C. C. HARRIS.

WIND-MILL

No. 185,826. Patented Jan. 2, 1877.

Fig. 1.

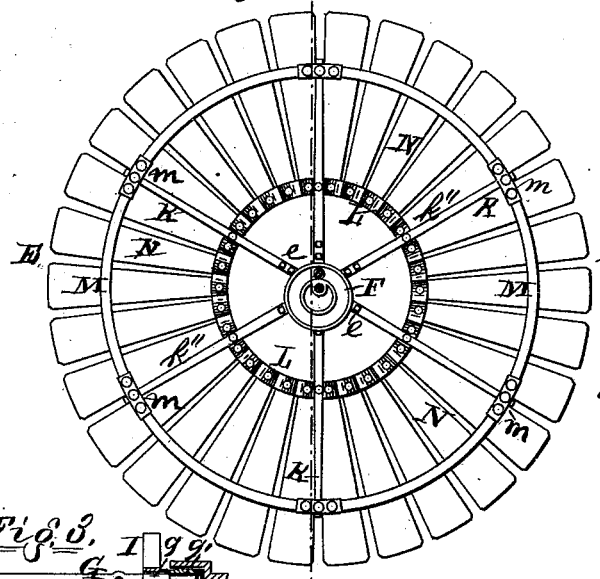

Fig. 2.

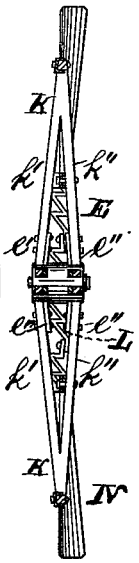

Fig. 3.

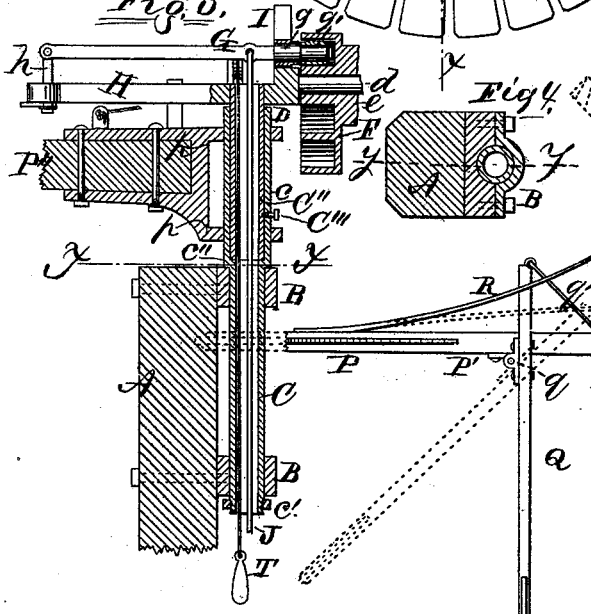

Fig. 4.

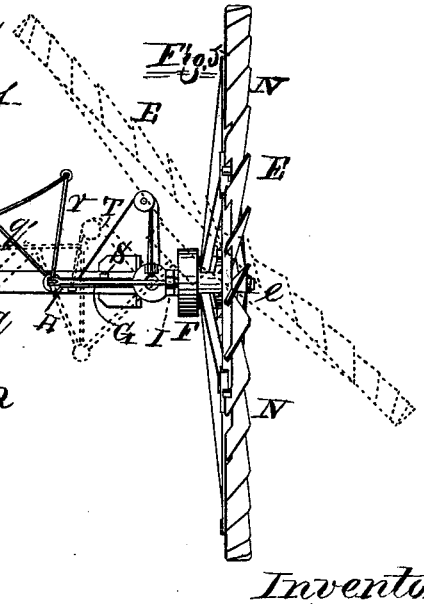

Fig. 5.

Witnesses:

W. B. Bainger.

P. R. Richards.

Inventor:

Charles C. Harris,

By W. B. Richards,

Atty.

UNITED STATES PATENT OFFICE.

CHARLES C. HARRIS, OF KEWANEE, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **185,826**, dated January 2, 1877: application filed September 9, 1876.

To all whom it may concern:

Be it known that I, CHARLES C. HARRIS, of Kewanee, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Windmills; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The nature of my improvements in windmills relates, first, to improvements in the manner of mounting the operating parts on the tower; second, to improvements in the construction of the windmill-frame; third, to improvements in the manner of regulating the speed of the wheel in varying velocities of wind; and the invention consists in the construction and combination of parts to constitute said improvements, as hereinafter more fully described, and set forth in the claims hereto annexed.

