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

(11) **EP 2 312 602 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.04.2011 Bulletin 2011/16

(51) Int Cl.:
H01H 31/00 *(2006.01)* *H01H 31/28* *(2006.01)*
H02B 13/035 *(2006.01)*

(21) Application number: **09012902.4**

(22) Date of filing: **13.10.2009**

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

(71) Applicant: **ABB Technology AG**
8050 Zürich (CH)

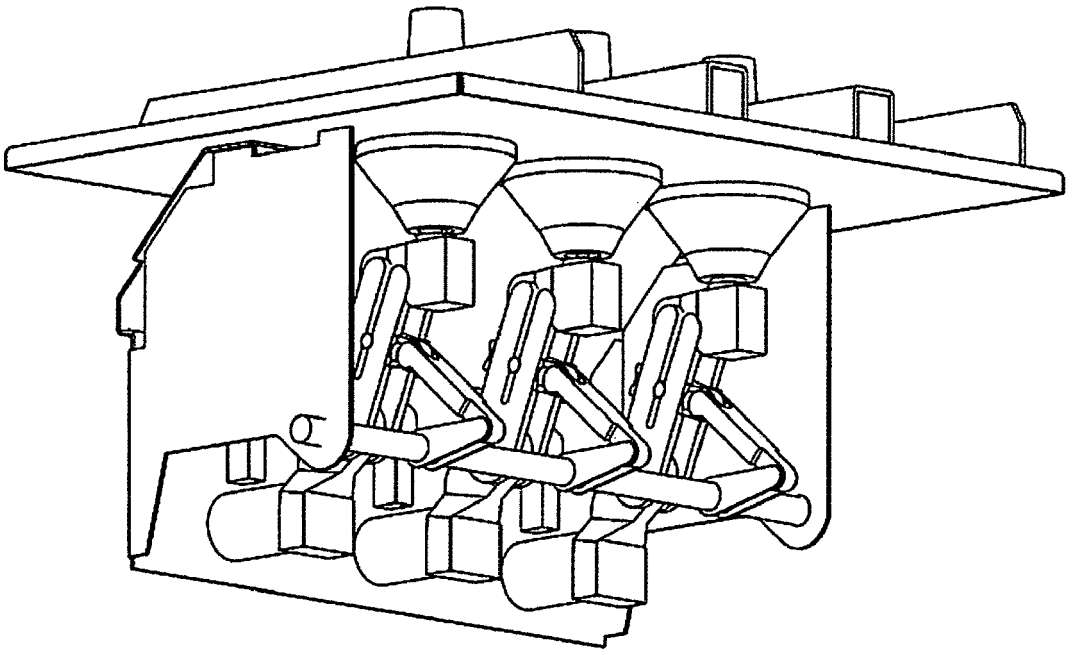
(72) Inventors:
- **Mildes, Hartmut**
  40878 Ratingen (DE)
- **Fussbahn, Olaf**
  40885 Ratingen (DE)
- **Wuillemet, Norbert**
  40885 Ratingen (DE)
- **Göttlich, Stefan, Dr.-Ing.**
  42799 Leichlingen (DE)

(74) Representative: **Schmidt, Karl Michael et al**
ABB AG
GF-IP
Oberhausener Strasse 33
40472 Ratingen (DE)

(54) Gas insulated medium voltage switchgear

(57) 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.



EP 2 312 602 A1

Description

[0001] 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.

[0002] In well known gastight medium voltage switchgears three-position disconnector devices 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.

[0003] 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 the final assembly line.
- The external sourcing of the complete assembled disconnector device from subsuppliers is not possible.

[0004] So it is an object of the invention, to overcome all these disadvantages with a compact construction, which is easy to adjust before mounting.

[0005] The basical 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.

[0006] This reduces the assembling or mounting time because of a better accessability. Furthermore, the preassembled unit is easier to adjust, before it will be mounted inot the switchgear housing.

[0007] 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.

[0008] Furthermore the frame is mounted on the base plate, and that the frame carries the fixation of the driveshaft.

[0009] Optionally, the earth contacts are fixed to the frame

[0010] A further very advantageous embodiment is, that the common functional unit closes the housing of the switchgear after mounting in a gastight way.

[0011] To realize this gastight closing of the housing, one possible solution is, to realiz it by welding after it is mounted in the housing, or to screw it by the use of a sealing element around the opening of the housing, in which the functional unit is placed.

[0012] An embodiment of the invention is shown in the drawing.

[0013] The figure shows a perspective view of a three phase disconnector device in one 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 bushbars.

[0014] So the common unit can be assembled and adjusted before it has to be mounted into the housing of the switchgear.

[0015] Furthermore the electric sourcing with external bushbars is easy and effective.

