Dec. 14, 1965 A. B. WILSON, JR 3,223,065

SAILBOAT

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FIG. 1.

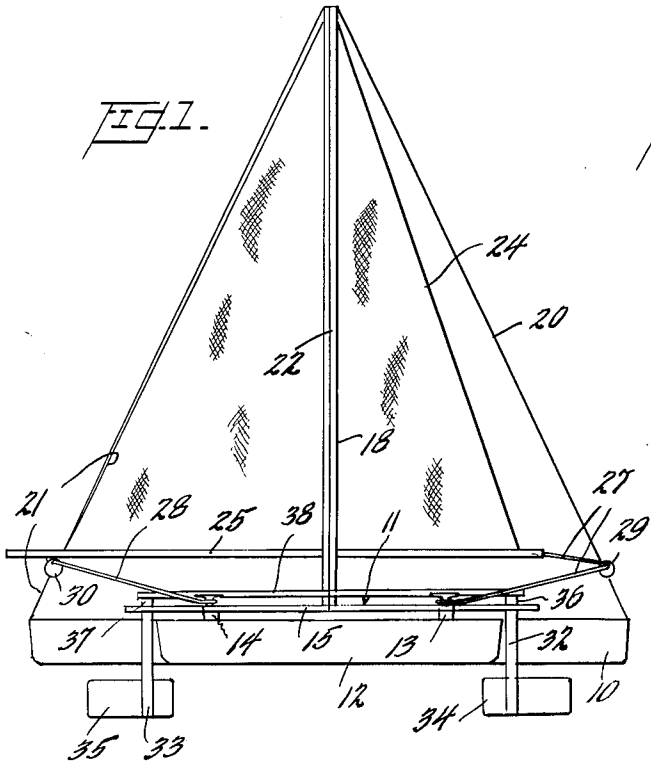


FIG. 2.

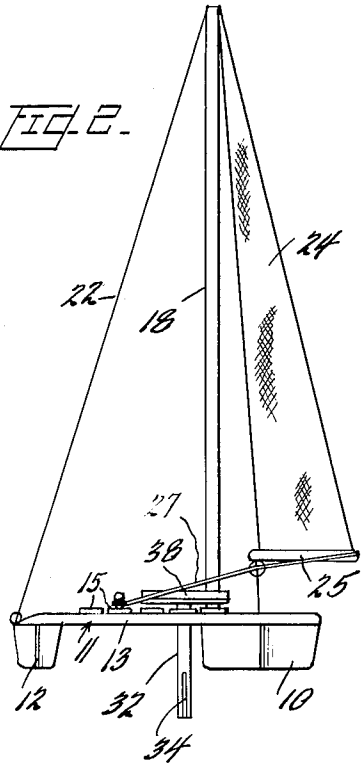
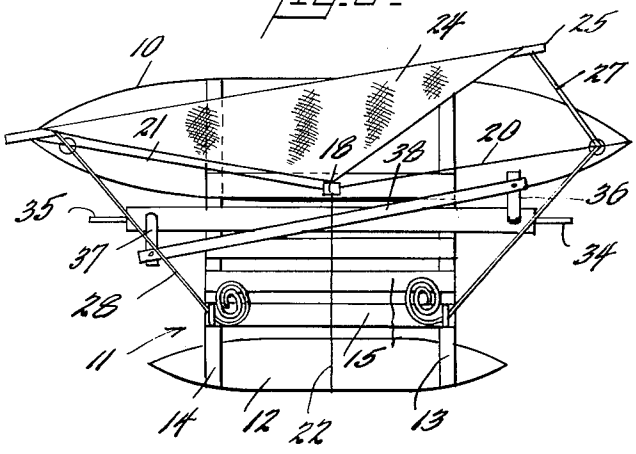


FIG. 3.



