductive arms arranged at intervals; each conductive arm is provided with a static contact.

[0026] Optionally, the wiring space is provided with a limiting protrusion in a protruding manner; the limiting protrusion divides the wiring space into a first wiring cavity and a second wiring cavity that are communicated with each other; the tail end of each wiring screw is located in the first wiring cavity; and the conductive plate is located in the second wiring cavity and is limited by the limiting protrusion.

[0027] Another object of the present invention is to provide an isolation switch, which reduces the interference of an external environment to the inside of a housing and improves the electrical life and reliability of the isolation switch.

[0028] An isolation switch comprises a housing, a handle, a static contact and the isolation switch closing energy storage mechanism as aforementioned, wherein a pair of wiring assemblies arranged at intervals are

arranged inside the housing; the isolation switch closing energy storage mechanism is arranged between the pair of wiring assemblies; the housing is provided with wiring holes; the wiring holes correspond to one wiring assembly respectively.

[0029] Optionally, the housing is further provided with a baffle plate; the baffle plate is arranged on one side of the wiring hole; the baffle plate is provided with a shielding region and a wiring groove; when the baffle plate is matched with the housing at a first position, the wiring groove is correspondingly communicated at least with one wiring hole; and when the baffle plate is matched with the housing at a second position, the shielding region at least encloses one wiring hole.

[0030] Optionally, a slot is formed in the housing on one side of each wiring hole; the shielding region and the wiring groove are respectively close to a first end and a second end of the baffle plate; the first end of the baffle plate is plugged in the slot; the wiring groove is correspondingly communicated with the wiring hole; the second end of the baffle plate is plugged in the slot; and the shielding region is kept in communication with the wiring hole.

[0031] Optionally, the slot is located inside the housing.

[0032] Optionally, a foolproof structure is arranged between the slot and the baffle plate. The foolproof structure includes a foolproof portion and a foolproof groove.

[0033] Optionally, the baffle plate is a straight plate; a plate surface between a middle part of the baffle plate and the first end of the baffle plate is used as the shielding region; a protruding foolproof portion is arranged on a surface on one side of the shielding region; an edge of the second end of the baffle plate is provided with a notch groove; pin portions are formed on both sides of an open end of the notch groove; and a closed end of the notch groove extends in a direction close to the first end and is adjacent to the foolproof portion as the wiring groove.

[0034] Optionally, the housing comprises a base and a box cover; the box cover is fixedly connected to the base through a fastening screw; the slot is formed in the housing and correspondingly located between the wiring assembly and the wiring hole; the wiring hole is formed in the base or the box cover, or the wiring hole is formed by butting the box cover with a first groove in an edge of the base; the slot is formed in the base or the box cover; or the slot is formed by butting the box cover with a second groove formed in an edge of the base.

[0035] The present invention has the following beneficial effects.

[0036] The isolation switch closing energy storage mechanism provided by the present invention includes a contact support, a contact bridge, an elastic member and an energy storage structure, wherein the contact support is slidably assembled in a housing; the contact bridge is movably assembled on the contact support; the elastic member is connected to the contact bridge and the contact support; the elastic member is used to drive a moving contact on the contact bridge to move to the static contact; and the energy storage structure is used to make the elastic member store energy first and then release it when the contact support drives the moving contact on the contact bridge to move to the static contact. The elastic member releases energy and can drive the moving contact to quickly contact the static contact, which can reduce the generation of a contact arc and effectively reduce a contact resistance and temperature between the moving contact and the static contact, thereby reducing the degrees of ablation and wear of a contact point and improving the electrical life performance of the isolation switch.

[0037] According to the isolation switch provided by the present invention, by means of the above isolation switch closing energy storage mechanism, a handle can be in linkage with the contact support, such that the closing operation can be operated rapidly and reliably, thereby reducing the closing time and the generation of the contact arc and improving the electrical life and reliability of the isolation switch.

[0038] According to the isolation switch provided by the present invention, two wiring screws are arranged on a wiring frame side by side, and then the conductive plate is matched with two static contacts, so the isolation switch has a simple structure, reasonable layout, firm wiring, and improved safety.

[0039] According to the isolation switch provided by the present invention, the baffle plate can shield or expose a wiring hole, or encloses the wiring hole, such that the wiring can be ensured and high reliability is achieved, which is conducive to avoiding the interference of the external environment to the inside of the housing and ensures safe use. In particular, the baffle plate may be stored in the housing and can be reused to prevent the loss.

BRIEF DESCRIPTION OF THE DRAWINGS

[0040]

FIG. 1 is a schematic structural diagram of an isolation switch closing energy storage mechanism provided by the present invention in an opened state;

FIG. 2 is a schematic diagram I of a closing process of an isolation switch closing energy storage mechanism provided by the present invention;

FIG. 3 is a schematic diagram II of a closing process of an isolation switch closing energy storage mechanism provided by the present invention;

FIG. 4 is a schematic structural diagram of an isolation switch closing energy storage mechanism provided by the present invention in a closed state;

FIG. 5 is an exploded view of an isolation switch closing energy storage mechanism provided by the present invention;

FIG. 6 is a schematic structural diagram of an energy storage structure provided by the present invention;

FIG. 7 is a schematic structural diagram of an indicator provided by the present invention;
FIG. 8 is a schematic structural diagram of a wiring assembly, two contact bridges and a conductive plate provided by the present invention;
FIG. 9 is a schematic diagram of the cooperation of a wiring assembly and a conductive plate provided by the present invention;
FIG. 10 is a schematic structural diagram of a wiring assembly provided by the present invention;
FIG. 11 is a schematic structural diagram of a conductive plate provided by the present invention;
FIG. 12 is a schematic structural diagram of a base provided by the present invention; and
FIG. 13 is a schematic structural diagram of a baffle plate provided by the present invention.

[0041] In drawings, reference symbols represent the following components:
100-contact support; 110-energy storage hole; 111-energy release slope; 112-reset slope; 113-arc transition surface; 120-assembling hole; 130-driving portion; 200-contact bridge; 210-moving contact; 300-elastic member; 400-housing; 410-energy storage groove; 411-energy storage boss; 420-indication window; 430-contact support limiting groove; 440-guide block; 450-guide groove; 460-wiring hole; 470-baffle plate; 471-first end; 472-second end; 473-shielding region; 474-wiring groove; 475-foolproof portion; 476-pin portion; 480-slot; 490-fastening screw; 500-energy storage shaft; 600-handle; 700-static contact; 710-conductive plate; 711-conductive arm; 800-indicator; 810-pivoting portion; 820-power portion; 830-link portion; 840-indication portion; 900-wiring assembly; 910-wiring frame; 920-wiring screw; 930-wiring space; 931-first wiring cavity; 932-second wiring cavity; and 933-limiting protrusion.

DETAILED DESCRIPTION OF THE INVENTION

[0042] The present invention will be further described below in conjunction with the accompanying drawings and embodiments. It can be understood that the specific embodiments described here are only used to explain the present invention, but not intended to limit the present invention. In addition, it should be further noted that, for ease of description, only the parts but all of structures related to the present invention are shown in the accompanying drawings.

[0043] In the description of the examples of the present invention, unless otherwise clearly specified and defined, the terms such as "connect", "link", "fixed" should be broadly explained. For example, they may mean a fixed connection, or a detachable connection or a one-piece connection; they may mean a direct connection, or indirect connection through an intermediate medium, or an internal communication between two parts. A person skilled in the art can understand the specific meaning of the above terms corresponding to conditions in the present invention. We shall further describe the present invention in combination with the drawings as follows.

[0044] In the present invention, unless otherwise specified and limited, the first feature "on" or "under" the second feature may include direct contact between the first feature and the second feature, and may also include the contact between the first feature and the second feature through another feature therebetween instead of the direct contact. Furthermore, the first feature "on", "above" and "over" the second feature includes that the first feature is directly above and obliquely above the second feature, or only indicates that the first feature is higher than the second feature in a horizontal height. The first feature "under", "below" and "underneath" the second feature includes that the first feature is directly below and obliquely below the second feature, or only indicates that the first feature is lower than the second feature in a horizontal height.

[0045] In the description of the present invention, it shall be understood that the orientation or position relationship indicated by the terms "up", "down", "left", "right" and the like is based on the orientation or position relationship shown in the accompanying drawings, it is only for the convenience of description of the present invention and simplification of the description, and it is not to indicate or imply that the indicated device or element must have a specific orientation, and be constructed and operated in a specific orientation. Therefore, the terms shall not be understood as limiting the present invention. Moreover, the terms "first" and "second" are used for descriptive purposes only and cannot be understood as indicating or implying relative importance.

