(No Model.)

W. LYMAN.

Self Adjusting Ship Mast.

No. 241,037. Patented May 3, 1881.

fig. 1

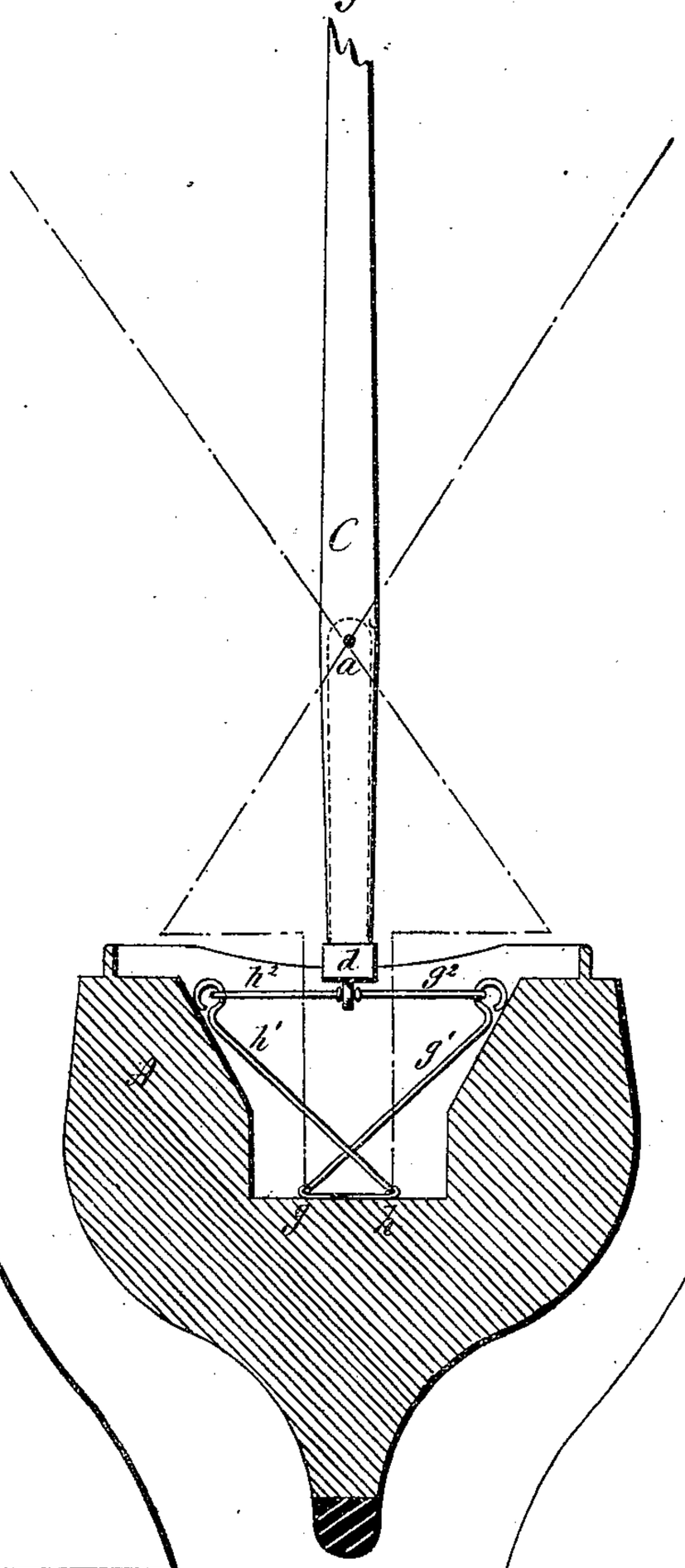


fig. 2

