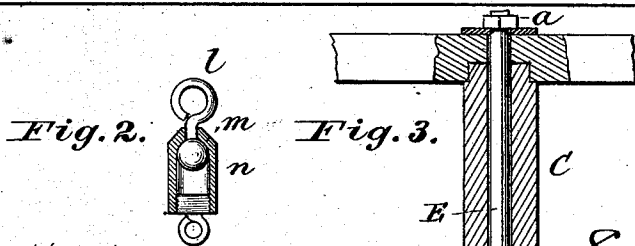
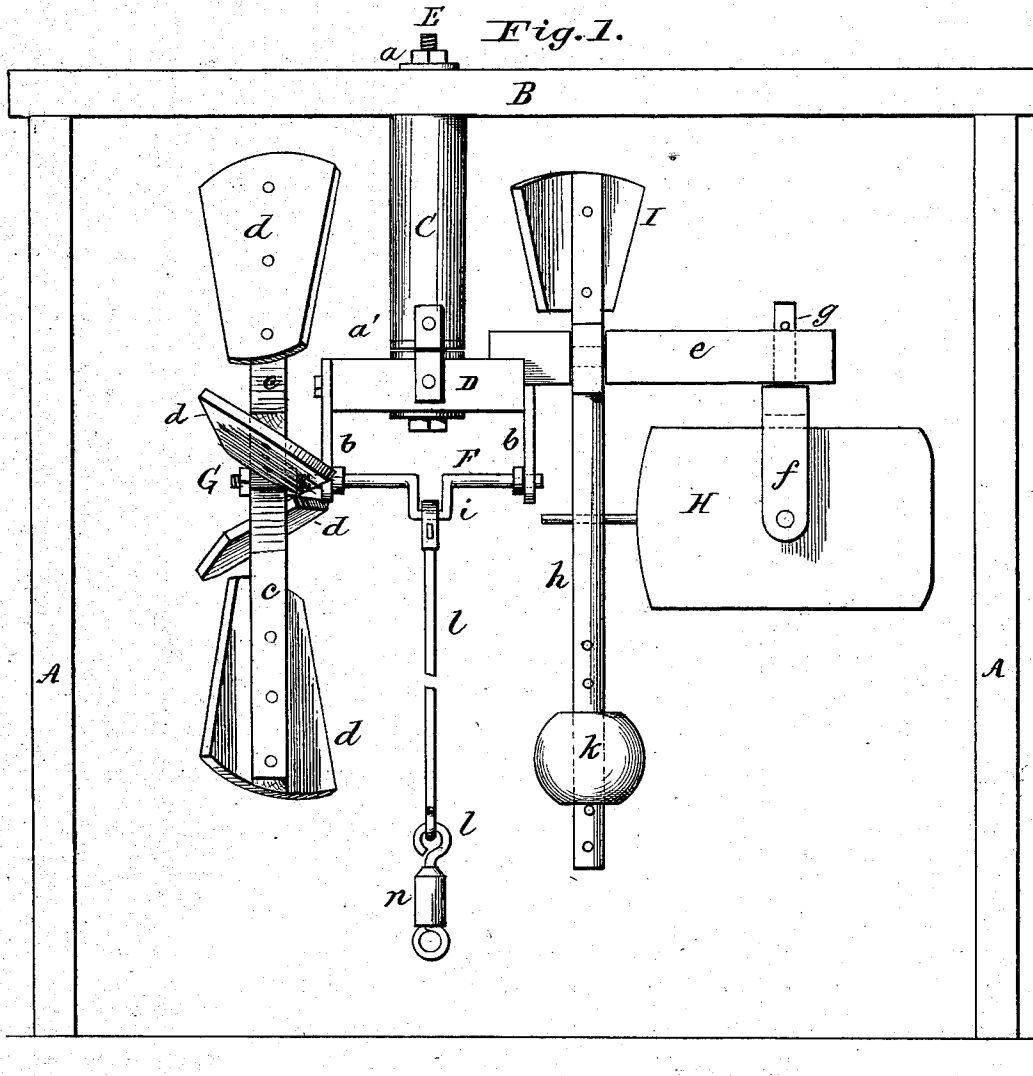


S. D. HOPKINS.

Wind-Mills.

No. 158,588.

Patented Jan. 12, 1875.



Attest.
A. H. Norris
J. S. Coomb

Inventor.
Samuel D. Hopkins
Per
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att.