[0046] An embodiment provides an isolation switch closing energy storage mechanism which is used in an isolation switch. As shown in FIGs. 1 to 5, the isolation switch closing energy storage mechanism includes a contact support 100, a contact bridge 200, an elastic member 300 and an energy storage structure. The contact support 100 is slidably assembled in a housing 400. The contact bridge 200 is movably assembled on the contact support 100, and a moving contact 210 is respectively arranged at both ends of the contact bridge 200. The elastic member 300 is connected to the contact bridge 200 and the contact support 100. The elastic member 300 is used for driving the moving contacts 210 on the contact bridge 200 to move in a direction of static contacts. The elastic member 300 is located on the upper side of the contact bridge 200, and the energy storage structure is located on the lower side of the contact bridge 200. The energy storage structure is used to make the elastic member 300 store energy first and then release it when the contact support 100 drives the moving contacts 210 on the contact bridge 200 to move to the static contacts 700. The elastic member 300 releases energy and then drives the contact bridge 200 to drive the moving contacts 210 to quickly contact the static contacts 700, which can reduce the generation of a contact arc and effectively reduce a contact resistance and temperature

between the moving contacts 210 and the static contacts 700, thereby reducing the degrees of ablation and wear of a contact point and improving the electrical life performance of the isolation switch.

[0047] Optionally, as shown in FIGs. 1 to 5, the energy storage structure includes an energy storage boss 411 and an energy storage shaft 500. The energy storage boss 411 is arranged on an inner wall of the housing 100 in a moving direction of the contact support 100. The energy storage shaft 500 is arranged on one side of the contact bridge 200 away from the elastic member 300. An energy storage hole 110 is formed in a position of the contact support 100 corresponding to the energy storage shaft 500. A hole wall of the energy storage hole 110 is provided with an energy release slope 111. The energy storage shaft 500 is located in the energy storage hole 110, and both ends of the energy storage shaft are respectively slidably arranged in the housing 100. When the contact support 100 moves in a closing direction, the contact bridge 200 and the elastic member 300 can be driven to move downward together. The energy storage shaft 500 slides to the energy storage boss 411 in the closing direction of the contact support 100. The energy storage shaft 500 abuts against the energy storage boss 411 to prevent the contact bridge 200 from continuing to move. At this moment, the contact support 100 continues to move downward, so that the elastic member 300 is compressed for energy storage. When the contact support 100 continues to move downward, the energy release slope 111 can push the energy storage shaft 500 to move horizontally along the energy storage boss 411. When the energy storage shaft 500 deviates from the energy storage boss 411, the elastic member 300 releases energy. The elastic member 300 releases energy and then can drive the contact bridge 200 to drive the moving contacts 210 to quickly contact the static contacts 700, thereby reducing the generation of the contact arc, reducing a contact resistance and temperature between the moving contacts 210 and the static contacts 700, reducing the degrees of ablation and wear of a contact point, and improving the electrical life performance of the isolation switch.

[0048] Optionally, an inner wall of the housing 400 is also provided with a guide groove 450 that extends in opening and closing directions of the contact support 100. The guide groove 450 can guide a moving direction of the contact support 100, thereby ensuring that the contact support 100 moves in a correct direction and improving the reliability of opening and closing operations.

[0049] Optionally, an energy storage groove 410 is formed inside the guide groove 450. The energy storage boss 411 is arranged in the energy storage groove 410. During opening and closing processes, the contact support 100 is located inside the guide groove 450 and abuts against the energy storage groove 410. The energy storage groove 410 is arranged such that a correct moving direction is planned for the energy storage shaft 500 while ensuring that the contact support 100 moves along the guide groove 450, such that the energy storage shaft 500 can cooperate with the energy storage boss 411, the energy storage hole 110 and the elastic member 300 for energy storage and energy release of a moving contact bridge. The moving contact 210 is made to quickly contact the static contact 700, which can reduce the generation of the contact arc.

[0050] Optionally, an inner wall of the housing 400 is also provided with a contact support limiting groove 430 which extends along the closing and opening directions of the contact support 100. The contact support limiting groove 430 can limit the contact support 100. Specifically, in an opening process, the contact support 100 is located in the guide groove 450. In a closing process, the contact support 100 moves along the guide groove 450 to the contact support limiting groove 430. This limiting groove can be provided to avoid a part of the contact support 100 deviating from the guide groove 450 from being offset, thereby improving the closing reliability.

[0051] Optionally, the energy storage structure further includes a reset slope 112. The reset slope 112 is arranged on a bottom wall of the energy storage hole 110. When the contact support 100 moves in the opening direction, the energy storage shaft 500 falls back to an initial position along the reset slope 112 under the gravity of the energy storage shaft 500 and the pressure of the elastic member 300, thereby achieving resetting. A structure for resetting the energy storage shaft 500 is simple, reduces the possibility of jamming when the energy storage shaft 500 is reset, and improves the reliability and stability of the energy storage structure. In addition, by adding the reset slope 112, it can be ensured that after each opening, the energy storage shaft 500 can return to the initial position, and is ready for the next energy storage, thereby improving the efficiency and service life of the energy storage structure, and ensuring the safe operation of a power system.

[0052] Optionally, an arc transition surface 113 is arranged at a junction between the energy release slope 111 and the reset slope 112, so that the conversion between the energy release slope 111 and the reset slope 112 can be smoother, the wear and jamming of the energy storage shaft 500 are reduced, and the fluency of the closing and opening processes of the isolation switch is improved.

[0053] Optionally, the arc transition surface 113 can be used as an initial position where the energy storage shaft 500 falls back. The arc transition surface is arranged on one side of the energy storage boss. Under the gravity of the energy storage shaft in the closing process, the energy storage shaft slides to the arc transition surface along the reset slope to prepare for the energy storage in the next closing process. In order to ensure that the energy storage shaft can store energy correctly in the next closing process, the reset structure is simple, safe and reliable. At the same time, due to the existence of the arc transition surface, the resetting process of the energy

storage shaft is more stable, which reduces shock and vibration, and ensures that the circuit breaker can operate reliably.

[0054] Optionally, as shown in FIG. 6, the contact support 100 is provided with an assembling hole 120. An arrangement direction of the assembling hole 120 is perpendicular to an arrangement direction of the energy storage hole 110. The contact bridge 200 is movably assembled in the assembling hole 120. The elastic member 300 is mounted on the upper side of the contact bridge 200. The energy storage shaft is movable on the lower side of the contact bridge 200. One end of the elastic member 300 abuts against the contact bridge 200, and the other end of the elastic member 300 abuts against a top wall of the assembling hole 120. The elastic member 300 can be matched with the energy storage shaft 500 and the contact support 100 for energy storage and energy release, which ensures that the moving contact 210 on the contact bridge 200 of the isolation switch can quickly contact the static contact 700 in the closing process, and reduces the generation of arcs. In addition, the elastic member 300 can provide a contact pressure to the contact bridge 200 to ensure that the moving contact 210 on the contact bridge 200 is in good contact with the static contact 700, so that the circuit operation is more stable.

[0055] Optionally, the elastic member 300 in present embodiment is a leaf spring. The leaf spring can realize the energy storage and energy release of the isolation switch through an elastic deformation, ensure that the moving contact 210 on the contact bridge 200 of the isolation switch in the closing process can quickly contact the static contact 700, reduce the generation of the arcs, and improve the electrical life performance of the isolation switch. At the same time, as an elastic element, the leaf spring has good fatigue resistance, and can maintain a good elastic deformation ability for a long time and improve the reliability and stability of the isolation switch.

[0056] An embodiment further provides an isolation switch. As shown in FIGs. 1 to 7, the isolation switch includes a housing 400, a handle 600, a static contact 700 and the above isolation switch closing energy storage mechanism. The handle 600 is pivotally connected to the housing 400. The contact support 100 can be in linkage with the handle 600. The two static contacts 700 are respectively arranged in the housing 400 in correspondence to the moving contacts 210 at both ends of the contact bridge 200. The handle 600 is used for driving the isolation switch to open or close, such that a contact state between the moving contact 210 and the static contact 700 can be switched. The handle 600 can be in linkage with the contact support 100, so that the closing operation can be completed quickly and reliably, thereby reducing the closing time and the generation of contact arcs, and improving the electrical life and reliability of the isolation switch. In addition, this isolation switch is compact in structure and easy to operate, has good energy storage and energy release performances, and can effectively reduce the generation of the arcs and a contact resistance of moving and static contacts 700, and prolong the service life of the isolation switch.

[0057] Optionally, the isolation switch further includes an indication mechanism that is used for displaying that the isolation switch is in an opening or closing position. Through the design of the indication mechanism, an operator can intuitively understand the opened and closed states of the isolation switch to avoid misoperation and safety accidents.

[0058] Optionally, the indication mechanism includes an indicator 800 pivotally connected into the housing 400. The indicator 800 is provided with a first identifier and a second identifier. An indication window 420 is formed in the housing 400. A driving portion 130 is arranged on one side of the contact support 100 close to the indicator 800. The driving portion 130 can drive the indicator 800 to rotate such that the first identifier or the second identifier moves into the indication window as the contact support 100 moves up and down. Therefore, when a user needs to use the isolation switch, a state of the isolation switch can be determined just by observing the identifier on the indicator 800 via the indication window 420.

