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2,652,802

WATER INLET STRUCTURE FOR OUTBOARD MOTORS

Filed April 20, 1951

2 Sheets-Sheet 1

FIG 1

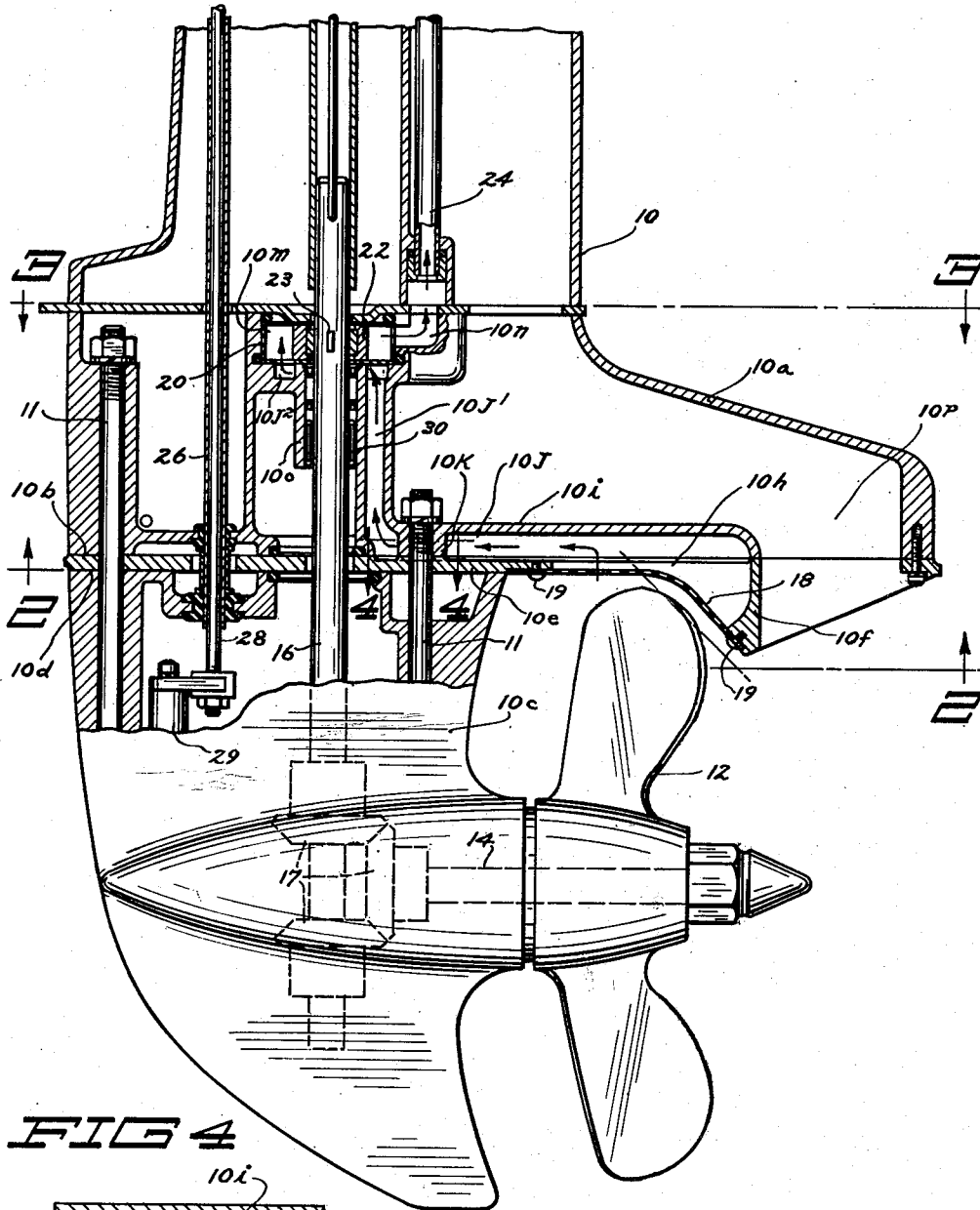
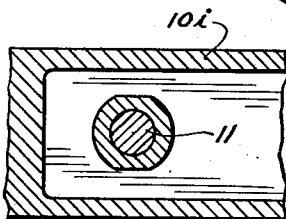


