No. 729,845. PATENTED JUNE 2, 1903.

W. M. CHERRY.

WINDMILL.

APPLICATION FILED MAR. 26, 1903.

NO MODEL.

Fig. 1.

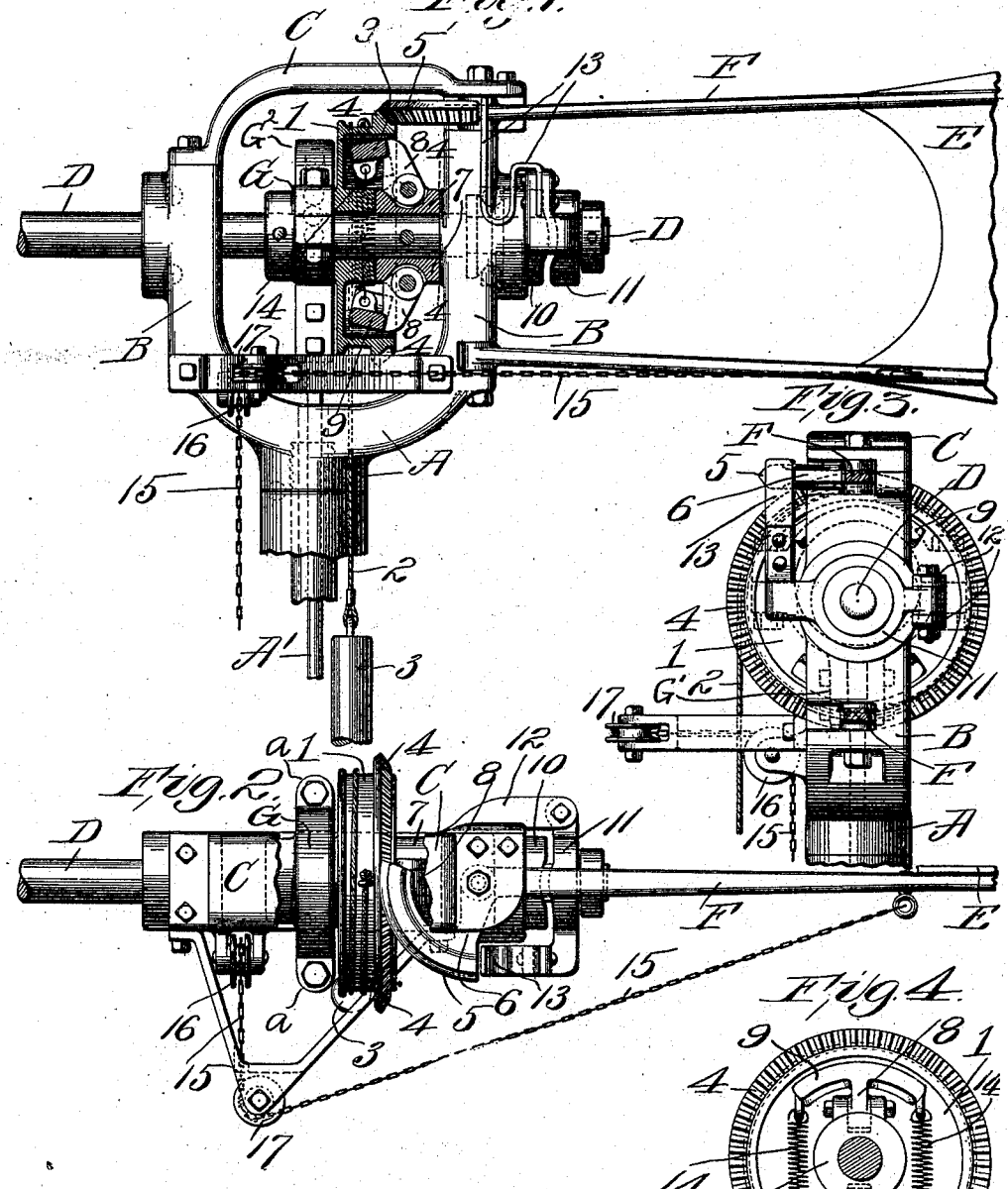


Fig. 3.

Fig. 2.

Fig. 4.

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No. 729,845. Patented June 2, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM M. CHERRY, OF GRANITE CITY, ILLINOIS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 729,845, dated June 2, 1903.

Application filed March 26, 1903. Serial No. 149,668. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. CHERRY, a citizen of the United States, residing at Granite City, Illinois, have invented a certain new and useful Improvement in Windmills, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevational view of my improved windmill. Fig. 2 is a top plan view thereof. Fig. 3 is a rear end view, and Fig. 4 is a sectional view through the wheel-shaft looking in the direction toward the wind-wheel.

This invention relates to new and useful improvements in windmills designed to be operated so as to automatically set themselves to the position or positions best adapted for operation under winds of varying velocity, the object being to provide such a windmill as will be complete and operable under all conditions without the requirement of personal attendance or manual operation.

