

L. D. ABRAMS.
Wind-Wheel.

No. 164,409.

Patented June 15, 1875.

Fig. 1

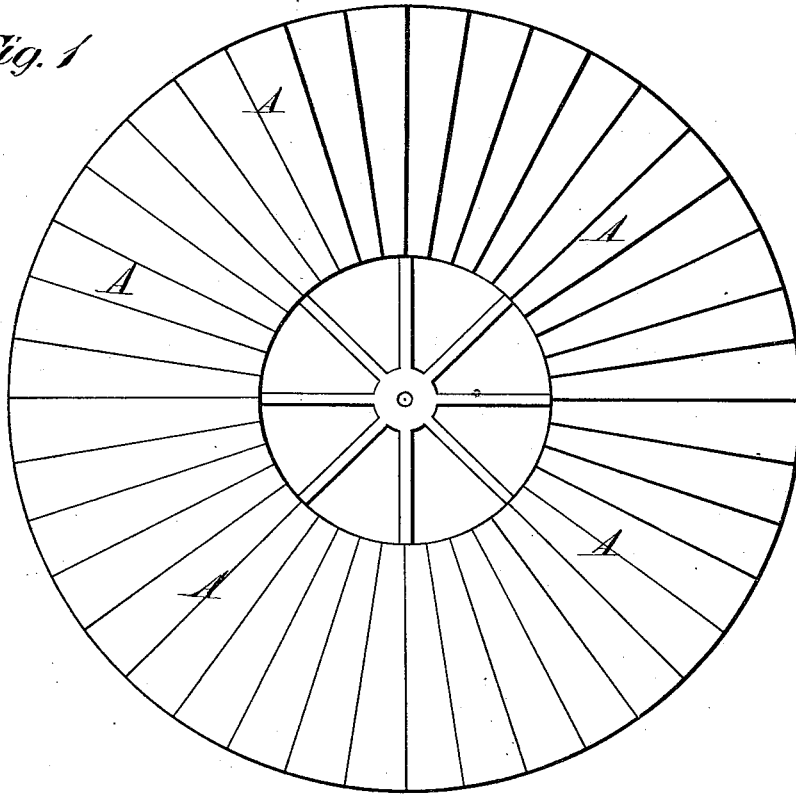


Fig. 2

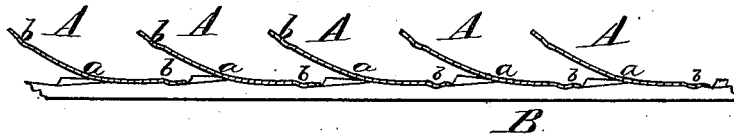


Fig. 3



WITNESSES

Mary S. Utley.
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LORENZO DOW ABRAMS, OF TUSCOLA, ILLINOIS.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **164,409**, dated June 15, 1875; application filed May 15, 1875.

To all whom it may concern:

Be it known that I, LORENZO D. ABRAMS, of Tuscola, in the county of Douglas and State of Illinois, 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 plan view of my wheel, and Fig. 2 is a sectional view of the same. Fig. 3 is a sectional detail view.

This invention has relation to blades for windmill-wheels; and the nature of my invention consists in a blade which is concave transversely, and which has rugated edges, whereby the wind will operate upon it to a much better advantage, and the edges, being rugated, will stiffen it, and allow it to be made very thin and light, as will be understood from the following description.

I prefer to construct the blades A of thin sheet metal; but they may be made of any other suitable material. These blades are tapered, their broadest ends being at the circumference of the wheel, and their narrowest ends being at the eye of the wheel, as shown in Fig. 1. In cross-section, taken at any point

between the ends of the blades, they are concave, forming an obtuse angle, *a*, which extends from end to end of each blade, through the middle of the width thereof. The longitudinal edges of each blade are crimped or rugated, as indicated, in Figs. 2 and 3, by letters *b b*, which rugæ afford great stiffness to the blade, and allow me to make it of very thin metal. I thus make a very light wheel, and at the same time secure the required stiffness of blades.

In making up a wheel with my improved blades, the rings B are notched and beveled, as shown in Fig. 2, and the blades are secured to these rings, so that they overlap one another one-half of the width of each blade, being at an angle with respect to the plane of the rings.

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

A wind-wheel blade, A, which is concave transversely, and which is stiffened by rugating or crimping its edges, as and for the purpose set forth.

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

LORENZO DOW ABRAMS.

Witnesses:

GEO. E. WYETH,
A. W. WALLACE.