

W. BOWES.
WIND-WHEEL.

No. 177,057.

Patented May 9, 1876.

Fig. 2.

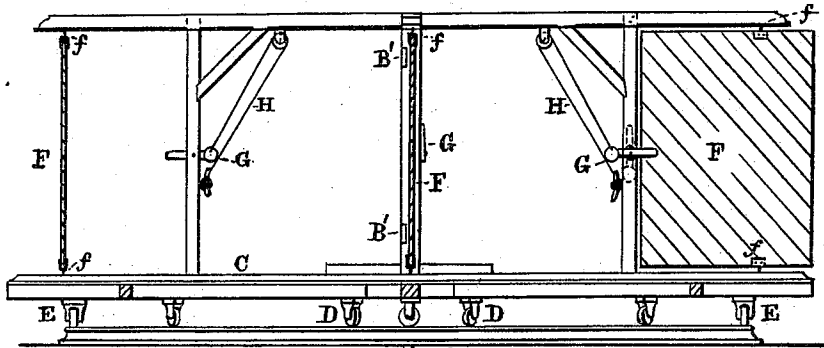


Fig. 1.

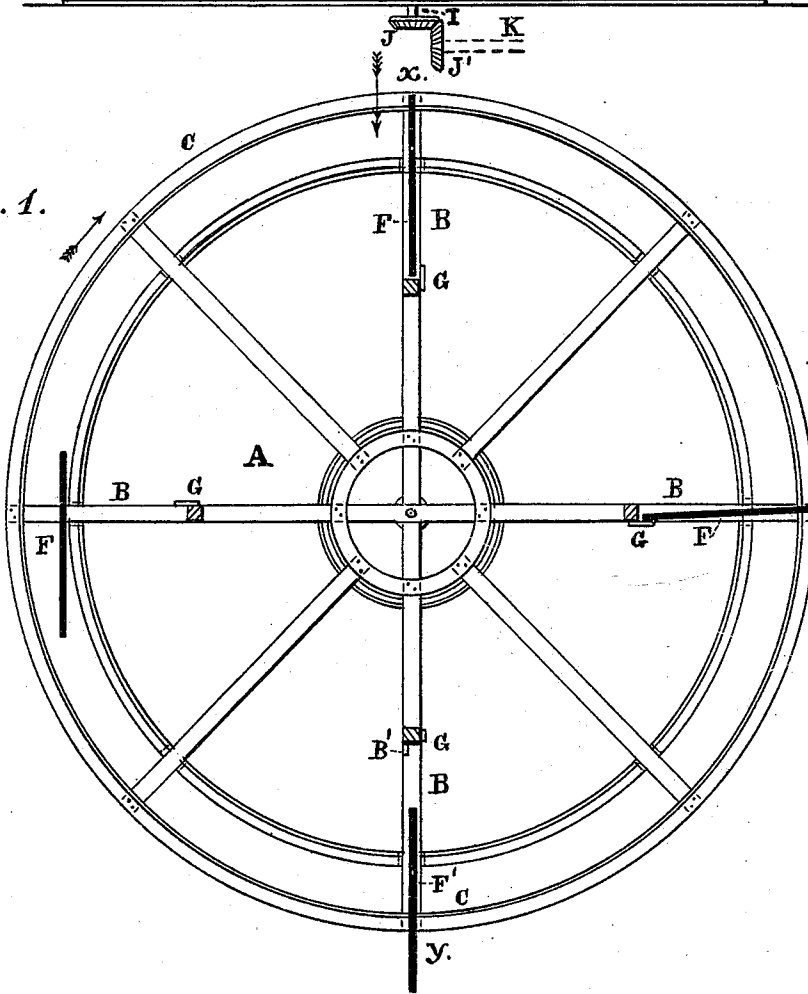
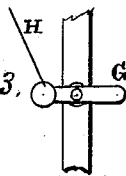


Fig. 3.



Witnesses :

Lewis Tomlinson
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UNITED STATES PATENT OFFICE.

WILLIAM BOWES, OF PINKERTON, CANADA.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **177,057**, dated May 9, 1876; application filed November 2, 1875.

