

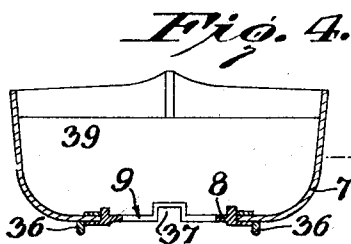
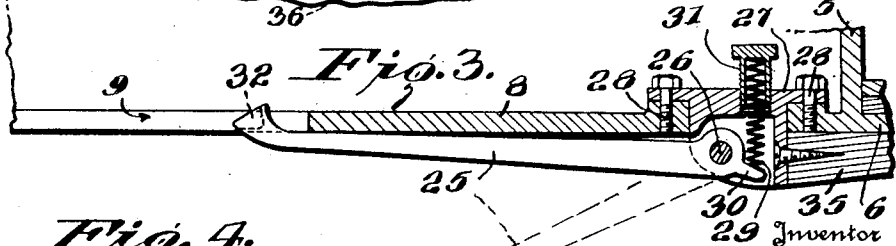
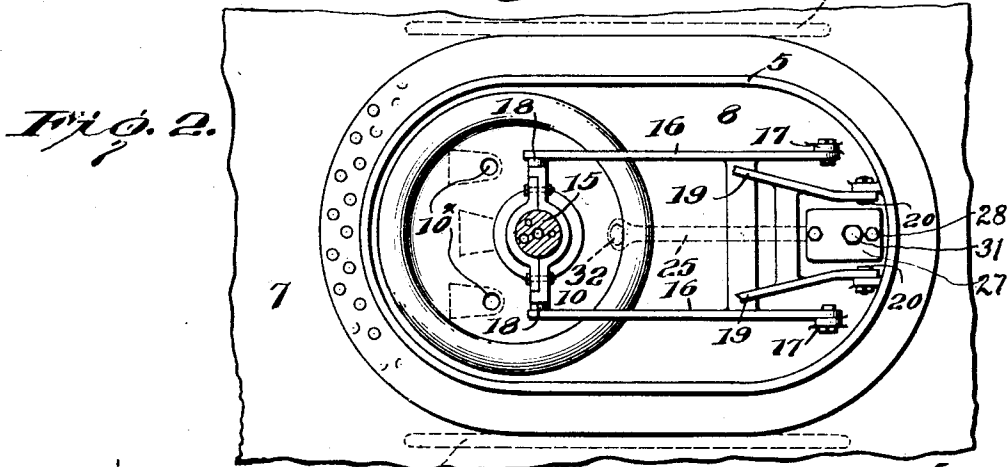
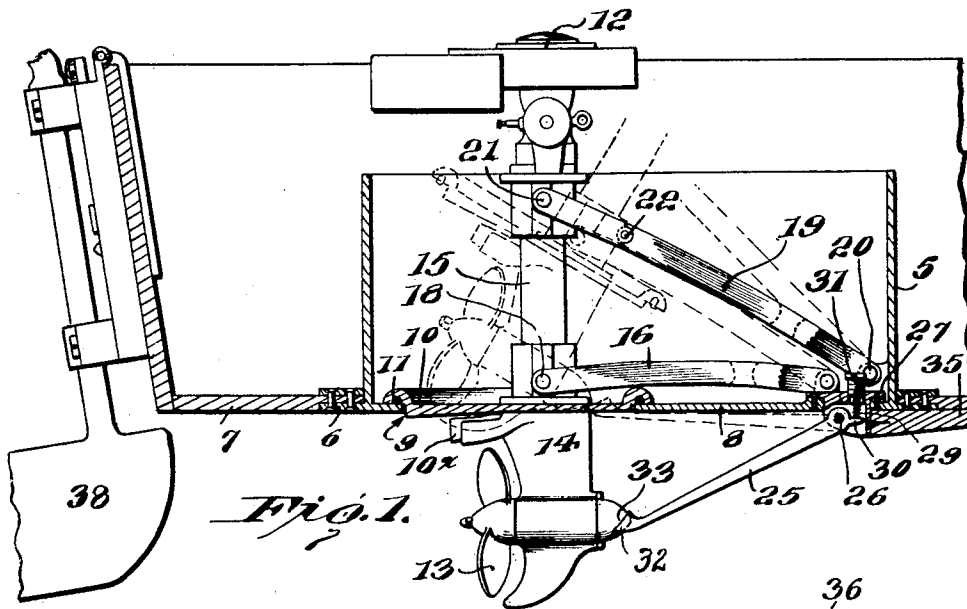
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MOTOR BOAT INSTALLATION

