2 Sheets—Sheet 1.

J. LONGYEAR & D. W. CLARK.

Wind-Engine.

No. 204,345. **Patented May 28, 1878.**

Fig. 1.

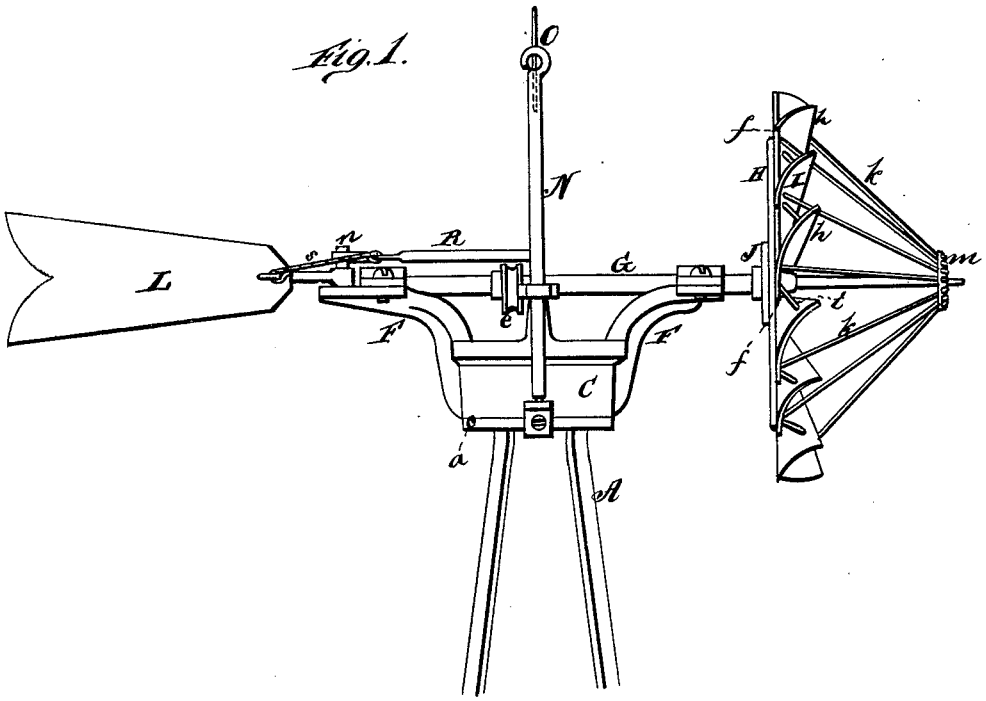
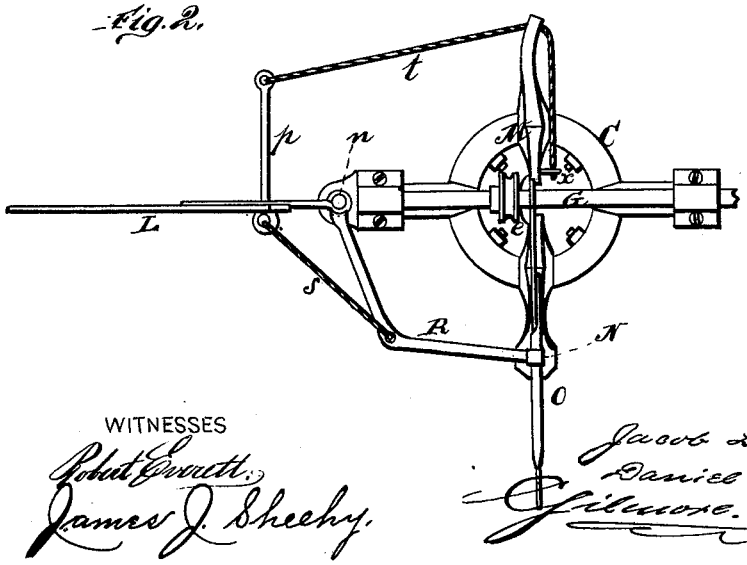


Fig. 2.



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2 Sheets—Sheet 2.

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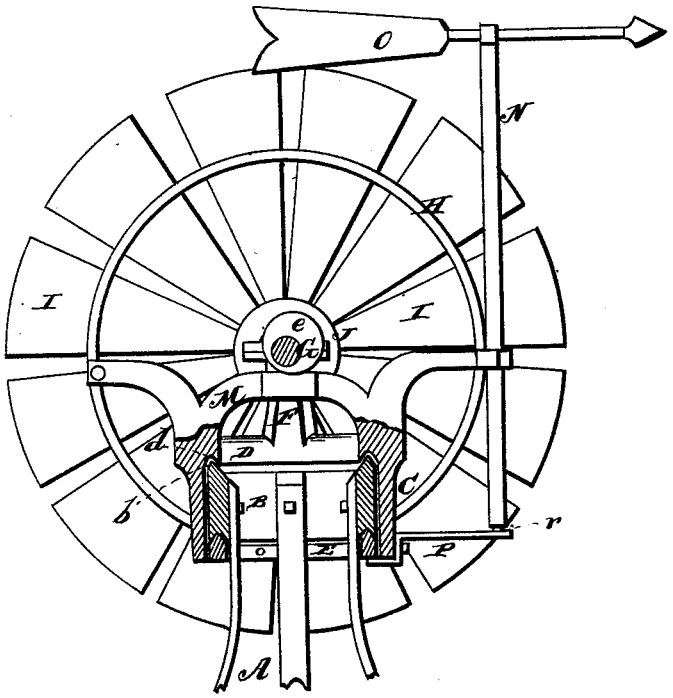
Fig. 3.



