June 25, 1946. E. E. BIDWELL 2,402,724

SMALL BOAT CONTROL

Filed April 5, 1945 2 Sheets-Sheet 1

Fig. 1.

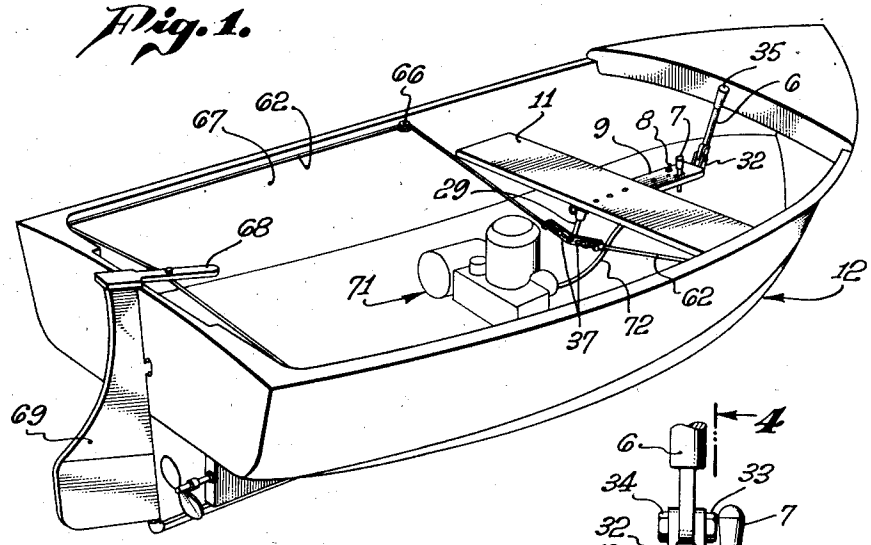


Fig. 2.

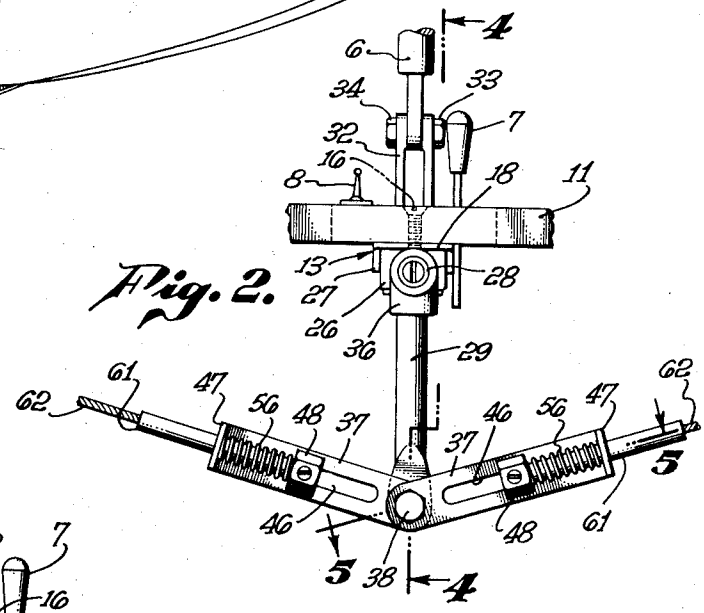
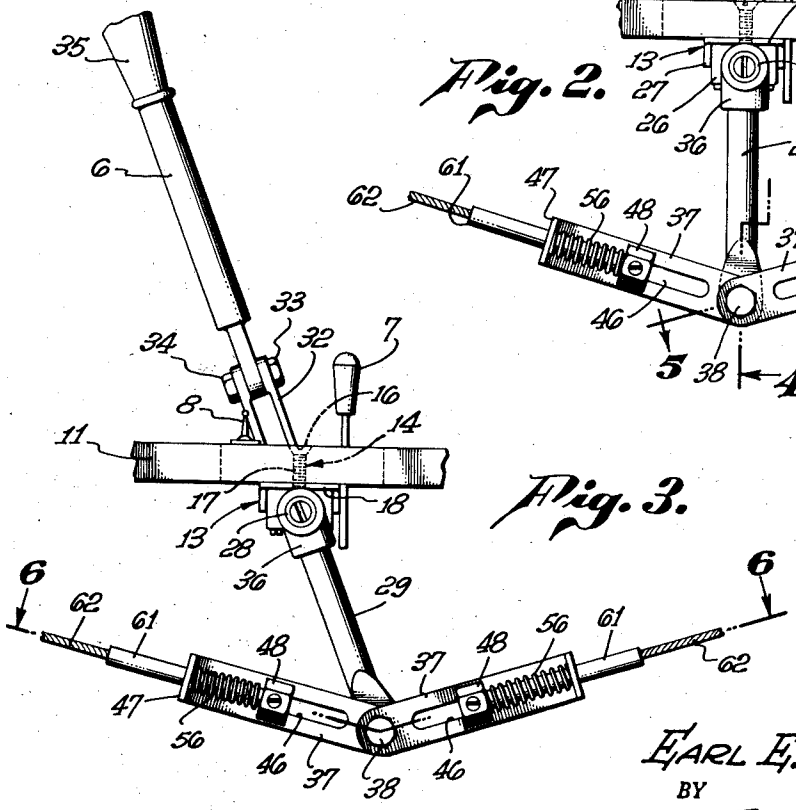


