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(54) **A SWITCH, A LOAD BREAK SWITCH AND A SWITCHGEAR**

(57) It is provided a load break switch comprising a stationary contact assembly (4); a movable contact assembly (3), a switch actuator mechanism (7); an electrically conductive housing (2), a first electrical terminal (5); and a second electrical terminal (6) in direct electrical contact with the electrically conductive housing (2), so that the movable contact assembly (3) is electrically connected with the second electrical terminal (6) via the electrically conductive housing.

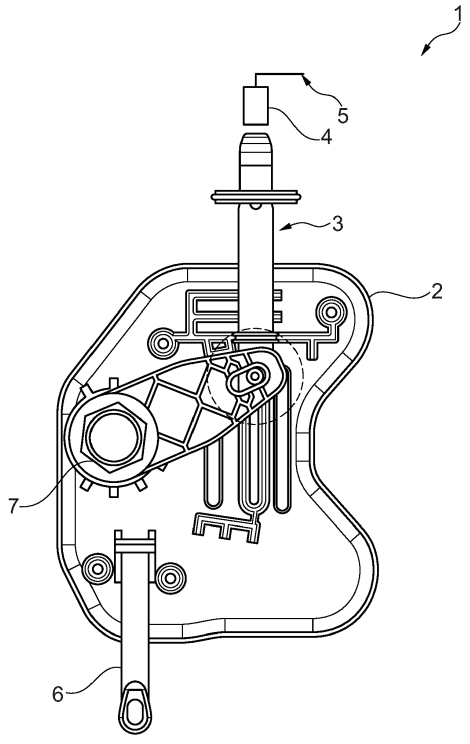

Fig. 2

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Description

[0001] Embodiments described herein relate to a switch, in particular a load break switch. Further embodiments relate to an electric power distribution switchgear including the load break switch. Still further embodiments relate to a low- or medium-voltage gas insulated switch, in particular to a puffer type load break switch.

BACKGROUND

[0002] Switchgears are used in electric power systems with the purpose to control, protect and isolate electric equipment. The challenges with such switchgears include maximising heat dissipation, enhancing dielectric withstand, simplifying design and assembly, and reducing environmental impact in a cost-efficient manner.

[0003] Switchgears used today for medium voltages are often gas insulated switchgears, where the insulating gas may be sulphur hexafluoride (SF6). The use of SF6 allows for a compact design of the switchgear since SF6 has excellent arc extinguishing, electrical insulating as well as thermal dissipating properties. Despite the many advantages of SF6, alternatives thereto have recently been introduced due to the high global warming potential (GWP) of SF6.

[0004] Load break switches, for example, for low- or medium- voltage, are typically cost effective and simple. For a number of applications, a relatively simple knife switch is sufficient. However, if SF6 is replaced by other gases and/or if more demanding conditions need to be met, an improved switch is desired that meets these increased demands but still retains the advantages of being cost-efficient and simple, and that is also compatible with the external dimensions of traditional compact, gas insulated ring main units (RMU) or gas insulated switchgear (GIS).

[0005] Document US2021193416A1 relates to a gas-insulated puffer-type switch device for operating inside a sealed gas tight enclosure of an electric power distribution switchgear. The document describes a first terminal electrically connected to the movable contact assembly by a first conductive line. The document describes a first conductive line includes a flexible conductor. The document describes a flexible conductor adapted for accommodating the longitudinal movement of the movable contact assembly.

[0006] Document EP3214709A1 discloses a switch that can prevent leakage of an SF6 gas. The document describes busing conductors embedded in the moulded solid insulator made, for example, of an epoxy resin.

SUMMARY

[0007] In view of the above, a load break switch according to claim 1 is provided.

According to an aspect, a load break switch is provided, comprising a stationary contact assembly; a movable contact assembly, longitudinally movable along an axis of the movable contact assembly between a closed state in which the movable contact assembly is in electrical connection with the stationary contact assembly and an open state in which the movable contact assembly is not in electrical connection with the stationary contact assembly; a switch actuator mechanism for transmitting a rotational movement of an actuation shaft to a longitudinal movement of the movable contact assembly along its axis between the closed and open state; an electrically conductive housing enclosing at least a portion of the movable contact assembly, thereby electrically shielding the movable contact assembly when the load break switch is in an open state; a first electrical terminal electrically connected to the stationary contact assembly; and a second electrical terminal in direct electrical contact with the electrically conductive housing, so that the movable contact assembly is electrically connected with the second electrical terminal via the electrically conductive housing.

[0008] The load break switch is able to break loads reliably with a cost-efficient, simple and compact design. This is achieved, in particular, by a conductive housing. The conductive housing allows for improved heat dissipation as well as shielding of the movable contact assembly and possibly other components of the switch, and in addition provides an electrical connection between the second electrical terminal and the movable contact assembly. Thereby, additional conductors for providing this electrical connection can be avoided, thus contributing to a cost-efficient, simple and compact design with reduced number of components, and reduced assembly requirements, and in addition allows for improved heat dissipation. Embodiments described herein can be particularly applied to puffer-type load break switches.

