June 24, 1930. F. L. HAMMER 1,767,584

CONTROL FOR OUTBOARD MOTORS AND THE LIKE

Filed Sept. 18, 1929

Fig. 1.

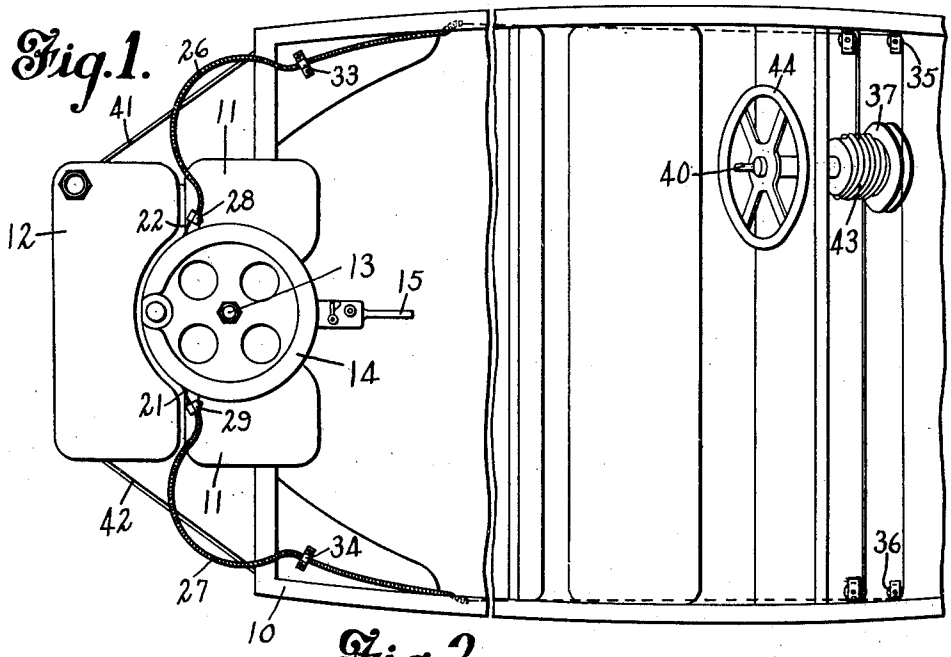


Fig. 2.

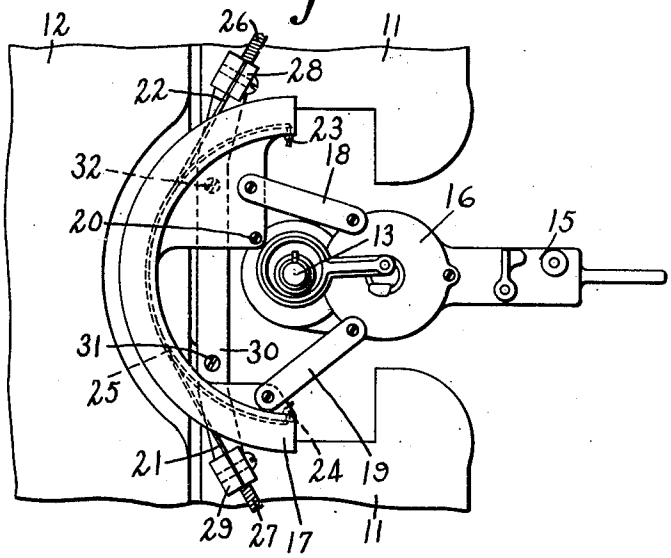
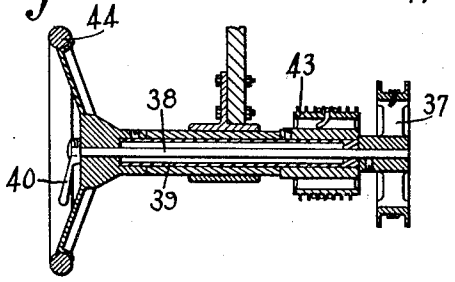


Fig. 3.



