Nov. 27, 1934. H. G. DUGAN 1,981,908

BOAT

Filed Sept. 21, 1931 3 Sheets-Sheet 1

Fig. 1.

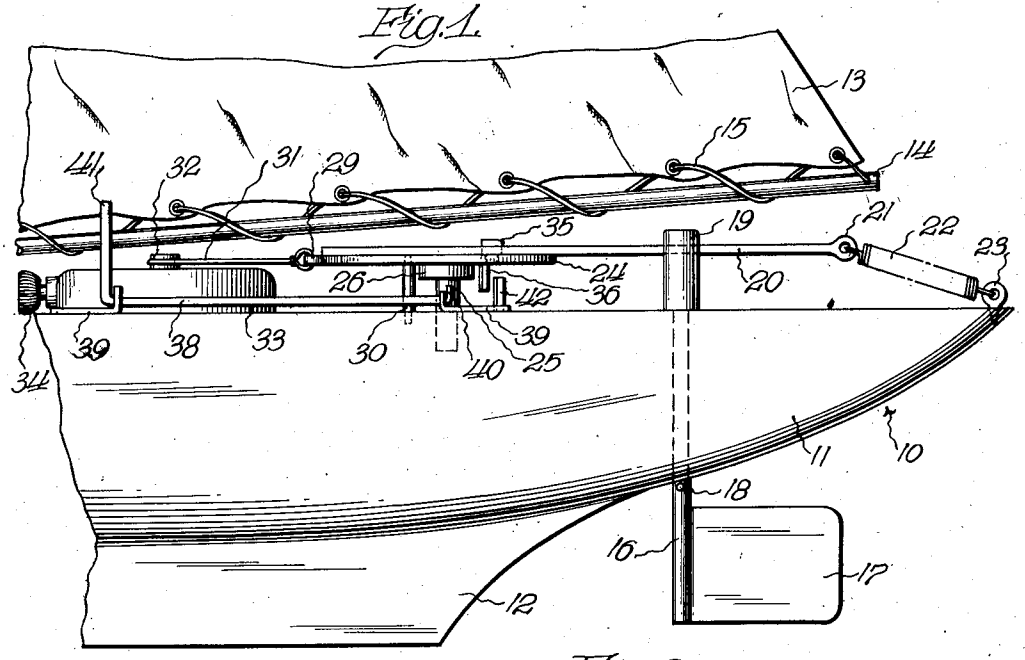


Fig. 2.

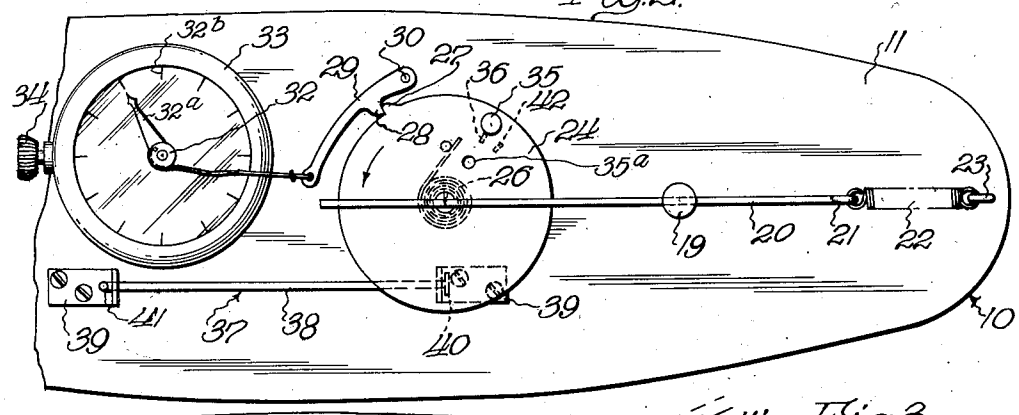
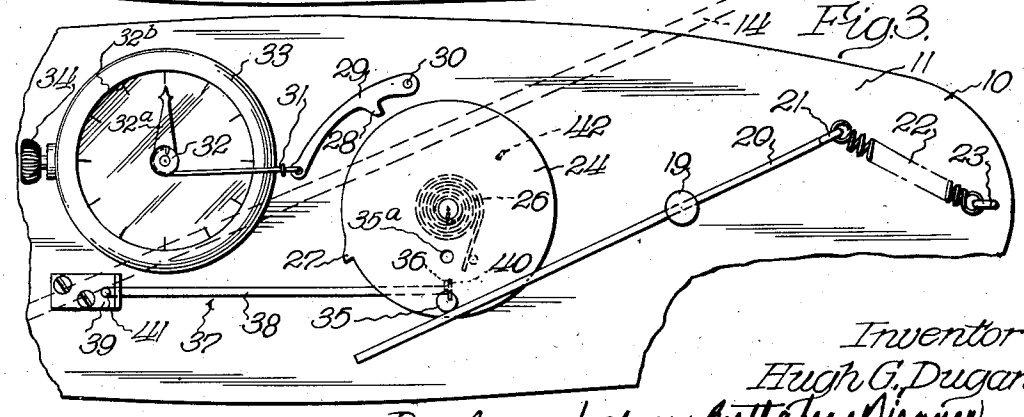


Fig. 3.



