No. 633,904. Patented Sept. 26, 1899.

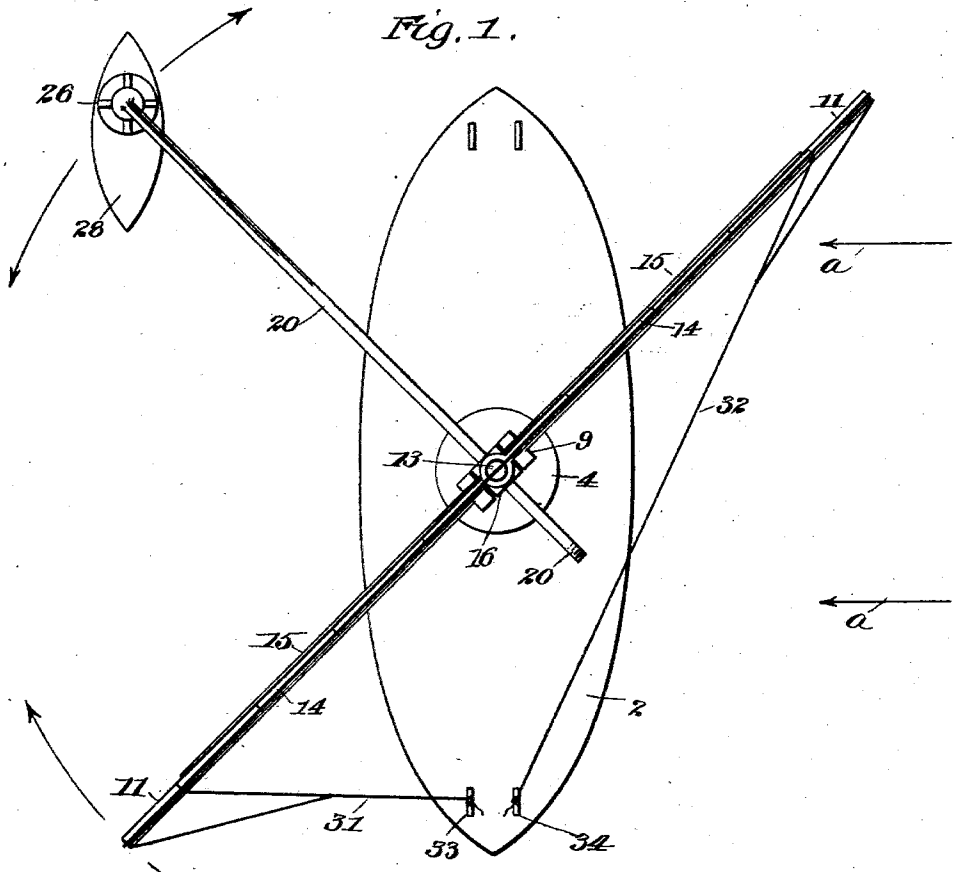
J. P. POOL.

BALLAST DEVICE.

(Application filed Jan. 23, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



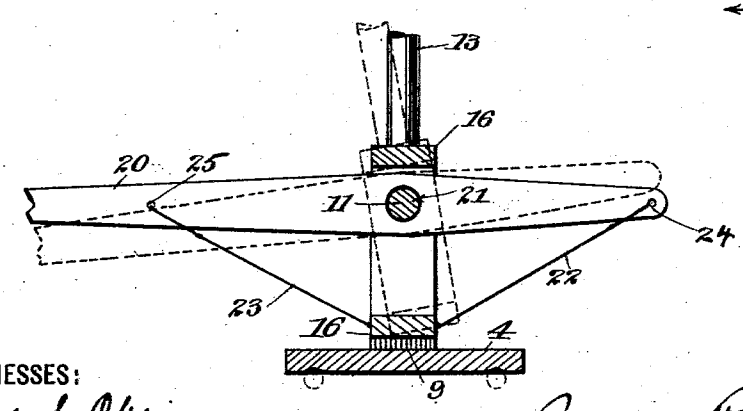


Fig. 3.

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Fig. 2.

