May 3, 1932. E. L. BLACKMAN 1,856,804

FORE AND AFT RIGGED VESSEL

Filed Aug. 3, 1931

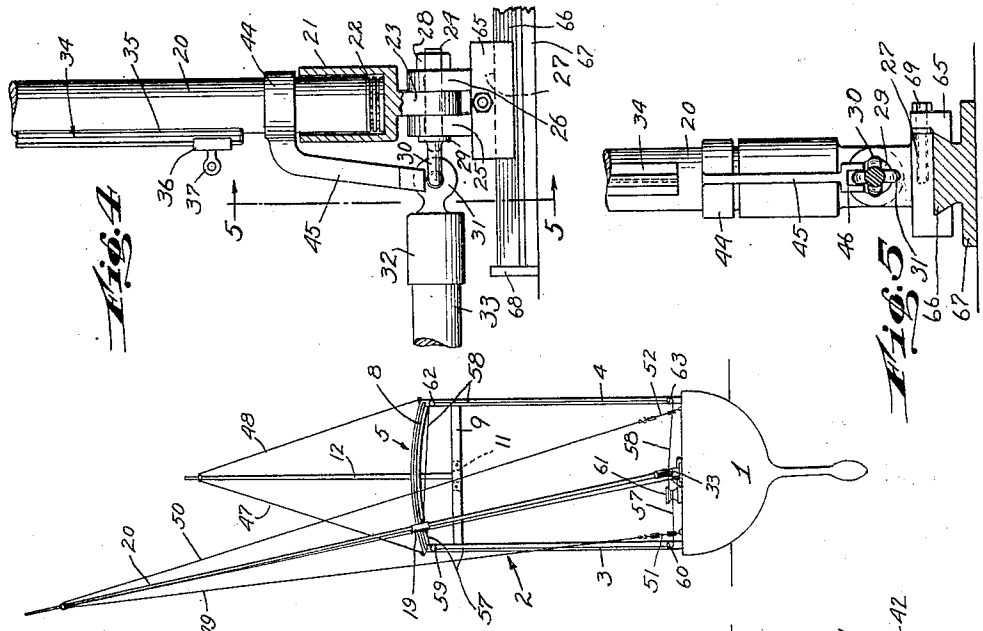

Fig. 4

Fig. 5

Fig. 3

Fig. 4a

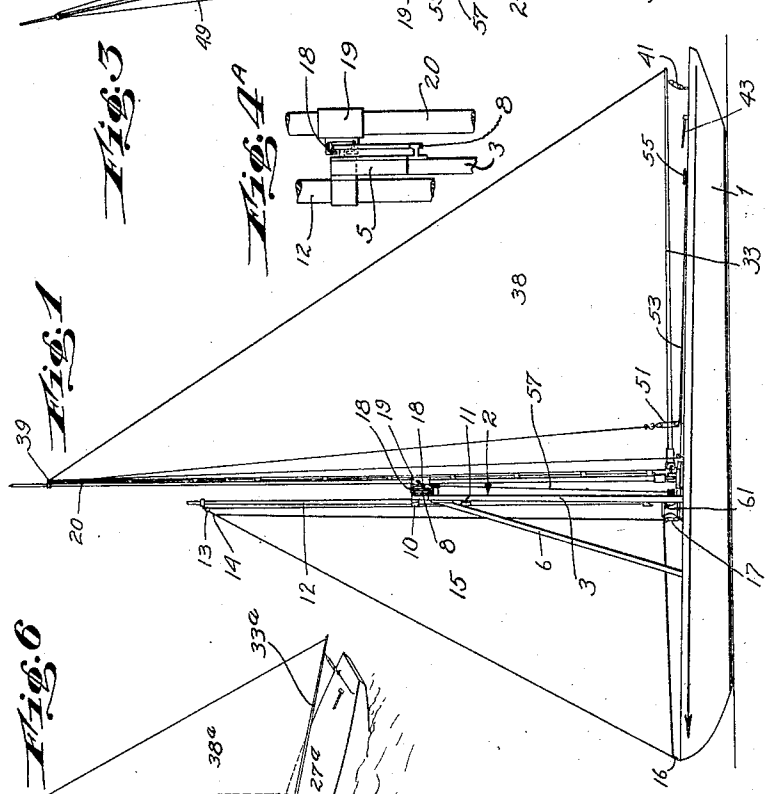

Fig. 1

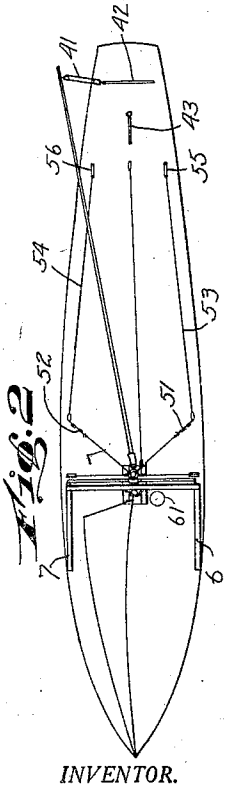

Fig. 2

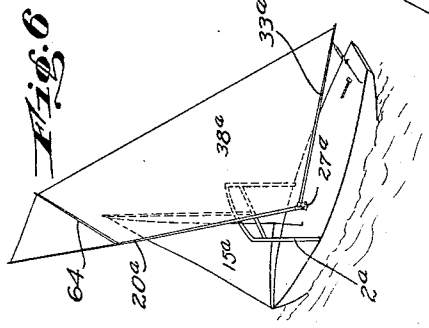

Fig. 6

INVENTOR.
EDWARD L. BLACKMAN
BY Gustav Drews
ATTORNEY.

Patented May 3, 1932

1,856,804

UNITED STATES PATENT OFFICE

EDWARD L. BLACKMAN, OF BROOKLYN, NEW YORK

FORE AND AFT RIGGED VESSEL

Application filed August 3, 1931. Serial No. 554,825.

This invention relates to fore and aft rigged vessel in general and more especially to vessels rigged according to the Marconi or leg-of-mutton type.

Among the objects of the present invention, it is aimed to provide a fore and aft rigged vessel where a greater efficiency may be obtained from the thrust of the wind and especially so that the thrust of the wind may be received substantially centrally of the vessel.

Among the objects of the present invention, it is aimed to provide a fore and aft rigged vessel whereby a greater efficiency may be obtained from the wind, by changing the angle formed by the mast with the deck of the vessel so that the top of the mast and the sail could be tipped to windward, thus making the sail present a more upright surface to the wind when the vessel heels to leeward.

Another object of the present invention is to provide that through the tipping of the mast or spar to windward, the thrust of the wind may be received substantially centrally of the vessel.

These and other features, capabilities and advantages of the present invention will appear from the subjoined detail description of one specific embodiment thereof illustrated in the accompanying drawings in which

