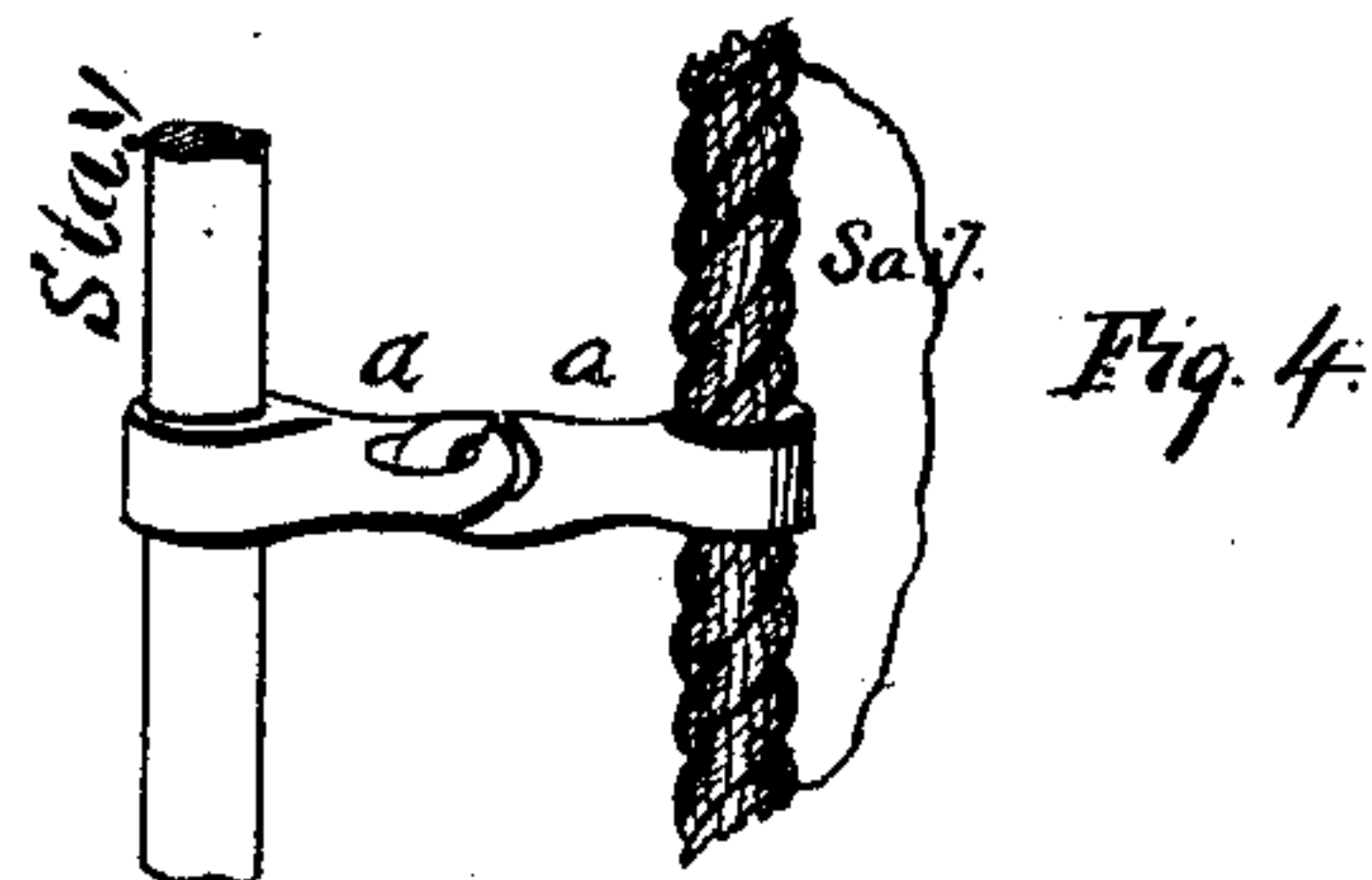
