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1,832,061

PROPELLER MOUNTING

Filed Dec. 21, 1929

2 Sheets-Sheet 1

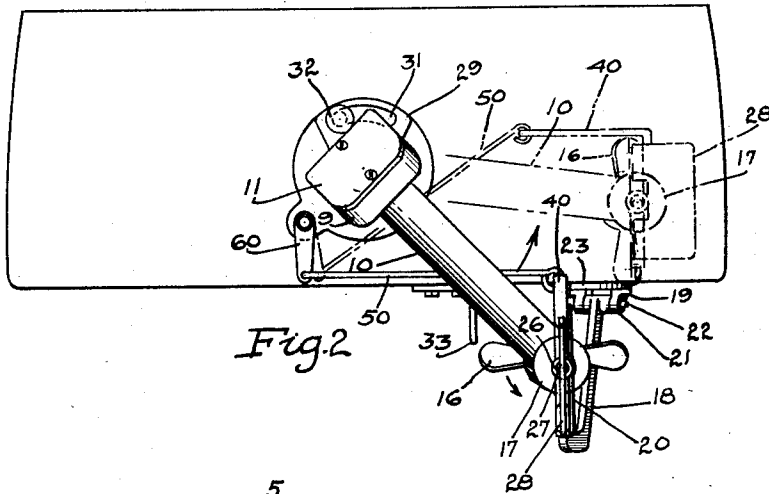


Fig. 2

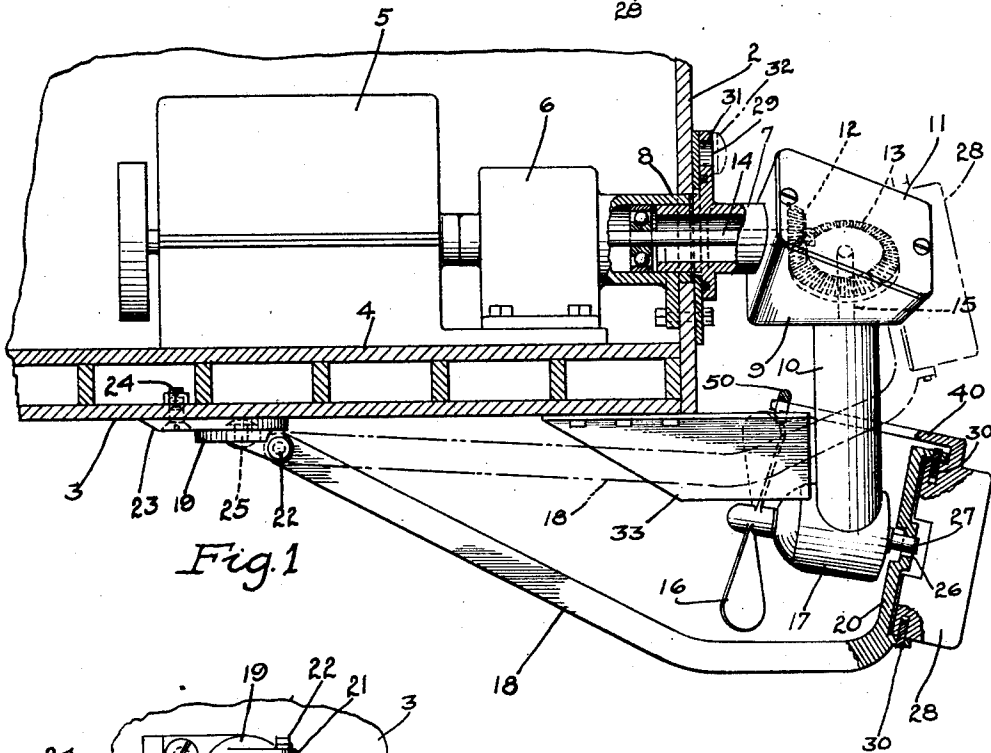


Fig. 1

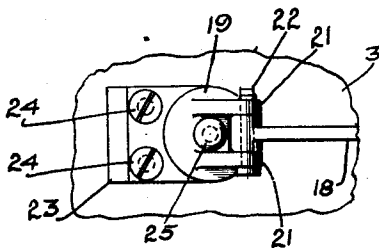


Fig. 3

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2 Sheets-Sheet 2

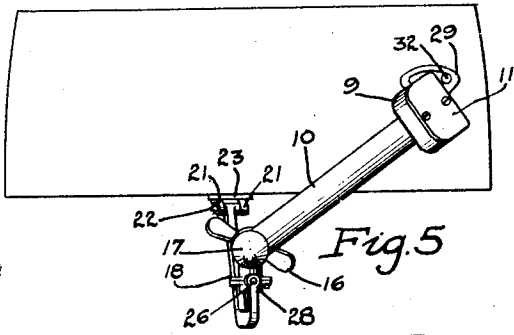


Fig. 5

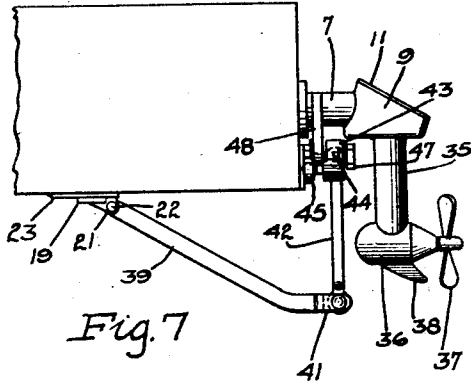


Fig. 7

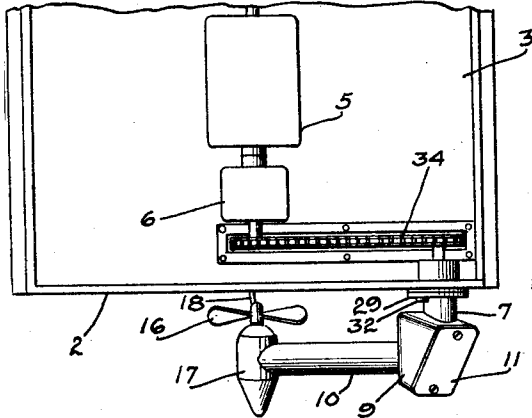


Fig. 6

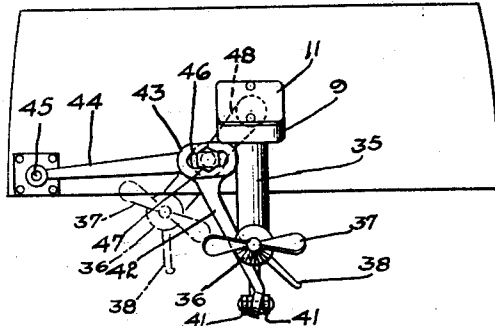


Fig. 8

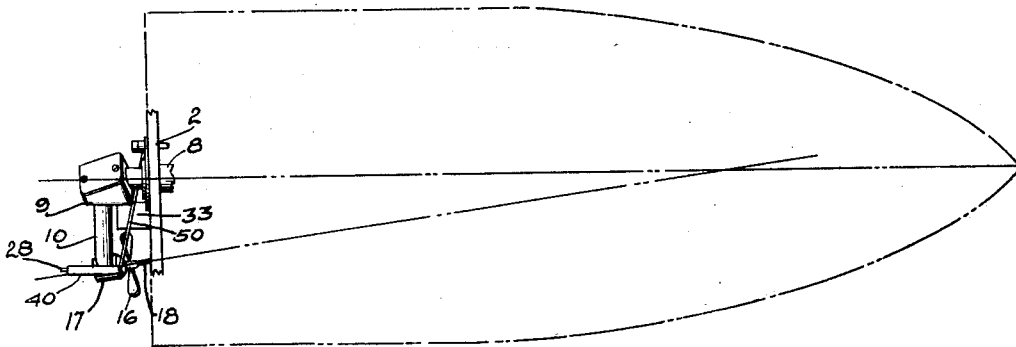


Fig. 4

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PROPELLER MOUNTING

Application filed December 21, 1929. Serial No. 415,854.

This invention relates to improvements in propeller mountings, and an object of the invention is to provide means for automatically raising the propeller to a higher elevation in the water to permit it to pass over an obstruction.

A further object is to provide in connection with a propeller mounting adapted to swing in a plane transversely of the boat, a strut having one end movably connected with the bottom of the boat and its opposite end operatively connected with the propeller mounting and located in such a manner that when the strut strikes an obstruction in the water, it will impart an upward thrust to the propeller mounting and automatically lift the propeller to a higher elevation in the water to permit it to clear the obstruction.

A further object is to provide in combination with a boat having a propeller mounted rearwardly thereof and adapted to swing in a plane transversely of the boat to adjust the position of the propeller in the water, a member located adjacent to the propeller and extending downwardly into the water so as to prevent the propeller from circulating the water in a direction crosswise of the boat, thereby preventing the boat from turning as a result of the paddling effect of the propeller when near the surface of the water.