Fig. 3.



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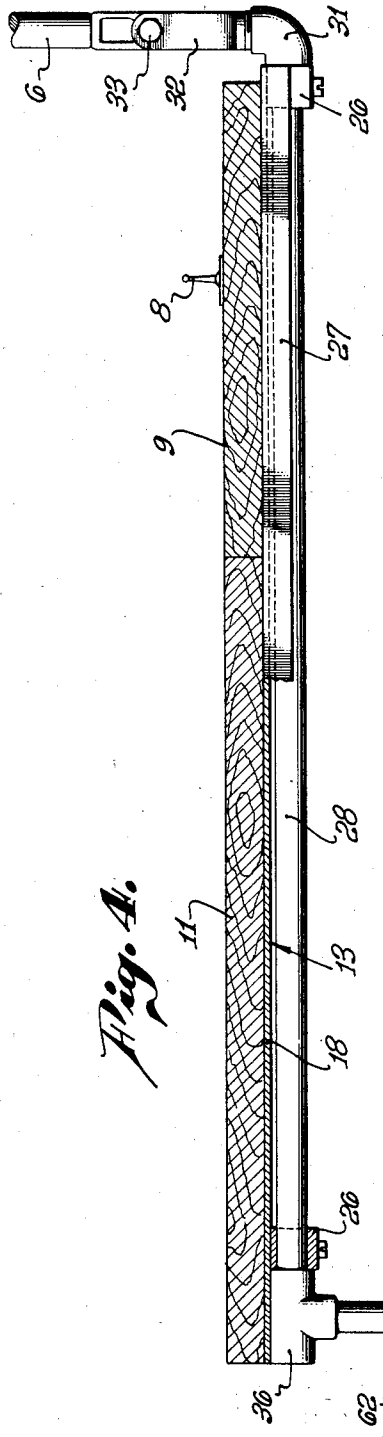


Fig. 4.

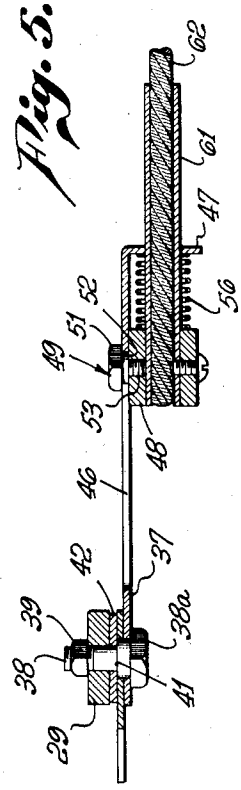


Fig. 5.

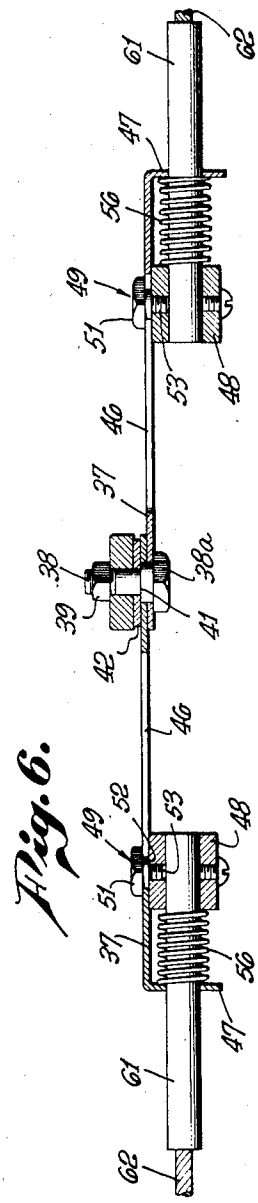


Fig. 6.

