

(No Model.)

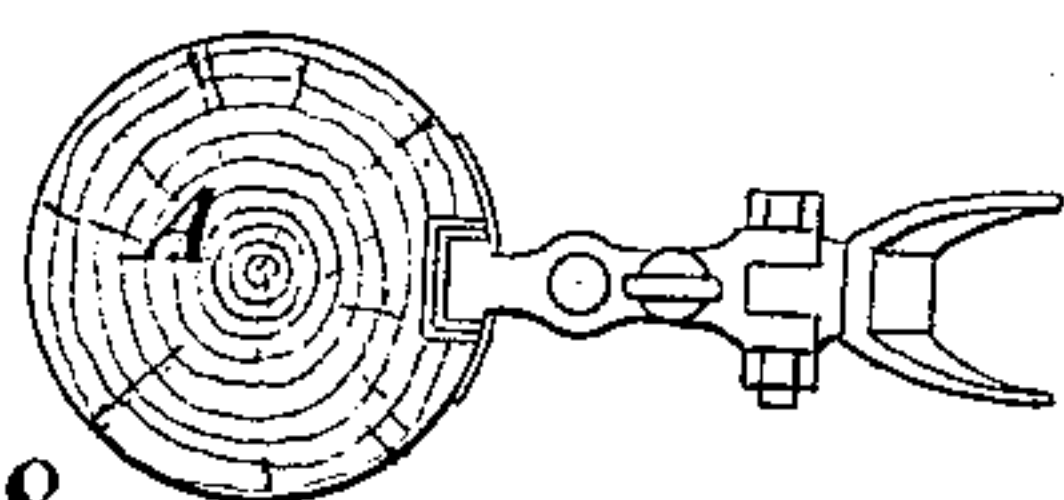
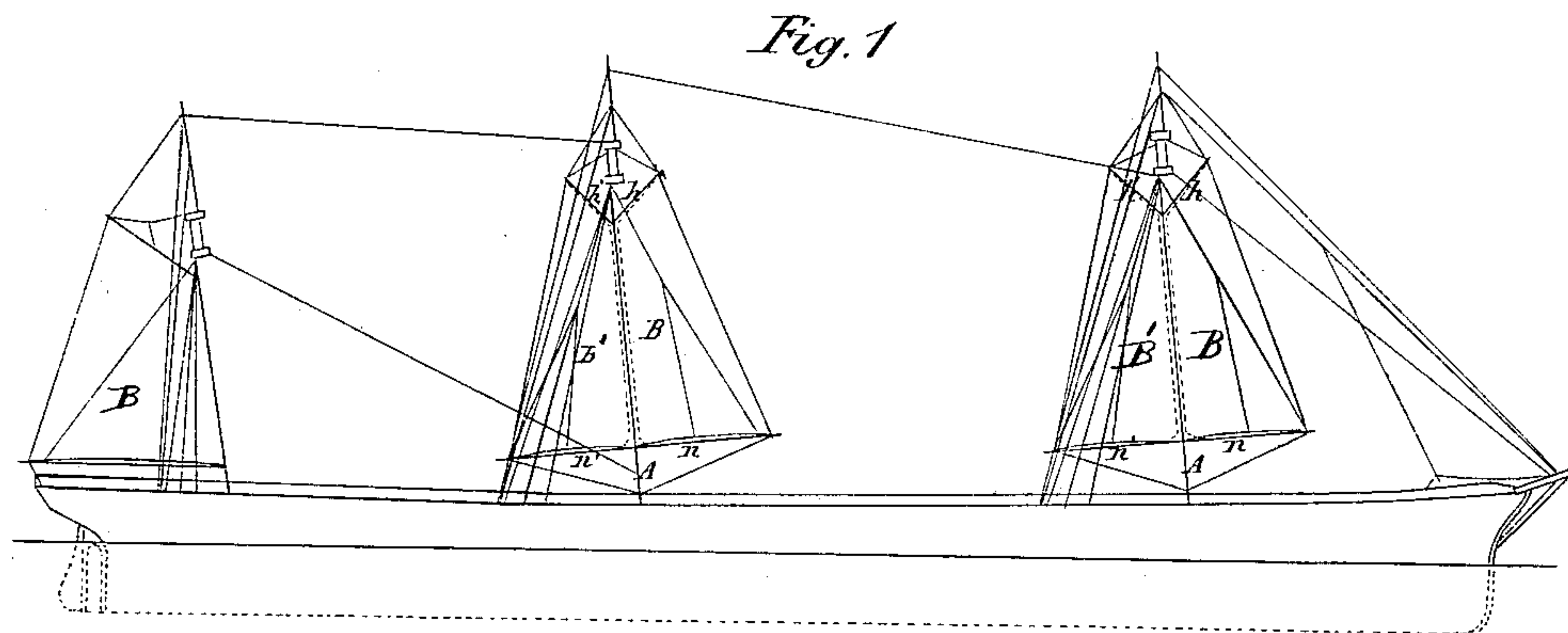
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G. BIANCHI.

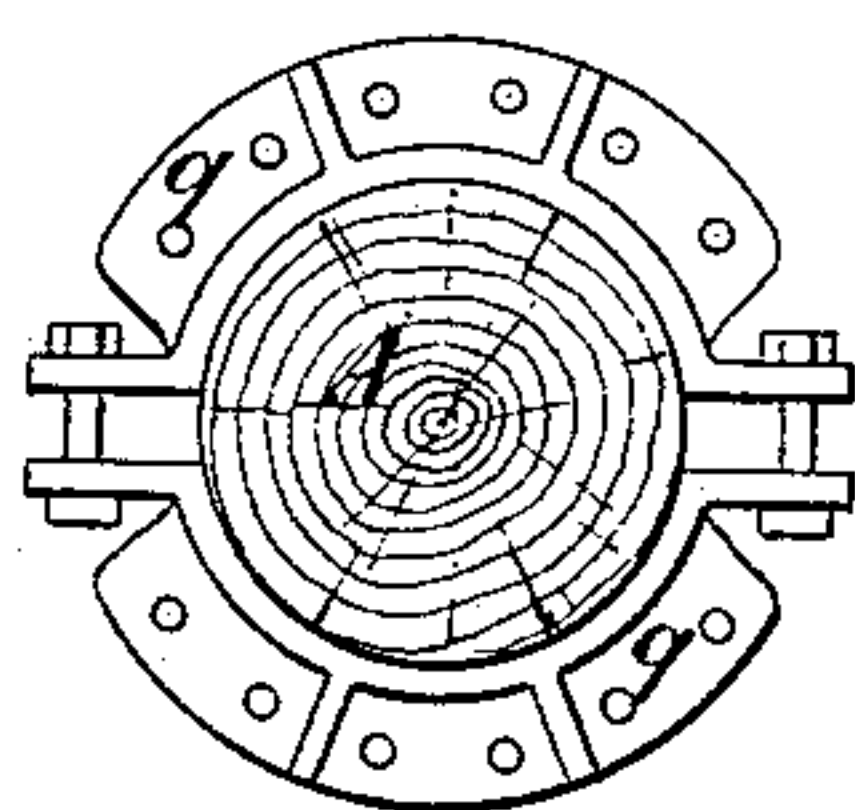
RIGGING FOR SAILS OF VESSELS.

No. 332,583.