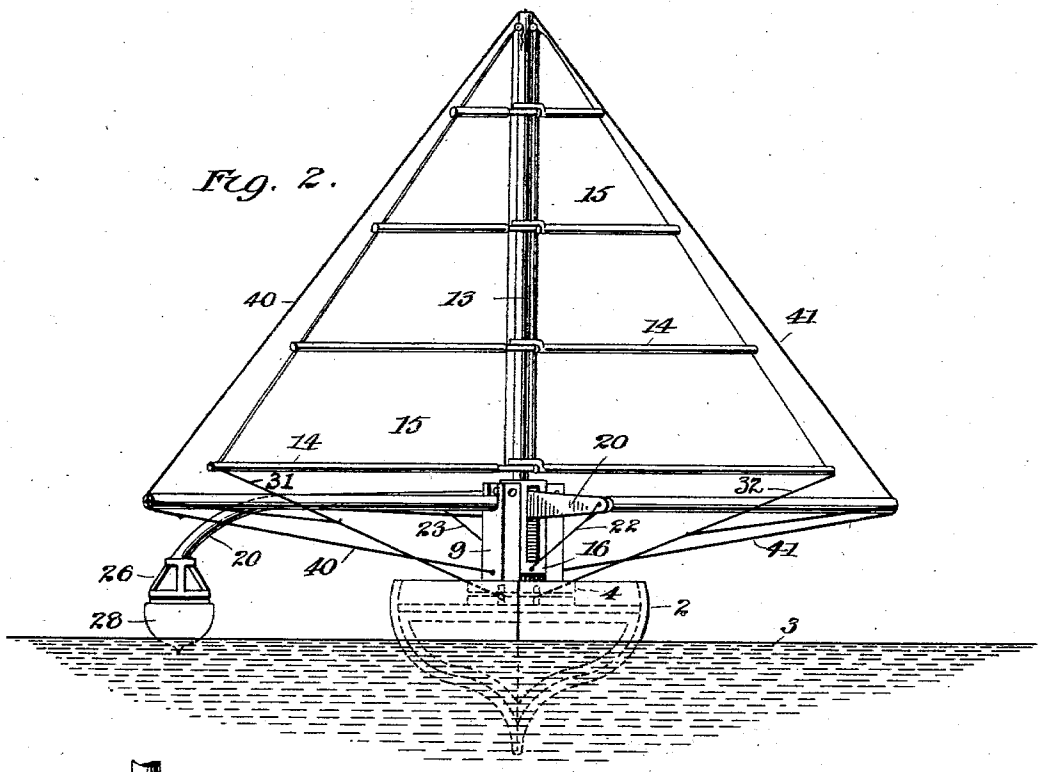


Fig. 4.

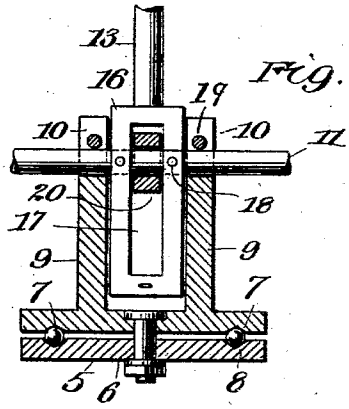


Fig. 6.

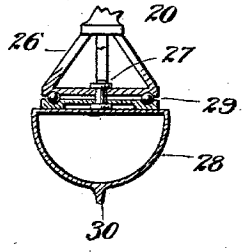


Fig. 5.

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UNITED STATES PATENT OFFICE.

JAMES P. POOL, OF NEW YORK, N. Y.

BALLAST DEVICE.

SPECIFICATION forming part of Letters Patent No. 633,904, dated September 26, 1899.

Application filed January 23, 1899. Serial No. 703,046. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. POOL, a citizen of the United States, residing at the borough of Brooklyn, New York city, county of Kings, and State of New York, have invented certain new and useful Improvements in Sail-Boat Ballast Devices, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to apparatus for ballasting sail-boats when in use to prevent the same from careening under certain conditions and from going down at the head when running before the wind, the principal object of the invention being to maintain the vessel practically upright under all conditions, the advantages of which result are obvious.

To these ends my invention consists in the various novel and peculiar arrangements and combinations of the different parts of the apparatus, all as hereinafter fully described and then pointed out in the claims.

I have illustrated a type of my invention in the accompanying drawings, wherein—

Figure 1 is a plan view of a sail-boat equipped with my improvements. In this view the mast is turned so as to bring the boom and its sail diagonally across the vessel, the wind being abeam of the boat, as illustrated by the arrows at the right hand. Fig. 2 is a rear view of the boat and its apparatus as illustrated in Fig. 1. Figs. 3 and 4 are enlarged detail views of the lower part of the swinging mast, the attached ballast-carrying arm, the boom, and the rotatable stand upon which the mast is mounted, these views being vertical sections taken at right angles to each other, respectively. Fig. 5 is an enlarged top view of the swinging mast, the boom, the ballast-carrying arm, and the upper part of the rotary stand. Fig. 6 is an enlarged detail view of the ballast-float, shown in vertical section.

