(No Model.)

M. STEINER.

WINDMILL.

No. 377,964. Patented Feb. 14, 1888.

Fig. 1.

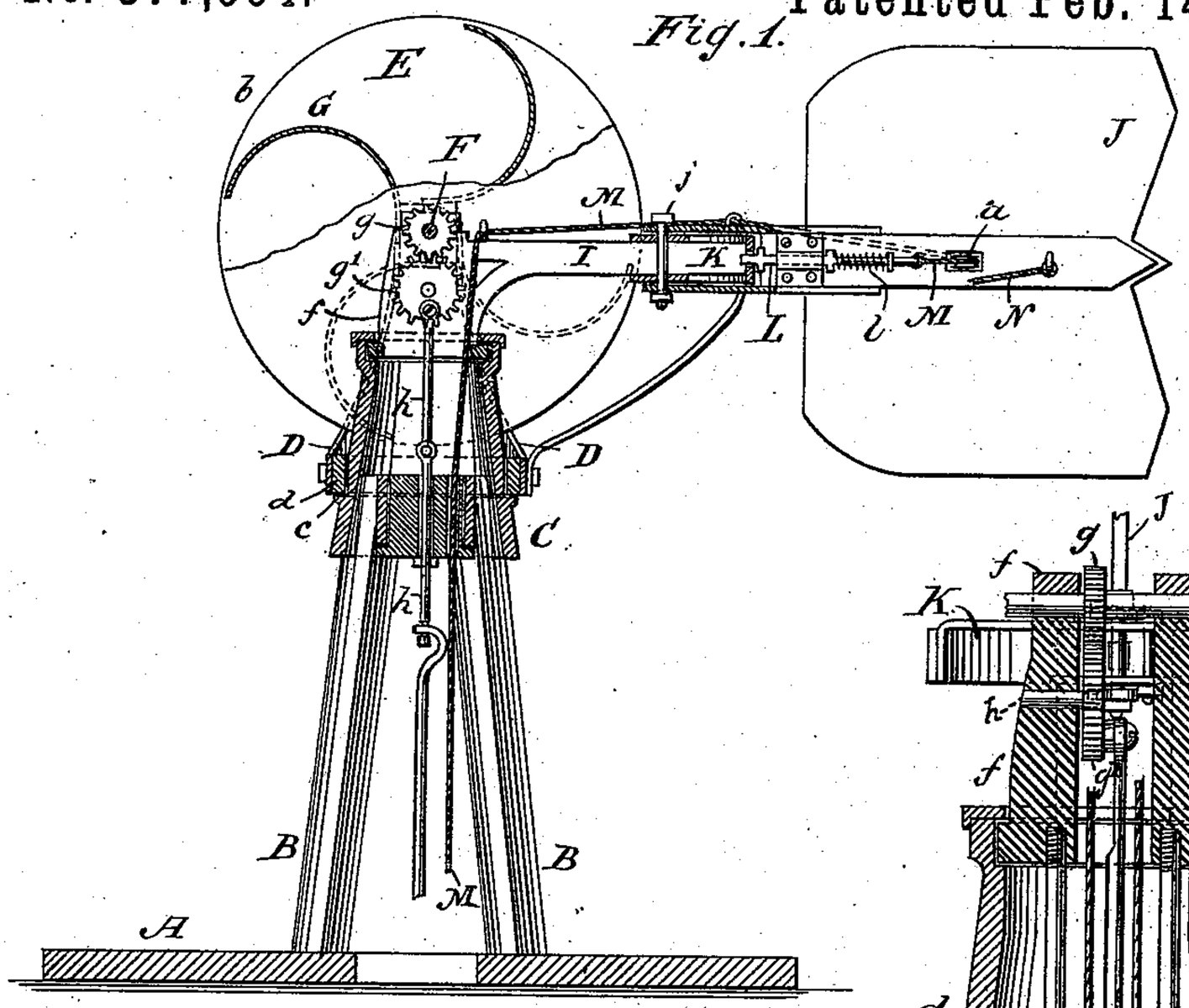


Fig. 3.

