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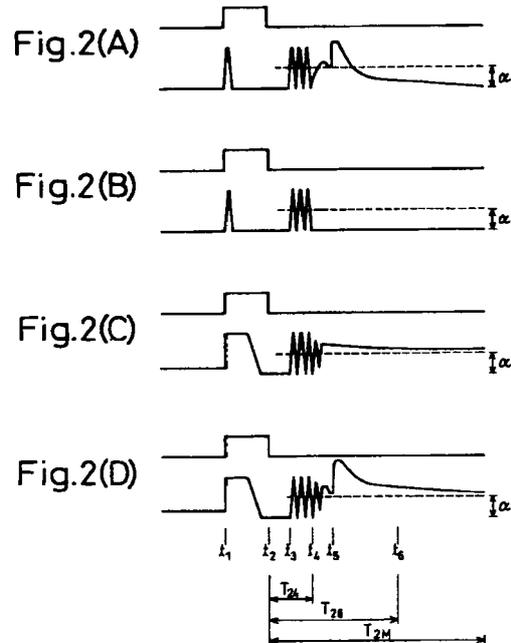
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(54) **An apparatus for detecting misfiring of an internal combustion engine**

(57) An object of the present invention is to provide an apparatus for detecting misfiring of internal combustion engines capable of detecting the misfiring reliably even though an ignition plug fouls.

When a mixture in a cylinder burns normally due to a discharge at an ignition plug 12, a voltage developed across a detection resistor 16 is fetched into a micro-computer 18 during a period other than a period where ions are generated. Thus, an insulation resistance due to fouling of the ignition plug 12 is measured. If the voltage developed across the detecting resistor 16 which is fetched into the microcomputer 18 during the period where ions are generated is equal to or larger than a threshold value, it is determined that mixture has burnt normally. If the voltage is smaller than the threshold value, it is determined that a misfire has occurred. The threshold value is corrected according to the decrease of insulation resistance. Consequently, though the ignition plug fouls, misfiring can be detected reliably.





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**PARTIAL EUROPEAN SEARCH REPORT**

Application Number

which under Rule 45 of the European Patent Convention EP 97 10 8519 shall be considered, for the purposes of subsequent proceedings, as the European search report

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)
X	PATENT ABSTRACTS OF JAPAN vol. 010, no. 378 (M-546), 17 December 1986 & JP 61 169669 A (NISSAN MOTOR CO LTD), 31 July 1986	1,3	F02P17/12
A	* abstract *	2,4	
A	--- US 4 349 782 A (DOSS JAMES D) 14 September 1982 * figures 1,3 * * column 1, line 6 - line 38 * * column 3, line 49 - line 57 * * column 5, line 12 - line 18 *	1,3	
A	--- US 5 337 716 A (FUKUI WATARU ET AL) 16 August 1994 * figures 1-4 * * column 1, line 8 - line 15 * * column 2, line 50 - line 57 * * column 3, line 3 - line 19 * * column 3, line 54 - line 64 * * column 6, line 6 - line 40 * * column 7, line 40 - line 49 *	1,3	
	--- -/--		TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F02P
INCOMPLETE SEARCH			
<p>The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.</p> <p>Claims searched completely :</p> <p>1 3</p> <p>Claims searched incompletely :</p> <p>2 4</p> <p>Claims not searched :</p> <p>-</p> <p>Reason for the limitation of the search:</p> <p>Obscurity: In claims 2 and 4, it is difficult to understand what is measured and when.</p>			
Place of search		Date of completion of the search	Examiner
THE HAGUE		6 July 1999	Lapeyronnie, P
CATEGORY OF CITED DOCUMENTS		<p>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</p> <p>&amp; : member of the same patent family, corresponding document</p>	
<p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p>			

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Application Number  
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

06-07-1999

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