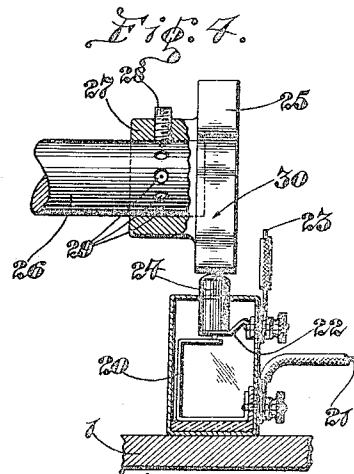
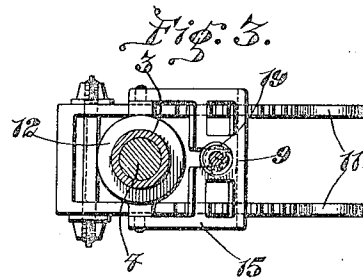
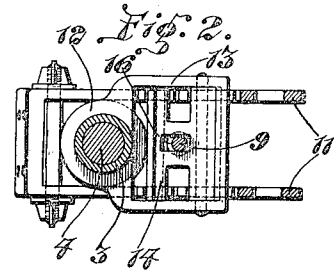
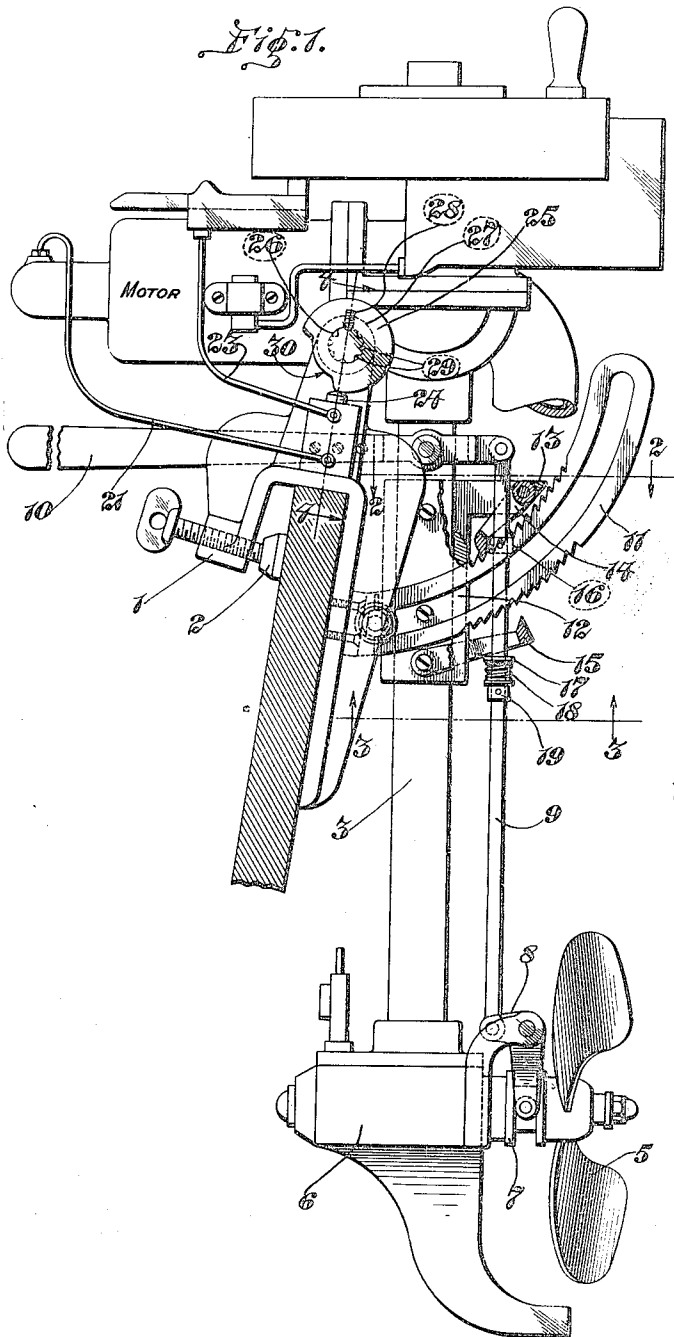


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MOTOR.

