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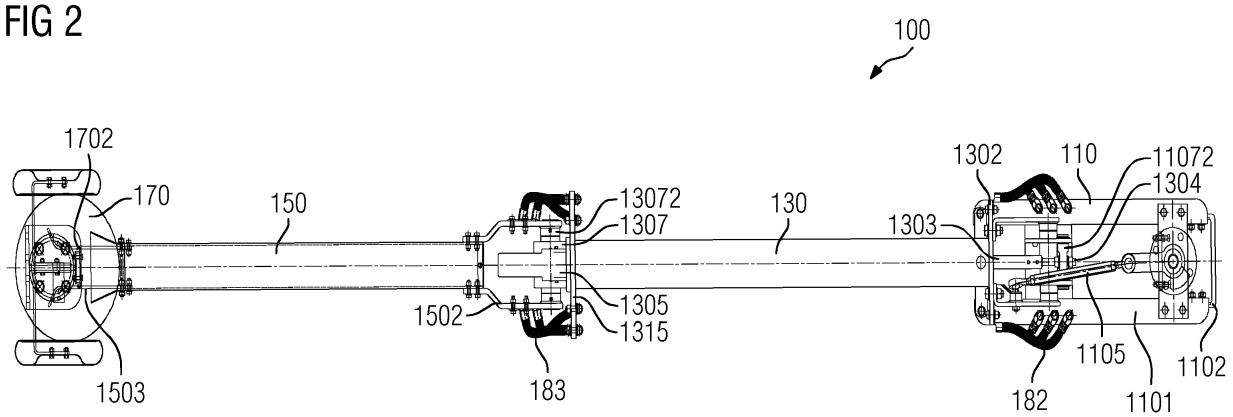
(54) **Isolating switch**

(57) Disclosed in the present invention is an isolating switch, comprising a static contact, a front conductive arm and an arc ignition device; the arc ignition device comprises an arc ignition plate, an arc ignition rod, an arc ignition frame and an elastic member; the arc ignition plate is installed on the static contact; the arc ignition frame is installed on the front conductive arm; the arc ignition rod is slidably disposed in the arc ignition frame; the elastic member is disposed on the arc ignition rod and can make the arc ignition rod move toward the arc ignition plate. Since the isolating switch in an embodiment of the present invention uses an arc ignition device, using an elastic member to drive an arc ignition rod into contact with an arc ignition plate, burning due to arcing will not occur between the static contact and contact fingers during the opening and closing operations, so safe operation of the electrical system can be guaranteed.

FIG 2



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Description

Technical field

[0001] The present invention relates to the technical field of switches, in particular to an isolating switch.

Background art

[0002] Isolating switches are electrical devices used in power systems to open and close no-load or light-load circuits, switch operating modes and isolate maintenance equipment. When closed, they can pass a normal load current for a long period of time and a short circuit fault current for a short period of time; when open, they have an obvious disconnection point to facilitate maintenance and protection. Isolating switches are used in large quantities in power systems, usually in outdoor environments so that they are subject to the influence of climatic conditions such as rain, snow and dust, therefore lowering their cost while increasing their reliability would help to reduce the cost of substations and power plants, etc. and improve operational safety.

Content of the invention

[0003] It is the intention in the present invention to provide an isolating switch of lower cost and high reliability. To this end, the embodiments of the present invention provide an isolating switch, comprising a static contact, a front conductive arm and an arc ignition device; the arc ignition device comprises an arc ignition plate, an arc ignition rod, an arc ignition frame and an elastic member; the arc ignition plate is installed on the static contact; the arc ignition frame is installed on the front conductive arm; the arc ignition rod is slidably disposed in the arc ignition frame; the elastic member is disposed on the arc ignition rod and can make the arc ignition rod move toward the arc ignition plate.

[0004] According to one embodiment, the isolating switch further comprises a base assembly and a rear conductive arm; the rear conductive arm comprises a drive shaft, a rack and a gearwheel; the rear conductive arm and the drive shaft are installed on two parallel rotation shafts of the base assembly, respectively; the rack is installed on the drive shaft; the gearwheel is installed on the front conductive arm and meshes with the rack.

[0005] According to one embodiment, the rear conductive arm further comprises a pipe body and, located in the pipe body, a limiting element, a joint bearing and an elastic element; the drive shaft is located in the pipe body; the limiting element is arranged so as to surround the drive shaft and connected to the pipe body; the joint bearing is arranged so as to surround the drive shaft and connected thereto; the elastic element is arranged so as to surround the drive shaft and located between the joint bearing and the limiting element.

[0006] According to one embodiment, the joint bearing comprises an adjustment piece and an adjustment bowl; the adjustment piece is connected to the drive shaft, while the adjustment bowl is arranged so as to surround the drive shaft and engages with the adjustment piece.

[0007] According to one embodiment, the rear conductive arm further comprises a joint housing and a gearwheel shaft; the joint housing is installed on the pipe body; the gearwheel meshes with the rack and is disposed in the joint housing by means of the gearwheel shaft; the gearwheel shaft is connected to the front conductive arm after passing through the joint housing.

[0008] According to one embodiment, the rear conductive arm further comprises a limiting shaft; the limiting shaft is disposed in the joint housing; the rack is sandwiched between the limiting shaft and the gearwheel.

[0009] According to one embodiment, an arcuate guiding portion is formed on the limiting shaft; the rack has a toothed portion and a guide portion; the toothed portion meshes with the gearwheel, and the guide portion engages with the arcuate guiding portion.

[0010] According to one embodiment, the base assembly comprises two base frames, two linkage plates and a support; the support is installed between the two base frames; a first rotary shaft and a second rotary shaft are provided on the support so as to be spaced apart; the two linkage plates are installed on two sides of the support by means of the first rotary shaft; the two linkage plates are connected to the rear conductive arm; the drive shaft is connected to the second rotary shaft.

[0011] According to one embodiment, the base assembly further comprises a support plate and a limiter; the support plate spans the two base frames; the limiter is disposed on the support plate and located between the support plate and the rear conductive arm.

[0012] According to one embodiment, a locking ring is provided on the arc ignition rod; the elastic member is a spring arranged so as to surround the arc ignition rod; the elastic member is disposed between the locking ring and the arc ignition frame.

[0013] According to one embodiment, the isolating switch further comprises multiple contact fingers; the contact fingers are installed on the front conductive arm; the arc ignition frame is installed in the front conductive arm and is adjacent to the contact fingers.

[0014] Since the isolating switch in an embodiment of the present invention uses an arc ignition device, using an elastic member to drive an arc ignition rod into contact with an arc ignition plate, burning due to arcing will not occur between the static contact and contact fingers during the opening and closing operations, so safe operation of the electrical system can be guaranteed. Furthermore, the various limiting devices ensure reliable operation of the isolating switch, while the front conductive arm, rear conductive arm and base assembly have a simple, reliable structure, thereby lowering costs effectively.

[0015] The description set out above is merely an outline of the technical solution of the present invention. In order that the technical means of the present invention

may be understood more clearly, and implemented according to the content of this description, and to make the above and other objects, features and merits of the present invention more obvious and easy to understand, preferred embodiments are specially presented below, and explained in detail in conjunction with the accompanying drawings.

Description of the accompanying drawings

[0016]

Fig. 1 is a partial structural schematic diagram of an isolating switch in an embodiment of the present invention.

