Oct. 20, 1953 M. GORSKI 2,655,891

PROPULSION MECHANISM

Filed Aug. 21, 1950

2 Sheets-Sheet 1

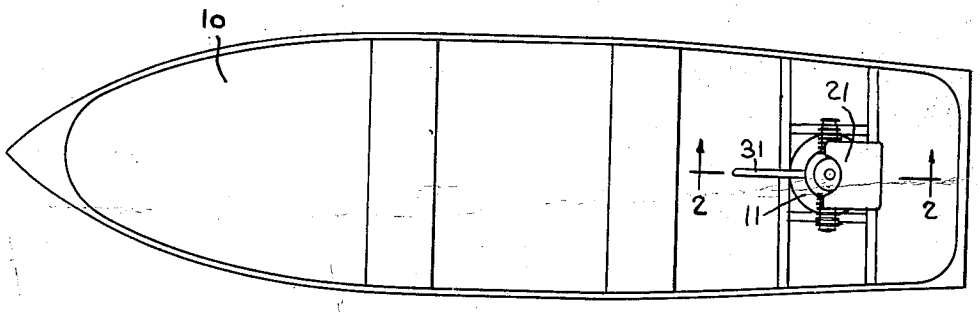


FIG. 1

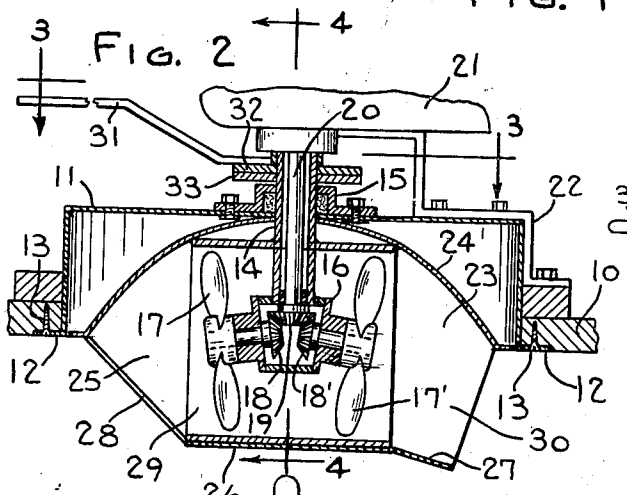


FIG. 2

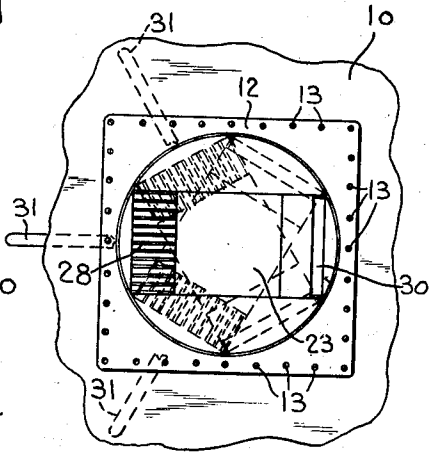


FIG. 9

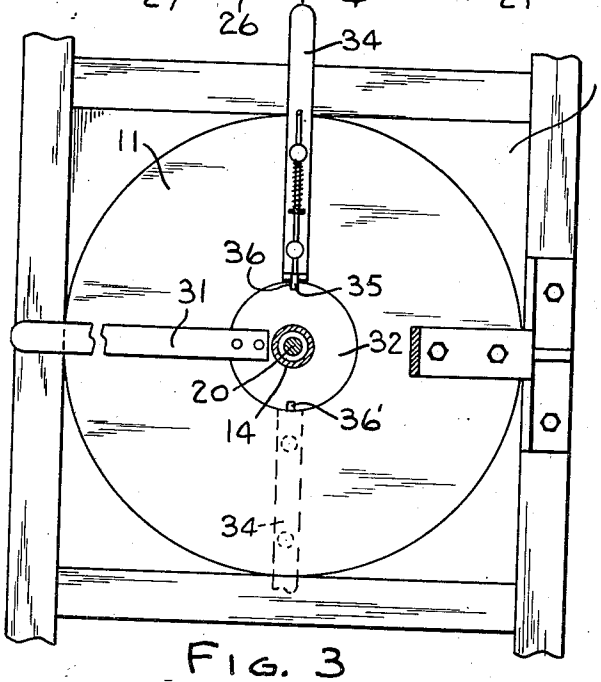


FIG. 3

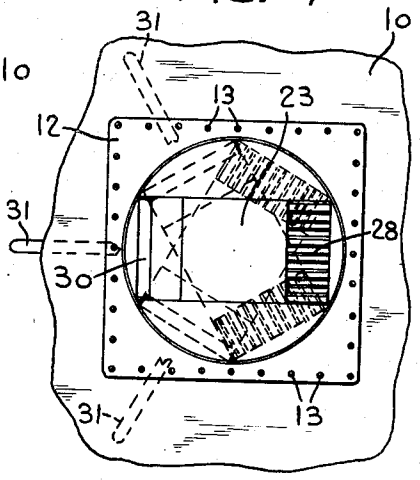


FIG. 10

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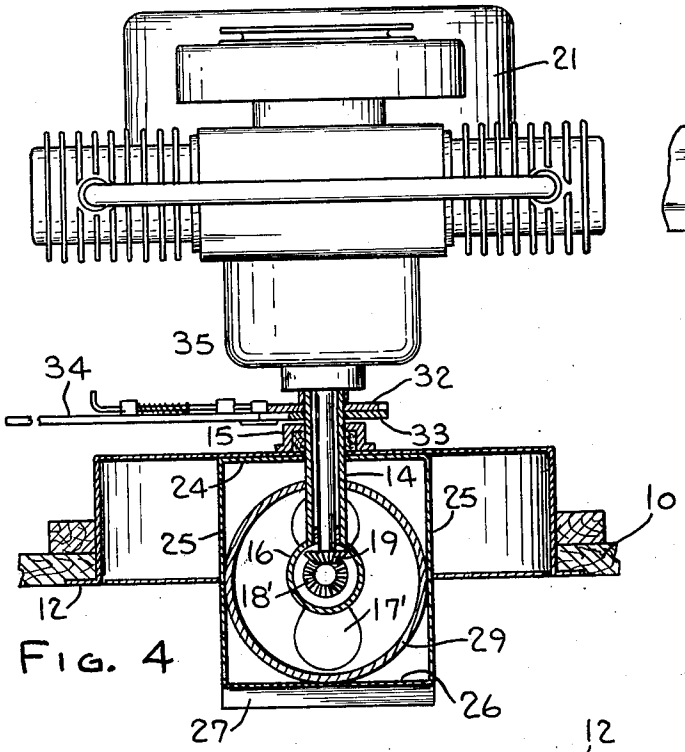


FIG. 4

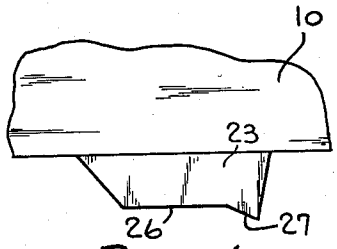


