2 Sheets. Sheet 1.

C. Peterson,

Sails & Rigging.

No. 70,256 Patented Oct. 29, 1867.

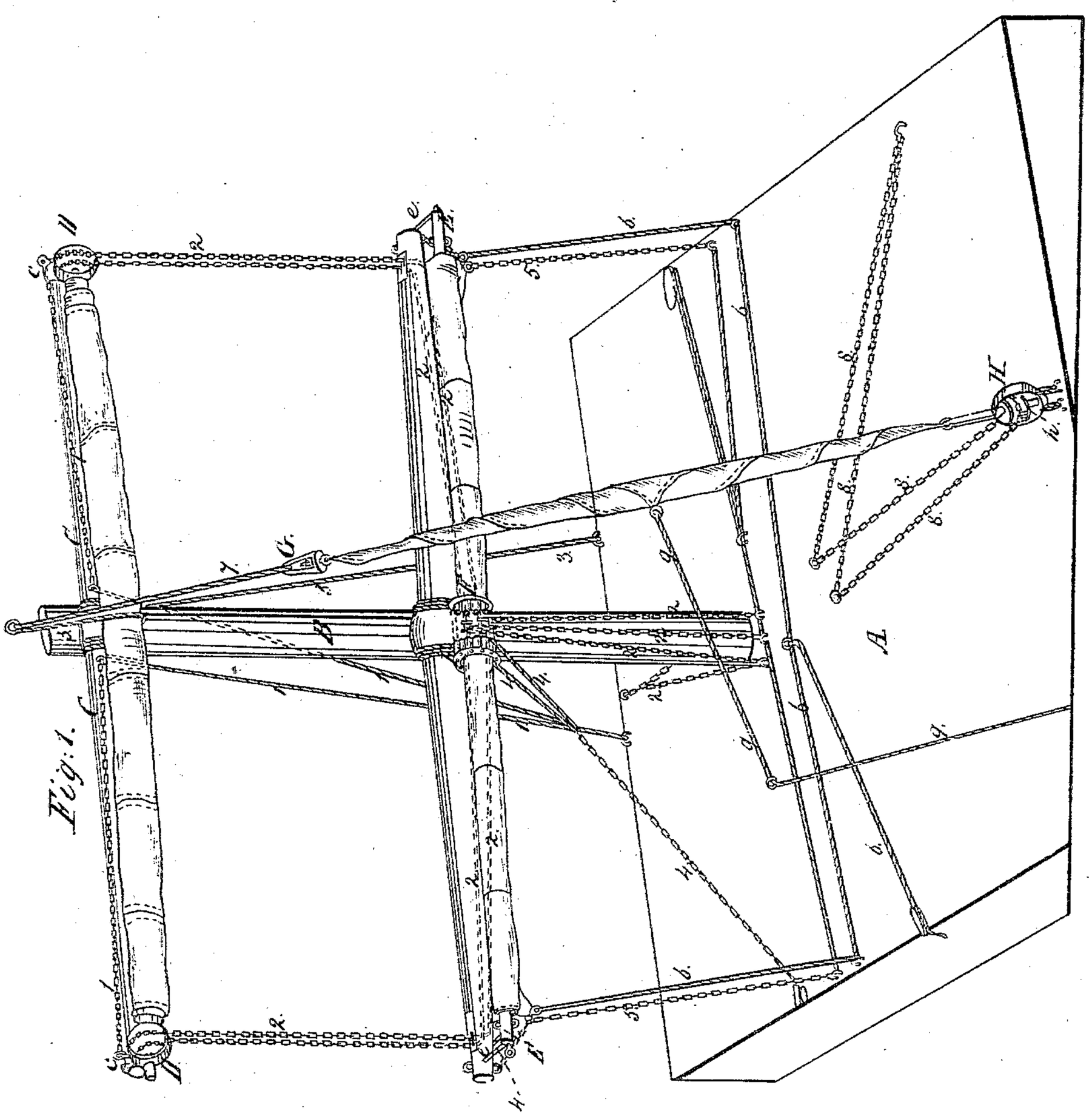

Fig. 1.

