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(54) **GAS INSULATED SWITCHGEAR**

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(57) **ABSTRACT**

A gas insulated switchgear includes an enclosure, a first fixed conductor, one side of the first fixed conductor being bent at a right angle and another side of the first fixed conductor being fixed on one side of the enclosure, a second fixed conductor configured to be spaced apart from the first fixed conductor and configured to be fixed on another side of the enclosure, a screw configured to form an axis on inner of the enclosure and being spaced apart from the first and second fixed conductors and a movable conductor configured to move along the axis through a rotation of the screw, one side of the movable conductor being in contact with the second fixed conductor.

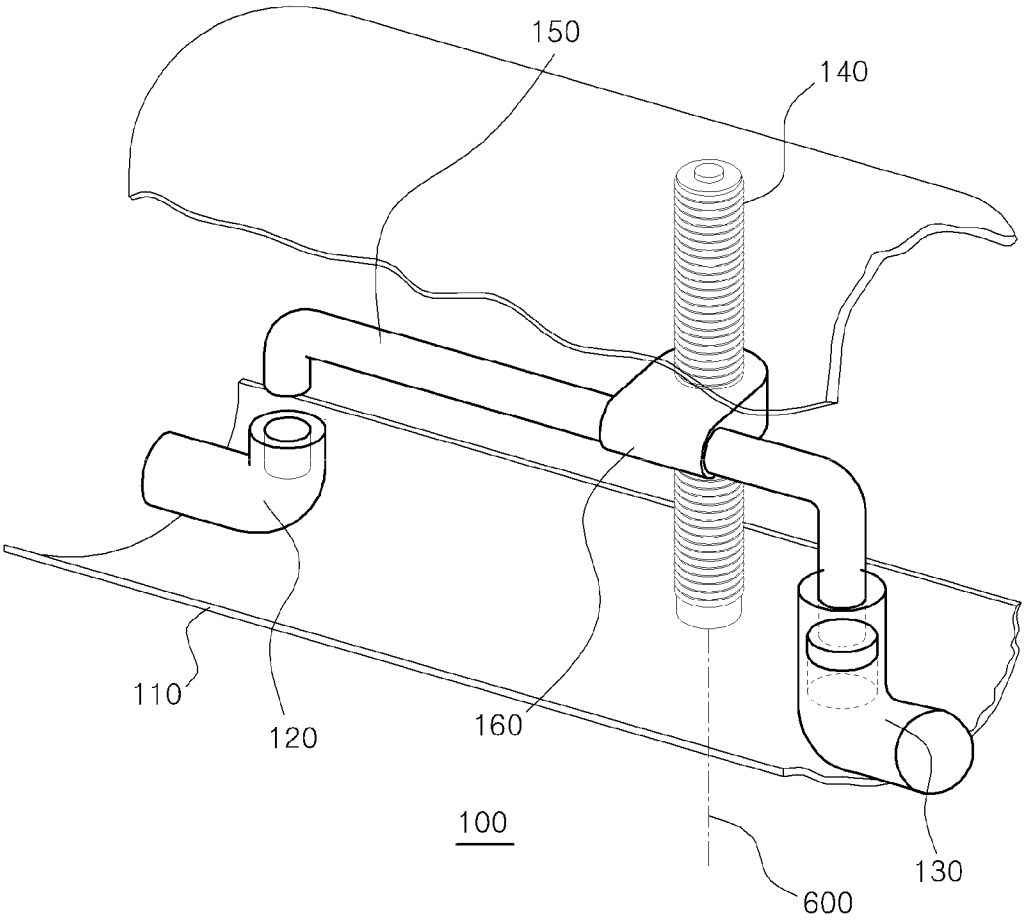


FIG. 1

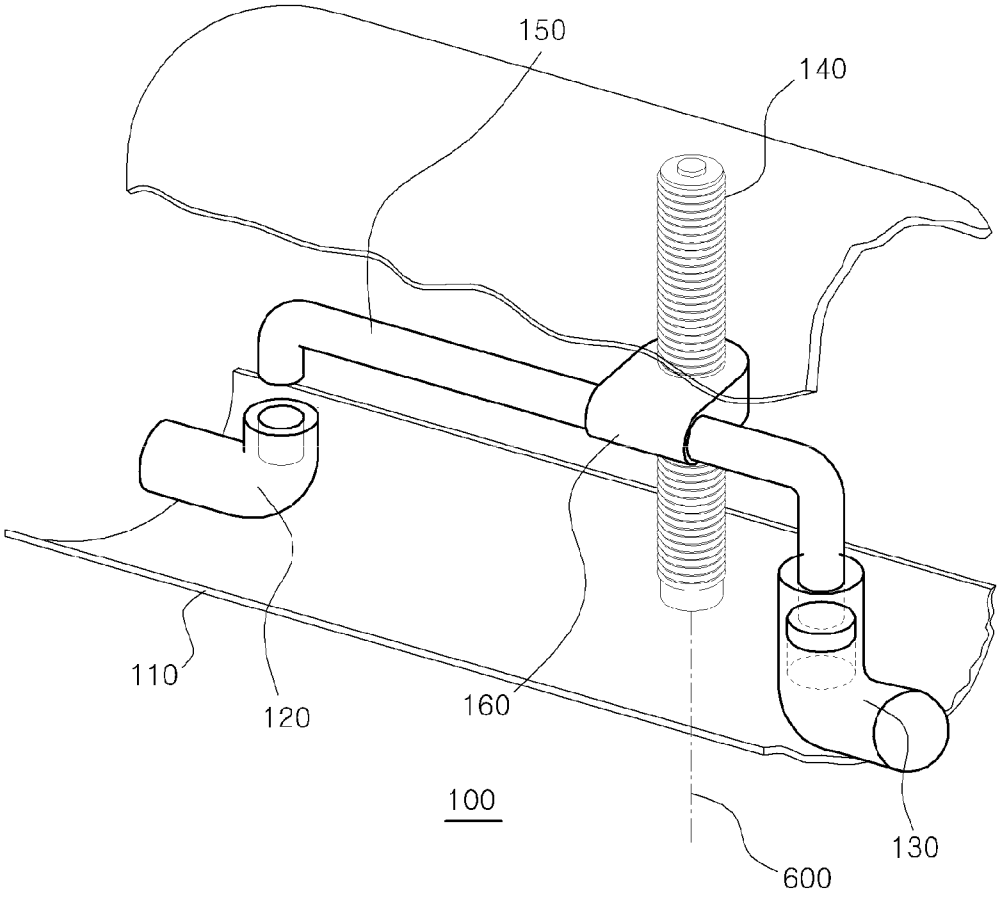
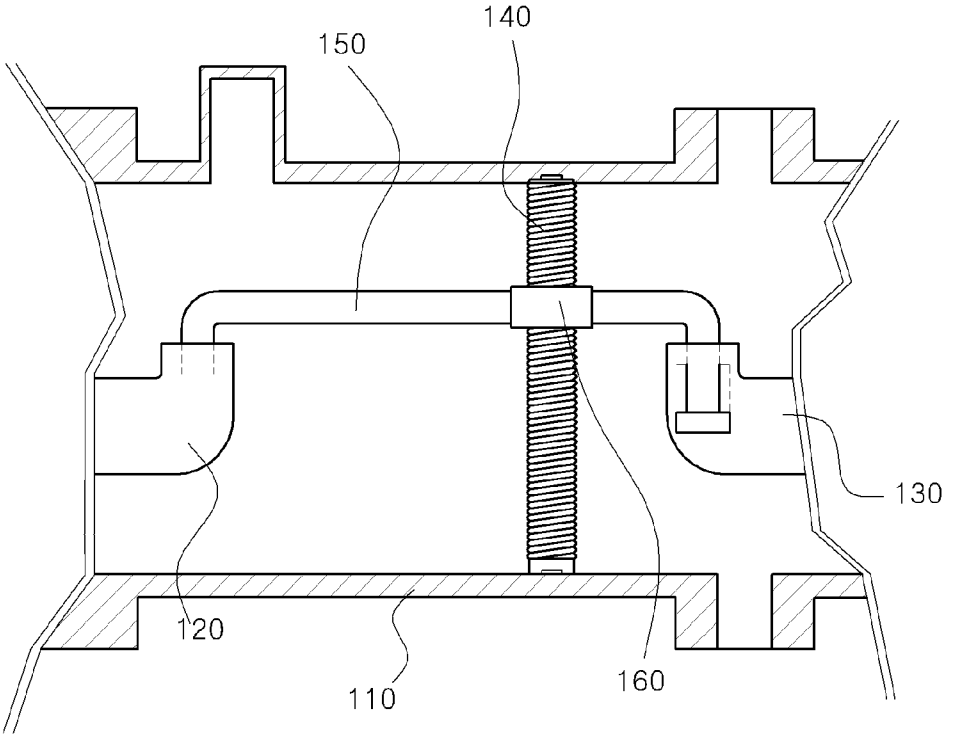


