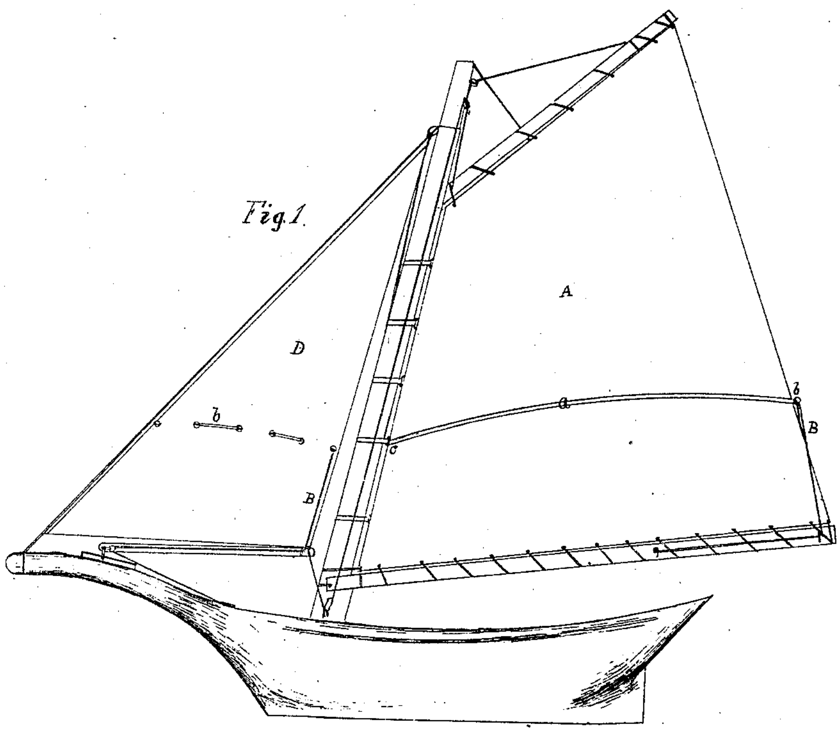
A. G. CROSSMAN.

2 Sheets--Sheet 1.

Improvement in Apparatus for Reefing Sails.

No. 113,983. Patented April 25, 1871.

Fig. 1.



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2 Sheets--Sheet 2.

A. G. CROSSMAN.

Improvement in Apparatus for Reefing Sails.

No. 113,983. Patented April 25, 1871.

Fig. 3.

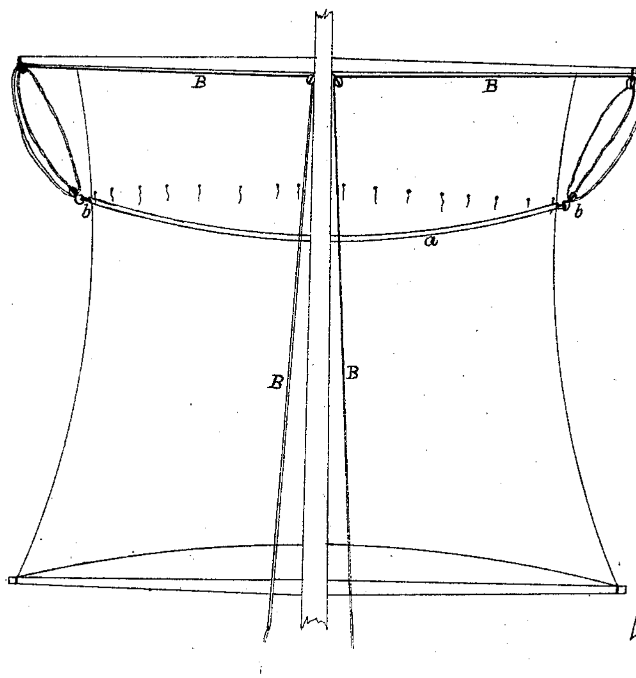
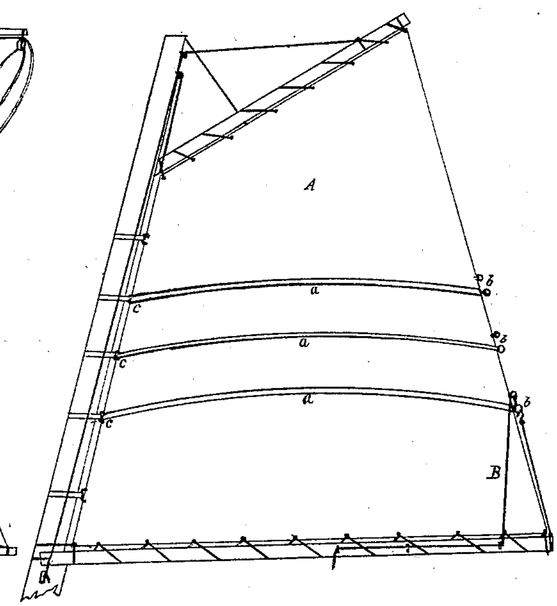


Fig. 2.



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United States Patent Office.

ALONZO G. CROSSMAN, OF HUNTINGTON, NEW YORK, ASSIGNOR TO FRANKLIN M. CROSSMAN, OF SAME PLACE.

Letters Patent No. 113,983, dated April 25, 1871.

IMPROVEMENT IN APPARATUS FOR REEFING SAILS.

The Schedule referred to in these Letters Patent and making part of the same.

I, ALONZO G. CROSSMAN, of Huntington, in the county of Suffolk and State of New York, have invented certain Improvements in Apparatus for Reefing Sails, of which the following is a specification.

