(No Model.) 2 Sheets—Sheet 1.

J. E. TOOMBS.

WINDMILL.

No. 273,642. Patented Mar. 6, 1883.

Fig. 1.

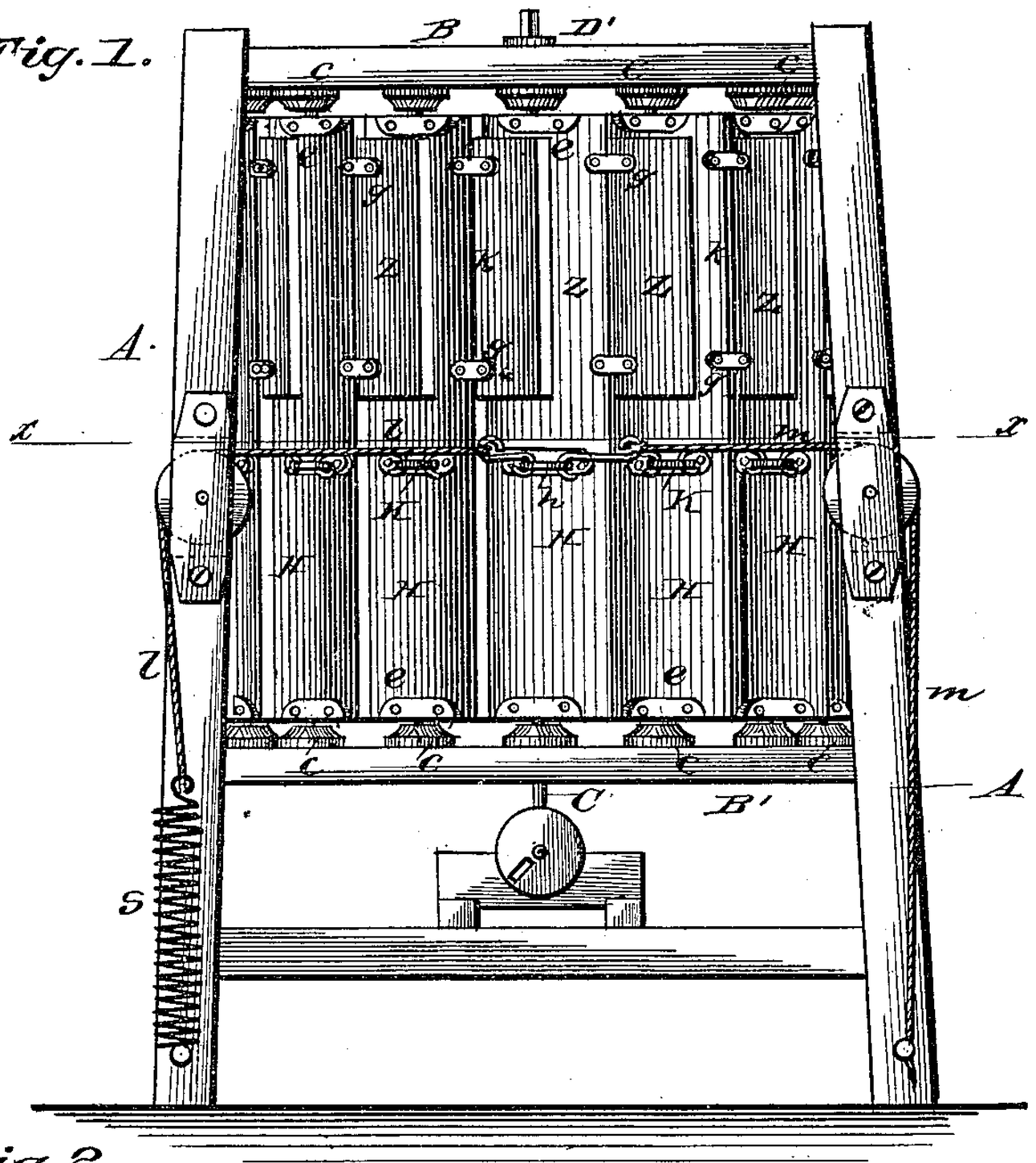
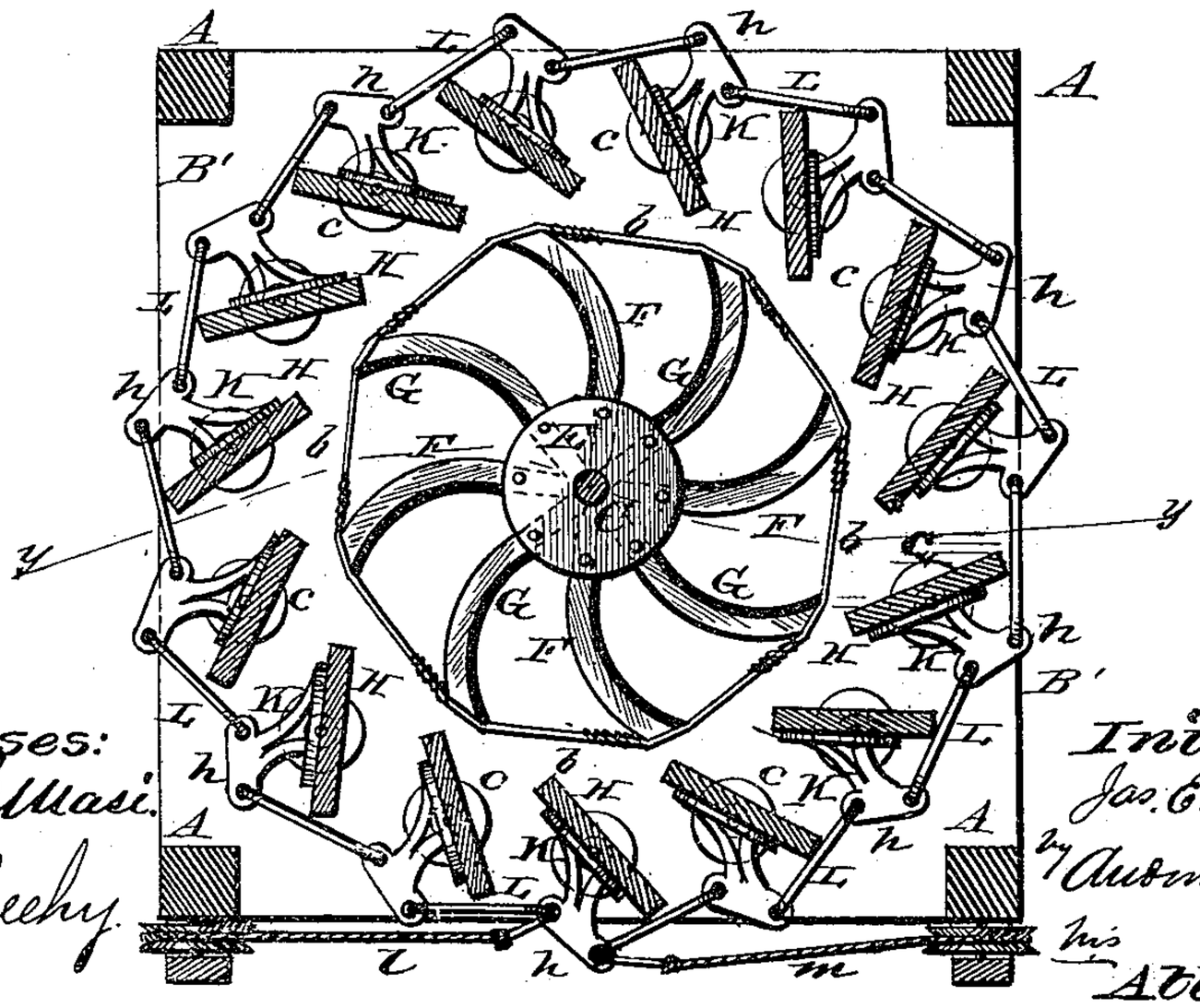


Fig. 2.



Witnesses:
Philip C. Masi.
J. J. Sheehy.