Witnesses.
Charles Gunner
N. H. Ellsworth.

Inventor.
Charles Peterson

2 Sheets. Sheet 2.

C. Peterson,

Sails & Rigging.

No. 70,256. Patented Oct. 29. 1867.

Fig: 8.

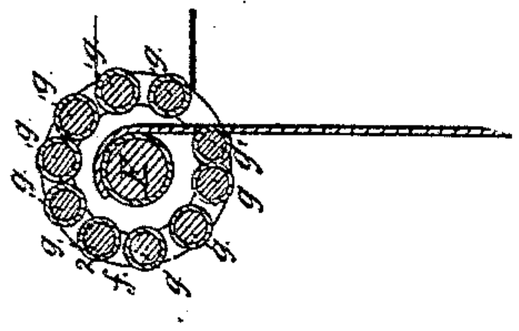

Fig: 7.

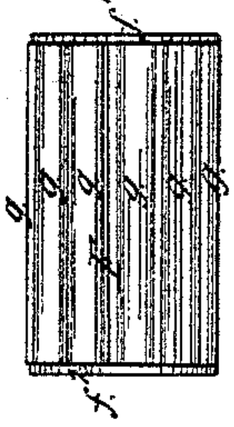

Fig: 5.

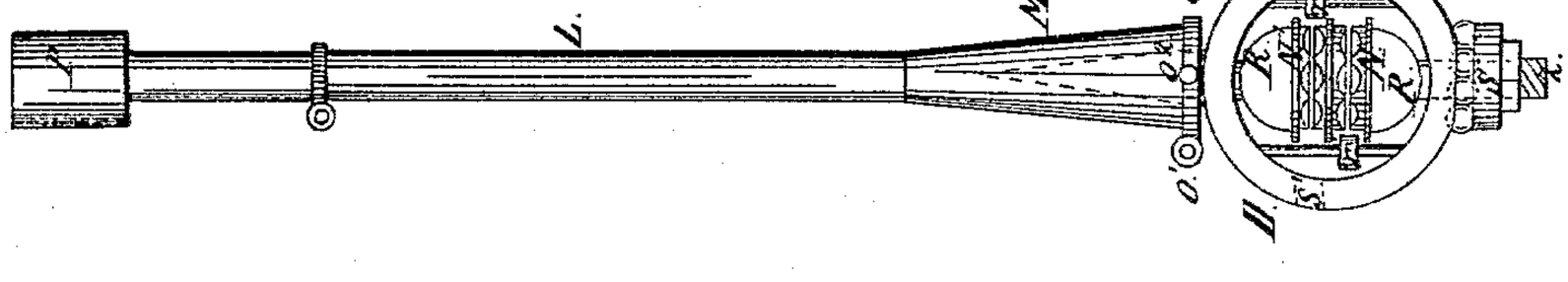

Fig: 6.

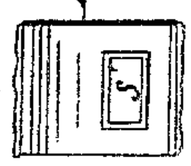

Fig: 3.

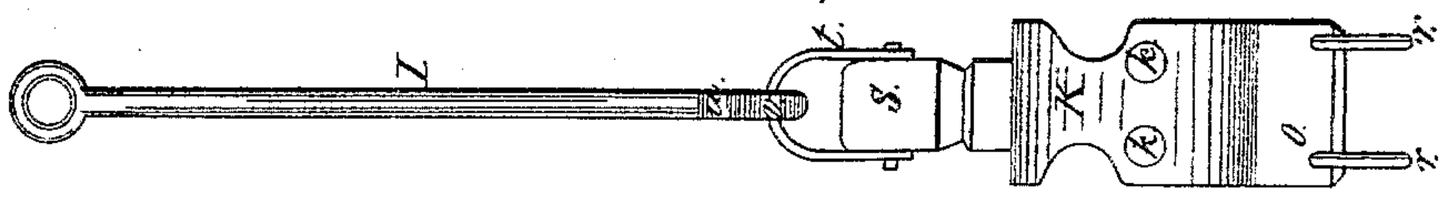

Fig: 2.