[0009] Further details including further aspects, embodiments, examples, and advantages may be understood from the following detailed description with reference to the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Further details may be understood from the following detailed description with reference to the drawings. The drawings include the following:

FIG. 1 showing schematically a general design of a load break switch being an illustrative example not belonging to the invention;

FIG. 2 showing schematically a load break switch according to an embodiment described herein;

FIG. 3 showing schematically a flexible electrically conductive connector electrically connecting a movable contact assembly to an electrically conductive housing according to embodiments described herein;

FIG. 4 showing schematically an electrically conductive connector having a through-opening portion for electrically connecting a movable contact assembly to an electrically conductive housing according to embodiments described herein; and

FIG. 5 showing schematically an electrically conductive connector having a track and a pin for electrically connecting a movable contact assembly to an electrically conductive housing according to embodiments described herein.

DETAILED DESCRIPTION

[0011] Reference will now be made in detail to the various embodiments, one or more examples of which are illustrated in each figure. Each example is provided by way of explanation and is not meant as a limitation. For example, features illustrated or described as part of one embodiment can be used on or in conjunction with any other embodiment to yield yet a further embodiment. It is intended that the present disclosure includes such modifications and variations.

[0012] Within the following description of the drawings, the same reference numbers refer to the same or to similar components. Generally, only the differences with respect to the individual embodiments are described. Unless specified otherwise, the description of a part or aspect in one embodiment applies to a corresponding part or aspect in another embodiment as well.

[0013] Load break switches, for example, for low- or medium- voltage, are typically cost effective and simple. As described in the background section above, knife switches may not have sufficient current interruption ability in some circumstances, e.g., if SF6 is replaced by other gases having lower GWP such as air, fluorketone- or fluornitrile mixtures.

[0014] In such a case, other interruption principles are used which involve linear motion of a movable contact along an axis. Currently, vacuum interrupters represent the state of the art. Another solution is based on the puffer principle. Puffer based solutions however are generally more complex and include more components than simple knife switches.

[0015] In load break switches, there has been tradition to obtain one function in each part, for example, one part as a field controller, one part as a current conductor, one part as a mechanical fixing anchor. This is demonstrated in FIG. 1 showing a general design of a load break switch not belonging to the invention.

[0016] A load break switch, as seen in FIG. 1, may include at least one of the following: a piston 101, as part of a movable contact assembly, one or more dielectric shield(s) 102, 106, a lever 103, as part of a switch actuator mechanism, a conductor 104, for electrically connecting the piston to a terminal or bushing 105, and a housing 107, which may also be referred to as a polehouse, and which is made of electrically insulating material such as plastic.

[0017] Before describing individual embodiments shown in the Figures, aspects of the invention are described in general terms. Each aspect is not limited to any particular embodiment but can be combined with any other aspect described herein, unless specified otherwise.

[0018] According to an aspect described herein there is provided a load break switch including an electrically conductive housing enclosing at least a portion of the movable contact assembly, thereby electrically shielding the movable contact assembly when the load break switch is in an open state, and preferably also when the load break switch is in a closed state.

[0019] Thus, when the load break switch is in a closed state, the electrically conductive housing may still enclose at least a portion of the movable contact assembly, thereby electrically shielding the movable contact assembly. According to an aspect, the housing may electrically shield the movable contact assembly towards at least one neighbouring phase, and/or towards at least one neighbouring switch.

[0020] The load break switch further comprises a stationary contact assembly and a movable contact assembly. The movable contact assembly is longitudinally movable along an axis of the movable contact assembly between a closed state of the load break switch in which the movable contact assembly is in electrical connection with the stationary contact assembly and the open state of the load break switch in which the movable contact assembly is not in electrical connection with the stationary contact assembly.

[0021] The load break switch further comprises a first electrical terminal electrically connected to the stationary contact assembly; a second electrical terminal in direct electrical contact with the electrically conductive housing. The load break switch further comprises a switch actuator mechanism for transmitting a rotational movement of an actuation shaft to a longitudinal movement of the movable contact assembly. The movable contact assembly is electrically connected with the second electrical terminal via the electrically conductive housing.

[0022] According to an aspect described herein, the housing may be of electrically conductive material. According to an aspect described herein, the walls of the electrically conductive housing may form the main current path between the second terminal and the movable contact. Accordingly, this will reduce the amount of copper bars and/or flexible braids that would otherwise be provided to carry the main current.

[0023] The load break switch may in particular be a puffer type switch.

[0024] According to an aspect described herein, the housing (may also be referred to as polehouse) encloses at least a portion of the movable contact assembly, and optionally further parts of the switch such as at least a respective portion of the switch actuator mechanism, and/or the second electrical terminal.

[0025] The housing may have one or more openings, e.g., for insertion of the actuation shaft, for a conductor connected to the second electrical terminal, and/or for gas circulation for cooling of an inner volume of the housing.

[0026] Herein, "enclosing" does not exclude the presence of such openings but is understood as defining an inner housing volume in which the enclosed components are at least partially and possibly fully arranged.

[0027] According to an aspect described herein, the housing is electrically conductive. Thereby, the housing may electrically shield the at least portion of the movable contact assembly, and any other components enclosed by the housing. Furthermore, the housing is electrically connected to (a conductor of) the movable contact assembly and to the second terminal, such that the main current path from (a conductor of) the movable contact assembly to the second terminal is via (the walls of) the housing.

[0028] A current carrying connection between the housing and (a main conductor of) the movable contact assembly can be achieved by one or more of several different ways, for example, using a flexible copper braid, a multi-contact mechanism, and/or a lever-pin mechanism.

