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(71) Applicant: **Yuyao Jiarong Electrical Appliance Co., Ltd.**
315463 Yuyao Zhejiang (CN)

(72) Inventor: **QIAN, Jiacan**
YUYAO, 315463 (CN)

(74) Representative: **Ipey**
Apex House
Thomas Street
Trethomas
Caerphilly CF83 8DP (GB)

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(54) ROTARY MAINTENANCE TYPE LEAKAGE PROTECTOR

(57) The present invention discloses a rotary maintenance type leakage protector, and relates to the technical field of leakage protectors. A base, a leakage protection device and an upper cover plate are included. The leakage protection device includes a return key, a return rotating stop block, an electromagnetic driving device and a dome. A power connection end which may be electrically connected with the dome is further arranged on the base. Extending ends which may abut on the dome are arranged on two sides of the return rotating stop block. The electromagnetic driving device is arranged on one side of an upper portion of the base. A driving iron core is arranged on the electromagnetic driving device. The electromagnetic driving device may drive the driving iron core to move, thereby driving the return rotating stop block to rotate about the extending ends. An inwards-protruding buckling clamping block is arranged on the return rotating stop block. The buckling clamping block causes the return key to drive the return rotating stop block to move synchronously. According to the present invention, active protection may be formed to completely eradicate potential safety hazards when the buckling clamping block is clamped with the return key. With the arrangement of the rotatable return rotating stop block, abrasions between parts are reduced, and the overall sensitivity of a mechanism is improved greatly.

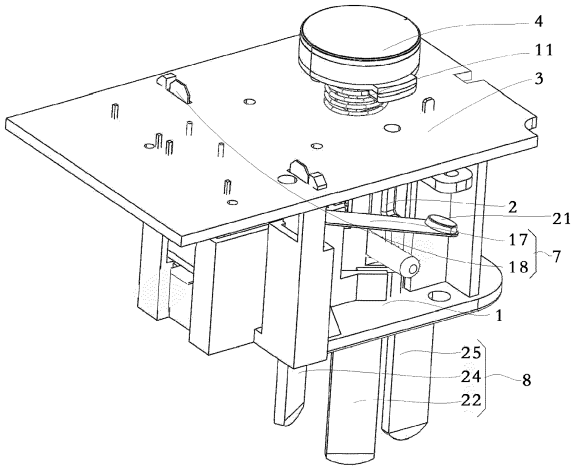

FIG. 1

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Description

Technical Field

[0001] The present invention relates to the technical field of leakage protectors, and particularly to a rotary maintenance type leakage protector.

Background Art

[0002] Leakage protectors can timely break main circuits when leakage failures occur to equipment or human bodies need to be protected from deadly electric shocks and thus are applied extensively. Leakage protector application technologies have been quite mature. Leakage protectors are divided into a voltage type and a current type in terms of protection principle and divided into a self-locking type and a closing type in terms of mechanical structure. Under normal conditions, current or voltage type leakage protectors of the mechanical self-locking structure type are mainly applied. A mechanical self-locking structure has the most important characteristic that the mechanical self-locking structure of the leakage protector in an on state cannot actively break an on contact in case of power interruption, open phase of a power supply circuit or poor line contact of the leakage protector at work, and exceptional open phase of the power supply circuit and exceptional energizing or leakage of an earth wire may disable a protection function of the leakage protector to result in a safety accident. Moreover, a buckling piece of an existing leakage protector structure usually slides in a surface contact manner, which results in a relatively strong frictional force and affects the service life of a moving part.

[0003] For the foregoing problems, a self-release rotating structure is designed in the present invention. A coil continuous power supply closing release mechanism is adopted. In case of power interruption, poor contact and open phase, a closing holding circuit of this structure is de-energized and thus cannot generate a magnetic force to attract a self-release mechanism. Consequently, a release circuit and an on contact are broken. Therefore, active protection is formed, potential safety hazards are completely eradicated, abrasions between parts are reduced, and the service life is prolonged.

[0004] As disclosed in Chinese invention patent CN211907362U, a leakage protector includes a protector device, a pin, a bottom plate and a dome. The protector device includes a communication maintenance device, a communication device and a locking device. The locking device includes a dome pressure block and a locking driving lever. A latch, a movable pressure plate and a hasp slideway are arranged on the locking driving lever. A pressure bar, a hasp and a vertical fork groove are arranged on the dome pressure block. A transversely extending second iron core clamped and matched with the vertical fork groove is arranged on the communication device. A longitudinally fixed first iron core attractively matched with the movable pressure plate is arranged on the communication maintenance device. The dome pressure block includes a pressure block upper portion and a pressure block lower portion. The leakage protector is relatively complex in structure and larger.

Summary of the Invention

I: Technical Problem to Be Solved

[0005] For the foregoing defects of a prior art, the present invention especially proposes a rotary maintenance leakage protector. The problems of complex structure of an existing leakage protector and relatively serious frictions between parts are solved, and the problem of the existing leakage protector that the leakage protector may break a circuit only when being energized is also solved.

II. Technical Solution

[0006] In order to solve the foregoing technical problems, the present invention provides a rotary maintenance type leakage protector, which includes a base, a leakage protection device and an upper cover plate. The leakage protection device includes a return key, a return rotating stop block, an electromagnetic driving device and a dome. A power connection end which may be electrically connected with the dome is further arranged on the base.

[0007] The return rotating stop block is mounted to an upper portion of the base in a manner of moving up and down. Extending ends which may abut on the dome are arranged on two sides of the return rotating stop block. The electromagnetic driving device is arranged on one side of the upper portion of the base. A driving iron core is arranged on the electromagnetic driving device. The driving iron core extends from the electromagnetic driving device and is movably clamped with a side wall of the return rotating stop block. The electromagnetic driving device may drive the driving iron core to move, thereby driving the return rotating stop block to rotate about the extending ends.

[0008] An inwards-protruding buckling clamping block is arranged on the return rotating stop block. The return key is sleeved with a return spring. One end of the return spring abuts on an upper portion of the upper cover plate, and the other end of the return spring abuts on the return key. The return key penetrates through the upper cover plate to be inserted into the return rotating stop block. The buckling clamping block may cause the return key to drive the return rotating stop block to move synchronously. When the buckling clamping block is clamped with the return key, the return key may be pressed to move the return rotating stop block downwards, and the dome moves downwards therewith so as to be separated from the power connection end and de-energized. When the return key is not pressed by an external force, the

return key returns and moves upwards under the action of the return spring, and the return rotating stop block may drive the dome to move upwards and contact with the power connection end to be energized.

[0009] The electromagnetic driving device kept in an energized state may cause the driving iron core to keep tightening the return rotating stop block and keep the buckling clamping block clamped with the return key such that the return key may keep an energized state that the dome contacts with the power connection end through the return rotating stop block.

[0010] After the electromagnetic driving device kept in the energized state is de-energized, the driving iron core releases the return rotating stop block, the buckling clamping block is released from clamping with the return key, and the dome is separated from the power connection end to be de-energized under the action of own elasticity.

[0011] A bayonet clamped and matched with the buckling clamping block is formed in the return key. An upper clamping surface and a lower release bevel are arranged on the bayonet.

[0012] An open slot is formed in a side wall of the return rotating stop block close to the driving iron core. The buckling clamping block is arranged on a side wall opposite to the open slot. The open slot is configured to be clamped with the driving iron core.

[0013] A sliding slot for the top-down insertion mounting of the return rotating stop block to the base is formed in a top of the base. The return rotating stop block may move up and down relative to the sliding slot. The return rotating stop block may further rotate in the sliding slot taking the extending end as an axis.

[0014] After the electromagnetic driving device is de-energized, the driving iron core releases the return rotating stop block, the return key moves upwards under the action of the return spring, and in an upward movement process of the return key, the return rotating stop block slides out along the lower release bevel of the return key and is released from clamping with the return key.

[0015] The power connection end is a pin structure, including a neutral wire pin, a live wire pin and an earth wire pin. The dome includes a neutral wire dome and a live wire dome. The neutral wire pin is in positional correspondence with the neutral wire dome. The live wire pin is in positional correspondence with the live wire dome. The earth wire pin is conductively connected with an earth wire directly. The two extending ends are arranged at lower portions of the neutral wire dome and the live wire dome. The neutral wire dome and the live wire dome may be automatically displaced downwards under the action of own elasticity.

[0016] The power connection end is a pin structure, including a neutral wire pin, a live wire pin and an earth wire pin. The dome includes a neutral wire dome, a live wire dome and an earth wire dome. The neutral wire pin is in positional correspondence with the neutral wire dome. The live wire pin is in positional correspondence with the live wire dome. The earth wire pin is in positional correspondence with the earth wire dome. The two extending ends are arranged at lower portions of the neutral wire dome and the live wire dome. The neutral wire dome and the live wire dome may be automatically displaced downwards under the action of own elasticity. An earth wire extending end is arranged at a bottom of the return rotating stop block. The earth wire extending end is arranged at a top of the earth wire dome and configured to control the earth wire dome to move downwards. The earth wire dome may be automatically displaced upwards under the action of own elasticity.

[0017] The leakage protection device further includes a pressing guide block arranged on one side of the upper portion of the base in a clamping manner. A pressing end configured to fixedly press the power connection end on the base is arranged on the pressing guide block.

[0018] The power connection end and the dome are embedded to the base. Corresponding electrical connection contacts are arranged on the power connection end and the dome. An extending indication rod is further arranged at one end of the return rotating stop block. The indication rod may rotate with the return rotating stop block to further display a state of the leakage protector.

[0019] A bottom of the return key penetrates through the return rotating stop block. A jack corresponding to the bottom of the return key is formed in the base.

[0020] A bottom of the return key penetrates through the return rotating stop block and the earth wire dome. A jack corresponding to the bottom of the return key is formed in the base.

[0021] An auxiliary earth wire return spring is further arranged between the earth wire dome and the base.

[0022] An auxiliary release spring is arranged between a bottom of the return key and a bottom of the return rotating stop block.

[0023] The earth wire extending ends may turn off the neutral wire dome and the live wire dome prior to the earth wire dome.

[0024] Herein, return sliding slots are further formed in sides of the return key. A sliding guide pillar is further arranged in the return rotating stop block. The return sliding slot may be correspondingly matched with the sliding guide pillar.

[0025] A sliding slot transition bevel is arranged at an upper portion of the return sliding slot. In a downward pressing process of the return key, the sliding guide pillar is matched with the return sliding slot to slide and then slides out along the sliding slot transition bevel to abut on a lateral surface of the return key such that the return rotating stop block rotates to a side where the electromagnetic driving device is.

[0026] The rotary maintenance type leakage protector further includes European pins and a shell.

[0027] The leakage protection device and the power connection end are arranged at the upper portion of the base. The European pin is arranged on the shell in a penetration manner and located at a lower portion of the

base.

[0028] A top end of the European pin is inserted from a bottom of the base and fixedly riveted with the power connection end.

[0029] An outer wall of the European pin is sleeved with a pin sleeve. An upper end of the pin sleeve abuts on the bottom of the base. A lower end of the pin sleeve abuts on the shell.

[0030] An upper fixed seat corresponding to the European pin is arranged at the bottom of the base. A limiting hole configured for the European pin to penetrate through and be limited is formed in the upper fixed seat.

[0031] A lower fixed seat is arranged in the shell. The pin sleeve abuts on the lower fixed seat.

[0032] A lower portion of the pin sleeve may be sleeved within the lower fixed seat. A sleeve shaft shoulder is arranged in the middle of the pin sleeve. A seal ring is further arranged on the pin sleeve. The seal ring is pressed between the sleeve shaft shoulder and the lower fixed seat.

[0033] A connecting piece is arranged between the pin sleeves.

[0034] An earth wire connecting device is arranged between the pin sleeves. An earth wire connecting sheet is arranged in the earth wire connecting device. The earth wire connecting device is integrally formed by injection molding.

III. Beneficial Effects

[0035] Compared with the prior art, the rotary maintenance type leakage protector provided in the present invention has the following advantages. The electromagnetic driving device is continuously powered to be closed and clamped to maintain an on state of the leakage protector, and the electromagnetic driving device is de-energized and cannot generate a magnetic force in case of power interruption, poor contact and open phase of the leakage protector. In such case, the bayonet is no longer clamped with the return rotating stop block, and furthermore, the return key is separated from the return stop block without linkage. Therefore, the leakage protector is separated and de-energized to form active protection to completely eradicate potential safety hazards.

[0036] In addition, with the arrangement of the rotatable return rotating stop block, abrasions between parts are effectively reduced, the service life is prolonged, and meanwhile, the overall sensitivity of the mechanism is improved greatly.

[0037] Moreover, with the arrangement of the auxiliary release spring, the return rotating stop block may move downwards under the action of the elasticity of the auxiliary release spring when the electromagnetic driving device is in a de-energized state, so that it is ensured that the dome moves downwards and is separated from the power connection end to be de-energized.

[0038] Further, the European pins are directly inserted to the base and then riveted with the power connection end on the leakage protection device to directly implement the electrical connection between the European pins and the power connection end. Compared with an existing mounting manner, the mounting manner of the present invention is higher in mounting efficiency and suitable for automatic assembling, various possible problems in pin mounting are substantially solved, and the requirement of high mounting accuracy is met.

Brief Description of the Drawings

[0039]

FIG. 1 is a three-dimensional diagram of a leakage protector in an off state according to the present invention.

FIG. 2 is a three-dimensional diagram of a leakage protector in an on state according to the present invention.

FIG. 3 is a three-dimensional internal structure diagram of a leakage protector according to the present invention.

FIG. 4 is a three-dimensional diagram of a return rotating stop block of a leakage protector according to the present invention.

FIG. 5 is a sectional diagram of a leakage protector according to the present invention.

FIG. 6 is a 1st internal structure diagram in case of existence of an earth wire dome according to the present invention.

FIG. 7 is a 2nd internal structure diagram in case of existence of an earth wire dome according to the present invention.

FIG. 8 is a 1st internal structure diagram in case of nonexistence of an earth wire dome according to the present invention.

FIG. 9 is a 2nd internal structure diagram in case of nonexistence of an earth wire dome according to the present invention.

FIG. 10 is a structure diagram of a base in case of nonexistence of an earth wire dome according to the present invention.

FIG. 11 is a structure diagram of a return key according to the present invention.

FIG. 12 is a structure diagram when an auxiliary release spring sleeves a key rod according to the present invention.

FIG. 13 is a three-dimensional diagram of a pin mounting structure according to embodiment 9 of the present invention.

FIG. 14 is an exploded diagram of a pin mounting structure according to embodiment 9 of the present invention.

FIG. 15 is a three-dimensional diagram of a base according to embodiment 9 of the present invention.

FIG. 16 is a 1st schematic diagram with a shell according to embodiment 9 of the present invention.

FIG. 17 is a 1st exploded diagram with a shell ac-

cording to embodiment 9 of the present invention.

FIG. 18 is a 1st schematic diagram of a lower portion of a shell according to embodiment 9 of the present invention.