[0059] Optionally, as shown in FIG. 7, the indicator 800 includes a pivoting portion 810, a power portion 820, a link portion 830 and an indication portion 840. The pivoting portion 810 is rotatably connected to the housing 400. The power portion 820 and the link portion 830 are arranged on the pivoting portion 810 at an included angle. The indication portion 840 is connected to one end of the link portion 830 that is not connected to the pivoting portion 810. The first identifier and the second identifier are sequentially arranged on the indication portion 840. The driving portion 130 is connected to the power portion 820 to drive the indicator 800 to rotate. Through this design, the isolation switch can realize that in the opening or closing process, a switch position is directly displayed by the indication window 420, which improves the convenience and safety in operation.

[0060] For example, if the first identifier is red and the second identifier is green, the indication mechanism may be displayed as red when the isolation switch is in a closed state, and the indication mechanism may be displayed as green when the isolation switch is in an opened state. This design not only makes it easy for an operator to use, but also improves the safety performance of the isolation switch.

[0061] Optionally, the isolation switch further includes a torsional elastic member, wherein one end of the torsional elastic member is connected to the housing 400, and the other end of the torsional elastic member is connected to a handle 600. The torsional elastic member is configured to keep the handle 600 in a closing position or an opening position. The torsional elastic member functions to provide a damping force when the handle 600 is twisted into the closing or opening position, so that the handle 600 remains in this position. In this way, a state change of the switch caused by accidental misoperation of the handle 600 during use can be avoided, thereby

increasing the reliability and safety of the isolation switch.

[0062] Optionally, the torsional elastic member in the present embodiment is a torsion spring. The torsion spring is simple in structure and low in cost, and can further save the cost and improve the reliability of the opening and closing processes of the isolation switch.

[0063] A closing process of the isolation switch provided in the present embodiment is as follows.

[0064] First, as shown in FIGs. 1 to 5, the handle 600 is rotated manually. With the rotation of the handle 600, the contact support 100 moves downward, drives the energy storage shaft 500 downward and moves in the energy storage groove 410 of the housing 400. When the energy storage shaft 500 moves to the energy storage boss 411 of the energy storage groove 410, the energy storage shaft 500 is stuck in a groove of the housing 400 and stops moving to prevent the contact bridge 200 from moving. However, the handle 600 continues to rotate and causes the leaf spring to begin to compress and store energy.

[0065] Then, as the contact support 100 continues to move downward, the energy release slope 111 on a left wall of the energy storage hole 110 can drive the energy storage shaft 500 to move horizontally, and after the contact support 100 moves to a critical point shown in FIG. 3, the energy storage shaft 500 slides off from energy storage steps, and the leaf spring is unlocked.

[0066] Finally, after the leaf spring is unlocked, as shown in FIGs. 4-5, the leaf spring quickly rebounds and drives the moving contact 210 on the contact bridge 200 to contact the static contact 700 at a higher speed, which can reduce the generation of a contact arc and improve the electrical life performance of the isolation switch.

[0067] An opening process of the isolation switch provided in the present embodiment is as follows:
the handle 600 rotates in the opening direction and drives the contact bridge 200 to move upward, and because the reset slope 112 is inclined, a fine energy storage shaft returns to an initial position under the gravity and the pressure of the leaf spring, thereby achieving resetting.

[0068] Wiring assemblies 900 are also arranged in the isolation switch in the present embodiment. The two wiring assemblies 900 are arranged at opposite two ends in the housing 600 at intervals. The isolation switch closing energy storage mechanism is correspondingly arranged between the two wiring assemblies 900. Each wiring assembly 900 is connected to an adjacent static contact 700 respectively. The wiring assemblies 900 in the present embodiment can adopt the prior art.

[0069] An embodiment further provides another isolation switch. As shown in FIGs. 8-13, the isolation switch includes a housing 400, a handle 600 and two isolation switch closing energy storage mechanisms. The two isolation switch closing energy storage mechanisms share the same contact support 100. Two contact bridges 200 are arranged on the contact support 100 at intervals, that is, the two contact bridges 200 are arranged at intervals up and down. An elastic member 300 and an energy storage structure are respectively located on the upper and lower sides of the contact bridge 200. A moving contact 210 is arranged at both ends of each contact bridge 200, respectively. Both ends of each contact bridge 200 correspond to the two static contacts 700 arranged in the housing 400, respectively. A moving space is formed between the two static contacts 700 corresponding to the same end of the contact bridge 200. The moving space provides a moving space for the end of one of the contact bridges 200, and one moving contact 210 arranged at the end of this contact bridge 200 cooperates with one of the static contacts 700. Each isolation switch closing energy storage mechanism has the same structure and action principle as the above structure, and the specific structure and action process are not repeated.

[0070] As shown in FIG. 9, the housing 400 further includes at least two pairs of wiring assemblies 900 inside. Each pair of wiring assemblies 900 is arranged at opposite two ends in the housing 400. The two isolation switch closing energy storage mechanisms are both located between one pair of wiring assemblies 900. Each wiring assembly 900 is correspondingly connected to two adjacent static contacts 700, respectively. The housing 400 is provided with a wiring hole 460 corresponding to the wiring assembly 900. Each wiring assembly 900 is connected to two static contacts 700 respectively. The two static contacts 700 share one wiring assembly 900, which can not only save a space in the housing 400, but also can reduce the number of openings in the housing 400 (e.g., reduce one wiring hole 460), such that the internal structure of the housing 400 is more compact and reasonable.

[0071] Optionally, as shown in FIGs. 9 to 10, each wiring assembly 900 includes a wiring frame 910 and two wiring screws 920. The wiring frame 910 is provided with a wiring space 930 and the wiring space 930 corresponds to one wiring hole 460 formed in the housing 400. The two wiring screws 920 are arranged side by side. A tail end of each wiring screw 920 extends into the wiring space 930 through a screw hole formed in the wiring frame 910. An external wire extends into the wiring space 930 from the wiring hole 460, and is connected to each wiring screw 920 to complete wiring.

[0072] Further, the number of the isolation switch closing energy storage mechanisms may be more than two. Correspondingly, the number of the wiring screws 920 on the same wiring frame 910 may also be more than two, and matches the number of the isolation switch closing energy storage mechanisms. That is, the number of the wiring screws 920 of each wiring assembly 900 matches the number of adjacent static contacts 700.

[0073] Optionally, as shown in FIGs. 8, 9 and 11, the housing 400 further includes a conductive plate 710. One end of the conductive plate 710 extends into the wiring space 930 and reserves a fixed gap with the tail end of each wiring screw 920 respectively. The external wire

extends into the fixed gap and is pressed by the wiring screw 920. Further, each wiring screw 920 is also connected to a crimping plate. The crimping plate has an outer diameter greater than that of the tail end of the wiring screw 920, such that a contact area is increased to facilitate the compression of an external wire into the wiring space 930.

[0074] Optionally, the other end of the conductive plate 710 is divided into two conductive arms 711 arranged at intervals. Each conductive arm 711 is provided with a static contact 700, and the static contact 700 is directly arranged at the other end of the conductive plate 700, such that a wire connected between the static contact 700 and the conductive plate 710 or the wiring assembly 900 can be omitted, achieving the advantages of simple structure and convenient wiring.

[0075] Optionally, as shown in FIG. 10, a limiting protrusion 933 is arranged in the wiring space 930 in a protruding manner. The limiting protrusion 933 divides the wiring space 930 into a first wiring cavity 931 and a second wiring cavity 932 which are communicated. The tail end of the wiring screw 920 is located in the first wiring cavity 931. The conductive plate 710 extends into the second wiring cavity 932. The limiting protrusion 933 is limited in the second wiring cavity 932. One end of the conductive plate 710 is stably limited by the limiting protrusion 933, which can avoid the displacement of the conductive plate 710 in the wiring space 930. The first wiring cavity 931 and the second wiring cavity 932 that are communicated with each other ensure the stable cooperation of the external wire, the conductive plate 710 and the wiring screw 920.

[0076] Combining with FIGs. 8-11, a specific structure of a wiring assembly 900 is provided, wherein the wiring frame 910 is of a quadrilateral frame structure. The wiring frame 910 may be integrally formed, or may be of a split structure. Two parallel screw holes are formed in a top wall of the wiring frame 910. A wiring screw 920 is connected to an inner thread of each screw hole. A head of the wiring screw 920 is located outside the wiring frame 910. A tail end of the wiring screw 920 is located in the wiring space 930 through the screw hole. The tail end of the wiring screw 920 and an inner side of a bottom wall of the wiring frame 910 are arranged at intervals to form a fixed gap. The tail end of the wiring screw 920 may be close to or away from the bottom wall of the wiring frame 910 by rotating the wiring screw 920, so that the fixed gap is adjusted so that an external wire can be accessed. Both side walls of the wiring frame 910 protrude into the wiring space 930 to form the limiting protrusion 933. The limiting protrusion 933 separates the wiring space 930 into a first wiring cavity 931 and a second wiring cavity 932 that are communicated with each other. The first wiring cavity 931 is close to the top wall of the wiring frame 910. The second wiring cavity 932 is close to the bottom wall of the wiring frame 910. In the drawings, the first wiring cavity 931 is a circular through groove, and the second wiring cavity 932 is a rectangular through groove.

