

(12) STANDARD PATENT
(19) AUSTRALIAN PATENT OFFICE

(11) Application No. AU 2010306082 B2

(54) Title
Gas insulated medium voltage switchgear

(51) International Patent Classification(s)
H01H 31/00 (2006.01) **H02B 13/035** (2006.01)
H01H 31/28 (2006.01)

(21) Application No: **2010306082** (22) Date of Filing: **2010.10.13**

(87) WIPO No: **WO11/045043**

(30) Priority Data

(31) Number **09012902.4** (32) Date **2009.10.13** (33) Country **EP**

(43) Publication Date: **2011.04.21**
(44) Accepted Journal Date: **2014.09.04**

(71) Applicant(s)
ABB Technology AG

(72) Inventor(s)
Mildes, Hartmut;Fussbahn, Olaf;Wuillemet, Norbert;Gottlich, Stefan

(74) Agent / Attorney
Griffith Hack, GPO Box 1285, Melbourne, VIC, 3001

(56) Related Art
WO 2004/054057
US 2004/0104201
US 2005/0219804

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 April 2011 (21.04.2011)

(10) International Publication Number
WO 2011/045043 A1

(51) International Patent Classification:
H01H 31/00 (2006.01) *H02B 13/035* (2006.01)
H01H 31/28 (2006.01)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(21) International Application Number:
PCT/EP2010/006260

(22) International Filing Date:
13 October 2010 (13.10.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09012902.4 13 October 2009 (13.10.2009) EP

(71) Applicant (for all designated States except US): **ABB TECHNOLOGY AG** [CH/CH]; Affolternstrasse 44, CH-8050 Zurich (CH).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MILDES, Hartmut** [DE/DE]; Bergstr. 29, 40878 Ratingen (DE). **FUSS-BAHN, Olaf** [DE/DE]; Zum Driegeltrath 48, 40885 Ratingen (DE). **WUILLEMET, Norbert** [DE/DE]; Fritz-Windisch-Str. 89, 40885 Ratingen (DE). **GÖTTLICH, Stefan** [DE/DE]; Turmweg 13, 42799 Leichlingen (DE).

(74) Agent: **SCHMIDT, Karl-Michael**; ABB AG/GF-IP, Oberhausener Straße 33, 40472 Ratingen (DE).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

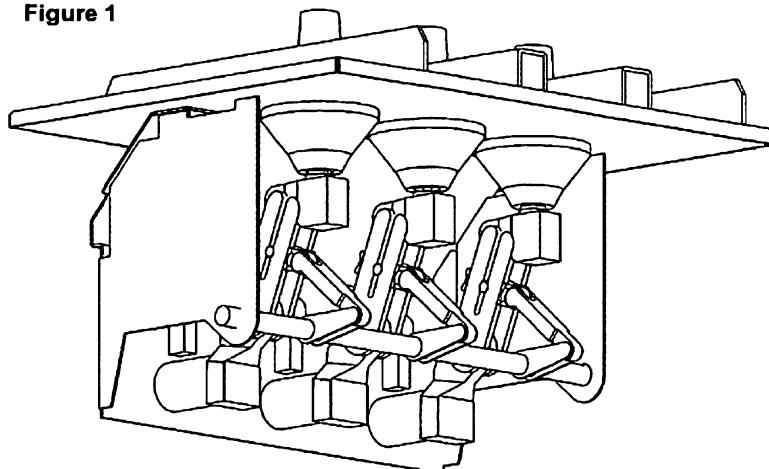
— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))

(54) Title: GAS INSULATED MEDIUM VOLTAGE SWITCHGEAR

Figure 1



(57) Abstract: The invention relates to a gas insulated medium voltage switchgear with a 3 position disconnector device for 3 electric phases on one common rotatable driveshaft. In order to realize a common construction, the three position disconnector device for three phases is arranged in one common functional unit, which has a base plate and a frame, and which can be mounted in a switchgear housing, in that way, that the baseplate and/or the frame is after the mounting a part of a gastight housing of the switchgear.

WO 2011/045043 A1

Gas insulated medium voltage switchgear

The invention relates to a gas insulated medium voltage switchgear with a 3 position
5 disconnector device for 3 electric phases on one common rotatable driveshaft.

