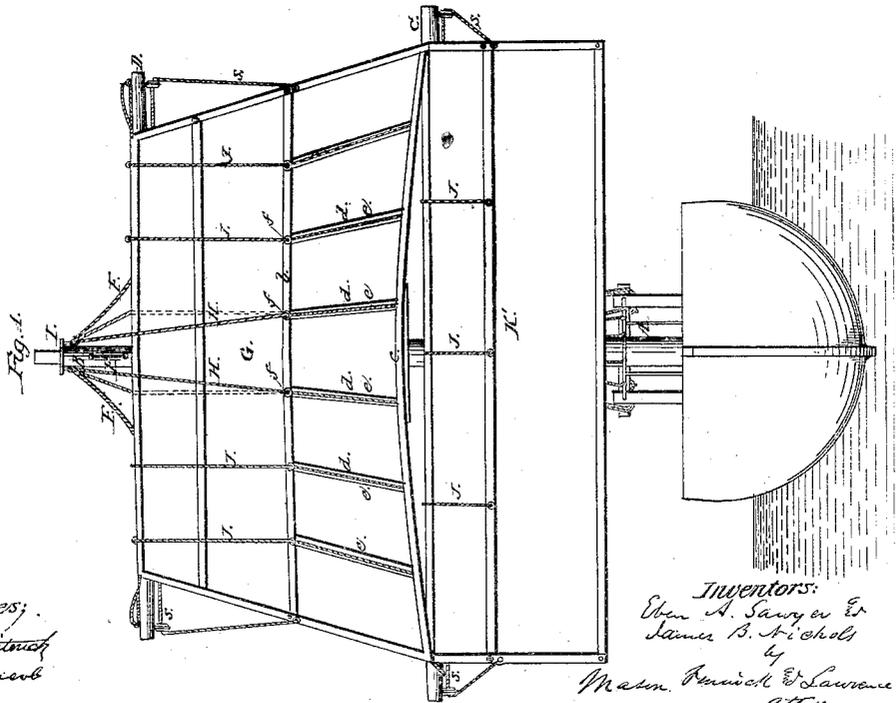
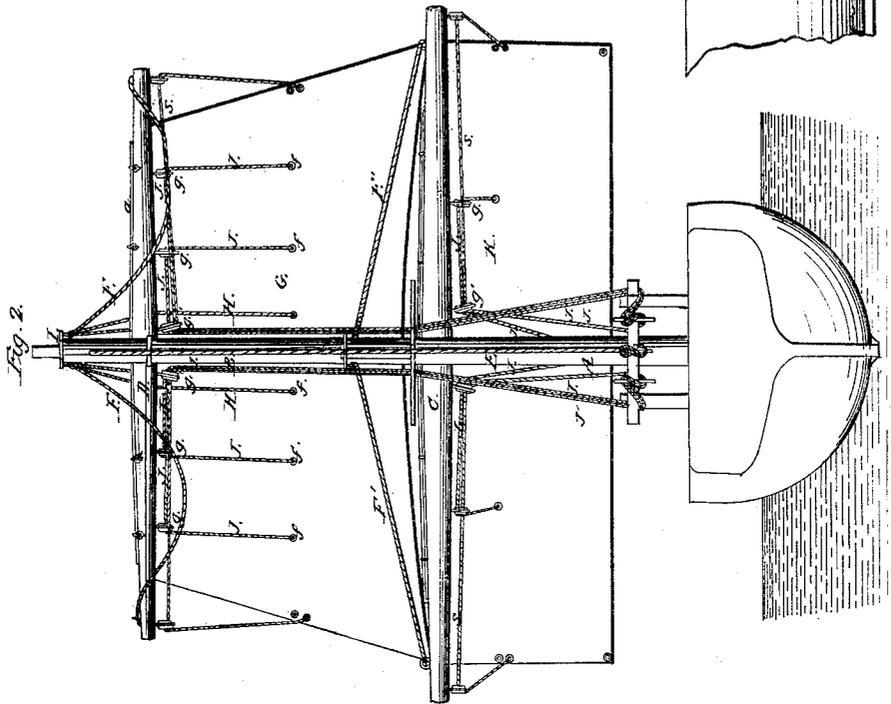
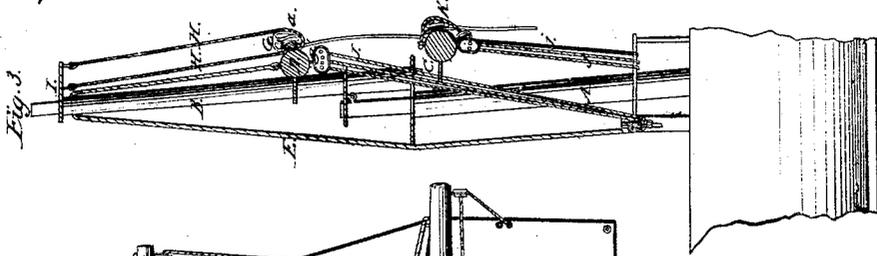


*Sawyer & Nichols*

*Reefing Sails.*

*No 37,011.*

*Patented Nov. 25, 1862.*



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# UNITED STATES PATENT OFFICE.