Filed Aug. 10, 1931



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MOTOR BOAT INSTALLATION

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My invention relates particularly to installations embodying motors of the so-called outboard type mounted within the boat and in which the propeller housing and propeller are movable in a casing such as set forth in my Patent 1,786,997. The motor of such constructions is carried by a frame supported in a casing and provided with a bottom plate which closes the bottom of the casing when the motor is in operation. The motor and propeller are adapted to be retracted by hand or automatically.

One object of my present invention is to provide improved means for insuring the automatic lifting of the propeller shaft and propeller when the boat is run on the beach or when some obstruction is met which might tend to damage the propeller or its housing.

Another object is to provide means for aiding in the lifting or tilting of the motor.

Another object is to provide a guard or lifting device which can be readily installed.

In its preferred form the invention contemplates the use of a casing secured in the bottom of the boat and which casing is closed at the bottom with the exception of a comparatively small opening which is normally closed by a plate forming the bottom of the motor frame. The propeller housing is carried by or supported on this plate and the motor frame is connected to the casing by one or more hinged arms so that the motor can be tilted forwardly while the propeller is being raised through the bottom opening.

A guard member or skeg is hinged to the bottom of the casing and provided with a spring which coacts with the arm to lift it. This arm is carried by a fitting secured to the front end of the casing at the rear end of the keel.

Fig. 1 is a longitudinal sectional view and side elevation of an installation embodying one form of the improvements of my invention.

Fig. 2 is a plan view of the casing showing the guard in the dotted lines.

Fig. 3 is an enlarged side view and section showing the guard member.

Fig. 4 is a cross sectional view on a smaller scale showing a modification.

The casing has a side wall 5 and a bottom flange 6 secured to the bottom 7 of the boat. The bottom 8 of the casing is closed except at 9 where an opening is provided which is normally closed by a plate 10. A gasket 11 is preferably provided between the flange of the plate 10 and the adjacent edge or seat in the bottom of the casing.

The motor 12 may be of any suitable type for driving the propeller 13. The housing 14 for the propeller shaft gear mechanism and so forth, may be of any suitable type secured to the bottom plate 10 in any suitable manner. The lower part of the housing 14 might be cast integrally with the bottom plate 10 or formed separately and suitably secured to it.

An upright member or post 15 serves as a part of the motor supporting frame which is secured to the bottom plate 10 in any suitable manner. The cooling water supply discharge and the motor exhaust may be taken care of in any suitable manner, either through the housing 14 or by separate pipes as is customary in outboard motor constructions. The bottom plate 10 is preferably provided with suction drains 10a, on opposite sides, one of which can be used for draining the casing when the boat is in motion, and the other of which can be connected by a pipe to a suction head for draining the boat outside of the casing, as set forth in my application #550,303 filed July 13, 1931.

To enable the propeller to be retracted into the casing for inspection, repair and for safety purposes, I preferably provide some form of hinged connection between the motor supporting frame and the casing. In the form shown in the drawings, two arms such as 16 are hinged at their forward ends to lugs 17 which are integral with the bottom of the casing. The rear ends of these arms are hinged to the motor frame at 18. It will be obvious therefore that when the motor is lifted the point 18 must swing about the center of the bearing in the lugs 17. With the larger sized motors I prefer to provide additional guiding means in the form of two arms 19 which are hinged at their front ends at 20 to lugs integral with the inner wall of

the casing. The rear ends of these arms are hinged at 21 to the upper end of the motor supporting frame so that as the motor is lifted the point 21 must swing about the axis 20, thus resulting in a tilting action of the motor frame and the propeller housing, so as to bring the propeller up into the casing where it can be readily inspected.

By forming each arm 19 in two parts hinged together at 22, the motor may be allowed to tilt still further after the arm 19 engages the side wall 5 of the casing.

