J. W. Norcross.

Boom & Gaff Joints.

No. 45,625. Patented Dec. 27, 1864.

Fig. 1.

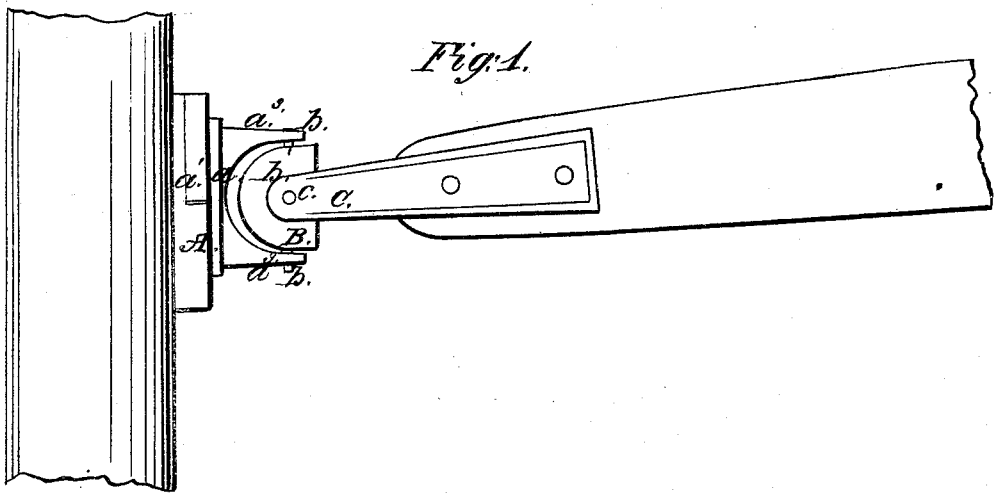


Fig. 2.

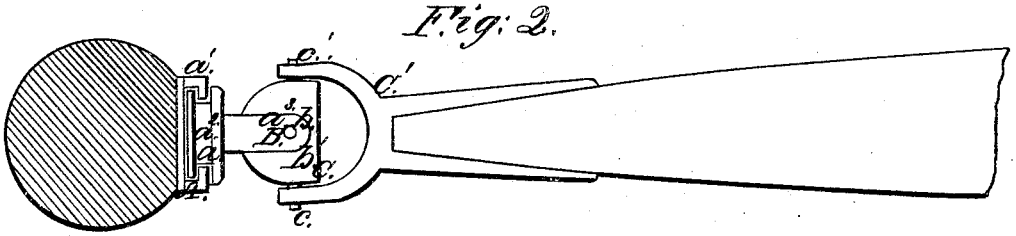
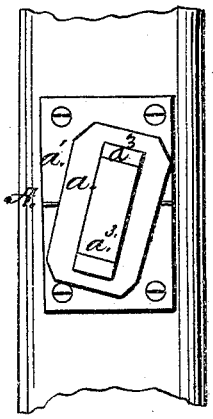


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH W. NORCROSS, OF MIDDLETOWN, CONNECTICUT.

IMPROVED BOOM AND GAFF JOINT.

Specification forming part of Letters Patent No. **45,625**, dated December 27, 1864.

To all whom it may concern:

Be it known that I, JOSEPH W. NORCROSS, of Middletown, in the county of Middlesex and State of Connecticut, have invented a new and improved Boom and Gaff-Joint; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of this invention. Fig. 2 is a horizontal section of the same. Fig. 3 is a front elevation of a portion of the joint.

Similar letters of reference indicate corresponding parts.

This invention consists in a boom or gaff joint with a triple motion, or composed of a universal joint, in combination with a swivel-jaw, in such a manner that the boom or gaff is free to accommodate itself to the position of the sail and sheet without straining the joint. The universal joint is so arranged that the fulcra of the same are situated in one plane, and a change of the position of the boom does not increase the strain on the joint as it does with joints of the ordinary construction, and when this joint is used for a gaff-joint it is applied in combination with a slide secured to the mast, so that the gaff can be raised and lowered without obstruction.

The ordinary method of attaching a boom or gaff to the mast of a vessel is by means of wooden jaws. There are several objections to this method, the principal being the chafing of the mast, and that the jaws are frequently broken by cramping against the mast. Another method is by an ordinary universal joint or a double joint, the fulcra of which are situated in different planes, one farther from the mast than the other. These joints are frequently broken from two causes, first, the sheet on the boom is necessarily on the under side of the same, and when the boom jibes, or when the sail is shifted from one side to the other, the boom being unable to revolve, twists the joint so as to cause it to break. The other cause is, one joint being situated outside of the other, as soon as the boom or gaff is raised above a level a great strain is brought on the inside joint and frequently causes it to break.

All these objections are avoided by the new boom and gaff joint which forms the subject-matter of this present invention, and which is composed of three joints, A B C. The first joint, A, is composed of a swivel, *a*, which is fitted into a grooved bracket, *a'*, secured to the mast by any suitable means, said swivel being provided with a groove, a^2, as shown in Fig. 2 of the drawings, to receive the projecting edge of the socket in the bracket. By this arrangement said swivel is firmly held in place, and yet it is enabled to revolve freely in a vertical plane. From said swivel rise two jaws, a^3, which form the bearings for the fulcrum-pin *b* of the second joint B, which is composed of a cup or hemisphere, *b'*. The third or last joint C is formed of a forked arm, *c'*, secured to the inner end of the boom or gaff, and made to straddle the cup or hemisphere *b'* being connected thereto by a pin, *c*, which forms the fulcrum of the joint C.

The fulcrum-pins *b* and *c* of the joints B C are situated in the same vertical plane, or at the same distance from the mast, so that a change of the position of the boom or gaff does not produce any increase of strain on either of the joints.

In jibing, the joint A allows the boom to revolve and to accommodate itself to the position of the sail and sheet, and thereby relieves the great strain brought upon it by the check and momentum, and the joints B C permit the boom or gaff to swing freely in a vertical or horizontal direction, and all the difficulties attending to boom or gaff joints of the ordinary construction are done away with.

When used for a gaff-joint, the swivel *a* must be fitted into a grooved rail secured to the mast, so that said gaff can be raised or lowered as may become necessary.

I claim as new and desire to secure by Letters Patent—

1. A boom or gaff joint with a triple motion, substantially as and for the purpose set forth.

2. The swivel *a*, in combination with the bracket or grooved rail *a'*, and with a boom or gaff constructed and operating substantially as and for the purpose herein described.

3. Combining with a boom or gaff a universal joint the fulcra of which are situated in one and the same vertical plane, substantially as and for the purpose specified.

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