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(54) MULTI-LINKAGE HANDLE FOR CIRCUIT BREAKER

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Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of circuit breakers, and specifically, to a multi-linkage handle used in a circuit breaker.

BACKGROUND

[0002] RCBO, also called earth leakage circuit breaker or ground fault circuit interrupter, is mainly used to protect a person in danger when current leakage occurs in a device, and may be used to protect a line or a motor to avoid overload or short circuit, or may be used in normal cases when a line is infrequently converted and started. The RCBO usually includes a housing. A circuit breaker apparatus and a current leakage protection apparatus are distributed in the housing. The circuit breaker apparatus is used to control the connection or the disconnection of a movable contact and a fixed contact when a short circuit or an overload occurs or a line is infrequently started. The current leakage protection apparatus is used to control the connection or disconnection of the movable contact and the fixed contact when current leakage occurs.

[0003] The circuit breaker apparatus and the current leakage protection apparatus are separately provided with a handle, so that when two or more circuit breakers are disposed, a quantity of handles also increases. In the prior art, usually one handle controls one circuit breaker operation mechanism. In this way, the quantity of the handles increases, and when there are multiple circuit breakers, it is difficult to simultaneously control the handles manually, and the handles need to be closed one by one, leading to complicated operation.

[0004] Such a handle is known e.g. from the document CN 108 511 281 A.

SUMMARY

[0005] In order to overcome the deficiencies of the prior art, the present invention provides a multi-linkage handle used in a circuit breaker, in which one handle may control two circuit breaker operation mechanisms, thereby reducing the quantity of operation handles and saving space.

[0006] To achieve the foregoing objectives, the present invention provides the following technical solutions. A multi-linkage handle used in a circuit breaker is provided, including a first handle, where a hinging and linking shaft hinged to a housing of the circuit breaker is linked to the middle part of the first handle, the other end of the hinging and linking shaft corresponding to the end linked to the first handle is linked to a concealed handle, an intermittent linkage mechanism is disposed between the concealed handle and the first handle, and the concealed handle may be intermittently linked to the first han-

dle through the intermittent linkage mechanism.

[0007] In the foregoing technical solutions, the structure of the handle is improved. Compared with the handle in the prior art, the first handle, the concealed handle, and the intermittent linkage mechanism are disposed, so that multiple circuit breakers may be controlled by controlling the first handle, and further, one handle may control two circuit breaker operation mechanisms. In this way, a quantity of operation handles is reduced, the structure is simplified, and mounting space is reduced.

[0008] The foregoing multi-linkage handle used in a circuit breaker is further set as follows. The intermittent linkage mechanism includes a second handle sleeved on the periphery of the concealed handle, the second handle is provided with an intermittent linkage area, and the concealed handle is provided with a protruding block corresponding to the intermittent linkage area; and the intermittent linkage mechanism further includes a connection assembly disposed between the first handle and the second handle, and the first handle may drive the second handle to work simultaneously through the connection assembly.

[0009] In the foregoing technical solutions, the second handle may work simultaneously with the first handle through the connection assembly, so that one handle may control two circuit breakers. Further, under joint action of the intermittent linkage area and the protruding block, the circuit breaker apparatus may be intermittently linked to the current leakage protection apparatus according to an actual situation. For example, when current leakage does not occur, and the circuit breaker apparatus is normally started, the intermittent linkage area rotates in an effective rotation direction. In this case, the protruding block does not come into contact with the intermittent linkage area. The second handle rotates with the first handle until an end of the intermittent linkage area is close to the protruding block. Once an abnormal case, for example, current leakage occurs, the current leakage protection apparatus works. The concealed handle pushes an end of the intermittent linkage area through the protruding block, so that the second handle drives the first handle to rotate and power is off, thereby protecting the circuit.

[0010] The foregoing multi-linkage handle used in a circuit breaker may further be set as follows. The connection assembly includes a linkage rod with two ends oppositely fixed to the first handle and the second handle, respectively.

[0011] In the foregoing technical solutions, the linkage rod is used to make the first handle and the second handles simultaneously linked.

[0012] The foregoing multi-linkage handle used in a circuit breaker may further be set as follows. An indication block is disposed at the periphery of the first handle.

[0013] In the foregoing technical solutions, the indication block may indicate power-on or power-off, facilitating observation for people.

