J. T. MIDER & J. T. McCLELLAND.

Wind-Wheel.

No. 212,249. Patented Feb. 11, 1879.

Fig. 1.

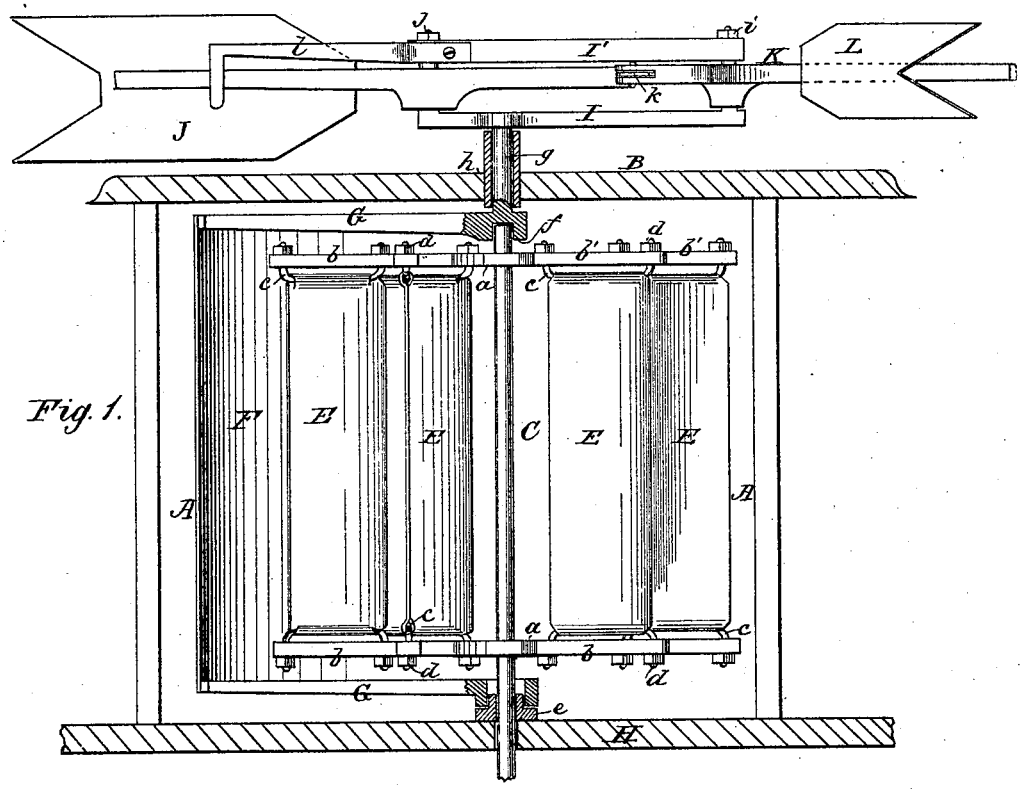
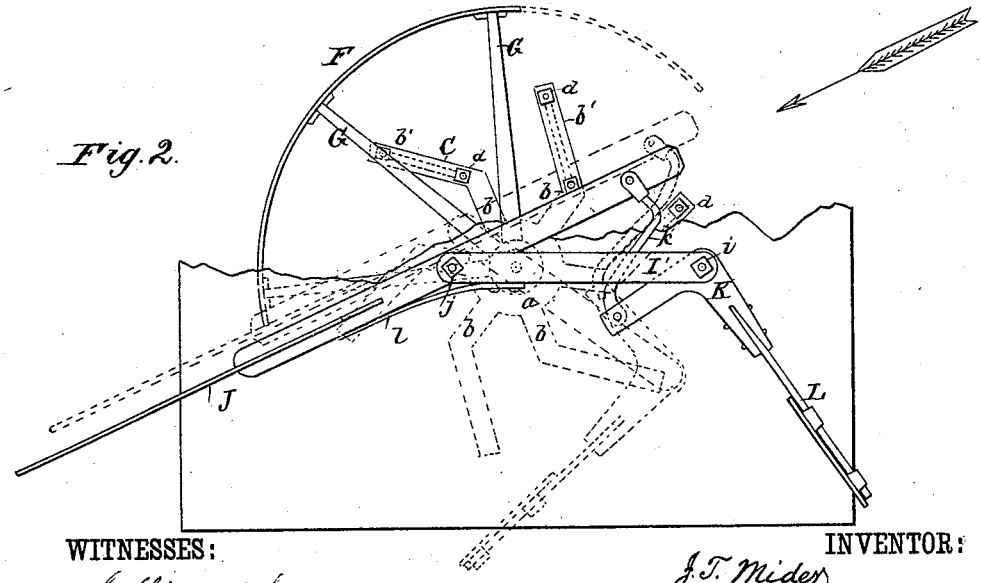


Fig. 2.



