F. C. WHITE.

Wind-Mills.

No. 148,100. Patented March 3, 1874.

Fig. 1.

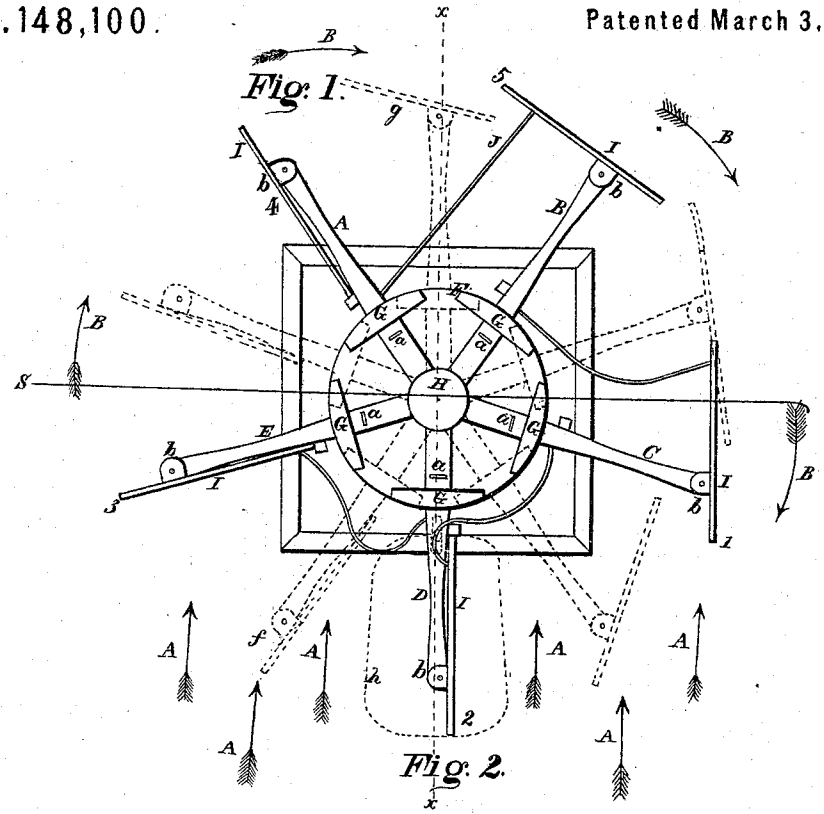

Fig. 2.

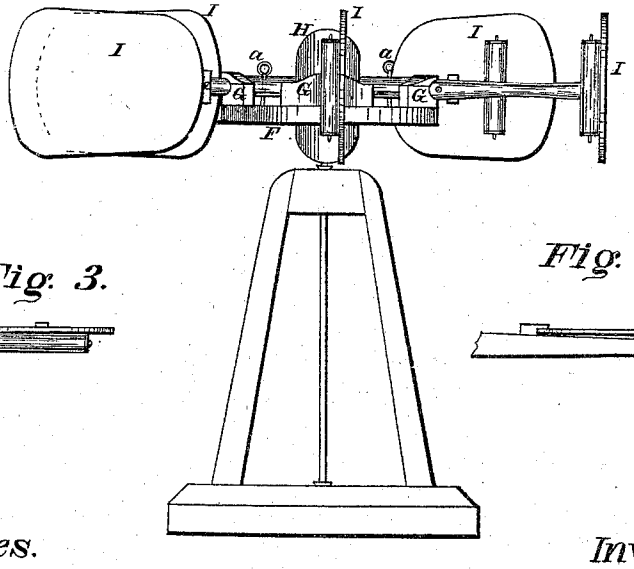

Fig. 3.

Fig. 4.

Witnesses.

A. F. Bennett

N. Thompson

Inventor.

F. C. White.

Per Burridge & Co.

Attys.

UNITED STATES PATENT OFFICE

FRANCIS C. WHITE, OF EUCLID, OHIO.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **148,100**, dated March 3, 1874; application filed December 17, 1873.