FIG. 19 is a 2nd schematic diagram with a shell according to embodiment 9 of the present invention.

FIG. 20 is a 2nd exploded diagram with a shell according to embodiment 9 of the present invention.

FIG. 21 is a 2nd schematic diagram of a lower portion of a shell according to embodiment 9 of the present invention.

[0040] In the figures: 1-base; 2-leakage protection device; 3-upper cover plate; 4-return key; 5-return rotating stop block; 6-electromagnetic driving device; 7-dome; 8-power connection end; 9-key button; 10-key rod; 11-return spring; 12-bayonet; 13-open slot; 14-indication rod; 15-extending end; 16-buckling clamping block; 17-neutral wire dome; 18-live wire dome; 19-lower release bevel; 20-upper clamping surface; 21-electrical connection contact; 22-neutral wire pin; 23-driving iron core; 24-live wire pin; 25-earth wire pin; 26-sliding slot; 27-electromagnetic coil; 29-sliding guide pillar; 30-auxiliary release spring; 31-jack; 32-earth wire extending end; 33-static iron core; 34-earth wire dome; 35-return sliding slot; 36-sliding slot transition bevel; 37-auxiliary earth wire return spring; 38-dome hole; 40-European pin; 41-pin sleeve; 42-seal ring; 43-earth wire connecting device; 44-sleeve shaft shoulder; 45-upper fixed seat; 46-limiting hole; 47-connecting piece; 48-earth wire connecting sheet; 49-lower fixed seat; and 100-shell.

Detailed Description of the Invention

[0041] Specific implementations of the present invention will further be described below in combination with the drawings and embodiments in detail. The following embodiments are adopted to describe the present invention rather than limit the scope of the present invention.

Embodiment 1:

[0042] As shown in FIGS. 1 to 9, a rotary maintenance type leakage protector of the embodiment of the present invention includes a base 1, a leakage protection device 2 and an upper cover plate 3. The leakage protection device 2 includes a return key 4, a return rotating stop block 5, an electromagnetic driving device 6 and a dome 7. A power connection end 8 which may be electrically connected with the dome 7 is further arranged on the base 1. In the present embodiment, the upper cover plate 3 may adopt a partition plate which only supports the following return spring 11 and is made of plastic or other materials, or may adopt a circuit board to achieve the same effect. The leakage protection device 2 further includes a pressing guide block arranged on one side of an upper portion of the base 1 in a clamping manner and positioned and fixed by a clamping slot correspondingly formed in the base 1. A pressing end configured to fixedly press the power connection end 8 on the base 1 is arranged on the pressing guide block.

[0043] The return rotating stop block 5 is mounted to the upper portion of the base 1 in a manner of moving up and down. A sliding slot 26 for the top-down insertion mounting of the return rotating stop block 5 to the base 1 is formed in a top of the base 1. The return rotating stop block 5 is clamped with the sliding slot 26 through extending ends 15 on two sides. The cylindrical return rotating stop block 5 may rotate in the sliding slot 26 taking the extending end 15 as an axis. The extending end 15 moves up and down to control the contact and separation between the dome 7 and the power connection end 8, i.e., the energizing and de-energizing of the leakage protector.

[0044] The electromagnetic driving device 6 is arranged on one side of the upper portion of the base 1. A movable driving iron core 23 is arranged in the electromagnetic driving device 6. An extending end of the driving iron core 23 is movably clamped with a side wall of the return rotating stop block 5. As shown in FIGS. 4, 5 and 6, an open slot 13 is formed in a side wall of the return rotating stop block 5 close to the driving iron core 23. A buckling clamping block 16 is arranged on a side wall opposite to the open slot 13. The open slot 13 is configured to be clamped and matched with the driving iron core 23. When the electromagnetic driving device 6 is energized, the driving iron core 23 is attracted by a static iron core 33 in the electromagnetic driving device 6 to be tightened and fixed, as shown in FIGS. 2 and 5.

[0045] The return key 4 includes a key button 9 and a key rod 10. As shown in FIG. 1, the key rod 10 is sleeved with a return spring 11. One end of the return spring 11 abuts on an upper portion of the upper cover plate 3, and the other end of the return spring 11 abuts on the return key 4. The return key 4 penetrates through the upper cover plate 3 to be inserted into the return rotating stop block 5. A bayonet 12 clamped and matched with the buckling clamping block 16 is formed in the key rod 10. An upper clamping surface 20 and a lower release bevel 19 are arranged on the bayonet 12. The bayonet 12 is an opening shaped like "7".

[0046] When the leakage protector is in an initial off state, the electromagnetic driving device 6 does not work, the driving iron core 23 is in a free state of not being attracted by a magnetic force, the return rotating stop block 5 is subjected to no constraint force, the buckling clamping block 16 of the return rotating stop block 5 is released from clamping with the return key 4, and the dome 7 is separated from the power connection end 8 under the action of own elasticity. In such case, the return rotating stop block 5 may not be driven to move when the return key 4 is pressed down to compress the return spring 11 or the return key 4 returns upwards.

[0047] When the leakage protector is energized, as shown in FIG. 5, the electromagnetic driving device 6 is kept in an energized state and generates a magnetic

force to attract the driving iron core 23 to keep tightening the return rotating stop block 5 through the driving iron core 23. In such case, the buckling clamping block 16 is kept clamped with the bayonet 12. In this state, the return key 4 moves up and down to synchronously drive the return rotating stop block 5 to move.

[0048] When the leakage protector is de-energized, namely when an exceptional condition such as power interruption, poor contact, open phase and leakage occurs to the leakage protector, the electromagnetic driving device 6 is de-energized, the driving iron core 23 releases the return rotating stop block 5, the buckling clamping block 16 of the return rotating stop block 5 is released from clamping with the return key 4, and the dome 7 is separated from the power connection end 8 under the action of own elasticity. In such case, the return spring 11 drives the return key 4 to return upwards.

[0049] Further, the return key 4 may move upwards under the action of the return spring 11. In an upward movement process of the return key 4, a tensile force applied by the driving iron core 23 to the return rotating stop block 5 disappears, and the buckling clamping block 16 may slide out along the lower release bevel 19 of the return key 4 and is released from clamping with the return key 4. In this state, the return key 4 is separated from the return rotating stop block 5. In such case, the dome 7 drives the return rotating stop block 5 to move downwards and is separated from the power connection end 8 to be de-energized under the action of own elasticity.

[0050] The buckling clamping block 16 slides out of the lower release bevel 19 more easily if an inclination angle of the lower release bevel 19 is larger. Therefore, a stronger maintenance force for the driving iron core 23 is needed if the inclination angle is larger. The inclination angle is defined as an acute included angle between the lower release bevel 19 and a horizontal plane.

[0051] Through the abovementioned structural design in the present embodiment, the electromagnetic driving device 6 is continuously powered to be closed and clamped, and the electromagnetic driving device 6 is de-energized and cannot generate a magnetic force in case of power interruption, poor contact, open phase and leakage of the leakage protector. In such case, the bayonet 12 is no longer clamped with the buckling clamping block 16, and furthermore, the return key 4 is separated from the return rotating stop block 5. Therefore, the leakage protector is separated and de-energized to form active protection to completely eradicate potential safety hazards.

[0052] As shown in FIGS. 8 and 9, the power connection end 8 is a pin structure, including a neutral wire pin 22, a live wire pin 24 and an earth wire pin 25. The dome 7 includes a neutral wire dome 17 and a live wire dome 18. The neutral wire pin 22 is in positional correspondence with the neutral wire dome 17. The live wire pin 24 is in positional correspondence with the live wire dome 18. The earth wire pin 25 is conductively connected with an earth wire directly. The two extending ends 15 are arranged at lower portions of the neutral wire dome 17 and the live wire dome 18. The neutral wire dome 17 and the live wire dome 18 may be automatically displaced downwards under the action of own elasticity. Corresponding electrical connection contacts 21 are arranged on the power connection end 8 and the dome 7 and may be used to ensure the stability and reliability of the electrical connection.

[0053] According to the present embodiment, a double-pole breakage effect may be achieved. That is, the neutral wire pin 22 corresponds to the neutral wire dome 17, and the live wire pin 24 corresponds to the live wire dome 18. Double-pole breakage refers to controlling the turning-off and turning-on of the neutral wire pin 22 and the neutral wire dome 17 and the turning-off and turning-on of the live wire pin 24 and the live wire dome 18 through the return rotating stop block 5.

Embodiment 2:

[0054] Compared with embodiment 1, in the present embodiment, as shown in FIGS. 6 and 7, the power connection end 8 is a pin structure, including a neutral wire pin 22, a live wire pin 24 and an earth wire pin 25. The dome 7 includes a neutral wire dome 17, a live wire dome 18 and an earth wire dome 34. The neutral wire pin 22 is in positional correspondence with the neutral wire dome 17. The live wire pin 24 is in positional correspondence with the live wire dome 18. The earth wire pin 25 is in positional correspondence with the earth wire dome 34. The two extending ends 15 are arranged at lower portions of the neutral wire dome 17 and the live wire dome 18. The neutral wire dome 17 and the live wire dome 18 may be automatically displaced downwards under the action of own elasticity. An earth wire extending end 32 is arranged at a bottom of the return rotating stop block 5. The earth wire extending end 32 is arranged at a top of the earth wire dome 34 and configured to control the earth wire dome 34 to move downwards. The earth wire dome 34 may be automatically displaced upwards under the action of own elasticity. Corresponding electrical connection contacts 21 are arranged on the power connection end 8 and the dome 7 and may be used to ensure the stability and reliability of the electrical connection.

[0055] According to the present embodiment, a three-pole breakage effect may be achieved. That is, the earth wire pin 25 corresponds to the earth wire dome 34, the neutral wire pin 22 corresponds to the neutral wire dome 17, and the live wire pin 24 corresponds to the live wire dome 18. Three-pole breakage refers to controlling the turning-off and turning-on of the aforementioned three. The turning-off and turning-on of the neutral wire pin 22 and the neutral wire dome 17, the turning-off and turning-on of the live wire pin 24 and the live wire dome 18 and the turning-off and turning-on of the earth wire pin 25 and the earth wire dome 34 are controlled through the return rotating stop block 5.

[0056] Moreover, a boss is arranged at a bottom of the earth wire extending end 32. With the arrangement of the boss, the neutral wire dome 17 and the live wire dome 18 may be turned off prior to the earth wire dome 34 when the leakage protector is de-energized.

Embodiment 3:

[0057] Compared with embodiment 1, as shown in FIGS. 1 and 2, the power connection end 8 and the dome 7 are embedded to the base 1. An extending indication rod 14 is further arranged at one end of the return rotating stop block 5. The indication rod 14 may rotate with the return rotating stop block 5 to further display a state of the leakage protector. Specifically, a top of the indication rod 14 is coated with red. When the leakage protector is in an energized state, the bayonet 12 is kept clamped and matched with the buckling clamping block 16, as shown in FIG. 2, namely the red top of the indication rod 14 may be viewed from an observation window in a housing of the leakage protector to achieve an indication effect. When the leakage protector is in a de-energized state, as shown in FIG. 1, the red top of the indication rod 14 cannot be viewed from the observation window in the housing of the leakage protector.

Embodiment 4:

[0058] Compared with embodiment 2, as shown in FIGS. 6 and 7, in the present embodiment, an auxiliary release spring 30 is arranged at a bottom of the return key 4. Specifically, the auxiliary release spring 30 is arranged in the return rotating stop block 5 with one end abutting on a bottom of the key rod 10, or the auxiliary release spring 30 sleeves the key rod 10, as shown in FIG. 12. With the arrangement of the auxiliary release spring 30, when the electromagnetic driving device is in a de-energized state, the auxiliary release spring 30 may provide a downward acting force for the return rotating stop block 5, and the return rotating stop block 5 may move downwards under the action of the elasticity of the auxiliary release spring 30, thereby ensuring that the dome moves downwards and is separated from the power connection end to be de-energized.

Embodiment 5:

[0059] Compared with embodiment 1, in the present embodiment, as shown in FIG. 10, a bottom of the return key 4 penetrates through the return rotating stop block 5, and a jack 31 corresponding to the bottom of the return key 4 is formed in the base 1. The return key 4 is limited by both the upper cover plate 3 and the jack 31 in the base 1. Therefore, the return key 4 may move up and down more stably, and the condition that the return key 4 sways when being limited only by the upper cover plate 3 may be avoided.

Embodiment 6:

[0060] Compared with embodiment 2, in the present embodiment, as shown in FIG. 3, a bottom of the return key 4 penetrates through the return rotating stop block 5 and the earth wire dome 34, and a jack 31 corresponding to the bottom of the return key 4 is formed in the base 1. The return key 4 is limited by both the upper cover plate 3 and the jack 31 in the base 1. Therefore, the return key 4 may move up and down more stably, and the condition that the return key 4 sways when being limited only by the upper cover plate 3 may be avoided.

[0061] In the present embodiment, a dome hole 38 corresponding to the bottom of the return key 4 is formed in the earth wire dome 34, and the bottom of the return key 4 penetrates through the dome hole 38.

Embodiment 7:

[0062] Compared with embodiment 2, in the present embodiment, an auxiliary earth wire return spring 37 is further arranged between the earth wire dome 34 and the base 1. The auxiliary earth wire return spring 37 may generate upward elasticity for the earth wire dome 34. The auxiliary earth return spring 37 may effectively ensure the turning-on between the earth wire pin 25 and the earth wire dome 34.

Embodiment 8:

[0063] Compared with embodiment 1, in the present embodiment, as shown in FIG. 11, return sliding slots 35 are further formed in sides of the return key 4. A sliding guide pillar 29 is further arranged in the return rotating stop block 5. The return sliding slot 35 may be correspondingly matched with the sliding guide pillar 29. The return sliding slots 35 are symmetrically formed in two sides of the key rod 10. The return sliding slot 35 is formed upwards from a lower end of the key rod 10. The sliding guide pillar 29 is configured to be matched with the upward and downward movement of the key rod 10. A sliding slot transition bevel 36 is arranged at an upper portion of the return sliding slot 35. In a downward pressing process of the return key 4, the sliding guide pillar 29 may be matched with the return sliding slot 35 to slide at first, and the sliding guide pillar 29 slides out of the return sliding slot 35 when the return key 4 continues to be pressed down. Specifically, the sliding guide pillar 29 slides out along the sliding slot transition bevel 36 to abut on a lateral surface, where no sliding slot is formed, of the key rod 10. The return rotating stop block 5 may rotate a certain angle to a side where the electromagnetic driving device 6 is under the abutting action. The requirement on the power of an electromagnetic coil on the electromagnetic driving device 6 may be reduced effectively by this preparation. In such case, the return rotating stop block 5 may be tightened by the driving iron core 23 if the electromagnetic driving device 6 is energized, there-

by maintaining the whole leakage protector in an energized state.