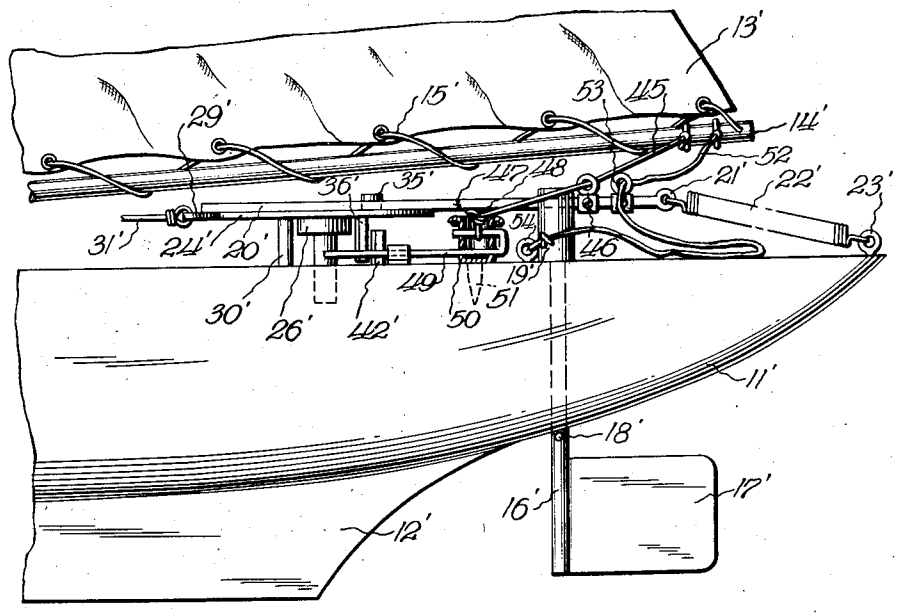
Inventor:
Hugh G. Dugan
By Brown, Jackson, Boettcher & Dienner
Attys.

Nov. 27, 1934. H. G. DUGAN 1,981,908

BOAT

Filed Sept. 21, 1931 3 Sheets-Sheet 2

Fig. 4.



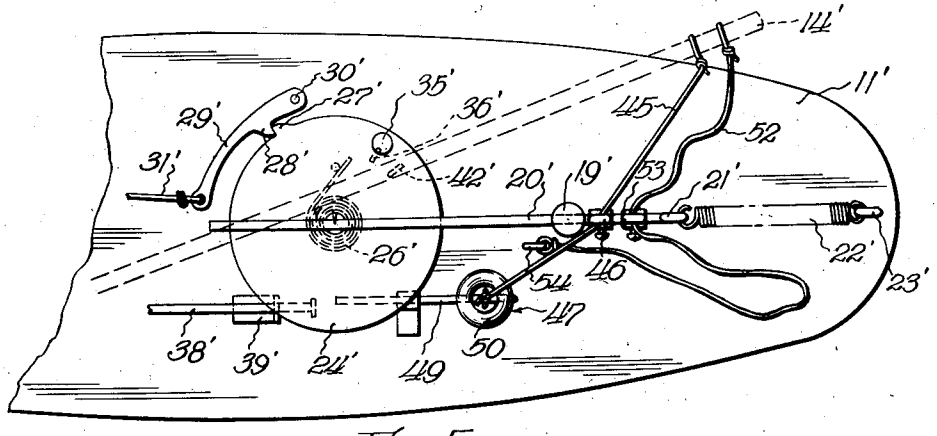


Fig. 5.

Inventor:
Hugh G. Dugan
By Brown, Jackson, Boettcher & Dienner
Attys.

Nov. 27, 1934. H. G. DUGAN 1,981,908

BOAT

Filed Sept. 21, 1931 3 Sheets-Sheet 3

Fig. 6.

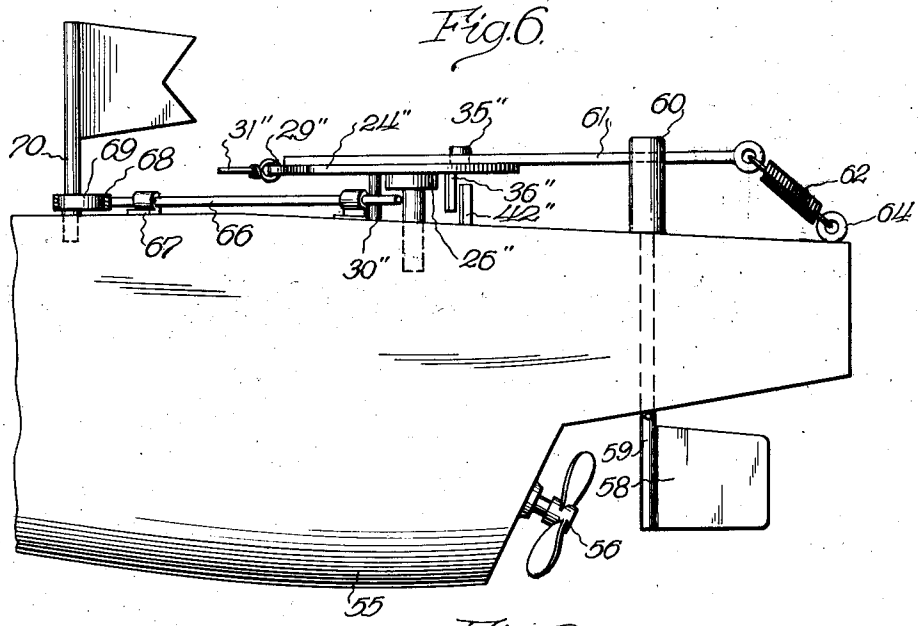


Fig. 7.

