

G. W. PENN & W. S. SHARPNECK.

WIND-WHEEL.

No. 187,900.

Patented Feb. 27, 1877.

Fig. 1.

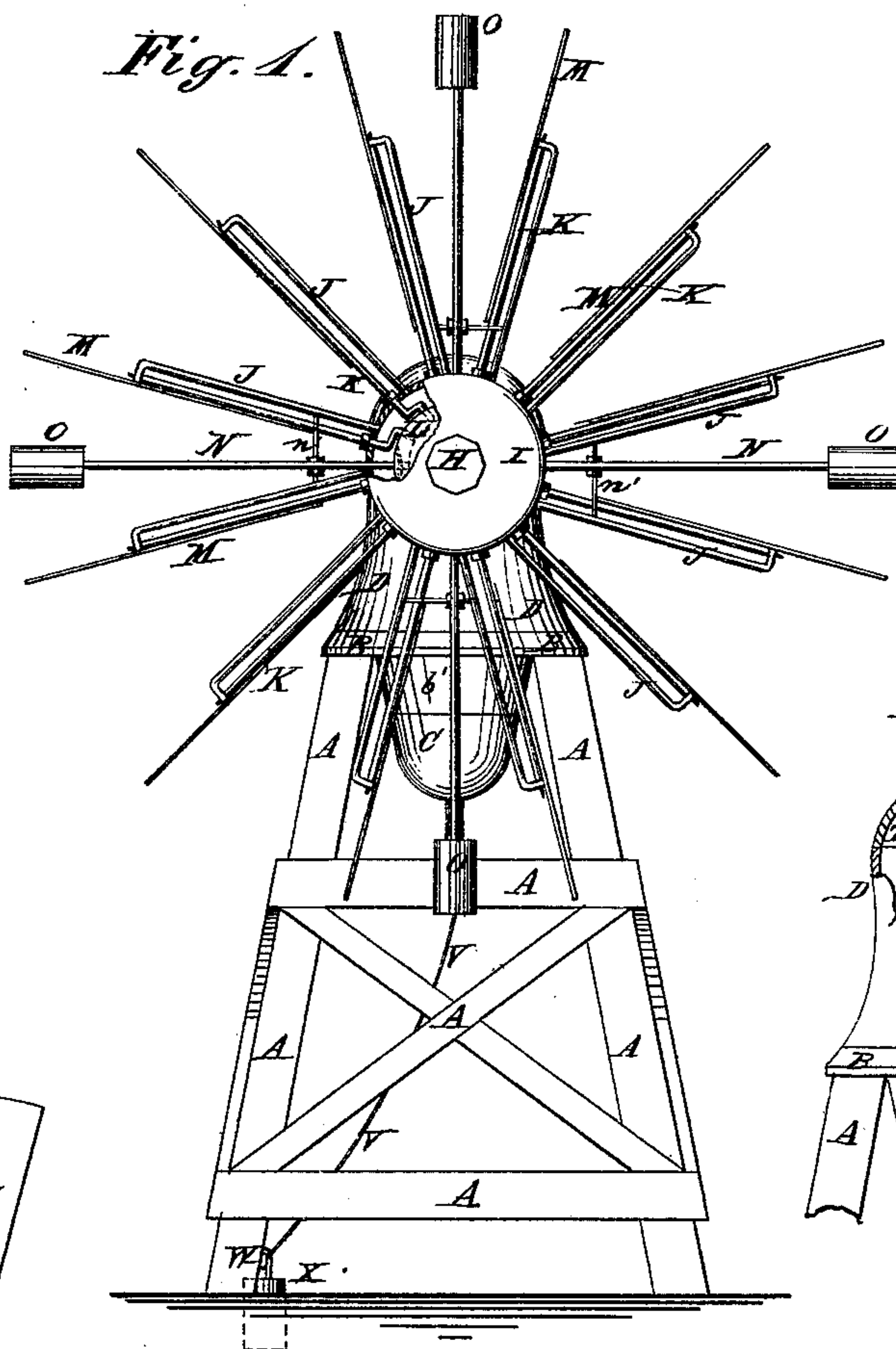


Fig. 3.

