(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 385 974 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
14.02.2024 Bulletin 2024/07

(21) Application number: **18165872.5**

(22) Date of filing: **05.04.2018**

(51) International Patent Classification (IPC):
H01H 83/22 *(2006.01)* *H01H 71/08* *(2006.01)*
H01H 71/40 *(2006.01)* *H01H 71/02* *(2006.01)*

(52) Cooperative Patent Classification (CPC):
H01H 83/226; H01H 71/002; H01H 71/0221; H01H 71/08; H01H 71/40; H01H 71/526

(54) **RESIDUAL CURRENT OPERATED CIRCUIT BREAKER**

FEHLERSTROMSCHUTZSCHALTER

DISJONCTEUR DIFFÉRENTIEL

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **06.04.2017 CN 201710221946**

(43) Date of publication of application:
10.10.2018 Bulletin 2018/41

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EP 3 385 974 B1

Description

Technical field

[0001] The present invention relates to the field of low-voltage electricity, in particular to a residual current operated circuit breaker.

Background art

[0002] As is well known, residual current circuit breakers not only have the control, overload and short circuit protection functions of conventional miniature circuit breakers (MCB), but also have a leakage protection function, so can actively protect the safety of life and property, being able to rapidly cut off a faulty power supply within a short time, to protect the safety of people and electrical appliances.

[0003] Existing RCBOs are generally divided into the following two forms of implementation, depending on their own structural layout. RCBOs of the first type have the same width as a compact product, but because the leakage detection and N pole connection flexible conductors arc located on the left side of the product, the product length is greater, so a special distribution box is still needed for installation. Moreover, since the N pole connection flexible conductor lacks the basic protection function of the RCBO, the reliability of the product is poor. RCBOs of the second type have the same dimensions as a compact product, but lack an N pole connection flexible conductor, so the product installation cost is higher, and the convenience of wiring by a user has room for improvement.

[0004] From document EP 2 242 077 A2 a residual current operated circuit breaker according to the preamble of claim 1 is known.

[0005] From document EP 2 506 283 A1 a residual current operated circuit breaker is known which breaks both the L pole and the N pole.

[0006] To resolve the abovementioned shortcomings, there is an urgent need for those skilled in the art to research and develop a new type of residual current operated circuit breaker.

Content of the invention

[0007] The object of the present invention is to provide a residual current operated circuit breaker; a product thereof has a better protection function, a housing has a more compact structural layout, and a process of product installation and wiring is more convenient and reliable.

[0008] The present invention provides a residual current operated circuit breaker, comprising: a housing, comprising a first housing, a second housing and an installation housing located therebetween, with a first accommodating chamber being formed between the first housing and the installation housing, and a second accommodating chamber being formed between the second housing and the installation housing; an electromagnetic trip apparatus and an arc extinguishing apparatus, disposed in the first accommodating chamber; a first operating mechanism, used for working in cooperation with the electromagnetic trip apparatus and being located on one side of the first accommodating chamber; a leakage trip apparatus, disposed in the second accommodating chamber; a second operating mechanism, used for working in cooperation with the leakage trip apparatus and being located on one side of the second accommodating chamber, with actions of the first operating mechanism and the second operating mechanism being capable of realizing the opening and closing of a current loop; a first terminal assembly, which may be used for an L pole incoming line, with an installation gap being provided on one side of the installation housing, the first terminal assembly being capable of running through the installation gap and being clamped in a space formed by the first housing and the second housing; a second terminal assembly, which may be used for an L pole outgoing line, being accommodated in the first accommodating chamber; a third terminal assembly, which may be used for an N pole incoming line, being accommodated in the second accommodating chamber; a flexible conductor assembly having a contact opening/closing function, which may be used for an N pole outgoing line, being accommodated in the second accommodating chamber. This design can provide the user with a method of wiring that is more convenient and reliable, and on condition that it is ensured that the product has perfect safety protection, still has an optimal housing structure.

[0009] According to one aspect of the present invention, the second terminal assembly is located on one side, close to the electromagnetic trip apparatus, in the first accommodating chamber.

[0010] According to another aspect of the present invention, an incoming line end of the third terminal assembly and an outgoing line end of the flexible conductor assembly are located on the same side of the housing. This design facilitates product installation and wiring, and the structural design of the housing interior is more compact, so the user has no need to use a special distribution box for installation; this helps to increase the user space utilization rate.

[0011] According to the present invention, the first operating mechanism comprises a first contact assembly and a first actuating assembly, the second operating mechanism comprises a second contact assembly and a second actuating

assembly, and linked movement of the first actuating assembly and second actuating assembly is realized by means of a drive element and an operating handle.

[0012] According to the present invention, the flexible conductor assembly comprises:
a connecting plate; a first connecting conductor, one end thereof being connected to a static contact in the second contact assembly, and another end thereof being connected to the connecting plate; a second connecting conductor, one end thereof being connected to the connecting plate, and another end thereof being a free connection end and extending to the outside of the housing, to save more space inside the housing; since one side of the first connecting conductor is connected to N pole moving and static contacts, an N pole connecting conductor contact opening/closing function can be realized.

[0013] According to the present invention, the connecting plate is a bent structure, and is provided with a trough-shaped first bent part, with an end of the first connecting conductor being accommodated in the first bent part; and a plate-like second bent part, with an end of the second connecting conductor being crimped to the second bent part, to help enhance the reliability of structural connection.

[0014] According to another aspect of the present invention, a wiring capacity of the first terminal assembly is larger than a wiring capacity of the third terminal assembly; this can effectively enhance the electrical safety and reliability of the L pole wiring.

[0015] According to another aspect of the present invention, the first terminal assembly has a current carrying range of 6 A - 32 A, and the first terminal assembly may be connected to a common bus bar, to meet the needs of large current input at the L pole, enhancing product applicability.

[0016] According to another aspect of the present invention, the direction of an N pole current loop of the residual current operated circuit breaker is, in sequence, the third terminal assembly, an N pole moving contact, an N pole static contact, the first connecting conductor, the connecting plate and the second connecting conductor.

[0017] According to another aspect of the present invention, also included is a thermal protection assembly, being close to the arc extinguishing apparatus and located in the first accommodating chamber, for the purpose of realizing thermal protection of the circuit breaker.

