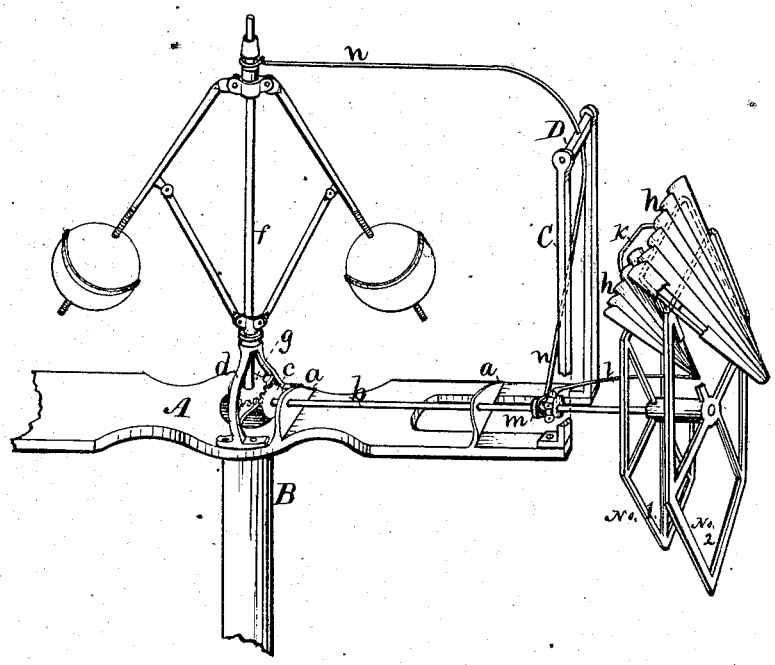
S. & D. JOHNSON.

Wind-Wheel.

No. 160,773. Patented March 16, 1875.



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UNITED STATES PATENT OFFICE.

SAMUEL JOHNSON AND DAVID JOHNSON, OF CARLISLE, ASSIGNORS OF ONE-THIRD THEIR RIGHT TO GEORGE W. HAWORTH, OF HARTFORD, IOWA.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **160,773**, dated March 16, 1875; application filed August 25, 1874.

To all whom it may concern:

Be it known that we, SAMUEL JOHNSON and DAVID JOHNSON, of Carlisle, in the county of Warren and State of Iowa, have invented an Improved Wind-Wheel, of which the following is a specification:

Our object is to furnish a wind-wheel that will be self-adjusting relative to the force of the wind, and self-regulating in maintaining uniformity of speed. It consists in mounting and combining a series of sails with a centrifugal governor, as hereinafter fully set forth.

Our drawing is a perspective view illustrating the construction and operation of our invention.

A represents the bar which forms the base and frame to support our mechanism. It is pivoted and balanced upon a suitable shaft, B, so that a vane at one end of it will keep it in line with the direction of the wind. *a a* are ears projecting from the bar A to form bearings for the horizontal shaft *b*. *c* is a bevel-gear wheel rigidly attached to the right end of the shaft *b*. *d* is a vertical frame or bearer rigidly attached to project upward from the center of the base A, to support the governor. *f* is the governor-spindle supported in suitable bearings in the frame *d*. *g* is a bevel-gear wheel rigidly attached to the lower end of the spindle *f*. It matches and engages the wheel *c* on the end of the horizontal shaft *b*. Adjustable balls are attached to the governor-spindle *f* in any known suitable way. Nos. 1 and 2 are skeleton frames of the sail-wheel of hexagon or octagonal form rigidly attached to the left end of the shaft *b*. *h h* represent a double series of fan-tail sails hinged to the outer edges of the wheels 1 and 2 in such a manner that they can be made to assume different angles relative to the horizontal shaft *b*, which forms the axle of the wheels. The outside No. 2 skeleton wheel or frame is larger than the No. 1, and the sails *h* correspond accordingly. K is a rod pivoted to the sails *h h*, to link them together at their top and wide ends. *l* is a rod pivoted to the lower end of the inside sail *h*, and to a collar, *m*, that slides on the shaft *b*. Each sail required to fill the wheels 1 and 2 is connected with the collar *m* in the same way. C is a frame rigidly attached to the left end of the base A to support a rock-shaft, D. *n n* are rods rigidly attached to the rock-shaft D, and form a connection between the governor and the sliding collar *m* linked to the sails *h*.

In the practical operation of our invention, the piston-rod of a pump may be connected by bevel-gear, or any suitable mechanical devices may be employed to transmit power from our wheel to drive machinery for various purposes.

A vane at the end of the base A opposite to the sail-wheels will govern our wheel relative to the direction of the wind, and continually hold the sails in position to meet the force of the wind. A uniform breeze or blast will produce a uniform speed. Irregular blowing and force will be overcome by the weight of the governor-balls, so that a superabundance of wind-force will be expended in lifting the balls. The blast strikes the pivoted sails, and turns them to angle away from the wind, and to let its force pass, and by so doing elevates the governor-balls through the medium of the links *k* and *l*, sliding collar *m*, rods *n*, and rock-shaft D. When the superabundant force has passed the sails *h*, the governor-balls will descend, and again hold the sails in a vertical position.

A simple and complete means is thus provided to adjust the sails automatically relative to the force of the wind to maintain uniform power and speed, and to prevent accidents in storms by the blowing down and breaking of wind-wheels.

We claim as our invention—

1. A wind-wheel composed of skeleton frames Nos. 1 and 2, and the two series of pivoted fan-tail sails *h*, substantially as described, and for the purposes specified.

2. The base A, having bearers *a a* and *d*, and frame C, in combination with the shaft *b*, gear-wheel *c*, collar *m*, linked to sails *h*, and the rock-shaft D, and the governor mounted upon the spindle *f*, having a gear-wheel, *g*, substantially as described, and for the purposes specified.

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