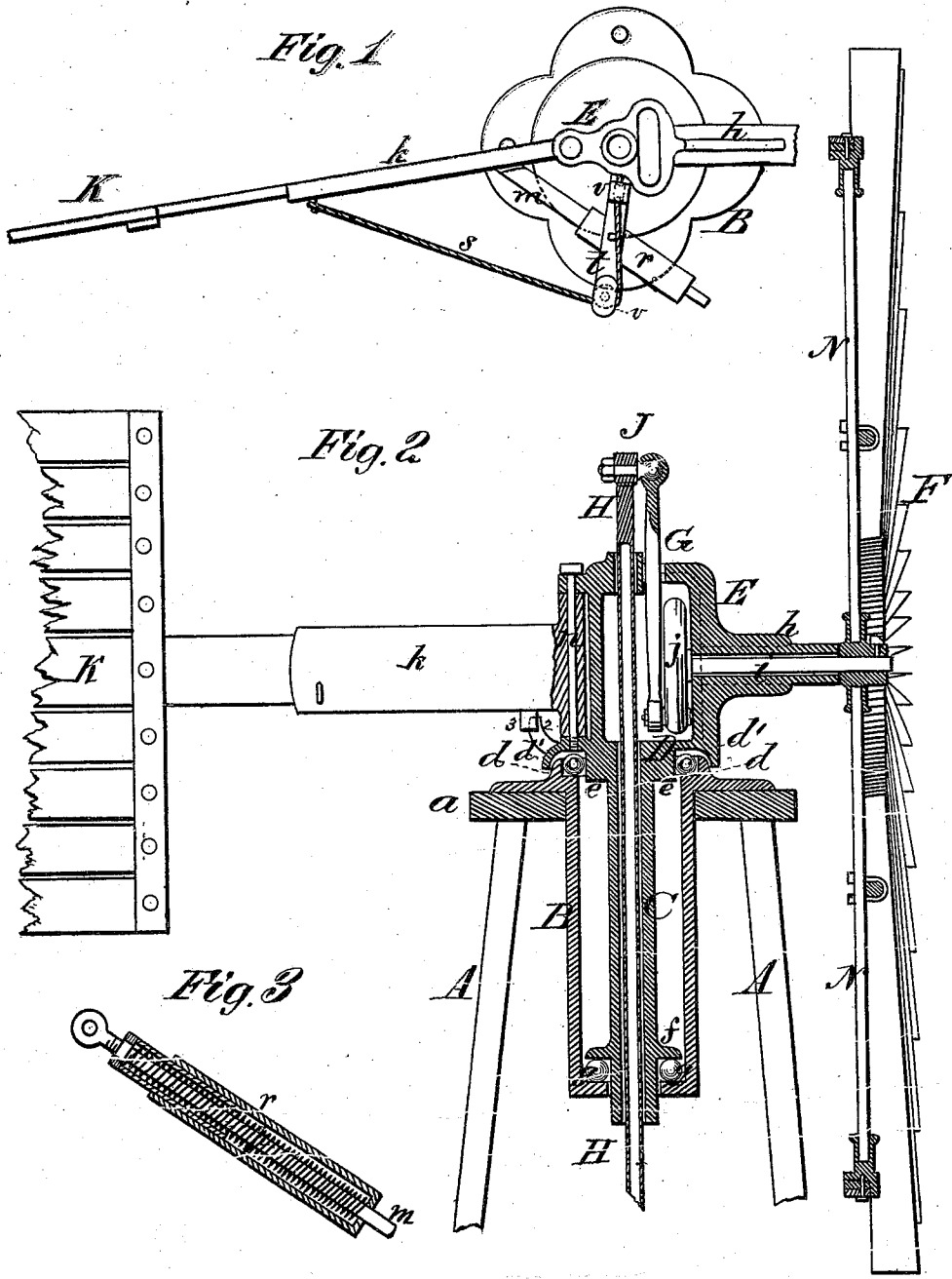


G. S. STRONG.
WIND MOTOR.

No. 173,368.

Patented Feb. 8, 1876.



