(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 23.12.2009 Bulletin 2009/52

(51) Int Cl.: **F02B** 61/02^(2006.01) **F02F** 1/40^(2006.01)

F02F 1/14 (2006.01)

(43) Date of publication A2: **16.02.2005 Bulletin 2005/07**

(21) Application number: 04103578.3

(22) Date of filing: 26.07.2004

(84) Designated Contracting States:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR Designated Extension States:

AL HR LT LV MK

(30) Priority: 15.08.2003 JP 2003293723

(71) Applicant: **HONDA MOTOR CO., LTD. Tokyo (JP)**

(72) Inventors:

 Ishikawa, Eiichi, c/o KK Honda Gijutsu Kenkyusho Saitama (JP)

- Hojo, Atsuo, c/o KK Honda Gijutsu Kenkyusho Saitama (JP)
- Kurokawa, Masaya, c/o KK Honda Gijutsu Kenkyusho Saitama (JP)
- (74) Representative: Poulin, Gérard
 Brevalex
 3, rue du Docteur Lancereaux
 75008 Paris (FR)

(54) Water-cooled type engine

(57) In a water-cooled engine, to enable a reduction in the size of the engine at or around a cylinder head and to ensure that a cooling water lead-out pipe portion for leading out cooling water from a cooling jacket can be disposed in the cylinder head, while obviating the interference with a valve-operating chamber and securing maintainability of a spark plug.

Valve-operating chamber forming walls 33a, 34a are provided with a recessed portion 158 at a portion thereof corresponding to the other end portion of a camshaft 141 whose one end portion fronts on a chain chamber 151, a spark plug 159 with its rear end portion disposed at the recessed portion 158 is attached to a cylinder head 33 in an inclined state so as to be spaced farther from the chain chamber 151 as one goes away from a combustion chamber 117, and a cooling water lead-out pipe portion 161 disposed on the outer side of the valve-operating chamber forming walls 33a, 34a and deviated from the recessed portion 158 toward the side of either intake valves or exhaust valves is provided in the cylinder head 33 so as to extend substantially in parallel to the cylinder axis C.

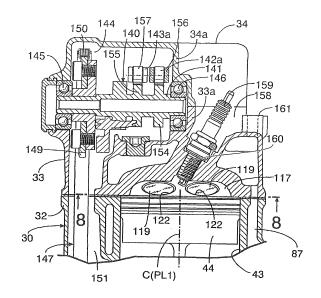


FIG. 7

EP 1 507 076 A3



EUROPEAN SEARCH REPORT

Application Number EP 04 10 3578

	DOCUMENTS CONSID	ERED TO BE RE	LEVANT		
Category	Citation of document with in of relevant pass		iate,	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Α	US 6 209 505 B1 (HC 3 April 2001 (2001- * figures 3, 9 *		P] ET AL)	1-4	INV. F02B61/02 F02F1/14 F02F1/40
A	US 4 903 483 A (ATS 27 February 1990 (1 * figure 3 *	SUUMI MAMORU [J 990-02-27)	P] ET AL)	1-4	1 1021 1/40
L	EP 1 460 238 A2 (HC 22 September 2004 (* figures 3,10 *		TD [JP])	1-4	
					TECHNICAL FIELDS SEARCHED (IPC) F02B F01L
	The present search report has	been drawn up for all clai	ims		
	Place of search	Date of completion	on of the search	1	Examiner
	The Hague	12 Nove	mber 2009	Mat	tray, J
X : part Y : part docu A : tech O : non	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with anot ument of the same category inological background written disclosure rmediate document	E: her D: &:	theory or principl earlier patent do after the filing dat document cited i document cited for member of the sa document	cument, but publi e n the application or other reasons	shed on, or

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

EP 04 10 3578

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.

12-11-2009

cited in search report		Publication date		Patent family member(s)	Publicatio date
US 6209505	B1	03-04-2001	CN IT JP JP TW	1257156 A T0990991 A1 4057725 B2 2000161019 A 418280 B	21-06-2 16-05-2 05-03-2 13-06-2 11-01-2
US 4903483	Α	27-02-1990	NONE	<u> </u>	
EP 1460238	A2	22-09-2004	CN ES JP JP TW	1530521 A 2301934 T3 4025667 B2 2004278447 A 240040 B	22-09-2 01-07-2 26-12-2 07-10-2 21-09-2
			1 W 	240040 B	21-09-
e details about this anne					