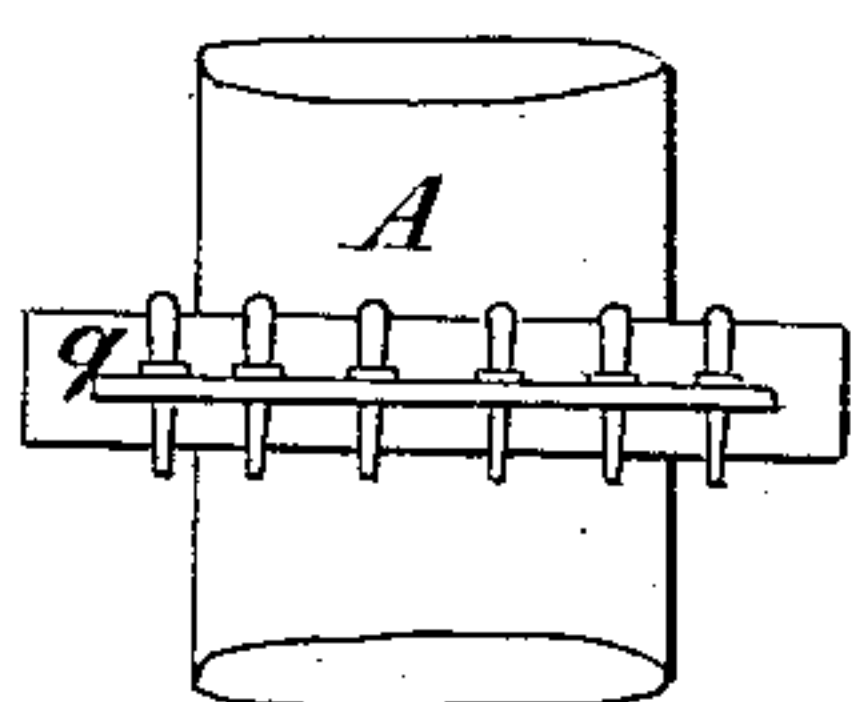
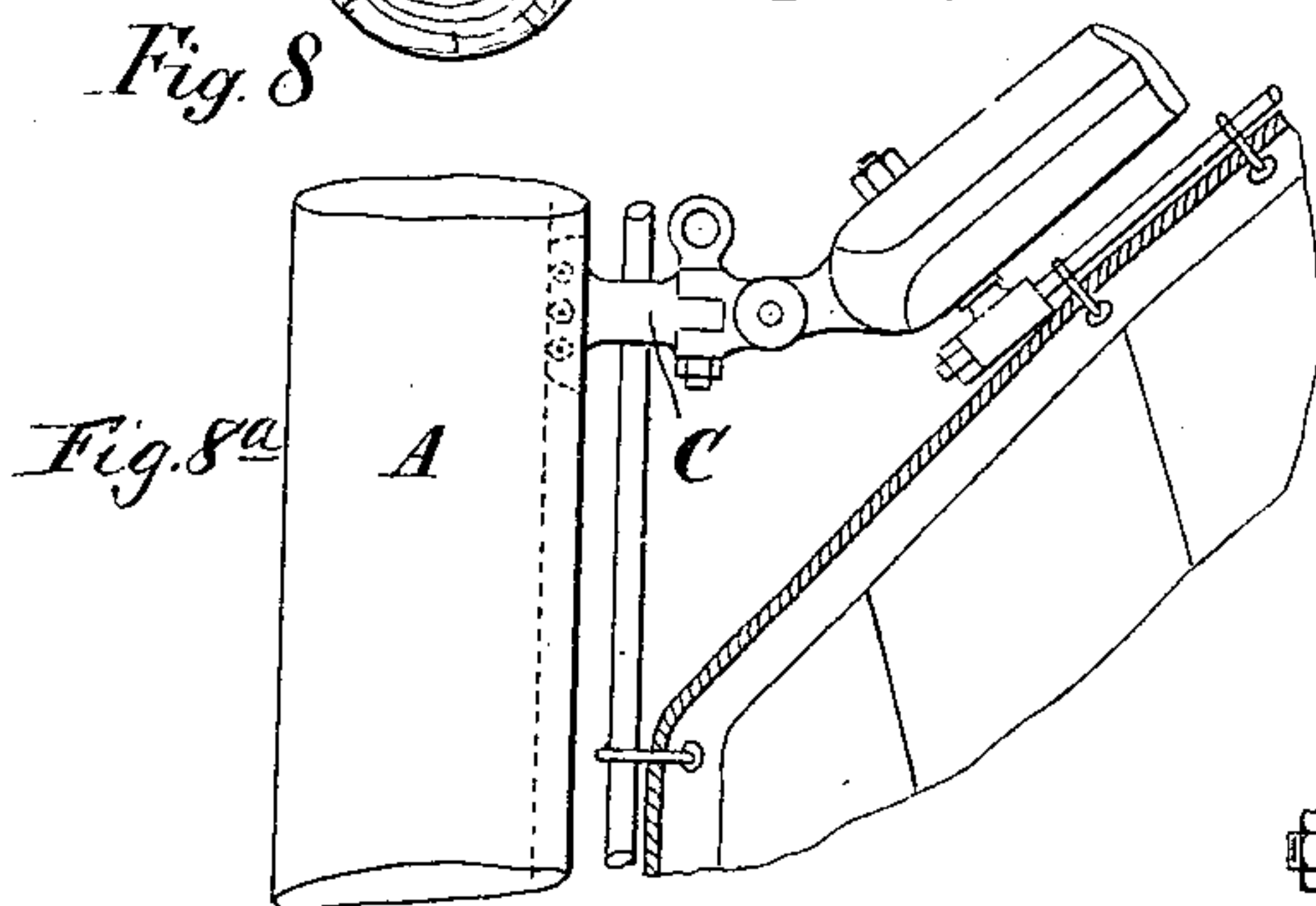
Patented Dec. 15, 1885.



