

F. J. WAGNER.

WINDMILL.

No. 344,886.

Patented July 6, 1886.

Fig. 1.

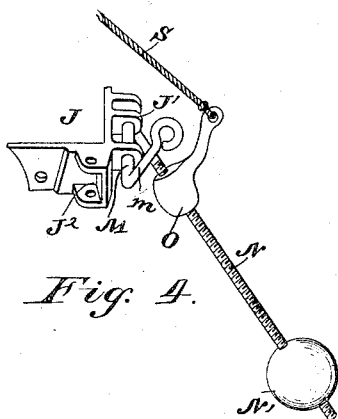
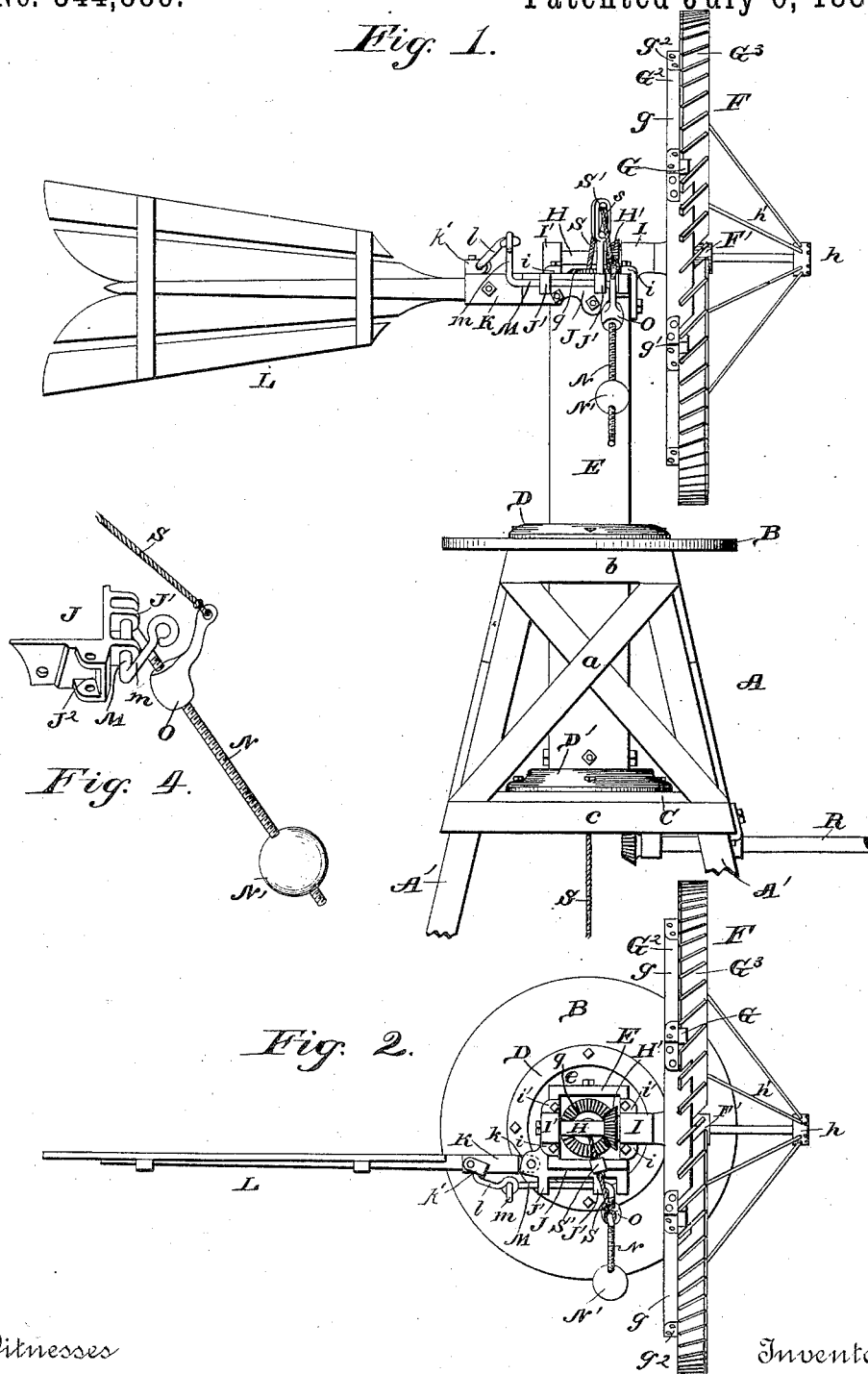


Fig. 2.

