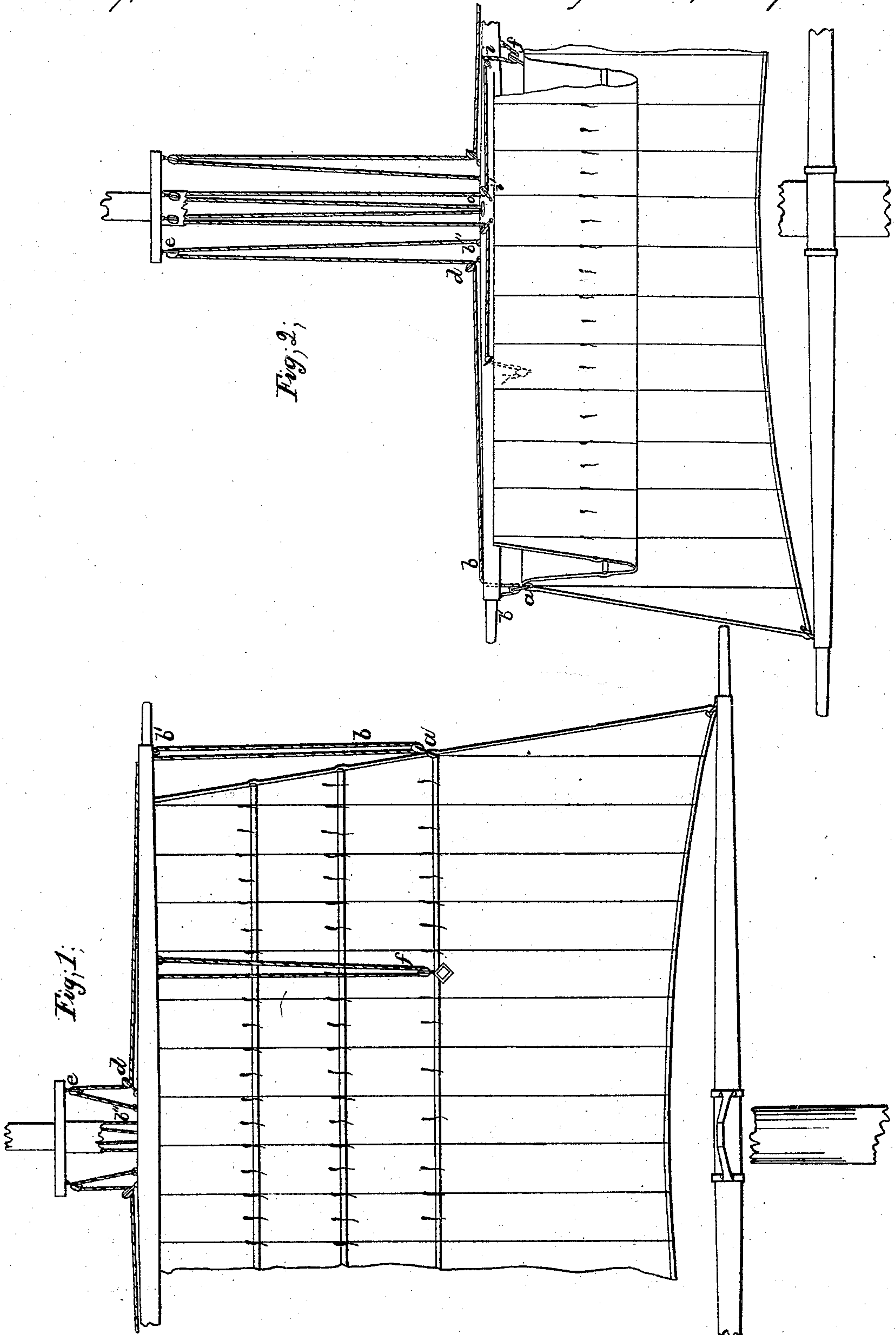


*La Croix & Barnes.*

*Sails & Rigging.*

*N<sup>o</sup> 17,101.*

*Patented Apr. 21, 1857.*





# UNITED STATES PATENT OFFICE.

F. C. LA CROIX AND CHAUNCEY BARNES, OF NEW YORK, N. Y.

## REEFING SAILS.

Specification of Letters Patent No. 17,101, dated April 21, 1857.

