

(No Model.)

2 Sheets—Sheet 1.

J. COOK.
SAIL.

No. 425,122.

Patented Apr. 8, 1890.

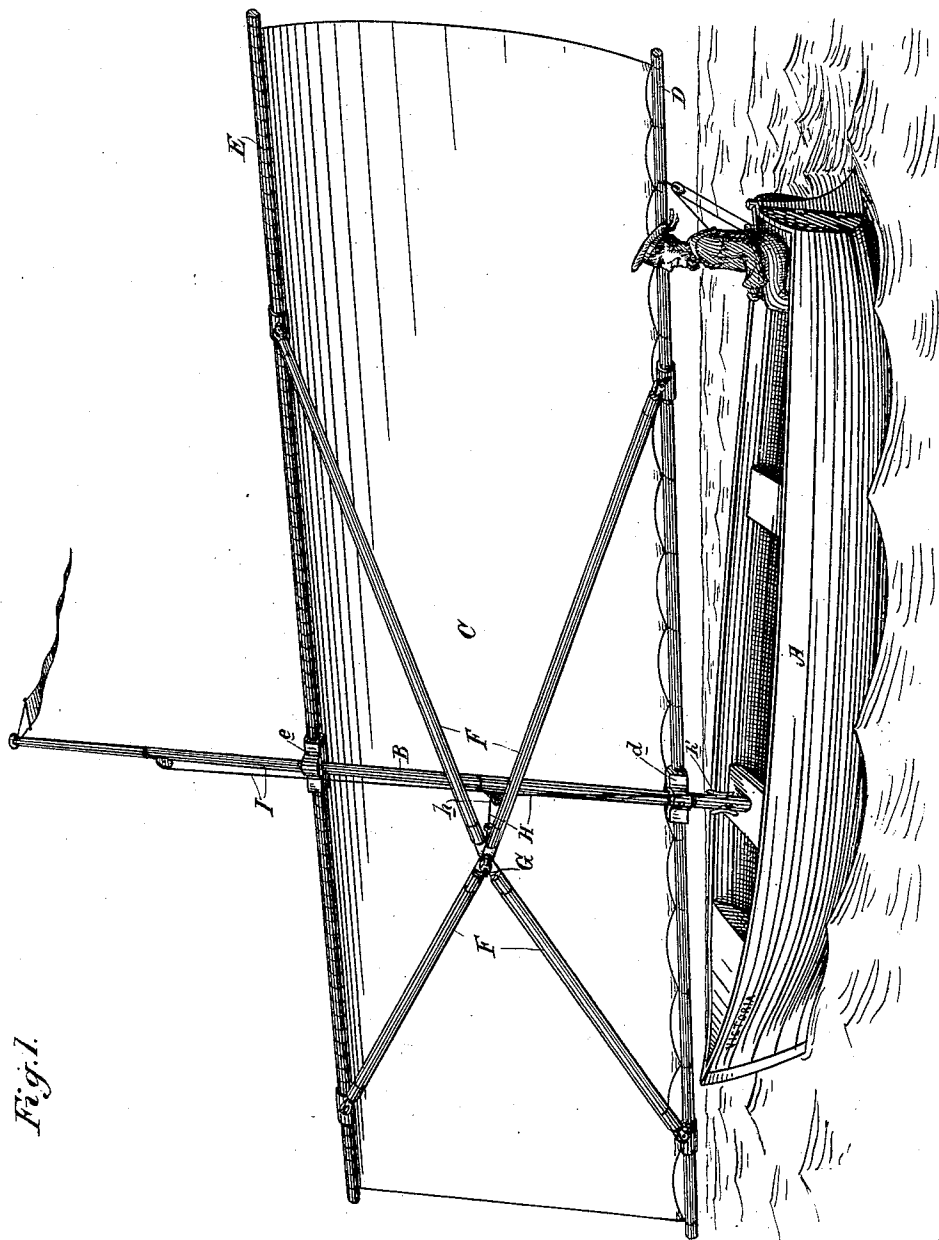


Fig. 1.

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attor

(No Model.)

