(No Model.)

# R. A. REYNOLDS.

## AUTOMATIC REGULATOR FOR WINDMILLS.

No. 369,366. Patented Sept. 6, 1887.

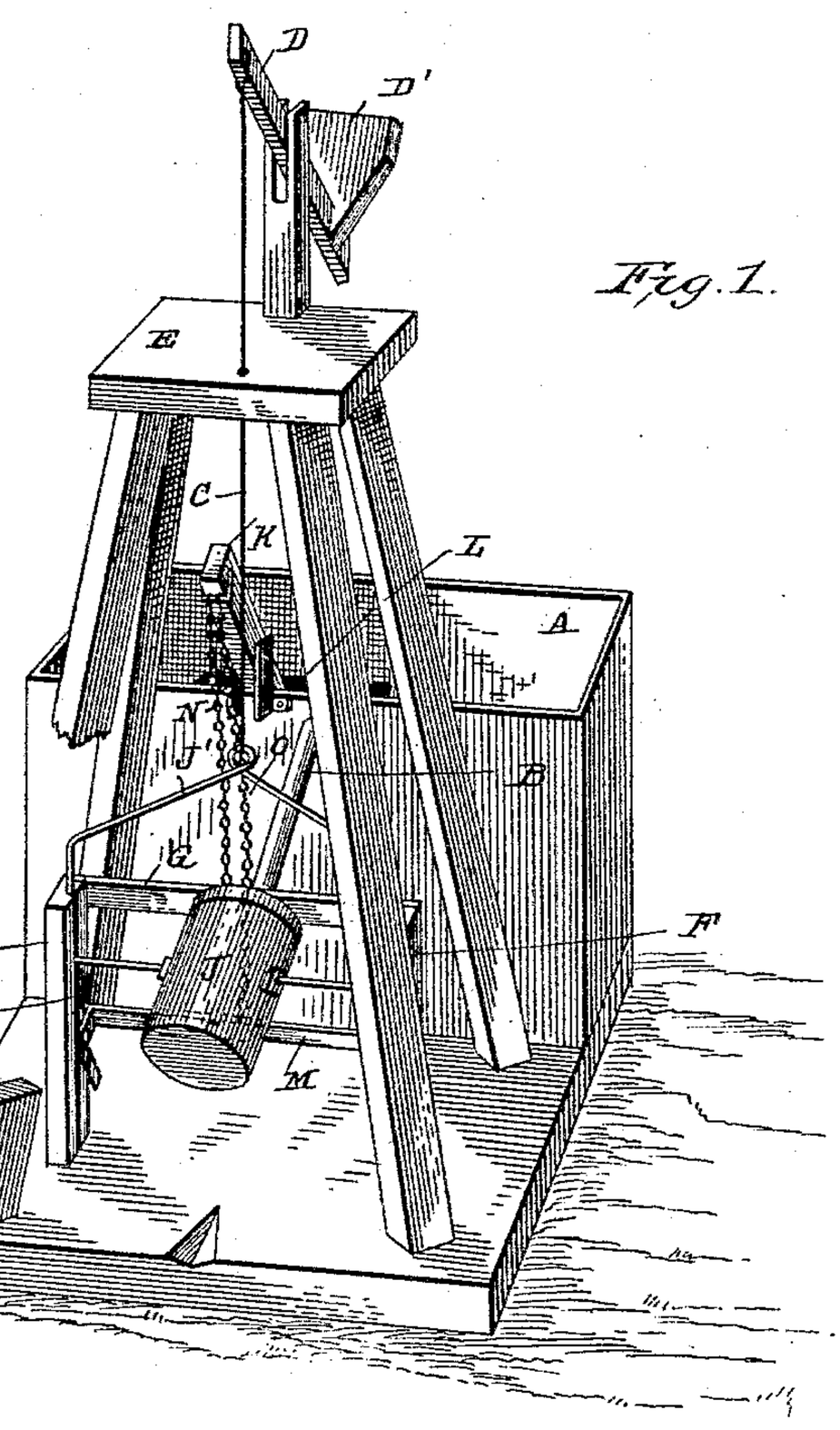



Fig. 1.

Fig 3.