Claims

1. Gasinsulated medium voltage switchgear with a three position disconnector device for three electric phases, with a rotatable driveshaft,
   characterized in,
   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.

2. Gasinsulated medium voltage switchgear according to claim 1,
   characterized in,
   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.

3. Gasinsulated medium voltage switchgear according to claim 1 or 2,
   characterized in,
   that the frame is mounted on the base plate, and that the frame carries the fixation of the driveshaft.

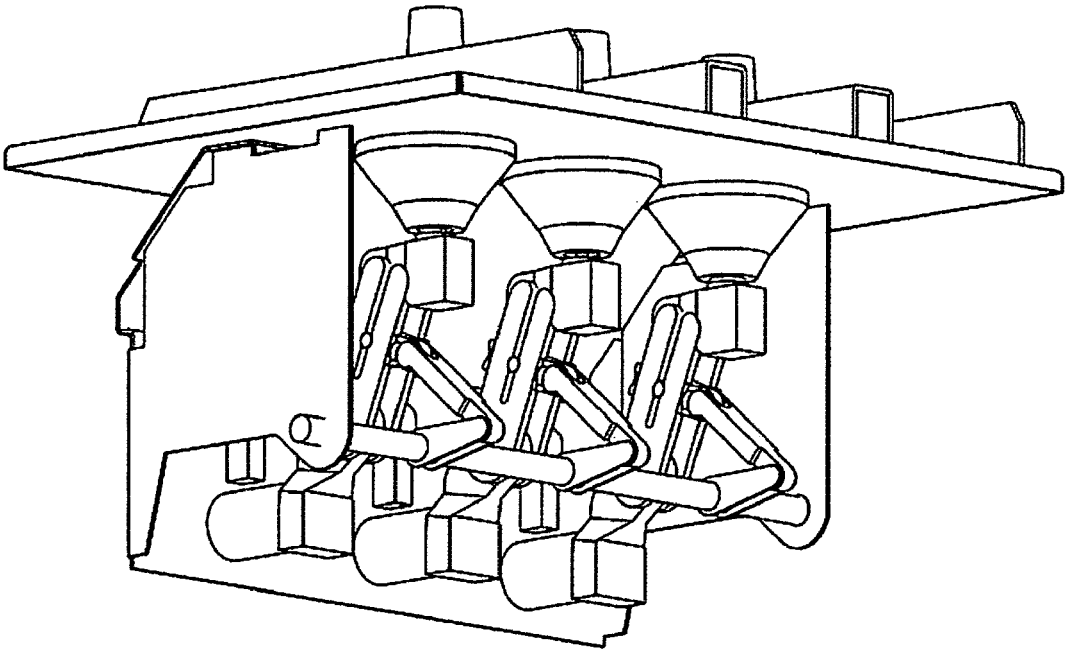
4. Gasinsulated medium voltage switchgear according to one of the aforesaid claims,
   characterized in,
   that the earth contacts are fixed to the frame

5. Gasinsulated medium voltage switchgear according to one of the aforesaid claims,
   characterized in,
   that the common functional unit closes the housing of the switchgear after mounting in a gastight way.

6. Gasinsulated medium voltage switchgear according

to claim 5,
characterized in,
that the gastight mounting is realized by welding

7. Gasinsulated medium voltage switchgear according to claim 5,
characterized in,
that 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.



Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 09 01 2902

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2004/054057 A (MITSUBISHI ELECTRIC CORP [JP]) 24 June 2004 (2004-06-24) * abstract; figure 1 * & DATABASE WPI Week 200448 Thomson Scientific, London, GB; AN 507162 * abstract *	1-7	INV. H01H31/00 ADD. H01H31/28 H02B13/035
X	US 2004/104201 A1 (SATO SHINJI [JP] ET AL) 3 June 2004 (2004-06-03) * figures 3,4,7 *	1-7	
X	US 2005/219804 A1 (ARIOKA MASAHIRO [JP]) 6 October 2005 (2005-10-06) * claims 1-4; figures 1,2,6,7 *	1-7	

TECHNICAL FIELDS SEARCHED (IPC)

H01H
H02B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 January 2010	Starck, Thierry

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 01 2902

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-01-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004054057 A	24-06-2004	CN 1623257 A	01-06-2005
		TW 589774 B	01-06-2004
US 2004104201 A1	03-06-2004	CN 1499687 A	26-05-2004
		DE 10351766 A1	27-05-2004
		FR 2846802 A1	07-05-2004
		KR 20040040358 A	12-05-2004
		TW 228339 B	21-02-2005
US 2005219804 A1	06-10-2005	BR 0308873 A	24-05-2005
		CN 1650494 A	03-08-2005
		WO 2004040729 A1	13-05-2004
		JP 4329923 B2	09-09-2009
		JP 2004153954 A	27-05-2004
		TW 591834 B	11-06-2004

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82