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(54) **Structure of driving member of engine valve**

(57) An engine (3) includes a camshaft (336) carrying a first intake cam (3361), a second intake cam (3362), and an exhaust cam (3363). The intake valve driving member (6) includes first and second driving members (61,62), which form push rollers (614,624) respectively in engagement with the first and second intake cams (3361,3362) and a pressing section (625) in engagement

with the intake valve (332). The first and second driving members (61,62) form bores (613,623) communicating each other to form a hydraulic cylinder (64). First and second pistons (643,644) are movable within the bores (613,623) to selectively set the first and second driving members (61,62) in a condition of being allowed to operate independently or in combination with each other.

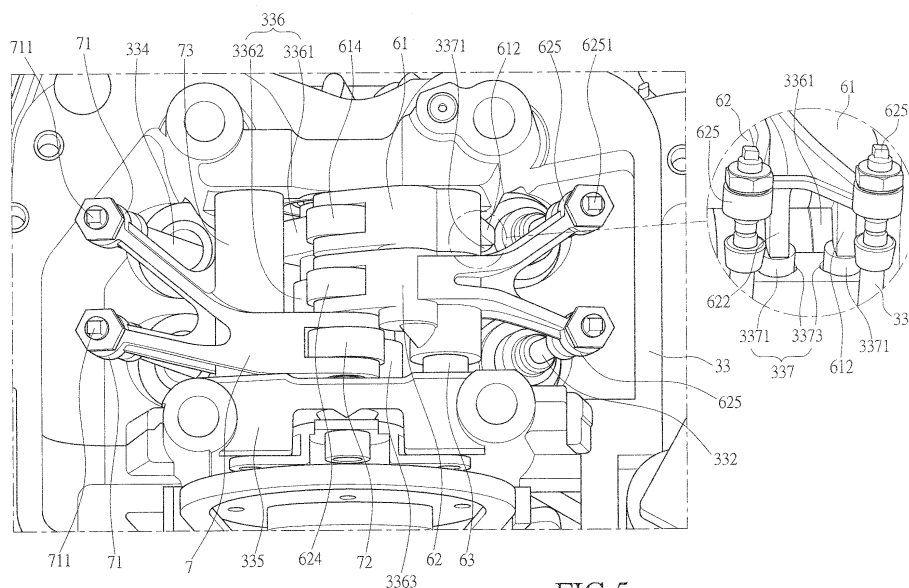


FIG.5



EUROPEAN SEARCH REPORT

Application Number
EP 11 16 7016

DOCUMENTS CONSIDERED TO BE RELEVANT			
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A	* column 1, line 5 - line 8 * * column 17, line 26 - line 37 * * column 59, line 20 - column 62, line 3 * * figures 4,8,11,12,41,42 * -----	3,9-11	
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A	* column 1, lines 5-17 * * column 5, line 18 - line 32 * * figures 2,3-5,9,12,15,16 * -----	10,11	
X	US 5 207 193 A (SUGIMOTO CHIHAYA [JP] ET AL) 4 May 1993 (1993-05-04)	1,2,8	
A	* column 1, line 7 - line 14 * * column 4, line 17 - column 5, line 8 * * column 5, line 63 - column 6, line 20 * * column 8, line 7 - line 13 * * column 8, line 25 - line 44 * * figures * -----	3	
A	EP 0 470 869 A1 (HONDA MOTOR CO LTD [JP]) 12 February 1992 (1992-02-12)	1-3	TECHNICAL FIELDS SEARCHED (IPC) F01L
	* column 1, line 1 - line 11 * * column 15, line 9 - line 32 * * figures 9,10 * -----		
A	EP 2 180 152 A1 (HONDA MOTOR CO LTD [JP]) 28 April 2010 (2010-04-28)	1,2	
	* paragraph [0001] * * paragraph [0048] * * paragraph [0051] * * paragraph [0065] * * figures * ----- -/-		
3 The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 2 September 2011	Examiner Paquay, Jeannot
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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EUROPEAN SEARCH REPORT

Application Number
EP 11 16 7016

DOCUMENTS CONSIDERED TO BE RELEVANT			
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			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		2 September 2011	Paquay, Jeannot
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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Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

2, 8-11

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claim: 2

The special technical features of claim 2 are related to the position of the oil control valve, thereby overcoming the problem of how to control the oil flow to the hydraulic cylinder in the driving members 36 and 38.

1.1. claim: 8

The special technical feature of claim 8 is a gap adjusting member and solves the problem of adjusting the valve play.

1.2. claims: 9-11

The special technical features of the claims 9 and 11 are related to the details about the closure caps, and simplifying engineering of variable lift driving members.

2. claims: 3-5

The special technical features of the claims 3-5 are related to the position constraining mechanism, said mechanism being engaged with the first and the second driving member, thereby overcoming the problem that the bores of the first and second driving members (the bores for the pistons 643 and 644) are not aligned with each other, and thus, solving the problem of latching difficulties when connecting the driving members together.

3. claim: 6

The special technical features of claim 6 are related to the location of the bores (the bores for the pistons 643 and 644) in relation to the push rollers and the positioning holes, thereby effectively reducing the height of the cylinder head (as explained in the description, from page 4, 19 to page 5, line 6).

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

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

EP 11 16 7016

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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02-09-2011

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