[0029] In an example, a flexible braid is attached directly to (a wall of) the housing and to (a main conductor of) the movable contact assembly. The flexible braid may be soldered, for example using silver, to (a main conductor of) the movable contact assembly.

[0030] In an example, a multi-contact may be used to provide a direct electrical connection between (a wall of) the housing and (a main conductor of) the movable contact assembly. The multi-contact may include a plurality of contact members.

[0031] In an example, a multi-contact includes a plurality of spring-loaded contact members.

[0032] In an example, a multi-contact allows and (a movable main conductor of) the movable contact assembly to move or slide along the contact members of the multi-contact during a switch opening operation and switch closing operation.

[0033] In an example, a sliding (electrical) contact is provided between (a movable main conductor of) the movable contact assembly and (a wall of) the housing.

[0034] In an example, a moving contact is mechanically attached a switch actuator mechanism, for example an operating lever, via a lever-pin mechanism or an electrically conductive pin or bolt.

[0035] In an example, a lever-pin mechanism or an electrically conductive pin or bolt is in (direct) electrical contact or electrically connected with (a wall of) the housing.

[0036] In a particular example, a lever-pin mechanism or an electrically conductive pin or an electrically conductive bolt is in (direct and/or continuous) electrical contact or electrically connected with (a wall of) the housing during a movement of (the main conductor of) the movable contact assembly.

[0037] In a particular example, a lever-pin mechanism or an electrically conductive pin or an electrically conductive bolt is in (direct) electrical contact or electrically connected with (a wall of) the housing continuously and/or during (any and all) movement (e.g. sliding up and down movement) of (a movable main conductor of) the movable contact assembly during a switch opening operation and switch closing operation.

[0038] In an example, a switch actuator mechanism such as a/an (operating) lever may allow movement of (a movable main conductor of) the movable contact assembly, in particular a longitudinal/linear or up-down movement.

[0039] Advantageously, when providing a main current path through the housing or a wall of the housing, a separate (or fewer/less of a) electrical conductor such as a copper bar and/or copper braid between the movable contact assembly and a terminal on the movable contact assembly side is no longer needed (or fewer/less thereof is needed).

[0040] The housing may thus perform a plurality of functions including conducting the current, and acting as a dielectric shield and as a mechanical fixing anchor.

[0041] Further, when providing a main current path through the housing or a wall of the housing, heat dissipation is improved.

[0042] The housing may be understood to be of an electrically conductive material, for example, aluminium or copper. The housing may be configured to perform a plurality of functions, including at least one, some, or all of the following: conductor, dielectric shield, and mechanical fixing anchor.

[0043] The terminal or bushing, on the movable contact assembly side, may provide an electrical connection to the switch, in particular to the load break switch on the movable contact assembly side, via the housing of the switch.

[0044] According to an aspect or aspects described herein, at least one of the following advantages is thus achieved: improved heat dissipation, simplified design and assembly, and reduced environmental impact.

[0045] FIG. 2 shows a schematic of a switch according to an aspect described herein. The switch may be understood to be a load break switch. The switch may be gas-insulated. The switch may be a puffer-type switch.

[0046] The switch may be for operating inside a sealed gas tight enclosure. The switch may be for an electric power distribution switchgear.

[0047] The sealed gas tight enclosure may be filled with a dielectric gas. The dielectric gas may have a global warming potential lower than that of SF6.

[0048] The switch may be understood to include a stationary contact assembly. The switch may be understood to include a movable contact assembly. The movable contact assembly may be understood to be longitudinally movable along an axis of the movable contact assembly.

[0049] As seen in FIG. 2, a switch, in particular a load

break switch 1, includes an electrically conductive housing 2, a movable contact assembly 3, a stationary contact assembly 4, a first electrical terminal 5, a second electrical terminal 6, and a switch actuator mechanism 7.

[0050] According to an aspect described herein, a main current path and/or an only current path between the movable contact assembly 3 and the second electrical terminal 6 is via the electrically conductive housing 2.

[0051] Herein, the main current path is defined as the path of least resistance between the specified elements (e.g., between the second terminal and the movable contact assembly) under all normal operating conditions. Thus, the main current path may be understood as a path carrying at least 50%, preferably at least 90% of the (rated) current (of the switch), or even essentially all of the current, under all normal operating conditions of the switch involving a non-negligible current flow.

[0052] According to an aspect described herein, the movable contact assembly 3 includes a first contacting portion configured for contacting the stationary contact assembly 4, and/or a second contacting portion spaced away from the first contacting portion and configured to be in electrical contact with the electrically conductive housing 2 in both the closed state and the open state.

[0053] According to an aspect described herein, any electrical path and/or all electrical paths between the movable contact assembly 3 and the second electrical terminal 6 includes the electrically conductive housing 2.

[0054] According to embodiments described herein, the load break switch includes an electrically conductive connector 10, 11, 12, 13 electrically connecting the movable contact assembly 3 to the electrically conductive housing 2.

[0055] According to embodiments described herein, an electrically conductive connector 11, 12, 13 is not movable in relation to the movable contact assembly 3 and/or the electrically conductive housing 2.

[0056] According to embodiments described herein, an electrically conductive connector 11, 12, 13 is configured to have an unchanging distance to the movable contact assembly 3 and/or the electrically conductive housing 2.

[0057] According to embodiments described herein, an electrically conductive connector 11, 12, 13 is rigidly fixed to the movable contact assembly 3 and/or the electrically conductive housing 2.

