

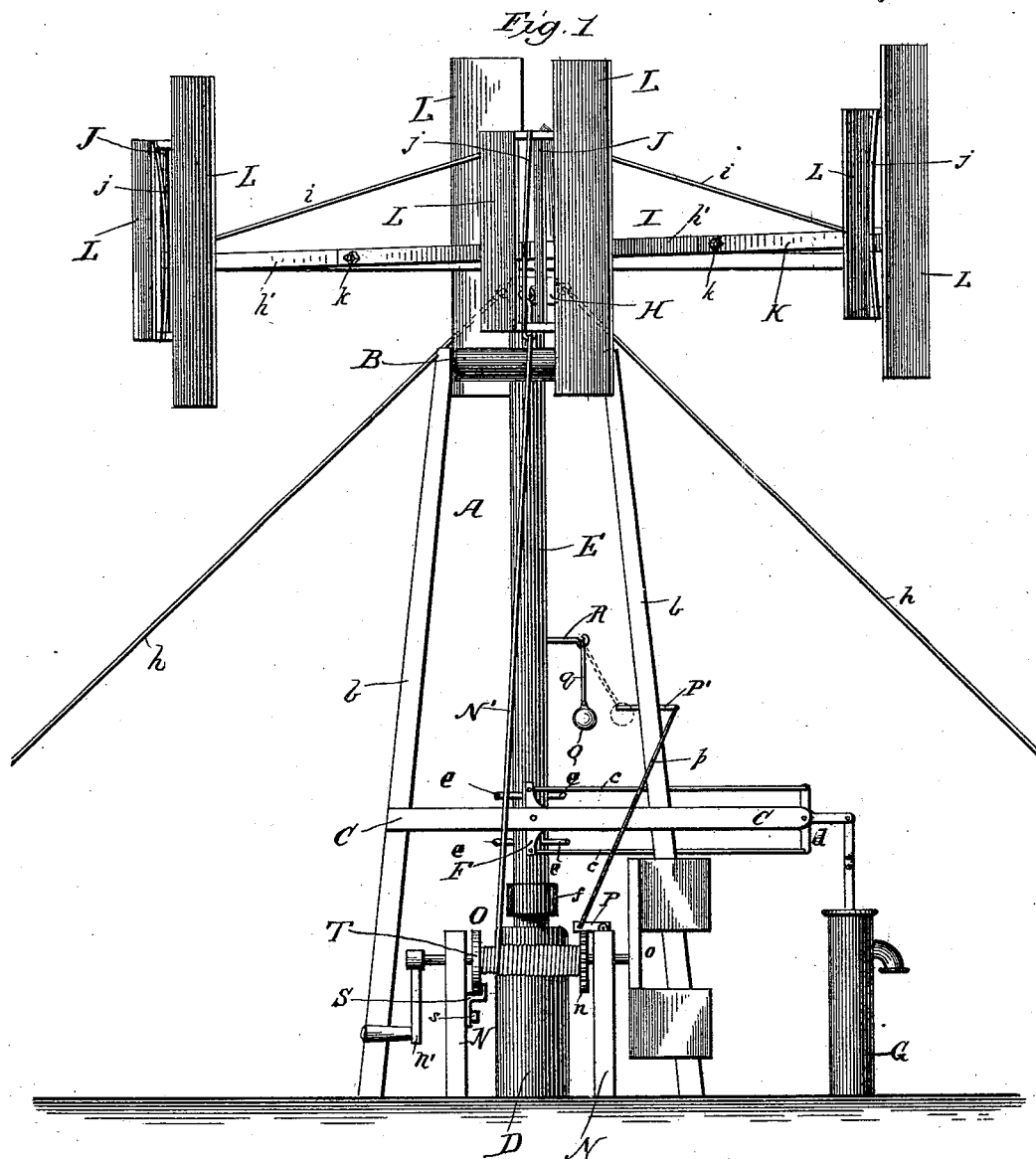
(No Model.)

3 Sheets—Sheet 1.

E. L. STONER.
WINDMILL.

No. 457,384.

Patented Aug. 11, 1891.



