E. W. BROWN.

SAIL RAISING AND LOWERING MEANS.

APPLICATION FILED JUNE 15, 1917.

1,248,067.

Patented Nov. 27, 1917.

3 SHEETS—SHEET 1.

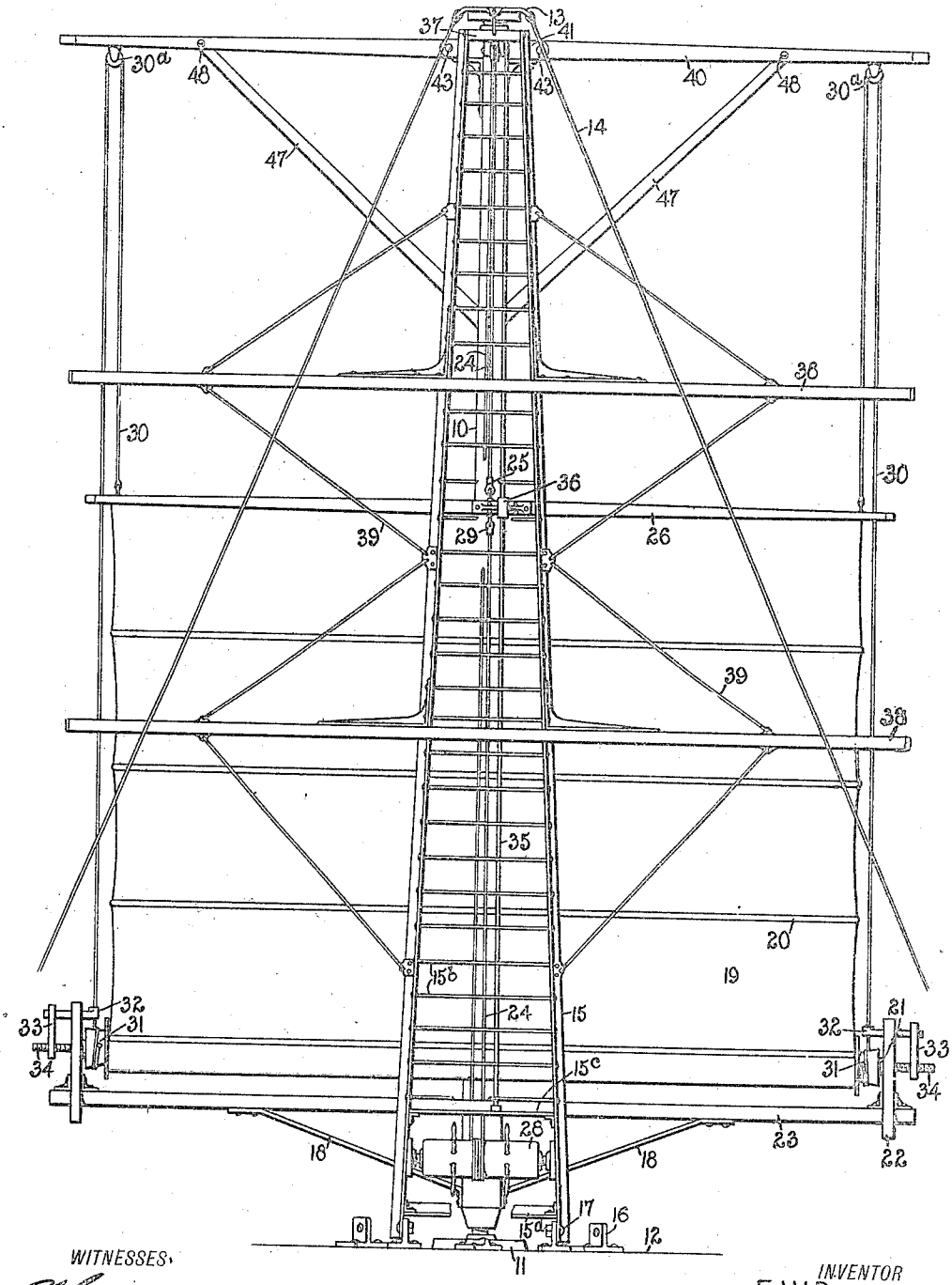


Fig. 1.

WITNESSES.

