May 24, 1932. R. EDGAR 1,859,557

REMOTE CONTROL APPARATUS FOR MINIATURE SAILBOATS

Filed July 7, 1930 3 Sheets-Sheet 1

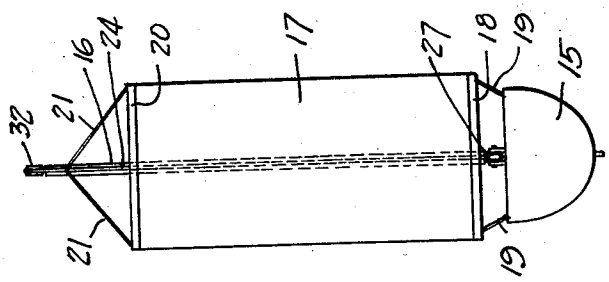


Fig. 2.

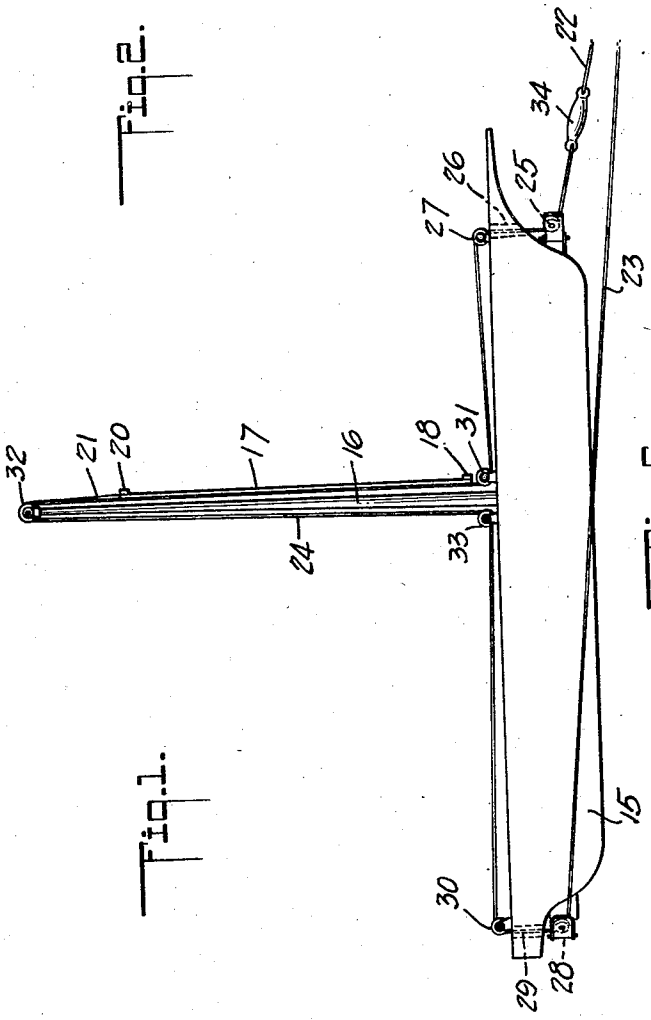


Fig. 1.

