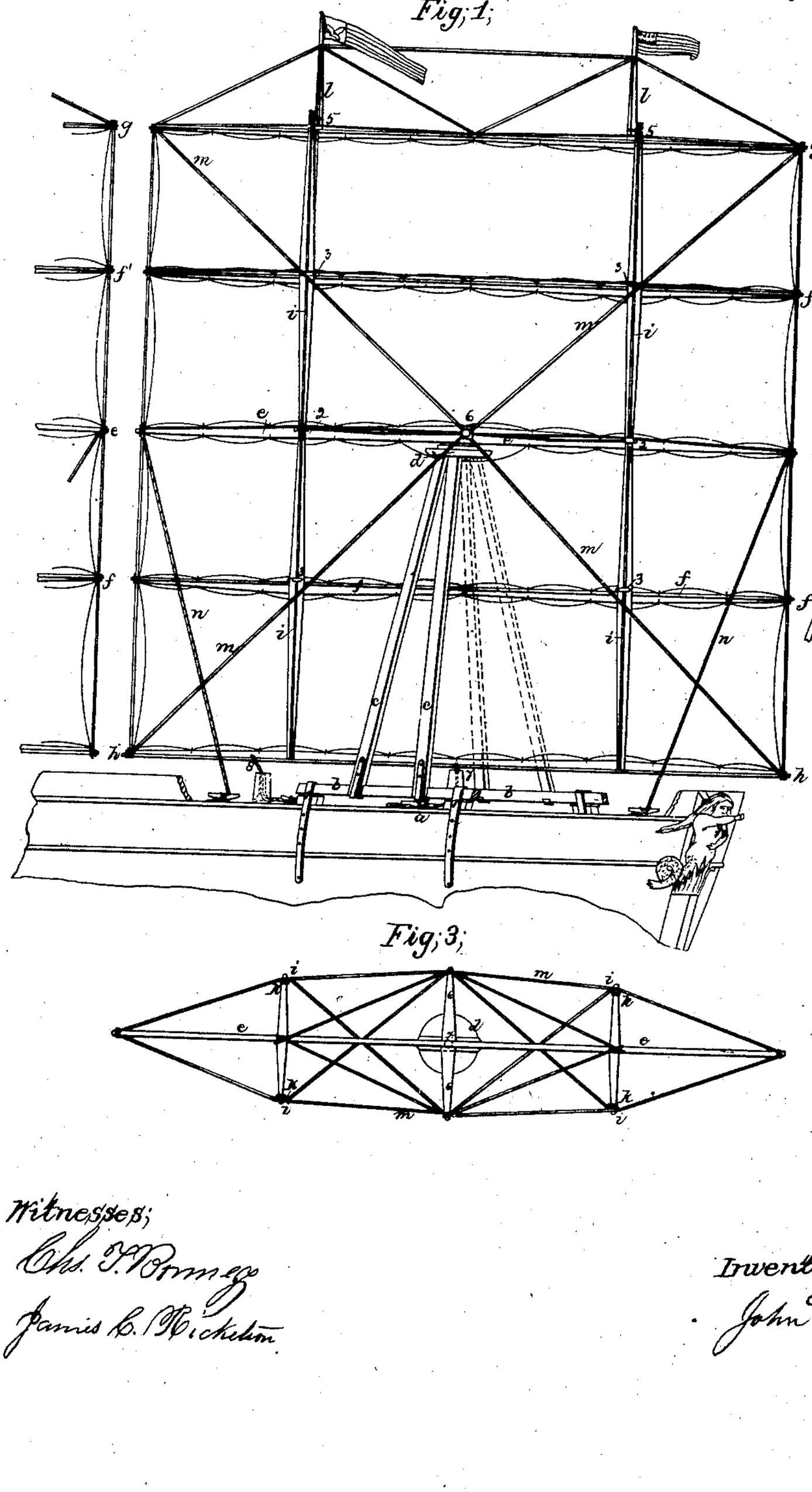
J. Lewis.

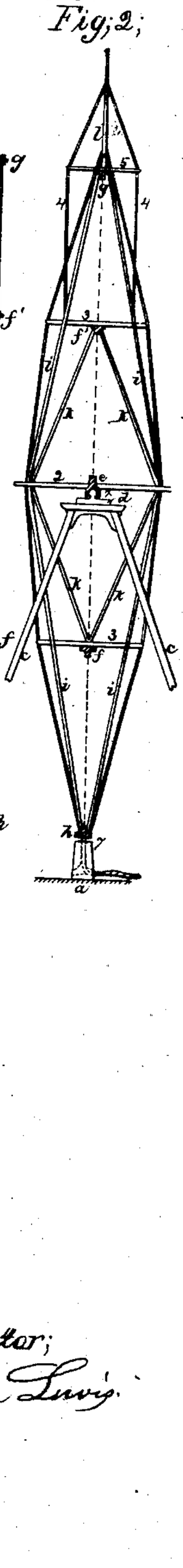
Sails & Rigging

No. 21,609. Patented Sept. 28, 1858.

