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# (54) CIRCUIT BREAKER AND HOUSEHOLD APPLIANCE

(57) The present application discloses a circuit breaker and a household appliance. The circuit breaker includes a bearing member, a switch assembly and a trigger assembly. The switch assembly is arranged on the bearing member, and includes a first terminal and a second terminal. The first terminal is provided with a displaceable conduction end, and the conduction end is abutted against the second terminal; the trigger assembly is arranged on one side of the conduction end, and includes a temperature control trigger assembly and an electric signal trigger assembly. The temperature control trigger assembly and/or the electric signal trigger assembly can drive the conduction end to displace so as to be spaced apart from the second terminal.

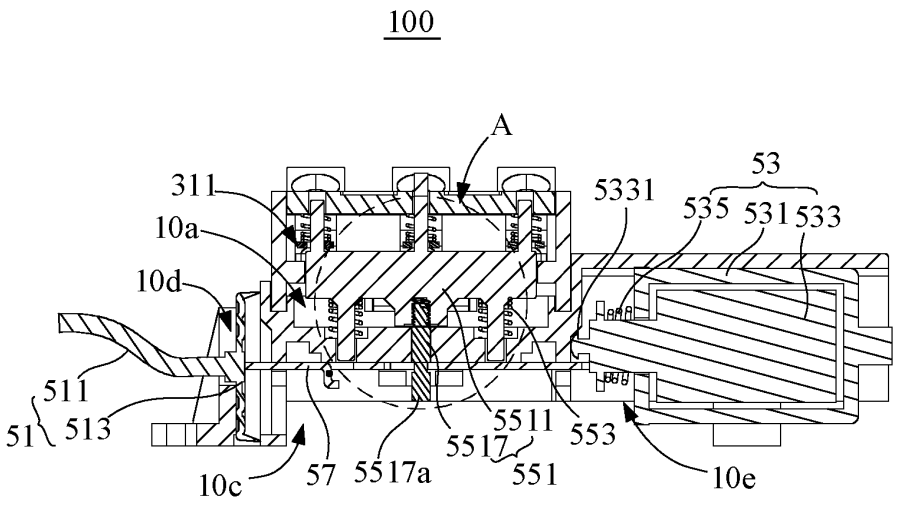



FIG. 1

EP 4 525 015 A1

## Description

**[0001]** The present application claims priority to Chinese Patent Applications No. 202322101797.1, filed on August 03, 2023, the entire contents of which are incorporated herein by reference.

## TECHNICAL FIELD

**[0002]** The present application relates to the technical field of household appliances, in particular to a circuit breaker and a household appliance.

## BACKGROUND

**[0003]** At present, some household appliances, such as water heaters and fan heaters, are equipped with circuit breakers. The circuit breaker is connected to the main circuit and is configured to cut off the power supply when an abnormal situation occurs to protect the safety of household appliances and users.

**[0004]** In the related art, household appliances are often equipped with temperature-controlled circuit breakers, which have an internal structure that can be deformed according to temperature changes to cut off the power supply to the heating tube when the temperature is too high. However, the function of the above-mentioned temperature-controlled circuit breaker is relatively single, and other circuit breakers need to be set up for power-off protection for other abnormal situations.

## SUMMARY

### TECHNICAL PROBLEM

**[0005]** The main purpose of the present application is to provide a circuit breaker to achieve multifunctional circuit breaker protection.

### TECHNICAL SOLUTION

**[0006]** In order to achieve the above purpose, the present application provides a circuit breaker, characterized by comprising: a bearing member, a switch assembly and a trigger assembly.

**[0007]** In an embodiment, the switch assembly is arranged on the bearing member and comprises a first terminal and a second terminal; the first terminal is provided with a displaceable conduction end, and the conduction end is abutted against the second terminal.

**[0008]** In an embodiment, the trigger assembly is arranged on one side of the conduction end and comprises a temperature control trigger assembly and an electric signal trigger assembly.

**[0009]** In an embodiment, the temperature control trigger assembly and/or the electric signal trigger assembly is enabled to drive the conduction end to be displaced so as to be spaced apart from the second terminal.

**[0010]** In an embodiment, the trigger assembly further comprises a motion assembly; the motion assembly is arranged on one side of the conduction end, and is configured to be driven by an active end of the temperature control trigger assembly and/or an active end of the electric signal trigger assembly to drive the conduction end to move.

**[0011]** In an embodiment, the motion assembly comprises: a circuit breaker assembly and a transmission member.

**[0012]** In an embodiment, the circuit breaker assembly is arranged on one side of the conduction end.

**[0013]** In an embodiment, the transmission member is connected with the active end of the temperature control trigger assembly and the active end of the electric signal trigger assembly; the transmission member is operatively connected with the circuit breaker assembly.

**[0014]** In an embodiment, the transmission member is driven to move by at least one of the active ends, so that the transmission member is configured to drive the circuit breaker assembly to drive the conduction end to move.

**[0015]** In an embodiment, the bearing member is provided with a movable cavity, and the conduction end and the circuit breaker assembly are arranged in the movable cavity.

**[0016]** In an embodiment, the transmission member is arranged on one side of the movable cavity and is operatively connected with the circuit breaker assembly.

**[0017]** In an embodiment, the circuit breaker assembly comprises: a circuit breaker body and a first elastic member.

**[0018]** In an embodiment, the circuit breaker body is movably arranged in the movable cavity and provided with a connection end exposed outside the movable cavity.

**[0019]** In an embodiment, the connection end is loosely connected to the transmission member.

**[0020]** In an embodiment, the first elastic member is connected to an inner wall of the movable cavity and the circuit

breaker body.

**[0021]** In an embodiment, a movement of the transmission member is configured to make the circuit breaker body loose, and the first elastic member is configured to drive the circuit breaker body close to the conduction end and drive the conduction end to move.

**[0022]** In an embodiment, the transmission member is provided with a limitation structure.

**[0023]** In an embodiment, the connection end is engaged with the limitation structure, or the transmission member is configured to move so that the connection end is spaced apart from the limitation structure.

**[0024]** In an embodiment, the connection end is provided with a slot, and the limitation structure is a slot hole.

**[0025]** In an embodiment, the connection end is passed through the slot hole, and a side wall of the slot hole extends into the slot, or the transmission member is configured to move so that the side wall of the slot hole is spaced from the slot.

**[0026]** In an embodiment, one end of the transmission member is connected to the active end of the temperature control trigger assembly, and the other end of the transmission member is connected to the active end of the electric signal trigger assembly; the two ends of the transmission member is configured to move translationally under a drive of at least one of the active ends.

**[0027]** In an embodiment, the circuit breaker further comprises a torsion spring; one end of the torsion spring is connected to the bearing member, and the other end of the torsion spring is connected to the transmission member, for driving the transmission member to reset.

**[0028]** In an embodiment, the switch assembly comprises a plurality of first terminals and a plurality of second terminals arranged side by side and corresponding to each other, and the circuit breaker body comprises: a trigger block and a connection rod.

**[0029]** In an embodiment, the trigger block is movably arranged in the movable cavity and configured to extend along an arrangement direction of the plurality of first terminals.

**[0030]** In an embodiment, the first elastic member is connected to the trigger block, and the trigger block is configured to drive the plurality of conduction ends to move.

**[0031]** In an embodiment, the connection rod is connected to the trigger block; one end of the connection rod away from the trigger block is the connection end.

**[0032]** In an embodiment, the bearing member is further provided with a terminal slot, and the conduction end is arranged in the terminal slot; the circuit breaker further comprises a second elastic member.

**[0033]** In an embodiment, an elastic coefficient of the second elastic member is less than an elastic coefficient of the first elastic member; one end of the second elastic member is connected to the conduction end, and the other end of the second elastic member is connected to a bottom wall of the terminal slot.

**[0034]** In an embodiment, the bottom wall of the terminal slot is provided with an avoidance hole, and the conduction end is provided with a positioning hole; the circuit breaker body is provided with a positioning rod.

**[0035]** In an embodiment, the positioning rod is passed through the positioning hole and the avoidance hole; the second elastic member is a spring, and the second elastic member is sleeved on the positioning rod.

**[0036]** In an embodiment, the circuit breaker body is also provided with a guide rod, and the bearing member is also provided with a guide hole communicated to the movable cavity; the guide rod is passed through the guide hole.

**[0037]** In an embodiment, the first elastic member is a spring, and the first elastic member is sleeved on the guide rod.

**[0038]** In an embodiment, the first terminal also comprises a terminal body; the terminal body is connected to the bearing member, and a connection gap is provided between the terminal body and the second terminal.

**[0039]** In an embodiment, the conduction end is provided at the connection gap; one end of the conduction end is bendably connected to the terminal body, and the other end of the conduction end is connected in an overlapping manner with the second terminal.

**[0040]** In an embodiment, the circuit breaker assembly is configured to drive the conduction end to bend so as to be spaced from the second terminal.

**[0041]** In an embodiment, the bearing member is further provided with a first receiving slot and a second receiving slot; the first receiving slot is provided close to one end of the transmission member, and the second receiving slot is provided on one side of the transmission member or close to one end of the transmission member away from the first receiving slot.

**[0042]** In an embodiment, the temperature control trigger assembly is provided in the first receiving slot, and the electric signal trigger assembly is provided in the second receiving slot.

**[0043]** In an embodiment, the temperature control trigger assembly comprises a temperature sensing structure and a motion structure; the temperature sensing structure is configured to sense temperature and drive the motion structure to move.

**[0044]** In an embodiment, an active end of the motion structure is connected to one end of the transmission member.

**[0045]** In an embodiment, the electric signal trigger assembly comprises a signal receiving structure and an electromagnetic structure; the signal receiving structure is configured to receive a trigger signal.

**[0046]** In an embodiment, and the electromagnetic structure comprises a housing, a magnetic member and a third elastic member.

**[0047]** In an embodiment, the housing is provided with a receiving cavity with an opening on one side, and the magnetic member is movably arranged in the receiving cavity; one end of the magnetic member is passed through the opening, and a hook is provided.