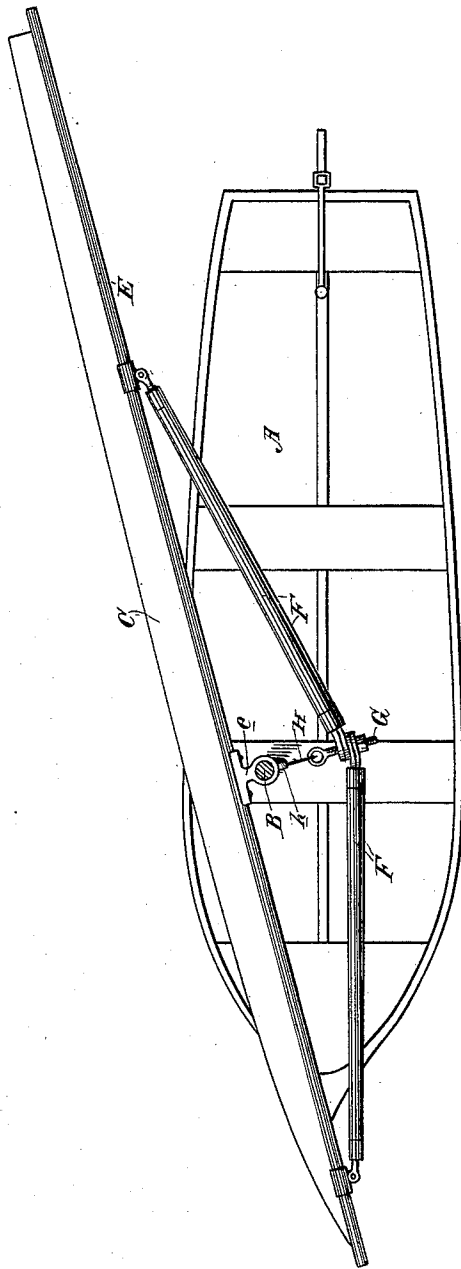
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2 Sheets—Sheet 2.

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Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN COOK, OF SAN FRANCISCO, CALIFORNIA.

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SPECIFICATION forming part of Letters Patent No. 425,122, dated April 8, 1890.

Application filed October 28, 1889. Serial No. 328,464. (No model.)

To all whom it may concern:

Be it known that I, JOHN COOK, a citizen of Great Britain, residing at the city and county of San Francisco, and State of California, have invented an Improvement in Sails; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the class of sails for boats; and it consists in the novel construction and arrangement of the sail herein-after fully described, and specifically pointed out in the claims.

The essential object of my invention is to provide a sail of increased capacity, and at the same time so constructed and arranged as to place the center of wind force at as low a point as possible, whereby the greatest stability is given to the boat and the danger due to a sail of great dimensions entirely avoided. Minor objects will appear in the course of the following description.

Referring to the accompanying drawings, Figure 1 is a perspective view of my sail. Fig. 2 is a plan of same.

A is a boat, and B is its mast.

C is my sail. This sail has the general configuration of an elongated parallelogram, differing therefrom only in a slight convergence of the sides of the sail forwardly, so that it is a little narrower at its forward end.

The sail is made long enough to considerably overreach the forward part of the boat and to extend aft as far as ordinary sails, so that, notwithstanding the comparative narrowness of the sail, its length gives it a superficial area greater than that of ordinary sails.

The lower edge or foot of the sail is secured to a boom or spar D, and its upper edge or head is secured to a similar boom or spar E. The lower boom or spar is firmly secured to a bracket *d*, which is pivoted upon the mast, but is fixed in a position up and down, as it does not move other than axially upon said mast. The upper boom or spar is secured firmly to a bracket *e*, which is pivoted upon the mast, and also is adapted to slide up and down thereon. In order to properly separate and hold apart the two booms or spars, so as to stretch the sail and hold it stiff, I have the braces or stretcher-bars F. There may be several of these, though I have here shown four; and the outer end of each is secured to the

booms by pivotal connection. Thence these bars converge to about the central plane of the width of the sail opposite the mast, and all the ends are secured upon an eyebolt G, from which a line H extends to a block *h* on the mast and down to a cleat *h'* at the base of the mast. By pulling upon this line the braces or stretcher-bars are pulled in toward the mast, thereby straightening them and raising the upper boom or spar, and then by fastening the line to the cleat the braces are held in this position, whereby the sail is very tightly stretched, and, notwithstanding its size, it has no belly.

To lower the sail either partially or wholly, the line is released, so as to allow the stretcher-bars to bend outwardly, thereby pulling down slightly or wholly the upper boom or spar. The attachment of the forward pair of braces or stretcher-bars to the booms or spars is near their forward ends, whereby the two are held together very rigidly, so that the forward edge of the sail presents under all circumstances a perfectly-straight edge to cut the wind.

