

(No Model.)

A. P. HAY.
WINDMILL GOVERNOR.

No. 469,315.

Patented Feb. 23, 1892.

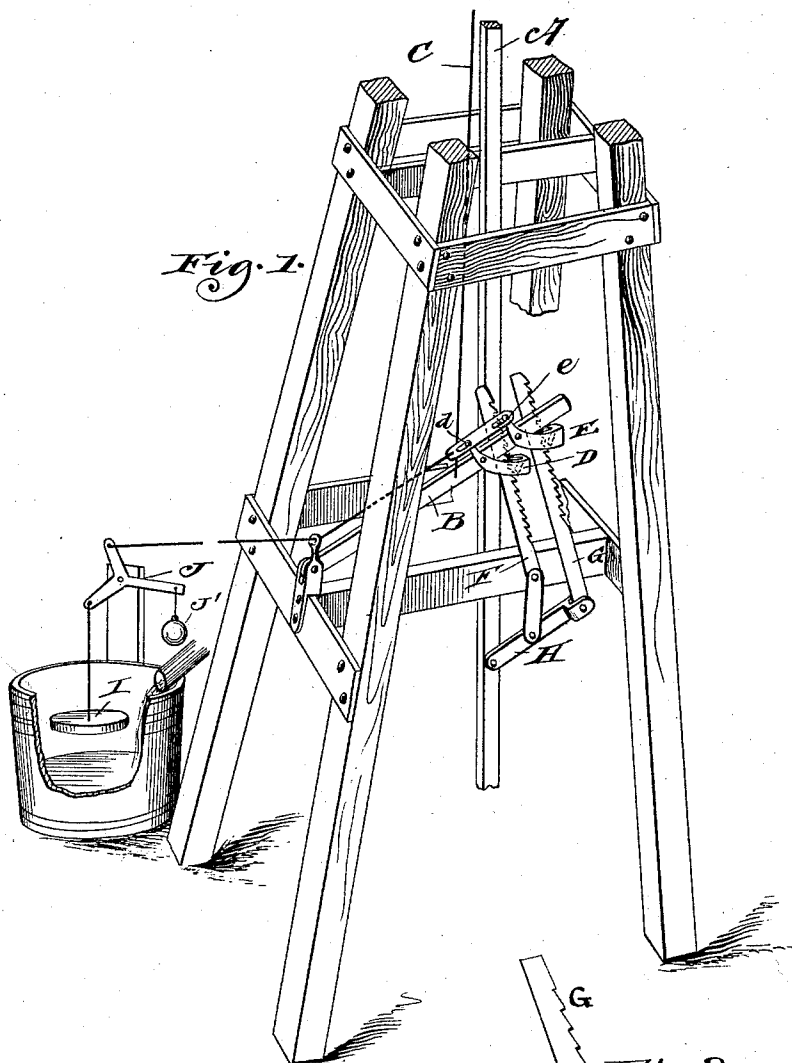


Fig. 1.

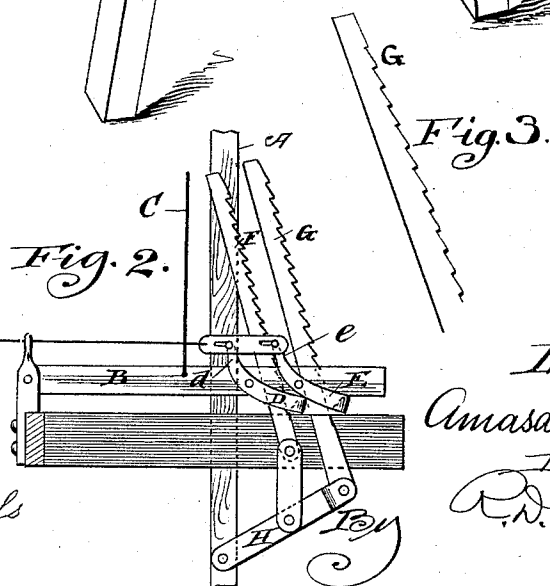


Fig. 2.

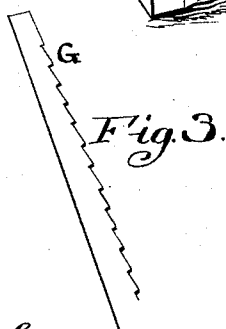


Fig. 3.

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WINDMILL-GOVERNOR.

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Application filed September 16, 1891. Serial No. 405,847. (No model.)

To all whom it may concern.

Be it known that I, AMASA P. HAY, of Goshen, Elkhart county, in the State of Indiana, have invented new and useful Improvements in Windmill-Governors; and I do hereby declare that the following is a full and accurate description of the same, having reference to the accompanying drawings, wherein—

Figure 1 is a perspective view, and Fig. 2 is a side elevation, of the double pawls and ratchet and of their connections. Fig. 3 is a side view of my ratchet, showing the reduced width toward the outer end.

