

(Model.)

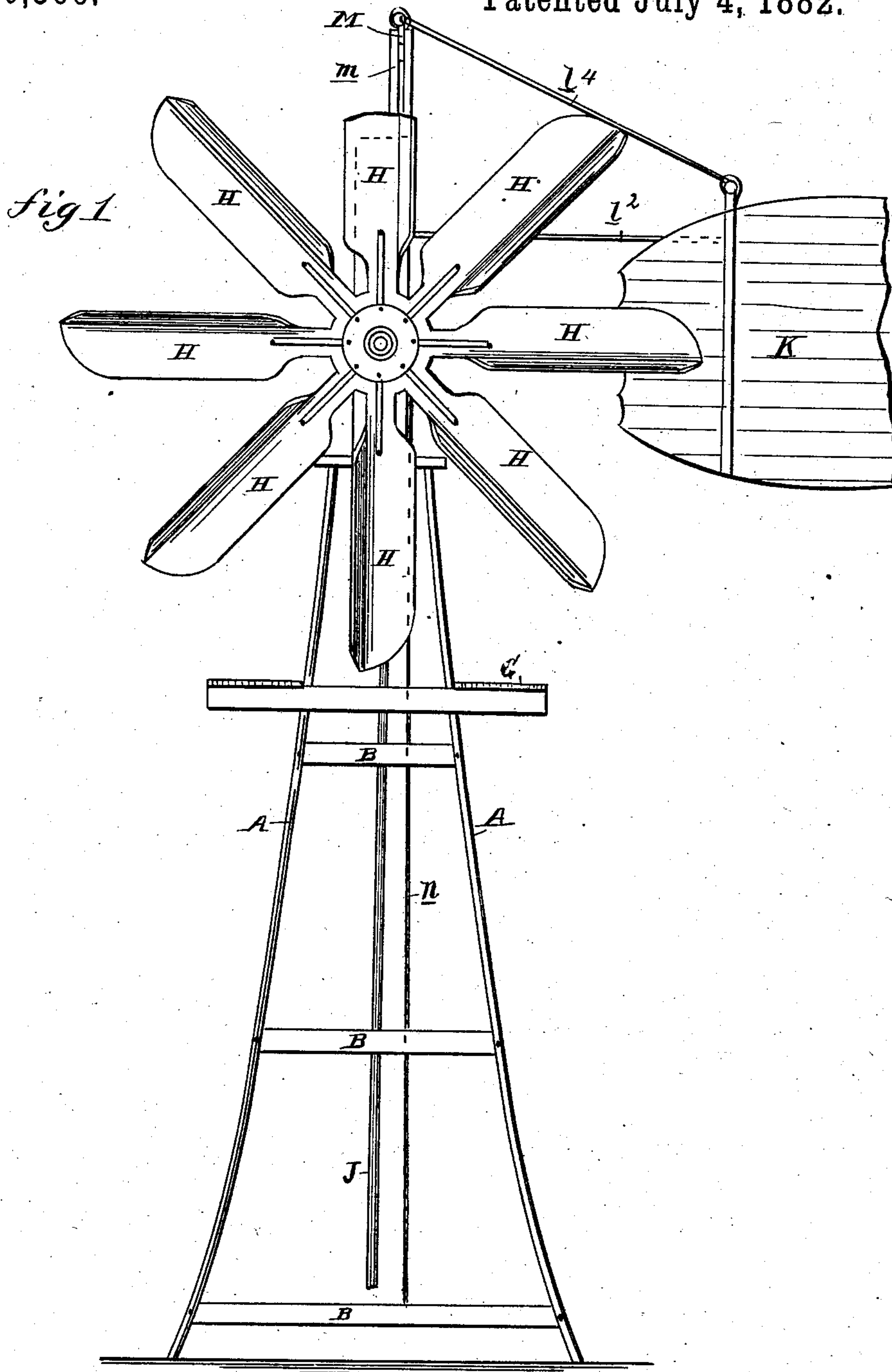
2 Sheets—Sheet 1.

C. B. HARMAN.

WINDMILL.

No. 260,566.

Patented July 4, 1882.



WITNESSES:

*Chas. Heinicke*  
*C. Sedgwick*

INVENTOR:

*C. B. Harman*

BY

*Munn & Co*

ATTORNEYS.

(Model.)

