

I. H. PALMER.  
Windmill.

No. 214,184.

Patented April 8, 1879.

Fig. 1.

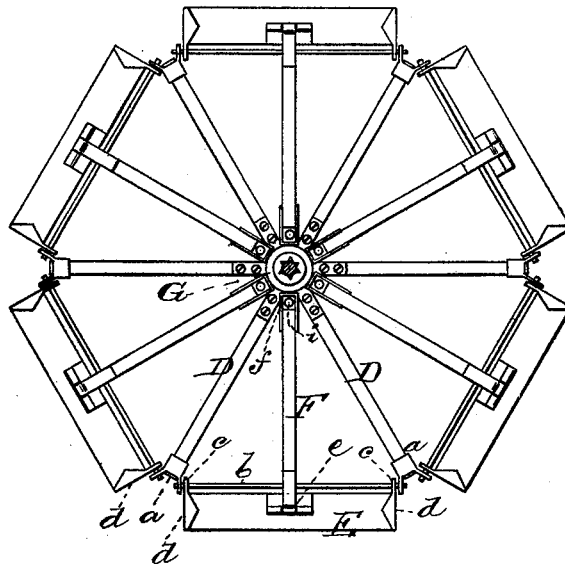


Fig. 2.

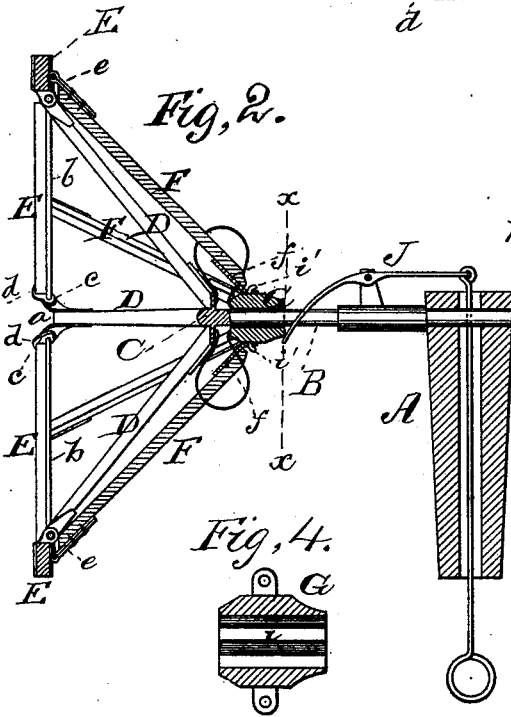


Fig. 4.

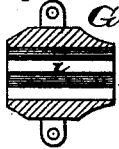


Fig. 3.

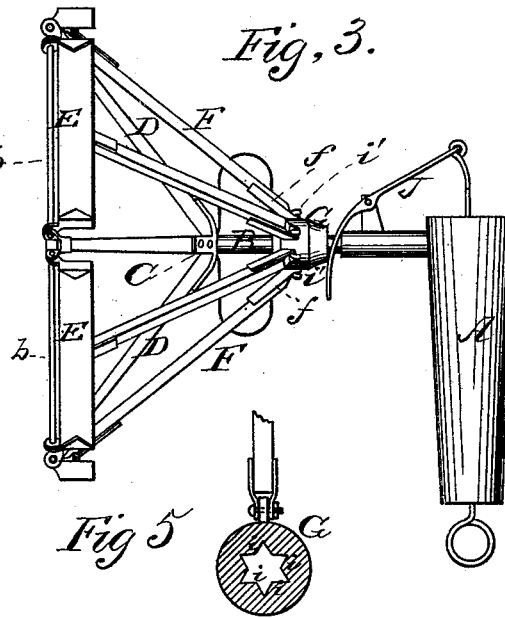
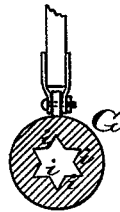


Fig. 5.



WITNESSES

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# UNITED STATES PATENT OFFICE.

ISAAC H. PALMER, OF LODI, WISCONSIN.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **214,184**, dated April 8, 1879; application filed February 10, 1879.