Referring to the drawings, in which like numbers of reference indicate like parts throughout, 2 is the body or hull of an ordinary sail-boat, shown as resting on the body of water 3. At about the central point of the boat is mounted a stand provided with a base 4, which is secured to a bed-plate 5 by means of a pivot-bolt 6, and the opposing faces of the base and bed-plate are each formed with an annular groove 7 for receiving antifriction-rollers 8 in order to permit the stand to be freely rotated about its vertical axis. The two parallel uprights 9 of the stand have their upper ends formed with suitable bearings 10 for receiving the boom 11 loosely therein. In the present construction such bearings are provided by notching the upper ends of the uprights and dropping the boom therein, retaining-pins 12 being placed across the forked ends of the uprights above the boom to hold it in its bearings.

13 is the mast for carrying the yards 14 and the sail 15, and the lower end of the mast is provided with a frame 16, having an elongated central opening 17. Each side of this frame 16 (which is a part of the mast) is formed near its upper end with an opening 18, arranged in axial alinement for the reception of the boom 11, which is passed through these openings and is made fast in the openings in the frame by means of pins 19, so that the boom at its center of length is made fast to the mast at right angles thereto. At the same time the mast can be swung on a horizontal axis with the boom as a pivot.

For the sake of clearness I have omitted showing any tackle or rigging for holding the sail in the plane of the boom; but it will of course be understood that any suitable well-known rigging can be used for this purpose. I have, however, shown stays 40 and 41, running from the respective uprights 9 of the stand to the adjacent ends of the boom 11, and thence to the head of the mast, for bracing these parts. If desired, a stay may be run from the end of each yard-arm to the ballast-carrying arm, which will now be described, and which extends at right angles to the plane of the sail.

20 is the ballast-carrying arm, which is so mounted upon the lower part of the mast as to respond to all movements thereof. For instance, as the mast is turned on its vertical axis the arm 20 is swung in the horizontal, and when the mast tilts on its pivotal axis the arm 20 tilts with it. In the present construction this ballast-carrying arm is mounted in place by forming the arm with an eye 21,

through which loosely passes the boom 11, and it extends through the central opening 17 of the frame 16. The arm 20 is secured to the foot of the mast 13 by means of two links or cables 22 and 23, the former of which is connected between the foot of the mast and a point 24 on the short part of the arm 20, while the latter is connected between the foot of the mast and the point 25 on the main part of the arm 20, so that when the mast tips on its pivotal axis the arm 20 is compelled to move with it, as indicated in dotted lines in Fig. 3. At the same time the ballast-carrying arm 20 may be swung around in the horizontal by turning the mast or swinging the boom connected therewith, the three parts mentioned always remaining in positions at right angles to each other. The end of the main part of the arm 20 is curved downwardly and carries the bracket 26, to the under side of which is secured, by means of pivot-bolt 27, the float 28, between which and the bracket are arranged suitable ball-bearings 29 to cause the float to turn freely on the arm. This float is a closed hollow water-tight body of oblong shape and with a rounded bottom, which is provided with a small keel 30. The float is pivoted by the bolt 27 to the bracket at a point of its length nearer to one end than the other, and this construction serves to keep the float always parallel with the length of the boat, as will be understood from Fig. 1. The longer part of the float naturally trailing as it moves through the water causes it to maintain this parallelism.

I have shown the sail set downwardly across the boat, with the wind abeam, as indicated by the arrows *a a* in Fig. 1. The sail is held in position by the sheets 31 and 32, which are secured to the respective ends of the boom 11 and are fastened to the belaying-pins 33 34, respectively, at the stern of the boat. The sail being set in the position described, with the wind in the direction indicated, whenever the pressure of the wind on the sail tilts the mast forward, as indicated in dotted lines in Fig. 3, the ballast-carrying arm 20 tends to depress the float, and this reacts upon the boat, so as to keep it righted and prevent its careening. The same effect will be brought about should the sail be set at right angles to its indicated position, with the wind in the opposite quarter and the float upon the starboard instead of the port side, where it is now indicated. In going before the wind and the sail being set straight across the boat and there held by the sheets the ballast-float 28 then stands directly ahead of the boat, and as the wind tips the mast forward the ballast-carrying arm 20 tends to depress the float, and thereby raises the bow of the boat and prevents its going down, as would otherwise be the case, so that the boat under this condition is kept on an even keel.

