I. H. PALMER.
WINDMILLS.

No. 194,839. Patented Sept. 4, 1877.

Fig 1.

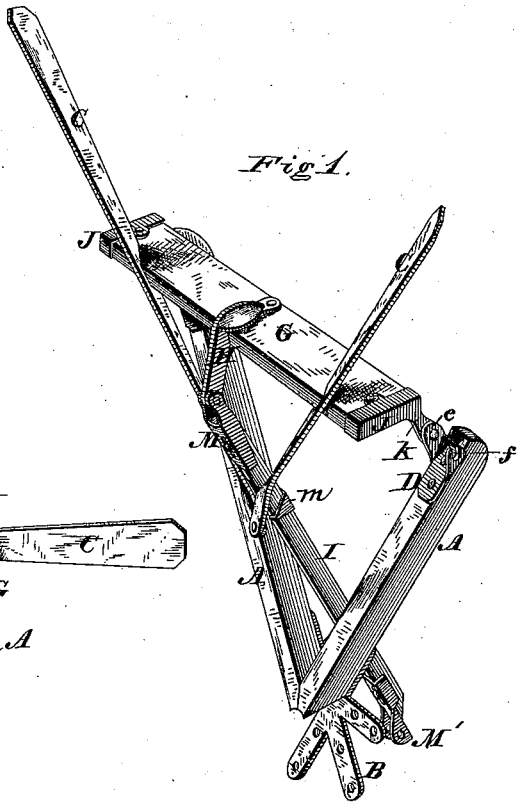


Fig 3.

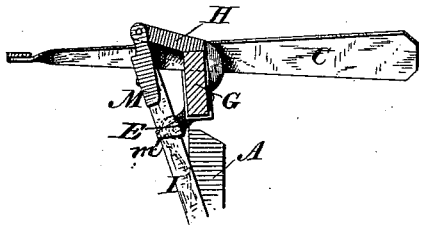
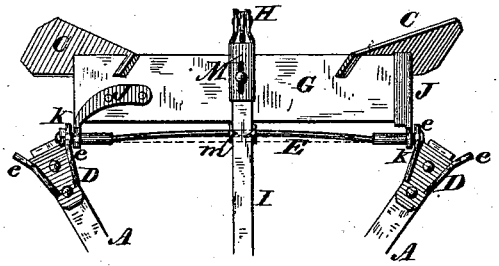


Fig 2.



Witnesses.

Harry King

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UNITED STATES PATENT OFFICE.

ISAAC H. PALMER, OF LODI, WISCONSIN.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **194,839**, dated September 4, 1877; application filed August 7, 1877.

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 useful Improvement in Windmills; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a section of a windmill, showing my improvement. Fig. 2 is a partial front elevation of the same; and Fig. 3 is a sectional view, showing the position of the section when thrown out of the wind.

Similar letters of reference in the accompanying drawings denote the same parts.

My present invention, which is an improvement upon the windmill for which a patent was granted to me July 10, 1877, is designed to facilitate the movement of the pivoted sections or fans of a rosette wind-wheel in and out of the wind; and it consists, first, in the combination of a spring-rod with each pivoted section of fans to assist by its elasticity in throwing or moving the sections into working position after they have been forced out by hand or an unusually strong wind; secondly, in hanging the cross-bar of the fan-sections upon the spring-rod in such a manner that when the sections are thrown or moved out of the wind the cross-bar will fall in rear of the spring-rod, thereby pressing the head lever-rod against the spring-rod, for the purpose of springing the latter so that its elasticity shall be brought into action in throwing the fan-sections into working position, when the pressure of the head lever-rod is removed; thirdly, in the construction of the spring-rod and the means for its connection with the arms of the wind-wheel; and, lastly, in the adjustment of the head lever-rod to regulate the throw of the fan-sections.

In the accompanying drawings, A A represent two radial arms of a rosette wind-wheel connected to the spider B in the usual manner, and, together with the fans C C, forming one section of the wheel. D D are iron bearings, secured to the outer ends of the arms A A to hold the ends of the spring-rod E. These bearings are each bolted to the face of the arms, and are formed with two turned-up ears, *e e*, to receive the spring-rods of adjoining fan-sections. The rods are either held in holes formed in the ears, or are let into notches *f* therein, as shown in Fig. 1, the notches and ears being so formed as to prevent the rod when serewed tight from falling out.

The ends of the spring-rods are made of sufficient thickness to form the necessary bearings or journals in the ears *e;* but between the ends they are made small in diameter, so that they can be sprung out of line when the requisite force is brought against it.

G is the cross-bar carrying the fan-blades C, and provided in the center with the head-lever H, which is pivoted to the rod I, by which the fan-section is moved into and out of operation. J J are iron sockets or plates fastened to the ends of the cross-bar and formed or otherwise provided with lateral lugs *k k*, through which the spring-rod passes to support the fan-section. By this method of hanging the fan-section its weight is thrown in rear of the spring-rod when out of the wind, as shown in Fig. 3, so as to press the head lever-rod I against the spring-rod and force the latter to yield or bend in the center, as shown in Fig. 2. The rod thus bent constitutes a spring, which, when the pressure of the head lever-rod is removed either automatically or by hand, acts promptly to assist in forcing the fan-sections back into working position, face to the wind. By this means the fan-sections are easily operated, and the difficulty usually experienced in returning them to the wind is entirely overcome.

The head lever-rod is articulated to a lever which in turn is connected to a horizontally-sliding head, as shown in my patented case above referred to, and is guided in its movements by a loop attached to the spider, and its end connecting-irons M are slotted, and attached and held in place by bolts passing through the slots, so that the length of the rod may be adjusted to regulate the throw of the fan-section. A metal plate, *m*, is also secured to this rod to bear against the spring-rod and prevent the rod I from wearing.

I claim as my invention—

1. In a wind-wheel, the combination of a

spring-rod, E, with the fan-sections, substantially as described, for the purpose specified.

2. In a wind-wheel, the combination of the spring-rod E with the fan-sections and suitable bearings on the radial arms A, substantially as described.

3. The cross-bar G of the fan-sections hung upon the spring-rod E, substantially as described, so as to lie in rear of such rod when the sections are thrown out of the wind, substantially as described.

4. The combination of the spring-rod E and head lever-rod I with the fan-sections and radial wheel-arms, substantially as described, for the purpose specified.

5. The plates or sockets J, constructed with lateral lugs *k* to receive the spring-rod, substantially as described.

6. The connecting-plates M of the head lever-rod, adapted for adjustment thereon to regulate the throw of the fan-sections, substantially as described.

7. The combination of the protecting-plate *m* with the head lever-rod, substantially as described.

8. The head lever-rod I, adapted to bear against the spring-rod E to set the latter for throwing the fan-sections into position full to the wind, substantially as described.

ISAAC H. PALMER.

Witnesses:
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