

Feb. 23, 1932.

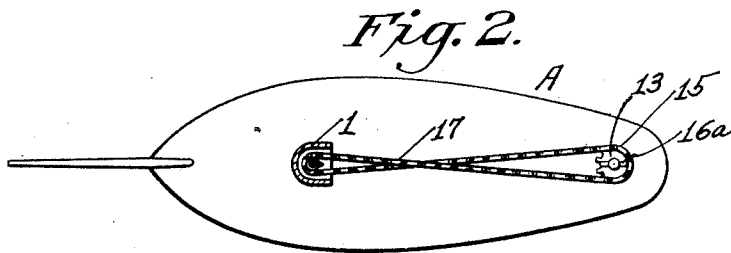
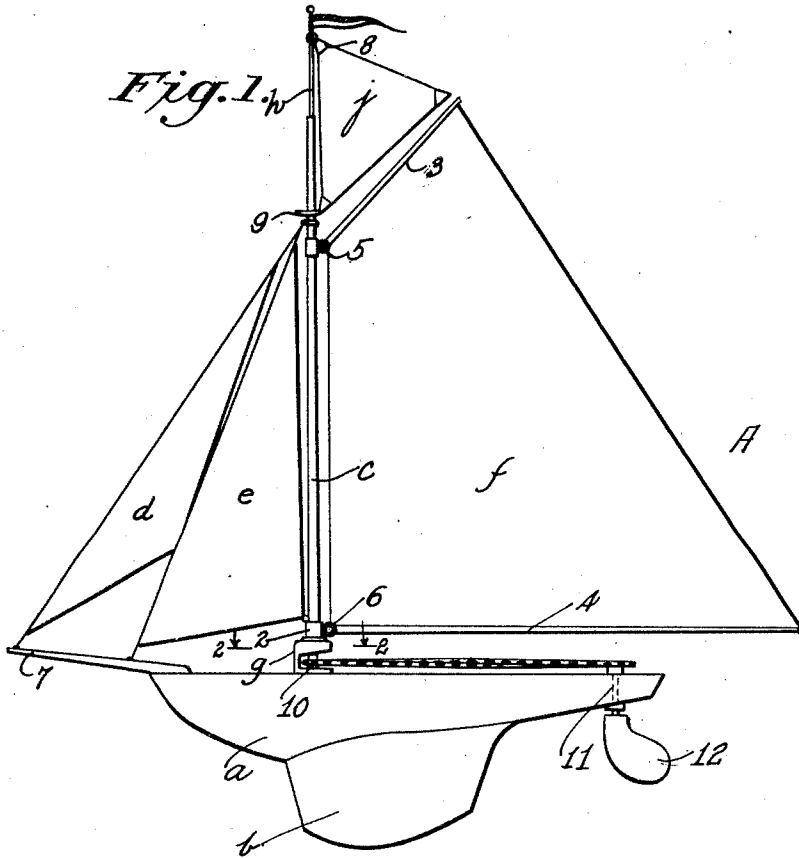
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1,846,458

HELM CONTROLLING DEVICE FOR YACHTS

Filed May 28, 1930

2 Sheets-Sheet 1.



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Fig. 3

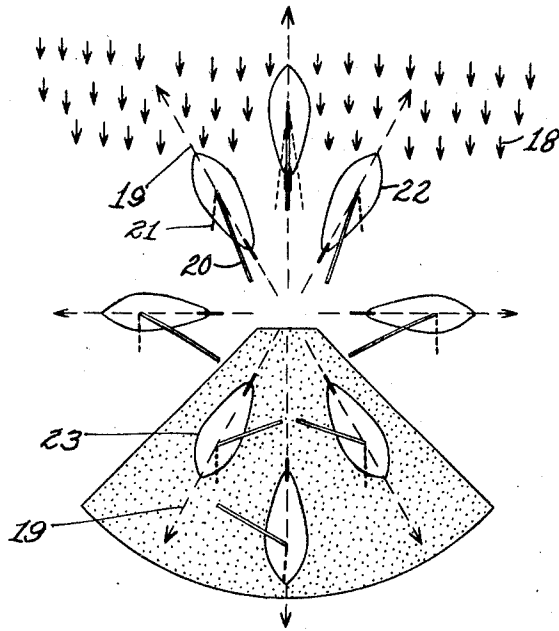
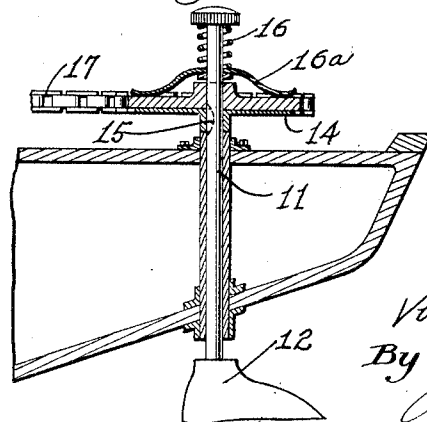