Another important advantage in the use of my improved ballast device is that in case the wind shifts suddenly and strikes the sail upon the opposite side the leverage of the weighted ballast-arm serves to prevent any bad results.

Instead of using the particular ballast device herein set forth I contemplate using in some cases what is practically a lee-board and attaching the same to the ballast-arm 20 instead of the float and so arranging it that when, for example, the sail is positioned as here shown the lee-board will project into the water on the lee side of the boat, and this will bring about quite the same effect as that already described in reference to the lee-float.

I wish to be understood as not limiting my invention to the particular form herein shown, as modifications may be made in various parts thereof without departing from the spirit of my invention.

In making the apparatus the various parts may be made of suitable well-known materials, which I have not deemed it necessary to specify.

While I have shown a triangular-shaped sail with the smallest part thereof standing upwardly, it will be obvious that any desired form of sail may be used, the one I have shown being merely for the purposes of illustrating the invention.

The various parts of the apparatus may be braced and strengthened in any well-known manner in order to make them sufficiently strong.

My improved apparatus will prevent a sailboat from capsizing, and in going to windward the boat is caused to stand up and receive the force of the wind, thereby increasing its speed. By taking in a part or all of the sail upon one side of the mast the wind acting upon the remaining sails will tend to swing the ballast device around to the other side of the boat in going about.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a boat, a rotary mast for carrying the sail, an arm mounted on said mast and moving in fixed relation therewith and projecting beyond the boat, and a ballast device secured to said arm and adapted to rest upon the water, whereby the ballast device is shifted angularly in accordance with the turning of the mast as the sail is shifted, substantially as and for the purpose set forth.

2. The combination of a boat, a swinging mast mounted thereon for carrying the sail, an arm mounted upon said mast and projecting beyond the boat and moving in fixed relation with the mast, and a ballast-float secured to the outer end of said arm and adapted to rest upon the water, whereby the tilting of the mast by the pressure of the wind depresses the float in the water and thereby maintains the deck practically level, substantially as and for the purpose set forth.

3. The combination of a boat, a swinging mast mounted thereon for carrying the sail, an arm mounted upon the mast and projecting beyond the vessel and provided with a

ballast-float adapted to rest upon the water, links connecting a point on said arm at each side of its pivotal point, respectively, with a point on said mast below the axis about which it swings, whereby the pressure of the wind on the sail depresses the float in the water and thereby maintains the deck of the boat practically level, substantially as and for the purpose set forth.

4. The combination of a boat, a rotary swinging mast mounted thereon for carrying the sail, an arm mounted upon said mast and projecting beyond the boat and provided with a ballast-float adapted to rest upon the water, said arm moving in response to the rotary and swinging movements of said mast, whereby the pressure of the wind on the sail depresses the float in the water and thereby maintains the deck practically level, substantially as and for the purpose set forth.

5. The combination of a boat, a swinging mast mounted thereon for carrying the sail, an arm mounted upon said mast and moving in response thereto, said arm projecting beyond the boat and provided at its outer end with an elongated float pivoted thereto so as to move through the water lengthwise, substantially as and for the purpose set forth.

6. The combination of a boat, a swinging mast on said boat for carrying the sail, a boom extending from said mast and held at right angles thereto, a lee ballast device connected with said mast and moving in response thereto, substantially as and for the purpose set forth.

7. The combination of a boat, a boom mounted in horizontal position in suitable bearings on said boat, a mast mounted near its lower end on said boom so as to swing about the axis of the boom, an arm projecting from said mast and projecting beyond the boat and provided at its outer end with a ballast-float resting upon the water, said arm moving in response to the movements of the mast, substantially as and for the purpose set forth.

8. The combination of a boat, a rotary stand mounted on the boat, a boom mounted horizontally on said stand, a swinging mast mounted near its lower end upon said boom so as to swing about the axis of the boom and an arm projecting from said mast and provided with a ballast-float adapted to rest upon the water, said arm moving in response to the movement of said mast, substantially as and for the purpose set forth.

9. The combination of a boat, a rotary stand mounted upon the boat and a boom mounted horizontally on said stand, a swinging mast mounted near its lower end upon said boom so as to swing about the axis of the boom and an arm pivoted on said boom and projecting laterally from the mast and moving in response thereto, and a ballast-float mounted upon said arm and adapted to rest upon the water, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand, this 13th day of January, 1899, in presence of the two subscribing witnesses.

JAMES P. POOL.

Witnesses:
A. M. HAYES,
WILLIS FOWLER.