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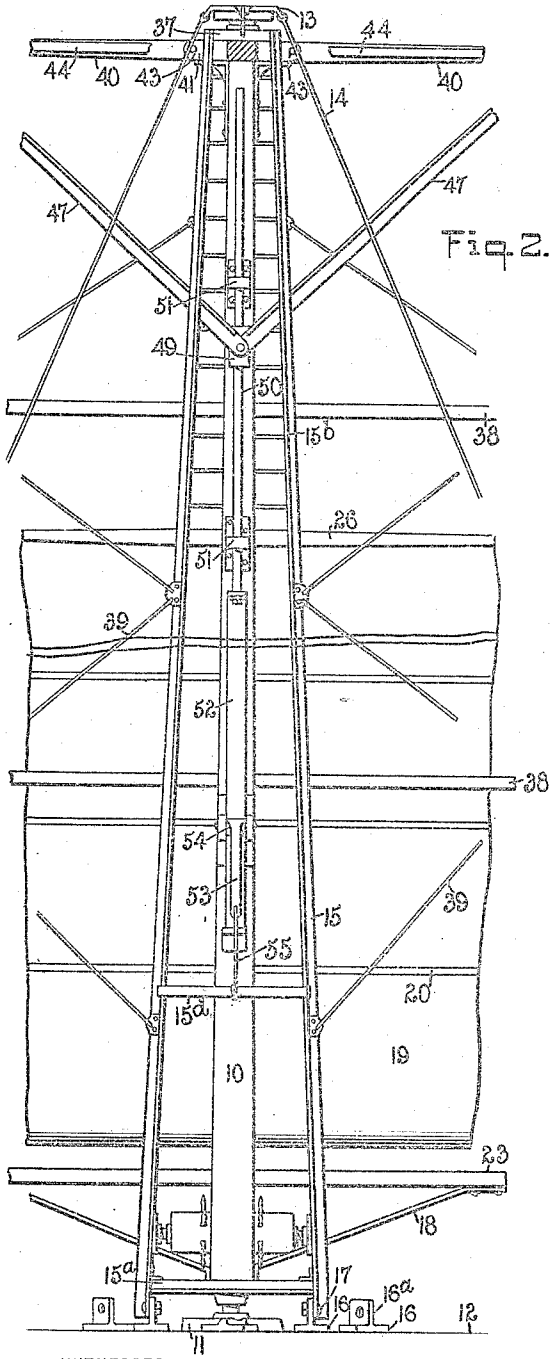


Fig. 2.

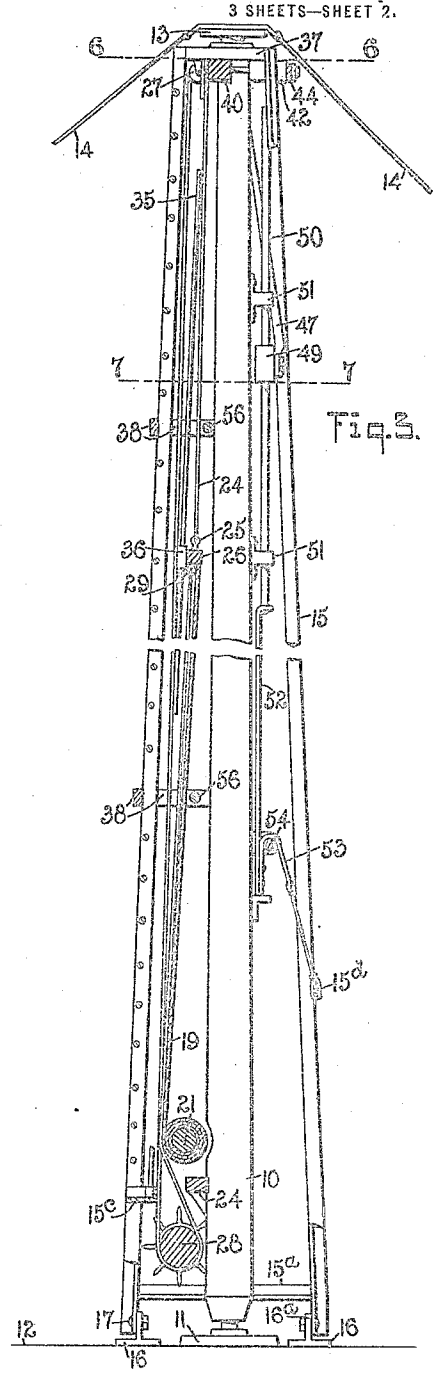


Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 4.