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Patented June 24, 1930 1,767,584

UNITED STATES PATENT OFFICE

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CONTROL FOR OUTBOARD MOTORS AND THE LIKE

Application filed September 18, 1929. Serial No. 393,428.

This invention relates to controls for outboard motors, and is particularly designed to enable the speed of such motors to be controlled from a remote point.

In certain types of outboard motors the speed of the motor is controlled by retarding or advancing the spark lever which adjusts the timing of the spark. Where a considerable range of speed is desired, the spark lever must be moved through a considerable angle and likewise through a considerable distance. It has been proposed, in some instances, to use for this purpose what is commonly called a Bowden wire. This is a small wire enclosed in a flexible casing in which it has a sufficiently snug fit so that the wire may be moved in both directions to move the speed controlling member in both directions. In other words, the wire as well as being subjected to tension to draw the control element in one direction may also be moved in the opposite direction under compression, and will slide through the flexible tube without buckling. Such an arrangement, however, is only capable of moving the speed controlling element through relatively small distances as the part of the wire which is exposed at the end of the casing will buckle or bend if any considerable length becomes exposed.

One object of this invention, therefore, is to provide a remote control for outboard motors such that the speed controlling element will be positively moved by a tensional force in both directions.

Another object of the invention is the provision of a remote speed control device for outboard motors, which will be positive in its action, simple in construction and easy to install.

Still another object of the invention is to provide a remote speed control device for outboard motors which will not be affected by the swinging of the motor to steer the boat.

A further object of the invention is the provision of a remote control adjustment for the spark lever or speed control lever of an outboard motor, which may be economically and cheaply made, easy to install and efficient and positive in operation.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a top plan view of an outboard motor, embodying my invention;

Fig. 2 is a fragmentary plan view of the motor with the fly wheel removed;

Fig. 3 is a sectional view through the steering shaft, showing the manually operated controlling lever.

To illustrate a preferred embodiment of my invention, I have shown a portion of a boat 10, having mounted on the stern thereof an outboard motor comprising the cylinders 11, the gasoline tank 12, the shaft 13, flywheel 14 and the spark lever 15. As shown in Fig. 2, the spark lever rotates or oscillates about the shaft 13 to adjust the timing of the spark, and carries with it the timer unit 16. As shown in Fig. 2, the spark lever is in an intermediate position and when moved in one direction downwardly, for instance, as shown in this figure, the spark is retarded and the speed of the motor lowered, and when moved in the opposite direction the spark is advanced and the speed of the motor accelerated.

In order that this lever may be controlled from a remote point, I secure to the timer unit a quadrantal member 17, which may, however, in extent approximate a semi-circle. This member is secured to the timer unit 16 by means of the links 18 and 19, which are secured at their ends to the casing of the timer unit and to the member 17. This member is also secured to the timer unit by the screw 20, so that it will be rigid with this unit and will move the spark lever 15 through the same arc through which the quadrantal element itself moves. Flexible wires 21 and 22 are secured at their ends to the element 17, as shown at 23 and 24. These wires are trained around the element 17 in a groove 25 provided in the periphery thereof. The wires are then led through the flexible casings 26 and 27. These casings are secured at their ends to clamp members 28 and 29, mounted upon the ends of a bracket member

30 secured in the illustrated form of the invention, to the bolts 31 and 32 which secure the gas tank in place.

The flexible casings 26 and 27 are also designed to be clamped to the stern portion of the boat by the clamps 33 and 34, and the free ends then led along the sides of the boat. The wires 21 and 22 are led through the casings 26 and 27, along the sides of the boat and around the pulleys 35 and 36 to have their ends secured to the drum 37. It will be understood that it may be that only one control wire is used which, in that case, has its central portion wrapped about and secured to the drum and its end portions leading through the flexible casings 26 and 27 to the motor.

As shown, the drum 37 is secured to a shaft 38, rotatably mounted within the hollow steering shaft 39. At its upper end the shaft 38 is provided with a manually operable control lever 40, by which the shaft may be rotated.

