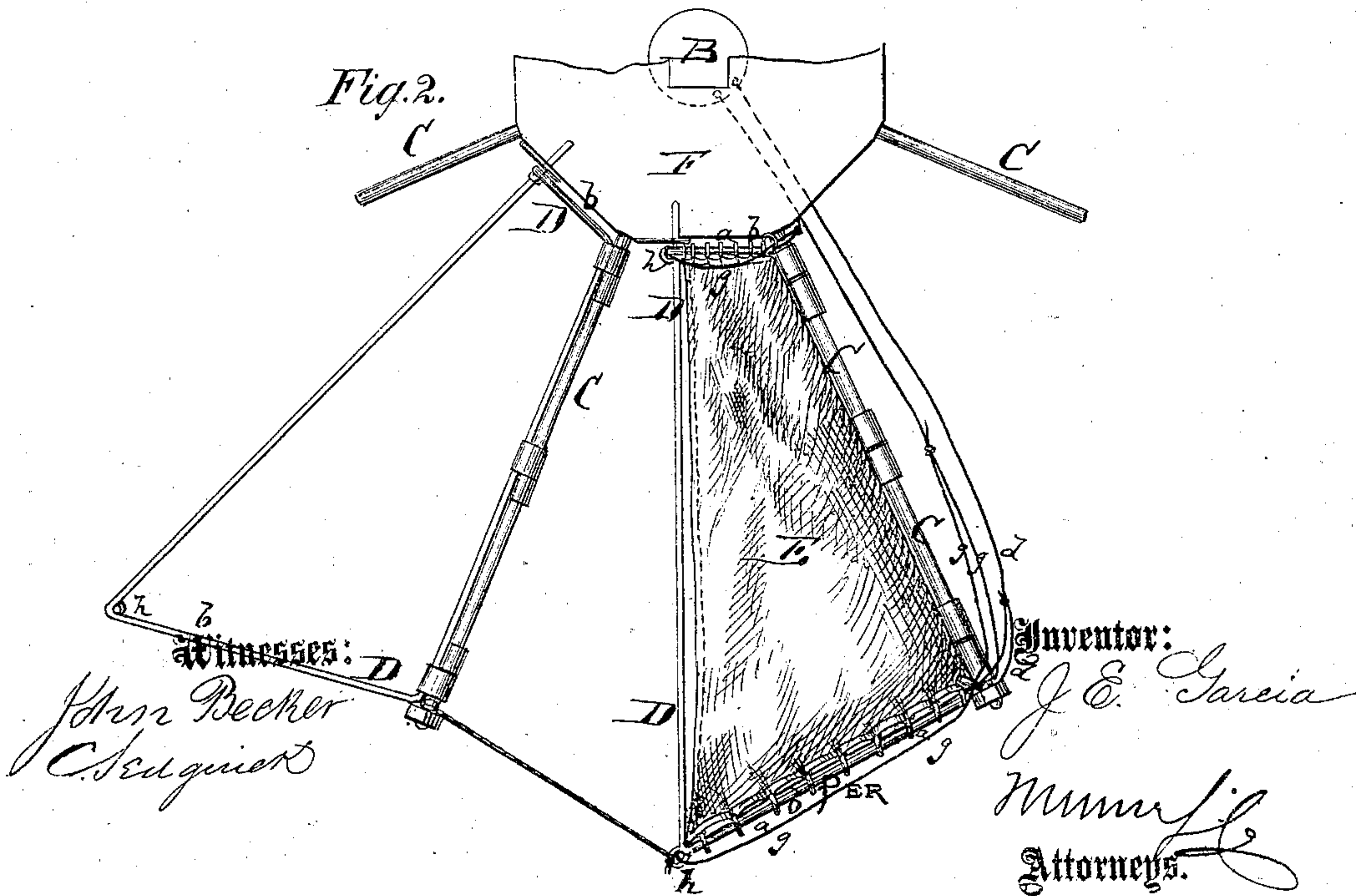
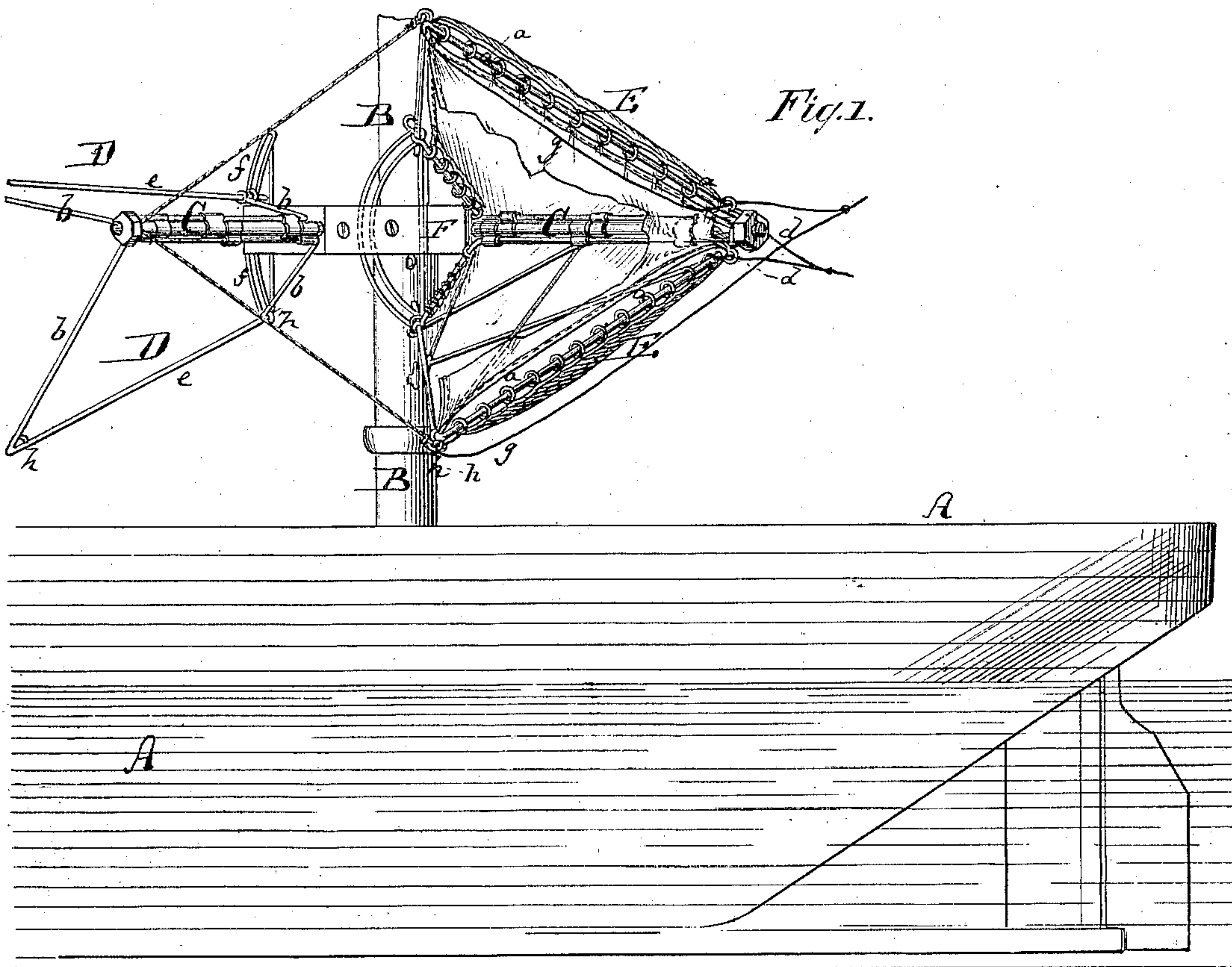


