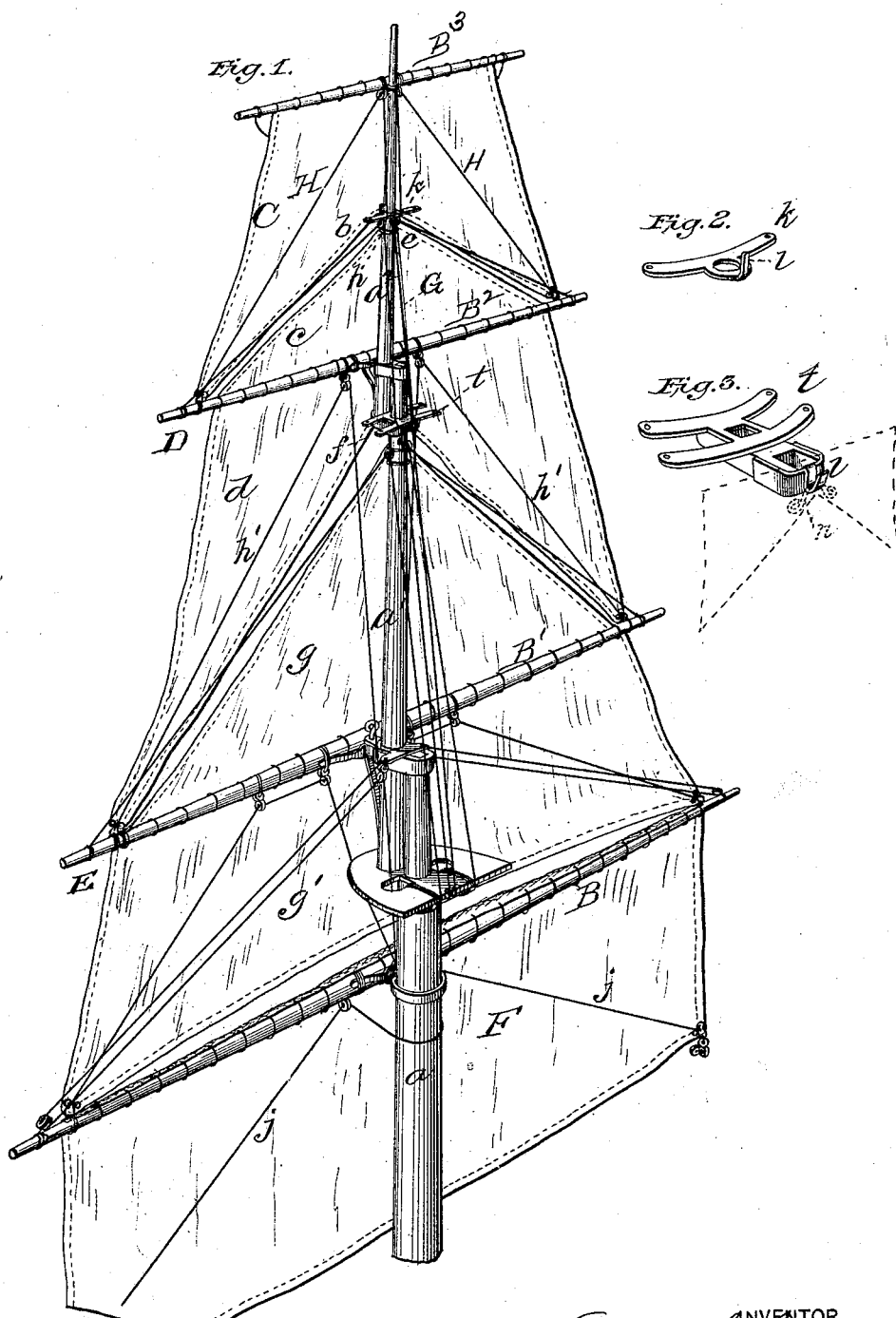


W. H. SPOONER.
Reefing and Furling Sails.

No. 210,573.

Patented Dec. 3, 1878.



WITNESSES

John A. Rice.
A. J. G. G. G.

INVENTOR

William H. Spooner,
by Edw. Ludlow,

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM H. SPOONER, OF PORTSMOUTH, VIRGINIA.

IMPROVEMENT IN REEFING AND FURLING SAILS.

Specification forming part of Letters Patent No. 210,573, dated December 3, 1878; application filed November 20, 1878.

To all whom it may concern:

Be it known that I, W. H. SPOONER, of Portsmouth, in the State of Virginia, have invented a new and valuable Improvement in Ships' Sails and Attachments; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of the foremast of a ship, showing my invention; and Figs. 2 and 3 are details.

This invention has relation to improvements in square-rigged vessels.

The object of the invention is principally to devise means whereby the double yards may be dispensed with, thus reducing the number of yards from six to four without decreasing the spread of canvas usually carried by full-rigged ships.

The nature of the invention consist in a certain novel construction of the sails, as will be hereinafter more fully explained.