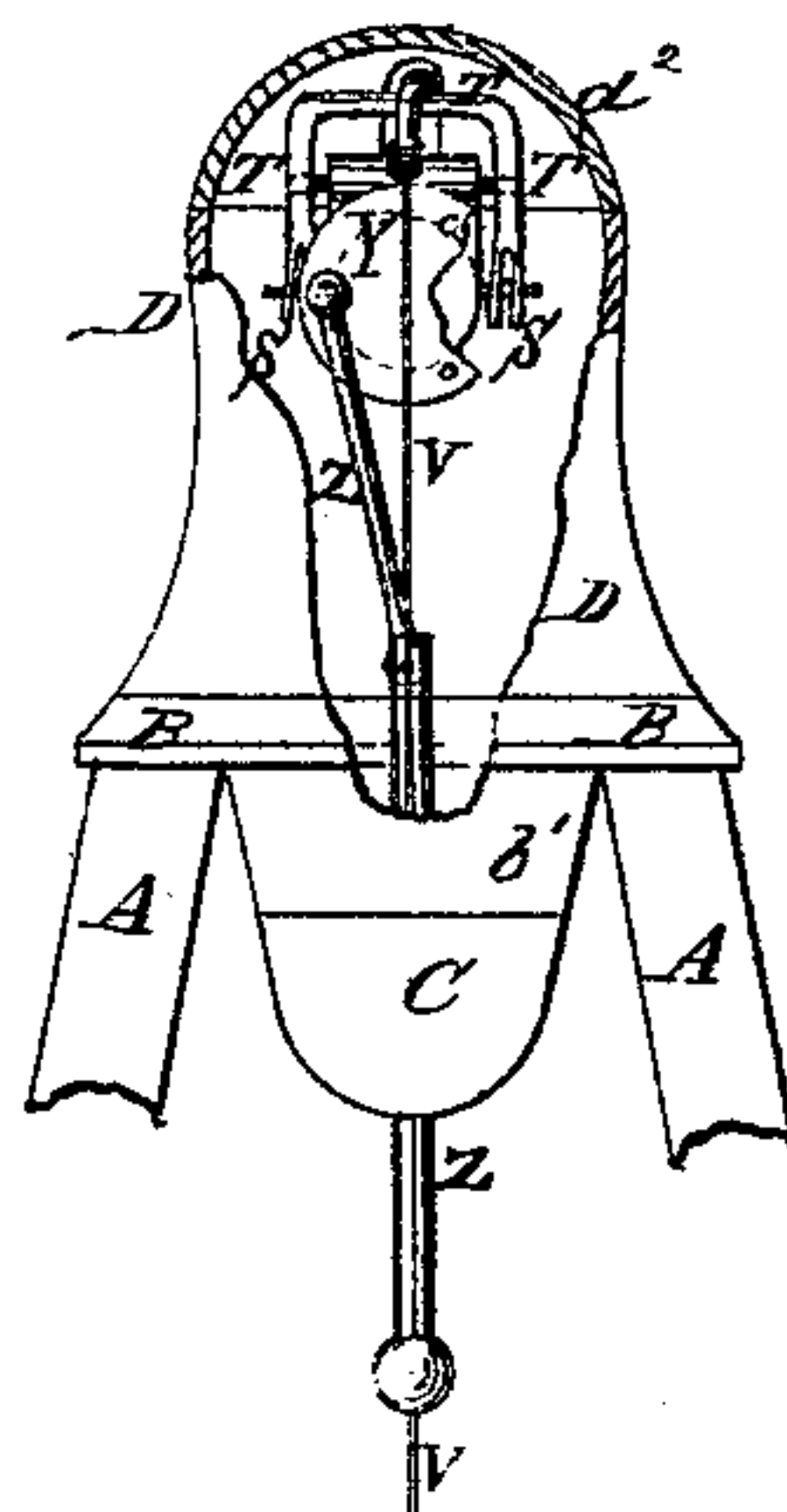