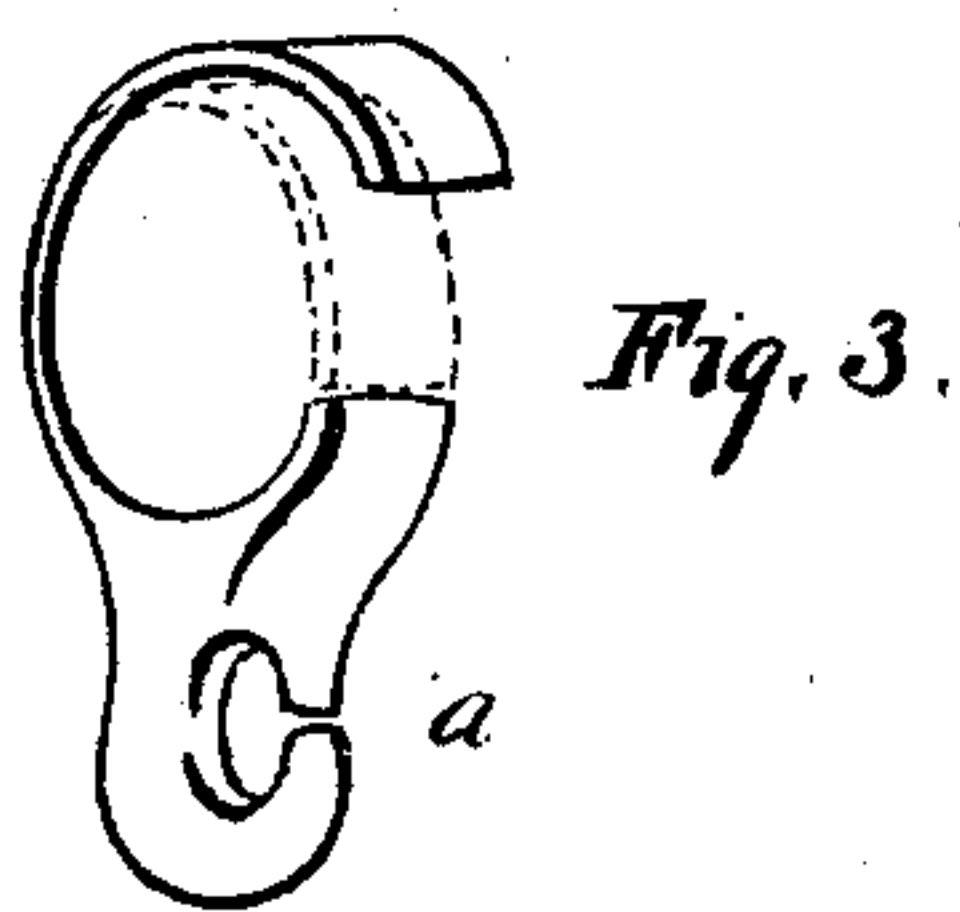
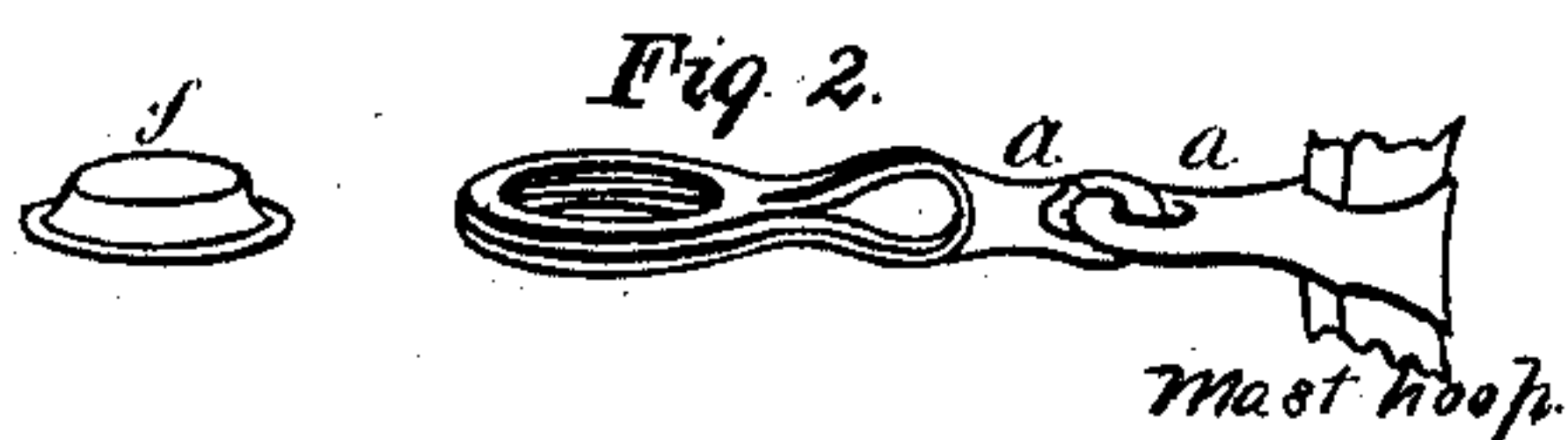
