Oct. 31, 1933. S. L. WHEELER 1,932,810

OUTBOARD MOTOR STRUCTURE

Filed Feb. 10, 1933

Fig. 1.

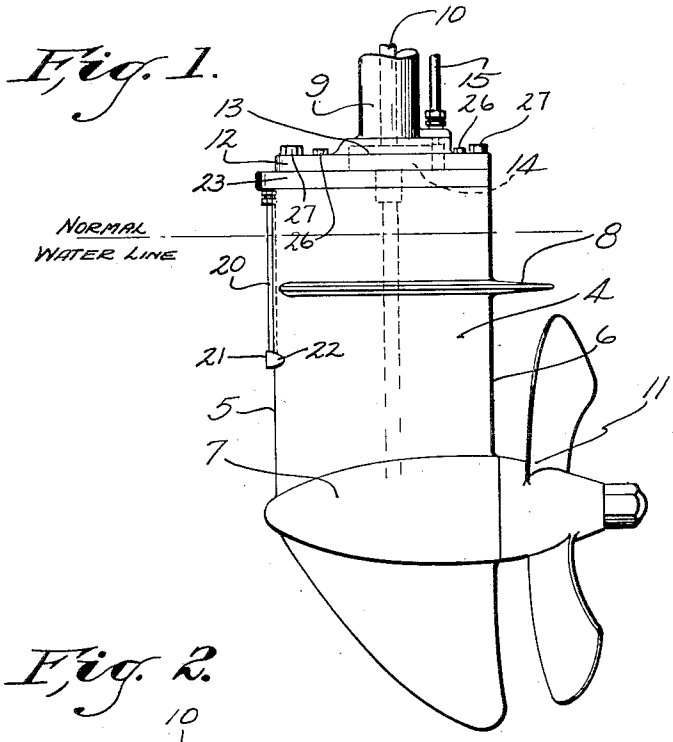


Fig. 2.

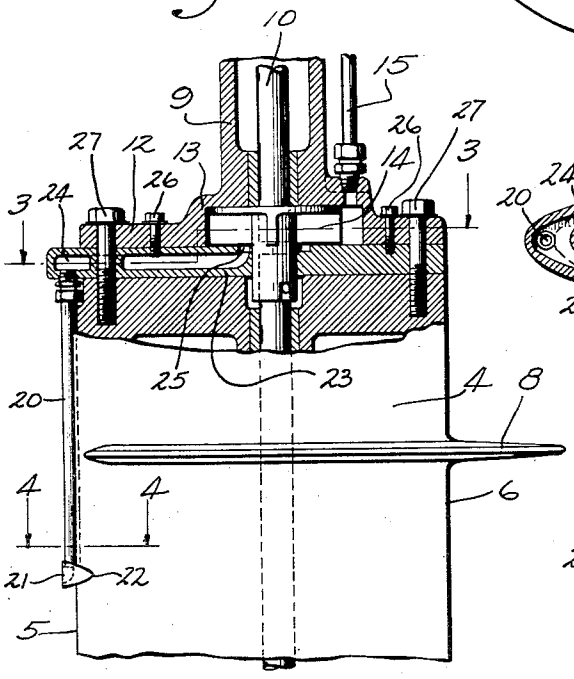


Fig. 3.

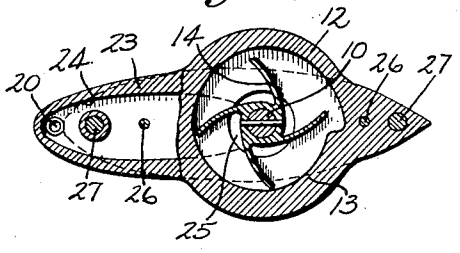
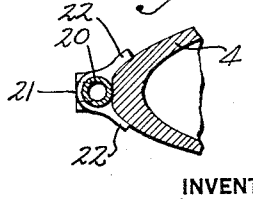


Fig. 4.



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OUTBOARD MOTOR STRUCTURE

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10 Claims. (Cl. 115—17)

This invention relates to improvements in outboard motor structures.

It is the object of the invention to provide means whereby all parts having to do with water circulation may, without destroying the stream lining of the lower unit or gear casing, be mounted and supported successfully upon the shaft housing, thus saving considerable sums heretofore expended in the coring, casting, and machining of lower units to provide water passages therein.

In the drawing:

Figure 1 is a side elevation of an outboard motor structure embodying the invention.

Figure 2 is an enlarged detail view partially in vertical axial section showing the disposition of the pump and the water passages leading to and from the pump.

Figure 3 is a detail view taken in section in the plane indicated at 3—3 in Figure 2.

Figure 4 is a detail view taken in section in the plane indicated at 4—4 in Figure 2.

Like parts are identified by the same reference characters throughout the several views.

The lower unit 4 is, in general, of conventional outline, having a relatively blunt leading edge at 5 and relatively sharp trailing edge at 6, a torpedo shaped gear casing portion 7, and an integrally cast anti-cavitation plate 8. The exterior wall surfaces are smooth and the contour in horizontal section is stream lined.

