

J. STEINER.
Windmill.

No. 215,687.

Patented May 20, 1879.

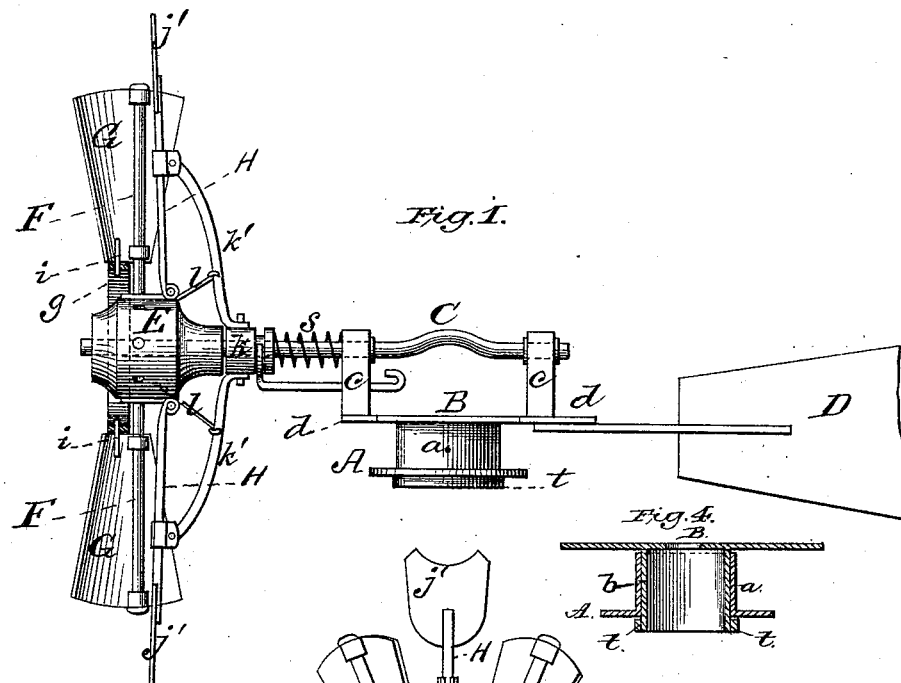


Fig. 2.

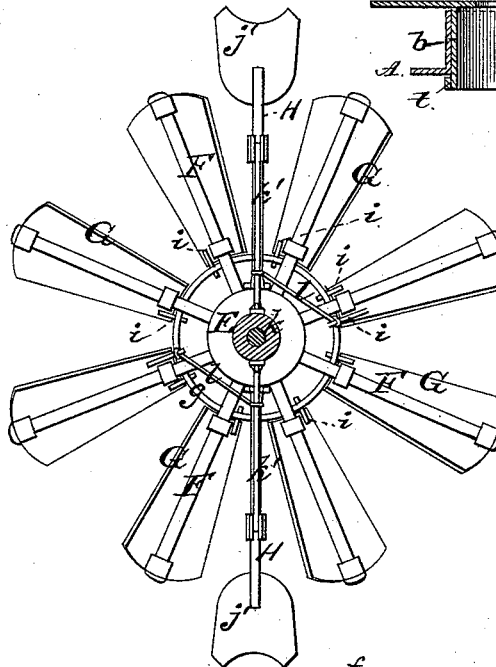
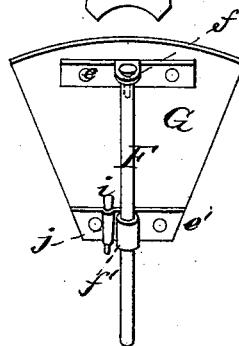


Fig. 3.



WITNESSES

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JACOB STEINER, OF BLUFFTON, OHIO.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **215,687**, dated May 20, 1879; application filed February 24, 1879.

To all whom it may concern:

Be it known that I, JACOB STEINER, of Bluffton, in the county of Allen and State of Ohio, have invented a new and valuable Improvement in Windmills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of a side, partly in section, of my improved wind-engine. Fig. 2 is a rear view thereof looking from the tower. Fig. 3 is a view of the wheel-blade, showing its attachment to the radial spoke. Fig. 4 is a detail.