[0058] According to embodiments described herein, an electrically conductive connector 11, 12, 13 is rigidly attached to the movable contact assembly 3 and/or the electrically conductive housing 2.

[0059] According to embodiments described herein, an electrically conductive connector 11, 12 is in sliding electrical contact with the movable contact assembly 3 when the electrically conductive connector 11, 12 is not movable in relation to the electrically conductive housing 2.

[0060] According to embodiments described herein, an electrically conductive connector 13 is in sliding electrical contact with the electrically conductive housing 2 when the electrically conductive connector 13 is not movable in relation to the movable contact assembly 3.

[0061] According to embodiments described herein, a surface portion of the electrically conductive connector is of a reciprocal shape to a surface portion of the movable contact assembly 3 and/or to a surface portion of the electrically conductive housing 2.

[0062] According to embodiments described herein, a surface portion of the electrically conductive connector 10 is in direct electrical contact with the surface portion of the movable contact assembly 3 and/or with the surface portion of the electrically conductive housing 2.

[0063] According to embodiments described herein, a surface portion of the electrically conductive connector is in permanent (continuous or uninterrupted) electrical contact with the movable contact assembly 3, in particular in the closed state, the open state and during the longitudinal movement of the movable contact assembly between these states.

[0064] FIG. 4 showing schematically an electrically conductive connector having a through-opening portion for electrically connecting a movable contact assembly to an electrically conductive housing according to embodiments described herein.

[0065] According to embodiments described herein, an electrically conductive connector 12, 13 comprises a track 12 and a pin 13 arranged to slide within, in and/or on the track 12. In an example, the track and the pin are electrically conductive.

[0066] In an example, the track is of, on, in, within and/or fixed to the electrically conductive housing 2. In an example, the electrically conductive housing 2 includes the track. In an example, the track is on a side of the electrically conductive housing 2 facing the movable contact assembly 3. In an example, the track is on an internal side of the electrically conductive housing 2.

[0067] In an example, the pin is of, on and/or fixed to the movable contact assembly 3. In an example, the movable contact assembly 3 includes the pin.

[0068] FIG. 5 showing schematically an electrically conductive connector having a track and a pin for electrically connecting a movable contact assembly to an electrically conductive housing according to embodiments described herein.

[0069] According to embodiments described herein, an electrically conductive connector 11 comprises a recess portion or through-opening portion in contact with the movable contact assembly 3.

[0070] In an example, the movable contact assembly 3 is configured to remain in contact with the electrically conductive housing 2 during a longitudinal movement of the movable contact assembly 3.

[0071] In an example, the recess portion is of the electrically conductive housing 2 or a recess in the electrically conductive housing 2. In an example, the recess portion is on a side of the electrically conductive housing 2 facing the movable contact assembly 3 and/or the recess por-

tion is on an internal side of the electrically conductive housing 2.

[0072] In an example, the through-opening portion is of the electrically conductive housing 2 or is a through-opening in the electrically conductive housing 2.

[0073] In an example, the movable contact assembly 3 is proximate to and/or in (sliding) contact with a recess portion or through-opening portion of the electrically conductive connector 11 and/or of the electrically conductive housing 2.

[0074] FIG. 3 showing schematically a flexible electrically conductive connector electrically connecting a movable contact assembly to an electrically conductive housing according to embodiments described herein.

[0075] According to embodiments described herein, an electrically conductive connector 10 is a flexible connector, e.g. a flexible electrically conductive braid. In an example, a flexible connector may be a braid of electrically conductive material, including one or more of the following: copper, silver, aluminium, gold.

[0076] According to embodiments described herein, a second electrical terminal 6 is configured to be connected to a cable that is external to the load break switch 1, and/or wherein the second electrical terminal 6 is a cable bushing.

[0077] In an example, a second electrical terminal 6 may be an electrical bushing, in particular, of the switch or load break switch. A second electrical terminal 6 may be understood as a movable contact assembly side terminal or a terminal for providing fixed electrical contact with a movable contact assembly of the switch or of the load break switch.

[0078] According to embodiments described herein, a switch or load break switch includes an earthing switch.

[0079] According to embodiments described herein, the switch 1 is a load break switch for a single electrical phase. According to embodiments, a plurality of switches (e.g., three switches) may be provided, each switch for a different phase. The switches may be arranged along a common actuation shaft so that each one of the switches is coupled, with its respective actuator mechanism, to the common actuation shaft.

[0080] According to embodiments described herein, there is provided a distribution network, ring main unit, or secondary distribution gas-insulated switchgear having a switch or load break switch 1 as described in embodiments and/or examples herein.

[0081] According to embodiments described herein, the switch or load break switch is configured to be used in an electric power distribution switchgear. According to embodiments described herein, it is provided an electric power distribution switchgear includes a switch or load break switch as described herein.

[0082] According to embodiments described herein, the load break switch 1 is a gas insulated switch.

[0083] According to embodiments described herein, the load break switch 1 includes an insulation gas, is configured to operate with an insulation gas and/or is a gas insulated switch. The switch may be for operating with a dielectric medium (electrically insulating gas). The dielectric medium may be a non-SF6 gas. The dielectric medium may be a gas having a global warming potential (GWP) lower than that of SF6.