Fig. 2 is a view of the isolating switch in Fig. 1 from above.

Fig. 3 is an enlarged schematic diagram of the base assembly of the isolating switch in Fig. 1.

Fig. 4 is a sectional schematic diagram along plane IV-IV in Fig. 3.

Fig. 5 is a view of the base assembly in Fig. 3 from above.

Fig. 6 is an enlarged sectional schematic diagram of the rear conductive arm in Fig. 1.

Fig. 7 is a schematic diagram of the rear conductive arm in Fig. 6 as viewed from above.

Fig. 8 is an enlarged schematic diagram of the front conductive arm in Fig. 1.

Fig. 9 is a view of the front conductive arm in Fig. 8 from above.

Fig. 10 is a schematic diagram showing the relationship between the contact assembly and the front conductive arm when the isolating switch is in a closed state.

Fig. 11 is a schematic diagram of Fig. 10 as viewed from above.

Fig. 12 is a schematic diagram showing the relationship between the contact assembly and the front conductive arm in a disconnected state.

Fig. 13 is a schematic diagram of Fig. 12 as viewed from above.

Fig. 14 is a sectional schematic diagram along plane I-I in Fig. 1.

[0017] The labels in the accompanying drawings comprise:

100	isolating switch
110	base assembly
1101	base frame
1102	wiring board
1103	flange
1104	crank
11042	rotary shaft
1105	connecting rod
11052	rotary shaft
1106	linkage plate
11062	first rotary shaft
1107	support
11072	second rotary shaft
1108	limiter
1109	support plate
130	rear conductive arm
1301	pipe body
1302	end plate
1303	drive shaft
1304	link rod
1305	rack
13052	toothed portion
13053	guide portion
1306	joint housing
1307	gearwheel
13072	gearwheel shaft
1308	limiting element
1309	joint bearing
13092	adjustment piece
13093	adjustment bowl
1310	limiting shaft
13102	arcuate guiding portion
1312	elastic element
150	front conductive arm
1501	pipe element
1502	connecting portion
1503	contact finger
1504	protective cover
170	contact assembly
1701	seat body
1702	static contact
182	soft braid
183	soft braid
190	arc ignition device
1901	arc ignition plate
1902	arc ignition frame
1903	arc ignition rod
1904	locking ring
1905	elastic member

Particular embodiments

[0018] The present invention is explained in further detail below with reference to embodiments and the accompanying drawings, to clarify the technical problem to be

solved thereby, as well as the technical solution and beneficial effects thereof. In the drawings, identical labels indicate identical components or components with similar structures but the same function. In the case of components with the same structure or function, only one of them is drawn schematically, or only one of them is marked. To make the drawings appear uncluttered, only those parts relevant to the present invention are shown schematically, but they do not represent the actual structure thereof as a product. The term "connected" as used herein indicates a direct "connection", or a "connection" via a third component. It should be understood that the particular embodiments described here are merely intended to explain the present invention, not to define it.

[0019] Fig. 1 shows a partial structural schematic diagram of an isolating switch 100 in an embodiment of the present invention. Fig. 2 shows a view of the isolating switch 100 in Fig. 1 from above. As shown in Figs. 1 and 2, the isolating switch 100 comprises a base assembly 110, a rear conductive arm 130, a front conductive arm 150 and a contact assembly 170. The rear conductive arm 130 is movably installed on the base assembly 110; the front conductive arm 150 is movably installed on the rear conductive arm 130, and can be driven by the rear conductive arm 130 to move relative to the contact assembly 170, thereby realizing a closing or opening operation. It must be explained that the isolating switch 100 also comprises other elements; only those parts relevant to the present invention are shown in Figs. 1 and 2.

[0020] Specifically, as Figs. 3 to 5 show, the base assembly 110 comprises two base frames 1101, a wiring board 1102, a flange 1103, a crank 1104, a connecting rod 1105, two linkage plates 1106, a support 1107 and a limiter 1108. The two base frames 1101 may be made of angle aluminum, etc. In the embodiment shown in Fig. 5, the two base frames 1101 are substantially parallel and spaced apart. The wiring board 1102 may be used for installing a power supply bus bar. The wiring board 1102 is disposed on one side, for instance the right side, of the two base frames 1101 (when the base assembly 110 is in the position shown in Fig. 3), and can be installed on the two base frames 1101 separately by a bolt connection, etc. The flange 1103 may be installed between the two base frames 1101 by bolts, etc. One end of the crank 1104 is connected to a drive shaft (not shown) passing through the flange 1103, the other end of the crank being connected to the connecting rod 1105 via a rotary shaft 11042. The connecting rod 1105 is further connected to one of the two linkage plates 1106 via a rotary shaft 11052.

[0021] The support 1107 may be installed between the two base frames 1101 as shown in Fig. 4 by a bolt connection, etc. The support 1107 may be used to install a first rotary shaft 11062 and a second rotary shaft 11072. The first rotary shaft 11062 and second rotary shaft 11072 are spaced apart, i.e. the first rotary shaft 11062 and second rotary shaft 11072 of the support 1107 are two parallel rotation shafts. The two linkage plates 1106 are installed on two sides of the support 1107 by means of the first rotary shaft 11062, and may be connected to the rear conductive arm 130 by a bolt connection, etc. The first rotary shaft 11062 is spaced apart from the rotary shaft 11052, i.e. the first rotary shaft 11062 and the rotary shaft 11052 are two parallel rotation shafts. Thus, the crank 1104, the connecting rod 1105, and the linkage plate 1106 on which the rotary shaft 11052 is installed together form a crank connecting rod mechanism, capable of driving the rear conductive arm 130 stably and reliably.

[0022] The limiter 1108 may be disposed between the two base frames 1101 by means of a support plate 1109. The support plate 1109 may be installed on the two base frames 1101 by a bolt connection, etc. In the embodiment shown in Fig. 5, the support plate 1109 spans the two base frames 1101. As Fig. 3 shows, the limiter 1108 is disposed between the support plate 1109, the base frames 1101 and the rear conductive arm 130, and can serve to limit the position of the rear conductive arm 130, ensuring stable and reliable operation of the rear conductive arm 130 (this will be explained further below).

[0023] As Figs. 6 and 7 show, the rear conductive arm 130 comprises a pipe body 1301, an end plate 1302, a drive shaft 1303, a link rod 1304, a rack 1305, a joint housing 1306, a gearwheel 1307, a limiting element 1308, a joint bearing 1309 and an elastic element 1312. "Rack" as used herein refers to that part of the component which has teeth and fulfills the function of a "rack", not the component itself. Those skilled in the art will understand that the position at which the "rack" is connected to the drive shaft may be chosen and vary accordingly, therefore in this text any part which is connected to the drive shaft but does not fulfill the function of a "rack" is regarded as part of the drive shaft.

[0024] The end plate 1302 is formed at one end of the pipe body 1301, and extends outward along an end edge of the pipe body 1301. The end plate 1302 may be connected to the linkage plates 1106 by bolts, etc., thereby connecting the pipe body 1301 to the linkage plates 1106. In addition, as shown in Fig. 2, the end plate 1302 may be connected to the base frames 1101 by multiple soft braids 182.