FIG 4



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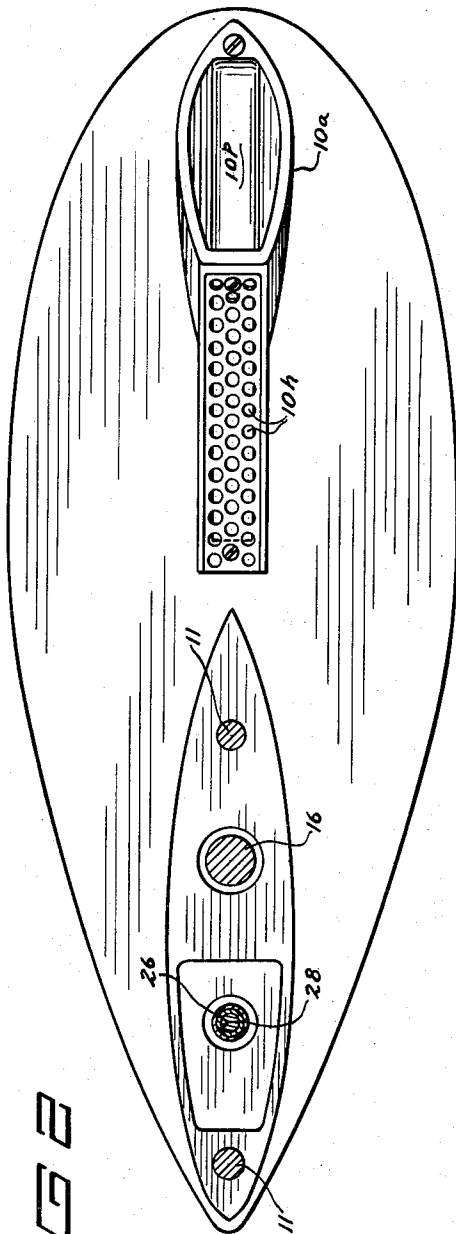


FIG 2

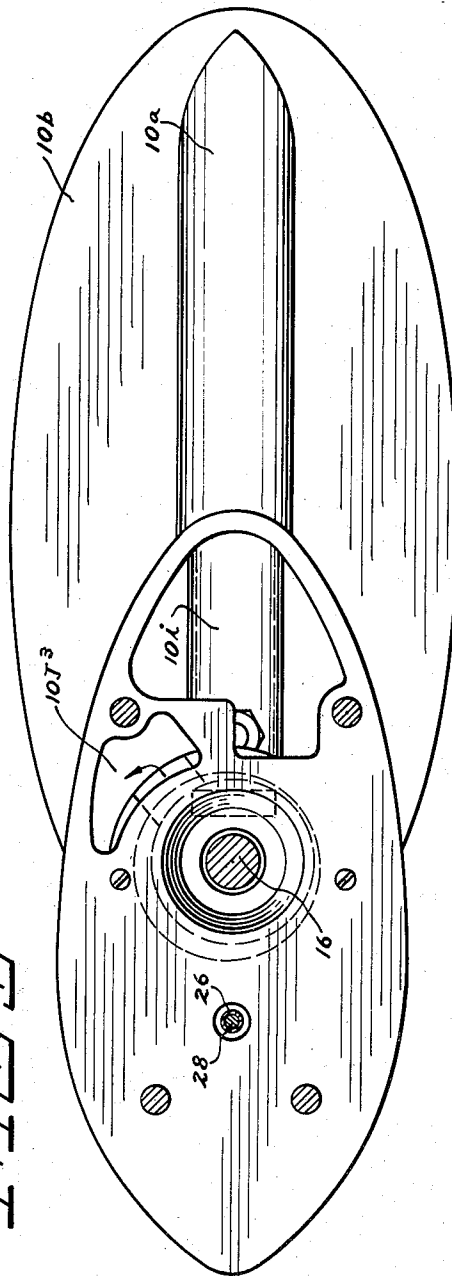


FIG 3

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WATER INLET STRUCTURE FOR OUTBOARD MOTORS

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9 Claims. (Cl. 115-17)

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This invention relates to an outboard motor construction, and particularly to the structure of a casing for an outboard motor and the cooling water inlet of said casing.

It is generally an object of this invention to locate a cooling water inlet of an outboard motor casing adjacent the propeller so that the propeller will act to assist the entry of water into said opening and casing.

It is also an object of this invention to provide an outboard motor having a casing, a propeller shaft journaled in the lower part of said casing, a propeller secured to said shaft, said casing having a portion disposed above and adjacent said propeller and a water inlet opening for said casing disposed adjacent said propeller, said opening preferably being covered with a screen.