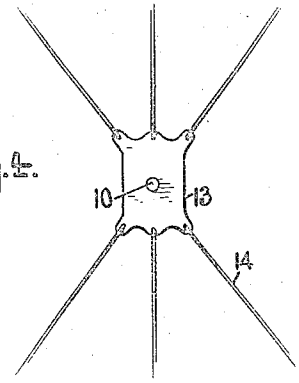


Fig. 5.

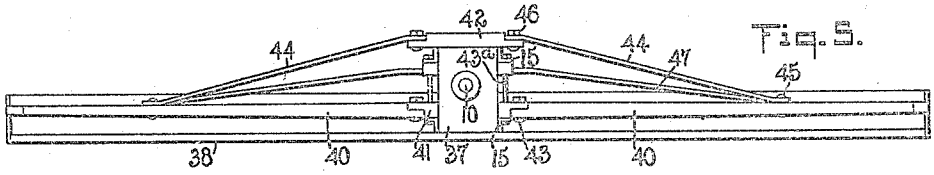


Fig. 6.

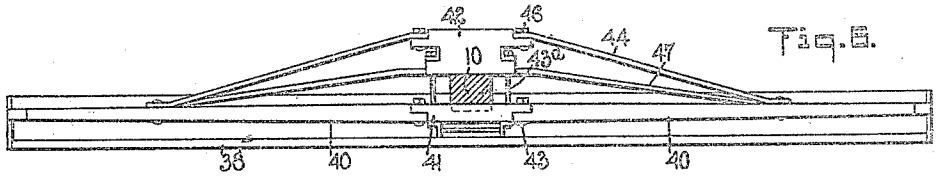


Fig. 7.

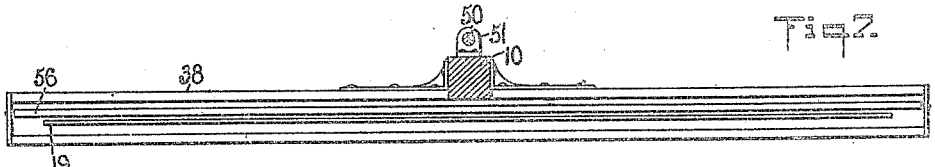
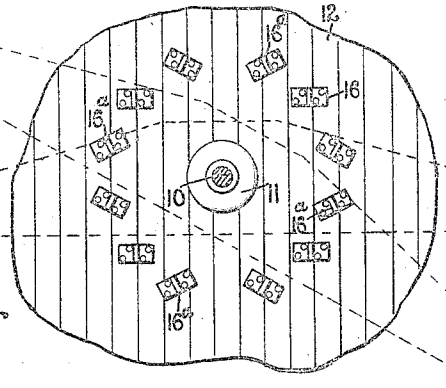


Fig. 8.



WITNESSES

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UNITED STATES PATENT OFFICE.

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SAIL RAISING AND LOWERING MEANS.

1,248,067. Specification of Letters Patent. Patented Nov. 27, 1917.

Application filed June 15, 1917. Serial No. 174,911.

To all whom it may concern:

Be it known that I, EDWIN W. BROWN, a citizen of the United States, and a resident of Vining, in the county of Clay and State of Kansas, have invented a new and Improved Sail Raising and Lowering Means, of which the following is a full, clear, and exact description.

My invention relates to the rigging of sailing vessels and particularly to a means for facilitating the raising and lowering of sails through the medium of a windlass or the like.

My present invention is characterized by means for spreading or furling the sail having capability of turning with a mast about the axis of the latter to position the sail properly with respect to the wind in addition to determining the extent of its spread. The invention is characterized also by various novel features for facilitating the operation and control of the sail operating means.

Reference is to be had to the accompanying drawings forming part of this specification in which similar reference characters indicate corresponding parts in all the views, it being understood that the drawings are merely illustrative of one example of the invention.