The vertical casing 9 for the drive shaft 10 which actuates propeller 11, is provided at its lower end with a flange 12 to receive the bolts by which the parts are secured together. This flange is enlarged at 13 to provide a chamber in which is operative a centrifugal pump runner 14 mounted on the drive shaft 10. The usual outlet port leads from the periphery of pump chamber 13 to a pipe 15 extending upwardly to the water jacket of the engine (not shown).

In order to provide an inlet for the pump chamber 13 without leading water thereto through the lower unit 4, I prefer to employ a depending pipe 20 of such proportions, as shown in Fig. 3, as not to interfere materially with the stream lining of the lower unit. This pipe 20 is preferably led downwardly along one of the margins of the lower unit, and has an inlet mouth 21 in a fitting which may be bifurcated to provide legs 22 extending along opposite sides of the lower unit to steady the inlet pipe thereon. As illustrated, the pipe 20 leads down the forward margin of the unit.

Any desired means may be provided for leading the water from pipe 20 to the pump. I have selected, for purposes of illustration, a plate 23 which is clamped between the flange 12 and the upper surface of the lower unit 4. As clearly illustrated in Fig. 2, this plate has an interior passage 24 with which pipe 20 is in communication and which is apertured at 25 in registry with a central portion of the pump chamber 13.

As a result of this arrangement, the pump runner is easily accessible and no packing is required between the lower unit and any other part. Thus, if anything requires that the lower unit be detached and returned to the factory, it may be detached and replaced by inexpert operators without impairing the water communications. If it is preferred that the plate 23 remain permanently secured to the shaft casing 9 in any such emergency, it may be held thereto by bolts 26 independent of the bolts 27 by which the shaft housing is anchored.

I claim:

1. In an outboard motor organization, the combination with a shaft housing, of complete water connections apertured to provide an inlet and applied to and wholly supported by the shaft housing, and a lower unit separably connected with the shaft housing independently of said water connections said water connections being extended well below the point of connection of said shaft housing to said lower unit, whereby all of said shaft housings and a portion of said lower unit may be above the water line.

2. In an outboard motor organization, the combination with a shaft housing providing a pump chamber above the water line and a lower unit connected therewith and intersected by the water line, of water supply connections leading from said pump chamber and to said pump chamber from a point in front of said lower unit and below the water line, said connections being supported by said shaft housing, whereby said lower unit is attachable to the shaft housing independently of said connections.

3. In an outboard motor structure, the combination with a shaft housing having a flange for lower unit attachment, of a lower unit separably secured to said flange, a line of shafting extending through said housing and unit, a pump runner carried by said shafting adjacent said flange, an inlet passage extending forwardly from said pump runner to a point adjacent the forward margin of said lower unit, and a pipe extending downwardly along the forward margin of said lower unit to a point below the normal water level thereof.

4. In an outboard motor organization, the com-

bination with a drive shaft housing and a lower unit connected therewith, of a line of shafting extending through said housing and lower unit, a pump means located above normal water level and driven thereby, and a suction pipe extending to said pump from a point below water level, said pipe extending in substantial abutment and alignment along a margin of said lower unit, externally thereof.

5. In an outboard motor structure, the combination with the submersible portion of a lower unit of general stream lined contour having a blunt margin, of a water pipe extending in substantial abutment and alignment along said margin externally of said unit to a point substantially below the water line.

6. In an outboard motor structure, the combination with a lower unit of general stream lined contour having a blunt margin, of a water pipe extending in substantial abutment and alignment along said margin externally of said unit, together with a part connected with said lower unit and by which said water pipe is wholly supported.

7. In an outboard motor structure, the combination with a lower unit of general stream lined contour having a blunt margin, of a water pipe extending in substantial abutment and alignment along said margin externally of said unit, said water pipe having bracing means engaging said lower unit and freely separable therefrom.

8. In an outboard motor structure, the combination with a lower unit of general stream lined contour having a blunt margin, of a water pipe in substantial abutment and alignment with said margin externally of said unit, said water pipe terminating at its lower unit in an apertured fitting bifurcated to provide arms between which the margin of said lower unit is engaged.

9. In an outboard motor organization, the combination with a shaft housing and lower unit and means separably connecting said housing and unit, of a pump enclosed adjacent the point of connection of said housing and unit and provided with a forwardly extending inlet, and an inlet pipe depending along the forward margin of said lower unit and communicating with said pump.

10. In an outboard motor organization, the combination with a shaft housing and lower unit and means separably connecting said housing and unit, of a pump enclosed adjacent the point of connection of said housing and unit and provided with a forwardly extending inlet, and an inlet pipe depending along the forward margin of said lower unit and communicating with said pump, said lower unit having a generally stream lined contour sufficiently blunt at its forward margin so that said pipe is received within the projected stream lines of the side walls of the housing.

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