W. H. B. PAGE.
Windmill.

2 Sheets—Sheet 1.

No. 223,379. Patented Jan. 6, 1880.

Fig. 1.

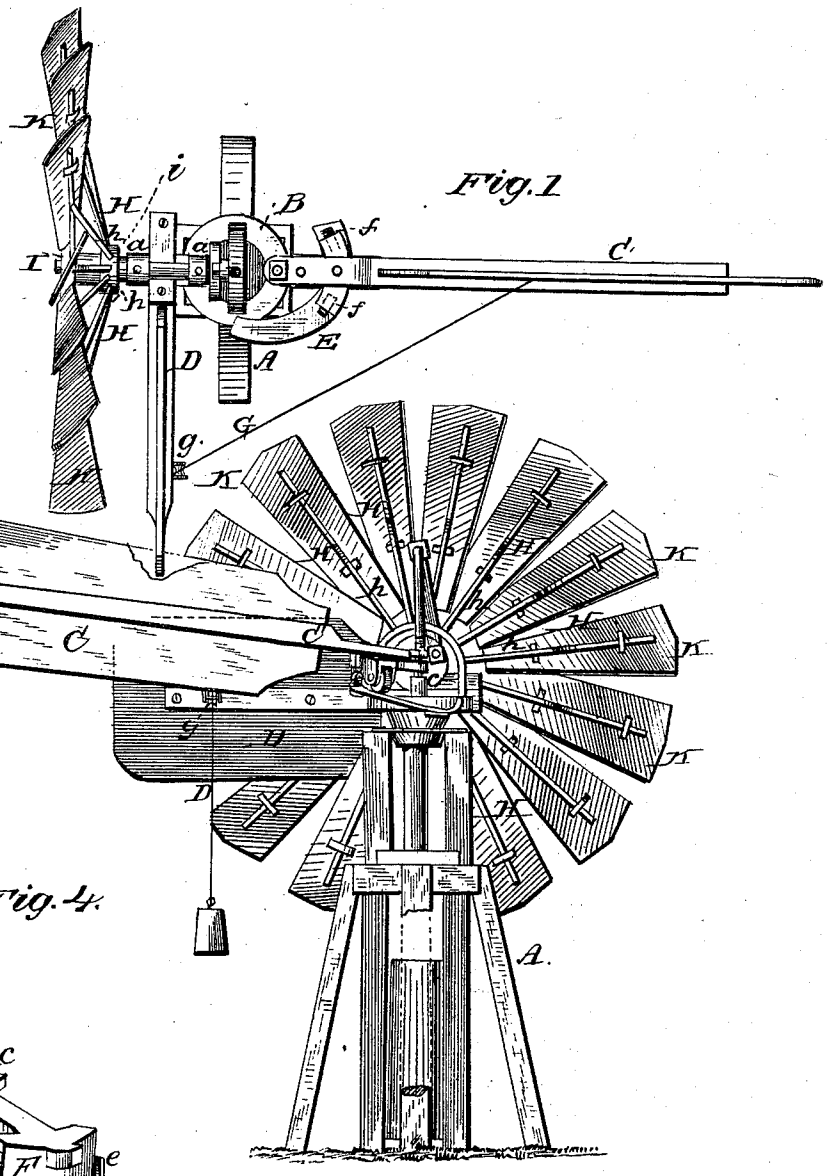
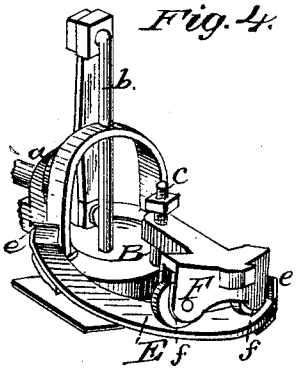


Fig. 2.

Fig. 4.



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2 Sheets—Sheet 2.

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Fig. 3.