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MOTOR.

1,384,009.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RALPH W. BORCHERT, a citizen of the United States, residing at the city of St. Louis and State of Missouri, have invented a new and useful Motor, of which the following is a specification.

This invention relates to motors, and has special reference to marine motors.

My invention is specially designed for outboard motors and comprises construction for permitting the motor to be moved from one position to another as when the propeller support strikes shoals or any submerged heavy object in order to prevent damage to the propeller, and means for stopping operation of the motor when the motor is so moved. This broad construction constitutes the subject-matter of my prior application Serial No. 301,193, filed June 2, 1919. The present invention comprises means for holding the propeller and the motor in proper position for operation when the operation of the propeller is reversed.

An object of the invention is to provide an improved motor attachment for stopping the motor as an incident to movement of the motor from one position to another, in combination with means for preventing displacement and stopping of the motor when the motor is reversed.

Other objects will appear from the following description in which reference is made to the drawing illustrating the invention, and in which—

Figure 1 is a side elevation of my improved motor attachment.

Fig. 2 is a cross sectional view on the line 2—2 of Fig. 1 showing the latch device for holding the motor in one position.

Fig. 3 is a cross sectional view on the line 3—3 of Fig. 1 showing the latch device for holding the motor in proper position when the operation of the propeller is reversed.

Fig. 4 is a view partly in section illustrating the switch and the switch controlling device.

As shown the motor or engine is pivotally supported by a bracket 1 arranged to engage the stern board of a boat and equipped with a clamp 2 for holding the bracket in rigid position in connection with the boat. From the motor a sleeve 3 extends inclosing the usual propeller shaft 4. The mechanism (not shown) for driving the propeller 5 is inclosed within a case 6 supported at the

lower end of the sleeve 3 and comprises the usual shift-member 7 which in one position causes the motor to be operated in a direction to propel the boat forwardly, and in another position causes the propeller to be operated in a direction to propel the boat rearwardly. This mechanism is well known commercially and the construction thereof is not specifically claimed, it being sufficient for a complete understanding of the present invention simply to understand that the direction of operation of the motor is reversible. Shifting of the member 7 may be effected by a lever 8 connected by a rod or link 9 with a hand lever 10.

An arcuate member comprising two arms 11 is in connection with the bracket 1, the curve of the member 11 being concentric with the axis of the pivot supporting the motor on the bracket. The sleeve 3 extends between the arms 11.

The upper edge of each arm of the member 11 is provided with a series of ratchet teeth, as shown. A bracket comprising a collar 12 and a frame 13 is attached to the sleeve 3. A pawl 14 is pivotally supported within the frame 13 in position to engage the ratchet teeth on the upper edges of both of the arms 11 and thereby hold the motor when the propeller is operating in a direction to drive the boat forwardly. The rod 9 passes through a hole in the pawl 14 but does not interfere with the free movement of the pawl into and out of engagement with the ratchet teeth on the upper edges of the arms 11. The lower edges of the arms 11 are also provided with series of ratchet teeth of a reverse construction from the ratchet teeth on the upper edges of said arms. A pawl 15 is pivotally supported by the sleeve 12 below the arms 11 and is movable into and out of engagement with the teeth on the lower edges of said arms. When the pawl 15 is engaged with the ratchet teeth on the lower edges of the arms 11 the motor and propeller will be held in proper position while the propeller is operating in a reverse direction, that is in a direction to propel the boat rearwardly. The rod 9 extends through an appropriate opening in the pawl 15.

