

Feb. 8, 1927.

H. E. BOUCHER

1,616,948

MINIATURE YACHT

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2 Sheets-Sheet 1

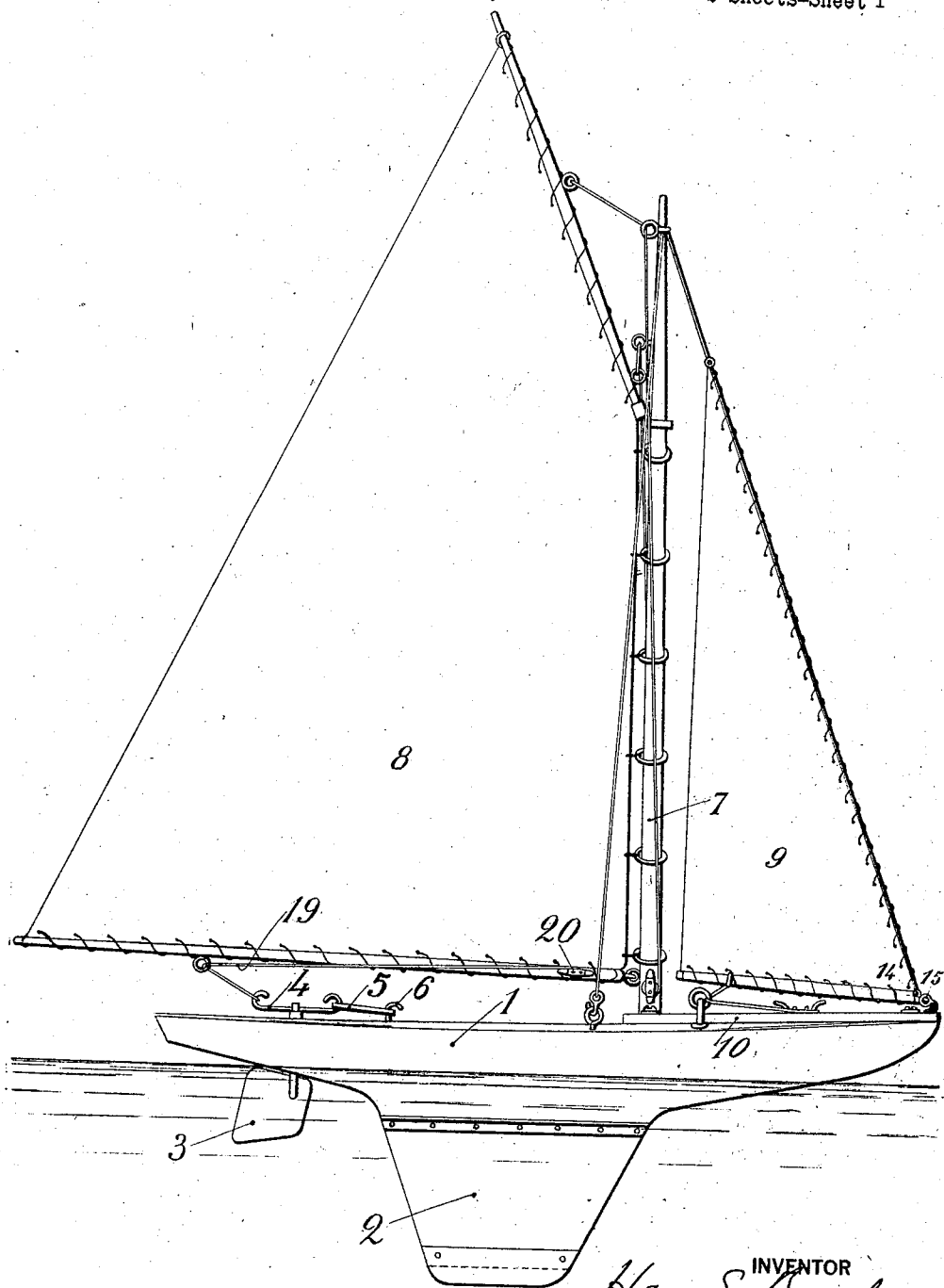


Fig. 1

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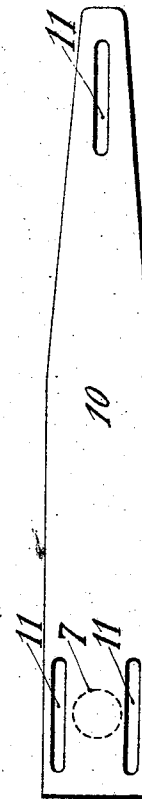
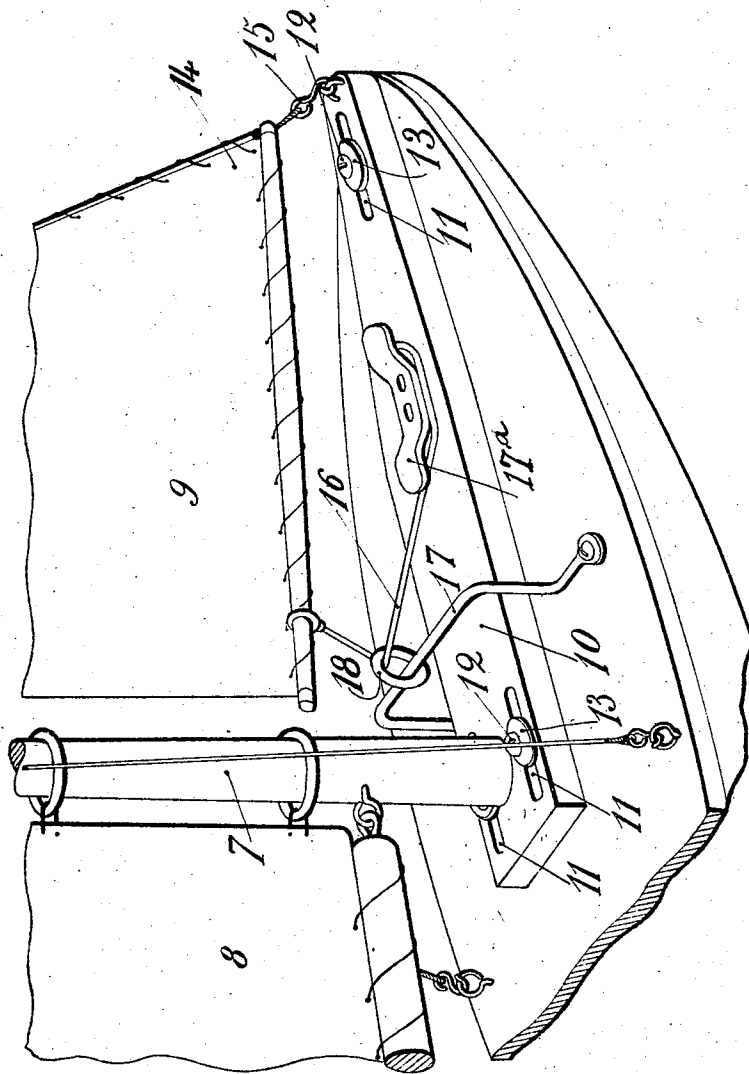
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

HORACE E. BOUCHER, OF NEW YORK, N. Y.

MINIATURE YACHT.

Application filed January 31, 1922. Serial No. 532,950.

My invention relates to miniature yachts and more particularly to a means for shifting the sail plan of the yacht forward or aft as desired in order to secure a balance between the center of effort of the sails and the center of lateral resistance of the hull, thus enabling the yacht to keep a true course.

One of the objects of my invention is to provide a miniature yacht having the usual hull, keel and rudder with a simple means for adjusting the mast forward or aft as desired.

With the above object in view my invention consists in the parts, improvements and combinations more fully pointed out hereinafter.

Referring to the drawings:

Figure 1 shows a side elevation of the miniature yacht embodying my improvement;

Fig. 2 is an enlarged detail view showing the longitudinally adjustable step carrying the mast.

Fig. 3 is a detail view of the step.

The sail boat as illustrated, is a miniature yacht which is of reduced size, has the usual hull 1 and is provided with a keel 2. It also carries a rudder 3 with tiller 4, a rubber band 5 attached to hook 6 keeping the rudder normally central.

It will be understood that the ability of the hull of a sail boat to withstand the pressure of the water may be described as its lateral resistance and that the balancing point called the center of lateral resistance, is the point at which, if pressure is applied to the hull in the direction at right angles to the length of the hull, the hull would be pushed exactly sidewise thru the water and would not pivot. The center of lateral resistance lies below the deck and within the profile of the hull.

It will be also understood that with the sail plan there is a center of effort, or in other words a point at which the pressure of the wind may be considered to be applied, which center is usually slightly aft of the center of lateral resistance of the hull. This center of effort usually lies within the profile of the mainsail.