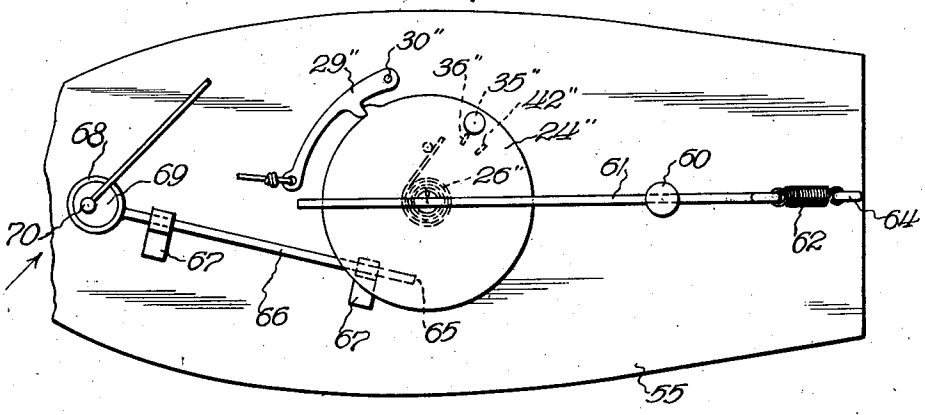


Fig. 8.

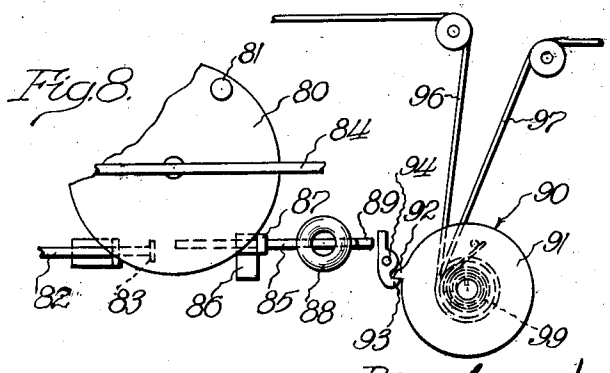
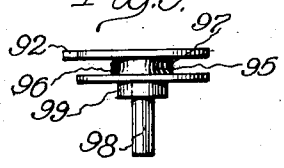


Fig. 9.



Inventor:
Hugh G. Dugan
By Brown, Jackson, Boettcher & Dienner
Attys.

Patented Nov. 27, 1934 1,981,908

UNITED STATES PATENT OFFICE

1,981,908

BOAT

Hugh G. Dugan, Hinsdale, Ill.

Application September 21, 1931, Serial No. 563,909

16 Claims. (Cl. 46—37)

This invention relates to boats, and more particularly to boats provided with control means for causing them to move in a predetermined manner.

The present invention relates particularly to means for controlling the movement of toy sail boats, and the like, but it is to be understood that it is applicable to toy motor boats and other devices as will hereinafter appear. It is to be understood also that if, for any reason, it is desired to have a pilotless full-sized or substantially full-sized boat go out over the water and return, the present invention, particularly in its broader aspects, may be used for that purpose.

Although it has heretofore been known to provide a toy boat with a control for causing the boat to move in a predetermined direction or series of directions, there has been no provision, as far as I am aware, for causing the boat to proceed in a straight line or substantially straight line direction for any desired predetermined distance, and then to reverse itself and return in a straight line or substantially straight line to its original position.

The particular embodiments of the invention selected for illustration cause the boat to travel out over the water straight ahead or substantially straight ahead for a predetermined period of time or a predetermined distance and then to turn around and return to the original starting point.

I therefore propose to provide, in a boat of either the sail boat or motor boat type, adjustable means for enabling the boat to proceed in accordance with the movements outlined above.

In providing a sail boat, for instance, with such a controlling means, I preferably employ means for turning the tiller bar to an angular position after a definite predetermined travel, and for maintaining the tiller bar in such an angular position until the boat "comes about" or reverses its direction, whereupon the main boom of the boat swings from the newly presented windward side to the leeward side of the vessel and causes the tiller to assume a position enabling the vessel to travel in the reverse direction to its original starting position or to position in proximity to the original starting position.

In some instances, such as in cases where a boat is proceeding "close hauled" or is sailing into the wind, after a predetermined distance or period of time has been traversed, and the tiller bar has been turned angularly to reverse or turn the boat about, it is desirable to allow the boom carrying the main sail to swing outwardly so that the boat in returning may run "free before the wind", and I provide means for releasing the sheet or halyard holding the boom in its "close hauled" position and allowing the boom to swing into the free running position. The tiller bar is at the same time returned to its normally aligned position to cause the boat to return to its original starting point or to position in proximity thereto.

I also provide means for allowing a vessel to be put out "running free" and to come about and return "close hauled". In this maneuver, the sheets are allowed to be fully extended, which permits the sails and the associated booms to assume a "free running" position. As the coming-about mechanism is released, the boat swings about or reverses its direction, and as it begins to straighten out on its return, the coming-about mechanism causes the sheets to be drawn up, resulting in the sails assuming a "close hauled" position for the return movement.

