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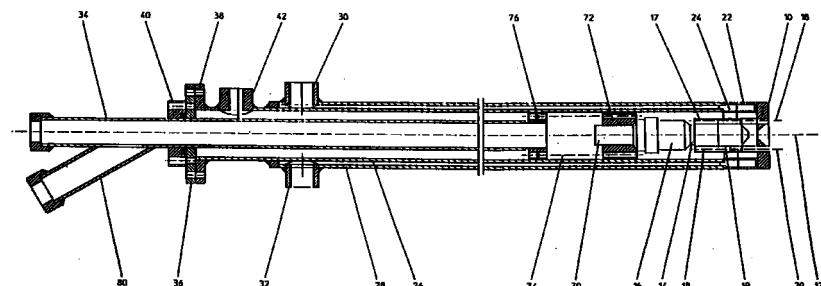
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(54) A flame monitoring apparatus

(57) An apparatus for monitoring a flame is disclosed. It comprises a video camera (16) looking in flame direction and a plurality of light guide fibers observing the flame surroundings. These optical ele-

ments are mounted in a lance including a double-walled pipe (26,28) through which cooling water flows.



FIGUR 1

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	GB 2 150 269 A (TOLLTRECK LIMITED) 26 June 1985 * page 1, line 70 - line 93 * * page 2, line 25 - line 33 * * page 2, line 57 - line 72 * * figures 1,2 * ---	1-5,7,17	F23M11/04 F23N5/08
A	US 4 756 684 A (NISHIKAWA MITSUYO ET AL) 12 July 1988 * column 1, line 6 - column 2, line 4 * * column 3, line 43 - line 57 * * figure 2 * ---	1	
A	PATENT ABSTRACTS OF JAPAN vol. 011, no. 057 (M-564), 21 February 1987 & JP 61 218737 A (KAWASAKI HEAVY IND LTD; OTHERS: 01), 29 September 1986 * abstract * ---	1-4	
A	DE 43 32 044 A (HALLMANN KLAUS) 23 March 1995 * column 1, paragraph 1 * * column 4, line 14 - line 41 * * column 5, line 31 - line 38 * * figures 1-3 * ---	2-5,14, 16	TECHNICAL FIELDS SEARCHED (Int.Cl.6) F23M F23N G01J
A	DE 91 11 701 U (MARAI MECHANIK UND ELEKTRONIK) 5 December 1991 * paragraph 1 * * page 5, paragraph 2 * * page 6, paragraph 3 * * figures 1,2 * ---	6	
		-/-	
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	14 May 1999	Mougey, M	
CATEGORY OF CITED DOCUMENTS		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	
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EUROPEAN SEARCH REPORT

Application Number
EP 97 12 0145

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	PATENT ABSTRACTS OF JAPAN vol. 010, no. 142 (M-481), 24 May 1986 & JP 60 263013 A (BABCOCK HITACHI KK), 26 December 1985 * abstract *	11,18	
	----- EP 0 802 372 A (BFI AUTOMATION GMBH) 22 October 1997 * the whole document *		
		1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
<p>The present search report has been drawn up for all claims</p>			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	14 May 1999	Mougey, M	
CATEGORY OF CITED DOCUMENTS		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	
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ON EUROPEAN PATENT APPLICATION NO.**

EP 97 12 0145

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.

14-05-1999

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
GB 2150269	A	26-06-1985	NONE		
US 4756684	A	12-07-1988	JP	1923393 C	25-04-1995
			JP	6050177 B	29-06-1994
			JP	62237221 A	17-10-1987
DE 4332044	A	23-03-1995	NONE		
DE 9111701	U	05-12-1991	DE	59207537 D	02-01-1997
			EP	0533303 A	24-03-1993
EP 0802372	A	22-10-1997	DE	19615141 A	23-10-1997
			AU	686966 B	12-02-1998
			AU	1895097 A	13-11-1997
			CN	1177076 A	25-03-1998