W. H. EVANS.
Windmills.

No. 198,453. Patented Dec. 25, 1877.

Fig. 1.

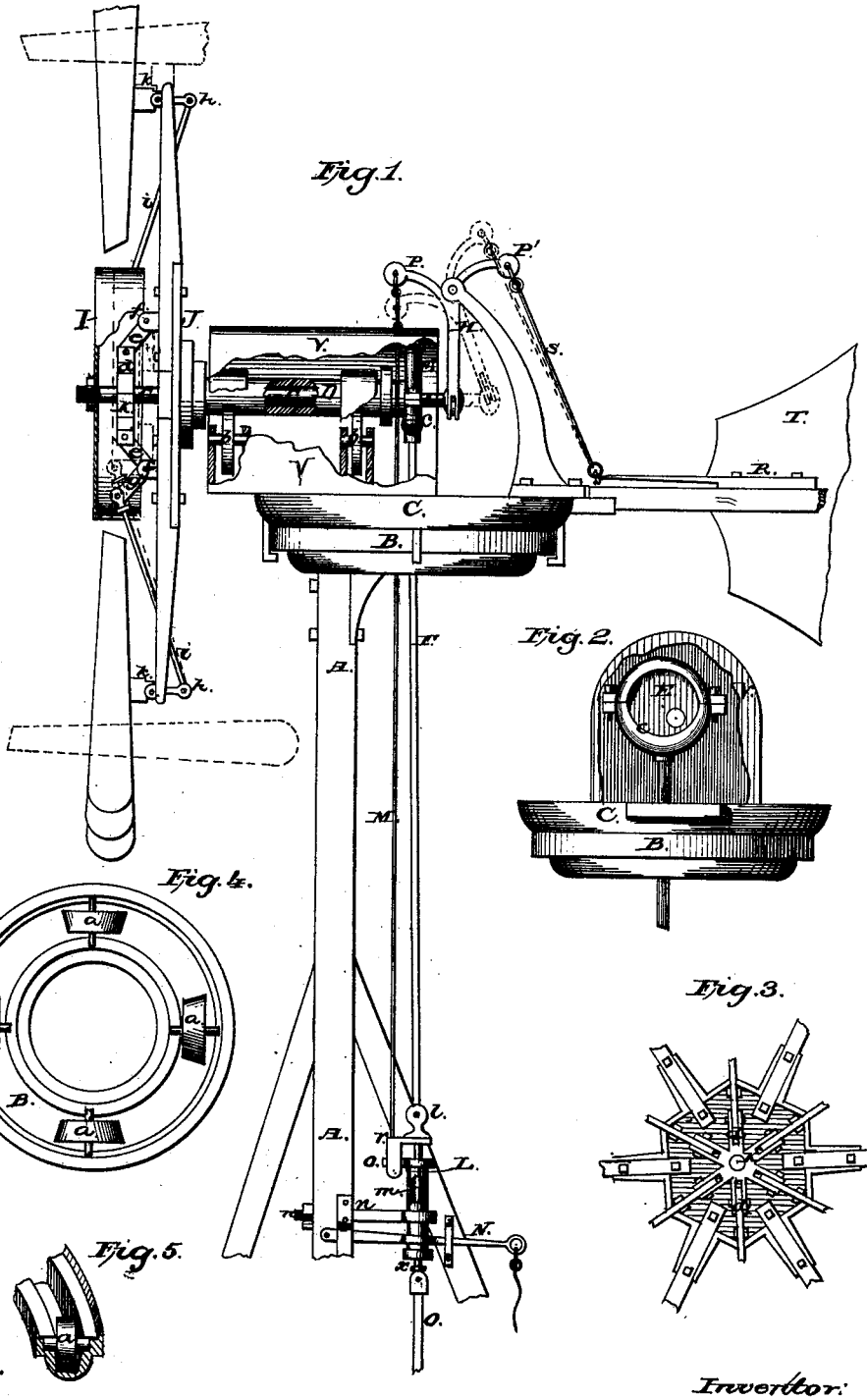

Fig. 2.

Fig. 3.

Fig. 4.

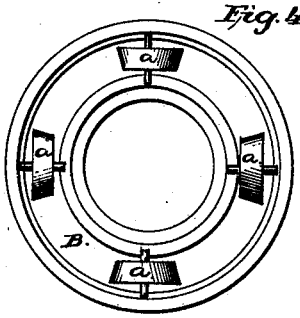

Fig. 5.

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WILLIAM H. EVANS, OF BOSTON, INDIANA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **198,453**, dated December 25, 1877; application filed September 14, 1877.

To all whom it may concern:

Be it known that I, W. H. EVANS, of Boston, county of Wayne, State of Indiana, have invented a new and useful Improvement in Windmills, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional view of a side elevation of the windmill and tower. Fig. 2 is a detached view of the bed-plate, turn-table, cam-wheel, and cap or cover. Fig. 3 is a front view of the wheel, the spokes and accompanying parts being broken off. Fig. 4 is a view of the upper surface of the bed-plate and rollers. Fig. 5 is a segment of the same.

My invention consists in improvements in the bed-plate, turn-table, and the other operating parts by which the mill is turned on the tower; also, in improvements in the devices by which the sails are turned in and out of the wind; and has for its object the construction of the bearings in such a manner as to make it self-lubricating.