**[0048]** In an embodiment, the hook is connected to one end of the transmission member, and the third elastic member is connected to an outer peripheral side of the opening and the hook.

**[0049]** The present application also provides a household appliance, characterized by comprising: the circuit breaker.

## TECHNICAL EFFECT

**[0050]** In the technical solution of the present application, the switch assembly is arranged on the bearing member; the first terminal is connected to the second terminal through the conduction end; the trigger assembly comprises a temperature control circuit assembly and an electric signal trigger assembly; both the temperature control trigger assembly and the electric signal trigger assembly are provided with active ends; the conduction end can be driven to move directly or indirectly by at least one active end to disconnect the connection with the second terminal, thereby cutting off the circuit. The electric signal trigger assembly and the temperature control circuit assembly are arranged to perform a circuit breaking operation. On the one hand, the electric signal trigger assembly can also drive the conduction end to move to disconnect the circuit when receiving an abnormal temperature signal, thereby further realizing the insurance effect for the scheme of transmitting a single temperature control circuit breaker, avoiding the safety hazard caused by the failure of the temperature control trigger assembly and the inability to disconnect the circuit in time; on the other hand, the electric signal trigger assembly can also disconnect the circuit when receiving a trigger signal, and the diversified trigger signals can realize circuit breaking protection in various situations, thereby improving the functionality and usability of the circuit breaker.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0051]** In order to more clearly illustrate the technical solutions in the embodiments of the present application or the related art, the following will briefly introduce the drawings that need to be used in the description of the embodiments or the related art. Obviously, the accompanying drawings in the following description are only some embodiments of the present application, and those skilled in the art can also obtain other drawings according to the structures shown in these drawings without creative effort.

FIG. 1 is a schematic diagram of a structure of a circuit breaker according to an embodiment of the present application.
FIG. 2 is a schematic diagram of the cross-sectional structure of the circuit breaker in FIG. 1.
FIG. 3 is an enlarged schematic diagram of the structure at A in FIG. 2.
FIG. 4 is a schematic diagram of a structure of a circuit breaker assembly in FIG. 3.
FIG. 5 is a schematic diagram of the structure of the circuit breaker in FIG. 1 from another angle.
FIG. 6 is an enlarged schematic diagram of the structure at B in FIG. 5.
FIG. 7 is a schematic diagram of the structure of the circuit breaker according to another embodiment of the present application.
FIG. 8 is a schematic diagram of the cross-sectional structure of the circuit breaker in FIG. 7.
FIG. 9 is a schematic diagram of the exploded structure of the circuit breaker in FIG. 7.

**[0052]**

Explanation of reference signs:

| reference sign | name | reference sign | name |
|---|---|---|---|
| 100 | circuit breaker | 513 | motion structure |
| 10 | bearing member | 53 | electric signal trigger assembly |
| 10a | movable cavity | 531 | housing |
| 10b | terminal slot | 533 | a magnetic member |
| 10c | mounting slot | 5331 | a hook |
| 10d | first receiving slot | 535 | third elastic member |
| 10e | second receiving slot | 55 | circuit breaker assembly |
| 11 | limit block | 551 | circuit breaker body |

(continued)

| reference sign | name | reference sign | name |
|---|---|---|---|
| 13 | first shell | 5511 | trigger block |
| 131 | cover plate | 5513 | positioning rod |
| 133 | housing body | 5515 | guide rod |
| 15 | second shell | 5517 | connection rod |
| 30 | switch assembly | 5517a | connection end |
| 31 | first terminal | 5517b | slot |
| 311 | conduction end | 553 | first elastic member |
| 33 | second terminal | 555 | second elastic member |
| 50 | trigger assembly | 57 | transmission member |
| 51 | temperature control trigger assembly | 57a | slot hole |
| 511 | temperature sensing structure | 571 | torsion spring |

**[0053]** The realization, functional features and advantages of the present application will be further described in conjunction with the embodiments and with reference to the accompanying drawings.

## DETAILED DESCRIPTION OF THE EMBODIMENTS

**[0054]** The following will clearly and completely describe the technical solutions in the embodiments of the present application with reference to the accompanying drawings in the embodiments of the present application. Obviously, the described embodiments are only part of the embodiments of the present application, not all of them. Based on the embodiments in the present application, all other embodiments obtained by those skilled in the art without creative efforts fall within the protection scope of the present application.

**[0055]** It should be noted that if there is a directional indication (such as up, down, left, right, front, back...) in the embodiment of the present application, the directional indication is only configured to explain the relationship between the assemblys in a certain posture. If the specific posture changes, the directional indication will also change accordingly.

**[0056]** In addition, if there are descriptions involving "first", "second", etc. in the embodiments of the present application, the descriptions of "first", "second", etc. are only for descriptive purposes, and cannot be understood as indicating or implying their relative importance or implicitly indicating the number of indicated technical features. Thus, the features defined as "first" and "second" may explicitly or implicitly comprise at least one of these features. In addition, the technical solutions of the various embodiments can be combined with each other, but it must be based on the realization of those skilled in the art. When the combination of technical solutions is contradictory or cannot be realized, it should be considered that the combination of technical solutions does not exist, nor within the protection scope required by the present application.

**[0057]** At present, some household appliances, such as water heaters and fan heaters, are equipped with circuit breakers. The circuit breaker is connected to the main circuit and is configured to cut off the power supply when an abnormal situation occurs to protect the safety of household appliances and users.

**[0058]** In the related technology, household appliances are often equipped with temperature-controlled circuit breakers. For example, the inner tank of an electric water heater is often equipped with a temperature-controlled circuit breaker. The temperature-controlled circuit breaker is generally connected to the main circuit to cut off the power supply of the heating tube when the temperature is too high. Traditional temperature-controlled circuit breakers mainly comprise liquid expansion thermostats and sudden jump thermostats. The former is to push the power supply conduction end to move by the expansion of the liquid due to heat, and the deformation of the diaphragm due to internal pressure to cut off the connection between the main power supply and the load; the latter is to push the power supply conduction end to move by the deformation of the metal sheet after the heat is transferred to the memory metal to cut off the connection between the main power supply and the load.

**[0059]** However, the function of the above-mentioned temperature-controlled circuit breaker is relatively single, and it can only passively disconnect the circuit connection under abnormal temperature conditions. For other abnormal conditions, other circuit breakers need to be set up for power-off protection.

**[0060]** In view of this, in order to achieve the purpose of multifunctional circuit breaker protection, the present application proposes a circuit breaker 100.

**[0061]** Referring to FIGS. 1 to 3, in some embodiments of the present application, the circuit breaker 100 comprises a bearing member 10, a switch assembly 30 and a trigger assembly 50. The switch assembly 30 is arranged on the bearing member 10, comprising a first terminal 31 and a second terminal 33. The first terminal 31 has a displaceable conduction end 311, and the conduction end 311 abuts the second terminal 33; the trigger assembly 50 is arranged on one side of the conduction end 311, comprising a temperature control trigger assembly 51 and an electric signal trigger assembly 53. The temperature control trigger assembly 51 and/or the electric signal trigger assembly 53 can drive the conduction end 311 to displace so as to be spaced from the second terminal 33.

**[0062]** The bearing member 10 is configured to provide an installation base for the switch assembly 30, which can be in the form of a seat or a shell, and can provide a space for the switch assembly 30 to displace. The switch assembly 30 is arranged on the bearing member 10 and is configured to connect the main circuit. It can be arranged between the power supply and the load to control the circuit between the power supply and the load. The switch assembly 30 mainly realizes the circuit connection and disconnection through the cooperation of the first terminal 31 and the second terminal 33. For example, the first terminal 31 comprises a terminal body and a conduction end 311. The terminal body is arranged on the bearing member 10 and is configured to connect the power supply. A connection gap is arranged between the terminal body and the second terminal 33. The conduction end 311 is arranged at the connection gap. One end of the conduction end 311 can be connected to the terminal body and the other end of the conduction end 311 abuts the second terminal 33 to realize the circuit conduction between the terminal body and the second terminal 33. It can be understood that the conduction end 311 can be displaced away from the second terminal 33. The displacement here can be that the conduction end 311 is rotated, translated, etc. When the conduction end 311 is displaced and away from the second terminal 33, the first terminal 31 is disconnected from the second terminal 33, thereby realizing the circuit disconnection. The conduction end 311 and the terminal body may be an integral structure, or may be a separate structure with one end fixedly connected, which is not limited in this embodiment.

**[0063]** The trigger assembly 50 is configured to drive the conduction end 311 to move to disconnect the circuit under specific conditions such as high temperature and leakage. Among them, the temperature control trigger assembly 51 and the electric signal trigger assembly 53 are both provided with an active end, and the active end can directly or indirectly drive the conduction end 311 to move. Specifically, the temperature control trigger assembly 51 comprises a temperature sensing structure 511 and a motion structure 513. The temperature sensing structure 511 is configured to sense temperature and can drive the motion structure 513 to move when the temperature is abnormal. The motion structure 513 has the above-mentioned active end. For example, the temperature sensing structure 511 comprises a temperature sensing terminal and a temperature sensing cavity. The temperature sensing cavity is filled with a solution. The motion structure 513 comprises a diaphragm provided on one side of the temperature sensing cavity. The temperature sensing terminal is used for heat conduction. The solution absorbs heat and expands, thereby causing the diaphragm on one side of the temperature sensing cavity to move. The motion structure 513 can also be a memory metal, which deforms after absorbing heat, and the deformed part is formed as the above-mentioned active end. The electric signal trigger assembly 53 comprises a signal receiving structure and an electromagnetic structure. The signal receiving structure is configured to receive the trigger signal. The electromagnetic structure comprises a housing 531 and a magnetic member 533. The housing 531 is provided with a receiving cavity with an opening on one side. The magnetic member 533 can be movably arranged in the receiving cavity. Among them, the trigger signal may comprise a leakage signal, an abnormal temperature signal, etc., which may be a weak voltage provided by the outside, a leakage protection circuit, a temperature detection circuit, etc. When the trigger signal is contacted, the magnetic member 533 moves in the housing 531, and the end of the magnetic member 533 exposed to the housing 531 moves synchronously and forms the active end of the electric signal trigger assembly 53.