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UNITED STATES PATENT OFFICE.

JACOB LONGYEAR AND DANIEL W. CLARK, OF GRASS LAKE, ASSIGNORS OF ONE-THIRD THEIR RIGHT TO MILES M. SEYMOUR, OF LESLIE, MICH.

IMPROVEMENT IN WIND-ENGINES.

Specification forming part of Letters Patent No. **204,345**, dated May 28, 1878; application filed April 27, 1878.

To all whom it may concern:

Be it known that we, JACOB LONGYEAR and DANIEL W. CLARK, of Grass Lake, in the county of Jackson and State of Michigan, have invented a new and valuable Improvement in Wind-Wheels; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a side view of our wind-wheel. Fig. 2 is a plan view of a portion, and Fig. 3 is a vertical sectional view of the same.

The nature of our invention consists in the construction and arrangement of a windmill, as will be hereinafter more fully set forth.

The annexed drawing, to which reference is made, fully illustrates our invention.

A represents the tower of the windmill, at the upper end of which is secured a ring or circle, B, having its upper edge beveled on both sides to form a V-shaped edge, *b*. This edge fits in a corresponding groove, *d*, formed in the under side of an overhanging flange, D, which projects inward from the top of a band or circle, C. This circle C surrounds the ring B, and forms the turn-table of the windmill. It projects below the ring B, and has at the lower end an interior ring, E, fastened to it by set-screws *a a*, to prevent any upward movement of the turn-table C D.

The turn-table is provided with two arms, F F, extending in opposite directions, and on the same are formed bearings for the wind-wheel shaft G, upon which is secured the usual eccentric *e*, to operate the pitman or pump-rod.

The wind-wheel is composed of a hub, J, from which project a series of wings, I I, strengthened at the back by a ring, H.

The wings I are curved, as shown, one edge, *f*, of each wing being on a radial line from the hub, while the other edge, *h*, is curved forward, making the body of the wing concave transversely, and such concavity increasing gradually from the inner to the outer end of the wing.

Each wing I is braced from its straight edge *f*, at the point where the ring H is attached, by a rod, *k*, to a disk, *m*, placed on the extreme front end of the shaft. A short brace, *i*, connects the same point on each wing with the edge *h* of the adjoining wing.

Upon a stud, *n*, on the arm F, on the opposite side from the wind-wheel, is pivoted the main vane L, which vane has near its inner end an arm, *p*, secured to it, and extending at right angles from it, as shown.

The turn-table C D is also, across the center, provided with a frame, M, standing at right angles with the shaft G. Through one end of this frame is passed a vertical shaft, N, carrying the regulating-vane O at its upper end. The lower end of the shaft N rests on a step, *r*, in an arm, P, secured on the side of the turn-table.

The shaft N is provided with an elbow or L-shaped arm, R, the outer end of which bears against the stud *n* when the mill is in position for work. From the bend or elbow of this arm a cord, *s*, connects with the short end of the arm *p* in the main vane L. From the other end of this arm passes a cord, *t*, through the opposite end of the frame M, and then down through the tower to the ground, said cord passing through an eye, *x*, near the center of the frame, as shown.

When the mill is at work the main vane L is on a line with the shaft G for holding the wheel in the wind, and the arm R on the shaft of the regulating-vane rests against the stud *n*. When the wind increases in force, the vane O is turned backward, and the cord *s* turns the main vane L, so that the wheel will be thrown out of the wind. When the wind decreases again, a weight connected to the cord *t* returns the vanes to their former position, and the wheel is thrown in the wind again.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a windmill, the combination of the stationary ring B, having V-edge *b*, and the ring C, having overhanging flange D, with corresponding groove *d*, as and for the purposes set forth.

2. The interior ring E and set-screws *a*, in

combination with the turn-table C D and ring B, for the purposes set forth.

3. The combination of the main horizontal vane L, pivoted on the stud *n*, the upright shaft N, with regulating-vane O and elbow R, and the cords *s t*, all substantially as and for the purposes set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

JACOB LONGYEAR.
DANIEL W. CLARK.

Witnesses:
H. S. SMITH,
O. F. PEASE.