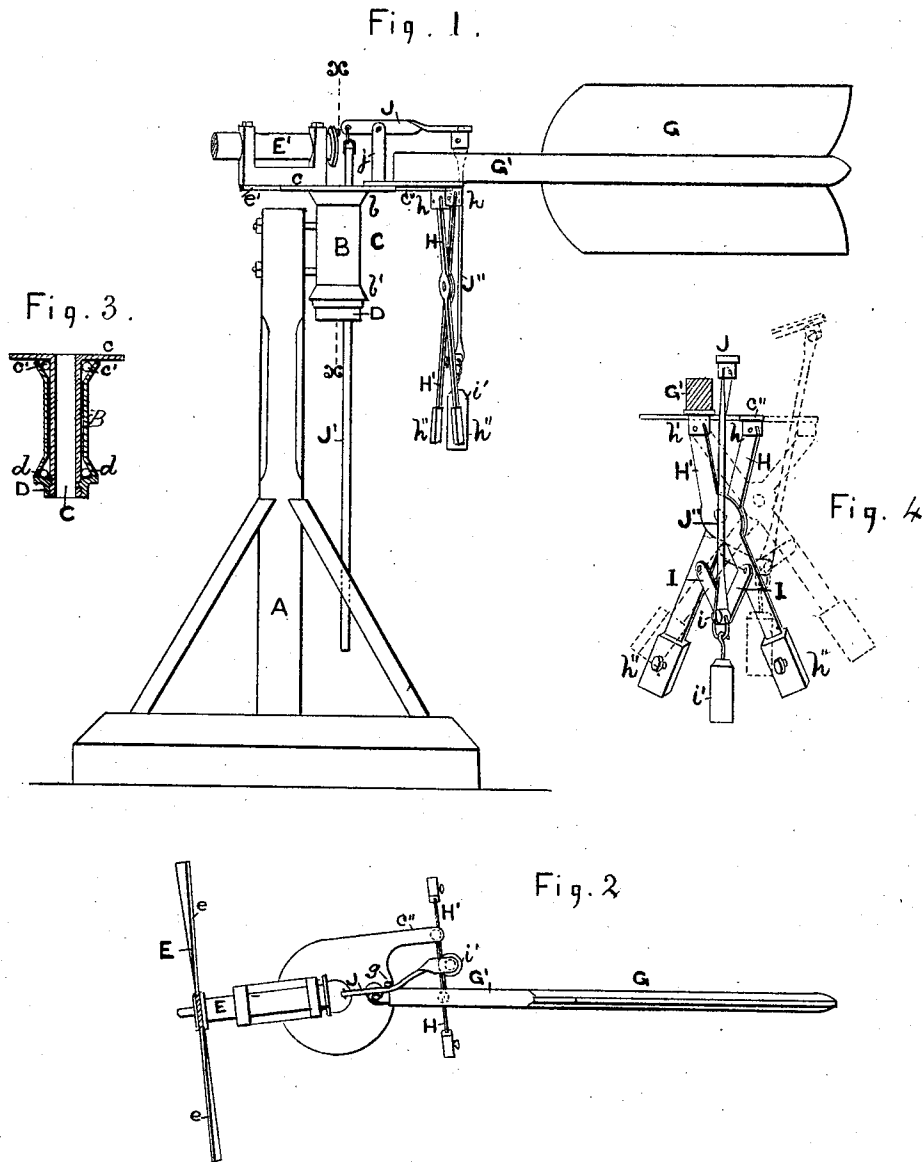


T. C. McCHESNEY.
Wind-Mills.

No. 149,410.

Patented April 7, 1874.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS C. MCCHESENEY, OF GALESBURG, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **149,410**, dated April 7, 1874; application filed February 12, 1874.

To all whom it may concern:

Be it known that I, THOMAS C. MCCHESENEY, of Galesburg, county of Knox and State of Illinois, have invented certain new and useful Improvements in Windmills, of which the following is a specification:

This invention relates to that class of wind-mills in which the wind-wheel rotates in a vertical plane, and in which the vane is pivoted to the other operative parts, so that they may turn upon the vertical axis on the tower or supporting-frame, to turn the wheel of sails face to the wind, or edge thereto, or at any intermediate points; and it consists, partly, in the arrangement of friction-balls in the bearings upon the tower, to prevent friction from the side motion, and partly in the arrangement of a system of weighted levers, to act as governors for regulating and adjusting the plane of rotation of the wind-wheel to the course of the wind, in varying velocities of the wind; and in the arrangement of toggle-arms and a weight to further increase the efficiency of the last-named devices; and partly in the arrangement of a rod and lever for operating the governor; and thereby regulating the mill by hand, all as hereinafter fully described.

