Sept. 8, 1959 A. W. WANZER 2,902,967

OUTBOARD PROPELLER MECHANISM FOR VESSELS

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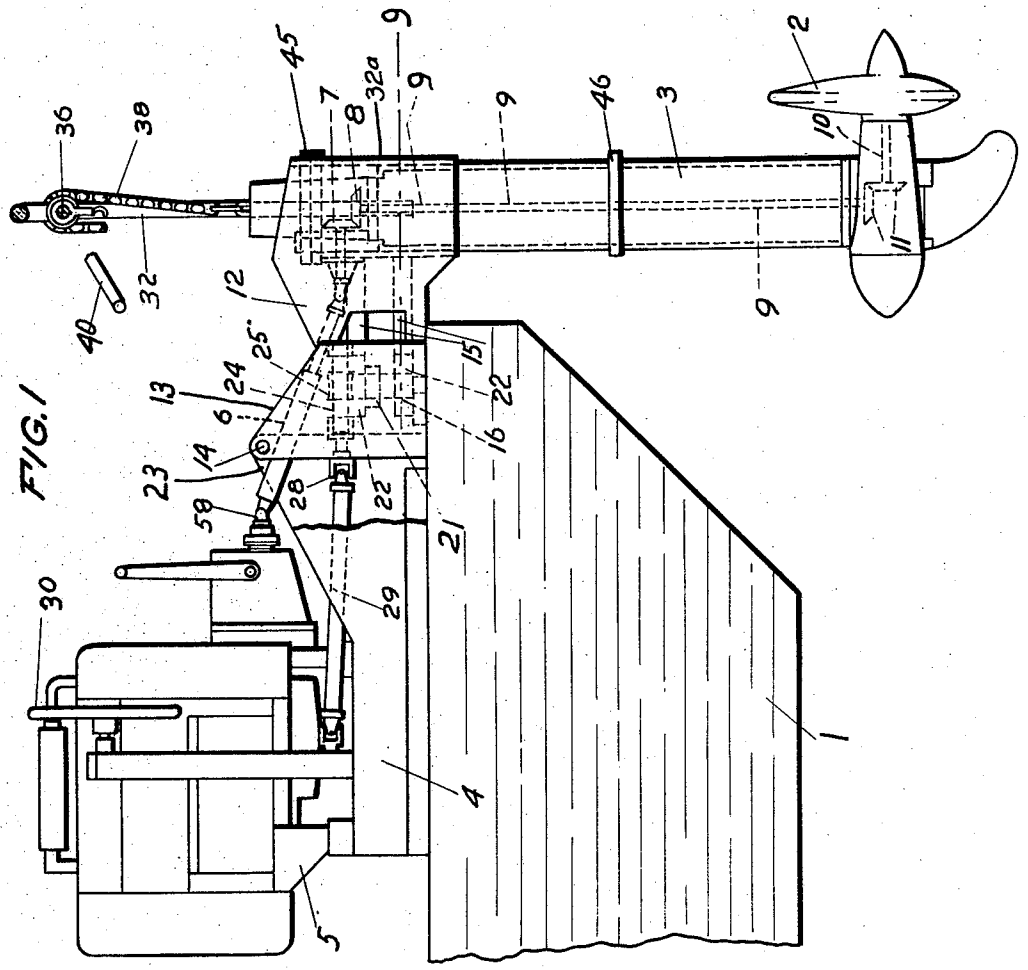