Witnesses

E. L. Stoner
J. M. Bloom

Inventor

Ethanan L. Stoner

By his Attorney

C. T. Belt

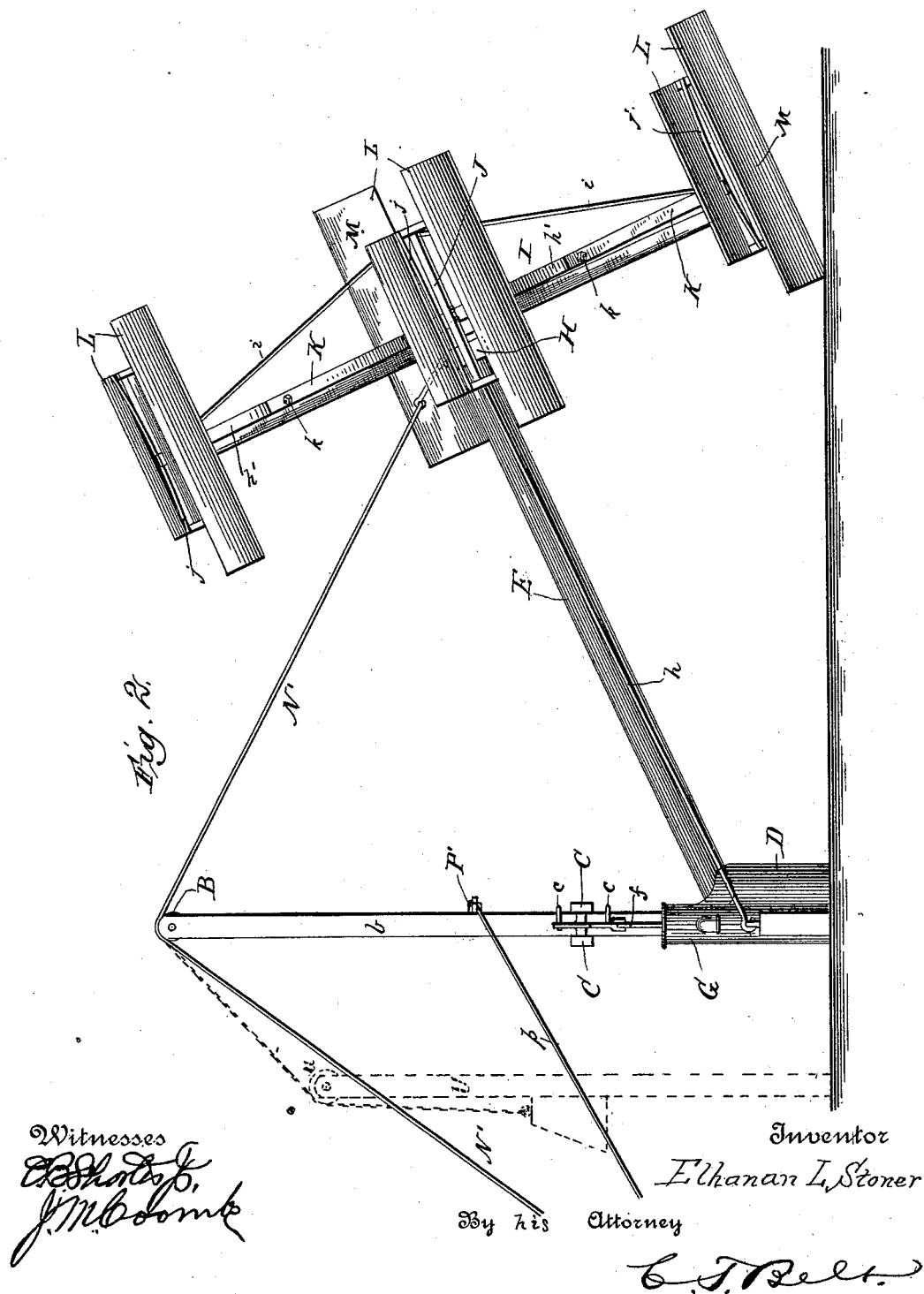
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3 Sheets—Sheet 3.