Inventor:
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by Auburn & Smith
his Attorneys.

(No Model.)

2 Sheets—Sheet 2.

J. E. TOOMBS.

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Fig. 3.

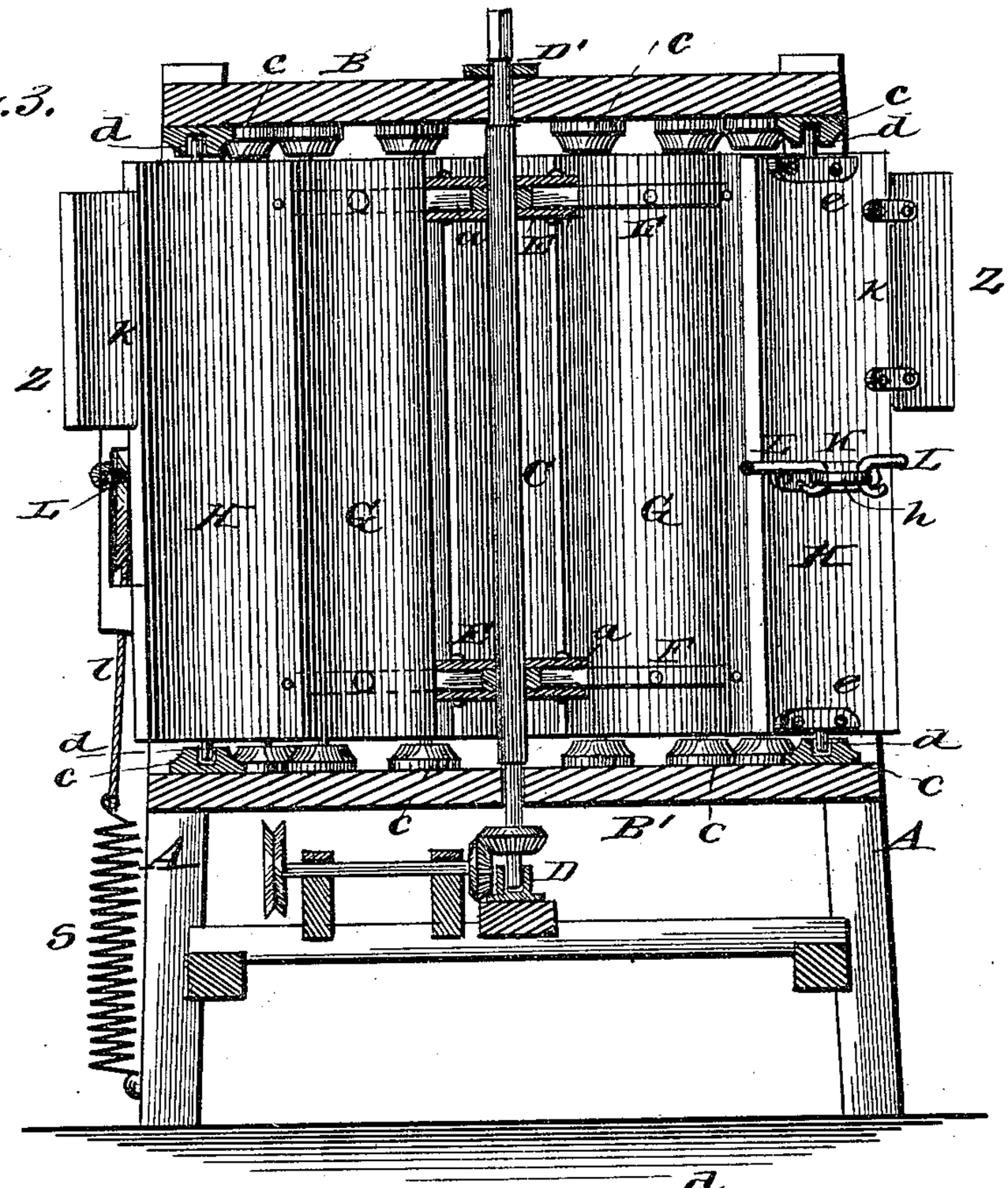


Fig. 4.