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JACOB T. MIDER AND JOHN T. McCLELLAND, OF WATHENA, KANSAS.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **212,249**, dated February 11, 1879; application filed November 30, 1878.

To all whom it may concern:

Be it known that we, JACOB T. MIDER and JOHN T. MCCLELLAND, of Wathena, in the county of Doniphan and State of Kansas, have invented a new and Improved Wind-Wheel; and we do hereby declare that the following is 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 side elevation, partly in section. Fig. 2 is a plan view with the roof partly broken away.

Our invention relates to certain improvements in wind-wheels of that class which rotate about a vertical axis.

Said improvements consist, mainly, in constructing the vanes or blades of the wheel of sheet metal or other material distended between two rigid heads fixed to the central shaft; also, in the peculiar construction and arrangement of the governing devices, as hereinafter more fully described.

In the drawings, A represents four vertical posts, sustaining at the top a roof, B, beneath which is arranged in a vertical axis the wheel C. Said wheel is constucted of heads *a*, rigidly attached to the central shaft, D, by any suitable means. These heads are cast or wrought with arms *b*, which diverge from the center, first in radial lines, and then are deflected at an angle to said radial line, as at *b'*.

E are the vanes or blades. These are constructed of sheet metal or other material, and arranged at an angle to the radial line, and distended between the outer portions, *b'*, of the arms of the heads. In attaching these blades to the heads short rods *c* are passed through a tubular bend at each end of the blades, and said rods are then bent at right angles, extended through perforations in the arms, and secured by nuts *d* upon their screw-threaded ends. These nuts may be screwed up from time to time, so as to tighten the blades. This mode of constructing the blades of a wheel of thin sheet metal or other similar material, and preventing them from bending or buckling by keeping them under a tension, enables us to secure great superficial area for the wheel with very little weight, and allows the wind to strike and glance from the blades, so as to utilize the same by reaction to the very best advantage.

F is a swinging screen. This is constructed, in curved form, of sheet metal or other material, and is carried upon the outer extremity of radial arms G. These radial arms G are riveted at the center, and have a bearing at the bottom, which encompasses the central shaft and is supported upon a metal plate, *e*, located upon a beam, H, which plate also forms a bearing for the central shaft. At the top these radial arms G are also united at the center, and upon their under side have a socket, *f*, that receives the upper end of the wheel-shaft, and forms a bearing for the same. These radial arms are also provided with a vertically-extended journal, *g*, which journal passes through a bearing, *h*, in the roof of the frame, and is rigidly attached to a frame carrying the governing devices, so that the said governing devices can act upon the horizontally-swinging screen.

The governing devices consist of a lower bar, I, attached to the journal of the swinging screen, and an upper parallel bar, I', connected with I at the ends by vertical bolts *i* and *j*. Upon the bolt *j* is pivoted the beam of the main tail J, and upon the forward bolt, *i*, is pivoted an elbow-lever, K, carrying the secondary or governing blade L. To the front end of the beam of the main tail is attached a rod, *k*, which connects with the arm of the elbow-lever. The main tail is designed to set in line with the direction of the wind, and the governing-blade to set at right angles thereto, so that as the force of the wind increases the governing-blade is deflected, and has a tendency to deflect the main tail, which tendency, however, is opposed by a spring, *l*, which forces the main tail in the opposite direction.

Now, when the force of the wind increases, the governing-blade is deflected and tends to deflect the main tail. The main tail, however, by reason of its greater superficial area and resistance, preserves its position in relation to the direction of the wind, and the effect is manifest in a reactionary movement of the frame I I', which, being attached to the journal of the screen, throws the latter more or less in front of the wheel, to cut off a greater or less part of the same from the wind. By

this means the action of the wheel is made automatically uniform.

To render the action of the governing devices more or less sensitive, the governing-blade is arranged to slide and be adjusted upon its arm farther from or closer to its pivot.

Having thus described our invention, what we claim as new is—

1. A wind-wheel composed of two rigid heads, arranged concentrically upon the same shaft, combined with intervening blades of sheet metal or analogous material, distended between said heads, substantially as described.

2. The combination, with the blades or vanes E, of the rigid heads *a*, the bent rods *c*, and the nuts *d*, substantially as and for the purpose described.

3. The adjustable frame I I′, in combination with the elbow-lever K, carrying the governing-blade, and pivoted upon the forward connecting-bolt, together with the main tail J, the spring *l*, and the connecting-rod *k*, substantially as and for the purpose described.

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Witnesses:
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