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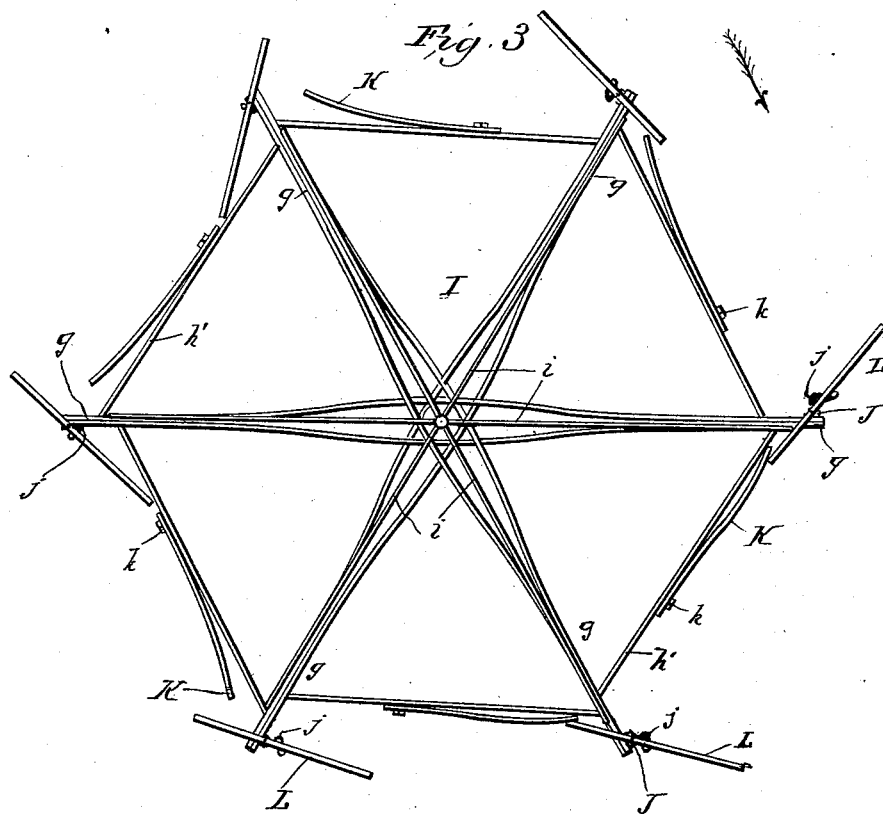


Fig. 3

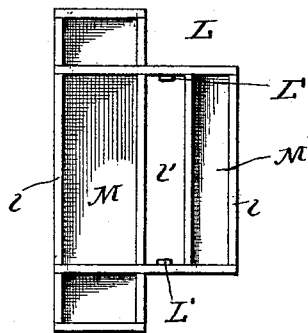


Fig. 4

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UNITED STATES PATENT OFFICE.

ELHANAN LEROY STONER, OF CENTREVIEW, MISSOURI.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 457,384, dated August 11, 1891.

Application filed July 14, 1890. Serial No. 358,612. (No model.)

To all whom it may concern:

Be it known that I, ELHANAN LEROY STONER, a citizen of the United States, residing at Centreview, in the county of Johnson and State of Missouri, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

This invention relates to windmills; and it consists in the novel construction and arrangement of parts, as will be hereinafter fully set forth.

The object of the invention is to provide a windmill the shaft and wheels of which are automatically lowered by the action of the wind on the said wheel, so as to prevent its destruction by high winds or storms.

A further object of the invention is to provide a sail or vane for wind-wheels which is held steadily against the wind by a spring, which enables the sail to catch the wind and reverse the sail much quicker than it would if depending wholly upon the wind to reverse it, thus giving the wheel additional power.

A still further object of the invention is to provide a shaft of cheap and durable construction, such shaft being provided with right-angle projections which operate a pump, and a right-angle arm having a weight attached thereto which operates a windlass.

In the drawings forming part of this application, Figure 1 is a side elevation of my improved windmill, showing the sails and wheel in position as when moved by the wind. Fig. 2 is a similar view showing the wheel and shaft dropped over and down out of working position. Fig. 3 is a top view of the wheel, showing the different positions of the sails when acted upon by the wind; and Fig. 4 is an enlarged view of one of the sails and its frame.

Like letters of reference denote like parts through the several figures of the drawings.

A denotes the tower, composed of two or more posts or uprights *b*, (but in the present case only two are employed,) having a roller B journaled in the top and a horizontal frame C located on either side of said uprights, which are inclined toward each other, as shown in Fig. 1 of the drawings. On one side of the tower A and close up to the horizontal frame C is firmly secured in the earth a shaft-support D, the end of which is hollowed out, so as to form a socket-bearing for the shaft

E. This support is cut away on the side farthest from the frame C, as clearly shown in Fig. 2 of the drawings. Between the two frames C and on a horizontal alignment with the center of the shaft E is pivoted a rocking head F, having two connecting-rods *c* secured to the ends of the said head at one end and their other end connected to an arm *d*, pivoted in the ends of the said frame C and connected with the piston of a pump G. The lower end of the shaft E is rounded, so as to conform with the hollowed-out bearing-surface of the support D, and is provided with right-angle projections *e*, which are made of a stiff iron rod driven straight through the said shaft and projecting through at either end far enough to strike the head F upon the revolution of the shaft E in either direction and cause the said head to rock and the pump G to be operated. The shaft E is provided with a pulley *f* just above the support D to accommodate a driving-belt, while the top of the said shaft is provided with a cross-head H, to which is connected one end of the braces *h*, and the other ends are secured in suitable posts driven in the earth, and they (the braces *h*) may be made of chain, iron rods, or rope, as desired.