This invention has relation to improvements in windmills; and the nature of the invention consists in combining, with a main shaft journaled in a turn-table and having a hub with radial projecting spokes, wind-blades rotating axially on said spokes, and provided with spurs at their inner ends engaging a metallic ring, governor-rods hinged to the hub and provided with fans at their upper ends, a sliding sleeve on the main shaft, rods connecting the governors and sleeves, other rods connecting the wind-blades and the rods aforesaid, and a spring on the main shaft between said slide and a stop, as will be hereinafter more fully set forth.

In the accompanying drawings, the letter A designates the metallic plate at the top of the tower, the same being a flat annulus provided with a vertical annular flange, *a*. This plate constitutes the fixed portion of the turn-table, and is secured to the tower in a horizontal position. B indicates a similar plate having a similar flange, *b*, extending through the annular flange *a*, and prevented from escaping therefrom by a collar, *t*. The plate B has a bearing on the annular flange *a*, and is provided at its top with two opposite pillow-blocks, *c*, in which the main shaft C of the wheel has its bearings, the said blocks being usually secured to the arms *d* projecting horizontally and in opposite directions from the plate B, and the crank-arm, eccentric, or other equivalent device be-

ing intermediate the said blocks. The shaft C is kept in the line of the wind by a vane, D, secured to the said plate B in any suitable manner.

E indicates a hub of suitable strength and material that is rigidly secured to the main shaft, and is provided with a suitable number of radial arms, F, upon which are swiveled the fan-blades G. This is usually done as follows: Two iron castings, *e e'*, are bolted to the blade at a suitable distance apart, plate *e* being provided with a flange, *f*, in which is stepped the outer end of the radial arm F and the inner plate, *e'*, with a sleeve, *f'*, through which the said arm extends. The blade is prevented from blowing off of its arm by means of a head, nut, or other equivalent on the end of the arm outside of the step-flange.

Projecting downward from each of the blades F is a stud, *i*, that engages a perforation in a ring, *g*, of any desired metal, which ring is arranged concentrically to the hub. The effect of this construction is that when one of the blades turns upon its arm all must turn. The stud *i* is usually engaged in a seat, *j*, of the casting *e'*, as shown in Fig. 3, so that when broken it may be replaced. H designates strong metallic rods hinged at their inner ends to the hub of the wind-wheel, and provided on their outer ends with broad fans *j'*, the flat surfaces of which are always facing the wind. These rods are connected to a sliding sleeve, *k*, on the main shaft by means of the rods *k'*, and these latter with the blades F by means of the rods *l*. Hence, when the force of the wind is sufficient it will, acting on the fans *j'*, cause the governor-rods H to swing inward toward the tower, forcing the sleeve *k* against a spring, *s*, coiled around the main shaft, and compressing it through the medium of the connecting-rods *k'*, and turning the blades more or less to the wind through the medium of the rods *l*. The force of the wind having lessened, spring *s* reacts and throws the blades back into the wind automatically. This spring is between the pillow-blocks *c* or a collar on the main shaft and the sliding collar, and its function is to hold the wind-blades facing the wind under all ordinary circumstances, and to yield when overpowered by the wind-pressure on

the governor-fans and allow the blades to be turned edgewise to the gale. The slide is provided with an annular groove, in which is engaged a fork upon the end of a rod extending inward toward the turn-table, by means of which the wind-blades may be thrown out of the wind by hand.

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

The combination, with the shaft C, having hub E, with fixed radial arms F, and the blades G, rotating axially on said arms and provided with spurs *i*, of the ring *g*, engaged by said

spurs, the governor-rods H, carrying the fans *j'*, the sliding sleeve *k* on the main shaft, the rods *k'*, connecting the governors and sleeve, the rods *l*, connecting the rods *k'*, and the wind-blades G, and the spring *s*, all arranged and operating substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JACOB STEINER.

Witnesses:

HENRY L. ROMEX,
JAMES WILSON.