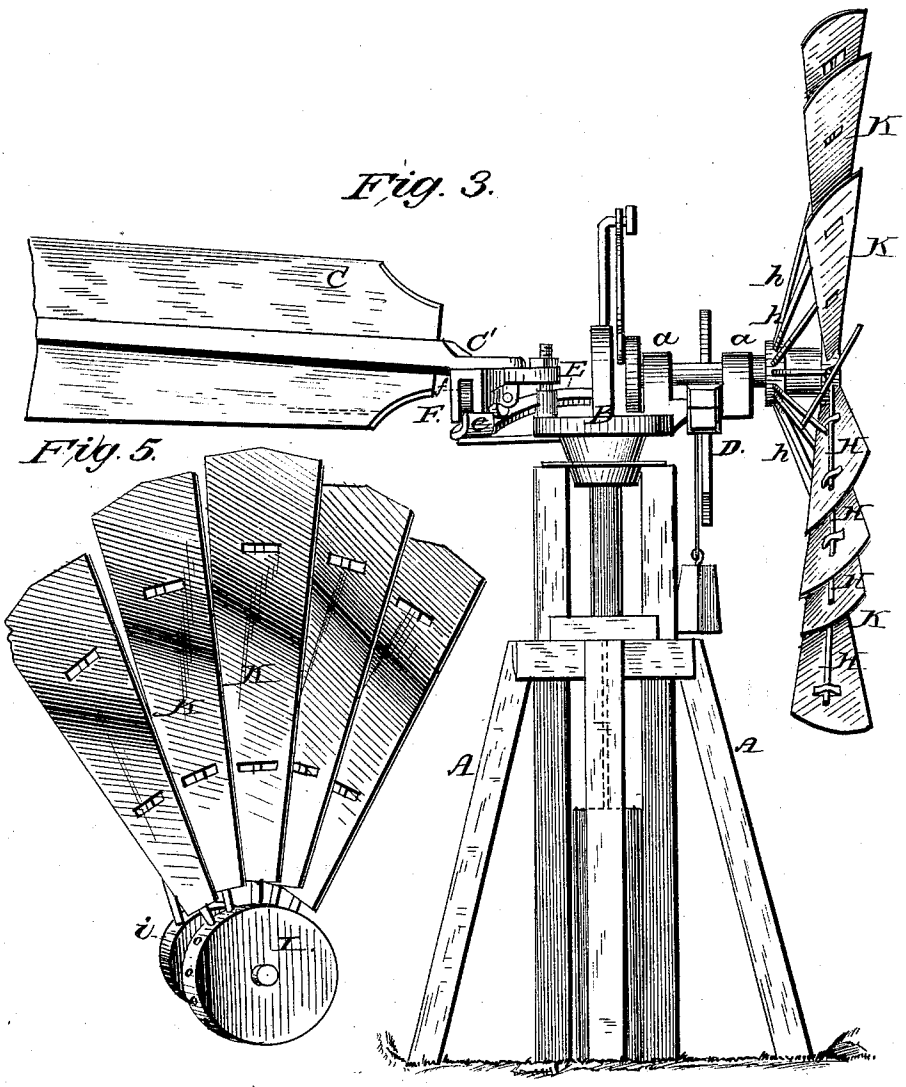


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM H. B. PAGE, OF DELAWARE, OHIO.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 223,379, dated January 6, 1880.

Application filed October 23, 1879.

To all whom it may concern:

Be it known that I, WILLIAM H. B. PAGE, of Delaware, in the county of Delaware and State of Ohio, have invented certain new and useful Improvements in Windmills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan or top view of a windmill embodying my improvements. Fig. 2 is a rear elevation of the same. Fig. 3 is a side elevation. Fig. 4 is a perspective view of the vane car or traveler with its inclined track; and Fig. 5 is a perspective view of a section of the wheel, showing its wings or blades bent or set to form different angles at their inner and outer ends as to the plane of motion of the wheel of which they form a part.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has relation to windmills or wind-engines; and it consists, first, in the combination, with the wheel and its stationary side vane, of an adjustable and automatically-operating main vane, which is supported upon a car or traveler riding upon a segmental inclined plane or track having the vane-pivot for its center; and, secondly, in the construction of the wheel-frame and the arrangement of its blades, substantially as and for the purpose hereinafter more fully set forth.

