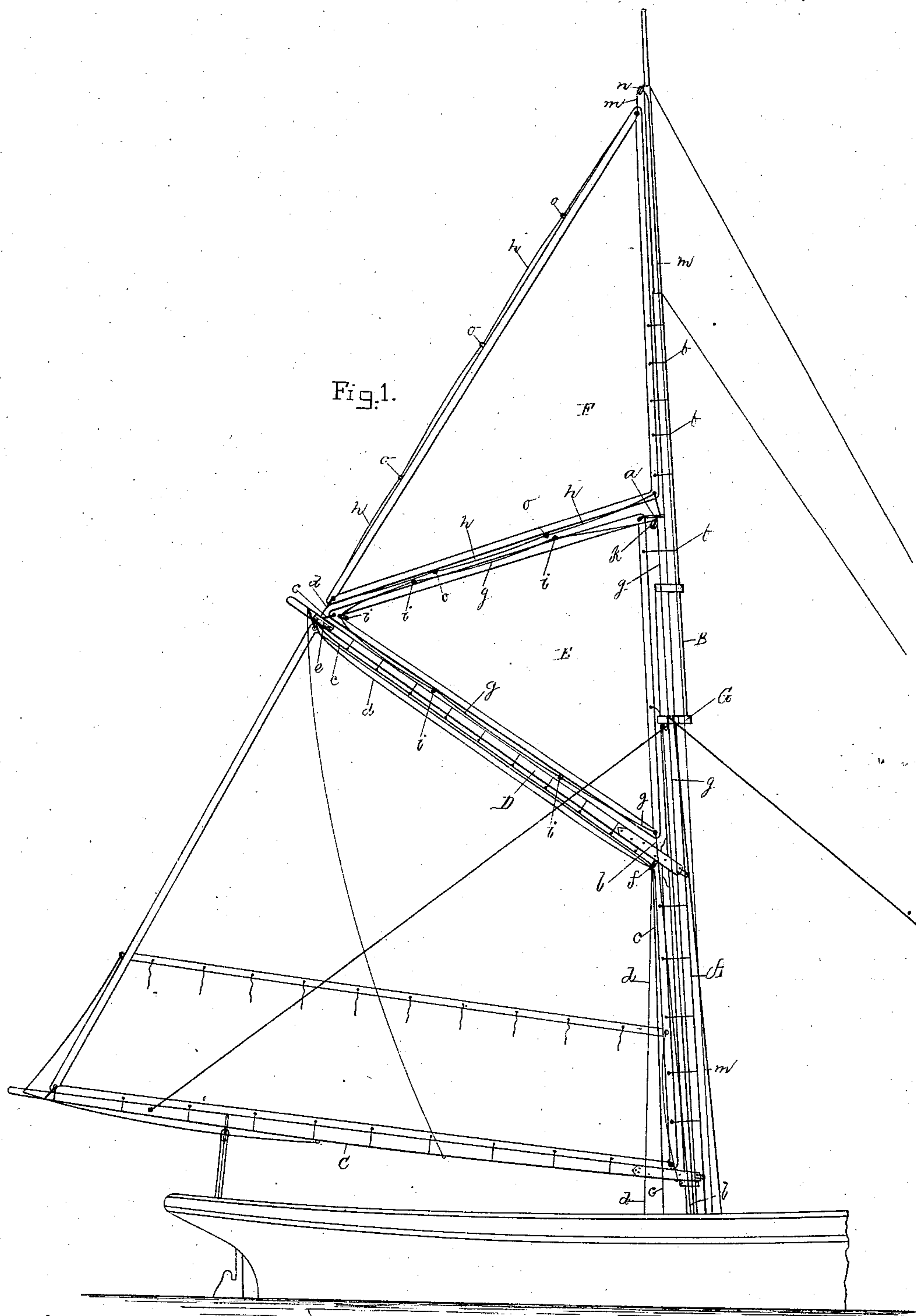


(No Model.)