It is another object of the invention to provide an outboard motor structure comprising a casing having a lower portion in which a propeller shaft is journaled and to which shaft a propeller is secured in the rear of said lower portion, said casing having a portion extending rearwardly of and above said lower portion and having an opening therein which is disposed above and adjacent said propeller, a screen covering said opening, said opening and screen extending rearwardly and downwardly as does the rear part of the propeller blade at its upper portion.

It is more specifically an object of the invention to provide an outboard motor structure comprising a casing having an upper portion and a lower portion with adjacent flat surfaces, a plate disposed between said portions and engaged respectively by said surfaces, means securing said portions and plate rigidly together, said plate and upper portion extending rearwardly beyond said lower portion, a propeller in the rear of said lower portion the top of which is adjacent said projecting part of said plate and upper portion, said plate having an opening therethrough elongated forwardly and rearwardly and a screen covering said opening.

It is also an object of the invention to provide such a structure as set forth in the preceding paragraph, including a drive shaft extending vertically in said casing, a hub disposed about said shaft, a pump chamber extending about said shaft, and a passage communicating with said pump chamber having a vertical portion extending alongside said hub and a horizontal portion extending to and communicating with said opening.

These and other objects and advantages of the invention will be fully set forth in the following:

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description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is for the most part a vertical section through the lower portion of an outboard motor taken substantially centrally of the drive shaft in a forward and rearward direction, a portion being shown in side elevation;

Fig. 2 is a horizontal section taken substantially on line 2-2 of Fig. 1, as indicated by the arrows;

Fig. 3 is a horizontal section taken substantially on line 3-3 of Fig. 1, as indicated by the arrows; and

Fig. 4 is a horizontal section taken substantially on line 4-4 of Fig. 1, as indicated by the arrows.

Referring to the drawings, an outboard motor structure is shown comprising a casing 10. Only the lower portion of the casing is shown which comprises an upper portion 10a having a lower substantially horizontal surface 10b and a lower portion 10c having an upper substantially horizontal surface 10d. A plate 10e is disposed between portions 10a and 10c having flat top and bottom surfaces engaged by surfaces 10b and 10d. The portions 10a, 10c and plate 10e are rigidly secured together by a plurality of headed and nutted bolts 11 extending therethrough. A propeller 12 is disposed in the rear of the lower portion 10c, the same being secured to a shaft 14 which will be driven in the usual manner by a drive shaft 16 through beveled gears 17. Plate 10e and the upper portion 10a project rearwardly beyond the lower portion 10c and the projecting portions thereof are disposed above and adjacent the blade of propeller 12. Plate 10e has a portion 10f adjacent its rear extending downwardly and said plate has an opening 10h therethrough extending to said portion 10f, which opening as shown in Fig. 2 is quite elongated in a forward and rearward direction. Opening 10h is covered by a screen 18 secured to plate 10e by small headed screws 19. Said opening 10h and screen 18 curve downwardly rearwardly, which curvature preferably follows generally the curvature of the top of the propeller blades so that when said blades are in vertical position said opening and screen are substantially parallel to the curved edge of said blades. The upper portion 10a of the casing has a part 10i which forms with plate 10e a horizontal passage 10j. Passage 10j communicates with opening 10h and extends about

a small hub 10k through which one of the bolts 11 passes and communicates with a vertical extending passage 10j1 which extends to an annular passage 10j2 in casing 10 which is disposed below a pump chamber 10m. Pump chamber 10m extends about shaft 16 and is coaxial therewith. A pump casing 20 is shown in pump chamber 10 and a pump 22 is disposed in chamber 10m, the same having a hub secured to shaft 16 in any suitable manner, as by a key 23. Annular passage 10j2 has an outlet portion 10j3 opening into the pump chamber 10m through the bottom of casing 20. Casing 10 has an outlet passage 10n extending from pump chamber 10m and which communicates with an upwardly extending conduit 24 carrying the cooling water to the motor.

A sleeve 26 is shown in which is movable a rod 28, which rod is connected to a gear shifting member 29. Parts 26, 28 and 29 form no part of the present invention.

Passage 10j1, as shown in Fig. 1, extends along one side of a hub 10o in which is disposed a needle bearing 30 for shaft 16. Annular passage 10j2 extends about the upper end of hub 10o. Casing 10 has extending through its rear lower portion an exhaust passage 10p which also extends through the rear portion of plate 10e. Said exhaust portion has an open lower end in plate 10e, the periphery of which is disposed in a plane extending upwardly and rearwardly from the lower end of portion 10f.