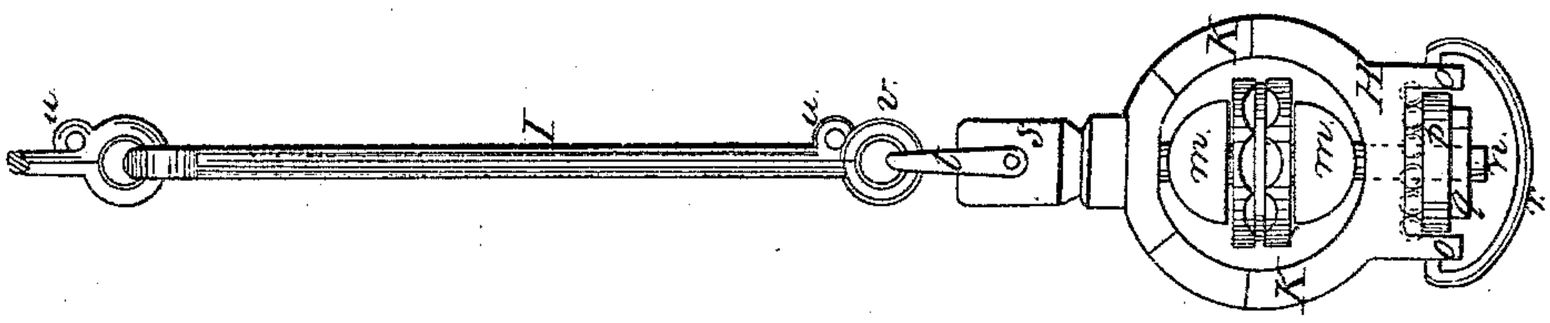

Fig: 4.

Witnesses.
Charles Gunner
N. K. Ellsworth.

Inventor.
Charles Peterson.

United States Patent Office.

CHARLES PETERSON, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 70,256, *dated October* 29, 1867.

IMPROVED MEANS FOR SETTING, 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, CHARLES PETERSON, of the city and county of San Francisco, in the State of California, have made new and useful Improvements in the Mode of Setting, Reefing, and Furling Sails; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improvements, as applied to a lower fore-topsail, a foresail, and fore-topmast staysail.

Figures 2 and 3 are side and front elevations, respectively, of the lower stay-swivel, and one link of the stay to which the fore-topmast staysail is fastened.

Figure 4 is a side view of the upper stay-swivel, at the head of the fore-topmast staysail.

Figure 5 is a side elevation of a revolving swivel-boom, on which the sail is pivoted.

Figure 6 is a view of the opening in the swivel through which the chains are rove.

Figure 7 is a front elevation of the roller around the booms of the lower sails.

Figure 8 is a section of the same, in the line *x x*, fig. 7.

Similar letters of reference indicate like parts.

The nature of my invention consists in a new mode of setting, reefing, and furling all sails of a vessel from the deck, without the necessity of any person going aloft, or without the necessity of lowering or hoisting the yards.

In the drawings, A may represent the deck of the vessel, and B the foremast, on which the lower topsail-yard C is secured in the usual manner. At the ends of the yard are davits, *c c*, to the inner ends of which are fastened the stationary ends of the clew-lines. These latter pass around sheaves in the block part of the swivel-booms D, through the loops on the davits *c*, along the front of the yard C, and between it and the sail, through blocks near the centre of the yard, and thence down to the deck, the parts of the clew-lines from the blocks near the centre of the yard to their ends on the davits *c* being chain, and the parts running down to the deck may be rope.

The standing part of the sheets 2 of the lower topsail are fastened on deck in front of the foremast, thence lead up through blocks under the centre of the fore-yard, through the after sheaves in the ends of the same, around the inner sheave in the block parts D of the swivel-booms, back through the front sheaves in the ends of the fore-yard, and through the front blocks under the centre of the yard down to the deck.

Fastened under the centre of the lower topsail-yard is the bond-line 3, which passes under and around the sail, through a block above the yard, and down to the deck.

To set the lower topsail, let go the clew-lines 1, and bond-line 3, and haul on the sheets 2. To furl the same, let go the sheets 2, and haul on the clew-lines 1, and bond-line 3.