INVENTOR

A. B. Wilson, Jr.,

Watson, Cole, Grindle & Watson

BY

ATTORNEYS

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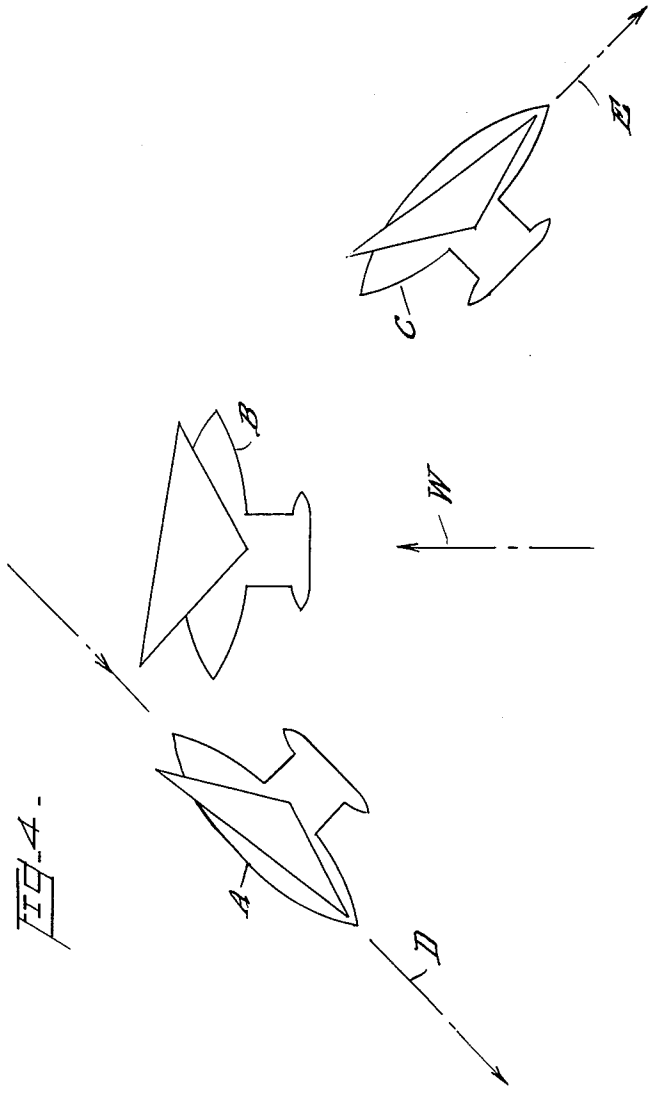


FIG. 4.

INVENTOR

A. B. Wilson, Jr.,

Watson, Cole, Grindle & Watson

BY

ATTORNEYS

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SAILBOAT

Aubrey Bennett Wilson, Jr., R.F.D. 1, Gordonsville, Va.

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4 Claims. (Cl. 114—39)

The present invention relates to sailing craft, and particularly, to sailing craft of the general type known as the proa, designed to move at the greatest possible speed for a given sail area and a given wind velocity.

The proa, as described in an article appearing in the magazine, "Popular Boating," issue of October 1962, beginning at page 46, has been known and used in certain areas for a great many years past but not widely used by sailing enthusiasts despite its speed, because of its complexity and need for special handling.

The present invention comprises a sailing craft which in all of its major features resembles the proa, as the proa has heretofore been known and used, but, by reason of changes which result in simplification of construction, it is rendered, without undue sacrifice in speed, much simpler to operate and much less costly to originally design and construct. In fact, a sailing craft of the type contemplated by the present invention can be built at extremely low cost, utilizing known and immediately available materials and, when placed in operation, may be controlled with ease and convenience by a single operator.

One form of the invention is disclosed in the accompanying drawings by way of example and will be described in detail. As will be apparent, the invention may be embodied in sailing craft which differ in certain respects from that illustrated and now to be described in particularity.

In the drawings:

FIGURE 1 is a side elevation of the improved sailing craft;

FIGURE 2 is an end elevation of the same;

FIGURE 3 is a plan view or a view looking down upon the sailing craft from above;

FIGURE 4 is a diagram showing the sailing craft in three positions which it successively occupies when changing direction while moving upwind.

A characteristic of the proa is that it is designed and constructed in such manner as to have two bow or cutwater ends, being intended to move in either direction with equal facility and its hull, indicated by reference numeral **10** in the drawings, is designed in this manner. In fact, the hull **10** may be a standard canoe primarily intended to be moved by paddles, such canoes being in common usage throughout the world. To the canoe, or hull portion **10**, is secured an outrigger structure which is generally indicated by the numeral **11** and which is secured to the canoe midway of its ends. It extends laterally from the hull for a substantial distance, a float **12** being suitably secured to its outer end. The outrigger structure may, as shown, comprise two elongated members **13** and **14**, one end of each of which rests upon and is permanently or detachably secured to the upper rails of the canoe or hull **10**, together with a series of cross members or boards **15** disposed parallel to each other and to the longitudinal axis of the hull **10**, the boards being secured at their ends to members **13** and **14**, respectively. The float, as may be clearly seen in FIGURE 2 of the drawing, is affixed to the underside of the outrigger structure at its outer end and is likewise elongated and provided with two pointed ends or cutwater structures, the longitudinal axis of the float being substantially parallel to the longitudinal axis of the hull **10**. The operator of the craft may position himself upon the platform intermediate the hull **10** and the float **12**, the sail control means and the steering means, to be later described, being conveniently within his reach.