2 Sheets—Sheet 1.

T. O'BRIEN.
REEFING AND FURLING FORE AND AFT SAILS.
No. 287,707. Patented Oct. 30, 1883.



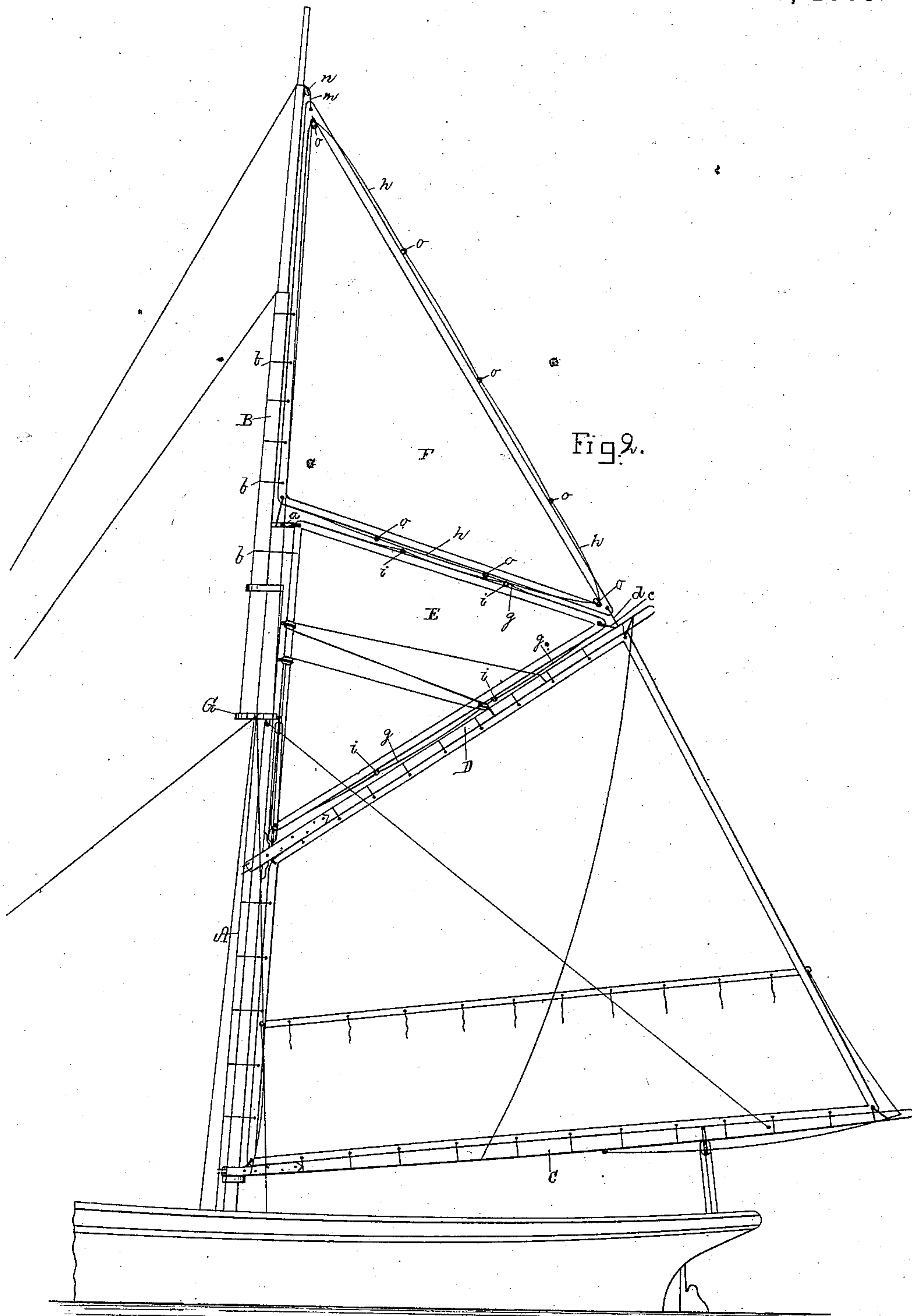
Witnesses
J. N. Phipps
C. B. Pratt

Inventor
Thomas O'Brien.
by R. H. Sedy atty

(No Model.)

2 Sheets—Sheet 2.

T. O'BRIEN.
REEFING AND FURLING FORE AND AFT SAILS.
No. 287,707. Patented Oct. 30, 1883.



Witnesses.