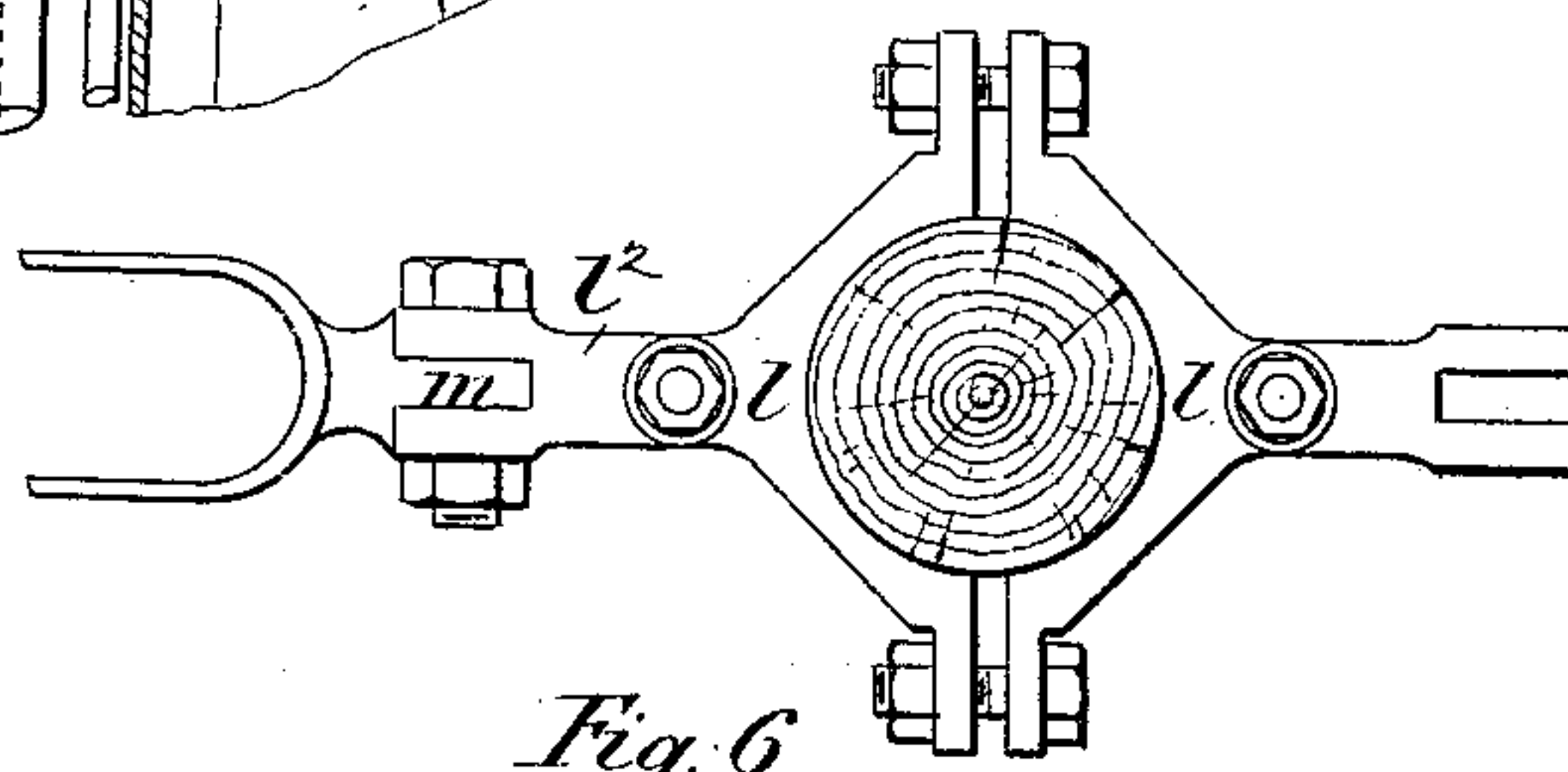
*Fig. 8*



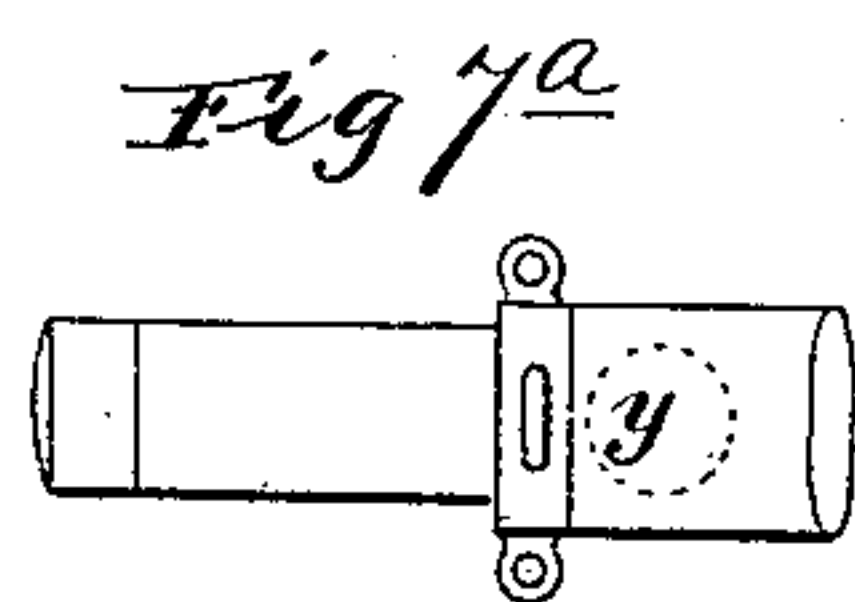
*Fig. 7*



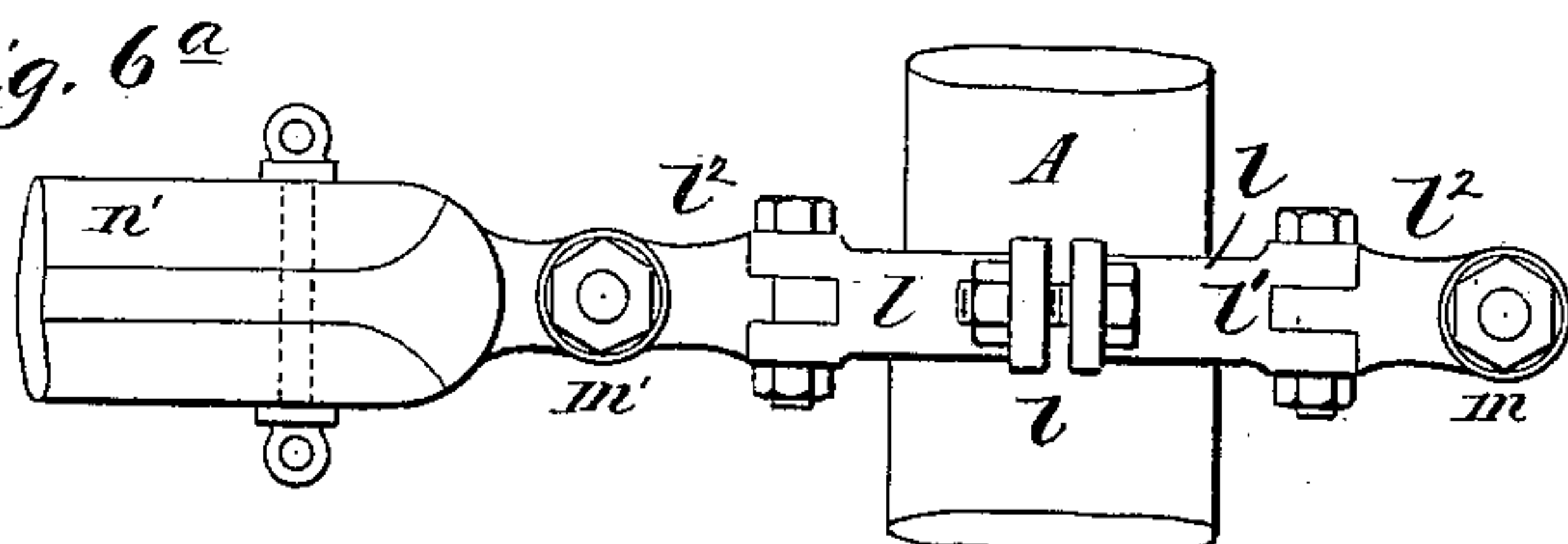
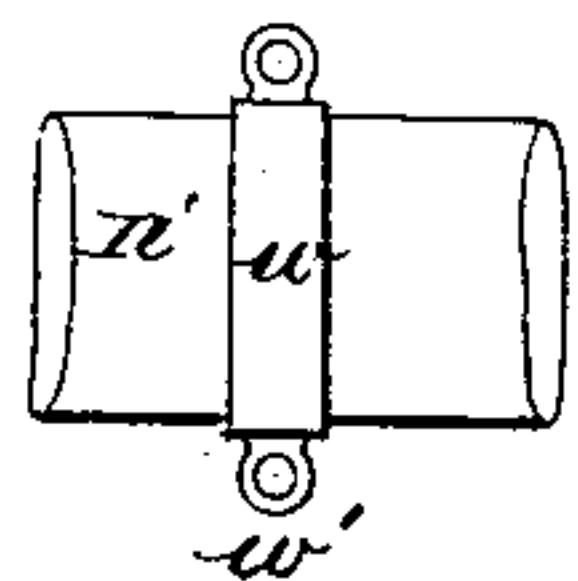
*Fig. 7a*



*Fig. 6*



*Fig. 6a*



Attest:

P. M. Knobloch,  
C. H. Halladay

Inventor:-

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per Henry Oth  
(att'y)

(No Model.)

