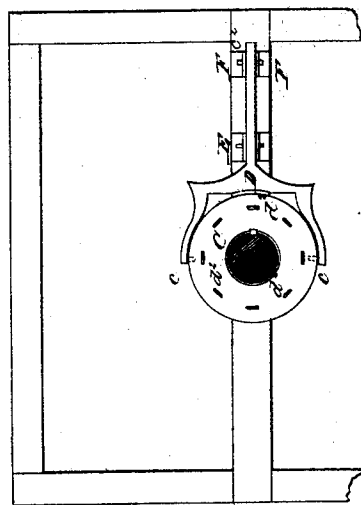
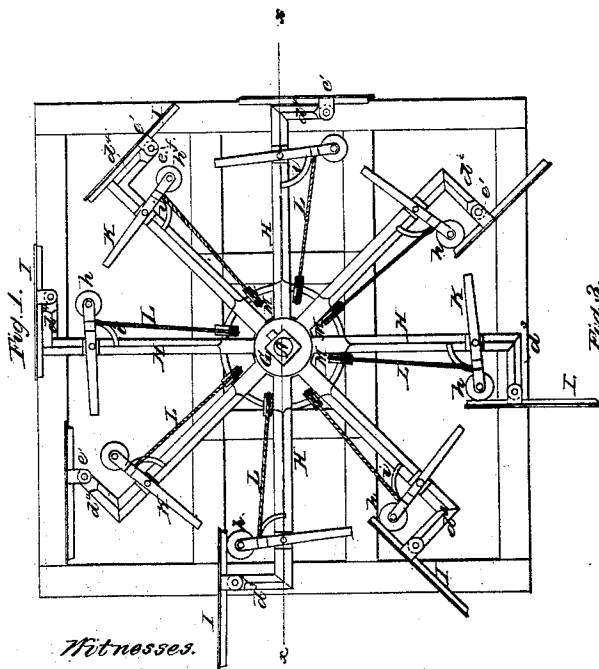
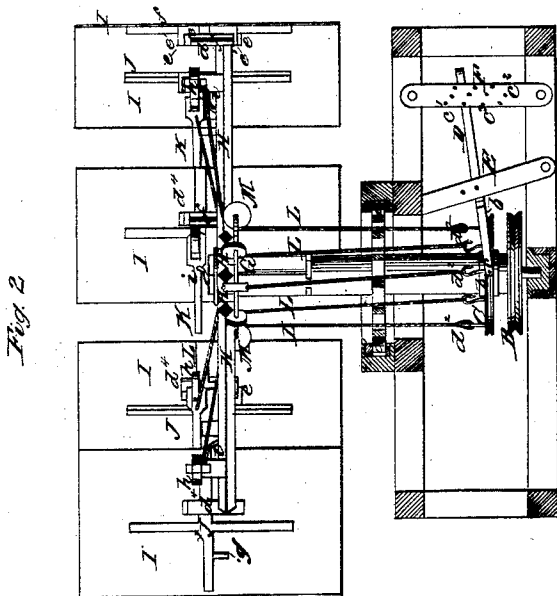


R. O. Lowrey,

Wind Wheel,

No 35,100.

Patented Apr. 29, 1862.



Witnesses.
Samuel Detrick,
Colvin S. Jacob

Inventor
Robt. O. Lowrey
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UNITED STATES PATENT OFFICE.

ROBERT O. LOWREY, OF SARATOGA SPRINGS, NEW YORK.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. 35,100, dated April 29, 1862.

To all whom it may concern:

Be it known that I, ROBERT O. LOWREY, of Saratoga Springs, in the county of Saratoga and State of New York, have invented a new and useful Improvement 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 drawings, forming part of this specification, in which—

Figure 1 is a plan or top view of a windmill with my improvements applied to it. Fig. 2 is a vertical longitudinal section of the same in line *xx* of Fig. 1. Fig. 3 is a horizontal section of part of the mill in the line *yy* of Fig. 2.

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

My invention relates to an improvement in that class of windmills which has its wings or blades hung on independent vertical axes and arranged to turn horizontally upon their own axes and around a common central axis or shaft.

The nature of my invention consists, first, in the arrangement of a single ring or cylinder which combines the properties of a weight and clutch-wheel, in combination with a clutch-lever and a series of vertical blades or wings in such manner that by the use of but one weight, which turns with the central shaft and rises and falls on it, the several wings are regulated, and by raising said weight with a lever the wings are allowed to assume an inoperative position, and thus stop the mill; second, in the combination of horizontal arms with right and left hinging termini in form of a compound of two right angles, vertical wings with cross-shaped hinging brackets, horizontal pivoted stops with friction-rollers on one of their ends, a single regulating ring-weight and a clutch-lever, the whole arranged and operating as hereinafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation with reference to the drawings.

