

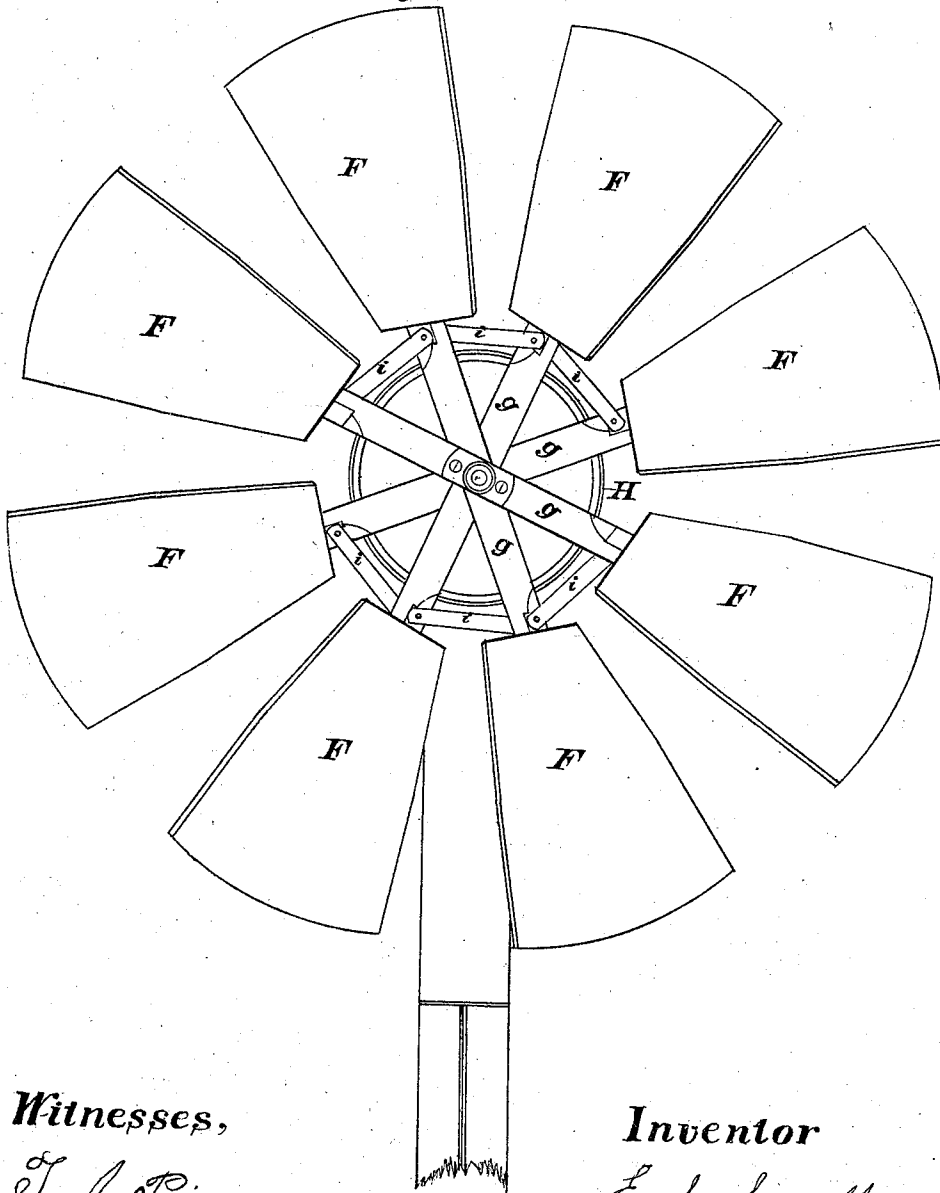
E. S. SMITH.
Wind-Mills.

2 Sheets--Sheet 1.

No. 150,489.

Patented May 5, 1874.

Fig. 1.