**[0064]** In an embodiment, the switch assembly 30 is arranged on the bearing member 10, and the first terminal 31 is connected to the second terminal 33 through the conduction end 311. The trigger assembly 50 comprises a temperature control circuit assembly and an electric signal trigger assembly 53. Both the temperature control trigger assembly 51 and the electric signal trigger assembly 53 are provided with active ends. The conduction end 311 can be driven to move directly or indirectly by at least one active end to disconnect the connection with the second terminal 33, thereby cutting off the circuit. The electric signal trigger assembly 53 and the temperature control circuit assembly are set to perform a circuit breaking operation. On the one hand, the electric signal trigger assembly 53 can also drive the conduction end 311 to move and disconnect the circuit when receiving a temperature abnormality signal, thereby further realizing the insurance function for the scheme of driving a single temperature control circuit breaker 100, avoiding the safety hazard caused by the failure of the temperature control trigger assembly 51 and the failure to disconnect the circuit in time; on the other hand, the electric signal trigger assembly 53 can also disconnect the circuit when receiving a trigger signal. The diversified trigger signals can realize circuit breaking protection in various situations, thereby improving the functionality and usability of the circuit breaker 100.

**[0065]** In an embodiment, referring to FIG. 2, the temperature control circuit assembly and the electric signal trigger assembly 53 are both arranged on one side of the conduction end 311. When the conduction end 311 is connected to the second terminal 33, the active ends of the two are spaced apart from the conduction end 311. When the temperature is

abnormal and/or the electric signal trigger assembly 53 receives a trigger signal, the active ends of the temperature control circuit assembly and/or the electric signal trigger assembly 53 move to approach and drive the conduction end 311 to move away from the second terminal 33 to disconnect the circuit.

**[0066]** In an embodiment, the trigger assembly 50 further comprises a motion assembly, which is disposed on one side of the conduction end 311. In this embodiment, the motion assembly plays a transmission role, and is configured to be driven by the active end of the temperature control trigger assembly 51 and/or the active end of the electric signal trigger assembly 53 to drive the conduction end 311 to move.

**[0067]** In an embodiment, the motion assembly may be provided with a transmission rod, and the end of the transmission rod toward the conduction end 311 may move close to the conduction end 311. The transmission rod is also provided with two rod ends for cooperating with the active end of the temperature control trigger assembly 51 and the active end of the electric signal trigger assembly 53. For example, the two rod ends may abut the two active ends, so that the movement of any active end can drive the transmission rod to move without affecting the other active end. When the conduction end 311 is conductive to the second terminal 33, the transmission rod may be spaced apart from the conduction end 311. When the temperature is abnormal and/or the electric signal trigger assembly 53 receives a trigger signal, the active end of the temperature control circuit assembly and/or the electric signal trigger assembly 53 drives the transmission rod to move, and drives the transmission rod to drive the conduction end 311 away from the second terminal 33 to disconnect the circuit. In this embodiment, the temperature control trigger assembly 51 and the electric signal trigger assembly 53 drive the same motion assembly to move, so as to drive the conduction end 311, reduce the difficulty of design and processing, and improve the consistency of movement.

**[0068]** It can be understood that the motion assembly is insulated from the conduction end 311, and the motion assembly can be made of insulating material, or an insulating layer is provided on the surface of the conduction end to avoid safety accidents.

**[0069]** Referring to FIG. 2, In an embodiment, the motion assembly comprises a circuit breaker assembly 55 and a transmission member 57. The circuit breaker assembly 55 is arranged on one side of the conduction end 311, and the transmission member 57 connects the active end of the temperature control trigger assembly 51 and the active end of the electric signal trigger assembly 53. The transmission member 57 is connected with the circuit breaker assembly 55, and the transmission member 57 can be driven to move by at least one active end, so that the transmission member 57 drives the circuit breaker assembly 55 to drive the conduction end 311 to move.

**[0070]** The motion assembly in this embodiment is divided into a circuit breaker assembly 55 for executing the action of driving the conduction end 311 to move and a transmission member 57 for conducting the movement of the active end of the temperature control trigger assembly 51 and the active end of the electric signal trigger assembly 53. When the transmission member 57 is driven to move by at least one active end, the circuit breaker assembly 55 moves through the cooperative connection between the transmission member 57 and the circuit breaker assembly 55.

**[0071]** It can be understood that the movement direction of the active end and the movement direction of the circuit breaker assembly 55 can be changed by the cooperation of the transmission member 57 and the circuit breaker assembly 55. For example, the transmission member 57 can be a connection rod or other mechanism, and the movement direction of the active end of the temperature control trigger assembly 51 and/or the electric signal trigger assembly 53 is arranged in a different plane from the movement direction of the circuit breaker 55, which is conducive to further optimizing the volume and device arrangement of the circuit breaker 100.

**[0072]** Further, in combination with FIG. 2 or FIG. 8, In an embodiment, the bearing member 10 is provided with an movable cavity 10a. The bearing member 10 in this embodiment is a shell, and the movable cavity 10a is formed inside; and the conduction end 311 and the circuit breaker assembly 55 are arranged in the movable cavity 10a. Specifically, the first terminal 31 and the second terminal 33 are partially extended into the movable cavity 10a, and partially exposed outside the shell to connect the wire. In an embodiment, the portion of the first terminal 31 and the second terminal 33 exposed outside the housing may be provided with screw holes to connect with the wire through the screw holes; or, the portion of the first terminal 31 and the second terminal 33 exposed outside the housing may also be extended into a long strip, suitable for welding on a circuit board; of course, depending on the specific situation, the first terminal 31 may also be provided with a screw hole, and the second terminal 33 may be formed into a long strip, which is not limited here.

**[0073]** The conduction end 311 is arranged in the movable cavity 10a, and it can be understood that the conduction end 311 can be displaced within a certain range in the movable cavity 10a to disconnect the electrical connection with the second terminal 33. The circuit breaker assembly 55 is arranged on one side of the conduction end 311, and the transmission member 57 is arranged on one side of the movable cavity 10a and is connected with the circuit breaker assembly 55. The circuit breaker assembly 55 can move in the movable cavity 10a under the action of the transmission member 57. The conduction end 311 and the circuit breaker assembly 55 are arranged in the movable cavity 10a, which can not only protect the switch assembly 30, but also guide the movement of the circuit breaker assembly 55, thereby improving stability and reliability.

**[0074]** In an embodiment, referring to FIG. 8 and FIG. 9, the bearing member 10 is a whole shell, and the above-mentioned movable cavity 10a is formed inside the bearing member 10; the bearing member 10 may also comprise two

parts, namely the first shell 13 and the second shell 15; the first terminal 31 and the second terminal 33 are arranged in the first shell 13, and the transmission member 57, the temperature control trigger assembly 51 and the electric signal trigger assembly 53 are arranged in the second shell 15. Connecting ears are arranged on both sides of the first shell 13, and positioning columns are arranged on both sides of the second shell 15. The first shell 13 and the second shell 15 are connected by passing the bolts through the connecting ears and the positioning columns. The first shell 13 and the second shell 15 are enclosed to form the above-mentioned movable cavity 10a, and the circuit breaker assembly 55 is arranged in the movable cavity 10a. In this way, the production, assembly, disassembly and maintenance of the circuit breaker 100 can be further facilitated, and a set of trigger assemblies 50 can be adapted to multiple switch assemblies 30 of different specifications by replacing the first shell 13.

**[0075]** In an embodiment, for easy assembly, the first shell 13 may also comprise a housing body 133 and a cover plate 131. The housing body 133 is formed with an assembly opening, and the cover plate 131 is covered on the assembly opening to enclose the housing body 133 to form an movable cavity 10a. When assembling the circuit breaker 100, the circuit breaker assembly 55, the switch assembly 30, etc. may be first installed into the housing body 133, and then the cover plate 131 may be covered, which is more convenient for assembly and improves efficiency.

**[0076]** Referring to FIG. 2 and FIG. 3, In an embodiment, the circuit breaker assembly 55 comprises a circuit breaker body 551 and a first elastic member 553. The circuit breaker body 551 is movably disposed in the movable cavity 10a and is provided with a connection end 5517a exposed outside the movable cavity 10a. The connection end 5517a is releasably connected to the transmission member 57. The first elastic member 553 is respectively connected to the inner wall of the movable cavity 10a and the circuit breaker body 551. The movement of the transmission member 57 can make the circuit breaker body 551 loose. The first elastic member 553 is configured to drive the circuit breaker body 551 close to the conduction end 311 and drive the conduction end 311 to move.

**[0077]** In this embodiment, the circuit breaker body 551 is configured to perform the action of driving the conduction end 311 to move. It is disposed in the movable cavity 10a. One end of the movable cavity 10a is provided with a through hole for the connection end 5517a to pass through. In order to make the structure more compact, the through hole is adapted to the shape of the connection section in the cross section, and the gap can be reduced to prevent foreign matter from entering. In an embodiment, the connection end 5517a is cylindrical, and the cross section of the through hole is circular. The transmission member 57 is arranged on one side of the through hole to facilitate the matching connection between the connection end 5517a and the transmission member 57. It can be understood that when the conduction end 311 is electrically connected to the second terminal 33, the connection end 5517a is limited by the transmission member 57 so that the circuit breaker body 551 is spaced apart from the conduction end 311. Here, the connection between the transmission member 57 and the connection end 5517a can be snap-fit connection, abutment, etc. This connection can be disconnected when the transmission member 57 is driven to move by the active end of the temperature control trigger assembly 51 and/or the active end of the electric signal trigger assembly 53.

