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(54) Title: SAFETY DEVICE AGAINST COMBUSTIBLE GAS LEAKS FOR HOUSEHOLD APPLIANCES

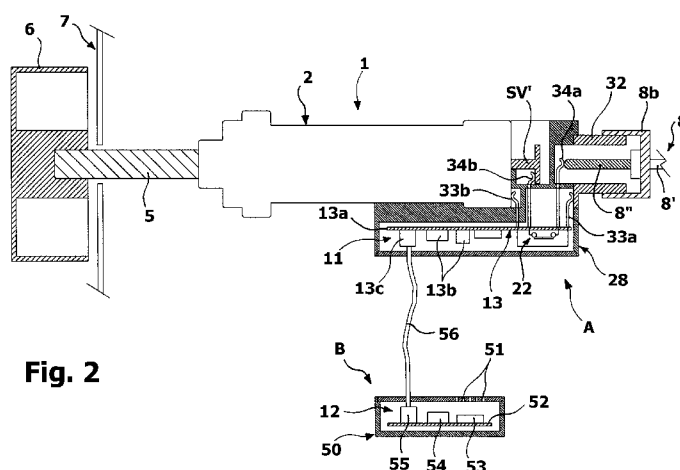


Fig. 2

(57) Abstract: A safety device against gas leaks for an apparatus having at least one gas tap or the like (1) includes control means (11), safety means (22) and detection means (12, 53), for detecting possible presence of gas in a surrounding environment. The detection means (12, 53) are in signal communication with the control means (11), which are configured for controlling the safety means (22) in function of detections earned out by the detection means (12, 53), in order to prevent or interrupt the inflow of combustible gas to a burner. The control means (11) and the safety means (22) belong to a first functional unit (A) of the device (A, B), which is coupled or configured for the coupling with a portion of the body (2) of the tap (1). Preferably the safety means (22) are controllable by the control means (11) for interrupting electric power supply to a solenoid of the tap, following a command signal generated by the detection means (12, 53) and causing as a consequence the passage of the valve in the respective closed condition.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2010/053234

A. CLASSIFICATION OF SUBJECT MATTER

INV. F23N5/10 F23N5/24 F24C3/12
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2004/001292 A1 (SIT LA PRECISA SPA [IT]; GIACOMELLI MASSIMO [IT]; TREVISANATO NICOLA []) 31 December 2003 (2003-12-31) page 3, line 6 - line 8 page 3, line 19 - page 4, line 13 page 4, line 22 - line 28 page 5, line 13 - line 21 figure 1	1-17
Y	GB 2 387 257 A (LEWIS GARRY [GB]) 8 October 2003 (2003-10-08) page 7, paragraphs 1,2; figure 1	1-17
Y	US 2006/166154 A1 (PARK JIN-HA [KR]) 27 July 2006 (2006-07-27) paragraphs [0070], [0074], [0075], [0088]; figure 6	5,12,15, 16 1
A	----- -/-	



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See patent family annex.

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INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2004/027320 A1 (CHEN LI [CN]) 1 April 2004 (2004-04-01) * abstract; figure 1 -----	3,17
Y	US 2001/038986 A1 (ABRAHAM ANTHONY W [US] ET AL ABRAHAM ANTHONY W [US] ET AL) 8 November 2001 (2001-11-08) paragraph [0021] -----	13
A	US 2005/120980 A1 (DOLAN PATRICK M [US]) 9 June 2005 (2005-06-09) paragraphs [0022], [0031], [0035]; figures 1,2 -----	1,9,14
A	US 2001/042564 A1 (ABRAHAM ANTHONY W [US] ET AL) 22 November 2001 (2001-11-22) paragraphs [0012] - [0014], [0017]; figures 1,2 -----	1,14
A	US 2005/092066 A1 (RUHLAND ROBERT M [US] ET AL) 5 May 2005 (2005-05-05) paragraphs [0001], [0021], [0025], [0031]; figure 2 -----	1
A	US 5 670 074 A (KASS CARL F [US] ET AL) 23 September 1997 (1997-09-23) column 3, line 11 - line 46 -----	1,2,10
A	FR 1 134 831 A (FRIGORGAS) 18 April 1957 (1957-04-18) the whole document -----	3,14
A	US 5 126 934 A (MACFADYEN DAVID J [US]) 30 June 1992 (1992-06-30) column 1, line 1 - line 18; figures 1,2 column 3, line 10 - line 23 column 5, line 35 - line 43 -----	1,12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2010/053234

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004001292 A1	31-12-2003	AU 2002318031 A1 CA 2485585 A1 CN 1628228 A MX PA04012132 A US 2005233272 A1	06-01-2004 31-12-2003 15-06-2005 04-05-2005 20-10-2005
GB 2387257 A	08-10-2003	NONE	
US 2006166154 A1	27-07-2006	AU 2003264559 A1 CN 1688847 A JP 4104597 B2 JP 2006502368 T WO 2004033967 A1	04-05-2004 26-10-2005 18-06-2008 19-01-2006 22-04-2004
WO 2004027320 A1	01-04-2004	AU 2002354138 A1 CN 1424541 A	08-04-2004 18-06-2003
US 2001038986 A1	08-11-2001	NONE	
US 2005120980 A1	09-06-2005	CA 2489120 A1	04-06-2005
US 2001042564 A1	22-11-2001	NONE	
US 2005092066 A1	05-05-2005	CA 2544435 A1 EP 1678486 A1 WO 2005045410 A1	19-05-2005 12-07-2006 19-05-2005
US 5670074 A	23-09-1997	NONE	
FR 1134831 A	18-04-1957	NONE	
US 5126934 A	30-06-1992	AU 5847090 A WO 9015284 A1	07-01-1991 13-12-1990