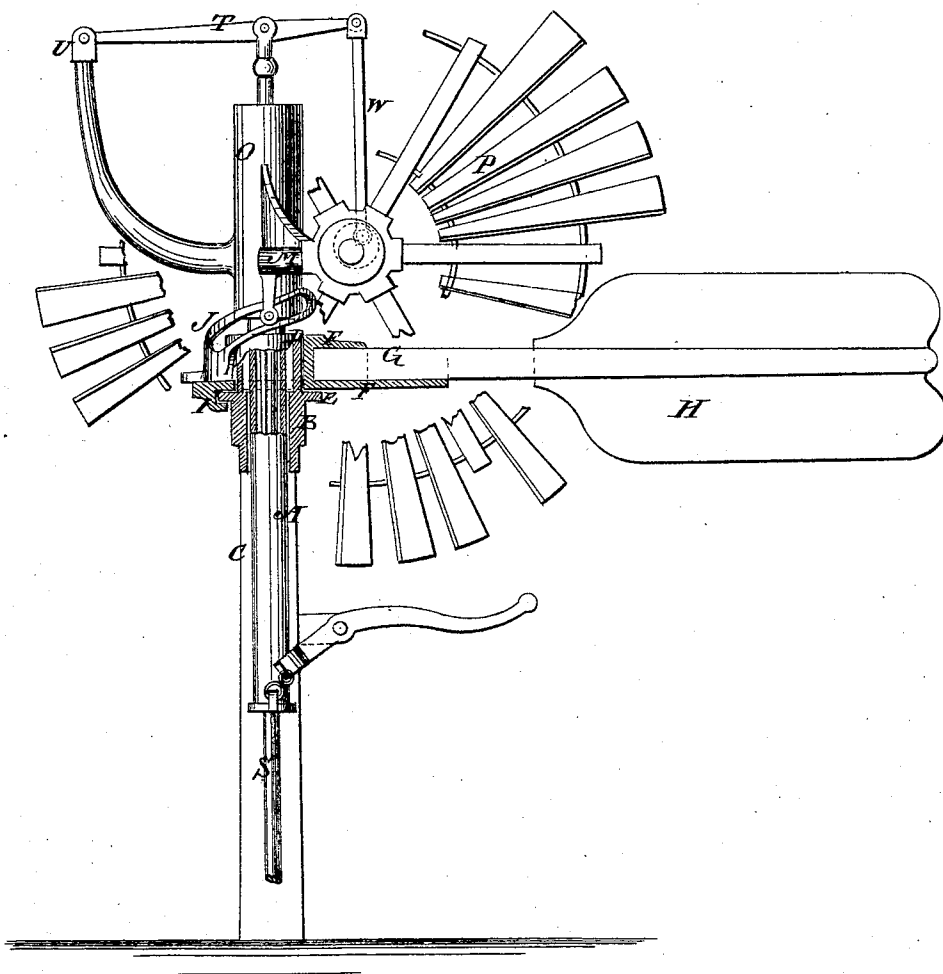


P. BRAND, J. BARROWS & A. ARMSTRONG.  
Wind-Wheels.

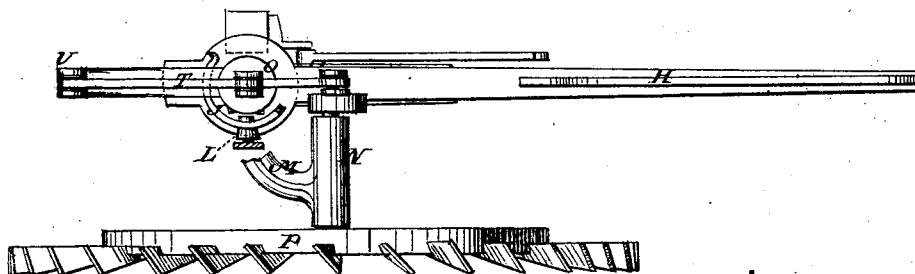
No. 145,782.

Patented Dec. 23, 1873.

*Fig: 1.*



*Fig: 2*



Witnesses:

*Chas. Nida*  
*Alex F. Roberts*

Inventors

*P Brand*  
*J Barrows*  
*A. Armstrong*  
Per *Wm H. C.*  
Attorneys.