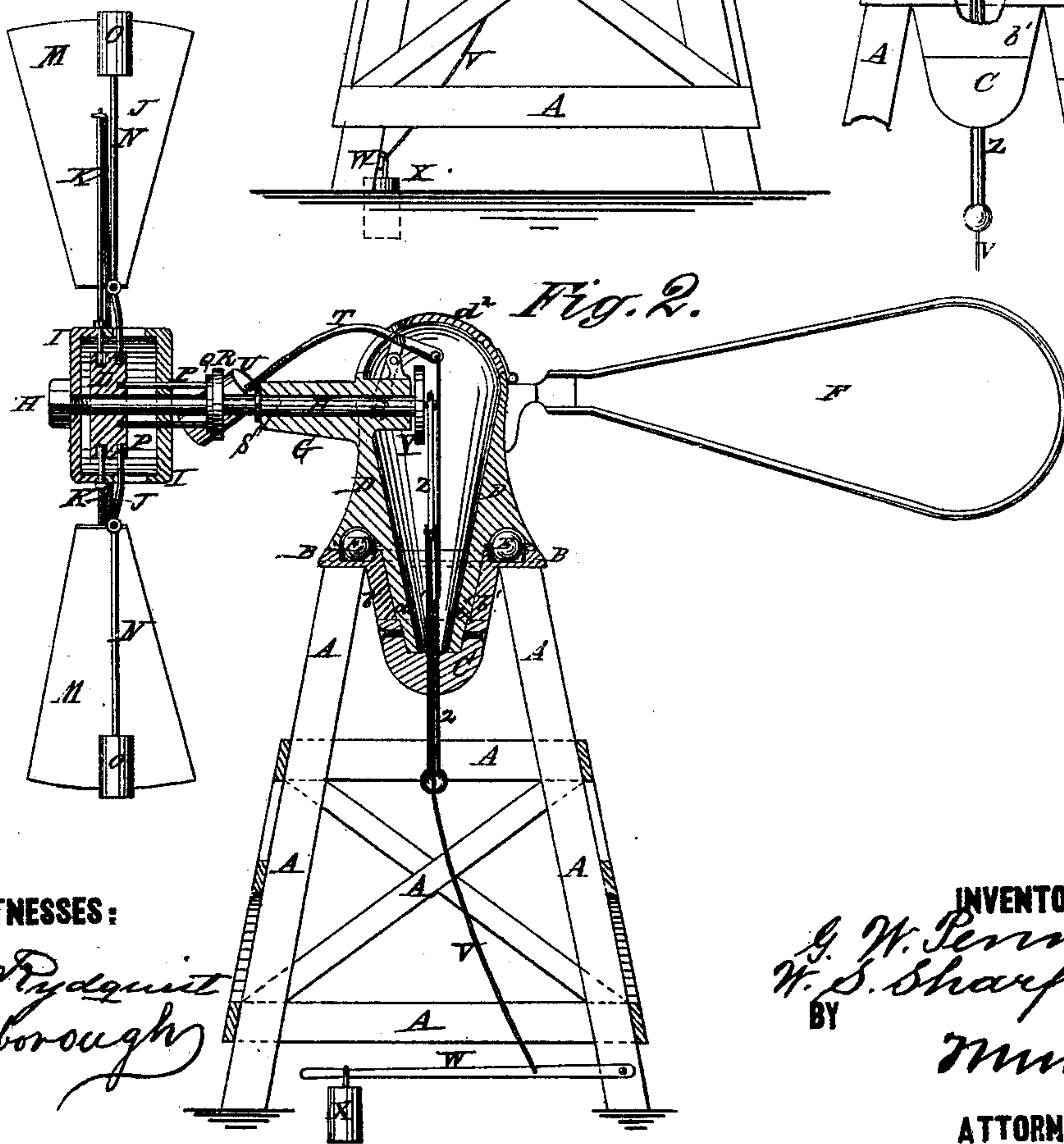