It is also contemplated to provide adjustable means for allowing a boat to put out on a given course, and at a preselected period of time, to change tack and set out on a second course at an angle to the first course, but not necessarily to come about entirely. In this adaptation the main sheet or halyard or boom sheet or halyard and the jib sail sheet or halyard are both set at a position dependent upon the direction of the wind and the direction in which the boat is to be set out. At a preselected distance, or time, the sheets are actuated after the tiller has been moved to an angular position, and the vessel sets out on a different tack with the main sail automatically swung into the proper position. This setting can be varied to produce any desired or predetermined movement of the vessel.

The device is equally applicable to a yawl, in which there are three sails to be hauled in, and can be modified to haul in as many sails as the vessel carries. Thus the mechanism is adaptable to any type of sailing vessel and can haul in one or a plurality of sails.

It is also an object of my invention to adapt the movement-controlling means described in connection with a sailing boat to the ordinary type of toy motor boat, which type of boat usually is propelled by some type of steam power or a clock-spring motor, and which is equipped with a rudder normally causing the boat to proceed in a straight line direction. In this adaptation, a small wind vane, preferably formed of metal, and mounted as a flag or the like on the boat, is adapted to hold the rudder in angular position while the boat is turning about, and then releases

the mechanism to return the rudder to its normal position.

The controlling means of the present invention comprises a spring actuated disc, an escapement or latch releasing mechanism controlled so as to be released at any predetermined time, means for engaging the tiller bar of the vessel to actuate the rudder for turning the boat, and a stop for maintaining the tiller bar in its angular position only until the vessel has come about. Various modifications and adaptations of the specific illustrated construction of my invention are contemplated.

In order to acquaint those skilled in the art with the specific details of construction and operation of my invention, I shall now describe it more completely in connection with the accompanying drawings, in which:

Figure 1 is a fragmentary side elevation of a sailing boat provided with my novel control means;

Figure 2 is a fragmentary plan view of the deck portion of the boat shown in Figure 1, illustrating in detail the arrangement of my controlling means;

Figure 3 is a plan view similar to Figure 2 showing the device in operating position;

Figure 4 is a fragmentary elevational view of a vessel similar to the vessel shown in Figure 1, but provided with the modified form of my device which is adapted to be used when the vessel is sailing "close hauled";

Figure 5 is a fragmentary plan view of the deck construction and the mounting of my controlling means thereon;

Figure 6 is a fragmentary elevational view of a motor boat provided with my novel controlling means;

Figure 7 is a fragmentary plan view of the motor boat shown in Figure 6;

Figure 8 is a fragmentary plan view of an embodiment for putting out "running free" and returning "close hauled"; and

Figure 9 is an elevational view of the spool shown in Figure 8, with the sheets in section.

Referring now in more detail to Figures 1, 2 and 3, the boat is indicated generally by the reference numeral 10. It has the hull portion 11, the keel 12, and is provided with a main sail indicated by the numeral 13. The bottom edge of the sail 13 is attached to the main boom 14, which is pivotally connected to a suitable mast, not shown. The sail 13 is secured to the boom 14 by means of the lacing 15, as is well known and does not need to be described in detail.

Projecting through the rearwardly extending portion of the hull 11 is a vertically mounted pivotal post member 16 provided at its lower end with the projecting flat rudder portion 17. A pin 18 prevents the upward movement of the post 16. A cap member 19 is secured to the upper portion of the post 16 which projects upwardly past the deck line of the vessel and is provided with a diametrical opening adapted to receive the tiller bar 20. This tiller bar 20 is secured in the opening in the cap 19 and serves to impart rotating movement to the rudder 17. The outer end of the tiller bar 20 is provided with a loop or eye portion 21 which receives one end of a spring 22. The other end of the spring 22 is secured in a suitable eye member 23 screwed or otherwise fastened into the deck end of the hull 11. The spring 22 is provided for normally maintaining the rudder in a straight line or substantially straight line position.

Mounted in a horizontal plane above the deck portion is a disc member 24 which is secured to a pin member 25 adapted to project down into, and be secured to the hull 11. A suitable spring member 26 is secured around the pin member 25 and serves to urge the disc into rotation in a counter-clockwise direction, as indicated by the arrow in Figure 2. It is to be understood, however, that the direction of rotation is optional and may be reversed. The disc 24 is provided with a suitable projecting lug member 27 adapted to be normally engaged by a lug or pawl member 28 provided on the release lever 29. This release lever is pivoted on the deck and in the plane of the disc 24 by means of a pin 30.

The extending end of the lever 29 is provided with an enlarged portion adapted to receive a pull chain or cable member 31 which is connected to the rotating portion 32 of a time-piece or control mechanism 33. This control mechanism may comprise a watch or any suitable actuated means. In the illustrated embodiment it is an ordinary time-piece provided with the usual spiral spring (not shown), this spring being wound by a projecting stem 34, and connected to turn shaft 32.