The object of this invention is to stop the mill and the pump driven thereby when the tank into which the pumped water is discharged is adequately full. To this end the primary control is in a float in said tank or in a suspended bucket, which may be so placed as to receive overflow-water from said tank. The float is the device most commonly employed.

This invention consists in an adaptation of what is known in mechanics as the "double ratchet and pawl," whereby one ratchet and pawl takes up and the other holds on; and in general terms the operation is such that when the float rises to a certain point it causes the said ratchets and pawls to go into action and draw upon the governor-wire to pull the wheel out of or edge to the wind. When the float is below said point, said pawls are thereby held out of action and the motion of the wheel is normal.

Having now indicated the object and nature of my invention, I will more particularly describe its structure as I have made and used it, but without intending to limit myself to the details, as shown.

A is the pitman, whereby a reciprocating motion is transmitted from the crank on the wheel-shaft to the pump-rod.

B is a lever pivoted at one end to the tower-frame at some convenient point and having attached to it the governor-wire C. When the free end of this lever is elevated, the wheel is liberated from control. At any convenient point on said lever there are two pivoted pawls D E, the latter of which is the take-up pawl and the former is the hold-on. The pawls D E respectively operate in connection with the ratchet-bars F G, whereof the former

is pivoted at its lower end to some stationary part of the tower-frame and the latter is pivoted to a reciprocating lever H, whereby, coincident with the strokes of the pitman, said ratchet is carried up and down. The lever H is pivoted on some convenient part of the frame of the tower, and, as stated, is also pivoted to the ratchet-bar G and to the pitman A.

The pawls D E are counterweighted, so that they will be put in action by gravity when permitted by elevation of the float I, or they may be made operative by suitable springs. The desired control of the pawls D E is secured by means of a bell-crank J, one arm of which is connected by wire or otherwise with the float I, and the other arm is similarly connected with the pawls D E by means of arms *d e*, projecting from said pawls for the purpose. Instead of the bell-crank, a pulley or any other device may be employed. By these means when the float descends with the level of the water the pawl-levers are pulled over and the pawls caused to disengage, so that they may play up and down past the ratchets F G without engaging them; but when by rise of the water-level the float is also raised up the pawls are liberated from control and go into action. The effect of this is with each stroke of the pitman A the ratchet G is caused to move upward, in which motion it moves freely past the pawl E; but when the movement is reversed the pawl engages the ratchet and pulls the lever B down and the pawl D engages the ratchet F and holds said lever down. Thus each reciprocation of the pitman causes said lever to be drawn further down until the bottom of ratchets is reached.

The bell-crank J or its equivalent device has the counter-weight J' to take up the slack of its cord and to balance the float.

The connections with the bell-crank are adjustable as to distance from the center of motion. A slotted coupling is employed to couple the pawl-arms and said float is connected with the bell-crank J. When the float is high, said coupling is moved forward and the pawl-lever coupling-pins move freely forward and backward in the coupling-slots as said pawls pass over teeth of their ratchets. The pawls may be coupled in other ways.

I do not limit my invention to the precise construction and arrangement of parts, as it

is evident that the same may be varied within wide limits without departing from the spirit and scope of my invention. For example, I have shown and described the take-up ratchet as adapted to reciprocate while the holding or locking ratchet is held stationary; but evidently the holding-ratchet might be carried by the bar B and the pawl D might be pivoted to a fixed part, in which case the ratchet would reciprocate, while the pawl would be relatively stationary. Of course the precise form of the pawls is immaterial, and an ordinary dog might be adapted to perform the same functions as the particular form of pawl described.

With all wind-wheels which are governed by the gravity of some member capable of change of position in a vertical direction the governing force progressively increases as the wheel moves out of the wind, and therefore the ratchet G may be made so as to afford a less positive hold for the pawl at the beginning of the governing action, and I accomplish this conveniently by making the ratchet-bar narrower for a short distance downward from its upper end, as shown in Fig. 3. This does not diminish the positive effect of the governor, but is convenient and desirable.

Having described my invention, I claim—

1. The ratchets F G, one stationary and one

reciprocating, the reciprocating one being connected with and carried by the reciprocating pitman A, the pawls D E, attached to and carried by the lever B, and the governor-wire C, attached to and controlled by said lever, substantially as set forth.

2. The lever B, pivoted at one end, the governor-wire C, attached to said lever, the pawls D E, pivoted to and carried by said lever, and the ratchets F G, one of them being stationary and the other reciprocating coincidentally with the pitman, substantially as set forth.

3. The ratchets F G, one stationary and the other reciprocating, the pitman A, and pivoted lever H, whereby said reciprocating ratchet is connected with the pitman A and actuated coincidentally with the motion of said pitman, combined with the lever B, the governor-wire C, attached to said lever, and the pawls D E, attached to and carried by said lever, substantially as set forth.

4. The lever B, the pawls D E, and the independent ratchets F G, one stationary and one reciprocating, substantially as described, combined with the controlling-float I and bell-crank J, as set forth.

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