FIG. 1

INVENTOR
ARTHUR W. WANZER
BY Louis C. Smith
INVENTOR

Sept. 8, 1959 A. W. WANZER 2,902,967

OUTBOARD PROPELLER MECHANISM FOR VESSELS

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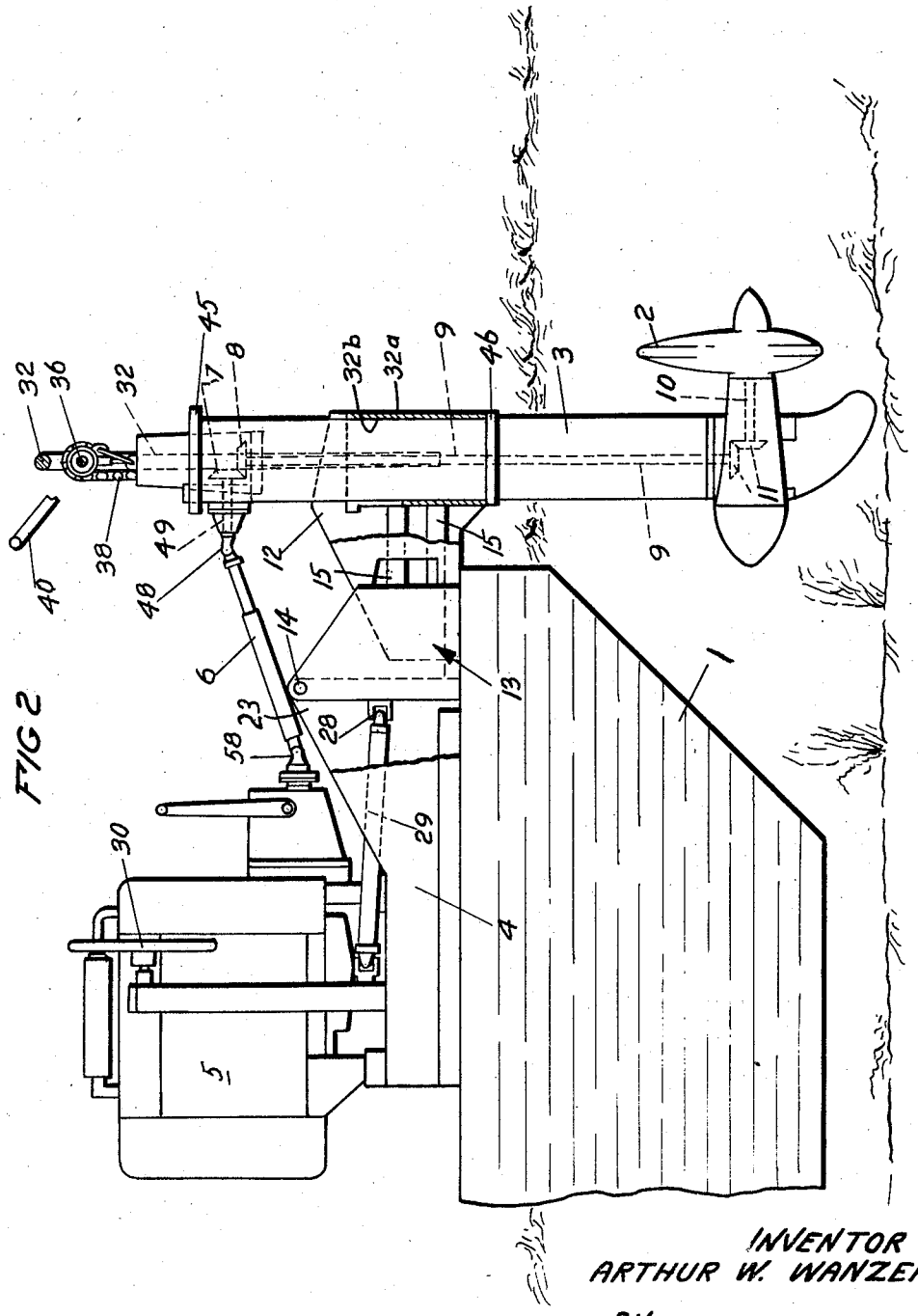