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Patented June 25, 1946 2,402,724

UNITED STATES PATENT OFFICE

2,402,724

SMALL BOAT CONTROL

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Application April 5, 1945, Serial No. 586,729

2 Claims. (Cl. 114—144)

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This invention relates to boats and more particularly to devices for controlling small boats such as those commonly used in trolling.

An object of my invention is to provide a small, compact, and yet efficiently operating control device adapted to be connected to the tiller of a small boat of the general character indicated, so designed and so arranged that it affords the utmost convenience to the operator of the boat so as to offer a minimum of interference with his other activities, such as the manipulation of a trolling rod or a retrieving net, without jeopardizing the measure of control which the operator exerts over the maneuvering of the boat itself.

A more detailed object in this connection is to provide a control device for a small boat as described, wherein the rudder is operated by means of a handle so situated with respect to the operator's station in the boat that it optionally can be actuated by hand or by the operator's knees, thus leaving his hands free to manipulate his fishing pole or to perform other operations coincident with fishing or manipulating the boat itself.

A still further object is to provide a steering device wherein the member to be actuated by the operator is carried by a small platform or shelf extending forward from the seat on which the boat's operator is normally seated, the parts being so proportioned and arranged that the control handle is conveniently positioned between the operator's knees, and wherein the platform also carries the controls for the boat's engine, such as the ignition switch and the throttle which controls supply of fuel to the motor, thus placing all the controls necessary for the satisfactory manipulating of the boat in the most conveniently accessible position.

A still further object is to provide a boat control device of the general character described which is in the nature of an accessory adapted for facile mounting in operative position upon a boat without requiring any special tools, thus adapting the device for sale to the owners and operators of boats already in service.

A still further object is to provide a boat control device as described which, in spite of the fact that it is capable of operating with the greatest ease and efficiency in performing the functions for which it was designed, is of very compact design requiring a minimum of space within the boat, is of minimum weight, and is composed of a small number of simple, rugged, and inexpensive parts.

The invention possesses other objects and valuable features, some of which, with those enumerated, will be set forth in the following description of the preferred embodiment of my invention illustrated in the drawings, accompanying and forming a part of the specification. It is to be understood that I do not limit myself to the showing made by said drawings and description but that I may adopt variations of the preferred form within the scope of my invention as defined by the claims.

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Referring to the drawings:

Figure 1 is a perspective view of a motor boat having a control device incorporating the principles of the invention operatively installed therein.

Figure 2 is an enlarged view in rear elevation of the control devices and the boat's seat upon which it is mounted, portions of the figure being broken away to reduce its size. The control device is shown in its intermediate, i. e., in the "center rudder" position.

Figure 3 is a view similar to Figure 2 showing the control handle swung to starboard.

Figure 4 is a view in side elevation of the control device taken in a vertical plane through the boat seat on which the control device is mounted, the plane of section being indicated by the line 4—4 of Figure 2 with the direction of view as indicated.

Figure 5 is a sectional detail view, the plane of section being indicated by the line 5—5 of Figure 2 and the direction of view by the arrows.

Figure 6 is a detail, compound sectional view, the planes of section being indicated by the lines 6—6 of Figure 3 and the direction of view by the arrows.

Specifically describing that embodiment of my invention which has been chosen for illustration and description herein, my control device comprises a manually operable lever 6, a throttle control lever 7, and an ignition switch 8, carried by a suitable support, preferably in the form of a small platform 9, rigidly mounted upon and extending forward from the transversally extending seat 11 with which small motor boats such as that indicated at 12 are conventionally equipped. The means for mounting the platform conveniently takes the form of a channel iron 13, secured to the under surface of the seat 11 and extending in a fore-and-aft direction, preferably substantially parallel to the boat's keel. By employing simple and easily operable means for fastening the channel 13 to seat 11, such as a suitable number of screws 14 having countersunk heads 16 substantially flush with the upper surface of the

seat 11 and shanks 17 extending through the seat 11 and threadedly engaged with the web 18 of the channel 13, the control device of the present invention is adapted for facile and expeditious mounting in operative position so that it does not require the services of a skilled mechanic, nor the use of specialized tools, with the result that the invention is adapted for use in the form of an accessory to be manufactured and sold apart from the boat and to be installed upon a boat already in service.

