M. W. PALMER.
Windmill.

No. 215,661. Patented May 20, 1879.

Fig. 1.

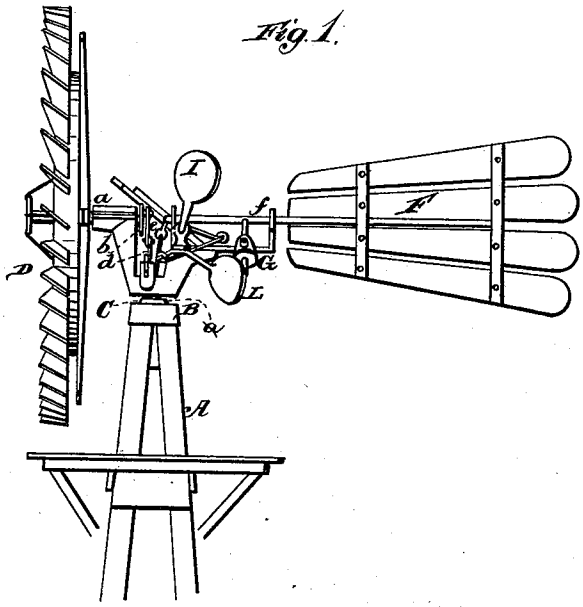
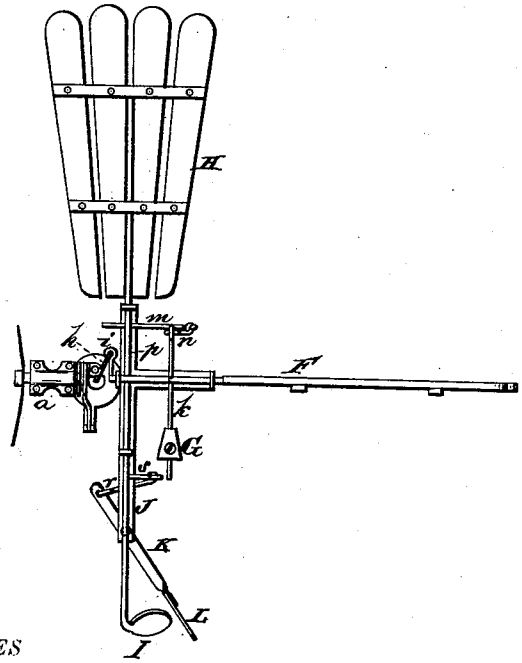


Fig. 2.



WITNESSES
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By

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UNITED STATES PATENT OFFICE.

MERRITT W. PALMER, OF SCHOOLCRAFT, MICHIGAN.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **215,661**, dated May 20, 1879; application filed March 8, 1879.

To all whom it may concern:

Be it known that I, MERRITT W. PALMER, of Schoolcraft, in the county of Kalamazoo and State of Michigan, have invented a new and valuable Improvement in Windmills; and I 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 is a side elevation of a windmill embodying the improvements in my invention, and Fig. 2 is a plan view of the same.

My invention relates to windmills; and it consists in the construction and arrangement of vanes used in connection with the wind-wheel, as will be hereinafter more fully set forth.

The annexed drawings, to which reference is made, fully illustrate my invention.

A represents the tower of the windmill, constructed in any suitable manner, and B is the turn-table, provided with a hollow or tubular journal, C, which is inserted in the upper end of the tower. The turn-table B is constructed to form a bearing at *a* for the shaft of the wheel D, said shaft having at its inner end a crank, *b*, which, by a pitman, *e*, is connected with a lever, *d*. This lever is pivoted to an arm projecting from the turn-table, and its inner free end is to be connected with the rod of the pump or other machinery to give the same a reciprocating motion.

In suitable bearings on the turn-table is placed a shaft, *f*, to which the tail-vane F is secured, said shaft *f* being on a line with, or parallel to, the wheel-shaft; and on the inner end of the said shaft *f* is a crank, *i*, for attaching a cord or wire, *h*, for the purpose of throwing the wheel out of the wind when desired.

To the shaft *f* is secured an arm, *k*, on one end of which is an adjustable weight, G, for holding the vane F in position to keep the wheel in the wind. The other end of the arm *k* is, by a coupling, *n*, connected with an arm, *m*, projecting from a shaft, *p*, and this shaft is placed in suitable bearings at right angles to the shaft *f*. On one end of the shaft *p* is secured a vane, H, the plane of which is at right angles to that of the vane F; or, in other words, when one vane stands vertically the other is horizontal, and vice versa. Upon the other end of the shaft *p* is attached a vane, I, which stands in inclined position, as shown. This vane I turns backward when the wind blows too hard, and turns the shaft *p* in its bearings; and this shaft being connected, as described, with the shaft *f*, the two vanes F and H are turned in such a manner as to throw the wheel more or less out of the wind. As the wind decreases in force the weight G brings the vanes back to their former position, and causes thereby the wheel to be thrown into the wind.

To an arm, J, projecting from the turn-table, is pivoted a lever, K, carrying at the outer end a vane, L. The inner end of this lever K is, by a rod, *r*, connected with an arm, *s*, projecting from the shaft *p*.

The vanes L and I are not intended to be used at the same time, though they may be so used, if desired.

The action of the vane L is the same as that described for the vane I; but it has greater power, on account of the leverage exerted by the lever J and the connection of the same with the shaft *p*.

I claim—

The shaft *p*, carrying the vanes H and I, in combination with the shaft *f*, vane F, and arm *k*, with weight G, as and for the purposes herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

MERRITT W. PALMER.

Witnesses:
H. P. SMITH,
WALTER F. SMITH.