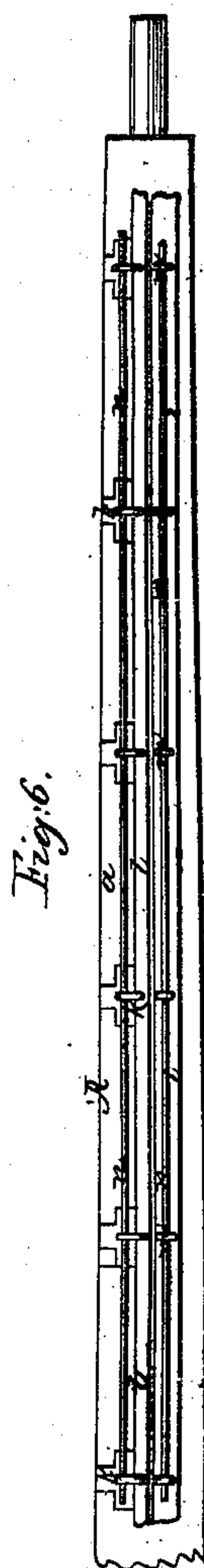
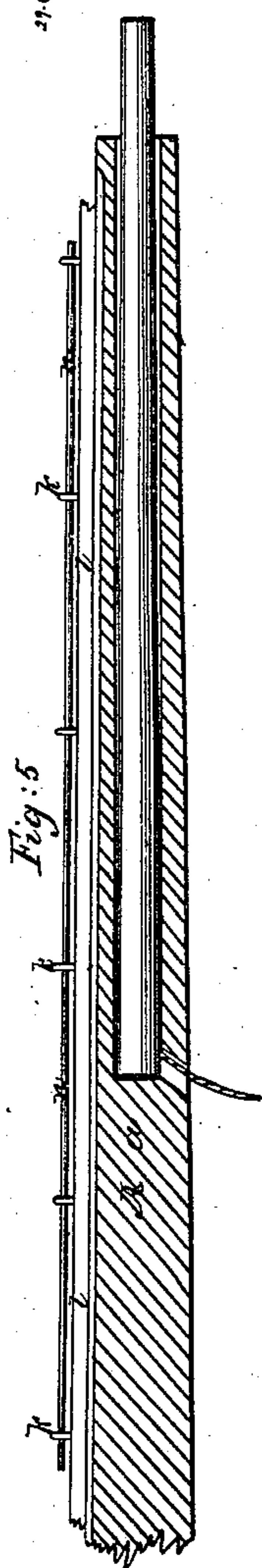
