

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte NORIYOSHI HIRAOKA,
MASANORI TAKAHASHI and HIROSHI OISHI

Appeal No. 1999-2444
Application 08/842,088

HEARD: January 11, 2001

Before STAAB, MCQUADE, and BAHR, Administrative Patent Judges.
MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Noriyoshi Hiraoka et al. appeal from the final rejection of claims 16, 17 and 20. Claims 1 through 15 stand allowed. Claims 18 and 19, the only other claims pending in the application, stand objected to as depending from a rejected base claim.

THE INVENTION

The invention relates to an internal combustion engine for an outboard motor. The engine has a vertically oriented crankshaft and a lubricating system designed to accommodate same. Claim 16 is illustrative and reads as follows:

16. An internal combustion engine having a vertically oriented crankshaft, the engine having a cylinder block with a crankshaft cover connected to said cylinder block and cooperating therewith to define a crankshaft chamber in which at least a portion of said crankshaft rotates, said crankcase chamber having a top end and a bottom end, said cylinder block having at least one first crankshaft supporting member extending into said chamber, said cover supporting a mating second crankshaft supporting member to said first crankshaft supporting member, said crankshaft having a bearing portion journalled between said first and said second crankshaft supporting members, a lubricant source, a lubricant path through a wall of said crankcase cover, a passage extending from said path through said second crankshaft supporting member for providing lubricant to said crankshaft bearing portion, and an oil drain flow passage extending vertically through said second crankshaft supporting member for flow of lubricant supplied into said crankcase chamber by gravity generally in the direction from said top end to said bottom end of said chamber to return to said lubricant source.¹

¹ Claim 16 refers to the cover recited therein as both a "crankshaft" cover and a "crankcase" cover, and to the chamber recited therein as both a "crankshaft" chamber and a "crankcase" chamber. These inconsistencies in terminology, which also appear in other claims, are deserving of correction.

THE PRIOR ART

The references relied upon by the examiner as evidence of obviousness are:

Fukuoka et al. (Fukuoka)	5,460,555	Oct. 24, 1995
Tsunoda et al. (Tsunoda)	5,687,688	Nov. 18, 1997

THE REJECTION

Claims 16, 17 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fukuoka in view of Tsunoda.

Attention is directed to the appellants' main and reply briefs (Paper Nos. 12 and 14) and to the examiner's answer (Paper No. 13) for the respective positions of the appellants and the examiner with regard to the merits of this rejection.

DISCUSSION

Fukuoka, the examiner's primary reference, discloses a lubrication system for an outboard motor engine. The V-type, four-cycle engine 12 shown in Figures 1 through 3²

² Fukuoka also discloses an essentially similar in-line version of the engine (see Figure 4).

includes a cylinder block 27, a vertically oriented crankshaft 29 "supported for rotation within a crankcase chamber 31 formed by the skirt of the cylinder block 27 and a crankcase member

32 that is affixed in any suitable manner to the cylinder block 27" (column 3, lines 12 through 15), and bearings 33 and 34 "which are formed at least in part by the crankcase member 32 [and in part by the cylinder block 27 as shown in Figure 3] for rotatably journaling the crankshaft 29" (column 3, lines

18 through 20). As described by Fukuoka, the engine's lubrication system

include[s] a lubricant pump 48, which is driven off the lower end of the crankshaft 29 and which may be of any conventional type. This oil pump draws lubricant from a lubricant reservoir . . . and distributes it through a main discharge passage 49 formed in the lower front portion of the crankcase member 32. This delivers lubricant to a full flow oil filter 51, which is mounted on the lower or front side of the crankcase member 32

The oil filter 51 then discharges the lubricant that has been filtered to a main oil gallery 52 formed integrally in the base of the crankcase member 32 and which extends vertically. This main oil gallery 52 is intersected by a

Appeal No. 1999-2444
Application 08/842,088

plurality of passages 53 formed in the main bearing members 54 of the crankcase member 32. This delivers lubricant under pressure to all of the main bearings 33 and 34 [column 4, lines 3 through 23].

As conceded by the examiner (see page 3 in the answer), Fukuoka does not meet the limitations in claim 16 requiring "an oil drain flow passage extending vertically through said second crankshaft supporting member for flow of lubricant supplied into said crankcase chamber by gravity generally in the direction from said top end to said bottom end of said chamber to return to said lubricant source." Fukuoka's engine has no such oil drain flow passage. The examiner's reliance on Tsunoda to cure this deficiency (see pages 3 and 4 in the answer) is not well founded.

Tsunoda is similar to Fukuoka in that it too discloses an outboard motor engine 4 having a vertically oriented crankshaft 13. The engine 4 also includes a cylinder block 18 having an integral skirt section 18a forming half of a crankcase, a split crankcase 19 forming the other half of the crankcase, opposed bearing sections 28a, 28b extending from the cylinder block and the split crankcase for rotatably supporting the crankshaft, an oil pump 72, an oil

Appeal No. 1999-2444
Application 08/842,088

filter 74, an oil passage 75 in the split crankcase and oil paths 76 extending from the oil passage for supplying oil to the crankshaft bearings. Of concern to Tsunoda is the fact that the bearing sections 28a extending from the cylinder block are thicker than the adjacent cylinder walls 79 in the block. This results in the formation of steps or shoulders a (see Figure 2) which prevent proper drainage of the oil (see column 1, lines 29 through 34; and column 8, lines 36 through 46).

To solve this problem, Tsunoda provides oil drainage holes 80 in the cylinder wall portions 79 adjacent the steps.

Tsunoda arguably would have suggested providing oil drainage holes or passages in the crankshaft bearing components extending from Fukuoka's cylinder block, which components correspond to the first crankshaft supporting member recited in claim 16. There is nothing in Tsunoda, however, which would have suggested providing such oil drainage holes or passages in the crankshaft bearing components extending from Fukuoka's crankcase member 32, which components correspond to the second crankshaft

Appeal No. 1999-2444
Application 08/842,088

supporting member recited in claim 16. Tsunoda's oil drainage holes solve a problem specifically associated with crankshaft bearing components extending from a cylinder block. Neither of the applied references indicates that such a problem exists with respect to crankshaft bearing components extending from a crankcase cover. It is therefore apparent that the only suggestion for providing oil drainage holes or passages through the crankshaft bearing components extending from Fukuoka's (or Tsunoda's) crankcase cover, i.e., through a second crankshaft supporting member as recited in claim 16, stems from hindsight knowledge impermissibly derived from the appellants' own disclosure.

Accordingly, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claim 16, or of claims 17 and 20 which depend therefrom, as being unpatentable over Fukuoka in view of Tsunoda.

SUMMARY

The decision of the examiner to reject claims 16, 17 and 20 is reversed.

REVERSED

Appeal No. 1999-2444
Application 08/842,088

	LAWRENCE J. STAAB)	
	Administrative Patent Judge)	
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	JOHN P. MCQUADE)	
	Administrative Patent Judge)	INTERFERENCES
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	JENNIFER D. BAHR)	
	Administrative Patent Judge)	

JPM/kis
ERNEST A. BEUTLER
ATTORNEY AT LAW
A PROFESSIONAL CORPORATION
500 NEWPORT CENTER DRIVE
SUITE 945
NEWPORT BEACH, CA 92660