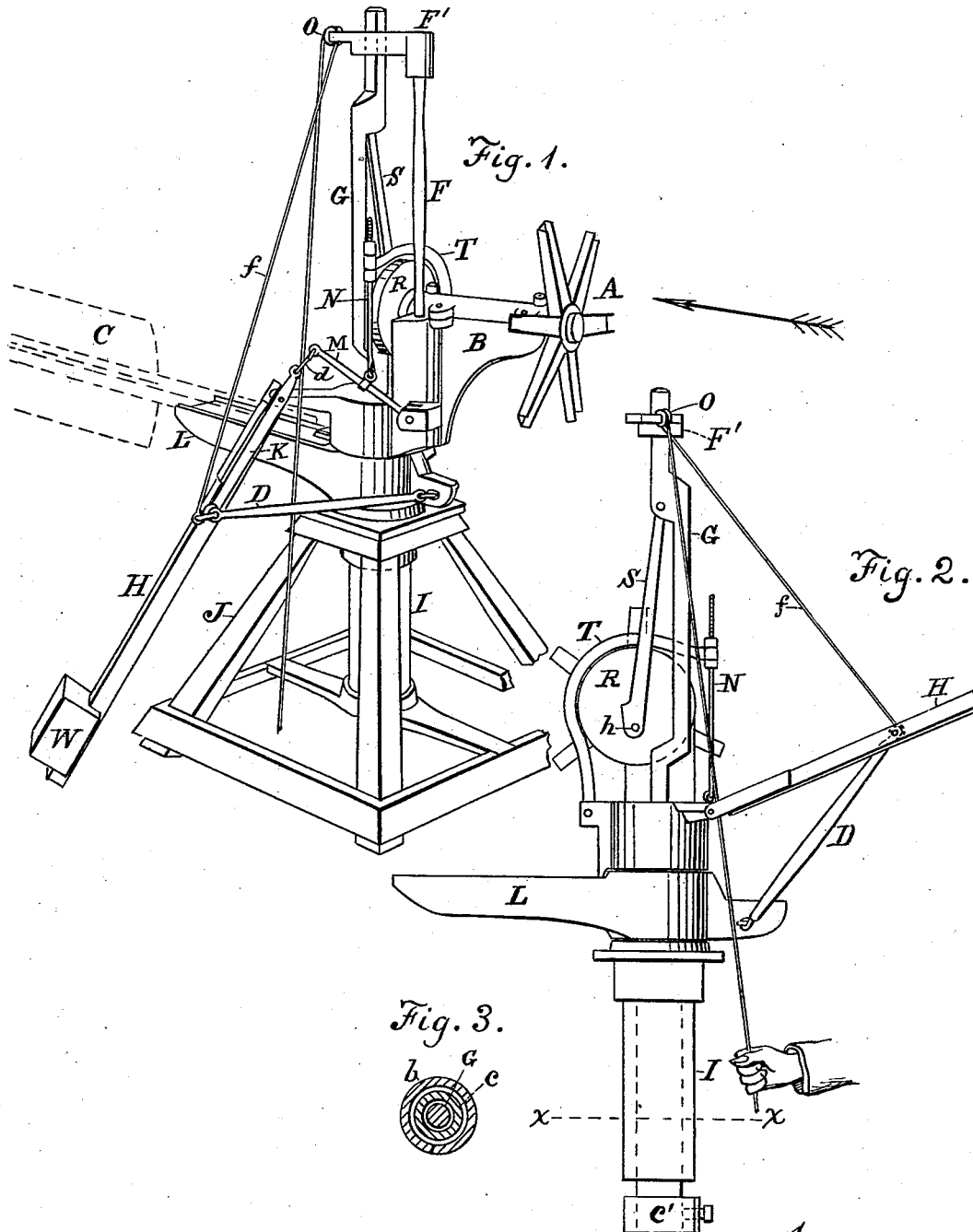


J. D. MORRISON & J. C. TIETJENS.
Windmill.

No. 221,248.

Patented Nov. 4, 1879.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES D. MORRISON AND JOCHIM C. TIETJENS, OF LYONS, IOWA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **221,248**, dated November 4, 1879; application filed August 27, 1879.