Description of the accompanying drawings

[0018] The present invention is explained in detail below in conjunction with the accompanying drawings and particular embodiments. In the drawings:

Fig. 1 is a schematic diagram of the product structure of a residual current operated circuit breaker according to an embodiment of the present invention;
fig. 2 is a schematic diagram of an N pole structure of the residual current operated circuit breaker shown in fig. 1;
fig. 3 is a schematic diagram of an L pole structure of the residual current operated circuit breaker shown in fig. 1;
fig. 4 is an exploded schematic diagram of part of the structure of fig. 2; and
fig. 5 is an exploded schematic diagram of part of the structure of fig. 3.

Key to labels

[0019]

residual current operated circuit breaker	100	first actuating assembly	23
housing	10	arc extinguishing apparatus	30
first housing	11	leakage trip apparatus	40
second housing	12	second operating mechanism	42
installation housing	13	second contact assembly	43
electromagnetic trip apparatus	20	second actuating assembly	44
first operating mechanism	21	first terminal assembly	71
first contact assembly	22	second terminal assembly	72
L pole static contact	221	third terminal assembly	51
L pole moving contact	222	flexible conductor assembly	60
N pole static contact	431	first connecting conductor	61
N pole moving contact	432	second connecting conductor	62
connecting plate	63	drive element	81
first bent part	631	operating handle	82

(continued)

second bent part	632	slider	83
circuit board assembly	80		

Particular embodiments

[0020] To enable clearer understanding of the technical features, objectives and effects of the invention, particular embodiments of the present invention are now explained with reference to the accompanying drawings, in which identical labels indicate identical parts. In the drawings representing the embodiments, if the final two digits are the same, this indicates components having the same structure, or having similar structures but the same function.

[0021] To make the drawings appear uncluttered, only those parts relevant to the present invention are shown schematically in the drawings; they do not represent the actual structure thereof as a product.

[0022] Furthermore, to make the drawings appear uncluttered for ease of understanding, in the case of components having the same structure or function in certain drawings, only one of these is drawn schematically, or only one is marked.

[0023] As used herein, "top", "bottom", "front", "rear", "left" and "right" etc. are merely used to indicate a positional relationship between relevant parts, not to define their absolute positions.

[0024] As used herein, "first" and "second" etc. are merely used to differentiate between parts, not to indicate their order or degree of importance, etc.

[0025] As used herein, "parallel" and "perpendicular" etc. are not strict limitations in the mathematical and/or geometric sense, but include errors which can be understood by those skilled in the art and are permitted in manufacture or use, etc.

[0026] Referring to fig. 1, this shows a residual current operated circuit breaker according to an embodiment of the present invention; the residual current operated circuit breaker 100 comprises a housing 10. The housing 10 comprises a first housing 11, a second housing 12 and an installation housing 13. The installation housing 13 is located between the first housing 11 and the second housing 12. A first accommodating chamber is formed between the first housing 11 and the installation housing 13; a second accommodating chamber is formed between the second housing 12 and the installation housing 13. The residual current operated circuit breaker 100 has a first current loop and a second current loop, wherein the first current loop is located in the first accommodating chamber, and the second current loop is located in the second accommodating chamber.

[0027] Referring to figs. 2 and 3, the residual current operated circuit breaker 100 further comprises an electromagnetic trip apparatus 20, an arc extinguishing apparatus 30, a first operating mechanism 21, a leakage trip apparatus 40 and a second operating mechanism 42. Specifically, the electromagnetic trip apparatus 20 and the arc extinguishing apparatus 30 are disposed in the first accommodating chamber. The first operating mechanism 21 is used for working in cooperation with the electromagnetic trip apparatus 20 and is located on one side of the first accommodating chamber; the action of the first operating mechanism 21 can realize opening and closing of the first current loop, for the purpose of realizing overcurrent protection of the residual current operated circuit breaker 100; the arc extinguishing apparatus 30 facilitates rapid extinguishing of an arc. The leakage trip apparatus 40 is disposed in the second accommodating chamber; the second operating mechanism 42 is used for working in cooperation with the leakage trip apparatus 40 and is located on one side of the second accommodating chamber; the action of the second operating mechanism 42 can realize opening and closing of the second current loop, for the purpose of realizing leakage protection of the residual current operated circuit breaker 100. In order to realize a thermal protection function, the residual current operated circuit breaker 100 of the present invention also comprises a thermal protection assembly 31 formed of a bimetallic strip, which is close to the arc extinguishing apparatus 30 and located in the first accommodating chamber, and a circuit board assembly 80 for detection and control signal output, disposed in the second accommodating chamber.

[0028] Referring to figs. 4 and 5, in order to satisfy wiring functions of an L pole and an N pole, the residual current operated circuit breaker of the present invention also comprises a first terminal assembly 71 which may be used for an L pole incoming line, a second terminal assembly 72 which may be used for an L pole outgoing line, and a third terminal assembly 51 which may be used for an N pole incoming line. It is worth pointing out that compared with a terminal assembly in the prior art, the first terminal assembly 71 of the present invention is of large size; in order to satisfy reliability of installation of the first terminal assembly 71 without increasing the size of the housing, preferably, an installation gap is provided on one side of the installation housing 13, and the first terminal assembly 71 can run through the installation gap and be clamped in the space formed by the first housing 11 and the second housing 12. The second terminal assembly 72 is accommodated in the first accommodating chamber, and the third terminal assembly 51 is accommodated in the second accommodating chamber. Preferably, the second terminal assembly 72 is located on one side, close to the electromagnetic trip apparatus, in the first accommodating chamber.

[0029] In particular, a wiring capacity of the first terminal assembly 71 is larger than a wiring capacity of the third terminal assembly 51. Since the first terminal assembly 71 of the present invention replaces a small terminal assembly used in the prior art, the use of a large terminal assembly with a larger wiring capacity can effectively enhance the

electrical safety and reliability of L pole wiring. According to a preferred embodiment of the present invention, the first terminal assembly 71 has a current carrying range of 6 A - 32 A. The first terminal assembly 71 is optionally connected to a common bus bar; an L pole incoming line end may be connected to a conductor of larger cross section, to meet the needs of large current input at the L pole, enhancing product applicability, and increasing product competitiveness more effectively. Optionally, a slider 83 is also disposed on one side of the housing 10 of the present invention, close to the first terminal assembly 71; the slider 83 can avoid the need for a user's finger to come into contact with electrified components, in order to effectively protect the user's personal safety, and also facilitates the task of removably connecting the circuit breaker to a corresponding rail in a flexible manner.