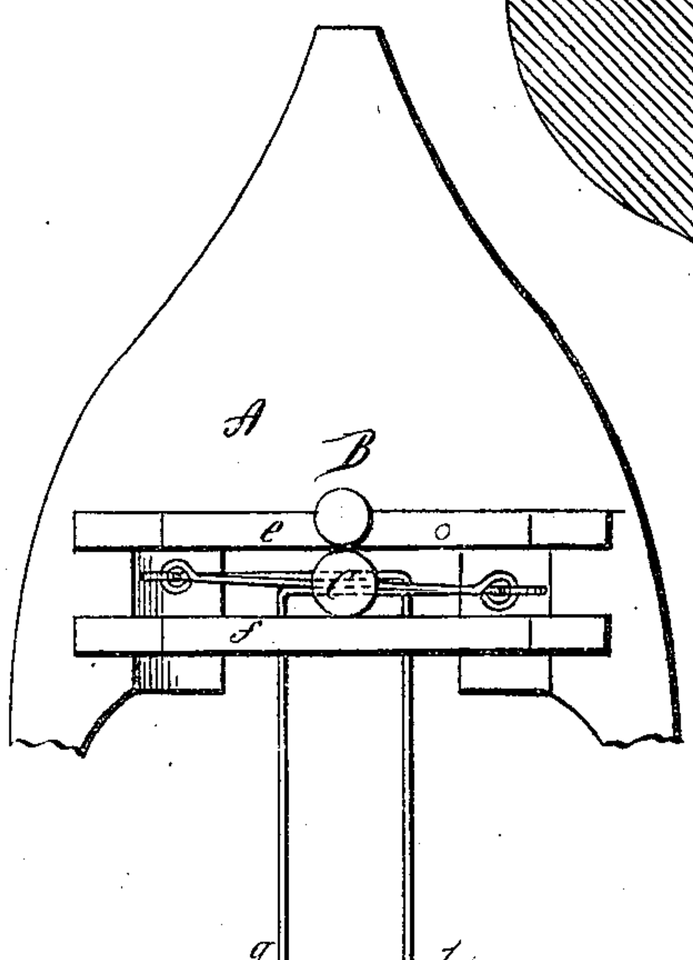
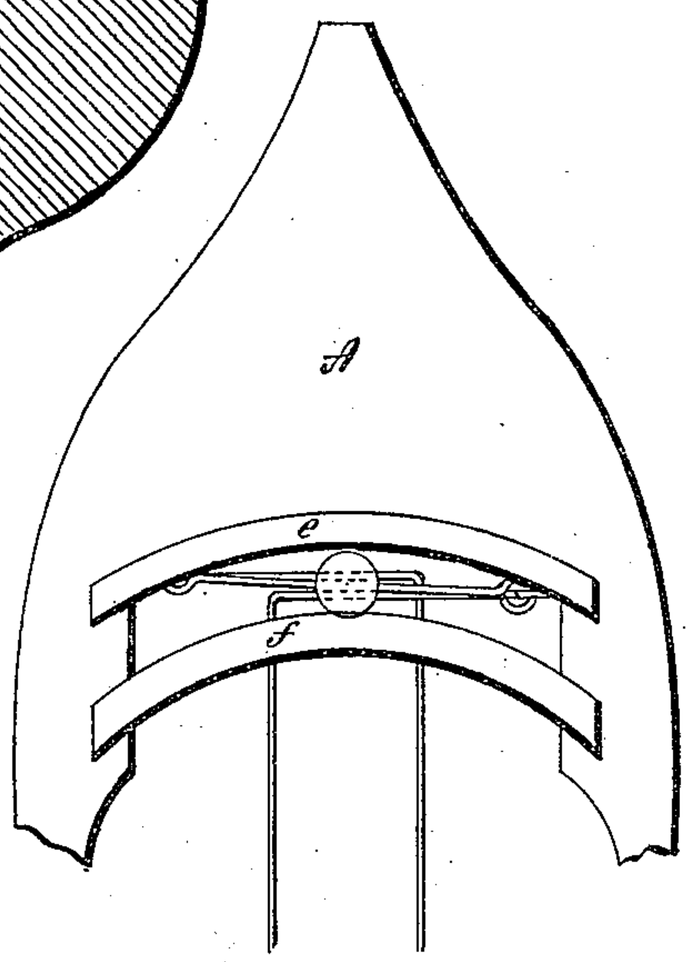


fig. 3



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM LYMAN, OF MIDDLEFIELD, CONNECTICUT.

