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**Internal combustion engine for vehicle.**

The invention relates to the structure of an internal combustion engine having a plurality of cylinder banks, and more particularly to the structure of an internal combustion engine for a vehicle suitable for use as an internal combustion engine of the V-shaped arrangement, and it is an object of the invention to provide a multi-cylinder internal combustion engine having two cylinder banks wherein the structure which incorporates a plurality of different types

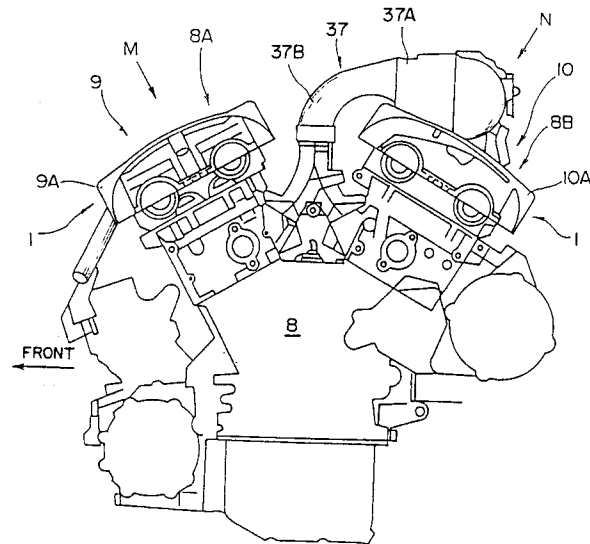
of valve operating mechanisms can be realized while enhancing the facility in assembling operation and the production efficiency.

To this end, the internal combustion engine of the present invention comprises at least first and second cylinder banks (8B, 8A) each including a plurality of cylinders or a single cylinder, a first valve operating mechanism (10) provided for each of the cylinders of the first cylinder bank (8B) for operating

an intake valve or an exhaust valve (2, 3) of the cylinder to open and close, and a second valve operating mechanism (9) having a valve operating characteristic different from that of the first valve

operating mechanism (10) and provided for each of the cylinders of the second cylinder bank (8A) for operating an intake valve or an exhaust valve (2, 3) of the cylinder to open and close.

FIG. 2





European Patent  
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## EUROPEAN SEARCH REPORT

Application Number

EP 93 11 0379

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. 5)
X	REVUE TECHNIQUE AUTOMOBILE vol. 43, no. 498, 1 December 1988, BOULOGNE-BILLANCOURT pages 7 - 8 'RENAULT "25 V 6" Injection turbo - limousine' * page 7, " Généralités "; page 8, " Distribution, Fonctionnement théorique de la distribution, moteur Z 7 V " *	1	F 01 L 13/00 F 01 L 1/26
Y	EP-A-0 026 249 (BROCK) * page 5, line 5-9; page 6, line 1-12; figure 1 *	1-4	
Y	REVUE AUTOMOBILE SUISSE vol. 86, no. 21, 16 May 1991, BERNE CH pages 27 - 29 VON FERSEN "Le six cylindres de la Honda NSX"	1-4	
A	EP-A-0 037 269 (ENGINE CONTROL INDUSTRIES LTD) * page 2, line 7 - line 16; abstract; figure 2 *	1-4	
A	GB-A-2 199 079 (HONDA GIKEN KOGYO KK) * abstract; page 27, line 10 - line 25; figures *	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 05-10-1993	Examiner KLINGER T G
<b>CATEGORY OF CITED DOCUMENTS</b> 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			



## CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

## LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement 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.
- ☐ 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 has 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: 1 - 4



#### LACK OF UNITY OF INVENTION

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

1. Claims 1-4: V-type internal combustion engine having the first bank of cylinders provided with a variable timing system including a variable displacement mechanism, and the second bank of cylinders provided with a variable timing system without variable displacement mechanism.
2. Claims 5-8: V-type internal combustion engine with intake manifold partly hanging over first bank of cylinders, and further comprising hydraulic lash adjusters for each valve operating systems of the first cylinder bank, each of the cylinders of the second bank being provided with variable displacement mechanism, both cylinder banks having valve operating systems of the variable timing type.
3. Claims 9-11: V-type internal combustion engine with intake manifold partly hanging over first bank of cylinders, the second bank of cylinders further comprising variable displacement mechanisms, and both cylinder banks having valve operating systems of the variable timing type.
4. Claims 12-13: Internal combustion engine of the type comprising two banks of cylinders, a purifying catalyser, variable displacement mechanism for each of the cylinders of second cylinder bank, the second bank of cylinders being disposed on the front side of the vehicle in which the engine is fitted.