In the accompanying drawings, Figure 1 is an elevation, rear side, of my improved wind-wheel. Fig. 2 is a sectional view of Fig. 1 in the line *x x*. Fig. 3 is an enlarged vertical sectional view in the line *x x* in Fig. 4. Fig. 4 is a transverse sectional view in the line *y y* in Fig. 3. Fig. 5 is a top-plan view of a windmill embodying my invention.

Referring to the parts by letters, letter A represents the upper portion of the tower. B B are ordinary spindle-boxes bolted to the tower A, as shown at Fig. 4 of the drawings. C is a tubular spindle journaled in the boxes B, where it is held by the shoulder *c''* of its enlarged upper end *c*, resting on the upper box B, and by a collar, *c'*, on its lower end, the shoulder *c''* resting on the upper box B to support the working parts. C'' is a tubular spindle seated in the enlarged upper end of the spindle C, where it is held by a set-screw, *c'''*. D is a laterally-projecting arm from the upper end of the spindle C'', its outer end formed into a journal, *d*, on which the wind-wheel E rotates. F is a cam-disk, carried on the rear side of the hub *e* of the wind-wheel, and receives one end of a lever, G, the other end of which is pivoted to a standard, *h*, which projects upward from an arm, H, extending laterally from the upper end of the spindle C''. I I are standards, between which the lever G reciprocates as it is given motion by the rotation of the wind-wheel E and cam-disk F, to impart the necessary reciprocating motion to the connecting-rod J, which connects with the pump or other device to be operated. The lever G is provided with anti-friction rollers *g g'*, where it works in the disk F and between the standards I, respectively. The metallic hub *e* has two series of short arms, *e' e''*, projecting radially therefrom. Letters K represent the spokes or arms of the wind-wheel, each spoke sawed or divided otherwise nearly its length into two parts, *k' k''*, which are separated at their inner ends and bolted, the part *k'* to an arm, *e'*, and the part *k''* to an arm, *e''*, as shown at Fig. 2 of the drawing, and so as to form braces to strengthen the wheel. L is a ring or hoop formed of a series of zigzags, *l*, and is secured in the arms *k' k''*. M is a hoop, secured in sections to the outer ends of the arms K by clamp-plates *m*. N are sails, their inner ends secured to the zigzags *l*, and their outer ends to the hoop M. P is the vane or rudder, its stem P' divided into two parts, *p p*, which are secured to the spindle C. Q is a side vane, its stem pivoted at *q* on the stem of the vane P, and projecting beyond the pivot *q* is connected by an arm, *q'*, to the outer end of the arm H, to both of which it is hinged or journaled. An increase in the velocity of the wind bearing on the vane Q will carry it around, and with it the wheel E, as plainly shown at Fig. 5 of the drawings, and thus turn the wheel E obliquely to the wind with increasing velocity thereof. R is a spring-bar, attached at its rear end to the vane P, and, extending forward, its free end is connected by a link, *r*, with the outer end of the arm H. The normal position of the spring R is shown by full lines at Fig. 5, and it will be seen that as the wind-wheel E is deflected obliquely by an increase of wind the lever R will be deflected, and the greater the deflection the greater the resistance it will offer, thus becoming a resistance of varying intensity, and greatest where required to prevent the wheel slamming when it comes round against the vane P, and least

where required to yield quickly when the wheel E is fairly "in the wind." S is the ordinary stop. T T is the ordinary hand-furling device.

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

1. The separate open boxes B B, combined with the spindles C C″, and collar c', substantially as and for the purpose specified.

2. The side vane Q, pivoted to the stem of the vane P, and having an extended end connected by an arm, q', to the end of the arm H, for regulating the velocity of the wheel E, substantially as described, and for the purpose specified.

3. The spring R, arranged to operate with the arm H, and wheel E for regulating the wheel with varying intensity, substantially as described, and for the purpose specified.

4. The spring R, arranged to operate with the arm H and side vane Q, for regulating the speed of the wheel E with varying intensity, substantially as described, and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES C. HARRIS.

Witnesses:

P. R. RICHARDS,

THOMAS MCKEE.