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### (54) Arrangement for locating fuel leakage in connection with a combustion engine

(57) In an arrangement for locating fuel leak in connection with a large combustion engine (5), particularly a large diesel engine, fuel is fed into several fuel injectors (8) from a common fuel space (9, 10), and a fuel injection system comprises a double wall (15) fuel pipe

system (11, 12, 3), which in turn comprises an inner flow space (14) for fuel and outer flow space (16) for possibly leaking fuel. The fuel injection system comprises at least one leaking fuel detection arrangement (18, 18', 18", 18'') in connection with an outer flow channel (16) of at least one section of the pipe system (11, 12, 13).

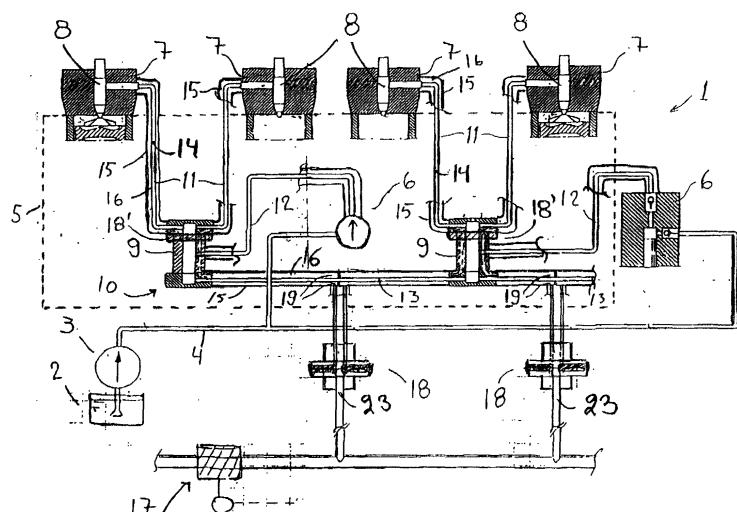


Fig. 1



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.7)						
Y	DE 43 44 190 A (ORANGE GMBH) 29 June 1995 (1995-06-29)	1,2	F02M65/00 F02B77/08						
A	* figures 1-4 * * abstract * * claims 1-20 * ----	4-12							
Y	US 3 783 842 A (KUHN K ET AL) 8 January 1974 (1974-01-08)	1,2							
A	* figures 1-3 * * abstract * * claims 1-3 * ----	4-12							
A	GB 1 457 087 A (MOTOREN TURBINEN UNION) 1 December 1976 (1976-12-01) * figure 1 * * claim 1 *	1							
A	US 5 233 963 A (EGERT DIETER ET AL) 10 August 1993 (1993-08-10) * figure 1 * * abstract * * claim 1 *	1							
A	US 5 076 242 A (PARKER ERIC G) 31 December 1991 (1991-12-31) * figures 1-4 * * abstract * * claims 1-8 *	1-3	F02M F02B						
A	US 5 715 786 A (SEIBERTH STEFAN) 10 February 1998 (1998-02-10) * figure 1 * * abstract * * claims 1-15 *	1,2							
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>14 August 2002</td> <td>Wassenaar, G</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	THE HAGUE	14 August 2002	Wassenaar, G
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THE HAGUE	14 August 2002	Wassenaar, G							
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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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 30 3830

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.

14-08-2002

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
DE 4344190	A	29-06-1995	DE WO	4344190 A1 9517594 A1	29-06-1995 29-06-1995
US 3783842	A	08-01-1974	FR CH DE DK ES FI IT JP NL NO SE SU	2133287 A5 552751 A 2217591 A1 136548 B 401109 A1 53240 B 950158 B 52006408 B 7204936 A ,B, 137791 B 379576 B 579937 A3	24-11-1972 15-08-1974 26-10-1972 24-10-1977 01-09-1975 30-11-1977 20-06-1973 22-02-1977 17-10-1972 16-01-1978 13-10-1975 05-11-1977
GB 1457087	A	01-12-1976	CH FR IT	579738 A5 2263446 A1 1029921 B	15-09-1976 03-10-1975 20-03-1979
US 5233963	A	10-08-1993	DE DE EP	4111988 A1 59200181 D1 0508074 A1	15-10-1992 30-06-1994 14-10-1992
US 5076242	A	31-12-1991	AU AU ES FR GB IT	642269 B2 8011291 A 2083307 A1 2664863 A1 2246410 A ,B 1250805 B	14-10-1993 23-01-1992 01-04-1996 24-01-1992 29-01-1992 21-04-1995
US 5715786	A	10-02-1998	DE WO DE EP JP	19520300 A1 9638664 A1 59605914 D1 0778922 A1 10503571 T	05-12-1996 05-12-1996 26-10-2000 18-06-1997 31-03-1998