A is the vertical central shaft of the windmill. It has a support in a step at its lower end, and is steadied about midway of its length by means of a circular hub, which runs within

a box provided with friction-rollers *a a a a*, as shown.

B is the pulley for transmitting power to machinery.

C is a ring-weight keyed on the shaft A so as to slide freely up and down thereon, but not to turn independent of the shaft. This weight has a clutch-groove, *b*, in its circumference, and in said groove the clutches *c c* of a forked lever, D, fit loosely, said lever being pivoted to a vertical guide, E, and its loose outer end is arranged to play up and down between perforated guides F, said guides F having horizontal controlling-pins *c' c'* passed through one or another of the sets of perforations. The pins are set far enough apart to allow the weight to rise and fall to the extent desired, and by setting an intermediate pin, *c³*, in close relation to the lower pin, *c²*, the lever and weight will be held in fixed positions, so far as vertical movement is concerned.

In the top of the weight C several hooks, *d² d²*, are inserted at uniform distances apart and in a circle.

G is a hub fitted to the top square end of the central shaft, A. From this hub radial arms H extend horizontally and terminate on one side of the hub in one direction in the form of a compound of two right angles, as shown at *d³ d³*, and on the opposite side of the hub in a converse direction in a similar form, as shown at *d⁴ d⁴*. Each of the portions *d³ d⁴* of the arms has two hinging-ears, *e e*, formed on it, said ears being perforated to receive a hinge-pin through them.

I I are vertical blades or wings, braced on their inner sides by a cross-shaped bracket, J, as shown. Each of these brackets has ears *e' e'*, similar to those *e e*, formed on one of their arms, and by means of the same the connection of the wings is effected, a vertical axial pin, *f*, being passed down through the two sets of ears *e e e' e'*, as shown. On that arm of each cross which is in line with the arm that has ears a vertical extension, *g*, is formed, so as to act as a stop to the wings when the wings stand at a right angle to the arms H, and bear against the outside of the angled portion of the arms. It will be observed that the right-angled arms afford a

firm support to the wings, both when the wings stand parallel with the inside and outside of the angled portions thereof.

K K are pivoted bars or levers arranged on top of the arms H a short distance from their angled ends. On one end of each of these levers a friction-roller, *h*, is placed, so as to be in line with one of the arms of the cross-shaped brackets of the wings I, and to come in contact with the same when the mill is in operation. Stops *i i* are provided on the arms H, to prevent the levers at their bearing end moving inward too far.

L L are cords or chains attached to the bearing end of the levers and extending horizontally along the arms H, and passing over pulleys M down to the hooks *d² d²* of the weight C and attaching to the same, the pulleys M, around which the cords work, being supported by a ring arranged under the arms H, and each pulley being loosely fitted on said ring.

The operation is as follows: The windmill being set to the wind, it revolves bodily on the central shaft, A, and the force of the wind is through the wings thrown against the pivoted levers, and through them is brought to bear upon the ring-weight, and if the force of the wind is too great the weight rises and allows the levers to recede and the wings to change their position and present less surface to the wind-current. The wings as they pass out of the wind-current on one side of the shaft A feather, or so change their position that they

do not act with a counteracting effect upon those which are in and coming into the wind-current. When it is desired to stop the mill, the lever D is depressed, so as to raise the weight C and slacken the cords L of the levers K sufficiently to allow all the wings to feather in a line with the wind-current, and thus present but an edge surface to the wind-current. If it is desired to have the power of the mill reduced, although the wind is strong, it is effected by reducing the amount of metal or other material on the ring-weight, while the energy of the mill is improved by increasing the weights on the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arms H, with termini of the construction described, in combination with the hinging brackets J of the wings or blades I, substantially as set forth.

2. In combination with the arms H and brackets J, the levers K, rollers *h*, stops *i*, cords L, and ring-weight C, substantially in the manner and for the purpose described.

3. The arrangement of a sliding ring-weight constructed as described, in combination with the vertical shaft A, blades I, and clutch-lever D, substantially as and for the purposes set forth.

ROBERT O. LOWREY.

Witnesses:

RANSOM COOK,
E. COWEN.