Figure 1 is a side elevation of the same;

Fig. 2 is a plan view of the same;

Fig. 3 is a rear elevation of the same;

Fig. 4 is an enlarged fragmental section showing the connection of the boom and spar to the vessel;

Fig. 4A is an enlarged fragmental detail showing the connection of the spar to the guide;

Fig. 5 is a section along the line 5—5 of Fig. 4; and

Fig. 6 is a perspective of a fore and aft rigged vessel provided with a main sail having a gaff as distinguished from the Marconi main sail illustrated in the embodiment of Fig. 1.

In the present embodiment, the hull 1 is provided with a frame 2 located where the mast of a fore and aft rigged vessel is ordinarily located. This frame 2 has two lateral uprights 3 and 4 extending upwardly in the present instance from the sides of the hull and having the upper ends connected by the crosspiece 5.

This frame 2 is provided with two lateral forwardly extending bracing bars 6 and 7 extending from the upper ends of the standards 3 and 4 forwardly to the deck.

Below the crosspiece 5, there is provided a second crosspiece 9. The crosspieces 5 and 9 are provided with yokes 10 and 11 in alinement with one another to receive the lower portion of the top mast 12.

To the upper end of the top mast 12 in the usual way, there is secured a block 13 over which extends the halyard 14 attached to the upper end of the jib 15, the forward end of the jib 15 is connected in the present instance to the bow of the boat by the halyard 16 and the rear lower end connected to the block and tackle 17 which is secured to the deck as shown in Fig. 1. The standards 3 and 4 as shown in Fig. 1, preferably incline forwardly in a downward direction.