It is contemplated that an ordinary type of stop-watch might be used for this purpose and adapted to be so set that upon a given amount of rotation or given number of rotations of the rotating mechanism 32, the cable member 31 will pull the latching member 29 from engagement with the lug 27 of the disc 24 and allow the disc to rotate under tension of the spring 26. The rotating member or shaft 32 has a pointer 32*a* cooperating with a scale 32*b* which may be graduated to indicate the time or distance of travel of the boat before the reversing operation occurs. The pointer may be set to the desired indication by means of the stem 34 which may be freed from the watch spring or other driving means, in the manner now employed in setting a stem winding watch. By freeing the stem 34 from the clock-spring or other driving means, the cable, chain or other flexible element 31 may be wound upon or unwound from the shaft 32 to the desired extent so that upon engaging the stem to connect the driving means with shaft 32 the pointer 32*b* will be positioned to indicate the time duration of travel of the boat before it is reversed. Obviously, the less the slack present in flexible element 31 the less the amount of travel of the boat before it is reversed, and the greater the slack the greater the amount of travel.

The disc 24 is provided with an upwardly projecting lug member 35 carried preferably near the outer periphery thereof. A second lug member 36 depends from the lower surface of the disc 24 and is positioned in radial alignment with the lug 35, but is spaced a short distance inwardly therefrom. It is to be understood that the lug 35 may comprise a peg member adapted to seat in a corresponding opening in the disc 24. If desired, several openings might be provided at different distances from the center of the disc, such as the hole indicated at 35*a*, which would actuate the tiller to effect tacking instead of "coming-about" completely. Thus, under this condition, partial rudder action only is effected, the action being controlled by the position which the lug 35 occupies with respect to the center of the disc.

Upon rotation of the disc 24, the lugs 35 and 36 rotate therewith, the lug 35 contacting the projecting end of the tiller bar 20 after rotation of disc 24 approximately one-third of a revolution. Further rotation of the lug member 35 forces the tiller member to the angular position shown in Figure 3, and the lug holds the tiller

in this position, a stop mechanism indicated generally by the reference numeral 37 causing the disc to remain stationary at this point.

This stop mechanism comprises a stop lever 38 preferably formed of a steel rod of sufficient diameter to resist bending, this rod passing through two bearings supports 39, 39 fastened to the deck of the hull. The rod 38 has the upwardly extending end portion 40 which is flattened to provide a stop means which engages the depending lug 36 secured to the disc 24. This upturned and flattened end 40 is adapted to hold the disc 24 from further rotation and results in the tiller bar 20 being held in the angular position shown in Figure 3 while the boat is swinging about. As the boat completes its turning movement, the boom 14, actuated by the sail 13 swings from the windward side of the vessel to the leeward side thereof, the boom 14 contacting the upwardly extending end 41 of the rod 38. This causes the rod 38 to be turned or rotated in the bearings 39 and releases the lug 36 from the stop 40.

The spring 26 then urges the disc to rotate further in a counter-clockwise direction, and after the lug passes the center line of the ship, the tiller bar 20 returns to its normal position, and is held by the tension in the spring member 22 connected therewith. A stop member 42 is provided on the deck of the hull 11 and projects upwardly to contact with the depending lug 36 of the disc 24 to limit further rotational movement of the disc after the tiller bar has once been actuated and disengaged.

Thus it is apparent that the boat is initially started in a straight line direction, and after a predetermined period of time, regulated by means of the controlling mechanism 33, the release lever 29 is actuated to allow rotation of the disc 24. The disc 24 rotates to the position shown in Figure 3, causing the tiller bar to assume an angular position with respect to the hull 11 and causing the ship to swing about to reversed or substantially reversed position. It is held in this position by the stop 40. As the vessel swings about, the boom 14 carrying the main sail 13 swings from the windward side thereof to the leeward side, causing the upturned end 41 of the control rod 38 to be knocked over, resulting in release of the lug 36 and the further rotation of the disc 24 to its inoperative position, where it is stopped by means of the lug 42. The tiller bar returns to its normal position due to the tension in the spring member 22, and the result is that the boat is reversed and returns to its original starting position in a straight line or substantially straight or at least along its path of travel outwardly from its starting point. The control mechanism 33 may be regulated so that it will operate at any desired time, and the position of the stop 40 may be such that the tiller bar can be held at an angle either greater or less than that shown in Figure 3, depending upon the space in which the vessel 10 has to come about and return to its original position.

It is obvious that other suitable releasing means might be employed in place of the control mechanism 33 and the release lever 29, and it is contemplated that the release means might be so formed that the disc 24 would be held against rotation until a certain period of time, then allowed to rotate as described, and returned to its original position to be in readiness for a further operation at a second given period of time, resulting in continued movement of the ship first in straight line direction and then in a circular or reversing direction.

Referring to the embodiment shown in Figures 4 and 5, the controlling means for the movement of the vessel are identical with those represented in Figures 1 to 3. However, this embodiment is intended to be used in cases where the vessel is sailing "close hauled" as in the case when the vessel is sailing against the wind. In such cases, when the vessel comes about it returns running "free before the wind" with the sails extended at practically right angles to the direction of movement of the vessel. It is thus necessary to provide some means for releasing the sheets controlling the movement of the booms to which the sails are connected so that upon turning movement of the vessel, the booms will be permitted to swing outwardly to their free running positions. This means is provided in this embodiment.