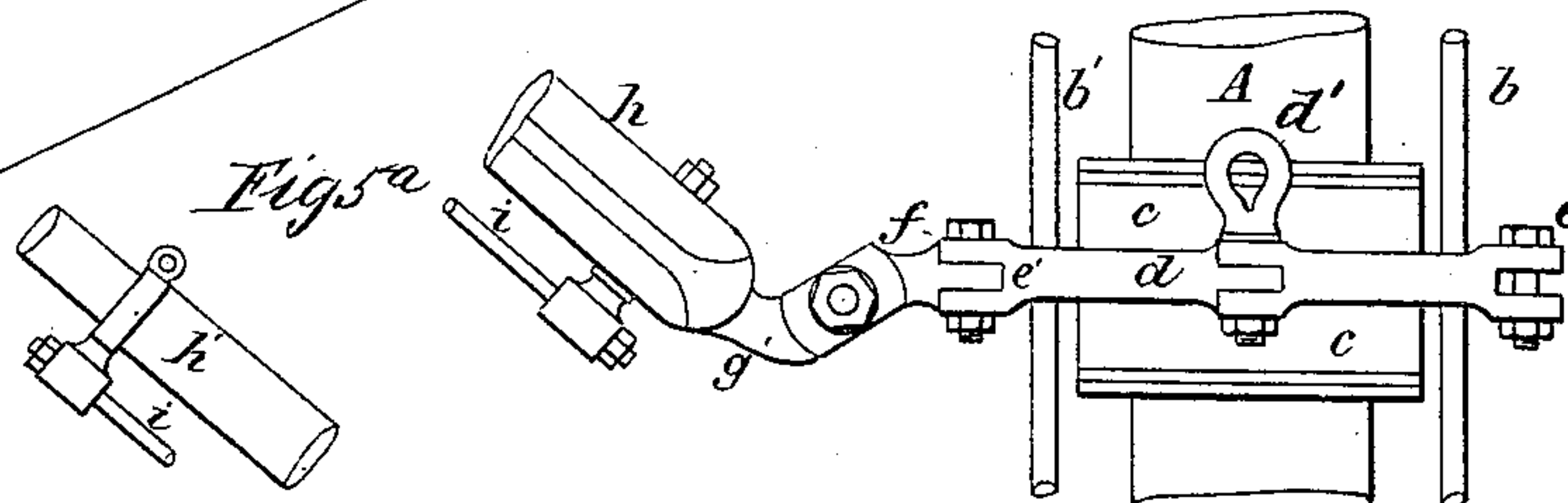
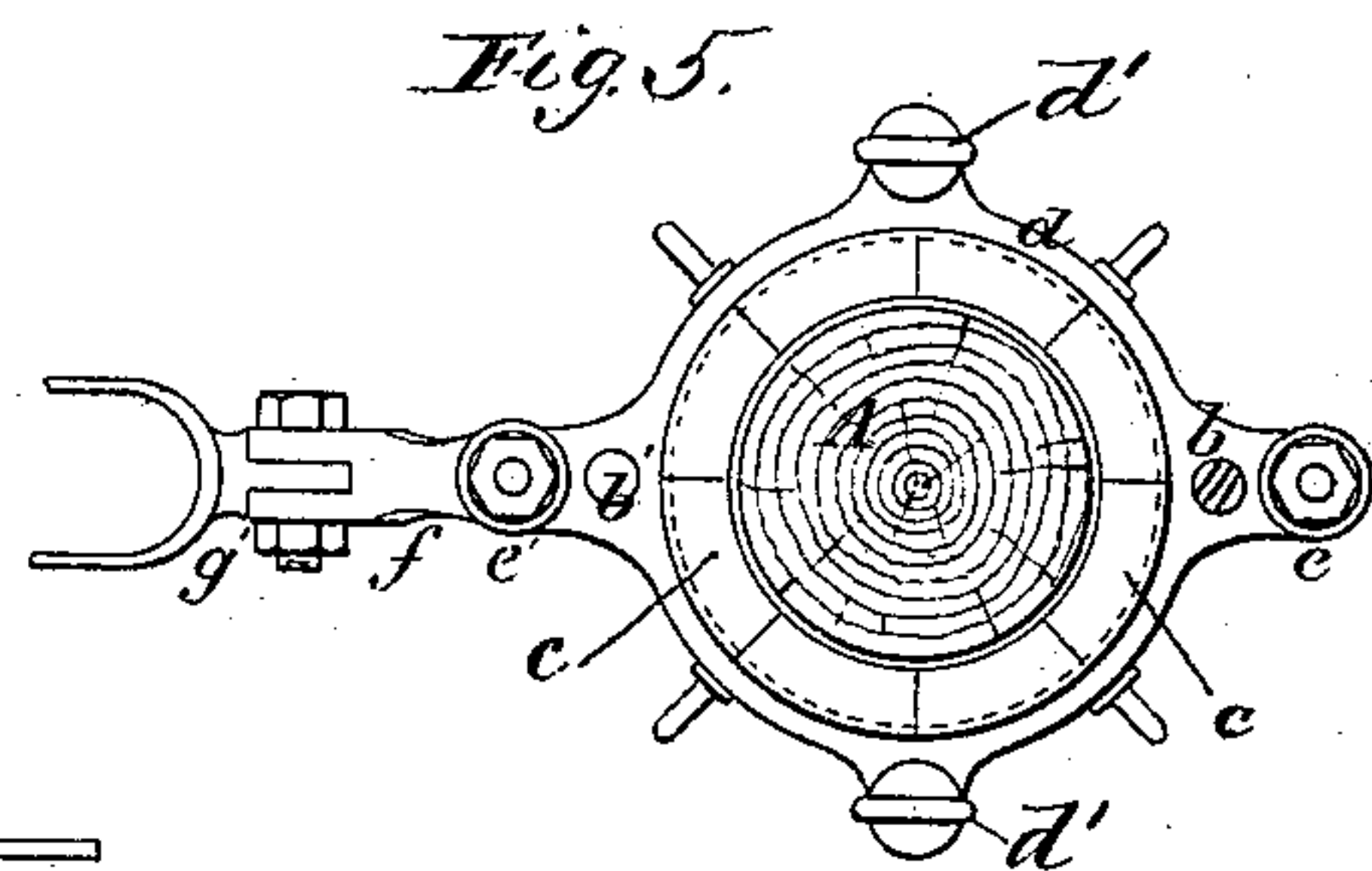