[0084] An insulation gas as described herein may be understood to have a global warming potential lower than the one of SF6 over an interval of 100 years and/or an insulation gas having at least one component selected from the group consisting of: CO2, O2, N2, H2, air, N2O, a hydrocarbon, in particular CH4, a perfluorinated or partially hydrogenated organofluorine compound, and mixtures thereof. For example, the dielectric medium may be a gas mixture including an organofluorine compound selected from the group consisting of: a fluorether, an oxirane, a fluoramine, a fluoroketone, a fluoroolefin, a fluoronitrile, and mixtures and/or decomposition products thereof.

[0085] According to embodiments described herein, the load break switch 1 is a low- or medium voltage load break switch and/or has a rated voltage of at most 52 kV, or at most at one of the following: 12 kV, 24 kV, 36 kV, 40.5 kV, 52 kV. The rated voltage may be at least 1 kV. The switch may be rated for a maximum voltage (RMS/AC) voltage in the range 1 kV to 52 kV, preferably 10 kV to 42 kV, and more preferably 12 kV to 36 kV.

[0086] In an example, the switch may be configured for operating with a dielectric gas at higher pressures for increased dielectric withstand capability. In an example, the dielectric gas, e.g. air/dry air, is at a pressure of at least 1 bar, preferably at least 1.3 bar, more preferably at least 1.5 bar, and most preferably at least 3.5 bar.

[0087] The load break switch according to embodiments described herein may be a puffer type switch. The advantage of using a puffer type switch is that relatively complex puffer switch can be made simpler with reduced number of components, and/or assembly requirements while maintaining performance and function.

[0088] Particularly advantageously, a complexity and/or cost of a puffer type switch may be reduced and/or compensated, especially when combined with the use non-SF6 insulating gas, which relatively lower dielectric performance is compensated by the puffer feature.

[0089] According to embodiments described herein, there is provided a load break switch and a switch-disconnector according to embodiments described herein.

[0090] The expression 'current path' may be understood as a path configured for conducting a rated current (or at least 50% or 90% thereof) of the switch, in particular, between the second electrical terminal 6 and the movable contact assembly 3.

[0091] The expression 'current path' may be understood as one or more parts or components of the switch which are in electrical connection with each other and arranged to conduct or are configured for conducting a rated current (or at least 50% or 90% thereof) of the switch, in particular, between the second electrical terminal 6 and the movable contact assembly 3.

[0092] The expression 'current path' may be understood as a path configured for conducting a rated current (or at least 50% or 90% thereof) of the switch, in particular, between the second electrical terminal 6 and the movable contact assembly 3.

[0093] The expression 'electrical path' may be understood as one or more parts or components of the switch which are in electrical connection with each other and arranged to conduct or are configured for conducting a rated electrical power (or at least 50% or 90% thereof) of the switch, in particular, between the second electrical terminal 6 and the movable contact assembly 3.

[0094] The expression 'movable contact assembly is longitudinally movable along an axis of the movable contact assembly' may be understood as 'a (main) conductor of the movable contact assembly is longitudinally movable along an axis of the movable contact assembly'.

[0095] While the foregoing is directed to embodiments, other and further embodiments may be devised without departing from the basic scope, wherein the scope thereof is determined by the claims that follow.

Claims

1. A load break switch (1) comprising:

a stationary contact assembly (4);
a movable contact assembly (3), longitudinally movable along an axis of the movable contact assembly (3) between a closed state in which the movable contact assembly (3) is in electrical connection with the stationary contact assembly (4) and an open state in which the movable contact assembly (3) is not in electrical connection with the stationary contact assembly (4);
a switch actuator mechanism (7) for transmitting a rotational movement of an actuation shaft to a longitudinal movement of the movable contact assembly (3) along its axis between the closed state and the open state;
an electrically conductive housing (2) enclosing at least a portion of the movable contact assembly (3), thereby electrically shielding the movable contact assembly (3) when the load break switch (1) is in the open state;
a first electrical terminal (5) electrically connected to the stationary contact assembly (4); and
a second electrical terminal (6) in direct electrical contact with the electrically conductive housing (2), so that the movable contact assembly (3) is electrically connected with the second electrical terminal (6) via the electrically conductive housing (2).

2. The load break switch (1) according to claim 1, wherein the electrically conductive housing (2) provides a main current path between the movable contact assembly (3) and the second electrical terminal (6).

3. The load break switch (1) according to any of claims 1 to 2, wherein the movable contact assembly (3) comprises a first contacting portion configured for contacting the stationary contact assembly (4) in the closed state, and a second contacting portion spaced away from the first contacting portion and configured to be in electrical contact with the electrically conductive housing (2).

4. The load break switch (1) according to any of claims 1 to 3, further comprising an electrically conductive connector (10, 11, 12, 13) electrically connecting the movable contact assembly (3) to the electrically conductive housing (2).

5. The load break switch (1) according to claim 4, wherein the electrically conductive connector (11, 12, 13) is fixedly attached to the movable contact assembly (3) and/or the electrically conductive housing (2).

6. The load break switch (1) according to claim 4, wherein the electrically conductive connector (11, 12) is fixedly attached to the electrically conductive housing (2) and in sliding electrical contact with the movable contact assembly (3), or is in sliding electrical contact with the electrically conductive housing (2) and fixedly attached to the movable contact assembly (3).