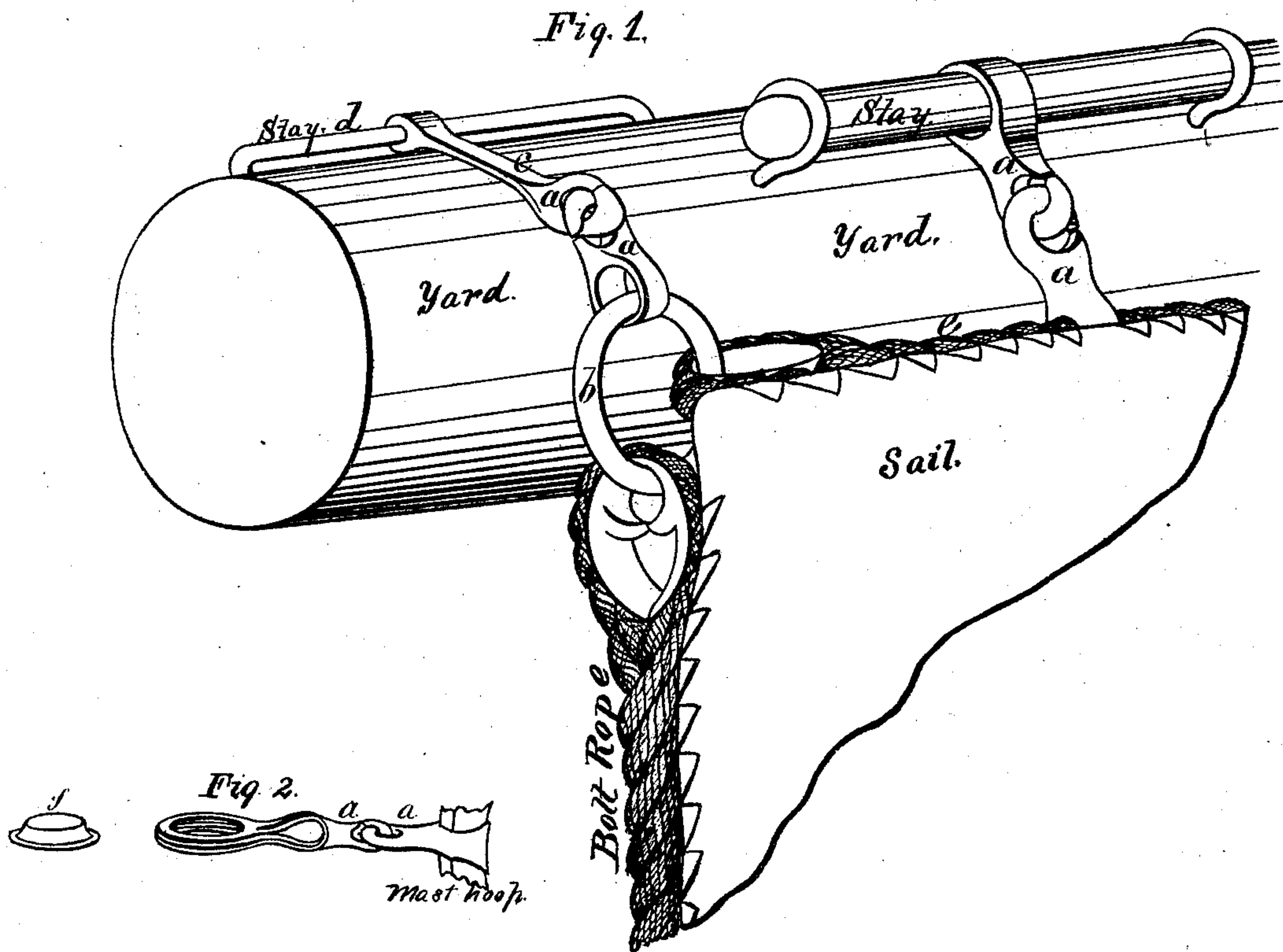