Fig. 4



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UNITED STATES PATENT OFFICE

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HELM CONTROLLING DEVICE FOR YACHTS

Application filed May 28, 1930. Serial No. 456,753.

This invention relates to helm controlling devices for yachts.

The invention has for an object the provision of a helm controlling device so constructed and arranged as to steer a yacht in a predetermined direction.

Another object is the provision of a helm controlling device adapted to so steer a yacht that regardless of the direction of the wind, the yacht will steer a preselected path at all times.

Another object is the provision of a helm controlling device for a yacht so arranged that if the yacht should get off its course, the device will immediately again place the yacht in its proper course and regardless of whether or not the yacht is completely turned around.

Another object is the provision of a yacht which is attractive in appearance, which is capable of being combined in a toy yacht as well as a full size yacht, which is fool-proof in operation, inexpensive of manufacture, does not detract from the general appearance of the yacht and which is generally superior in use and serviceability.

With the above mentioned and other objects in view, the invention consists in the novel and useful provision, formation, construction, association and relative arrangement of parts, members and features, all as shown in a certain embodiment in the accompanying drawings, described generally, and more particularly pointed out in the claims.

In the drawings:

Figure 1 is a side elevation of the improved yacht embodying the invention,

Figure 2 is a plan view, partly in section, of the yacht, the sails being removed and taken substantially on the line 2—2 of Figure 1.

Figure 3 is a sailing chart for the yacht, and,

Figure 4 is a fragmentary cross sectional view of certain details of the invention.

Referring to the drawings, the improved yacht is designated as an entirety by A, and the same includes a hull *a* carrying the usual keel *b*. The hull is adapted to carry a mast *c*. In the present instance, a jib, stay, and main-

sails *d*, *e*, and *f*, respectively, are provided. The mast *c* is tubular in form and secured by means *g* to the hull *a*. The means *g* constitutes a casing provided with a chamber portion 1 and with a flange 2, the tubular mast being secured to said flange. The mainsail includes the usual gaff 3 and a mainsail boom 4. The gaff and mainsail boom are secured to the mast by means shown at 5 and 6. The mainsail and the jib-sail are likewise secured to the mast and to the bow sprit 7. As stated, the mast is hollow and passed through said hollow mast is an elongated rod *h*. This rod extends beyond both ends of the mast and has one end thereof journaled in the member *g*. A topsail *j* has a portion thereof rigidly secured to the upper end of the topsail rod *h*, as shown at 8. A clevis 9 is likewise secured to the topsail and surrounds the mast *c* purely for stabilizing purposes of the topsail, the said clevis being rotatable relative to said mast. The lower end of the topsail rod carries within the chamber 1 of the means *g* a sprocket 10. The stern of the hull is provided with a helm post 11 carrying the usual rudder 12. The post 11 is passed through a gear 13. This gear rests on a plate 14 which is keyed to the post 11, at 15. The post is adapted to extend beyond the gear, and surrounding the post is a coil spring 16 bearing against leaf fingers 16*a*. These leaf fingers engage the top surface of the gear 13. The post is provided with a head whereby the post may be moved against pressure exerted by the spring 16 to release the fingers 16*a* from the gear. Extending between the sprockets 10 and 13 is a crossed continuous chain 17. For the purpose of the present invention, there is a one to two ratio between the sprockets 10 and 13.