Figure 1 is a front elevation of a sail-controlling means embodying my invention, parts being broken away;

Fig. 2 is a fragmentary elevation taken at the opposite side of the sail;

Fig. 3 is a transverse vertical section;

Fig. 4 is a detail plan view of the guyed top plate in which the mast turns;

Fig. 5 is a plan view with the top and various other features below omitted;

Fig. 6 is a horizontal section on the line 6—6, Fig. 3, various parts being omitted;

Fig. 7 is a horizontal section on the line 7—7, Fig. 3, with various parts omitted;

Fig. 8 is a fragmentary view of a portion of the deck with the mast in section, the view being given to show the means for securing in different angular position on the deck the tower on which the sail and sail-operating means are carried.

In carrying out my invention in accordance with the illustrated example, a mast 10 is mounted to turn in a suitable step bearing 11 secured to the deck 12, the mast turning at the upper end in a cap plate 13 which is secured by guy wires 14, the lower ends of said wires being made fast to any suitable means (not shown) on the ship. A tower 15 is built to be disposed about the mast 10 and is secured to the mast to be turned therewith so they both may be turned in unison through any desired angle. Said tower 15 has suitable cross members as for example a main cross bar 15^a near the lower end and various rungs or cross bars 15^b. The tower 15 is adjustably secured to any suitable means on the deck, there being shown bracket plates 16 having vertical flanges 16^a receiving bolts 17 which pass through suitable members of the tower. The brackets 16 are disposed about the mast in a manner so that pairs of the flanges 16^a will be similarly disposed and in the instance shown there are four corner members to the tower, formed of angle iron and receiving the bolts 17 to secure the respective corners to four of the similarly disposed flanges 16^a. Thus, by removing the bolts, the tower and mast may be turned through a given angle to suit the wind and then secured in the adjusted position by the bolts 17. The mast may be connected in any desired manner to the tower, there being shown braces 18 extending from the mast near the lower end thereof and secured to a bottom transverse bar 23 on the tower. The sail 19 which in practice is provided with stiffening bars or cleats 20 winds at its lower end on rollers 21 which turn in suitable upright bearings 22 on the bar 23.

For hoisting and lowering the sail 19 to any desired extent by causing it to unwind from the roller 21 or to wind thereon, a hoist rope or cable 24 is secured at one end as at 25 to a stiffener bar 26 secured to the free edge of the sail, said rope extending from the bar 26 upwardly and over a sheave 27 on the tower at the top, the cable or rope being then carried downwardly and given a suitable number of turns around the windlass 28 from which the cable passes upwardly to the bar 26 to which it is suitably made fast as at 29. Thus, it will be obvious that the turning of the windlass in a given direction will raise or lower the sail. In addition to the hoist cable 24, side cables 30 are employed, secured at one end to the bar 26 near the ends of the latter and passing upwardly over sheaves 30^a and thence downwardly to drums 31 on the roller 21, which drums, it is to be observed, are coned so that with the hoisting of the sail the

ropes or cables 30 will wind with an increasing diameter of convolution to tighten said cables 30 and hence to maintain the sail taut. The cables 30 pass through guides 32 adjacent to the drums 31 and on the ends of the roller 21 are right and left screws 34 on which screws are mounted travelers 33 to which the shanks of the guides 32 are secured, whereby said guides will be carried outwardly and inwardly to properly dispose the convolutions of the cables 30 on the drums 31. The sail bar 26 has guided movement on a vertical guide rod 35 suitably secured in the tower structure 15, as for example at its lower end in a cross bar 15^c and at its upper end in the head 37 of the tower. The hoist cable 24 and the cables 30 pass through fixed guide keepers 38 which are horizontally disposed on the tower in suitable number, two being shown in the present example. The keepers 38 are of a width to accommodate the sail 19 and sail bar 26.

The sheaves 30^a for the cables 30 may be carried as shown on foldable lateral arms 40 pivoted as at 43 to parts in fixed relation to the tower structure, there being shown blocks 41, 42 secured by clamp bolts 43^a (see Figs. 5 and 6), the arms 40 being pivoted as at 43 to the blocks 41 so that the arms may, if desired, be folded downwardly against the tower. The arms 40 are braced by pivoted braces 44 pivotally secured at their outer ends as at 45 and pivoted at their inner ends as at 46 to the blocks 42. Pivotally secured as at 48 to the arms 40 are toggle links 47 that converge at their lower ends and are secured to a block 49 rigid on a vertical rod 50, said rod being movable in suitable guide brackets 51 and being adapted to be raised or lowered to raise or lower the arms 40 through the medium of the toggle links 47. In the illustrated example the raising and lowering means consist of a metal strap or plate 52 depending from the lower end of the rod 50, to which strap 52 a billet 53 is secured and passes over a guide roller 54, there being secured to the billet 53 a rope or other flexible element 55 which may be made fast to any convenient part of the tower structure as for example, the cross bar 15^d.