FIG. 6

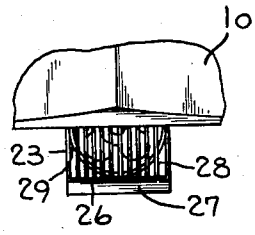


FIG. 7

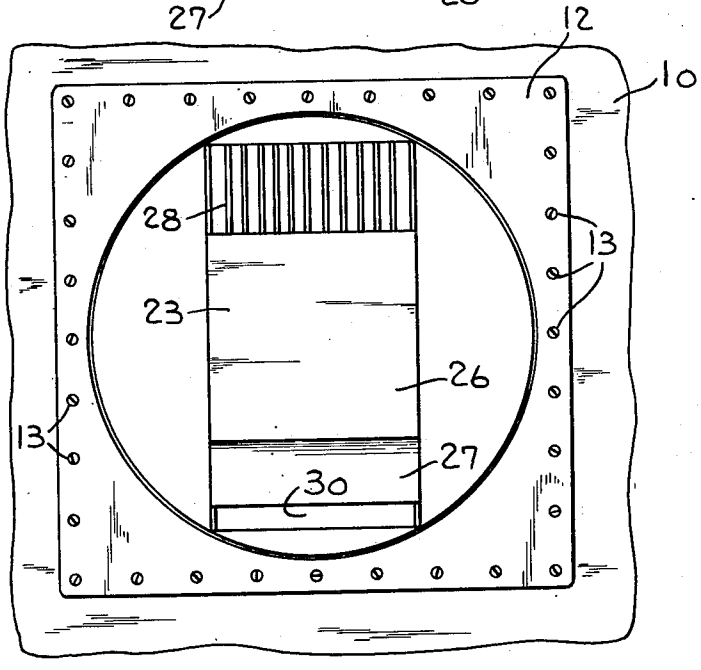


FIG. 5

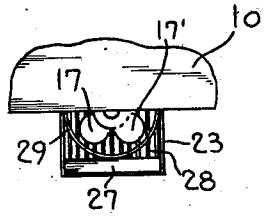


FIG. 8

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PROPULSION MECHANISM

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Application August 21, 1950, Serial No. 180,613

5 Claims. (Cl. 115—35)

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This invention relates to propulsion mechanisms for water-craft.