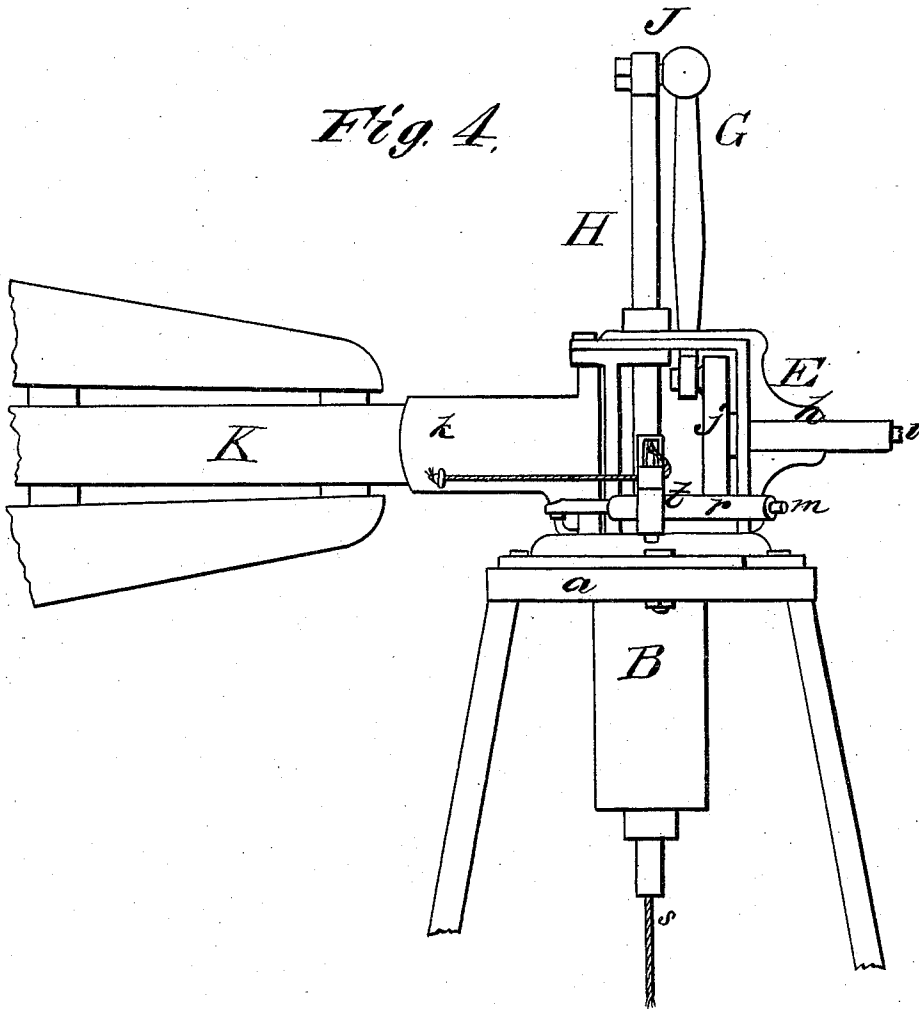
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WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE S. STRONG, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF HIS RIGHT TO JAMES CLARK.

IMPROVEMENT IN WIND-MOTORS.

Specification forming part of Letters Patent No. **173,368**, dated February 8, 1876; application filed October 2, 1875.

To all whom it may concern:

Be it known that I, GEO. S. STRONG, of Springfield, in the county of Clarke and State of Ohio, have invented a new and valuable Improvement in Wind-Motors; 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 plan view of my wind-motor, and Fig. 2 is a longitudinal vertical sectional view thereof. Fig. 3 is a sectional detail view of the same, and Fig. 4 is a side elevation.

This invention has relation to wind-motors of that class where the wheel will edge more or less to the wind, as the force of the wind increases or diminishes, thereby automatically regulating the mill and preventing injury during a gale of wind.

The objects which I have accomplished by my present invention are, first, to employ, below the anti-friction collar, an anti-friction turn-table, which turns on the bottom of a suspended cup or cap, for the purpose of giving steadiness to the mill, as will be hereinafter explained; second to provide for holding the wheel to the wind by means of a spiral spring arranged inside of tubes which telescope, the power of resistance of which spring will increase as the vane is moved around toward the wheel, thereby compensating for the increase of leverage which takes place as the wheel is thrown off the center.

In the annexed drawings, A designates the tower of the mill, on the platform *a* of which a cylindrical cup, B, is rigidly secured by means of bolts passed through its flanges. C designates the vertical shaft of the mill, and D is a circular-flanged cap, which is rigidly secured to said shaft and supported on anti-friction balls *c*, applied within an annular flange, *d*, cast on top of the cup B. The flange *d'* around the cap D is outside of the flange *d*, and between the flange *d* and a cylindrical hub, *e*, on the cap D, the balls *c* are applied. By these means the lateral friction so common in many wind-mills, is avoided.

The shaft C extends down through the bottom of the cup B, and just above this bottom

is a circular turn-table, *f*, which is supported upon anti-friction balls *g*. A steady motion without vibration is thus obtained. E designates a frame, which is on the cap D, and *h* designates a long tubular bearing, in which turns the shaft *i* of the wind-wheel F. On the inner end of the wheel-shaft *i* a crank-wheel, *j*, is keyed, to the wrist-pin of which the lower end of a pitman-rod, G, is pivoted. The upper end of this rod has a socket formed in it which receives a ball on the upper end of a hollow working-rod, H. The pitman G plays through an oblong slot made through the frame E, and the rod H plays through a hole alongside of the said slot and also through the center of the shaft C, as shown in Fig. 2. The ball-and-socket joint *j*, which connects the two rods G H together, prevents binding under all circumstances. K designates the rudder-vane, the shank *k* of which is connected to the frame E by a vertical pivot-bolt, *n*. To the lower edge of the rudder-vane shank *k* a rod, *m*, is pivoted, which is acted on by a spring, *p*, inclosed in a case, *r*. The case *r* passes through a bracket, *t*, to which it is pivoted by vertical pins that allow it horizontal vibration.

The regulating-rope *s* is fastened to an eye fixed to the shank *k* and passed around pulleys *v v*, thence carried down through the working-rod H. The wheel F is composed of radial blades, suitably feathered and secured to rings concentric to the axis of the wheel. The said rings are rigidly secured to radial arms N, which are made hollow for the purpose of affording lightness.

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

1. The collar D, having a flange, *d'*, in combination with cup B, provided with flange *d*, turn-table *f*, balls *c g*, substantially as described, and for the purpose set forth.

2. The spring *p*, incased substantially as described, in combination with the pivoted rudder-vane and the cap D, as set forth.

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

GEO. S. STRONG.

Witnesses:

WALTER C. MASI,
B. H. MORSE.