A further object is to provide a propeller support adapted for swinging movement whereby the propeller may be adjusted to different elevations in the water, and the support having a strut connected therewith and adapted to strike an obstruction in the water and lift the propeller so as to clear such obstruction, and a rudder or steering member being operatively connected with the propeller support and said strut and movable therewith.

Other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings, there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown as

various changes may be made within the scope of the claims which follow.

In the drawings:

Figure 1 is a view illustrating the rear portion of a boat having a propeller supported thereon and showing the invention applied thereto;

Figure 2 is a rear end view of Figure 1 showing the propeller in an operative position;

Figure 3 is a view showing the movable connection between one end of the strut and the bottom of the boat;

Figure 4 is a plan view of Figure 2;

Figure 5 is a view similar to Figure 2 but showing the propeller mounting located in the boat so that the propeller when in operative position will be substantially aligned with the longitudinal center line of the boat;

Figure 6 is a plan view of Figure 5 showing the driving connection between the propeller mounting and the engine;

Figure 7 is a side elevation of a modified construction wherein the strut is not connected directly with the propeller mounting; and

Figure 8 is a rear view of Figure 7.

In the selected embodiment of the invention here shown, there is illustrated in Figures 1 and 2, the rear end portion of a conventional type of boat including a rear wall 2, bottom 3, and floor 4, upon which the usual engine 5 is shown mounted. A transmission case 6 is shown operatively connected with the engine and includes the usual mechanism, not shown, for controlling the speed and direction of rotation of the propeller.

The propeller, as shown, comprises a revoluble support 7 mounted in a suitable bearing 8 which may be connected with the transmission case 6, and is preferably supported in the rear wall 2 of the boat, as shown in Figure 1. A suitable housing 9 is provided at one end of the revoluble support 7 and has a tubular member 10 secured thereto adapted to swing in a plane transversely of the boat. A cover 11 is secured to the housing 9 whereby access may be had to the interior of the housing. Suitable

gears 12 and 13 are provided within the housing 9 for operatively connecting one end of a drive shaft 14 with an intermediate shaft 14 with an intermediate shaft 15, the lower end of which is operatively connected with the propeller 16 by suitable means, not shown. The opposite end of the drive shaft 14 is suitably connected with the engine crank shaft within the transmission case 6, as is customary in drives of this character.

A feature of this invention resides in the means provided for automatically lifting the propeller 16 to a higher elevation in the water to permit it to pass over an obstruction. In the form shown in Figures 1 and 2, the revoluble support 7 is shown aligned with the transmission case 6 and engine 5, the latter two being shown located substantially in the center of the boat. The propeller, however, is offset to one side as shown in Figure 2, so that an upward thrust exerted against the lower housing 17 provided at the lower end of the tubular member 10, will cause the mounting to swing upwardly in the direction indicated by the arrow in Figure 2, or to the dotted line position shown in this figure.

A strut 18 has one end movably connected with the bottom of the boat by such means as a plate 19 having a pair of spaced ears 21 between which the upper end of the strut 18 is supported. A suitable pin 22 passes through apertures provided in the ears 21 and an aperture provided in the end of the strut 18, so as to pivotally connect the strut to the plate 19. The plate 19, which may be made circular as shown in Figure 3, is rotatably connected with a fixed plate 23 suitably secured to the bottom wall 3 of the boat, by such means as bolts 24. The plate 19 is connected with the stationary plate 23 by means of a pivot pin 25.

The opposite or rear end portion 20 of the strut 18 is preferably shaped as shown, and has an aperture 26 therein adapted to loosely receive a rearwardly extending pin 27 mounted in the housing 17. It will thus be seen that the connection between the lower end of the strut 18 and the housing 17, and also the universal connection between the opposite end of the strut and the bottom of the boat, permit the support 10-17 to swing without interference. The connection between the upper end of the strut and the bottom of the boat is also constructed in such a manner that the strut cannot rotate or tilt on a longitudinal axis.

Another feature of the invention resides in the means provided for guiding and steering the boat. Referring to Figures 1 and 2, it will be noted that a rudder 28 is pivotally mounted upon the rear end portion 20 of the strut 18 by suitable pivot pins 30. An

arm 40 may be connected with the upper portion of the rudder and preferably extends forwardly as shown. A connection 50 connects the arm 40 with a suitable operator 60, shown in Figure 2. Means, not shown, are provided within the boat for actuating the operator 60 to control turning movement of the boat. By thus supporting the rudder upon the strut, the rudder will be moved upwardly together with the housing.