In propulsion mechanisms as heretofore designed the propeller is ordinarily submerged to a substantial depth in order to insure an effective propulsive effort, and when so submerged it is subject to fouling by weeds and other objects or obstructions in the water. This is true of both inboard and outboard types of propulsion mechanisms heretofore employed.

An object of the present invention is to provide a propulsion mechanism capable of developing an effective propulsive effort with the propeller at minimum or reduced depth, thereby avoiding or minimizing the above noted difficulties and also rendering it adaptable for operation in shallow water.

Another object is to provide a propulsion mechanism possessing the above noted advantageous characteristics and so constructed and arranged as to utilize the propeller for steering purposes and for reversing the direction of operation.

Other more specific objects and advantages will appear, expressed or implied, from the following description of an illustrative embodiment of the present invention.

In the accompanying drawings:

Figure 1 is a plan view of a boat equipped with a propulsion mechanism constructed in accordance with the present invention.

Fig. 2 is a sectional view on a larger scale of the propulsion mechanism shown in Fig. 1, this view being taken along the line 2—2 of Fig. 1.

Fig. 3 is a horizontal sectional view taken along the line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 2 with the attached motor shown in elevation.

Fig. 5 is a bottom plan view of the mechanism shown in Fig. 2.

Figs. 6, 7 and 8 are views in side, front and rear elevation, respectively, of the flow channel structure shown on a larger scale in Figs. 2, 4 and 5.

Figs. 9 and 10 are bottom plan views illustrating various angular positions that the flow channel structure may assume for steering purposes during forward and reverse operation.

Although applicable to other types of water-craft, the propulsion mechanism selected for illustration is shown mounted in a flat bottom boat 10 of otherwise conventional design. The mechanism shown includes a circular housing 11 of inverted cup-like form closely fitted within a circular opening provided in the bottom of the boat. The housing 11 is open at the bottom and equipped with a peripheral mounting flange or plate 12 seated against the under side of the boat and secured in watertight union therewith by suitable means such as screws 13.

The housing 11 provides support for a centrally disposed rotary sleeve 14 projecting vertically through the top thereof, a suitable stuffing box

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15 being provided to seal the joint therebetween. A gear box 16 carried by the lower end of the sleeve 14 provides support for one or more propellers. In this instance two propellers 17 and 17' are shown disposed at opposite sides of the box 16. These propellers are preferably of opposite hand and driven in opposite directions through separate bevel gears 18 and 18', both meshing with a driving bevel gear 19. A shaft 20 journalled in the sleeve 14 and carrying the gear 19 provides a separable driving connection between the propellers and a motor 21 of any known or approved type. In this instance an air cooled vertical motor is shown fixedly supported on an appropriate bracket 22.

It will be noted that by virtue of the housing 11 it is possible to dispose the propellers 17 and 17' at an elevation somewhat higher than would otherwise be possible and higher relative to the bottom of the boat than in propulsion mechanisms heretofore employed. In order to render the propellers effective at this elevation, provision is made for properly directing the course of the water toward and from them. Although this might be accomplished in various ways the arrangement shown for the purpose and which will now be described has proven quite satisfactory.

In the arrangement shown the propellers 17 and 17' are contained in an auxiliary housing 23 designed to provide a flow channel for directing the water in a generally curved course sloping upward toward the propellers and downward away from them. In this instance the housing 23 comprises a longitudinally curved roof portion 24, a pair of substantially flat upright side walls 25, and a bottom wall 26 which is substantially horizontal except for a downwardly deflected portion 27 at the outlet end of the housing. The housing 23 is open at opposite ends except for a protective grill 28 that covers the inlet opening thereof. The housing 23 is internally braced and stiffened by a tubular structure 29 encircling both propellers 17 and 17' and welded to the bottom, top and sides of the housing.

The arrangement is such that the two reversely rotating propellers 17 and 17' coact with each other and with the confined channel in the housing 23 to effect passage of a solid unbroken stream of water therethrough, the leading propeller 17 functioning to induce entry of water into the housing and to deliver the same to the trailing propeller 17', while the latter functions primarily to drive the water through the outlet end 30 of the housing. The two propellers are preferably slightly inclined in opposite directions, the leading propeller 17 being somewhat inclined toward the grill 28 at the intake end of the housing 23, and the trailing impeller 17' being somewhat inclined toward the discharge opening 30.

In the propulsion mechanism shown the auxiliary housing 23 or flow channel is fixed to the sleeve 14 for support thereby and to rotate therewith for steering purposes. Rotation of the

sleeve 14 is in this instance manually controlled by an appropriate handle 31 connected thereto through mechanism adjustable to effect forward or reverse motion of the boat. This adjustable mechanism includes a disk 32 loosely mounted on the sleeve 14 and to which the handle 31 is fixed, and a second disk 33 underlying disk 32 and fixed to the sleeve 14. A second handle 34 attached to the disk 33 is equipped with a spring pressed dog 35 adapted to engage within either of two diametrically disposed peripheral notches 36 and 36' formed in the loose disk 32.