Embodiment 9:

[0064] Compared with the abovementioned embodiments where an inserted portion extends from the power connection end 8 as a complete pin structure directly, in the present embodiment, as shown in FIGS. 13 to 18, a split structural design is adopted for the power connection end 8 and European pins 40. In the present embodiment, a pin mounting structure, as an important protected object, is a pin structure suitable for a European leakage protector. Since a pin in the European leakage protector is a cylindrical pin different from a Chinese standard, a novel pin mounting structure convenient to assemble automatically is provided for the structural difference in the present embodiment.

[0065] As shown in FIG. 13, the leakage protection device 2 and the power connection end 8 are arranged at the upper portion of the base 1. The European pin 40 is arranged on a shell 100 in a penetration manner and located at a lower portion of the base 1. A top end of the European pin 40 is inserted from a bottom of the base 1 and fixedly riveted with the power connection end 8. That is, in an assembling process, it is only necessary to insert the top end of the European pin 40 from the bottom of the base 1, and a small section of structure of the top end of the European pin 40 extends from the base 1 and then is directly fixed with the power connection end 8 on the leakage protection device 2 by riveting. In this manner, mounting between the European pin 40, the leakage protection device 2, the power connection end 8 and the base 1 is completed.

[0066] Then, only simple assembling is needed, including the assembling of pin sleeves 41 and the shell 100. Specifically, an outer wall of the European pin 40 is sleeved with a pin sleeve 41, an upper end of the pin sleeve 41 abuts on the bottom of the base 1, and a lower end of the pin sleeve 41 abuts on the shell 100.

[0067] As shown in FIG. 14, an upper fixed seat 45 corresponding to the European pin 40 is arranged at the bottom of the base 1. A lower fixed seat 49 is arranged in the shell 100. The pin sleeve 41 abuts on the lower fixed seat 49. The pin sleeves 41 fixedly abut on the upper fixed seat 45 and the lower fixed seat 49 respectively, so that the firm mounting of the European pins 40 is ensured. In addition, the accuracy of the whole mounting size may be ensured by this design. Moreover, a limiting hole 46 configured for the European pin 40 to penetrate through and be limited is formed in the upper fixed seat 45. The limiting hole 46 is specifically shaped into a round hole with a section of straight edge, so that the European pin 40 may be prevented from rotating after being inserted.

[0068] Moreover, a lower portion of the pin sleeve 41 may be sleeved within the lower fixed seat 49, so that a more convenient assembling is achieved. A sleeve shaft shoulder 44 is arranged in the middle of the pin sleeve 41. A seal ring 42 is further arranged on the pin sleeve 41. The seal ring 42 is pressed between the sleeve shaft shoulder 44 and the lower fixed seat 49, to achieve an effect of sealing the inside of the shell 100.

[0069] As shown in FIG. 1, a connecting piece 47 is arranged between the pin sleeves 41. It may further be ensured that the European pins 40 are side by side on the left and the right, and higher mounting accuracy is achieved.

[0070] Further, as shown in FIGS. 19 to 21, an earth wire connecting device 43 is arranged between the pin sleeves 41. An earth wire connecting sheet 48 is arranged in the earth wire connecting device 43. The earth wire connecting device 43 is integrally formed by injection molding. A top of the earth wire connecting device 43 abuts on the bottom of the base 1. A bottom of the earth wire connecting device 43 abuts on an inner wall of the shell 100. Connection with an earth wire is implemented through the earth wire connecting device 43.

[0071] The above is only the preferred implementation of the present invention. It should be pointed out that those of ordinary skills in the art may further make a plurality of improvements and embellishments without departing from the technical principle of the present invention, and these improvements and embellishments shall also fall within the scope of protection of the present invention.

Claims

1. A rotary maintenance type leakage protector, comprising a base (1), a leakage protection device (2) and an upper cover plate (3), wherein the leakage protection device (2) comprises a return key (4), a return rotating stop block (5), an electromagnetic driving device (6) and a dome (7); a power connection end (8) which may be electrically connected with the dome (7) is further arranged on the base (1);

   the return rotating stop block (5) is mounted to an upper portion of the base (1) in a manner of moving up and down, and extending ends (15) which may abut on the dome (7) are arranged on two sides of the return rotating stop block (5); the electromagnetic driving device (6) is arranged on one side of the upper portion of the base (1), a driving iron core (23) is arranged on the electromagnetic driving device (6), the driving iron core (23) extends from the electromagnetic driving device (6) and is movably clamped with a side wall of the return rotating stop block (5), and the electromagnetic driving device (6) may drive the driving iron core (23) to move, thereby driving the return rotating stop block (5) to rotate;

   a buckling clamping block (16) is arranged on the return rotating stop block (5), the return key

(4) is sleeved with a return spring (11), one end of the return spring (11) abuts on an upper portion of the upper cover plate (3), and the other end of the return spring (11) abuts on the return key (4); the return key (4) penetrates through the upper cover plate (3) to be inserted into the return rotating stop block (5);
the electromagnetic driving device (6) kept in an energized state may cause the driving iron core (23) to keep tightening the return rotating stop block (5) and keep the buckling clamping block (16) clamped with the return key (4) to further drive the return rotating stop block (5) to move synchronously, and the return key (4) may keep an energized state that the dome (7) contacts with the power connection end (8) through the return rotating stop block (5); and
after the electromagnetic driving device (6) kept in the energized state is de-energized, the driving iron core (23) releases the return rotating stop block (5), the buckling clamping block (16) is released from clamping with the return key (4), and the dome (7) is separated from the power connection end (8) to be de-energized under the action of own elasticity.

2. The rotary maintenance type leakage protector according to claim 1, wherein a bayonet (12) clamped and matched with the buckling clamping block (16) is formed in the return key (4), and an upper clamping surface (20) and a lower release bevel (19) are arranged on the bayonet (12).

3. The rotary maintenance type leakage protector according to claim 2, wherein an open slot (13) is formed in a side wall of the return rotating stop block (5) close to the driving iron core (23), the buckling clamping block (16) is arranged on a side wall opposite to the open slot (13), and the open slot (13) is configured to be clamped with the driving iron core (23).

4. The rotary maintenance type leakage protector according to claim 1, wherein a sliding slot (26) for the top-down insertion mounting of the return rotating stop block (5) to the base (1) is formed in a top of the base (1), the return rotating stop block (5) may move up and down relative to the sliding slot (26), and the return rotating stop block (5) may further rotate in the sliding slot (26) taking the extending end (15) as an axis.

5. The rotary maintenance type leakage protector according to claim 2, wherein, after the electromagnetic driving device (6) is de-energized, the driving iron core (23) releases the return rotating stop block (5), the return key (4) moves upwards under the action of the return spring (11), and in an upward movement process of the return key (4), the return rotating stop block (5) slides out along the lower release bevel (19) of the return key (4) and is released from clamping with the return key (4).

6. The rotary maintenance type leakage protector according to claim 1, wherein the power connection end (8) is a pin structure, comprising a neutral wire pin (22), a live wire pin (24) and an earth wire pin (25), the dome (7) comprises a neutral wire dome (17) and a live wire dome (18), the neutral wire pin (22) is in positional correspondence with the neutral wire dome (17), the live wire pin (24) is in positional correspondence with the live wire dome (18), and the earth wire pin (25) is conductively connected with an earth wire directly; and the two extending ends (15) are arranged at lower portions of the neutral wire dome (17) and the live wire dome (18), and the neutral wire dome (17) and the live wire dome (18) may be automatically displaced downwards under the action of own elasticity.

7. The rotary maintenance type leakage protector according to claim 1, wherein the power connection end (8) is a pin structure, comprising a neutral wire pin (22), a live wire pin (24) and an earth wire pin (25), the dome (7) comprises a neutral wire dome (17), a live wire dome (18) and an earth wire dome (34), the neutral wire pin (22) is in positional correspondence with the neutral wire dome (17), the live wire pin (24) is in positional correspondence with the live wire dome (18), and the earth wire pin (25) is in positional correspondence with the earth wire dome (34); the two extending ends (15) are arranged at lower portions of the neutral wire dome (17) and the live wire dome (18), and the neutral wire dome (17) and the live wire dome (18) may be automatically displaced downwards under the action of own elasticity; and an earth wire extending end (32) is arranged at a bottom of the return rotating stop block (5), the earth wire extending end (32) is arranged at a top of the earth wire dome (34) and configured to control the earth wire dome (34) to move downwards, and the earth wire dome (34) may be automatically displaced upwards under the action of own elasticity.

8. The rotary maintenance leakage protector according to claim 1, wherein the leakage protection device (2) further comprises a pressing guide block arranged on one side of the upper portion of the base (1) in a clamping manner, and a pressing end configured to fixedly press the power connection end (8) on the base (1) is arranged on the pressing guide block.

9. The rotary maintenance type leakage protector according to claim 1, wherein the power connection end (8) and the dome (7) are embedded to the base (1), and corresponding electrical connection con-

tacts (21) are arranged on the power connection end (8) and the dome (7); and an extending indication rod (14) is further arranged at one end of the return rotating stop block (5), and the indication rod (14) may rotate with the return rotating stop block (5) to further display a state of the leakage protector.

10. The rotary maintenance type leakage protector according to claim 1, wherein an auxiliary release spring (30) is further arranged at a bottom of the return key (4).

11. The rotary maintenance type leakage protector according to claim 6, wherein a bottom of the return key (4) penetrates through the return rotating stop block (5), and a jack (31) corresponding to the bottom of the return key (4) is formed in the base (1).

12. The rotary maintenance type leakage protector according to claim 7, wherein a bottom of the return key (4) penetrates through the return rotating stop block (5) and the earth wire dome (34), and a jack (31) corresponding to the bottom of the return key (4) is formed in the base (1).

13. The rotary maintenance type leakage protector according to claim 8, wherein an auxiliary earth wire return spring (37) is further arranged between the earth wire dome (34) and the base (1).

14. The rotary maintenance type leakage protector according to claim 7, wherein the earth wire extending ends (32) may turn off the neutral wire dome (17) and the live wire dome (18) prior to the earth wire dome (34).

15. The rotary maintenance type leakage protector according to claim 1, wherein return sliding slots (35) are further formed in sides of the return key (4), a sliding guide pillar (29) is further arranged in the return rotating stop block (5), and the return sliding slot (35) may be correspondingly matched with the sliding guide pillar (29).

16. The rotary maintenance type leakage protector according to claim 15, wherein a sliding slot transition bevel (36) is arranged at an upper portion of the return sliding slot (35); and in a downward pressing process of the return key (4), the sliding guide pillar (29) is matched with the return sliding slot (35) to slide and then slides out along the sliding slot transition bevel (36) to abut on a lateral surface of the return key (4) such that the return rotating stop block (5) rotates to a side where the electromagnetic driving device (6) is.

17. The rotary maintenance type leakage protector according to claim 1, further comprising European pins (40) and a shell (100), wherein

the leakage protection device (2) and the power connection end (8) are arranged at the upper portion of the base (1); the European pin (40) is arranged on the shell (100) in a penetration manner and located at a lower portion of the base (1); and
a top end of the European pin (40) is inserted from a bottom of the base (1) and fixedly riveted with the power connection end (8).

18. The rotary maintenance type leakage protector according to claim 17, wherein an outer wall of the European pin (40) is sleeved with a pin sleeve (41), an upper end of the pin sleeve (41) abuts on the bottom of the base (1), and a lower end of the pin sleeve (41) abuts on the shell (100);

wherein an upper fixed seat (45) corresponding to the European pin (40) is arranged at the bottom of the base (1), and a limiting hole (46) configured for the European pin (40) to penetrate through and be limited is formed in the upper fixed seat (45);
wherein a lower fixed seat (49) corresponding to the European pin (40) is arranged in the shell (100), and the pin sleeve (41) abuts on the lower fixed seat (49).

19. The rotary maintenance type leakage protector according to claim 20, wherein a lower portion of the pin sleeve (41) may be sleeved within the lower fixed seat (49), a sleeve shaft shoulder (44) is arranged in the middle of the pin sleeve (41), a seal ring (42) is further arranged on the pin sleeve (41), and the seal ring (42) is pressed between the sleeve shaft shoulder (44) and the lower fixed seat (49).

20. The rotary maintenance type leakage protector according to claim 17, wherein an earth wire connecting device (43) is arranged between the pin sleeves (41), an earth wire connecting sheet (48) is arranged in the earth wire connecting device (43), and the earth wire connecting device (43) is integrally formed by injection molding.

Amended claims in accordance with Rule 137(2) EPC.

1. A rotary maintenance type leakage protector, comprising a base (1), a leakage protection device (2) and an upper cover plate (3), wherein the leakage protection device (2) comprises a return key (4), a return rotating stop block (5), an electromagnetic driving device (6) and a dome (7); a power connection end (8) which may be electrically connected with

the dome (7) is further arranged on the base (1);

the return rotating stop block (5) is mounted to an upper portion of the base (1) in a manner of moving up and down, and extending ends (15) which may abut on the dome (7) are arranged on two sides of the return rotating stop block (5); the electromagnetic driving device (6) is arranged on one side of the upper portion of the base (1), a driving iron core (23) is arranged on the electromagnetic driving device (6), the driving iron core (23) extends from the electromagnetic driving device (6) and is movably clamped with a side wall of the return rotating stop block (5), and the electromagnetic driving device (6) may drive the driving iron core (23) to move, thereby driving the return rotating stop block (5) to rotate;

a buckling clamping block (16) is arranged on the return rotating stop block (5), the return key (4) is sleeved with a return spring (11), one end of the return spring (11) abuts on an upper portion of the upper cover plate (3), and the other end of the return spring (11) abuts on the return key (4); the return key (4) penetrates through the upper cover plate (3) to be inserted into the return rotating stop block (5);

the electromagnetic driving device (6) kept in an energised state may cause the driving iron core (23) to keep tightening the return rotating stop block (5) and keep the buckling clamping block (16) clamped with the return key (4) to further drive the return rotating stop block (5) to move synchronously, and the return key (4) may keep an energised state that the dome (7) contacts with the power connection end (8) through the return rotating stop block (5); and

after the electromagnetic driving device (6) kept in the energised state is de-energised, the driving iron core (23) releases the return rotating stop block (5), the buckling clamping block (16) is released from clamping with the return key (4), and the dome (7) is separated from the power connection end (8) to be de-energised under the action of own elasticity, **characterised in that** a bayonet (12) clamped and matched with the buckling clamping block (16) is formed in the return key (4), and an upper clamping surface (20) and a lower release bevel (19) are arranged on the bayonet (12).

2. The rotary maintenance type leakage protector according to claim 1, wherein an open slot (13) is formed in a side wall of the return rotating stop block (5) close to the driving iron core (23), the buckling clamping block (16) is arranged on a side wall opposite to the open slot (13), and the open slot (13) is configured to be clamped with the driving iron core (23).

3. The rotary maintenance type leakage protector according to claim 1, wherein a sliding slot (26) for the top-down insertion mounting of the return rotating stop block (5) to the base (1) is formed in a top of the base (1), the return rotating stop block (5) may move up and down relative to the sliding slot (26), and the return rotating stop block (5) may further rotate in the sliding slot (26) taking the extending end (15) as an axis.