To all whom it may concern:

Be it known that I, FRANCIS C. WHITE, of Euclid, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Windmill, of which the following is a complete description, reference being had to the accompanying drawings making part of this specification.

The nature of this invention relates to a windmill; and which consists of a series of horizontal arms, to the extreme ends of which are pivoted vanes, which have, in their relation to the arms, a vertical position, whereby said arms are carried around by the wind for operating the mill.

A more full description of the invention is the following:

Figure 1 is a plan view of the windmill. Fig. 2 is a side elevation. Figs. 3 and 4 are detached sections.

Like letters of reference refer to like parts in the several views.

In the drawing, A B C D E, Fig. 1, represent the arms of the windmill, which are secured to a disk or nave, F, Fig. 2, by means of the pillow-blocks G, and the center or hub H, in which the ends of the arms are inserted.

The attachment of the arms to the disk is not rigid, but so as to permit of their turning in the blocks; but which, however, are prevented from turning by the pins *a*, inserted in the arms and disk. To the end of each arm is pivoted a vane, I, at the point *b*. Said pivotal connection of the vanes to the arms permits of their moving toward or away from the side of the arms in order to adjust themselves to the wind while revolving.

It will be observed that the arms are not attached to the middle of the vanes, but to one side thereof, so that a much larger portion of the vane is back of the arms than in front of them, the purpose of which is to allow them to adjust themselves to the wind as they revolve, and change their position in relation to it.

The operation of the mill is as follows: For illustration, let the wind be supposed to blow in the direction of the arrows A; the two vanes 1 and 2 will present their edges to the wind, whereas the vanes 3, 4, and 5 will present their broad side more or less to the wind, which will cause the arms to revolve in direction of the arrows marked B. The vane 1 will hold itself edgewise to the wind until it reaches the opposite side of the dotted line *x*, when it will gradually present its broad side thereto, as shown at vane 3 and the dotted line *f;* the vane having by this time become close to the side of the arm by virtue of its greater surface or tail being on the inside of the pivotal point *b*, as a consequence, forces the vane to the position indicated. As the arms continue to revolve, the inner end or tail of the vane will gradually present itself to the wind, and by the time it arrives to the line *x* the edge of the tail is in the wind's eye, but on passing the line *x* the wind strikes the opposite side of the tail, and forces the vane to the position indicated by the dotted line *g*, broad-side to the wind, or nearly so, as shown by the vane 5, which presents its inner side to the wind at a certain angle, it being prevented from standing edgewise to the wind by the cord J, which has sufficient elasticity to permit the vane to assume such relation to the wind that it shall impinge upon its side without allowing the tail to be carried out so far as to bring the vane edgewise to the wind, which it would do before reaching the position of the vane 1 were it not for the cord.

It will be obvious that by this arrangement of the vanes three of them are at all times presenting their broad sides, more or less, to the wind, thereby receiving its full force as an impelling power to rotate the arms, whereas the other two vanes offer but little resistance, as they readily adjust themselves edgewise to the wind, and at the proper time as readily assume their broad-side relation thereto, as before described.

In the event the vanes are not wanted for immediate use they can be turned down, so that their broad sides will be horizontal, as indicated by the dotted lines *h*, Fig. 1, and as shown in Figs. 3 and 4, thereby bringing the vane edgewise to the wind. This is done by removing the pin *a*, which will allow the arms to be turned around for the purpose specified.

What I claim as my invention, and desire to secure by Letters Patent, is—

The herein-described windmill, consisting of the vanes I, having a vertical position to the arms A B C D E, and pivoted thereto at the points *b*, as described, in combination with the disk F, pillow-blocks G, pins *a*, cords J, and head H, all constructed as described, and for the purpose set forth.

FRANCIS C. WHITE.

Witnesses:
W. H. BURRIDGE,
A. F. CORNELL.