[0014] The present invention is further described in de-

tail below with reference to the accompanying drawings and embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

FIG. 1 is a schematic structural diagram according to an embodiment of the present invention;
FIG. 2 is a schematic diagram of a second handle according to an embodiment of the present invention;
FIG. 3 is a schematic diagram of a concealed handle according to an embodiment of the present invention; and
FIG. 4 is a schematic diagram of a first handle according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0016] The technical solutions in embodiments of the present invention will be described below clearly and completely with reference to the accompanying drawings in the embodiments of the present invention. Apparently, the described embodiments are merely a part rather than all of the embodiments of the present invention.

[0017] A multi-linkage handle used in a circuit breaker shown in FIG. 1 to FIG. 4 includes a first handle 1. A hinging and linking shaft 2 hinged to a housing of the circuit breaker is linked to the middle part of the first handle 1 (where the linkage shaft 2 is a handle fixing axis extending from the housing). The other end of the hinging and linking shaft 2 corresponding to the end linked to the first handle 1 is linked to a concealed handle 3. An intermittent linkage mechanism is disposed between the concealed handle 3 and the first handle 1. The concealed handle 3 may be intermittently linked to the first handle 1 through the intermittent linkage mechanism. The intermittent linkage mechanism includes a second handle 4 sleeved on the periphery of the concealed handle 3. The second handle 4 is provided with an intermittent linkage area 41. The concealed handle 3 is provided with a protruding block 31 corresponding to the intermittent linkage area 41. The intermittent linkage mechanism further includes a connection assembly disposed between the first handle 1 and the second handle 4. The first handle 1 may drive the second handle 4 to work simultaneously through the connection assembly. The connection assembly includes a linkage rod 5 with two ends oppositely fixed to the first handle 1 and the second handle 4, respectively. An indication block 6 is disposed at the periphery of the first handle 1.

[0018] Working principles are as follows. When, for example, current leakage does not occur, and the circuit breaker apparatus is normally started, the first handle 1 is pushed in an effective rotation direction of the first handle 1, and the first handle 1, through the linkage rod 5, drives the second handle 4 to rotate. In this case, the

protruding block 31 does not come into contact with the intermittent linkage area 41, and the concealed handle 3 does not work, so that the current leakage protection apparatus of the circuit breaker does not work. When the second handle 4 rotates with the first handle 1 to a limit, an end of the intermittent linkage area 41 is close to the protruding block 31. When an abnormal case, for example, current leakage occurs, the current leakage protection apparatus works and drives the concealed handle 3 to rotate in a direction opposite to the effective rotation direction of the first handle 1. The protruding block 31 pushes the end of the intermittent linkage area 41, so that the second handle 4 rotates with the concealed handle 3, and the linkage rod 5 drives the first handle 1 to rotate. In this way, power is off, and the circuit is protected. Compared with the handle in the prior art, the structure of the handle is improved. The first handle 1, the concealed handle 3, and the intermittent linkage mechanism are disposed, so that multiple circuit breakers may be controlled by controlling the first handle 1, and further, one handle may control two circuit breaker operation mechanisms. In this way, a quantity of operation handles is reduced, the structure is simplified, and mounting space is reduced.

Claims

1. A multi-linkage handle for a circuit breaker, comprising a first handle (1), wherein a middle part of the first handle (1) is connectable to an end of a hinging and linking shaft (2) hinged to a housing of the circuit breaker, coaxially and rotatably relative to each other, and **characterized in that** it further comprises a concealed handle (3) connectable to another end of the hinging and linking shaft (2) opposite to the end connectable to the first handle (1), coaxially and rotatably relative to each other, an intermittent linkage mechanism is disposed between the concealed handle (3) and the first handle (1), and the concealed handle (3) is intermittently linked to the first handle (1) through the intermittent linkage mechanism, wherein the intermittent linkage mechanism comprises a second handle (4) sleeved on a periphery of the concealed handle (3) coaxially and rotatably relative to each other, the second handle (4) is provided with an intermittent linkage area (41), and the concealed handle (3) is provided with a protruding block (31) corresponding to the intermittent linkage area (41); and the intermittent linkage mechanism further comprises a connection assembly (5) disposed between the first handle (1) and the second handle (4), and the first handle (1) drives the second handle (4) to work simultaneously through the connection assembly.
2. The multi-linkage handle used in the circuit breaker according to claim 1, wherein the connection assembly

bly comprises a linkage rod (5) with two ends oppositely fixed to the first handle (1) and the second handle (4), respectively.

3. The multi-linkage handle used in the circuit breaker according to claim 1 or 2, wherein an indication block (6) is disposed at a periphery of the first handle (1).