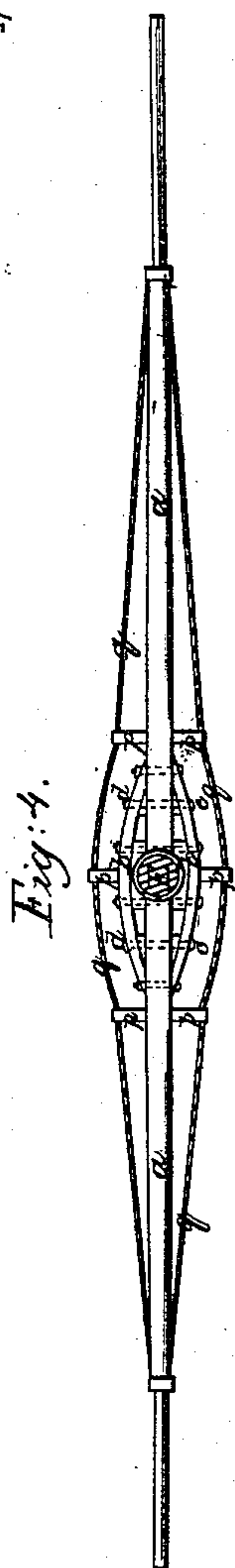
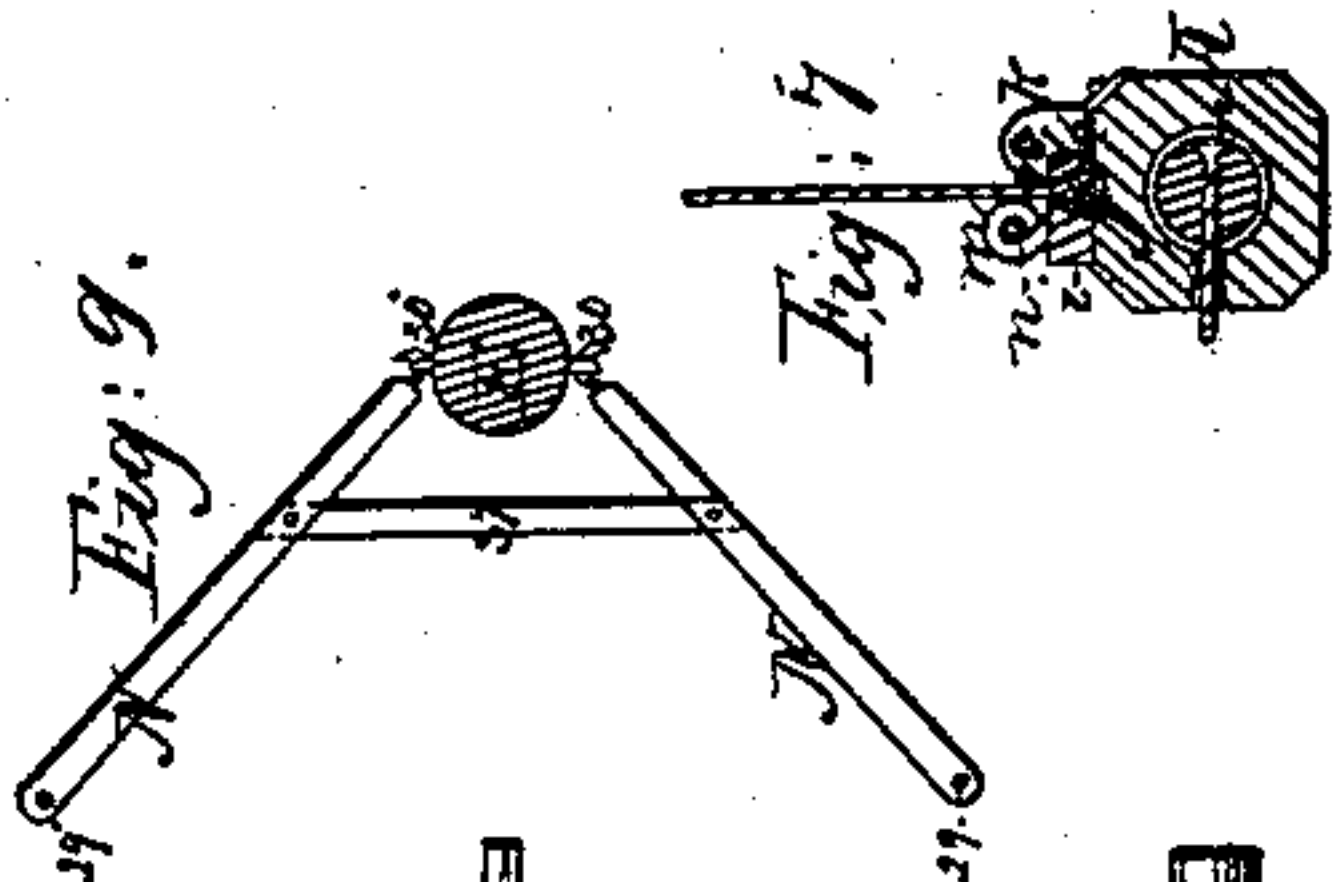
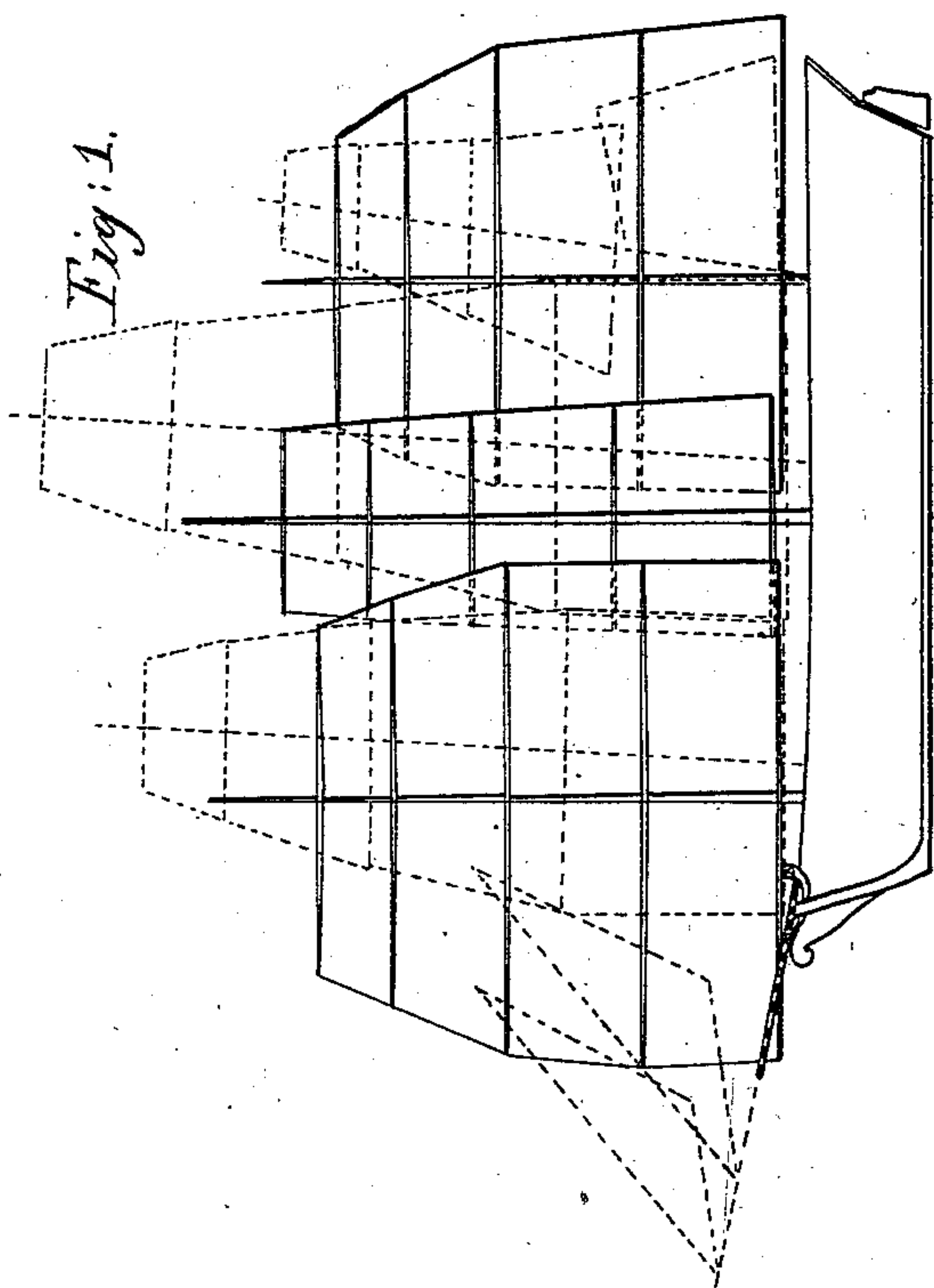