[0077] The external wire extends in a direction parallel to a central axis of the first wiring cavity 931. One end of the conductive plate 710 extends in a direction parallel to a central axis of the second wiring cavity 932. An edge of the conductive plate 710 is limited by the limiting protrusion 933, so as to prevent the conductive plate 710 from moving in the wiring space 930. The wiring screw 920 is rotated. As the tail end of the wiring screw 920 moves in the first wiring cavity 931, the tail end of the wiring screw 920 gradually approaches the second wiring cavity 932, and a wire is in contact with the conductive plate 710 and is pressed by a tail end of a grounding screw. In addition, the wiring space 930 may be a square hole, round hole or special-shaped hole as a whole.

[0078] Combining with FIGs. 9 and 11, a specific structure of a conductive plate 710 is provided. The conductive plate 710 is in a shape of a straight plate as a whole. One end of the conductive plate 710 extends and is connected to the wiring assembly 900, and a U-shaped body is arranged at the other end of the conductive plate 710. Both side walls of the U-shaped body are respectively opposed at intervals as a conductive arm 711, wherein an end of one of the contact bridges 200 may move in a space between the two conductive arms 711. A static contact 700 is respectively arranged at an end of each conductive arm 711. In FIG. 9, the static contact 700 is arranged on an upper surface of each conductive arm 711, and correspondingly, each moving contact 210 corresponds to the top of each static contact 700 respectively.

[0079] As shown in FIGs. 12 and 13, an embodiment further provides a housing 400 suitable for the above two isolation switches. At least one pair of wiring holes 460 is formed in opposite two ends of the housing 400. A pair of wiring assemblies 900 arranged at intervals is arranged in the housing 400. Each wiring hole 460 corresponds to an adjacent wiring assembly 900 respectively. An external wire is connected to the wiring assembly 900 through the wiring hole 460. The isolation switch closing energy storage mechanism is arranged between one pair of wiring assemblies 900. When the wiring assembly 900 adopts the existing structure, an isolation switch closing energy storage mechanism is arranged between one pair of the wiring assemblies 900. When the wiring assembly 900 adopts the two-screw structure, two isolation switch closing energy storage mechanisms are arranged between one pair of the wiring assemblies 900.

[0080] Optionally, the housing 400 is further provided with a baffle plate 470. The baffle plate 470 is arranged on one side of the wiring hole 460. The baffle plate 470 is provided with a shielding region 473 and a wiring groove 474. When the baffle plate 470 is matched with the housing 400 at a first position, the wiring groove 474 is communicated with at least one wiring hole 460. When the baffle plate 470 is matched with the housing 400 at a second position, the shielding region 473 at least encloses one wiring hole 460. The baffle plate 470 may not only enclose the wiring hole 460, but also expose the

wiring hole 460 when in use, such that the wiring hole 460 can be enclosed when not wired to ensure the closure of the product.

[0081] Optionally, a slot 480 is formed in the housing 400 on one side of each wiring hole 460. The shielding region 473 and the wiring groove 474 are respectively close to a first end 471 and a second end 472 of the baffle plate 470. When the first end 471 of the baffle plate 470 is plugged into the slot 480, the baffle plate 470 and the housing 400 are matched at a first position. The wiring groove 474 is correspondingly communicated with the wiring hole 460 for wiring of an external wire. When the second end 472 of the baffle plate 470 is plugged into the slot 480, the baffle plate 470 and the housing 400 are matched at a second position at this moment, and the shielding region 473 corresponds to the wiring hole 460, such that the wiring hole 460 is enclosed. The baffle plate 470 is in plug fit with the housing 400, achieving an advantage of convenient disassembly and assembly.

[0082] Optionally, as shown in FIG. 12, the housing 400 includes a base and a box cover (not shown), wherein the box cover is fixedly connected to the base through a fastening screw 490. The box cover in the present embodiment is further provided with a plurality of operating holes. Each operating hole corresponds to the wiring screw 920 and the fastening screw 490 respectively. A central axis of each operating hole is perpendicular to a central axis of the wiring hole 460. Preferably, the slot 480 is located inside the housing 400, and the slot 480 is correspondingly formed between the wiring assembly 800 and the wiring hole 460, which is conducive to the storage of the baffle plate 470 and preventing the loss, and can be reused.

[0083] Further, the wiring hole 460 is formed in a side wall of the base, or the wiring hole 460 is formed in the side wall of the box cover, or a first groove is respectively formed in an edge of the side wall of the box cover and the side wall of the base. When the box cover covers the base, the two first grooves are butted to form the wiring hole 460. The slot 480 is correspondingly formed in the side wall of the base, or the slot 480 is formed in the side wall of the box cover, or a second groove is respectively formed in the edges of the side wall of the box cover and the side wall of the base. When the box cover covers the base, the two second grooves are butted to form the slot 480, and the length of each of the first groove and the second groove is less than an overall length of the baffle plate 470.

[0084] Optionally, a foolproof structure is arranged between the slot 480 and the baffle plate 470 for realizing the correct assembly of the baffle plate 470. Preferably, the foolproof structure includes a foolproof portion 475 and a foolproof groove that are slidably plugged. A shape of the foolproof portion 475 and a shape of the foolproof groove can match each other, or match partially only.

[0085] Combining with FIGs. 12 and 13, a specific structure of the baffle plate 470 is provided. The baffle plate 470 is a straight plate. A plate surface between the middle part of the baffle plate 470 and the first end 471 of the baffle plate 470 is used as the shielding region 473. A protruding foolproof portion 475 is arranged on a surface on one side of the shielding region 473. In drawings, one end of the foolproof portion 475 is kept flush with an end of the first end 471 of the baffle plate 470. A width of the foolproof portion 475 is slightly less than a width of the baffle plate 470, and the other end of the foolproof portion 475 is circular. An edge of the second end 472 of the baffle plate 470 is provided with a notch groove. Pin portions 476 are formed on both sides of an open end of the notch groove. A closed end of the notch groove extends in a direction close to the first end 471 and is adjacent to the foolproof portion 475 as the wiring groove 474, i.e., is adjacent to a circular end of the foolproof portion 475 in FIG. 13, and a closed end of the notch groove is approximately a round hole. In FIG. 12, at one end close to a lower left side, the second end 472 of the baffle plate 470 is plugged into the slot 480, the wiring hole 460 is enclosed by the shielding region 473; and at one end close to an upper right side, the first end 471 of the baffle plate 470 is plugged into the slot 480, so that the wiring groove 474 corresponds to the wiring hole 460, thereby exposing the wiring hole 460 to facilitate wiring.

[0086] It is obvious that the above description only gives examples for clarity, which does not impose a limitation on their embodiments. A person skilled in the art can make various changes or modifications on the basis of the above description. There is no need and inability to give all exhaustive embodiments. However, any modification, equivalent replacement and improvement made within the essence and principle of the present invention shall be included in the protection scope of the present invention.

Claims

1. An isolation switch closing energy storage mechanism, comprising:

a contact support (100), which is slidably assembled in a housing (400);
a contact bridge (200), which is provided with a moving contact (210) and movably assembled on the contact support (100);
an elastic member (300), which is connected to the contact bridge (200) and the contact support (100) and used for driving the moving contact (210) on the contact bridge (200) to move to the static contact (700); and
an energy storage structure, which is configured to make the elastic member (300) store energy first and then release it when the contact support (100) drives the moving contact (210) on the contact bridge (200) to move to the static contact, wherein the elastic member (300) releases energy and drives the moving contact (210) to

contact the static contact (700).

2. The isolation switch closing energy storage mechanism according to claim 1, wherein the energy storage structure comprises:

an energy storage boss (411), which is arranged on an inner wall of the housing (400) in a moving direction of the contact support (100); and
an energy storage shaft (500), which is arranged on one side of the contact bridge (200) away from the elastic member (300), wherein the contact support (100) is provided with an energy storage hole (110), a hole wall of the energy storage hole (110) is provided with an energy release slope (111), the energy storage shaft (500) is located in the energy storage hole (110), and both ends of the energy storage shaft (500) are slidably arranged in the housing (400), wherein
the energy storage boss (411) is configured to limit the energy storage shaft (500) from sliding in a closing direction of the contact support (100) when the contact support (100) moves in a closing direction, so as to prevent the contact bridge (200) from continuing to move, so that the elastic member (300) stores energy; and the energy release slope (111) can drive the energy storage shaft (500) to deviate from the energy storage boss (411), such that the elastic member (300) releases energy and drives the contact bridge (200) to drive the moving contact (210) to move to a closing position.

3. The isolation switch closing energy storage mechanism according to claim 1, further comprising a guide groove (450), wherein the guide groove (450) is formed in an inner wall of the housing (400) in opening and closing directions of the contact support (100); an energy storage groove (410) is formed inside the guide groove (450); and the contact support (100) is located inside the guide groove (450) and abuts against the energy storage groove (410) in an opening process.

4. The isolation switch closing energy storage mechanism according to claim 2, wherein the energy storage structure further comprises a reset slope (112); the reset slope (112) is arranged on the hole wall of the energy storage hole (110); and when the contact support (100) moves in an opening direction, the reset slope (112) resets the energy storage shaft (500).