Means is preferably provided for limiting the travel of the propeller mounting and may consist of a flange 29, preferably integrally formed with the revoluble support 7 and having a slot 31 therein, which is here shown traversed by a bolt or stud 32 secured to the rear wall of the boat. The length of the slot 31 is such that when the propeller is in the operative position shown in full lines in Figure 1, the stud 32 will be engaged with one end of the slot and, conversely, when the propeller is in the dotted line position shown in Figure 2, the stud will be engaged with the opposite end of the slot 31.

The angular position of the tubular member 10, when in normal operative position, permits the propeller mounting to be easily moved upwardly when the strut engages an obstruction in the water and exerts an upward thrust thereagainst.

In Figure 4, the axis of the propeller is shown disposed at a slight angle with respect to the longitudinal center line of the boat for the purpose of compensating for the offsetting of the propeller from the longitudinal center line of the boat.

A plate 33 is secured to the bottom of the boat and extends downwardly and rearwardly therefrom, as shown in Figure 1, to minimize the paddling effect of the propeller when partially lifted out of the water. By the use of this plate, the paddling effect of the propeller is substantially eliminated, so that the boat will continue forwardly in substantially a straight line, regardless of the position of the propeller with respect to the bottom of the boat.

Figures 5 and 6 illustrate a modified construction wherein the revoluble support 7 of the propeller mounting is located to one side of the boat so as to locate the propeller substantially in the longitudinal center line of the boat. When the propeller mounting is thus supported, a suitable driving connection such, for example, as a chain drive 34 may be provided between the drive shaft 14 of the mounting and the transmission 6.

Figures 7 and 8 illustrate another modification wherein the propeller mounting is supported in the center of the boat in alignment with the engine and transmission, and the tubular member 35 of the propeller mounting extends directly downwardly from the housing 9. In the form here shown, a housing 36 is provided at the lower end of

the tubular member 35, upon which the propeller 37 is supported in a suitable manner.

The housing 36 has a fin 38 which preferably is arranged at an angle with respect to the axis of the tubular supporting member 35, as shown in Figure 8, so that when the member 35 is swung to the dotted line position shown in Figure 8, the fin 38 will extend directly downwardly from the housing 36 and thus provide a guard for the propeller blades and prevent them from striking an obstruction over which the boat may be passing.

The means provided for automatically lifting the propeller shown in Figures 7 and 8, to a higher elevation in the water when the boat passes over an obstruction, consists of a strut 39 having its upper end connected to the boat in a manner similar to that shown and described with reference to Figure 1. The opposite end of the strut has a fork 41 to which a depending leg 42 of a bell crank 43 is pivotally connected. The other leg 44 of the bell crank 43 is shown pivotally connected to the rear lower left hand corner of the boat, as indicated at 45 in Figure 8. A slot 46 is provided in the intermediate portion of the bell crank 43 adapted to receive a stud 47 secured to the lower end of an arm 48 which has its other end suitably secured to the revoluble support 7. In the form shown in Figures 7 and 8, when an obstruction strikes the strut 39, an upward force will be exerted against the lower leg 42 of the bell crank 43, thereby causing the bell crank to swing upwardly, which, in turn, will cause the arm 48 to be swung upwardly, resulting in the tubular member 35 and propeller 37 being moved upwardly to the dotted line position indicated in Figure 8. In this form of construction, it will be noted that the strut is not connected directly to the lower end of the propeller mounting for movement therewith, but to the arm 48 provided at the upper end of the mounting.

By the use of the strut 18 in connection with a propeller mounting such as shown in Figures 1 and 2, it will readily be seen that the strut will positively prevent the propeller 16 from striking an obstruction in the water for the reason that when the strut strikes the obstruction, the propeller will immediately be moved upwardly to a safe position and will pass over the obstruction. It will also be seen that the upward force exerted against the propeller mounting to lift it in the water, is applied directly to the outer end of the mounting as a result of the swinging end of the strut being connected directly thereto.

We claim as our invention:

1. The combination with a propeller support mounted to swing in a plane transversely of the boat, of means connected with said support and adapted to engage an obstruction in the water located in the path of the propeller, whereby said means may lift the

propeller and its support over said obstruction.