In the annexed drawing, the letter A designates a mast, composed, as usual, of a foremast, *a*, a foretop-mast, *a*¹, and a foretop-gallant and royal mast, *a*², connected together by the usual caps and trestle-trees, and carrying in the usual positions the foreyard B, the foretop-sail yard B¹, the foretop-gallant yard B², and the royal yard B³.

C indicates the royal, bent in the usual way to the yard B³, and having its lower edge or foot cut in angular form, as shown at *b*, Fig. 1.

D indicates the top-gallant sail, composed of two sections, *c d*, the one above and the other below the top-gallant yard B².

The adjacent edges of the sections *c d* are bent in the usual manner to the yard B², as shown in Fig. 1. The section *c* is of triangular form, its base being bent to the yard B², and its peak *e* extending up into the angular foot of the royal.

The foot of the top-gallant sail is also of angular form, as shown at *f*, the apex of the angle extending up into the body of the sail rather more than half way.

E indicates the top-sail, also composed of two sections, *g g*¹, the upper one being of the

form of a triangle, and extending up into and filling the angular space at the lower part of the top-gallant sail, and the lower one of the usual form of a ship's square sail. These sections are bent to the top-sail yard in the usual way.

The foresail F is bent to the foreyard in the usual manner, and does not differ in its form from that in common use. The peak of the section *c* of the top-gallant sail is rigidly secured in any suitable manner to a hoop, *h*, sliding freely on the top-gallant mast, and it is spread by means of the halyards G, and lowered upon the top-gallant yard by means of suitable down-hauls.

In taking in sail, the royal is drawn up to the royal yard by means of the usual clew-lines H, and secured in the usual way.

The clews of the lower section of the top-gallant sail are raised to its yard by the clew-lines *h*¹, and the sail secured. The upper section, *c*, is then lowered to its yard, and likewise secured.

If still further reduction of sail is required, the upper section of the top-sail may be lowered upon its yard B¹, and its lower section clewed up and furled, leaving only the foresail spread. This may be also taken in by means of the clew-lines *j* and furled, leaving only the bare poles.

As shown in Fig. 1, the apex of the angular lower portion of the royal reaches to, or nearly to, the royal-mast jack *k*, and the peak of the upper section of the top-gallant sail extends upward to said jack, thus closing the interval between the royal and top-gallant yards completely. The angular lower part or foot of the lower section of the top-gallant sail has its apex on a level, or nearly so, with the top-mast trestle-trees *t*, and the upper section of the top-sail reaches from the top-sail yard to said trees, thus closing the interval between the top-gallant and top-sail yards. These sails, with the lower section of the top-sail and the foresail, comprise the equipment of each mast, and produce a greater area or spread of canvas than can be had in the usual square rig now in use, where double yards are required, there being six in all.

The jack and top-mast trestle-trees are each provided with an upturned hook, *l*, (shown in

Figs. 2 and 3,) over which is passed a strong eyelet, loop, or other equivalent device, *n*, secured to the foot of the royal at its angle, and to the lower section of the top-gallant sail in a corresponding position. The object of this construction is to hold the said sails against the mast, and, by keeping them from bellying out, maintain them in proper position relative to the top-gallant sail.

It will be observed that in shortening sail one of the sections of the top-gallant sail and of the top-sail may be left standing, and the other taken in. It will also be seen that, being in sections, they are the more readily handled in heavy weather.

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

1. The combination, with a mast, *A*, having the royal, top-gallant, top-sail, and foreyards, *B*³ *B*² *B*¹ *B*, of the royal *C*, having an angular lower edge, *b*, the sectional top-gallant sail *D*, above and below the top-gallant yard, and bent thereto, the upper section being triangular and fitting into the angular lower part of the royal, and the lower section having an angular lower edge, the top-sail *E*, formed in two sections, the upper being triangular and fitting into the angular lower edge of the top-gallant sail, and the lower square, and the foresail, substantially as specified.

2. A sectional top-gallant sail consisting of the triangular part *c*, bent to the top-gallant yard and above the same, and a part, *d*, also

bent thereto, having the angular foot *f*, and extending below the yard, substantially as specified.

3. A top-gallant sail bent to its yard and reaching above and below the same, substantially as specified.

4. A sectional top-sail consisting of a triangular portion, *g*, above its yard and a square portion below the same, in combination with a top-gallant sail, *D*, having an angular lower edge, designed to receive the correspondingly-shaped part *g* of the top-sail, substantially as specified.

5. The combination, with a royal-sail having an angular lower edge and a loop or eyelet, *n*, at the apex of said angular portion, of the royal-mast jack, having a hook, *l*, designed to engage said loop or eyelet *n*, substantially as specified.

6. The combination, with a top-gallant sail having an angular lower edge, and provided at the apex of said angle with a loop, *n*, of the top-mast trestle-trees *t*, having a hook, *l*, designed to engage said loop, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM HENRY SPOONER.

Witnesses:

THOS. J. HOBDAV,
JOHN J. EDMONDS.