

July 3, 1945.

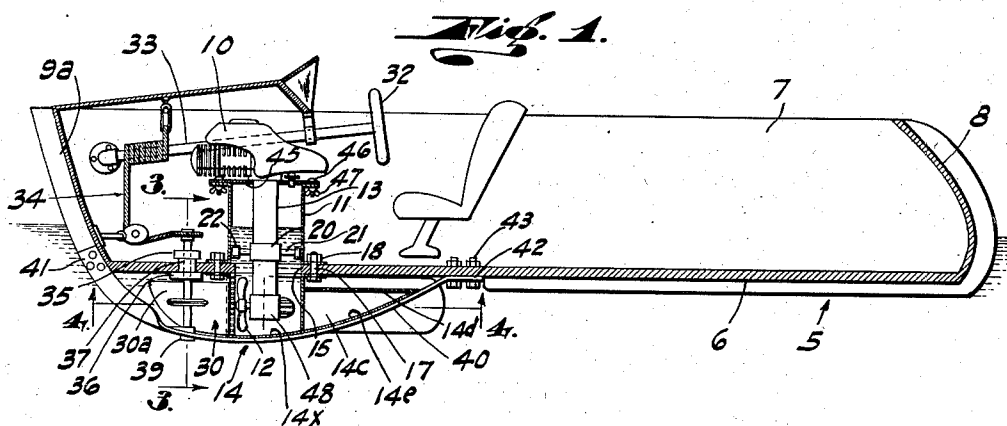
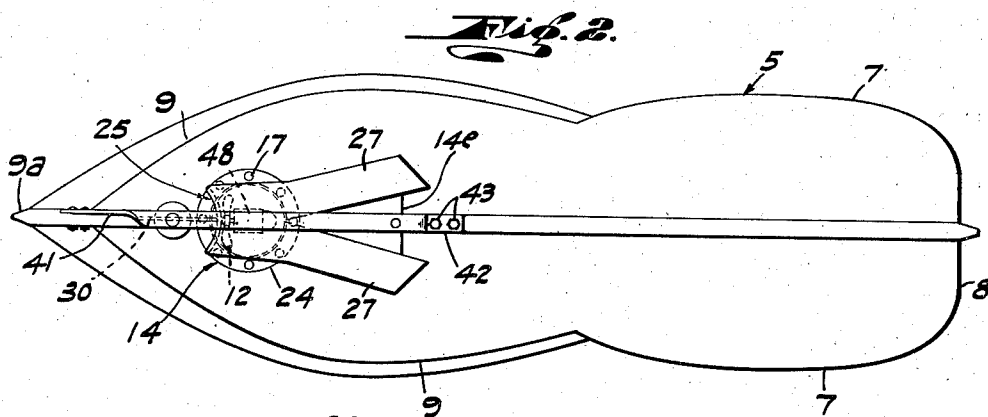
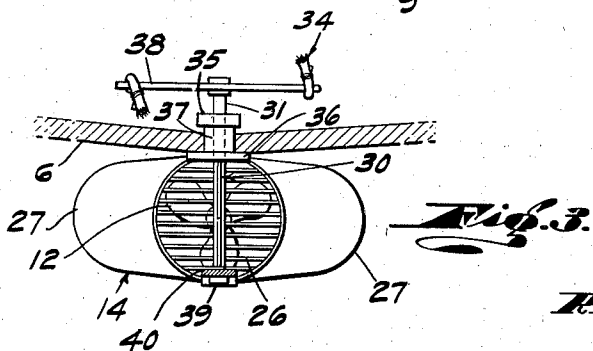
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2,379,834