From the foregoing description it will be understood that the propeller shaft may be retained in a vertical position by the pawl 14 irrespective of the angle of inclination of

the stern board of the boat. Furthermore, this construction permits the propeller to be raised entirely above the water which is a desirable feature, especially in cold weather when it is sometimes difficult to start a motor. After the motor has been started and the engine has become heated the propeller may easily be lowered into the water by proper control of the pawl 14 which may be engaged with the ratchet teeth on the arms 11 at the proper place to hold the propeller shaft in vertical position. The construction is also highly advantageous since it permits the propeller to be lifted quickly, either by hand or automatically, out of the water when passing over shoals or other submerged objects by which the motor might be damaged. The construction also permits the propeller to be supported entirely out of the water while the boat is being towed thus avoiding the resistance of the water against the propeller. Because of the arrangement of the pawl 15 and the ratchet teeth on the lower edges of the members 11 the propeller shaft will also be held in proper vertical position when the propeller is operating in a reverse direction.

As previously mentioned the rod 9 and the lever 10 comprise a part of the mechanism for controlling the direction of rotation of the propeller. In the lower position of the rod 9 the propeller operates in a direction to drive the boat forwardly and in the raised position of the rod 9 the propeller operates in the reverse direction. It is desirable to control the pawls 14 and 15 automatically by and as an incident to movement of the rod 9 from one position to another. For this purpose a collar 16 is secured to the rod 9 below the pawl 14, as a result of which arrangement the pawl 14 is raised out of engagement with the ratchet teeth on the arms 11 when the rod 9 is raised to move the controlling member 7 to position to reverse the direction of operation of the propeller. Also, as an incident to such movement of the rod 9, the pawl 15 is moved into engagement with the ratchet teeth on the lower edges of the arms 11 in order to hold the engine and the propeller in proper position while the propeller is operating in a reverse direction. Such movement of the pawl 15 into engagement with the ratchet teeth on the lower edges of the arms 11 is effected by a device specially provided for that purpose. As shown, said device comprises a collar or washer 17 encircling the rod 9 below the pawl 15 and yieldingly supported by a spring 18 bearing upon a supporting collar 19 on the rod.

By the foregoing construction I am enabled to employ a pivotally mounted and adjustable motor and propeller capable of movement from one position to another, as when the propeller support strikes shoals or

any submerged heavy object, in order to prevent damage to the propeller or to the other mechanism. Also, the engine and the propeller may be supported in proper adjustment for operation irrespective of the angle of inclination of the stern board of the boat upon which the motor is mounted. Furthermore, I am enabled to employ my invention in connection with "reversible motors" by which is meant motors equipped with propellers capable of operation in either direction. The latch devices for holding the motor in proper position are under control of the mechanism which controls the direction of operation of the propeller; so that when the direction of operation of the propeller is reversed one latch device is disengaged and the other latch device is engaged, as required to sustain the motor in proper position.

Provision is made for controlling the switch that controls the operation of the motor, so that when the propeller is moved to a position in which it is desired that the motor be inoperative the switch will open and thereby prevent operation of the motor. The equipment for this purpose, as shown, includes a switch comprising a contact member 20 in circuit with one of the circuit wires 21 and a contact member 22 in circuit with the other wire 23 of the circuit. The contact member 22 is movable into and out of contact with the contact member 20 and may be moved into contact with said member 20 by a push button 24. A cam disk 25 is attached to the pivot 26 supporting the motor. As shown the cam disk is provided with a hub 27 receiving the end of the pivot 26. The cam disk may be secured to the pivot in any desired adjustment by a screw 28 arranged to engage in spaced indentations 29 in the pivot. As shown in Figs. 1 and 4 a wide portion of the cam disk is in contact with the push button 24 and holds the push button pressed inwardly to close the switch. However, when the propeller is raised the push button enters a notch 30 in the disk, leaving the switch free to open, which it will do because of the tendency of the contact member 22 to move out of contact with the contact member 20. As a result of this operation the motor is stopped as an incident to the raising of the propeller by contact with any submerged object, or otherwise. However, if the propeller be raised entirely out of the water, the disk 25 again closes the switch, thereby closing the electric circuit and leaving the motor free to operate. This is a great convenience in starting the motor because it permits the propeller to be raised entirely out of the water, thus avoiding the resistance of the water in the initial operation of starting the motor.