From the foregoing description it will be obvious that when the lever 40 is rotated, the shaft 38 and the drum 37 secured thereto will also be turned. The turning of the drum 37 winds up or shortens one of the controlling wires 21 or 22, and unwinds or slackens the other wire to the same extent. This swings the quadrantal element 17 and with it the timer unit 16 in one direction or the other about the shaft 13, and retards or advances the spark, thereby retarding or accelerating the speed of the motor.

It will be obvious that the quadrantal element 17 is positively moved in both directions by a pull or tensional force upon the corresponding wire, so that the timer unit will be positively moved in both directions and there will be no tendency for the control wires to buckle or bend as might be the case under a force of compression. I have found it advantageous to make the drum 37 of such a size that a complete range of the speed of the motor may be obtained by one revolution of the operating lever 40, and consequently one revolution of the drum, although this may be varied if desired. Rotation of the drum in the other direction tends, of course, to return the timer unit to its original position.

The outboard motor illustrated is designed to be swung bodily about its pivot on the boat, not shown, by the steering cables 41 and 42, in order to steer. These cables are attached to the drum 43, secured to the hollow steering shaft 39, which is rotated by the steering wheel 44. It will be seen, therefore, that in this instance, provision should be made to prevent any movement of the motor for steering purposes affecting the position of the spark lever and thereby affecting the speed of the motor. To this end, it will be noted that I have left considerable slack in the flexible casings 26 and 27 between the clamps 28 and 33 and 29 and 34, and there is, of course, the same length of the control wires 21 and 22, which pass through these casings.

As the casings are clamped rigidly between these points, it will be apparent that the lengths of the casings therebetween do not vary regardless of the position of the motor, and likewise, there is no variation in the lengths of the control wires 21 and 22 between these points regardless of the position of the motor, that is, regardless of its swinging movements about a vertical axis. Any such swinging movement simply takes up a certain amount of the slack in one of the casings, but does not vary the length of the casing, and therefore, does not vary the position of the spark lever with respect to the motor. However, as the spark lever is moved with respect to the motor to control the speed, such a movement is always brought about positively by movement of the wires 21 and 22 by the rotation of the drum 37.

It will also be obvious that by loosening the clamp members 33 and 34 and moving the flexible casings through these members in one direction or the other, will adjust the slack in the casings between these clamp members and the motor and, therefore, will serve to tighten the wires or flexible elements 21 and 22. In this manner, I am enabled to dispense with turn-buckles or other devices to adjust the lengths of the wires leading from the speed control lever to the drum 37.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to the details shown but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. In a speed control device for an outboard motor secured to a boat and having a speed control lever, a pair of tension elements leading in opposite directions from said lever, and a manually operable member to which said tension elements are connected, said manually operable member being arranged to apply a tensional force to said elements.

2. In a speed control device for an outboard motor secured to a boat and having a speed control lever, a pair of tension elements leading in opposite directions from said lever, and a manually operable member to which said tension elements are connected, said manually operable member being arranged to apply a tensional force to said elements, flexible casings through which said elements are led, said casings being secured to the motor at one point and secured to the boat at another point.

3. In a remote control device for an outboard motor secured to a boat and having a

speed control lever, a flexible casing secured to the boat at one point and secured to the motor structure at another point, there being considerable slack left in the casing between said points of securement to permit movement of the motor, a flexible element led through said casing, a manually operable member to which one end of said flexible element is secured, said member being designed to exert a pull upon said element, a member arcuate in shape secured to said speed control lever and having the other end of said flexible element secured thereto.

4. In a remote control device for an outboard motor secured to a boat and having a speed control lever, a flexible casing secured to the boat at one point and secured to the motor structure at another point, there being considerable slack left in the casing between said points of securement to permit movement of the motor, a flexible element led through said casing, a manually operable member to which one end of said flexible element is secured, said member being designed to exert a pull upon said element, a member arcuate in shape secured to said speed control lever and having the other end of said flexible element secured thereto, and a second flexible element secured to said arcuate member and leading therefrom in an opposite direction, and said second flexible element being conducted through a similarly secured flexible casing and being likewise secured to said manually operable member.