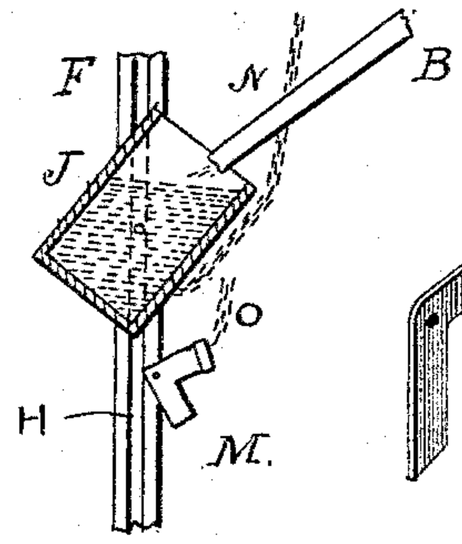
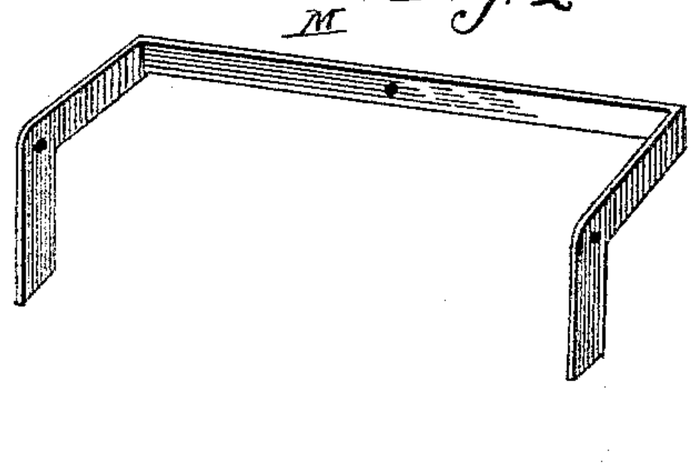



Fig. 2.




Witnesses
Edwin I. Yowell.
W. E. Stearns

Inventor
Raymond A. Reynolds
By his Attorneys
Manahan and Ward.

# UNITED STATES PATENT OFFICE.

RAYMOND A. REYNOLDS, OF MORRISON, ILLINOIS.

## AUTOMATIC REGULATOR FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 369,366, dated September 6, 1887.

Application filed March 21, 1887. Serial No. 231,754. (No model.)

*To all whom it may concern:*

Be it known that I, RAYMOND A. REYNOLDS, a citizen of the United States, residing at Morrison, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Automatic Regulators for Windmills; and I do hereby declare the following to be a full, clear, and exact description of the invention, 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, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention has reference to an automatic regulator for wind-pumps; and it consists substantially in certain novel mechanism by which the action or the non-action of the pump may be effected by the height of the water in the watering-tank.

In the drawings, Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is an end elevation of the same; Fig. 3, details in section, showing the operation of the bucket.

A is the usual water-tank, from which the stock drink at will.

B is an outlet-pipe communicating at its inner end with the interior of the tank A, near the top of the latter, and having its outer end slightly depressed, so that water flowing into such pipe at the inner end will be discharged at its outer end.

C is the usual vertical rod attached at or near its upper end in any suitably way to the windmill above, so that the downward movement of the rod C will throw the pumping apparatus out of gear.

D is a lever fulcrumed at any suitable point on the tower E. The inner end of the lever D is pivotally attached to the rod C, and the opposite or outer end of the lever D is provided with a counter-weight, D′. Beneath the tower E, or at any suitable point, are placed, on the ground and a short distance apart, vertical posts F F, which are held in suitable relation to each other by a cross-brace, G, or in any other suitable manner. On the inner faces of the posts F F are formed vertical grooves H, which serve as ways or guides for the bail J′ of the bucket J, and the bail J′ is attached at its center to the rod C, and at its lower ends pivotally attached to the outside of the bucket J, slightly above the center of gravity of the latter. The counter-weight D′ is sufficiently heavy to throw the rod C upward and the pump into gear, carrying the bucket J upward with such rod whenever said bucket is empty; but when the bucket J is filled with water its then weight is sufficient to draw the vertical rod C downward, raising the counter-weight D′ and throwing the mill out of gear. The relative position of the outer end of the outlet-pipe B and that of the vertical path of the bucket J are such that when the upper edge of the bucket reaches the lower side of the pipe B the further draft upward of the rod C tilts the mouth of the bucket over and upon the outer end of the pipe B, as shown in the drawings, and the bail J′ being held in the ways H of the posts F, the bucket is not permitted to swing out sufficiently to pass the pipe B, and is therefore held in the position shown over the outer end of the pipe B, as aforesaid.