To the lower end of the crosspiece 5, there is secured an arcuate I-beam 8, the flange of which is slidably engaged by the gripping jaw 18 of the sleeve 19 in which the spar 20 is slidably mounted. The lower end of the spar 20 is supported in the sleeve 21 resting on the ball bearings 22 formed at the bottom of such cup shaped sleeve 21 to facilitate rotation of the spar 20 in said cup shaped sleeve 22.

The lower end of the cup shaped sleeve 21 is provided with an ear 23 provided with an orifice to receive the pin 24 extending through the orifices of the alined ears 25 and 26 of the bracket 27. The pin 24 is preferably provided with a nut or other securing device 28 at its forward end and has a shoulder 29 at its rearward end and an eye 30 extending beyond such shoulder which engages the eye 31 formed in the forward end of the cup shaped sleeve 32 in which the forward end of the boom 33 is secured.

The rear face of the spar 20 is preferably provided with a T-shaped bar 34 having a

flange 35 secured to the spar and jaw members 36 slidably mounted on said T-shaped bar 34 which are provided with eyes 37 through which extend the usual loops or rings connected to the main sail 38. The main sail 38 in the present instance is of the Marconi or leg-of-mutton type and is provided at its upper end with a halyard extending over the block 39 connected to the upper portion of the spar 20. The lower edge of the sail is connected to the boom 33 in the usual way.

The rear end of the boom is preferably provided with a main sheet 41 which extends to the traveler 42 formed at the stern of the vessel in the usual way. To the front of the traveler 42, there is provided the tiller 43.

When the sail swings to leeward, the spar 20 will rotate in the cup shaped member 21. In order to facilitate this rotation and thus minimize any torsional strain that might be transmitted to any portion of the spar 20, there is provided the sleeve 44 fixed to the lower portion of the spar above the cup shaped member 21 and having an extension 45 provided with a bifurcated end 46 which engages the upper portion of the eye 31. Consequently when the boom 33 swings to leeward with the main sail 38, such motion will be transmitted to the lower portion of the spart 20 by the boom 33 through the eye 31 and extension 45. The extension 45 is preferably composed of spring steel in order to give slightly during the transmission of motion by the boom 33 to the spar 20.

The top mast 12 and spar 20 may be provided with suitable stays. In the present instance, the top mast 12 is provided with stays 47 and 48 which extend down to the outer ends of the crosspiece 5. The spar 20 is also provided with stays, to wit the stays 49 and 50 extending from the upper portion of the spar 20. These stays 49 and 50 are connected at their lower ends to the block and tackle 51 and 52 respectively which are connected to the deck of the hull 1, the halyards 53 and 54 of which extend back and are connected to the cleats 55 and 56 on the deck of the vessel. These stays are so arranged that they may be easily removed.

The spar 20 is intended to be inclined to windward when travelling and therefore in order to facilitate swinging the spar over into proper direction, the sleeve 19 is provided with the guiding halyards 57 and 58, the halyard 57 extending across the pulley 59 down to the pulley 60 and then over to the capstan 61 to which it is connected and the halyard 58 extends from the sleeve 19 over the pulley 62 and then down over the pulley 63 and then over to the capstan 61. The operation of the capstan in one direction will of course wind the halyards 57 and 58 about to swing the spar 20 to one side of the top mast 12 and in the other direction will of course operate the halyards 57 and 58 to swing the spar 20 to the other side of the top mast 12.

In the embodiment illustrated in Fig. 6, the main sail 38^a is connected to the boom 33^a and spar 20^a in the same way as the main sail 38 is connected in the embodiment of Fig. 1. This embodiment is also provided with a frame, to wit the frame 2^a similar to the frame 2 of the embodiment illustrated in Fig. 1 to which the spar 20^a is slidably connected below its center. The spar 20^a in this instance is also pivotally connected to a bracket secured to the deck of the vessel, to wit the bracket 27^a, similar to the bracket 27 illustrated in Fig. 1.