5. The isolation switch closing energy storage mechanism according to claim 4, wherein an arc transition surface (113) is arranged at a junction between the energy release slope (111) and the reset slope (112); the arc transition surface (113) is located on one side close to the energy storage boss (411); and the energy storage shaft (500) slides to a position on the arc transition surface (113) corresponding to the energy storage boss (411) in a closing process.

6. The isolation switch closing energy storage mechanism according to claim 1, wherein the contact support (100) is provided with an assembling hole (120); the moving contact (210) is movably assembled in the assembling hole (120); one end of the elastic member (300) abuts against the moving contact (210); and the other end of the elastic member (300) abuts against a top wall of the assembling hole (120).

7. An isolation switch, comprising a housing (400), a handle (600), static contacts (700) and the isolation switch closing energy storage mechanism according to any one of claims 1 to 6, wherein the handle (600) is pivotally connected to the housing (400), the contact support (100) can be in linkage with the handle (600), and the two static contacts (700) are respectively arranged in the housing (400) in correspondence to the moving contacts (210) at both ends of the contact bridge (200).

8. An isolation switch, comprising a housing (400), a handle (600), static contacts (700) and at least two isolation switch closing energy storage mechanisms according to any one of claims 1 to 6, wherein the handle (600) is pivotally connected to the housing (400); the at least two isolation switch closing energy storage mechanism are arranged at intervals and share one contact support (100); the contact support (100) can be in linkage with the handle (600); at least two contact bridges (200) are arranged on the contact support (100) at intervals; and both ends of each contact bridge (200) respectively correspond to the two static contacts (700) arranged in the housing (400); and
the isolation switch further comprises at least one pair of wiring assemblies (900), wherein each pair of wiring assemblies (900) is arranged at opposite two ends in the housing (400) at intervals, and the isolation switch closing energy storage mechanism is located between each pair of wiring assemblies (900); each wiring assembly (900) is correspondingly connected to two adjacent static contacts (700), respectively; and the housing (400) is provided with wiring holes (460) corresponding to the wiring assemblies (900).

9. The isolation switch according to claim 8, wherein each wiring assembly (900) comprises a wiring frame (910) and two wiring screws (920); the wiring frame (910) is provided with a wiring space (930) and the wiring space (930) corresponds to one wiring hole (460); the two wiring screws (920) are arranged

side by side; and a tail end of each wiring screw (920) extends into the wiring space (930) through a screw hole formed in the wiring frame (910).

10. The isolation switch according to claim 9, further comprising a conductive plate (710), wherein one end of the conductive plate (710) extends into the wiring space (930) and reserves a fixed gap with a tail end of each wiring screw (920) respectively; the other end of the conductive plate (710) is divided into two conductive arms (711) arranged at intervals; each conductive arm (711) is provided with a static contact (700); the wiring space (930) is provided with a limiting protrusion (933) in a protruding manner; the limiting protrusion (933) divides the wiring space (930) into a first wiring cavity (931) and a second wiring cavity (932) that are communicated with each other; the tail end of each wiring screw (920) is located in the first wiring cavity (931); and the conductive plate (710) is located in the second wiring cavity (932) and is limited by the limiting protrusion (933).

11. An isolation switch, comprising a housing (400), a handle (600), a static contact (700) and the isolation switch closing energy storage mechanism according to any one of claims 1 to 6, wherein a pair of wiring assemblies (900) arranged at intervals are arranged inside the housing (400); the isolation switch closing energy storage mechanism is arranged between the pair of wiring assemblies (900); the housing (400) is provided with wiring holes (460); the wiring holes (460) correspond to one wiring assembly (900) respectively; and
the housing (400) is further provided with a baffle plate (470); the baffle plate (470) is arranged on one side of the wiring hole (460); the baffle plate (470) is provided with a shielding region (473) and a wiring groove (474); when the baffle plate (470) is matched with the housing (300) at a first position, the wiring groove (474) is correspondingly communicated at least with one wiring hole (460); and when the baffle plate (470) is matched with the housing (400) at a second position, the shielding region (473) at least encloses one wiring hole (460).

12. The isolation switch according to claim 11, wherein a slot (480) is formed in the housing (400) on one side of each wiring hole (460); the shielding region (473) and the wiring groove (474) are respectively close to a first end (471) and a second end (472) of the baffle plate (470); the first end (471) of the baffle plate (470) is plugged in the slot (480); the wiring groove (474) is correspondingly communicated with the wiring hole (460); the second end (472) of the baffle plate (470) is plugged in the slot (480); and the shielding region (473) is kept in communication with the wiring hole (460).

13. The isolation switch according to claim 12, wherein the slot (480) is located inside the housing (400).

14. The isolation switch according to claim 12, wherein the baffle plate (470) is a straight plate; a plate surface between a middle part of the baffle plate (470) and the first end (471) of the baffle plate (470) is used as the shielding region (473); a protruding foolproof portion (475) is arranged on a surface on one side of the shielding region (473); an edge of the second end (472) of the baffle plate (470) is provided with a notch groove; pin portions (476) are formed on both sides of an open end of the notch groove; and a closed end of the notch groove extends in a direction close to the first end (471) and is adjacent to the foolproof portion (475) as the wiring groove (474).

15. The isolation switch according to claim 12, wherein the housing (400) comprises a base and a box cover; the box cover is fixedly connected to the base through a fastening screw (490); the slot (480) is formed in the housing (400) and correspondingly located between the wiring assembly (900) and the wiring hole (460); the wiring hole (460) is formed in the base or the box cover, or the wiring hole (460) is formed by butting the box cover with a first groove in an edge of the base; the slot (480) is formed in the base or the box cover; or the wiring groove (474) is formed by butting the box cover with a second groove formed in an edge of the base.