7. The load break switch (1) according to any of claims 4 to 6, wherein a surface portion of the electrically conductive connector is of an reciprocal shape to a surface portion of the movable contact assembly (3) or to a surface portion of the electrically conductive housing (2); wherein the surface portion of the electrically conductive connector (10) is in direct electrical contact with the surface portion of the movable contact assembly (3) or with the surface portion of the electrically conductive housing (2); and wherein the surface portion of the electrically conductive connector is in permanent electrical contact with the surface portion of the movable contact assembly (3) or with the surface portion of the electrically conductive housing (2) in the closed state, the open state and during the longitudinal movement of the movable contact assembly (3) between the closed state and the open state.

8. The load break switch (1) according to any of claims 4 to 7, wherein the electrically conductive connector comprises a track (12) and pin (13) arranged to slide in or on the track (12), and/or wherein the electrically conductive connector comprises a recess portion or through-opening portion (11) in contact with the mov-

able contact assembly (3).

9. The load break switch (1) according to claim 4, wherein the electrically conductive connector is fixedly attached to the movable contact assembly (3) and the electrically conductive housing (2), and wherein the electrically conductive connector is a flexible connector (10), preferably a flexible braid.

10. The load break switch (1) according to any of claims 1 to 9, wherein any electrical path or all electrical paths between the movable contact assembly (3) and the second electrical terminal (6) includes the electrically conductive housing (2).

11. The load break switch (1) according to any of claims 1 to 10, wherein the second electrical terminal (6) is configured to be connected to an external conductor, and/or wherein the second electrical terminal (6) is a cable bushing.

12. The load break switch (1) according to any of claims 1 to 11, wherein the load break switch is a puffer-type switch.

13. The load break switch (1) according to any of claims 1 to 12, wherein the load break switch (1) is a gas insulated switch, and/or wherein the load break switch (1) comprises an insulation gas having a global warming potential lower than the one of SF_6 over an interval of 100 years and/or an insulation gas having at least one component selected from the group consisting of: CO_2, O_2, N_2, H_2, air, N_2O, a hydrocarbon, in particular CH_4, a perfluorinated or partially hydrogenated organofluorine compound, and mixtures thereof.

14. The load break switch (1) according to any of claims 1 to 13, wherein the load break switch (1) is a low- or medium voltage load break switch and/or has a rated voltage of at most 52 kV, preferably at most one of the following: 12 kV, 24 kV, 36 kV, 40.5 kV.

15. A distribution network, ring main unit, or secondary distribution gas-insulated switchgear having the load break switch (1) according to any of claims 1 to 14.