FRONT DRIVEN MOTOR BOAT

Filed Feb. 28, 1944

2 Sheets-Sheet 1



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*Fig. 4.*

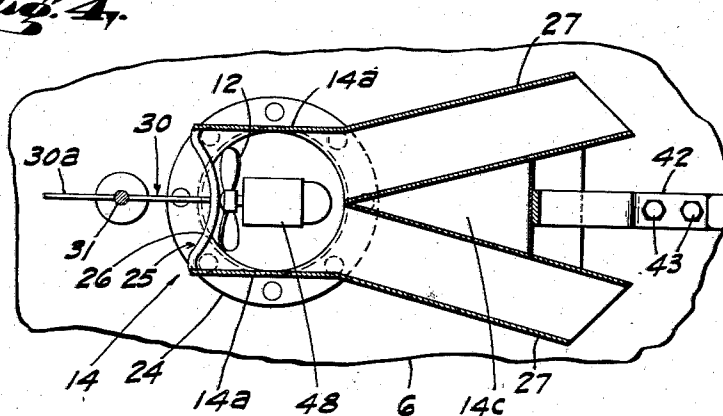


*Fig. 5.*

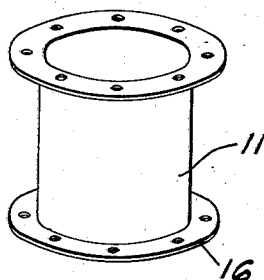
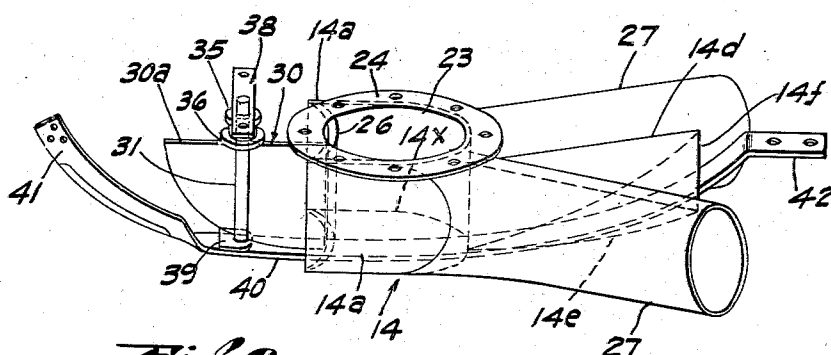


**Fig. 6.**



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## UNITED STATES PATENT OFFICE

2,379,834

## FRONT DRIVEN MOTORBOAT

Renwick J. Sharp, Guatemala, Guatemala

Application February 28, 1944, Serial No. 524,248

11 Claims. (Cl. 115-16)

This invention relates to a front driven motor boat.

Among the objects of the invention are: to provide a front driven motor boat construction wherein the propeller is so positioned as to overcome tendency to entrain air from the surface of the water, but is caused to act upon water only, thus increasing its efficiency; to provide an improved rudder located in the bow portion of the boat and capable of more quickly changing the course of the boat; to provide, in this connection, an improved type of steered by the "nose" rudder; to provide an improved housing means for the propeller to guard its operation from being impeded by sea-weed or debris; to provide, in conjunction with the last mentioned feature, for utilizing the rudder as a means for sweeping off debris from a screening used to protect the propeller; to provide for a better balancing of the boat in regard to its fore-to-aft position so that the objectionable heretofore encountered tendency of the front portion of the boat to tilt upwardly during speedy travel will be overcome together with the resulting increased wind resistance and the dangerous tendency of the stern becoming lowered to such an extent as to become filled with water; to provide an improved means for detachably mounting a motor and propeller unit so that it may be conveniently removed for safe keeping when the boat is not in use and also may be readily replaced in its operative relation to the hull; and to provide a motor driven boat-propelling unit and mounting means therefor all of which may conveniently and at but a small cost be used to convert an oar-driven or otherwise propelled boat into an in-board motor driven craft.

A more specific object of the invention is to provide an improved means for attaching to the bottom of a boat, a housing wherein the propeller is contained and protected.

It is an object of this invention to overcome certain undesirable features of boat motors now on the market, among which are the use of motors which are too heavy to be handled in a free and easy manner, and which entail the danger of the not uncommon occurrence of the motor falling into the water, due to jumping off, or to the breaking off of a piece of the sternal part of the boat to which it is attached.

Other objects, advantages and features of invention will hereinafter appear.