2. The combination with a propeller support mounted to swing in a plane transversely of the boat, of means connected with said support and positioned below and ahead of the propeller so as to strike an obstruction located in the path of the propeller, whereby said means may lift the propeller and its support over said obstruction.

3. The combination with a propeller support mounted to swing in a plane transversely of the boat, of means connected with said support and with the boat and mounted to swing in a plane lengthwise of the boat, said means being positioned below and ahead of the propeller so as to strike an obstruction which may be located in the path of the propeller, whereby said means may lift the propeller and its support over said obstruction.

4. The combination with a propeller support mounted to swing in a plane transversely of the boat, of means movably connected with the lower portion of said propeller support and with the bottom of the boat and positioned to engage an obstruction located in the path of the propeller, whereby said means may lift the propeller and its support over said obstruction.

5. The combination with a propeller support mounted to swing in a plane transversely of the boat, of a strut having one end movably connected with the lower portion of said support and its opposite end movably connected with the bottom of the boat, said strut being positioned to engage an obstruction located in the path of the propeller, whereby said strut may lift the propeller and its support over said obstruction.

6. The combination with a propeller mounting including a revoluble support having a member depending therefrom and provided with a propeller, said revoluble support permitting swinging movement of said member and propeller in a plane transversely of the boat, of a strut having one end movably connected with the lower portion of said member and its other end connected with the boat ahead of the propeller and adapted for universal movement, said strut being adapted to swing in a plane lengthwise of the boat so that pressure brought to bear thereagainst by an obstruction in the water will cause said strut to lift the propeller to a higher elevation and prevent it from striking said obstruction.

7. The combination with a propeller support mounted to swing in a plane transversely of the boat, of means connected with said support and adapted to engage an obstruction in the water located in the path of the propeller, whereby said means may lift the propeller and its support over said obstruction, and means for minimizing the paddling effect of the propeller when the latter is ad-

justed to a position near the surface of the water.

8. The combination with a propeller support mounted for swinging movement, of a strut having one end connected with the lower portion of said support and its opposite end extending forwardly and upwardly and connected with the bottom of the boat whereby said strut may strike an obstruction in the water and lift the propeller and its support to a higher elevation to clear said obstruction, and means capable of minimizing the paddling effect of the propeller when the latter is adjusted to a position near the surface of the water.

9. The combination with a propeller support mounted for swinging movement, of a strut having one end connected with the lower portion of said support and its opposite end extending forwardly and upwardly and connected with the bottom of the boat whereby said strut may strike an obstruction in the water and lift the propeller and its support to a higher elevation to clear said obstruction, and a plate located adjacent to said support adapted to minimize the paddling effect of the propeller when the latter is adjusted to a position near the surface of the water.

10. The combination with a propeller support mounted to swing in a plane transversely of the boat, of a strut having a movable connection with the lower portion of said support and with the bottom of the boat and positioned to engage an obstruction located in the path of the propeller, whereby said strut may lift the propeller and its support over said obstruction.

11. The combination with a propeller support mounted to swing in a plane transversely of the boat, of a strut having one end movably connected with the lower portion of said propeller support and its opposite end movably connected with the bottom of the boat and positioned to engage an obstruction located in the path of the propeller, whereby said strut may lift the propeller and its support over said obstruction, and a boat-guiding means supported on said strut.

12. The combination with a propeller mounting including a revoluble support mounted to swing in a plane transversely of the boat and having a propeller operatively mounted thereon whereby said propeller may be adjusted to a higher elevation in the water, of a strut, one end of which is movably connected with the swingable portion of said support and its other end having a universal connection with the boat ahead of the propeller, said strut being adapted to be actuated by an obstruction in the water to lift the propeller to a higher elevation and prevent it from striking said obstruction, a rudder pivotally supported upon said strut and movable therewith, and means whereby said

rudder may be retained in substantially a vertical position regardless of the position of the propeller in the water.

13. The combination with a propeller support mounted to swing in a plane transversely of the boat, of a rudder movably connected with said support and adapted to swing therewith, and means independent of the support for actuating said rudder.

14. The combination with a propeller support mounted to swing in a plane transversely of the boat, of a rudder mounted upon said support and movable therewith, and means for retaining said rudder in substantially a vertical plane regardless of the position of said support.

In witness whereof, we have hereunto set our hands this 19th day of December 1929.

ROBERT T. SVENDSEN.

DAVID G. CHANDLER.