EBEN A. SAWYER AND JAMES B. NICHOLS, OF PORTLAND, MAINE.

IMPROVED APPARATUS FOR REEFING TOP-SAILS AND COURSES OF SHIPS.

Specification forming part of Letters Patent No. 37,011, dated November 25, 1862.

*To all whom it may concern:*

Be it known that we, EBEN A. SAWYER and JAMES B. NICHOLS, both of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Reefing Top-Sails and Courses; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front view of a "top-sail" and "course" fully set to the wind. Fig. 2 is a rear view of the same. Fig. 3 is a transverse section showing the top-sail reefed and the course in a like condition.

Similar letters of reference in the several figures indicate corresponding parts.

Our invention consists, first, in an arrangement of looped "spilling" lines running down from the top-mast cross-tree through a jack-stay of the top-sail yard, and then behind and through the top-sail or close reef thereof, and then up in front of the top-sail to the top-mast cross-tree, so that when the top-sail yard is lowered away the wind is caused to spill out of the top-sail, and said sail confined in a condition for being conveniently reefed from the deck.

It consists, second, in an arrangement of a series of "brail" lines attached to the top-sail or to the fore or main yard, and running down in front of and through the sail to and through a series of blocks of the yard, and then down to the deck. With this arrangement on the top-sail yard, the top-sail may be reef simultaneously with the lowering away of the yard from the deck, and without employing a rolling yard or a double top-sail yard or any of the complicated systems heretofore devised; and with it applied to the main or fore yard the courses may be hauled up in position and confined, ready for reefing in the ordinary way.

To enable others skilled in the art to make and use our invention, we will proceed to describe the same with reference to the drawings.

A is the lower mast, and B the top-mast, of usual construction.

C is the fore or main yard, and D the top-sail yard; E, the top-sail halyard, and F F' the fore and top sail lifts, all arranged and operated as usual.

G is the top-sail, attached by its head to the jack-stay *a* of the yard D, and by its clews to the yard C. That part of this sail known as the "close-reef," and included between the band *b* and the foot-rope *c*, is banded diagonally, as indicated at *d d*, the bands *d d* being roped from top to bottom, as shown at *e e*, the lower ends of the ropes *e* attaching to the foot-rope *c*, and their upper ends being confined to the sail by bull's-eyes, which fit in the spliced ends of the ropes and in perforations *f f* of the sail. Thus banding and roping the sail gives great strength and durability to it and enables it to bear the strain of the brail-lines.

H H are the spilling-lines, attached, first, by one end to a top-mast cross-tree, I, passed down through the jack-stay *a* behind the top-sail, then through the bull's-eyes of the close-reef, and then up in front of the top-sail, and attached by their other end to the cross-tree I, as shown. These lines, as will be seen in Fig. 3, hold in the surplus of the sail as it descends with the top-sail yard, and consequently cause the wind to spill out of it. They also retain the sail in a position to be reefed from the deck or from aloft in a very short space of time, and while the vessel may be "standing on her course."

J J are the brail-lines attached to the after part of the top of the yard D, and run down forward of the sail G and through the bull's-eyes of the close-reef, thence up aft of the sail to and through single and double blocks *g g'* and down to the deck of the vessel. These lines, in connection with reef-tackle *s s* serve for reefing the top-sail, and to bring them into play the sailors have only to lay hold of their loose lower ends and haul down upon them, as such operation draws in the slack of the lines, and causes the lines to securely reef the sail, as illustrated in Fig. 3.

The brail-lines, if extended in their use to the fore-course K, as shown in Figs. 2 and 3, are applied to the lower yard and to the sail in substantially the same manner as to the top-sail, and so, also, if extended in their use to the main-sail, or to any other similar sail to which they are applicable.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. Running the spilling - lines H through reef-band *b* and through the top-sail G at points near the top-mast B or center of the

sail G, and extending their ends in front and in rear of the sail up to the cross-tree I, substantially in the manner and for the purpose described.

2. Providing the blocks *g* on the yards of top-sails and courses, and arranging brail-lines J J to pass independently of one another from the top of the yards down in front of the sails, through the sails, up behind the sails, over the blocks *g*, and down to the deck, in the manner and for the purpose described.

3. The arrangement together on the top-sail of the spilling-lines and brail-lines, in the manner and for the purposes described.

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