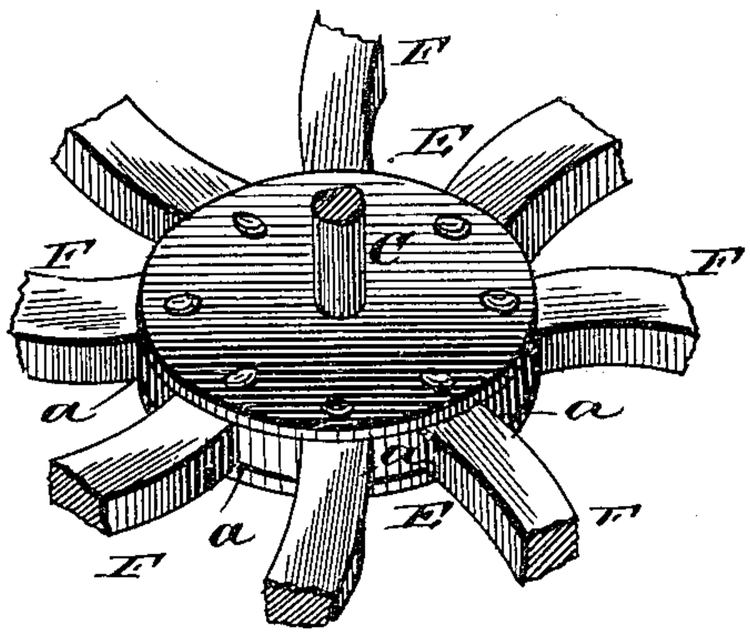
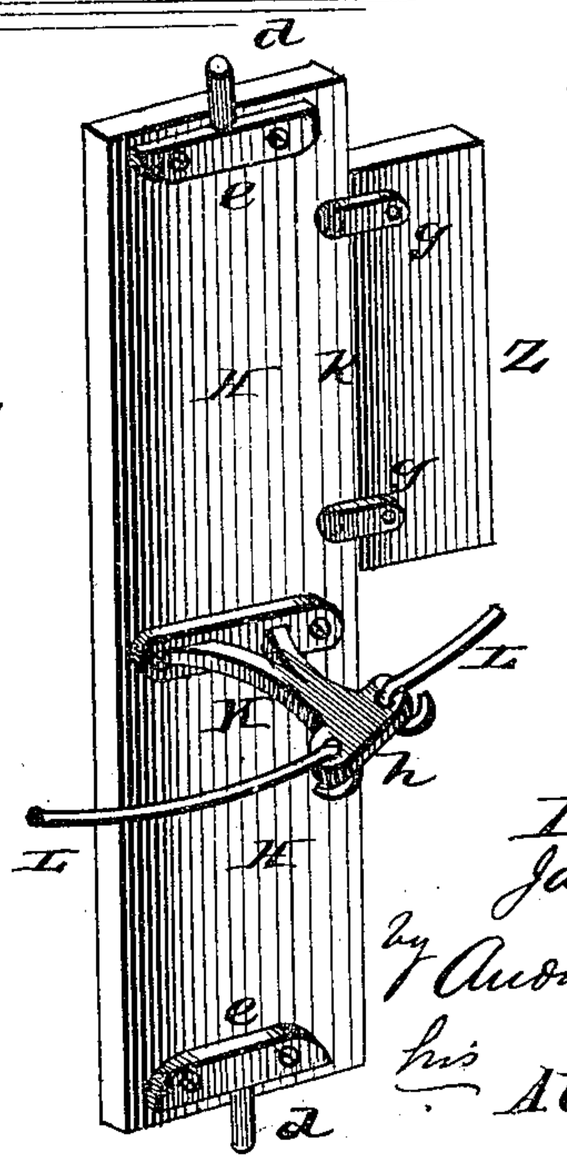


Fig. 5.



Witnesses:
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by Audrus & Smith
his Attorneys.

UNITED STATES PATENT OFFICE.

JAMES E. TOOMBS, OF TYNER, UTAH TERRITORY.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 273,642, dated March 6, 1883.