The main difference between this embodiment and the embodiment illustrated in Fig. 1 resides in providing the main sail 38 with a gaff, to wit the gaff 64. The jib sail 15^a is rigged substantially identical to the rigging of the jib 15 of the embodiment of Fig. 1. When the rigging is provided with a main sail having a gaff such as illustrated in this embodiment, the height of the structure above the deck of the vessel will be materially reduced as compared to the structure above the deck of the vessel of the embodiment illustrated in Fig. 1 and the main sail 38^a when dipped to windward will have the effect of positioning the gaff 64 more nearly parallel to the boom 33^a as the force of gravity will work in opposition to the force of the wind.

The bracket 27 as will particularly appear from Figs. 4 and 5 supplements the jaw member 65 to grip the slideway 66 formed on the base 67 secured to the deck of the hull 1 centrally of the vessel and extending underneath the crosspiece 9 of the frame 2. The ends of this slideway 66 are preferably provided with stops, see the stop 68 at the rear end thereof, Fig. 4, determining the movement of the bracket 27 along said slideway. As shown in Fig. 5, the jaw member 65 is connected to the bracket 27 by a bolt 69 which may be sufficiently tightened to anchor the bracket 27 against movement at any point along the slideway 66 if desired.

From the foregoing, it will appear that when the lower end of the spar 20 due to its slidable character is permitted to move forwardly especially when sailing with the wind, the force of the wind exercised on the lower part of the sail will materially minimize the burying effect of the wind on the vessel.

It will also appear that there will be sufficient clearance between the gripping jaw 18 and the I-beam 8 to permit the spar 20 to rock relative to the I-beam 8 when its bracket 27 slides along the slideway 66.

It is obvious of course that various changes and modifications may be made to the general details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. A fore and aft rigged vessel having a frame, a spar pivotally connected at its lower end to the vessel and slidably connected to said frame intermediate its ends, and a main sail attached to said spar.

2. A fore and aft rigged vessel having a guide extending across the deck of the vessel at a distance above the same, a spar pivotally connected at its lower end to the deck of the vessel and slidably connected to said guide, a boom connected to the lower end of said spar, and a main sail attached to said spar and boom.

3. A fore and aft rigged vessel having a guide extending across the deck of the vessel and at a distance above the same, a bracket secured to the deck of the vessel, a spar pivotally connected to said bracket at its lower end and slidably connected to said guide, a boom pivotally connected to said bracket, and a main sail connected to said spar and boom.

4. A fore and aft rigged vessel having a bracket extending upwardly from the deck thereof forwardly of the center of the vessel, a guide at the upper end of said bracket extending across the deck of the vessel, a spreader at the upper end of the bracket, a top mast secured to said spreader, a spar pivotally connected at its lower end to the deck of the vessel and slidably connected to said guide, a jib connected to the upper end of said top mast and to the deck of the vessel in front of said bracket, and a main sail connected to said spar to the rear of said bracket.

5. A fore and aft rigged vessel having a bracket extending upwardly therefrom, braces extending forwardly from the upper end of said bracket to the deck of said vessel, a guide at the upper end of said bracket, a spar pivotally connected at its lower end to the deck of the vessel and slidably connected to said guide, controlling means for moving said spar from one side to the other of said guide, and a main sail attached to said spar.

6. In a fore and aft rigged vessel, the combination with a guide mounted to extend across the deck of the vessel at a distance above the same in front of the center thereof, of a bracket secured to the deck of the vessel adjacent to said guide, a pin extending through said bracket, a cup shaped sleeve pivotally connected to said pin, a spar rotatably mounted in said sleeve, a second cup shaped sleeve pivotally connected to said pin, a boom attached to said second sleeve, and a main sail attached to said spar and boom.

7. In a fore and aft rigged vessel, the combination with a guide mounted to extend across the deck of the vessel at a distance above the same in front of the center thereof, of a bracket secured to the deck of the vessel adjacent to said guide, a pin extending through said bracket, a cup shaped sleeve pivotally connected to said pin, a spar rotatably mounted in said sleeve, a second cup shaped sleeve pivotally connected to said pin, a boom attached to said second sleeve, a T-shaped bar secured to the rear face of said spar, grippers slidably mounted on said T-shaped bar, and a main sail connected to said grippers and to said boom.