# UNITED STATES PATENT OFFICE.

PHILIPP BRAND, JOSIAH BARROWS, AND ALEXANDER ARMSTRONG, OF  
JACKSONVILLE, ILLINOIS.

## IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **145,782**, dated December 23, 1873; application filed  
September 27, 1873.

*To all whom it may concern:*

Be it known that we, PHILIPP BRAND, JOSIAH BARROWS, and ALEXANDER ARMSTRONG, of Jacksonville, in the county of Morgan and State of Illinois, have invented a new and Improved Windmill, of which the following is a specification:

The invention is an improvement in the class of wind-wheels mounted a little out of line with the regulating-vane and adapted to be self-regulating. We arrange the wheel on a tubular support, which is fixed above the vane-support, so as to turn on a hollow shaft, and having a horizontal arm with a friction-roller on it, working in an ascending spiral slot formed in an arm of the vane-support, so that the wheel may swing around parallel with the vane out of the wind when the latter is too strong, at the same time forcing the aforesaid arm up the inclined slot, so that the gravity of the wheel and its support will cause it to move back into the wind when the force of the wind decreases enough.

Figure 1 is partly a side elevation and partly a sectional elevation of our improved wind-wheel, and Fig. 2 is a plan view.

Similar letters of reference indicate corresponding parts.

A represents a hollow shaft or tube, mounted in the hollow bracket B on the post C, so that it extends above and below said bracket. This bracket has a large annular stud, D, extending upward a short distance above the collar or flange E, to serve for the pivot of the casting F, to which the beam G of the tail-vane H is attached, said casting being fitted on the pivot so as to turn freely around it. On the side of the hole opposite to the beam, said casting has a clip, I, which works under the flange to counteract the action of the weight of the vane on the pivot. J is a curved bar arranged on the casting F, with a slot, K, arranged spirally to the vertical axis of the machine, and at a distance from it suitable for the roller L of the arm M of the hub N of the wind-wheel to work in. This hub and arm are connected with a short vertical hub or tube, O, mounted on the shaft A above the pivot D, so as to rest on it except when raised by the slotted bars J. The hub O is free to turn, also to rise and fall, on the shaft A. The hub N is arranged to one side of the hub D so as not to be in the same plane of the tail-vane, the object

of which is, that the wind-wheel P shall tend to swing around to the right parallel with the tail, as in Fig. 2. The inclined slotted bar J and the roller-arm M oppose this tendency, and keep the wheel P at right angles to the vane and facing the wind. It will be seen that the wheel will be held to the wind with a force governed by the pitch of the slotted bar, which, when the wind becomes too powerful, will allow the wheel to turn around, self-actingly, out of the wind, but will instantly turn it back when the wind-force abates. Moreover, the effect of the wind on the wheel will decrease as the latter turns out of it, so that the wheel will be graduated to the varying forces of the wind within the limit of the force necessary to turn the wheel entirely around. To allow the wind-wheel to turn on the axis A without disturbing the connection with the pump-rod S, the latter is arranged so as to turn on its axis, and is connected to a lever, T, that has a fulcrum on the arm U, projecting from the hub D, which turns with the wheel P. The other end of said lever is connected, by rod W, with the crank of the wind-wheel. The tubular shaft A, through which the pump-rod S works, is capable of rising and falling, and has a lever, X, combined with it, by which to lift the wheel up, and at the same time turn it out of the wind to stop it.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In combination with the vane and its casting or ring-socket F, provided with the spiral bar J having slot K, the wheel P, having an arm, M, working in said slot, and supported on a hub, O, revolving independently of the vane, substantially as shown and described, whereby the wheel may vary its position relatively to the vane.

2. In combination with the pump-rod, the lever T, having a swivel-connection therewith, and pivoted, at U, to an arm of the revolving hub O, carrying the wheel P, as shown and described.

PHILIPP BRAND.  
JOSIAH BARROWS.  
ALEXANDER ARMSTRONG.

Witnesses:

G. W. CLARK,  
W. H. BROADWELL.