In well known gastight medium voltage switchgears three-position disconnector devices
10 are assembled in the housing, in that way, that different components of the device are
fixed mechanically on different parts of the housing of the switchgear.

15 This guides to the following problems.

- The assembly is complicated and time consuming, as the accessibility is
restricted by the available openings in the housing of the switchgear.
- The adjustment of the three-position disconnector devices has to be done in the
final assembly line.
- The functional test of the three-position disconnector devices has to be done in
20 the final assembly line.
- The external sourcing of the complete assembled disconnector device from
subsuppliers is not possible.

25 The basic features of the invention are, that the three position disconnector device for
three phases is arranged in one common functional unit, which has a base plate and a
frame, and which can be mounted in a switchgear housing, in that way, that the
baseplate and/or the frame is after the mounting a part of a gastight housing of the
switchgear.

30 This reduces the assembling or mounting time because of a better accessibility.
Furthermore, the preassembled unit is easier to adjust, before it will be mounted into
the switchgear housing.

35 A further advantageous embodiment is, that the fixed contacts of the disconnector

device are mounted on the base plate with integral bushings, which are furthermore connectable to the solid insulated busbars at the outside part of the housing of the switchgear.

5 Furthermore the frame is mounted on the base plate, and that the frame carries the fixation of the driveshaft.

Optionally, the earth contacts are fixed to the frame

10 A further very advantageous embodiment is, that the common functional unit closes the housing of the switchgear after mounting in a gastight way.

To realize this gastight closing of the housing, one possible solution is, to realize it by welding after it is mounted in the housing, or to screw it by the use of a sealing element 15 around the opening of the housing, in which the functional unit is placed.

An embodiment of the invention is shown in the drawing.

The figure 1 shows a perspective view of a three phase disconnector device in one 20 common unit. The movable contacts are arranged operated by a turnable driveshaft. The driveshaft is positioned and fixed on both side in a frame, which is mounted on a base plate. In the base plate are fixed not movable contacts which are mounted on integral bushings. These bushings are connected to external busbars.

25 So the common unit can be assembled and adjusted before it has to be mounted into the housing of the switchgear.

Furthermore the electric sourcing with external busbars is easy and effective.

30 The figure 2 shows the housing of a medium voltage switchgear. The above mentioned base plate will be mounted on an opening on top of the housing. This base plate will be fixed in such a way, that the housing is gastightly closed by that. So only the baseplate with its external busbarsystem is visable in figure 2. The rest of the components which are mounted on the baseplate like shown in figure 1 extend into the inner part of the 35 housing and is closed hermetically by the base plate.

2010306082 23 Jul 2014

- 3 -

This hermetically closing could be realized by a sealing of by welding the basplate into the opening of the housing.

Claims

1. A gasinsulated medium voltage switchgear comprising:
 - 5 a three position disconnector device for three electric phases,
 - a rotatable driveshaft,
 - wherein the three position disconnector device for three phases is arranged in one common functional unit comprising:
 - 10 a base plate, and
 - a frame, mounted on the base plate and carries the fixation of the driveshaft,
 - wherein the base plate and the frame are mounted in a switchgear housing, and, after mounting, at least one of the base plate and frame is a part of a gastight housing of the switchgear.
- 15 2. The gasinsulated medium voltage switchgear according to claim 1, wherein both the base plate and the frame are, after the mounting, at least one of the base plate and frame is a part of a gastight housing of the switchgear.
3. The gasinsulated medium voltage switchgear according to either claim 1 or 20 claim 2, wherein that the fixed contacts of the disconnector device are mounted on the base plate with integral bushings, which are furthermore connectable to the solid insulated busbars at the outside part of the housing of the switchgear.
4. The gasinsulated medium voltage switchgear according to one of the aforesaid 25 claims, wherein that the earth contacts are fixed to the frame.
5. The gasinsulated medium voltage switchgear according to claim 4, wherein the gastight mounting is realized by welding.
- 30 6. The gasinsulated medium voltage switchgear according to claim 4, wherein the gastight mounting is realized by screwing and the use of a sealing element around the opening of the housing, in which the functional unit is placed.
7. The gasinsulated medium voltage switchgear substantially as herein described 35 with reference to the accompanying drawings.