Witnesses

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FRED J. WAGNER, OF KIRWIN, KANSAS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 344,886, dated July 6, 1886.

Application filed March 24, 1886. Serial No. 196,403. (No model.)

To all whom it may concern:

Be it known that I, FRED J. WAGNER, a citizen of the United States, residing at Kirwin, in the county of Phillips and State of Kansas, have invented a new and useful Improvement in Windmills, of which the following in a specification, reference being had to the accompanying drawings.

My invention relates to improvements in windmills; and it consists of the novel construction and combination of parts, substantially as hereinafter more fully set forth, and specifically pointed out in the claim.

In the accompanying drawings, Figure 1 is a side elevation of my improved windmill. Fig. 2 is a plan view of the invention. Fig. 3 is a vertical central sectional view through the wheel, turn-table, and tower. Fig. 4 is an enlarged perspective view, in detail, of a part of my invention detached from the turn-table.

Referring to the drawings, in which like letters of reference denote corresponding parts in all the figures, A designates the tower of my improved windmill, which comprises the uprights A', which are arranged at an angle to each other, an upper platform, B, secured to the uprights, an auxiliary platform, C, and beams b c, bolted to the uprights at and near the upper ends thereof, and having the platforms B C, respectively, secured thereto, the beams and uprights being strengthened by cross-braces a, which are secured to the uprights and bear against the beams at the ends thereof. The upper platform, B, has an opening, b', formed therein, and is provided with a retaining-ring, D, which is bolted thereto and arranged around the opening b' at a short distance therefrom, to provide a bearing-ledge, b², for a purpose presently described. The lower platform, C, is provided with a similar opening, c', and a ring, D', which is made in two sections, which are each provided on their inner faces with a circumferential groove, d, the sections being bolted to the platform C, around the opening c' therein.

E designates a turn-table, which is arranged vertically within the openings b' c' of the upper and lower platforms, through which it projects. The turn-table is made hollow and preferably square in form, and near its upper end it is provided with a plate or rim, e, which bears on the ledge b² and turns or rotates with

the turn-table thereon. The turn-table is provided at its lower end with a similar rim, e', which is loosely fitted in the circumferential grooves d of the sectional rings D', so as to rotate freely with the turn-table, the rim e' being cast or formed integral with flanges e², that fit in the lower end of the turn-table and are firmly bolted thereto.

F designates the wheel, which is disposed vertically and comprises a hub, F', having a series of radial arms, f, a series of radial spokes, G, each bolted to one of the arms of the hub, an inner frame, G', and an outer frame, G², and inclined radial blades G³, which are set in inclined recesses of the frames and suitably secured in place.

The frames G' G² each comprise a series of bars, g, which are arranged at an angle to each other, and provided with tongues g', that bear on the spokes G, and the proximate ends of the arms are secured together by straps g² and bolts, as will be very readily understood.

H designates a shaft, which is rigidly keyed or otherwise secured in the hub of the wheel, and one end of this shaft is reduced and projects through the hub and forward of the wheel, and carries at its extreme end a hub, h, to the periphery of which is connected the ends of a series of brace-wires, h', the other ends of which are suitably secured to the spokes of the wheel to strengthen the latter. The shaft H of the wheel is journaled in bearings I I', which are bolted to the turn-table, and the said shaft carries a bevel-pinion, H', keyed or otherwise rigidly secured thereon. The bearing I is provided with angular lugs i i', which bear on and are bolted to the turn-table, and the bearing I' is provided with similar lugs, and the same is cast integral with a support, J. This support J is bolted to the turn-table and provided with perforated lugs J' and a socket, J², the latter being arranged at one corner of the turn-table, and having a reduced tongue or tenon, k, of a casting, K, pivoted therein, so as to be free to turn in one direction in a horizontal plane, while it is estopped from movement in a reverse horizontal direction by abutting against one of the walls of the socket-plate J². This casting K has the regulating vane or tail L of the windmill rigidly secured or bolted therein, and it is further provided with a lug, k', to which is

