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(71) Applicant: **ABB Sp.zo.o.**
04-713 Warszawa (PL)

(72) Inventors:
- **Wesolowski, Zbigniew**
  01-641 Warszawa (PL)
- **Tarnowski, Marcin**
  06-300 Przasnysz (PL)
- **Debski, Pawel**
  06-300 Przasnysz (PL)
- **Grysztar, Pawel**
  06-300 Przasnysz (PL)
- **Duzdowski, Jaroslaw**
  06-413 Ciechanow (PL)

(74) Representative: **Chochorowska-Winiarska, Krystyna**
ABB Sp. z o. o.,
Ul. Zeganska 1
04-713 Warszawa (PL)

(54) High voltage coil

(57) The invention deals with an HV voltage coil which is an element of a voltage transformer used in a combined instrument transformer applicable in high voltage electric power measuring systems. The voltage coil comprises a magnetic core (16), a primary winding (13) wound onto a secondary winding (14) and surrounded by an upper screen (17), a bushing of a high voltage instrument transformer in the form of a conducting rod (21) placed in insulating material (23) with equipotential screens (25), the primary winding together with the upper screen being located in the coil insulation (24) which is covered by an external screen (26). The voltage coil according to the invention is characterized in that the upper screen (17) has the shape of a ring with a gap (18), which is integrated with a connecting element (19) in the form of a truncated cone. This base of the cone which has the larger diameter is situated on the external surface of the ring, and the cone has an axial opening (20) into which a threaded end of the conducting rod (21) is screwed. Equipotential screens (25) are situated centrically around the rod (21) and they have overlapping longitudinal edges which do not touch one another in any point. A copper tape (27) is wound on the insulation (23) and on the external screen (26) of the voltage coil.

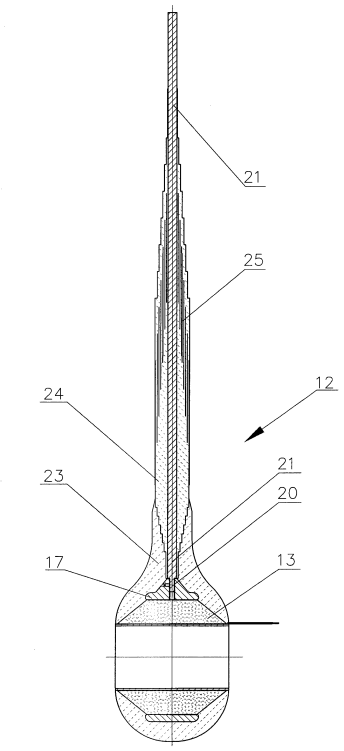

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 12 46 0050

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	PL 193 711 B1 (ABB SP ZOO) 30 March 2007 (2007-03-30) * the whole document *	1-10	INV. H01F38/24 H01F38/26
A	FR 1 102 450 A (MOSER GLASER & CO AG) 20 October 1955 (1955-10-20) * the whole document *	1-10	
A	EP 2 239 744 A1 (ABB TECHNOLOGY AG [CH]) 13 October 2010 (2010-10-13) * abstract; figure 1 *	1-10	
A	DE 21 15 663 A1 (TOKYO SHIBAURA ELECTRIC CO) 21 October 1971 (1971-10-21) * figure 1 *	1-10	
A	WO 2009/146569 A1 (TRENCH SWITZERLAND AG [CH]; TRENCH FRANCE SAS [FR]; MINKNER RUTHARD [C) 10 December 2009 (2009-12-10) * abstract; figure 1 *	1-10	
A	US 3 686 600 A (CONNER EDMOND E ET AL) 22 August 1972 (1972-08-22) * abstract; figure 2 *	1-10	TECHNICAL FIELDS SEARCHED (IPC) H01F
A	US 2 382 199 A (BRINK EDWIN H) 14 August 1945 (1945-08-14) * abstract; figures 1,2 *	1-10	
A	FR 1 288 329 A (REYROLLE A & CO LTD; MOSERGLASER & CO A G) 24 March 1962 (1962-03-24) * figure 1 *	1-10	
A	US 3 028 568 A (GUGLIELMO CAMILLI) 3 April 1962 (1962-04-03) * figure 2 *	1-10	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	2 September 2013	Rouzier, Brice

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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
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02-09-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
PL 193711 B1	30-03-2007	NONE	
FR 1102450 A	20-10-1955	NONE	
EP 2239744 A1	13-10-2010	CN 102379014 A	14-03-2012
		EP 2239744 A1	13-10-2010
		EP 2417612 A1	15-02-2012
		ES 2406813 T3	10-06-2013
		WO 2010115522 A1	14-10-2010
DE 2115663 A1	21-10-1971	DE 2115663 A1	21-10-1971
		US 3668513 A	06-06-1972
WO 2009146569 A1	10-12-2009	AT 543188 T	15-02-2012
		CH 698970 A1	15-12-2009
		CN 102057454 A	11-05-2011
		EP 2281294 A1	09-02-2011
		ES 2383288 T3	20-06-2012
		HR P20120280 T1	30-04-2012
		WO 2009146569 A1	10-12-2009
US 3686600 A	22-08-1972	CA 919278 A1	16-01-1973
		JP S5211405 B1	31-03-1977
		US 3686600 A	22-08-1972
US 2382199 A	14-08-1945	NONE	
FR 1288329 A	24-03-1962	NONE	
US 3028568 A	03-04-1962	NONE	

EPO FORM P0459

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