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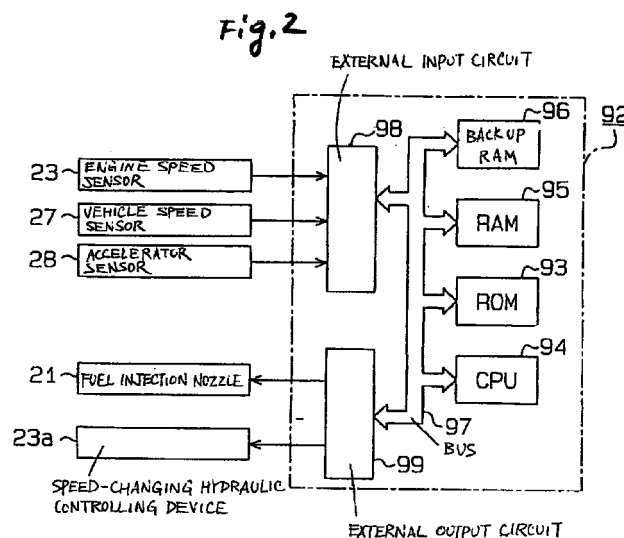
(71) Applicant:
TOYOTA JIDOSHA KABUSHIKI KAISHA
Aichi-ken 471-8571 (JP)

(72) Inventor: **Kato, Yuichiro**
Toyota-shi, Aichi-ken, 471-8571 (JP)

(74) Representative:
Pellmann, Hans-Bernd, Dipl.-Ing. et al
Patentanwaltsbüro
Tiedtke-Bühling-Kinne & Partner
Bavariaring 4-6
80336 München (DE)

(54) **Torque controlling apparatus for vehicle-mounted internal combustion engine**

(57) When an accelerator pedal (25) is suddenly stamped on, the amount of fuel injected into an engine (12) increases sharply, and the rotating force of a crank-shaft (14) is increased, so that when the rotation is transmitted from the shaft (14) to an automatic transmission (23), a force which tends to twist an automobile (11) in the rotating direction of the shaft (14) is applied to the automobile (11). Consequently, the automobile (11) vibrate in the back-and-forth direction, and variations occur in the engine speed. The variations in the engine speed and the vibrations of the automobile (11) are suppressed by executing fuel-injection-amount correction corresponding to the variations in the engine speed with a predetermined phase difference and an incremental pattern with respect to the variations. As the phase difference (θ) is thus provided, the output torque of the engine (11) which changes by lagging behind the fuel-injection-amount correction can be suitably regulated so as to suppress the variations in the engine speed.



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EUROPEAN SEARCH REPORT

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EP 98 11 7674

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	US 4 909 224 A (NISHIYAMA RYOJI ET AL) 20 March 1990 (1990-03-20) * column 2, line 60 - column 3, line 12 *	1-4,6	B60K28/02 F02D41/14
A	* column 3, line 62 - column 4, line 20 * * column 4, line 38 - line 64 * * column 4, line 68 - column 5, line 8 * * figures 4-6 *	5,7	
X	EP 0 690 225 A (GEN MOTORS CORP) 3 January 1996 (1996-01-03) * abstract *	1,2	
Y	* page 3, line 28 - page 4, line 1 * * page 4, line 31 - line 42 * * page 5, line 9 - line 17 * * page 5, line 45 - page 6, line 36 * * figures 2,4; tables 1-3 *	3-7	
Y	PATENT ABSTRACTS OF JAPAN vol. 015, no. 190 (M-1113), 16 May 1991 (1991-05-16) & JP 03 047444 A (NISSAN MOTOR CO LTD), 28 February 1991 (1991-02-28) * abstract *	3-7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	US 5 070 841 A (FUJIMOTO SACHITO ET AL) 10 December 1991 (1991-12-10) * column 1, line 5 - column 2, line 10 * * column 4, line 65 - column 5, line 8 *	1,2,4-6	F02D F02P G01M
A	EP 0 315 171 A (HITACHI LTD) 10 May 1989 (1989-05-10) * the whole document *		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12 July 2000	Examiner Libeaut, L
CATEGORY OF CITED DOCUMENTS 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		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.**

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The members are as contained in the European Patent Office EDP file on
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12-07-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4909224 A	20-03-1990	JP 63212740 A	05-09-1988
		DE 3805823 A	08-09-1988
		KR 9007818 B	20-10-1990
EP 0690225 A	03-01-1996	US 5573474 A	12-11-1996
		DE 69511481 D	23-09-1999
		DE 69511481 T	09-12-1999
JP 03047444 A	28-02-1991	NONE	
US 5070841 A	10-12-1991	NONE	
EP 0315171 A	10-05-1989	JP 1121570 A	15-05-1989
		JP 2701270 B	21-01-1998
		DE 3888289 D	14-04-1994
		DE 3888289 T	07-07-1994
		KR 9205850 B	23-07-1992
		US 4919098 A	24-04-1990

EPO FORM P0459

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