(Model.)

D. M. REED.

WINDMILL.

No. 266,051. Patented Oct. 17, 1882.

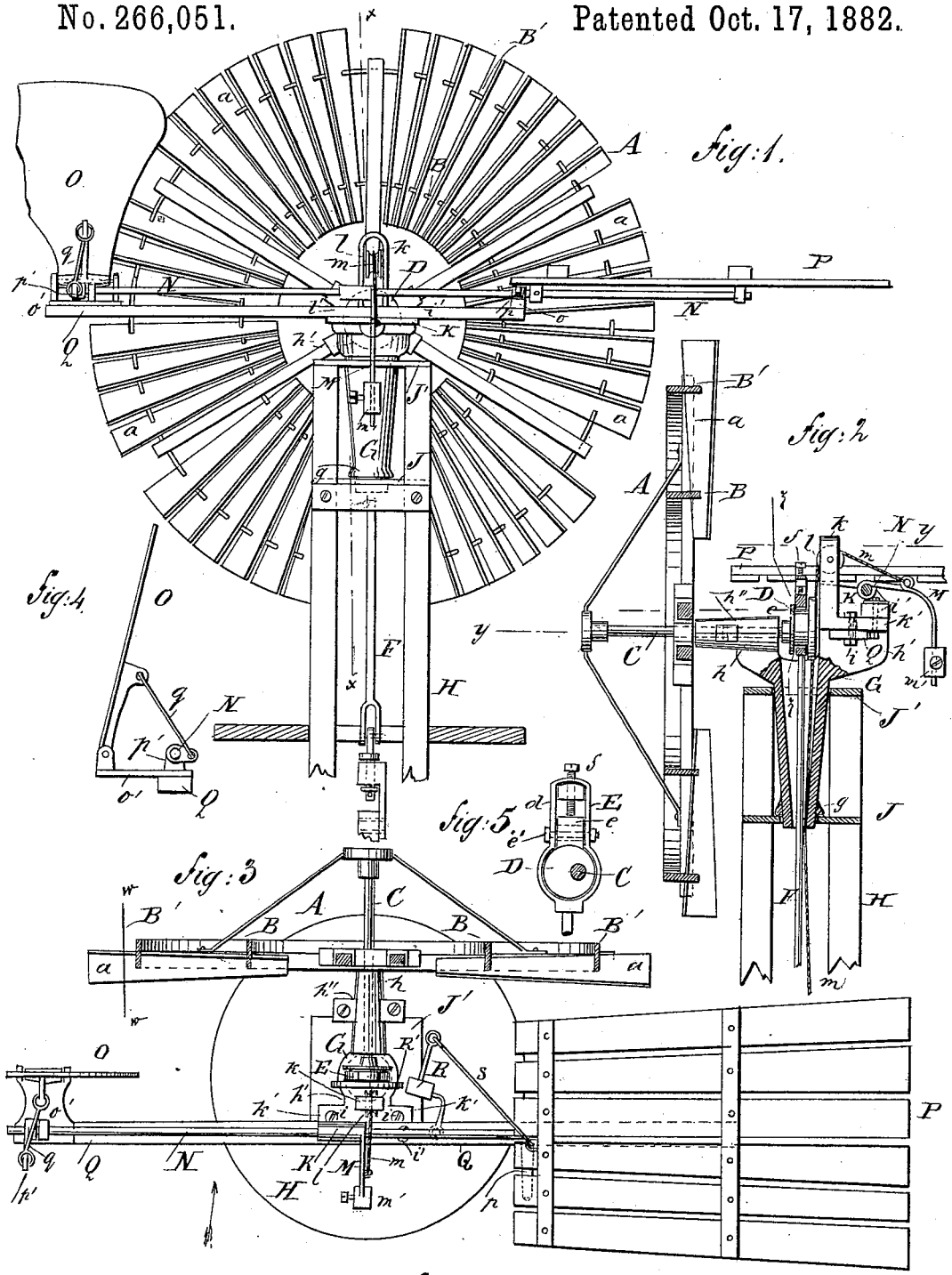

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

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DANIEL M. REED, OF ANCONA, ILLINOIS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 266,051, dated October 17, 1882.

Application filed August 2, 1882. (Model.)

To all whom it may concern:

Be it known that I, DANIEL M. REED, of Ancona, in the county of Livingston and State of Illinois, have invented a new and useful Improvement in Windmills, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my new and improved windmill. Fig. 2 is a sectional elevation of the same, taken on the line *x x* of Fig. 1. Fig. 3 is a sectional plan view taken on the line *y y* of Fig. 2. Fig. 4 is an edge view of the small upright vane. Fig. 5 is a detail of the eccentric and eccentric-frame on the main shaft; and Fig. 6 is a detailed sectional elevation of the ends of the sails and outer sail-rim, taken on the line *w w* of Fig. 3.

The wheel A is of ordinary construction, except that the sails *a* are made of sheet metal instead of wood, as heretofore. These sails are placed edgewise in diagonal slots cut in the edges of the inner and outer rims, B B′, of the wheel in the ordinary manner, and are secured therein by the nails *b*, which pass through the sails and diagonally into the rims, as shown in Fig. 6.

