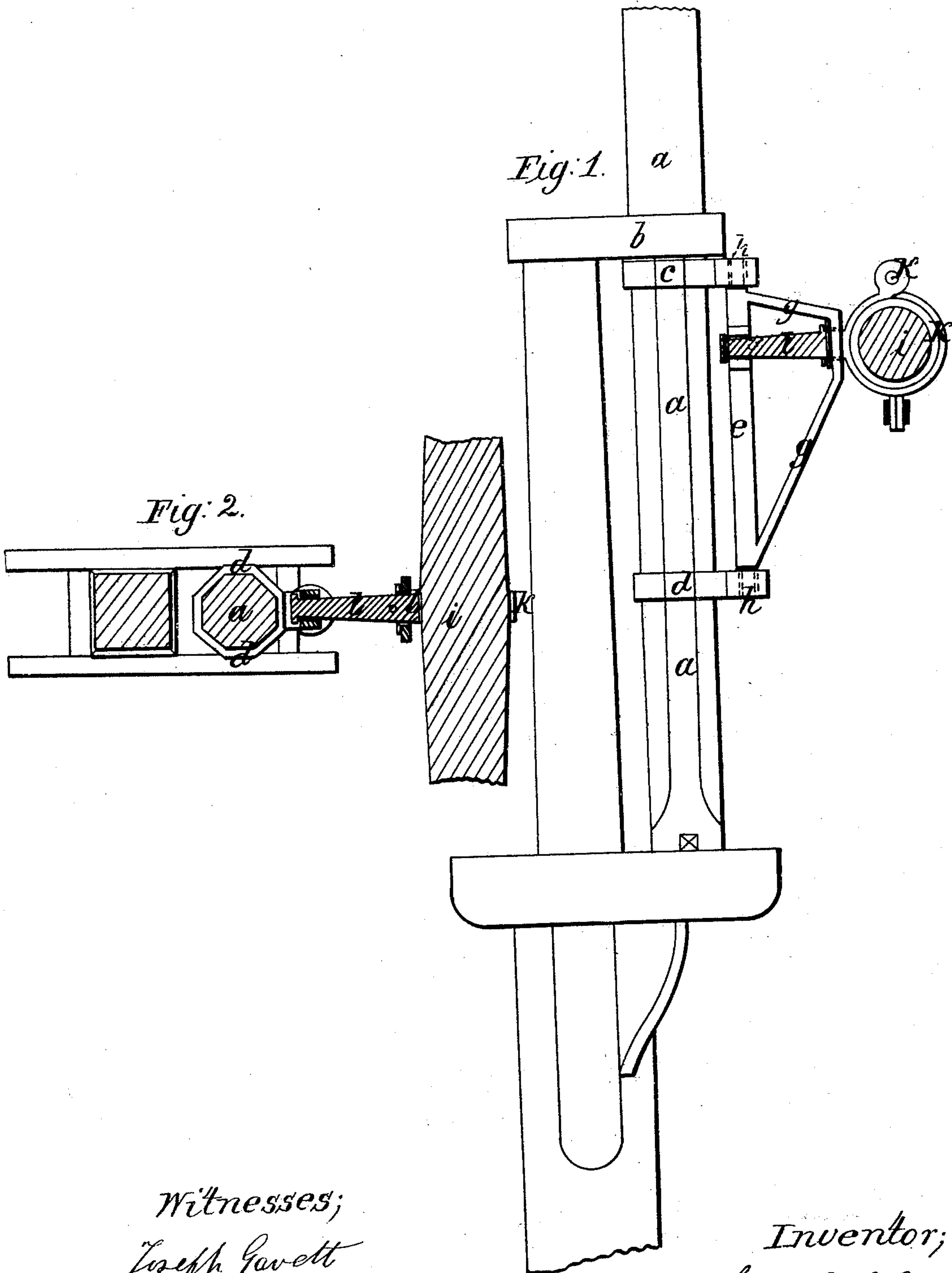


S. Hall.

Attaching Yards to Masts.

N^o 28,364.

Patented May 22, 1860.



Witnesses;
Joseph Garrett
A. H. Brown.

Inventor;
Sam^l Hall

UNITED STATES PATENT OFFICE.

SAMUEL HALL, OF BOSTON, MASSACHUSETTS.

ATTACHMENT OF YARDS TO TOPMASTS.

Specification of Letters Patent No. 28,364, dated May 22, 1860.

To all whom it may concern:

Be it known that I, SAMUEL HALL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Mode of Attaching Yards to Masts of Vessels, and that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plate of drawings represent my improvements.

Figure 1 is a side elevation of my improved attachment. Fig. 2 is a horizontal section taken in the plane of the line A, B, Fig. 1.

Various devices have heretofore been used for attaching extra top-sail yards to top-masts of vessels all of which have proved more or less objectionable practically. In cases, for instance where the yard is hung from the cap, the strain thus brought to bear upon it is dangerously great and moreover the movements of the yard when thus hung interfere with the top-mast rigging and also twist and wrinkle the sail as the upper yard turns upon a center that is in a different plane from the lower one. I am also aware that the extra-yard has been so hung and arranged as to swing from the top-mast as a center but in this case it was attached to rings that turned upon the mast and has proved unsuccessful in operation on account of the great chafing of the mast thereby and the friction of the rings upon their bearings which made it exceedingly difficult to swing the yard. By my im-

provements these objections are obviated, the extra top-sailyard being so hung and arranged as to allow of its necessary movements of bracing, "cock-billing," &c., taking place without wrinkling the sail, interfering with the top-mast rigging or chafing the top-mast and with but very little friction, so that it can be operated with the greatest ease.

a a in the drawings represent the top-mast of a vessel made of a polygonal shape below the cap *b* so as to hold and keep from slipping two similarly shaped bands *c, d* which tightly encircle the top-mast and form bearings for a crane *e, f, g*, which turns upon centers or pintles *h, h*.

i, i is the yard firmly held by a strap *k* attached to or forming a continuation of a short shaft *l* that turns or swivels on proper bearings formed in the crane *e, f, g*. Thus it will be seen that by sustaining the yard by means of the swinging crane, *e, f, g* and swiveling shaft *l*, it can swing with the greatest ease and but little friction in any desired direction so that "bracing," "cock-billing," &c., can be quickly performed and without being obstructed in its movements by the top-mast rigging.

Having thus described my improvements, what I claim as my invention and desire to have secured to me by Letters Patent is—

Attaching the yard to the top mast, by means of the swiveling shaft *l*, the axis of which passes through the yard and both the standard (*c*) and brace (*g*) of the swinging crane, in the position and manner substantially as described.

SAML. HALL.

Witnesses:

JOSEPH GAVETT,
A. W. BROWN.