**[0078]** The first elastic member 553 is arranged in the movable cavity 10a, which can be a spring or a spring sheet structure. Taking the spring as an example, the two ends of the first elastic member 553 are respectively connected to the bottom wall of the movable cavity 10a and the circuit breaker body 551. When the connection end 5517a is connected to the transmission member 57, the first elastic member 553 is compressed and has a tendency to push the circuit breaker body 551 to move toward the conduction end 311. The elastic force of the first elastic member 553 is balanced with the force of the transmission member 57 on the connection end 5517a, so that the circuit breaker body 551 is spaced apart from the conduction end 311. After the connection end 5517a is loosened from the transmission member 57, due to the lack of the restriction of the transmission member 57, the first elastic member 553 drives the circuit breaker body 551 to move toward the conduction end 311, and pushes the conduction end 311 to move, so that the conduction end 311 is spaced apart from the second terminal 33, and the circuit breaker operation is realized. In this embodiment, a transmission member 57 is configured to limit the connection end 5517a, so that the first elastic member 553 can drive the circuit breaker body 551 to drive the conduction end 311 to move when the connection end 5517a is loosened. The structure is simple and effective. The use of an elastic member to drive the circuit breaker body 551 can also provide relatively abundant kinetic energy, thereby ensuring that the circuit breaker body 551 can effectively push the conduction end 311 to achieve the circuit breaker operation.

**[0079]** In an embodiment, the transmission member 57 is provided with a limitation structure, and the connection end 5517a is engaged with the limitation structure, or the transmission member 57 moves so that the connection end 5517a is spaced apart from the limitation structure.

**[0080]** In an embodiment, referring to FIG. 4, FIG. 5 and FIG. 6, the connection end 5517a is provided with a slot 5517b, and the limitation structure is a slot hole 57a; the connection end 5517a is penetrated through the slot hole 57a, and the side wall of the slot hole 57a extends into the slot 5517b, or the transmission member 57 moves so that the side wall of the slot hole 57a is spaced apart from the slot 5517b.

**[0081]** In an embodiment, the transmission member 57 is roughly plate-shaped, and the above-mentioned slot hole 57a is opened in the middle; the opening area of the slot hole 57a is large enough to allow the connection end 5517a to be freely inserted in the slot hole 57a. A slot 5517b is provided on one side of the connection end 5517a, and the slot 5517b is opened

toward the movement direction of the transmission member 57. When the side wall of the slot hole 57a extends into the slot 5517b, the surface of the transmission member 57 on one side of the slot hole 57a abuts against the side wall of the slot 5517b, thereby limiting the connection end 5517a. Driven by the temperature control trigger assembly 51 and the electric signal trigger assembly 53, the transmission member 57 rotates or translates to disengage the side wall of the slot hole 57a from the slot 5517b, and the connection end 5517a is loosened from the transmission member 57 and moves under the drive of the first elastic member 553.

**[0082]** In an embodiment, the circuit breaker body 551 comprises a trigger block 5511 and a connection rod 5517. The trigger block 5511 is arranged in the movable cavity 10a. The end of the connection rod 5517 away from the connection end 5517a is provided with a thread. The trigger block 5511 is provided with a threaded hole. The end of the connection rod 5517 provided with a thread is connected to the threaded hole in the movable cavity 10a for easy assembly. The slot 5517b is extended along the circumference of the connection end 5517a, so that when the connection rod 5517 and the trigger block 5511 are assembled, no matter how much the connection end 5517a rotates, it can always be opened toward the movement direction of the transmission member 57, so that the transmission member 57 can enter and exit the slot 5517b, thereby improving compatibility and convenience.

**[0083]** Further, the two ends of the transmission member 57 are respectively connected to the active end of the temperature control trigger assembly 51 and the active end of the electric signal trigger assembly 53, and can move in translation under the drive of at least one active end. The active end of the temperature control trigger assembly 51 and the active end of the electric signal trigger assembly 53 move in the same direction and are roughly on the same straight line when abnormal conditions such as high temperature or leakage occur. The active end of the temperature control trigger assembly 51 is a deformable diaphragm or metal sheet, and the active end of the electric signal trigger assembly 53 is a retractable end. The transmission member 57 is roughly plate-shaped, one end of which abuts against the active end of the temperature control trigger assembly 51, and the other end is detachably connected to the active end of the electric signal trigger assembly 53 by means of a buckle or the like, so that it can move in translation along its deformation direction or retraction direction under the action of at least one active end. In other words, the transmission member 57 in this embodiment can directly transmit the movement of the active end of the temperature control trigger assembly 51 and the active end of the electric signal trigger assembly 53, and the structure is simple, but more direct and reliable. It is understandable that, limited by factors such as volume and cost, the active end of a general temperature control trigger assembly 51 and the active end of an electric signal trigger assembly 53 have a relatively short movement range. In this embodiment, the movement of the active end is used as a switch for the movement of the circuit breaker assembly 55 through the cooperation of the transmission member 57 and the circuit breaker assembly 55. The circuit breaker body 551 is driven to move through the first elastic member 553 to drive the conduction end 311 to move, thereby enabling the circuit breaker operation to be more reliably achieved under limited travel conditions.

**[0084]** Further, referring to FIG. 5, the bearing member 10 is provided with a mounting slot 10c, and the mounting slot 10c is connected with the movable cavity 10a; the transmission member 57 is arranged in the mounting slot 10c, and the side wall of the mounting slot 10c is provided with a limit block 11; the limit block 11 is arranged at intervals with the bottom wall of the mounting slot 10c to define a transmission channel for the movement of the transmission member 57. The limit block 11 is provided with an avoidance gap at the slot hole 57a so as not to affect the movement of the connection end 5517a.

**[0085]** Referring to FIG. 5, In an embodiment, the circuit breaker 100 further comprises a torsion spring 571; the bearing member 10 is provided with a mounting column, and the torsion spring 571 is sleeved on the mounting column; one end of the torsion spring 571 is connected to the bearing member 10, and the other end of the torsion spring 571 is connected to the transmission member 57. In an embodiment, the transmission member 57 is provided with a stopper; one end of the torsion spring 571 abuts against the side of the stopper toward the movement direction of the transmission member 57; and in order to prevent the torsion spring 571 from loosening, one end of the stopper is also bent toward the movement direction of the transmission member 57. In this way, the direction in which the movement of the transmission member 57 can cause the connection end 5517a to loosen is defined as the tripping direction. When the active end of the temperature control trigger assembly 51 and the active end of the electric signal trigger assembly 53 are not moving, the torsion spring 571 can give the transmission member 57 a force to move in the opposite direction of the tripping direction through the block, so as to make the transmission member 57 more stable and avoid the transmission member 57 loosening when the active end is stationary, thereby causing the connection end 5517a to loosen. On the other hand, the connection end 5517a always passes through the slot hole 57a and is exposed on one side of the transmission member 57. When the transmission member 57 moves and the circuit breaker body 551 cuts off the connection between the conduction end 311 and the second terminal 33, the user can pull the connection end 5517a, and the connection end 5517a moves relative to the slot hole 57a. When the slot 5517b is directly opposite to the side wall of the slot hole 57a, the side wall of the slot hole 57a extends into the slot 5517b under the action of the torsion spring 571, and self-locking is achieved, so that the transmission member 57 can be limitedly connected with the connection end 5517a. In other words, the torsion spring 571 can also help the transmission member 57 to reset, which is convenient for operation and improves efficiency.

**[0086]** Please referring to FIGS. 2, 8 and 9, In an embodiment, the circuit breaker 100 comprises a plurality of first terminals 31 and a plurality of second terminals 33 arranged side by side and corresponding to each other. The circuit

breaker body 551 comprises a trigger block 5511 and a connection rod 5517. The trigger block 5511 is movably arranged in the movable cavity 10a and is extended along the arrangement direction of the plurality of first terminals 31 to drive the plurality of conduction ends 311 to move. The connection rod 5517 is connected to the trigger block 5511, and one end of the connection rod 5517 away from the trigger block 5511 is the connection end 5517a.

**[0087]** In an embodiment, the number of the first terminal 31 and the second terminal 33 can be three, four, etc., which is not limited here. Among them, a first terminal 31 is connected to a second terminal 33, and multiple pairs of first terminals 31 and second terminals 33 are arranged side by side. It can be understood that the multiple first terminals 31 have multiple conductive ends 311. In order to be able to simultaneously drive the multiple conductive ends 311 to move so as to cut off the electrical connection between the multiple first terminals 31 and the multiple second terminals 33, the circuit breaker body 551 in this embodiment comprises a trigger block 5511 and a connection rod 5517. The trigger block 5511 is arranged in a strip shape and extends along the arrangement direction of the multiple pairs of first terminals 31 and the second terminals 33. When the connection end 5517a is loosened from the transmission member 57, the trigger block 5511 can drive the multiple conductive ends 311 to move under the action of the first elastic member 553.

**[0088]** Combined with FIG. 3, the bearing member 10 is also provided with a terminal slot 10b; the conduction end 311 is provided in the terminal slot 10b, and can move in the depth direction of the terminal slot 10b; the circuit breaker 100 also comprises a second elastic member 555; the elastic coefficient of the second elastic member 555 is smaller than the elastic coefficient of the first elastic member 553, and the two ends of the second elastic member 555 connect the conduction end 311 and the bottom wall of the terminal slot 10b. By providing the second elastic member 555, the second elastic member 555 can make the connection between the conduction end 311 and the second terminal 33 more compact, uniform and reliable, and avoid poor contact. The elastic coefficient of the second elastic member 555 is smaller than the elastic coefficient of the first elastic member 553, that is, when the connection end 5517a is loosened from the transmission member 57, under the drive of the first spring, the circuit breaker body 551 can drive the conduction end 311 to move and compress the second elastic member 555.

