

W. C. NELSON.

Wind-Mills.

No. 157,757.

Fig 1

Patented Dec. 15, 1874.

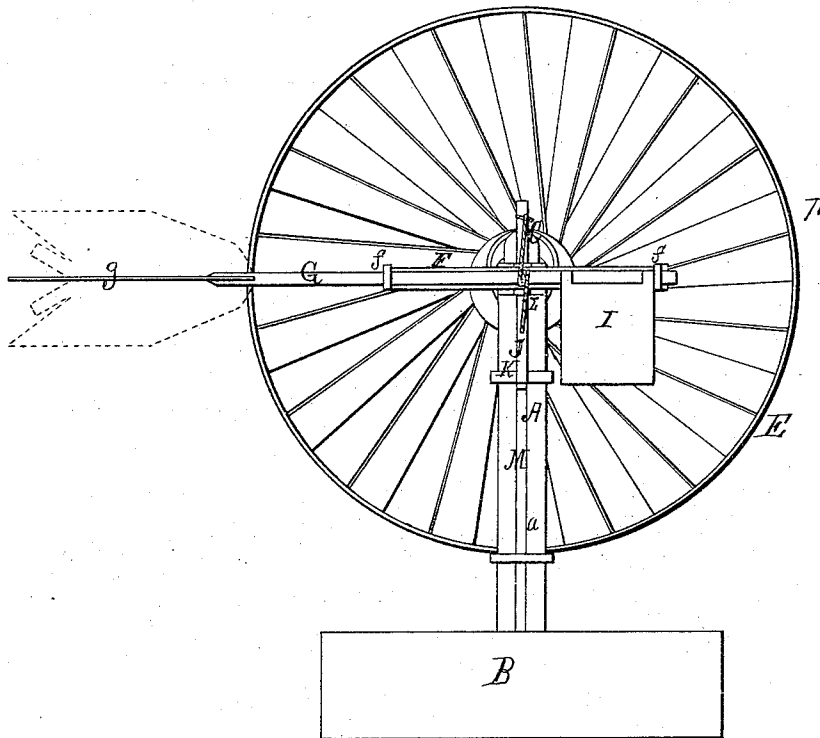
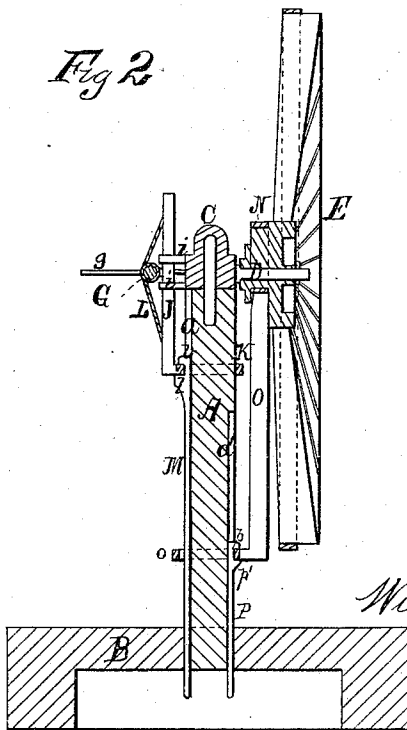


Fig 2



WITNESSES

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WILLIAM C. NELSON, OF SACRAMENTO, CALIFORNIA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **157,757**, dated December 15, 1874; application filed September 19, 1874.

To all whom it may concern:

Be it known that I, WILLIAM C. NELSON, of Sacramento, in the county of Sacramento and State of California, have invented a new and valuable Improvement in Windmills; 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 drawing is a representation of a front view of my windmill. Fig. 2 is a vertical sectional view of the same.

This invention has relation to revolving windmills, wherein a vane is used to revolve the wheel in proper position to be acted upon by the wind with greatest effect, in accordance with the various changes thereof; and the nature of the invention consists in a novel construction and arrangement of the parts, as will be hereinafter more fully described and claimed.