The channel 13 is materially longer than the width of the seat 11, its forward end extending far enough in front of the seat 11 to support the platform 9, which preferably substantially corresponds in thickness to seat 11 so that their upper surfaces are substantially flush. The platform 9 is relatively narrow so that the boat's operator is enabled to seat himself comfortably on the seat 11 with the platform 9 between his knees in which position the controls 6, 7 and 8 are most conveniently accessible.

A suitable bearing 26 is rigidly mounted upon the channel 13 adjacent each end thereof, these bearings being in axial alignment and preferably situated between the downwardly extending side flanges 27 of the channel 13. A rod 28 is journalled in the aligned bearings 26, this rod carrying on its forward end a suitable means for connecting the hand lever 6 thereto, and on its after end a lever 29 which is rigid with the rod 28 so that it partakes of any rotary movement imparted to the rod 28 by manipulation of the hand lever 6. A preferable means for mounting the lever 6 upon the rod 28 is in the form of an elbow 31, one end of which is threaded a U-shaped bracket 32. The lower end of the hand lever 6 is embraced between the ends of the legs of the U-shaped bracket 32, being preferably mounted therebetween by a suitable machine screw 33, the nut 34 of which may be tightened to compress the legs of the bracket 32 against the lower end of the lever 6, and thereby establish that degree of frictional interengagement to retain the lever 6 in any selected position of obliquity, and yet permit the operator to swing the lever 6 into the most conveniently accessible position. Preferably a suitable cushioned grip 35 is carried at the outer end of the hand lever 6.

The means for maintaining the lever 29 rigidly upon the after end of the rod 28 also is preferably in the form of a conventional pipe fitting, the standard T fitting 36 being illustrated as the type of fitting selected for this purpose. The lever 29 extends downwards from the rod 28, preferably in the same plane as that in which the hand lever 6 extends upwards; and the lower end of the lever 29 is flattened to provide a convenient plane surface for the pivotal mounting of a pair of oppositely extending brackets 37. Both brackets are preferably connected to the lower end of the lever 29 by a machine screw 38, the nut 39 of which may be tightened to draw a shoulder 41 on the shank of the screw 38 tightly against a washer 42 which in turn is pressed against the said plane surface at the lower end of the lever 29 and thereby immobilizes the screw 38 with respect to the lever 29. The shoulder 41 of the screw 38 is disposed within aligned holes in the inner ends of the two brackets 37, the parts being so proportioned that the brackets 37 are free to pivot about the axis of the screw 38, by being retained against dislodgement from the screw 38 by the screw's head 38a, without, however, being compressed between the head 42 and the lever 29 so tightly as to interfere with their freedom of movement.

Each bracket 37 has a longitudinally extending slot 46 therein and a flange 47 extending perpendicularly from its outer end. Slidably mounted upon each bracket 37 is a block 48, the means for mounting the block 48 preferably being a machine screw 49, the head 51 of which slidably engages the face of the bracket 37 opposite the face against which the block 48 slides. A shoulder 52 on the screw 49 slides within the bracket's slot 46, and the shank 53 of the screw 49 is rigidly threaded into the block 48. The shoulder 52 is slightly longer than the thickness of the bracket 37 so that the screw 49 can be tightened to bring the shoulder 52 firmly against the block 48 without clamping the bracket 46 so tightly between the block 48 and the screwhead 51 that sliding movement of the block on the bracket would be interfered with.

A coil spring 56 is under compression between each block 48, and the flange 47 of the associated bracket 37. The springs 56, therefore, continually urge their associated blocks 48 inwards toward each other.

Each block 48 is provided with a socket 61 of tubular form, within which is anchored an end of a cable 62. A pair of pulleys 66 are mounted preferably on the gunwales 67 of the boat 12 in transverse alignment with the lever 29, and another pair of pulleys (not shown) are mounted on the gunwales 67 near the boat's stern. Each of the cables 62 is reeved through one of the forward pulleys 66 and through one of the after pulleys (not shown) whence it extends to the tiller lever 68 to which it is fastened, with the result that when the lever 29 on the rod 28 turns, the cables will operate to swing the tiller lever 68 and thereby move the rudder 69, thereby determining the course traversed by the boat 12.