The numeral 56, Figs. 3, 5 and 6, indicates a friction roller against which the sail contacts in each guide keeper 38. By the described arrangement it will be seen that a heavy sail may be conveniently raised or lowered by one man and made fast in any given position and also that the angular position of the sail may be varied by turning the mast and tower through the desired angle.

I wish to state in conclusion that although the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the mechanical details herein illustrated, since manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent:

1. In a means for raising and lowering a sail, a mast mounted to turn, a structure in fixed relation with the mast to be turned therewith, a sail, sail hoisting and lowering means, said sail, sail hoisting and lowering means being carried by said structure, and means to secure the structure in different positions on the deck of a vessel.

2. In sail hoisting and lowering means, an upstanding structure adapted to be turned about a vertical axis, means to secure said structure on the deck of a vessel in different angular positions, a sail, and means to raise and lower the sail, said sail and the means to raise and lower the same being carried by the said structure to be adjusted therewith to dispose the sail in different angular positions.

3. In means for raising and lowering sails, a tower, a mast to which said tower is secured to turn therewith, means to secure the mast in different positions on the deck of the vessel, transverse keepers on said tower, a roller on said tower at the bottom, a sail secured to said roller to wind thereon or unwind therefrom, the sail being movable through said keepers when winding or unwinding, and means carried by the tower to raise and lower the sail.

4. In an apparatus for raising and lowering sails, an upstanding structure adapted to be secured to the deck of a vessel, a roller on said structure near the bottom, a sail adapted to wind on or unwind from said roller, a windlass, a cable running from said windlass to the approximate center of the sail to raise and lower the same, cables connected with said sail at the free end near the side edges of the sail, guide sheaves on the said structure at the top over which the last-mentioned cables run, and drums on the roller to which the last mentioned cables extend from the sheaves to be wound or unwound with the turning of the roller.

5. In an apparatus for raising and lowering sails, an upstanding structure adapted to be secured to the deck of a vessel, a roller on said structure near the bottom, a sail adapted to wind or unwind from said roller, a windlass, a cable running from said windlass to the approximate center of the sail, to raise and lower the same, cables connected with the sail at the free end near the side edges of the sail, guide sheaves on the said structure at the top over which the last mentioned cables run, coned drums on the roller at the ends to wind and unwind the last-

mentioned cables, guides adjacent to the drums through which the last-mentioned cables extend, and means operated by the turning of the roller to move the guides laterally to lay the last-mentioned cables on the coned drums.

6. In means for raising and lowering sails, an upstanding structure adapted to be secured to the deck of a vessel, a roller on said structure, a sail adapted to be wound on said roller or unwound therefrom, coned drums on the roller, sail hoisting and lowering means connected with the sail at the approximate center, and cables connected with the sail at the free end thereof near the side edges and adapted to wind on said drums or unwind therefrom.

7. In means for raising and lowering sails, an upstanding structure adapted to be secured to the deck of a vessel, a roller on said structure, a sail adapted to be wound on said roller or unwound therefrom, coned drums on the roller, sail hoisting and lowering means connected with the sail at the approximate center, and cables connected with the sail at the free end thereof near the side edges and adapted to wind on said drums or unwind therefrom, together with guides adjacent to the drums through which the said cables extend, travelers secured to said guides, and right and left screws on the roller at the ends having threaded engagement with said travelers.

8. In means for raising and lowering a sail, an upstanding structure adapted to be secured to the deck of a vessel, a roller on said structure, a sail adapted to be wound on said roller or to unwind therefrom, sail hoisting and lowering means connected at the free end of the sail at the approximate center thereof, arms pivoted on said structure at the top for vertical movement, sheaves carried by said arms near their outer ends, cables connected with the sail near the free end thereof adjacent to the side edges and running over said sheaves, drums on the roller at the ends on which said cables are adapted to wind with the turning of the roller, and means carried by said structure and adapted to raise or lower the said pivoted arms.

EDWIN W. BROWN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."