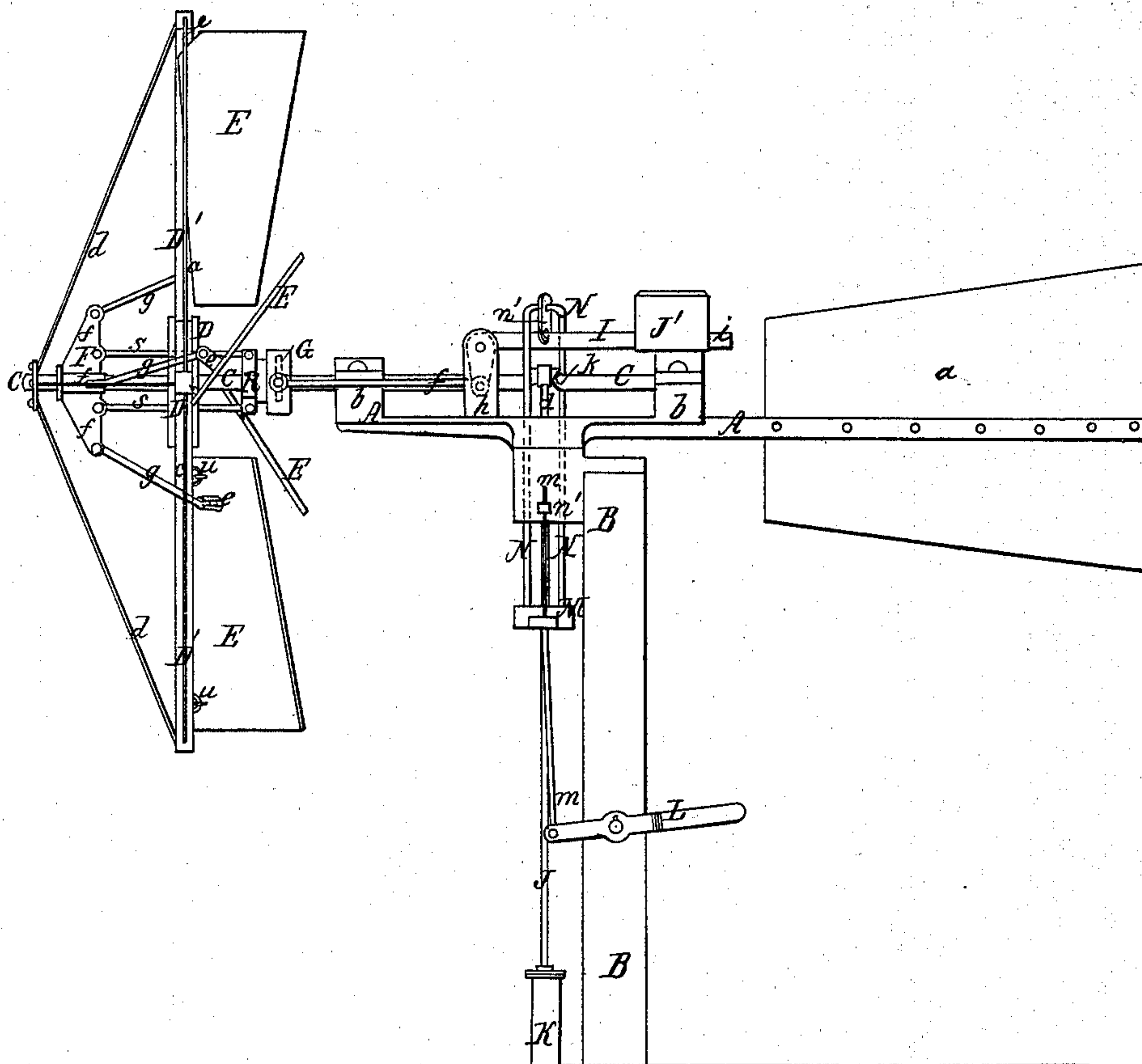


F Hewitt, Wind Wheel.

N^o 62,269.

Patented Feb. 19, 1867.



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FREDERIC HEWITT, OF NEWARK, NEW JERSEY.

Letters Patent No. 62,269, dated February 19, 1867.

IMPROVEMENT IN WINDMILLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, FREDERIC HEWITT, of Newark, in the county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Windmills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a portion of this specification, which is a side elevation of a windmill constructed according to my invention.

This invention relates to that class of windmills in which the varying pressure of the wind upon the sails thereof causes the said sails to assume a position more or less inclined in proportion to the said pressure, in order to insure a regular and uniform movement of the same.

The invention consists in a novel arrangement of parts, whereby the use of the hollow shaft or axle hitherto employed in this variety of windmills is rendered unnecessary. The invention further consists in a novel means of operating the sails of the windmill by hand, whereby the motion thereof may be stopped when desired, without interfering with the pump-piston or other shaft operated by the windmill.

To enable others to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawing.