rigidly secured an outwardly-extended arm, *l*, having an eye at its free end, to which is pivotally connected a similar eye of a crank-arm, *m*, which is formed with a rock-shaft, *M*, that is loosely journaled in the perforated lugs *J'*, that form bearings therefor. This rock-shaft is further provided at one end with an angular arm, *N*, that extends outwardly therefrom and is threaded for nearly its length. This threaded arm *N* carries a weight, *N'*, which has an interiorly-threaded opening to adjust the weight longitudinally of the rod and increase or diminish the leverage of the arm, and the arm is further provided with a bracket-arm, *O*, which is also provided with a threaded opening to secure the same upon the threaded arm at any point.

P designates a vertical shaft that is arranged centrally within the turn-table, and which is made hollow and tubular in form. At its upper end the tubular shaft is fitted in a bearing, *p*, that is rigidly secured in and carried by the turn-table, and the lower end of the said shaft is also journaled in a similar bearing-plate, *p'*, which is bolted to the lower surface of the lower platform, *C*, by the same bolts that secure the sectional ring *D'* thereto. The upper end of the tubular shaft is provided with a bevel gear-wheel, *g*, which meshes with and is rotated by the bevel-pinion *H'* of the wheel, and the lower end of said tubular shaft carries another bevel gear-wheel, *Q*, which meshes with and rotates a pinion, *Q'*, that is rigidly secured on one end of a shaft, *R*, that drives the pump or other machinery which it is desired to operate.

S designates a cord, rope, or chain, which is connected at one end to the free end of the bracket-arm *O*, and then passes over a friction roller or pulley, *s*, that is journaled in a standard, *S'*, which is secured to and carried by the turn-table, and the rope then passes into and through the tubular shaft *P*, down to a convenient point within reach of the operator.

The operation of my invention is as follows: When the wheel is directly in the path of the wind, it is rotated thereby, and revolves the shafts *H'*, *P*, and *R*, and the vane or tail keeps the wheel directly in the path of the wind. The vane is normally held in proper position in rear of the wheel by means of the weighted

arm; but when a storm or high wind is prevailing and it is blowing in one direction, the force of the wind will overcome the weight of the arm and turn the vane in a position parallel with the wheel, so that the latter will not be operated to rotate the shafts, and will therefore be thrown out of use. The wheel can also be thrown out of use by pulling on the cord *S*, which will elevate the weighted arm and oscillate the rock-shaft to cause its arm *m* to turn the vane laterally on its pivot and parallel with the wheel.

The invention is very simple, strong, and durable in its construction, thoroughly effective for the purposes designed, easy of adjustment, and not liable to get out of order.

I am aware that it is not new to provide a pivoted vane and a swinging counterweighted arm connected with the vane to return the same to a position in line with the wheel when the vane is turned to one side thereof; and hence I do not claim this feature, broadly, but confine myself to the particular construction herein shown and described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of a turn-table carrying a wheel, a tubular vertical shaft geared to the wheel-shaft, a bracket, *J*, bolted to the turn-table, and having the integral lugs *J'* *J*² arranged on opposite sides of the table, a vane, *L*, carrying a casting, *K*, provided with a reduced lug, *k*, pivoted on the lugs *J*² of the brackets, a rock-shaft, *M*, journaled in the lugs *J'*, and having a crank-arm, *m*, a link, *l*, intermediate of the vane and the crank-arm *m*, a threaded arm, *N*, carried by the rock-shaft, and having an adjustable weight at its free end, and a vertical arm, *O*, a standard, *S'*, having a friction-roller, *s*, and a cord or rope, *S*, connected to the arm *O*, and passing over the roller *s* and through the tubular vertical shaft, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

FRED J. WAGNER.

Witnesses:

A. HODGES,
M. V. HANKS.