8. In a fore and aft rigged vessel, the combination with a guide mounted to extend across the deck of the vessel at a distance above the same in front of the center thereof, of a bracket secured to the deck of the vessel adjacent to said guide, a pin extending through said bracket, a cup shaped sleeve pivotally connected to said pin, a spar rotatably mounted in said sleeve, a second cup shaped sleeve pivotally connected to said pin, a boom attached to said second sleeve, a T-shaped bar connected to the rear face of said spar, grippers slidably mounted on said bar, a sleeve fixed to the lower end of said spar, an extension secured to said fixed sleeve and operatively connected to said second sleeve, and a main sail attached to said grippers and to said boom.

9. A fore and aft rigged vessel having a frame, a bracket slidably mounted on said vessel, a spar pivotally connected at its lower end to said bracket and slidably connected to said frame intermediate its ends, and a main sail attached to said spar.

10. A fore and aft rigged vessel having a frame, a slideway secured to said vessel below said frame, a bracket slidably mounted on said slideway, a spar pivotally connected to said bracket at its lower end and slidably connected to said frame intermediate its ends, and a main sail attached to said spar.

11. A fore and aft rigged vessel having a frame, a slideway extending longitudinally of said vessel and disposed centrally thereof below said frame, a bracket slidably mounted on said slideway, a spar pivotally connected at its lower end to said bracket, and a main sail attached to said spar.

12. In a fore and aft rigged vessel, the combination with a guide mounted to extend across the deck of the vessel at a distance above the same in front of the center thereof, of a bracket secured to the deck of the vessel adjacent to said guide, a pin extending through said bracket, a cup shaped sleeve pivotally connected to said pin, a spar rotatably mounted in said sleeve, a second cup shaped sleeve pivotally connected to said pin, a boom attached to said second sleeve, roller bearings in said first cup shaped sleeve to facilitate rotation of said spar, and a main sail attached to said spar and boom.

13. A vessel having a frame, a spar pivotally connected at its lower end to the ves-

sel and slidably connected to said frame above its lower end, and a main sail attached to said spar.

14. A vessel having a guide extending across the deck of the vessel at a distance above the same, connecting means on the deck of said vessel, a spar pivotally connected at its lower end to said connecting means and slidably connected to said guide, a boom connected to said connecting means, and a main sail attached to said spar and boom.

15. A vessel having a guide extending across the deck of the vessel and at a distance above the same, a bracket secured to the deck of the vessel, a second bracket slidably connected to said first bracket, a spar pivotally connected to said second bracket at its lower end and slidably connected to said guide, a boom pivotally connected to said second bracket, and a main sail connected to said spar and boom.

16. In a vessel, the combination with a guide mounted to extend across the deck of the vessel at a distance above the same in front of the center thereof, of a bracket secured to the deck of the vessel below said guide, a pin extending through said bracket, a cup shaped sleeve pivotally connected to said pin, a spar rotatably mounted in said sleeve, a second cup shaped sleeve pivotally connected to said pin, a boom attached to said second sleeve, and a main sail attached to said spar and boom.

17. A vessel having a frame, a bracket slidably mounted on said vessel, a spar pivotally connected at its lower end to said bracket and slidably connected to said frame above its lower end, and a main sail attached to said spar.

18. A fore and aft rigged vessel having a frame, a slideway extending longitudinally of said vessel and disposed centrally thereof below said frame, a bracket slidably mounted on said slideway, a spar pivotally connected at its lower end to said bracket and slidably connected to said frame, and a main sail attached to said spar.

19. In a vessel, the combination with a guide mounted to extend across the deck of the vessel at a distance above the same in front of the center thereof, of a bracket secured to the deck of the vessel, a pin extending through said bracket, a cup shaped sleeve pivotally connected to said pin, a spar rotatably mounted in said sleeve, a second cup shaped sleeve pivotally connected to said pin, a boom attached to said second sleeve, roller bearings in said first cup shaped sleeve to facilitate rotation of said spar, and a main sail attached to said spar and boom.

EDWARD L. BLACKMAN.