[0025] The drive shaft 1303 passes through the pipe body 1301. In the embodiment shown in Fig. 6, the drive shaft 1303 may be a hollow shaft. The link rod 1304 is installed at one end, such as the right-hand end, of the drive shaft 1303 (when the rear conductive arm 130 is in the position shown in Fig. 6). As Fig. 5 shows, the link rod 1304 further passes through the second rotary shaft 11072. The link rod 1304 is substantially perpendicular to the second rotary shaft 11072. In other embodiments, the link rod 1304 may be integrally formed with the drive shaft 1303.

[0026] The rack 1305 is installed at the other end, such as the left-hand end, of the drive shaft 1303 (when the rear conductive arm 130 is in the position shown in Fig. 6). As Fig. 14 shows, a limiting shaft 1310 is disposed in

the joint housing 1306, with the rack 1305 sandwiched between the limiting shaft 1310 and the gearwheel 1307. The rack 1305 has a toothed portion 13052 and a guide portion 13053. The toothed portion 13052 and the guide portion 13053 are formed on two sides of the rack 1305. The toothed portion 13052 engages with the gearwheel 1307, while the guide portion 13053 engages with the limiting shaft 1310. To reduce friction between the guide portion 13053 and the limiting shaft 1310, the surface of the guide portion 13053 may be substantially arcuate, with an arcuate guiding portion 13102 being correspondingly formed on the limiting shaft 1310.

[0027] The joint housing 1306 may be installed on the pipe body 1301 by a bolt connection, etc., close to the rack 1305. The gearwheel 1307 is disposed in the joint housing 1306 by means of a gearwheel shaft 13072, and meshes with the rack 1305. As Fig. 2 shows, the gearwheel shaft 13072 is connected to the front conductive arm 150 after passing through the joint housing 1306 and extending out of the joint housing 1306. Thus, by means of the transmission of motion between the gearwheel 1307 and the rack 1305, the rear conductive arm 130 can drive the front conductive arm 150 to move and thereby realize closing or opening operations.

[0028] The limiting element 1308 may be disposed in the pipe body 1301 and connected thereto by a bolt connection, etc., so as to surround the drive shaft 1303.

[0029] As Fig. 7 shows, the joint bearing 1309 comprises an adjustment piece 13092 and an adjustment bowl 13093. The adjustment piece 13092 may be arranged so as to surround the drive shaft 1303 and be connected thereto. In the embodiment shown in Figs. 6 and 7, the adjustment piece 13092 is sandwiched in the junction where the rack 1305 is connected to the drive shaft 1303. The adjustment bowl 13093 is arranged so as to surround the drive shaft 1303, and engages with the adjustment piece 13092. Those skilled in the art will understand that the adjustment piece could also be connected at another suitable point on the drive shaft 1303.

[0030] The elastic element 1312, for instance a spring, is arranged so as to surround the drive shaft 1303, and is located between the adjustment bowl 13093 and the limiting element 1308. The elastic element 1312 between the adjustment bowl 13093 and the limiting element 1308 is in a compressed state, therefore the elastic element 1312 will exert an action force on the limiting element 1308. Since the limiting element 1308 is installed on the pipe body 1301, this action force is exerted by the elastic element 1312 on the pipe body 1301 via the limiting element 1308. As Fig. 3 shows, the connecting rod 1105 exerts a driving force on the pipe body 1301 via the linkage plate 1106, making the pipe body 1301 rotate around the first rotary shaft 11062 in the direction indicated by the arrow A in Fig. 3. Since the action force exerted by the elastic element 1312 on the pipe body 1301 is in the same direction as the driving force exerted by the connecting rod 1105 on the pipe body 1301, it makes rotation of the rear conductive arm 130 easier, i.e. reduces the stresses on the connecting rod 1105 and associated transmission elements thereof. This enables the dimensions of each transmission element to be made smaller, the quantities of materials used to be reduced, and the goal of lowering costs to be achieved. In addition, during rotation of the rear conductive arm 130, relative movement occurs between the pipe body 1301 and the drive shaft 1303, so that the elastic element 1312 is further compressed or stretched such that the rear conductive arm 130 always attains a new balance automatically. Furthermore, when relative movement occurs between the pipe body 1301 and the drive shaft 1303, swinging or tilting movement between the adjustment piece 13092 and adjustment bowl 13093 in the joint bearing 1309 allows the stresses on the drive shaft 1303 and the elastic element 1312 to be altered favorably.

[0031] As Figs. 8 and 9 show, the front conductive arm 150 comprises a pipe element 1501, two connecting portions 1502, multiple contact fingers 1503 and a protective cover 1504.

[0032] As Fig. 2 shows, the connecting portions 1502 may be installed at one end of the pipe element 1501 by a bolt connection, etc. The connecting portions 1502 are also connected to the gearwheel shaft 13072. Furthermore, the connecting portions 1502 may be connected to the rear conductive arm 130 by multiple soft braids 183. The multiple contact fingers 1503 and protective cover 1504 may be installed at the other end of the pipe element 1501 by a bolt connection, etc. The protective cover 1504 can serve to protect the contact fingers 1503. The contact fingers 1503 can be used to contact the contact assembly 170.

[0033] As Fig. 10 shows, the contact assembly 170 comprises a seat body 1701 and a static contact 1702. The static contact 1702 is disposed on the seat body 1701, and can engage with the contact fingers 1503. In one embodiment, when the isolating switch 100 is in a closed state, as shown in Figs. 10 and 11, the static contact 1702 is substantially perpendicular to the axis of the pipe element 1501.

[0034] In addition, as Figs. 10 and 11 show, the isolating switch 100 may further comprise an arc ignition device 190. The arc ignition device 190 comprises an arc ignition plate 1901, an arc ignition rod 1903, an arc ignition frame 1902, a locking ring 1904 and an elastic member 1905. The arc ignition plate 1901 may be installed on the static contact 1702 by a bolt connection, etc. In the embodiment shown in Fig. 10, the arc ignition plate 1901 and static contact 1702 are substantially parallel and spaced apart. The arc ignition frame 1902 may be installed in the pipe element 1501 by a bolt connection, etc., adjacent to the contact fingers 1503. The arc ignition rod 1903 is slidably disposed in the arc ignition frame 1902. The arc ignition rod 1903 can slide relative to the arc ignition frame 1902 in a direction substantially parallel to the axis of the pipe element 1501. The locking ring 1904 is arranged so as to surround the arc ignition rod 1903 and is fixed thereto. The locking ring 1904 may also be integrally formed with

the arc ignition rod 1903; for example, it may be a protrusion or other such structure on the arc ignition rod 1903. The elastic member 1905 is disposed between the locking ring 1904 and the arc ignition frame 1902, and can make the arc ignition rod 1903 move toward the arc ignition plate 1901. In one embodiment, the elastic member 1905 may be a spring arranged so as to surround the arc ignition rod 1903. One end of the elastic member 1905 is in contact with the arc ignition frame 1902, while the other end can bear against the locking ring 1904 which is arranged so as to surround the arc ignition rod 1903 and is fixed thereto.

[0035] The specific structure of an isolating switch 100 in one embodiment of the present invention is presented above; the operating process thereof is presented briefly below.

[0036] As Figs. 1 - 2 and 10 - 11 show, the isolating switch 100 is in a closed state. At this time, the static contact 1702 is in contact with the contact fingers 1503, while the arc ignition rod 1903 is in contact with the arc ignition plate 1901. Current is transmitted in the following manner: wiring board 1102 → base frames 1101 → soft braids 182 → rear conductive arm 130 → soft braids 183 → front conductive arm 150 → static contact 1702.