The foresail is fastened to a boom E, held at its ends by braces *e*, and in the centre by the roller-tube F, hereinafter more fully described. As many of the roller-tubes may be used as the size of the sail requires. The boom E rotates in the ends of the braces *e*. The sheets of the foresail are the same as now used. Chains, 4, are fastened, one to each end of the boom E, and pass through a block under the ends of the fore-yard, through quarter-blocks under the same, down to the deck.

The clews of the foresail are provided with shackle-rollers, through which pass guide-chains, 5, the standing parts of which are secured on the ends of the fore-yard. By means of these guide-chains I am enabled to keep the foresail, under any wind or tack, from getting foul in any way, especially from blowing between and doubling in the roller-tubes.

To set the foresail, slack the chains 4, and haul taut the sheets 6, and as the sail unwinds from the rotating boom, the chains 4 are wound up on the ends of the same. To furl the foresail, let go the sheets 6, the sail being held by the guide-ropes 5, and haul on the chains 4, which, unwinding from the boom E, rotate the same in its bearings in the braces *e*, and roll up the sail on the boom.

As now in use, staysails have an additional stay on which they are hoisted and lowered. By my improvements, I do away with the necessity of having extra stays, as I fasten my staysails and jibs on to a chain con-

structed of links, as shown in figs. 2 and 3, this chain serving as a stay. This I am enabled to do, as, by my improved mode of furling and reefing staysails and jibs, I do not lower them at all.

7 is a chain rope, passing from the deck, in the rear of the foremast, where it is set up like a stay, through a block on the side of the topmast, to the swivel G, to which it is fastened. To this swivel is fastened the chain which forms the stay, and to which the sail is secured. The lower end of the chain is secured to the swivel H by means of a shackle.

Around the sheave *h*, in the swivel H, passes the endless chain 8, which runs inward to the deck through two pulleys.

To set the fore-topmast staysail, haul the starboard chain 8, the port one slackening in the same proportion as the starboard is hauled, at the same time tautening either sheet 9, according to the tack on which the ship is sailing. To furl the sail, haul the port chain 8, and slacken the sheet 9, hauling it taut again after the sail is rolled up.

In setting or furling the staysails or jibs, on pulling on either chain 8, the sheave and swivel H are turned and rotate with them, the stay-chain to which the sail is attached, in the upper swivel G, thus rolling or unrolling the sail around the stay-chain.

All staysails and jibs are set and furled in the manner described for the fore-topmast staysail; the courses in the same manner as the foresail; and all square sails above the courses in the manner described for the lower fore-topsail.

Figs. 2 and 3 show the swivel H, with one link, I, of the chain-stay. This swivel consists of a metal band, K, provided at its inner flat side with holes, *k*, through which the chains 8 (see fig. 1) pass. *l* is a sheave, into the circumference of which are cut a groove and depressions, into which the links of the chains 8 fit. This sheave rests between two bearings *m* on the axle *n* of the swivel, the sheave rotating with said axle. From the bottom of the metal band K extend two projections, *o*, between which lies a circular plate, *p*, through the centre of which the axle of the swivel passes, a nut, *q*, affording a bearing for said plate. Between this plate and the bottom band K, in which a groove is cut corresponding with a similar one on the upper side of the plate *p*, is a number of metal balls, enough to fill the grooves, for the purpose of preventing friction. To the ends of the projections *o* are secured swinging hooks, *r*, as shown in the drawings. The head *s* of the axle is fastened to the eye *v* of the link I, by means of the shackle *t*. When desired to unbend a staysail or jib, or to bend a new one, it is only necessary to unshackle the swivel from the link, to allow the stay-chain and sail to swing inboard, when they can be lowered on to the deck. On the link I, and on the upper part of its eye, *v*, is formed a smaller eye, *u*, to which the sail is attached. The swivel G has, as shown in fig. 4, on its inner base, a number of metal balls playing around the eye-bolt *w*, forming the axle of the swivel, which passes through the centre of a circular plate, *x*, which lies and keeps in place the metal balls, the whole being secured by a nut on the screw end of the eye-bolt *w*.