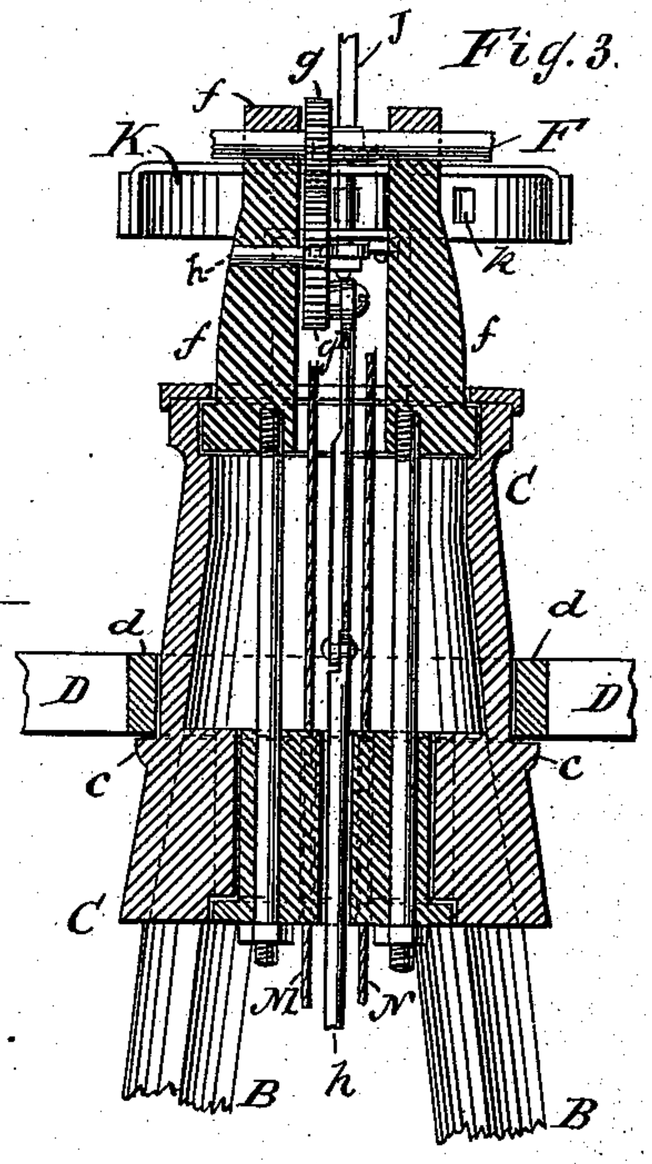
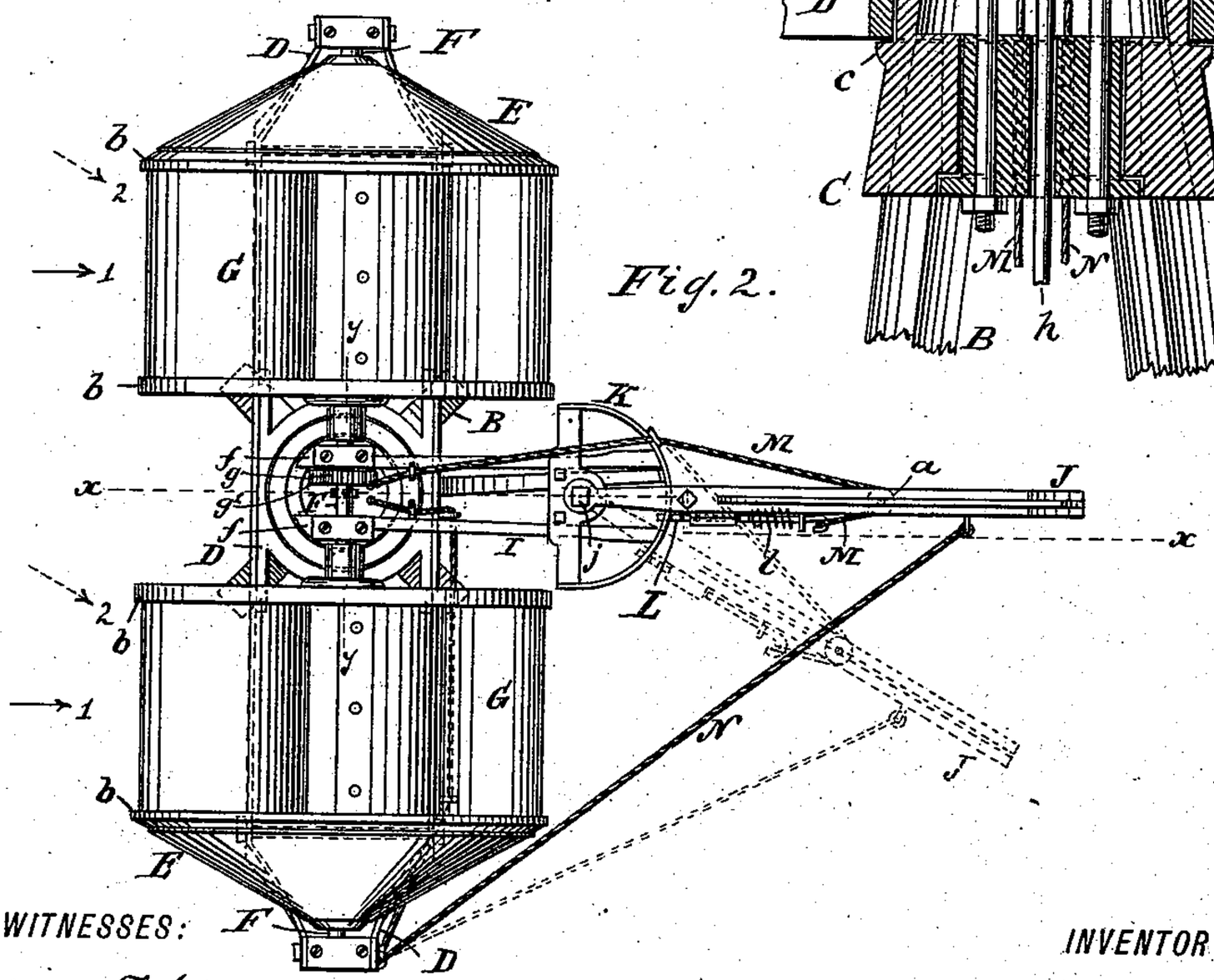