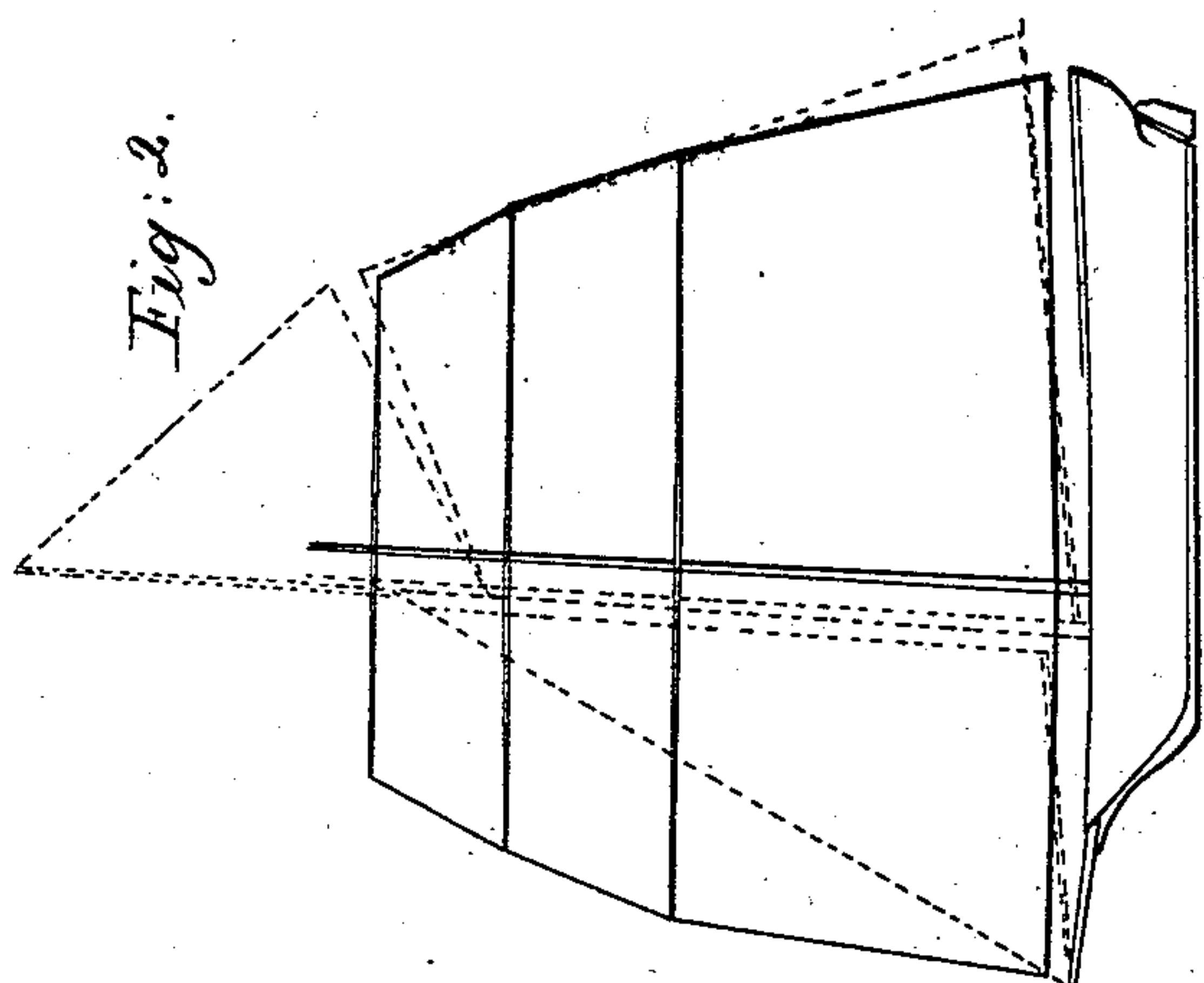


