RIG FOR SAILING VESSELS

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2 Claims. (Cl. 114—102)

This invention relates to improvements in lateen rigged sailing vessels.

The lateen rig, for instance as embodied in a dhow or a felucca, is typified by a single loose footed triangular sail extended by a long obliquely directed yard which is suspended intermediate its ends from a relatively short mast and has its fore-end attached in the region of the bow of the vessel, the clew of the sail being sheeted to the stern of the vessel.

Latenen rigged vessels are generally fast, particularly off the wind, but have certain disadvantages which may be surmounted as follows:

1. The mast, supported by conventional shrouds, has a triangle of forces based on only half the beam of the vessel, since the lee shrouds are slack.
2. The yard must be very heavy in order to withstand the bending forces upon it and it thus offers a bad airfoil to the sail.
3. The sail is difficult to får and unfurl.
4. The vessel sails well on one windward tack but not on the other since the mast obstructs the airflow to the sail.
5. Off the wind an auxiliary spar or spreader has to be used to hold the leech of the sail away from the hull.

With the general object of eliminating these disadvantages according to this invention a sailing vessel having a lateen rig has a bipod mast, a substantially straight yard supported intermediate its ends upon the mast and a sail suspended from a stay which extends from one end of the yard to the other between the legs of the bipod mast.

Preferably the yard is straight in compression and braced to relieve it of bending stresses. Its section can thus be smaller than would otherwise be necessary with a corresponding reduction in weight and air resistance.

Preferably the sail is suspended from the yard by means of a luff stay extending parallel with the yard and attached to it by ball or roller thrust bearings at either end of the yard. In the well known Wykeham-Martin manner the sail is hanked to the luff stay and furled on the roller blind principle by rotating the stay about its axis.

For a better understanding of the invention however reference should now be made to the accompanying drawings, in which:

FIGURE 1 shows a typical felucca with conventional lateen rig;
FIGURE 2 shows an improved lateen rig according to the invention;
FIGURE 3 is a half plan of the vessel shown in FIGURE 2;
FIGURE 4 is a section on line A—A of FIGURE 3 on an enlarged scale;
FIGURE 5 also on an enlarged scale is a fragmentary aft elevation view of the top of the mast of the vessel;
FIGURE 6 is a section on line B—B of FIGURE 5;
FIGURE 7 is a front elevation of the yard as viewed in the direction indicated by arrow D in FIGURE 2;
FIGURE 8 on a still larger scale is a section on line C—C of FIGURE 5;

Referring firstly to FIGURE 1 there is shown a traditional lateen rigged vessel having a hull 30 and a relatively short mast 31 supported by the usual shrouds 32. The mast 31 supports a curved yard 33 intermediate its ends to which a triangular loose-fitted sail 34 is secured. The fore-end of the yard 33 is secured to the bow of the vessel and the clew of the sail is attached to the stern of the vessel by a variable length main sheet 35.

Referring now to the improvement represented in FIGURE 2 there is shown a vessel having a hull 1 with bow portion 2. Above the hull is a bipod mast 3 secured to the sides of the vessel at 3a. Mounted on the top of this mast is a lateen yard 4 which is stiffened by bracing wires 5 and bracing struts 5a. The head 4a of yard 4 is rotatably secured by twin backstays 6 to the stern 7 of the hull 1. Ball or roller thrust bearings 8, 8 (diagrammatically shown) secure a luff stay 9 to the ends of the yard 4. The sag in the luff stay is restrained by an extended portion of a sleeve 10 as hereafter explained.

The yard 4, which is of pear-shaped cross-section, has its lower end rotatably coupled to a fitting 4b at the bow 2. The sail 11 is secured to the stay 9 so that when the yard 9 is rotated, for instance by use of a pulley 20 controlled by a rope 21 as shown, the sail will unfurl upon it. The dashed sail outlines 11a, 11b indicate two possible reduced sail plans. An out haul 12 holds the sail taut on a swivelling boom 13. This out haul 12 passes around a snatch block 15 on the boom 13 and is made fast on a cleat 15a fixed to the hull 1. The sail is unfurled by pulling on the out haul 12 after the rope 21 has been released.

FIGURE 3 shows the boom 13 in its "before the wind" position, whilst dashed lines 13a show the centre line of boom 13 when close hauled by a sheet 13c. It will be seen that the foot 12b of sail 11 passes freely inside the bipod mast 3.

FIGURE 4 shows certain details of the bipod mast 3. In order that there shall be the maximum amount of space available for lateral movement of the foot 12b of the sail and also to reduce the length of the bipod mast 3, the latter rests on a braced structure 3a, 3b, 3d, which is centrally supported by a column 14a on which the boom 13 is pivoted at point 14.

Referring now to FIGURES 5 and 6 there are shown bolts 18 which secure a metal frame 17 to the legs of the bipod mast 3. At the top of the mast 3 a cross member 17a is inclined to the vertical to support the yard 4 which rests upon it in the position shown by the dashed lines.

FIGURE 7 shows the bracing wires 5 and struts 5a of the yard 4 being attached to a backstay 6. Except for the pull of the sail the braced yard is free from external forces and can readily pivot at the attachment 4a and at the housing 16.

FIGURE 8 shows how the yard 4 is embraced by a metal bearing sleeve 10 which may be fixed, or alternately rotatable, upon the yard and is for the purpose of preventing the luff stay 9 from sagging to leeward when the sail is filled. The sleeve 10 to this effect is provided with two rearwardly extending curved jaws 10a which enclose the luff stay 9 and are separated at their ends by a distance only sufficient to admit the sail 11.

Since the yard 4 can swivel and carry with it the stay 9 there is a smoother flow of air into the sail when close-hauled than would be the case if there were a fixed mast or yard with a fixed slot or guide track for locating the stay.

It should be appreciated from the foregoing that a vessel which is rigged in accordance with the invention is considerably easier to handle so far as reducing and increasing sail area to meet varying weather conditions and changing from one windward tack to another is concerned.

What I claim is:

1. A lateen rigged sailing vessel comprising a bipod mast, a braced structure secured to the hull of the vessel supporting the mast, a yard having upper and lower ends, means pivotally connecting the lower end of the yard to
the bow of the hull forward of the mast, means pivotally connecting the yard intermediate the upper and lower ends thereof to the top of the mast, a stay, swivel means connecting the stay to the upper and lower ends of the yard for suspension rearward of the yard, gracing means for maintaining the yard substantially straight when the yard is under load including at least one wire extending forward of the yard between its upper and lower ends, a strut supporting the wire and a backstay pivotally connected to the upper end of the yard and to the stern of the hull, a sail attached at its leading edge to the stay, means operably coupled to the stay for rotating the stay for furling the sail thereon, a sleeve mounted on the yard in proximity to the wire supporting strut, and rearwardly extending curved jaws carried by the sleeve for enclosing the stay and preventing the stay from sagging to leeward when the sail is filled.

2. The lateen rigged sailing vessel as claimed in claim 1 in which said stay is a taut wire.

References Cited by the Examiner

UNITED STATES PATENTS

Rudder Publication; April 1957; page 46; an article by H. Mann.

FERGUS S. MIDDLETON, Primary Examiner.