Application filed December 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. TOOMBS, a citizen of the United States, and a resident of Tyner, in the county of Box Elder and Territory of Utah, have invented certain new and useful Improvements in Windmills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a side view of my device. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a vertical section, and Figs. 4 and 5 are detail views.

This invention has relation to wind-engines; and it consists in the construction and novel arrangement of devices, as hereinafter set forth, and particularly pointed out in the claims appended.

In the accompanying drawings, the letter A designates the framing, which is conveniently constructed with corner-posts and cross-beams connecting the same.

B B′ indicate the top and bottom floors of the incasement.

C represents the iron shaft of the wind-wheel, said shaft having its lower end pivoted in a bearing, D, supported on a cross-block below the center of the lower floor, B′, through which said shaft extends upward, and is pivoted at its upper end in a bearing, D′, connected to the upper floor. The upper end of this shaft may pass through the upper floor, and, being finished with a square seat, can be connected to the lower end of a second shaft, extending upward to an additional wind-wheel.

The wind-wheel consists of the vertical shaft C, the horizontal hubs E, having square peripheral mortises or seats *a*, the curved arms F, secured in said mortises, the fans G, and wire bindings or tire-connections *b*, engaging the ends of the arms. The curved arms F are preferably made of wood, and are concave toward the wind. To the concave sides of these arms are secured the concave fans G, which are preferably made of sheet metal. The tire-bindings *b* are of wire twisted between the arms, the ends of which they engage, as shown in the drawings, so that the wind-wheel, although light, is very strong and durable.

The vertical or surrounding wall of the incasement consists of a circular series of end-pivoted vertical gates, H, whereof the inner edges are near the path of the outer edges of the fans, and the outer edges overlap the inner portions of the preceding gates in serial order when the gates are closed.

The gate-bearings *c* are metallic castings having central pivot recesses and perforations in the peripheral portion for the passage of fastening screws or nails. The gate journals are lugs *d*, formed on longitudinal plates *e*, which are also perforated for the fastening screws or nails. The bearings *c* are secured in circular order to the floors B and B′, and are engaged by the journals *d* of the plates *e*, which are fastened to the outer side of each gate, at each end thereof, a little nearer the inner edge of the gate than the outer edge. The tendency, therefore, of each gate, when affected by the wind, is to swing into closed position.

To the outside of each gate, near its middle portion, is attached an obliquely-projecting arm, K, having a perforated head, *h*, affording bearings for the ends of the rods L, which connect the gates to each other in series, so that when operated they move in unison.

To the upper portion of the outer edge of each gate is attached by outside hinges, *g*, a vibratory board or flapper, Z, which is so pivoted that it can fold back against the outer face of the gate. This flapper is, however, provided with an abutting edge or stop, as indicated at *k*, whereby it is prevented from folding forward beyond the plane of the gate. In the extended position it affords purchase to the wind, whereby when it is high the gates are closed automatically in opposition to the force of the opening-spring S, which is connected to the gate series by a cord or chain, *l*.

By means of a cord or chain, *m*, extending in opposite direction to the cord *l*, the gates can be adjusted to partially or wholly close them, when necessary, in regulating the admission of wind to the wind-wheel, or in closing the incasement entirely when the wind-wheel is not in use.

The vertical shaft of the wind-wheel is provided near its lower end with a pinion, which

engages a gear-wheel on the shaft which communicates motion to the machinery to be driven.

It will be observed that the plane of each gate is directed toward the concave face of a fan when the gates are fully opened.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The wind-wheel consisting of the vertical shaft C, its peripherally-mortised hubs E, the curved arms F, concave fans G, and binding-wires *b*, engaging the ends of the arms and extending around the wheel, substantially as specified.

2. The combination, with an interior wind-wheel, of the incasement top B and bottom B′, the circular series of end-pivoted gates H, connected together and to an opening-spring, S, and the hinged flapper-boards Z, connected to the outer edges of said gates, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES EPHRAIM TOOMBS.

Witnesses:

JOHN S. MILLER,

HOMER CALL.