[0037] When it is necessary to perform an opening operation, the connecting rod 1105 can be driven to move by means of an existing transmission structure. The moving connecting rod 1105 can drive the two linkage plates 1106 to rotate around the first rotary shaft 11062 in the direction indicated by arrow A in Fig. 3. Since the linkage plates 1106 are connected to the pipe body 1301 of the rear conductive arm 130, the pipe body 1301 also rotates around the first rotary shaft 11062 in the direction indicated by arrow A in Fig. 3. Since the rack 1305 is installed on the drive shaft 1303 and sandwiched between the gearwheel 1307 and the limiting shaft 1310, as the pipe body 1301 rotates, the drive shaft 1303 will rotate around the second rotary shaft 11072 in the direction indicated by arrow A in Fig. 3. Since the second rotary shaft 11072 and first rotary shaft 11062 are disposed on the support 1107 so as to be spaced apart, i.e. the drive shaft 1303 and pipe body 1301 have different rotation shafts, relative movement occurs between the rack 1305 and gearwheel 1307, causing the gearwheel 1307 to rotate. In this process, the action force exerted by the elastic element 1312 on the pipe body 1301 is in the same direction as the driving force exerted by the connecting rod 1105 on the pipe body 1301, making rotation of the rear conductive arm 130 easier, i.e. reducing the stresses on the connecting rod 1105 and associated transmission elements thereof. At the same time, swinging or tilting movement between the adjustment piece 13092 and adjustment bowl 13093 in the joint bearing 1309 allows the stresses on the drive shaft 1303 and the elastic element 1312 to be altered favorably. By way of the gearwheel shaft 13072, the rotating gearwheel 1307 further drives the front conductive arm 150 to rotate around the gearwheel shaft 13072 in substantially the opposite direction to that indicated by arrow A and hence adjusts the included angle between the front conductive arm 150 and rear conductive arm 130, thereby facilitating separation of the static contact 1702 from the contact fingers 1503. When the static contact 1702 is completely separated from the contact fingers 1503, the opening operation is completed.

[0038] When it is necessary to perform a closing operation, the connecting rod 1105 is rotated in the opposite direction, enabling the rear conductive arm 130 to drive the front conductive arm 150 in the opposite direction by means of movement of the gearwheel 1307 and rack 1305 in the opposite direction, until the static contact 1702 comes into contact with the contact fingers 1503, at which point the closing operation is completed.

[0039] In the opening operation described above, when the static contact 1702 separates from the contact fingers 1503, the action of the elastic member 1905 maintains contact between the arc ignition rod 1903 and the arc ignition plate 1901, and an arc is generated on the arc ignition rod 1903 and arc ignition plate 1901. When the arc ignition rod 1903 and arc ignition plate 1901 are completely separated, as shown in Figs. 12 and 13, the arc is extinguished, completing the opening operation. In the closing operation described above, the arc ignition rod 1903 contacts the arc ignition plate 1901 first under the action of the elastic member 1905, and an arc is generated on the arc ignition rod 1903 and arc ignition plate 1901. The arc ignition rod 1903 and arc ignition plate 1901 are in electrical communication with the front conductive arm 150 and static contact 1702, respectively, and the action of the elastic member 1905 and the moving front conductive arm 150 brings the arc ignition rod 1903 and arc ignition plate 1901 into tight contact, so the arc is extinguished. Thus, burning due to arcing will not occur between the static contact 1702 and contact fingers 1503 during the opening and closing operations, so safe operation of the electrical system can be guaranteed.

[0040] Furthermore, when the isolating switch 100 is in a closed state, the rear conductive arm 130 bears against the limiter 1108, and is locked by the connecting rod 1105, etc., i.e. the rear conductive arm 130 is sandwiched between the limiter 1108 and the connecting rod 1105, etc. Thus, rocking of the rear conductive arm 130 can be prevented, i.e. the rear conductive arm 130 can be fixed in position.

[0041] As stated above, in one embodiment of the present invention the isolating switch 100 utilizes transmission of motion by meshing of the gearwheel 1307 with the rack 1305 to achieve transmission of motion between the rear conductive arm 130 and the front conductive arm 150, and can change the included angle between the rear conductive arm 130 and the front conductive arm 150 so as to facilitate separation of the static contact 1702 from the contact fingers 1503. Moreover, the provision of the elastic element 1312 between the joint bearing 1309 and the limiting element 1308 can make rotation of the rear conductive arm 130 easier, i.e. reduce the stresses on the connecting rod 1105 and associated

transmission elements thereof. This enables the dimensions of each transmission element to be made smaller, the quantities of materials used to be reduced, and the goal of lowering costs to be achieved. Furthermore, during rotation of the rear conductive arm 130, relative movement occurs between the pipe body 1301 and the drive shaft 1303, so that the elastic element 1312 is further compressed or stretched such that the rear conductive arm 130 always attains a new balance automatically. In addition, the use of the arc ignition device 190 means that burning due to arcing will not occur between the static contact 1702 and contact fingers 1503 during the opening and closing operations, so safe operation of the electrical system can be guaranteed.

[0042] The above embodiments are merely preferred embodiments of the present invention, which are not intended to limit it. Any amendments, equivalent substitutions or improvements etc. made within the spirit and principles of the present invention should be included in the scope of protection thereof.

Claims

1. An isolating switch (100), comprising a static contact (1702), a front conductive arm (150) and an arc ignition device (190); the arc ignition device (190) comprises an arc ignition plate (1901), an arc ignition rod (1903), an arc ignition frame (1902) and an elastic member (1905);
   the arc ignition plate (1901) is installed on the static contact(1702);
   the arc ignition frame (1902) is installed on the front conductive arm (150);
   the arc ignition rod (1903) is slidably disposed in the arc ignition frame (1902);
   the elastic member (1905) is disposed on the arc ignition rod (1903) and can make the arc ignition rod (1903) move toward the arc ignition plate (1901).

2. The isolating switch (100) as claimed in claim 1, wherein the isolating switch (100) further comprises a base assembly (110) and a rear conductive arm (130); the rear conductive arm (130) comprises a drive shaft (1303), a rack (1305) and a gearwheel (1307);
   the rear conductive arm (130) and the drive shaft (1303) are installed on two parallel rotation shafts of the base assembly (110), respectively;
   the rack (1305) is installed on the drive shaft (1303);
   the gearwheel (1307) is installed on the front conductive arm (150) and meshes with the rack (1305).

3. The isolating switch (100) as claimed in claim 2, wherein the rear conductive arm (130) further comprises a pipe body (1301) and, located in the pipe body (1301), a limiting element (1308), a joint bearing (1309) and an elastic element (1312);
   the drive shaft (1303) is located in the pipe body (1301);
   the limiting element (1308) is arranged so as to surround the drive shaft (1303) and connected to the pipe body (1301);
   the joint bearing (1309) is arranged so as to surround the drive shaft (1303) and connected thereto;
   the elastic element (1312) is arranged so as to surround the drive shaft (1303) and located between the joint bearing (1309) and the limiting element (1308).