Referring to the accompanying drawings which illustrate what is at present deemed to be a preferred embodiment of the invention,

Fig. 1 is a longitudinal vertical midsection of a motor boat constructed according to the principles of the invention;

Fig. 2 is a bottom plan view of the boat shown in Fig. 1;

Fig. 3 is a sectional detail on an enlarged scale, the plane of section being indicated by the line 3-3 of Fig. 1;

Fig. 4 is a fragmental, horizontal section, on an enlarged scale, looking up from line 4-4 of Fig. 1;

Fig. 5 is an enlarged perspective of the mounting drum;

Fig. 6 is an enlarged perspective of the part of the device which is attachable to the bottom of the boat.

Referring in detail to the drawings, the hull 5 has a substantially flat bottom 6, rear side wall portions 7 united by a flattened sternal wall 8, and bowed front side wall portions 9 which converge in a conventional manner till they meet at the bow piece 9a.

Important parts of the propelling means, to which the present invention pertains, are the motor 10, the upstanding propeller containing drum 11 upon which said motor is supported, the propeller 12 located below said drum, the motor propeller shaft casing 13 which extends downwardly from said motor and at its lower end carries said propeller, and the bottom housing 14 made of galvanized sheet metal.

Describing the aforementioned parts more in detail, as well as other parts which cooperate with them, in the midwidth portion of the front part of the boat's bottom 6 is a spacious circular opening 15 around the upper side of which the aforesaid drum 11 is fitted in a leak proof manner by any suitable means, the drawings showing said drum as a cylindrical tube furnished with an outwardly directed flange 16 which is secured in a leak proof manner to the boat's bottom 6 by means of bolts 17 and their nuts 18.

A ring 20 is fitted around and secured by any suitable means to the motor propeller shaft casing 13, said ring carrying in a fixed relation to it, two diametrically opposite radial arms 21 each of which is furnished at its outer end with a curved head 22 that abuts against the inner surface of the drum 11. These two heads are positioned in a fore and aft relation to each other so as better to brace the motor propeller shaft casing 13 against the thrust of the propeller.

The bottom housing 14, shown in perspective in Fig. 6, has in its top a circular opening 23, and carries around said opening a horizontal attach-

ing flange 24 which is suitably apertured to receive the lower portions of the already mentioned bolts 17, so that said bolts not only serve to attach the flange 16 of drum 11, but also aid in securing in place the aforesaid bottom housing 14.

Through the front end of the bottom housing 14 is a spacious circular water intake opening 25 which is shown guarded by a grille 26, which is concave from side to side as viewed from the front. A correspondingly spacious water outlet is afforded by the intake ends of the twin symmetrically disposed sternally directed tunnels 27 with which said housing 14 is provided. Said housing is shown in Fig. 1 as having a bottom wall or floor 14x.

In front of the grille 26 is located the rudder 30, the rudder post 31 being turned in opposite directions by the handwheel 32 and steering post 33 by means of a connection 34, which need not be described in detail because, separately considered it forms no part of the invention. Said rudder post is located adjacent to the nose portion 30a of the rudder so as to steer "by the nose" thereof. The rudder post 31 is suitably equipped with flanges 35 and 36 at opposite sides of the boat bottom, between which is a compressed leak proof packing gland 37. The rudder post has a cross bar 38 fixed to its upper end, a run of the steering connection being secured to each end of said bar in order to afford the proper operating leverage. When the rudder is operated the rear edge thereof (which is closely juxtaposed to the front side of the grille 26) clears away any seaweed or debris which may have collected on the grille and tended to obstruct the flow of the water therethrough. The grille is concave in conformity to the arcuate sweep of the rear edge of the rudder. The lower end of the rudder post has provided for it a bearing 39 carried by a band iron brace 40.

Describing more in detail the housing 14 within which the propeller 12 is located, said housing, as viewed in horizontal section (see Fig. 4), comprises twin parallel side walls 14a, the front ends of which are joined to each other by the sternally bowed series of horizontal grille bars 26, already mentioned.

