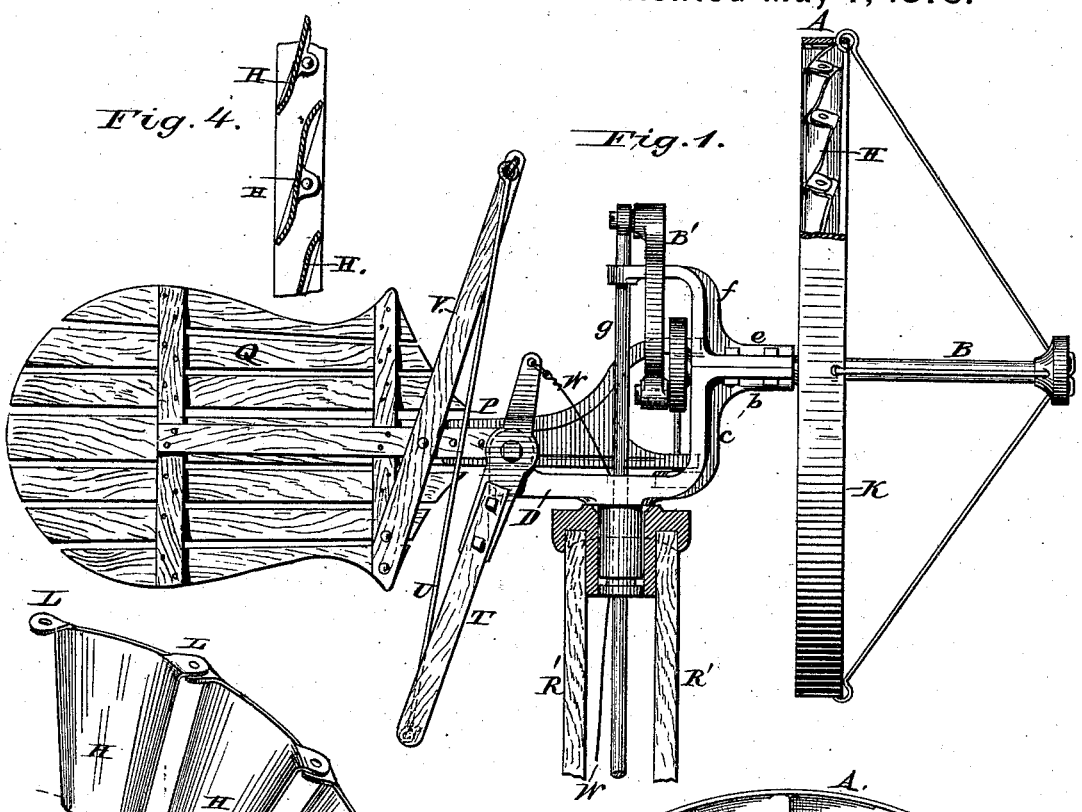
H. C. MINER.
Wind-Engine.

No. 203,480. Patented May 7, 1878.

Fig. 4.

Fig. 1.



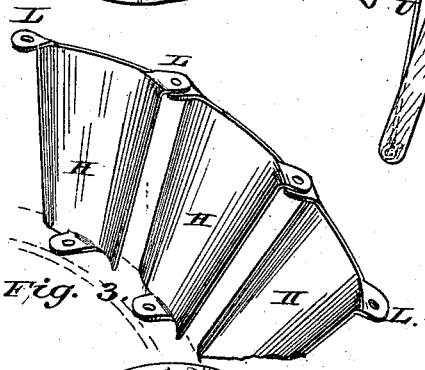


Fig. 3.

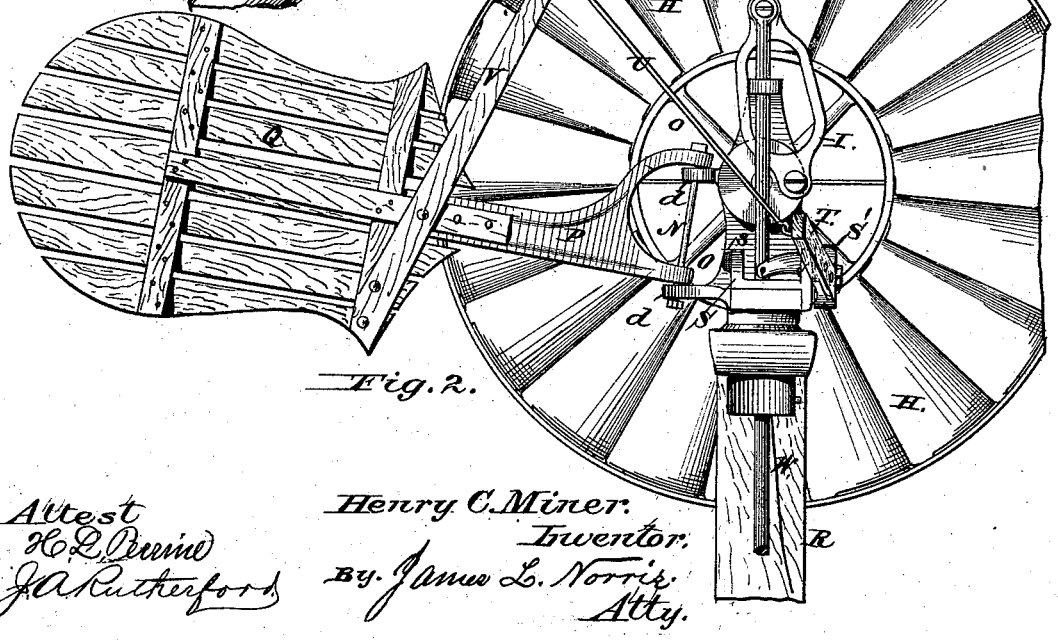


Fig. 2.