FIG 2

INVENTOR
ARTHUR W. WANZER

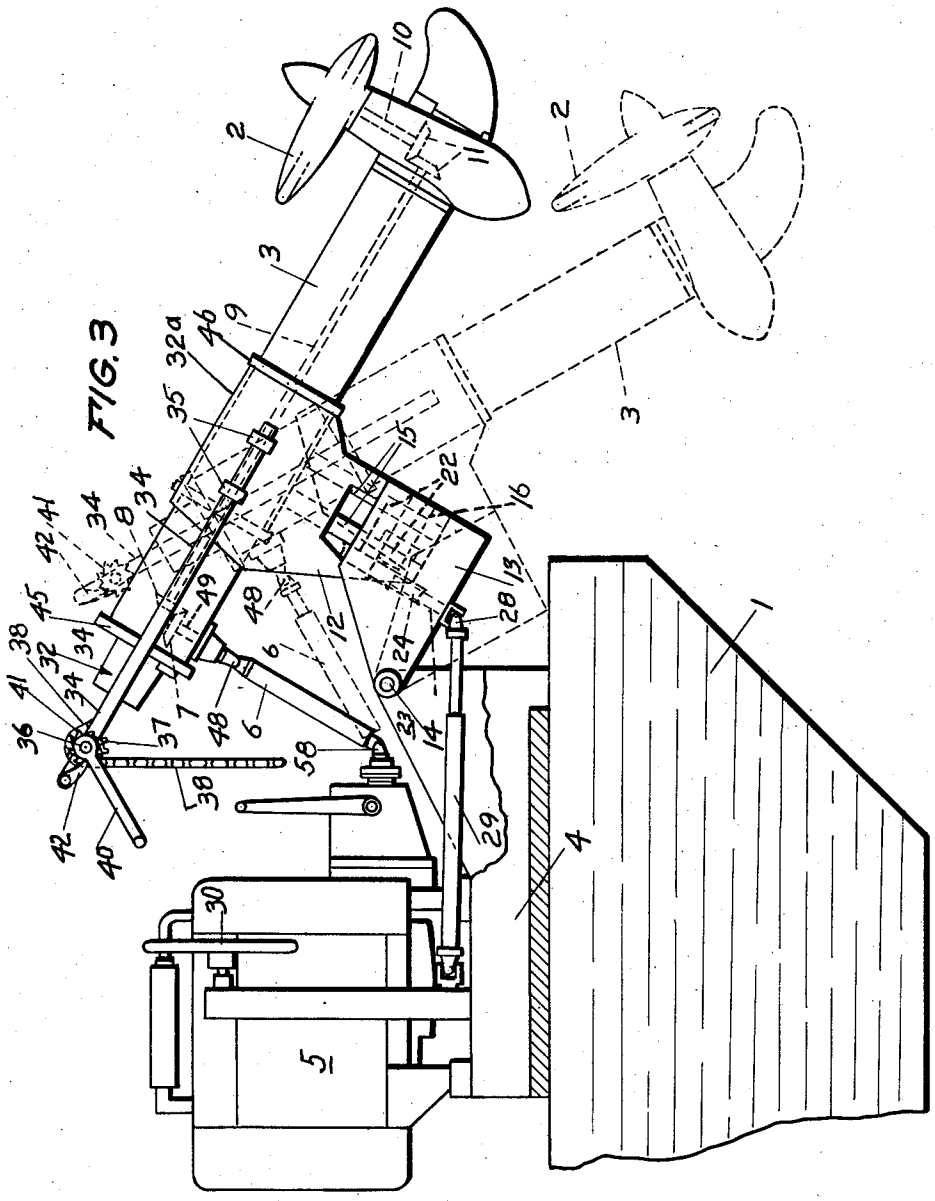
BY Louis C. Smith
ATTORNEY

Sept. 8, 1959 A. W. WANZER 2,902,967

OUTBOARD PROPELLER MECHANISM FOR VESSELS

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FIG. 3



