

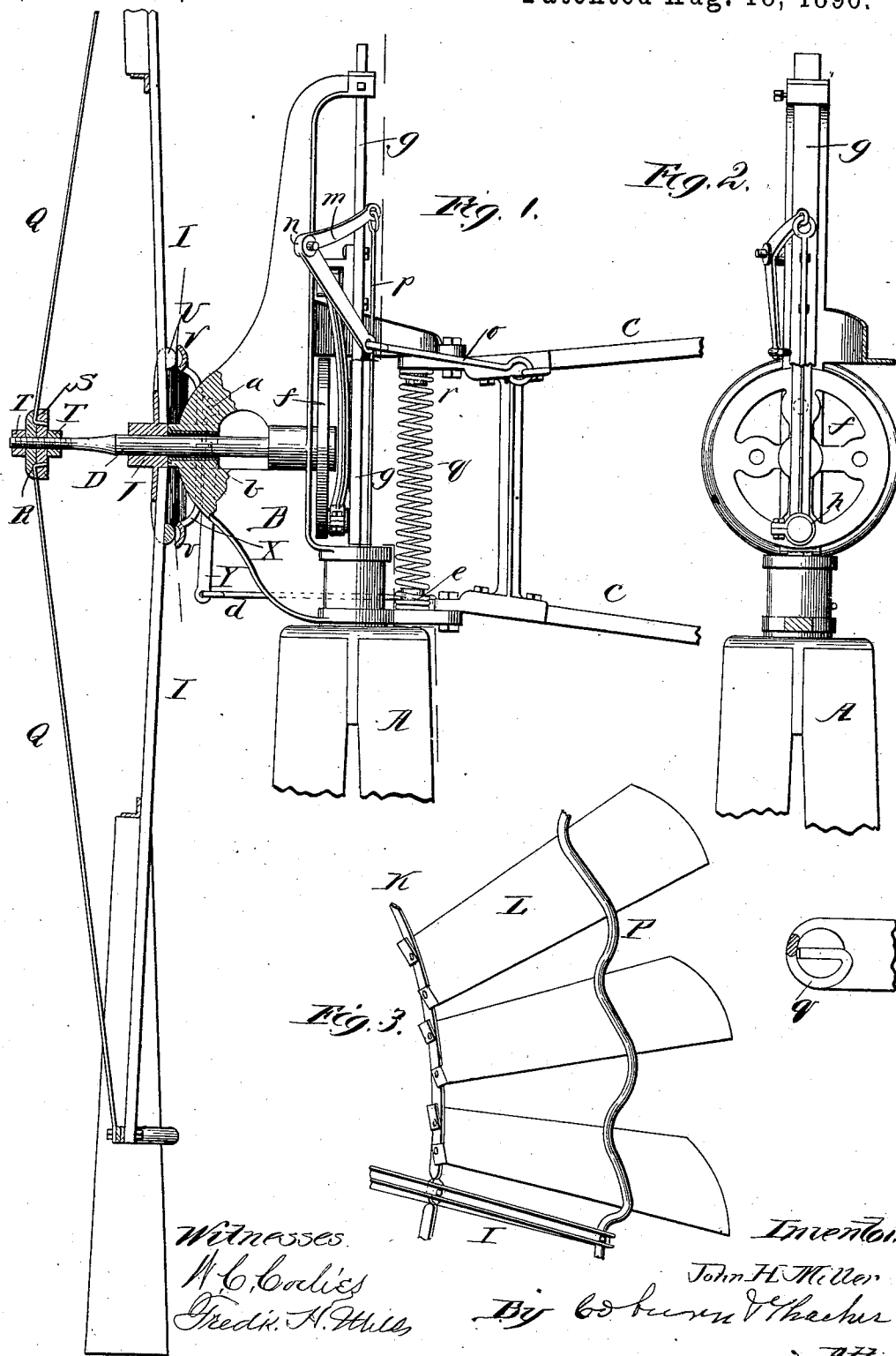
(No Model.)

J. H. MILLER.
WINDMILL.

2 Sheets—Sheet 1.

No. 566,002.

Patented Aug. 18, 1896.



