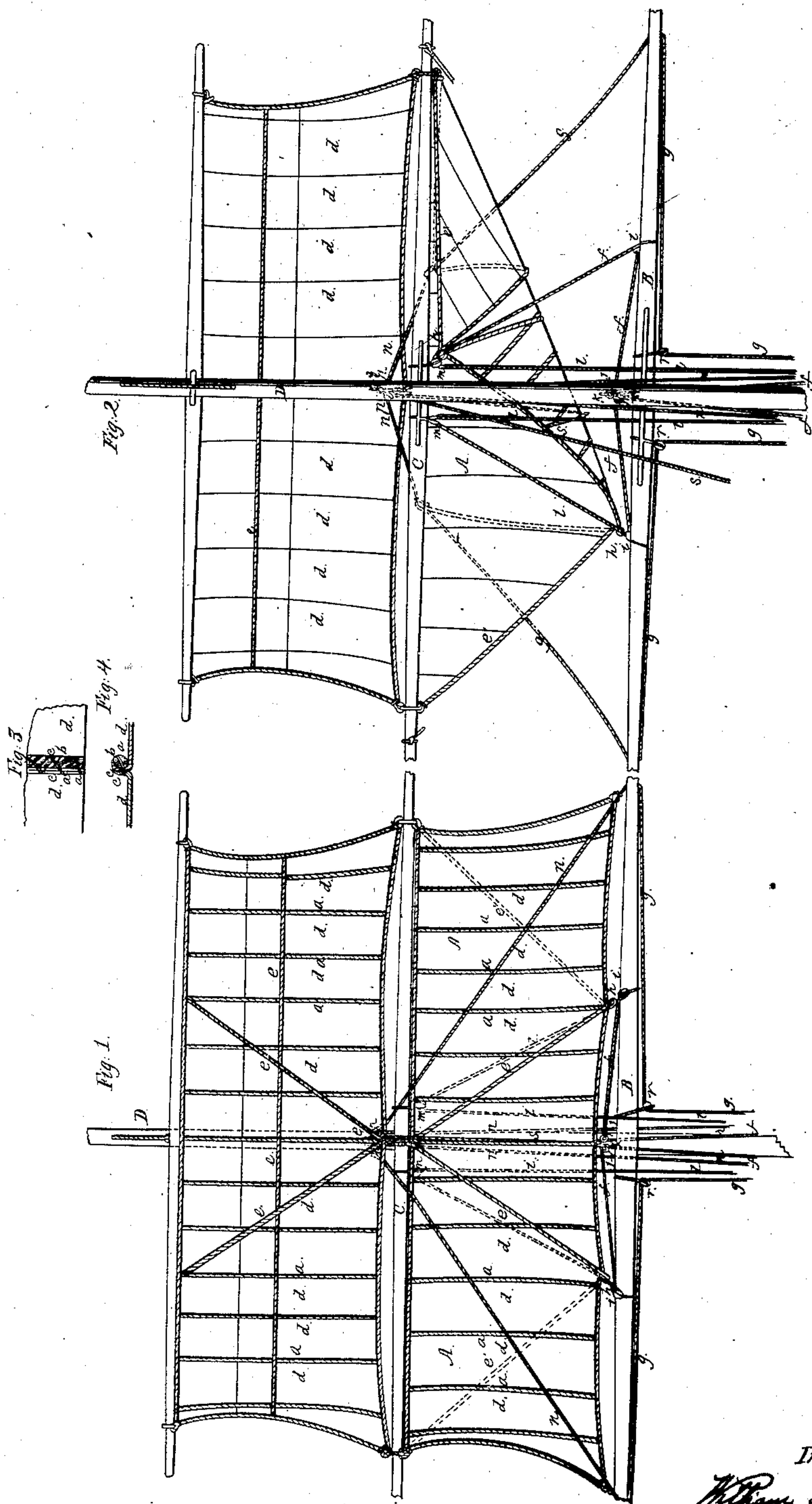


*W. A. Sands,
Sails & Rigging.*

N^o 30,694.

Patented Nov. 20, 1860.



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UNITED STATES PATENT OFFICE.

WILLIAM A. SANDS, OF BROOKLYN, NEW YORK.

SHIP'S SAIL.

Specification of Letters Patent No. 30,694, dated November 20, 1860.

To all whom it may concern:

Be it known that I, WILLIAM A. SANDS, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sails for Ships; and I 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 double or divided top-sail with my improvements showing it fully spread. Fig. 2 is a back view of the same with the lower top sail partly taken in. Fig. 3 is a front view of a portion of one of the seams of the sail on a larger scale. Fig. 4 is a transverse section corresponding with Fig. 3.

