

(No Model.)

C. BARNES.
WINDMILL.

No. 438,282.

Patented Oct. 14, 1890.

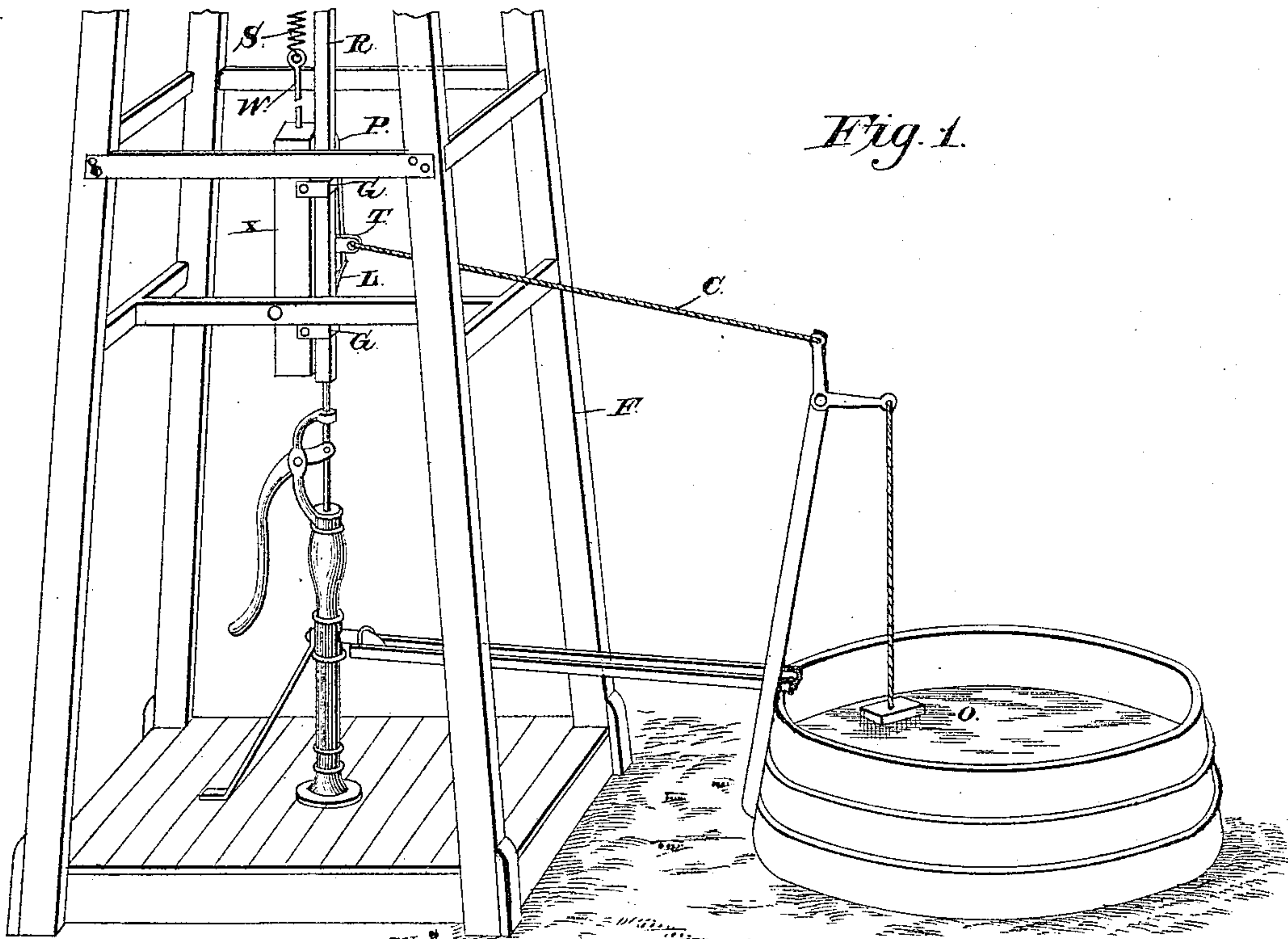


Fig. 1.

