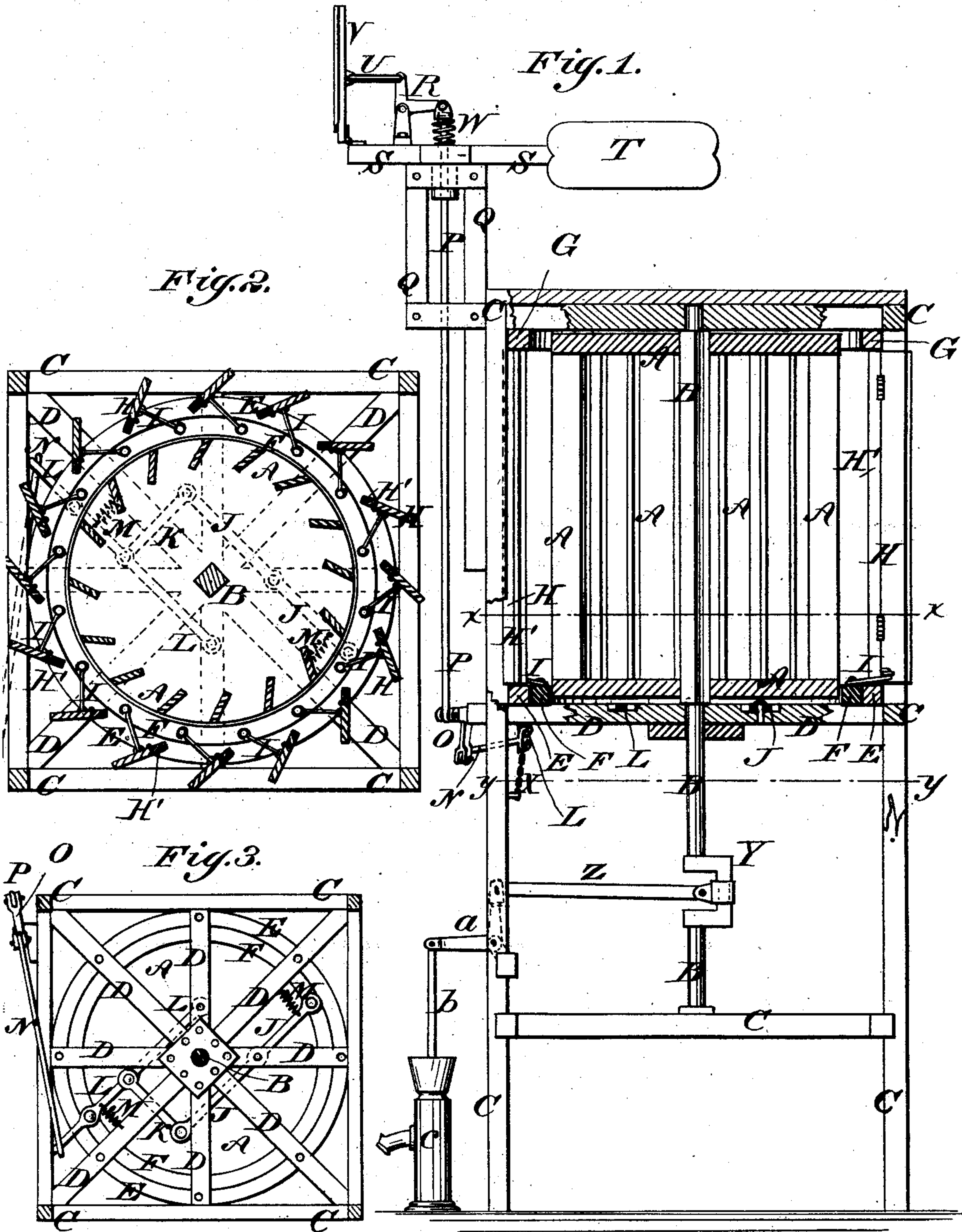


(Model.)

I. M. STEWARD.
WINDMILL.

No. 244,831.

Patented July 26, 1881.



WITNESSES:

D. S. Twitchell.
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UNITED STATES PATENT OFFICE.

ISAAC M. STEWARD, OF STROMSBURG, NEBRASKA, ASSIGNOR TO HIMSELF
AND GEORGE S. REICHARD, OF SAME PLACE.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 244,831, dated July 26, 1881.

Application filed March 3, 1881. (Model.)

To all whom it may concern:

Be it known that I, ISAAC MORRIS STEWARD, of Stromsburg, in the county of Polk and State of Nebraska, have invented a new and useful Improvement in Windmills, of which the following is a specification.

Figure 1 is a sectional side elevation of my improvement. Fig. 2 is a sectional plan view of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a sectional plan view of the same, taken through the line *y y*, Fig. 1, looking upward. Fig. 4 is a side elevation of a part of the speed-regulating mechanism.

Similar letters of reference indicate corresponding parts.