The attachment of the rear pair of stretcher-bars to the booms or spars is about half-way between the mast and their rear ends, so that under a force of wind the two booms or spars are thrown slightly out of line, and thereby catch the wind to better advantage.

The narrowing or forwardly-tapering shape of the sail allows the wind, when catching it ahead, to better clear itself toward the rear.

If desired, I may assist the raising of the sail by means of a line I, passing from the upper boom or spar of the sail or its connections over a suitable block on the mast and down to a cleat at the base of the mast.

It will be seen that by this construction of sail, making it as narrow as possible and of a great length, I am enabled to secure the main object of my invention—namely, of lowering the wind force as much as possible, and thereby giving greater stability to the boat. At the same time the sail has a greatly-increased capacity, and the same sail serves both as the mainsail and jib. Its pivotal connection with the mast enables it to be turned at right angles in front of the mast when the boat is sailing before the wind, or at any angle for the purpose of beating or tacking.

This sail belongs to the type known as "square," and, though I have herein described it as oblong, it need not necessarily be this particular shape, the main object being to so shape it as to bring the center of wind-pressure as low as possible.

To make such a sail useful for sailing to windward it is necessary to keep it flat and not allow it to twist into all shapes and forms. This result is accomplished by the stretcher-bars or braces, which, though here shown as four in number, are not necessarily confined to that number, as a greater or less number may be used, provided they accomplish the result of keeping the spars apart, and thus tightening the sail. This method of bracing keeps the front part of the sail, where the wind enters, tight and straight and always in line with the mast, exactly the same as if the mast had been placed right in front.

The sail is kept away from the mast by means of the brackets which secure the spars to the mast, and this allows the sail to bulge a little, at the same time giving the wind a straight and free passage.

I thus obtain by this invention a large sail-surface with the lowest possible wind-leverage and a balanced sail easily handled, which will sail straight without much resistance from the rudder. The sail is set tight and has no belly and can sail closer to windward than ordinary sails.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with upper and lower booms and stretcher-bars placed between said booms, of an elongated or oblong sail secured along its longer sides to the booms and made very narrow in proportion to its length, said sail being carried low on the mast, whereby its center of wind force is lowered to give increased stability to the boat.

2. The upper and lower pivoted and adjustable booms or spars carried by the mast, and the oblong narrow sail secured between them and carried low on the mast, in combination with adjustable stretcher-bars or braces connected with the booms or spars, whereby they are separated and the sail tightened, substantially as described.

3. The sail and the upper and lower booms or spars to which the head and foot of the sail are attached, said booms or spars being pivoted upon the mast and the upper one vertically movable thereon, in combination

with stretcher-bars or braces connected with the booms or spars, and connections whereby said bars or braces are operated to separate the booms or spars, and thereby stretch the sail, substantially as described.

4. The sail and the upper and lower booms or spars to which the head and foot of the sail are secured, said booms or spars being pivoted upon the mast and the upper one vertically movable thereon, in combination with the converging braces or stretcher-bars, the outer ends of which are pivoted to the booms or spars and their inner or converging ends fitted upon a common pin or bolt, and the line connected with said pin or bolt, whereby the braces or bars are operated simultaneously to separate the booms or spars and stretch the sail, substantially as described.

5. The sail and its pivoted booms or spars pivoted on the mast and the upper one vertically movable thereon, in combination with the stretcher-bars or braces pivoted to the booms or spars and passing on the side of the mast opposite to the side on which the booms or spars lie, the bolt or pin to which the inner ends of the stretcher-bars or braces are connected, and the line for operating the bars or braces to stretch the sail, substantially as described.

6. The sail, the lower boom or spar to which its foot is attached, said boom or spar being pivoted upon the mast, the upper boom or spar to which the head of the sail is attached, said boom or spar being pivoted to and vertically movable on the mast, and the brackets by which the booms or spars are secured to and held away from the mast, in combination with the braces or stretcher-bars, the outer ends of the forward ones of which are attached to the booms or spars near their forward ends, whereby the front of the sail is held straight and the ends of the rear ones of which are attached to the booms or spars at a point behind the mast, the common pin or bolt upon which the inner ends of the braces or bars are pivoted, and the line connected with said pin or bolt for operating the bars and stretching the sail, substantially as described.

In witness whereof I have hereunto set my hand.

JOHN COOK.

Witnesses:

S. H. NOURSE,
H. C. LEE.