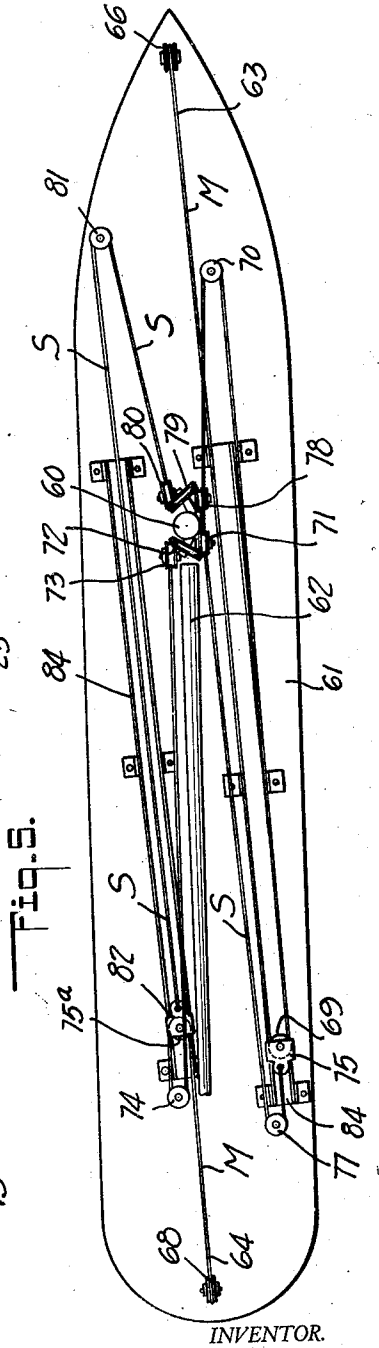


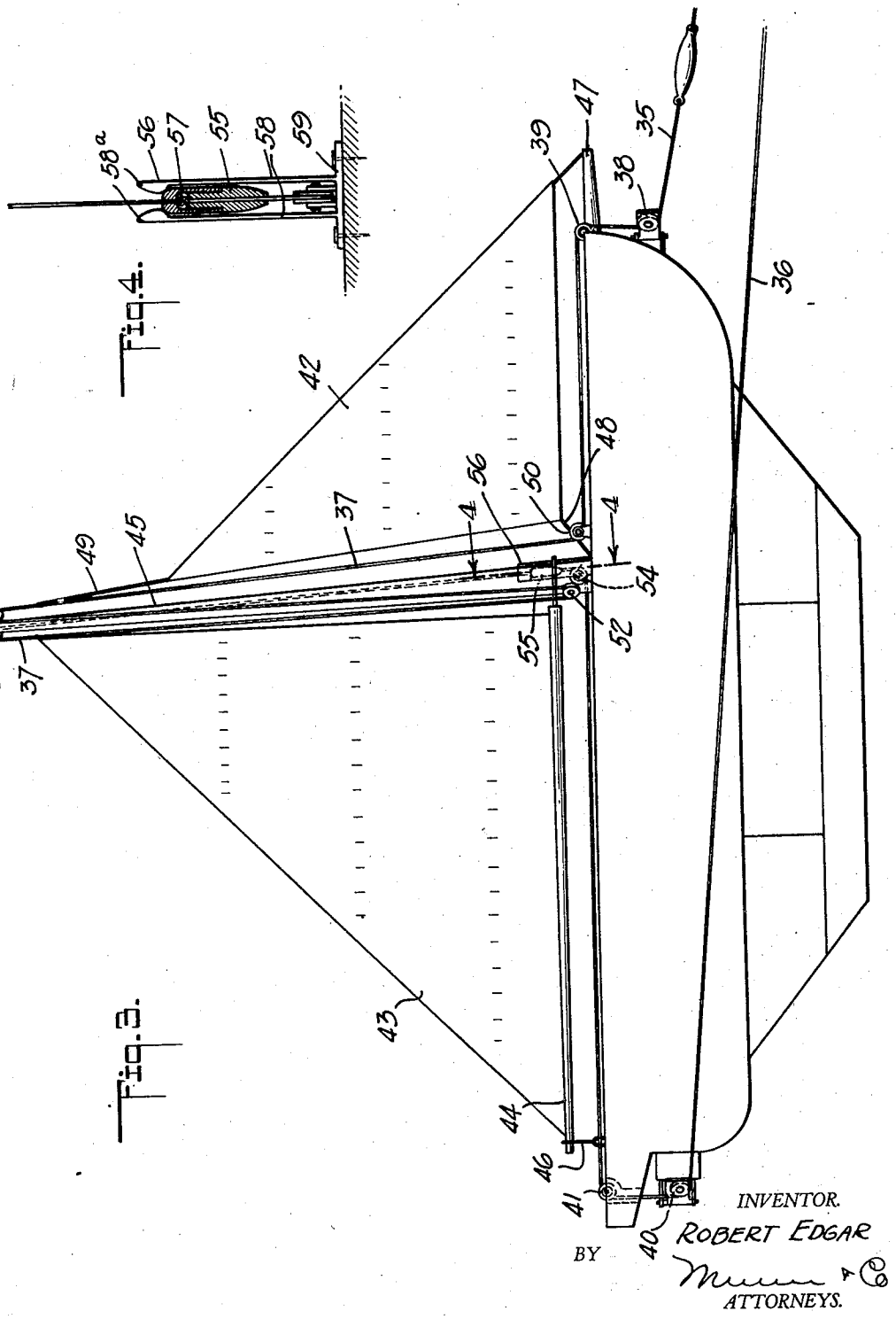
Fig. 5.