The guard device includes an arm 25 which is hinged on the pin 26 which is supported in the block 27. This block is preferably formed separate from the bottom of the casing and secured in place by a number of screws or bolts 28 near the front edge of the casing. A spring 29 is provided which presses against a shoulder 30 at one side of the hinge pin 26 of the guard arm 25. This spring may be conveniently housed in a tube 31 screwed into the block 27. This tube 31 may be removable and adjustable so as to facilitate re- placement of the spring and to permit adjustment of the pressure of the spring to provide a greater or less lifting power to the guard arm 25. The rear end of the guard arm is provided with a cup-like recess 32 which loosely engages the front end 33 of the propeller housing. This guard arm 25 is preferably streamlined in cross section so as to afford a minimum resistance during passage through the water.

When the motor is lifted the guard arm 25 follows the propeller housing under pressure of the spring 29 until the guard arm strikes the bottom 8 of the casing where it is held by the spring pressure while the motor may be lifted still higher free of the guard arm.

Preferably the boat is provided with a keel 35 forward of the casing which keel adds to the stability of the boat in turning. The block 27 is mounted against the end of this keel section. When the motor is lifted and the guard is up it will thus be seen that the guard arm is in direct alignment with the keel so that it is protected by the keel.

In the form shown the boat is provided with lateral keel sections 36 running longitudinally and substantially parallel with the main keel but in rear thereof and alongside of the motor casing. These keel sections not only serve to protect the bottom of the boat and the bottom of the casing but they assist in stabilizing the boat so as to facilitate its turning at high speed without danger of capsizing. These keel sections also serve to protect the guard arm when the propeller is retracted into the casing. If desired, a groove 37 may be provided in the bottom of the casing so that the guard when up will be flush with the bottom of the casing.

When the boat is running the guard arm

25 serves as a protection which precedes the propeller housing and propeller and serves to automatically lift the propeller and the motor when the guard arm meets an obstruction, thus retracting the propeller and avoiding damage. This action is greatly facilitated by the method of mounting the motor because the inertia of the heavy upper part of the motor when the boat strikes an obstruction tends to continue the forward movement of the motor as the boat is slowed up. The inertia thus tends to move the motor in the same direction that the guard arm tends to move it. This makes it possible to employ a comparatively small and light guard arm and yet accomplish the necessary lifting action promptly without injury and with a minimum of shock.

When the motor is to be again lowered and put into operation, the housing tip 33 automatically engages the cup 32 so that the resistance of the spring 29 acts as a buffer. The yielding gasket 11 also acts as a buffer in the seating movement.

This yielding gasket also serves to materially reduce vibration and noise so that the motor can run at high speeds quietly and without any unpleasant vibration.

By proportioning the parts so that the cup at the end of the guard arm engages the center of the lower end of the propeller housing beneath its axis of rotation, the guard can be applied to motor constructions in which steering is effected by rotation of the propeller housing on a vertical axis.

In the larger types of motors it may be desirable to employ a separate rudder such as 38 for steering. It should be understood, however, that by properly designing the lower end of the arm 25 it may be made to co-act with the propeller housing of motors which are used for steering.

Although a pre-formed casing 5 is a most convenient means for installing the motor unit in a boat, the casing might be formed as a part of the boat itself as indicated in Fig. 4. In such a case the floor plate 8 is secured in the bottom of the boat and has an opening 9 for the propeller. The sides of the boat and transoms or bulkheads such as 39 fore and aft the opening 9 would constitute the vertical walls of the casing. Such a construction can be installed in either metallic or wooden boats.

In case of the breakage or absence of the spring the guard arm 25 will of course serve to lift the motor when the arm strikes an obstruction with sufficient force.

If desired the cup might in some cases be loosely connected to the propeller housing so as to rise with the motor unit regardless of the presence of the spring. The spring is highly desirable however as it assists in lifting the motor unit and holds the guard

arm up out of the way when the propeller is withdrawn.