[0030] In order to enable the user to manage and use the circuit breaker more easily, the residual current operated circuit breaker of the present invention differs from the prior art in that an N pole outgoing line is realized by means of a flexible conductor assembly 60, and the flexible conductor assembly 60 has a contact opening/closing function, thereby being able to enhance the electrical safety and reliability of an N pole current loop. Referring to figs. 2 and 4, the flexible conductor assembly 60 is accommodated in the second accommodating chamber. According to a preferred embodiment of the present invention, an incoming line end of the third terminal assembly 51 and an outgoing line end of the flexible conductor assembly 60 are located on the same side of the housing 10; this design facilitates product installation and wiring, and increases user space utilization rate. Since the structural design of the housing interior is more compact, the overall length of the circuit breaker product is unchanged, so the user has no need to use a special distribution box for installation, and the convenience of product installation is increased effectively. Moreover, since a flexible conductor is used to replace a wiring terminal, processing technology can be simplified, effectively reducing the production cost of the product.

[0031] Referring to figs. 2 and 3, furthermore, the first operating mechanism 21 comprises: a first contact assembly 22 and a first actuating assembly 23. The second operating mechanism 42 comprises a second contact assembly 43 and a second actuating assembly 44. More specifically, the action of the first contact assembly 22 and the first actuating assembly 23 can realize the opening and closing of an L pole current loop. The action of the second contact assembly 43 and the second actuating assembly 44 can realize the opening and closing of the N pole current loop. Linked movement of the first actuating assembly 23 and second actuating assembly 44 may be realized by means of a drive element 81 and an operating handle 82.

[0032] As shown in fig. 4, according to a preferred embodiment of the present invention, the flexible conductor assembly 60 comprises a connecting plate 63, a first connecting conductor 61 and a second connecting conductor 62. Specifically, one end of the first connecting conductor 61 is connected to a static contact 431 in the second contact assembly 43; another end of the first connecting conductor 61 is connected to the connecting plate 63. One end of the second connecting conductor 62 is connected to the connecting plate 63; another end of the second connecting conductor 62 is a free connection end and extends to the outside of the housing 10. Referring to figs. 2 to 5, the direction of the L pole current loop of the present invention is, in sequence, the first terminal assembly 71, an L pole moving contact 222, an L pole static contact 221 and the second terminal assembly 72. The direction of the N pole current loop is, in sequence, the third terminal assembly 51, an N pole moving contact 432, the N pole static contact 431, the first connecting conductor 61, the connecting plate 63 and the second connecting conductor 62. With such a design, since one side of the first connecting conductor 61 is connected to the N pole moving and static contacts 432 and 431, the flexible conductor assembly 60 has a contact opening/closing function. Compared with the prior art, the protection function and reliability of the N pole of the circuit breaker of the present invention are therefore vastly improved.

[0033] Referring to fig. 4, preferably, in a schematic embodiment, in order to save space inside the housing and enhance installation reliability, the connecting plate 63 may have a bent structure, and can be stably engaged in an installation groove formed jointly by multiple limiting ribs on an inner surface of the housing. Preferably, the connecting plate 63 is also provided with a first bent part 631 and a second bent part 632. To enhance the stability of electrical connection, the first bent part 631 may be trough-shaped, and an end of the first connecting conductor 61 can be accommodated in the trough-shaped first bent part 631. The second bent part 632 may be plate-like, and an end of the second connecting conductor 62 is crimped to the plate-like second bent part 632. It is worth pointing out that the shape and structure of the connecting plate 63 are not unique; those skilled in the art could make various changes and substitutions according to actual needs when the same functions can be realized, without departing from the scope of protection of the present invention.

[0034] The residual current operated circuit breaker according to the present invention can provide the user with a method of wiring that is more convenient and reliable, and on condition that it is ensured that the product has perfect safety protection, still has an optimal housing structure, effectively saving installation space for the user, and at the same time, since a flexible conductor is used to replace a wiring terminal, the processing technology of the product can be simplified, and the product cost is reduced.

[0035] As used herein, "schematic" means "serving as an instance, example or illustration". No drawing or embodiment described herein as "schematic" should be interpreted as a more preferred or more advantageous technical solution.

Claims

1. A residual current operated circuit breaker (100), comprising:

   a housing (10), comprising a first housing (11), a second housing (12) and an installation housing (13) located therebetween, with a first accommodating chamber being formed between the first housing (11) and the installation housing (13), and a second accommodating chamber being formed between the second housing (12) and the installation housing (13);
   an electromagnetic trip apparatus (20) and an arc extinguishing apparatus (30), disposed in the first accommodating chamber;
   a first operating mechanism (21), used for working in cooperation with the electromagnetic trip apparatus (20) and being located on one side of the first accommodating chamber and comprising a first contact assembly (22) and a first actuating assembly (23);
   a leakage trip apparatus (40), disposed in the second accommodating chamber;
   a second operating mechanism (42), used for working in cooperation with the leakage trip apparatus (40) and being located on one side of the second accommodating chamber and comprising a second contact assembly (43) and a second actuating assembly (44), with actions of the first operating mechanism (21) and the second operating mechanism (42) being capable of realizing the opening and closing of a current loop, and wherein linked movement of the first actuating assembly (23) and second actuating assembly (44) is realized by means of a drive element (81) and an operating handle (82);
   a first terminal assembly (71), which may be used for an L pole incoming line, with an installation gap being provided on one side of the installation housing (13), the first terminal assembly (71) being capable of running through the installation gap and being clamped in a space formed by the first housing (11) and the second housing (12);
   a second terminal assembly (72), which may be used for an L pole outgoing line, being accommodated in the first accommodating chamber;
   a third terminal assembly (51), which may be used for an N pole incoming line, being accommodated in the second accommodating chamber,
   characterized in that it further comprises:
   a flexible conductor assembly (60) having a contact opening/closing function, which may be used for an N pole outgoing line, being accommodated in the second accommodating chamber, wherein the flexible conductor assembly (60) comprises:

      a connecting plate (63);
      a first connecting conductor (61), one end thereof being connected to a static contact (431) in the second contact assembly (43), and another end thereof being connected to the connecting plate (63);
      a second connecting conductor (62), one end thereof being connected to the connecting plate (63), and another end thereof being a free connection end and extending to the outside of the housing (10), wherein the connecting plate (63) is a bent structure and is provided with a trough-shaped first bent part (631), with an end of the first connecting conductor (61) being accommodated in the first bent part (631), and with a plate-like second bent part (632), with an end of the second connecting conductor (62) being crimped to the second bent part (632).

