

(No Model.)

J. P. FRUIT.
WINDMILL.

No. 588,060.

Patented Aug. 10, 1897.

Fig. 1.

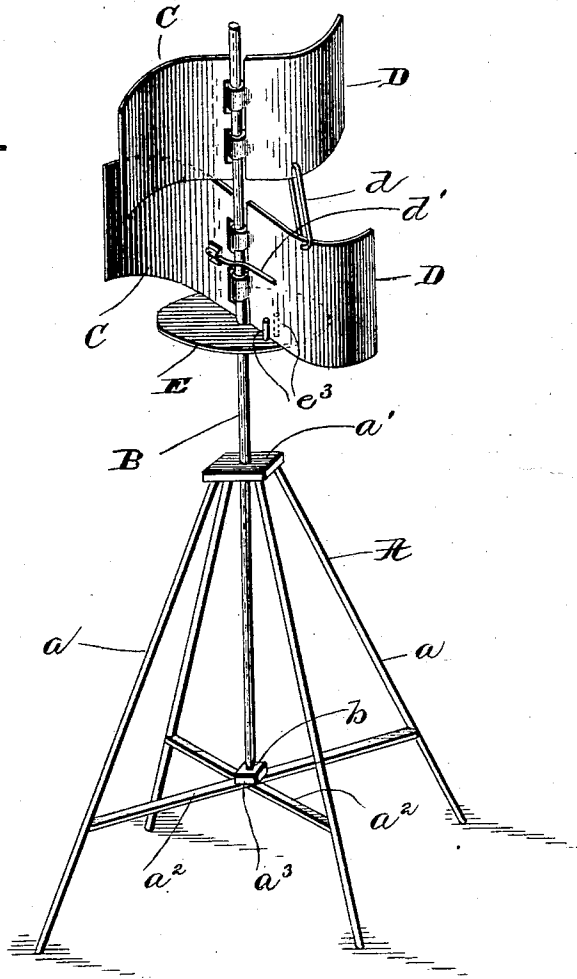
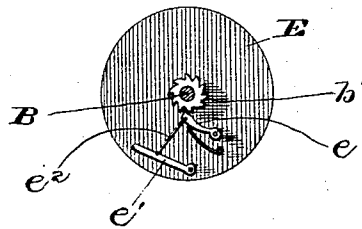


Fig. 2.



WITNESSES

Marcus L. Byng.
J. L. Tappan

INVENTOR,

John P. Fruit.
by John Wedderburn
Attorney

UNITED STATES PATENT OFFICE.

JOHN P. FRUIT, OF RUSSELLVILLE, KENTUCKY.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 588,060, dated August 10, 1897.

Application filed October 20, 1896. Serial No. 609,452. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. FRUIT, a citizen of the United States, residing at Russellville, in the county of Logan and State of Kentucky, have invented certain new and useful Improvements in Windmills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in wind-wheels and has more particular relation to wheels in which a portion of the vanes are movable to provide a means for stopping the wheel.

The invention consists of certain novel constructions, combinations, and arrangements of parts, all of which will be hereinafter more fully described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 represents a perspective view of the wheel embodying my invention; and Fig. 2 represents a bottom plan view of the adjusting-wheel, showing its ratchet connection with the vertical shaft.

A in the drawings represents the supporting-frame; B, the vertical power-shaft journaled therein; C C, the rigid vanes; D D, the hinged vanes, and E the adjusting-wheel. The said frame A, I preferably construct, as shown in the drawings, of vertical inclined rods *a*, a top plate *a'*, and brace-rods *a²*, a suitable step-block *a³* being mounted at the intersecting points of said latter rods *a²*.

The vertical shaft B has its lower needle-pointed end *b* mounted in the step-block *a³* and passes through the top plate *a'*, whereby it is supported in a vertical position. The vanes C and D are mounted above said top *a'* upon the shaft B, one above the other. The said vanes C and D when in their normal positions form a cyma, said cymas extending approximately at right angles to each other. Each of the vanes D is hinged to the vertical shaft B, so that they may be turned back, when so desired, upon the vanes C, but in one direction only. The lower vane D is connected to the upper vane D by a suitable link or rod *d*, and the lower vane D is prevented from turning by its normal position in a forward direction by an arm *d'*, projecting from the lower vane C.