4. The isolating switch (100) as claimed in claim 3, wherein the joint bearing (1309) comprises an adjustment piece (13092) and an adjustment bowl (13093); the adjustment piece (13092) is connected to the drive shaft (1303), while the adjustment bowl (13093) is arranged so as to surround the drive shaft (1303) and engages with the adjustment piece (13092).

5. The isolating switch (100) as claimed in claim 3, wherein the rear conductive arm (130) further comprises a joint housing (1306) and a gearwheel shaft (13072); the joint housing (1306) is installed on the pipe body (1301); the gearwheel (1307) meshes with the rack (1305) and is disposed in the joint housing (1306) by means of the gearwheel shaft (13072); the gearwheel shaft (13072) is connected to the front conductive arm (150) after passing through the joint housing (1306).

6. The isolating switch (100) as claimed in claim 5, wherein the rear conductive arm (130) further comprises a limiting shaft (1310); the limiting shaft (1310) is disposed in the joint housing (1306); the rack (1305) is sandwiched between the limiting shaft (1310) and the gearwheel (1307).

7. The isolating switch (100) as claimed in claim 6, wherein an arcuate guiding portion (13102) is formed on the limiting shaft (1310); the rack (1305) has a toothed portion (13052) and a guide portion (13053); the toothed portion (13052) meshes with the gearwheel (1307), and the guide portion (13053) engages with the arcuate guiding portion (13102).

8. The isolating switch (100) as claimed in any one of claims 2 to 7, wherein the base assembly (110) comprises two base frames (1101), two linkage plates (1106) and a support (1107);
   the support (1107) is installed between the two base frames (1101); a first rotary shaft (11062) and a second rotary shaft (11072) are provided on the support (1107) so as to be spaced apart;
   the two linkage plates (1106) are installed on two sides of the support (1107) by means of the first rotary shaft (11062); the two linkage plates (1106) are

connected to the rear conductive arm (130);
the drive shaft (1303) is connected to the second rotary shaft (11072).

9. The isolating switch (100) as claimed in claim 8, wherein the base assembly (110) further comprises a support plate (1109) and a limiter (1108); the support plate (1109) spans the two base frames (1101); the limiter (1108) is disposed on the support plate (1109) and located between the support plate (1109) and the rear conductive arm (130).

10. The isolating switch (100) as claimed in claim 1, wherein a locking ring (1904) is provided on the arc ignition rod (1903); the elastic member (1905) is a spring arranged so as to surround the arc ignition rod (1903); the elastic member (1905) is disposed between the locking ring (1904) and the arc ignition frame (1902).

11. The isolating switch (100) as claimed in claim 1, wherein the isolating switch (100) further comprises multiple contact fingers (1503); the contact fingers (1503) are installed on the front conductive arm (150);
the arc ignition frame (1902) is installed in the front conductive arm (150) and is adjacent to the contact fingers (1503).

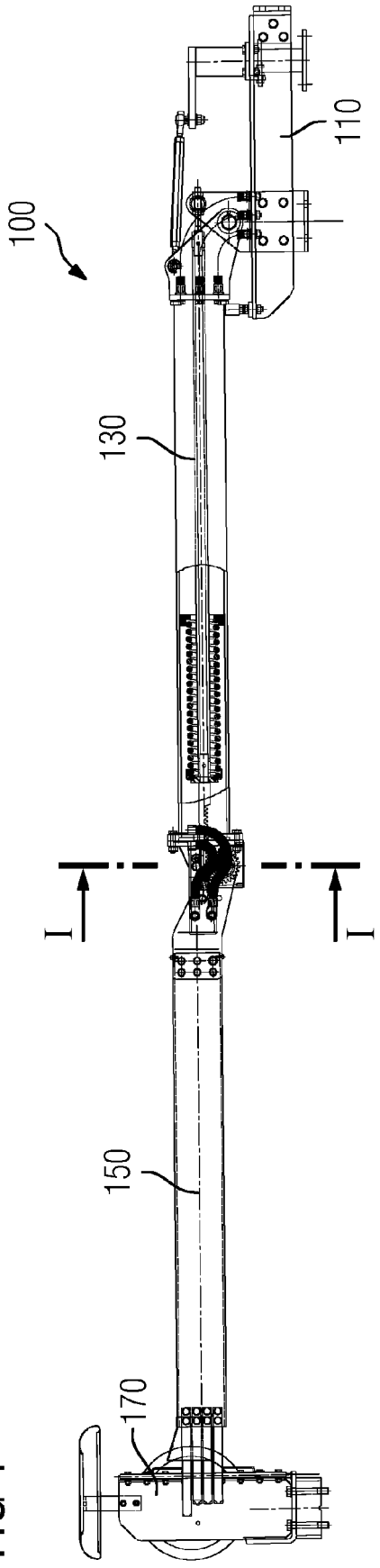


FIG 1

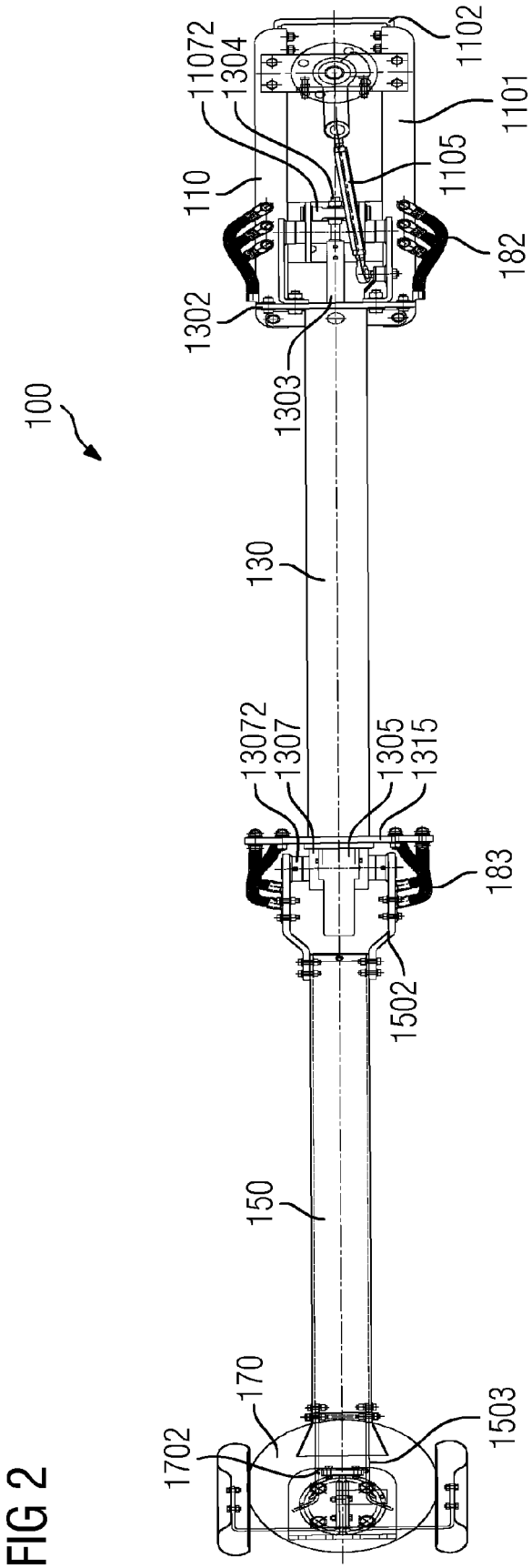

100
11072
1304
1102
1101
1105
110
182
1302
1303
130
13072
1307
1305
1315
183
1502
150
170
1503
1702