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SAIL-BENDING HOOK.

No. 170,966.

Patented Dec. 14, 1875.



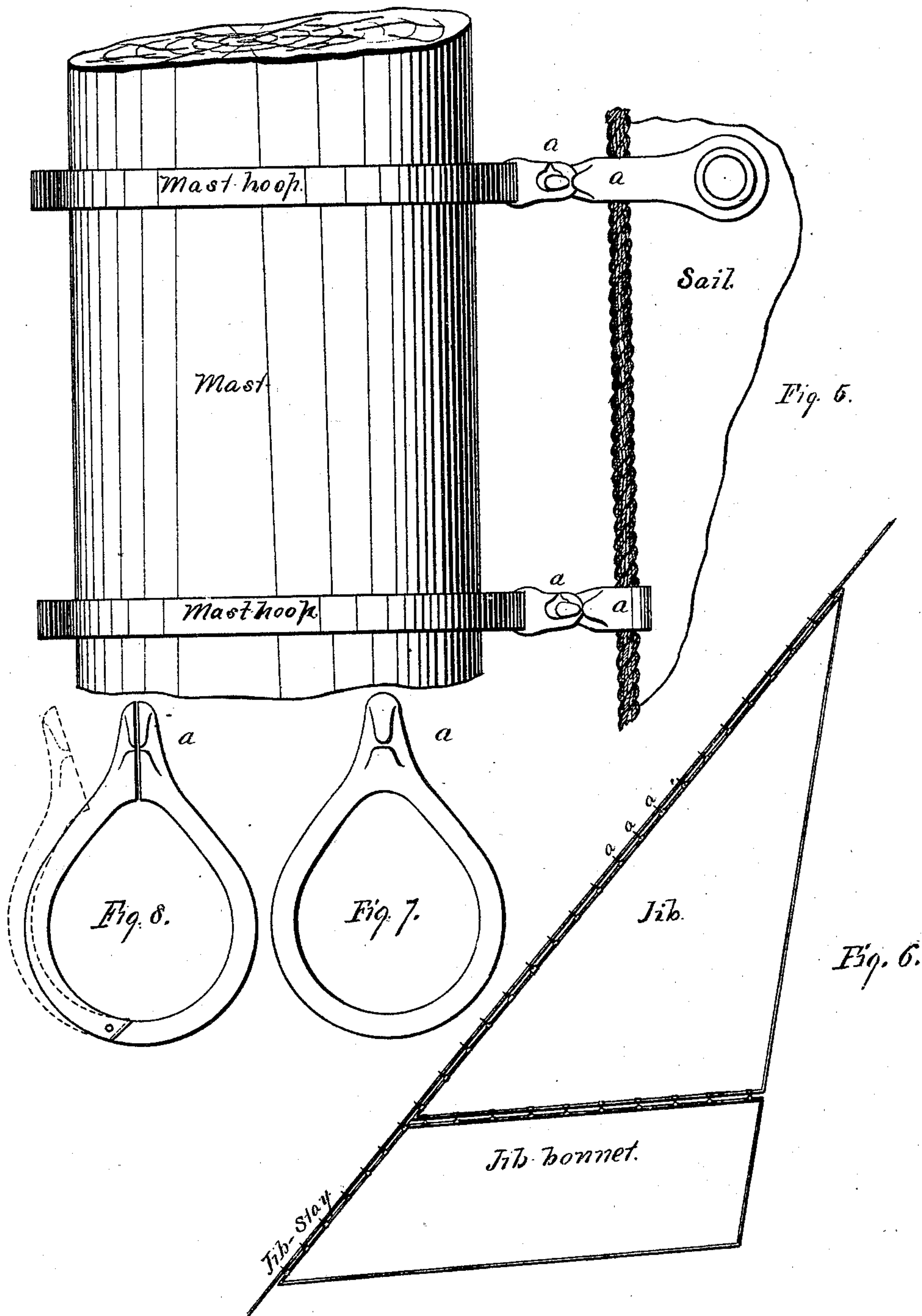
Witnesses.  
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Benjamin Woodward.

Inventor.  
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# UNITED STATES PATENT OFFICE.

EDWIN D. RANKIN, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND JOHN J. HILLMAN, OF SAME PLACE.

## IMPROVEMENT IN SAIL-BENDING HOOKS.

Specification forming part of Letters Patent No. **170,966**, dated December 14, 1875; application filed October 7, 1875.

*To all whom it may concern:*

Be it known that I, EDWIN D. RANKIN, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in the Means and Process for Bending Sails on Vessels, which I will, for brevity, denominate "Improved Sail-Bending Gear."

My improvement is fully set forth in the following specification, reference being had to the accompanying drawings, which comprise a part of this specification.

The object of my invention is to provide a convenient and durable device for the purpose named above, and at the same time facilitate the operation of bending sails.

With the improvement in use the operation of bending sails is reduced to the simple matter of hooking the various hooks together, thereby attaching the sails in a safe and expeditious manner to the rigging, as will more fully appear in the further description thereof.