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REMOTE CONTROL APPARATUS FOR MINIATURE SAILBOATS

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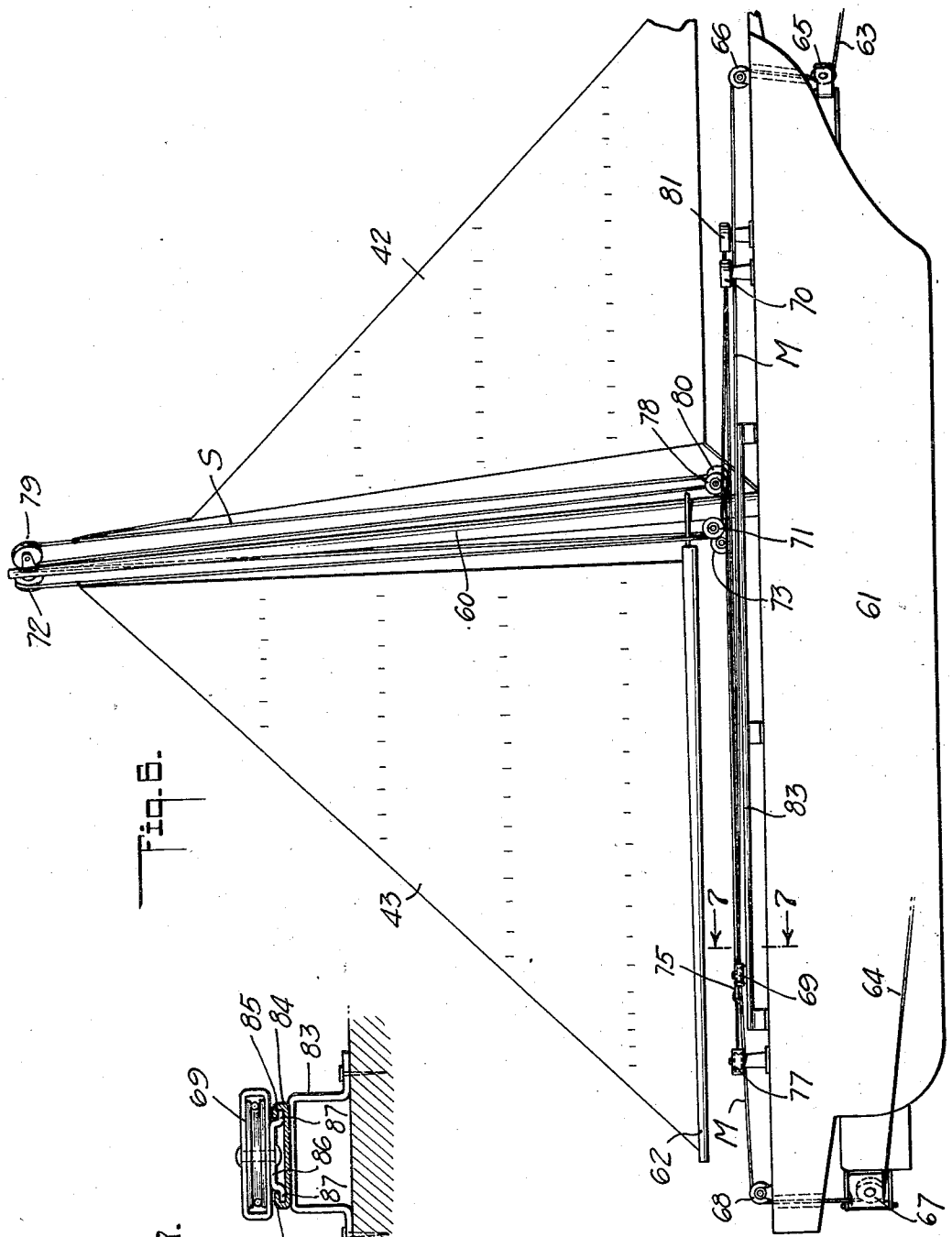


Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE

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REMOTE CONTROL APPARATUS FOR MINIATURE SAILBOATS

Application filed July 7, 1930. Serial No. 466,262.

My invention relates to remote control apparatus for miniature boats and is a divisional application in part of my application Ser. No. 43,594, filed July 14, 1925.

It is a purpose of my present invention to provide an apparatus which is manually operable from a point remote with respect to a miniature or toy sail boat, not only to move and control at will the movements of the boat as in my former apparatus, but which is also operable from a remote point to lower and elevate the sail or sails of the boat, the invention in one embodiment being operable to lower and elevate either or both of a pair of sails, while in another embodiment there is provided means for latching the sail or sails in elevated position and in a manner which does not interfere with the manipulation of the towlines to move and control the movement of the boat as a whole.

I will describe only three forms of remote control apparatus for miniature sail boats, each embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawings:

Fig. 1 is a view showing in side elevation a miniature sail boat having applied thereto one form of remote control apparatus embodying my invention.

Fig. 2 is a view showing the boat of Fig. 1 in front end elevation.

Fig. 3 is a view similar to Fig. 1 showing another miniature sail boat having applied thereto another form of remote control apparatus embodying my invention.

Fig. 4 is an enlarged vertical sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a view showing in top plan a third form of miniature sail boat having applied thereto a third form of remote control apparatus embodying my invention.

Fig. 6 is a view showing the boat and control apparatus of Figure 5 in side elevation.

Fig. 7 is an enlarged vertical sectional view taken on the line 7—7 of Figure 6.

Similar reference characters refer to similar parts in each of the several views.

Referring specifically to the drawings and to Figures 1 and 2, I have here shown a miniature sail boat comprising a hull 15 from the deck of which rises a mast 16 upon which a transverse sail 17 is adapted to be raised and lowered. The sail is secured to the deck at its lower end by means of a transverse beam 18 and cords 19 secured to the ends of the beam and to the deck. The upper end of the sail is provided with a transverse beam 20 from which extend converging lines 21.

The control apparatus for the boat just described, comprises a control line consisting of a suitable cord associated with the boat to provide a bow towline 22, a stern towline 23, and a boat line 24, the latter being associated with the sail 17 so that the latter can be raised and lowered by operation of the boat line through proper manipulation of the bow and stern towlines.

The towlines 22 and 23 are operatively connected to the hull of the boat, not at the extreme ends as in my former application herein referred to, but adjacent the ends of the hull and substantially along the vertical longitudinal central plane of the hull. As shown in Figure 1, the bow towline 22 is extended around a hinged pulley 25 mounted on the bow end of the hull, and then upwardly through an opening 26 in the hull where the line is trained over a pulley fixed on the deck of the hull. Similarly, the stern towline 23 is trained about a hinged pulley 28 on the stern end of the hull, and from this pulley the line extends upwardly through an opening 29 in the hull and over a pulley 30 on the deck of the hull.

It is to be noted that the openings 26 and 29 are spaced from the respective ends of the hull so that those portions of the hull projecting beyond the pulleys 25, 27, 28 and 30 provide projecting abutments to protect the pulleys and lines from damage in the event of the bow or stern end of the boat colliding with any obstruction.

