2 Sheets, Sheet 1.

W. Spear,

Sails & Rigging.

No. 111,694. Patented Feb. 7, 1871.

Fig. 1.

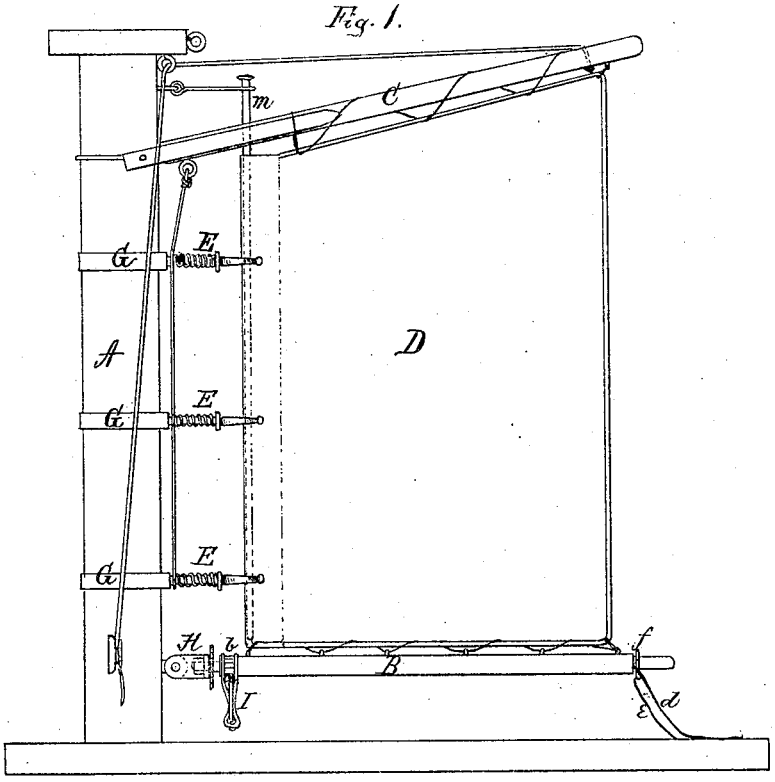
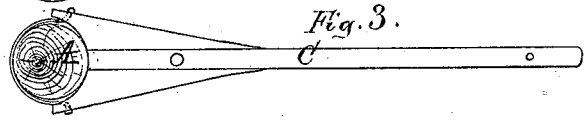


Fig. 2.

Fig. 3.



Witnesses:

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J. C. White.

Inventor:

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Atty.

W. Spear,

2 Sheets, Sheet 2.

Sails & Rigging.

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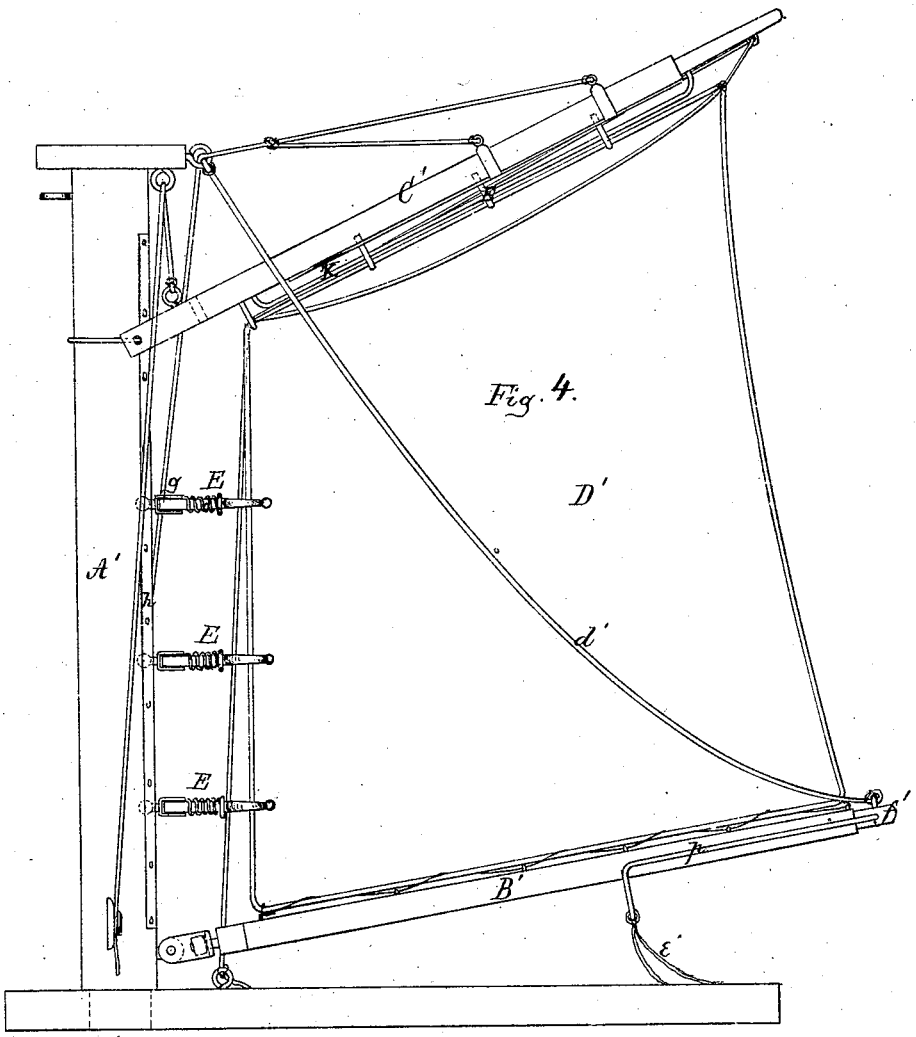

Fig. 4.