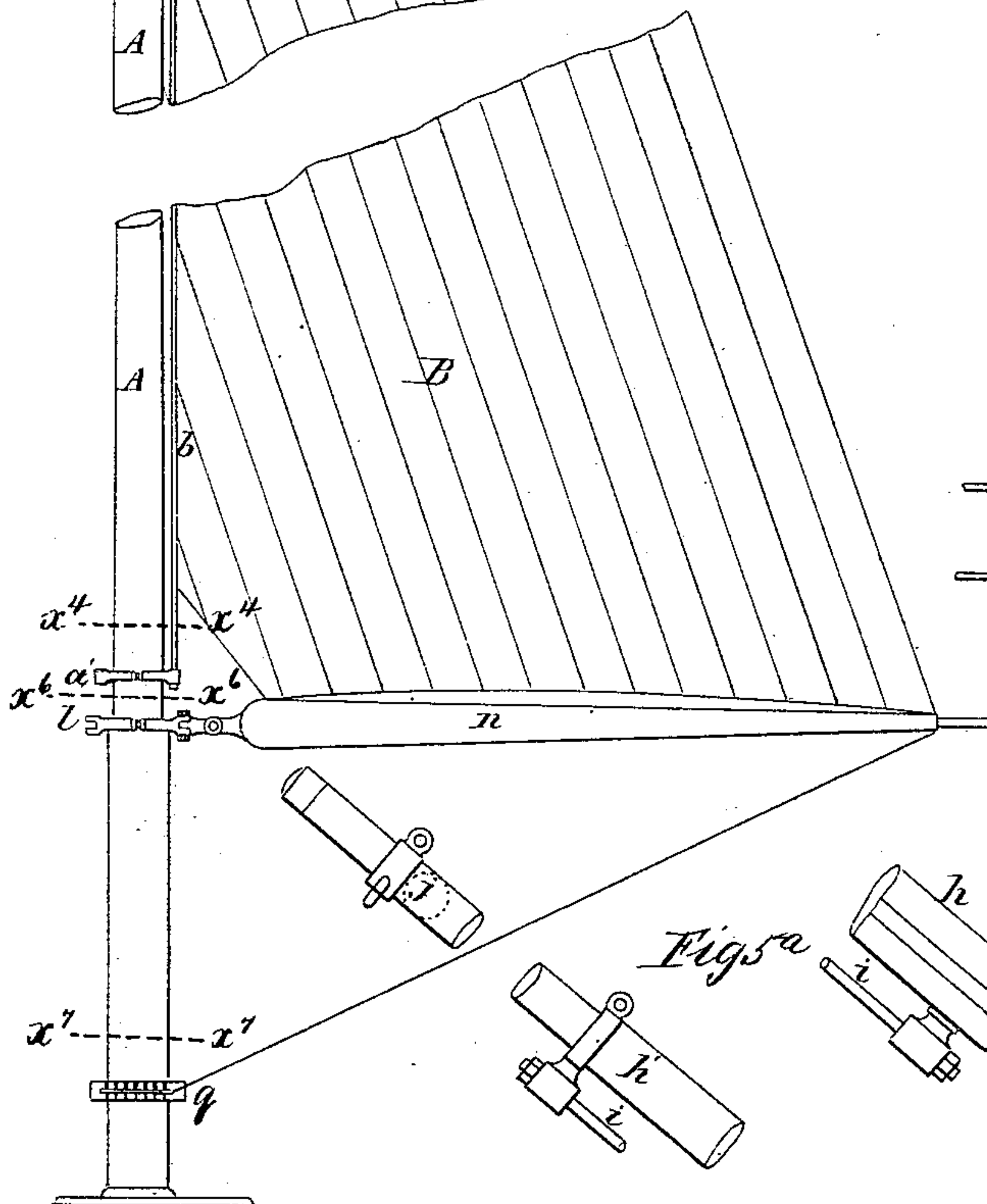
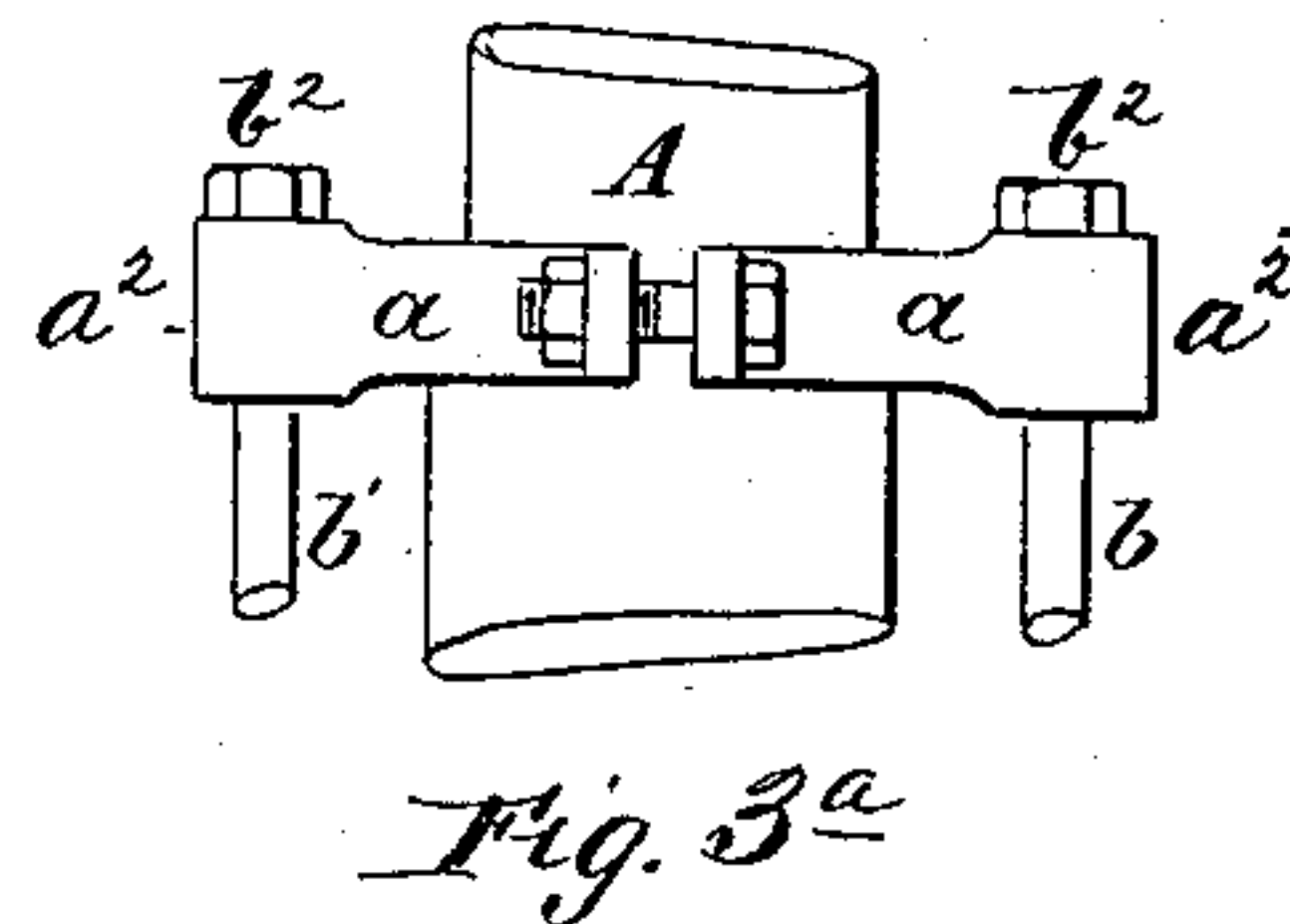
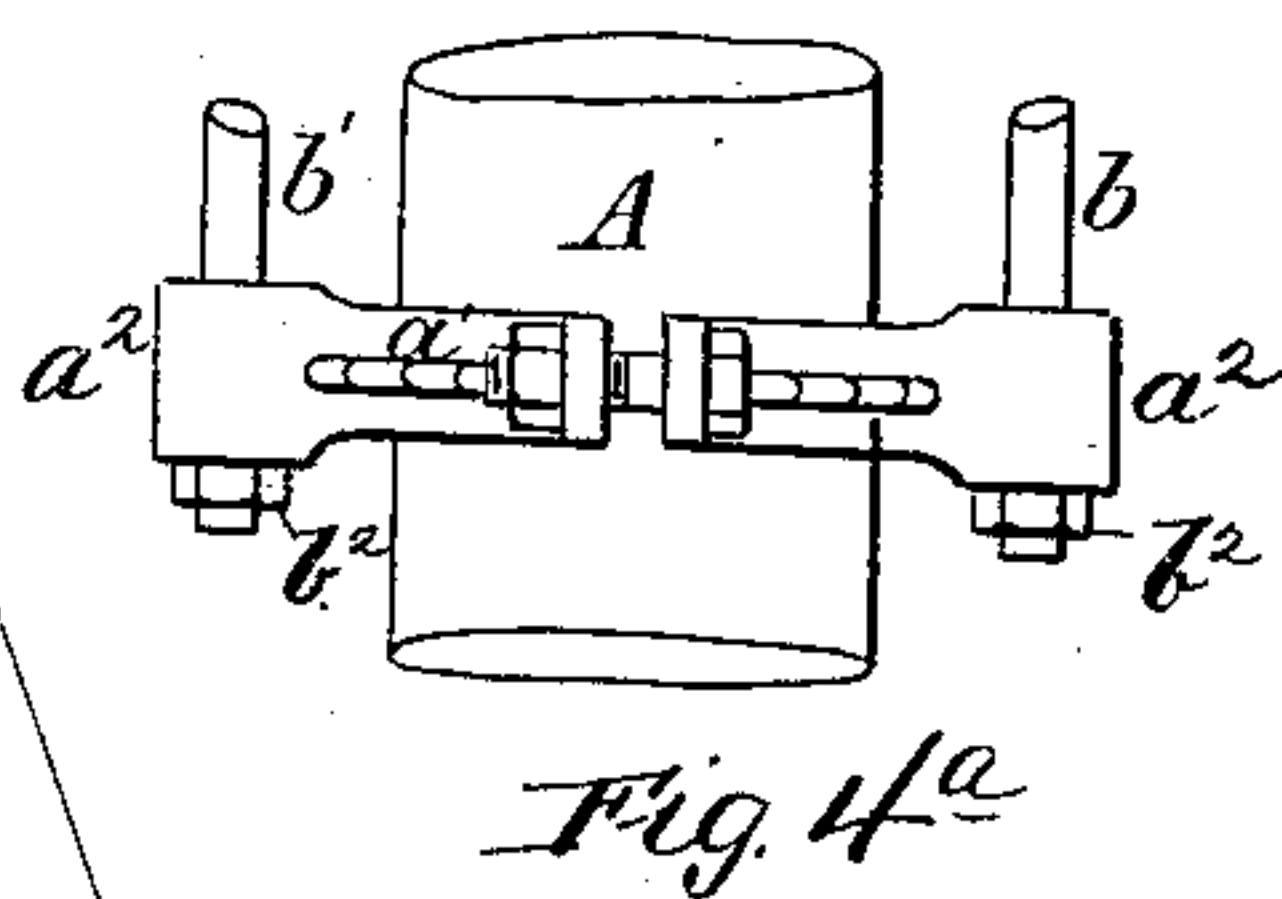