K is a lever fulcrumed horizontally between the tower E and tank A, and provided at its outer end with the float L, which latter is designed to be raised or lowered, as the case may be, by the water in the tank A.

M is a double bell-crank lever pivoted at its outer angles to the inner faces, respectively, of the posts F, so that the weight of its longer or connected ends will throw its lower or open ends diagonally outward across the ways H. The bail J′ as it first leaves the bucket J on each side is horizontal for a short distance, and when the bucket J is filled with water, and thereby passes down the ways H, these horizontal portions of the bails J′ force the open ends of the bell-crank lever M out of the way and pass below such lever; but immediately the bail J′ has passed the lower end of such lever the increased weight of the longer and joined ends of such lever throw the shorter open ends of the latter over the bail J′ at each side of the bucket J and prevent the latter from rising. To the inner end of the float-lever K are attached two cords or chains, N and O. The chain N is attached to the side of the bucket J, near the bottom of the latter, and at its side next the tank A. The lower

end of the chain O is attached to the central portion of the double bell-crank lever M.

The operation of my invention is as follows: Assuming the position of the parts to be as shown in the drawings, with the outer end of the pipe B projecting slightly into the mouth of the bucket J, the rod C would be at the upper limit of its action and the pump in operation. As the tank A becomes filled with water, the latter raises the float L sufficiently to slacken the chain O and allow the free ends of the lever M to project across the ways H in the posts F As the water rises to the inner end of the pipe B, the overflow is discharged through the latter into the bucket J. The increased weight thus given to the latter forces it downward until the bail J′ is caught under the free ends of the lever M, when the rod C is at the downward limit of its action and the pump out of gear. As the height of the water in the tank A is decreased by its consumption, the float L descends therewith, thus raising the inner end of the float-lever K. The chains N and O are of about the same length; but the point of attachment to the bucket J of the chain N being much below the point of attachment of the chain O to the lever M, the first effect of the raising of the inner end of the float-lever K is to tilt the bucket J outward, discharging the water therefrom, the bucket J turning in its ball-connections as in a trunnion. The next effect of the upward movement of the inner end of the lever K is to cause the chain O to draw the central portion of the lever M upward and the free ends of said lever backward out of engagement with the bail J′, whereby the bucket J is released and the counter-weight D′, being heavier than said bucket when the latter is empty, raises the bucket J to its original position over the outer end of the pipe B, and throws the mill into operation.

I have not deemed it necessary to show the mill, as those familiar with the art to which my invention pertains will readily understand that the action of the mill can be regulated in any of the usual modes by the vertical movement of the rod C.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In an automatic regulator for windmills, the combination of the regulating-rod C, bucket J, attached thereto by its bail J′, tank A and pipe B, communicating from said tank to said bucket at the upper end of the latter's movement, the posts F, grooved at H, the lever M, adapted to engage and hold bucket J at the limit of the latter's downward movement, the float-lever K, provided with the float L, pivotally attached thereto and connected at its inner end to the lever M and the bucket J, and thereby adapted to empty and release the bucket J when the water in the tank A has receded to a certain point, all substantially as shown, and for the purpose described.

2. The combination, substantially as shown, of the water-tank A, provided with outlet-pipe B, posts F F, provided with grooves H, bucket J, provided with bail J′, adapted to traverse said grooves, rod C, attached to said bucket, lever D, provided with counter-weight D′ and adapted to lift the rod C, lever M, adapted to engage and hold the bucket J at its lower limit, lever K, provided with float L at its outer end, adapted to rise and fall with the water in the tank A, and at its inner end provided with the chains N and O, attached, respectively, to the bail J′ and the lever M, whereby the discharge of water through the outlet-pipe B causes the bucket J to descend and ungear the windmill, and the recession of the water in the tank A empties and releases said bucket and throws said mill into gear, substantially as shown, and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

RAYMOND A. REYNOLDS.

Witnesses:

JOHN B. EMMONS,

JOHN H. YEAKLE.