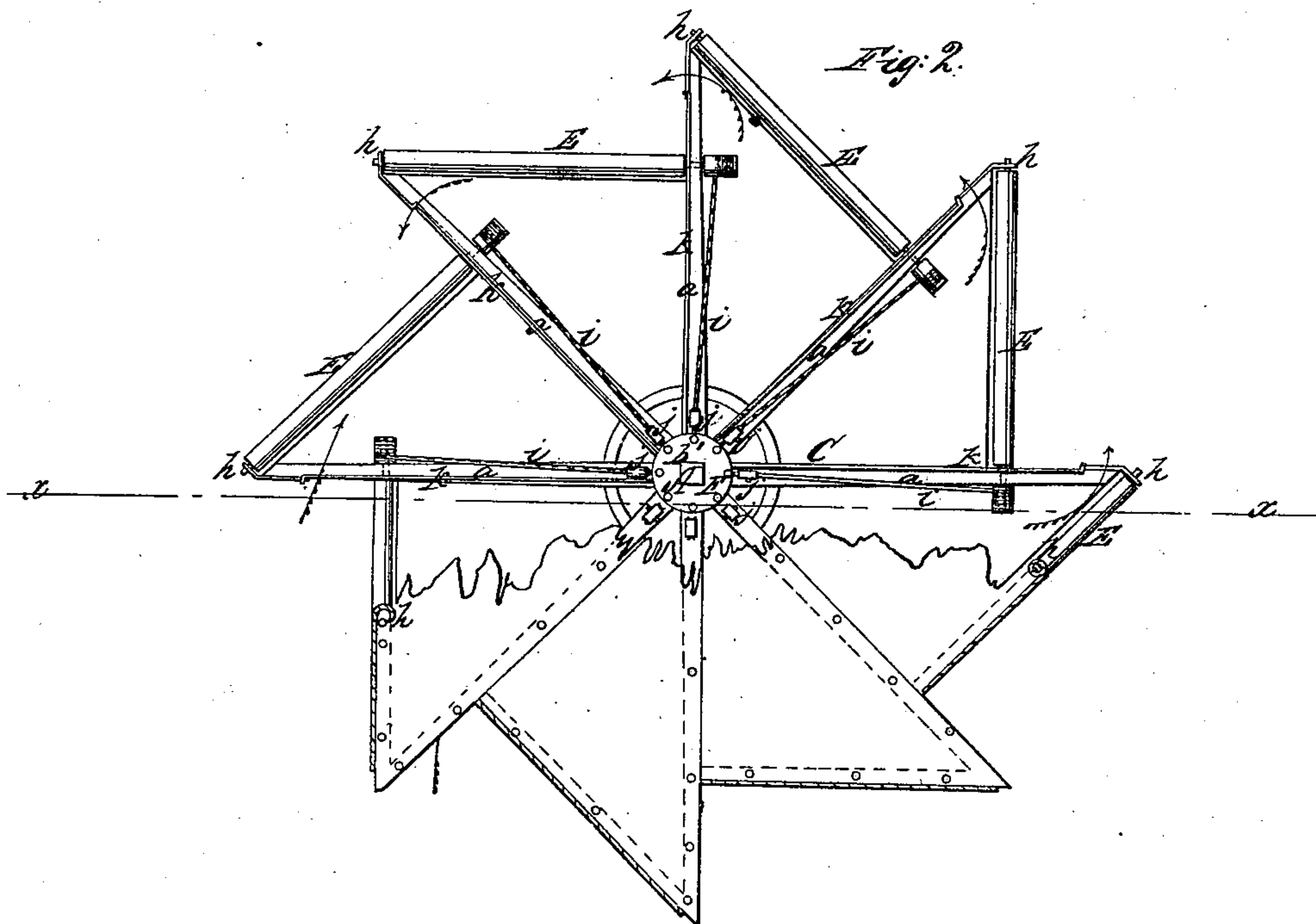