The object of this invention is to insure a uniform speed from a variable wind, and also to cheapen the construction of windmills, and economize space.

A represents the wind-wheel, which is attached to a vertical shaft, B, revolving in bearings attached to the supporting-frame C. To the frame C, just below the wheel A, is attached a platform or frame, D, to which is attached a ring-bar or circular plate, E, concentric with the wind-wheel A, and enough larger than the said wind-wheel to form a space to receive or extend beyond a movable ring-bar or circular plate, F. To the outer or stationary ring or plate, E, and to a ring or plate, G, or other support attached to the top of the frame C, are attached vertical strips H', to which the shutters H are hinged. The strips H' are so arranged that when the shutters H are open the said shutters and the said strips will be in line, and will thus increase the effective width of the shutters.

To the shutters H are pivoted the outer ends of the connecting-rods I. The inner ends of the connecting-rods I are pivoted to the inner or movable ring or plate F, so that the shutters H can be adjusted and closed by moving the said inner ring or plate, F.

J is a lever, the outer end of which is pivoted to the movable plate F, and its middle part is pivoted to the platform-frame D. To the inner end of the lever J is pivoted the end of a connecting-rod, K, the other end of which is pivoted to the middle part of the lever L. The lever L is placed parallel with the lever

J, and its inner end is pivoted to the platform-frame D. The outer part of the lever L is pivoted to the movable plate F, and the outer end of the said lever projects beyond the stationary plate E. With this construction, when the outer end of the lever L is moved in either direction, the power will be applied to the opposite sides of the plate F or distributed, and the said plate will be moved to open or close the shutters H.

The levers J L are drawn in the direction to close the shutters H by springs M attached to the said levers and to the frame D. The springs M should be made strong enough to hold the shutters H closed when no counteracting power is applied to the lever L.

To the outer end of the lever L, or directly to the movable plate F, is pivoted the end of the connecting-rod N, the other end of which is pivoted to an arm of an elbow-lever, O. The elbow-lever O is pivoted at its angle to the frame C or other suitable support, and to its other arm is pivoted the lower end of a vertical connecting-rod, P, which passes up through guide-holes in an upright frame, Q, attached to and projecting above the frame C. The upper end of the rod P is swiveled to an arm of the elbow-lever R, which is pivoted at its angle to the shank S of the vane T, or to a support attached to the said shank. To the other arm of the elbow-lever R is pivoted the end of a connecting-rod, U, the other end of which is hinged to the wing V. The lower end of the wing V is hinged to the projecting forward end of the shank S of the vane T.

The wing V is held erect against the pressure of a wind of ordinary force by a spring, W, which may be placed upon the upper end of the vertical connecting-rod P, to rest upon the shank S of the vane, or its ends may be attached to the wing V and shank S. The arrangement first described is preferred as being less liable to get out of order.

The spring W is made of sufficient strength to hold the shutters H open against the action of the springs M upon the levers J L, and against the pressure of a wind of ordinary force against the wing V; but should the force of the wind increase, the wing V will be forced back, compressing the spring W and moving the le-

vers J L to close the shutters H more or less. The shutters H may be held against being entirely closed by a strong wind by a chain, X, attached at one end to the lever L or rod N, and at
 5 the other end to the frame C or other suitable support. The chain X is secured at one end to a hook, so that it can be readily adjusted to regulate the extent to which the shutters may be held open, and to allow the shutters to be
 10 closed when it is desired to have the mill stop. With this construction the shutters H will be opened and closed as the force of the wind varies, so that the windmill will work at a uniform speed.

15 To the lower part of the wheel-shaft B is attached, or upon it is formed, a crank, Y, to which is pivoted the inner end of a connecting-rod, Z. The outer end of the rod Z is pivoted to an arm of an elbow-lever, a, which is
 20 pivoted at its angle to the frame C, or to a cross-bar or other support attached to the said frame. The other arm of the elbow-lever a is pivoted to the piston-rod b of a pump, c, or is connected with other machinery to be driven.

25 With this construction the pump can be placed at one side of the frame C, so as to leave the

space beneath the said frame clear for any desired use.

Having thus fully described my invention, I claim as new, and desire to secure by Letters
 Patent— 30

1. In a windmill, the combination, with the vane T and the plate F, that operates the shutters H, of the two elbow-levers R O, the three connecting-rods U P N, and the unequal
 35 springs W M, substantially as herein shown and described, whereby the said shutters are adjusted by the varying force of the wind to keep the wind-wheel at a uniform speed, as set forth. 40

2. In a windmill, the combination, with the movable plate F, that operates the shutters H and the connecting-rod N of the adjusting mechanism, of the levers J L and their connecting-rod K, substantially as herein shown
 45 and described, whereby the power applied to the plate F is distributed, as set forth.

ISAAC MORRIS STEWARD.

Witnesses:

CHARLES C. SHULTZ,
 N. W. STEWARD.