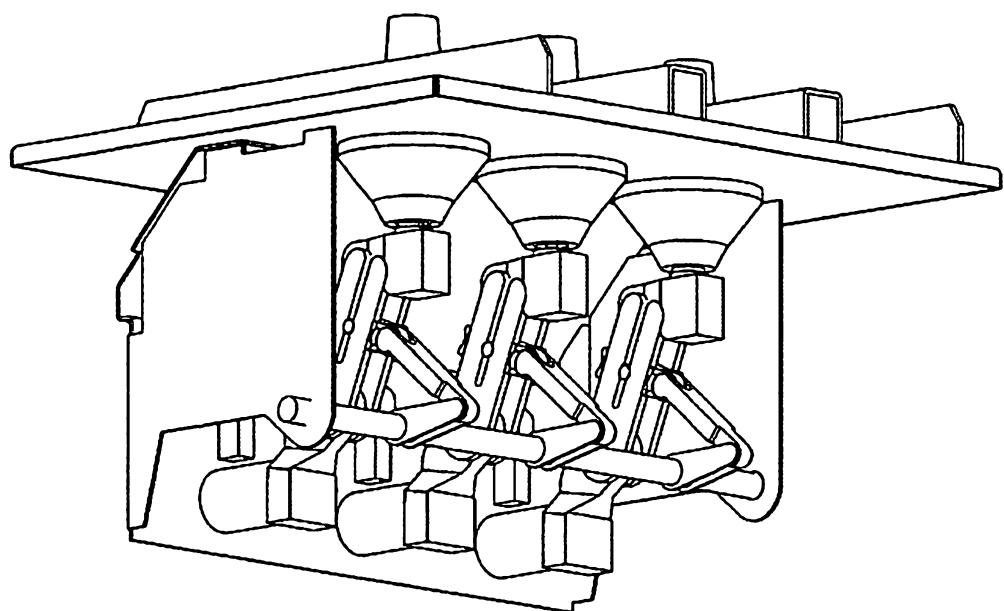


Figure 1

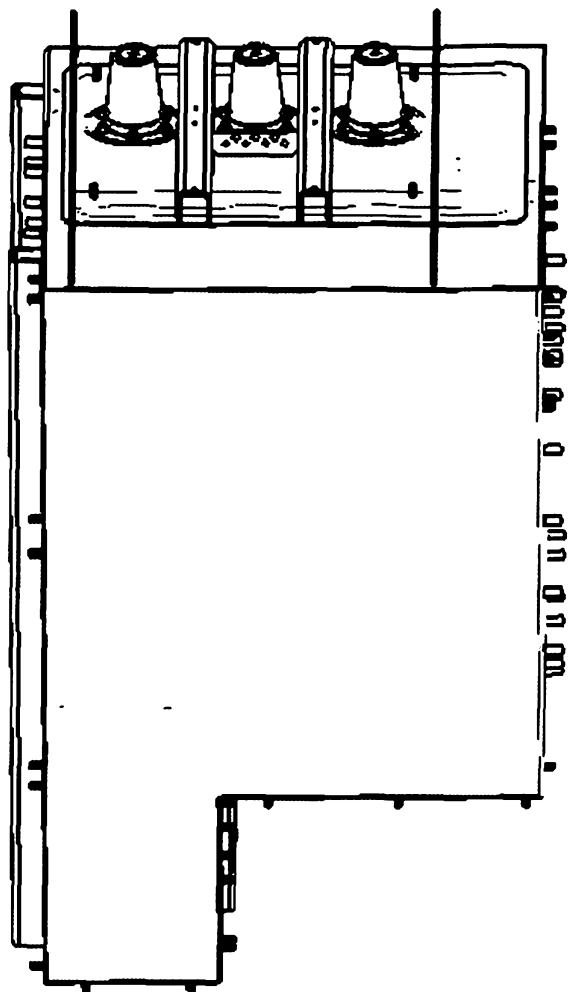


Figure 2