Witnesses
W. C. Calley
Fredk. H. Hill

Inventor
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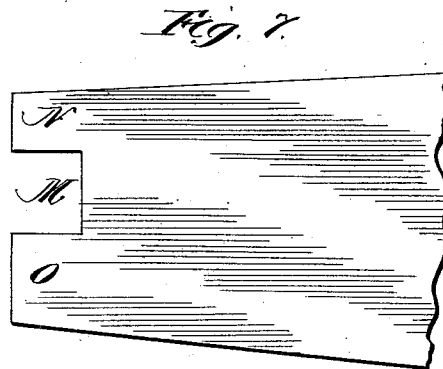
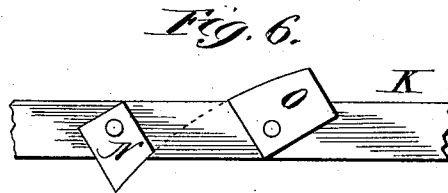
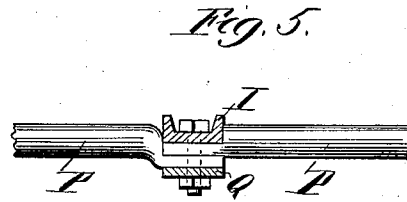
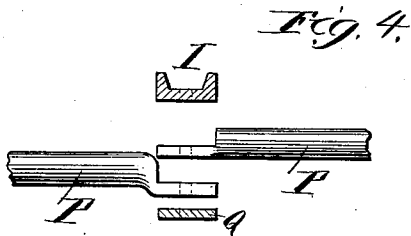
(No Model.)

2 Sheets—Sheet 2.

J. H. MILLER.
WINDMILL.

No. 566,002.

Patented Aug. 18, 1896.



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UNITED STATES PATENT OFFICE.

JOHN H. MILLER, OF BATAVIA, ILLINOIS, ASSIGNOR TO THE UNITED STATES
WIND ENGINE AND PUMP COMPANY, OF SAME PLACE.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 566,002, dated August 18, 1896.

Application filed September 23, 1891. Serial No. 406,600. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. MILLER, a citizen of the United States, residing at Batavia, in the county of Kane and State of Illinois, have invented a certain new and useful Improvement in Windmills, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

10 Figure 1 represents a side elevation of a portion of the windmill, showing my improvement. Fig. 2 is a side elevation, showing the top of the tower with the tail-vane removed, showing a side elevation of the pitman-wheel
15 with the pitman attached thereto. Fig. 3 is a side elevation of a part of the wind-wheel with the end of one of the arms of the wind-wheel attached. Fig. 4 is a detached view of a portion of two ends of the sail-brace rod
20 and the channel-iron wind-wheel arm or spoke and a flattened end of a head-brace rod. Fig. 5 is a side view of the same pieces put together and bolted. Fig. 6 is a side view of the wind-wheel rim, showing how the inner
25 ends of the sails are bolted thereto. Fig. 7 is a side elevation of a portion of the inner end of one of the sails, showing its form before it is attached to the rim.

This invention was substantially embodied, in most of its features, in my application for
30 a patent, Serial No. 387,583, which application was held to embody two inventions.

The features relating to the windmill construction shown and claimed in that application I embody herein, the purpose of this invention being to construct a metallic wind-wheel which can be easily constructed and
35 readily put together.

My invention consists in the construction and combination of the various parts of a windmill, hereinafter fully and specifically described, and made the subject-matter of the claims.

In the accompanying drawings, A represents the top portion of the wind-wheel tower, which may be constructed in any of the usual ways, the construction of the tower forming
40 no part of my invention.

B is the ordinary casting that carries the wind-wheel and tail-vane, and turns on the turn-table on the top of the tower.

C is the pivoted tail-vane, which is pivoted to the casting B, as clearly shown in Fig. 1.

D is the wind-wheel shaft.

I do not specifically claim in this application the construction and combination of a windmill of the above-described graphite bearings, but embody the invention pertaining to this feature of my windmill in another application for a patent, Serial No. 428,082.

I are spokes or arms of the wind-wheel, and they are made of channeled metal, a cross-section of which is clearly shown in Figs. 4 and 5. They are secured in place by being bolted to the hub J.

K is a plate-metal rim, which is bent or flattened where it is fastened to the arms or spokes I by means of bolts, as clearly shown in Fig. 3.

L are metal sails, the inner ends of which are notched out, as shown at M in Fig. 7. These sails are curved and stand at an angle to the rim K, and are fastened to the rim K by placing the notch M on the rim and passing one piece N of the end under the rim K and bending it upward, and the piece O over the rim and bending it downward and bolting them to the rim, as clearly shown in Figs. 3 and 6. This makes a secure fastening for the ends of the sails to the rim K, and sets the sails in a relative desired position to the rim K and wind-wheel.