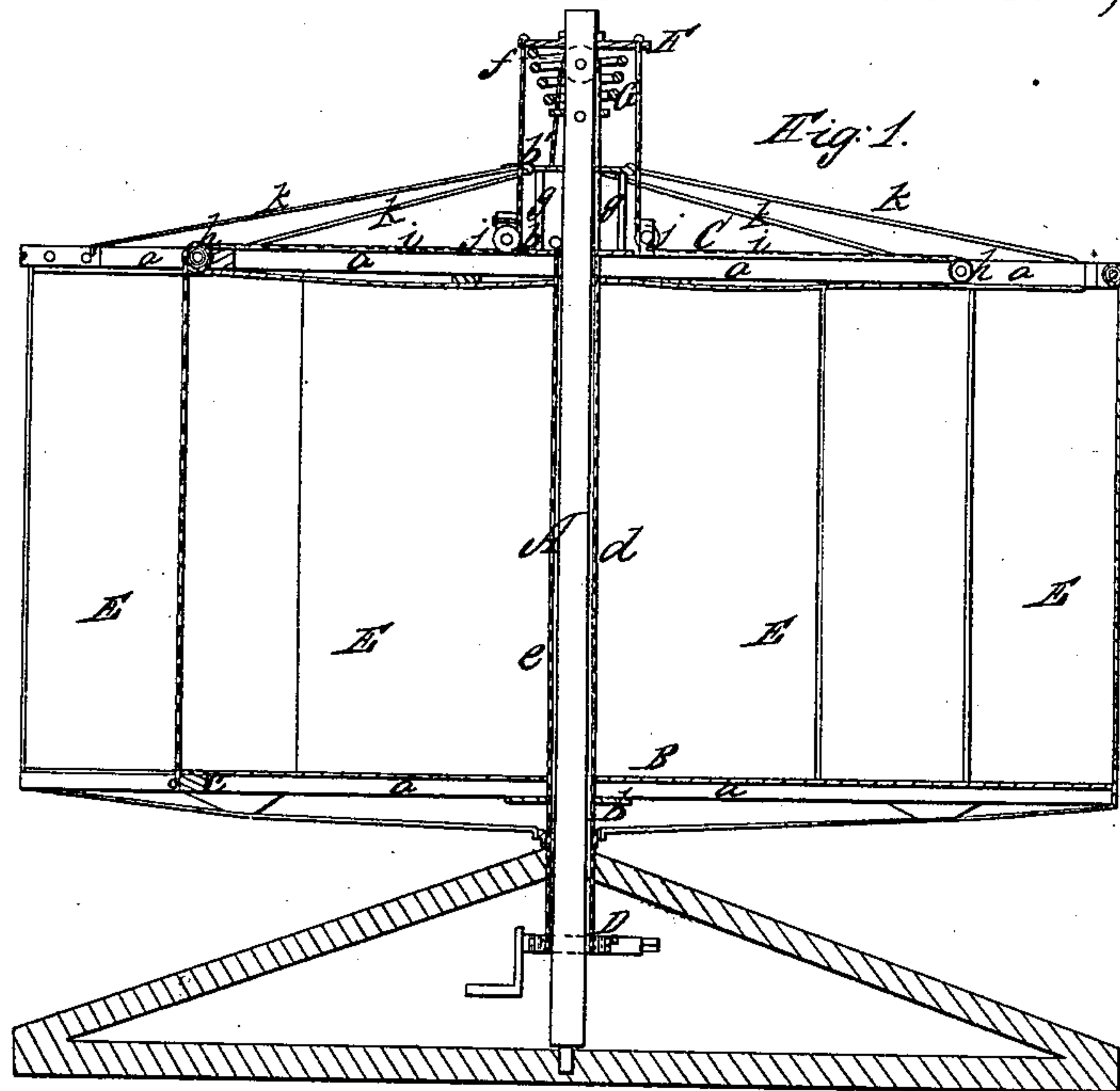