FIG 2

FIG 3

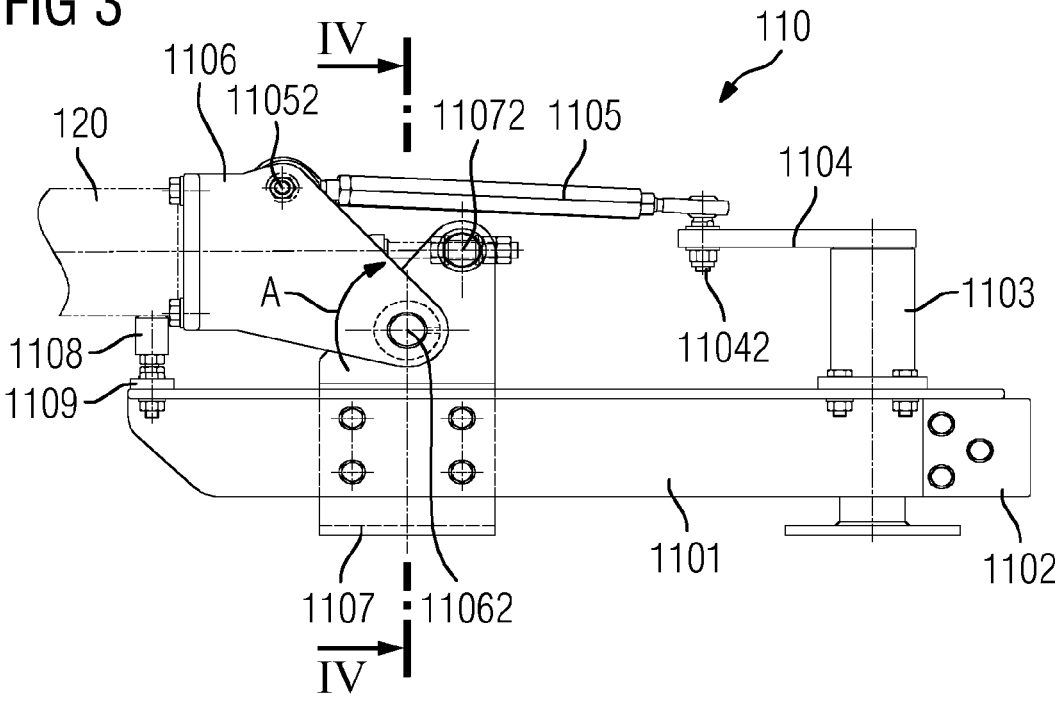

110
IV
1106
11052
11072
1105
120
1104
A
1103
1108
11042
1109
1101
1102
1107
11062
IV

FIG 4

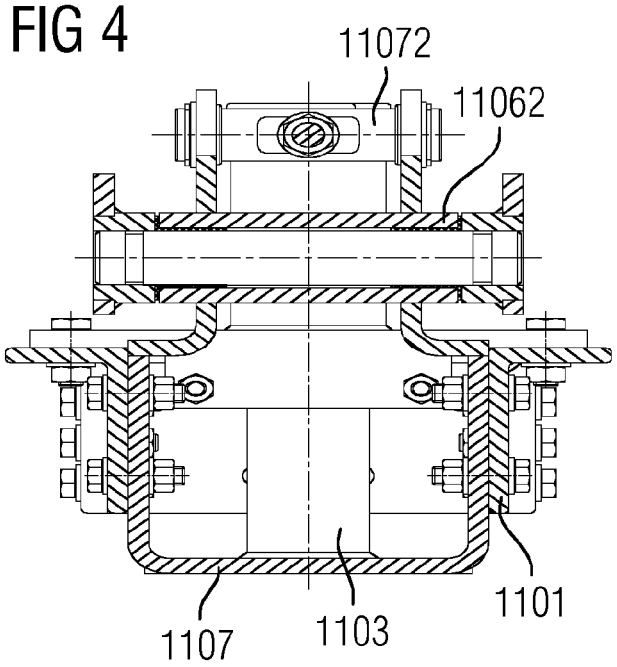

11072
11062
1101
1107
1103

FIG 5

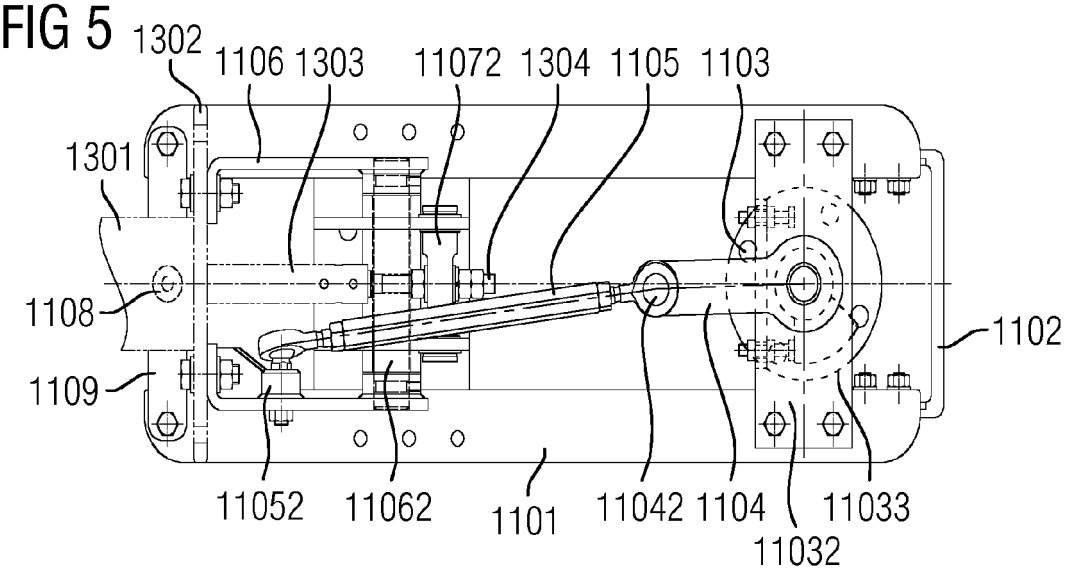


FIG 6

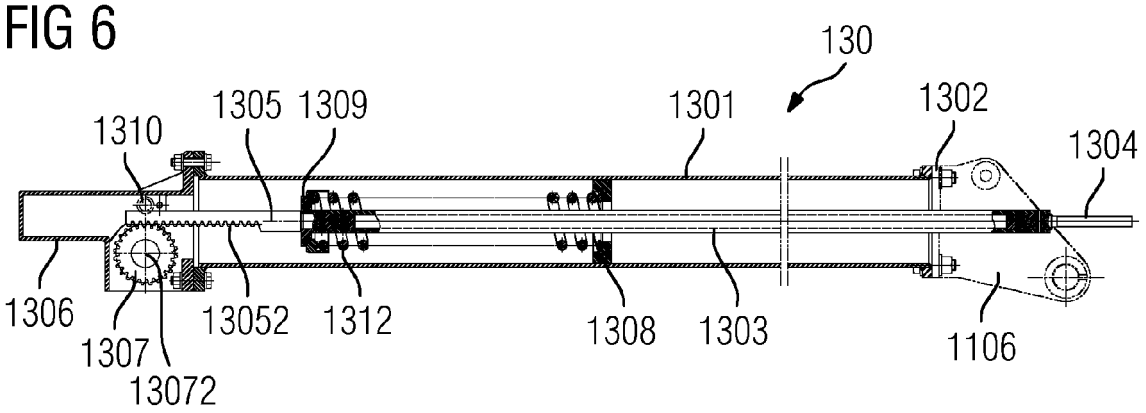


FIG 7

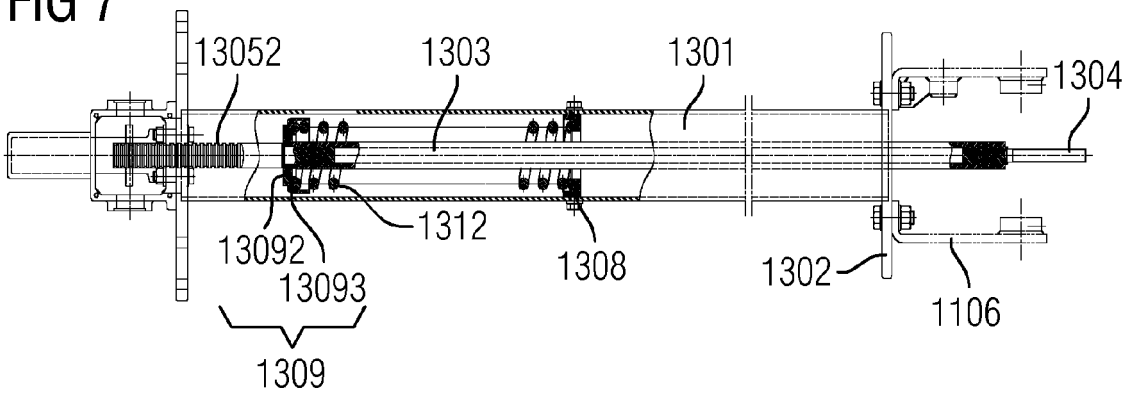


FIG 8

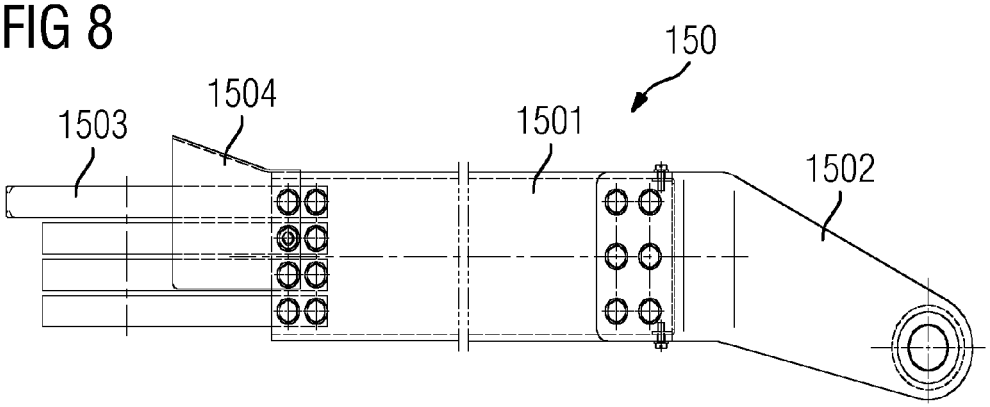


FIG 9