The supporting means for said housing includes in addition to the aforesaid flange 24, the already mentioned band iron 40 the upwardly directed front end portion 41 of which is given a twist which brings it into approximately a vertical plane so as to overlie and be riveted to the lower part of the knife-edge portion 9a of the bow, the sternal end 42 of said band iron being horizontally directed and secured to the boat's bottom in any suitable manner, as by bolts 43. Said band 40 is upwardly inclined throughout its sternal half and contacts along the midwidth portion of the under side of the housing floor 14x and the sternally tapered wall 14e underlying the compartment 14c, which joins the arcuate housing wall 14a and is secured thereto in any suitable manner.

At each side of said compartment 14c there is provided, sternally of the housing 14, one of the already mentioned water delivery tunnels 27, said tunnels directing away from the bottom surface of the boat the water ejected from the housing by the propeller, thereby lessening the friction of these streams upon the boat's bottom and thus materially increasing the speed of the craft. The front ends of these tunnels converge till they meet and communicate with the open sternal end of the housing 14, said tunnels, like

the housing, being made of sheet metal. The front ends of these tunnels are made substantially rectangular in cross section where they join the housing, but are gradually altered in form toward their sternal ends, where they are circular.

The above mentioned compartment 14c is preferably made by securing a single piece of sheet metal having a flat upper run 14d and a downwardly bowed lower run 14e between the tunnels 27, said sheet having an acute sternal bend line 14f which spans the space between the two funnels and contours the compartment 14c in such a manner as not to produce "drag" behind the tunnels. The curved lower wall 14e of this compartment contributes to the desired streamline effect, the already mentioned brace bar 40 underlying its midwidth portion in a flat-wise manner, and also underlying the floor 14x of the housing 14. Said bar 40 is riveted or otherwise secured to the parts which it underlies.

The tunnels 27 are shown obliquely cut across at their sternal ends in such a way as to cause the issuing streams to diverge more rapidly, thereby lessening the "dragging" effect of the propeller driven streams upon the bottom of the boat.

Describing more in detail the means for mounting the motor 10 (which is preferably an internal combustion engine), said motor has secured to it a centrally apertured basal plate 45. Said plate is of a somewhat greater diameter than the drum body 11 and is shown detachably secured to the latter by means of stove bolts 46 which extend through the flanged upper end of the drum and are provided with winged nuts 47.

The motor propeller shaft casing 13 extends from the motor down through the central opening of the cover 45 and thence axially of the drum 11 and into the housing 14, where it carries at its lower end a gear casing 48 which contains a conventional gearing that forms a part of the means for operatively connecting the motor and propeller.

By the arrangement which has just been described a convenient means is afforded for bodily removing from the craft the motor, propeller and intervening structure. Preparatory to doing this it is only necessary to remove the winged nuts 47 from the bolts 46, whereupon the cover plate 45 may be lifted, together with the motor, off from the drum 11, and together with the above mentioned parts operatively connected therewith, be conveyed to any place where it is desired to store them for safety or other reasons.

The drum 11 extends above the boat's bottom to a sufficient height to prevent water entering the boat through its bottom opening even when the motor carrying plate 45 has been detached. However, if it is desired further to safeguard against entrance of water into the boat when the motor is removed and oars are relied upon to propel the boat, any suitable imperforate plate may be substituted as a closure element for the drum, to take the place of said plate 45.

What is claimed is:

1. In a motor boat, a hull having an opening through its bottom adjacent to its bow, a housing having an opening registering with said hull opening, said housing being attached to the boat's bottom in an underlying relation to said hull opening, there being a spacious water intake opening in the front portion of said housing and correspondingly spacious rearwardly di-

rected water outlet means leading divergingly therefrom, an elongated upstanding drum having its lower end in a surrounding, water tight relation to said hull opening, a motor including a basal plate detachably carried by and water-sealing the upper part of said drum, a propeller located below said registering openings, and means operatively connecting said motor and propeller to drive the latter in a direction to create a sternal movement of the water through said housing and diverging outlet means.

2. In a motor boat, a hull, a housing secured to the bottom thereof, said housing having a fore portion provided with a spacious water intake opening and aft portion furnished with means to discharge the water admitted through said opening, said intake opening being guarded by a grille which as viewed in front is concave from side to side of the boat, and a rudder mounted upon the hull forwardly of said grille to swing about a vertical axis, said rudder having a sternally directed trailing edge which moves through an arc corresponding to the concavity of said grille and adjacent to the latter to remove debris therefrom.