INVENTOR
ARTHUR W. WANZER
BY Louis C. Smith
ATTORNEY

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FIG. 9

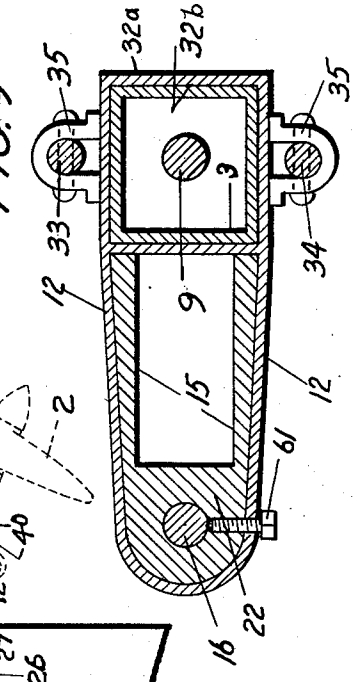
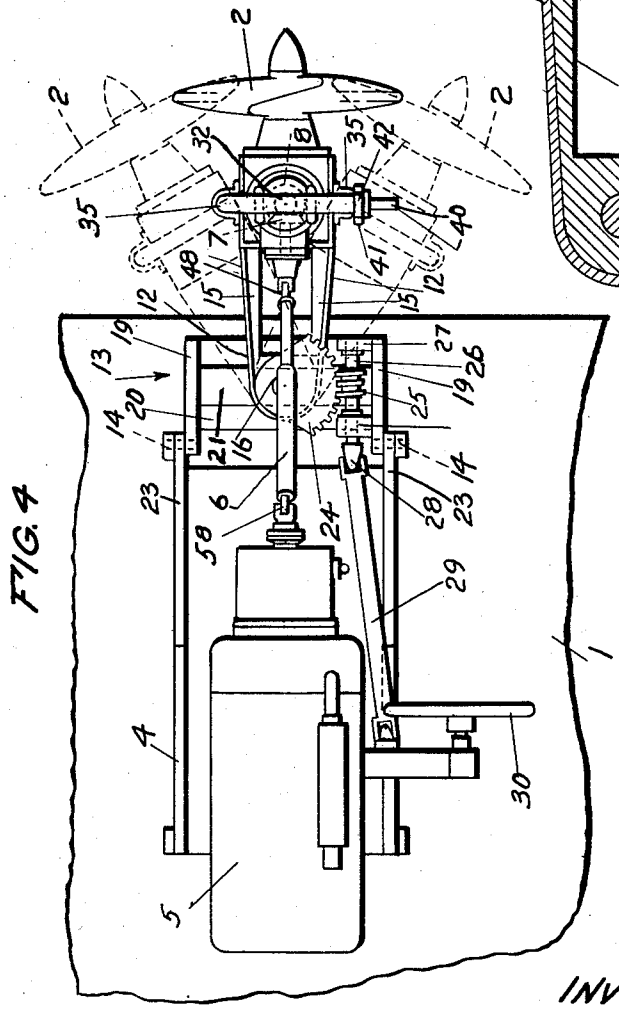