In fig. 5, the topsail swivel-boom is shown. This consists of the wooden boom part L, and the swivel D. The part L spreads at the outer end, as shown at M, the circumference of its widest part being equal to the circumference of the sheaves N N, and is encircled by a metal band, O, provided with an eye, *o'*, to which the clew of the sail is fastened. At its end it is provided with an India-rubber cap, P. Into a tapering hole in the part M of the swivel-boom fits the pointed end of the axle 2, holding the swivel firmly to the boom. The two sheaves N N are secured to the axle 2, between two bearings R R, and each sheave has, opposite its inner periphery, an India-rubber roller, r^1 and r^2, on axles the bearings of which are on opposite sides of the metal band of the swivel. Opposite the free end of each sheave is a hole, s^1 and s^2, (see figs. 5 and 6,) the sheet 2 of the lower topsail passing through the hole s^1, around the sheave, and out at the same hole, the hole s^2 serving in the same manner for the clew-line 1. The flat under side of the metal band of the swivel has a groove in the circular plate S, play a number of metal balls, the plate being supported and held by a nut and the screw-thread on the axle 2.

As the sail is furled and rolls around the swivel-boom, the India-rubber cap P firmly seizes the sail, and prevents its crumpling and doubling, the gradually-extending part M insuring a perfectly even roll of every part of the sail; for, by tapering this part, the second and each succeeding roll of the sail comes in an even size, and with the first roll, which will prevent the boom from canting as it is elevated. Near the cap P on the boom is a band, with an eye, from which a rope extends to the foot of the sail, by means of which the boom is kept in a horizontal position when the sail is set. The India-rubber rollers, r^1 and r^2, opposite the sheaves, press on the chains as they pass around the sheaves, and prevent the same from getting foul, and from passing around one quicker than the other, so that if, in a storm or squall, it is necessary to take in a number of sails at once, it is only required to let go the sheets, when the wind forces the same through their sheaves by raising the sails, and necessitates the slack of the upper or clew-chain to be taken up by the other sheave, (on account of the India-rubber roller, the chain being unable to slip back,) which equally necessitates the rotation of the boom, and consequently the rolling of the sail. Thus the sail is furled by the force of the wind. The slack of the clew-chains can be hauled in as soon as the hands can be spared to do it.

The roller-tube F, shown in figs. 7 and 8, consists of the two rims *f f'*, which are not entirely closed, leaving a space, Z, for the sail to pass in and around the boom E, which is covered with India rubber in that part which is surrounded by the roller-tube F. In these rims are the bearings of the small rollers *g*, which are covered with India rubber, so that, when the sail is rolled up on the boom, both sides of the sail are kept from wrinkling, chafing, and doubling on its inner side by the rubber covering of the boom and the roller *g*. Any number of these roller-tubes may be applied, according to the size of the sails and booms.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The within-described mode of setting, furling, and reefing sails from the deck of a vessel, by means of the swivel-booms D, swivels G H, and ropes or chains 1, 2, 3, 4, 5, 6, 7, and 8, substantially as described.

2. Setting, furling, and reefing staysails and jibs, by rolling them on the stay, substantially as described.

3. Setting, furling, and reefing the upper square sails from the deck, by means of two sets of ropes or chains only, operating together with the swivel-booms D, substantially as described.

4. A swivel-boom, around which the upper square sails are rolled or furled, substantially as described.

5. An India-rubber cap, P, on the end of rotating spars, for the purpose and manner set forth.

6. The swivel D, provided with friction balls, substantially as described, for the purpose specified.

7. An India-rubber roller over the periphery of a sheave, substantially as and for the purposes described.

8. A stay for ships' sails, constructed of metal links, substantially as described.

9. The combination of the swivel H, link I, and swivel G, substantially as described, for the purpose specified.

10. The India-rubber covered rollers *g* and *g'*, in combination with the India-rubber covered boom E, substantially as and for the purposes described.

11. The guide-rope 5, in combination with the courses, substantially as and for the purposes described.

CHARLES PETERSON.

Witnesses:

CHARLES GUNNER,

ALEX. A. C. KLAUCKE.