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PROPELLING MECHANISM FOR BOATS

Original Filed Oct. 5, 1925

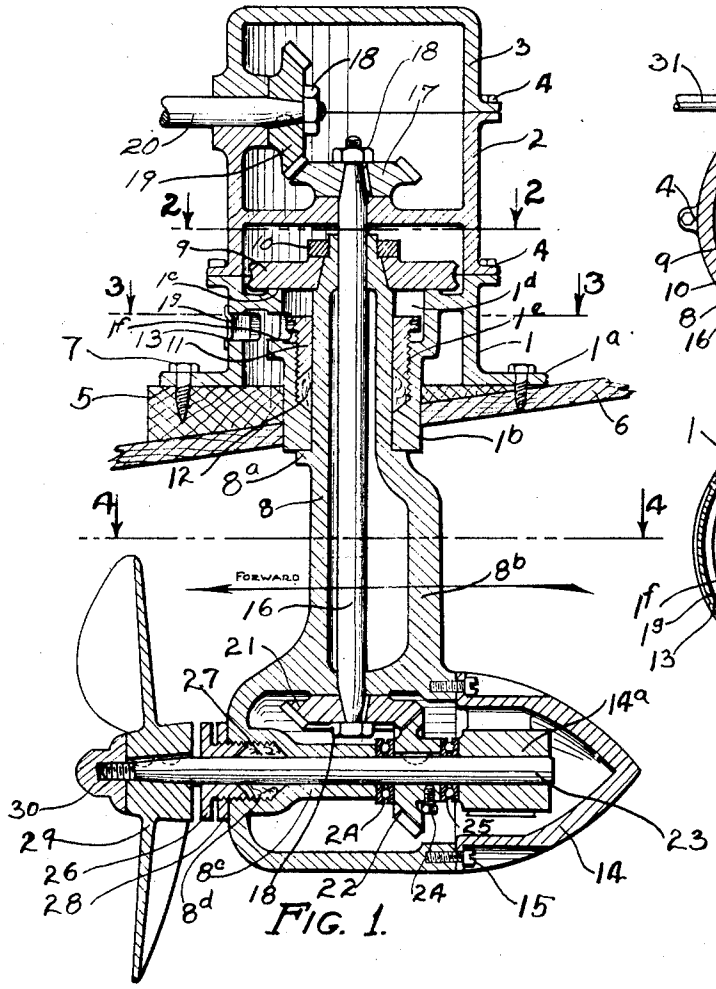


FIG. 1.

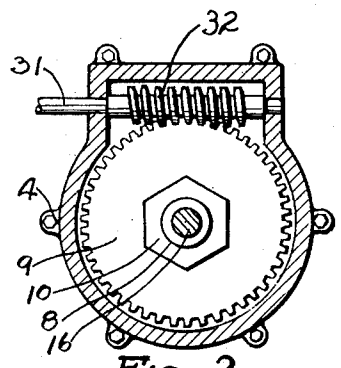


FIG. 2.

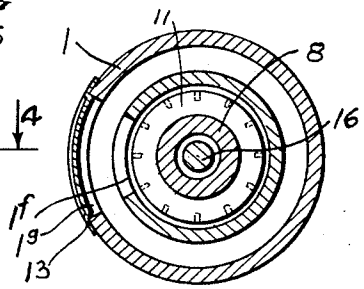


FIG. 3.

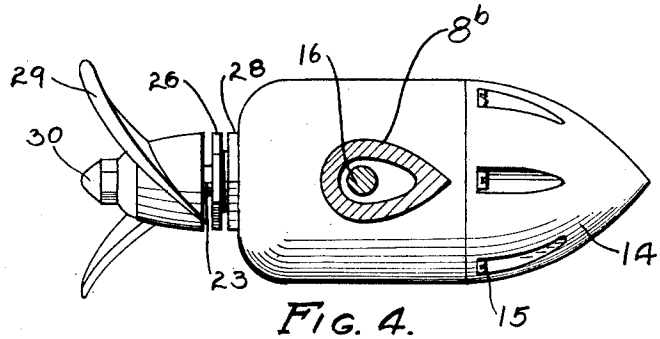


FIG. 4.

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UNITED STATES PATENT OFFICE.

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PROPELLING MECHANISM FOR BOATS.