4. The rotary maintenance type leakage protector according to claim 1, wherein, after the electromagnetic driving device (6) is de-energised, the driving iron core (23) releases the return rotating stop block (5), the return key (4) moves upwards under the action of the return spring (11), and in an upward movement process of the return key (4), the return rotating stop block (5) slides out along the lower release bevel (19) of the return key (4) and is released from clamping with the return key (4).

5. The rotary maintenance type leakage protector according to claim 1, wherein the power connection end (8) is a pin structure, comprising a neutral wire pin (22), a live wire pin (24) and an earth wire pin (25), the dome (7) comprises a neutral wire dome (17) and a live wire dome (18), the neutral wire pin (22) is in positional correspondence with the neutral wire dome (17), the live wire pin (24) is in positional correspondence with the live wire dome (18), and the earth wire pin (25) is conductively connected with an earth wire directly; and the two extending ends (15) are arranged at lower portions of the neutral wire dome (17) and the live wire dome (18), and the neutral wire dome (17) and the live wire dome (18) may be automatically displaced downwards under the action of own elasticity.

6. The rotary maintenance type leakage protector according to claim 1, wherein the power connection end (8) is a pin structure, comprising a neutral wire pin (22), a live wire pin (24) and an earth wire pin (25), the dome (7) comprises a neutral wire dome (17), a live wire dome (18) and an earth wire dome (34), the neutral wire pin (22) is in positional correspondence with the neutral wire dome (17), the live wire pin (24) is in positional correspondence with the live wire dome (18), and the earth wire pin (25) is in positional correspondence with the earth wire dome (34); the two extending ends (15) are arranged at lower portions of the neutral wire dome (17) and the live wire dome (18), and the neutral wire dome (17) and the live wire dome (18) may be automatically displaced downwards under the action of own elasticity; and an earth wire extending end (32) is arranged at a bottom of the return rotating stop block

(5), the earth wire extending end (32) is arranged at a top of the earth wire dome (34) and configured to control the earth wire dome (34) to move downwards, and the earth wire dome (34) may be automatically displaced upwards under the action of own elasticity.

7. The rotary maintenance leakage protector according to claim 1, wherein the leakage protection device (2) further comprises a pressing guide block arranged on one side of the upper portion of the base (1) in a clamping manner, and a pressing end configured to fixedly press the power connection end (8) on the base (1) is arranged on the pressing guide block.

8. The rotary maintenance type leakage protector according to claim 1, wherein the power connection end (8) and the dome (7) are embedded to the base (1), and corresponding electrical connection contacts (21) are arranged on the power connection end (8) and the dome (7); and an extending indication rod (14) is further arranged at one end of the return rotating stop block (5), and the indication rod (14) may rotate with the return rotating stop block (5) to further display a state of the leakage protector.

9. The rotary maintenance type leakage protector according to claim 1, wherein an auxiliary release spring (30) is further arranged at a bottom of the return key (4).

10. The rotary maintenance type leakage protector according to claim 5, wherein a bottom of the return key (4) penetrates through the return rotating stop block (5), and a jack (31) corresponding to the bottom of the return key (4) is formed in the base (1).

11. The rotary maintenance type leakage protector according to claim 6, wherein a bottom of the return key (4) penetrates through the return rotating stop block (5) and the earth wire dome (34), and a jack (31) corresponding to the bottom of the return key (4) is formed in the base (1).

12. The rotary maintenance type leakage protector according to claim 7, wherein an auxiliary earth wire return spring (37) is further arranged between the earth wire dome (34) and the base (1).

13. The rotary maintenance type leakage protector according to claim 6, wherein the earth wire extending ends (32) may turn off the neutral wire dome (17) and the live wire dome (18) prior to the earth wire dome (34).

14. The rotary maintenance type leakage protector according to claim 1, wherein return sliding slots (35) are further formed in sides of the return key (4), a sliding guide pillar (29) is further arranged in the return rotating stop block (5), and the return sliding slot (35) may be correspondingly matched with the sliding guide pillar (29).

15. The rotary maintenance type leakage protector according to claim 14, wherein a sliding slot transition bevel (36) is arranged at an upper portion of the return sliding slot (35); and in a downward pressing process of the return key (4), the sliding guide pillar (29) is matched with the return sliding slot (35) to slide and then slides out along the sliding slot transition bevel (36) to abut on a lateral surface of the return key (4) such that the return rotating stop block (5) rotates to a side where the electromagnetic driving device (6) is.

16. The rotary maintenance type leakage protector according to claim 1, further comprising European pins (40) and a shell (100), wherein

the leakage protection device (2) and the power connection end (8) are arranged at the upper portion of the base (1); the European pin (40) is arranged on the shell (100) in a penetration manner and located at a lower portion of the base (1); and

a top end of the European pin (40) is inserted from a bottom of the base (1) and fixedly riveted with the power connection end (8).

17. The rotary maintenance type leakage protector according to claim 16, wherein an outer wall of the European pin (40) is sleeved with a pin sleeve (41), an upper end of the pin sleeve (41) abuts on the bottom of the base (1), and a lower end of the pin sleeve (41) abuts on the shell (100);

wherein an upper fixed seat (45) corresponding to the European pin (40) is arranged at the bottom of the base (1), and a limiting hole (46) configured for the European pin (40) to penetrate through and be limited is formed in the upper fixed seat (45);

wherein a lower fixed seat (49) corresponding to the European pin (40) is arranged in the shell (100), and the pin sleeve (41) abuts on the lower fixed seat (49).

18. The rotary maintenance type leakage protector according to claim 17, wherein a lower portion of the pin sleeve (41) may be sleeved within the lower fixed seat (49), a sleeve shaft shoulder (44) is arranged in the middle of the pin sleeve (41), a seal ring (42) is further arranged on the pin sleeve (41), and the seal ring (42) is pressed between the sleeve shaft shoulder (44) and the lower fixed seat (49).

19. The rotary maintenance type leakage protector ac-

cording to claim 16, wherein an earth wire connecting device (43) is arranged between the pin sleeves (41), an earth wire connecting sheet (48) is arranged in the earth wire connecting device (43), and the earth wire connecting device (43) is integrally formed by injection moulding.