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J. A. Rutherford

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By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

HENRY C. MINER, OF STAFFORD, NEW YORK.

IMPROVEMENT IN WIND-ENGINES.

Specification forming part of Letters Patent No. **203,480**, dated May 7, 1878; application filed March 16, 1878.

To all whom it may concern:

Be it known that I, HENRY C. MINER, of Stafford, in the county of Genesee and State of New York, have invented certain new and useful Improvements in Windmills, of which the following is a specification:

The object of this invention is to so improve the wing-vanes of wind-wheels as to enable them to more fully utilize the motive force of the wind than heretofore, and also to improve the method of securing said wings in position; and, further, to provide an effective and readily-operated means of swinging the main vane to or from the wind, and thereby causing the wheel to be turned away from or into its operative position.

It consists, first, in a wind-wheel wing-vane having the line of its cross-section a double or approximately **S**-shaped curve, so that when said vane is arranged in a proper oblique position in a wheel its front edge will stand directly in the path of the wind, and the rear edge will stand at angles thereto; second, in providing the wing-vanes of wind-wheels with ears, projecting laterally in opposite directions from the opposite corners of the outer ends of said vanes, and arranging the vanes in a wheel in such position that the ears of each lap those of the vanes on both sides, and two lapping ears are attached to the outer rim of the wheel by a single bolt, so that the vanes are attached together as well as to the rim, and great strength is given to the wheel; third, in hinging the beam of the main vane to the turn-table on an inclined pintle, so that said vane will be held by gravity in a position parallel with the axis of the wheel, and automatically returned to said position, when released, after being swung to the wind, for the purpose of shifting the wheel.

In the accompanying drawing, Figure 1 is a side elevation of my improved wind-wheel and connections. Fig. 2 is a rear view, showing the regulating-vane swung to a position for shifting the wheel from the wind. Fig. 3 is a detached perspective view of a series of the vanes. Fig. 4 is a detached view, showing the vanes in cross-section.

The letter A indicates the wheel, fixed upon a shaft, B, which has a bearing partly in an arm, *b*, projecting from a standard, *c*, rising from the turn-table D, the upper portion or cover of said bearing being formed in an arm, *e*, projecting from the foot of a bracket, *f*, in the other end of which is formed the upper bearing for the rod *g*, which is intended to communicate motion to any desired machinery. H designates the wings or wheel-vanes. Transversely or in cross-section these wings are formed on a double or reversed curve, the back edge being slightly less curved than the front. These wings or vanes are secured, in a series of any desired number, radially around the hub I of the wheel, and are bound at their outer edges or ends by means of a rim, K, the said outer edges or ends being provided with ears L, projecting laterally in opposite directions from the opposite corners of the outer ends or edges of said vanes, the ear of the left-hand corner of one vane lapping the ear of the right-hand corner of the next, and secured to the rim by a single bolt, by means of which great strength is given to the wheel.

The turn-table D is provided with two lateral ears or lugs, *d d*, the lower one projecting slightly beyond the upper, through which passes and is secured an inclined pintle, N, upon which the branches O O of the bifurcated beam P of the main vane Q are pivoted, in such manner that the gravity of said main vane will tend to keep it in its normal position parallel with the axis of the wheel. The turn-table D is mounted upon the upright standard R, which is constructed of two upright sections, R′ R′, leaving a space between for the downwardly-extending driving-shaft. Said turn-table, at its rear, is provided with two vertical standards, S′ S′, which are preferably constructed in one piece, forming an attachment, which may be secured to the turn-table by means of screws, or in any other convenient manner. One of said standards is provided with an elastic cushion, *s*, against which the beam of the main vane rests when in its normal position, and which serves to take up the shock when said main vane suddenly assumes such position from any cause, in order to prevent injury to the apparatus. The other standard, S′, serves as a fulcrum for the lever T, the long arm of which is secured by a connection, U, to the end of an inclined beam, V, attached to the main beam, the short arm be-

ing provided with a cord, W, extending downwardly through the opening at the center of the turn-table, and terminating below within ready control of an attendant, by means of which the position of the main vane may be controlled.

The operation of my invention will be readily understood in connection with the above description. As the front edges of the wind-vanes stand directly in the path of the wind by reason of their double curves, instead of at an angle to the path of the wind, as in the ordinary construction, the whole of the force of the wind striking the face of the wheel is exerted on the vanes, securing the full power of the same, causing the wheel to rotate in proper direction. By reason of the inclined position in which the main beam is pivoted, it always tends to assume its normal position after being shifted.

What I claim is—

1. A wind-wheel having its wing-vanes constructed in cross-section of a double or approximately **S**-shaped curve, whereby, when said vanes are arranged in proper position, the front edges will be presented directly to the path of the wind, and the rear edges will stand at an angle thereto, substantially as and for the purposes specified.

2. In a wind-wheel, the wing-vanes provided with ears projecting laterally in opposite directions from opposite corners of the outer ends of said vanes, and arranged in the wheel in such position that the ears of each lap those of the vanes on both sides, and two lapping ears may be attached to the rim of the wheel by a single bolt, substantially as specified.

3. The turn-table provided with ears or lugs *d d*, in combination with the main vane Q, bifurcated beam P, and pivot N, constructed and arranged substantially as described, whereby said main vane is held by gravity in a position parallel with the wheel, and automatically returned to said position, when released, after being swung to the wind for the purpose of shifting the wheel, as set forth.

In testimony that I claim the above I have hereunto set my hand in the presence of the subscribing witnesses.

HENRY C. MINER.

Witnesses:
JAMES L. NORRIS,
JAMES A. RUTHERFORD.