The boat line 24 is in effect a continuation of the inner ends of the towlines 22 and 23, and as will be clear from a consideration of Figure 1 the bow end of the boat line extends from the pulley 27 rearwardly under a pulley 31. From this pulley the boat line

extends upwardly to the rear side of the sail 17 and to which the sail 17 is attached, so that as the line is pulled upwardly or downwardly, the sail will be raised or lowered. The boat line at its upper end joins the lines 21, and from the latter it is extended over a pulley 32 mounted on the mast 16. From the pulley 32, the boat line is extended downwardly to the rear end of the mast and under a pulley 23 whence, the line extends rearwardly over the deck of the hull to the rear pulley 30.

As in my parent application, the towlines 22 and 23 are adapted to be manually manipulated to move and control movement of the boat as a whole, and in practice the towlines extend obliquely from one side of the boat and forwardly or rearwardly, so that in towing ahead or astern the bowline or the sternline as the case may be, is at a greater angle with respect to the boat than the other line. Thus, upon towing the boat by the lines 22 and 23 from the shore or any other remote point, the boat is caused to travel ahead or astern depending upon which towline is at the greater angle with the boat, and in a prescribed course irrespective of the action of the wind upon the sail 17. Of course movement of the boat is assisted by the action of the wind upon the sail, but it may be definitely guided in its movements at all times by pulling on one line or the other, and simultaneously slacking the other line.

When it is desired to shift the boat and the towlines from their respective positions in towing ahead in any given direction to their corresponding positions for towing ahead in the opposite direction, or from their respective positions in towing astern in any given direction to their corresponding positions for towing astern in the opposite direction, the towlines in each instance have to be changed from one side of the boat to the other. To accomplish this, one of the towlines must be passed beneath the hull of the boat, and to facilitate such an operation the respective towline is weighted with a small sinker 34 secured to the line in spaced relation to the hull so that when the line is released its respective weight will operate to submerge the line sufficiently for the purpose.

In addition to providing a remote control means for moving and controlling movements of the boat, the towlines can be operated to actuate the boat line to the end of effecting the raising and lowering of the sail 17 and without affecting movement of the boat. To lower the sail onto the deck of the boat, one pulls on the bow towline 22 while simultaneously permitting the stern towline to slacken. Thus the boat line 24 is moved longitudinally to cause that stretch thereof attached to the sail to be pulled downwardly, thereby moving the sail to lowered or folded position on the deck of the boat. To raise the sail, one pulls upon the stern line and slackens on the bow line, thus moving the boat line in the opposite direction to move that stretch thereof connected to the sail upwardly on the mast, and thereby elevating the sail to extended position.

Referring now to Figures 3 and 4, I have here shown another form of sail boat, and another form of remote control apparatus which latter is similar to the apparatus shown in Figures 1 and 2 in that a control line is provided to form bow and stern lines 35 and 36, and a boat line 37. The towlines are associated with the hull of the boat in a manner similar to that shown and described in connection with the first form of control apparatus, the only difference being that the two pulleys at the bow are at the extreme end of the hull, and the vertical stretch of the bow towline is in advance of the hull. The pulleys of the bow towline are designated at 38 and 39, and those for the stern towline are designated at 40 and 41.

The boat shown in Figure 3 is provided with a jib sail 42 and a main sail 43, the main sail being connected to a jib 44 swingingly mounted on a mast 45. The rear end of the jib is secured to a staple 46 fixed in the deck of the hull so as to hold the jib in a fixed horizontal plane and, at the same time, to allow a minimum lateral movement thereof to permit the sail to swing to one side or the other of the mast. The main sail 43 is secured at its upper end to the boat line 37, so that by vertical movement of the boat line, the sail can be lowered or elevated. The jib sail 42 is connected at its forward end to a front jib 47 secured to the bow of the boat, and the rear end of the jib sail is tied to a staple 48 fixed in the deck. At its top corner the jib sail is provided with a suspension cord 49 which is run up and made fast to another vertical stretch of the boatline 37.

The boat line 37 can be traced as extending rearwardly from the pulley 39 through and around a pulley 50 mounted on the deck of the hull. From the pulley 50, the boat line extends upwardly and around a pulley 51 mounted on the upper end of the mast 45. From this pulley, the line extends downwardly around a pulley 52 mounted on the lower end of the mast, and from this pulley the line extends upwardly around the pulley 53 at the upper end of the mast. From the pulley 53, the boat line extends downwardly around a pulley 54 also mounted on the mast, and from this pulley the line extends rearwardly to the pulley 41.

