E. F. Edwards

Wind Mill.

No. 26899. Patented Jan. 24. 1860.

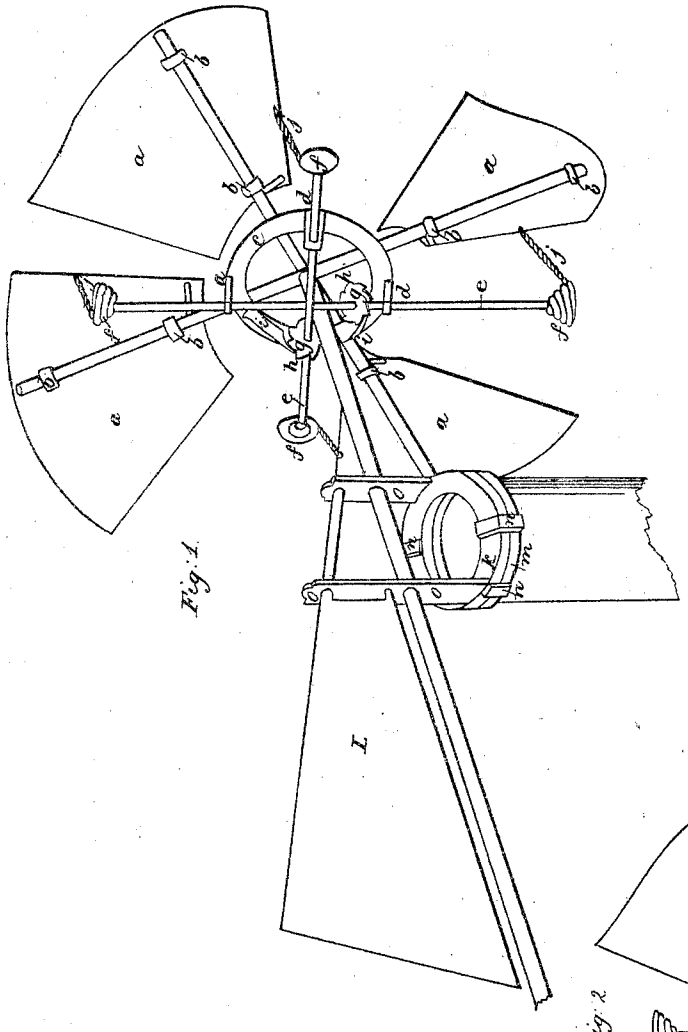


Fig. 1.



Fig. 3

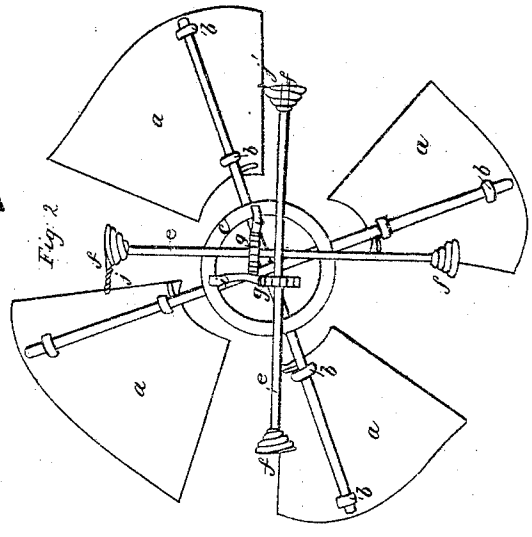


Fig. 2

Witnesses;
Jas. Grover
E. R. Roe.

Inventor;
Elisha F. Edwards

UNITED STATES PATENT OFFICE.

ELISHA F. EDWARDS, OF LE ROY, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **26,899**, dated January 24, 1860.

To all whom it may concern:

Be it known that I, ELISHA F. EDWARDS, of Le Roy, in the county of McLean and State of Illinois, have invented an Improvement in Windmills; and I do hereby declare that the following is a full and complete description thereof, the accompanying drawings being a part of this specification, in which—

Figure I is a perspective view of the windmill with the smaller set of fans broken off. Fig. II is a front view of the smaller set of fans, shown as broken off from the shaft, so as to better exhibit the various parts. Fig. III is a view of cylinder containing the coiled spring.