J. E. GARCIA.
Rotary Sails.

No. 135,641.

Patented Feb. 11, 1873.



UNITED STATES PATENT OFFICE.

JULIO E. GARCIA, OF NEW YORK, N. Y.

IMPROVEMENT IN ROTARY SAILS.

Specification forming part of Letters Patent No. 135,641, dated February 11, 1873.

To all whom it may concern:

Be it known that I, JULIO E. GARCIA, of the city, county, and State of New York, have invented a new and useful Improvement in Rotary Sails, of which the following is a specification:

Figure 1 is a side view of my improved rotary sail, and Fig. 2 a top view of the same.

Similar letters of reference indicate corresponding parts.

This invention has for its object to supply vessels of all kinds with a species of sails by means of which the power of the wind may be transmitted to a propeller, paddle-wheel, or screw of suitable kind. The invention consists in an improvement in the mode of applying sails to vessels, as hereinafter fully described and subsequently pointed out in the claim.

In the accompanying drawing, the letter A represents a portion of the hull of a vessel. B is the vertical shaft or mast, secured thereto in such manner that it can freely revolve in the hull. From the shaft project above deck a series of radial horizontal or somewhat inclined arms, C C, equidistant from each other, and all of substantially the same length. To each of these radial arms are hinged two frames, D D, of wire or light metallic structure, which can be swung apart or folded together. E E are pieces of canvas which are stretched over the frames D to form V-shaped sails on each arm C. The sails are, by means of rings *a a*, drawn over and held to the end pieces *b b* of the frames D, and can be furled against the arms C, whenever desired, by contracting all the rings *a a* of each sail against and toward the arm C to which it pertains. For this purpose of furling, ropes or strings *d d* connect with the ends of each sail. The longitudinal bars *e e* of the frames D play in grooved slotted segments *f* that are attached to the shaft B or to a disk, F, mounted thereon, as shown in Figs. 1 and 2. In these slotted guides the frames D are allowed free play

in such manner that the two sails pertaining to each arm C will, when the wind strikes them on the inner or hollow side of the V, be spread apart to offer a larger surface to the wind; while, if the wind strikes the opposite side of said sails, it will cause them to collapse, as the frame D will fold together. Thus it will be found that, from whatever direction the wind may strike the sails, it will always rotate the shaft B, and, consequently, impart power to the screw, so that even when going dead against the wind the opposing influence of the same will at least be weakened or reduced to a minimum.

In the drawing, I have shown but one arm, C, provided with a set of sails; but it is evident from the foregoing that each of the eight, more or less, arms that project from the shaft B is to be provided with a pair of frames, D, and sails E. The outer ends of the two frames D pertaining to each arm C may be connected by a triangular sail or not, as may be desired; which triangular sail, if used, would necessarily connect with the rings *a* at the outer ends of the two sails E, which it joins. The disk F, when used, will also serve to hold the inner ends of the arms C, and may be made of metal or of any other suitable material. Each sail is, as above mentioned, to be connected with a string, *d*, whereby it can be furled. It is also to be connected with other strings *g* passing through rings or loops *h* at the ends of its frame D, whereby it can be stretched over said frame when required for use.

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

The frames D D, provided with longitudinal bars *e e*, movable in slots of segments *f*, as and for the purpose described.

JULIO E. GARCIA.

Witnesses:

A. V. BRIESEN,
T. B. MOSHER.