Located above and resting on the cross-head H is the wheel I, constructed with the arms *g* and braces *h'* and *i*. Secured to these arms *g* are suitable pivot-posts J and upright springs *j*, and the braces *h'* are also provided with springs K, secured thereto by bolts or rivets *k*. The purpose of the upright springs is to give a stiffness and to support the canvas on the sail or vane L and keep it well to the wind when the wheel I is turning in one direction, while the springs K tend to force and keep the said sail or vane hard against the wind. This sail or vane is constructed with a frame *l*, covered with oiled canvas M, leaving an opening *l'*, the top and bottom of which is provided with brackets *L'*, having apertures therein for the accommodation of the ends of the pivot-posts J, as clearly shown by Figs. 3 and 4 of the drawings, wherein it will be observed that an arrow indicates the direction of the wind in Fig. 3; but should the wind be blowing the opposite direction the position of the sails or vanes would be just the reverse.

Journaled in the top ends of the posts N,

situated convenient to the tower A, is a windlass O, having the ratchet-wheel *n*, a suitable crank-handle *n'*, and a balance-wheel *o*. The windlass is provided with a rope N', secured thereto at one end, and at the other end is passed up over the roller B and attached to the cross-head H on the shaft E. On the top of one of these posts N is secured a pawl P, having a rod or connection *p* to a loosely-pivoted arm P' on the uprights *b* of the tower A. This pivoted arm P projects inward toward the shaft E a short distance, so as to be operated by a weight Q, attached to a suitable cord or chain *q* and secured to an arm R, projecting at right angles from the shaft E.

It will be observed that the foregoing description relates to mechanism brought in action by the device being exposed to a heavy wind or storm, which so often proves disastrous to such machines, for, as shown by the dotted lines, Fig. 1, when the wind becomes so violent as to rotate the shaft E too fast the weight Q will swing outward and strike the inward-projecting end of the loosely-pivoted arm P', which will cause the outer end, connected to the pawl, to swing around, carrying with it the rod *p*, which raises the pawl P from the ratchet-wheel *n*, setting the windlass O free to turn, which it at once does, as the shaft E is top-heavy and commences at once to topple over, thus automatically lowering itself (the wind-wheel) out of a storm, as clearly shown in Fig. 2.

To prevent the wind-wheel from dropping over suddenly or with too great velocity, one of the posts N is provided with a brake or friction-clutch S, having a slot and secured on the said post by the set-screw *s*, which passes through the slot in the clutch and into a suitable screw-hole, so that the clutch can be moved up or down on the said post. This clutch is moved up against the flange T of the windlass after the shaft E is in upright position, so as to have a bearing on the periphery and also on the inside face of the flange T. The clutch may have a bearing-surface of some elastic material, so as to create a greater friction when the windlass is in motion, as clearly shown by Fig. 1.

A modified form of means for preventing the wind-wheel from descending with too

great velocity is shown in dotted lines, Fig. 2, the standards U having a pulley *u* journaled in their top and one end of a rope secured to the said pulley, with the other end provided with a weight.

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

1. In combination with a windmill, the cut-out or socket support, the upright shaft, the lower end of which rests pivotally in the cut-out or socket of said support and the upper end having the propelling-wheel located thereon, the said shaft and wheel being adapted to fall into a horizontal position by the action of the wind on the said wheel, substantially as specified.

2. In a windmill, the combination, with the upright shaft and the propelling-wheel located on the upper end thereof, of the tower having a roller journaled therein, a windlass located to one side of the tower and provided with a rope passed over the said roller and attached to the said shaft, and the shaft-support, wherein the upright shaft is pivoted so as to be capable of turning down into a horizontal position, substantially as shown and described.

3. The combination, in a windmill substantially as shown and described, of a propelling-wheel constructed with a series of arms which are braced together, a series of springs secured to said braces, a pivot-post, and a second series of springs attached to the ends of the said arms, and a series of sails or vanes pivoted on the said pivot-posts and acted upon by both the said series of springs, for the purpose set forth.

4. The combination, in a windmill, of the wind sail or vane constructed as shown, with a frame *l*, having an opening *l'*, and brackets *L'*, said frame being covered with canvas, leaving the said brackets and opening uncovered, substantially as shown and described, and for the purpose set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

ELHANAN LEROY STONER.

Witnesses:

W. R. DELANEY,
A. A. POTTERF.