Patentansprüche

1. Ein mehrgelenkiger Griff für einen Leistungsschalter, umfassend einen ersten Griff (1), wobei der mittlere Teil der ersten Griffes (1) mit einem Ende einer Scharnier- und Verbindungswelle (2), die an einem Gehäuse des Leistungsschalters eingehängt ist, koaxial und drehbar verbunden ist;

dadurch gekennzeichnet, dass er ferner einen verdeckten Griff (3) umfasst, der mit einem anderen Ende der Scharnier- und Verbindungswelle (2) verbunden werden kann, das dem Ende, das mit dem ersten Griff (1) verbunden werden kann, gegenüberliegt; koaxial und drehbar ist ein intermittierender Verbindungsmechanismus zwischen dem verdeckten Griff (3) und dem ersten Griff (1) angeordnet, und der verdeckte Griff (3) ist durch den intermittierenden Verbindungsmechanismus intermittierend mit dem ersten Griff (1) verbunden, wobei der intermittierende Verbindungsmechanismus einen zweiten Griff (4), der eine Peripherie des verdeckten Griffes (3) ummantelt, koaxial und drehbar umfasst, der zweite Griff (4) mit einem intermittierenden Verbindungsbereich (41) und der verdeckte Griff (3) mit einem hervorstehenden Block (31), der dem intermittierenden Verbindungsmechanismus (41) entspricht, versehen ist; wobei der intermittierenden Verbindungsmechanismus (41) ferner eine Verbindungsanordnung (5) umfasst, die sich zwischen dem ersten Griff (1) und dem zweiten Griff (4) verbindet und der erste Griff (1) den zweiten Griff (4) antreibt, sodass sie durch die beide Verbindungsanordnung gleichzeitig den Betrieb aufnehmen.

2. Der mehrgelenkige Griff in einem Leistungsschalter nach Anspruch 1, wobei die Verbindungsanordnung eine Verbindungsstange (5) mit zwei gegenüberliegenden Enden umfasst, die jeweils am ersten Griff (1) bzw. am zweiten Griff (4) befestigt sind.

3. Der mehrgelenkige Griff in einem Leistungsschalter nach Anspruch 1 oder 2, wobei ein Anzeigeblock (6) an der Peripherie des ersten Griffes (1) angeordnet ist.

Revendications

1. Une poignée de disjoncteur à connexions multiples,

comprenant une première poignée (1), dans laquelle la partie médiane de la première poignée (1) est raccordable à une terminaison d'une articulation et d'un arbre de connexion (2) articulé au logement du disjoncteur, coaxialement et de façon rotative l'une à l'autre, et

caractérisée en ce qu'elle comprend en outre une poignée dissimulée (3) raccordable à une autre terminaison d'une articulation et d'un arbre de connexion (2) opposés à l'extrémité de la terminaison raccordable à la première poignée (1), coaxialement et de façon rotative l'une à l'autre, un mécanisme de connexion intermittente est placé entre la poignée dissimulée (3) et la première poignée (1), et la poignée dissimulée (3) est connectée de façon intermittente à la première poignée (1) via le mécanisme de connexion intermittente, dans lequel le mécanisme de connexion intermittente comprend une deuxième poignée (4) emmanchée sur une périphérie de la poignée dissimulée (3) coaxialement et de façon rotative l'une à l'autre, la deuxième poignée (4) est munie d'une zone de connexion intermittente (41), et la poignée dissimulée (3) est munie d'un bloc saillant (31) correspondant à la zone de connexion intermittente (41); et le mécanisme de connexion intermittente comprend en outre un ensemble de raccordement (5) placé entre la première poignée (1) et la deuxième poignée (4), et la première poignée (1) entraîne la deuxième poignée (4) à fonctionner simultanément via l'ensemble de raccordement.

2. Une poignée de disjoncteur à connexions multiples selon la revendication 1, dans laquelle l'ensemble de raccordement comprend une tige de connexion (5) avec deux terminaisons fixées de façon opposée à la première poignée (1) et la deuxième poignée (4), respectivement.

3. Une poignée de disjoncteur à connexions multiples selon la revendication 1 ou 2, dans laquelle un bloc indicatif (6) est placé à une périphérie de la première poignée (1).