Referring to Figures 4 and 5 it will be observed that the boom 14 is held in "close hauled" position by means of the main sheet member 45. This sheet member is adapted to pass through a suitable eye 46 secured to the tiller bar 20' and from the eye 46 is carried to a suitable latching mechanism indicated generally at 47.

A knot is formed in the end of the sheet 45 and forms a loop adapted to fit over a control or latching bar 49 which is carried in suitable bearings fastened to the deck of the hull 11. The latching bar 49 is preferably of U-shaped structure and fits into suitable openings formed in a yoke or supporting member 50 fastened by means of the stud member 51 into the hull 11. The outwardly projecting end of the latching rod 49 is adapted to have abutting contact with the depending lug 36' secured to the disc 24'. As the disc 24' rotates, the lug 36' thereof is adapted to engage the stop provided by the control rod 38', and is held in this position while the vessel swings about. As the vessel comes about, the boom 14' swings from the windward side thereof to the leeward side, knocking the control rod 38' about its support and releasing the lug 36'. Further rotation of the disc 24' causes the lug 36' to push the latching rod 49 out of engagement with the yoke member 50 causing the knot formed in the end 48 of the sheet 45 to become disengaged and releasing the boom 14' from its "close hauled" position.

A secondary sheet 52 is secured outwardly from the sheet 45 upon the boom 14' and passes through a second eyelet 53 positioned on the tiller bar 20'. This second sheet 52 is of much greater length than the sheet 45 and is adapted to allow the boom 14' to swing to its free running position. The end of the sheet 52 is fastened to a stanchion or pin member 54 secured in the deck of the hull 11'.

It is to be understood that the eyes 46 and 53 are adjustable along the tiller bar 20, and the distance that the eyes are positioned from the pivot point 19 is dependent upon the leverage desired, which is determined by the strength of the wind. When a boat is sailing up into the wind, very little rudder pressure is needed, therefore the "close hauled" sheet passes through the eye 46 nearest the rudder post, resulting in less leverage to translate the pull of the sail into rudder movement.

However, when the boat is traveling before the wind more pressure on the rudder is required, which means that the "running free" sheet passes

through the eye farthest from the rudder post to effect more leverage on the rudder.

Thus it is apparent that a ship starting out in a "close hauled" position is adapted to return in a free running position by the release of the sheet 45. This is accomplished simultaneously with the turning of the ship and as the ship comes about the boom swings to its free running position automatically. The remainder of the control mechanism for controlling the movement of the vessel is similar to that shown in Figures 1 to 3 and needs no further detailed description.

The embodiment shown in Figures 6 and 7 is adapted to be applied to a motorboat instead of a sailing vessel. In applying my movement-controlling mechanism to a self-propelled vessel, I provide for using means other than the swinging of the boom of a sail boat from the windward to the leeward of the vessel for the purpose of releasing the tiller bar from its angular position. In other words, means is provided to supplant the control rod 38 which is knocked over by contact of its upturned end 39 with the boom 14 of Figures 1 to 5.

Referring in more detail to this embodiment, the hull of a motor boat is indicated by the reference numeral 55. It is provided with a propeller 56 adapted to be energized by any suitable motor means, such as a rubber band or a clock-spring motor. This detail forms no part of the present invention.

A rudder member is adapted to be placed in a cut out portion of the hull 55 and has the rudder post 59 attached thereto extending upwardly through the hull 55 and surmounted at its upper end by a cap member 60. The cap member 60 is provided with a suitable opening for receiving the tiller bar 61, this tiller bar corresponding to the tiller bar 20 of the embodiment shown in Figures 1 to 5. The outer end of the tiller bar 61 is provided with means for receiving a spring member 62 which normally urges the tiller bar into the straight line position, best shown in Figure 7, the rudder member 58 is aligned with the longitudinal axis of the hull 55. The other end of the spring 62 is secured in a suitable support fastened in the hull 55 of the boat and indicated by the numeral 64. The mechanism for rotating the tiller bar 61 about the rudder post 59 is the same as that shown in Figures 1 to 5, and comprises the disc 24'' with the upwardly projecting lug 35'' and the downwardly projecting lug 36''.

The escapement or release lever 29'' (Figure 7) is shown as in its operative position, holding the disc 24'' against rotation. The spring member 26'' is adapted to rotate the disc 24'' upon release of the lever 29'' and forces the lug 35'' into contact with the tiller bar 61 holding the tiller bar in an angular position. The depending lug 36'' of the disc 24'' is adapted to contact with the end 65 of a control rod 66, and holds the tiller bar 61 in angular position with respect to the hull 55. The control 66, which is adapted to be mounted in suitable bearings 67 secured to the deck of the hull 55, extends forwardly and at its ends is provided with enlarged circular portion 63 adapted to fit around an eccentric 69 secured to a flag staff 70. A small metal flag or vane is mounted on the staff 70 and serves as a means for releasing the lug 36'' from the end of the rod 65 and permitting the tiller bar to assume its normal position.

The flag 71 is initially set in a position corresponding to the direction in which the wind is blowing as the vessel is put out. When the release mechanism 29'' operates and the disc 24'' rotates, causing the boat to start to come about, the flag 71 is affected by the wind and rotates the eccentric 69. As the boat completes its movement the flag 71 assumes a position 180 degrees from the position shown in Figure 7, and causes the eccentric 69 to pull the control rod 66 forwardly, releasing the lug 36'' from the end 65 thereof and allowing the disc 24'' to rotate back to its position against the stop lug 42. The spring 62 then turns the tiller bar 61 to normal position, causing the rudder 58 to straighten the ship out and return it to its original starting position.