2. The residual current operated circuit breaker as claimed in claim 1, wherein the second terminal assembly (72) is located on one side, close to the electromagnetic trip apparatus (20), in the first accommodating chamber.

3. The residual current operated circuit breaker as claimed in claim 1, wherein an incoming line end of the third terminal assembly (51) and an outgoing line end of the flexible conductor assembly (60) are located on the same side of the housing (10).

4. The residual current operated circuit breaker as claimed in claim 1, wherein a wiring capacity of the first terminal assembly (71) is larger than a wiring capacity of the third terminal assembly (51).

5. The residual current operated circuit breaker as claimed in claim 1, wherein the first terminal assembly (71) has a current carrying range of 6 A - 32 A, and the first terminal assembly (71) may be connected to a common bus bar.

6. The residual current operated circuit breaker as claimed in claim 1, wherein the direction of an N pole current loop of the residual current operated circuit breaker (100) is, in sequence, the third terminal assembly (51), an N pole

moving contact (432), an N pole static contact (431), the first connecting conductor (61), the connecting plate (63) and the second connecting conductor (62).

7. The residual current operated circuit breaker as claimed in claim 1, further comprising a thermal protection assembly (31), being close to the arc extinguishing apparatus (30) and located in the first accommodating chamber.

Patentansprüche

1. Fehlerstromschutzschalter (100), umfassend:

ein Gehäuse (10), das ein erstes Gehäuse (11), ein zweites Gehäuse (12) und ein dazwischen angeordnetes Installationsgehäuse (13) umfasst, wobei zwischen dem ersten Gehäuse (11) und dem Installationsgehäuse (13) eine erste Aufnahmekammer und zwischen dem zweiten Gehäuse (12) und dem Installationsgehäuse (13) eine zweite Aufnahmekammer gebildet wird;
eine elektromagnetische Auslösevorrichtung (20) und eine Lichtbogenlöschvorrichtung (30), die in der ersten Aufnahmekammer angeordnet sind;
einen ersten Betätigungsmechanismus (21), der zum Zusammenwirken mit der elektromagnetischen Auslösevorrichtung (20) verwendet wird und auf einer Seite der ersten Aufnahmekammer angeordnet ist und eine erste Kontaktanordnung (22) und eine erste Betätigungsanordnung (23) umfasst;
ein Erdschluss-Schutzschalter (40), der in der zweiten Aufnahmekammer angeordnet ist;
einen zweiten Betätigungsmechanismus (42), der zum Zusammenwirken mit dem Erdschluss-Schutzschalter (40) verwendet wird und sich auf einer Seite der zweiten Aufnahmekammer befindet und eine zweite Kontaktanordnung (43) und eine zweite Betätigungsanordnung (44) umfasst, wobei Aktionen des ersten Betätigungsmechanismus (21) und des zweiten Betätigungsmechanismus (42) in der Lage sind, das Öffnen und Schließen einer Stromschleife zu realisieren, und wobei eine gekoppelte Bewegung der ersten Betätigungsanordnung (23) und der zweiten Betätigungsanordnung (44) mittels eines Antriebselements (81) und eines Betätigungsgriffs (82) realisiert wird;
eine erste Anschlussanordnung (71), die für eine ankommende L-Pol-Leitung verwendet werden kann, wobei auf einer Seite des Installationsgehäuses (13) ein Installationszwischenraum vorgesehen ist, wobei die erste Anschlussanordnung (71) durch den Installationsspalt laufen kann und in einem durch das erste Gehäuse (11) und das zweite Gehäuse (12) gebildeten Raum eingeklemmt ist;
eine zweite Anschlussanordnung (72), die für eine abgehende L-Pol-Leitung verwendet werden kann, in der ersten Aufnahmekammer untergebracht ist;
eine dritte Anschlussanordnung (51), die für eine ankommende N-Pol-Leitung verwendet werden kann und in der zweiten Aufnahmekammer untergebracht ist,
dadurch gekennzeichnet, dass er ferner umfasst:
eine flexible Leiteranordnung (60) mit einer Kontaktöffnungs-/-schließfunktion, die für eine abgehende N-Pol-Leitung verwendet werden kann, die in der zweiten Aufnahmekammer untergebracht ist, wobei die flexible Leiteranordnung (60) umfasst:

eine Verbindungsplatte (63);
einen ersten Verbindungsleiter (61), dessen eines Ende mit einem statischen Kontakt (431) in der zweiten Kontaktanordnung (43) und dessen anderes Ende mit der Verbindungsplatte (63) verbunden ist;
einen zweiten Verbindungsleiter (62), dessen eines Ende mit der Verbindungsplatte (63) verbunden ist und dessen anderes Ende ein freies Anschlussende ist und sich zur Außenseite des Gehäuses (10) erstreckt, wobei die Verbindungsplatte (63) eine gebogene Struktur ist und mit einem wannenförmigen ersten gebogenen Teil (631) versehen ist, wobei ein Ende des ersten Verbindungsleiters (61) in dem ersten gebogenen Teil (631) untergebracht ist, und mit einem plattenförmigen zweiten gebogenen Teil (632), wobei ein Ende des zweiten Verbindungsleiters (62) an den zweiten gebogenen Teil (632) gecrimpt ist.

2. Fehlerstromschutzschalter gemäß Anspruch 1, wobei die zweite Anschlussanordnung (72) auf einer Seite in der Nähe der elektromagnetischen Auslösevorrichtung (20) in der ersten Aufnahmekammer angeordnet ist.