FIG. 2



GAS INSULATED SWITCHGEAR

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a gas insulated switchgear and more particularly, to a gas insulated switchgear implementing a switch using a perpendicular movement of one axis.

[0003] 2. Background of the Invention

[0004] In general, a Gas Insulated Switchgear (GIS) corresponds to a switch device shutting off a current when a fault current is generated. The GIS embeds a circuit breaker, a disconnecting switch, a ground switch, a current transformer and a busbar and so on in a grounded metal tank and charges an SF6 gas having a good characteristic of insulation and extinction. The GIS has advantages such as a substation minimization, a safety and reliability improvement, an operation and maintenance easiness, an environment suitability. The GIS is categorized into a two phase switch and a three phase switch and the two phase switch has been developed due to an easiness, a safeness and a small space.

SUMMARY OF THE INVENTION

[0005] In some embodiments, a gas insulated switchgear includes an enclosure, a first fixed conductor, one side of the first fixed conductor being bent at a right angle and another side of the first fixed conductor being fixed on one side of the enclosure, a second fixed conductor configured to be spaced apart from the first fixed conductor and configured to be fixed on another side of the enclosure, a screw configured to form an axis on inner of the enclosure and being spaced apart from the first and second fixed conductors and a movable conductor configured to move along the axis through a rotation of the screw, one side of the movable conductor being in contact with the second fixed conductor.

[0006] The one side of the movable conductor may be bent toward the first fixed conductor at a right angle and another side of the movable conductor may be bent toward the second fixed conductor at a right angle.

[0007] The screw may pass through the movable member being combined with the movable conductor and the screw to form an axis. In one embodiment, the movable member may be screw-coupled to the screw to move up and down along a direction of the axis according to a rotation of the screw.

[0008] The second fixed conductor may be constantly and electrically connected with the movable conductor regardless of a movement of the movable conductor.

[0009] A contact region of the first fixed conductor and the movable conductor may be welded or combined with an arc-resisting material.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. **1** is a perspective diagram illustrating a gas insulated switchgear according to an example embodiment of the present invention.

[0011] FIG. **2** is a cross sectional diagram illustrating a gas insulated switchgear in FIG. **1** where the gas insulated switchgear is closed.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0012] Explanation of the present invention is merely an embodiment for structural or functional explanation, so the scope of the present invention should not be construed to be limited to the embodiments explained in the embodiment. That is, since the embodiments may be implemented in several forms without departing from the characteristics thereof, it should also be understood that the above-described embodiments are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its scope as defined in the appended claims. Therefore, various changes and modifications that fall within the scope of the claims, or equivalents of such scope are therefore intended to be embraced by the appended claims.

[0013] Terms described in the present disclosure may be understood as follows.

[0014] While terms such as "first" and "second," etc., may be used to describe various components, such components must not be understood as being limited to the above terms. The above terms are used only to distinguish one component from another. For example, a first component may be referred to as a second component without departing from the scope of rights of the present invention, and likewise a second component may be referred to as a first component.

[0015] It will be understood that when an element is referred to as being "connected to" another element, it can be directly connected to the other element or intervening elements may also be present. In contrast, when an element is referred to as being "directly connected to" another element, no intervening elements are present. In addition, unless explicitly described to the contrary, the word "comprise" and variations such as "comprises" or "comprising," will be understood to imply the inclusion of stated elements but not the exclusion of any other elements. Meanwhile, other expressions describing relationships between components such as "~between", "immediately~between" or "adjacent to~" and "directly adjacent to~" may be construed similarly.