**[0089]** It can be understood that when resetting the circuit breaker assembly 55, the connection end 5517a is pulled, the circuit breaker body 551 compresses the first spring and moves away from the conduction end 311. At this time, under the action of the second elastic member 555, the conduction end 311 can be reconnected with the second terminal 33, and the reset operation can be completed without disassembling the bearing member 10, which greatly facilitates the maintenance work after the circuit breaker. Further, the circuit breaker 100 can also be provided with a torsion spring 571 to further facilitate the restoration of the locking state of the transmission member 57 and the connection end 5517a.

**[0090]** In an embodiment, the conduction end 311 is provided with a positioning hole, and the circuit breaker body 551 is provided with a positioning rod 5513; the positioning rod 5513 is penetrated in the positioning hole. The cooperation of the positioning rod 5513 and the positioning hole can align the circuit breaker body 551 with the conduction end 311 to ensure that the circuit breaker body 551 can effectively drive the conduction end 311 to move. The second elastic member 555 is a spring, and the second elastic member 555 is sleeved on the positioning rod 5513 to improve the stability of the second elastic member 555. Furthermore, the bottom wall of the terminal slot 10b is provided with an avoidance hole, and the positioning rod 5513 is penetrated through the positioning hole and the avoidance hole. When the circuit breaker body 551 moves close to the conduction end 311, the positioning rod 5513 can be exposed outside the movable cavity 10a through the avoidance hole. On the one hand, the cooperation of the avoidance hole and the positioning rod 5513 can play a certain guiding role, further improving the stability of the circuit breaker body 551 during movement, and saving internal space at the same time; on the other hand, the staff can judge the state inside the circuit breaker 100 by the extended length of the positioning rod 5513. If the positioning rod 5513 is longer, it means that the circuit breaker body 551 drives the conduction end 311 to move, and if the positioning rod 5513 is shorter, it means that the first terminal 31 and the second terminal 33 are normally connected.

**[0091]** In an embodiment, the number of positioning rods 5513 corresponds to the number of conduction ends 311, and multiple positioning rods 5513 are arranged side by side.

**[0092]** Further, please referring to FIG. 4 again, the circuit breaker body 551 is also provided with a guide rod 5515, which is arranged on the side of the circuit breaker body 551 away from the conduction end 311. The bearing member 10 is also provided with a guide hole connected to the movable cavity 10a. The guide rod 5515 is passed through the guide hole. The first elastic member 553 is a spring. The first elastic member 553 is sleeved on the guide rod 5515 to improve the movement stability of the first elastic member 553 and the circuit breaker body 551. In an embodiment, two guide rods 5515 are provided, and the two guide rods 5515 are arranged on both sides of the connection rod 5517 to further improve the stability of the circuit breaker body 551. Each guide rod 5515 is sleeved with a first elastic member 553, which can give the circuit breaker body 551 sufficient kinetic energy to drive the conduction end 311 to move.

**[0093]** In an embodiment, the first terminal 31 also comprises a terminal body, which is connected to the bearing member 10 and has a connection gap with the second terminal 33. The conduction end 311 is arranged at the connection gap; one end of the conduction end 311 can be bent to connect the terminal body, and the other end of the conduction end 311 is overlapped with the second terminal 33; the circuit breaker assembly 55 can drive the conduction end 311 to bend so as to be spaced apart from the second terminal 33.

**[0094]** In this embodiment, the terminal body is arranged on the bearing member 10 for connecting the power supply, and the conduction end 311 is arranged at the connection gap for realizing the circuit conduction between the terminal body and the second terminal 33. The conduction end 311 and the terminal body can be an integral structure or a separate structure with one end fixedly connected, which is not limited in this embodiment. In an embodiment, the conduction end 311 is a conductive metal sheet, which has a certain elasticity and can be bent around the end of the conduction end 311 connected to the terminal body. When the conduction end 311 is bent, the end away from the terminal body moves away from the second terminal 33 to disconnect the circuit.

**[0095]** The bearing member 10 is further provided with a first receiving slot 10d and a second receiving slot 10e. The first receiving slot 10d is arranged near one end of the transmission member 57, and the second receiving slot 10e is arranged on one side of the transmission member 57 or near one end of the transmission member 57 away from the first receiving slot 10d.

**[0096]** Referring to FIG. 2 or FIG. 8, the temperature control trigger assembly 51 is arranged in the first receiving slot 10d, and comprises a temperature sensing structure 511 and a motion structure 513. The temperature sensing structure 511 is configured to sense temperature and can drive the motion structure 513 to move. The active end of the motion structure 513 is connected to one end of the transmission member 57. In an embodiment, the temperature sensing structure 511 comprises a temperature sensing terminal and a temperature sensing cavity. The temperature sensing cavity is filled with a solution. The motion structure 513 comprises a diaphragm arranged on one side of the temperature sensing cavity. The temperature sensing terminal is used for heat conduction. The solution absorbs heat and expands, thereby causing the diaphragm on one side of the temperature sensing cavity to move. The motion structure 513 can also be a memory metal, which deforms after absorbing heat, and the deformed part forms the above-mentioned active end. The temperature control trigger assembly 51 often drives the transmission member 57 to move by pushing.

**[0097]** The electric signal trigger assembly 53 is arranged in the second receiving slot 10e, and comprises a signal receiving structure and an electromagnetic structure. The signal receiving structure is configured to receive the trigger signal. The electromagnetic structure comprises a housing 531 and a magnetic member 533. The housing 531 is provided with a receiving cavity with an opening on one side, and the magnetic member 533 can be movably arranged in the receiving cavity. Among them, the trigger signal may comprise a leakage signal, an abnormal temperature signal, etc., which may be a weak voltage provided by the outside world, a leakage protection circuit, a temperature detection circuit, etc. When the trigger signal is contacted, the magnetic member 533 moves in the housing 531, and the end of the magnetic member 533 exposed in the housing 531 moves synchronously and forms the active end of the electric signal trigger assembly 53.

**[0098]** In an embodiment, a hook 5331 is provided at the end of the magnetic member 533, and a connecting slot is provided at one end of the transmission member 57. The hook 5331 is clamped in the connecting slot to realize the synchronous movement of the magnetic member 533 and the transmission member 57.

**[0099]** Furthermore, in order to drive the magnetic member 533 to reset, the electromagnetic structure also comprises a third elastic member 535, which can be a spring, and the spring is sleeved on the end of the magnetic member 533.

**[0100]** For details, please referring to FIGS. 1 and 2, when the second receiving slot 10e is arranged close to the end of the transmission member 57 away from the first receiving slot 10d, the temperature control trigger assembly 51 can push the transmission member 57 to move, and the active end of the electric signal trigger assembly 53 moves in the opposite direction to the active end of the temperature control trigger assembly 51, which is configured to pull the transmission member 57. When the trigger signal is received, the magnetic member 533 retracts into the receiving cavity, and the hook 5331 pulls the transmission member 57; at this time, the third elastic member 535 is compressed; when the magnetic field on the magnetic member 533 is removed, the magnetic member 533 pops out under the action of the third elastic member 535, which can drive the transmission member 57 to reset.

**[0101]** Referring to FIGS. 7 and 8, in another embodiment, the second receiving slot 10e is provided on the side of the transmission member 57 away from the circuit breaker assembly 55, and one end of the transmission member 57 is bent to form a connecting plate, which extends into the second receiving slot 10e to cooperate with the active end (hook 5331) of the temperature control trigger assembly 51. At this time, the temperature control trigger assembly 51 can push the transmission member 57 to move, and the active end of the electric signal trigger assembly 53 has the same movement direction as the active end of the temperature control trigger assembly 51. When the trigger signal is received, the end of the magnetic member 533 extends out of the receiving cavity, and the hook 5331 pushes the transmission member 57; the third elastic member 535 is stretched at this time; when the magnetic field effect on the magnetic member 533 is removed, the magnetic member 533 retracts under the action of the third elastic member 535, and can drive the transmission member 57 to reset. The circuit breaker 100 of this embodiment is smaller in size and more compact in structure.

**[0102]** The present application also proposes a household appliance, which comprises a circuit breaker 100. The specific structure of the circuit breaker 100 refers to the above embodiment. Since the household appliance adopts all the technical solutions of all the above embodiments, it has at least all the beneficial effects brought by the technical solutions of the above embodiments, which will not be described one by one here.

**[0103]** In some embodiments, the circuit breaker 100 comprises a bearing member 10, a switch assembly 30 and a

trigger assembly 50. The switch assembly 30 is arranged on the bearing member 10, and comprises a first terminal 31 and a second terminal 33. The first terminal 31 has a displaceable conduction end 311, and the conduction end 311 abuts the second terminal 33; the trigger assembly 50 is arranged on one side of the conduction end 311, and comprises a temperature control trigger assembly 51 and an electric signal trigger assembly 53. The temperature control trigger assembly 51 and/or the electric signal trigger assembly 53 can drive the conduction end 311 to displace so as to be spaced from the second terminal 33.

**[0104]** The switch assembly 30 is arranged on the bearing member 10; the first terminal 31 is connected to the second terminal 33 through the conduction end 311; the trigger assembly 50 comprises a temperature control circuit assembly and an electric signal trigger assembly 53; both the temperature control trigger assembly 51 and the electric signal trigger assembly 53 are provided with active ends, and the conduction end 311 can be driven to move directly or indirectly by at least one active end to disconnect from the second terminal 33, thereby cutting off the circuit. The electric signal trigger assembly 53 is set to perform circuit breaking operation with the temperature control circuit assembly. On the one hand, the electric signal trigger assembly 53 can also drive the conduction end 311 to move and disconnect the circuit when receiving the abnormal temperature signal, thereby further realizing the insurance function of the scheme of driving a single temperature control circuit breaker 100, avoiding the safety hazard caused by the failure of the temperature control trigger assembly 51 and the failure to disconnect the circuit in time; on the other hand, the electric signal trigger assembly 53 can also disconnect the circuit when receiving the trigger signal. The diversified trigger signals can realize circuit breaking protection in various situations, thereby improving the functionality and usability of the circuit breaker 100.