P is a metal brace-rod bent into a curved form, which curve is adapted to fit the back of the sails, as clearly shown in Fig. 3. The sails are firmly secured to this brace-rod by bolts or in any other suitable manner. The ends of the brace-rods P are shouldered and flattened, as clearly shown in Figs. 4 and 5, the flattened portion being the width of the spoke or arm I of the wind-wheel, so that the said spoke will fit in the recess between the shoulders on the brace-rod P, thus formed on the brace-rod P.

Q are head-braces of the wind-wheel. The outer ends of these head-braces are flattened and are held secured to the spokes or arms of the wind-wheel by the same bolt which fastens the sail-braces to the spokes or arms of the wind-wheel, as clearly shown in Fig. 5. The inner end of the head-braces Q are bent at right angles, and they are secured to the ad-

justable head-block of the wind-wheel by a ring S, which has holes through it to receive the hooked or bent end of the brace-rods Q. The under side of the block R has recesses to receive the end of the brace-rod Q next to the bent or hooked portion. The nuts T T hold these two parts together and firmly secure the ends of the brace-rods in place. By the adjustment of these nuts T the brace-rods can be tightened or loosened, as desired.

U is an annular semicircular ring, securely attached to the face of the spokes or arms of the wind-wheel or to the spider-hub J, to which the inner ends of said hubs or spokes are secured. This construction is clearly shown in Fig. 1.

V is an annular brake-shoe, its bearing-surface being concave, as clearly shown in Fig. 1, to bear against the oval face of the ring U. The brake-shoe I preferably make somewhat less than a full circle for the purpose of allowing any dirt or grit that might accumulate in the concave face or bearing surface to escape therefrom. This brake-shoe has connecting-arms X, to which the lever Y is pivoted at *a*. The lever Y is pivoted to the windmill-casting B at *b*.

d is a rod, one end of which is pivoted to the lever Y, the other end being pivoted to the tail-vane of the windmill at *e*.

When the wind blows with sufficient velocity to swing the solid wind-wheel around horizontally toward a plane parallel with the tail-vane, the connecting-rod *d* vibrates the lever Y, and forces the brake-shoe V against the ring U on the side of the wind-wheel and checks its velocity. When the wheel reaches nearly a plane parallel with the tail-vane, the force is sufficient to entirely stop the revolution of the wind-wheel. The wind-wheel-shaft carries a pitman disk or wheel *f* with the ordinary wrist-pin, to which the pitman is connected that drives the pump-rod.

In the drawings, *g* represents the pump-rod. I do not claim in this application the construction of the pitman with its open bearings and means of adjusting the same, but have embodied this feature of my windmill in another application, Serial No. 428,083,

especially claiming the features of the pitman above described.

m is a crank-lever pivoted to the casting B at *n*, one end of which is connected by a connecting-rod *o* to the tail-vane of the windmill, while a rod or chain *p* extends from the other end of the crank-lever to the bottom of the wind-mill, to enable a person to turn the wind-wheel out of or into wind, as desired.

q is a coiled spring, one end of which is held in place by a lug *r* on the inner end of the tail-vane, while the other end of the bearing is held in position in a similar manner by a projecting lug *e* on the windmill-casting B, so arranged that when the wind-wheel swings out of wind the tension of this spring will be increased, and its force will be exercised to swing it back to wind as the wind subsides, the spring also serving the purpose of ordinarily holding the wind-wheel face to wind.

I find that I have a complete windmill, simple in its construction, durable, cheaply manufactured, and readily put together, although metallic in all its parts.

Having fully described the construction and operation of my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a windmill, the rim K; the spokes or arms I to which the rim K is connected; and the curved sails L having their inner ends notched at M, and having side projecting pieces N and O, the notch at M being as wide as the rim K and adapted to receive it, and the pieces N and O being bent over the rim and bolted thereto on the opposite side of the rim from the curved sails, making a secure fastening of the sails to the rim.

2. In a wind-wheel, the rim K; the curved sails notched at their inner ends and having projecting pieces N and O, one bent over the tops of the rim and the other under the rim and bolted to it; the brace-rod P bent to fit the curved sails, flattened and shouldered at their ends to receive the arms I; and the arms I, all as specified and shown.

JOHN H. MILLER.

Witnesses:

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C. D. WALWORTH.