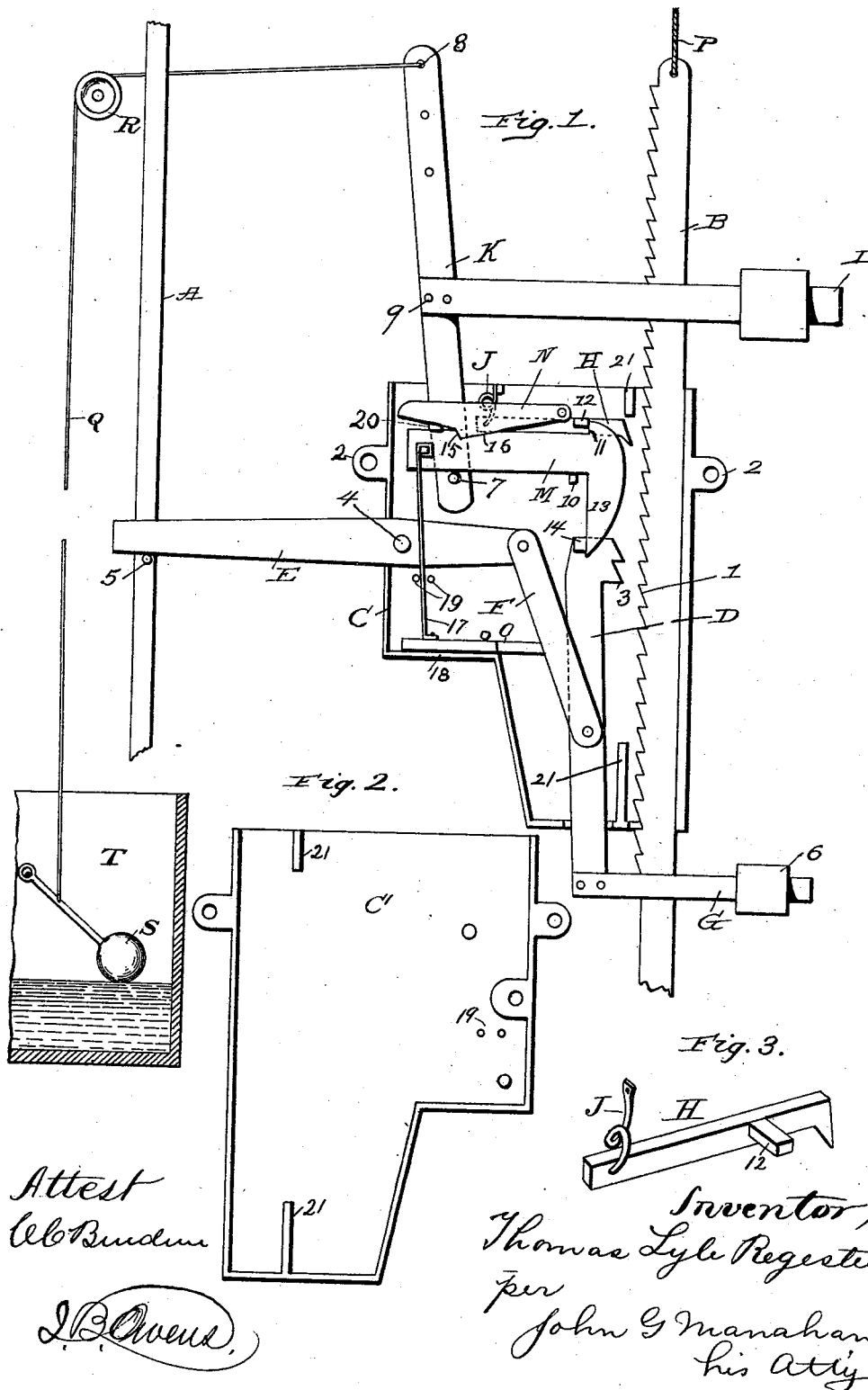


(No Model.)

T. L. REGESTER.
AUTOMATIC REGULATOR FOR WINDMILLS.

No. 523,442.

Patented July 24, 1894.



UNITED STATES PATENT OFFICE.

THOMAS LYLE REGESTER, OF STERLING, ILLINOIS, ASSIGNOR TO CHRISTOPHER C. DENNY, OF SAME PLACE, AND TRUMAN E. STEVENS, OF BLAIR, NEBRASKA.

AUTOMATIC REGULATOR FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 523,442, dated July 24, 1894.

Application filed May 9, 1893. Serial No. 473,509. (No model.)

To all whom it may concern:

Be it known that I, THOMAS LYLE REGESTER, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Automatic Regulators for Windmills; and I do 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 the letters and figures of reference marked thereon, which form a part of this specification.