3. In a boat having a propeller located beneath its bottom and driving means for said propeller extending thereto from the interior of the boat, a housing comprising means attachable to the bottom of the boat to sustain said housing in a position to inclose said propeller, said housing having a fore opening and diverging aft openings to admit and discharge the stream of water created by the operation of said propeller.

4. In a motor boat, a hull having an opening through its bottom, means surrounding said opening to prevent water entering the boat there-through and at the same time affording a passage through which a propeller and driving means therefor may be inserted, and a housing comprising means attachable to the bottom of the boat in a surrounding relation to said opening to support said housing in a position to contain a propeller introduced therinto as aforesaid, said housing having a fore opening and diverging aft openings to admit and discharge the stream of water created by operation of the motor.

5. The subject matter of claim 4 and, said attaching means comprising a flange carried by said housing, and common fastening means connecting the first said means and said attaching means.

6. In a motor boat, a propeller supported by the boat in a subjacent relation to its bottom, a housing for said propeller secured to the boat's bottom, said housing having a sternally directed water outlet and a forwardly directed water inlet, a sternally concaved grille guarding said water inlet, and a swingable rudder mounted in a forwardly adjacent relation to said grille, said rudder having a trailing edge which sweeps across the front side of said grille to remove rubbish therefrom.

7. The subject matter of claim 6 and, said sternally directed water outlet comprising twin symmetrical disposed tunnels, the front ends of said tunnels converging till they meet and communicate with said housing.

8. The subject matter of claim 6 and, said

sternally directed water outlet comprising twin symmetrical disposed tunnels, the front ends of said tunnels converging till they meet and communicate with said housing, said tunnels being obliquely cut across at their external ends.

9. The subject matter of claim 3 and, said fore opening being guarded by a grille which as viewed in front is concave from side to side of the boat, and a rudder mounted upon the hull of the boat forwardly of said grille to swing about a vertical axis, said rudder having a sternally directed trailing edge which moves through an arc corresponding to the concavity of said grille and adjacent to the latter to remove debris therefrom.

10. In a motor boat, a hull having an opening through its bottom adjacent to its bow, a housing having an opening registering with said hull opening, said housing being attached to the boat's bottom in an underlying relation to said hull opening, there being a spacious water intake opening in the front portion of said housing and correspondingly spacious rearwardly directed water outlet means leading therefrom, an elongated upstanding drum having its lower end in a surrounding, water tight relation to said hull opening, a motor including a basal plate detachably carried by and water sealing the upper part of said drum, a propeller located below said registering openings, and means operatively connecting said motor and propeller to drive the latter in a direction to create a sternal movement of the water through said housing, said motor propeller and driving means for said propeller comprising a portable unit and being in a unitary manner bodily removable without pre-adjustment from and re-attachable to said drum.

11. In a motor boat, a hull having an opening through its bottom adjacent to its bow, a housing having an opening registering with said hull opening, said housing being attached to the boat's bottom in an underlying relation to said hull opening, there being a spacious water intake opening in the front portion of said housing and correspondingly spacious rearwardly directed water outlet means leading divergingly therefrom, a band of iron underlying said housing along its midwidth, the front end of said band iron being twisted to approximately a vertical plane and secured to one side of the lower part of the bow of the hull and the sternal end of said band being secured in a flatwise manner to the bottom of the hull rearwardly of said housing, a propeller in said housing, driving means in the hull operatively connected with said propeller, said intake opening being guarded by a grille which as viewed in front is concave from side to side of the boat, a rudder including a post mounted upon the hull forwardly of said grille to swing about a vertical axis, and a bearing carried by the front end portion of said band iron adjacent said twist in which the lower end of said rudder post is mounted, said rudder having a sternally directed trailing edge which moves through an arc corresponding to the concavity of said grille and adjacent to the latter and a nose portion movable through an arc rearwardly of the trailing edge of the front end of said band and adjacent said twist.

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