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My invention relates to a traction boat propelling mechanism adapted for large as well as small boats.

The objects of my invention are: first, to provide a propelling mechanism for boats in which the screw propeller is unobstructed at its front end and adapted to draw substantially live water into the propeller at all times, thus materially increasing its efficiency; second, to provide a boat propelling mechanism in which the axis of the propeller shaft is positioned horizontally and extends normally from front to aft, the forward or entering end of the propeller shaft being provided with a propeller, providing a traction propelling means for boats in which the water adapted to be drawn through the propeller is undisturbed by any propeller supporting or driving mechanism; third, to provide a compact propelling mechanism for boats in which the propeller and propeller shaft are revolubly supported at the lower end of a housing stream-line below the hull of the boat and rotatably supported at its upper end through the hull for directionally changing the axis of the propeller shaft for steering the boat; fourth, to provide a propelling mechanism of this class in which the propeller may be completely rotated about a vertical axis so that the direction of the ship may be easily controlled without a rudder and whereby the ship may be easily reversed, without reversing the engine or by interposed gear mechanism; fifth, to provide a traction propelling mechanism which is applicable for propelling large, as well as small, boats; sixth, to provide a propelling mechanism for boats which may be very easily dismantled for repairing the same; seventh, to provide as a whole a novelly constructed propelling mechanism for boats, and eighth, to provide a mechanism of this class which is particularly simple and economical of construction, durable, efficient, and which will not readily deteriorate or get out of order

With these and other objects in view, as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, which form a part of this application, in which:

Figure 1 is a sectional elevational view of my propelling mechanism for boats, with the section taken through the longitudinal axis thereof, showing the same mounted in the hull of a boat and extending through the bottom thereof, the boat being shown fragmentarily, certain parts and portions of the propelling mechanism being also shown in elevation to facilitate the illustration; Fig. 2 is a transverse sectional view thereof, taken through 2—2 of Fig. 1, showing the steering gear mechanism thereof; Fig. 3 is a sectional view thereof, taken through 3—3 of Fig. 1, and Fig. 4 is a sectional view thereof, taken through 4—4 of Fig. 1, showing the stream-line shape of the bottom head or end of the rotating housing and the supporting portion thereof extending into the hull of the boat.

Like characters of reference refer to similar parts and portions throughout the several views of the drawings.

In the preferred construction of my boat propelling mechanism, as illustrated in the drawings, the mechanism within the hull of the boat is enclosed in a sectional housing consisting of the housing sections 1, 2 and 3 divided on horizontal planes and bolted together with bolts 4. The lower housing section 1 is provided with a large, laterally extended flange 1^a at its base, which is mounted on a block 5 secured to and in the bottom of the hull 6, the flange 1^a being secured to the block by means of lag screws 7, or other suitable means. The housing section 1 is provided with a central hollow cylindrical portion 1^b, which extends downwardly through the block 5 and the hull of the boat, providing a bearing shoulder at its lower end for a bearing flange 8^a positioned intermediate the ends of the rotatable vertical drive-shaft housing 8. The portion of the housing 8 above the shoulder flange 8^a is also cylindrical and rotatably mounted in the cylindrical portion 1^b of the housing section 1. The upper end of the housing 8 is tapered and threaded for receiving, respectively, the worm gear 9 and a nut 10 for sceuring the gear in place. Said worm gear 9 rests at its under side on an annular face 1^c within the housing section 1 for supporting the rotatable housing 8 against vertical movement within the housing section 1. The upper end of the middle portion of the housing section 1 is recessed, as indicated by 1^d, and internally threaded below the recessed portion, as indicated by 1^e, for receiving a screw-

able stuffing box member 11 for packing a packing 12 around the cylindrical portion of the rotatable housing 8. Through the inner and outer walls of the housing section 1 are provided elongated arcuate openings 1^f and 1^g, respectively, for receiving a spanner wrench for adjusting the stuffing box member 11. Over the opening 1^g is placed a cover 13 for excluding dirt and water from the mechanism.

The portion of the rotatable housing 8 below the shoulder flange 8^a is stream-lined from front to rear, as indicated by 8^b in Fig. 4. The lower end of the rotatable housing is considerably enlarged and merged with the portion 8^b in gradual stream-line curves. This lower enlarged end is provided at its normally rear end with a substantially conical or stream-lined cap 14, which is secured to said enlarged portion by a plurality of screws 15.