My invention has relation to improvements, by which the usual float in the water reservoir, or receptacle, can be utilized in connection with a wind wheel and pump to turn the said wheel out of the wind and suspend its operation, or to permit the same to swing into the wind and operate the pump, as occasion may demand.

I attain the above named results by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective of the construction and relation of the parts exhibiting my invention with one side of the chamber, or box removed, within which some of the operating devices are contained. Fig. 2 is a view of the inner surface of said removed side. Fig. 3 is a detail of the retaining pawl, which operates alternately with the actuating pawl and the brake block.

Similar letters and figures refer to similar parts throughout the several views.

As my invention is adapted, with obvious changes, to be applied to any of the water reservoirs and wind wheels in common use, and the construction of the latter is well known, I do not deem it essential to show or describe any parts other than those necessary to exhibit the construction and operation of my invention.

Referring to Fig. 1, A is the usual pump rod, which, when the wind wheel is in operation, is reciprocated vertically by the latter, said pump rod serving to force water into a suitable tank T.

B is a vertical bar, provided on one side with

a vertical series of notches or teeth 1, extending through and a suitable distance above and below the operating mechanism hereinafter described. The upper end of the bar B is suitably attached to the usual wire P for drawing the wind wheel out of the wind.

C is a metallic box having the removable side C', and suitably attached to any cross beam of the wheel tower by means of perforated lugs 2 formed on the side of said box. The bar B is adapted to be moved vertically in said box, being guided by suitable ways 21 cast on the latter.

D is the operating pawl, supported loosely in the box C in a vertical position substantially parallel to the bar B, and provided at its side adjacent to said bar with the engaging teeth 3.

The pawl D is supported and actuated as follows: A horizontal lever E is fulcrumed at 4 in the box C, and connected at its inner or short end to the pawl D by means of a pair of links F, pivoted at their upper ends to the lever E, and projected diagonally downward toward the bar B, and pivotally attached at their lower ends to the respective sides of the pawl D. But one of said links F is shown, but its counter-part lies directly under it in Fig. 1, and the two are respectively placed on each side of the lever E and pawl D, to prevent any torsional movement of said pawl. The outer end of the lever E is projected in substantially a horizontal direction beyond the pump rod A, and the latter is provided with an engaging lug 5, by means of which the upward movement of said pump rod raises the outer end of lever E, and forces the pawl D downward. The weight of the free end of the lever E is sufficient, when permitted, to drop and thereby raise the pawl D at each downward movement of the pump rod A, to be in position for the next engagement of the lug 5 with said lever E. A horizontal arm G is rigidly attached at one end to the lower end of the pawl D, and extended past the bar B and provided with the weight 6, to normally swing the upper end of said pawl into engagement with the bar B.

H is a retaining pawl loosely placed in the upper portion of the box C in position to en-

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gage the teeth 1 of the bar B alternately with the pawl D, and hold said bar from rising during the interval of the upward movement and re-engagement of the pawl D. A coiled spring J, seated on the inner surface of the back of the box C in position to engage the pawl H, throws the latter into engagement with the teeth 1.

K is a vertical trip lever projecting into the upper end of the box C and fulcrumed in the latter at 7. The lever K extends a suitable distance above the box C, and is adapted to have its upper end 8 attached to the float wire Q, carried over an intermediate pulley, or other support R, whereby the descent of said float S draws the upper end of lever K toward the pump rod A. As the float rises the lever K is drawn back to its vertical position by means of a weighted arm L rigidly seated at one end 9 on lever K and projected horizontally a sufficient distance past the bar B.

A disengaging dog M is placed horizontally in the upper end of the box C, resting at one end upon the pivot 7 of the lever K, and near the other end on a lug 10 formed on the inner wall of box C. The lower end of the lever K passes through a long slot in the dog M, and when the descent of the float draws the lever K toward the pump rod A said lever draws the dog M in the same direction. In this movement a notch 11 in the upper edge of the dog M engages a lug 12 formed on the side of the retaining pawl H, and draws said pawl out of engagement with the teeth 1 of the bar B. The depending end 13 of the dog M also engages a lug 14 formed on the upper end of the pawl D, and also draws said end of said pawl and its teeth 3 out of engagement with said bar B.