With reference to the drawings comprised in two sheets, Figure 1 shows the yard, a square sail, or sail for square rig, and the hooks or bending-gear in use as applied to the stays and the sail. Fig. 2 shows in detail a portion of the gear, comprising a hook adapted to and fitted on the mast-hoop, and another hooked to it adapted to the sail, with the eyelet for setting the latter in the sail. Fig. 3 shows a hook constructed with open strap, to be clasped on the stay after the stay is set up. Fig. 4 shows another pair of hooks—one on a stay, the other grasping the bolt-rope or sail. Fig. 5 shows the mast, mast-hoop, sail, and sail-bending gear, or hooks, in a fore-and-aft rig. Fig. 6 shows the application to the jib, jib-bonnet, and jib-stay of my improvement. Fig. 7 shows an enlarged hook with suitable eye or ring for the jib-stay. Fig. 8 shows a similar hook, so divided and hinged as to be readily applicable to the stay or other standing rigging which has been already set up.

My improved sail-bending gear is designed to make it easy to bend or unbend the sails of a vessel in much less time and without the waste of material which is made by the ordinary method.

The improvement consists in the construc-

tion and adaptation of the hooks *a a* and their application to the vessel's rigging, including stays, grommets, bolt-ropes, hoops, &c. These hooks are constructed as shown, with their mouths or openings so constructed, arranged, and formed that the two mouths of the two hooks can be made to pass each other, for hooking and unhooking, only when brought together at nearly right angles.

To make the construction of the hooks more clear I will state that they cannot be hooked into an ordinary ring or eye like ordinary hooks used for like purposes, but one hook must be hooked into another hook of like construction. That part of the hook which is called a hook in ordinary hooks—*i. e.*, the curved bow part—has in my hook a counterpart, forming a double hook, if I may so express it; in other words, there are two points to the hook, nearly alike, and nearly meeting each other in opposite directions at the side of the space inclosed thereby, and nearly in the middle, or exactly so, of the side of the space so inclosed. Not only so, but the points are made thin in the direction across the bow of the hook, so that a very narrow space or mouth between the reversed points of the hook is required in each hook. The two mouths are placed together, bringing the two hooks at nearly right angles to each other during the process of hooking or unhooking them, which makes it nearly impossible for them to find such a position and get unhooked accidentally.

With reference to Fig. 1, the head-gearing *b* has looped to it one hook, *a*; another hook, *a*, with longer shank, is hinged on the stay *d*; these two, when hooked together, secure the corner of the sail. The upper bolt-rope *e* of the sail is supplied at proper intervals with similar hooks, *a*, which are also hooked to similar hooks, *a*, arranged on the stay attached to the yard. The hooks on the stays are placed there before the stay is secured in place generally, and in like manner those on the bolt-rope of the sail. If, however, the occasion occurs to apply them afterward, as in case of omission or a broken one, I provide hooks with open strap, as shown in Fig. 3, which may be clasped on readily at any time after the stay is set. The hooks for attach-



ment to the sail are made as shown in Figs. 1 and 4, to simply grasp the bolt-rope, as shown, and may be made as shown in these figures, or with open strap, as in Fig. 3. A better form, perhaps, is that shown in Fig. 2, where the grommet and hook are combined. This form is also shown at the upper part of Fig. 5. The grommet form will give the sailor more confidence during the introduction of the improvement; for if the hook breaks, he has the usual grommet left, which he can then use in the old way. For this purpose the hook is provided with a divided shank, in the proper form for a grommet, which grasps both the bolt-rope and the margin of the sail, and is clasped together by the insertion of an eyelet through the sail in the manner of applying the ordinary metallic grommet. The parts are shown in detail in Fig. 2. The eyelet is marked *f*. If this hook breaks the eyeleted grommet remains to reeve through, as in the old method of bending sails. Fig. 2 shows the section of a mast-hoop with hook applied. Figures succeeding Fig. 1 show the various adaptations of the improvement to fore-and-aft rig. Fig. 5 shows the connection as applied between the mast-hoop and the sail. Fig. 6 serves to illustrate the application of the improvement

to the jib, jib-stay, and bonnet. To cover the opening between the jib and jib-bonnet I attach a flap to each side of the jib of sufficient width to cover and made of same material as the sail. These flaps are not shown in the drawing, as they would cover the hooks. Fig. 7 illustrates the hook used on the jib-stay. Fig. 8 shows the same divided and hinged for the purpose of being put on after the stay is set up. The dotted lines show it open ready to be slipped on the stay. The hooks may be made of composition metal, or malleable iron galvanized, or other suitable metal adapted to the purpose.

I claim—

1. The pair of hooks *a a*, when constructed with the reversed points and means of attaching them to the sails, stays, and other parts requiring to be connected or hooked together by them, substantially as described.
2. The combined hook and grommet, constructed substantially as shown in Figs. 2 and 5.

EDWIN DANIEL RANKIN.

Witnesses:

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