**[0105]** The above are only some embodiments of the present application, and do not limit the patent scope of the present application. Under the inventive concept of the present application, the equivalent structural transformations made by using the description of the present application and the contents of the accompanying drawings, or directly/indirectly used in other relevant technical fields, are all comprised in the protection scope of the present application.

## Claims

**1.** A circuit breaker, **characterized by** comprising:

a bearing member;
a switch assembly arranged on the bearing member and comprising a first terminal and a second terminal, wherein the first terminal is provided with a displaceable conduction end, and the conduction end is abutted against the second terminal; and
a trigger assembly arranged on one side of the conduction end and comprising a temperature control trigger assembly and an electric signal trigger assembly, wherein the temperature control trigger assembly and/or the electric signal trigger assembly is enabled to drive the conduction end to be displaced so as to be spaced apart from the second terminal.

**2.** The circuit breaker according to claim 1, wherein the trigger assembly further comprises a motion assembly; wherein the motion assembly is arranged on one side of the conduction end, and is configured to be driven by an active end of the temperature control trigger assembly and/or an active end of the electric signal trigger assembly to drive the conduction end to move.

**3.** The circuit breaker according to claim 2, wherein the motion assembly comprises:

a circuit breaker assembly arranged on one side of the conduction end; and
a transmission member connected with the active end of the temperature control trigger assembly and the active end of the electric signal trigger assembly; wherein the transmission member is operatively connected with the circuit breaker assembly, and the transmission member is driven to move by at least one of the active ends, so that the transmission member is configured to drive the circuit breaker assembly to drive the conduction end to move.

**4.** The circuit breaker according to claim 3, wherein the bearing member is provided with a movable cavity, and the conduction end and the circuit breaker assembly are arranged in the movable cavity; wherein the transmission member is arranged on one side of the movable cavity and is operatively connected with the circuit breaker assembly.

**5.** The circuit breaker according to claim 4, wherein the circuit breaker assembly comprises:

a circuit breaker body movably arranged in the movable cavity and provided with a connection end exposed outside the movable cavity, wherein the connection end is loosely connected to the transmission member; and

a first elastic member connected to an inner wall of the movable cavity and the circuit breaker body, wherein a movement of the transmission member is configured to make the circuit breaker body loose, and the first elastic member is configured to drive the circuit breaker body close to the conduction end and drive the conduction end to move.

**6.** The circuit breaker according to claim 5, wherein the transmission member is provided with a limitation structure, and the connection end is engaged with the limitation structure, or the transmission member is configured to move so that the connection end is spaced apart from the limitation structure.

**7.** The circuit breaker according to claim 6, wherein the connection end is provided with a slot, and the limitation structure is a slot hole; wherein the connection end is passed through the slot hole, and a side wall of the slot hole extends into the slot, or the transmission member is configured to move so that the side wall of the slot hole is spaced from the slot; and/or

wherein one end of the transmission member is connected to the active end of the temperature control trigger assembly, and the other end of the transmission member is connected to the active end of the electric signal trigger assembly; wherein the two ends of the transmission member is configured to move translationally under a drive of at least one of the active ends; and/or
wherein the circuit breaker further comprises a torsion spring; one end of the torsion spring is connected to the bearing member, and the other end of the torsion spring is connected to the transmission member, for driving the transmission member to reset.

**8.** The circuit breaker according to any one of claims 5 to 7, wherein the switch assembly comprises a plurality of first terminals and a plurality of second terminals arranged side by side and corresponding to each other, and the circuit breaker body comprises:

a trigger block movably arranged in the movable cavity and configured to extend along an arrangement direction of the plurality of first terminals; wherein the first elastic member is connected to the trigger block, and the trigger block is configured to drive the plurality of conduction ends to move; and
a connection rod connected to the trigger block, wherein one end of the connection rod away from the trigger block is the connection end.

**9.** The circuit breaker according to any one of claims 5 to 8, wherein the bearing member is further provided with a terminal slot, and the conduction end is arranged in the terminal slot; wherein the circuit breaker further comprises a second elastic member, and an elastic coefficient of the second elastic member is less than an elastic coefficient of the first elastic member; wherein one end of the second elastic member is connected to the conduction end, and the other end of the second elastic member is connected to a bottom wall of the terminal slot.

**10.** The circuit breaker according to claim 9, wherein the bottom wall of the terminal slot is provided with an avoidance hole, and the conduction end is provided with a positioning hole, the circuit breaker body is provided with a positioning rod, and the positioning rod is passed through the positioning hole and the avoidance hole; wherein the second elastic member is a spring, and the second elastic member is sleeved on the positioning rod; and/or
wherein the circuit breaker body is also provided with a guide rod, and the bearing member is also provided with a guide hole communicated to the movable cavity; the guide rod is passed through the guide hole; wherein the first elastic member is a spring, and the first elastic member is sleeved on the guide rod.

**11.** The circuit breaker according to any one of claims 3 to 10, wherein the first terminal also comprises a terminal body; wherein the terminal body is connected to the bearing member, and a connection gap is provided between the terminal body and the second terminal; wherein the conduction end is provided at the connection gap; one end of the conduction end is bendably connected to the terminal body, and the other end of the conduction end is connected in an overlapping manner with the second terminal; and
wherein the circuit breaker assembly is configured to drive the conduction end to bend so as to be spaced from the second terminal.

**12.** The circuit breaker according to any one of claims 3 to 11, wherein the bearing member is further provided with a first receiving slot and a second receiving slot; wherein the first receiving slot is provided close to one end of the transmission member, and the second receiving slot is provided on one side of the transmission member or close to one end of the transmission member away from the first receiving slot; and

wherein the temperature control trigger assembly is provided in the first receiving slot, and the electric signal trigger assembly is provided in the second receiving slot.

**13.** The circuit breaker according to claim 12, wherein the temperature control trigger assembly comprises a temperature sensing structure and a motion structure; wherein the temperature sensing structure is configured to sense temperature and drive the motion structure to move, and an active end of the motion structure is connected to one end of the transmission member; and/or
wherein the electric signal trigger assembly comprises a signal receiving structure and an electromagnetic structure; wherein the signal receiving structure is configured to receive a trigger signal, and the electromagnetic structure comprises a housing, a magnetic member and a third elastic member; wherein the housing is provided with a receiving cavity with an opening on one side, and the magnetic member is movably arranged in the receiving cavity; wherein one end of the magnetic member is passed through the opening, and a hook is provided; wherein the hook is connected to one end of the transmission member, and the third elastic member is connected to an outer peripheral side of the opening and the hook.

**14.** A household appliance, **characterized by** comprising: a circuit breaker according to any one of claims 1 to 13.

