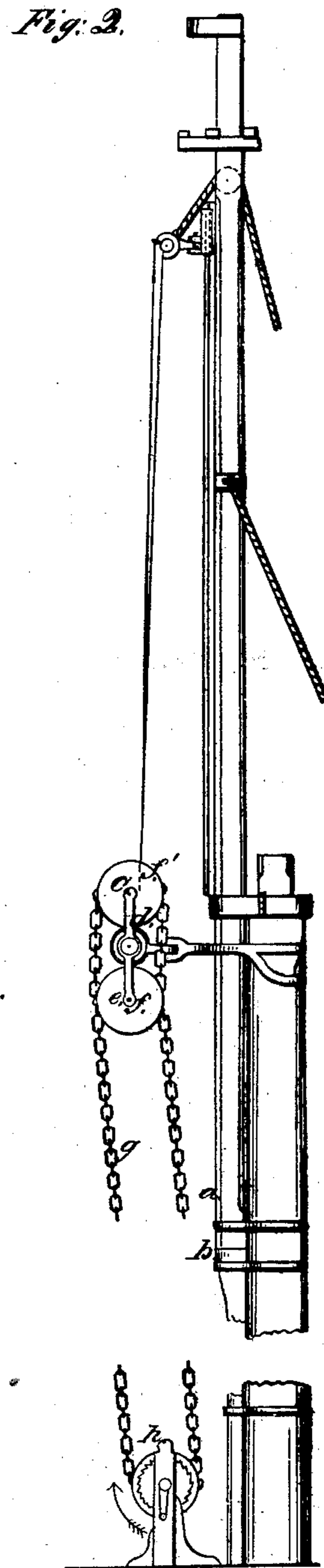
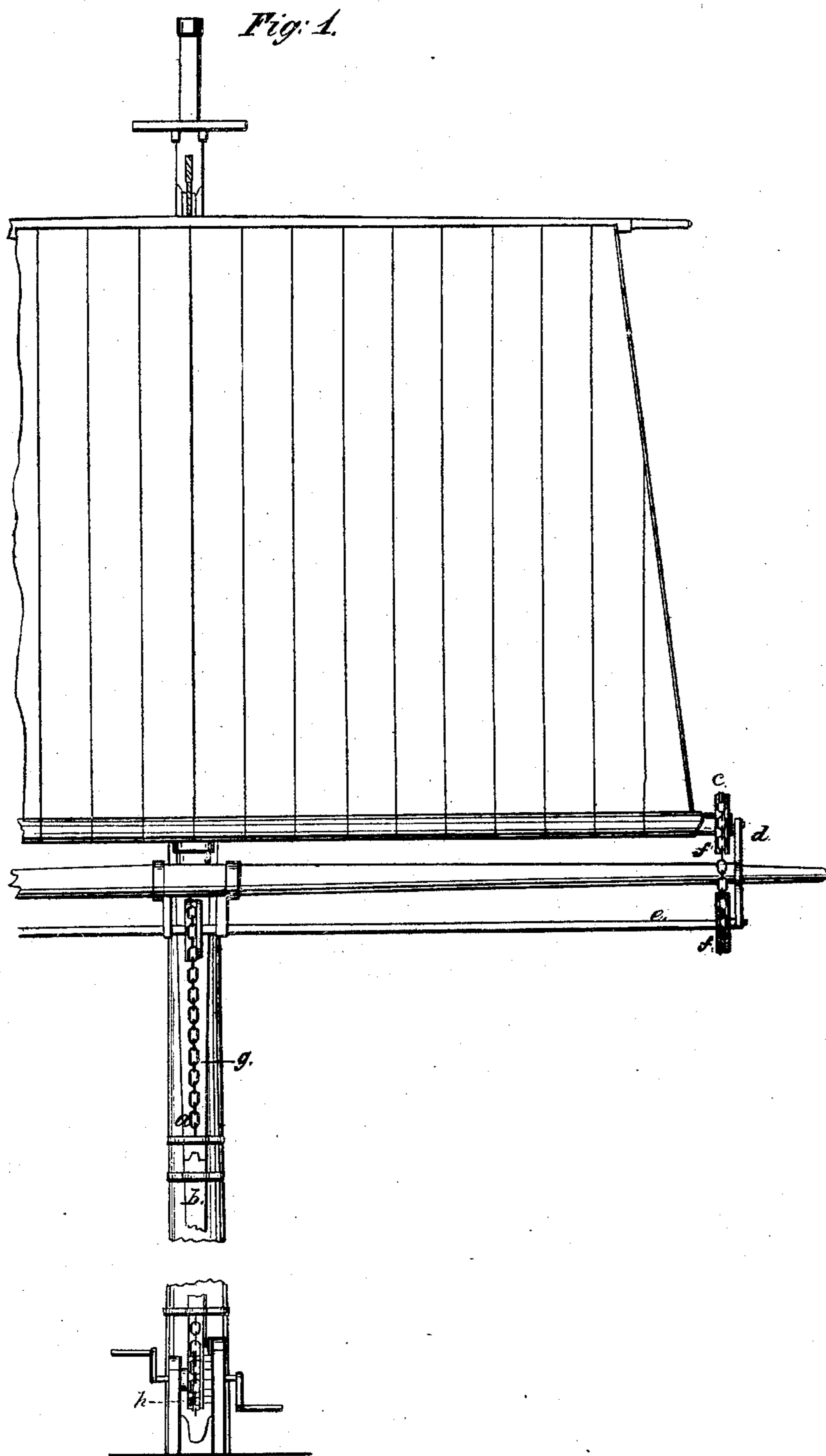


*J. E. Cole.*  
*Sails & Rigging*  
*Nº 17,365.*      *Patented May 26, 1857.*



# UNITED STATES PATENT OFFICE.

JAS. E. COLE, OF NEW YORK, N. Y.