The operation, uses and advantages of the invention just described are as follows:

Reference is now had to Figure 3 and the direction of the wind is indicated by the arrows 18. The line 19 indicates the center line of the hull, being the line extending from bow to stern. The lines 20 indicate the mainsail boom and the lines 21 the position of the topsail *j*. In every instance, it will be seen that the topsail *j* is parallel to the wind direc-

tion while the boat is moving. The position of the rudder is aligned in the plane of the line 19 which cuts the center portion of the hull from bow to stern. To set the yacht in its proper course, hold the yacht out of the water with the bow pointing in the direction that it is desired that the yacht sail. The topsail will then align itself parallel with the direction of the wind. Hold the sprocket 15 against movement and turn the rudder to a position parallel with the line 19, holding the boat during the setting in its sailing direction.

It is found that the yacht will steer the course set. It is true that the yacht may zig-zag but will always tack back on its course. It will be noted that if the yacht gets swung off its course, a pressure is immediately exerted against one or the other sides of the topsail and this pressure will turn the topsail rod *h* which, through the medium of the crossed chain 17, will in turn rotate the sprocket 13 and move the rudder steering the boat back on its course. For convenience, a two to one relation is shown between the sprockets 10 and 13. It has been found that this gear relation works satisfactorily. It is to be remembered that air is compressible and water is not and, therefore, a slight turning of the rudder will produce an immediate change in the course of the boat despite a large movement of the topsail.

It is obvious that in the case of a small toy yacht that my invention will afford hours of amusement and teach some of the principles of navigating a yacht; in other words, movement of the boom relative to movement of the rudder in order to keep the boat on a given course. It has been found, for instance, that sometimes if a sudden gust of wind should strike the boom that the impact may be so violent as to cause the boat to turn completely around, that is, 180°, and when this occurs, the topsail remains parallel with the wind and while the boat turns 180°, the rudder turns 90° if a two to one ratio is used. Thus, taking the yacht and the position of the topsail and boom shown at 22 and swinging it 180°, the yacht would be in the position shown at 23. However, the rudder would not be in the position shown by the heavy line at 23, although the boom might be in that position. In other words, the rudder position would be at the median line 19 of the showing at 23 with the result that the boat would again turn around, perhaps not abruptly but gradually and again sail its predetermined course. If the boat turns clockwise, this is equivalent to the topsail turning anti-clockwise, and the rudder turns clockwise relative to the boat, but at a reduced ratio.

A device of this character might be used on full size sailing yachts, the clutch arrangement being changed. The yacht could be set in a given direction relative to the topsail and

it would automatically take its course without the attention of an operator. In this instance, means other than the crossed chain would have to be resorted to, such as a shaft geared to a clutch, which clutch is releasable so that the helm could be operated manually or automatically. It will, of course, be obvious that certain details would have to be worked out with relation to area of rudder, and area of topsail, but this is a simple matter to any one skilled in marine engineering.

It is obvious that various changes and modifications and variations may be made in practicing the invention in departure from the particular showing of the drawings without departing from the true spirit thereof.

I claim:

1. A boat including a hollow mast, a rod extending through said mast, and a topsail secured to said rod and adapted to turn the same, a rudder, and means between said rudder and said rod whereby movement of the topsail will produce turning movement of the rudder, in a two to one ratio.

2. A boat including a hollow mast, a rod extending through said mast and beyond ends of the same, a sprocket carried at one end of said rod, a topsail secured to said rod, a rudder having a helm portion, a sprocket carried by said helm, and a chain extending between the two sprockets whereby movement of the topsail produces movement of the rudder, said sprockets having a turning relation of two to one.

3. A boat including a rod, a topsail secured to said rod and adapted to turn the same, a rudder, and means between said rudder and said rod whereby movement of the top sail will produce turning movement of the rudder in a two to one ratio.

In testimony whereof, I have signed my name to this specification at Los Angeles, California, this 5th day of February, 1930.

VIRGIL E. ROBINSON.