The brackets 37, the sliding blocks 48 and the springs 58 which serve to connect the cables 62 to the lower end of the lever 29, not only maintain constant tension in the cables 62, but they also compensate for variations in the distance between the lower end of the lever 29 and the two forward pulleys 66, which are coincident with rotary movement of the lever 29 about the axis of the rod. Such variations are more clearly understood by comparison of Figures 2 and 3. Figure 2 shows the lever 29 in its central position, whereas the Figure 3 shows the lever swung to one side with the result that its lower end is higher than its Figure 2 position, thus accounting for the fact that the distance from one pulley 66 to the axis of the screw 38 in the lower end of the lever and thence to the other pulley 66 is less when the parts are in their respective positions illustrated in Figure 3 than when in their Figure 2 positions. The manner in which the sliding blocks 48 compensate for this variation in the effective length of the cables is understood best by comparison of Figures 5 and 6. Figure 5 indicates the positions taken by blocks 48 when the lever 29 is vertical. In this position the total length from one pulley 66 to the other through the axis of the screw 38 is greatest, therefore the block 48 is pulled outwards, against the tension of its associated spring 56, to its outermost extreme position. In Figure 6, however, the lower end of the lever 29 has been swung to the right, pulling the cable 62 at the left-hand end of the figure with it. Hence this is the cable 62 which pulls upon the tiller handle 68; and accordingly immediate response of the rudder 69 to any move-

ment of the rod **28** is assured because of the fact that block **48** to which is connected the cable **62** which actually moves the rudder is at its outermost extreme of movement when that cable is so operated, whereas the other block **48**, because of the decrease in distance between the pulley **66** through the other end of the lever **29**, is moved inwards away from its associated flange **47** by its spring **56**, as illustrated at the right-hand side of Figure 6.

Whereas the word "cable" has been employed throughout the specification and claims in describing the flexible tension members **62**, it should be understood that the word has been employed in its broader sense without any intension of indicating any specific type of flexible member, inasmuch as different types of cord, rope, or even chain might be employed under various conditions of operation.

Since the steering lever **66**, the ignition switch **8** which is connected by suitable electrical connections (not shown) to the motor **71**, and the throttle lever **7** which is connected to the motor **71**, as by a suitable length of Bowden wire **72**, are all mounted upon the platform **9**, all three of these control devices are most conveniently accessible to the operator of the boat **12**. It is intended that he be seated on the seat **11** with the platform **9** between his knees; then after having started the motor and determined its proper speed by means of the throttle lever **7**, he can steer the boat by movement of the lever **6**. However, due to the location of the lever **6** between the operator's knees, it is not necessary for him to hold the lever **6**; on the contrary, his hands may be left free to manipulate a fishing rod, a landing net, or to perform any other operations coincident with the manipulating of the boat. This arrangement has proven most convenient when trolling. The operator merely rides along, holding the rod in his hands. Then, when he gets a strike, he can most easily steer the boat in the half-circle necessary to head toward the fish simply by moving the handle **6** in the proper direction with one knee, all the time keeping both hands on the fishing pole and thereby minimizing the danger of losing the fish.

I claim:

1. A control device for a boat having a seat extending transversally thereof, and a rudder having a tiller operatively connected thereto, said control device comprising a rod, means for mounting said rod on said seat substantially in a fore-and-after position and for rotary movement about its own axis, manually operable means carried by one end of said rod for imparting rotary motion thereto, a lever carried by the other end of said rod, a pulley mounted on said boat on each side of said lever, a pulley mounted on said boat on each side of said tiller, cables reeved through said pulleys and interconnecting said lever and said tiller whereby rotary movement of said lever about the axis of said rod imparts rotary movement to said rudder, and resilient means connecting at least one of said cables to said lever comprising a bracket pivotally connected to said lever, a flange extending angularly from said bracket adjacent the outer end thereof, a block slidably mounted on said bracket, means connecting said one of said cables to said block and extending slidably through said flange, and a spring under compression between said block and said flange.

2. A control device for a boat having a seat extending transversally thereof, and a rudder having a tiller operatively connected thereto, said control device comprising a rod, means for mounting said rod on said seat substantially in a fore-and-aft position and for rotary movement about its own axis, manually operable means carried by one end of said rod for imparting rotary motion thereto, a lever carried by the other end of said rod, a pulley mounted on said boat on each side of said lever, a pulley mounted on said boat on each side of said tiller, cables reeved through pulleys and interconnecting said lever and said tiller whereby rotary movement of said lever about the axis of said rod imparts rotary movement to said rudder, and resilient means connecting at least one of said cables to said lever comprising a bracket pivotally connected to said lever and having a longitudinally extending slot therein, a block slidably engaging a face of said bracket, a screw having a shank rigid with said block, a shoulder slidable within said slot, and a head slidably engaging the opposite face of said bracket, means providing an abutment on said bracket adjacent the outer end thereof, a tube rigid with said block and extending slidably through said flange, said one of said cables being anchored within said tube, and a spring under compression between said block and said flange.

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