Within the housing 8 is revolubly mounted the vertical driveshaft 16, which is tapered at its opposite ends and provided at its upper end with a bevel gear 17 secured in position by a nut 18. The bevel gear 17 rests on a bearing face within the housing section 2, which is bolted to the housing section 1 over the steering worm gear 9. The bevel gear 17 meshes with a similar bevel gear 19 secured, by means of another nut 18, to the normally rear end of the main driveshaft 20 connected or extending from the power plant of the boat.

At the lower end of the driveshaft 16 is secured, by means of a nut 18, another bevel gear 21, which is positioned within the hollow, lower enlarged end of the housing 8 and meshes with a similar bevel gear 22 keyed to the propeller shaft 23, the gear being also secured in non-movable relation to the shaft by means of a screw 24. The propeller shaft 23 is positioned in a substantially horizontal plane and is revolubly mounted intermediate its ends in a journal portion 8^c extending backwardly from the front end of the enlarged portion of the rotatable housing, and also in a journal portion 14^a in the cap 14. At the opposite ends of the bevel gear 22 and around the shaft 23 are provided thrust bearings 24 and 25, which bear against the normally rear end of the journal portion 8^c and the journal portion 14^a of the cap 14, respectively.

In the head end of the enlarged lower end of the rotatable housing 8, around the shaft 23, is a threaded recess 8^d in which is screwed the stuffing box member 26 for retaining the packing 27 in the recess around the shaft, there being provided a lock nut 28 against the front end of the enlarged portion of the housing for retaining the stuffing box member in a certain adjusted position.

At the forward, head or entering end of the propeller shaft 23 is secured, by a hub nut 30, a screw propeller 29. This propeller, it will be noted, is unobstructed at its head, forward or entering portion and not interfered with by any support for the shaft, gearing and the like, but is permitted to work or screw its way into substantially still, undisturbed or live water, thereby materially increasing the efficiency of the propelling mechanism.

The housing sections 1 and 2 are separated on a plane extending transversely with the longitudinal axis of the worm gear 9 and through the transverse axis thereof to permit a worm 32 to be placed within the housing in mesh with the worm gear. This worm 32 is mounted on a steering shaft 31 journaled between the housing sections 1 and 2.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to this particular construction, combination and arrangement, but desire to include in the scope of my invention, the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a motor boat wherein a driven propeller is supported from the bottom of the boat and adapted for pulling the boat: means for supporting the propeller and its housing so that it may be moved for steering purposes, said means including a boat housing extending into the bottom of the boat and affording a stuffing box therefor, a drive shaft housing journaled in said stuffing box in the boat housing, a propeller and shaft supported from said drive shaft housing, means in said drive shaft housing including a drive shaft adapted for operating said propeller, and a steering wheel enclosed by said boat housing and mounted on the upper end of said drive shaft housing for supporting and turning it relative to said boat housing.

2. A motor boat as called for in claim 1, further characterized by the stuffing box of said boat housing being set in from the walls of said boat housing to form an annular bearing face for said steering wheel, and means on said drive shaft housing cooperating with said steering wheel in preventing longitudinal displacement of said drive shaft housing relative to said boat housing.

3. In a motor boat, a sectional housing mounted on the bottom of the boat and providing upper and lower sections, a drive shaft housing depending from said sectional housing, an unobstructed propeller supported from said drive shaft housing, a drive shaft extending from within the upper section of said sectional housing through said drive shaft housing for operating said propeller, and means supported within the lower section of said sectional housing adapted for bodily rotating said drive shaft housing for steer-

ing purposes, said means supporting said drive shaft housing relative to said sectional housing.

