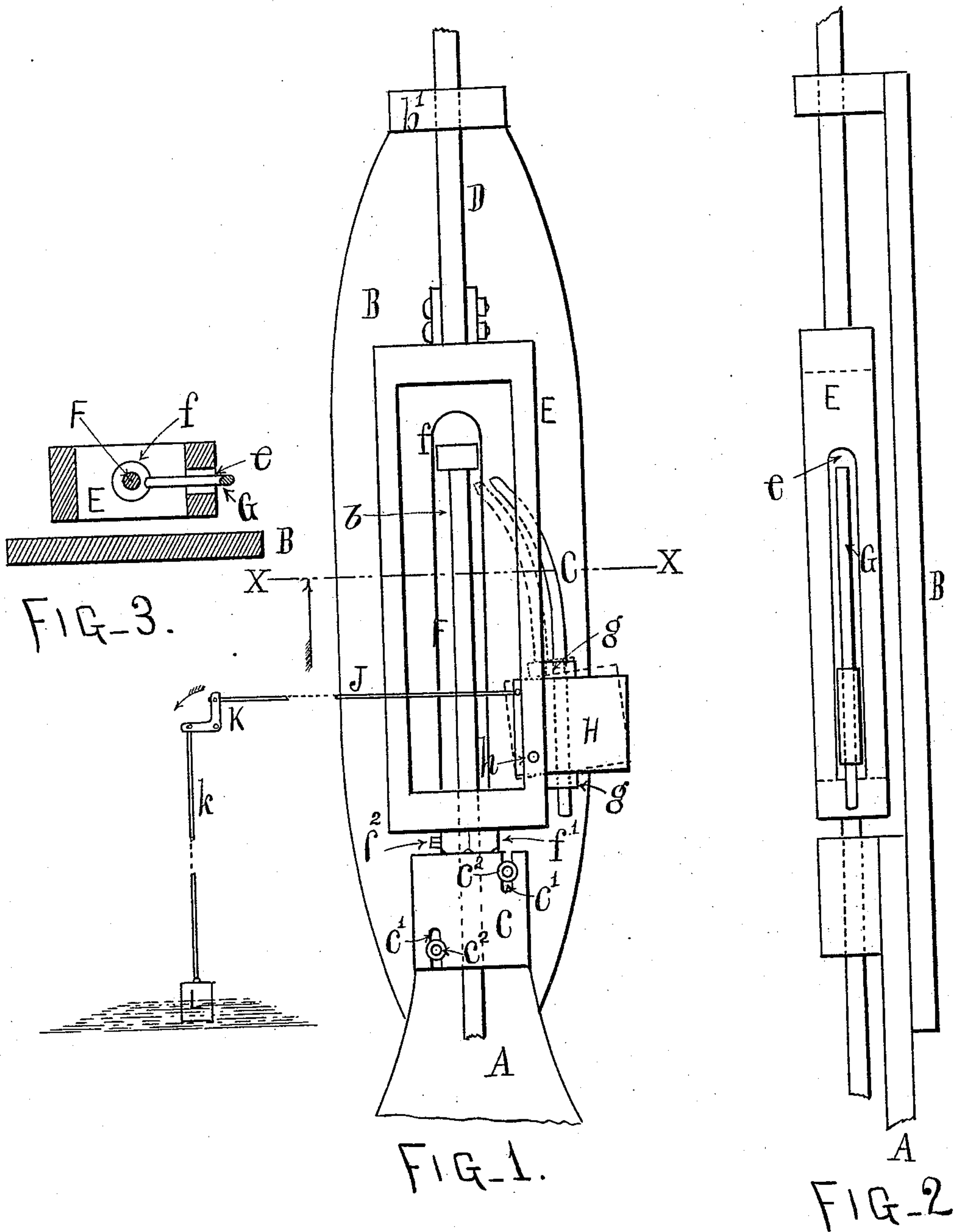


(No Model.)

E. P. DOWNING.  
WINDMILL GOVERNOR.

No. 464,064.

Patented Dec. 1, 1891.



WITNESSES.  
Mr. W. Shulda  
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by N. DuBois, his Atty.

# UNITED STATES PATENT OFFICE.

ELLSWORTH P. DOWNING, OF MOUNT PULASKI, ILLINOIS.

## WINDMILL-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 464,064, dated December 1, 1891.

Application filed March 2, 1891. Serial No. 383,516. (No model.)

*To all whom it may concern:*

Be it known that I, ELLSWORTH P. DOWNING, a citizen of the United States, residing at Mount Pulaski, in the county of Logan and State of Illinois, have invented a new and useful Windmill-Governor, fully described in this specification.

My invention relates to windmills of that class which are commonly used for pumping water; and the objects of my invention are to provide simple and effective means for automatically starting the pump when the water in the tank has fallen below a predetermined depth and for automatically stopping the pump when the tank has been filled. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front view. Fig. 2 is a side view, and Fig. 3 is a horizontal transverse section on the line X X.

Similar letters indicate similar parts in all the views.

My invention may be applied to any ordinary windmill, so that it is unnecessary here to show or describe the mill.

In the drawings, A represents the upper end of the post or frame supporting the windmill.

B is a vertical plate suitably secured to the post. In the plate B there is a longitudinal opening *b*, which affords convenient access to the bolts, by means of which the mechanism is adjusted. To the upper end of the post A is also attached the movable block C, which has slots *c'*, through which pass bolts *c*<sup>2</sup>, by means of which the position of the block on the post may be adjusted.