It may be desired to have a vessel, particularly if it is a sailing vessel, put out "running free" and return "close hauled". To accomplish this result, I provide an adjustable setting for automatically controlling the sheets governing the position of all the sails. Referring to the detailed embodiment of Figures 8 and 9, the coming-about mechanism is provided as in the embodiment of Figures 4 and 5. It comprises the disc 80 having the upwardly projecting lug 81 corresponding to the lug 35' of Figure 4, and is provided with a suitable spring, not shown, for rotating the disc in a counter-clockwise direction.

The disc is provided with the usual depending lug, not shown, corresponding to the lug 36' of Figure 4, this lug being adapted to be engaged by the usual stop mechanism 82, similar to the control rod 38 of Figure 1. The operation of the device up to this point is as described in connection with Figures 1 to 3 and needs no further detailed description.

The flattened upturned end portion 83 of the stop mechanism holds the tiller bar 84 in angular position for changing the tack of the boat and allowing it to come about. As the boom releases the stop mechanism the lower depending lug engages the end of a latching bar 85 similar to the latching bar 49 of Figure 4. This latching bar is mounted for longitudinal movement in a suitable guide or support 86 secured to the deck of the vessel, and is provided with a collar 87 for limiting the movement of the rod in the guide.

The latching rod 85 has sliding engagement in a suitable yoke or supporting member 88 corresponding to the member 50 of Figure 4. This yoke member is provided for permitting the vessel to maneuver as described in connection with Figures 4 and 5, which maneuver is exactly the opposite of the maneuver possible in connection with Figures 8 and 9. The lower portion of the latching rod 85 has a projecting portion 89 which is adapted to form a release for the sheet controlling mechanism indicated at 90.

This sheet controlling mechanism comprises a reel 91 provided with an outwardly projecting pawl 92 adapted to be engaged by a suitable dog 93 pivoted on a pivot shaft 94 secured to the deck of the vessel.

The reel 91 comprises one of a pair of discs adapted to form the outer surfaces of a pulley indicated at 95. The jib sail or other sheet 96 and the main sail sheet 97 are adapted to be secured about the pulley portion 95 of the sheet controlling mechanism 90. The controlling mechanism is adapted to be supported by means of a shaft 98 suitably mounted in the deck of the vessel and is provided with a spring 99 adapted to rotate the reel 91 and the associated pulley 95 in a counter-clockwise direction.

It is thus apparent that as the boat is set out

running free, the sheets 96 and 97 will be extended to their full length, causing the pulley 95 to be rotated to increase the tension of the spring member 99. The dog 93 is then placed in engagement with the pawl 92 for holding the mechanism 90 in the proper position and the boat sets out "running free". At a suitable preselected time, the releasing mechanism releases the disc 80 and allows the lug 81 to move the tiller bar 84 to an angular position, resulting in the boat changing its direction. This causes the boom to swing from the newly presented windward side to the leeward side of the vessel, releasing the stop mechanism 82 and allowing the lower projecting lug mounted on the disc 80 to engage the end of the latching rod 89. This results in causing the projecting end 89 of the latching rod to engage the other end of the pivoted member 93, releasing the pawl 92 and allowing the mechanism 90 to rotate in a counter-clockwise direction.

This results in the sheets 96 and 97 being drawn inwardly about the pulley 95 and causing the boom to assume a "close hauled" position. Thus the vessel, which has set out with the boom in a "free running" position returns in a "close hauled" position.

If desired, the projecting end portion 89 of the latching rod 85 may be formed so as to provide a stop for limiting the amount of rotation of the reel 91, so that the disc will rotate only to a position where the pawl 92 is engaged by the projecting portion 89 of the rod. This will result in the rod causing the boom and main sail to assume a position which is not a "close hauled" position and which will result in the boat changing tack from not coming completely about and returning to its starting position. Thus a vessel may set out on a given tack and at a preselected period of time change tack and vary its course without returning to its original position.

It is also contemplated that the spring 99 may be rotated just sufficiently so that the tension within the spring will cause the disc 91 to rotate only to the amount desired for changing the tack of a vessel without completely reversing its movement. This adjustment may be made such that the disc 91 will make 1, 2, or a plurality of revolutions, depending upon the tension which has been put into the spring member 99 and will thus vary the angular direction that the vessel assumes in setting out on its new tack.

While I have shown but one method of permitting the tiller bar to be released from its angular position as the boat reverses its direction, it is to be understood that there are several methods of performing this operation, and I do not intend to be limited to the exact method shown.

My novel movement controlling mechanism for boats is thus applicable to either sailing vessels or motor boats, and can be used on either to control the movement thereof. Also, the device is operative upon boats which may be sailing against the wind in one direction and with the wind in the opposite direction. I do not intend to be limited to the exact details shown and described, but only in so far as defined by the spirit and scope of the appended claims.

I claim:

1. The combination with a pilotless boat having means for steering the same, means for initially holding the steering means in position to direct the boat away from starting position, spring actuated rotating means for engaging said steering means mechanically to reverse the direction of travel of the boat after a preselected time-controlled movement, and means for positively returning the steering means to initial position upon reversal of the boat.