Upon the main shaft C, to which the wheel A is secured, is fixed the eccentric D, and to the eccentric is connected, by means of the frame E, the rod F, which passes down through the hollow casting G and tower H to the ground, where it is connected to the pump or other machine to which it is desired to communicate motion.

The frame E is formed with the upward extension *d*, and in this upward extension is placed the block *e*, which is held therein by the bolt *e′*, which passes through a slot formed in the block, as shown in Fig. 5. The lower edge of the block is concaved and bears upon the eccentric D, and is adjustable in the extension *d* for taking up the wear of the eccentric and frame by means of the set-screw *f*, which passes through the top of the extension and bears upon the block, as shown in said Fig. 5.

The casting G is preferably made conical, and is formed near its lower end with the offset *g*, which rests and turns upon the plate J, secured in the tower H, as shown in Fig. 2, and said casting is kept from lateral movement by means of the plate J′, secured to the upper end of the tower, through which plate it passes, and is formed at its upper end with the forward extension, *h*, and rear extension, *h′*. The forward extension, *h*, together with the removable plate *h″*, forms the main bearing for the shaft C. The rear extension, *h′*, together with the removable casting K, forms the bearing for the rear end of the said shaft. The removable casting K is formed with the upward extension *k*, and with the side extensions, *k′ k′*, through which the bolts *i i* pass for securing it to the casting G. The upward extension *k* is provided with the pulley *l*, over which the cord *m*, attached to the governor-arm M of the horizontal vane-shaft N, passes. From this pulley *l* the cord *m* passes down through the casting G and tower H to the ground to serve as means for turning the vane-shaft N and vanes O and P into or out of the wind for putting the wheel in motion or stopping it, as desired. The vane-shaft N is journaled in the small castings *o o′*, secured upon the ends of the horizontal vane-beam Q, which is secured by means of the bolts *i′ i′* to the removable casting K, as shown clearly in Figs. 1 and 2. The vane P is secured rigidly to the shaft N, and is held normally by the weight *m′* of the governor-arm in a horizontal position, as shown clearly in Figs. 1 and 2. In this position it is supported by the short horizontal arm *p*, (shown in Fig. 1,) which is part of the casting *o*. The vane O is hinged to the forward edge of the casting *o′*, as shown clearly in Figs. 1 and 4, and is attached to the shaft N by means of the lever *p′* and the connecting-rod *q*, and is held normally in nearly vertical position, as shown in Figs. 1 and 4, so that when the wind strikes it on the side away from the wheel it will turn the shaft N, bringing the vane P into the wind, which will cause the wheel to turn edgewise to the wind, and thus protect it from injury during high winds. If the wind is not strong enough to throw the wheel entirely out of the wind, it will go only part way and the wheel will not stop, but will turn with a slower motion, thus making it much easier on the mill and continuing to work. By drawing upon

the cord *m* the wheel may be thrown out of action when desired.

R is a brake pivoted to the beam Q and connected to the vane P by the rod *s*, so that the brake is adapted to be applied to the brake-disk R′, secured upon the main shaft C by the pivotal action of the vane P for stopping the revolution of the wheel when turned out of the wind, as will be clearly understood from Fig. 3.

By the use of the sheet-metal sails it will be seen that the wheel is made much more durable, since they will not warp and crack, as is the case with wooden sails, and the wheel is stronger, since the sheet-metal sails are thinner than the wooden sails, and less wood has to be taken out of the rims of the wheels for their insertion. The extension *h* of the casting G furnishes a long bearing for the main shaft, and the shaft, being journaled in this bearing and at its rear end on the opposite side of the eccentric D, holds the shaft with great firmness and prevents the wheel becoming lopsided, and the conical form of the casting G furnishes a small bearing-surface at its lower end against the plate J, so that it turns easily and with a very small amount of friction, rendering friction-rollers unnecessary, and the adjustment of the block *e* upon the cam D greatly increases the durability of the mill, and when the block is properly adjusted the mill will never thump, but will always have an even and regular action.

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

1. The rims B B′ of the wheel A, having diagonal slots formed in them, in combination with the sheet-metal sails *a*, secured in the slots by means of the nails *b*, substantially as described.

2. The combination, with the eccentric D, of the frame E, sliding block *e*, and connecting-rod F, substantially as and for the purposes set forth.

3. The frame E, formed with the extension *d*, in combination with the slotted block *e*, set-screw *f*, and eccentric D, substantially as and for the purposes set forth.

4. The combination, with the main vane P, of the smaller hinged upright vane O, attached to the shaft N by the rod *q* and arm *p′*, substantially as and for the purposes set forth.

5. The brake R, hinged to the beam Q, in combination with the vane P, connecting-rod *s*, and brake-disk R′, secured to the shaft C, substantially as and for the purposes set forth.

6. The combination, with the vane-shaft N, vane P, and the weighted arm M, of the hinged vane O, the arm *p′*, and the connecting-rod *q*, substantially as and for the purpose set forth.

7. The combination, with the shaft C and the tower H, provided with the plates J J′, of the conical casting G, provided with the side extensions, *h h′*, and the offset *g* at its lower end, the removable plate *h″*, and the removable casting *k*, substantially as and for the purpose set forth.

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