Sheet 1. 2 Sheets.

*B Ricketson.*  
*Sails and Rigging.*

*N<sup>o</sup> 36,482.*

*Patented Sep. 16, 1862.*



Witnesses.  
*Charles A. Fisher*  
*Geo W Reed*

Inventor.  
*B Ricketson*  
Per *Mum C Atty*

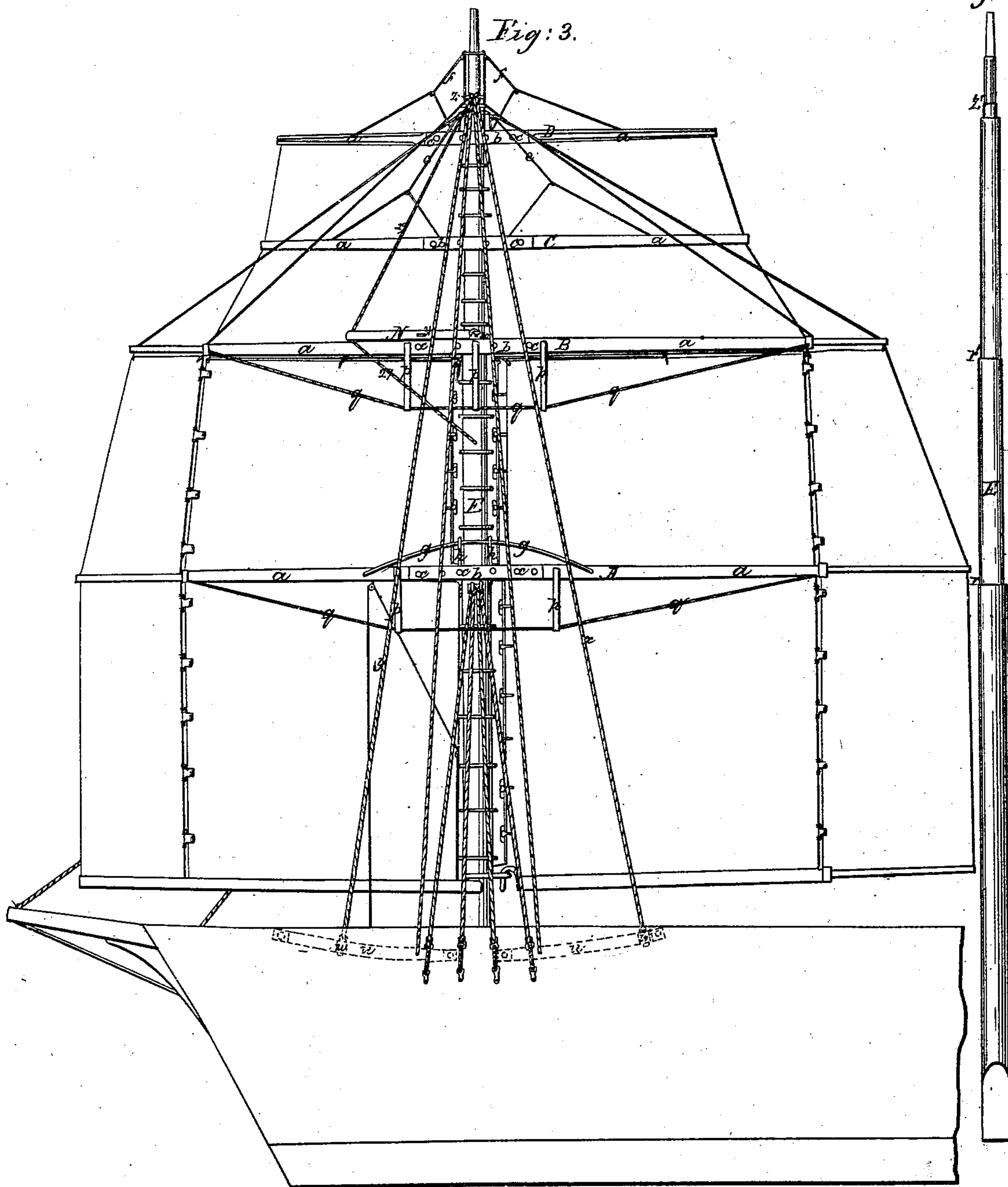
*B. Ricketson.* Sheet 2. 2 Sheets.

*Sails and Rigging.*

*N<sup>o</sup> 36,482.*

*Patented Sep. 16, 1862.*

*Figs.*



*Witnesses.*

*Charles A. Fisher*  
*Geo W Reed*

*Inventor.*

*B. Ricketson*  
*Per Munn & Co Attys*



# UNITED STATES PATENT OFFICE.

BARTON RICKETSON, OF NEW BEDFORD, MASSACHUSETTS.

RIGGING AND SPARS OF SHIPS AND OTHER NAVIGABLE VESSELS.

Specification of Letters Patent No. 36,482, dated September 16, 1862.

*To all whom it may concern:*

Be it known that I, BARTON RICKETSON, of New Bedford, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in the Rig and Spars of Ships and other Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification.

The principal objects of this invention are to reduce the cost of the rig, spars and sails of vessels, by a simpler construction and arrangement of parts, to obtain increased speed by providing for the carrying of a greater area of sail without injuriously straining either the spars or the hull, and to facilitate the working of the sails and thereby enable a vessel of a given tonnage to be worked by fewer hands.