[0016] Singular forms "a", "an" and "the" in the present disclosure are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that terms such as "including" or "having," etc., are intended to indicate the existence of the features, numbers, operations, actions, components, parts, or combinations thereof disclosed in the specification, and are not intended to preclude the possibility that one or more other features, numbers, operations, actions, components, parts, or combinations thereof may exist or may be added.

[0017] The terms used in the present application are merely used to describe particular embodiments, and are not intended to limit the present invention. Unless otherwise defined, all terms used herein, including technical or scientific terms, have the same meanings as those generally understood by those with ordinary knowledge in the field of art to which the present invention belongs. Such terms as those defined in a generally used dictionary are to be interpreted to have the meanings equal to the contextual meanings in the relevant field of art, and are not to be interpreted to have ideal or excessively formal meanings unless clearly defined in the present application.

[0018] FIG. **1** is a perspective diagram illustrating a gas insulated switchgear according to an example embodiment of the present invention.

[0019] Referring to FIG. **1**, a gas insulated switchgear **100** includes an enclosure **110**, first and second fixed conductors **120** and **130**, a screw **140**, a movable contact **150** and movable member **160**.

[0020] The enclosure **110** is an insulating body being charged with an insulated gas and corresponds to a structure supporting the screw **140** and the first and second fixed conductors **120** and **130**.

[0021] The one side of the first fixed conductor **120** may be bent at a right angle and may form a hall and another side of the first fixed conductor **120** may be fixed on one side of the enclosure **110**. In one embodiment, the first fixed conductor **120** may be connected with a busbar thereby an electric current may be applied.

[0022] The second fixed conductor **130** may be spaced apart from the first fixed conductor **120** and may be fixed on another side of the enclosure **110**. The second fixed conductor **130** may be constantly and electrically connected with the movable conductor **150** regardless of a movement of the movable conductor **150**. In one embodiment, the second fixed conductor **130** may form a hall being extended to a longitudinal direction of the screw **140** on one side of the second fixed conductor **130** to support a movement of the movable conductor **150** and to maintain an electrical connection with the movable conductor **150**.

[0023] In one embodiment, an opening (i.e., front part) of the hall in the second fixed conductor **130** is narrower than that inner of the hall. In one embodiment, the second fixed conductor **130** may be connected with a main busbar thereby an electric current may be applied.

[0024] The screw **140** may form an axis **600** on inner of the enclosure **110** and may be spaced apart from the first and second fixed conductors **120** and **130**. In one embodiment, the screw **140** may pass through the movable member **160** to form the axis **600** with respect to the first fixed conductor **120**. The screw **140** may rotate on the axis **600** and both ends of the screw **140** may fixed on inner of the enclosure **110**. The screw **140** may be rotated through a mechanical connection outside the enclosure **110**.

[0025] The movable conductor **150** corresponds to a component being movable along the axis **600** through a rotation of the screw **140**. Both ends of the movable conductor **150** may be bent at a right angle and an overall frame of the movable conductor **150** may be cylindrical. In one embodiment, one side of the movable conductor **150** may be bent toward the hall of the first fixed conductor **120** at a right angle and bent another side at a right angle may be inserted to the hall of the second fixed conductor **130**.

[0026] In one embodiment, another side of the movable conductor **150** may be connected with inner of the hall of the second fixed conductor **130** and may be more widened to a degree where another side of the movable conductor **150** is larger than an opening part of the hall to enlarge a contact area between the movable conductor **150** and the second fixed conductor **130**.

[0027] In one embodiment, the movable conductor **150** may be combined with the movable member **160** to move up and down along a longitudinal direction of the screw **140** according to a movement of the movable member **160**.

[0028] The movable member **160** is an insulating body being combined with the movable conductor **150** and the screw **140**. The movable member **160** may be screw-coupled to the screw **140** to move up and down along a direction of the axis **600** according to a rotation of the screw **140**.

[0029] In FIG. **1**, the gas insulated switchgear **100** is open in case where the movable conductor **150** is not contacted the first fixed conductor **120**.

[0030] In one embodiment, a contact region of the first fixed conductor **120** and the movable conductor **150** may be welded or combined with an arc-resisting material. This may prevent from damages due to the arc being caused by a high voltage current when the movable conductor **150** are spaced apart from the first fixed conductor **120**.