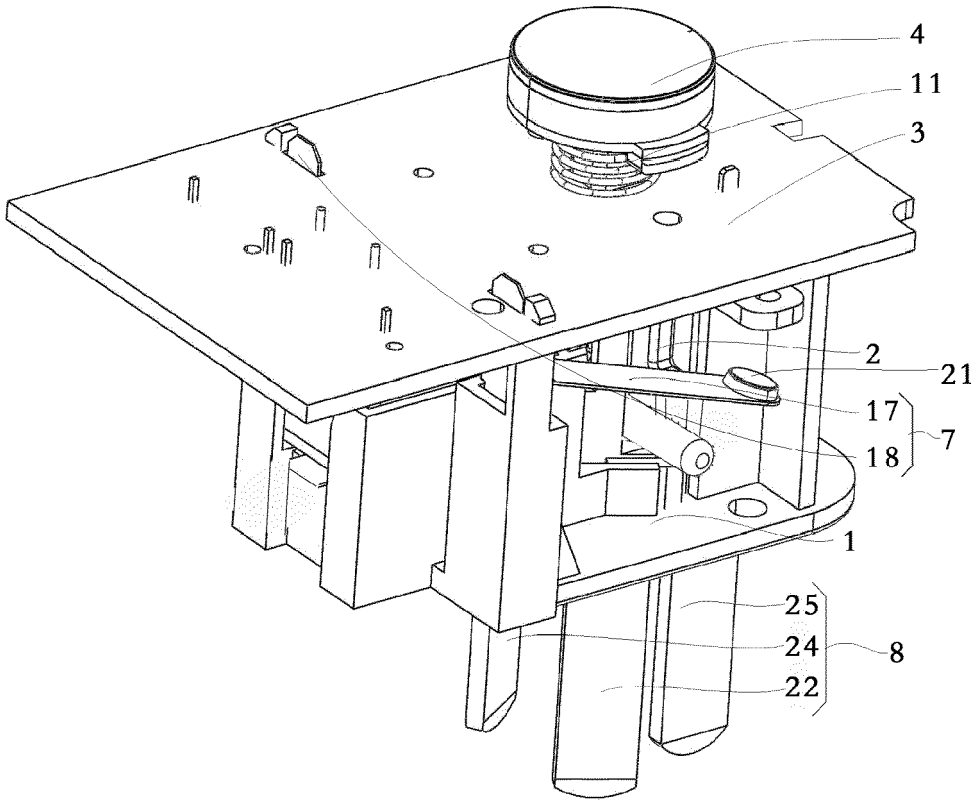


FIG. 1

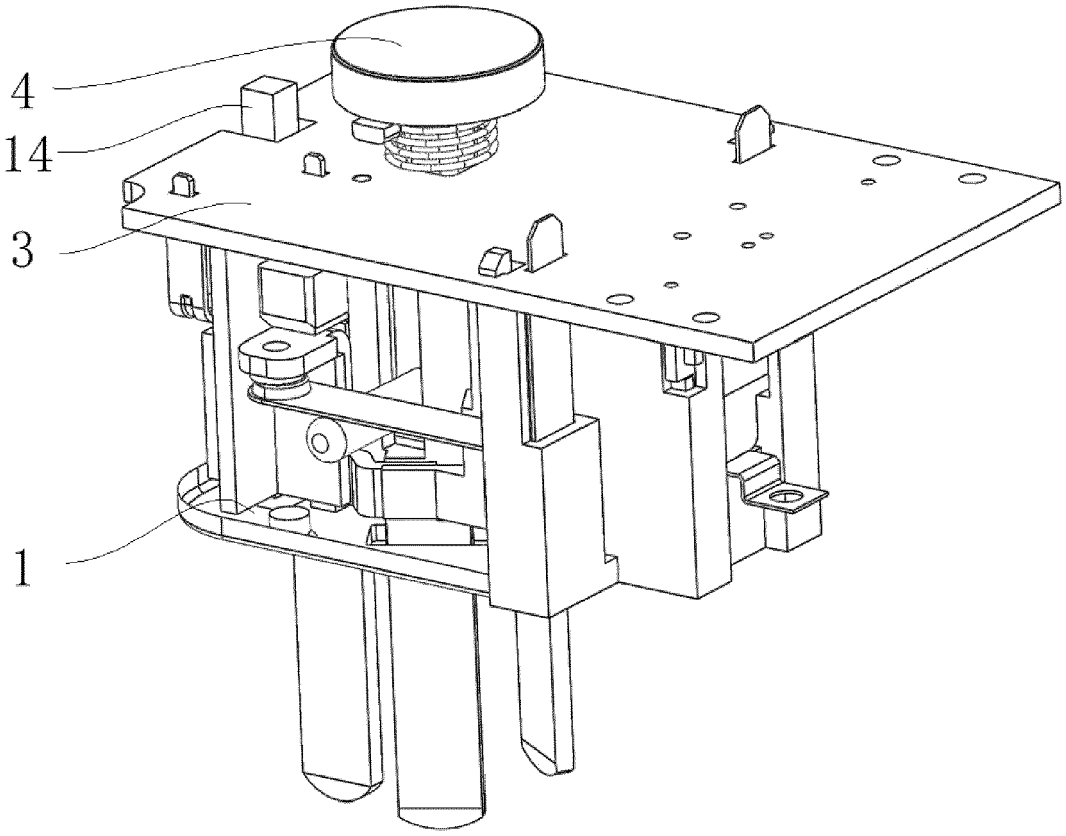


FIG. 2

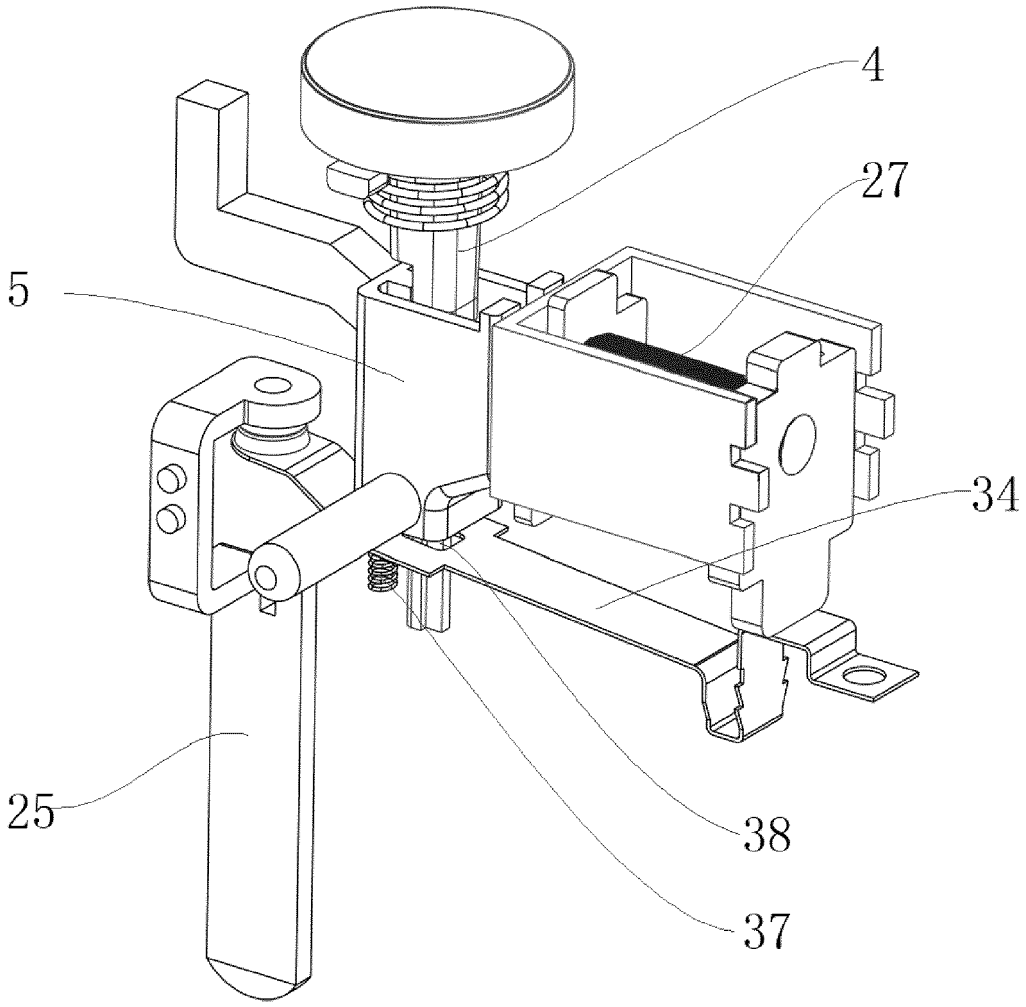


FIG. 3

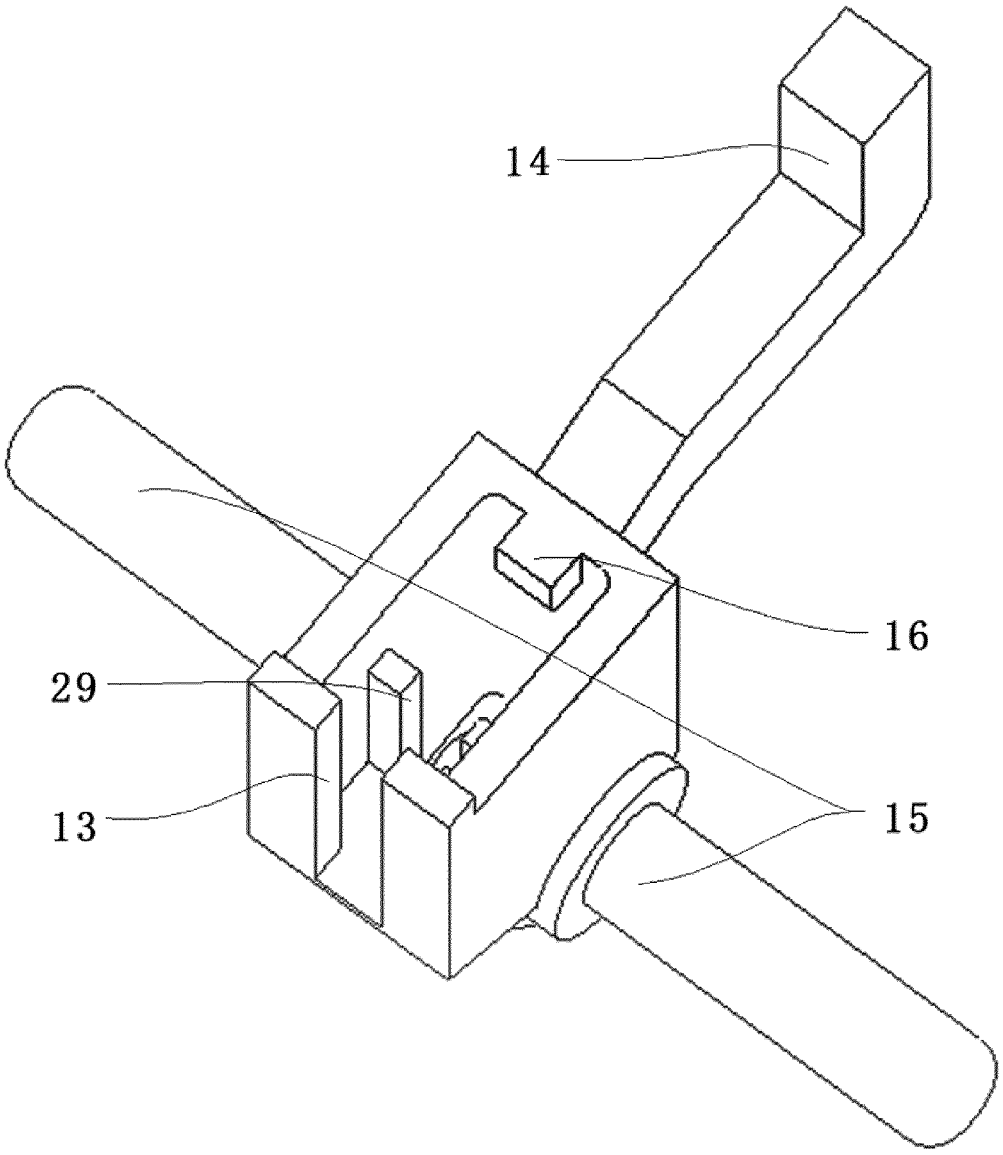


FIG. 4

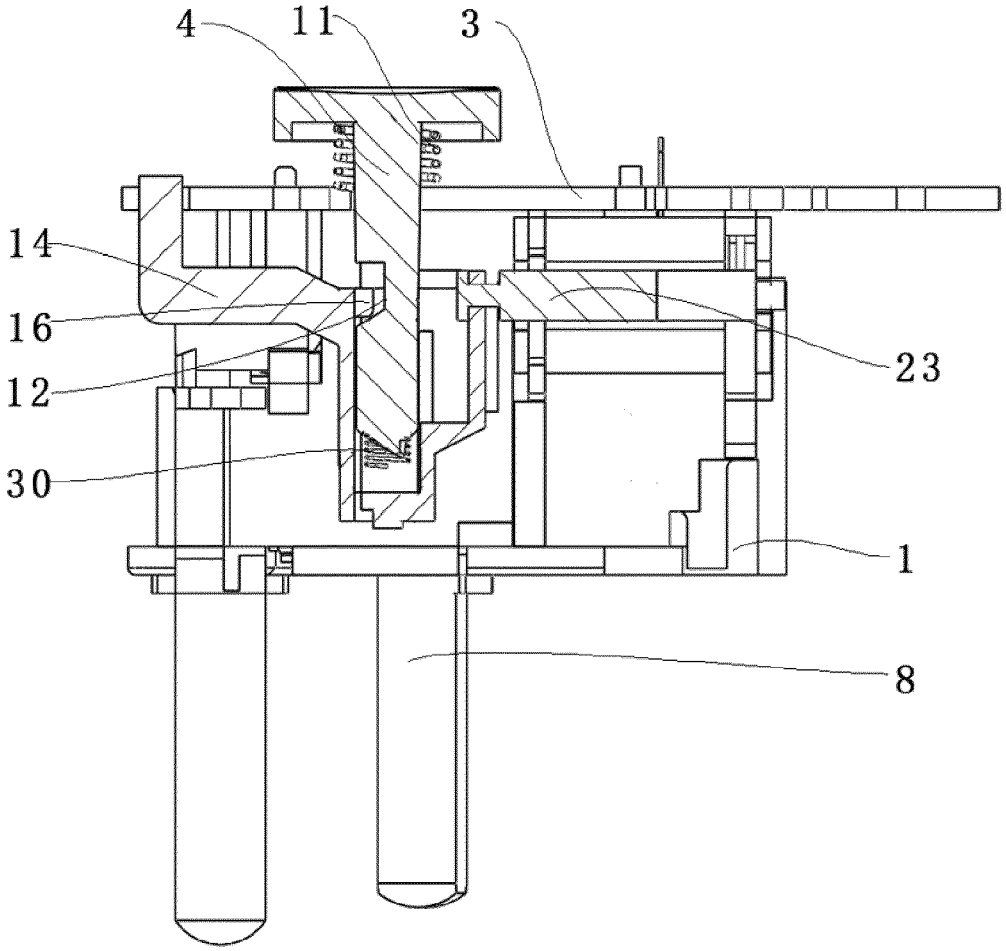


FIG. 5

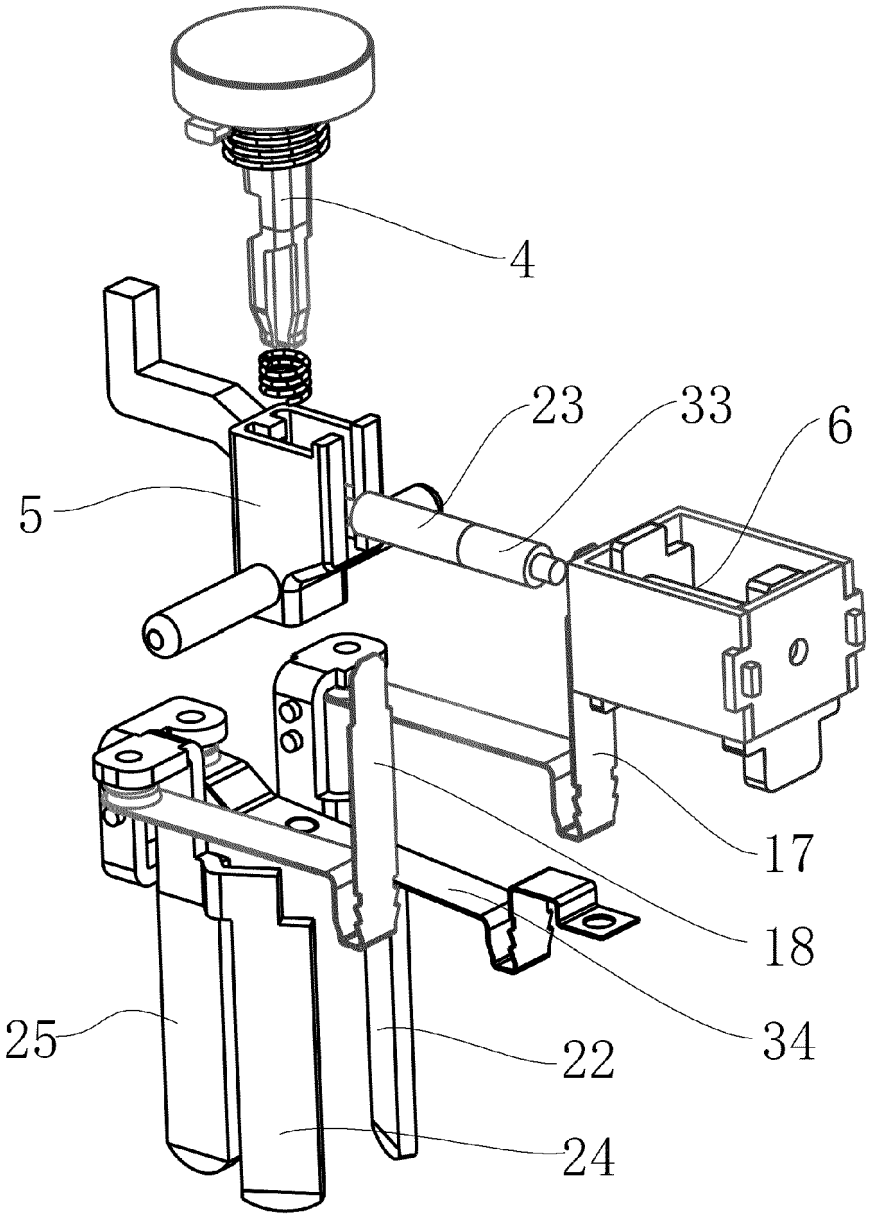


