

[72] Inventor **Yutaka Masaoka**
Hamakita-shi, Japan
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 [73] Assignee **Yamaha Hatsudoki Kabushiki Kaisha**
Hamakita-shi, Shizuoka-Ken, Japan
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 [33] **Japan**
 [31] **42/80979**

[56]

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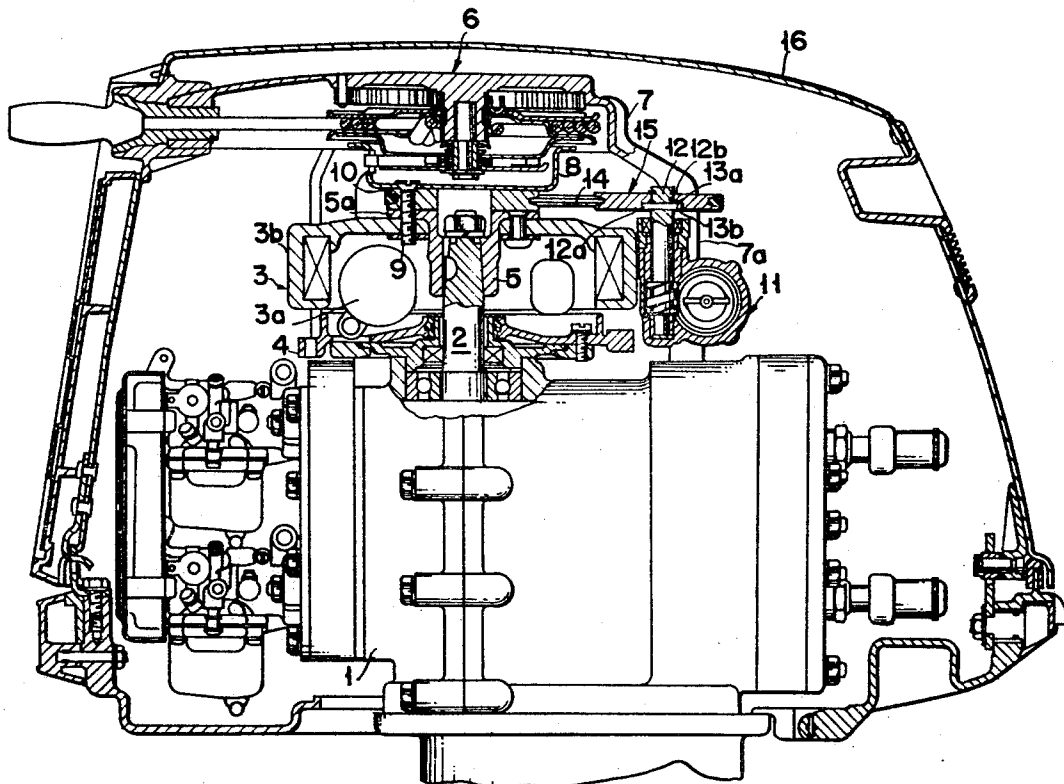
Primary Examiner—Al Lawrence Smith

Attorney—George B. Oujevolk

[54] **RECOIL STARTER AND LUBRICATING PUMP DRIVE FOR OUTBOARD MOTOR**
3 Claims, 3 Drawing Figs.

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115/17, 123/196, 184/6
 [51] Int. Cl. **F02n 3/02,**
F01m 1/02, F01m 3/00
 [50] Field of Search **123/185**
(A), (B), (B1), 73 (A3), 179 (O); 115/17, 18;
184/6 (Y), (Inquired)

ABSTRACT: An outboard motor wherein the fitting arrangement of a lubricating pump for lubricating an internal combustion engine is so designed as to be simple and compact, and a transmission gear mechanism for allowing said pump to be driven by the power of an engine is saved from the deposition of water drops or water scales by said arrangement.