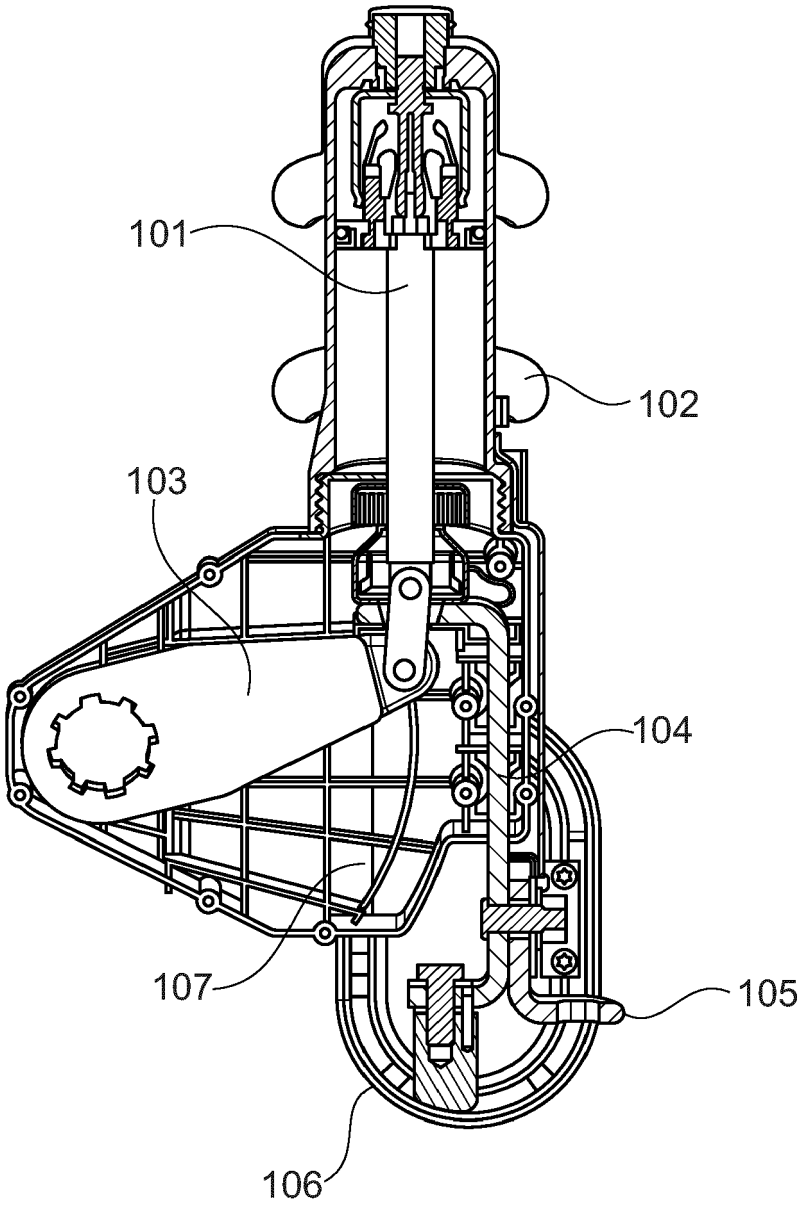

Fig. 1

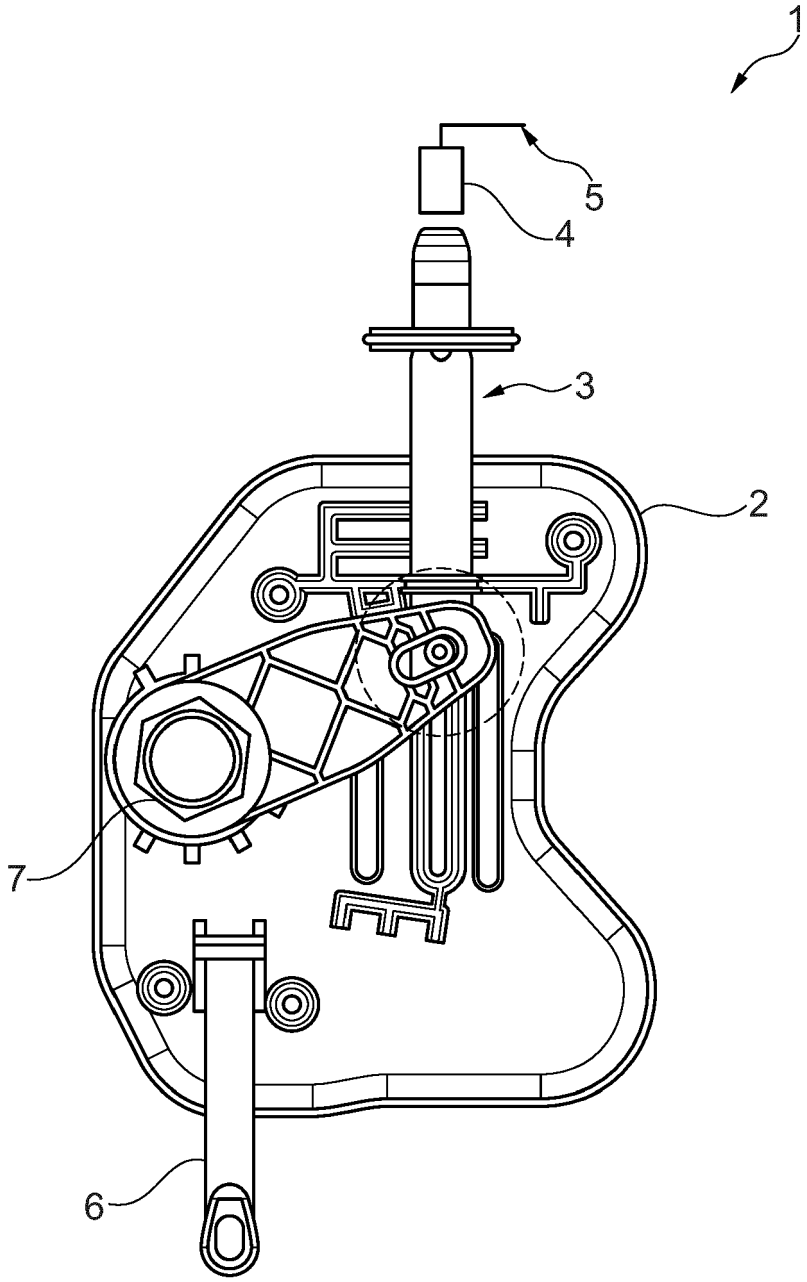

Fig. 2

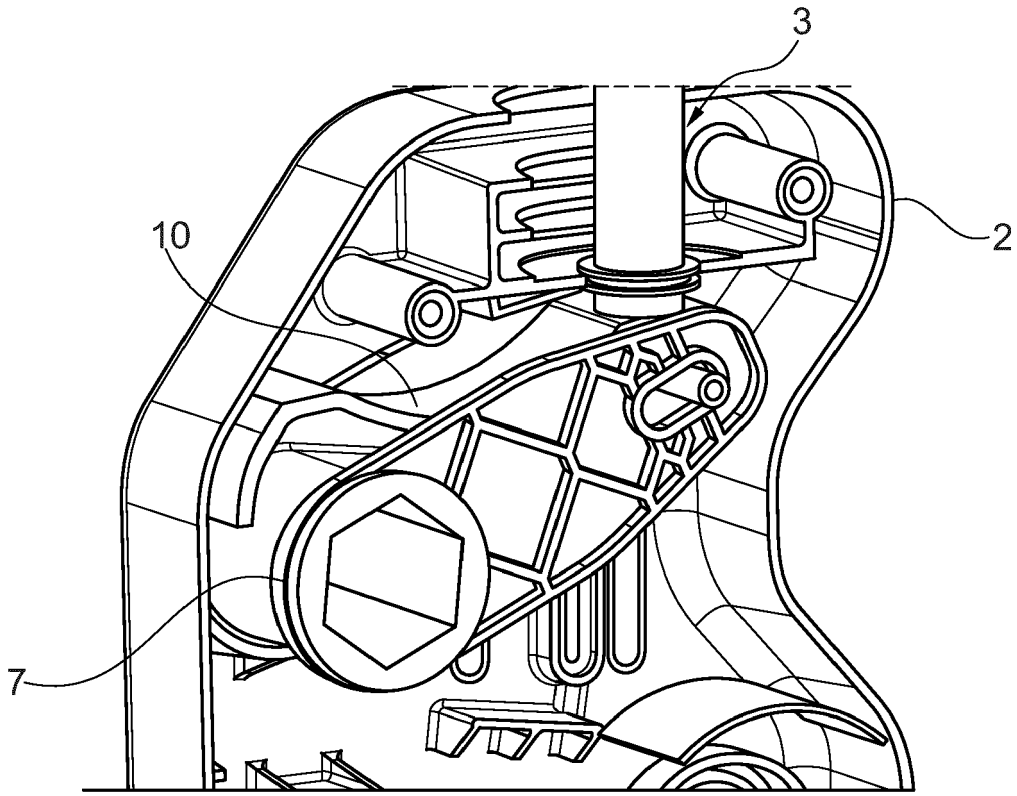

Fig. 3

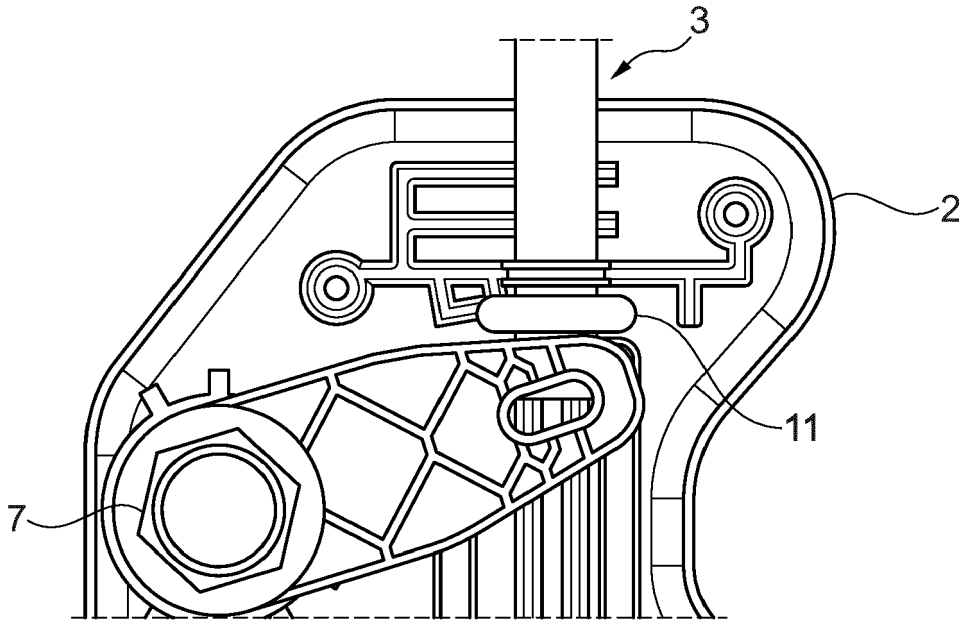