FIG. 6

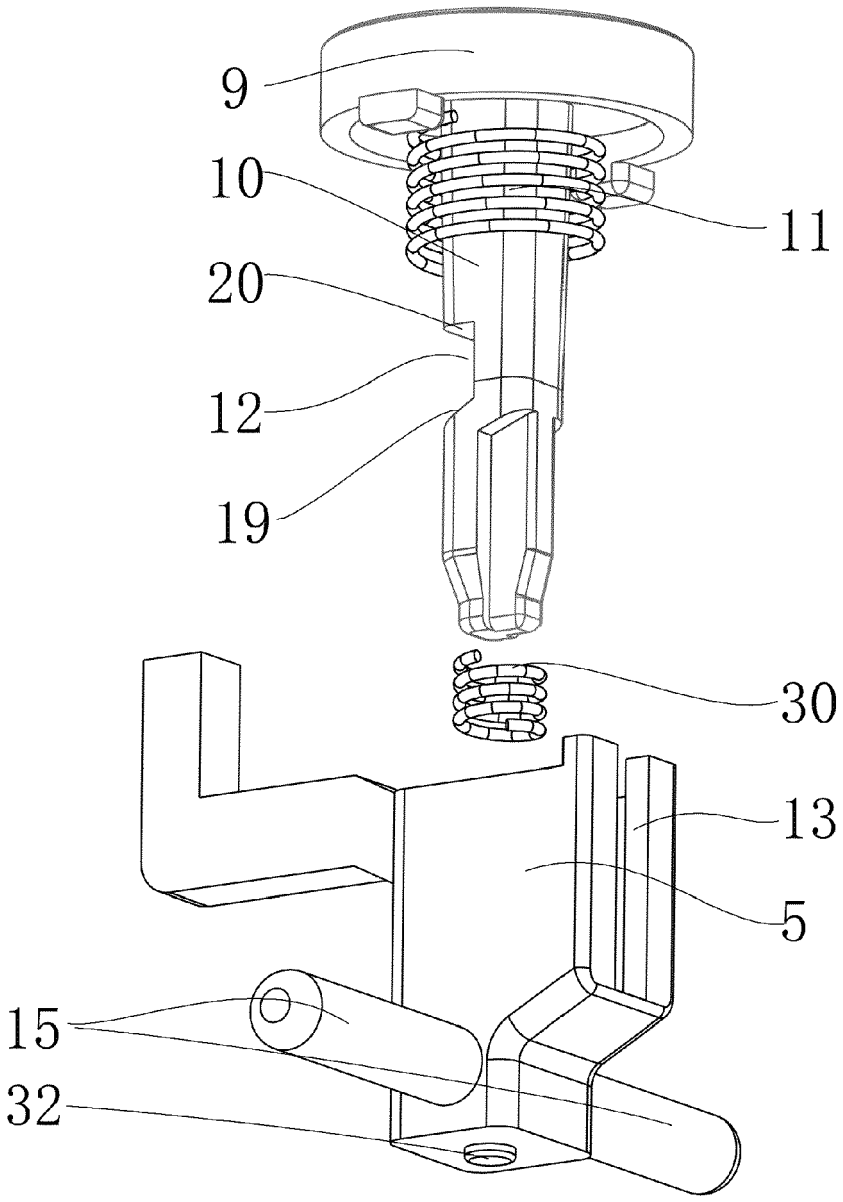


FIG. 7

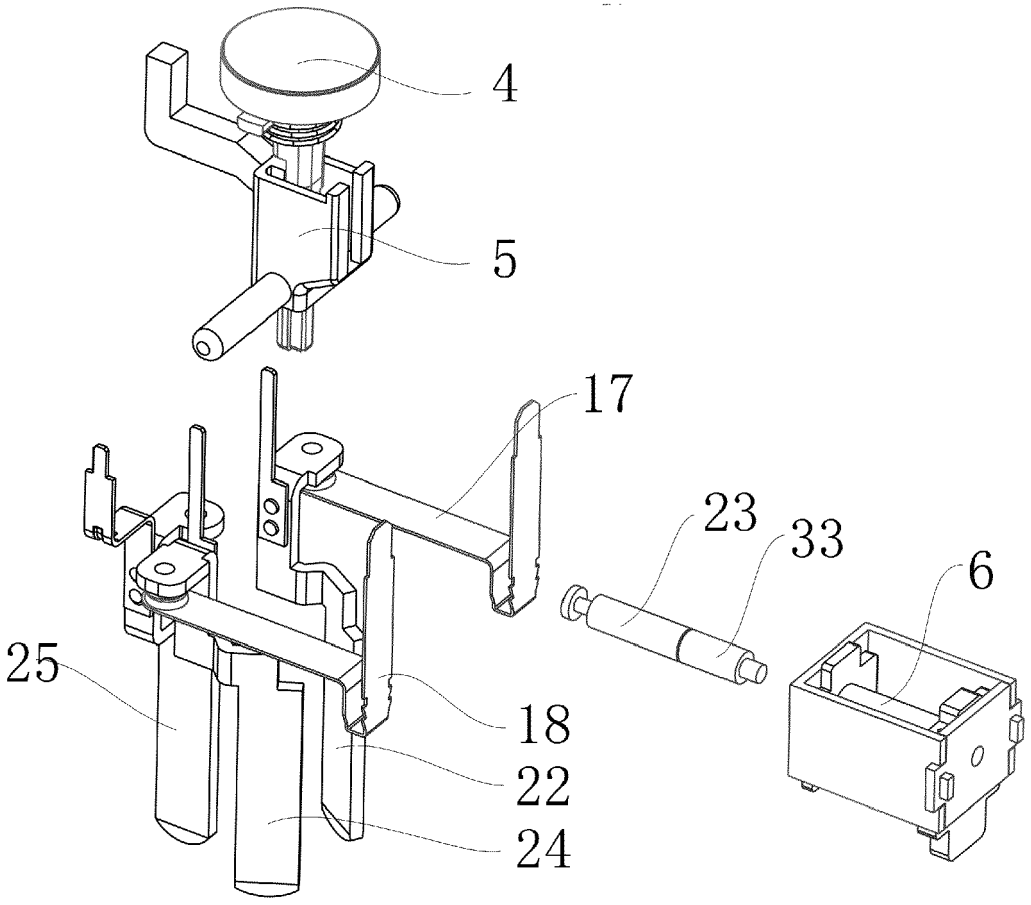


FIG. 8

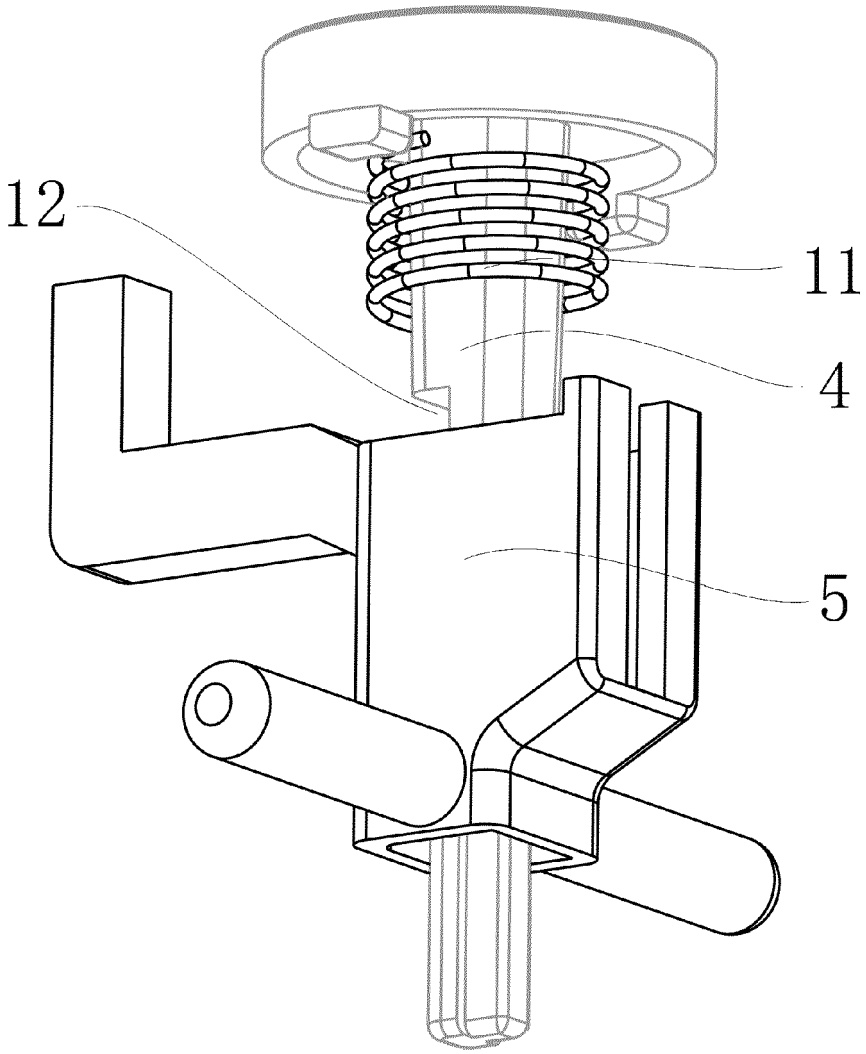


FIG. 9

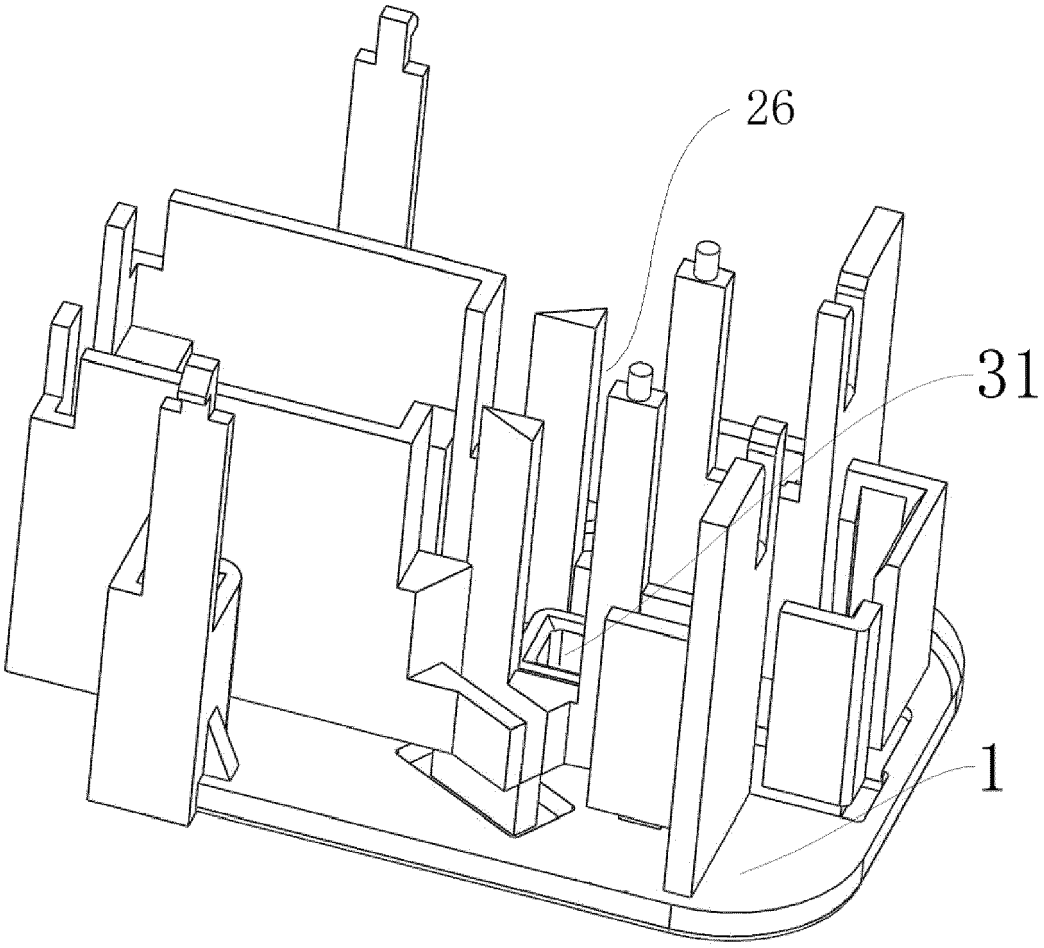


FIG. 10

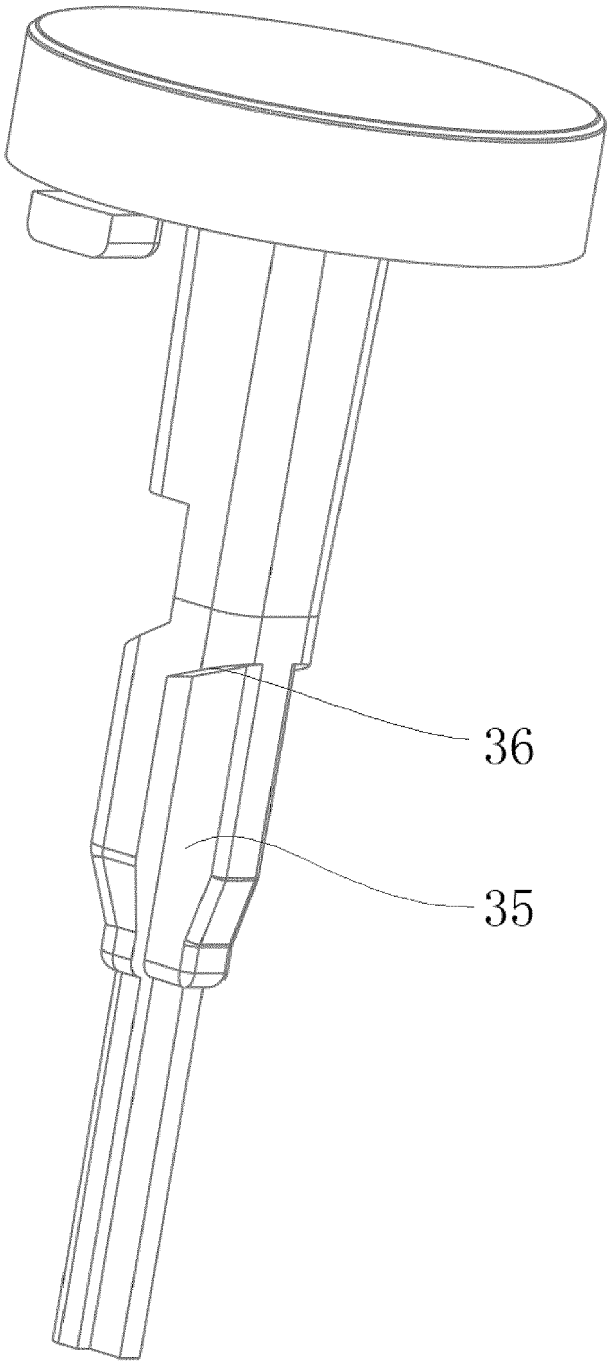


FIG. 11