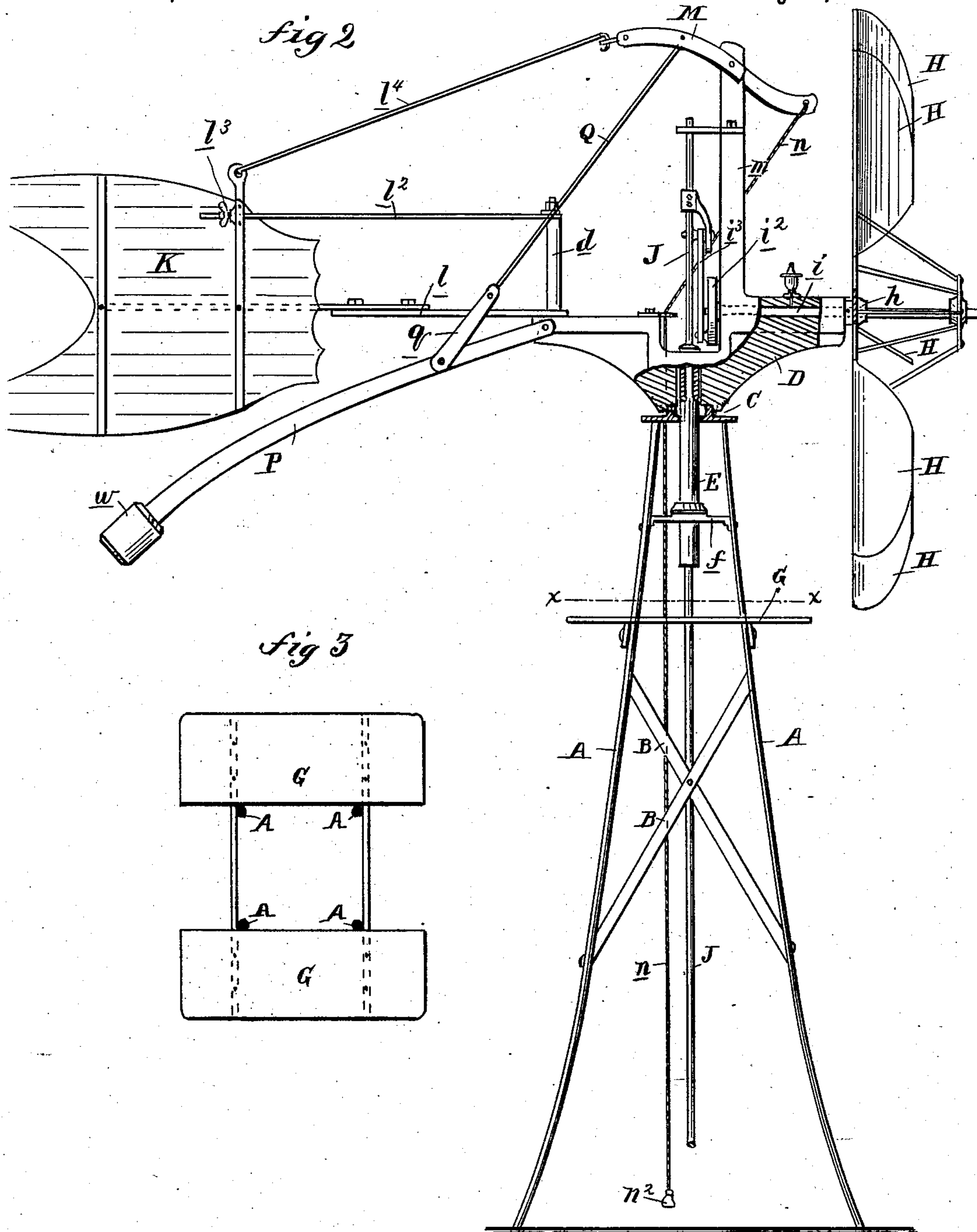
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# UNITED STATES PATENT OFFICE.

CHRISTIAN B. HARMAN, OF LANARK, ILLINOIS.

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 260,566, dated July 4, 1882.

Application filed April 25, 1882. (Model.)

*To all whom it may concern:*

Be it known that I, CHRISTIAN B. HARMAN, of Lanark, in the county of Carroll and State of Illinois, have invented a new and useful Improvement in Windmills, of which the following is a full, clear, and exact description.

My invention consists in a novel construction, arrangement, and combination of a wind-wheel, a vane pivoted to the stock of the wheel and arranged to swing in a horizontal plane, a weighted lever pivoted to said stock and arranged to swing in a vertical plane, and a series of levers, connecting-rods, and other devices, whereby provision is made for automatically adjusting the wheel according to the force of the wind, and other advantages are obtained, as hereinafter more particularly described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a face or front view of my improved windmill. Fig. 2 is a side view, partly in section. Fig. 3 is a horizontal section taken in the line *x x* of Fig. 2.

The apparatus may be constructed of wood or iron, either in whole or in part. The working parts are supported by a frame-work consisting of upright posts A and connecting-braces B, at the top of which is a seat, C, upon which the wheel-stock D rests, and in which the shaft E has its upper bearing. A platform, G, is attached to the frame-work at a suitable distance to enable a person standing thereon to reach the working parts.