3. Fehlerstromschutzschalter gemäß Anspruch 1, wobei ein ankommendes Leitungsende der dritten Anschlussanordnung (51) und ein abgehendes Leitungsende der flexiblen Leiteranordnung (60) auf der gleichen Seite des Gehäuses (10) angeordnet sind.

4. Fehlerstromschutzschalter gemäß Anspruch 1, wobei die Verdrahtungskapazität der ersten Anschlussanordnung (71) größer als die Verdrahtungskapazität der dritten Anschlussanordnung (51) ist.

5. Fehlerstromschutzschalter gemäß Anspruch 1, wobei die erste Anschlussanordnung (71) einen Stromführungsbereich von 6 A - 32 A aufweist und die erste Anschlussanordnung (71) mit einer gemeinsamen Sammelschiene verbunden werden kann.

6. Fehlerstromschutzschalter gemäß Anspruch 1, wobei die Richtung einer N-Pol-Stromschleife des Fehlerstromschutzschalters (100) in der Reihenfolge dritte Anschlussanordnung (51), beweglicher N-Pol-Kontakt (432), statischer N-Pol-Kontakt (431), erster Verbindungsleiter (61), Verbindungsplatte (63) und zweiter Verbindungsleiter (62) ausgelegt ist.

7. Fehlerstromschutzschalter gemäß Anspruch 1, ferner umfassend eine Wärmeschutzanordnung (31), die sich in der Nähe der Lichtbogenlöschvorrichtung (30) befindet und in der ersten Aufnahmekammer angeordnet ist.

Revendications

1. Disjoncteur différentiel résiduel (100), comprenant :

un boîtier (10), comprenant un premier boîtier (11), un deuxième boîtier (12) et un boîtier d'installation (13) situé entre eux, avec une première chambre d'accueil formée entre le premier boîtier (11) et le boîtier d'installation (13), et une deuxième chambre d'accueil formée entre le deuxième boîtier (12) et le boîtier d'installation (13) ;
un appareil de déclenchement électromagnétique (20) et un appareil d'extinction d'arc (30), disposés dans la première chambre d'accueil ;
un premier mécanisme d'ouverture (21), utilisé pour fonctionner en coopération avec l'appareil de déclenchement électromagnétique (20) et situé sur un côté de la première chambre d'accueil et comprenant un première ensemble de contact (22) et un première ensemble d'actionnement (23) ;
un appareil de déclenchement lors de fuites (40), disposé dans la deuxième chambre d'accueil ;
un deuxième mécanisme d'ouverture (42), utilisé pour fonctionner en coopération avec l'appareil de déclenchement lors de fuites (40) et situé sur un côté de la deuxième chambre d'accueil et comprenant un deuxième ensemble de contact (43) et un deuxième ensemble d'actionnement (44), avec des actions du premier mécanisme d'ouverture (21) et du deuxième mécanisme d'ouverture (42) capables de réaliser l'ouverture et la fermeture d'une boucle de courant, et un mouvement lié des premier ensemble d'actionnement (23) et deuxième ensemble d'actionnement (44) étant réalisé au moyen d'un élément d'entraînement (81) et d'une poignée d'exécution (82) ;
un premier ensemble borne (71), qui peut être utilisé pour une ligne entrante de pôle L, avec un espace d'installation prévu sur un côté du boîtier d'installation (13), le premier ensemble borne (71) pouvant traverser l'espace d'installation et étant enserré dans un espace formé par le premier boîtier (11) et le deuxième boîtier (12) ;
un deuxième ensemble borne (72), qui peut être utilisé pour une ligne sortante de pôle L, intégré dans la première chambre d'accueil ;
un troisième ensemble borne (51), qui peut être utilisé pour une ligne entrante de pôle N, intégré dans la deuxième chambre d'accueil,
caractérisé en ce qu'il comprend en outre :
un ensemble conducteur flexible (60) ayant une fonction d'ouverture/fermeture de contact, pouvant être utilisé pour une ligne sortante de pôle N, intégré dans la deuxième chambre d'accueil, l'ensemble conducteur flexible (60) comprenant :

une plaque de connexion (63) ;
un premier conducteur de connexion (61), une extrémité de celui-ci étant connectée à un contact statique (431) dans le deuxième ensemble de contact (43), et une autre extrémité de celui-ci étant connectée à la plaque de connexion (63) ;
un deuxième conducteur de connexion (62), une extrémité de celui-ci étant connectée à la plaque de connexion (63), et une autre extrémité de celui-ci étant une extrémité de connexion libre et s'étendant vers l'extérieur du boîtier (10), la plaque de connexion (63) étant une structure courbe et étant munie d'une première partie courbe (631) traversante, avec une extrémité du premier conducteur de connexion (61) intégrée dans la première partie courbe (631), et avec une deuxième partie courbe (632) en forme de

plaque, avec une extrémité du deuxième conducteur de connexion (62) sertie sur la deuxième partie courbe (632).

2. Disjoncteur différentiel résiduel selon la revendication 1, le deuxième ensemble borne (72) étant situé sur un côté, à proximité de l'appareil de déclenchement électromagnétique (20), dans la première chambre d'accueil.

3. Disjoncteur différentiel résiduel selon la revendication 1, une extrémité de ligne entrante du troisième ensemble borne (51) et une extrémité de ligne sortante de l'ensemble conducteur flexible (60) étant situés sur le même côté du boîtier (10).

4. Disjoncteur différentiel résiduel selon la revendication 1, un capacité de câblage du premier ensemble borne (71) étant supérieure à une capacité de câblage du troisième ensemble borne (51) .

5. Disjoncteur différentiel résiduel selon la revendication 1, le premier ensemble borne (71) ayant une plage porteuse de courant de 6 A à 32 A, et le premier ensemble borne (71) pouvant être connecté à une barre omnibus commune.

6. Disjoncteur différentiel résiduel selon la revendication 1, la direction d'une boucle de courant de pôle N du disjoncteur différentiel résiduel (100) étant, en séquence, le troisième ensemble borne (51), un contact mobile de pôle N (432), un contact statique de pôle (431), le premier conducteur de connexion (61), la plaque de connexion (63) et le deuxième conducteur de connexion (62).