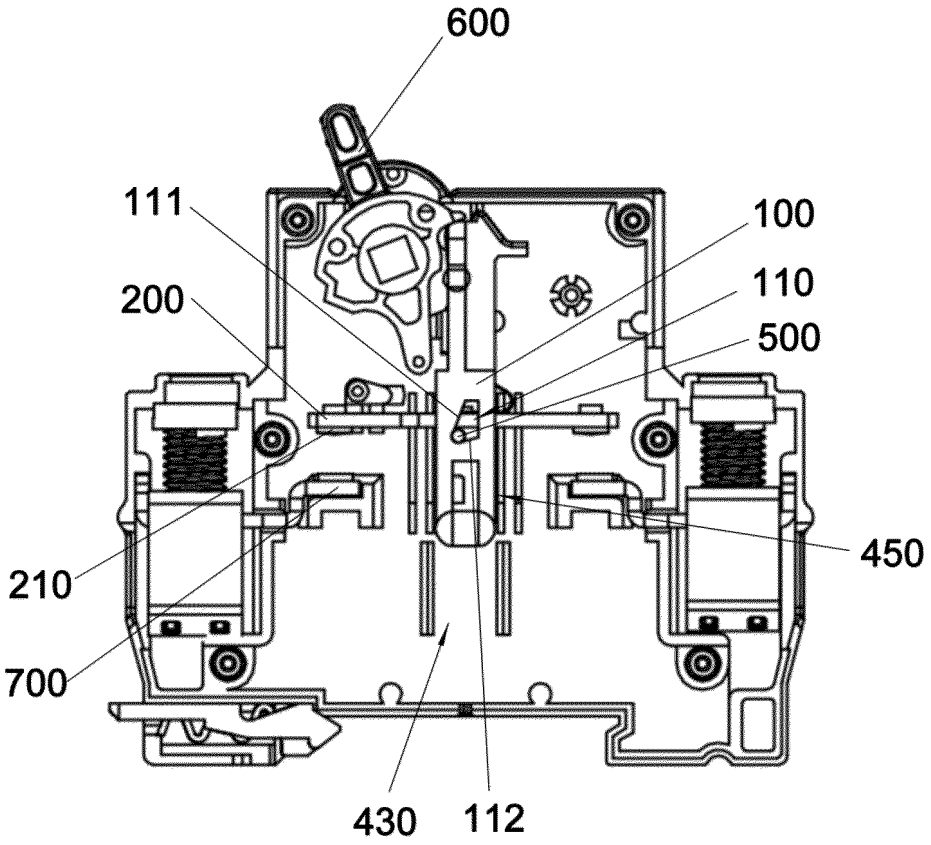

Fig.1

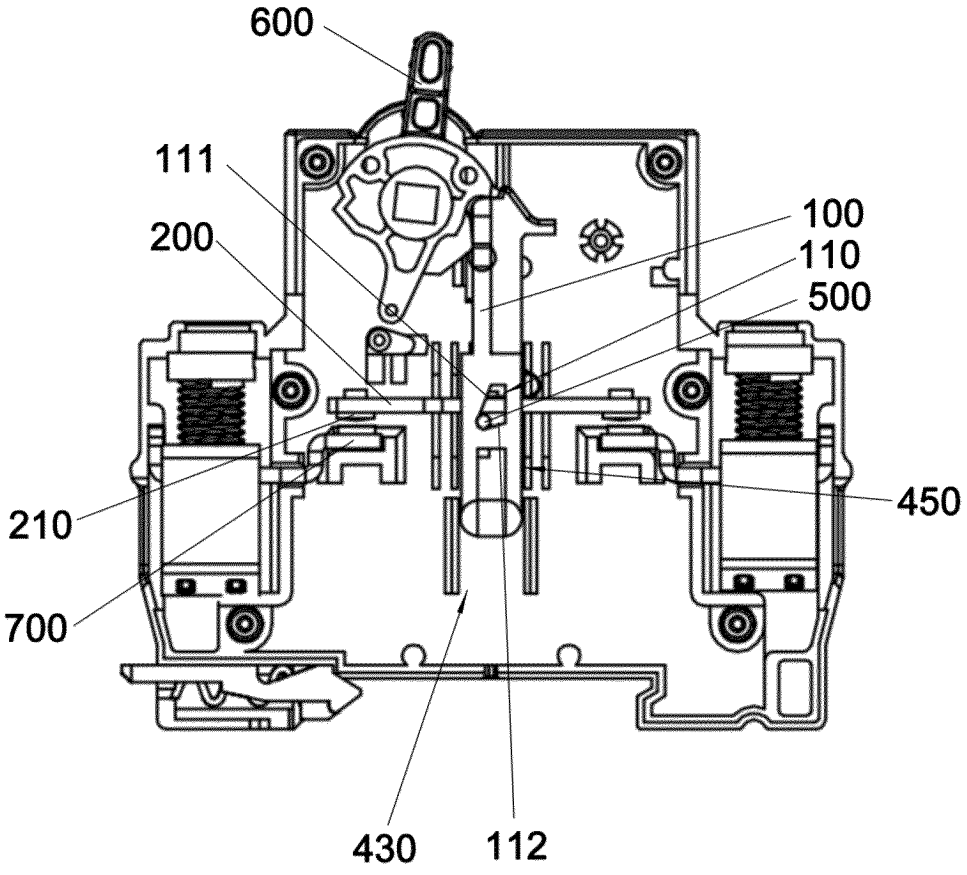

Fig.2

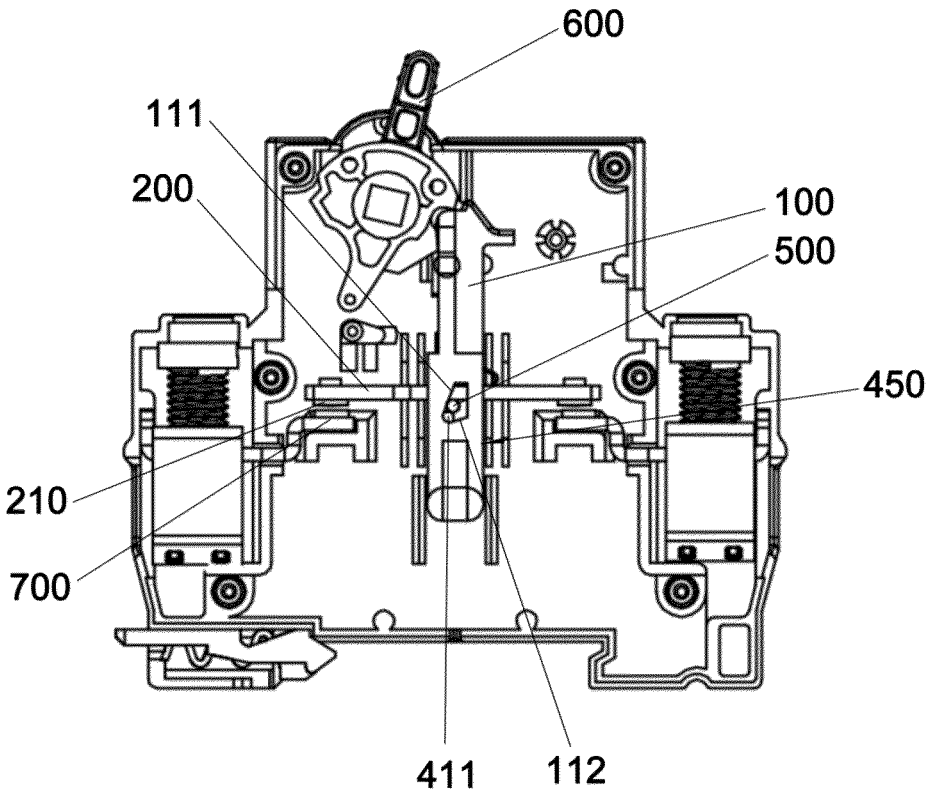

Fig.3

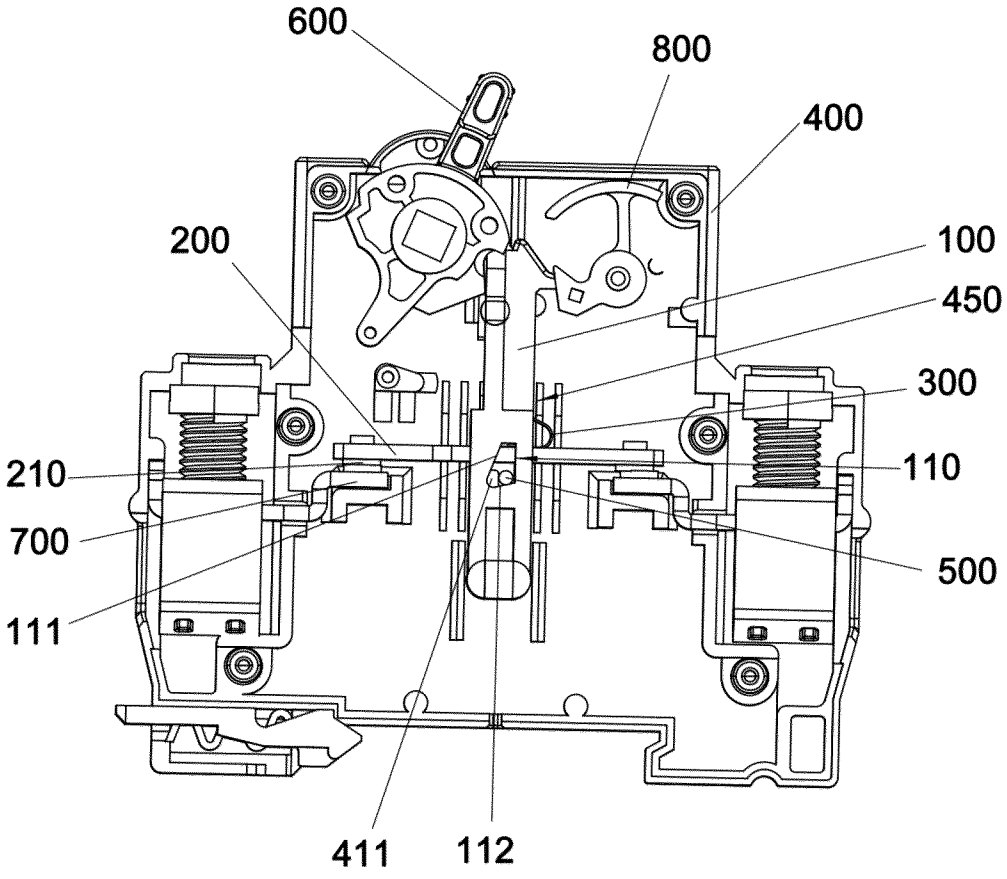

Fig.4

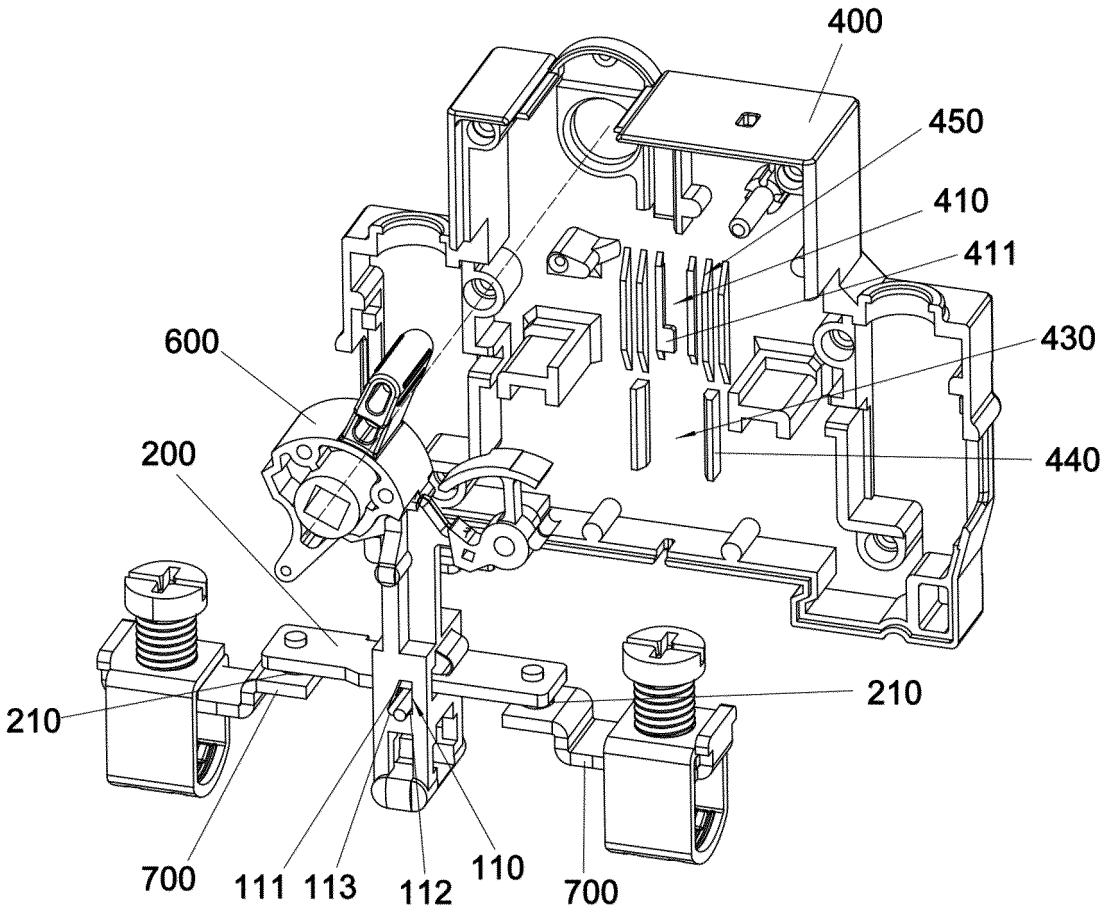

Fig.5

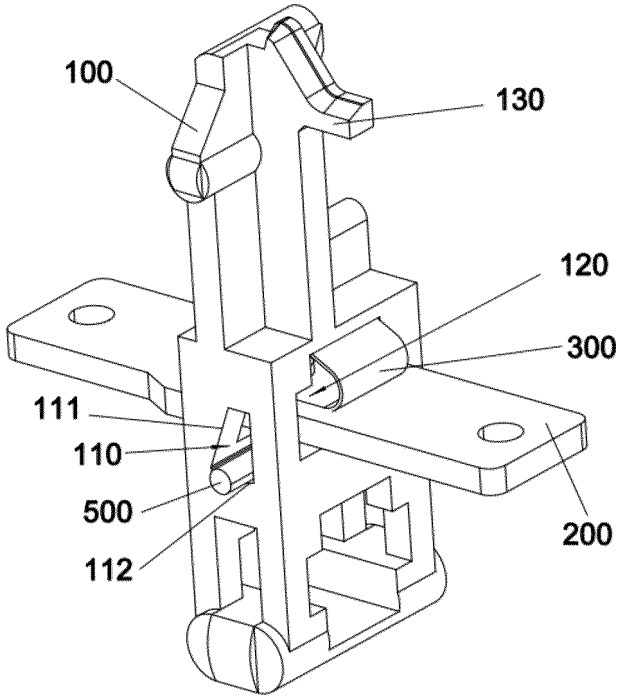

Fig.6

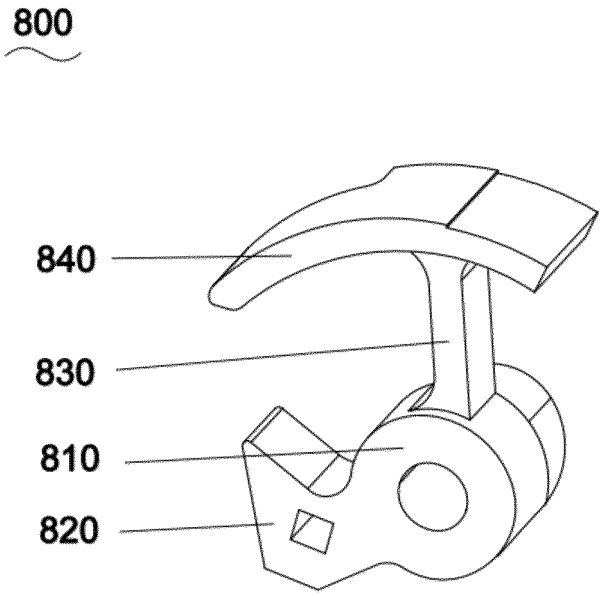

Fig.7

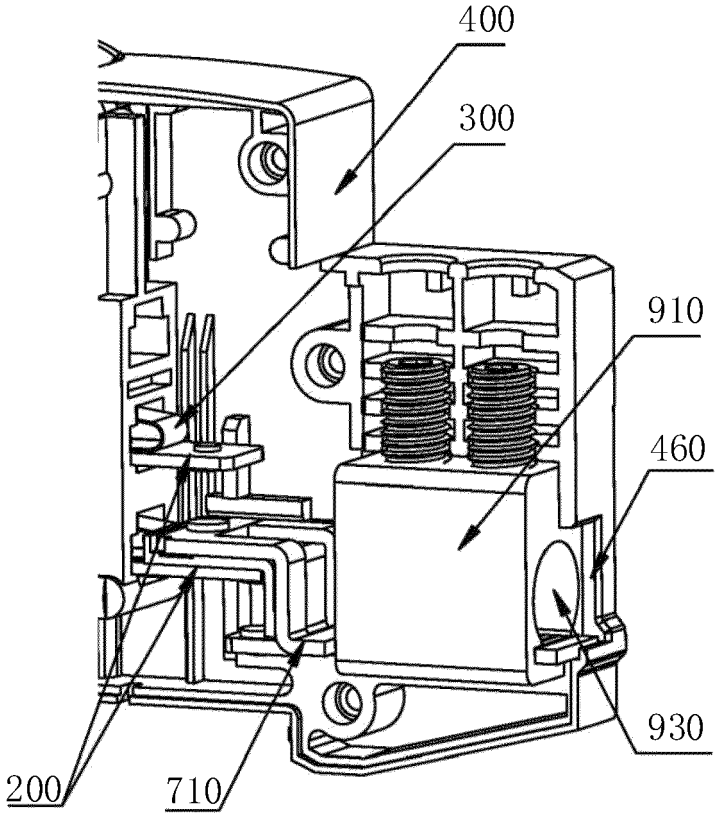

Fig.8

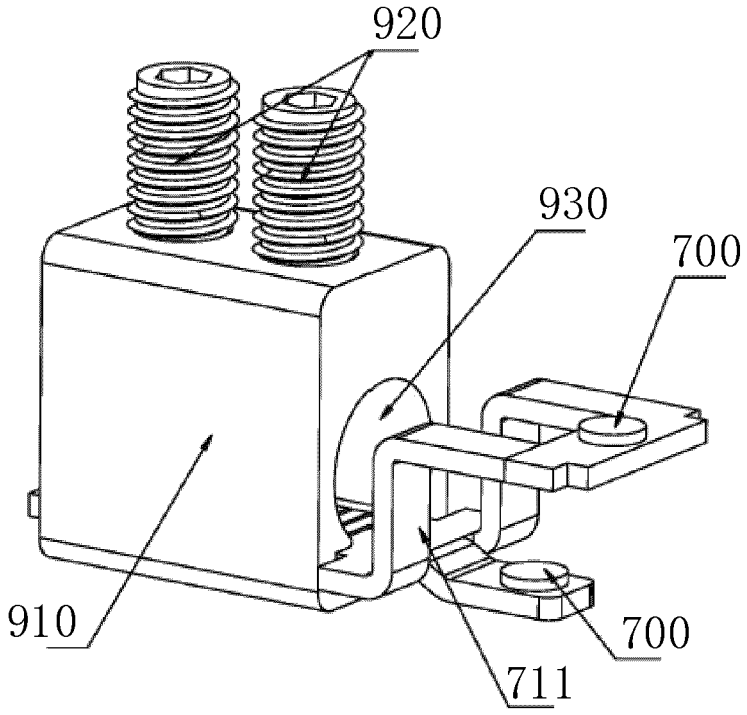

Fig.9

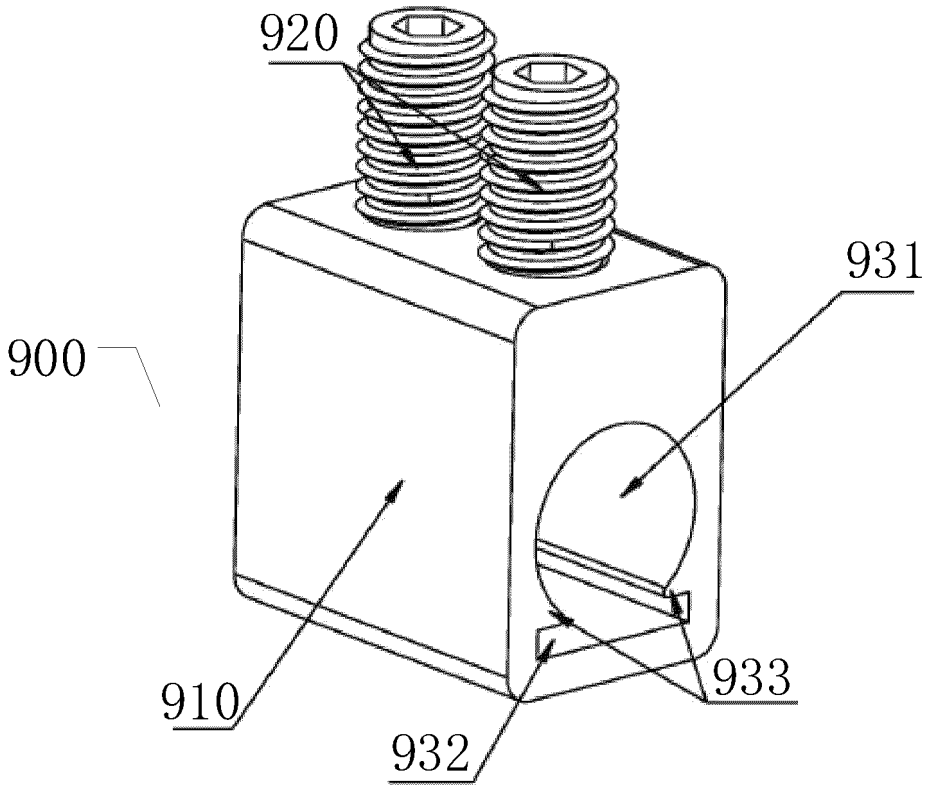

Fig.10

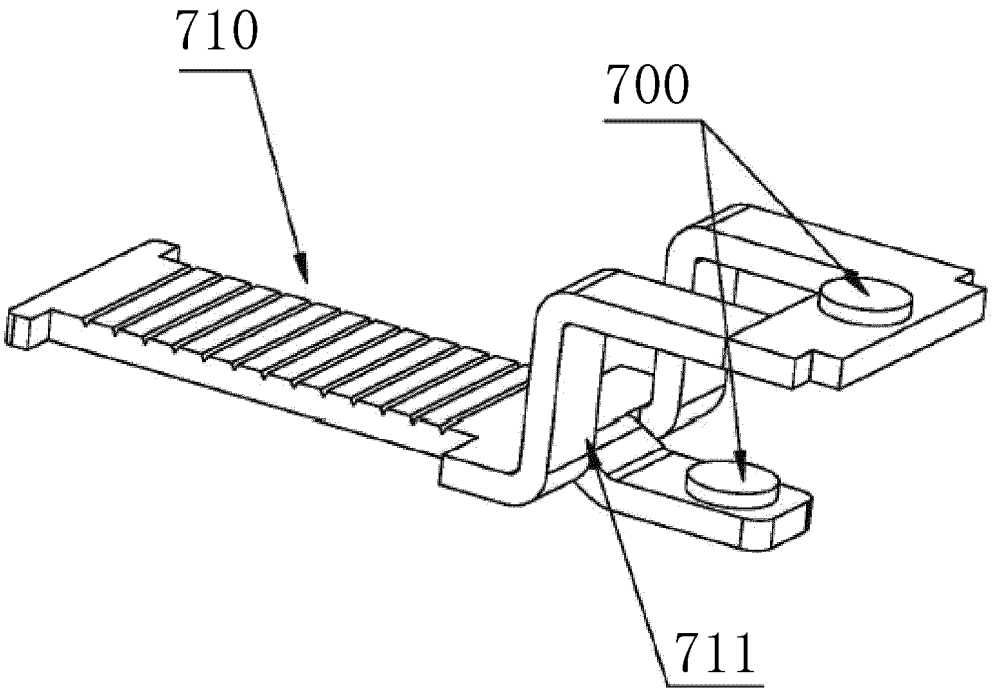

Fig.11

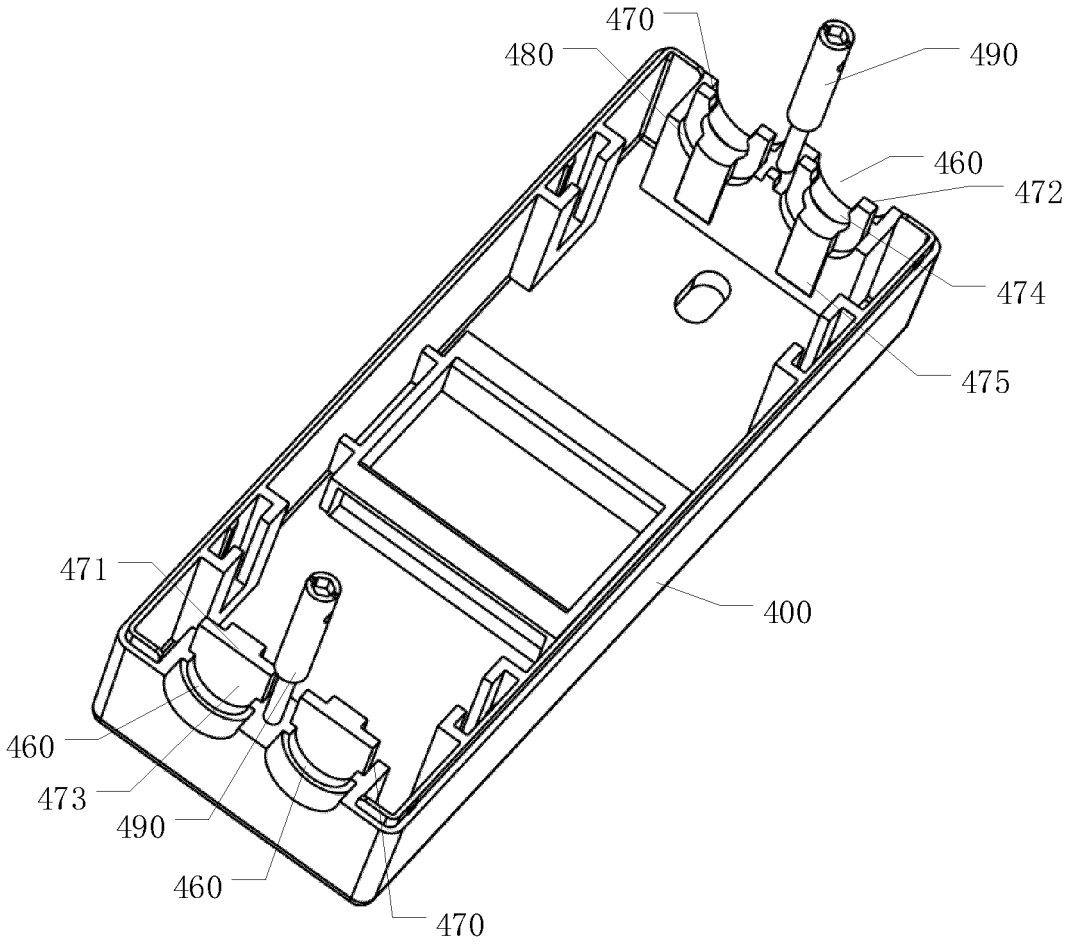
470
480
490
460
472
474
475
471
400
460
473
490
460
470