4. In a propelling mechanism for a boat, a supporting housing extending through the bottom thereof and secured thereto, a stream-lined vertical-driveshaft and propeller-shaft housing rotatably mounted at its upper end in the supporting housing, a steering gear rotatably mounted in said supporting housing and secured to the upper end of said rotatable housing, another steering gear member rotatably mounted in said supporting housing in mesh with said steering gear with its shaft extending from said housing, a propeller shaft substantially horizontally mounted at the lower end of said rotatable housing and extending beyond one end thereof, a bevel gear mounted on said propeller shaft intermediate its ends, another bevel gear mounted at the lower end of said vertical driveshaft and meshing with said first bevel gear, the lower portion of said rotatable housing being enlarged to receive said gears and generally stream-lined, the tail end of the enlarged portion of said housing being in the form of a removable stream-lined cap to permit ready access to the interior of the lower end of the housing, and thrust bearings on said propeller shaft on either side of the bevel gear mounted thereon, said thrust bearings bearing against shoulders at the lower end of said housing and in the cap thereof.

5. In a propelling mechanism for boats, an upright sectional housing adapted to be supported at its lower end on the bottom of a boat and secured thereto, the central portion of the lower section of said housing being hollow and extended downwardly adapted to project below the bottom of said boat, a rotatable steering housing provided with a flange intermediate its ends and journaled with the portion above said flange in the downwardly extended central portion of the lower section of said housing, the portion of said rotatable housing below said flange being stream-lined from front to rear and considerably enlarged at its lower end, a steering worm gear secured to the upper end of said rotatable housing and bearing against the lower housing section, a substantially vertical driveshaft extending beyond the upper end of said rotatable housing and into the enlarged lower end thereof, the upper end of said driveshaft being extended into another section of said supporting housing and connected with a driveshaft of a power plant, a worm journaled between the lower section and the next upper section of said sectional housing in mesh with said worm gear for rotating and locking said rotatable housing, a propeller shaft revolubly mounted in the lower enlarged end of said rotatable housing, gear means connecting said propeller shaft with the lower end of said vertical driveshaft, and a screw propeller secured to the one end of said propeller shaft.

6. In a propelling mechanism for boats, an upright sectional housing adapted to be supported at its lower end on the bottom of a boat and secured thereto, the central portion of the lower section of said housing being hollow and extended downwardly adapted to project below the bottom of said boat, a rotatable steering housing provided with a flange intermediate its ends and journaled with the portion above said flange in the downwardly extended central portion of the lower section of said housing, the portion of said rotatable housing below said flange being stream-lined from front to rear and considerably enlarged at its lower end, a steering worm gear secured to the upper end of said rotatable housing and bearing against the lower housing section, a substantially vertical driveshaft extending beyond the upper end of said rotatable housing and into the enlarged lower end thereof, the upper end of said driveshaft being extended into another section of said supporting housing and connected with a driveshaft of a power plant, a worm journaled between the lower section and the next upper section of said sectional housing in mesh with said worm gear for rotating and locking said rotatable housing, a propeller shaft revolubly mounted on a substantially horizontal axis in the lower enlarged end of said rotatable housing with its normally forward or head end extending beyond the forward end of the lower enlarged end of said housing, gear means connecting the propeller shaft with the lower end of said vertical driveshaft, and a traction screw propeller unobstructed at its front portion secured to the normally forward entering end of said propeller shaft.

7. In a propelling mechanism for boats, an upright sectional housing adapted to be supported at its lower end on the bottom of a boat and secured thereto, the central portion of the lower section of said housing being hollow and extended downwardly adapted to project below the bottom of said boat, a rotatable steering housing provided with a flange intermediate its ends and journaled with the portion above said flange in the downwardly extended central portion of the lower section of said housing, the portion of said rotatable housing below said flange being stream-lined from front to rear and considerably enlarged at its lower end, a steering worm gear secured to the upper end of said rotatable housing and bearing against the lower housing section, a substantially vertical driveshaft extending beyond the upper end of said rotatable housing and into the enlarged lower end thereof, the upper end of said driveshaft being extended into another section of said supporting housing and connected with a driveshaft of a power plant, a

worm journaled between the lower section and the next upper section of said sectional housing in mesh with said worm gear for rotating and locking said rotatable housing, a propeller shaft revolubly mounted in the lower enlarged end of said rotatable housing, gear means connecting said propeller shaft with the lower end of said vertical driveshaft, a screw propeller secured to the one end of said propeller shaft, and a stuffing box member mounted in the upper portion of the central portion of the lower section of said sectional housing, the side walls of said lower section being provided with openings to permit adjustment of said stuffing box member.

In testimony whereof, I have hereunto set my hand at San Diego, California, this 23d day of September, 1925.

ELMER E. PECK.