FIG. 4



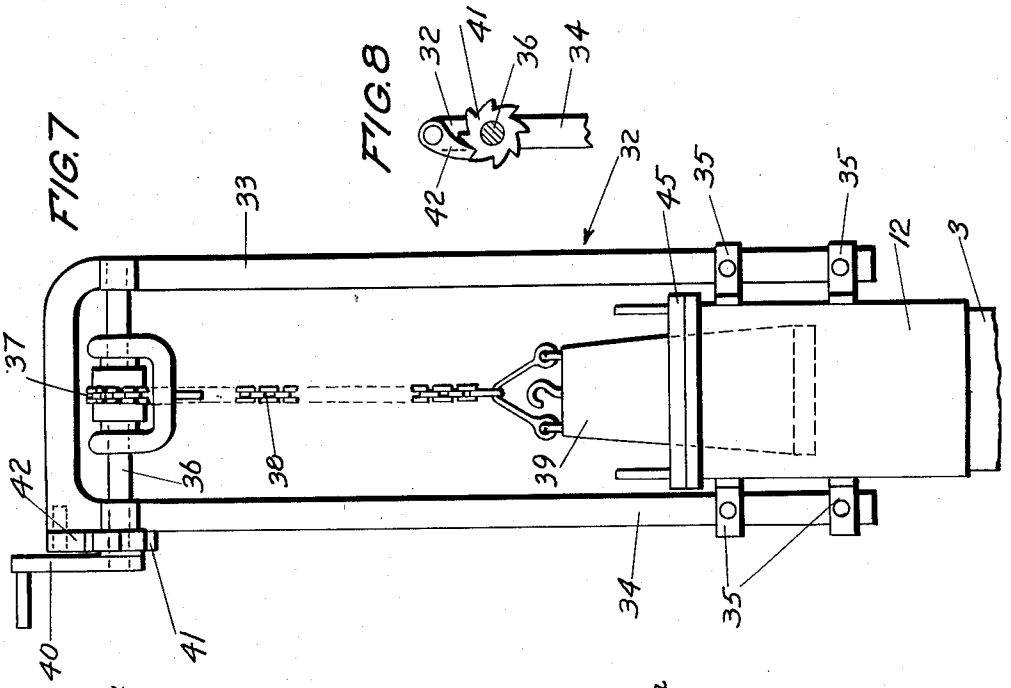
INVENTOR
ARTHUR W. WANZER

BY Louis C. Smith
ATTORNEY

Sept. 8, 1959 A. W. WANZER 2,902,967

OUTBOARD PROPELLER MECHANISM FOR VESSELS

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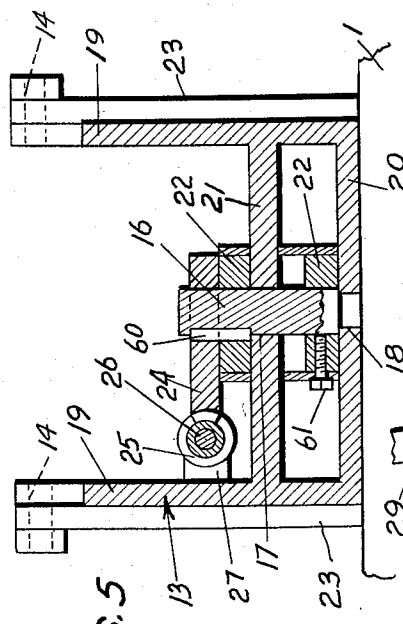


FIG. 5

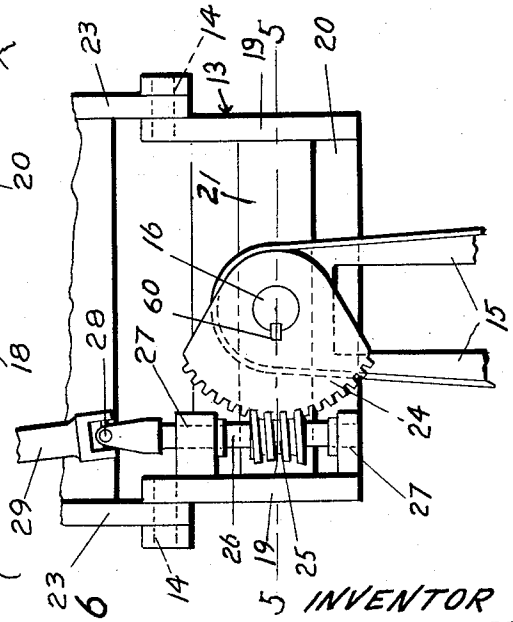


FIG. 6

INVENTOR
ARTHUR W. WANZER
BY Louis C. Smith
ATTORNEY

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2,902,967

OUTBOARD PROPELLER MECHANISM FOR VESSELS

Arthur W. Wanzer, Hingham, Mass.

Application June 1, 1956, Serial No. 588,794

2 Claims. (Cl. 115—41)

This invention relates to outboard propeller mechanism for vessels, and especially outboard propeller mechanism of that type in which the propeller is mounted on the lower end of a vertically depending propeller housing which in turn is mounted to turn about a vertical axis for steering the boat and also a horizontal axis to provide for raising the propeller from or lowering it into the water.

One object of the present invention is to provide improvements in outboard propeller mechanism of the above type in which the propeller housing can be raised and lowered in a vertical line for the purpose of raising and lowering the propeller without swinging the propeller housing about the horizontal axis.

In order to give an understanding of the invention I have illustrated a selected embodiment thereof in the accompanying drawings, in which—

Fig. 1 is a side view of an outboard propeller mechanism embodying my invention and showing it installed on a vessel;

Fig. 2 is a similar view but showing the propeller at a higher level than shown in Fig. 1;

Fig. 3 is a view showing the propeller housing in a raised position resulting from swinging it about the horizontal axis;

Fig. 4 is a top plan view showing the manner in which the propeller housing is swung about a vertical axis for steering the boat;

Fig. 5 is a section on the line 5—5, Fig. 6;

Fig. 6 is a plan view of Fig. 5;

Fig. 7 is a view illustrating means for raising and lowering the propeller housing while it is still in a vertical position;

Fig. 8 is a view showing the ratchet wheel and stop pawl used in connection with raising and lowering the propeller housing;

Fig. 9 is a section on the line 9—9, Fig. 1.