### *To all whom it may concern:*

Be it known that I, ISAAC H. PALMER, of Lodi, in the county of Columbia and State of Wisconsin, 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 of the drawings is a representation of a vertical section of the shaft, showing an end view of the wheel. Fig. 2 is a vertical central section of the wheel. Fig. 3 is a side view thereof; and Figs. 4 and 5 are, respectively, longitudinal and transverse sections of the slide-head.

This invention has relation to improvements in that class of wind-engines the wheels of which are driven by wind blowing from the tower side thereof, and provided with fans that swing into and out of the wind, and are held into the wind by spring-power.

The nature of the invention consists in a slide-head loosely fitted upon a wind-wheel shaft, and revolving with it, the said slide being provided with longitudinal inside ribs and exterior hooks for the attachment of the rods controlling the wings or fans of the wheel, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates an axis-post arranged in a vertical position and journaled in a tower so as to rotate freely therein. B designates a horizontal wind-wheel shaft journaled in the said post, and provided at its outer end with a strong spider, C, the arms of which radiate from the shaft, and form together a conical outline, the flare being outward from said shaft. To the arms of this spider are rigidly secured the spokes D of the wheel, the same being usually of wood, and provided at their outer extremities with the forked castings *a*. These are connected together, bracing the frame of the wind-wheel, by means of rods *b*, which together form a regular hexagon, and extend through eyes *c* at the ends of the cross-pieces E of the wheel-sections, allowing the latter to vibrate freely into the plane of the wheel, and at right angles thereto. The eyes *c* project

from metallic end pieces *d*, secured to the ends of the cross-pieces E rigidly.

The blades which compose the wind-wheel sections are attached rigidly to the cross-pieces E in the usual positions, and by holding the wind cause rotary motion to be imparted to the wheel.

Connected to the cross-pieces E, by means of ordinary strap-hinges *e*, or their equivalents, are the controlling-rods F, the ends of which contiguous to the said pieces are beveled off, to avoid interference with the same during their vibrations. The other ends of the rods F are provided with metallic shoes *f*, having in their ends, projecting beyond the rods, perforations, in which are engaged hooks *g* on a metallic slide-head, G, sliding loosely upon the main shaft and turning therewith. These hooks are bent backward, as shown in Figs. 2 and 3, and when engaged with the shoes *f*, aforesaid, connect the rods to the slide in such a manner as to prevent casual displacement.

Sometimes, however, I may employ the mode of attachment shown in Fig. 5, consisting of a forked casting on the end of the controlling-rod, an eye upon the slide-head, and a bolt and nut connecting the casting and eye flexibly; but I prefer the former construction, as the nut is dispensed with, which, from its liability to work loose, is somewhat objectionable.

Inside of the head are formed longitudinal ribs *i*, alternating with corresponding depressions that extend from end to end of the said sleeve. The depressions allow water to run off from the shaft through the head, thus preventing the formation of ice therein, and the ribs *i* speedily clear off any ice which may have accumulated on the shaft, thus preventing the said head from becoming locked.

The wings or fans that compose the wheel are held into the wind by spring-power, as shown in my Letters Patent No. 207,545, dated August 27, 1878. When the power of these springs is overcome by the force of the wind the wheel-sections swing out of the wind automatically, and are swung back into the wind as the gale subsides, and in proportion to such subsidence, by the resilience of said springs. They may, however, be operated by a lever,

J, fulcrumed on the bearing of the main shaft, and operated from below by means of a rod extending through the axis-post.

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

1. The combination, with shaft B, the wind-wheel frame C D, and the cross-pieces E, journaled in said frame, of a slide-head, G, on said shaft, and provided with outside radial hooks *i*, and interior longitudinal ribs *i*, and the controlling-rods F, hinged directly to the cross-pieces E, and provided with shoes *f*, having

perforations engaging the hooks aforesaid, substantially as specified.

2. The slide-head G, having exterior books *i'* and interior ribs *i*, as and for the purpose specified.

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

ISAAC H. PALMER.

Witnesses:

H. M. AYER,

M. D. MANN.