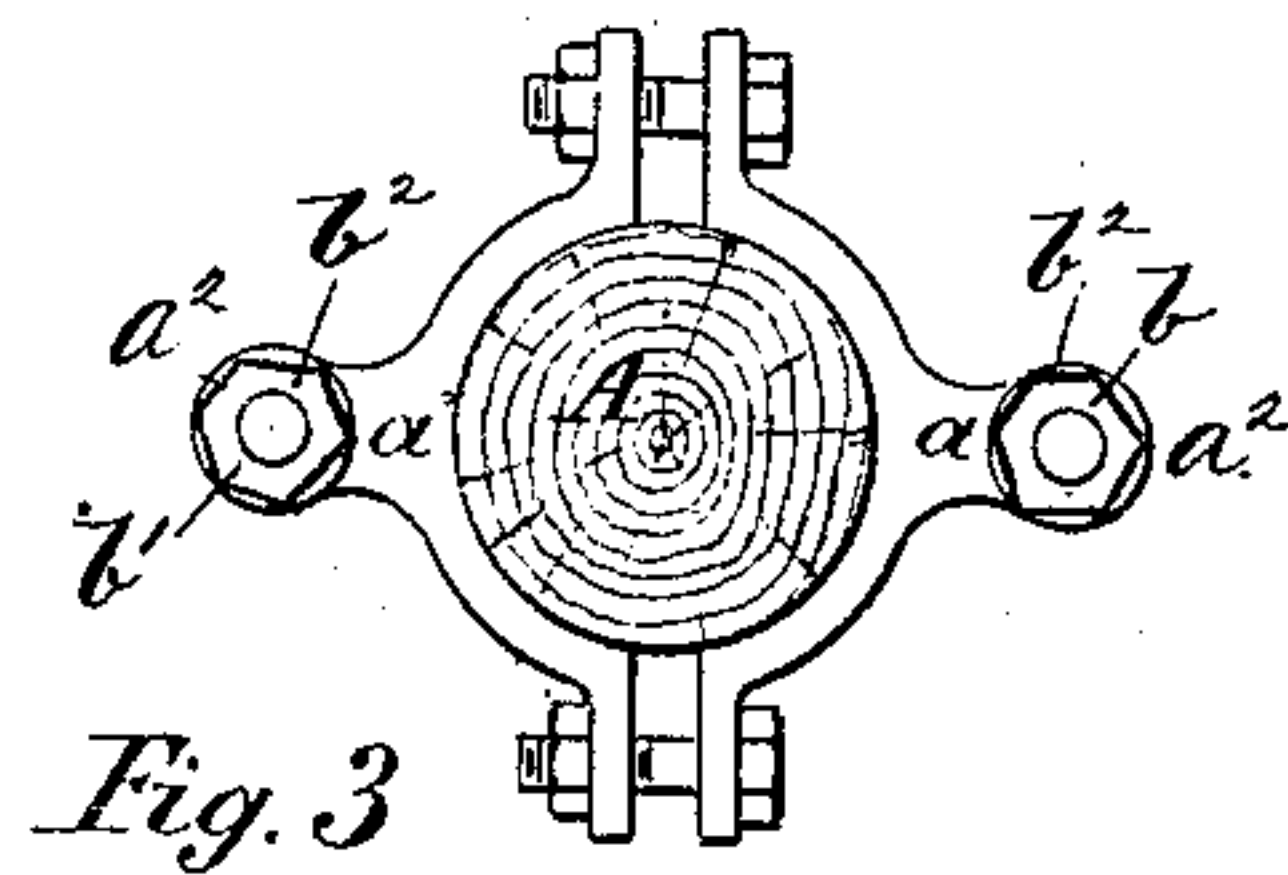
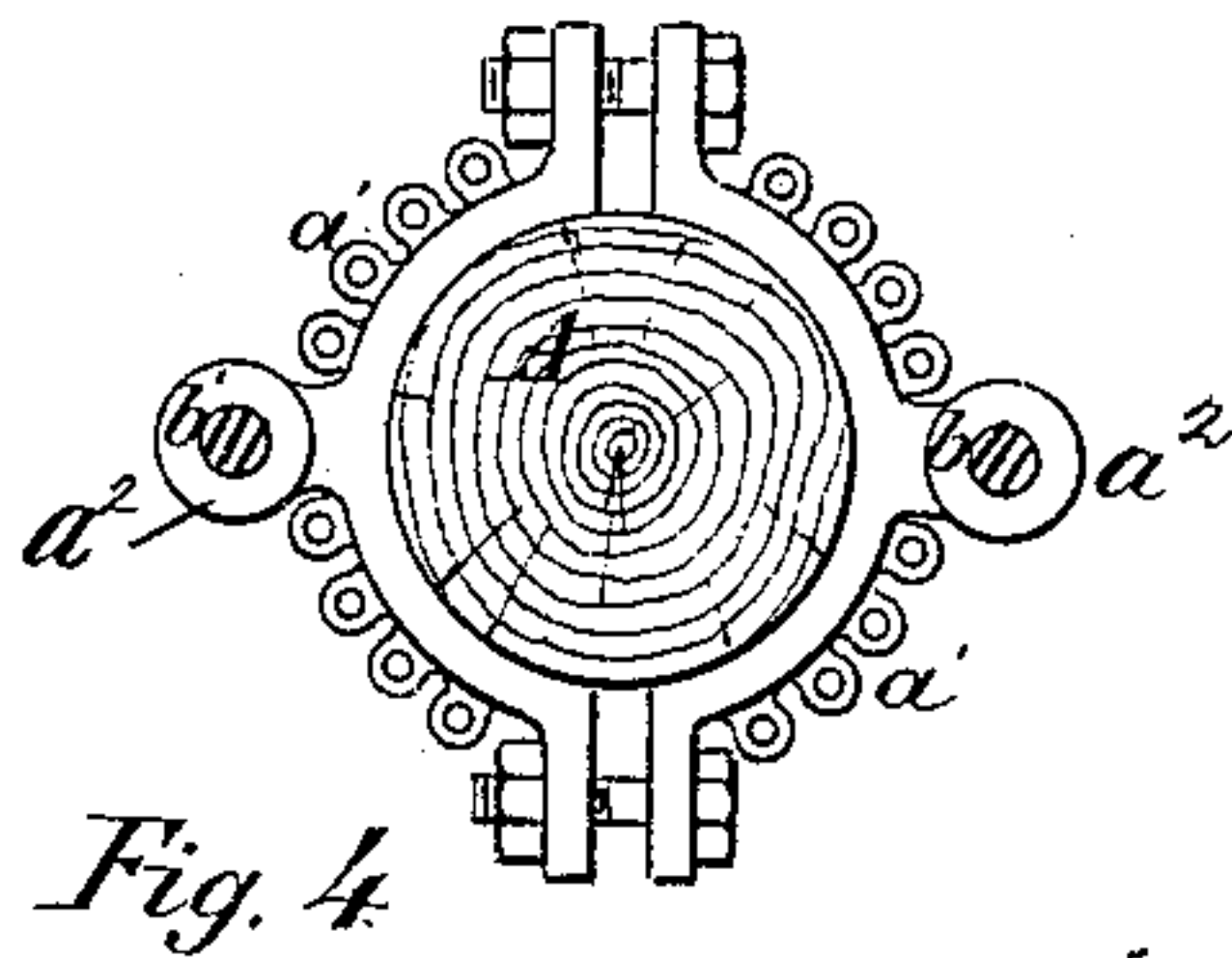