On any convenient horizontal shaft I fix at one end two rods crossing each other at right angles and forming arms for the support of the fans, as in ordinary windmills, and on each arm I fix a wing or sail to receive the pressure of the wind, said wings being much broader and shorter in proportion than those now in common use and shaped in their outline nearly as seen at *a*. I prefer making the surface of the wings of a spiral form, as giving a more regular motion than a plane surface. The wings are hinged to the arms so as to be movable about them, as seen at *b*, and are not balanced on their centers, but nearer to one edge than the other, so that an increase of wind-pressure may cause them to turn away from the wind and present their edges to it.

To strengthen the arms I bolt upon them at a convenient distance from the point of their crossing a stout circle of iron, as shown at *c*, and from this circle project bearings for the fusee-rods, as seen at *d d d d*, Fig. I.

The fusee-rods *e e e e* have a fusee—a well-known device—affixed to each end *f f f f*, and near the middle of each rod is a cylinder containing a coiled spring, the rod passing through the cylinder and being connected to the center of the spring, while the termination of the coil is attached to the cylinder itself *g g*, Fig. I. Attached to the cylinder, or making part of the same, as seen at *h h*, Figs. I and III, is a ratchet-wheel with a ratchet or pawl for adjusting the tension of the spring *i i*. Wrapped in the spiral groove of the fusee and passing from that to the edge of the sail at its shortest projection from the arm is a strong cord or chain, by which the sail, when it has been forced by the wind to revolve on the arm, is drawn back to its position by the coiled spring acting on the rod and fusee, and thus wrapping up the cord *j j j j*. On the opposite end of the main shaft I place a second set of wings, constructed in all things like the ones described, with spiral springs, fusees, and other things the same; but I make this second set of fans, &c., only about two-thirds as large as the first. (See Fig. II.) The object of the second set of fans is to obtain more power by presenting more surface to the wind, to give greater steadiness of motion, and by being placed farther from the swivel *k*, on which the shaft revolves as the direction of the wind changes, it aids the tail L in adjusting the main shaft to the wind. The tail L is seen in Fig. I, and like the sails may be made of canvas stretched on a proper frame, or in any convenient way.

In making use of my windmill I fasten a cap of iron upon any proper support, as at *m*, Fig. I, with a portion of the same projecting beyond the support all round. On this cap rests the swivel *k*, kept in place by clamps *n n n*, Fig. I, which are fastened to the swivel, but hook under and move freely around the cap. From the top of the swivel bearings project up for the support of the main shaft, as seen at *o o*, and for carrying the tail. These bearings of the shaft are to be nearer the larger set of wings than to the others, so that the wind may have the benefit of the leverage thus made in throwing round the tail and keeping the larger fans or wings square to the wind.

For applying the power the main shaft may be formed with a crank between the bearings, or any convenient gearing may be used for the purpose.

The action of the windmill is as follows: When it is desired to use it, the springs are wound up to the desired tension, according to the force which it is intended to require for use, by turning the cylinders, when the ratchets retain them at the proper tension. Then when the wind is blowing, if the breeze becomes stronger than desired, the portion of each sail which is farthest from the arm, on which it is free to turn, is forced round, and the edge of the sail thus presented more and more to the wind, according to its force; and

when the wind becomes less strong the sails are drawn back again to their proper position, and this is regulated by their coming against stay-rods *p p p p*, projecting from the arms. The fusees from their structure give the wind the advantage in deflecting the sails and the springs in restoring them to place again.

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

The arrangement of sails *a a a a*, substantially as described, with the spiral springs, fusees, rods, and cords, in the manner and for the purpose specified.

ELISHA F. EDWARDS.

In presence of—
JAS. GROVER,
E. R. ROE.