In the two sheets of drawings hereto attached, A denotes the derrick or supporting-frame of the mill, in which is pivoted the turn-table B, with its shaft-boxes *a a*, pitman-guide *b*, and pivot-pin *c* for the main vane C. Projecting rearward from the turn-table B, and firmly secured thereto, is a segmental track, E, forming an inclined plane around the pin *c* as its center, and turned up at each end to form a stop, *e e*. Upon this inclined track travels the vane car or support F, upon the upper side of which the central beam, C′, of the main vane is bolted, and which is provided with wheels or rollers *f f*, which ride upon the track and support the carriage with its vane as it travels up and down this. D is the stationary side vane, which is secured in the forward part of the turn-table in a vertical plane parallel to that of the wheel. A cord or chain, G, connects the main vane E with the side vane, D, passing over a pulley, *g*, upon the inner face of the latter and down to the ground.

From the foregoing description, taken in connection with the drawings, the operation of this part of my invention will readily be understood. As the wind presses against the face side of the side vane, D, it inclines the turn-table with the wheel around on its central pivot, bringing the opposite side of the main vane E into the wind, and when this is strong it will roll the main vane up upon its inclined track into a position parallel to that of the side vane, so as to throw the edge of the wheel into the wind, and thus stop the motion of the mill. The main vane is heavy enough to maintain its position at the lowest point of the inclined plane or track with any good working breeze; but any considerable current of air acting against the face of the side vane partly turns the turn-table and wheel, thus equalizing or balancing the position of the latter between its two vanes by setting the face of the wheel at a greater or lesser angle to the current of the wind, which said angle is regulated automatically by the strength or force of the wind. Hence in the exact proportion as the wind increases the acuteness of the angle of the face of the wheel relative to the current of air will be increased until, during a high wind or gale, the face of the wheel will be parallel with the current, and the mill will cease to operate. After the gale has subsided the main vane rolls down its inclined plane, and the wheel will reassume its normal position and go to work again.

If it is desired to stop the mill, the lower end of cord G is pulled, which brings the main vane up parallel to the side vane and turns the edge of the wheel to the wind. By attaching a weight to or fastening the end of the cord the mill will remain inoperative.

The wheel consists of a series of radial ribs or spokes, H, inserted into or bolted upon a central disk or hub, I, and braced by rods *h*, the ends of which are inserted into or bolted upon a circular collar, *i*, back of the hub.

Upon the spokes H are secured the fans or blades K, each of which is twisted so as to increase its angle relative to the wheel in a downward direction, as will be seen more clearly by reference to Fig. 5 of the drawings. Thus, at the outer edge or periphery of the wheel the face of each of the blades presents an angle of about twenty degrees, which is gradually increased by twisting the blade in the manner described to forty degrees at the hub end.

By this arrangement of the blades the force of the wind is utilized the entire length of the blades, so that the wheel will not outrun or run ahead of the wind, because the wheel first takes the wind from its center at a sharp angle, which is gradually reduced as it spreads over the face of the wheel and bears against the broader and less inclined parts of its fans or blades.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a windmill, the combination, with the wheel, turn-table, and a rigid side vane set parallel to the face of the wheel, of a pivoted main vane supported upon a car or traveler which rides upon a segmental inclined plane having the pivot of said vane for its center, substantially as and for the purpose herein shown and described.

2. A wheel for windmills, consisting of a central shaft and hub, having straight radial arms or spokes braced by inclined rods set back of said spokes and inserted into a collar on the wheel-shaft back of the hub, and fans or blades secured upon said spokes, and so bent or twisted as to present to the plane of the motion of the wheel an angle of gradually-increasing pitch from the outer to the inner ends of said fans or blades, substantially as and for the purpose herein shown and specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM HARRISON BENJAMIN PAGE.

Witnesses:

JOHN SMITH GILL,

THOMAS EDWARD POWELL.