G. W. Shaw,

Wind Wheel.

N^o 19,383.

Patented Feb. 16, 1858.



UNITED STATES PATENT OFFICE.

GEORGE W. SHAW, OF THOMPSON, CONNECTICUT.

IMPROVED METHOD OF FURLING THE SAILS OF WIND-WHEELS.

Specification forming part of Letters Patent No. 19,383, dated February 16, 1858.

To all whom it may concern:

Be it known that I, GEORGE W. SHAW, of Thompson, in the county of Windham and State of Connecticut, have invented a new and Improved Wind-Wheel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical section of my improvement, *xx*, Fig. 2, showing the plane of section. Fig. 2 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the two figures.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a vertical shaft, the lower end of which is stepped in a proper support, the shaft being retained in proper position by a suitable bearing at any point above the step.

On the shaft A two horizontal frames B C are placed. These frames may be formed of radial arms *a*, attached to hubs or bosses *b*, which are placed on the shaft. The arms *a* are covered with metal plates or other suitable material. To the outer parts of the arms *a* of the lower frame B bars *c* are attached. These bars are placed tangentially with a circle concentric with the shaft.

The lower frame B is attached permanently to the shaft A, but the upper frame C is allowed to slide up and down therein, the frame C being retained at any desired point by ropes or chains *d e*, which are attached to a D at the lower part of the shaft A. One of these ropes or chains *d* passes over a sheave *f* in the upper end of the shaft and is attached to a hub or boss *b'* on the shaft A, just above the hub or boss *b* of the upper frame C. The other rope or chain *e* passes upward from the winch D and is attached to the hub or boss *b*. The two hubs or bosses *b b'* are connected by rods *g*. The two ropes or chains *d e* are placed or wound upon the winch in reverse directions, so that one is wound up while the other is unwound.

To the outer parts of the arms *a* of the upper frame C rollers *h* are attached. These rollers are placed in the same position as the bars *c* of the lower frame B.

E represents sails formed of canvas or proper fabric. The lower ends of these sails are attached to the bars *c* of the lower frame B and the upper ends are attached to the rollers *h*. At one end of each roller *h* a cord *i* is wound. The cords of the several rollers pass under sheaves *j* at the inner ends of the arms, and are attached to a circular plate F, placed on the upper end of the shaft, said plate F resting on a spiral spring G, attached to or placed on the shaft A.

The sails E, it will be seen, are placed angularly with each other and tangentially with a circle concentric with the shaft A. The position of the sails is clearly shown in Fig. 2.

The upper hub or boss *b'* of the frame C is braced by rods K.

The wind passes between the sails E and enters the wheel and impinges against the sails as it passes out between them. The wheel, therefore, is rotated by the reaction of the wind against the sails as it passes out of the wheel. This is clearly shown by the arrows in Fig. 2. It will be seen that the wind acts upon nearly all of the sails, and consequently a powerful wind-wheel is obtained. In wind-wheels provided with movable or swinging sails the sails at one side of the wheel only are acted upon at the same time, and consequently these wheels are comparatively of much less power. For the same reason my wheel also is more powerful than those on which the wind acts upon the outer sides of the sails, the sails being stationary. In the last-named wheels the fans on one side—the side that is presented to the wind—are only acted upon.

The power of the wheel may be increased or diminished by raising or lowering the upper frame C. This frame is adjusted by turning the winch D. By raising and lowering the frame C the area of the sails is increased and diminished, and by having the cords *i* attached to the plate F and wound around the ends of the rollers *h*, as shown, the sails will be wound upon the rollers *h h* as the frame C is depressed, and unwound from them as said frame is elevated, the spring G being sufficiently stiff to keep the cords *i* taut when the frame C is both raised and lowered and the sails consequently will be kept taut or properly stretched or strained at all times.

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

1. Attaching the sails E to the frames B C, substantially as herein shown, whereby the wind is allowed to pass between the sails and within the wheel and to act against the sails as it passes out from the wheel.

2. Attaching the upper ends of the sails E to rollers h, which have cords i passing around them at one end, the ends being connected to

a plate F, placed on the shaft A and resting upon the spring G, the above parts being used in connection with the movable frame C, whereby the area of the sails may be increased or diminished as desired, for the purpose herein set forth.

GEO. W. SHAW.

Witnesses

JOHN MCGREGOR,

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