It will be observed from the foregoing description that the upper vane D is controlled and limited in its movements by the lower vane D, and thus when the lower vane is closed the upper vane must follow suit, and vice versa. This closing of the lower vane D is accomplished by means of the wheel E, which is loosely mounted upon the vertical shaft B by means of a notched wheel or collar *b'*, fast on said shaft B. The underside of said wheel E is provided with a spring-pressed pawl *e*, connected to a pivoted operating-lever *e'* by a link *e²*. The upper surface of said wheel E is provided with two vertically-projecting spaced pins *e³*, adapted to receive the lower vane D between them, and thus cause the latter to move with the wheel E when the same is rotated.

The vanes are preferably connected to the shaft B by some detachable connection, whereby they may be removed, when so desired, and different-sized vanes inserted in their place.

It will be observed from the foregoing description that when it is desired to stop the action of the wheel the pawl *e* is released from the notched wheel *b'* and said wheel E rotated on the shaft B, thus folding both of the vanes D against the vanes C and throwing said vanes out of action and stopping the wheel. After the vanes D D are turned to their closed positions the pawl *e* is released and engages the notched wheel *b'* and holds the vanes in said closed position against any pressure of the wind that may tend to open them again.

It will be observed that with my improved wheel the respective vanes forming cymas are arranged in different horizontal planes.

It has been found by experiment that if the cymas were arranged in the same horizontal plane with each other the respective vanes of the same would be deprived of the full pressure of the wind during a portion of the revolution, as the next succeeding vane would enter into the line of the current of air before the preceding vane had reached its extreme operating point. When a cyma-shaped blade is arranged in a horizontal plane by itself, it receives the full force of the wind and each vane of the cyma is caused to work through the full extent of its operative field. By my peculiar arrangement of the cymas—one above

the other and at right angles to each other—the full working power of all of the vanes is secured and in such relations one to the other as to effectually prevent any dead-center or locking of the wheel.

I do not care to limit myself to two sets of blades arranged above each other, as any desired number may be mounted upon the vertical shaft, according to the character of work to be accomplished by the wheel.

The wheel operates in the well-known manner of concavo-convex vanes, presenting their surfaces to the wind upon opposite sides of the shaft.

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

1. In a wind-wheel, the combination with a suitable supporting-frame, of a vertical shaft journaled therein, vanes mounted upon said shaft, one above the other, and each comprising a rigid vane and a hinged vane, means connecting the hinged vanes so that they move together and an adjusting-wheel loosely mounted upon said shaft and connected to one of said hinged vanes, substantially as described.

2. In a wind-wheel, the combination with a suitable supporting-frame, of a vertical shaft journaled therein, cyma-shaped vanes mounted upon said shaft one above the other, and each consisting of a rigid vane and a hinged

vane, links connecting the hinged vanes so that they move together, an adjusting-wheel mounted upon said shaft and connected to the hinged blades, and means for adjusting said wheel in connection with the shaft whereby said hinged vanes may be opened or closed at will to start or stop the wheel, substantially as described.

3. In a wind-wheel, the combination with a suitable supporting-frame, of a vertical shaft journaled therein, cyma-shaped vanes mounted upon said shaft one above the other, and also at right angles to each other, each of said vanes comprising a rigid and a hinged vane, means for connecting said hinged vanes whereby they are moved together, an adjusting-wheel loosely mounted upon the shaft and connected to the hinged vanes, a notched wheel rigidly mounted upon said shaft below the adjusting-wheel, a spring-pressed pawl mounted upon the adjusting-wheel and engaging the notched wheel so as to hold said adjusting-wheel in any desired position in relation to the vertical shaft, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN P. FRUIT.

Witnesses:

G. W. GARRETSON,
E. O. GARRETSON.