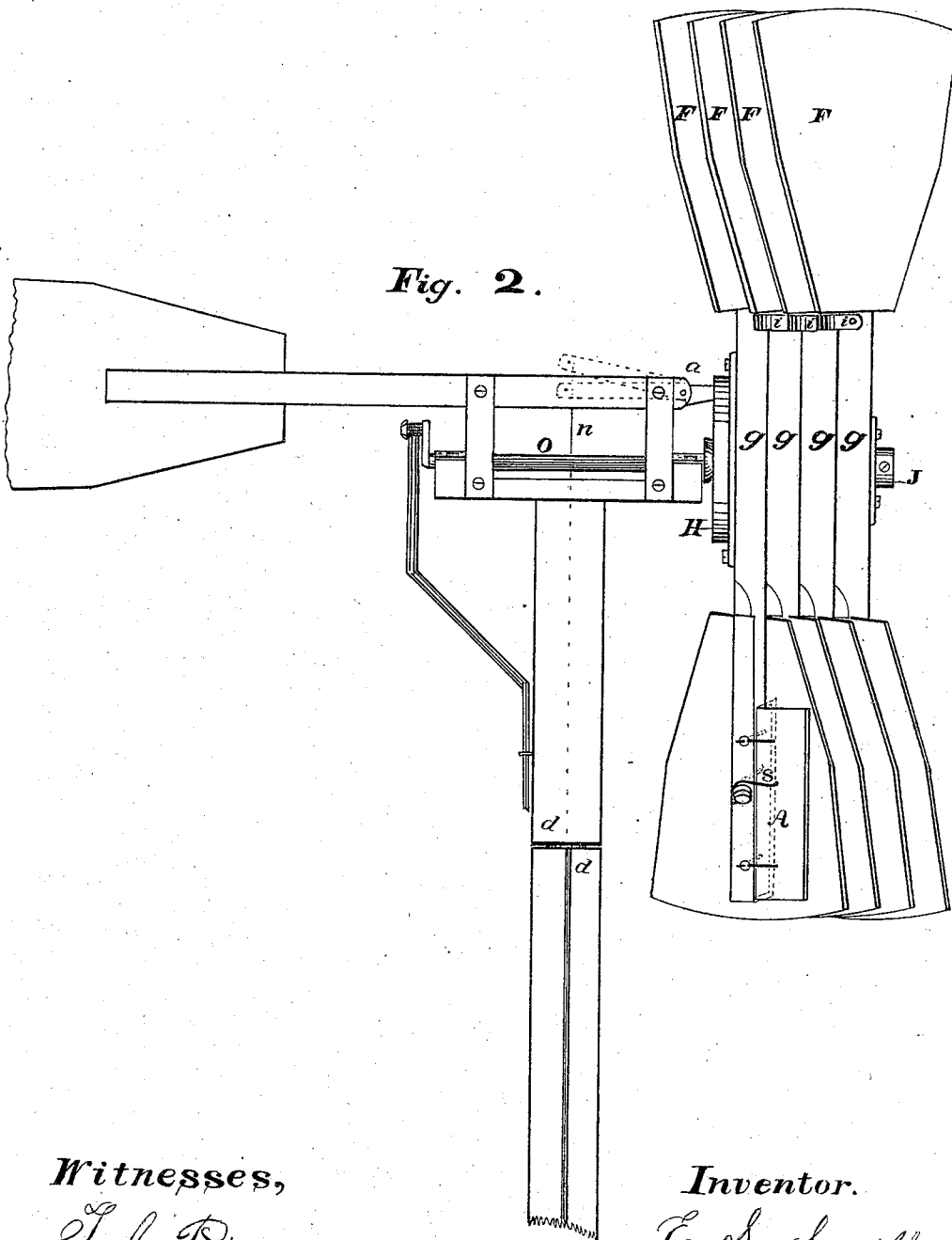
Witnesses,
T. J. Price
A. Fisher.

Inventor
E. S. Smith.

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UNITED STATES PATENT OFFICE.

ELIJAH S. SMITH, OF GOOD HOPE, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **150,489**, dated May 5, 1874; application filed April 10, 1874.

To all whom it may concern:

Be it known that I, E. S. SMITH, of Good Hope, in the county of McDonough 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 drawings, and to the letters of reference marked thereon.

This invention is a windmill which, by its peculiar construction and attachments, folds up when subjected to a strong force of wind; and its novelty consists, first, in the arms acting independently of each other on the main shaft at the center of the wheel; second, in auxiliary sails attached at each end at the rear of the rear arm; third, in the combination of a brake-wheel and its attachments with auxiliary sails and independent folding arms.

In the drawing, Figure 1 represents a front elevation, showing the wheel spread out full size. Fig. 2 is a side elevation, showing the wheel folded up.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction.

g g g g represent the arms of the wheel, to which are attached the sails *F F F F*. At the center of the arms *g g g g* I make a hole sufficiently large, so that the arms will fit on the shaft loosely, except the front arm, which is attached firmly to the shaft *o* by means of the flange *J*, which is provided with a set-screw for that purpose. At the rear of the rear arm the brake-wheel *H* is firmly attached. *i i i i* represent leather straps, which only allow the wheel to spread out to its full size, as shown in Fig. 1. *A* represents an auxiliary sail, attached by hinges to the rear arm back of the rear sail, which is held down, when not in motion, by a spiral spring, *s*. *a* represents the brake. *n* represents the rod, which is attached to the end of the brake-lever, as shown in dotted lines, Fig. 2.

The operation is as follows: The wheel, as shown, is mounted, in the usual manner, on an upright standard, the upper end being rounded, forming a spindle, on which the box that supports the wheel proper is placed, as shown at

d d, Fig. 2, which allows the wheel to turn, by means of the tail-board, in any direction that the wind may be blowing. When the wheel commences to revolve, and power applied to the crank-shaft *o*, the front arm, being secured firmly to the shaft, is retarded in its motion. The other arms, being loosely attached to the shaft, are not retarded in their motion until they spread out to the full size of the wheel shown in Fig. 1, and, by the means of the leather straps *i i i*, the power is all connected to and applied to the front arm, giving all the power to the crank-shaft *o*, causing it to perform such labor as may be required.

In strong winds and wind-storms the speed of the wheel is governed by the auxiliary sail *A*, which, only being slightly held by the spiral spring *s*, opens out (shown in dotted lines) when the wheel is in a high motion, so as to form a plane at right angles with the sail proper, which will retard the motion sufficiently to keep the wheel folded up, but not sufficient to stop the wheel. If the wheel is wanted to have a very slow motion the brake *a* is applied to the wheel *H* by means of the rod *n*, at the lower end of which can be attached a weight sufficient to stop the motion entirely, if desired, when there is no labor wanted; or the weight can be of such substance as to float in a well, and act automatically, allowing the wheel only to pump such quantity of water as may be required.

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

1. A wind-wheel, as shown, with independent arms *g g g g*, that will fold up, substantially as and for the purpose set forth.
2. The auxiliary sails *A* and springs *s*, as described, for the purpose set forth.
3. The brake-wheel *H* and auxiliary sails *A*, in combination with a folding wind-wheel, operating substantially as and for the purpose set forth.

ELIJAH S. SMITH.

Witnesses:

THOS. J. PRICE,
DAVID BLAZER.