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

My invention consists in making sails for vessels, with corded or roped seams as hereinafter described thereby not only giving them greater strength with less weight than when made with lapped seams in the usual manner but affording greater facility for handling them aloft.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

The manner in which my corded or roped seams are made is best illustrated in Figs. 3, and 4, but Fig. 1, shows the strengthening cords or ropes *a, a*. The two widths of cloth *d, d*, to be sewed together are first placed back to back with their edges *c, c*, together as shown in Figs. 3 and 4, and run together with thread as close as practicable to the edges after which a cord or rope *a*, is placed along one piece close to the edge and sewed to both edges, the stitches *b, b*, passing around one strand of the cord or rope and through both pieces of cloth and over both their edges. When the sail is spread and stretched the cord lies snugly against the face of the sail with the seam on one side of it. A sail made in this way may be made much stronger than one having the ordinary lap seams, with the use of cord which weighs much less than the extra width of cloth that is used in the laps of the seams, and besides this the cord enables the men aloft to get a better hold on the sail.

This improvement is applicable to all kinds of sails. Their strengthening bands *e, e, e', e'*, may be made of rope and sewed

to the sail in a similar manner to the seam ropes *a, a*, by first folding the sail where the band is to be applied, and stitching through the double cloth close to the fold and then laying the rope along one side of the fold and sewing through the rope and double cloth over the edge of the fold.

An improved mode of reducing and taking in square sails is illustrated in Figs. 1 and 2, where it is represented applied to the lower top sail A. The reduction or taking in is effected by folding the lower angles of the sail by drawing the clews up to the yard in the peculiar manner represented in Fig. 2, which will be presently described. To enable this to be effected I provide the sail with two quarter sheets *f, f*, in addition to the usual sheets *g, g*, the said quarter sheets being attached to the foot of the sail at two points *h, h*, at distances from the corners or clews thereof, about equal to the height of the sail, and passing through two blocks *i, i*, attached to the top of the lower yard B, and through two blocks *j, j*, attached to the sling *k*, of the said yard and from thence to the deck; and at the same points *h, h*, I attach two clew lines *l, l*, which pass diagonally across the back of the sail to and through two blocks *m, m*, attached to the upper yard C, near the top mast D, and from thence to the deck. I also attach to the corners of the sail two other clew lines *n, n*, which pass diagonally across the front of the sail to and through blocks *p, p*, attached to the sling *q*, of the yard C, and from thence to the deck. The outer sheets *g, g*, are applied in the usual manner running through the lower yard B, near the ends thereof and through blocks *r, r*, attached to the bottom of the said yard and from thence to the deck. A buntline *s*, attached to the middle of the foot of the sail and passing up the front thereof to and through a block attached to the sling *q*, and from thence down to the deck completes the necessary apparatus.

The reducing and taking in and letting out of the sail A, are performed in the following manner. To take in the sail to the extent shown at the left hand of Fig. 2, the outer sheets *g, g*, are slackened, and the quarter sheets *f, f*, kept taut, and the outer clew lines *n, n*, are hauled in by the hands on deck, till the portions of the sail outside of the strengthening bands *e', e'*, which extend from the upper corners of the

sail to the points *h, h*, are drawn flat against the front of the sail when the said clew lines are made fast and the sail is kept stretched by the quarter sheets and is made
5 as snug as if reefed. To take in the whole sail the lower corners should first be taken in and secured as above described and when this has been done the quarter sheets *f, f*, are let go and the inner clew lines *l, l*, hauled
10 taut, which causes the sail to be folded backward and brings the points *h, h*, close up to the yard as shown in Fig. 2, and then by hauling in the buntline *s*, at the middle of the sail it is brought snugly up to the yard.
15 The reduction of the sail to make it equivalent to taking in one or more reefs may be effected by taking in only one of the lower corners, by taking in both of said corners or by taking in both lower corners and

then hauling in one of the inner clew lines *l, l*, to bring the sail to the condition shown in Fig. 2. To let out the sail again it is only necessary to let go the bunt-line and clew lines and haul on the sheets. This mode of reducing and taking in sail can be
25 performed with very few hands in all weather without shifting braces.

What I claim as my invention and desire to secure by Letters Patent is—

The arrangement of the ropes *a* with the
30 edges *c, c*, of the sail, in the manner herein shown and described, when the said edges are attached to said ropes by stitching so as to avoid lapping or banding, all as set forth.

WILLIAM A. SANDS.

Witnesses:

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