J. & J. B. CUSHMAN.
Windmill.

No. 199,190. Patented Jan. 15, 1878.

Fig. 1.

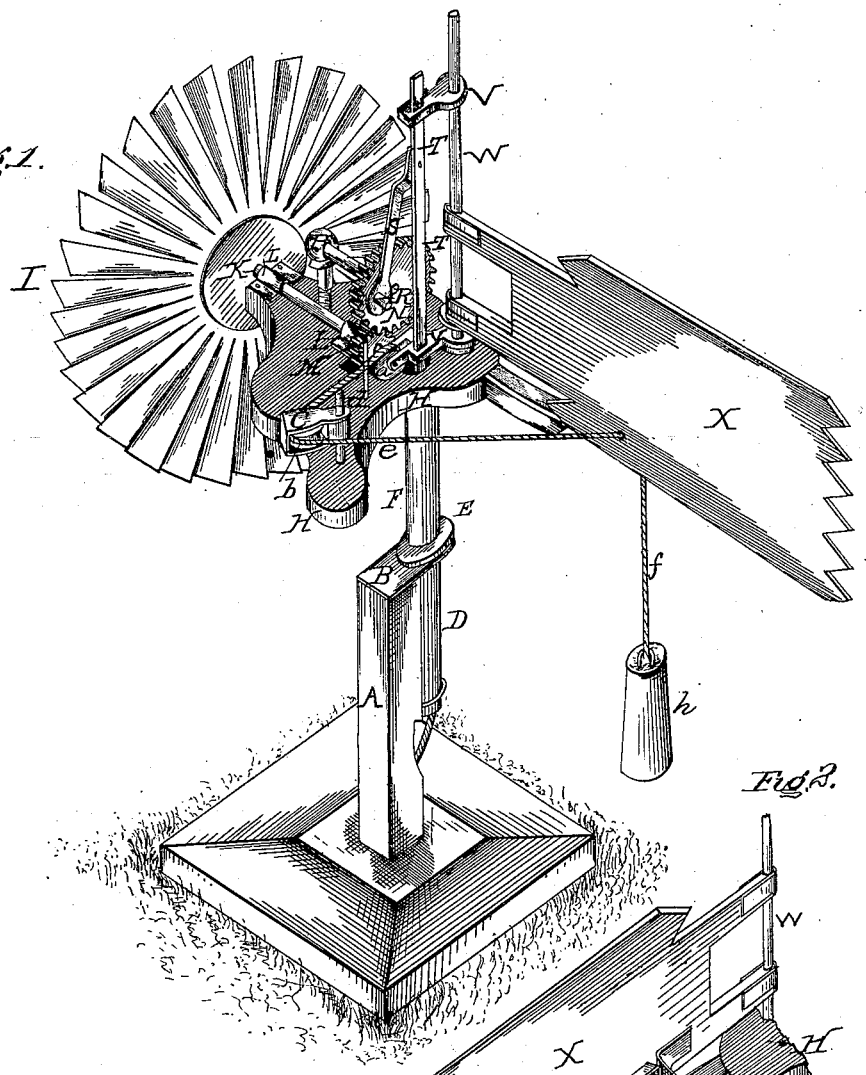
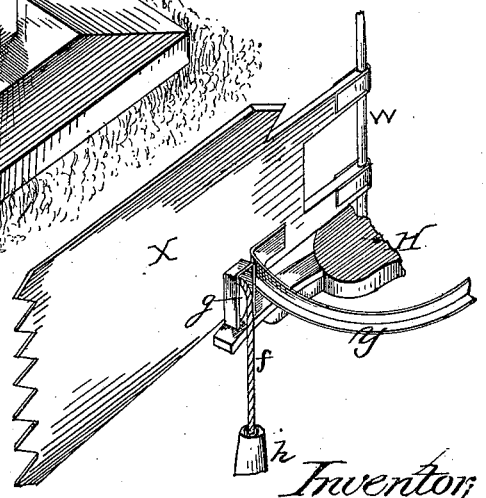


Fig. 2.



Witnesses;
J. Walter Fowler.
Chas. B. Gill

Inventor;
Jos. and Josiah B. Cushman
By their Attorneys
Cox and Cox

UNITED STATES PATENT OFFICE.