Nature and Object of the Invention.

In the ordinary construction of sails for vessels they are usually provided with reefing-nettings at intervals, by which a portion of the sail may be stowed upon the yard after the sail has been let down or raised up, as the case may be, for that purpose. The ordinary mode of reefing as now generally practiced is to slacken the halyards which hold the sail in place, and in the case of a schooner-rigged sail to let down the sail for the distance necessary to take in the reef required, and then stow the sail upon the yard by tying it thereto with a series of short cords, usually termed nettings, which are attached to the sail for this purpose.

This mode of reefing is, however, open to objections, among which are, first, that it requires a very considerable amount of labor and consequent loss of time to thus stow the sail; and, second, that as taking a reef in a sail has generally to be performed in rough weather it is very commonly necessary to lay to for that purpose, which is not only objectionable but often dangerous.

My invention is designed to obviate these difficulties and to furnish a ready means of taking a reef in a sail with dispatch and securing the sail sufficiently for working purposes in much less time and without the necessity of stopping the vessel or changing her course for the purpose; and consists in the devices for the purpose hereinafter described, by which that portion of the sail which is to be taken in is drawn down or drawn up to the yard and sufficiently secured and the remaining portion held to its work with sufficient firmness.

Description of the Accompanying Drawing.

Figure 1 is a side view of a sloop-rigged vessel and sails, and illustrating my improvements for taking in a single reef.

Figure 2 shows a similar mainsail with my apparatus for taking in one or several reefs, as may be required.

Figure 3 illustrates my invention as applied to a square sail.

General Description.

In applying my invention to either square or fore and aft sails the same general construction now used for the sails, masts, yards, halyards, clew-lines, and in short of all the standing and running rigging at present employed, may be retained, it only being necessary to add to that the further devices necessary to carry my invention into practice.

In applying my invention to a fore and aft mainsail which is to have but a single reef, I prefer the construction shown in fig. 1, in which I form a pocket, *a*, in the mainsail A, either by making a tuck in the sail itself or by sewing on a piece of canvas to form said pocket, and in this pocket I place a rope, *b*, which I securely fasten at the inboard end, near the mast, to the sail at *c*, leaving the outboard end free, and either extending from the sail at the outboard end far enough to form a halyard for the purpose hereinafter described, or else having a ring in its outboard end to receive such halyard B.

When the sail is fully hauled up the halyard B is not in use, and its end may simply be secured to the boom in any desired or convenient manner; when it is necessary or desirable to reduce the sail the mainsail-halyards are eased off or let go sufficiently to allow the reef to be taken in, and the halyard or line B is then close hauled so as to bring the outboard portion of the reef down snugly to the boom C and there securely belayed to the boom at or near its outboard end, or it may be brought further inboard, first running it through a ring or its equivalent attached to the boom at or near its outboard end. The inboard end of the reef is then secured by lashing to the boom, and the mainsail-halyards having been again hauled sufficiently taut and belayed the operation of reefing the mainsail is complete.

To facilitate the hauling in of the reef, however, it may be desirable to have a purchase by running the halyard B through tackle-blocks or by some other equivalent means to reduce the power required to haul in the reef.

It will be observed that the pocket *a* is curved upward in the middle. This is for the purpose of causing the tension applied to the rope contained in said inside pocket to draw downward on the middle of the sail so as to keep it from bagging, and this curvature may be greater or lesser, according to the size of the sail and the other circumstances of the case.

Instead of the pocket *a* the rope *b* may be run through a series of rings or loops attached to the sail, or passed through eyelet-holes in the sail, as shown in the jib in fig. 1.

The reefing of the sail may be accomplished in the manner I have described while the vessel is under full headway and without changing her course, and if desired to make the reef more trim it may be afterward further secured along the boom by nettings in the usual way.

The reefing-halyard B may be applied to the jib D in a similar manner and belayed forward upon the bowsprit, as shown in fig. 1. In this figure,

however, the halyard is represented as passing through eyelet-holes in the sail. The fore part of the reef in the jib may also be lashed down in a manner similar to that described for the mainsail.

When several reefs are likely to be required in the same sail I form several pockets *a* upon or in the sail, as shown in fig. 2, and supply them with as many ropes *b;* or these ropes may pass through eyelet-holes in the sail or through rings attached to it; but in either case, where several reefs in the same sail are to be provided for, instead of extending the ropes *b* so as to form the halyards I prefer to cut them off at or near the outboard edge of the sail and attach a ring or hook to this end of the rope, to which ring or hook the halyards may be attached, so as to avoid the necessity of having separate haylards for the several reefs. This halyard may also be provided with a tackle so as to reduce the power required to haul in the reef.

For reefing square sails I attach the reefing-halyards B to each end of the upper yard to which the sail is attached, and to the rope *b* at each outboard edge of the sail, and running these halyards along the upper yard to the mast extend them to the deck of the vessel, as shown in fig. 3, so that the sail can be reefed without sending men aloft for that purpose.

In this case, as the reef is to be drawn upward, the curvature of the rope *b* is downward in the middle, as shown in fig. 3.

Claims.

I claim as my invention—

1. The combination, with a sail of a vessel, of the rope *b* attached to the sail, and the halyard B, substantially as described.

2. The arrangement upon a sail of the reefing-rope *b* in a curved line, the center of which is further from the boom or yard than its extremities.

3. The combination of the reefing-rope *b* with the sail of a vessel, substantially as hereinbefore described.

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Witnesses:

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