In the drawings, A represents the tower, upon which the bed-plate B is mounted, the bed-plate being secured by bolts in the ordinary way. This bed-plate is circular in form, having a raised flange around its outer edge and a corresponding one around its inner edge, forming a circular groove, in which the rollers *a* are placed, upon which the turn-table C revolves. This groove is so constructed as to contain the oil necessary for the lubrication, and is best shown in Fig. 5.

The turn-table C is constructed with raised flanges, corresponding with the flanges of the bed-plate B, the outer flange projecting over the flange of the bed-plate, so as to afford perfect protection to the oil in the groove. The only decrease of oil, therefore, will be the small amount caused by evaporation. The turn-table is secured by bolts, with heads projecting under the outer rim of the bed-plate.

The main shaft D is tubular, and is mounted on anti-friction rollers, two of which, *b* and *b'*, are shown in Fig. 1. These rollers revolve in oil-boxes, so constructed as to contain the oil necessary for their lubrication. On the inner end of the main shaft D is a cam-wheel, E, to which is attached the pitman-rod F, operating the pump or other mechanism. The lower cap *c*, Fig. 2, of this cam-wheel is constructed so as to contain the oil necessary for the lubrication of the wheel.

A rod, G, passes through the main shaft D and the cam-wheel E, the inner end being secured by a button working in an oil-box, forming a swivel-joint with the forked lever H. To the outer end of this rod is attached the cylindrical cap or cover I. On the rod and outside the main wheel J is a spur-wheel, K. This wheel is constructed with slotted arms *d*, Fig. 3, and is made rigidly fast to the rod G. Into these slotted arms one arm, *e*, of the angular lever *f* is fitted, forming a sliding joint, the other arm, *g*, of the angular lever being connected with the straight lever *h* by the link-bar *i*, these straight levers *h* being made fast to the tilt-bars *k*, to which the sails are attached.

During a storm the force of the wind, acting upon the cylindrical cap or cover I, will be sufficient to drive the rod G backward, and with it the spur-wheel K, and thus, by means of the mechanism already described, the sails are turned parallel with the course of the wind. The tilt-bars *k*, to which the sails are attached, being pivoted eccentric to their actual centers, the centripetal force arising from the increased revolutions of the main wheel during a high wind will further increase the tendency of the sails to be thrown into the position described.

At the lower extremity of the pitman-rod F, and connected to it by a knuckle, *l*, is a plunge-rod, *m*, working in a tubular cylinder, L. This cylinder is secured to the tower by an eyebolt, *n*, which permits it to work up and down on the plunge-rod *m*. Its upper head has a projecting arm, *o*, to which is attached the rod M, connecting the cylinder L with the arm *p* of the forked lever H.

The cylinder L is operated by the lever-bar N, which, being drawn downward by a cord or other attachment, causes the forked lever H to assume the position indicated by the dotted lines. Thus the rod G is drawn backward and the sails thrown parallel to the wind. The plunge-rod *m* is attached to the pump-rod O by a swivel-joint, *x;* and the cylinder L being governed by the plunge-rod *m* by means of the guide-box *r*, in which the projecting arm *o* of its upper head works, the plunge-rod and cylinder are caused to rotate together with the

mill upon the tower, carrying with them the connecting-rod M. The sails being parallel to the course of the wind are restored to their original position, and held there by means of the spring R, connected to the arm *p'* of the forked lever H by the connecting-rod S. On the side of the turn-table opposite to the wheel is the usual vane T, secured to the turn-table by bolts.

The cylindrical cap or cover I protects the levers, spur-wheel K, and the other mechanism by which the sails are turned in and out of the wind. The rollers upon which the main shaft D revolves, the cam-wheel, &c., are protected by a cap or cover, V, constructed especially for this purpose. The whole mechanism of the windmill is thus amply protected from rain, snow, or sleet, making it impossible for the movements of the parts to be obstructed by freezing or otherwise.

It will also be noticed, as one of the marked peculiarities in connection with this mill, that it is so constructed as to be self-lubricating, or as nearly so as is possible, it being ascertained by actual experience with one of these mills that one oiling in six months is amply sufficient. Thus the frequent climbing of the tower for this purpose is obviated.

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

1. The turn-table C, with its projecting flange and oil-boxes for lubricating the anti-friction rollers upon which the main shaft D revolves, in combination with the bed-plate, substantially as and for the purpose set forth.

2. The tubular shaft D, in combination with the rod G within the shaft, with the cam-wheel E, and its cap *e* for oil, attached as described, and for the purpose set forth.

3. The sliding rod G, with the cylindrical cap or cover I, in combination with the spur-wheel K, the angular levers *f*, the link-bars *i*, the straight levers *h*, and the tilt-bars *k*, substantially as and for the purpose set forth.

4. The forked lever H, with the spring R, and the connecting-rods S and M, in combination with the sliding rod G, substantially as described, and for the purpose set forth.

5. The tubular cylinder L, with its projecting arm *o* and lever-bar N, in combination with the plunge-rod *m*, the guide-box *r*, and the swivel-joint X, as described, and for the purpose set forth.

6. The tubular cylinder L, with its projecting arm *o* and connecting-rod M, in combination with the forked lever H, substantially as and for the purpose set forth.

7. The cylindrical cap or cover I, in combination with the wind-wheel, as described, and for the purpose set forth.

WILLIAM H. EVANS.

Witnesses:
WILLIAM G. SEAVEY,
OLIVER H. FOUTS.