[0031] FIG. **2** is a cross sectional diagram illustrating a gas insulated switchgear in FIG. **1** where the gas insulated switchgear is closed.

[0032] In FIG. **2**, when the screw **140** rotates in one direction, the movable member **160** being combined with the screw **140** may move down due to a turning force to move down the movable conductor **150** being combined with the movable member **160**. In one embodiment, when the movable conductor **150** moves down, the movable conductor **150** may insert the bent one side to the hall of the first fixed conductor **120** and may be electrically connected with the first fixed conductor **120**.

[0033] In one embodiment, when a system is in a steady state, the first fixed conductor **120** is electrically connected with the second fixed conductor **130**.

[0034] In one embodiment, the first second fixed conductor **120** and second fixed conductor **130** may be connected with a busbar and a main busbar to configure a disconnecting switch or may be connected with a main busbar and a ground terminal to configure a ground switch.

[0035] The disclosed technique may have the following effects. That is, unless otherwise specified, but rather should be construed broadly within its scope as defined in the appended claims. Therefore, various changes and modifications that fall within the scope of the claims, or equivalents of such scope are therefore intended to be embraced by the appended claims.

[0036] The gas insulated switchgear according to one embodiment may be operated based on an axial movement and may cause inner of the gas insulated switchgear to be simply configured thereby the gas insulated switchgear may be effectively implemented.

[0037] The gas insulated switchgear according to one embodiment is operated through the up and down movement of a movable conductor. Therefore, an overall size of the gas insulated switchgear may be minimized in comparison with that of a conventional gas insulated switchgear.

[0038] Although this document provides descriptions of preferred embodiments of the present invention, it would be understood by those skilled in the art that the present invention can be modified or changed in various ways without departing from the technical principles and scope defined by the appended claims.

Description of symbols

100: GAS INSULATED SWITCHGEAR	110: ENCLOSURE
120: FIRST FIXED CONDUCTOR	
130: SECOND FIXED CONDUCTOR	
140: SCREW	
150: MOVABLE CONDUCTOR	
160: MOVABLE MEMBER	

1. A gas insulated switchgear comprising:
an enclosure;
a first fixed conductor installed inside the enclosure and having a first end being bent at a right angle and a second end being fixed on one side of the enclosure;

a second fixed conductor configured to be spaced apart from the first fixed conductor and configured to be fixed on another side of the enclosure in the enclosure;

a screw configured to form an axis in an inner space of the enclosure and being spaced apart from the first and second fixed conductors;

a movable conductor associated with the screw and configured to move along the axis when the screw rotates, the movable conductor having a first end being in contact with the second fixed conductor and a second end which is connectable with and disconnectable from the first end of the first fixed conductor by a rotation of the screw.

2. The gas insulated switchgear of claim **1**, wherein the second end of the movable conductor is bent toward the first end of the first fixed conductor at a right angle and wherein the second end of the movable conductor is bent toward the second fixed conductor at a right angle.

3. The gas insulated switchgear of claim **1**, further comprising:

a movable member movably engaged with the screw and fixed to the movable conductor,

wherein the screw passes through the movable member to form the axis.

4. The gas insulated switchgear of claim **3**, wherein the movable member is screw-coupled to the screw to move up and down along an axial direction of the screw according to the rotation of the screw.

5. The gas insulated switchgear of claim **1**, wherein the second fixed conductor is constantly and electrically connected with the first end of the movable conductor regardless of a movement of the movable conductor.

6. The gas insulated switchgear of claim **1**, wherein a contact region of the first fixed conductor and the movable conductor is welded or combined with an arc-resisting material.

7. The gas insulated switchgear of claim **1**, wherein the first end of the first fixed conductor includes a groove thereon so that the second end of the movable conductor is inserted in the groove when the movable conductor and the first fixed conductor are electrically connected with each other.

8. The gas insulated switchgear of claim **1**, wherein the second fixed conductor includes a cavity therein and a mouth having a width smaller than a diameter of the cavity,

wherein the first end of the movable conductor includes a flange extended from the first end of the movable conductor and inserted in the cavity, wherein the flange is larger than the mouth.

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