7. Disjoncteur différentiel résiduel selon la revendication 1, comprenant en outre un ensemble de protection thermique (31), à proximité de l'appareil d'extinction d'arc (30) et situé dans la première chambre d'accueil.

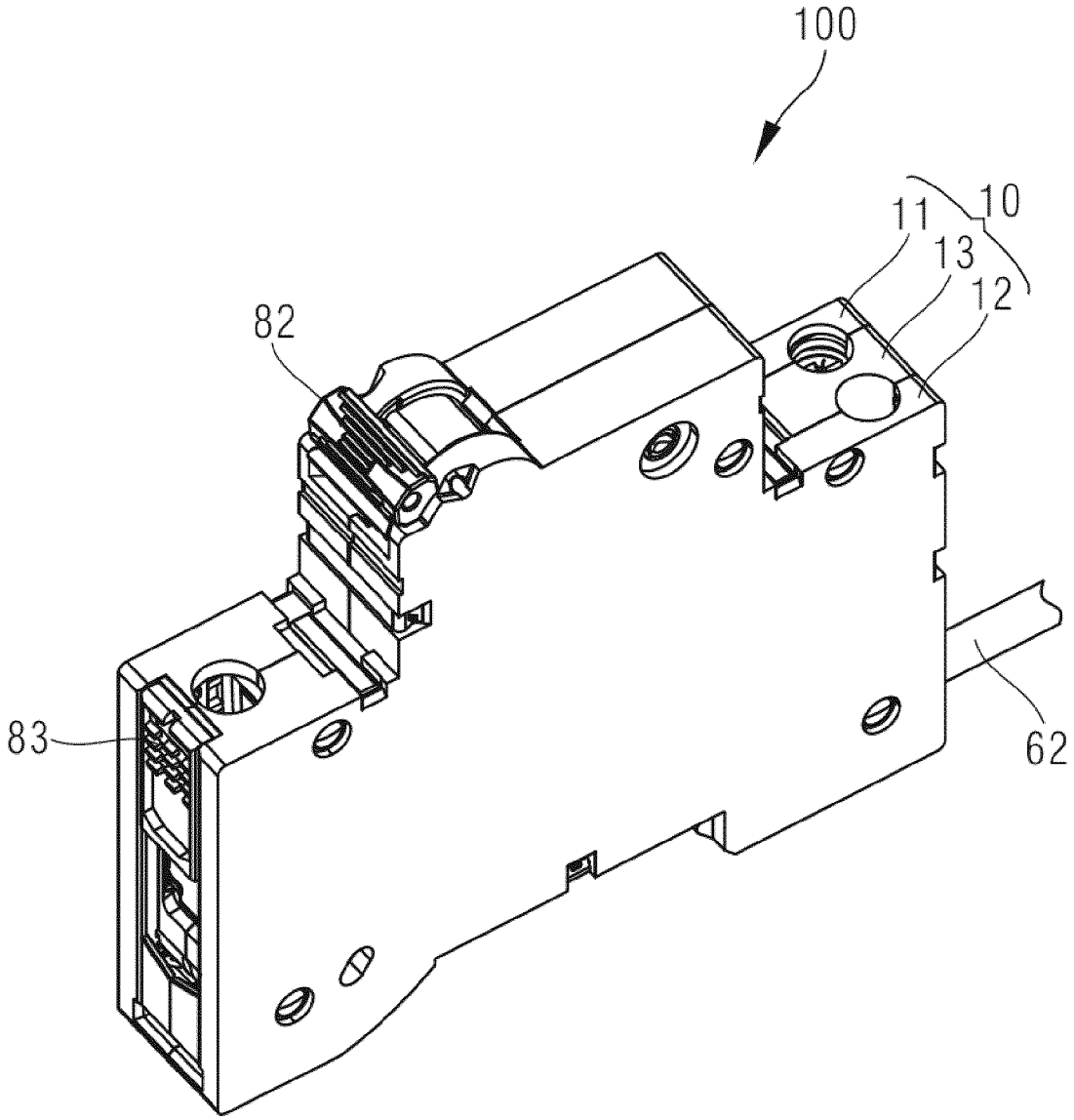

Fig. 1

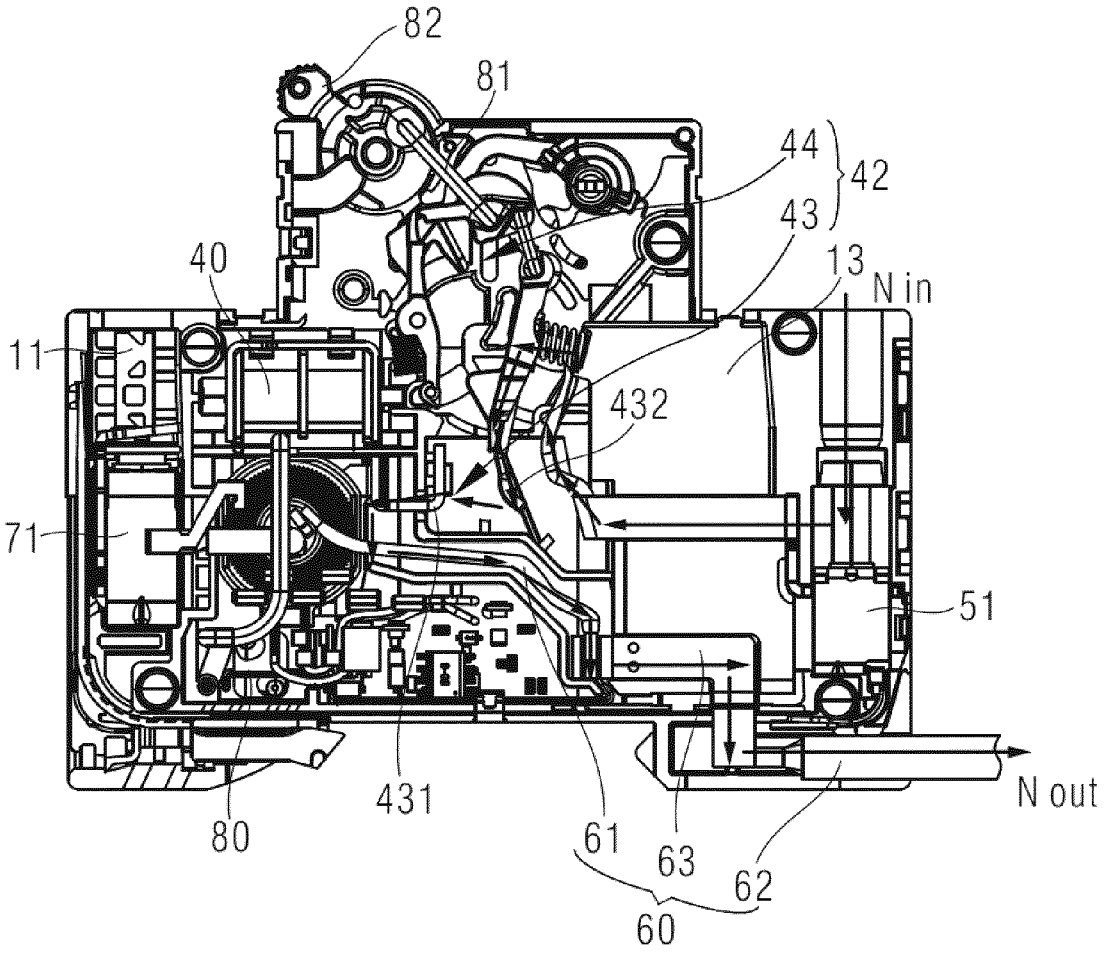

Fig. 2

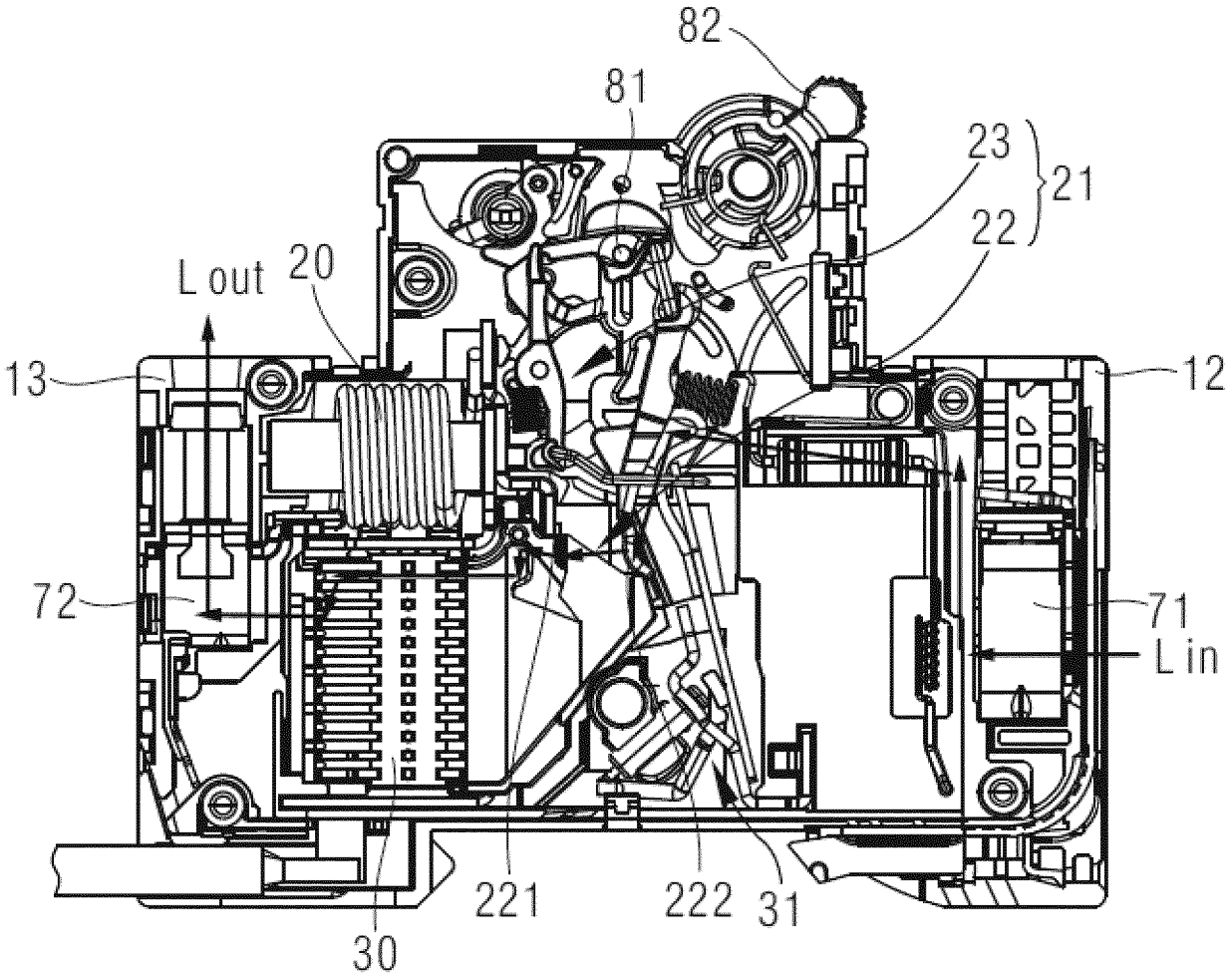