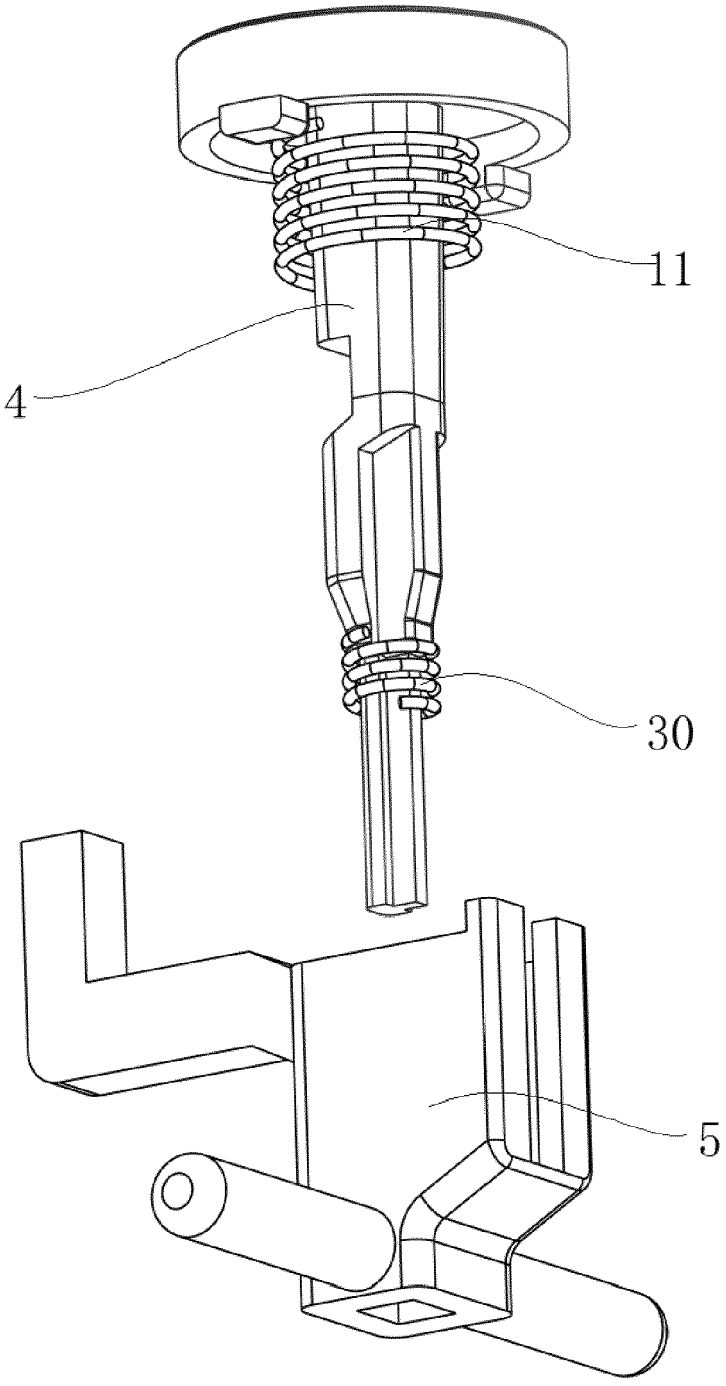


FIG. 12

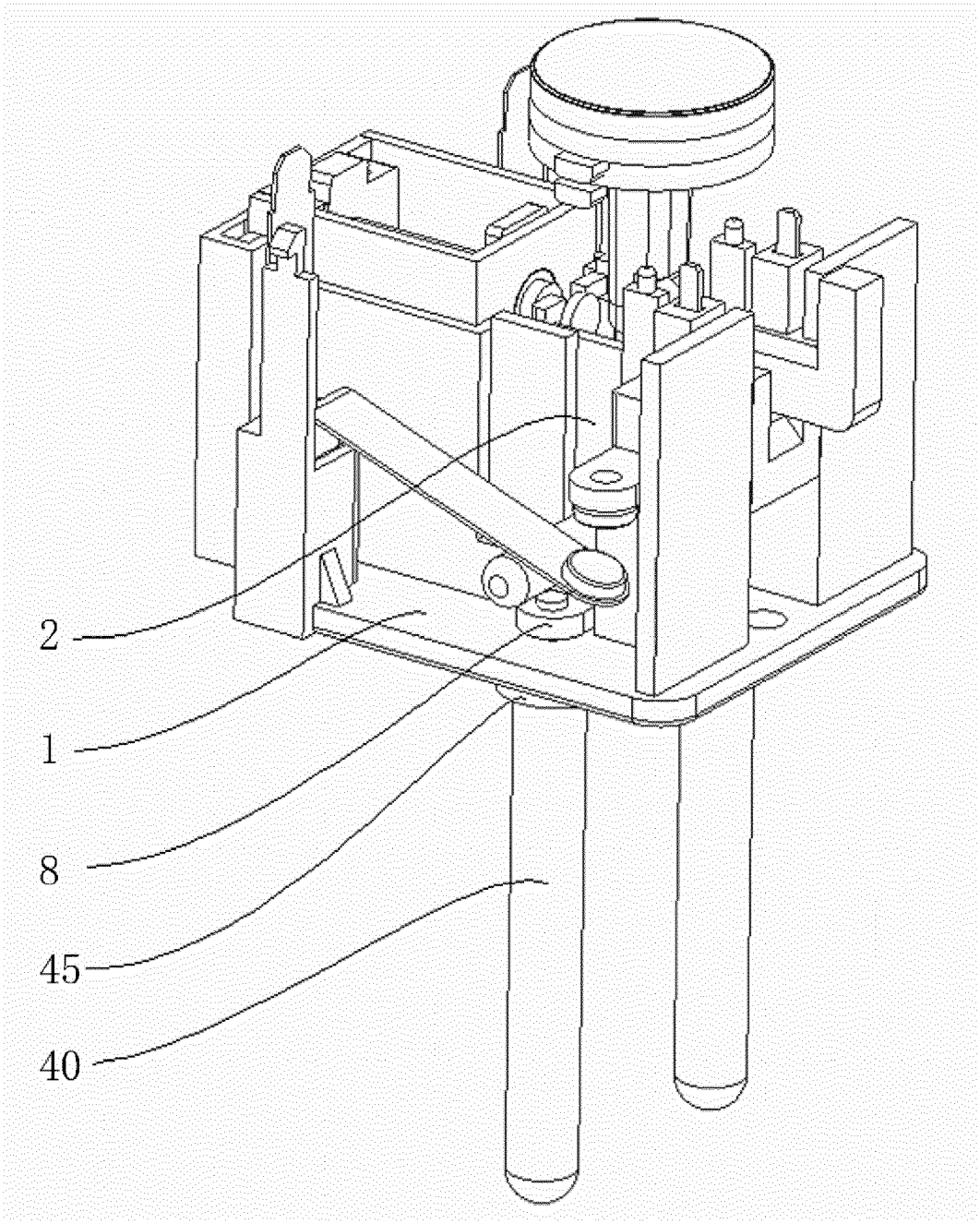


FIG. 13

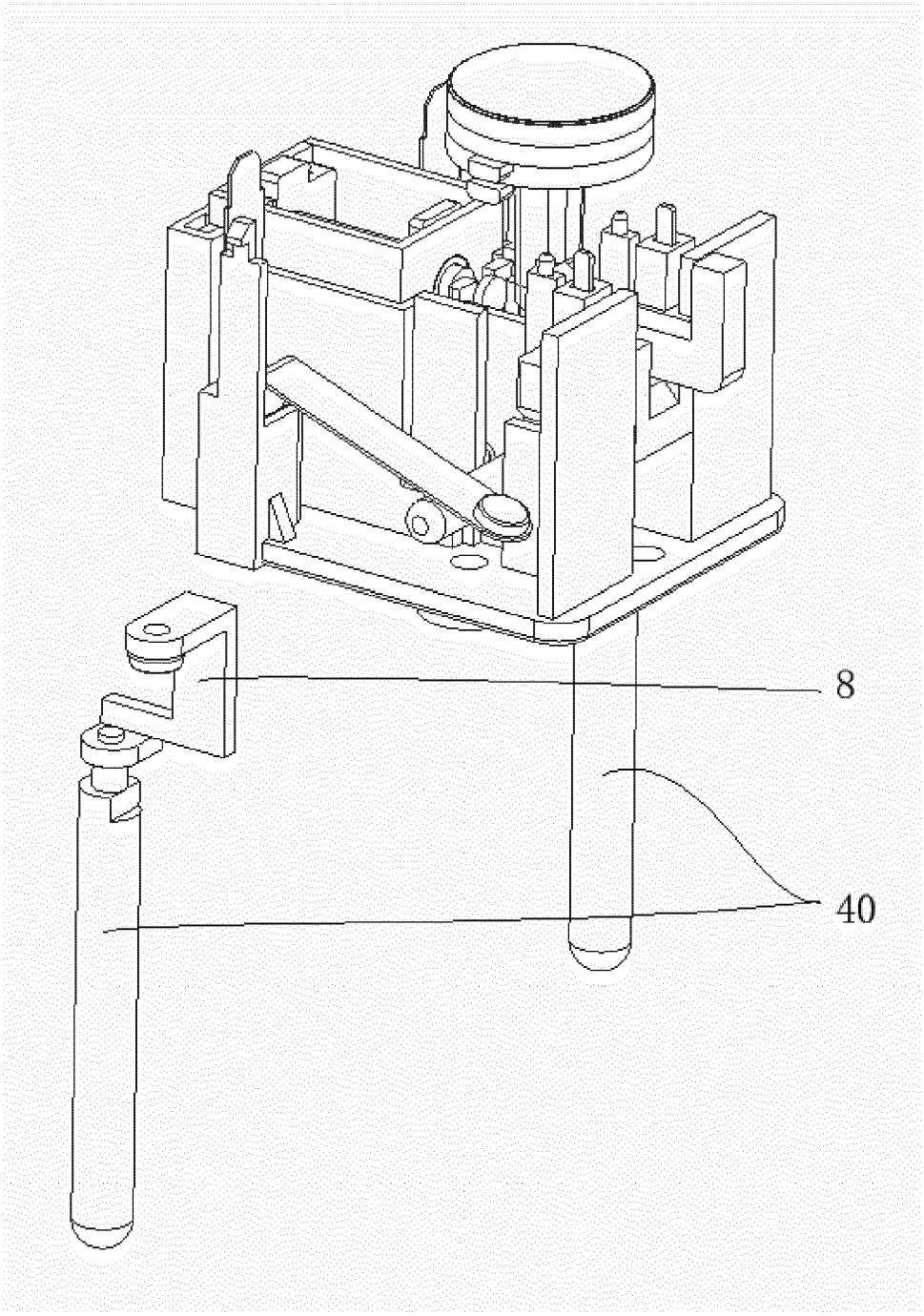


FIG. 14

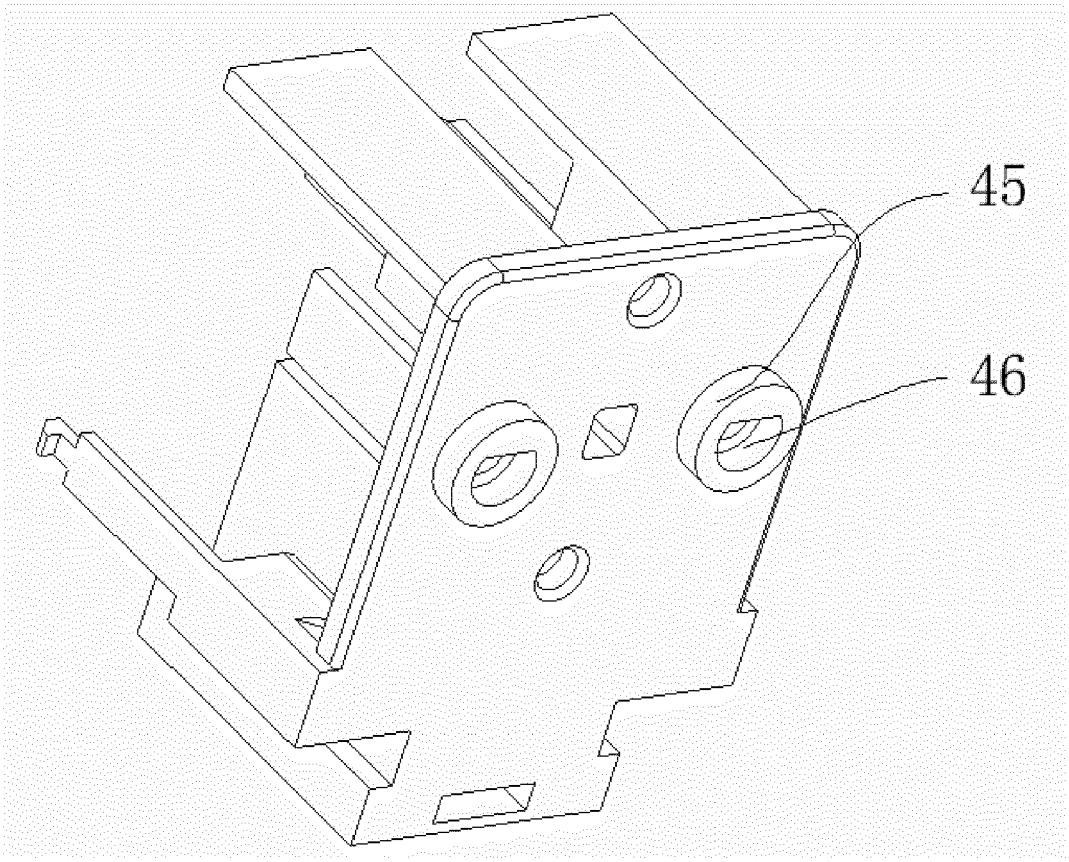


FIG. 15

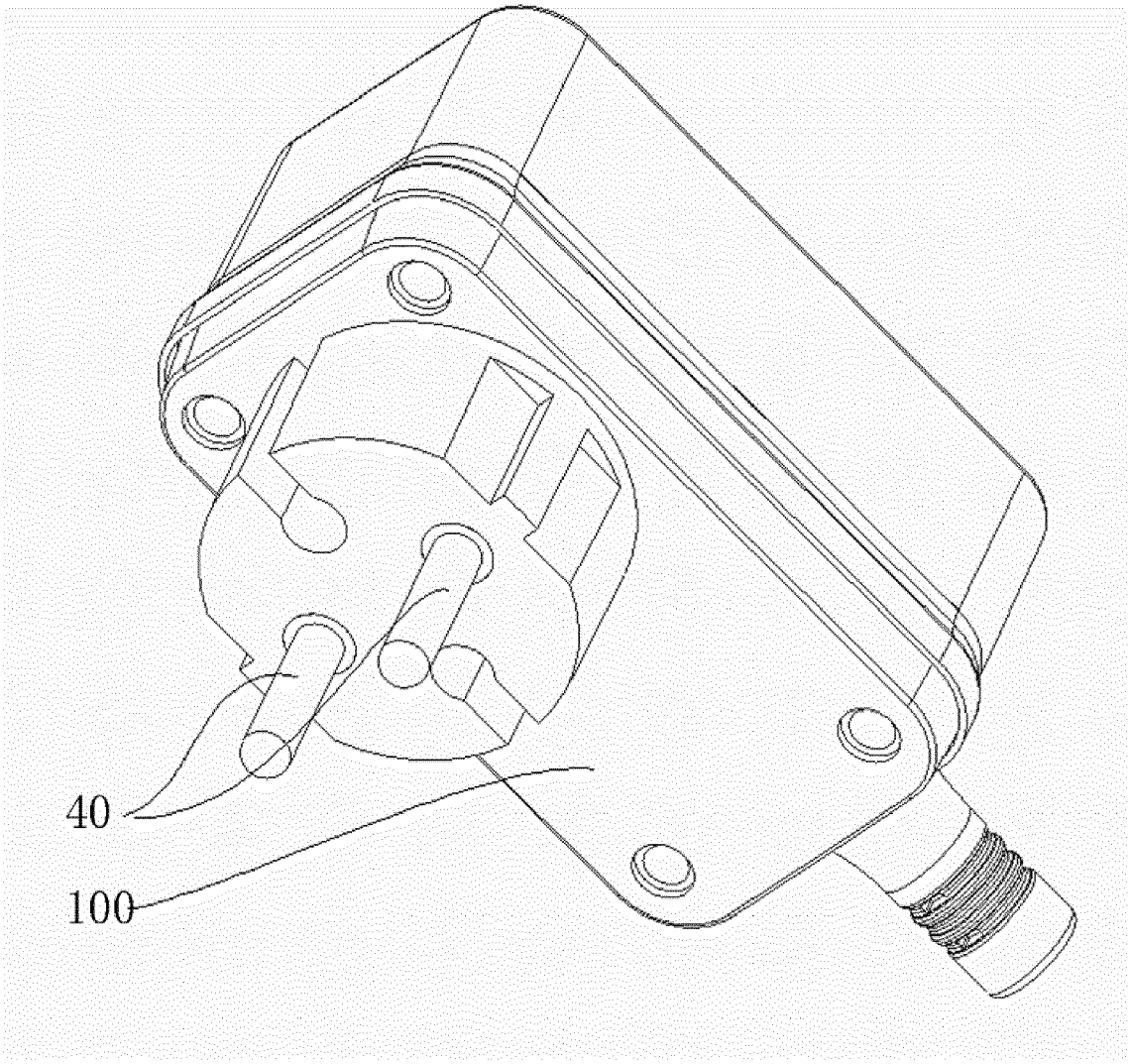
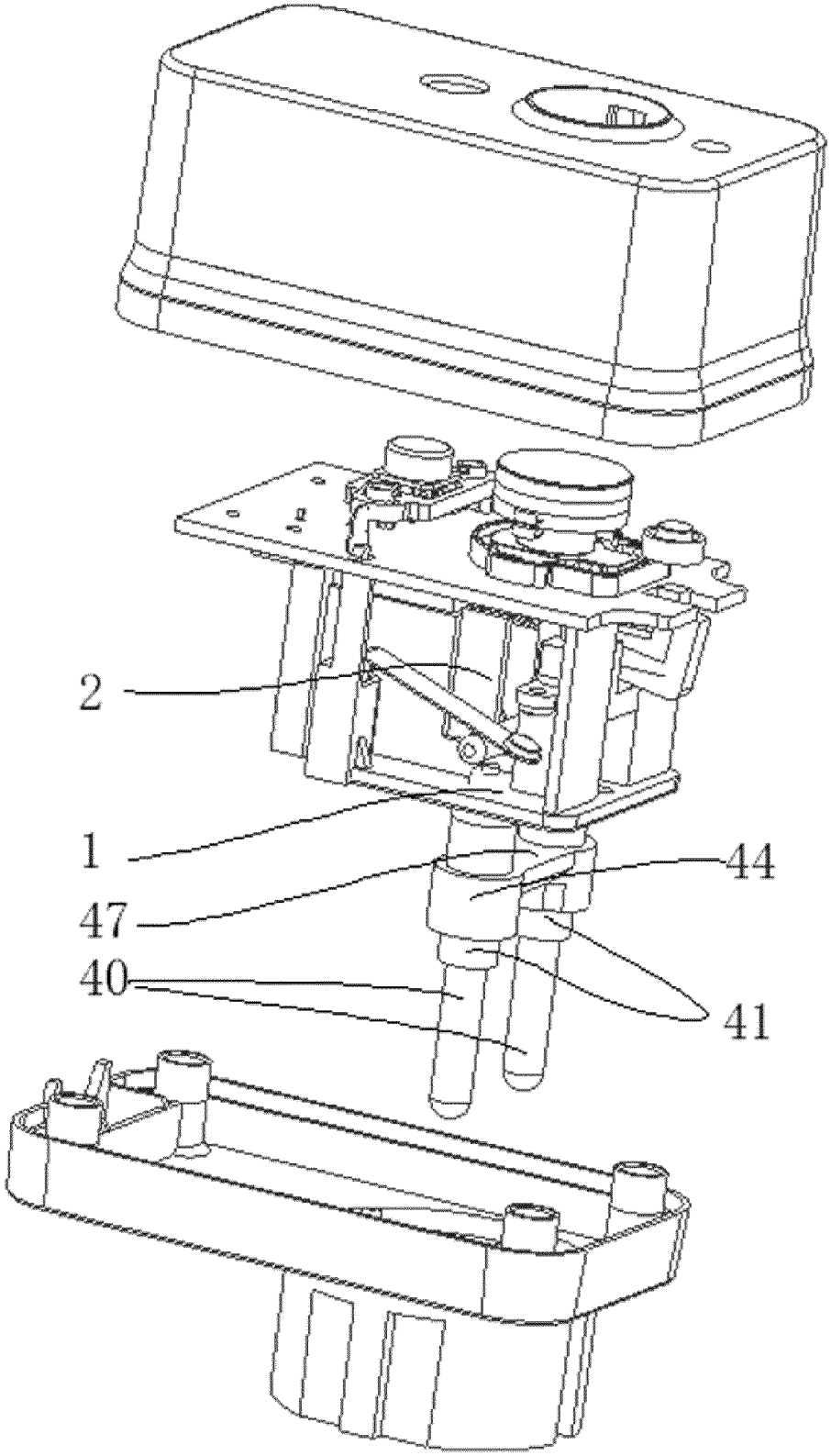