Fig. 5

Fig. 6.

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United States Patent Office.

WILLIAM SPEAR, OF CAPE ELIZABETH, MAINE.

Letters Patent No. 111,694, dated February 7, 1871; antedated February 4, 1871.

IMPROVEMENT IN DEVICES FOR REEFING AND FURLING SAILS.

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

To all whom it may concern:

Be it known that I, WILLIAM SPEAR, of Cape Elizabeth, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Devices for Reefing and Furling Sails; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon which form a part of this specification.

The nature of my invention consists in the construction and arrangement of certain devices for shortening, reefing, and furling sails, as will be hereinafter fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a side view of a mast with sail.

Figure 2 is a view of the sail-holder.

Figure 3 is a view of the gaff.

Figures 4, 5, and 6 are similar views as the foregoing, slightly modified.

A represents a mast, with boom B, gaff C, and sail D.

The sail D is attached to the mast by automatic sail-holders E E applied to the hoops G G, now generally in use. The sail-holder E is composed of two curved jaws pivoted together, the shank of one of said jaws being permanently secured to the hoop G, while the other is loose, and both shanks are surrounded by a spiral spring that moves a ring or collar which keeps them together, closing the jaws. The circular orifices between the jaws of the sail-holders will be made just large enough to let the usual bolt-rope pass freely through them, and their rounded points will be, as shown, just far enough apart to let the sail itself pass freely between them.

The boom B is attached to the mast by a pivot, H, which allows of the boom being rolled over in order to wind the sail up upon it, to facilitate which there is a lever attachment, I, as shown, at the inner end of the boom, with holding-gear represented by a pawl, *a*, and ratchet *b*, the ratchet being attached to the end of the boom.

The top-lift *d* and sheets *e* are attached to a broad ring, *f*, or collar of iron, surrounding the outer end of the boom, within which ring or collar the boom itself can freely revolve.

As will be readily seen, the operation of furling is, simply, while one man lowers away the sail another turns the boom over by means of the lever attachment I, which will wind the sail upon the boom.

Whether it is desired to fully furl or only to take in a small part of the sail, much time and labor will be saved by this arrangement the pawl and ratchet-wheel holding it firmly from unrolling, so that by this means it is possible to carry just as much sail as the vessel can stand, whereas by the usual method a certain arbitrary quantity must be taken off when desired to reef them, the reef-points being fixed points. The labor of reefing is also greatly reduced and much exposure to wet is avoided, especially in the case of reefing the foresail of low-decked vessels, such as are the most of our colliers, when, at the time of reefing this sail, the deck is often washed over like a raft.

In the drawing, on the other mast A′, I have represented a similar sail, D′, with holders E E, but in this case the hoops G G are dispensed with.

One of the shanks of these holders is pivoted in a loop, *g*, provided with a headed pin, *i*, which is inserted in longitudinal gain or recess in the mast, and held by strips *h h*, as shown. This construction of the sail-holders may be applied to masts without cutting any gain or recess in the mast, by preparing two pieces of metal or joists and fastening them upon the mast.

In the under side of the main gaff C′ is cut a gain or channel, in which move similar, but smaller sail-holders E, this being, in fact, a continuation of the principle applied to the main mast A′. Through the sail-holders in the gaff C′ passes a rod, *k*, attached to the gaff, which rod assists in supporting the sail. This rod is, however, by no means absolutely necessary, as the sail can be attached without the same.

The object and use of this device will readily appear to practical seamen. In getting under weigh in narrow places it often happens that a vessel will not answer her helm quick enough to avoid collision with some other craft, or wharf, or grounding on some point. For instance, if she has too much tendency to come to the wind, or, in sea parlance, to luff, the pilot or whoever has her in charge has no other resource but to lower the main peak, and the moment she has fallen off enough all hands are required to sway up main peak. Whereas, with my device, instead of letting go the peak-halyards, let go the hauling-out line, and if the head of the sail does not of its own weight run down to the mast, one pull on the hauling-in line will do the work. Then, to set it again, one man can haul it out with ease.

Also, in the case of gibing, it will be but a moment's work to run the sail into the head of the mast, and the gaff will not even go over at the same time as the boom and lower body of the sail do. The gaff can then be dipped under the top-lift *d′* (or *d*) and the sail hauled out.

Also, in running in squally weather, the sails can be hauled in on the head on all the booms, bringing them at once into triangular or jib-shape, with the broadest part near the deck, with, of course, the least possible tendency to careen the hull.

On the sail D′ I have represented a rod, *m*, running

the whole length of the sail and passing through the gaff, its upper end being so arranged on the mast that it can freely pass around with the gaff and sail. The object of this rod, it is readily seen, is to dispense with the bolt-rope on the inner edge of the sail, so that it will roll more neatly on the boom.

Upon the outer end of the main boom B is the collar *f'*, to which the top-lift *d'* is attached. Leading from this collar are two springs, *p p*, connected under the boom, as shown, and to which connection the main sheet *e'* is fastened.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The sail-holders E E, constructed as described, and used either in combination with the usual hoops around the mast or fastened in a channel cut into or formed upon the surface of the mast, substantially as and for the purposes herein set forth.

2. The springs *p p*, arranged as described with the collar *f'*, for the purposes herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM SPEAR.

Witnesses:

BENJ. W. PICKETT,

A. J. ROBINSON.