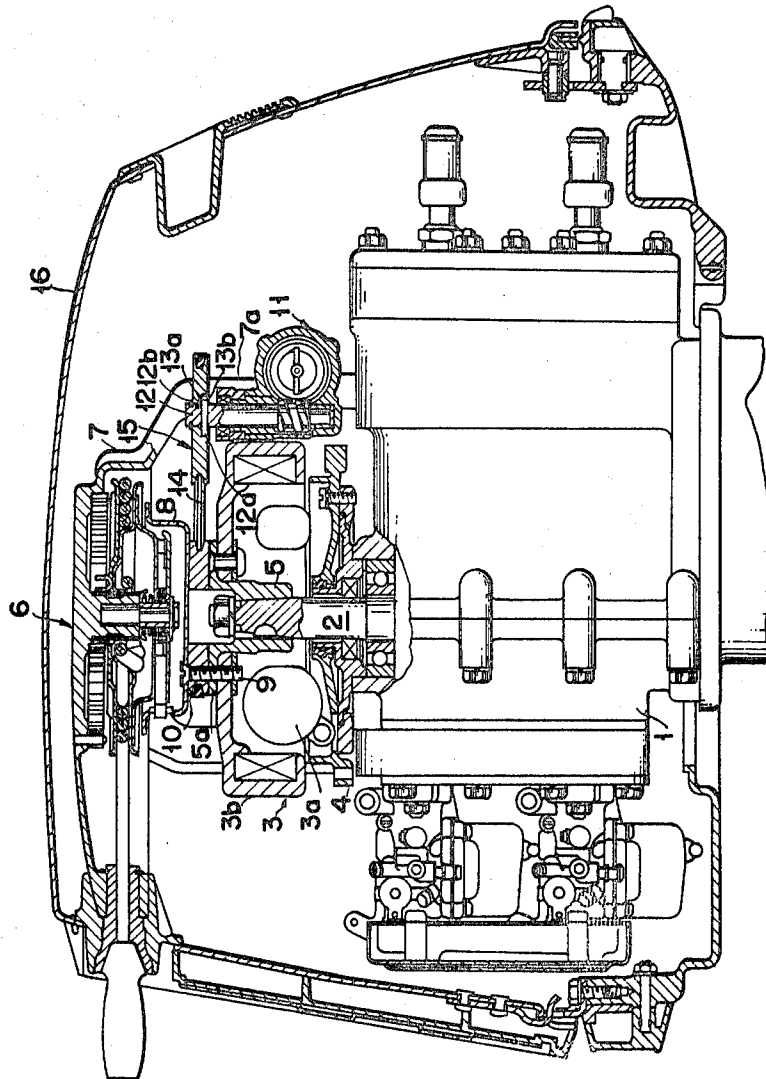


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FIG. 1



Yutaka Masaka
INVENTOR.

BY *George B. Cigornik*
Attorney

FIG. 2

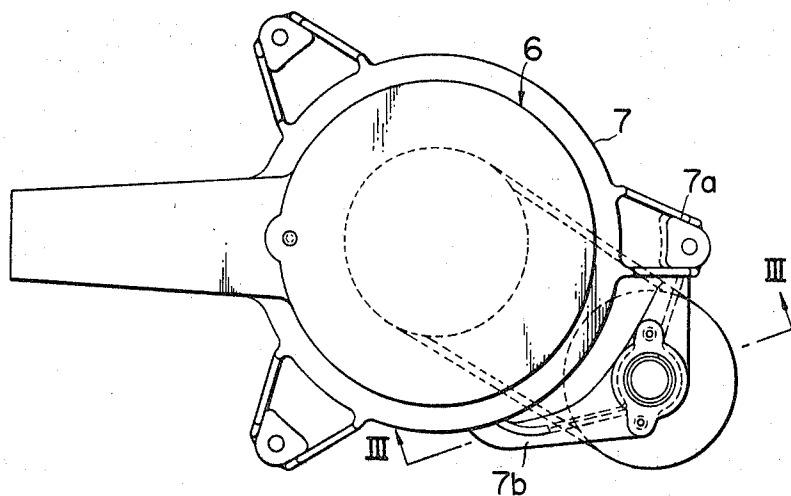
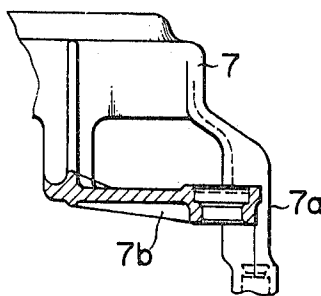


FIG. 3



Yutaka Masaka
INVENTOR.

BY

Leopold B. Cipriani
Attorney

RECOIL STARTER AND LUBRICATING PUMP DRIVE FOR OUTBOARD MOTOR

SUMMARY OF THE INVENTION

This invention relates to an outboard motor provided with a lubricating pump.

