(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 20 December 2001 (20.12.2001)

PCT

(10) International Publication Number WO 01/96827 A3

(51) International Patent Classification7: G01L 19/12. H01F 27/40

(21) International Application Number: PCT/CA01/00873

(22) International Filing Date: 14 June 2001 (14.06.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 09/593,749 14 June 2000 (14.06.2000)

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:

09/593,749 (CIP) Filed on 14 June 2000 (14.06.2000)

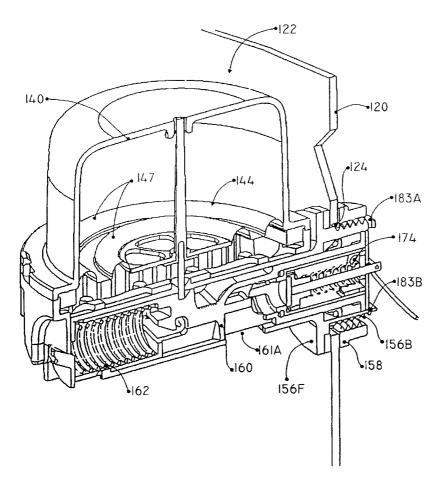
(71) Applicant (for all designated States except US): IFD INTERNAL FAULT DETECTOR CORPORATION

[CA/CA]; 201 - 1000 3rd Street, North Vancouver, British Columbia V7P 3J6 (CA).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): CUK, Nikola [CA/CA]; 690 Tudor Avenue, North Vancouver, British Columbia V7R 1W9 (CA). HICKS, Stuart, H. [CA/CA]; 3272 West 27th Avenue, Vancouver, British Columbia V6L 1W8 (CA). SUGGITT, Robert [CA/CA]; 6495 Napier Street, Burnaby, British Columbia V5B 2B9 (CA).
- (74) Agent: MANNING, Gavin, N.; Oyen Wiggs Green & Mutala, 480 - 601 West Cordova Street, Vancouver, British Columbia V6B 1G1 (CA).
- (81) Designated States (national): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EC, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE,

[Continued on next page]

(54) Title: INTERNAL FAULT INDICATOR FOR POWER ELECTRICAL DEVICES



(57) Abstract: An internal fault indicator for an electrical device is triggered by a sudden increase in pressure as occurs when an insulation failure creates an electric arc. The heat released in the arc is transferred onto the surrounding volume causing localized overheating, vaporization and decomposition of the insulating material. The resulting pressure surge moves a diaphragm. The movement of the diaphragm releases a spring driven plunger from a barrel which extends through the housing of the electrical device. Prior to activation the plunger is held in an "armed" position by a retaining pin. Upon triggering, the plunger is pushed by the spring until it protrudes from the housing to provide a visual signal of the internal fault. A pressure relief valve may be integrated with the internal fault indicator.

WO 01/96827 A3



GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW). Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

--- with international search report

(88) Date of publication of the international search report: 2 May 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Int ...ional Application No PCT/CA 01/00873

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G01L19/12 H01F27/40

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

B. FIELDS SEARCHED

 $\begin{array}{ccc} \text{Minimum documentation searched (classification system followed by classification symbols)} \\ IPC & 7 & H01F & G01L \end{array}$

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, WPI Data, PAJ

Calegory °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 568 055 A (THE BRITISH THOMSON-HOUSTON COMPANY, LIMITED) 15 March 1945 (1945-03-15)	1,6,7,9, 10,23, 28,29
Y	the whole document	8,14,15, 24,25, 27,30
X	US 3 816 801 A (J.Z. ALMAND, III) 11 June 1974 (1974-06-11)	23-26
Y	the whole document	27
Y	US 4 654 643 A (D.T. MEISENHEIMER, JR.) 31 March 1987 (1987-03-31) the whole document	2,3,14, 15,24, 25,30
	/	

Further documents are listed in the continuation of box C.	χ Patent family members are listed in annex.
Special categories of cited documents: 'A' document defining the general state of the art which is not considered to be of particular relevance 'E' earlier document but published on or after the international filing date 'L' document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) 'O' document referring to an oral disclosure, use, exhibition or other means 'P' document published prior to the international filing date but later than the priority date claimed	 'T' later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention 'X' document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone 'Y' document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. '&' document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report
15 January 2002	25/01/2002
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Van Assche, P

1

IF'TERNATIONAL SEARCH REPORT

Int. ational Application No
PCT/CA 01/00873

on of document, with indication, where appropriate, of the relevant passages S 4 010 708 A (F.C. KELEDY ET AL.) March 1977 (1977-03-08) he whole document	Relevant to claim No.
S 4 010 708 A (F.C. KELEDY ET AL.) March 1977 (1977-03-08) he whole document	2,3,8
	nuisting of second sheeth (July 1992)

1

IPTERNATIONAL SEARCH REPORT

Information on patent family members

Int .tional Application No PCT/CA 01/00873

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
GB 568055	Α	15-03-1945	NONE		
US 3816801	A	11-06-1974	AR AU BE CA ES FR IT JP	203096 A1 6390473 A 809629 A1 983145 A1 422011 A1 2323214 A1 1006840 B 49103126 A	14-08-1975 26-06-1975 11-07-1974 03-02-1976 01-04-1976 01-04-1977 20-10-1976 30-09-1974
US 4654643	Α	31-03-1987	NONE		
US 4010708	A	08-03-1977	CA DE FR GB IT JP JP	1053084 A1 2649626 A1 2334093 A1 1548219 A 1067739 B 1275514 C 52069368 A 59052770 B	24-04-1979 08-06-1977 01-07-1977 04-07-1979 16-03-1985 31-07-1985 09-06-1977 21-12-1984