2. In a boat, movement controlling mechanism comprising a disc, means for rotating said disc, latching means restraining said disc, means for releasing said latching means when said boat has traversed a predetermined distance, a rudder for guiding said boat, a tiller bar connected to said rudder, means on said disc adapted to engage and rotate said tiller bar upon rotation of said disc, stop means for limiting the rotation of said tiller by the means on said disc, and means for releasing said stop means when said boat has turned about to return said tiller to its initial unrotated position.

3. In a sailing vessel, a disc, latching means therefor, latch releasing mechanism, steering means for said boat, means on said disc having abutting engagement with said steering means when said latch releasing mechanism is operated, stop means engaging said disc for maintaining said steering means in actuated position while said boat is turning about, and means for releasing said last named means when said boat has completely turned about.

4. In a sailing boat, a rotatable disc, latching means therefor, adjustable latch releasing mechanism, steering means for said boat, means carried by said disc for engaging said steering means when said disc is rotated, stop means for maintaining said steering means in actuated position, and means actuated by the change of tack of said boat for releasing said last named means when said boat has turned about.

5. In a sail boat, a disc mounted for rotation upon said boat, latching means therefor, latch releasing mechanism, a main sail for said boat, a main sheet secured to said main sail and holding said main sail in position with respect to said boat, steering means for said boat, means for rotating said disc to cause said steering means to be forced to an angular position with respect to said boat, means for releasing said main sheet when said boat has turned about, and means for allowing said main sail to assume a free running position with respect to said boat after said boat has turned about.

6. In a boat, sails therefor, booms secured to said sails, main sheets attached to said booms and normally holding said booms in position with respect to said vessel, secondary sheets secured to said booms and inoperative when said main sheets are in normal position, means for reversing automatically the movement of said vessel, means actuated by said reversing means to release said main sheets, means secured to said sheets for allowing said booms to assume a free running position with respect to said vessel when said sheets are released.

7. In a boat, a rudder, steering means secured to said rudder, rotating means adapted to engage said steering means at a predetermined time for automatically forcing said steering means to an angular position with respect to said boat, stop means for maintaining said steering means in said angular position, and means adapted to release said stop means to return said rudder automatically to normal position.

8. In a boat, movement controlling mechanism comprising a disc, spring means for rotating said disc, latching means restraining said disc, adjustable means for releasing said latching means when said boat has been moving a prede-

termined period of time, a rudder for guiding said boat, a tiller bar secured to said rudder, a projecting lug on said disc adapted to force said tiller bar automatically into an angular position with respect to said boat upon rotation of said disc, stop means for holding said disc in position for maintaining said tiller bar in said angular position, and means for releasing said stop means to return said tiller bar automatically to normal position.

9. In a sailing vessel having sails therefor, booms secured to said sails, sheets attached to said booms, rotating means comprising a spring actuated spool mounted on the deck of said vessel, said sheets having their free ends secured to said rotating means, and release mechanism actuated by changing of tack of said vessel to release said rotating means to cause said sheets to be wound about said spool.

10. In a sailing boat, sails therefor, booms secured to said sails, sheets secured to said sails, tack changing mechanism, means for actuating said tack changing mechanism, stop means for holding said tack changing mechanism in actuated position, release means operable upon change of tack of said boat to disengage said tack changing mechanism, and rotating means for securing said sheets in a predetermined position, said release means actuating said rotating means to cause said sheets to be adjusted to a position corresponding to the change of tack of said boat.

11. In a pilotless sailing vessel, a main sail, sheets attached thereto, coming about mechanism for changing the tack of said vessel, releasable sheet engaging means, rotatable spring actuated sheet engaging means, the movement of said vessel being determined by securing said sheets selectively to one of said sheet engaging means.

12. The combination with a pilotless boat having a main sail, of rudder means for steering said boat, rotatable means for forcing said rudder means out of normal position, means for locking said last named means in rotated position, and means actuated by said main sail for releasing said locking means.

13. The combination with a pilotless boat having a main sail and sheets for controlling the position of said main sail, of rudder means for steering said boat, rotatable means for forcing said rudder means out of normal position, means for locking said last named means in rotated position, means actuated by said main sail for releasing said locking means, and means actuated upon release of said locking means for shortening said sheets.

14. The combination with a pilotless boat having a main sail and sheets for controlling the position of said main sail, of rudder means for steering said boat, rotatable means for forcing said rudder means out of normal position, means for locking said last named means in rotated position, means actuated by said main sail for releasing said locking means, and means actuated upon release of said locking means for lengthening said sheets.

15. In combination, in a boat having steering means therefor, a clockwork mechanism, a spring-actuated disc rotatably mounted on said boat adjacent said steering means and normally restrained against rotation, means for releasing said disc connected to said clockwork mechanism, means carried by said disc for angularly displacing said steering means to change the tack of said boat, and means actuated by change of tack of said boat for returning said disc to normal position and for releasing said steering means.

16. In combination, in a boat having steering means therefor, time controlled means adapted to engage said steering means after a predetermined time to displace said steering means angularly, adjustable pin means carried by said time controlled means for determining the angular displacement of said steering means, and means actuated by change of tack of said boat for releasing said steering means to initial position.

HUGH G. DUGAN.