To enable those skilled in the art to make and use my invention, I will now proceed to describe the manner in which the same is or may be carried into effect, by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a top plan or view of Fig. 1. Fig. 3 is a vertical central section of the turn-table in the line *xx* of Fig. 1. Fig. 4 is a detailed view, referred to hereinafter.

Similar letters of reference indicate like parts in all of the figures.

Referring to the parts by letters, letter A represents the tower or supporting-frame, to the upper end of which is secured a tubular cylinder, B, with funnel-shaped enlargements *b b'* at its upper and lower ends, respectively. C is the ordinary turn-table for this class of mills, consisting of a tubular cylinder interior to the cylinder B, and supported thereon by a flange, *c*, on its upper end, between which and the flange *b* the friction-balls *c'* are interposed. D is a collar, secured to the lower projecting end of the cylinder B by a bayonet-joint, and

its upper end enlarged to correspond with the enlargement *b'*, between it and which the friction-balls *d* are placed. The balls *d* are not designed to support any weight, but simply to prevent the great friction due to side motion in this class of mills. The arrangement of the balls *c'* is such as to support the weight, and also to prevent side motion, of the upper end of the turn-table. E is an ordinary wind-wheel, with fixed radial arms *e*, and a horizontal shaft, E', carried in suitable bearings on an arm, *e'*, projecting from one side of the turn-table C. G is the vane, its stem end G' pivoted to form an axis of oscillation on the flange *c* in a line with the axis of the shaft E'; and *g* is the usual stop on the flange to prevent the vane and shaft E' coming fully in line, as shown at Fig. 2, in order that any undue increase in the velocity of the wind may have the power to turn the wheel of sails E oblique to its direction, in proportion to its intensity, in the obvious manner. H H' are arms suspended from fulcrums *h h'*, the one, H, from the outer end of a horizontal arm, *e''*, and the other, H', from a point on the stem G, a short distance from its fulcrum on the flange *c*. The arms H H' are pivoted to each other a short distance from their upper ends, and are provided with adjustable weights *h'' h''* on their lower ends. I I are toggle-arms, pivoted to the lower arms of the levers H H', and to each other at *i*, from which fulcrum a weight, *i'*, is suspended. The length of the arms I may be such, relatively to the arms H H' and their arrangement of fulcrums, that they will limit the shaft E' from turning past a right angle with the vane. J is a lever, with a fulcrum in the top of a standard, *j*, and a pendent rod, J', from one end down through the cylinder C, and its other end connected by a rod, J'', with a stud projecting from the fulcrum where the arms I I are pivoted to each other.

The operation of my invention is deemed obvious to any one skilled in the art to which it appertains. The angle presented by the surface of the wind-wheel to the direction of the wind is increased in a direct ratio with the increase of velocity of the wind, and the arrangement of the weighted levers and toggle-arms is such that the tendency to resist such change may be regulated, and the wheel kept at such

angles, in varying velocities of the wind, as to produce equable, or nearly equable, velocity of the wind-wheel.

The increased resistance of the levers H H' as they are separated, on the principle of the bent-lever balance, is too well known to need description here, as is also the operation of the toggle-arms I I. Their arrangement and weight are such, also, as to allow the wind-wheel to turn at right angles to the vane and edge to the wind, to stop its revolutions in gales or blasts of very high wind. In such cases, however, the rod J' may be taken hold of, and the wheel forced slightly into the wind for temporary operation, when desired. The rod J' may be further utilized to hold the wheel at any time to a more favorable action of the wind, or to throw it around and stop its revolutions; or it may be connected to a float in the water-tank, for the purpose of stopping and starting the mill with the rise and fall of the water.

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

1. The cylinder C, flanged collar D, and flanged cylinder B, arranged to operate with the friction-balls *c'* and *d*, substantially as and for the purpose specified.

2. The weighted levers H H', pivoted to each other, one attached to the vane, and the other to the turn-table or arm projecting therefrom, substantially as and for the purpose specified.

3. The weighted levers H H', toggle-arms I I, and weight *i'*, arranged to operate with the turn-table C, wheel E, and vane G, substantially as and for the purpose specified.

THOMAS C. McCHESNEY.

Witnesses:

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