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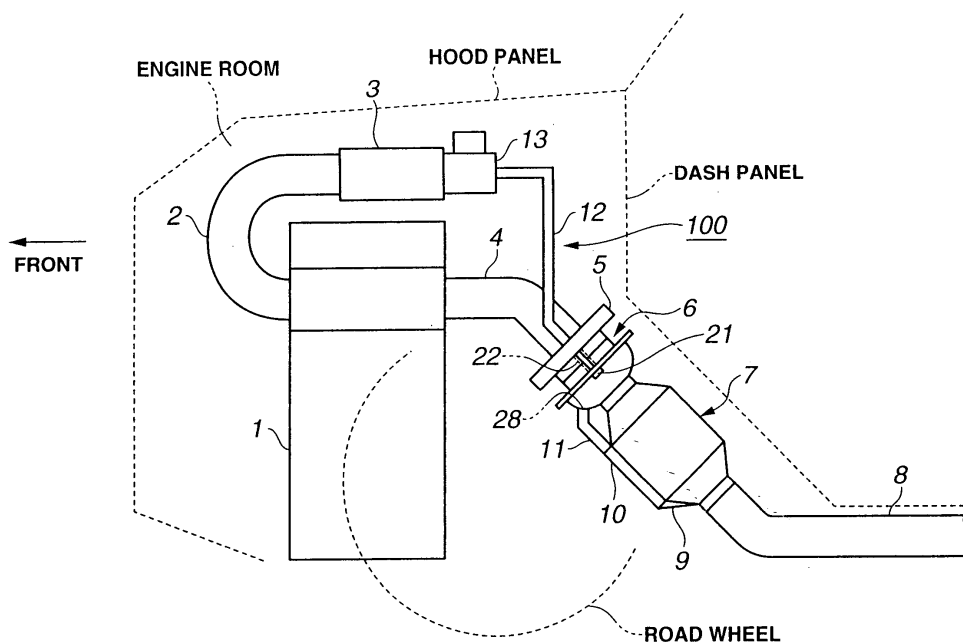
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(54) Exhaust gas recirculation device of internal combustion engine

(57) An exhaust manifold of an internal combustion engine is pivotally connected to a catalytic converter through a spheric coupler. An exhaust gas recirculation device for use with the engine comprises an EGR gas

inlet port provided in a downstream portion of the catalytic converter and an EGR gas passage line extending from the EGR gas inlet port to an intake system of the engine. At least a part of the EGR gas passage line is constructed by a passage defined in the spheric coupler.

FIG.1





European Patent
Office

EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2001/008616 A1 (HAGA TAKASHI ET AL) 19 July 2001 (2001-07-19) * page 2, paragraph 30 - page 3, paragraph 42; figures 1,2 *	1,10-12, 16	INV. F02M25/07
A	US 5 966 932 A (YAHAGI ET AL) 19 October 1999 (1999-10-19) * column 5, line 1 - column 7, line 50; figures 1-4 *	1-5	
A	US 5 374 086 A (HIGGINS ET AL) 20 December 1994 (1994-12-20) * column 2, line 15 - line 57; figures 1,2 *	1-5	
A	EP 0 844 373 A (HONDA GIKEN KOGYO KABUSHIKI KAISHA) 27 May 1998 (1998-05-27) * page 3, line 35 - page 4, line 40; figures 1,2 *	1,10-12, 16	
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 03, 31 March 1997 (1997-03-31) -& JP 08 291772 A (MAZDA MOTOR CORP), 5 November 1996 (1996-11-05) * abstract; figures 1-6 *	1,10-12, 16	TECHNICAL FIELDS SEARCHED (IPC) F02M F01N
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 5 July 2006	Examiner MARTINEZ CEBOLLADA
<p>CATEGORY OF CITED DOCUMENTS</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> <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 & : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 02 6729

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
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05-07-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2001008616 A1	19-07-2001	JP 2001200720 A	27-07-2001
US 5966932 A	19-10-1999	DE 19722146 A1	04-12-1997
		JP 3250458 B2	28-01-2002
		JP 9317461 A	09-12-1997
US 5374086 A	20-12-1994	NONE	
EP 0844373 A	27-05-1998	DE 69727451 D1	11-03-2004
		DE 69727451 T2	01-07-2004
		JP 3658115 B2	08-06-2005
		JP 10153112 A	09-06-1998
		US 5946906 A	07-09-1999
JP 08291772 A	05-11-1996	NONE	