From the just described arrangement of pulleys and lines in their association with the sails 42 and 43, it will be manifest that on pulling the bow line 35 and slacking the stern line 36, the two stretches of the boat line 37 to which the sails are connected will be pulled downwardly and the two sails thus lowered.

Conversely, when pulling the stern line and slacking the bow line, the two stretches of the boat line attached to the sails will be moved upwardly and the two sails thus raised to extended position. Thus, the remote control apparatus not only provides for the remote control and towing of the boat through the tow lines, but by manipulation of the towlines in the manner described, the two sails can be simultaneously elevated or lowered.

For holding the sails 42 and 43 in elevated position, once they are raised by manipulation of the boat line, I provide a latch which comprises, as shown in Figure 4, a bolt 55 secured in fixed position on one of the vertical stretches of the boat line, and so as to be moved vertically with and by movement of the vertical stretch to engage and disengage a keeper 56. The bolt 55 is made of two parts one of which is screw-threaded within the other to retain the two against separation, and between which parts a knot 57 of the boat line is interposed so as to cause the bolt to be fixed against movement longitudinally of the boat line, and to thereby insure its movement vertically with the boat line.

The keeper 56 comprises a pair of resilient arms 58 fixed to a base 59, the latter in turn being secured to the deck of the hull. The upper ends of the arms 58 are provided with heads 58[a] which coact to engage the upper end of the bolt so as to prevent its withdrawal from between the arms. However, the arms, being resilient, yield, when a predetermined upward pull is exerted on the boat line, and thus allow the withdrawal of the bolt from the keeper. Conversely, when the bolt is moved downwardly, its leading end engages and spreads the heads to permit the entire bolt to pass between the arms, so that the bolt is gripped against upward movement to retain the boat line against lengthwise movement and to thereby retain the sails in raised position.

To engage or disengage the bolt from the keeper to latch or release the two sails, it will be clear that it is only necessary to exert a sudden pull upon one towline or the other, and that this operation may be accomplished without affecting control of the movement of the boat as a whole.

Referring to Figures 5, 6, and 7, I have here shown another form of boat and control apparatus embodying my invention, and which apparatus is characterized from the embodiment shown in Figure 3 by the provision of a control apparatus which is manually operable to raise and lower the two sails in a successive order, and in such manner that one sail or the other may be completely raised or lowered without affecting movement of the other. Thus provision is made for elevating and lowering either or both of the sails and through the medium of the two towlines.

As in the form of sail boat illustrated in Figure 3, the boat illustrated in Figures 5 and 6 is provided with two sails, a jib sail 42 and a main sail 43 disposed at opposite sides of a mast 60 which rises from the deck of a hull 61, and upon which mast is mounted a jib 62 to which the main sail 43 is attached.

As in the other forms of my invention, a control line is employed, and this line includes a bow towing line 63 and a stern towing line 64 extending from the ends of the hull adjacent, the two extending from the hull adjacent the ends thereof, and trained about pulleys in the same manner as the towlines 22 and 23 in the first embodiment of my invention. As shown in Figure 6 the bow towline 63 is trained about pulleys 65 and 66 to provide a vertical stretch which passes upwardly through a suitable opening in the bow end of the hull. Similarly, pulleys 67 and 68 are provided at the stern end of the hull over which a vertical stretch of the stern towline is extended and upwardly through a suitable opening in the hull. A main boat line M operatively connects the two towlines, and this boat line is operatively connected to the main sail 43 so that by manipulation of the towlines the main sail can be lowered and raised. A subsidiary boat line S is also provided, and this boat line is operatively connected to the main boat line M so as to be actuated thereby, and when actuated to effect raising and lowering of the jib sail 42.