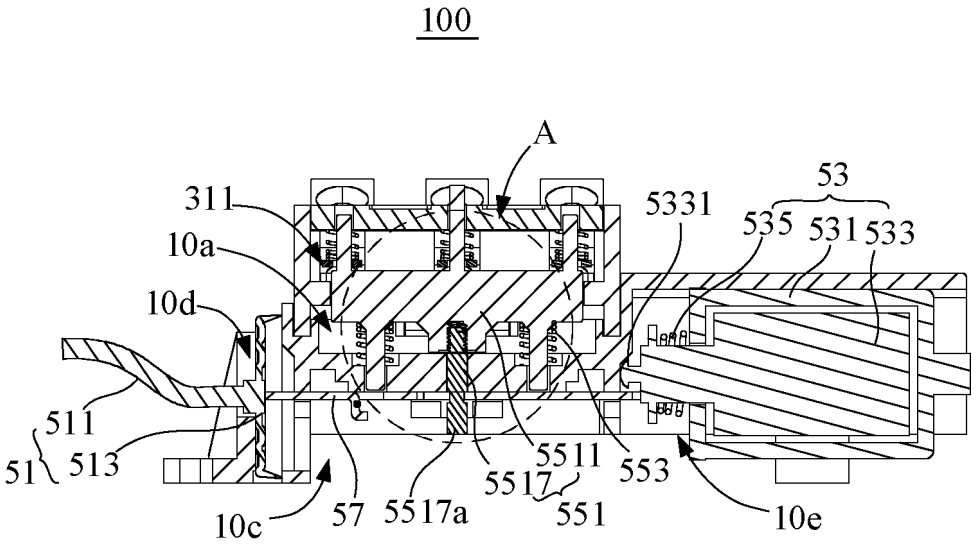

100
A
311
10a
10d
511
513
51
10c
57
5517a
5517
5511
551
553
5331
53
535
531
533
10e

FIG. 1

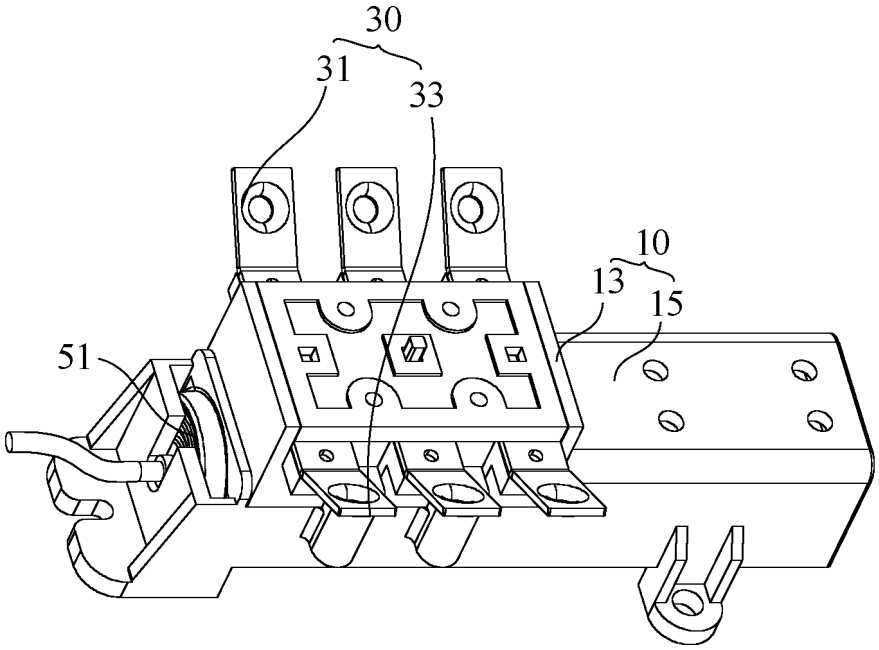

30
31
33
10
13
15
51

FIG. 2

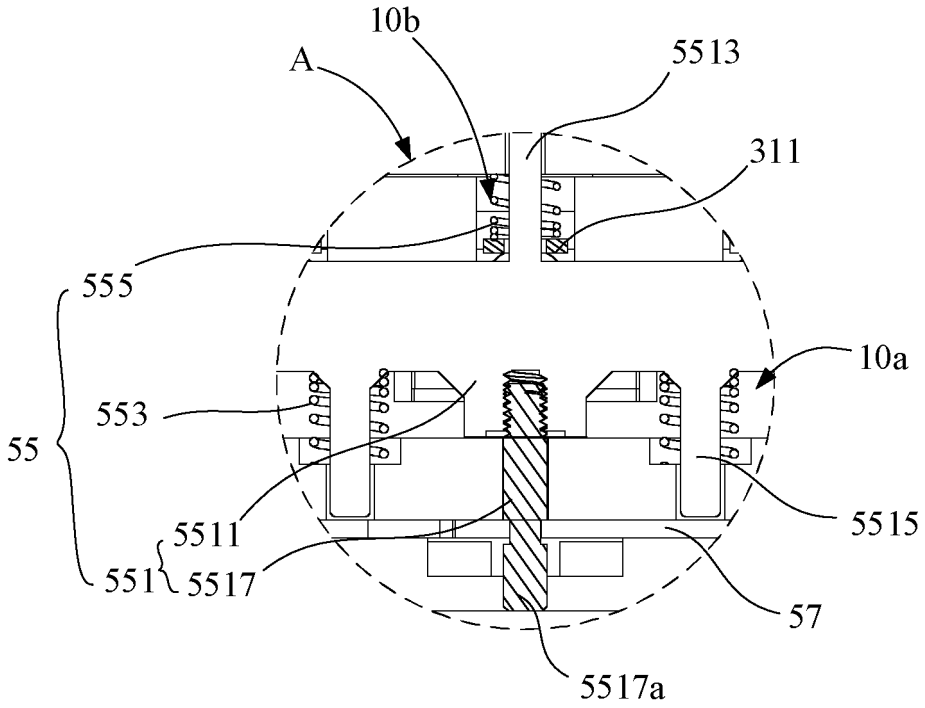

10b
A
5513
311
555
10a
553
55
5515
5511
551
5517
57
5517a

FIG. 3

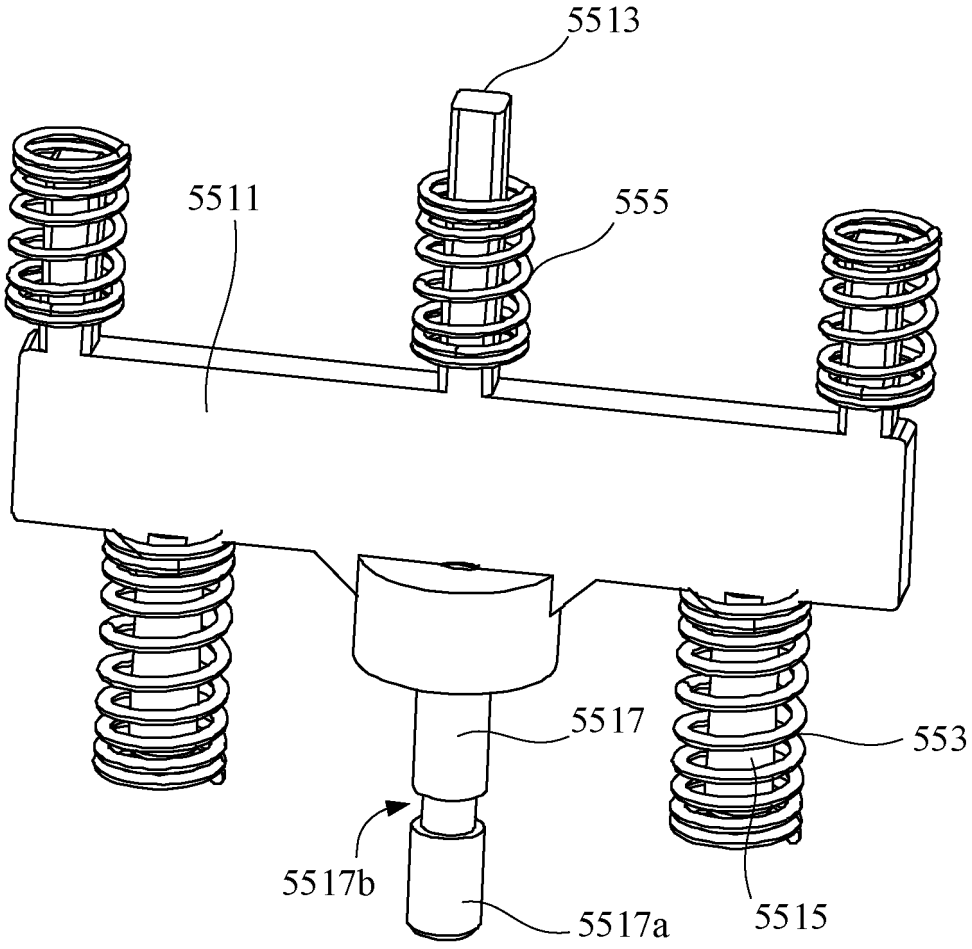

5513
5511
555
5517
553
5517b
5517a
5515

FIG. 4

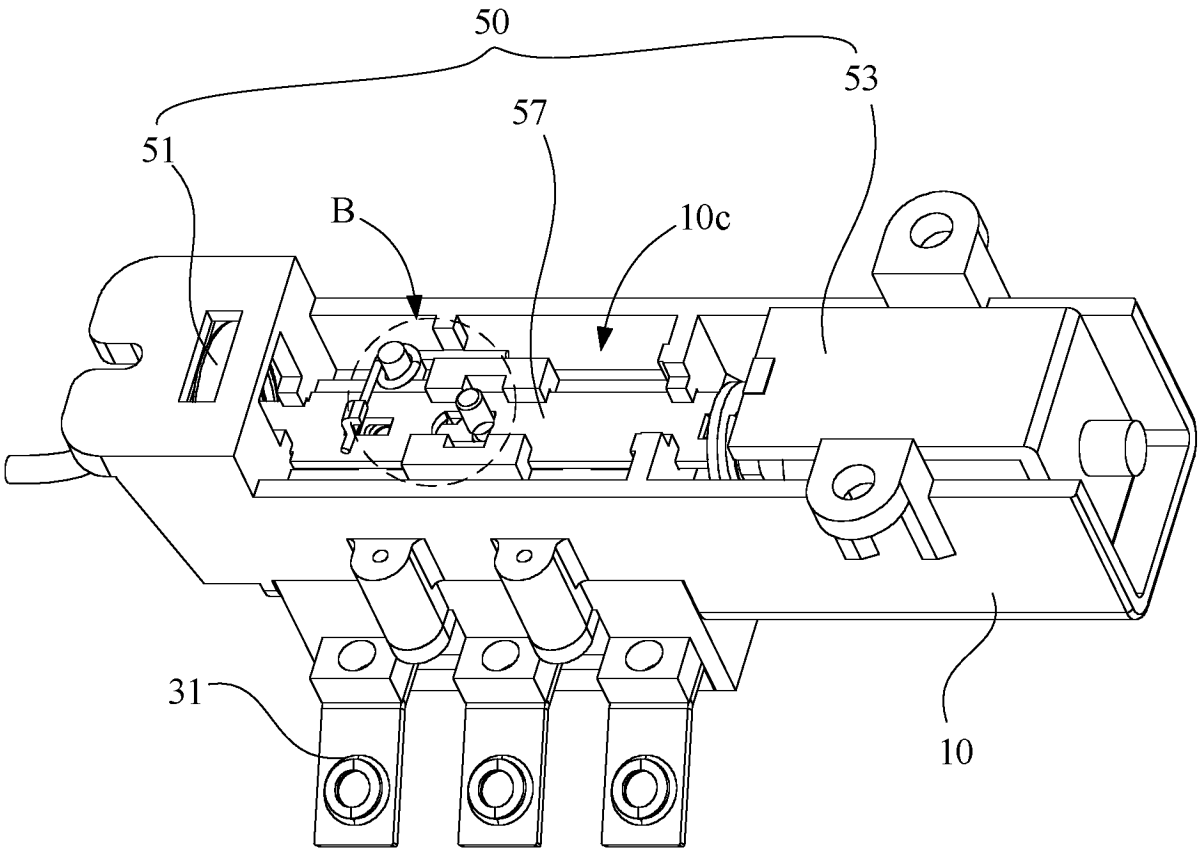



FIG. 5

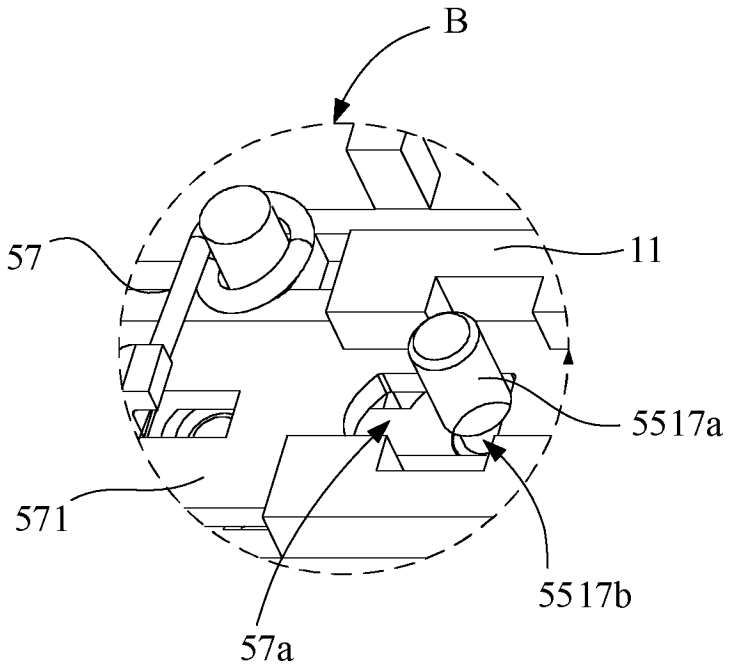
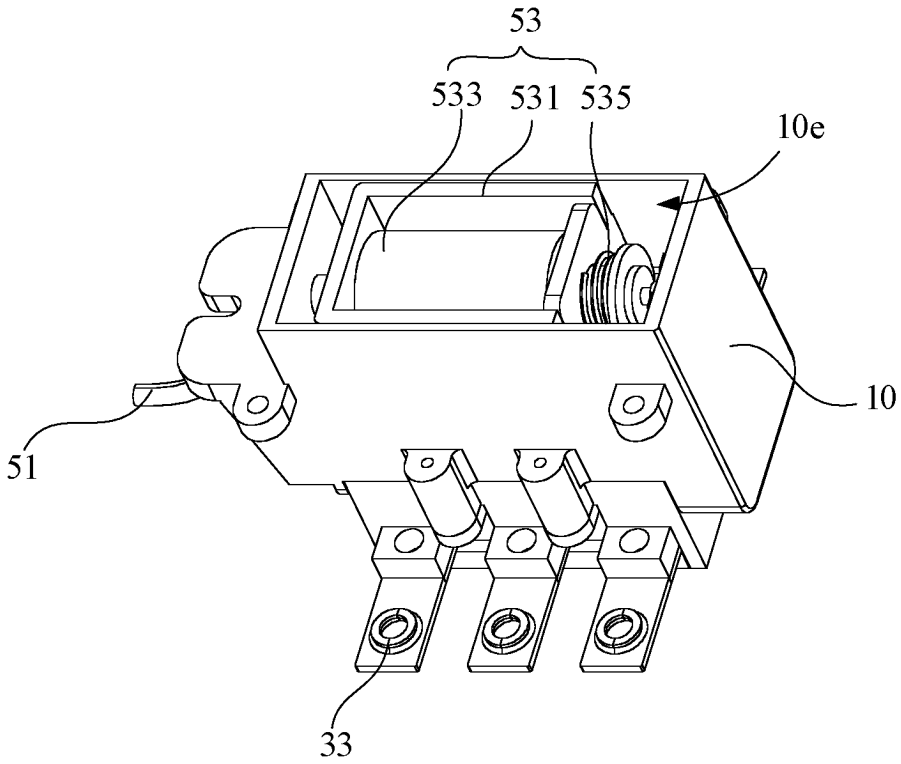



FIG. 6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10e
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FIG. 7

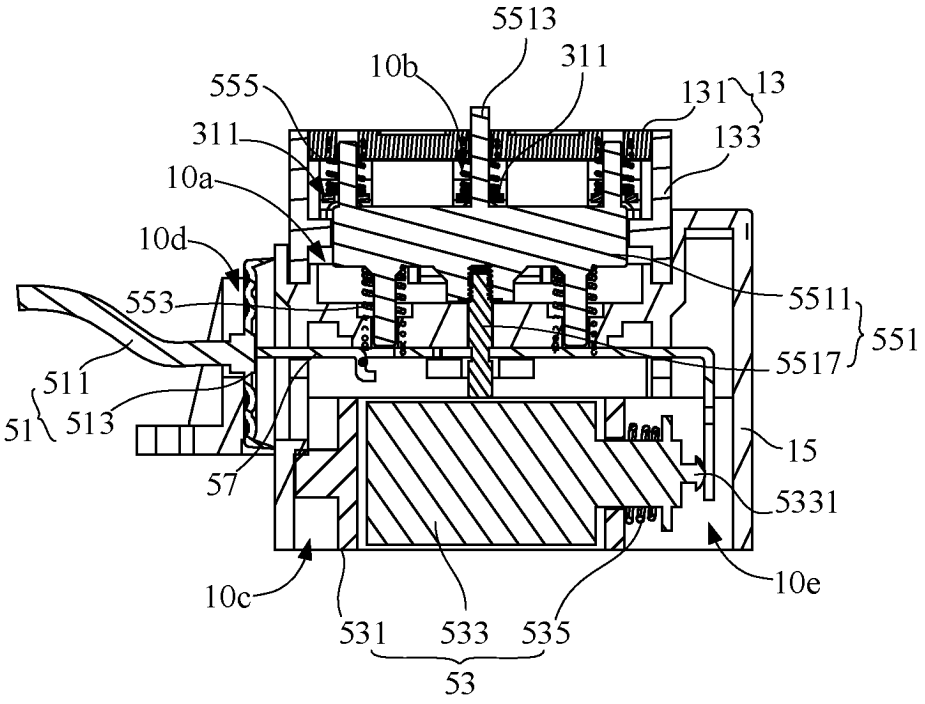
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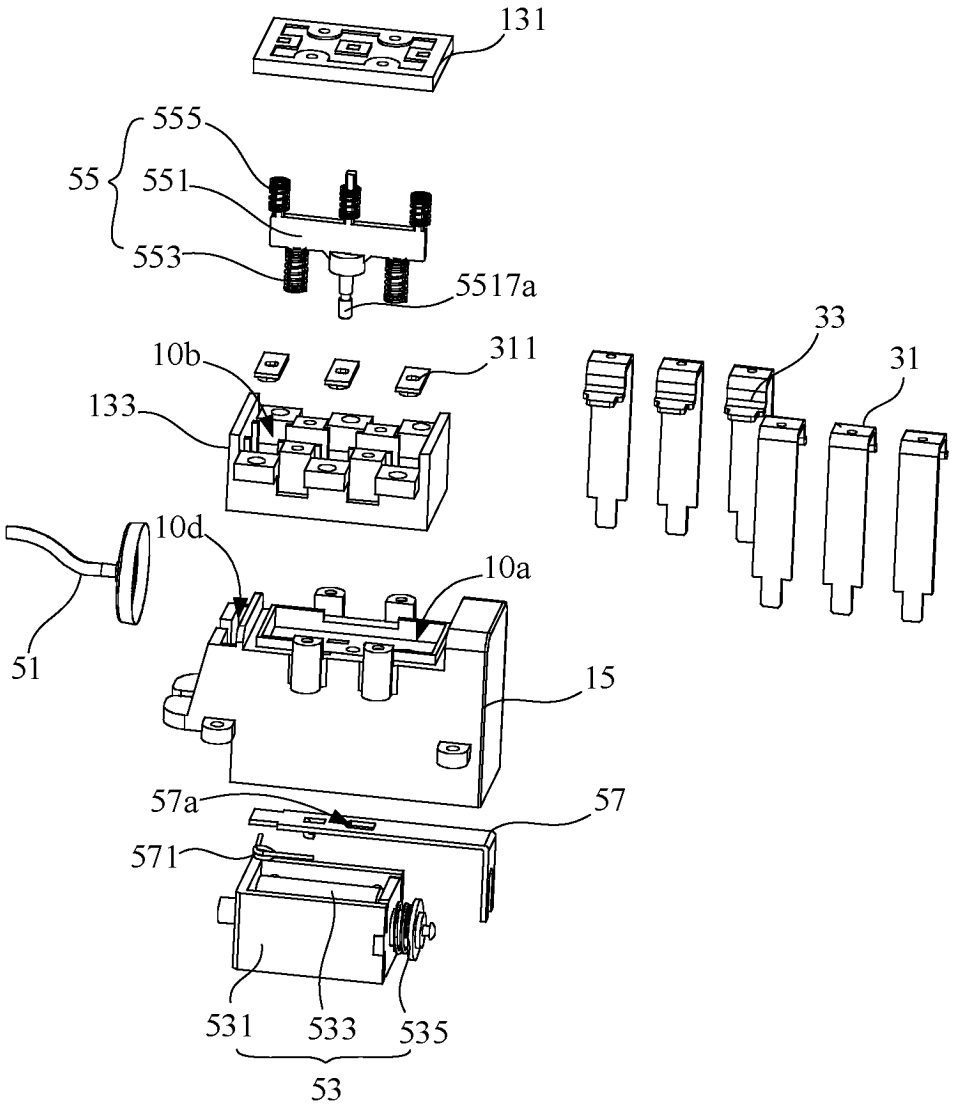
FIG. 8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10d
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FIG. 9

**INTERNATIONAL SEARCH REPORT**

International application No.
**PCT/CN2024/100444**

**A. CLASSIFICATION OF SUBJECT MATTER**

H01H71/08(2006.01)i; H01H71/40(2006.01)i; H01H71/12(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)

CNABS; CNTXT; CNKI; VEN; USTXT; WOTXT; EPTXT: 芜湖美的智能厨电制造有限公司, 断路, 开关, 温控, 温度, 控制, 感应, 壳, 磁, 家用电器, 触发, breaker?, switch+, cas+, spring+, sens+, appliance?, concave?, rod+, temperature?, magnet+

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| **28 July 2024** | **06 August 2024** |
| Name and mailing address of the ISA/CN<br>**China National Intellectual Property Administration (ISA/CN)**<br>**China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088** | Authorized officer<br><br>Telephone No. |

Form PCT/ISA/210 (second sheet) (July 2022)

**INTERNATIONAL SEARCH REPORT**
**Information on patent family members**

International application No.
**PCT/CN2024/100444**

| Patent document cited in search report | | | Publication date (day/month/year) | Patent family member(s) | | | Publication date (day/month/year) |
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