In the drawings, 1 indicates the rear portion of a vessel which is equipped with my improved outboard propeller mechanism. The propeller is indicated at 2 and is supported at the lower end of a propeller housing 3 which is mounted on a supporting base 4 carried by the vessel 1 to turn about both a vertical axis for steering the boat and about a horizontal axis for swinging the housing upwardly.

The supporting base is shown as carrying a power unit 5 by which the propeller is driven, said power unit being connected to the propeller by a transmission shaft 6 which is operatively connected by bevel gears 7, 8 to a vertical shaft 9 that is located within the propeller housing 3, said shaft 9 being connected to the propeller shaft 10 by bevel gears 11.

In the construction herein shown the propeller housing 3 is adjustably carried by a housing support 12 so that the propeller housing can be moved vertically relative to the housing support, thereby raising or lowering the propeller 2 while said housing support remains stationary in the position shown in Figs. 1 and 2.

The housing support 12 extends forwardly from the propeller housing and is pivotally mounted on an intermediate element 13 to turn about a vertical axis as will presently be described. The intermediate element 13 in turn is pivotally mounted on the supporting base 4 to turn about a horizontal axis indicated at 14.

Said intermediate element presents two vertical parallel side members 19 which are spaced from each other and are rigidly connected at their lower portions by a bottom member 20 and a transverse member 21 situated above the bottom member. The side members 19 extend some distance above the transverse member 21, and such extending portions provide between them a free and unobstructed space. The upper front corner of each side member is pivotally connected at 14 to an upstanding portion 23 with which the supporting base is provided, such portions being spaced apart from each other as shown in Fig. 4.

The pivotal connection 14 may be in the form of pivot pins or pivot bolts extending through the overlapping sections of the side members 19 and the upstanding portions 23.

For pivotally connecting the housing support to the intermediate element to turn about a vertical axis, said housing support is made with two forwardly extending arms 15, the forward ends of which are rigid with a vertical shaft 16 which in turn is journaled in bearings 17 and 18 with which the transverse member 21 and bottom member 20 of the intermediate element is provided.

The means for turning the propeller housing 3 and the housing support 12 about the vertical axis 16 is herein shown as including a worm gear 24 fast on the shaft 16 and meshing with a worm 25 on a shaft portion 26 that is journaled in bearings 27 carried by one side member 19 of the intermediate member 13. The worm shaft section 26 is connected by suitable universal joint 28 with a shaft section 29 that is operatively connected by any suitable means with a steering wheel 30 so that by operating the steering wheel the worm shaft 26 can be turned, thereby turning the warm gear 24 and shaft 16 about its vertical axis, and thus swinging the housing support 12 with the propeller housing 3 about said vertical axis as indicated by the full and dotted lines in Fig. 4.

An important feature of the present invention is the manner in which the propeller housing 3 is mounted in the housing support 12 so that said propeller housing can be raised and lowered relative to the housing support, thereby to control the position vertically of the propeller 2.

As illustrated in Fig. 9, the housing support 12 is formed in its rear end with a tube-like portion 32*a* which defines an elongated opening 32*b* through which the upper portion of the propeller housing extends and in which it is vertically movable. Such tube-like portion 32*a* has flat sides and the portion of the propeller housing which extends through said opening has a cross sectional shape and size to fit the shape and size of said opening 32*b*. Said propeller housing thus is free to move vertically in the tube-like portion 32*a* of the housing support but is prevented from having any turning movement about a vertical axis relative to said housing support.

In the construction shown, the tube-like portion 32*a* has a rectangular opening 32*b* and the upper portion of the propeller housing 3 is also rectangular in cross section to fit said opening.