In operation, drive shaft 16 will be driven from the motor and propeller shaft 14 and propeller 12 will be rotated. The propeller will cause a pressure of water which will assist in moving the water through opening 10h and through the screen 18 into passage 10j. The opening 10h and screen 18, as stated, extend downwardly, and as stated, preferably follow generally the curvature of the propeller blade. This will assist the entry of water through screen 18, particularly when the propeller is rotating in reverse. The screen 18 and opening 10h are also disposed generally between the blade of propeller 12 and the exhaust opening 10p, which is desirable. The water entering through screen 18 passes readily to the pump chamber.

From the above description it will be seen that we have provided a simple and very efficient structure of the inlet water opening and cooperating parts in an outboard motor. The screen 18 is nicely carried by plate 10e which also has therein the inlet opening for the cooling water. The parts can be conveniently made and easily assembled.

The device has been demonstrated in actual practice, found to be very successful and efficient and is being commercially made.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicants' invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. An outboard motor structure having in combination, a casing, a propeller shaft journaled in said casing, a propeller secured to said shaft and disposed at the rear of said casing, said casing having a portion above and adjacent said propeller having an elongated opening above said propeller forming a cooling water inlet and a screen covering said opening whereby said pro-

PELLER will assist in moving water through said screen and opening.

2. The structure set forth in claim 1, said propeller having blades with convexly curved end edges and said opening and screen being continuous and extending substantially horizontally above and in front of said propeller and being curved and generally following said curvature of said propeller blades in the rear thereof.

3. The structure set forth in claim 1, a driving shaft extending substantially vertically in said casing, a pump chamber extending about said shaft, a passage extending vertically adjacent said shaft communicating with said pump chamber and having a substantially horizontal portion communicating with said opening.

4. The structure set forth in claim 1, a drive shaft extending vertically in said casing, said casing having a hub through which said shaft extends, a pump chamber extending about said shaft, said casing having an annular passage below said pump chamber, a passage extending vertically at one side of said hub communicating with said annular passage and having a horizontal portion communicating with said first mentioned opening.

5. An outboard motor structure having in combination, a casing having an upper portion and a lower portion, said portions having adjacent surfaces disposed in substantially horizontal planes respectively, a plate disposed between said surfaces and engaged thereby, means for securing said portions and plate rigidly together, a substantially horizontal propeller shaft journaled in said lower portion, a propeller secured to said shaft at the rear of said casing, said plate and upper portion projecting rearwardly beyond said lower portion, said plate having an opening there-through elongated in a forward and rearward direction, said opening forming an inlet for cooling water, a screen covering said opening, said opening and screen being disposed above and adjacent said propeller whereby said propeller will act to move water through said screen and opening.

6. The structure set forth in claim 5, a drive shaft extending vertically in said casing, a pump chamber extending about said drive shaft, said upper portion having a part forming with said plate a passage communicating with said opening and a passage extending upwardly at one side of said shaft communicating with said pump chamber and first mentioned passage.

7. An outboard motor structure having in combination, a casing, a drive-shaft, a propeller shaft disposed at right angles to said driveshaft and journaled in said casing, a propeller secured to said shaft and disposed at the rear of said casing, said casing having a portion above and adjacent said propeller having an elongated screened opening forming a cooling water inlet, a chamber in said casing with which said opening communicates, a pump chamber in said casing, a pump in said pump chamber secured to and rotatable with said driveshaft and a passage leading from said first mentioned chamber to said pump chamber whereby said propeller will act to cause a flow of water through said opening.

8. The structure set forth in claim 5, said upper portion having a downwardly directed opening for exhaust gases at its rear end, a discharge spout member having an opening therethrough vertically aligned with said last mentioned opening, means securing said member to said upper

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portion, and means for securing said screen to said member.

9. An outboard motor comprising a drive shaft having in combination, a casing having an upper portion and a lower portion, said portions having adjacent surfaces disposed in substantially horizontal planes respectively, a plate disposed between said surfaces and engaged thereby, means for securing said portions and plate rigidly together, said casing having a third portion above said upper portion, a substantially horizontal propeller shaft journaled in said lower portion, a propeller secured to said shaft at the rear of said casing, said plate and upper portion projecting rearwardly beyond said lower portion, said plate having an opening there-through elongated in a forward and rearward direction, said plate and upper portion forming a substantially horizontal passage leading forwardly from said opening, said upper portion having a vertically extending passage communicating with said horizontal passage, said upper portion having a pump chamber about said drive shaft and having a chamber below said pump chamber extending around said drive shaft, said

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vertical passage communicating with said latter chamber, a third passage leading upwardly from said pump chamber into said third portion, and a conduit communicating with said third passage extending upwardly within said third portion.

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