



# UNITED STATES PATENT OFFICE.

WALTER PECK, OF ROCKFORD, ILLINOIS, ASSIGNOR TO DAVID S. PENFIELD,  
OF SAME PLACE.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **138,186**, dated April 22, 1873; application filed  
January 17, 1873.

*To all whom it may concern:*

Be it known that I, WALTER PECK, of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Windmills; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

Figure 1 is a side elevation of so much of a windmill as is necessary to illustrate my invention. Fig. 2 is a view of a portion of the devices taken from the opposite side; and Fig. 3 is a top or plan view.

The invention relates to a novel construction and combination of parts whereby the wheel is made to shift its position relative to the direction in which the wind is blowing, the object being that, as the wind increases in violence, the angle at which the face of said wheel is presented to the wind may be changed so as to maintain a nearly uniform speed of revolution.

In the accompanying drawing, A is a post, upon which the mill is mounted. B is a hollow cylinder, supported and revolving freely in plates or sockets  $b$   $b^1$ , secured to post A. B' is a shank, attached rigidly to or cast in one piece with the vertical cylinder B.  $b^2$   $b^3$  are arms or lugs, projecting horizontally from an arm,  $b^4$ , rising from the shank B'. C is a grooved ring, surrounding the cylinder B. This grooved ring has notches cut in its inner surface, which fit over feathers  $b^2$  on the cylinder. Thus the ring is free to rise and fall on said cylinder, and is made to revolve with it. The weighted bent lever C<sup>2</sup> is pivoted to post A, and is connected with the grooved ring C by means of a link, C<sup>1</sup>, which slides in a slot in one of the plates  $b$ , and is provided at its upper end with a spur or pin, which enters the groove in the ring. By preference I further support link C<sup>1</sup> by means of a second slotted plate,  $c$ .  $c^1$  is a stem rising from the ring C. The upper end of this link  $c^1$  rests in a socket groove or seat cut in the cylinder B, the seat being of such depth that the outer face of the link is on a line with the outside of the cylinder. D is a vane, secured to the shank B' to keep the mill in a proper working

position relative to the wind. D' is a lever, pivoted in the shank of vane D, the upper end of the lever D' having a wing-board attached to it, and occupying a vertical plane at right angles to the vertical plane of the vane D, for a purpose which will soon be explained. E is a sleeve or bearing-box, in which the shaft F of the wind-wheel is mounted. The crank of the inner end of this shaft extends inward to about the center of the cylinder, as is customary in this class of windmills. The bearing-box E is provided at its inner end with an upright arm,  $e$ , from which project two arms, corresponding substantially to those marked  $b^3$ , the pin  $e^1$  uniting the parts in such manner that the wheel can swing said pin as a pivot without disturbing a proper working relation of the pitman, which works in the hollow cylinder B. E' is the head or spider to which the arms for supporting the circular slotted wheel are attached, the wheel being made in the usual well-known manner.  $e^2$  is a lug, on either the box E or on its vertical arm  $e$ .  $d^1$  is a cord or chain connecting the lever D' with one crank,  $d$ , of a rock-shaft.  $d^2$  is a link connecting crank  $d$  with the lug  $e^2$  on arm  $e$ .

From an inspection of the drawing, it will be readily seen that if the upper end of lever D' be moved toward the vane D, the wind-wheel will be swung around toward or into the position shown in dotted lines in Fig. 3, and the edge of said wheel thereby presented to the wind; and it will be apparent that the effective force of the wind will be greatly reduced thereby.

It will be observed, the whole object of the lever D' or supplementary fan is to assist in turning the wind-wheel from off the center, when the force of the wind, acting against the opposite side of the wheel, will bring it in the position before mentioned. It is obvious this result may be obtained by not allowing the wind-wheel to swing fully in face with the wind, thereby dispensing with the lever D', which in practice I intend to do—that is, dispense with lever or fan D'.

As the wind slackens, it is desirable to return the wheel toward the position indicated in Fig. 1. This is accomplished as follows: The rock-shaft to which the crank-arm  $d$  is

attached is mounted on the shank B', and has at its opposite end a horizontal crank-arm,  $d^3$ , connected with the upper end of stem  $c^1$  by means of a link,  $c^2$ . As the crank-arm  $d$  is drawn backward by the action of the wind, the crank-arm  $d^3$  lifts stem  $c^1$ , ring  $c$ , and the weighted lever  $c^2$ , and of course when the pressure is released the weighted lever throws the wind-wheel back again into the position indicated by full lines in Figs. 1 and 3.

In order to regulate and limit the movement of the wheel in either direction in its vibrations about the pivot  $e^1$ , I employ stops  $g g'$ . By preference I make them as shown in Fig. 3—that is, I take a bar, G, and bend one end at a right angle and cut a screw-thread in it to receive a set-screw,  $g'$ , and then secure the bar upon the lower lug  $b^3$  in such position that the heel end of the bar at  $g$  shall serve to stop the wheel at about the point shown in Fig. 3, when the position of the wheel, when full in the wind, may be determined by set-screw  $g'$ .

H is a cord or rod, attached to one end of the weighted lever  $c^2$ . By pulling down upon this cord or rod the wind-wheel can be swung around, as in dotted line, (see Fig. 3,) and locked with its edge to the wind, and thus thrown out of action until the cord or rod is released, as will be understood without further explanation.

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

1. The hollow cylinder B, provided with the

shank B' for the vane and the arms  $b^3 b^3$ , in which the sleeve or box E is pivoted, substantially as set forth.

2. The sleeve or box support E, provided with its vertical arm  $e$  having its projecting lugs, in combination with the cylinder B provided with the vertical arm  $b^4$  and lugs  $b^3 b^3$ , these parts being united by the pivot  $e^1$ , substantially as described.

3. The arrangement of the hinge or pivot of the wind-wheel over or nearly over the vertical center of the cylinder B, substantially as described, so that the relative position of the pitman with the cylinder shall not be materially changed when the wheel is brought parallel to and in line with the vane, as and for the purpose set forth.

4. The combination of the rock-shaft, provided with crank-arms  $d d^3$ , with the cylinder B, sleeve E, loose ring C, weighted lever  $c^2$ , and their connecting devices, substantially as set forth.

5. The combination of the lever D' with the cylinder B, sleeve E, links  $d^1 d^1$ , and their connecting devices, substantially as set forth.

6. The combination of the stops  $g g'$  with the sleeve E, cylinder B, shank B', and operating devices, substantially as set forth.

This specification signed and witnessed this 11th day of January, 1873.

WALTER PECK.

Witnesses:

GEORGE TROXELL,

G. W. FORD.

1.5 v  
words.