Any suitable means may be provided for raising and lowering the propeller housing relative to the housing support 12 without departing from the invention. As herein illustrated, there is shown a U-shaped stand or frame 32, the legs 33 and 34 of which are rigidly secured to the sides of the tube-like portion 32*a* of the housing support 12, as indicated at 35. This stand supports at its upper end a shaft 36 carrying a sprocket wheel 37 which cooperates

with a sprocket chain 38 that is connected to the upper end 39 of the propeller housing 3. Power may be applied in any suitable way to the shaft 36 for rotating the sprocket wheel 37 and thereby raising the propeller housing 3, and for illustrative purposes only I have shown a crank handle 40 for this purpose. The shaft 36 is shown as having rigid therewith a ratchet wheel 41 with which cooperates a pawl 42 for preventing retrograde movement of the shaft 36.

The propeller housing 3 is provided with a flange 45 which cooperates with the top of the housing support 12 to limit downward movement of the propeller housing, and said propeller housing is provided with a stop projection 46 which cooperates with the lower side of the housing support 12 for limiting the upward movement of the propeller housing with regard to the housing support.

The construction shown thus provides for raising and lowering the propeller 2 in the water while the propeller housing is still in its operative vertical position, and hence if during the progress of the vessel in the water it comes into shallow water where the bottom is only a few inches below the bottom of the vessel, the propeller housing can be raised above the shallow bottom and into clear water, as shown in Fig. 2. If during further progress of the vessel it leaves the area of shallow water and passes into an area of deeper water, then the propeller housing 3 may be lowered to the normal depth shown in Fig. 1.

The driving connection between the power unit and the vertical driving shaft 9 is such that it is operative in any position which the propeller housing may assume as it is adjusted vertically relative to the housing support or when the latter is swung about the horizontal axis 14, as shown in Fig. 3. For this purpose such driving connection includes the shaft connection 6 which has a telescopic construction and which is connected by one universal joint 48 with the short shaft section 49 which is mounted in bearings in the upper end of the propeller housing 3 and on which the bevel gear 7 is mounted and another universal joint 58 which connects the shaft section 6 to the power shaft of the motor unit. The intermediate element provides an open unobstructed space between the upper extended portions of the side members 19, and the upstanding portions 23 of the supporting base provide between them an unobstructed space. When the propeller housing 3 is in its lowered position shown in Fig. 1, the transmission shaft 6 occupies the free and unobstructed spaces between the upstanding portions 23 of the supporting base and the extended portions of the side members 19 of the intermediate element. With this construction, there is nothing to interfere with the downward movement of the transmission shaft 6 when the propeller housing is moved downwardly into its lowered position as shown in Fig. 1.

I claim:

1. An outboard propeller mechanism for vessels comprising a supporting base carrying a power unit and having two spaced-apart parallel upstanding portions, a depending propeller housing carrying a propeller at its lower end, means mounting said propeller housing on the supporting base to swing about a horizontal axis, said means including an intermediate element presenting two vertically extending side members integrally connected at their lower portions by a bottom member and a transverse member, said side members extending some distance above the transverse member and the space between the upwardly extending portions of the side members being free and unobstructed, means pivotally connecting the upper front corners of the side members to said upwardly extending portions of the supporting base thereby to provide for swinging movement of the intermediate element about a horizontal axis, a housing support connected to the intermediate element and extending rearwardly therefrom, said housing support having at its rear end a vertically extending tube-like portion which defines an elongated vertical opening through which the upper end portion of the propeller housing extends, said opening having flat sides and said upper end portion of the propeller housing having a shape and size to fit said opening whereby the propeller housing can be adjusted vertically relative to the housing support into positions between a low position and a high position but is prevented from having turning movement about a vertical axis relative to said housing support, means for rotating the propeller comprising driving gears mounted in the upper end of the propeller housing and operatively connected with the propeller and a transmission shaft connected at one end to said power unit and at the other end to said driving gears, said transmission shaft occupying the open and unobstructed spaces between the upstanding portions of the supporting base and between the upwardly extending portions of the side members of the intermediate element when the propeller housing is located in its low position, and means carried by the housing support for raising and lowering the propeller housing through said opening of the housing support.

2. An outboard propeller mechanism as defined in claim 1 in which the means for raising and lowering the propeller housing includes an inverted U-shaped support member having the lower ends of its legs embracing and rigidly secured to the tube-like portion of the housing support, said support member extending above the housing support, and a lifting connection extending from the top of said support member to the top of the propeller housing by which the latter can be raised.

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