In the annexed drawings, A designates an upright post rising out of a base, B, which may be the platform of a mill, pump-house, or other shelter for machinery actuated by a wind-wheel. This post has a rectangular groove, *a*, extending from end to end thereof, and a second groove, *a'*, diametrically opposite the groove *a*, which, commencing at or near the middle of its length, ends with the lower end thereof, for a purpose hereinafter to be explained. C designates a metal cap, which is pivotally mounted upon the upright A, and which affords bearings for the shaft D of a wind-wheel, E. F designates an arm, which is rigidly secured, in a horizontal position, to the opposite side of the cap C to that on which the wind-wheel E is applied, having arms *f* extending horizontally outward from both ends thereof, which afford bearings for the shaft G of a horizontally-oscillating vane, *g*, arranged upon one end thereof. Upon the other end of the shaft G a wind-plate, I, is rigidly secured in a plane vertical to that of the vane, and in a position slightly oblique to the long axis of the vane-shaft. The vane-shaft G having a rotary motion in its bearings, the downward gravitation of the wind-plate will cause the vane *g* to be held in a horizontal position, as

shown in Fig. 1, when a calm prevails; but when a strong breeze arises, the force of the wind acting upon the wind-plate will cause the vane to be turned more or less at an angle to the horizontal plane, thus allowing the wind to bear upon it and revolve the wind-wheel more or less edging to the wind. But, as a comparatively light breeze would throw the wheel out of the wind, thus greatly decreasing its power, I have devised the following means for holding it therein: A vertically-movable rod, J, rigidly secured to a ring, K, encircling the upright A of the wind-wheel, is connected, by a suitable chain, L, to the rotating shaft G of the vane in such a manner that when the wind-plate is moved by the wind the said chain shall be wound around the shaft, thereby causing the rod J to be raised, thus elevating the ring K. The rod J being held against lateral displacement by guide-staples *i* rigidly secured to the cap C or to the arm F, a very slight oscillation of the shaft G will affect it. M designates a metallic rod, which is arranged in the groove *a* of upright A, its upper end being secured to the ring K by means of lugs *l* upon its upper end, and its lower end passing down through the platform B, within reach of the miller, for the purpose of enabling him to attach weights thereto.

It is evident, if the lower end of the rod M be weighted, that a greater force of wind will be requisite, acting upon the wind-plate, to cause it to rotate the shaft G, and turn the vane *g* with its flat surface to the breeze. Hence, by adding weights to the rod M, the miller is enabled to hold the wheel into the wind under any circumstances, and, by removing the said weights, to instantly throw the wheel edging to the wind, and stop its motion.

By the use of a number of these weights the miller may operate his burr-stones, saws, or pump no matter how hard the wind blows, as he is enabled to hold his wheel more or less edging to the wind, according to the degree of force thereof, as any undue force thereof would cause the wind-plate to rotate the vane-shaft, bringing the vane into a position for revolving the wheel more edging to the wind, thereby decreasing the action of the breeze upon the wind-sails, and preventing the wrecking of the ma-

chinery or carrying away of the wheel. Upon the subsiding of a gust of wind the plate will gravitate downward, bringing the vane-edge to the wind, and enabling the wheel to assume a position for utilizing the full force of a diminished breeze.

The power of the wheel is communicated to the machinery by means of an eccentric, N, applied upon the shaft of the wind-wheel, and a connecting-rod, O, the lower end of which is rigidly secured to a ring, o, upon the upright A, which ring is attached, by means of lugs *p p'*, to a rod, P, arranged in the groove *a'*, to which a vertically-reciprocating movement is given by the rotation of the shaft G.

The rods P and M being rigidly held against lateral displacement in their respective grooves, and the rings K and o being loosely applied around the upright A, and attached, by means of the connecting-rods O I, to the eccentric N and revolving cap C, the wind-wheel will be in

no manner hindered in its oscillation under the influence of currents of air varying in force, as the rings will slide freely in the lugs *l* and *p p'*.

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

The metallic cap C, pivoted to the upper end of the upright A, affording bearings for the shaft D of the wind-wheel E, the arm F, having extensions *f f* rigidly secured in a horizontal position to the opposite side of the cap C to that on which is situated the wind-wheel E, and the oscillating vane-shaft G, combined and arranged as and for the purpose specified.

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

WILLIAM CLARK NELSON.

Witnesses:

SAMUEL POORMAN,
SAMUEL SIMS.