Fig; 1;



Fig; 2;



Fig; 3;

Witnesses;

Chas. F. Perry

James L. Nicholson

Inventor;

John Lewis.

UNITED STATES PATENT OFFICE.

JNO. LEWIS, OF ELIZABETH, NEW JERSEY.

BALANCE-SAIL RIG FOR SHIPS.

Specification of Letters Patent No. 21,609, dated September 28, 1858.

To all whom it may concern:

Be it known that I, JOHN LEWIS, of Elizabeth, in the county of Essex and State of New Jersey, have invented, made, and applied to use certain new and useful Improvements in Rigging and Sparring Vessels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is an elevation of my improved sail and the parts carrying the same, as seen from the starboard bow; Fig. 2, is a vertical cross section through the center of the yards and parts carrying and connecting said yards. Fig. 3, is a plan of the center yard.

Similar letters designate the same parts in all the figures.

The said invention relates to a peculiar mode of constructing and working a set of yards or spars connected by framework so as to move on a center or pivot, the said frame being balanced on said pivot so as to turn easily thereon, and also receiving sails so set as to present nearly the same extent of surface on each side of said center, and thus be balanced in their action.

a, is the deck of the vessel, a portion of the bulwarks of which is shown as removed in Fig. 1, to represent the other parts; *b*, is a spring beam attached at 1, 1, to the vessel and lying near the plank-shear, one on each side of the vessel's deck. On these spring beams a pyramidal framework *c*, *c*, is formed that rises to the required height, and terminates with a cap or round top *d*, to which the said framework *c*, *c*, is securely attached. On the round top *d*, a ball and socket joint or pivot *x*, connects the same securely to the main yard *e*, and allows said yard and the parts connected thereto to move freely into the required position. The yard *e*, is connected to yards *f'* and *g* above, and to yards *f* and *h*, below, by means of braces *i*, *i*, and *k*, *k*, extending from outriggers 2, 2, and 3, 3 as seen in Fig. 2, and the said braces are placed about equidistant between the middle and ends of the said yards, so as to permanently connect the same and form a large framing to receive sails, the lower part of said framing moving between the pyramidal frames *c;* and the sails themselves are set between the yards and effectually protected from wear, because they are merely attached at the top and bottom to the yards, and do not come in contact with any portion of the framing or spars connecting said yard.

The sails are to be set by means of the usual halyards and lacings, and in order to set sails above the yard *g*, I make use of topmasts *l* with stays passing to the ends of the yard *g* and braces 4, crosswise, passing through outriggers 5, 5; and to prevent any motion endwise of the yards I make use of double diagonal braces or tie rods *m*, *m*, attached at their ends to the yards *g*, and *h*, and at the middle connected to the outrigger *b*, on the yard *e*. The yards are thus firmly attached together, and braced in all directions, and can be turned on the center *x*, into any desired position; and in order to govern the motion of this framing carrying suitable sails, I make use of a rope or chain 7, attached to the center of the yard *h*, passing to a ring, bolt, or winch, connected to the deck, perpendicularly below the center *x*, so as to confine the said frame, and cause it only to move as a perpendicular plane around said points as centers.

The rear part of the yard *h*, is controlled by a suitable rope or chain through a ring bolt, or to a winch barrel, and by slackening the rope 8, the sail can be moved as a vertical plane into the desired position, but if the rope 8, be tightened and the rope 7, be slackened the sails will not only turn on the ball *x*, and rope 8, but in consequence come into an inclined position which is often preferable; guy ropes *n*, *n*, may be attached to the yard *e*, to aid in sustaining the same: All these ropes or chains may pass through suitable blocks or be taken to any winch or other heaving device.

A rope or stay should be used passing from the end of one yard to the next, in order to tie the same together. Two or more frames carrying sails can be made use of according to the length and character of the vessel, sufficient room being allowed for the sails to swing clear of each other.

I am well aware that square sails have been used, supported by yards and frames; I am also aware that a pyramidal frame has been used to support a sail; and I do not claim a spring beam in itself, but

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

1. The spring beam *b*, applied between the pyramidal frame or shears *c*, c, and the

sides of the vessel, and connected to both the frame and vessel in substantially the manner and for the purposes specified.

2. I claim constructing a frame to receive sails by the horizontal yards, combined with the double ranges of spars and braces substantially in the manner specified, whereby the said yards are permanently sustained at the desired distances apart, and a clear space is left from end to end of said yard for spreading the sails, without their coming in contact with the said spars and braces as described.

3. I also claim the sail frame constructed as aforesaid and combined with the pyramidal shears (*c*, *c*) by the joint *x* near the middle of said sail frame, whereby the aforesaid sail and frame are sustained and permitted to be turned in the manner and for the purposes specified.

In witness whereof I have hereunto set my signature this third day of June 1858.

JOHN LEWIS.

Witnesses:

CHS. T. BONNEY,

JAMES C. RICKETSON.