FIG. 16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1
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40
44
41

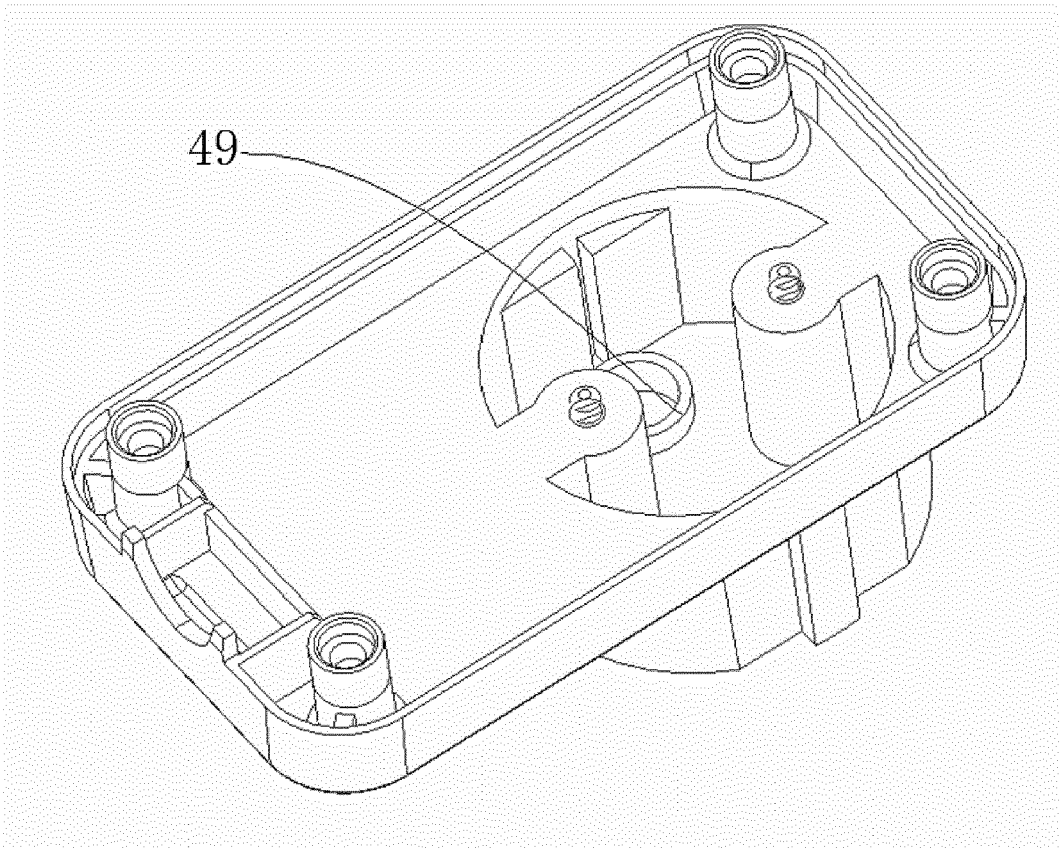

FIG. 18

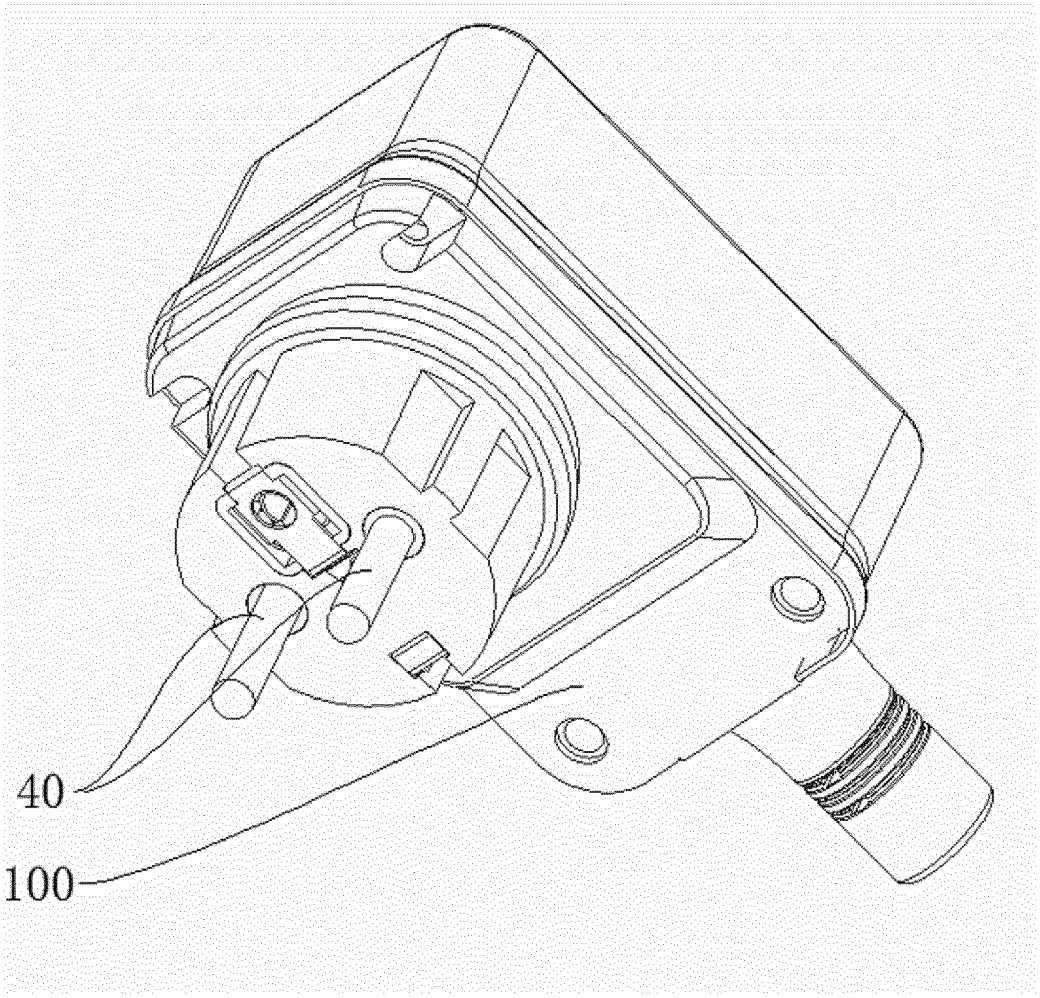

FIG. 19

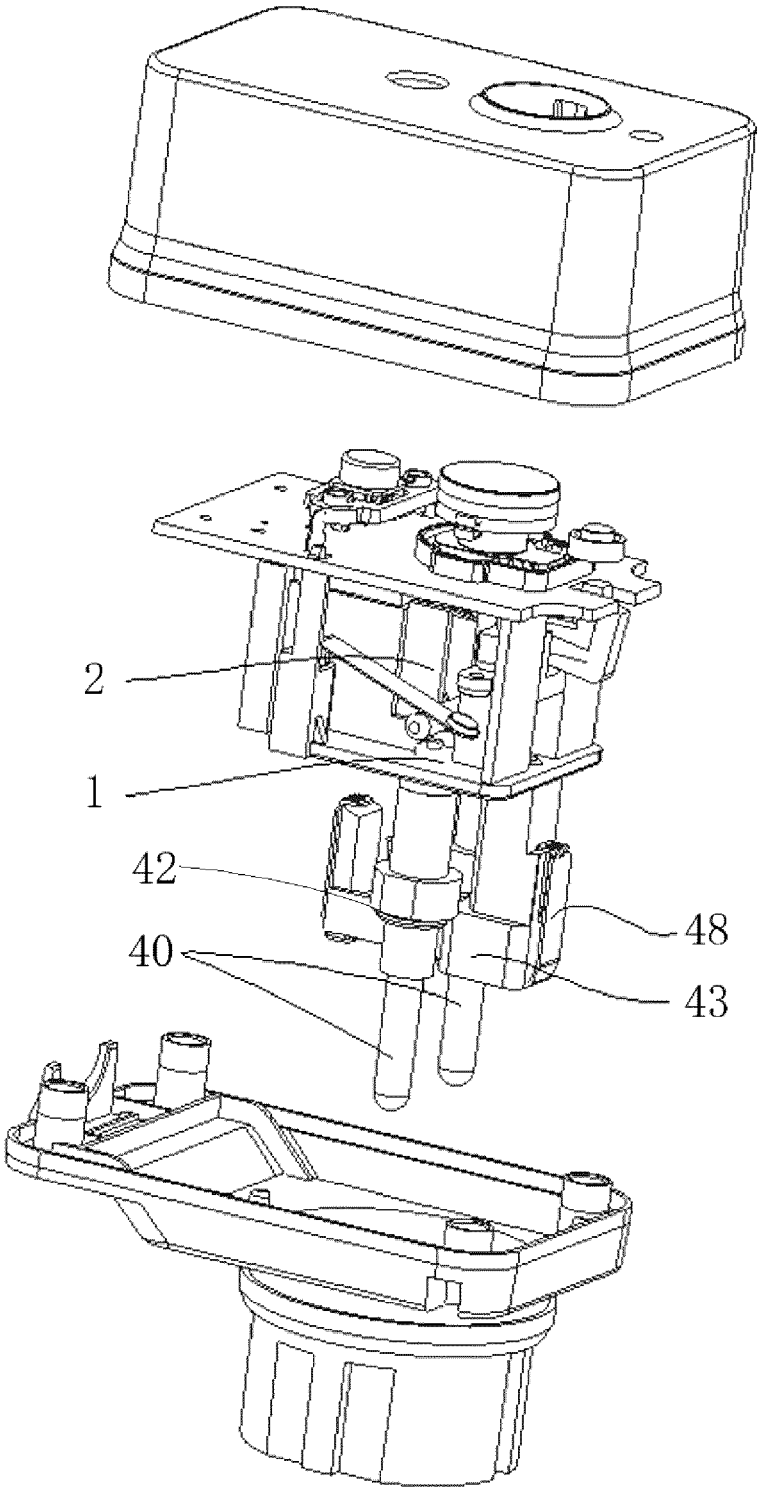

FIG. 20

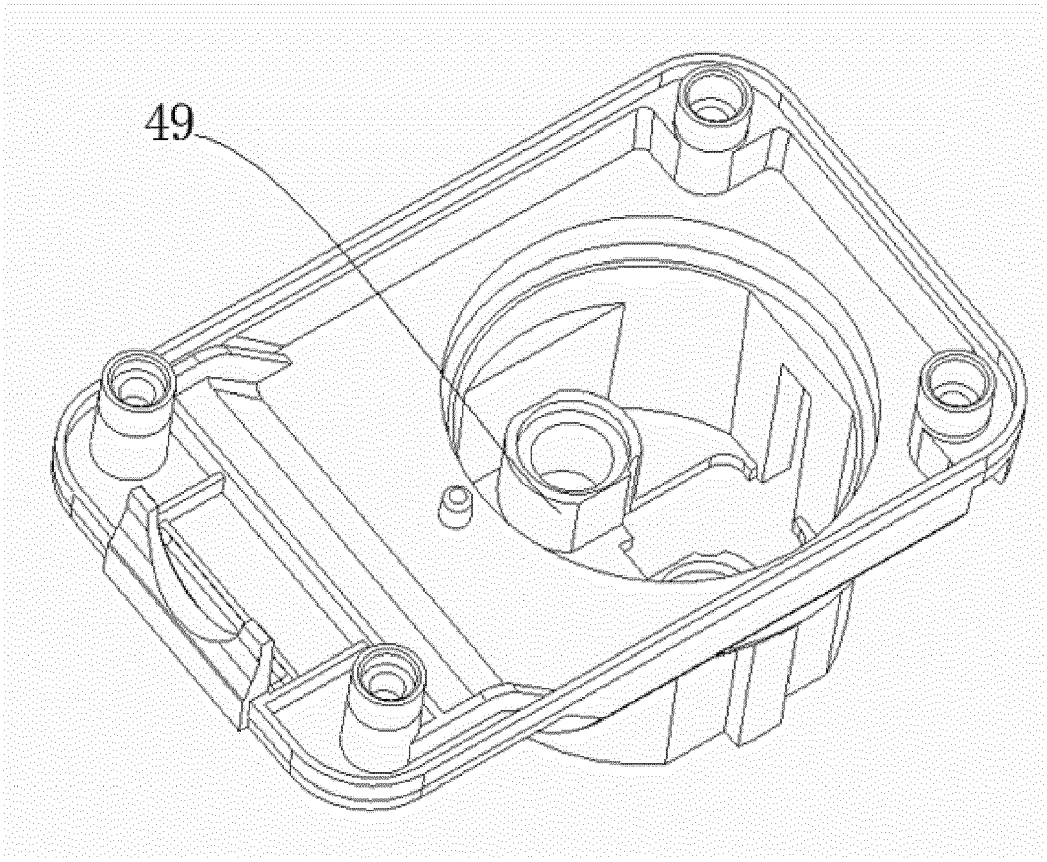

FIG. 21

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	CN 212 434 520 U (YUYAO JARON ELECTRONIC AND ELECTRICAL CO LTD) 29 January 2021 (2021-01-29) * figures * -----	1-20	INV. H01H83/02 H01H83/14 H01R13/713 H01R24/30
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A	CN 212 848 269 U (YUYAO JARON ELECTRONIC AND ELECTRICAL CO LTD) 30 March 2021 (2021-03-30) * figures * -----	1	

TECHNICAL FIELDS SEARCHED (IPC)
H01H
H01R

1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	2 March 2022	Findeli, Luc

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02-03-2022

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