What I claim is:—

1. A device of the character described, 130

comprising a support, a pivot supported by the support, a motor carried by said pivot, a switch controlling the operation of the motor, means for holding the motor on said pivot in different positions relative to said support, a device adjustable in different positions relative to the motor to prevent the switch from opening in one selected position of the motor and to permit the said switch to open in another selected position of the motor, and means for holding said device in any of its adjusted positions relative to the motor, whereby said switch may be operated or not, as desired, when said motor is moved from one position to another.

2. A device of the character described, comprising a bracket, a motor pivotally supported by said bracket, a propeller driven by the motor, a device controlling the direction of operation of the propeller, a switch for controlling the operation of the motor, and means under control of said device for supporting the motor and thereby the propeller in different adjustments upon the pivot; in combination with a device in adjustable connection with the pivot to prevent said switch from opening in one position of the motor and propeller, and to permit said switch to open in another position of the motor and propeller; and means for holding said device in any desired adjustable position on said pivot.

3. The combination with a pivotally mounted motor movable from a position in which it is desired that the motor be operative to a position in which it is desired that the motor be inoperative, an electric circuit controlling the operation of the motor, a switch for opening and closing said circuit, and a reversible propeller driven by the motor, of an adjustable device for closing said switch as an incident to movement of the motor to position in which it is desired that the motor be operated, and means for holding said device in different selected adjustments, whereby said switch will be operated or not, as desired, when the motor is moved from one position to another.

4. The combination with a pivotally mounted motor movable from a position in which it is desired that the motor be operative to a position in which it is desired that the motor be inoperative, an electric circuit controlling the operation of the motor, a switch supported independently of the motor for opening and closing said circuit, and a reversible propeller driven by the motor, of an adjustable device movable with the motor for closing said switch as an incident to movement of the motor to position in which it is desired that the motor be operated, and permitting said device to move to position to prevent operation of the motor as an incident to movement of the motor to position in which it is desired that the motor

be inoperative, and means for holding said device in position to close said switch or not, as desired, when said motor is moved from one position or another.

5. The combination with a pivotally mounted motor having an ignition system and being movable from a position in which it is desired that the motor be operative to a position in which it is desired that the motor be inoperative, a propeller driven by the motor, latch devices for holding the motor in position when the propeller is operating in a forward or in a reverse direction, and an electric switch device controlling the ignition system of the motor, of means arranged to close said switch device as an incident to movement of the motor to position in which it is desired that the motor be operative.

6. The combination with a pivotally mounted motor having an ignition system and being movable from a position in which it is desired that the motor be operative to a position in which it is desired that the motor be inoperative, a propeller driven by the motor, latch devices for holding the motor in position when the propeller is operating in a forward or in a reverse direction, and an electric switch device controlling the ignition system of the motor, of a device arranged to close said switch device as an incident to movement of the motor to position in which it is desired that the motor be operative, and permitting said switch device to open as an incident to movement of the motor to position in which it is desired that the motor be operative, and means for holding said device in position to close said switch or not, as desired, when the motor is moved from one position to another.

7. The combination with a motor, of a bracket, a pivot connecting the bracket and the motor, an arcuate arm having its center of curvature at the axis of the pivot, ratchet teeth on the upper side of said arm, a sleeve supported by the motor, a pawl carried by said sleeve for engaging the ratchet teeth, ratchet teeth on the lower side of said arm, and a pawl carried by said sleeve movable into and out of engagement with the last-named ratchet teeth.

8. The combination with a motor, of a bracket for supporting the motor, a pivot connecting the motor and the bracket, a sleeve in connection with the motor, a propeller driven by the motor, a device controlling the direction of operation of the propeller, an arm attached to said bracket, and latch devices carried by said sleeve cooperating with said arm to hold the motor and propeller in proper position irrespective of the direction of operation of the propeller.

9. The combination with a motor, of a bracket, a pivot connecting the motor and the bracket, an arm attached to said bracket,

a sleeve in connection with the motor, a propeller driven by the motor, a device for controlling the direction of operation of the propeller, a latch holding the motor in proper position when the propeller is operating in one direction, means operated by said device to disengage said latch when said device is operated to reverse the direction of operation of the propeller, and an additional latch moved by said device to position to hold the motor in proper position when said device is moved to reverse the direction of operation of the propeller.

RALPH W. BORCHERT.