A indicates the horizontal frame of the windmill, which is pivoted on a vertical axis upon a suitable support, B, and is furnished at one end with the perpendicular vane *a*, by means of which the said frame is turned around to keep the windmill in proper position with regard to the direction from which the wind may blow. Situated at that portion of the frame A, opposite to that to which the vane *a* is secured, is a horizontal shaft or axle, C, which works in bearings, *b*, formed upon the upper side of the aforesaid frame A. Attached to the outermost portion of this shaft is a hub, D, which is furnished with any desired or suitable number of radial arms, D', the said arms being braced and strengthened by suitable braces, *c* and *d*. The sails of the windmill are shown at E, and are each hinged at one edge to one of the arms D', as shown at *u*, each one being also furnished, at the outermost side thereof, with a short spur, *e*. The outer end of the axle C projects considerably beyond the hub D, through which it passes, and has placed upon it, outside of the said hub, a sliding piece or "spider," F, which is furnished with short radial arms, *f*, corresponding in number with the arms D'. The outermost end of each of these short arms *f* is connected with one of the spurs *e* by means of a rod, *g*, in such a way that, when the spider F is moved in one direction or the other, it will move the sails E to a position more or less inclined, according to the extent of such movement, and to the position of the spider F upon the axle C; any change in the inclined position of the sails being capable in like manner of moving the aforesaid spider longitudinally upon the axle. Placed upon the axle C, at the innermost side of the hub D, is a collar, R, the innermost end of which is connected by a groove and flange, with a sliding-block, G, in such manner as to turn with the rotation of the axle C, and at the same time be capable of moving the said sliding-block longitudinally upon the said axle, when it is itself operated by the movements of the spider F, with which it is connected, by one or more rods, *s*, which are passed through suitable holes or slots in the hub D. Extending upward from the frame A, near the vertical axis thereof, are two short uprights, *h*, in and between the uppermost ends of which is pivoted a lever, I, the long arm *i* of which occupies a nearly horizontal position, and is furnished with an adjustable weight, J', while the short or innermost end thereof is forked and bent downward, as shown in dotted lines in the drawing. This forked end or arm of the lever I is connected with the sliding-block G by one or more connecting-rods, *j*. Preferably two of the said rods are used, and are situated upon opposite sides of the axle C. The pivot by which the frame A is pivoted upon the support B, as hereinbefore mentioned, is made tubular, and has passing downward through it a shaft or rod, J, to which is communicated the power derived from the rotation of the axle C. This shaft may be simply the piston-rod of a pump, the cylinder of which is shown at K, being in this case attached to a crank, *k*, formed upon the innermost portion of the axle C in such manner that the rotation of the said axle communicates a reciprocating motion to the said shaft J, or instead of this reciprocating shaft or rod, a rotating shaft may be employed with its upper end connected with the axle C by suitable bevel gears; such rotating shaft being employed to transmit motion to any suitable mechanism in any appropriate manner. L represents a forked lever, which is pivoted at the lower part of the support B, and to the forked end or arms of which are attached vertical rods, *m*, the upper ends of which work through staples, *n*, which serve as guides therefor. M indicates an annular block, the central portion of which surrounds

the shaft J and constitutes an annular guide or plate, as will be presently further explained, the opposite sides of the said block being firmly secured to the vertical rods *m*. Extending upward through the tubular pivot of the frame A, past the axle B, is a rod, N, which may be bent or doubled so that its upper end will pass over the long arm *i* of the lever I, with which it is connected by a suitable link, *n'*. The lower end or ends of this rod N rest upon the annular central portion of the block M in such a way that when the frame A turns upon its vertical axis, or in other words upon its vertical tubular pivot, hereinbefore mentioned, the said lower end of the rod N will traverse around and upon the annular block M, which thus supports the rod N, and whatever weight of the loaded lever I may be brought thereon, and consequently permits the said lever to be raised up by moving downward the long or outward arm of the lever I, in order to operate the sails of the windmill, to stop the motion thereof, as will be hereinafter fully explained. The upper surface of the annular block M may be furnished with a circular groove, which receives the lower end of the rod N and prevents it from slipping off from the same, at the same time that it permits the said rod to turn around upon it, in the manner just set forth.

The wind blowing upon the inclined surface of the sails E, causing them to rotate and thus communicate a rotary motion to the axle C, any increase in the force or pressure exerted upon the said sails will cause them to turn upon their hinges *u*, and to approach more nearly a position at right angles to the plane of rotation of the arms D', to which they are hinged, and thus present a proportionally less area to the action of the wind. This movement of the sails, operating the rods *g*, draws the spider F inward, which, operating through the rods *s*, collar R, block G, and rods *j*, actuates the lever I, to raise the weight J' in such manner that when the pressure of the wind upon the sails is diminished, the descent of the said weight will force the spider outward and operate to turn the sails in a reverse direction, so as to expose an increased surface thereof to the action of the wind. By these means the hollow shaft or axle and its attendant mechanism, ordinarily employed in connecting the sails E with the loaded lever I, is dispensed with. When it is desired to bring the sails E into a position at right angles to the plane of rotation of the arms D', in order that no portion of their surface may be exposed to the action of the wind as required in stopping the windmill, the lever L is operated to force the rods *m* upward, which elevates the annular block M, and raising the rod N, lifts the long arm *i* of the loaded lever I, which, drawing the spider F inward, brings the sails into the position just described, without at all interfering with the rod or shaft J. The same result may be brought about by raising the annular block M by a cord and pulley, or by any other suitable means, and instead of using sails, E, of the particular construction herein described, any other suitable variety of sails may be employed.

What I claim as new, and seek to secure by Letters Patent, is—

1. The sliding block G, collar R, rod or rods *s*, and spider F, arranged and operating in relation with each other, and with the loaded lever I, and sails E, substantially as herein set forth, for the purpose specified.
2. The annular sliding block M and rod N, arranged with reference to each other, and with the loaded lever I, and shaft or rod J, substantially as herein set forth, and for the purpose specified.

FREDERIC HEWITT.

Witnesses:

A. LE CLERC,
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