Fig. 4

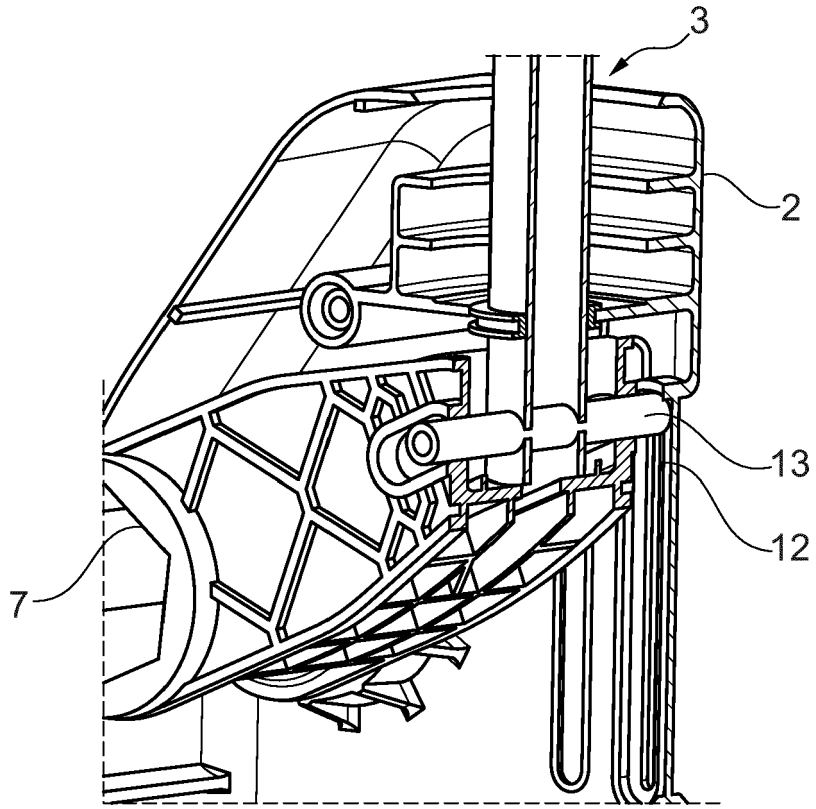

Fig. 5

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EUROPEAN SEARCH REPORT

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