F. W. INGHAM.
Wind-Wheels.

No. 212,008. Patented Feb. 4, 1879.

Fig. 1.

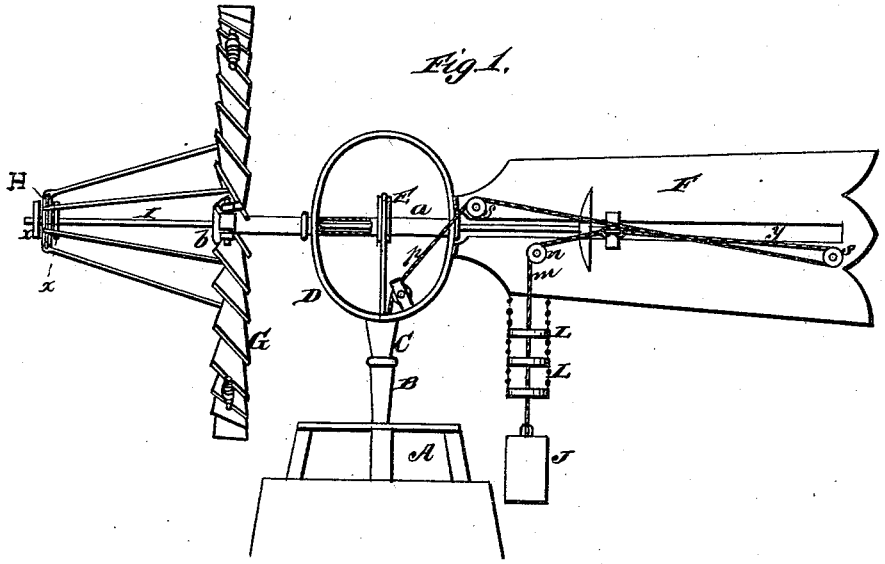
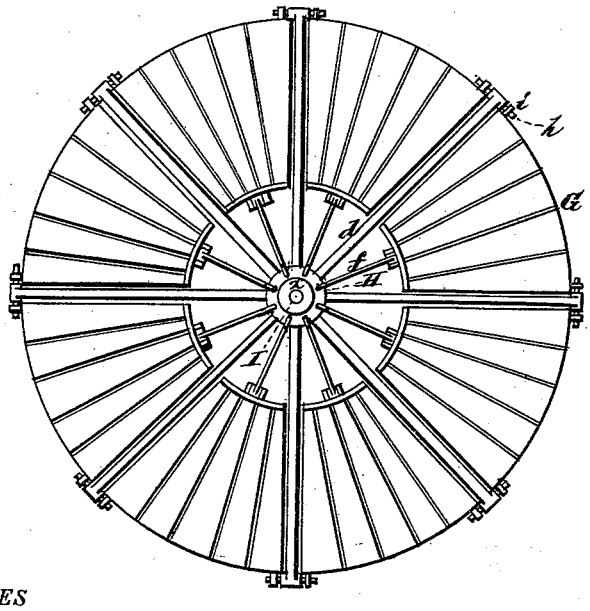


Fig. 2.



WITNESSES
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FREDERICK W. INGHAM, OF FALLS CITY, NEBRASKA.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **212,008**, dated February 4, 1879; application filed September 14, 1878.

To all whom it may concern:

Be it known that I, FREDERICK W. INGHAM, of Falls City, in the county of Richardson and State of Nebraska, have invented a new and valuable Improvement in Wind-Wheels; 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 side elevation of my windmill; and Fig. 2 is a front view of the fan.

The nature of my invention consists in the construction and arrangement of a 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 base or tower of my windmill, provided with a hollow inverted thimble, B, in which is inserted the correspondingly-shaped hollow stem C, projecting downward from the frame D. This forms the turn-table or turning device of the windmill; but I do not confine myself to this construction, as the turn-table may be constructed in any of the known and usual ways.

In the frame D is placed the hollow main shaft *a*, which rotates in suitable bearings, and is provided in the center with an eccentric, E, for imparting the reciprocating motion. To one side of the frame D, on a line with the shaft *a*, is secured the vane F. On the opposite end of the hollow shaft *a* is secured the wind-wheel, which consists of a hub, *b*, with a series of radial arms, *d*, projecting from the same, and in the spaces between said arms is placed a wheel-section, G, consisting of a series of inclined blades arranged somewhat in fan form, having their inner ends connected together, while their outer ends are free and disconnected.

The outer end of each section G is hung, by means of eyes *i*, upon pins *h*, in the outer ends of the arms *d*, as shown, and the inner end of each section is, by a hinged rod, *f*, connected with a collar or disk, H, placed on a rod, I, which passes through the hollow main shaft *a*. The collar or disk H is capable of rotating on the rod I, but is held from any lateral movement thereon by means of pins or collars *x x*. The other end of the rod I is guided by suitable keepers in a longitudinal slot, *y*, in the vane F, and to this end of the rod is attached a cord or chain, *m*, which is passed around a pulley, *n*, mounted on a stud near the inner end of the vane, and has a weight, J, attached to it. The action of this weight is to hold the wheel-sections in the wind. As the force of the wind increases the sections G are turned more or less out of the wind, thereby pushing the rod I inward and drawing up the weight. As the wind decreases the weight throws the rod outward again, and brings the wheel-sections to their former places.

From the inner end of the vane F is suspended a series of auxiliary weights, L L, made in ring form, and the cord or chain *m*, which suspends the main weight, is passed through the weights L.

The rings or weights L in a full-sized mill will be cast-iron, and weigh some three or four pounds each.

If the wind is strong, the wheel-sections or fans G open, and the leverage becomes shorter and more weight is required. As the main weight J is raised the auxiliary weights L are applied one by one, thus increasing the weight gradually more and more as the fans open.

The fans are opened from the ground by means of a cord or chain, *p*, passing over pulleys *s s* on the side of the vane, and connected to the end of the rod I.

I am aware that wind-wheels have been constructed wherein the wheel-sections have been secured to rods pivoted between the radial arms of the wheel and operated by jointed levers, as shown in the patent to Jesse M. Clock, October 20, 1857.

I am aware, also, that wheel-sections have been composed of sail-vanes radially inserted in grooves in a shaft pivoted between the radial wheel-arms and operated by rods connected with the disk upon the wheel-shaft, as shown in the patent to L. H. Bennett, May 29, 1877; but I do not seek in this application to cover either of said constructions.

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

1. In a windmill having a weight to hold the fans in the wind, a series of auxiliary weights, applied automatically, to increase the main weight in proportion to the increase of the force of the wind, as herein set forth.

2. The ring-shaped suspended weights L, in combination with the main weight J, cord or chain *m*, and vane F, as and for the purpose herein set forth.

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

FREDERICK WILLIAM INGHAM.

Witnesses:
GEO. W. NEELY,
R. L. HENDERSON.