To all whom it may concern:

Be it known that we, JAMES DOUGLAS MORRISON and JOCHIM CHRISTIAN TIETJENS, of Lyons, in the county of Clinton and State of Iowa, have invented certain new and useful Improvements in Windmills; and we do hereby declare that the following is a full, clear, and exact description of the invention, 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 the letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a perspective view, showing the wind-wheel and other parts of the mill in position to be operated by the wind. Fig. 2 is an elevation, showing the position of the mill when the wind-wheel is locked by the friction-brake. Fig. 3 is a transverse section on line *x x* of Fig. 2.

The object of our invention is to furnish a windmill which will be automatic and regular in movement, which we accomplish by the construction and combination of the operating devices, as hereinafter fully described, and as shown in the drawings adjusted for pumping water.

In the drawings, A represents the wind-wheel, mounted on a bracket, B. C represents the vane, supported by a bracket, L. H is an arm hinged at the upper end to the bracket B, and provided on the lower part with a movable weight, W. D is a rod connecting the arm H and the bracket L. F is a standard, provided with the guide F' for the pump-rod G. I is a vertical support to the brackets B and L, and is composed of the two pipes *b c*, as shown in Fig. 3. The outer pipe, *b*, is connected with and supports the bracket L, and the inner pipe, *c*, is connected with and supports the bracket B.

J represents the frame or tower supporting the whole operating mechanism. K and M represent levers, connected by a link, *d*. The lower end of the lever K is connected to the arm H, and the lower end of the lever M is connected with the bracket B.

N is a rod connected at the lower end to the lever M, and provided with an adjustable nut at the upper end, and connected with the fric-

tion-brake. O represents a pulley attached to the guide to carry the cord *f*. R represents a crank-wheel, having its bearings on the bracket B, and is provided with a crank-pin, *h*, to which is connected the lower end of the pitman S, the upper end of which connects with the pump-rod, which is provided with an offset to allow space for the pitman, as seen in Fig. 2 of the drawings. This mode of construction avoids the necessity of large holes in the brackets for the pitman to move in, and when the greatest power is required in lifting the pump-rod and connections the pitman is in a direct line with the rod, thus avoiding undue friction and doing the same work with less power than a machine having the rod connected directly with the crank-wheel.

T is the friction-brake, hinged at the lower end to the bracket B and extended over the crank-wheel, and connected at the other end with the rod N.

The tubular support *c* of the bracket B, above described, passes downward through the tube *b*, and is held in place vertically by a collar, *c'*, on its lower end, provided with a set-screw.

The wind-wheel is set out of line of the vane, inclining to the left of that line, as seen from a point facing the wind blowing in the direction of the arrow shown in Fig. 1.

In operation, when the wind blows hard the vane remains in line with the course of the wind, but the wheel turns to the left, as above described; and as the wind-wheel is carried thus around the connecting-rod D raises the arm H, and by means of the levers K M the friction-brake is depressed upon the crank-wheel, thus securely locking the wind-wheel out of the wind. In this position of the machine the wind-wheel shaft is at right angles to the path of the wind, and the other parts are in position, as shown in Fig. 2 of the drawings.

When the wind ceases to blow hard the arm and weight descend, moving the wind-wheel back to the wind in position to operate again. To stop the wheel by hand the arm H is raised by means of the cord *f*.

As the wind-wheel is deflected from the line of the vane and the weight and arm are raised the leverage and distance traveled by the

weight are increased, thus enabling the machine to work regularly and smoothly in strong or light winds.

It will be observed that as the line of the shaft of the wind-wheel approaches a line parallel with the line of the vane the power decreases, and as the line of that shaft is inclined from that parallel line the power increases.

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

1. In combination, the weighted arm H, connecting-rod D, pivoted levers K M, and brackets B L, carrying the wind-wheel A and vane C, substantially as and for the purposes described.

2. In combination, the bracket B, having the tubular bearing *c* and carrying the wind-wheel A, the arm H, hinged at the top to the bracket B, and connected below the hinge-joint to this bracket by the jointed levers K M, and the

bracket L, having the tubular bearing *b* and carrying the vane C, and connected with the arm H by the rod D, substantially as and for the purposes described.

3. The brake T, in combination with the arm H, levers K M, rod N, and crank-wheel R, substantially as and for the purposes described.

4. The pitman S, connected at the lower end with the crank-wheel R, provided with the brake T, in combination with the rod G, having the offset, substantially as and for the purposes described.

In testimony that we claim the foregoing as our own invention we hereunto affix our signatures in presence of two witnesses.

JAMES DOUGLAS MORRISON.

JOCHIM CHRISTIAN TIETJENS.

Witnesses:

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CHAS. W. CHASE.