SELF-ADJUSTING SHIP-MAST.

SPECIFICATION forming part of Letters Patent No. 241,037, dated May 3, 1881.

Application filed April 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, WM. LYMAN, of Middlefield, in the county of Middlesex and State of Connecticut, have invented a new Improvement in Sail-Boats; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a transverse section of the boat, illustrating the invention; Fig. 2, a top view; Fig. 3, a modification.

This invention relates to an improvement in the attachment of masts of sail-boats.

As usually constructed, the masts are rigidly set, and so as, under all circumstances, to retain the same relative position to the boat. The result is, that the force of the wind upon the sails bears upon the mast, tipping it out of the vertical position, and also correspondingly tips the boat.

To guard against capsizing of the boat and yet permit all the possible force upon the sail, center-boards are used, occupying an inconvenient portion of the boat, and frequently failing of the desired result.

The object of this invention is to prevent the unpleasant tipping of the boat; and it consists in the construction as hereinafter described, and particularly recited in the claims.

A represents the boat, which may be of any of the usual forms.

Immediately in front or in rear of the mast is a post, B, or other device, to which the mast C is pivoted. This pivoting-point *a* is best made a little above the deck. The foot *d* of the mast is arranged between transverse guides *e f*, (see Fig. 2,) but so as to be free to slide therein.

Along the bottom of the boat two rods, *g h*, are arranged, and near the guide *f* the ends of said rods are turned at right angles to form arms *g' h'*, the opposite end of the rods being rigidly held. Hence if the arms *g' h'* be turned they will correspondingly twist their respective rods *g* or *h*. These rods are of steel or other material, which, after this twisting, will return to their original condition, and this serves as springs, to bring the said arms *g' h'* back to their position. From the foot of the mast a cord, chain, or similar flexible connection, h^2, is made to the end of the arm *h'*, and a like connection, g^2, from the other side to the arm *g'*.

The springs are of a strength to hold the foot of the mast at the central position against a light tipping strain upon the mast, or such a strain as would not tip the boat to any considerable extent, but so as to yield to a greater strain. Hence, when the force of the wind becomes greater, either directly or from a change of the position of the sail, tending to a greater tipping of the mast, the spring against which the strain comes yields and permits the tipping of the mast, without a corresponding tipping of the boat, to the extreme positions, either to the right or left, as seen in broken lines, Fig. 1. The two springs take a bearing on their respective sides, or nearly so, when the mast is upright, as seen in Fig. 1. Hence, while one spring is strained or drawn inward when the mast is tipped in one direction, the other spring rests, so that the springs do not act as counterbalancing each other, which, if they did, would leave the mast freer than desirable. Other kinds of springs may be applied with the same result.

The foot of the mast may be fixed in a rigid socket below and the springs applied above the pivot. This invention, therefore, is not to be understood as limiting the particular arrangement of springs or pivoting of the mast.

Instead of the guides *e f* being transversely across the boat, they may be in segment shape, as seen in Fig. 3. In this case, if the mast be tipped, its foot is carried toward the stern, and the top correspondingly forward. This movement is advantageous in preventing the boom from striking the water, as this fore-and-aft tipping of the mast will tend to raise the boom.

If the pivot be at the foot of the mast, the curve of the guides *e f* must be in opposite direction.

I do not broadly claim pivoting the mast so as to vibrate transversely, and provided with springs to retain it in the vertical position and permit the mast to yield to the pressure of the wind upon the sail, as such, I am aware, is not new; but

What I do claim is—

1. The combination, in a sail-boat, of the mast pivoted so as to be tipped transversely,

with horizontal springs *g h*, and arms extending therefrom respectively, *g' h'*, and flexible connection g^2 h^2 between the mast and said arms, substantially as described.

2. The herein-described improvement in sail-boats and like craft, consisting in the mast pivoted so as to be tipped transversely, combined with springs tending to hold the mast in its vertical position, but yielding under the force of the wind to tip the mast, and transverse curved guides, substantially as and for the purpose specified.

WILLIAM LYMAN.

Witnesses:

LYMAN A. MILLS,

WM. P. RICHARDSON.