Fig. 2.



WITNESSES:

Edward Wolff.
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INVENTOR

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ATTORNEYS

UNITED STATES PATENT OFFICE.

MOSES STEINER, OF BLUFFTON, OHIO.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 377,964, dated February 14, 1888.

Application filed September 8, 1887. Serial No. 249,147. (No model.)

To all whom it may concern:

Be it known that I, MOSES STEINER, a citizen of the United States, residing at Bluffton, in the county of Allen and State of Ohio, have invented new and useful Improvements in Windmills, of which the following is a specification.

This invention relates to improvements for securing proper working of windmills, as set forth in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a section in the plane *x x*, Fig. 2. Fig. 2 is a plan view of a windmill. Fig. 3 is a section, on an enlarged scale, in the plane *y y*, Fig. 2.

Similar letters indicate corresponding parts.

In the drawings, the letter A indicates a base or support, to which is secured a tower or pillar, B, having a cap, C, with a ledge or collar, *c*. On said ledge *c* rests the ring or support *d* of the supporting-frame D for the rotary wind-wheels E. Said wheels are secured to a shaft, F, having bearings in the frame D and in pillow-blocks *f*. Said pillow-blocks *f*, as seen in Fig. 3, are mounted in the cap C, so as to be able to rotate therein. The frame D and pillow-blocks *f* thus rotate together and allow the position of the shaft F to be changed relatively to the wind.

The wind-wheels E consist each of a pair of disks or plates, *b*, between which are curved blades G. Said blades are made to extend from the periphery of the wheel to the center thereof, so as to form an unbroken surface adapted to catch and utilize the full force of the wind striking into the wheel. The wind striking said blades causes the wheel to revolve.

On the shaft F is a gear, *g*, meshing into a gear, *g'*, having a shaft, *h*, connected thereto by a crank-pin, so that the rotation of the wheel *g'* reciprocates the shaft *h*. The movements of the shaft *h* can be utilized to work an apparatus such as a pump.

The frame I for the vane J is attached to the pillow-blocks *f* or the frame D. Said frame I has a semicircularly-shaped segment or support, K, for the vane. The vane J is pivoted at *j* to the frame I, and said vane has a bolt, L, which is pressed by a spring, *l*, toward the segment K. Said segment has a series of holes, *k*, adapted to be engaged by the bolt L, and the engagement of a hole *k* by the bolt L locks the vane J against turning about the pivot *j*.

By having a series of holes *k* the bolt L can be made to lock the vane J at varying angles to the wheels E. By shifting the vane—for example, from the position shown in Fig. 2 in full lines to the position there shown in dotted lines—the wind, instead of squarely striking the wheels E, as indicated by full arrows 1 in Fig. 2, can be made to strike the wheels E at an angle, as indicated by the dotted arrows 2 in Fig. 2. The velocity of revolution of the wheels can thus be regulated.

In order to allow the bolt L to be worked from the base A, an operating chain or connection, M, is secured to the bolt and made to pass about a pulley, *a*, in the vane into the interior of the tower B, and thence toward the base A to within reach of the attendant. This chain M serves to draw the bolt L out of engagement with the segment K and to swing the vane J in one direction. A chain or connection, N, secured to the vane serves to swing the vane in the opposite direction. The vane J can thus be set so as to regulate the action of the wind on the wheels E.

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

1. The combination, with a swiveled wind-wheel, of a pivoted vane, a locking-bolt, substantially as described, adapted to secure said vane at varying angles to the wheel, an operating chain or connection secured to said vane on one side and acting directly thereon to vary the angle with the wind, and an operating chain or connection on the other side of the vane secured to said locking-bolt, substantially as set forth.

2. The combination, with a swiveled wind-wheel, of a vane-support, I, and vane J, a segment, K, having holes *k*, a spring-actuated locking device, L, a chain or connection, M, attached thereto and carried to the tower at an angle with one side of the vane, and the connection N, attached to said vane and carried to the tower at an angle with the opposite side of said vane, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

MOSES STEINER. [L. S.]

Witnesses:

PETER ALTHOUS,

PETER MUENZER.