UNITED STATES PATENT OFFICE

SAMUEL D. HOPKINS, OF TRUMANSBURG, NEW YORK.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **158,588**, dated January 12, 1875; application filed November 14, 1874.

To all whom it may concern:

Be it known that I, SAMUEL D. HOPKINS, of Trumansburg, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Windmills, of which the following is a specification:

This invention relates to improvements in that class of devices for operating machinery which receive their motion from the impulse of the wind acting upon vanes or sails, for operating a shaft to impart motion to the machine or machinery, whereby much expense and labor are dispensed with; and the object of the present invention is to so construct such devices or machines (commonly termed windmills) whereby they are rendered more simple and reliable in operation.

This invention consists in the combination of a depending hanger, carrying a horizontally-revolving beam provided with a regulating-vane, and carrying the cranked axle and fan, and a weighted rod connected with the regulating-vane, and having at its upper end a vane, whereby the regulating-vane on the horizontal beam is limited in its movement, and always retained in position, so that the currents of air always act upon it for moving it and bringing the fan-wheel into proper position for receiving the currents of air.

Figure 1 represents a side view of my invention, and Fig. 2 a detached sectional view of the universal joint; and Fig. 3, a similar view of the hanger.

The letters A A represent two uprights, connected together by a cross-beam, B, at their upper ends, and to this cross-beam is attached a vertical bar or hanger, C, at the lower end of which is arranged a horizontal beam, D, both of said parts being confined and retained in their proper position by means of a bolt, E, passing through the beam D, hanger C, and cross-beam B, and secured in place by a nut, *a*, screwed onto the upper end of the same. The horizontal beam D is arranged loosely on the bolt E, and is provided with a packing-disk, *a'*, which bears against a similar packing on the end of the hanger, whereby the beam is retained in a true horizontal position when it is moved by the wind to properly present the fan-wheel. To the ends of the said beam are attached depending plates *b*,

in which is journaled a shaft, F, carrying at one end a fan-wheel, G, consisting, in the present instance, of radial arms *c*, having at their outer ends flat rectangular pieces of wood *d*, which receive the force of the currents of air, and revolve the shaft for imparting motion to the machine or machinery to be operated. The said beam is also provided with a projecting bar, *e*, carrying a vane, H, pivoted between the arms *f f* of an arm, *g*, pivoted or journaled in the outer end of said bar *e*, as shown, the object of said vane being to properly present the fan-wheel to the currents of air, as will be evident. To the said bar *e* is also pivoted a pendulum or rod, *h*, provided with a weight, *k*, and connected with the vane H by a lateral rod projecting from the latter through an opening in the rod *h*, so as to permit the vane to turn. The upper end of the pendulum is provided with a fixed vane, I, to be acted upon by the wind, whereby the vane H is regulated in its movements, and is always held in position with respect to the direct action of the currents of air, whereby the fan-wheel is also presented to receive the latter, and uniform movements of the operating-shaft secured.

By means of the regulator the vane H is limited in its movements—that is to say, the currents of air can act upon it to move it, in order to bring the fan-wheel in proper position, but it cannot be moved “out of the wind;” or, in other words, it is always retained in position while being acted upon by the wind, which may, in some cases, come in contrary directions, and tend to move the vane to bring its edge to the wind.

The shaft F is provided with a crank, *i*, to which is secured one end of a connecting-rod, *l*, the other end of said rod being connected with the shaft or wheel for operating the machine or machinery. The lower end of the connecting-rod *l* is provided with a conical head, *m*, which fits a correspondingly-shaped seat in the end of a sleeve, *n*, the lower end of which is connected with the operating shaft or wheel, whereby a universal joint is secured, so that when the wind acts upon the fan-wheel in different directions the said connecting-rod may turn to accommodate itself to the circumstances.

By means of a windmill constructed in ac-

cordance with my invention such class of devices are rendered much more simple and reliable than any heretofore constructed that I am aware of.

I do not claim, broadly, suspending a horizontal beam upon a vertical bolt, said beam carrying the shaft of the fan; but

What I claim is—

The combination, with a depending hanger, horizontal revolving beam D, and vane H, of

a weighted rod carrying at its upper end a vane, and connected with the vane on the horizontal bar, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand.

SAMUEL D. HOPKINS.

Witnesses:

G. W. HOPKINS,

J. R. EMERY.