The main boat line M at its point of connection with the bow towline 63 extends rearwardly and around a travelling pulley 69, and then forwardly and around a fixed pulley 70. From the pulley 70, the boat line extends under a pulley 71 adjacent the mast 60 and then upwardly along the mast where it is attached to the main sail 43. To continue tracing of the main boat line, it passes over a pulley 72 on the upper end of the mast 60, and then downwardly around a deck pulley 73, from whence it extends rearwardly along the deck and around a fixed pulley 74 likewise fixed to the deck. From this pulley 74, the boat line is trained about a travelling pulley 75, and then rearwardly where it is connected to the stern towing line 64.

The subsidiary boat line S at one end, is connected to a pulley block 75 for the travelling pulley 69, and from this pulley block the line is trained about a fixed pulley 77 fixed to the deck of the hull and then forwardly and upwardly around a pulley 78 on or adjacent the mast 60. From the pulley 78, the line is extended upwardly adjacent the mast, and this vertical stretch of the line is connected to the jib sail 42 so that when the line is moved vertically in one direction or the other the jib sail is raised or lowered on the mast. The upper end of the vertical stretch of the line is trained over a pulley 79 on the

upper end of the mast, and then downwardly to a deck pulley 80, from whence it is extended forwardly around another deck pulley 81, and then rearwardly where its end is connected to a pulley block 82 for the travelling pulley 75.

The travelling pulleys 69 and 75 are adapted to move in fixed paths on the deck of the hull in order to insure proper operation of the main and subsidiary boat lines. For this purpose I provide tracks for the pulleys, and as each track is identical in construction with that of the other, a description of one will suffice for both. As shown in Figures 6 and 7, each track comprises an elongated support 83 secured to the deck of the hull and upon the top of which is a track member 84 that has its longitudinal edges inturned to provide a pair of rails 85. Secured to the under side of the pulley block 76 or 82 is a carriage 86 which is slidable on the track member 84 and provided with leads 87 which engage beneath the rails 85 so as to prevent upward displacement of the carriage and to definitely guide the carriage and the pulley along the track. Thus the travelling pulley 69 or 75 is mounted for travelling movement on the deck of the hull in order to respond to pulling movements exerted on the main boat line in the operation of the sails of the boat.

The operation of the pulley and line mechanism just desecribed is as follows:

Now, considering that the resistance to be overcome in raising or lowering the jib sale or the main sale is equal in each case, and that being so, it will be evident that when pulling on the main line M in the direction of the pulley 66, such line will, in accordance with the mechanical properties of movable pulleys, impart movement to the travelling pulley 69, thereby exerting a pull upon the subsidiary line S to which the travelling pulley is attached and in the direction of the pulley 66, and with a force equal to twice the pull exerted on the main line M. So, also, will a corresponding action take place on the travelling pulley 75 and its attached subsidiary line S when that part of the line M extending from the pulley 75 to the pulley 68 is moved in the direction of the latter.

Considering both sails fully raised, as illustrated in Figure 6, on pulling the bow line 63 and at the same time keeping the stern bow line 64 slack, that portion of the boat line S which is operatively connected to the jib sail will be pulled downward with twice the force that is pulling downward on that part of the main boat line M to which the main sail is attached. Consequently, the jib sail will move downward in advance of the main sail, and at such rate of movement that the jib sail is completely drawn down before any movement of the main sail takes place. In the fully lowered position of the jib sail, the subsidiary boat line S is held against any further movement in a downward direction, but upon increasing the pull on the bow line the entire main line M, the latter will be moved to draw the main sail downward. Thus the two sails can be lowered to the deck but with the jib sail moving in advance of the main sail and in such manner that complete lowering of the jib sail occurs before any movement of the main sail is initiated.

On reversing movement of the main line M by pulling upon the stern line 64 and keeping the bow line slack, the travelling pulley 75 will be moved in a direction away from the pulley 81 and toward the pulley 74. As a consequence, the jib sail will be pulled upward with twice the force of that exerted on the main sail so that the jib sail moves in advance of the main sail and reaches its uppermost position before there is any movement of the main sail. In this operation, the jib sail, when in its uppermost position, the pulley 75 has been moved adjacent the pulley 74 so that the line S is held against further movement. Upon continued pull on the line M the main sail begins to move upwardly and by continuing such pull, the main sail is drawn into fully raised position. Thus, in raising the two sails, the jib sail is completely elevated before any raising movement of the main sail takes place.