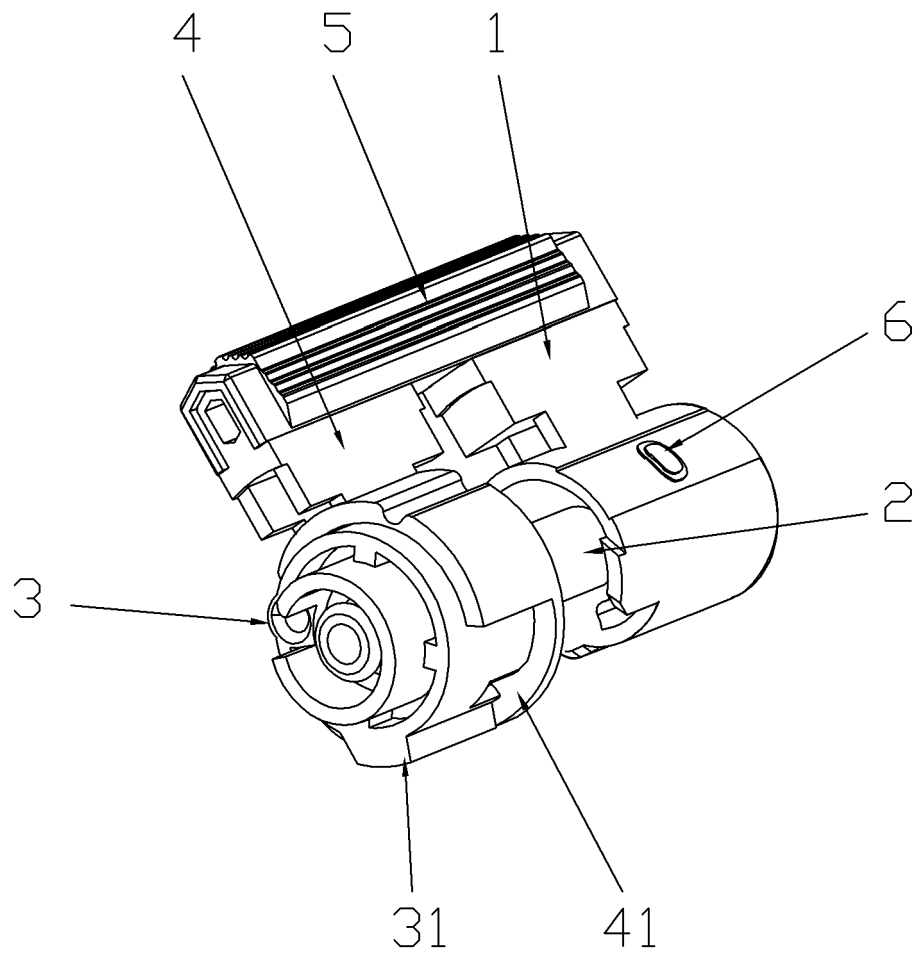


Fig. 1

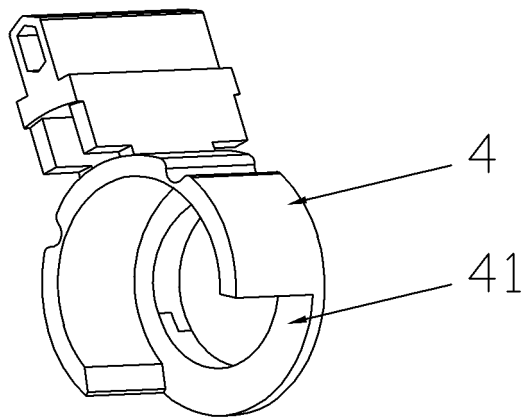


Fig. 2

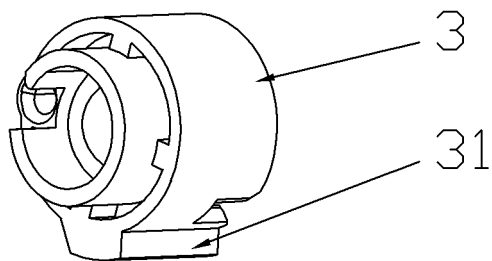


Fig. 3

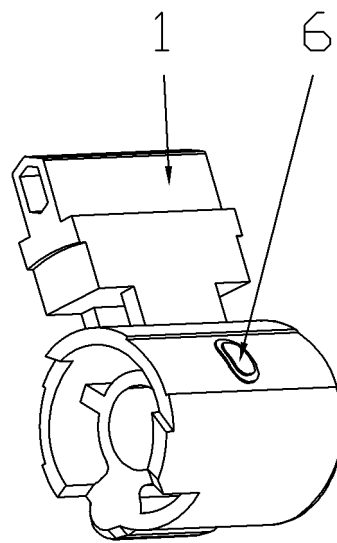


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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