To all whom it may concern:

Be it known that I, WILLIAM BOWES, of Pinkerton, in the Province of Ontario, Canada, have invented new and useful Improvements in Wind-Wheels, of which the following is a specification:

My invention relates more particularly to improvements in that class of wind-wheels in which the wheel revolves on a plane with the earth's surface; and it consists, first, in placing one, two, or more wheels under each arm of the windmill for the purpose of supporting said arm or arms, and for the further purpose of making it practicable to extend the arms to any desired length without necessarily requiring any increase of strength in the central part, said supporting-wheels to rotate, and be themselves supported on any suitable road-bed, such as a rail of wood or iron, or the smooth ground itself.

The second part of my invention relates to the appliances necessary to regulate the motions of the wheel in the case of high and storm winds, as well as to provide for its safe condition when it is not in use. When in use the sails are held to the wind by the sails themselves swinging onto pivoted catch-bars, which bars are so arranged that in high winds, and as the wind increases, they can be disengaged from one sail, then from another, and so on, each sail so freed then presenting, in any part of the wheel's revolution its edge to the wind, thereby losing its power to help to rotate the machine. In storms or when at rest one sail is buttoned up tight, while the rest swing free, thus retaining the machine in a quiet state, only veering as the wind veers.

In the accompanying drawings, Figure 1 is a side elevation, and Fig. 2 a plan, of a wind-wheel constructed according to my invention. Fig. 3 is a detail of the pivoted catch-bar.

A is the wheel, having four radially-placed sail-arms, B, mounted on a circular platform, C. This platform revolves on a center, and is supported on two sets of friction-wheels, D and E, which wheels travel on the rails D' and E' as the machine rotates. The inner set of wheels are flanged to keep the superstructure in position, but the outer set, E, are plain rollers; or, if desired, both sets may be without flanges, and the center of rotation

preserved by a heavy pivot working in a suitable socket.

I do not wish it to be understood that I confine myself to four sail-arms, as a greater or less number can be used, if desired.

F are the sails pivoted to the outer end of the radially-placed arms B. The position of the pivot *f* is such that it divides the sail into two unequal parts or arms, one being much larger than the other. Therefore when the wind strikes the sail the larger arm exerts the greatest leverage, forcing the sail into line with the wind. This is the governing principle of my wind-wheel both when in operation and at rest. G are catch-bars, weighted on one end and pivoted on one side of the sail-arms, against which the sails at a certain part of the revolution of the machine bear. To the heavy end of these catch-bars ropes H are connected, by which the bars may be lowered to free the sails when desired. The power developed by the wheel is concentrated on the center or pivot pin I, to which the bevel-wheel J is attached. The power is then transmitted to any desired place by means of the bevel-wheel J' and horizontal shaft K, or their equivalents. The power developed by the moving wheel may also be taken from its periphery, or any intermediate point, as desired.

On one of the radial arms B cleats or stops B' are placed on the opposite side to the catch-bar G, between which and the catch-bar one particular sail, F', may be secured when it is desired to keep the machine from rotating. At the same time all the other catch-bars G are lowered clear of the sails, allowing them to swing with the wind. The one sail being thus fastened becomes, as it were, a rudder, veering with the wind and preventing the machine from revolving.

The operation of my machine is as follows, and for the purpose of example we will suppose the wind to be blowing in the direction shown by the double-headed arrow. The wheel will then rotate in the direction shown by single-headed arrows. Each sail to the left of the center line, in operation, will be blown in line with the wind, offering but little resistance to the movement; but when they come around to and after passing the point X they are held in a fixed position, with their

broad sides to the wind, by the catch-bars G during the remainder of their course, or until they reach the point Y. The wind then disengages them from their fastening, and, reversing them on the pivots, causes them to present their thin edge to the wind, as before.

I propose to load the platform C with portable weights, to secure equality of motion and to give solidity to the machine.

I claim as my invention—

1. The horizontally-revolving wind-wheel A, working around the center pivot I, the said wheel consisting of the platform C, fric-

tion-wheels D and E, radially-placed sail-arms B, pivoted catch-bars G, and pivoted sails F and F', arranged and operating substantially as described, and for the purpose specified.

2. The sail F', in combination with the cleats B' and catch-bars G, arranged and operating substantially as described, and for the purpose specified.

WM. BOWES.

Witnesses:

GEO. A. AIRD,
HUGH AIRD.