A principle object of this invention is to provide a simple and compact fitting arrangement for the lubricating pump and also to prevent by said arrangement water drops or water scales from being deposited on a transmission gear mechanism for allowing said pump to be driven by the power of an engine.

Another object of this invention is to provide a transmission gear mechanism requiring substantially no lubrication.

Other objects and advantages of this invention will be apparent from the following description taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fractional longitudinal section of a power head according to an embodiment of the invention;

FIG. 2 is a plan view of a support device; and

FIG. 3 is a fractional sectional view on line III-III of FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, an engine is of water-cooled 2-cycle internal combustion type, the housing 1 of which supports a vertical crankshaft 2 rotatably and supports the stator 3a of a flywheel magneto 3 at the upper part thereof in concentric relationship with the crankshaft 2 through a stator plate 4. To the upper end of the crankshaft 2, the lower end of which is connected to a propeller (not shown), is fitted the rotor 3b of the flywheel magneto 3 through a fitting member 5.

On the other hand, the known recoil starter 6 is positioned above the rotor 3b and fixed to the engine housing 1 by means of a support device 7 having three support pillars 7a. The driven drum 8 of the starter 6 is coaxially fixed by bolts 9 to the upper side of the rotor 3b of the flywheel magneto 3 with a driving pulley 10 interposed between said drum 8 and the flange 5a of the fitting member 5. The driving pulley and driven drum of the starter are fixedly superposed. Further, as shown in FIGS. 2 and 3, the support device 7 has a support member 7b integrally formed therewith. To said support member 7b is fitted a lubricating pump 11 in such a manner that the driven shaft 12 of the lubricating pump 11 is disposed parallel with the crankshaft 2 and the end of the shaft 12 is positioned at the same level as the driving pulley 10. To the end of the shaft 12 is fixed a driven pulley 13. Across the driving and driven pulleys 10 and 13 is stretched a transmission belt 14. Thus both pulleys 10 and 13 and belt 14 constitute a transmission gear mechanism 15 for transmitting the motive

force of the engine to the pump.

Thus, as the engine is at work, the driven shaft 12 of the lubricating pump 11 rotates, and the lubricating pump 11 sucks and delivers the lubricant to be fed to the 2-cycle internal combustion engine at the intake manifold thereof.

The driven pulley 13 involves a circular bore 13a for fitting the driven shaft 12 therein, and a transverse groove 13b formed on the one side thereof in a manner to extend perpendicular to the axis of said driven pulley 13. The driven shaft 12 has a cross pin 12a detachably fitted into said transverse groove, said pin penetrating the body of said shaft 12, and a retaining ring 12b preventing the driven pulley 13 to be moved away from said cross pin.

The aforementioned power mechanism is fully enclosed by a detachable cowling 16 at least at the upper part and periphery. Accordingly, though there may be brought in water sprays from below the cowling 16 during the travel of a boat, the aforesaid arrangement minimizes the possibility of water drops and scales being carried beyond the engine housing 1 and flywheel magneto 3 up to the transmission gear mechanism 15 of the pump to be deposited thereon.

I claim:

1. An outboard motor comprising an engine for driving a propeller, a flywheel magneto having a rotor fitted to the upper end of a vertical crankshaft of the engine, a recoil starter positioned above the flywheel magneto and fixed to the housing of the engine in concentric relationship with the crankshaft by means of a support device so as to rotate the crankshaft when the engine is started, a lubricating pump fixed to the support device of the recoil starter, the driven shaft of the lubricating pump being disposed parallel with the crankshaft, a transmission gear mechanism for connecting the driven shaft of the lubricating pump with the upper part of the rotor of the flywheel magneto so as to rotate therewith, and a cowling for enclosing said engine with the associated mechanism.

2. The outboard motor according to claim 1 wherein the transmission gear mechanism consists of a driving pulley fixed to the upper side of the rotor of the flywheel magneto, a driven pulley fitted to the driven shaft of the lubricating pump and a transmission belt stretched across these pulleys.

3. The outboard motor according to claim 2 wherein the driving pulley and driven drum of the starter are fixedly superposed, the driven pulley involves a circular bore for fitting the driven shaft therein, and a transverse groove formed on the one side thereof in a manner to extend perpendicular to the axis of said driven pulley, and the driven shaft has a cross pin detachably fitted into said transverse groove, said pin penetrating the body of said shaft, and a retaining ring for preventing the driven pulley to be moved away from said cross pin.

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