J. N. Piper
E. B. Pratt

Inventor

Thomas O'Brien

by *R. W. Eddy* atty

UNITED STATES PATENT OFFICE,

THOMAS O'BRIEN, OF BOSTON, MASSACHUSETTS.

REEFING AND FURLING FORE-AND-AFT SAILS.

SPECIFICATION forming part of Letters Patent No. 287,707, dated October 10, 1883.

Application filed July 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS O'BRIEN, of Boston, in the county of Suffolk, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Reefing and Furling Fore-and-Aft Sails; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figures 1 and 2 are opposite side elevations of a vessel's mast, top-mast, boom, gaff, and mainsail, and the two auxiliary or gaff-top-sails, constituting my invention.

Instead of having above the gaff a single gaff-top-sail, as usual, I have, in carrying out my said invention, two of such top-sails, they being arranged and applied as represented in the said drawings, such enabling me to use a shorter mast and also a mainsail of less size, comparatively speaking, than are usually required when but a single gaff-top-sail is employed. The lower gaff-top-sail and the mainsail together have in them the same or about the same number of square yards of cloth or canvas as would be necessary for a mainsail for use with but one gaff-top-sail containing about the same number of square yards of canvas as there would be in the upper of the two gaff-top-sails appertaining to my improvement.

My invention not only enables the sails to be handled or set and taken in and furled with less labor or number of hands or men, but is advantageous in other respects.

In the drawings, A denotes the mast; B, the top-mast; C, the boom; D, the gaff; E and F, the two gaff-top-sails, and G the cross-tree.

The lower gaff-top-sail, E, is in shape like an inverted isosceles triangle, while the upper gaff-top-sail is in form like an obtuse angled triangle, one being directly over the other, and both being arranged above the gaff in manner as represented. The said two gaff-top-sails at their next adjacent fore corners are secured to an eyebolt, *a*, projecting from the top-mast, and they are provided with hoops *b*, to encompass the top-mast and keep them in further connection therewith.

Each top-sail at its outer corner next the gaff is provided with a "sheet" or hauling-out rope. These ropes are shown at *c* and *d*. They lead through guides *e* and *f*, projecting from the gaff at its toe and heel, and thence downward to the deck. There is also to each

of such top-sails a "clew-line," one of such clew-lines being shown at *g* and the other at *h*. The clew-line *g*, attached to the lower corner of the lower gaff-top-sail, passes from thence along the lower edge of such top-sail to the outer corner, and along the upper edge to the upper corner and to the deck, passing through eyes *i* at the outer edge of the sail and eye *i'* at the outer corner, and through a block, *k*, depending from the eyebolt *a*, and thence through the cross-tree. This arrangement of the clew-line *g* enables the top-sail E to be closely furled, as the line extending all around such top-sail draws in all parts closely. A down-haul or rope, *l*, attached to the lowermost corner of the lower top-sail, extends to the deck. The sheet, clew-line, and down-haul of the lower top-sail serve to set and take in or clew the said sail. Attached to the peak or uppermost corner of the upper gaff-top-sail is a halyard or rope, *m*, which, after going through a block, *n*, near the head of the top-mast, descends to the deck. This rope *m* is for raising the sail. The clew-line *h*, fastened to the lower fore corner of the upper gaff-top-sail or to the eyebolt *a*, is led from thence through eyes *o*, attached to the sail at its two outer edges, and thence through the said eyebolt to the deck. By means of the said ropes *c*, *d*, *g*, *h*, *l*, and *m*, the top-sails can be set or taken in and clewed or furled, as occasion may require.

The above-described rig is very useful for large schooners and various other vessels.

I claim—

1. The gaff-top-sail E, having the clew-line *g*, which passes completely around the outer edge of such top-sail, and is led through suitable blocks to the deck, as set forth.

2. The gaff-top-sails E and F, in combination with the outhauls *c* *d*, secured to the outer corner of such top-sails and passing along the gaff to the deck, the clew-lines *h* and *g*, secured at the lower fore corner of the top-sails, and passing completely around the same to the deck, the down-haul *l*, secured to the top-sail E, and running to the deck, and the halyard *m*, secured to the top-sail F, and running to the deck, as set forth.

THOMAS O'BRIEN.

Witnesses:

R. H. EDDY,
E. B. PRATT.