A mast **18** of substantial height has its base rigidly affixed to the outrigger structure at a point equidistantly disposed from the ends of the hull but laterally of the center line thereof, this mast being of substantial height in relation to the size of the hull **10**. It is sustained in position by three guys wires indicated at **20**, **21**, and **22**, respectively, guy wires **20** and **21** extending from the top of the mast to opposite ends of the hull and guy wire **22** extending from the mast top to the outer end of the outrigger structure.

The sail **24** is isosceles in outline and, when in operative position, its upper end or peak is approximately at the top of the mast and its lower edge, which is horizontal, extends longitudinally of the hull, a rigid member or boom **25** being secured to the lower horizontal edge of the sail and thus maintaining its generally triangular shape when in use. The boom extends in a longitudinal direction, and with the sail to which it is secured, is suspended from the top of the mast by the means which is selected to uphold the sail, this means preferably comprising a block and halyard by means of which the sail may be raised and lowered as desired. As this supported, the boom **25** may be adjusted longitudinally of the hull moving, with the sail, along an arcuate path centered at the mast top, and it may be caused to assume various angular relationships with respect to the longitudinal axis of the hull by moving its ends transversely of the hull. The boom adjusting means may conveniently comprise two lines or cables, or the like, indicated at **27** and **28**, respectively, one end of each line or cable being attached to an end of the boom and the other being either conveniently secured by suitable means to the outrigger structure, or held by the operator, the rope **27** passing through a loop **29** which forms part of the guy wire **20**, and the rope **28** passing through a similar loop **30** which forms part of the guy wire **21**. It is obvious that one who occupies a position upon the platform portion of the outrigger may, by simultaneously tensioning one rope while releasing the other, move the boom **25** angularly about the mast **18** and also longitudinally of the craft and, in the normal operation of the sailing craft, its course is controlled in this manner with the aid of rudder devices now to be described.

Mounted in suitable bearing means, rigidly affixed to the outrigger structure, are two rotatable rudder posts **32** and **33** each having at its lower end a rudder, these rudders being indicated at **34** and **35**, respectively. Fixed to the top of each rudder post is an arm, these arms being indicated at **36** and **37**, respectively, these arms extending in opposite directions as shown most clearly in FIGURE 3, being equal in length and their outer ends being connected by a link **38**. The link **38** is at all times under the close control of the occupant on the platform of the outrigger and movement of the link in one direction will cause simultaneous movement of the rudders **34** and **35** in opposite directions. Maneuvering of the craft when under sail is realized by adjusting the angle and longitudinal position of the sail in coordination with movements of the rudders. The rudder blades **34** and **35** likewise comprise means to resist sidewise movement of the hull under the pressure of the wind.

In its operation, the sailing craft or modified proa can be maneuvered in such manner as to sail directly downwind, or across the wind, or to move upwind by tacking. In moving upwind, the procedure differs from that which is practiced by the conventional sailing craft having a bow and a stern, the proa being reversed in direction, that end thereof which has been trailing becoming the leading end after the tacking operation has been completed. In

FIGURE 4 of the drawings the craft is shown diagrammatically in three positions through which it passes in tacking, moving from position A to position B to position C rapidly merely upon adjustment of the sail and rudder by the operator. In this figure the direction of the wind is indicated by the arrow W and the sailing craft in position A having its sail adjusted in such manner that its direction of movement is along the line D. To effect the tacking operation, the operator releases the leading end of the boom **25** which immediately causes the sail to assume the position in which it is illustrated in the diagrammatic view B, the craft losing headway. By further adjusting the sail to the position in which it is shown in diagrammatic Figure C, drawing in the leading end of the boom and likewise adjusting the trailing end, the craft has been placed in position to move in a direction indicated by the arrow E, which is substantially at right angles to the course which it was first following and is indicated by the arrow D.

During this tacking operation, the wind has continued to move in the direction indicated by the letter W and the operator has manipulated the rudder structure to assist in the maneuver. At all times during the operation of the boat, the sail is kept to leeward of the mast, even when going before the wind, and all maneuvering is accomplished by adjusting the sail in the manner described.

The means for securing the outrigger structure to the hull **10** may vary widely. It may be a permanent connecting means or the connection may be made by means of clamps or ropes or wires so that the outrigger structure may be removed from the hull and the hull used in its normal manner. The sail is much larger in area than any sail which can be carried by a hull of comparable size and, for a given wind pressure, the sailing craft is much speedier than conventional sailing craft of the bow and stern type, particularly when the operator moves to a position on the platforms which permits the float to rise from the water so that the only water resistance results from the friction of the water against the wetted surface of the hull **10**.