Referring to the drawings, A is a revoluble head supported by the usual tower, (not shown,) and A′ is the usual pump-shaft incident to machines of this class. Rising from the head A are two arms B B, connected at the upper end by means of the yoke C. In the arms B is journaled the usual wheel-shaft D, which projects beyond said arms B at both ends, while the vane E is pivotally supported, by means of the arms F, to the rear arm B in substantially the usual manner. Between the arms B is the usual eccentric G, which in this case is preferably provided with ball-bearings, as are all the rotatable parts where convenient. The eccentric (designated by the general reference-letter G) consists of the two-part lower section G′ G′, secured to the pump-rod A′, combined with the upper member or strap G^2, which is bolted to the lower section by means of bolts *a* passing through lateral projections or flanges on both upper and lower sections of said eccentric, between which sections is held a cam, which is rigidly secured on the shaft D. Next to the eccentric G is a drum 1, loosely mounted on the shaft D, while secured to the said drum is a cord or cable 2, wound thereon, which cord is provided with a weight 3. The rear edge of the drum is provided with a beveled rack or gear 4, which meshes with the segment 5, supported by the arm 6 below the yoke C, which arm 6 is rigidly connected with the vane, as best shown in Fig. 2. Next to the drum 1, upon the open side thereof, is a member 7 in the form of a hub, which hub supports one or more centrifugal arms 8, pivotally connected therewith, the said arms 8 being provided with the brake-shoes 9, adapted to contact with the inner peripheral face of the drum 1 when thrown outwardly by centrifugal motion, as they will be when the shaft D is rotated faster than the proper speed required for the correct operation of my improved windmill. When the wheel is revolved by the force of the wind faster than a predetermined velocity, said arms 8 are thrown outwardly against the force of the springs 14, causing the brake-shoe 9 to contact with the drum 1, thereby rotating the said drum, whereupon the rack 4, engaged with the segment 5, will cause the vane E to move in a direction toward a right angle with the shaft D. Under ordinary circumstances this motion will cause such a shifting of the wheel in the wind as will slow it to the proper speed. To secure an entire stoppage of the wheel, however, a friction-clutch is provided at the inner end of the shaft D, which clutch comprises the two members 10 and 11. The member 11 is pivotally connected to the arm 12, as best shown in Fig. 2, while the spring-arm 13 is connected thereto at its opposite end and projects forwardly and outwardly, as shown in Figs. 1 and 2, so that when the vane is at right angles to the shaft D said arm 13 will contact with the arm F of the vane, thereby drawing the clutch member 11 into frictional engagement with the arm 10 and by contact slow down the apparatus, or if the vane is thrown to a right-angular position with sufficient force the arm F will contact with the arm 13 and cause the members 10 and 11 to positively lock the wheel against rotation.

The cable 2 and weight 3 are provided for the purpose of restoring the vane to its normal position in alinement with the shaft D. When the speed of the wind-wheel has been

slowed down sufficiently to permit the springs 14 to exert their function and withdraw the brake-shoe 9 from engagement with the drum, said weight will by gravity fall, thereby causing partial rotation of the drum about which the cord 2 is wound and reëstablish the normal relation of the parts.

In addition to the means hereinbefore described a chain or other equivalent means 15 is provided which passes over the sheaves 16 and 17, and thus to the vane E, so that when desired the vane may be drawn out of alinement with the shaft D manually for the purpose of placing the wind-wheel out of commission.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. In a windmill, a wheel-shaft, a member rigidly connected therewith, pivoted governor-arms connected with said member, a friction-drum loosely mounted on said shaft coöperating with said arms, a rack on said drum, a segment in engagement with said rack, and a vane connected with said segment and movable therewith; substantially as described.

2. In a windmill, a wheel-shaft, a member rigidly connected therewith, pivoted governor-arms connected with said member, a friction-drum loosely mounted on said shaft coöperating with said arms, a weighted cord connected with said drum, a rack on said drum, a segment in engagement with said rack, and a vane connected with said segment and movable therewith; substantially as described.

3. In a windmill, a wheel-shaft, a member rigidly connected therewith, pivoted governor-arms connected with said member, a friction-drum loosely mounted on said shaft coöperating with said arms, a rack on said drum, a segment in engagement with said rack, a vane connected with said segment and movable therewith, and a clutch operable by said vane when at an angle to said shaft; substantially as described.

4. In a windmill, a rotatable head with upright members, a vane supported thereby, a wheel-shaft journaled in said members, an eccentric on said shaft, a drum loosely mounted on said shaft, a rack on said drum, a segment in engagement with said rack and said vane, and a weighted cord, connected with said drum, adapted to restore said vane to its normal position in alinement with said shaft; substantially as described.

5. In a windmill, a rotatable head with upright members, a vane supported thereby, a wheel-shaft journaled in said members, an eccentric on said shaft, a drum loosely mounted on said shaft, centrifugal friction-arms, rotatable with said shaft, adapted to engage the inner peripheral face of said drum, a rack on said drum, a segment in engagement with said rack and said vane, and a weighted cord, connected with said drum, adapted to restore said vane to its normal position in alinement with said shaft; substantially as described.

6. In a windmill, a rotatable head with upright members, a vane supported thereby, a wheel-shaft journaled in said members, an eccentric on said shaft, a drum loosely mounted on said shaft, a rack on said drum, a segment in engagement with said rack and said vane, a weighted cord, connected with said drum, adapted to restore said vane to its normal position in alinement with said shaft, and a friction-clutch adapted to lock said shaft against rotation when said vane is substantially at right angles with said shaft; substantially as described.

7. In a windmill, a rotatable head, a wheel-shaft journaled therein, a friction-clutch on the inner end of said shaft, an arm connected with one member thereof extending to one side of said shaft, a vane adapted to actuate said arm when in predetermined position, a drum, loosely mounted on said shaft, centrifugal friction-arms adapted to engage therewith, connections between said drum and said vane adapted to move the vane from its normal position upon rotation of said drum and means connected with said drum adapted to restore said vane to its normal position; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 24th day of March, 1903.

WILLIAM M. CHERRY.

Witnesses:

GEORGE BAKEWELL,

FREDERICK H. GIBBS.