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **187,900**, dated February 27, 1877; application filed November 25, 1876.

*To all whom it may concern:*

Be it known that we, GEORGE W. PENN, of Onawa, in the county of Monona and State of Iowa, and WILLIAM S. SHARPNECK, of Missouri Valley, in the county of Harrison and State of Iowa, have invented a new and useful Improvement in Wind-Wheels, of which the following is a specification:

Figure 1 is a front view of our improved wind-wheel, part of the drum being broken away to show the construction. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a rear view of the head-block, part being broken away to show the inclosed mechanism.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved wind-wheel which shall be simple in construction, strong, durable, and reliable in use, adjusting itself promptly to the wind, and running at the same speed whether the wind be strong or light.

The invention will first be described in connection with drawing, and then pointed out in the claims.

A represents the frame or tower that supports the wheel, and to the top of which is secured the bed-plate B, provided with a tubular downward projection or collar, *b'*. Against the lower end of the projection *b'* rests a cap or collar, C, which has a hole formed through it for the passage of the pitman, and which fits upon and is bolted to a tubular downward projection, *d'*, of the head-block D, so as to keep the said head-block D in place upon said bed-plate B. In the ring-face of the bed-plate B is formed a ring-groove, in which roll three balls, E, which are pivoted in recesses in the shoulder of the head-block D, that rests upon the said bed-plate. The three balls E are arranged—two at the forward side of the head-block D, or toward the wheel, and one at the rear side of said head-block, or beneath the vane. F is the vane, which is secured to the upper part of the rear side of the head-block D. Upon the forward side of the head-block D is formed a horizontal projection or arm, G, which is perforated longitudinally, to serve as a bearing for the shaft H, which is kept from

longitudinal movement in said bearing by collars formed upon or attached to said shaft. To the forward end of the shaft H is rigidly attached a drum, I, to the convex side of which are rigidly attached twelve, more or less, radial arms J. The outer ends of the arms J are bent over at right angles, and to said ends are pivoted the outer ends of the rods K, which pass in through holes in the drum I, and have small cranks formed upon their inner ends, within the shell of the drum I. The ends of the cranks of the rods K enter a ring-groove in the surface of the wheel L, which slides loosely upon the shaft H. To the outer parts of the rods K are attached the fans or wings M. To the grooved wheel L are pivoted, at equal distances apart, the inner ends of four rods, N, which pass out through short slots in the drum I, and are pivoted to bars *n'*, the ends of which are attached to the two adjacent arms J. To the outer ends of the rods N are attached weights O. The rods N are so arranged that when the fans M are turned out of the wind the said rods N will be in the same plane with the arms J, and when the fans M are turned to the wind the rods N will incline forward.

With this construction, as the velocity of the wheel increases the weights O are thrown outward by centrifugal force, which brings the rods N toward the plane of the arms J. slides the wheel L forward, turning the crank-rods K, and turning the fans M out of the wind.

To the wheel L, upon the opposite sides of the shaft H, are attached the ends of two rods, P, which pass back through holes in the rear plate of the drum I, and are attached to a wheel, Q, placed upon the shaft H, between the drum I and the bearing G.

The wheel Q is swiveled to another wheel, R, also placed upon the shaft H, and to which are attached the outer ends of two rods, S. The rods S pass through holes in the bearing G, and to their inner ends, which project into the cavity of the head-block D, are attached cross-pins, to receive the slotted arms of the fork of the lever T, which is pivoted to a stud attached to the inner end of the bearing G, or to the head-block D. An arm of



the lever T projects outward and forward, and to it is attached a weight, U.

By this arrangement the weight U tends to draw the wheel L rearward, and thus turn the fans to the wind. The weight U also serves to hold the fans to the wind against the action of the wind, so that by regulating the position of the weight U upon the lever T, the wheel may be adjusted to run at any desired velocity.

To the inwardly-projecting end of the lever T is attached a cord, V, which passes down through a groove in the pitman, through a hole in the head formed upon the lower end of said pitman, and its lower end is attached to a lever, W. The end of the lever W is pivoted to the lower part of the frame A, and from its free end is hung an adjustable weight, X, which thus acts in opposition to the weight U, so that by adjusting the weight X the operating power of the said weight U may be regulated to cause the wheel to run faster or slower, as may be desired.

The lever W may also be operated by hand to throw the fans out of the wind when desired. To the rear end of the shaft H is attached a crank-wheel, Y, to the crank-pin of which is pivoted the upper end of the pitman Z. The pitman Z is jointed, so that its lower part, which passes down through the hole in the cap C, may move up and down vertically, while its upper end moves through the arc of a circle. The lower part of the pitman Z is grooved longitudinally to receive the cord V, to guide and protect said cord as it passes down through cap C. The top of the hollow head-block D is provided with a cap,  $d^2$ , to cover and protect the mechanism within said head-block, and which is slotted for the passage of the lever T.

The entire wheel is designed to be made of iron.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with wind-wheels, of cord V, lever W, weight X, and weighted fork-lever, to act directly upon the wheel without reference to the vane, as set forth.

2. The combination of the stationary arms J, the pivoted rods K, having cranks formed upon their inner ends, and the grooved sliding wheel L, with the fans M, the drum I, and the shaft H, for connecting the said fans adjustably with said drum and shaft, substantially as herein shown and described.

3. The combination of the pivoted weighted rods N O with the grooved sliding wheel L and the crank-rods K, that carry the fans, for throwing the fans M out of the wind automatically as the velocity increases, substantially as herein shown and described.

4. The combination of the rods P and S, the swiveled wheels Q R, and the forked weighted lever T U with the shaft H, the grooved sliding wheel L, and the crank-rods K, for holding the fans to the wind, and throwing them into the wind as the velocity decreases, substantially as herein shown and described.

5. The combination, with cord V, of the pitman Z, grooved longitudinally in its lower part substantially as and for the purpose specified.

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Witnesses:

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