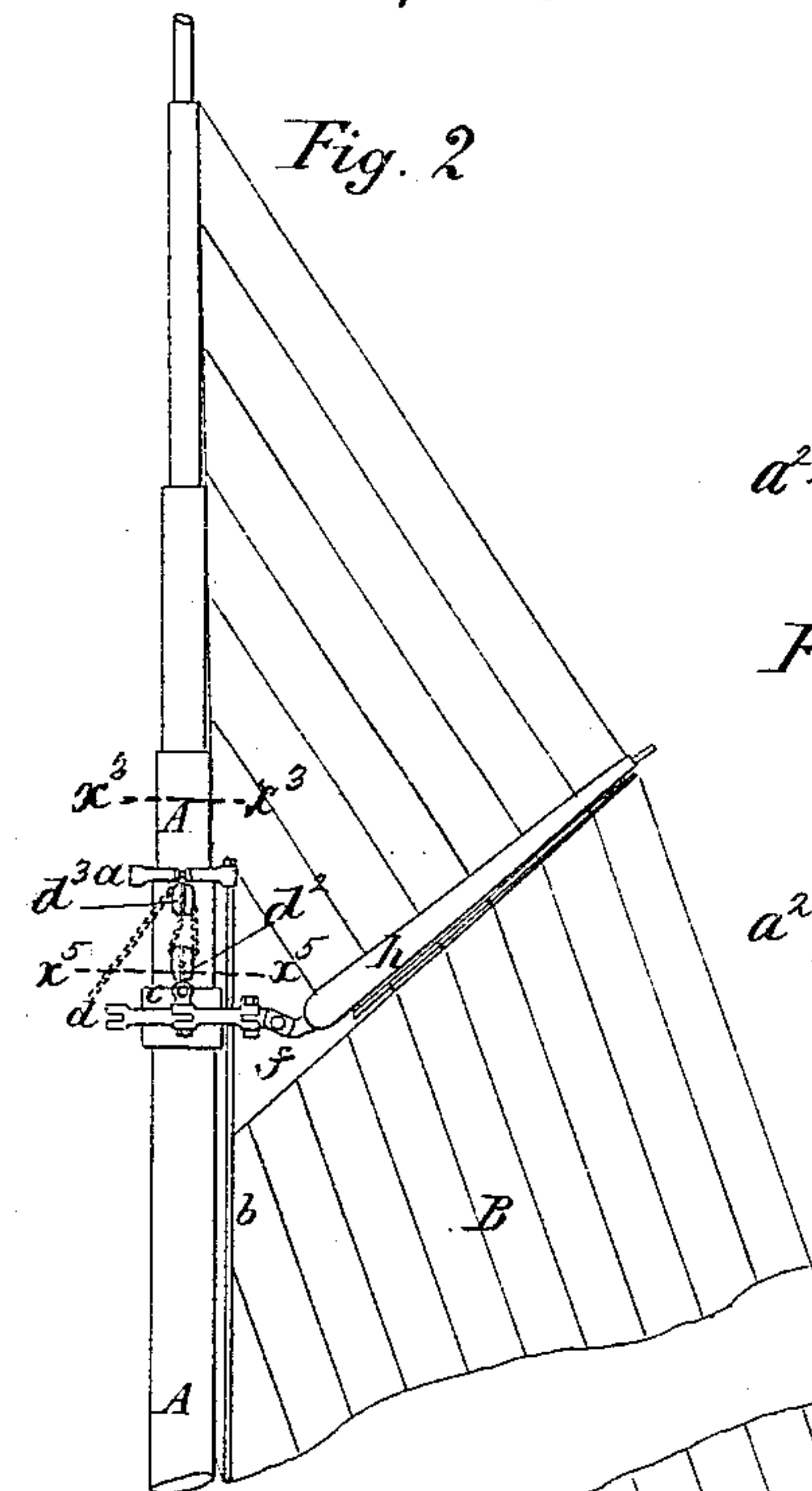
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G. BIANCHI.