I claim:

1. A motor boat installation comprising a casing having an opening in the rear part of its floor, a tilting power unit supported in the casing and provided with a propeller housing movable through said opening, a guard arm hinged to the bottom of the casing and having a cup at its rear end for receiving a part of the propeller housing a spring member pressing against said guard arm to lift its rear end against the floor of the casing, said power unit being movable independently of said guard arm.

2. In a motor boat construction, a casing having an opening in its bottom, a tilting power unit having a propeller housing projecting through said opening, means for supporting the power unit in the casing so as to permit the upper end to be tilted forwardly and to retract the propeller rearwardly through said opening, and a spring pressed guard arm hinged to the bottom of the casing and detachably engaging said propeller housing.

3. In a motor boat construction, a casing having an opening in its rear end, a power unit having a propeller housing projecting through said opening, means for supporting the power unit in the casing so as to permit it to be lifted to retract the propeller through said opening, a guard arm pivoted to the bottom of the casing and having its rear end detachably engaging said propeller housing, a spring pressing downwardly on a shoulder of said arm in front of its pivot and a tubular housing for the spring secured to the inside of the casing.

4. A motor boat installation comprising a casing having a floor plate with an opening, a motor unit movably supported in the opening with a propeller housing extending downwardly therethrough, a block secured to the bottom of the casing at the front end thereof, a guard arm pivoted to said block and extending downwardly and rearwardly to lift said propeller housing and a spring device within the casing for pressing against the guard arm in front of its pivot.

5. A motor boat installation comprising a casing having a floor plate with an opening, a motor unit tiltingly supported in the opening with a propeller housing extending downwardly therethrough, a block separately formed and secured to the bottom of the casing at the front end thereof, and a guard arm hinged to said block and extending downwardly and rearwardly to engage said propeller housing and lift the same.

6. A motor boat installation comprising a casing having an opening in the bottom of the casing, a power unit tiltingly mounted in the casing and having a propeller housing adapted to project through said opening, a

guard arm hinged at its front end to the bottom of the front of the casing and adapted at its rear end to engage said propeller housing, a spring engaging said guard arm to lift the rear end of the same, and a removable housing for said spring.

7. A motor boat installation comprising a casing having an opening in the bottom of the casing, a power unit tiltingly mounted in the casing and having a propeller housing adapted to project through said opening, a guard arm pivotally supported at its front end and adapted at its rear end to engage said propeller housing, a spring engaging said guard arm in front of the pivot to lift the rear end of the same, and a removable and adjustable housing for said spring.

8. A motor boat installation comprising a casing secured to the bottom of the boat, a keel projecting downwardly from the bottom of the boat forward of the casing, a spring-lifted guard arm hinged to the bottom of the casing in line with said keel, said casing having an opening in its rear end and a power unit tiltingly supported in said casing and having a propeller housing adapted to move downwardly through said opening and adapted to automatically engage the rear end of said guard arm when dropped into place, said guard arm being adapted to assist in lifting said power unit and tilting the propeller housing into the casing.

9. A motor boat installation comprising a casing secured in the bottom of the boat and having an opening in the rear part of its floor, a power unit supported in the casing and provided with a propeller housing extending through said opening, a guard arm hinged to the bottom of the casing and having a rear end for engaging and lifting the propeller housing, and a longitudinal keel section on each side of the guard arm.

10. In a motor boat installation comprising a casing secured to the bottom of the boat, a keel projecting downwardly from the bottom of the boat forward of the casing, a guard arm hinged to the bottom of the casing in line with said keel, relatively short stabilizing keels alongside of the casing, said casing having an opening in its rear end and a power unit tiltingly supported in said casing and having a propeller housing adapted to extend downwardly through said opening and adapted to engage the rear end of said guard arm, said guard arm being adapted to lift said power unit and tilt the propeller housing into the casing.

11. As an article of manufacture, a motor boat construction comprising a casing adapted to be mounted in the bottom of a boat and having a floor plate with an opening in its rear end, a motor unit and propeller housing having a hinged connection with the inside of the casing near the front end and having a propeller adapted to swing through said

opening and a bottom plate to close said opening, a guard arm hinged at its front end to the bottom of the casing below the hinged connection of the motor unit and propeller housing and having its rear end located beneath a part of the propeller housing for lifting the same when the guard arm meets an obstruction.

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