The arrangement is such that, when the dog 35 on the reversing handle 34 is engaged with the notch 36 in disk 32, the steering handle 31 is connected to the housing 23 through the disks 32 and 33 so as to render the housing 23 responsive to angular steering movements of the handle 31. That is to say, when the handle 31 is in the intermediate forwardly extending position shown in full-lines in Fig. 9, the housing 23 assumes the forward driving position shown in full-lines in that figure, and by shifting this handle toward either of the angular positions shown, the housing 23 is correspondingly angularly adjusted for effective steering.

To effect reverse operation, the dog 35 on the reversing lever 34 is withdrawn from the notch 36 and the handle 34 swung through an angle of one hundred eighty degrees, while the steering handle 31 is held stationary and until the dog 35 engages in the other notch 36' in disk 32. This action of the reversing handle 34 turns the housing 23 into the reverse position shown in full lines in Fig. 10 and thus reverses the propulsive effort of the propellers for reverse running. During reverse operation the steering handle 31 remains in a convenient forwardly extending position where it may be readily manipulated for steering purposely in the same manner as above described.

Various changes may be made in the embodiment of the invention hereinabove specifically described without departing from or sacrificing the advantages of the invention as defined in the appended claims.

I claim:

1. In a propulsion mechanism for water craft the combination of a main housing for attachment to the bottom of the craft to close an opening therein, a rotatively adjustable auxiliary housing supported within said main housing, said auxiliary housing defining an open-ended propeller encircling channel, a propeller supporting means in said channel, a propeller on said supporting means, and a shaft in said supporting means for driving said propeller, said channel serving to direct water to and from said propeller to thereby develop an effective propulsive thrust through the action of said propeller and said rotative adjustment of said auxiliary housing serving to provide steering means for the craft.

2. In a propulsion mechanism for water craft the combination of a main housing for attachment to the bottom of the craft to close an opening therein, said main housing having an open bottom and a centrally arranged vertically disposed guide means in its upper surface, an auxiliary housing mounted for rotatable adjustment in said guide means, said auxiliary housing projecting below the open bottom of said main housing, said rotatably adjustable auxiliary housing defining an open ended propeller encircling channel, a propeller supporting means in said channel, a propeller on said supporting means, and a shaft in said supporting means for driving said propeller, said channel serving to direct water to and from said propeller to thereby develop an effective propulsive thrust through the action of said propeller and said rotative adjustment of said auxiliary housing serving to provide steering means for the craft.

3. In a propulsion mechanism for water craft the combination of a main housing for attachment to the bottom of the craft to close an opening therein, said main housing having an open bottom and a centrally arranged vertically disposed guide means in its upper surface, an auxiliary housing mounted for rotatable adjustment in said guide means, said auxiliary housing defining an open ended propeller encircling channel, a propeller supporting means in said channel, a propeller on said supporting means, and a shaft extending through said propeller supporting means and said guide means whereby said auxiliary housing and the axis of said propeller may be rotated to any position of adjustment in a horizontal plane to thereby provide adjustable means for steering the craft.

4. In a propulsion mechanism for water craft the combination of a main housing for attachment to the bottom of the craft to close an opening therein, said main housing having an open bottom and a centrally arranged vertically disposed guide means in its upper surface, a tubular member journaled for rotative adjustment in said guide means, an auxiliary housing supported on said tubular member, said auxiliary housing being partially contained within said main housing and defining an open ended propeller encircling channel, a propeller supporting means in said channel, a propeller on said supporting means, and a propeller driving shaft extending through said tubular member whereby said auxiliary housing and the axis of said propeller may be adjusted to any desired position of rotation in a horizontal plane to provide means for steering the craft.

5. In a propulsion mechanism for water craft the combination of a circular open bottomed main housing for attachment to the bottom of the craft to close an opening therein, an auxiliary housing mounted for rotatable adjustment in a horizontal plane, said auxiliary housing projecting below the open bottom of said main housing and defining an open ended propeller encircling channel, propeller supporting means in said channel, two oppositely rotating propellers mounted in longitudinal spaced relationship on said supporting means in said channel, a shaft in said supporting means for driving said propellers, and manually operable means for effecting rotative adjustment of said auxiliary housing in said main housing to thereby provide adjustable means for steering the craft.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
185,301	Crosby et al.	Dec. 12, 1876
249,191	Mallory	Nov. 8, 1881
1,131,287	Stockemann	Mar. 9, 1915
2,197,534	Szymczak	Apr. 16, 1940

FOREIGN PATENTS

Number	Country	Date
2,804	Great Britain	Feb. 12, 1892
140,985	Great Britain	Apr. 8, 1920
334,994	Germany	Mar. 16, 1921