Between the platform G and the top of the frame is a bar, *f*, in which is a bearing for the lower portion of the shaft E. The portion of the stock D surrounding the shaft is flaring, so as to slightly overhang the seat C, and thus render it weather-proof.

The braces B serve as a ladder by which the platform G may be reached.

The shaft E has its upper end attached to the center of the stock D, one end of which carries the wheel and the other end the vane.

The wheel is composed of radial sails H and a hub, *h*, from which extends a shaft, *i*, working in a bearing in the stock D and carrying

at its inner end a crank-wheel, *i*<sup>2</sup>, which is connected by a pitman, *i*<sup>3</sup>, with a pump-rod, J, which works through the tubular shaft E. By increasing or reducing the size of the crank-wheel or the distance of the crank-pin from the center the stroke of the pump-rod may be lengthened or shortened, according to the depth of the well.

The sails H are of approximate elongated elliptical form, and are bent at an obtuse angle at their longitudinal centers, so that while one side of the angle remains vertical the other side is inclined, so that the action of the wind on the sails will carry them around.

To the rear end of the stock D is attached a vertical post, *d*, to which the vane K is connected by two horizontal bars, *l* *l*<sup>2</sup>, so as to swing in a horizontal plane on said post as a center. The lower bar, *l*, is composed of two pieces, one lapping over the other, and connected by screw-bolts passing through slots, and the upper bar, *l*<sup>2</sup>, has its rear end screw-threaded and passes through a cleat on the vane, where it is fastened by a thumb-nut, *l*<sup>3</sup>. By this means the vane can be adjusted to a level position.

To the front portion of the stock D is attached a vertical standard, *m*, near the top of which is pivoted a lever, M. To the front end of this lever is attached a cord, *n*, carrying a weight, *n*<sup>2</sup>. The rear end of the lever is connected by a rod, *l*<sup>4</sup>, with the vane K at a point near where the bar *l*<sup>2</sup> is attached.

To the rear end of the stock D, under the post *d*, is attached the front end of a rod or bar, P, the rear end of which carries a weight, *w*. Near the pivoted front end of the bar P is an arm, *q*, to which is connected the lower end of a rod, Q, the upper end of which is connected to the lever M between the fulcrum and rear end thereof.

The operation of my invention is as follows: When the force of the wind is greater than that of the weight *w* it raises said weight, and with it the lever P, causing said lever, through the connecting-rod Q, to raise the rear end of the lever M, and by pulling on the rod *l*<sup>4</sup> to cause the vane K to swing around toward the position shown in Fig. 2—that is, at a right angle to the shaft *i*. This moves the wheel



out of the wind sufficiently to reduce its speed to the desired degree, in which position it remains until the wind subsides, when the weight *w* of its own gravity restores the parts to their original positions.

The advantages of my invention are: It is cheap and simple in construction, and is strong and durable. It is portable, and can be readily moved from place to place. It is automatic in its operation, being regulated by the force of the wind. The cord *n* and weight *n*<sup>2</sup> co-operate with the weight *w* and insure a regularity and uniformity in the motion of the wheel. It is motionless when out of the wind, so that no wind-brake is required. It can be turned out of the wind by pulling on the cord *n*, and so held as to keep out of the wind.

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

1. A wind-wheel having its sails *H* bent longitudinally at an obtuse angle and arranged with one side of the angle in a vertical plane and the other side inclined at the proper angle to receive the force of the wind, substantially as herein described.

2. In a windmill, the combination, with the stock *D*, provided with the vertical post *d*, and the vane *K*, of the bar *l*, composed of two parts adjustably secured together, and the bar *l*<sup>2</sup>, having its outer end screw-threaded and provided with the nut *l*<sup>3</sup>, substantially as and for the purpose set forth.

3. In a windmill, the combination, with the stock *D*, provided with the vertical standard *m*, and the vane *K*, of the lever *M*, pivoted to the said standard, the connecting-rod *l*<sup>4</sup>, and the chain or rope *n*, substantially as and for the purpose set forth.

4. In a windmill, the combination, with the stock *D*, provided with the standard *m*, and the vane *K*, of the lever *M*, the connecting-rod *l*<sup>4</sup>, the weighted lever *P*, provided with arm *q*, the connecting rod *Q*, and the chain or cord *n*, provided with the weight *n*<sup>2</sup> at its end, substantially as and for the purpose set forth.

CHRISTIAN B. HARMAN.

Witnesses:

EDWARD GLOTFELTY,  
JOHN HENRY ALLEMONG.