An automatic dog N is pivotally seated in the upper end of the box C, and provided on its lower surface with a shoulder or projection 15, which, when the dog M is retracted as aforesaid by the lever K, engages the notch 16 formed in the upper surface of the dog M, and holds the latter with the pawls H and D in the retracted position aforesaid. The descent of the float, and the movement aforesaid, of the lever K toward the pump rod A also pushes toward said pump rod the upper ends of two vertical spring wires 17, the upper ends of which are seated in the lower surface of the dog M, and the lower ends of which are seated in the horizontal brake block O, the latter resting loosely on the inner surface of the marginal recess 18 of the box C. One of the wires 17 is fulcrumed between two short studs 19 formed on the inner surface of the back of the box C, and the other between like studs 19 formed on the inner surface of the removable front C' of box C (Fig. 2). The outward pressure on the upper end of the wires 17 throws the lower end of said wires toward the bar B, and therefore forces the adjacent end of the brake block O against the side of the pawl D, after which the next succeeding upward movement of the pump

rod A will carry the adjacent end of the lever E to the limit of its up stroke, when the friction or pressure of the brake block O against the pawl D will hold the latter from rising again, and thereby, through the medium of the links F, hold the outer end of the lever E at the limit of its up stroke, so that the succeeding movements of the pump rod A will have no effect thereon, and the pawl D remains stationary until it is next thrown into engagement with the bar B, as hereinafter described.

A diagonal shoulder 20 is formed on the inner surface of the vertical lever K in position to rock under the free end of the dog N, so that when the lever K is vibrated toward the pump rod A said shoulder passes out of engagement with the dog N and permits it to fall into engagement with the latter. And when the lever K returns to the vertical position, the edge of the shoulder 20 engages the lower surface of the dog N, and raises the latter out of engagement with the dog M, when the pressure of the upper ends of the springs 17 instantly throws the dog M toward the bar B, and the pawl H into engagement with said bar, and at the same time withdraws the brake block O, and permits the free end of the lever E to drop so as to be engaged and operated by the pump rod A, and thereupon the subsequent movements of pump rod A reciprocate the pawl D, and gradually force down the bar B, drawing the wind wheel out of the wind and suspending, for a time, the operation of the latter.

There are several advantages in my invention; one is that, by the diagonally downward projection of the links F which connect the lever E with the pawl D, every upward movement of the outer end of lever E pushes the pawl D diagonally downward toward the bar B, and thereby insures the immediate, certain and complete engagement of pawl D with the bar B.

Another advantage of my invention is that when the wind wheel is in operation, the outer end of lever E is held up by the brake block O, so that the movements of the pump rod A are not communicated to it, nor to the pawl D, and therefore there is no wear of the parts.

Another advantage is that, by reason of the dogs N and M and their co-acting parts, the pawls D and H, when permitted to engage the bar B, are thrown into such engagement completely and at once, so that there is no wearing or breaking of the teeth of pawl D and bar B, occasioned by only partial engagement, and consequent slipping.

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

1. In a wind wheel regulator, the combination of the box C, vertical bar B provided with teeth 1 adapted to reciprocate therein, lever E, pawl D provided with teeth 3 adapted to engage teeth 1 of said bar, links F flexibly connecting said lever and pawl, retaining

pawl H, and pump rod A provided with lug 5; substantially as shown, and for the purpose described.

2. In a wind wheel regulator, the combination of a vertical notched bar B, and pawl D adapted to actuate the same, lever E adapted to be oscillated by the usual pump rod, link connection F between said lever and said pawl, retaining pawl H, dis-engaging dog M, lever K adapted to be attached to the usual float, the brake block O, and means substantially as shown, for forcing the latter against said pawl; for the purpose described.

3. The combination of a vertical notched bar B, adapted to be attached at its upper end to the usual regulating wire, and lever E adapted to be operated by the usual pump rod A, the pawl D adapted to engage said bar, and links F projected diagonally downward toward bar B from said lever E, and connecting the latter with said pawl; substantially as shown and for the purpose described.

4. In combination with the vertical notched bar B, suitably connected to a regulating wire, the pawl D adapted to actuate the same, a lever E adapted to operate upon, by the usual pump rod, and to actuate said pawl, a brake block O, and means substantially as shown

for pressing said block against said pawl, and thereby holding said parts stationary during the operation of the wind wheel; for the purpose specified.

5. The combination of the notched bar B, adapted to be connected to the regulating wire, pawl D adapted to engage said bar, retaining pawl H, dog M adapted to disengage said pawls, lever K, weighted bar G, weighted arm L, and spring J; dog N, and means for operating pawl D and dog M substantially as shown, and for the purpose described.

6. In a wind wheel regulator, the combination of a notched bar, adapted to be attached to the usual regulating wire, a pawl adapted to engage and force said bar downward, means substantially as shown for operating said pawl, and means substantially as shown for suspending the movement of said pawl while the mechanism worked by the wind mill is still operated; for the purpose specified.

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

THOMAS LYLE REGESTER.

Witnesses:

JOHN G. MANAHAN,
CHRISTOPHER C. DENNY.