Obviously for the means described equivalent means may be substituted. The rudder structure illustrated is of the simplest nature; and functions not only as a rudder, but as a weatherboard preventing sideways movement of the craft under wind pressure. In lieu of the links which are interposed between the ends of the guy wires **20** and **21**, pulleys may be employed, and throughout the craft other changes may be made without departure from the intent of the invention. The outrigger structure may be designed and constructed purely as an attachment for standard types of canoes, the mast being a part thereof, likewise the rudder structure, the sail with its boom, and the float. The outrigger structure for a standard canoe of approximately 17 feet long may include a float 8 or 9 feet long the axis of which is approximately 7 feet from the axis of the hull **10**. The entire outrigger structure may be of light but strong material, for instance aluminum, readily movable from place to place without difficulty, and the mast may be demountable for promoting convenience in movement.

While the hull illustrated and described is symmetrical about a straight line connecting the bows or cutwaters and an outrigger structure is affixed thereto, the invention contemplates hulls of different types and shapes which are in the nature of combination hulls and outrigger structures, such hulls being non-symmetrical about a straight line connecting the bows. By this means the operator may position himself laterally of the mast on the up-wind side, so as to be able to control the triangular sail while seated on or in the hull and the use of an attached platform and float avoided.

I claim:

1. A sailing craft comprising an elongated hull each end of which is adapted to serve as a bow or cutwater,

a float, and an outrigger structure, said hull, float and outrigger structure constituting a rigid assembly with the axes of hull and float disposed in spaced parallel relation and the outrigger structure connecting the same and constituting a support for an operator,

a mast supported on said assembly approximately midway of the length of the hull,

a triangular sail disposed upon that side of the mast remote from the float with its uppermost corner attached to the mast and its lower edge spaced above the hull and extending longitudinally thereof in both directions from the mast,

a boom secured only to and supported solely by the sail at its lower edge so as to be freely movable relatively to the hull,

and means accessible to an operator located on said outrigger structure for determining the position of the boom to vary as desired the relationship of the sail to the hull, whereby even though the direction of the wind may remain substantially constant, the operator may cause either end of the hull, as desired, to serve as a bow or cutwater.

2. A sailing craft comprising an elongated hull each end of which is adapted to serve as a bow or cutwater,

a float, and an outrigger structure, said hull, float and outrigger structure constituting a rigid assembly with the axes of hull and float disposed in spaced parallel relation with the outrigger structure connecting the same and constituting a support for an operator,

a mast supported on said assembly approximately midway of the length of the hull,

a triangular sail disposed upon that side of the mast remote from the float with its uppermost corner attached to the mast and its lower edge spaced above the hull and extending longitudinally thereof in both directions from the mast,

a boom secured only to and supported solely by the sail at its lower edge so as to be freely movable relatively to the hull,

and means accessible to an operator located on said outrigger structure for moving the boom angularly relatively to the axis of the hull to bring the sail into desired relationship with the hull whereby, even though the direction of the wind may remain substantially constant, the operator may cause either end of the hull, as desired, to serve as a bow or cutwater.

3. The combination set forth in claim **2** in which said means includes a control line attached to one end of said boom and extending from said point of attachment, through one of said guide members to said outrigger structure, and a second control line attached to the opposite end of said boom and extending through the second guide member to said outrigger structure, whereby an operator positioned on said outrigger structure may adjust the sail relatively to the hull, for the purpose set forth.

4. A sailing craft comprising an elongated hull each end of which is adapted to serve as a bow or cutwater,

a float, and an outrigger structure constituting a rigid assembly with the axes of hull and float disposed in spaced parallel relation and the outrigger structure connecting the same and constituting a support for an operator,

a mast supported on said assembly approximately midway of the length of the hull,

a triangular sail disposed upon that side of the mast remote from the float with its uppermost corner attached to the mast and its lower edge spaced above the hull and extending longitudinally thereof in both directions from the mast,

a boom secured only to and supported solely by the sail at its lower edge so as to be freely movable relatively to the hull,

and means accessible to an operator located on said outrigger structure for moving said boom angularly relatively to the axis of the hull, and also longitudi-

nally of the hull, to adjust the sail relatively to the hull, for the purpose set forth.

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MILTON BUCHLER, *Primary Examiner.*

FERGUS S. MIDDLETON, *Examiner.*

RICHARD G. BESHA, *Assistant Examiner.*