## REEFING TOPSAILS.

Specification of Letters Patent No. 17,365, dated May 26, 1857.

*To all whom it may concern:*

Be it known that I, JAMES E. COLE, of New York, county of New York, and State of New York, have invented certain new and  
5 useful Improvements in Reducing and Furling the Sails of Ships from the Deck; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being made to the annexed  
10 drawing, making a part of this specification, in which—

Figure I is a front elevation of a top sail fitted with my improvements. Fig. II is a side view thereof, and similar letters indi-  
15 cate similar parts throughout.

My invention is an improvement on that method of reducing the sails of a square rigged vessel whereby the sail is taken in by being rolled upon a cylindrical spar op-  
20 erated from its ends, and which rolling is to be effected from the deck of the vessel.

It consists in combining with the said roller a supplementary shaft which is operated at its central part from the deck, and  
25 from the ends of which shaft rotation is transmitted to the ends of the roller spar.

As it is oftener desirable that the "topsails" of a ship shall be worked from the deck than any of the others, I will describe  
30 my invention particularly with reference to those sails, and although my said improved method is capable of being applied and used to advantage upon masts of ordinary construction and rig, yet as I prefer a different  
35 and improved construction for those, I shall also describe my invention in its connection with my improved masts. In these the lower mast is made to terminate at the usual place of the "round-top," and instead of the heel  
40 of the top mast resting there, it is continued downward for some distance, as seen at (a), and rests upon a step (b) affixed to the front of the lower mast for that purpose, and extending down to the deck. In merchant  
45 vessels the "round-top" is now considered as but of little if any real use; I therefore dispense with it, supporting the top masts by the back stays, as in fact they usually are really so supported, and in the place of  
50 the round top I affix the "cap." The length of top-mast upon which the top-sail-yard can traverse is thus so much greater than in the ordinary rig that the yard can be sent down lower, thereby reducing the weight  
55 aloft when the sail is taken in. The top-mast has upon the front side a rail-bar ex-

tending from the halyard-sheave quite down to the cap, and upon this is a slide made to play vertically, to which the top-sail-yard is affixed by such joint as will per-  
60 mit it to be braced sharp, as well as to be "cock-billed." As there is now no "parrel" to traverse upon this mast, a band may be put around it midway of its height, to which an extra back-stay may be affixed, if  
65 desired, and to that band the lifts of the lower yard may also be attached. The cap on the head of the lower mast is made to open forward, in order that the top-mast may be sent down, since it could not, as thus constructed be sent down through a cap of  
70 ordinary form.

The lower yard is generally as of usual construction and size. Along the upper side, and a little above it, is a strong spar  
75 (c) hung in journals upon suitable bearings (d) rising from the yard arms. This spar is cylindrical and operates as a roller, the foot of the sail being secured to a jack-stay upon it, as the head is upon the top-sail-yard. In order that the sail may be  
80 unbroken this roller must be operated from its ends, and for this purpose a supplementary shaft (e) is placed immediately under the lower yard, its ends being journals se-  
85 cured in proper bearings hanging also from the yard arms as shown. This shaft has upon each end a pulley (f) opposite to corresponding ones (f') on the roller above the yard, and belts of chain transmit the  
90 rotation of the shaft, the pulleys having spurs to take into the links and thereby render the motion certain. The shaft has also at its center a similar pulley or chain-wheel, on which is an endless-fall-chain (g) extend-  
95 ing down to near the deck and passing under a like spur chain-wheel (h) on the shaft of a windlass affixed to the deck, and which has a ratchet and pawl to secure it in any de-  
100 sired position, as usual.

The top-sail-yard is of ordinary construction, except that no provision is necessary for reef tackles. This sail requires no reef-points, bunt-lines, clew-lines, brails, nor sheets, and the operation will be as follows: 105

When sail is to be reduced it is accomplished by turning the windlass on deck in the direction shown by the arrow, Fig. II, at the same time that the top-sail-yard is lowered to the distance required. The lower  
110 part of the sail will thus be rolled upon the spar (c) being held tightly there by se-

curing the windlass, and as it is the widest part of the sail which has been so taken up on the roller, the whole will lie smooth, and the remainder of the sail will be tightly stretched. If it be desired to take in the sail entirely, the rolling is continued, while the top sail yard is still further lowered until it hangs just behind the roller spar, for the rail-bar on the top-mast is brought down far enough to admit of this. The rolling up of the sail may perhaps be more smoothly accomplished if the cloths are put in parallel with the "leach" of the sail, or otherwise diagonally, so that the doubled parts do not follow in the same place on the roller spar. The adaptation of this improvement in various ways to the other square sails will be readily suggested to those familiar with nautical matters. For a top-gallant-sail it may be effected by placing both the shaft (e) and the roller spar (c) above the top-sail-yard, so that the "stay" which extends out from the top-mast will pass between

those and the yard. The bearings (d) for both will now be one piece above the yard, and the lower end of this bearing instead of being firmly affixed to the top-sail-yard, will be affixed to the ordinary sheet of the top-gallant-sail, by which the bearing may be drawn down to the yard. The top-sail-yard may thus be lowered, when necessary to reduce the top-sail, away from the shaft and roller of the top-gallant-sail, leaving those in their place above the stay. For a "course," or lower sail, the roller spar would necessarily be applied at the head of the sail, and this may be by putting both the roller and its shaft in front of the yard.

I claim—

The supplementary shaft in combination with the roller spar, for the purposes and in the manner substantially as set forth.

JAS. E. COLE.

Witnesses:

JOSEPH P. PIRSSON,  
S. H. MAYNARD.