JOSEPH CUSHMAN AND JOSIAH B. CUSHMAN, OF THOMSON, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **199,190**, dated January 15, 1878; application filed November 2, 1877.

To all whom it may concern:

Be it known that we, JOSEPH CUSHMAN and JOSIAH B. CUSHMAN, of Thomson, in the county of Carroll and State of Illinois, have invented a new and useful Improvement in Windmills, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improvement in windmills; and consists in the devices hereinafter fully described, the object being to provide a suitable means for pumping water and other purposes.

In the accompanying drawings, Figure 1 is a perspective view of a device embodying the elements of the invention. Fig. 2 is a detached view of the vane X, with its attachments.

In the accompanying drawings, A represents the standard or support, which is furnished on its upper end with a plate, B, provided on its projecting portion with an aperture, in which the section of pipe or cylinder D is placed in a perpendicular position, and retained therein by means of an annular collar, E, on said pipe or cylinder, the lower end of the cylinder being secured by a loop or other convenient means.

Upon and around the upper part of section D is loosely mounted another section, F, the lower end of same resting upon the shoulder E, and the upper end carrying the platform H. Thus it is manifest that the latter section is capable of revolving, and that, when such revolution occurs, the platform H, with the devices secured upon it, receives a corresponding movement.

The platform H may be of any suitable form and dimensions, and is supplied on its front vertical edge with the wheel I, which is mounted on the outer end of axle K, secured upon the upper surface of said platform in bearings L, and provided on its inner end with pinion M, which meshes with gear-wheel N, mounted on an axle secured in bearings P.

Upon the outer face of wheel N, at a suitable point on its radius, is rigidly affixed the arm R, which receives the lower end of arm S, the opposite end of same being extended upward and pivoted to one side of rod T, which is retained by guides V, and passes downward through the platform H and sections D and F.

It is obvious that, when the gear-wheel N is rotated by the wheel I through the axle K and pinion M, the arm R imparts a crank-movement to the arm S, and, as the latter arm is pivoted to the rod T, that also receives a corresponding motion. Thus it is evident that so long as the said movement is continued the rod T will be alternately elevated and depressed, and can, therefore, be effectively employed for pumping water, driving machinery, or other purposes.

The guides V are keyed upon standard W, set in platform H, and has loosely secured upon it the vane X, which extends rearward, and is provided on one side with the segmental guide *y*, hereinafter mentioned.

In the fork of the lower guide V is pivoted the pulley-wheel *a*, opposite which is secured a similar wheel, *b*, in the casing *c*, keyed on standard *d*, which is set in platform H. The purpose of these pulley-wheels is to receive a rope, *e*, which passes over them, and has one end attached to the vane X, the other extending downward through the sections D F, within reach of the operator. Upon the side of the vane opposite the rope *e*, and adjacent the guide *y*, is fastened one end of the rope *f*, the opposite end of which passes over the pulley *g*, and is furnished with a counterpoise or weight *h*.

It is obvious that if the lower end of rope *e* were drawn it would cause the vane X to move toward the pulley *b* and away from pulley *g*, thereby elevating the weight *h* and drawing rope *f* in the direction in which it (the vane) is moving, which rope in this condition rests in the segmental guide *y*, and is prevented from wearing or knotting; and it is also obvious that, when the tension of rope *e* is relieved, the weight *h* will automatically draw the vane X back to its former position. Thus it is plain that the said vane can be veered to suit the condition of the wind, and the wheel I brought in such position that the wind may strike it at any angle, according to the wish of the attendant.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The wheel N, provided with arm R, in

combination with the arm S and rod T, which is sustained in guides V, substantially as expressed.

2. In a windmill, the wheel I, axle K, and pinion M, in combination with the wheel N, arm S, and rod T, substantially as shown and described.

3. In a windmill, the vane X, provided with segmental guide *y*, in combination with the rope *f*, which passes over pulley *g*, and is furnished with weight *h*, substantially as set forth.

4. In a windmill, the pulleys *a b*, provided with the rope *e*, in combination with the vane X, furnished with the segmental guide *y*, rope *f*, and weight *h*, substantially as specified.

In testimony that we claim the foregoing improvement in windmills, as above described, we have hereunto set our hands this 3d day of September, 1877.

JOSEPH CUSHMAN.
JOSIAH B. CUSHMAN.

Witnesses:
PETER HOLMAN,
Z. B. HOLMAN.