RIGGING FOR SAILS OF VESSELS.

No. 332,583.

Patented Dec. 15, 1885.



Attest:  
P. M. Knobloch  
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# UNITED STATES PATENT OFFICE.

GEROLAMO BIANCHI, OF GENOA, ITALY.

## RIGGING FOR SAILS OF VESSELS.

SPECIFICATION forming part of Letters Patent No. 332,583, dated December 15, 1885.

Application filed September 23, 1885. Serial No. 177,947. (No model.)

*To all whom it may concern:*

Be it known that I, GEROLAMO BIANCHI, a citizen of Genoa, Italy, residing at Genoa, have invented certain new and useful Improvements in the Arrangement and Rigging of Sails for Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The object of this invention is to provide more simple means for rigging and maneuvering the sails of vessels of all classes, but more especially those of steamships, and of lessening the danger to both the vessel and its crew in the handling of the sails or in case of a squall or storm, where the safety of the vessel often depends on the rapidity with which the sails are handled.

Up to the present time but two systems of sails have been used for propelling vessels—namely, the square sail, and the simple or brigantine or spanker sail, or a combination of these. The first of these offers no advantage to steamers, for the reason that it is necessary to send the men aloft for unfurling or furling, which latter could not be done in case of a squall without endangering the lives of the men, or without risk of injuring or loosening the sails or breakage of the yards. There is another disadvantage due to the fact that the yards themselves can not be hauled down, thereby affecting the speed or equilibrium of the vessel. In a schooner-rigged vessel, or a vessel provided with simple or brigantine or spanker sails, the latter, it is true, are more easily handled, but present many other difficulties. Inasmuch as there is but one sail for one mast, their superficial area is comparatively small. It is also difficult with this class of sails to use the same with advantage with a head wind, on account of the false position of the sails, which renders it necessary to hug the wind and carry the sails all on one side, which affects the equilibrium and speed of the vessel.

With my improved mode of rigging the sails I avoid all the difficulties described, and

provide means for hauling in the sails at any moment without sending the men aloft, and am enabled to take advantage of the wind, from whatever quarter it may blow, since either a square sail or an auric or brigantine or lug sail may be used and advantage taken of the wind. Nor is it necessary in case of a storm or head wind to abandon the use of the latter sails.

In the accompanying drawings, Figure 1 is a schematic view of a vessel having its sails rigged according to my invention. Fig. 2 is an elevation of the masts, showing one half of the sails in position. Figs. 3, 4, 5, 6, and 7 are sections on a larger scale, taken on lines  $x^3$ ,  $x^4$ ,  $x^5$ ,  $x^6$ , and  $x^7$ . Figs. 3<sup>a</sup>, 4<sup>a</sup>, 5<sup>a</sup>, 6<sup>a</sup>, and 7<sup>a</sup> are elevations of Figs. 3 to 7, respectively; Fig. 8, a section of the mast; and Fig. 8<sup>a</sup>, an elevation of Fig. 8, showing a slight modification in the means employed for spreading and hauling in the sails.

A, Fig. 2, indicates one of the masts, which for steamers may be of metal, and in one or more pieces, according to the size of the vessel.

To the mast A, at suitable distances apart, are secured two rings or collars,  $a$  and  $a'$ , Figs. 2, 3, and 4, of metal, composed of two half rings or collars bolted together. The collars are provided on opposite sides with lugs or ears  $a^2$ , in which are secured the ends of metal rods  $b$  and  $b'$ , said ends being screw-threaded and carry tightening-bolts  $b^2$ , and along the said rods slide the rings of the main or spanker sails B B'. A little below the upper ring,  $a$ , is arranged a panel,  $c$ , consisting of a sleeve, made of wood or metal, and adapted to slide freely along the mast A. The panel  $c$  is encircled by collar or ring  $d$ , composed also of two half-rings bolted together by means of eye-bolts  $d'$ , to which are attached blocks or sheaves  $d^2$ , Fig. 2, over which and the blocks or sheaves  $d^2$  pass chains for hoisting or lowering the panel  $c$ , said chains being connected with any usual panel truss. On a line at right angles to that which intersects the coupling-bolts  $d'$ , and on opposite sides, the collar  $d$  has a forked lug or ear,  $e$  and  $e'$ , in the forks of which are hinged links  $f$  and  $f'$ , so as to rotate freely in a horizontal direction on their hinges. The opposite end of the links  $f$  and  $f'$  is also forked, and in said forks are hinged



the shoes or jaws *g* and *g'*, to which are secured the yards *h* and *h'*. The two yards, as shown in Figs. 2 and 5<sup>a</sup>, are provided on their under side with a metal rod, *i*, along which  
 5 slide the rings of the upper edge of the main or spanker sails *B B'*, and near their outer ends said yards carry a pulley, *j*, over which run the halyards of said sails. Thus, in hoisting  
 10 or lowering the panel or sleeve *c*, the yards *h* and *h'*, and with them their main or spanker sails, may be hoisted or lowered with rapidity and security by means of the blocks or sheaves *d<sup>2</sup> d<sup>3</sup>* and the chains.

Instead of connecting the yards *h* and *h'* to  
 15 the same panel *c*, they may be arranged so as to be hoisted or lowered independent of each other. In this case the yards are each connected to a carriage, *C*, provided with rollers that run in a groove formed on opposite sides  
 20 of the mast, as shown in Figs. 8 and 8<sup>a</sup>, so that either one or the other of the main or spanker sails *B* or *B'* may be spread or hauled in, as desired.

To the mast *A* below the lower collar, *a'*, is  
 25 secured a support, *l*, in the form of a ring or collar, or of the form shown in Fig. 6, made in two parts bolted together and having forked lugs *l'*, in which are pivoted links *l<sup>2</sup> l<sup>2</sup>*, so as to rotate horizontally on their pivot-pins, and  
 30 said links have forked ends, in which are pivoted the jaws or shoes *m* and *m'* of the booms *n* and *n'*, so as to adapt said booms to rotate vertically on their pivot or hinge pins in the same manner as the yards *h* and *h'*, above de-  
 35 scribed. At their outer ends the booms also carry pulleys *y*, over which the halyards run, and in rear of said pulleys the booms are provided with a collar or ring, *w*, that has two perforated lugs or ears, *w' w'*, for the stay-  
 40 ropes, by means of which the boom is held in position, said ropes being secured to the pins of the stay-ring *q*, Fig. 7, to which all the halyards or ropes for operating the sails are attached. These booms, as described, are so  
 45 connected with their supporting-collars as to swing both vertically and horizontally on their hinges, and may therefore be employed as hoisting-derricks for loading or unloading the vessel.

50 It will be understood that each main or spanker sail will be provided with proper stay-rails and means for reefing the same, and

each mast will have a small spanker or brigantine sail, to be used in case of injury to the machinery or during a storm as a jury-sail, to  
 55 be rigged to one or the other of the yards.

Having thus described the nature of my said invention, what I claim is—

1. The combination, substantially as described, with a vessel's mast, of two spanker-  
 60 sails having their booms and yards connected with the mast, to rotate and slide thereon, substantially as and for the purpose specified.

2. The combination, substantially as described, with a vessel's mast, of two spanker-  
 65 sails having their yards and booms articulated to collars or carriages connected with the mast, for the purpose specified.

3. The combination, substantially as described, with a vessel's mast, of two spanker-  
 70 sails having their booms and yards connected with the mast, to slide and rotate thereon, and stay-sails for said mast, for the purpose specified.

4. The combination, with a mast provided  
 75 with collars *a* and *a'*, guide-rods *b* and *b'*, secured to said collars, of two spanker-sails, *B* and *B'*, and their yards and booms *h h'* and *n n'*, articulated to their supports by means of links *f f* and *l<sup>2</sup> l<sup>2</sup>*, to adapt said yards and booms  
 80 to swing both horizontally and vertically, substantially as and for the purpose specified.

5. The combination, with a mast provided  
 85 with collars *a* and *a'* and guide-rods *b* and *b'*, secured to said collars, of the fixed collar *l*, sliding panel or sleeve *c*, the yards *h h'*, booms *n n'*, and spanker-sails *B B'*, said parts being constructed and arranged for operation sub-  
 90 stantially as and for the purpose specified.

6. The combination, with a mast provided  
 90 with collars *a* and *a'*, guide-rods *b* and *b'*, secured to said collars, and the stay-collar *q*, of the fixed collar *l*, sliding panel or sleeve *c*, the yards *h h'*, the booms *n n'*, and spanker-sails *B* and *B'*, and their operating chains, halyards,  
 95 or ropes, said parts being constructed for operation substantially as described, and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEROLAMO BIANCHI.

Witnesses:

R. ORRIGONI,  
 L. RONCALLO.