Fig.12

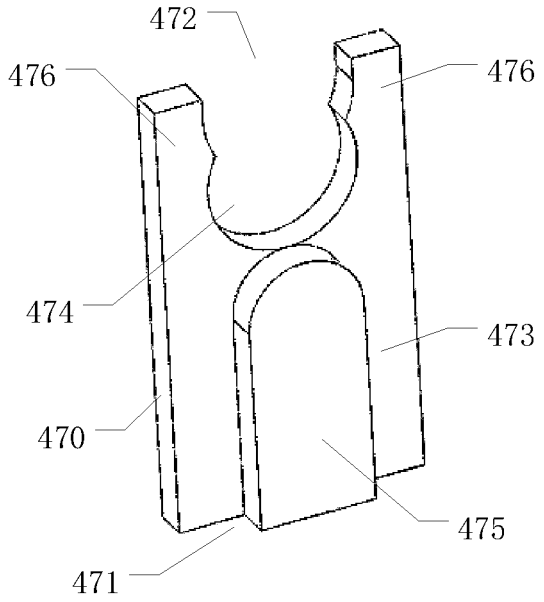
472
476
476
474
473
470
475
471

Fig.13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/126385

A. CLASSIFICATION OF SUBJECT MATTER

H01H3/30(2006.01)i; H01H3/02(2006.01)i; H01H3/32(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)

IPC: H01H

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)

CNTXT, ENTXT, ENTXTC, DWPI, CNKI: 开关, 储能, 释能, 弹, 快速, 合闸, 触, 支架, 支持, 桥, switch, energy, storage, release, spring, elastic, rapid, quick, fast, closing, contact, bracket, support, bridge

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 107452542 A (HUANYU GROUP ZHEJIANG HIGH TECH CO., LTD.) 08 December 2017 (2017-12-08) description, paragraphs 20-23, and figures 1-8	1, 3, 6-15
Y	CN 112289623 A (XIAMEN HONGFA ELECTRICAL SAFETY & CONTROLS CO., LTD.) 29 January 2021 (2021-01-29) description, paragraphs 42-62, and figures 1-16	1, 3, 6-15
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Date of the actual completion of the international search	Date of mailing of the international search report
06 March 2024	**08 March 2024**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
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International application No.
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