Fig. 3

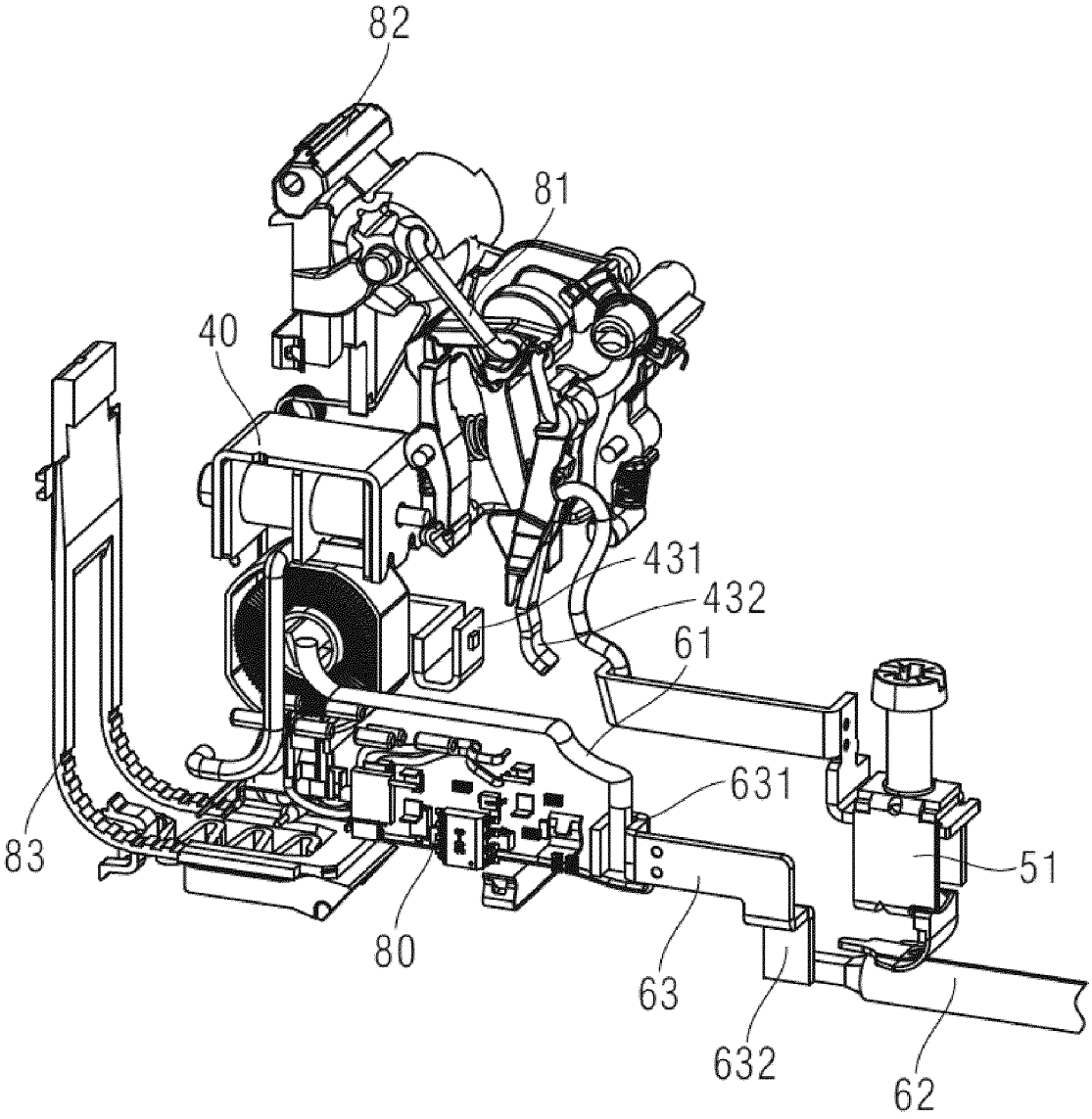

Fig. 4

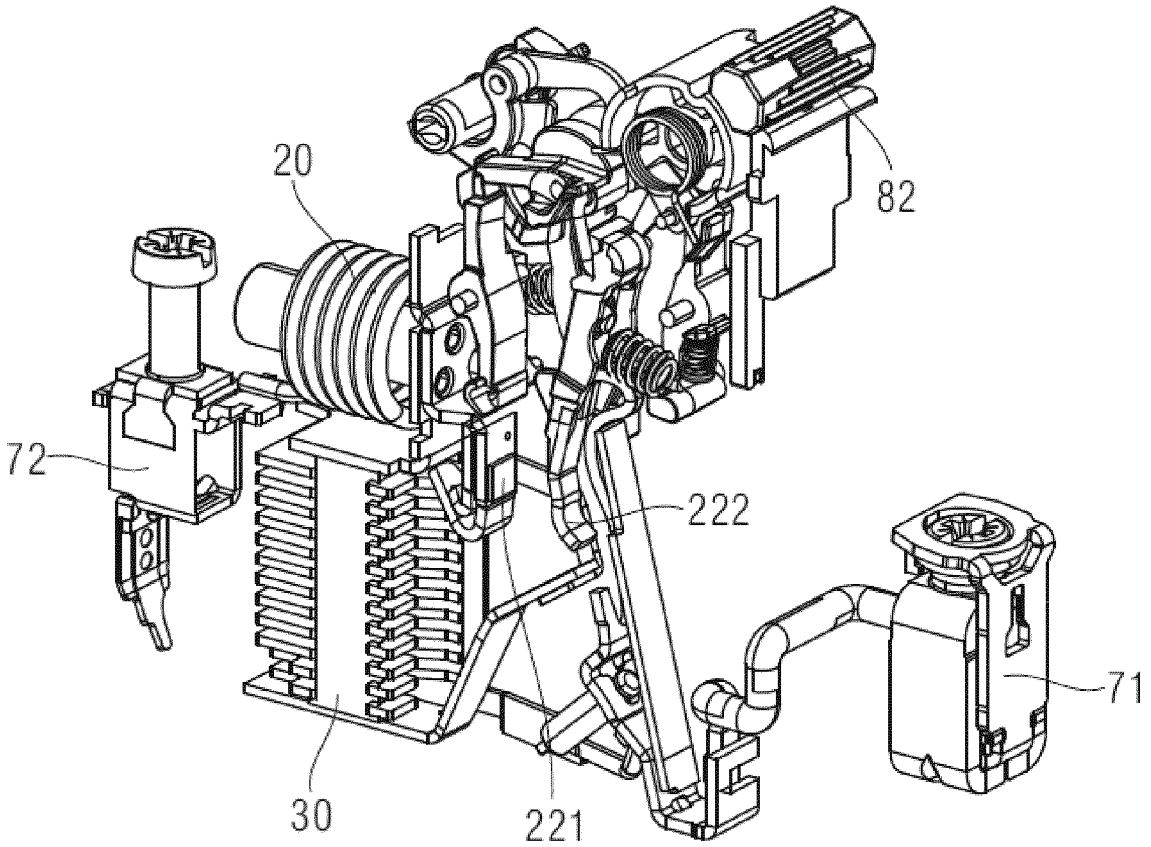

Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- EP 2506283 A1 **[0005]**