From the preceding operation, it should be manifest that through the medium of the pulley and line mechanism, the bow and stern lines can be operated to lower or raise either one sail or the other, and to lower or raise both of the sails, and all from a remote point in respect to the boat.

Although I have herein shown and described only three forms of remote control apparatus for miniature sail boats, each embodying my invention, it is to be understood that various changes and modifications may be made therein without departing from the spirit of the invention and the spirit and scope of the appended claims.

I claim as my invention:

1. A toy or miniature boat having a mast, and a sail capable of being raised and lowered on the mast, a control line providing a bow towline, a stern towline, and a boat line, the boat line being operatively connected to the sail so that by pulling on one towline or the other the sail can be raised or lowered on the mast, and a latch having one part correlated to the boat line to be movable thereby and another part fixedly associated with the boat, the two parts coacting when the sail is raised to releasably retain the sail in raised position and yet permit the towlines to be manipulated to tow and steer the boat.

2. A toy or miniature boat having a mast and a sail capable of being raised and lowered on the mast, a control line providing a bow towline, a stern towline, and a boat line,

the boat line being operatively connected to the sail so that by pulling on one towline or the other the sail can be raised or lowered on the mast, and a latch having a bolt secured to the boat line and a keeper secured to the boat, the bolt and keeper coacting when the sail is raised to releasably retain the sail in raised position and yet permit the towlines to be manipulated in towing and steering the boat.

3. A toy or miniature boat having a mast and a sail capable of being raised and lowered on the mast, a control line providing a bow towline, a stern towline, and a boat line, the boat line being operatively connected to the sail so that by pulling on one towline or the other the sail can be raised or lowered on the mast, said boat line having a part thereof that is knotted and moves downward as the sail is raised, and a latch having a two part bolt on the boat line engaging said knot, and a keeper having resilient arms for engaging the bolt when the sail is raised to releasably secure the sail in raised position.

4. A miniature boat having a mast, two sails, means for operatively supporting the sails so that they can be raised and lowered on the mast, a control line providing a bow towline, a stern towline, and a boat line operatively connected to one of the sails, a subsidiary boat line operatively connected to the other sail, means on the boat and mast for supporting the boat lines for lengthwise movement in either direction, and means for operatively connecting the subsidiary boat line to the first boat line so that through movement of the first boat line to lower and raise the corresponding sail, the other sail will be moved in advance of the first sail to the extent of completing its movement upward or downward before movement of the first sail is initiated.

5. A miniature boat having a pair of sails, line and pulley means for raising and lowering one of the sails, a second line and pulley means for raising and lowering the other sail, bow and stern towlines on the boat connected, respectively, to the ends of the line of the first means and movably mounted on the boat to actuate the line of the first means in a manner to raise and lower the corresponding sail, and connections between the first and second line and pulley means for actuating the second means through actuation of the first means to raise or lower the corresponding sail in advance of the other sail.

6. A toy or miniature boat having a control line operatively connected thereto to provide a bow towline, a stern towline, and a boat line between the two towlines, sails movable on the boat to occupy extended and collapsed positions and operatively connected to the boat line, and means on the boat for supporting the boat line for lengthwise movement and in such manner that the entire control line can be manually moved lengthwise in either direction without moving the boat and to extend or collapse the sails according as the boat line is moved in one direction or the other.

7. A toy or miniature boat having a control line operatively connected thereto to provide a bow towline, a stern towline, and a boat line, means on the boat for supporting the boat line for lengthwise movement so that the whole control line can be moved lengthwise in either direction without moving the boat, and a sinker on at least one of the towlines and normally spaced from the boat, whereby upon the operator pulling on one towline while simultaneously keeping the other towline slack, he is enabled to pull the sinker upward against the boat without moving the boat.

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