*To all whom it may concern:*

Be it known that we, FRANCIS C. LA CROIX and CHAUNCEY BARNES, of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Reducing Topsails of Ships; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being made to the annexed drawings, making a part of this specification, which are fully described herein, and similar letters indicate similar parts throughout the figures.

Our invention consists in a peculiar method of reducing the topsails from the deck whereby, if reduced to a storm-sail, the operation of reefing may be dispensed with, or if less reduced, the reefing is rendered much less laborious than by the ordinary methods. This we accomplish by attaching the sail, along the line of the close-reef-points, to the mast-head, by certain tackles so rigged, through the intervention of the yard, that the lower part of the sail will be constantly kept tightly stretched by said tackles, whatever the height of the top-sail yard.

In the drawings annexed, Figure I is a representation of a topsail, with our improvements attached, as seen from the after side, and Fig. II exhibits the sail as seen from forward, and as reduced to the fullest extent.

The sail is generally of usual construction, having the ordinary thimbles worked into the leach to which reel tackles are affixed. To the lower, or close-reef thimble (*a*), a block is affixed permanently, and through this a line (*b*) is rove, one end of which is attached to the yard arm at (*b'*), thence after passing the block it is led through a sheave hole in the yard arm, thence along the yard to a point near the center, where it is taken through a leading-block, or a bullseye, as (*d*), from which it is carried over a block (*e*) placed vertically above the leading-block on the cross-tree, and thence down to the yard again, where it is permanently belayed as at (*b''*). Two or more similarly rigged tackles are affixed in the belly of the sail along the line of the close-reef-points, as seen at (*f*), being led from the yard to the sail, thence to the cross-tree through the leading-blocks (*i*) (*i'*) and back to the yard at (*o*) as shown in Fig. II. The theoretical equivalent of

each of these tackles would be a single line, led, from the sail at the place where the block is affixed to it, through the leading-blocks to the cross-tree, and the operation will be as follows: If the topsail yard be lowered to the usual distance for a close reef, the act of lowering will take up the lines (*b*) and (*f*) since those are fastened to the yard at (*b'*) and (*o*), the yard in fact merely passing along them—and that part of the sail below the close-reef-points will be kept as tightly stretched as if the yard were not in motion. The slack of the sail will be thrown to the forward side by the position of the lines (*f*), and the sail is thus reduced to a storm-sail, which can be carried in heavy weather with comparative safety and without going aloft to tie the points. If the weather is such that more sail is desirable, and that the men can go aloft to reef, the act of hoisting the yard to the distance of the reef above still keeps all the lower part of the sail stretched, the upper part alone bellying out, and thus in tying the second reef-points the men have only to lift a small part of the sail instead of the whole, as in ordinary reefing. The usual reef tackles are rigged into the thimbles in the leach, and these are hauled out in the common way, except that the labor of doing so is obviously less from the fact that the one at (*a*) always remains "hauled out" whatever be the position of the yard. It will thus be seen that the operation of reducing to a storm sail, or close reefed top sail is effected from the deck by simply letting go the halyards to the requisite distance, and that of setting the full sail again by merely hoisting the yard once more.

We are aware that sails have been reduced by lowering the yard, and that the effect of keeping a lower portion of the sail stretched at varying elevations of the yard has been produced. In one instance by rolling up the sail upon a roller beneath the yard, and in another by hauling out the leach of the sail to the yard arm by single lines, made fast at one end to the deck or other fixed point and extending thence through leading blocks to the leach of the sail, and other points in the reef bands. The first-named plan is by us deemed to be imperfect in practice, and the second very inferior to ours in its operation, requiring a much greater power to be applied to the



downhaul to produce an effect equal to that produced when our arrangement is used, under similar circumstances, for only single lines can be used while we are enabled to  
5 use "tackles" that double the effective force derived from the weight of the yard when being lowered.

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

10 Reducing sails by means of "tackles" ar-

ranged as herein described, both ends of the "falls" of which are secured to the yard, and which are operated in the manner set forth.

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CHAUNCEY BARNES.

Witnesses:

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THOMAS DUCEY.