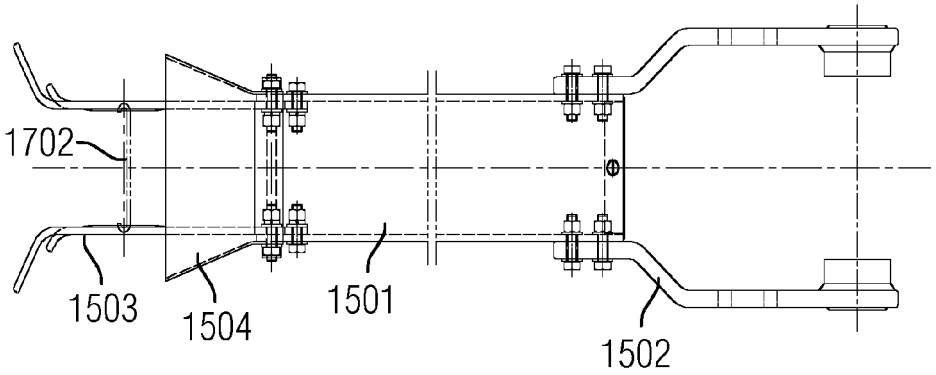


FIG 10

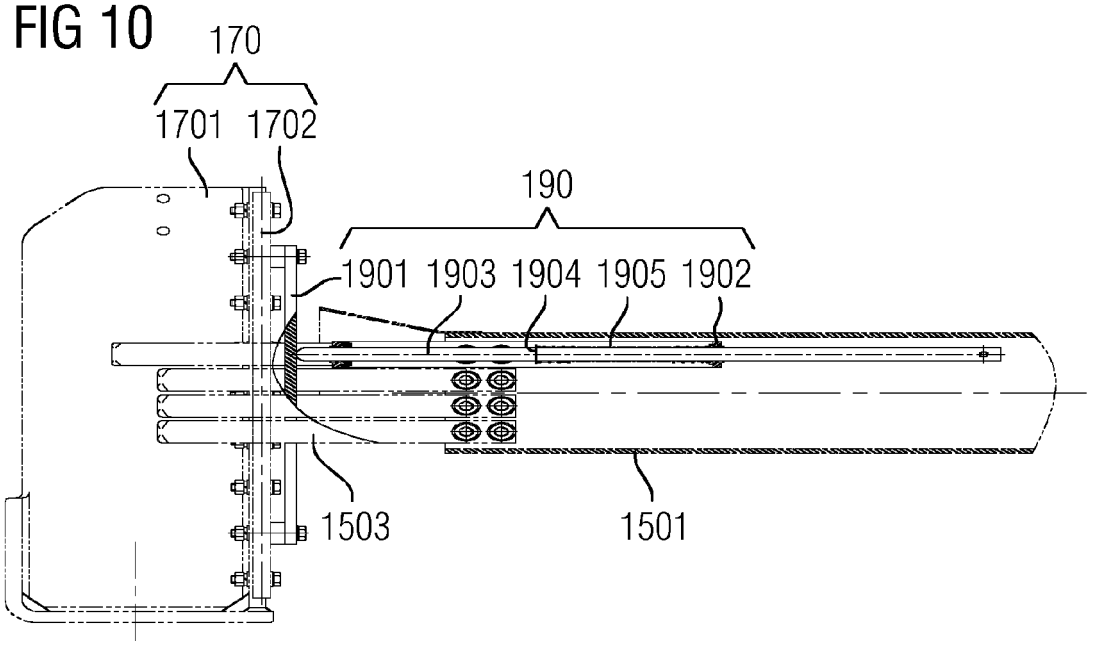


FIG 11

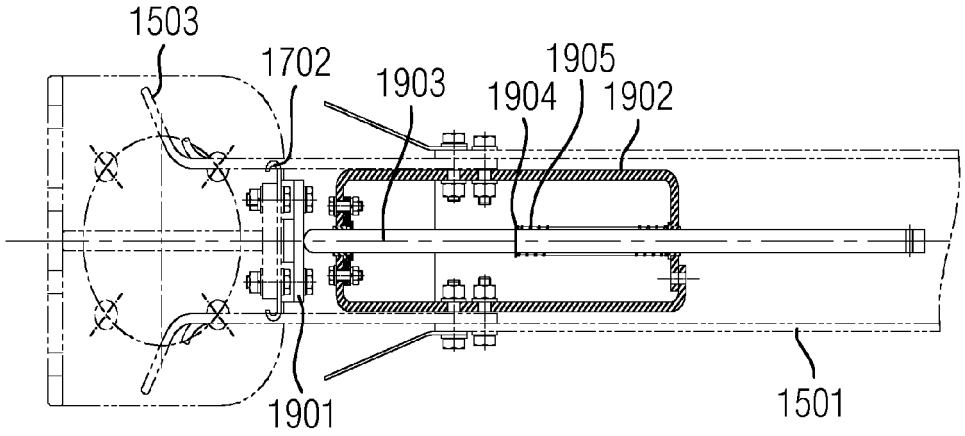

1503
1702
1903
1905
1904
1902
1901
1501

FIG 12

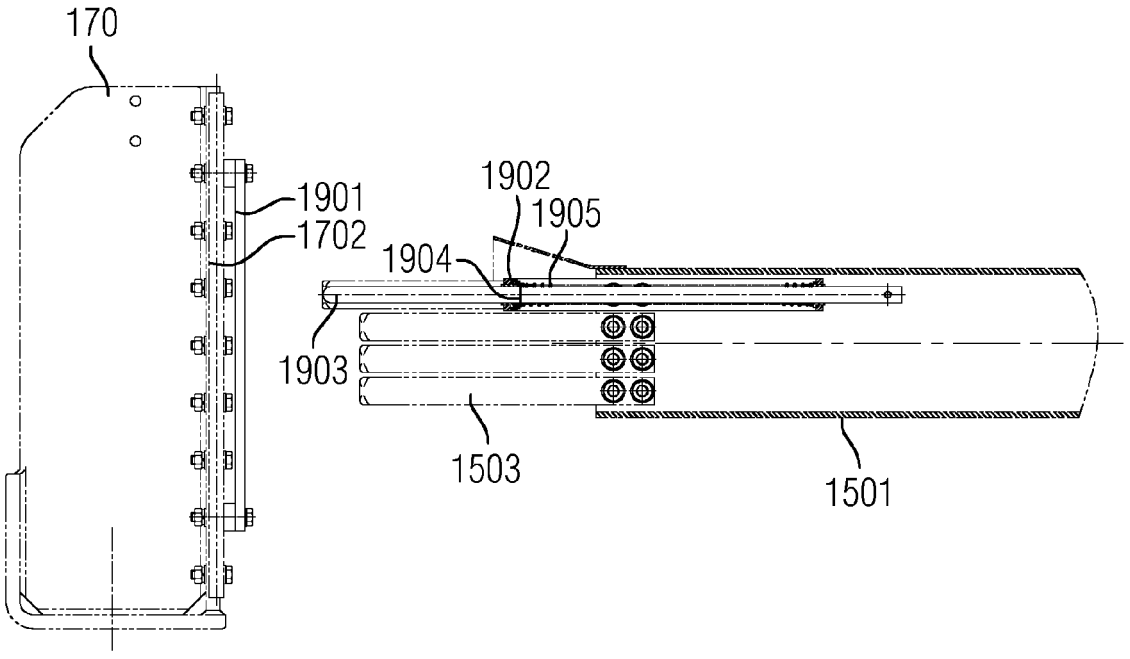

170
1901
1702
1902
1905
1904
1903
1503
1501

FIG 13

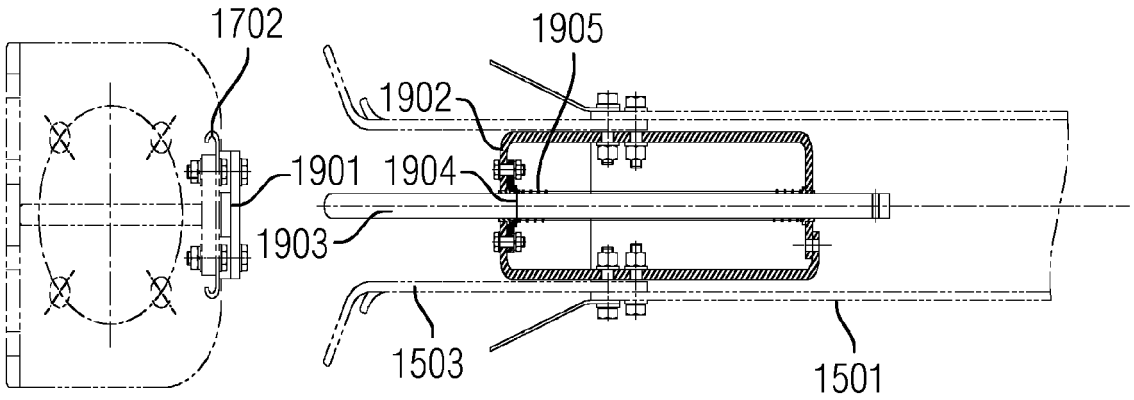
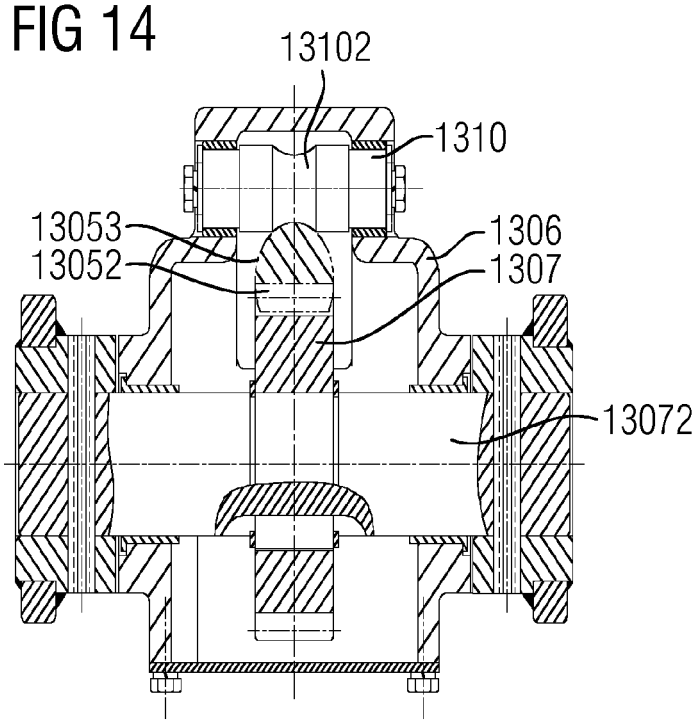

1702
1905
1902
1901
1904
1903
1503
1501

FIG 14


13102
1310
13053
13052
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13072

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EUROPEAN SEARCH REPORT

Application Number
EP 14 18 1102

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H01H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 December 2014	Ramírez Fueyo, M

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19-12-2014

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