Ordinarily the pressure of the wind is such as to give the hull a tendency to pivot on a vertical axis so as to head up into the wind. In order to keep her on the course with her sails filled, the rudder is placed and maintained by the helmsman at a slight

angle to the center line of the hull, being put in this position by the tiller.

Altho theoretically one may predetermine the center of effort and center of lateral resistance when a vessel is standing upright, it is not, however, possible to so determine the exact relation when the vessel heels over to the pressure of the wind, for then the centers move slightly either forward or aft.

In accordance with my invention I accomplish as nearly as possible a balance between the center of effort of the sails and the center of lateral resistance of the hull. In my miniature yacht I obtain as far as possible a relation between the two centers so that the center of effort is directly above the center of lateral resistance and is neither forward nor aft of the same.

To accomplish this result I provide means for shifting the mast carrying one or both sails forward or aft and for securing it in its adjusted position.

Referring again to the drawings, the mast 7 carrying mainsail 8 and jib 9 is mounted in and carried by a step or block 10, the heel end of the mast being mounted in said step. This block is placed over the center line of the hull so that the mast is on a center line. Means for adjusting it back and forth are provided which may consist of slots 11 in the step and screws 12 with washers 13 for holding the step in its adjusted position, without piercing or slotting the water proof solid deck of the boat. The eye of the jib or triangular point 14 is, in the best embodiment of the invention, connected to the front of the step by means of the jib stay and hook 15. In this way both sails are carried by and moved fore and aft with the step.

The sheet 16 for the jib may be secured at one end to a cleat 17 and an iron 17 and runner 18 may be provided for the jib sheet.

The main sheet 19 is connected at one end to the tiller 4 and at the other end to the cleat 20 on the boom of the mainsail so that when the yacht heels under the pressure of the wind the tiller turns, thus moving the rudder 3 and bringing the body up further into the wind.

The operation will be readily understood from the description and drawings. The person sailing the boat may hoist the sails, select an angle for the rudder so as to provide a weather helm as it is called, which varies with the strength of the wind. The

entire rig or sail plan can be moved fore or aft so as to give a perfect balance under different weather conditions. The sails may be trimmed to get the best speed out of the boat.

What I claim and desire to secure by Letters Patent is:

1. A miniature yacht comprising in combination, a hull, a rudder, a mast adapted to carry the sail, a step supported on the underlying deck of the yacht, said step carrying said mast, the heel of the mast being mounted in said step, the heel of the mast being above the deck so that the step carrying the mast may slide over the deck, and adjusting means for securing said step to the deck of the yacht so as to shift the center of effort along the center line of the hull, fore and aft of the center of lateral resistance without said adjustment shifting the mast sideways of the hull.

2. A miniature yacht comprising in combination, a hull, a rudder, a mast adapted to carry a mainsail and a jib, means for connecting the rudder to the mainsail boom, a step supported on the underlying deck of the yacht, said step carrying the heel of said mast and adjusting bolts for said step carried by said deck so as to shift the center of effort fore and aft of the center of lateral resistance without said adjustment shifting the mast sideways of the hull, thereby securing a balance between the center of effort of the sails and the center of lateral resistance of the hull, thus enabling the yacht to keep a true course.

3. A miniature yacht comprising in combination a hull, a rudder, a mast adapted to carry the sail, a movable step carrying said

mast, the heel of the mast being mounted in said step, means for adjustably securing said step to the deck of the yacht, said step being then adjustable so as to shift the center of effort fore and aft of the center of lateral resistance without said adjustment shifting the mast sideways of the hull, thereby securing a balance between the center of effort of the sails and the center of lateral resistance of the hull, thus enabling the yacht to keep a true course.

4. A miniature yacht comprising in combination, a hull, a rudder, a mast adapted to carry the sail, a step carrying said mast mounted upon the deck of the yacht, said step provided with slots whereby it is adjustable fore and aft so as to shift the center of effort fore and aft of the center of lateral resistance without said adjustment shifting the mast sideways of the hull, thereby securing a balance between the center of effort of the sails and the center of lateral resistance of the hull, thus enabling the yacht to keep a true course, and a plurality of screws passing thru said slots into the deck of the yacht for securing the step in its adjusted position.

5. A miniature yacht comprising in combination, a hull, a rudder and a keel and means for supporting the mainsail and jib thereon, said means comprising a mast, a longitudinally adjustable step for said mast, adjustable fore and aft along the center line of the hull, said step at the forward end provided with means for connecting the point of the jib thereto.

In testimony whereof, I have signed my name to this specification.

H. E. BOUCHER.