In carrying out my invention I fit the yards around the mast in such manner that their axes intersect the axis of the mast, and make one arm of each longer than the other, so that it may carry a larger area of sail on one side than on the other, the portion of the sail on one side of, or abaft the mast, being separate from the portion on the other side or forward of it. The sails and yards thus applied partake in some degree of the character of what are known as square, and in some degree of the character of what are known as fore and aft sails, and the yards are worked and secured in position by braces in substantially the same manner as the yards and booms of other vessels. I employ in a vessel one, two, or more masts according to its size, or as, all circumstances considered, may be most desirable, and employ on each mast the usual or any suitable number of yards, generally preferring to employ as small a number as practical, as my object is to reduce the height of the masts and sails as much as possible, and compensate for such reduction by an increased width of sail the arrangement allowing a greater width to be used without those of one mast taking the wind from those of any other, and I propose generally to dispense with the use of jibs and flying-jibs and their booms, and in some cases with the bowsprit also. The general form and arrangement of the yards and sails which I employ is illustrated in black outline in Figures 1 and 2 of the drawing, representing

a ship and a sloop, and a comparison of the said form and arrangement with the usual systems is illustrated in the said figures, by the representation of those systems in red outline.

The first part of my invention relates to the construction of yards to fit around, and turn upon the mast, whereby great facility is afforded for the attachment of such yards to their mast, and their detachment therefrom is illustrated in Figs. 3 and 4 of the drawing, the latter exhibiting a top view of a yard and horizontal section of the mast, and the former a side view of part of the hull of a ship with the foremast and its yards and sails and the principal portion of the rigging. The two arms *a, a*, of the yard are made of separate pieces of timber, or if made of one piece are sawn apart, and they are connected at their sides with strong cheek pieces *b, b*, which hold them at the proper distance apart, and between which and the inner ends of the arms there is formed an opening of suitable size for the reception of the mast *E*, the inner faces of the said cheek pieces being hollowed out to make the said openings nearly circular. The said cheek pieces are so secured to the yard arms by bolts *c, c*, and nuts *d, d*, as to provide for the removal of one of them, without disturbing the other one, which always keeps the two arms rigidly connected, and when the yard is to be applied to the mast the movable cheek-piece is taken off and the yard put on the mast side-ways and after the yard has been so put on, the movable cheek piece is again applied to the yard and secured in place by the nuts *d, d*. By this construction of yards fitted around and turning upon their mast, either one can be removed without removing or disturbing those above it. These cheek-pieces may be made wide enough and long enough to give great strength to the yard and I propose to use in connection with them wrought iron arched tension rods *g*, to strengthen the yard vertically, as shown in the lower yard A in Fig. 1, running the said rods through standards *h, h*, secured in the yard. I propose to use in connection with such yards a mast made all in one length, instead of lower mast, top mast and top gallant mast in separate lengths, and to provide shoulders *r, r'*, all around them at proper lengths for the lower yard A and top-sail yard B to rest upon. These shoulders may be formed by



reducing the size of the mast at the places where the yards are to come as shown in Fig. 8, which is an elevation of the mast. I make one arm of each yard longer than the other and by that means I am enabled to tack better as the sails are then made to operate like fore and aft sails, or when at anchor and getting under way can place them so as to cause the ship to fill on the right tack almost to a certainty and prevent missing stays or filling on the wrong tack.

The two upper yards C and D represented in Fig. 3 as arranged to slide down the upper portion of the mast, so that both may, with their sails, be lowered down to the top-sail yards B when it is desirable to take in these sails, and it is in thus providing for the sliding down the mast of yards which fit around it to turn upon it that the second part of my invention consists. I propose to apply in this way in large vessels any number of the upper yards as those of the top-gallant sails and royals and any sails that may be used above the royals, but in small vessels all yards may be applied in this way to be lowered. *e, e*, are the top gallant sail halyards and *f, f*, the royal halyards applied in the same manner as the halyards of yards are applied in the ordinary rig of vessels.

The third part of my invention consists in an improved jack-stay. This is illustrated in Fig. 5 which is a longitudinal vertical section of one arm of a yard, in Fig. 6, which is a top view of the same, and in Fig. 7 which is a transverse section of the same; *i* is a fixed cleat secured longitudinally on the top of the yard and extending the whole length of the arm and hollowed out on its inner side for the reception of one side of the bolt-rope *j*, of the sail. Opposite to this cleat, there are secured to the yard at short distances apart hooks or hooked lugs *k, k*, under which there is fitted to the yard a slide *l*, of wood which may be made in one two or more lengths and which is hollowed out on its inner side for the reception of the other side of the bolt-rope *j*, space being left between the cleat *i* and slide *l* for the thickness of the cloth of which the sail is composed. To attach the sail to the yard the slide *l* is removed and the bolt-rope *j* brought against the hollow face of the fixed cleat *i* and close to the top of the yard, and the slide *l* is then inserted endwise under hooks or lugs *k, k*, and by that means the bolt-rope being confined in the cavities of the cleat and slide, the foot of the sail is secured. In the cleat *i*, there are secured eyebolts *m, m*, for the reception of a horizontal iron rod *n, n*, and in the hooks or lugs *k, k*, there are eyes for the reception of a similar rod. In reefing the sail the reef points are secured to these rods.

