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(72) Inventor: **Osman, Azmi**
c/o Yamaha Engine Developments Co.Ltd.
Iwata, Shizuoka 438-0026 (JP)

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(74) Representative: **Murray, Elisabeth Anne et al**
Mathys & Squire
120 Holborn
London EC1N 2SQ (GB)

(71) Applicant: **Petroliam Nasional Berhad**
50088 Kuala Lumpur (MY)

(54) **Oil pan structure for an engine**

(57) In an example, an oil pan 8 comprises a bottom plate 26, a vertical wall 27 integrally protruded upwardly from outer edges of the bottom plate 26, an outwardly extending flange 28 formed integral with the vertical wall 27 at the protruded end and fixed to the lower end of a crankcase 2, a pair of bosses 21, 21 located below the outwardly extending flange 28 and integrally projecting laterally outwardly from the outside surface of the vertical wall 27 for supporting a component 14 of an engine 1, and a connecting piece 29 disposed between these

two bosses 21, 21 for connecting the two bosses 21, 21 integrally. The bottom plate 26, vertical wall 27, outwardly extending flange 28, bosses 21, 21 and connecting piece 29 are formed by casting. The inner edge 29a of the connecting piece 29 on the side of the vertical wall 27 is formed integral with the outwardly extending flange 28.

Such an arrangement can prevent shrinkage cavities from being produced when a pair of bosses are provided on the outside surface of a vertical wall of an oil pan made by casting and these bosses are reinforced.

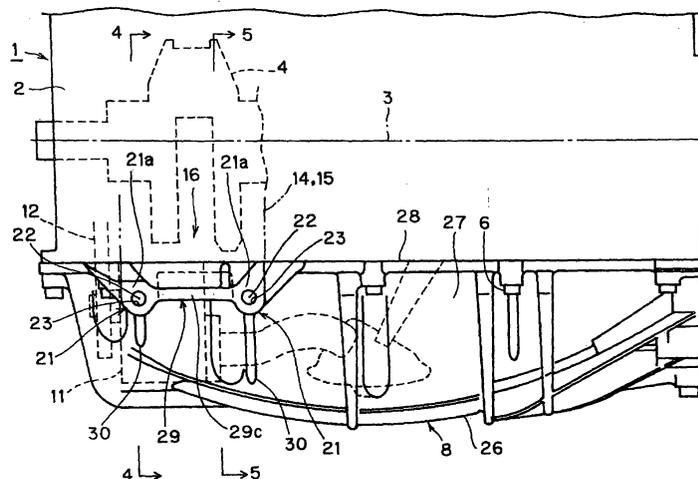


FIG. 1



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.7)
X	US 2002/172606 A1 (ASANO MASAYUKI) 21 November 2002 (2002-11-21) * column 3, line 54 - column 4, line 39; figure 2 *	1-5	F01M11/00
A	-----	6,7	
A	US 5 218 938 A (MILLER ET AL) 15 June 1993 (1993-06-15) * column 1, lines 38-68; figure 1 *	1-7	
A	----- EP 0 837 236 A (HONDA GIKEN KOGYO KABUSHIKI KAISHA) 22 April 1998 (1998-04-22) * figure 7 *	1-7	
A	----- US 5 526 781 A (SUGIYAMA ET AL) 18 June 1996 (1996-06-18) * column 2, line 54 - column 3, line 64; figures 2,5,7 *	1-7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			F01M
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 July 2005	Examiner Vedoato, 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.

EP 04 25 3169

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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05-07-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2002172606	A1	21-11-2002	JP 2002339712 A	27-11-2002
			CN 1386963 A	25-12-2002
			TW 554131 B	21-09-2003

US 5218938	A	15-06-1993	NONE	

EP 0837236	A	22-04-1998	JP 3640480 B2	20-04-2005
			JP 10122041 A	12-05-1998
			JP 3388109 B2	17-03-2003
			JP 10122045 A	12-05-1998
			JP 10121930 A	12-05-1998
			JP 3631863 B2	23-03-2005
			JP 10148156 A	02-06-1998
			BR 9705055 A	23-02-1999
			CA 2218304 A1	16-04-1998
			DE 69704917 D1	28-06-2001
			DE 69704917 T2	06-09-2001
			EP 0837236 A1	22-04-1998
			US 5901679 A	11-05-1999

US 5526781	A	18-06-1996	JP 2880075 B2	05-04-1999
			JP 7317601 A	05-12-1995