5. In a remote control device for outboard motors, having an oscillatable speed control lever, a member of arc shape secured rigidly to said speed control lever, flexible elements leading from said arcuate member in opposite directions, said flexible members being led through flexible casings and secured at their other ends to a manually operable member, and means for operating said last named member to apply a tensional force to said flexible elements.

6. In a control for outboard motors having an oscillatable timer unit and a fly-wheel, a member of arcuate shape secured to said timer unit below the fly-wheel, flexible elements leading from said member in opposite directions, a manually operable rotatable member, said flexible elements having their ends connected to said manually operable member and designed to be operated thereby to oscillate said arcuate member.

7. In a control for outboard motors having an oscillatable speed control lever, a member of arcuate shape secured to said lever, flexible elements leading from said member in opposite directions, a manually operable rotatable member, said flexible elements having their ends connected to said manually operable member and designed to be operated thereby to oscillate said arcuate member, said flexible elements being led through flexible casings, each of said casings being secured to said motor at one point and secured at another point to the boat on which the motor is mounted.

8. In a control for outboard motors having an oscillatable timer unit and a fly-wheel, a member of arcuate shape secured to said timer unit below the fly-wheel, flexible elements leading from said member in opposite directions, a manually operable rotatable member, said flexible elements having their ends connected to said manually operable member and designed to be operated thereby to oscillate said arcuate member, said flexible elements being led through flexible casings, a bracket secured to the motor, and each of said casings being secured to said bracket at one point and at another point to the boat upon which the motor is mounted, and there being considerable slack left in the casing between said points of securement.

9. In a control for outboard motors, having an oscillatable spark control lever, a member of arcuate shape secured to said lever, flexible elements leading from said member in opposite directions, a manually operable member to which said flexible elements are connected to be operated thereby to oscillate said arcuate member, flexible casings through which said flexible elements are led, a bracket secured to the motor, and each of said casings being secured to the bracket at one point and at another point to the boat upon which the motor is mounted.

10. In a control for outboard motors, having an oscillatable spark control lever, a member of arcuate shape secured to said lever, flexible elements leading from said member in opposite directions, a manually operable member to which said flexible elements are connected to be operated thereby to oscillate said arcuate member, flexible casings through which said flexible elements are led, a bracket secured to the motor, and each of said casings being secured to the bracket at one point and adjustably secured at another point to the boat upon which the motor is mounted whereby the lengths of said casings between the secured points may be adjusted to tighten the flexible elements.

11. In a control for outboard motors, having an oscillatable speed control lever, a member of arcuate shape secured to said lever, flexible elements leading from said member in opposite directions, a manually operable member, said flexible elements having their ends connected to said manually operable member and designed to be operated thereby to be oscillated by said arcuate member, said flexible elements being led through flexible casings, each of said casings being secured to the motor at one point and secured at another point to the boat upon which said motor is mounted, and means permitting adjustment of the length of said casings between their secured points.

12. In a speed control device for an outboard motor secured to a boat and having a speed control lever, a pair of tension elements leading in opposite directions from said lever, a manually operable member to which said tension elements are connected, said manually operable member being arranged to apply a tensional force to said elements, flexible casings through which said elements are led, and said casings being secured to the motor at one point and to the boat at another point, and one of said securing means permitting adjustment of the length of said casing between said secured points.

13. In a control for outboard motors having a speed control lever, a member of arcuate shape secured to said member, flexible elements leading from said member in opposite directions, a manually operable member to which said flexible elements are secured, said flexible elements being led through flexible casings, a bracket secured to the motor, and means securing said casings to the bracket at one point and to the boat at another point in their lengths, and said securing means being adjustable to vary the lengths of the casings between the secured points.

In witness whereof, I have hereunto set my hand this 16 day of September, 1929.

FORRESTER L. HAMMER.