In the upper end of the plate B is secured a guide *b'*, having a central hole, through which passes the vertical rod D, which is suitably connected with the crank of the windmill. To the lower end of the shaft D is secured a rectangular frame E, having in its lower end a central hole, through which passes the vertical rod F, which is suitably connected to the rod of the pump, such as is commonly used. The upper end of the rod F is swaged to form a head *f*, as shown. On the rod F, and between the frame E and the block C, is the collar *f'*, adjustable on the rod by means of the set-screw *f*<sup>2</sup>, so that in

operation the distance from the lower edge of the head *f* to the upper edge of the lower end of the frame E shall slightly exceed the stroke of the windmill. In one side of the frame E is a longitudinal opening *e*, through which the weighted arm G works, as I will hereinafter explain. Near the lower end of the arm G and adjustable thereon by means of the nuts *g* is the weight H. This weight is pivoted near one of its lower corners on a bolt *h*, passing through the weight and through one side of the frame E, so that the arm G and weight H work through the opening *e* in the side of the frame E. Near one of the upper corners of the weight H is pivoted a rod J, connecting the weight with one arm of the bell-crank K. The other arm of the bell-crank is connected by means of the rod *k* with the float L in the tank. The bell-crank K may be located in any position convenient to the tank and the rods J and *k* may be of any convenient length.

The operation of the mechanism is as follows: When the tank is full, the windmill is running idly and the pump is at rest and the several parts of the mechanism occupy the relative positions shown in Fig. 1. The rod D, connected with the crank of the windmill, imparts a reciprocating motion to the frame E, which carries with it the weighted arm G. When the water in the tank falls, the float also falls, and by means of the bell-crank K and connecting rods *k* and J turns the weight H on its pivot *h*, as indicated by dotted lines, until the arm G engages with the under side of the head *f*, thereby interlocking the frame E with the rod F and starting the pump, and the pump continues to work until the water in the tank raises the float, which by means of the bell-crank K and levers *k* and J disengages the arm G, releases the reciprocating frame E, and the pump stops until again started, as above described.

To adjust the frame E in proper position relative to the rod F and the weighted arm, loosen the set-screw *f*<sup>2</sup> and move the collar *f'* up or down, as may be necessary.

To adjust the weighted arm G relative to the throw of the bell-crank K, turn the nuts *g* up or down, as may be necessary.

To adjust the rod F to the stroke of the pump, so that when the pump is at rest the



weight of the rod F will be supported on the block C, loosen the bolts  $c^2$  and move the block up or down, as may be necessary.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a governor for windmills, the supporting-plate B, the guide  $b'$ , the windmill-rod D, and the rectangular reciprocating frame E, in combination with the weight H, pivoted on and carried by the frame, the pump-rod, the adjustable arm G, secured to the weight and engaging with the pump-rod, the float in the tank, and the bell-crank and the rods connecting the float with the weight, all co-operating substantially as shown and described, and for the purpose stated.

2. In a governor for windmills, the combination of the post A, the plate B, supported on the post, the reciprocating frame E, connected with the windmill-rod D, the weight pivoted on the frame and carrying an arm G, the pump-rod F, engaging with the arm G, supported on the pivoted weight, the bell-crank and connecting rods, the float in the tank, the adjustable collar  $f'$  on the pump-rod, and the adjustable block C on the post A, substantially as shown and described, and for the purpose stated.

3. In a governor for windmills, the combination of the supporting-post A, the plate B, provided with a longitudinal opening  $b$ , the guide  $b'$ , secured to the plate, the windmill-rod D, the rectangular frame E, provided with a longitudinal opening  $e$  in its side, the weight H, pivoted in the opening  $e$  and carrying the arm G, moving in the opening  $e$ , the float in the tank, the bell-crank, and the connecting-rods, substantially as shown and described, and for the purpose stated.

4. In a governor for windmills, a weight pivotally supported in a reciprocating frame, carrying an adjustable arm moving in a slot in said frame and connected with a float in a tank, in combination with a supporting-post, a plate secured to the post, a reciprocating frame, a windmill-rod connected with the frame, a pump-rod, a head on the pump-rod, a collar adjustable on the pump-rod, and a block adjustable on the post, all co-operating substantially as shown and described, and for the purpose stated.

5. In a governor for windmills, the block C, having slots  $c'$ , in combination with the post A, the plate B, the reciprocating frame E, the weighted arm G, the pump-rod F, and the collar  $f'$ , substantially as shown and described, and for the purpose stated.

6. In a governor for windmills, the combination of the post A, the plate B, the guide  $b'$ , the rod D, the head  $f$ , the reciprocating frame E, the pivoted weight H, the adjustable arm G, the rod F, the adjustable collar  $f'$ , the block C, the rods J and  $k$ , the bell-crank K, and the float L, substantially as shown and described, and for the purpose stated.

7. In a governor for windmills, the arm G, vertically adjustable on the weight H by means of nuts  $g$ , in combination with the reciprocating frame E, the windmill-rod D, the pump-rod F, the head  $f$  on the pump-rod, the bell-crank, the connecting rods, and the float in the tank, substantially as shown and described, and for the purpose stated.

ELLSWORTH P. DOWNING.

Witnesses:

PAULUS HORN,  
V. L. SCOTT.