The fourth part of my invention consists in the attachment of the foot ropes to a yard by means of rigid hangers of wrought iron or other metal, so applied as to keep the said ropes well out from the said outside of the shrouds which are connected to the mast below the said yard, thereby enabling the said ropes to be continued past the mast all along both sides of the yard and on opposite sides of the mast, and affording much greater facility for the passage of the crew along the yard. This part of the invention is illustrated in Figs. 3 and 4, in which *p, p*, are the rigid hangers, secured to the yard and having at their lower ends eyes through which the foot rope *q*, is rove. The ends of the said rope are secured to eye bolts at the end of the yard arms.

The fifth part of my invention consists in the application to the mast of traveling back-stays and head-stays. I apply the yards in such manner as to work between the standing rigging on one side and that on the opposite side of their respective masts. This is illustrated in Fig. 3. In such arrangement of the yards the distance which the yard is capable of swinging in either direction from a position directly fore and aft, is limited by the back-stay *x*, on one side and the head-stay *y*, on the opposite side of the mast, and in order to enable the lower ends of the said stays to be carried far enough forward and aft to operate effectively on the mast and yet to prevent them from interfering with the range of the yard I arrange the lower ends of the said stays to travel along curved ways *w, w*, attached to the hull of the vessel within the bulwarks, as shown in Fig. 3 in dotted outline, attaching to the said ends, metal slides *w, w*, fitted to the said curved ways, the curvature of which is in the form of arcs concentric with the points of attachment of the upper ends of the stays. By moving back the head-stay *y*, on one side and moving forward the back-stay *x* on the opposite side, leaving the other head-stay in its forward and the other back-stay in its backward position, the yards are permitted to swing as far as desirable in either direction. The upper ends of the stays so applied should be connected with a ring *Z*, which is fitted to turn around the mast on a shoulder *Z'*, provided thereon for its support.

The sixth part of my invention consists in strengthening the mast by the application to it of revolving stays and outriggers. This is illustrated in Fig. 3, and in Fig. 9, which is a horizontal section of the mast just above the outriggers. *N, N*, are the outriggers, two in number, attached by links or eye-bolts *30, 30*, to opposite sides of the mast just above the top-sail yard B, and *29, 29* are the stays secured at their upper ends to the ring *Z*, before mentioned, rove through eyes in



the outriggers and secured to the mast some distance below. The outriggers are connected together by an iron link or strap 31, which passes under the foot of the top-gallant sail, such strap keeping them always at the same distance apart. One of the outriggers always lies close to the back or windward side of the sail and the other projects in a forward direction from the leeward side thereof, and when the yards and sails swing around in tacking, the side of the sails which has been to leeward comes over to windward, as is the case with my mode of applying the yards; the outriggers are also shifted either by the action of the sail or by the action of the wind, to bring the other one against the side of the sail which is then the back or to windward.

I do not claim broadly the fitting of yards over and around their masts, but,

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

1. The construction of the yards to fit around the mast, with a movable cheek-piece *b*, on one or both sides, substantially as and for the purpose herein specified.

2. So applying the yards which fit around the mast, that they also slide up and down thereon, substantially as herein specified.

3. Providing the yards with jack stays constructed as herein specified.

4. The attachment of the foot ropes to the yards, by means of rigid hangers *p, p*, so applied as to keep the said ropes outside of, and out of contact with the shrouds, substantially as herein specified.

5. The traveling back and head-stays *x, y*, applied and operating in combination with yards fitted over and around the mast, substantially as and for the purpose herein set forth.

6. The combination of the revolving stays 29, 29, and outriggers *N, N*, applied to the mast, and in relation to the yards fitted around the mast, substantially as and for the purpose herein specified.

BARTON RICKETSON.

Witnesses:

JAMES LAIRD,

RICHARDSON GAWLEY.