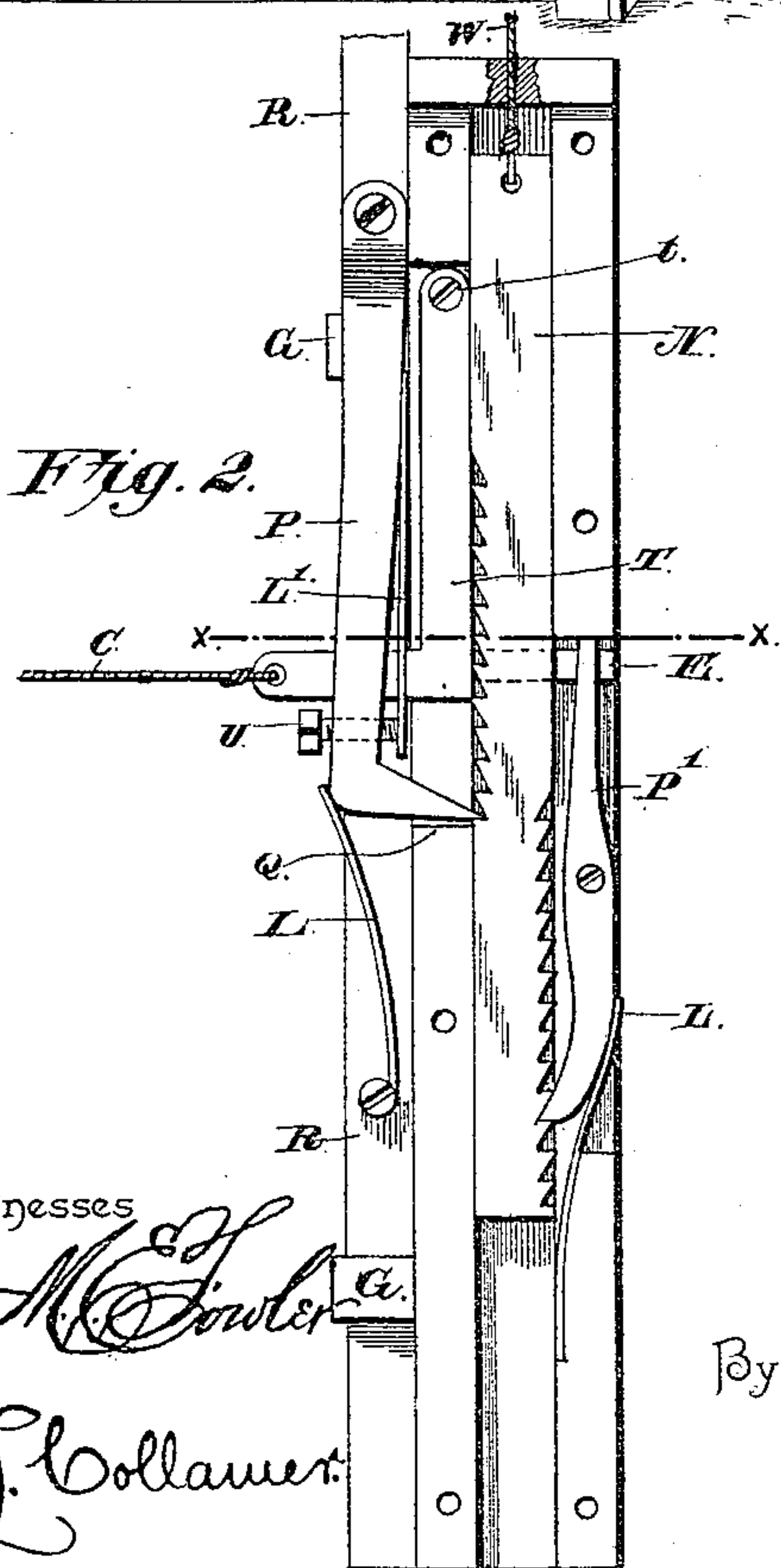


Fig. 2.

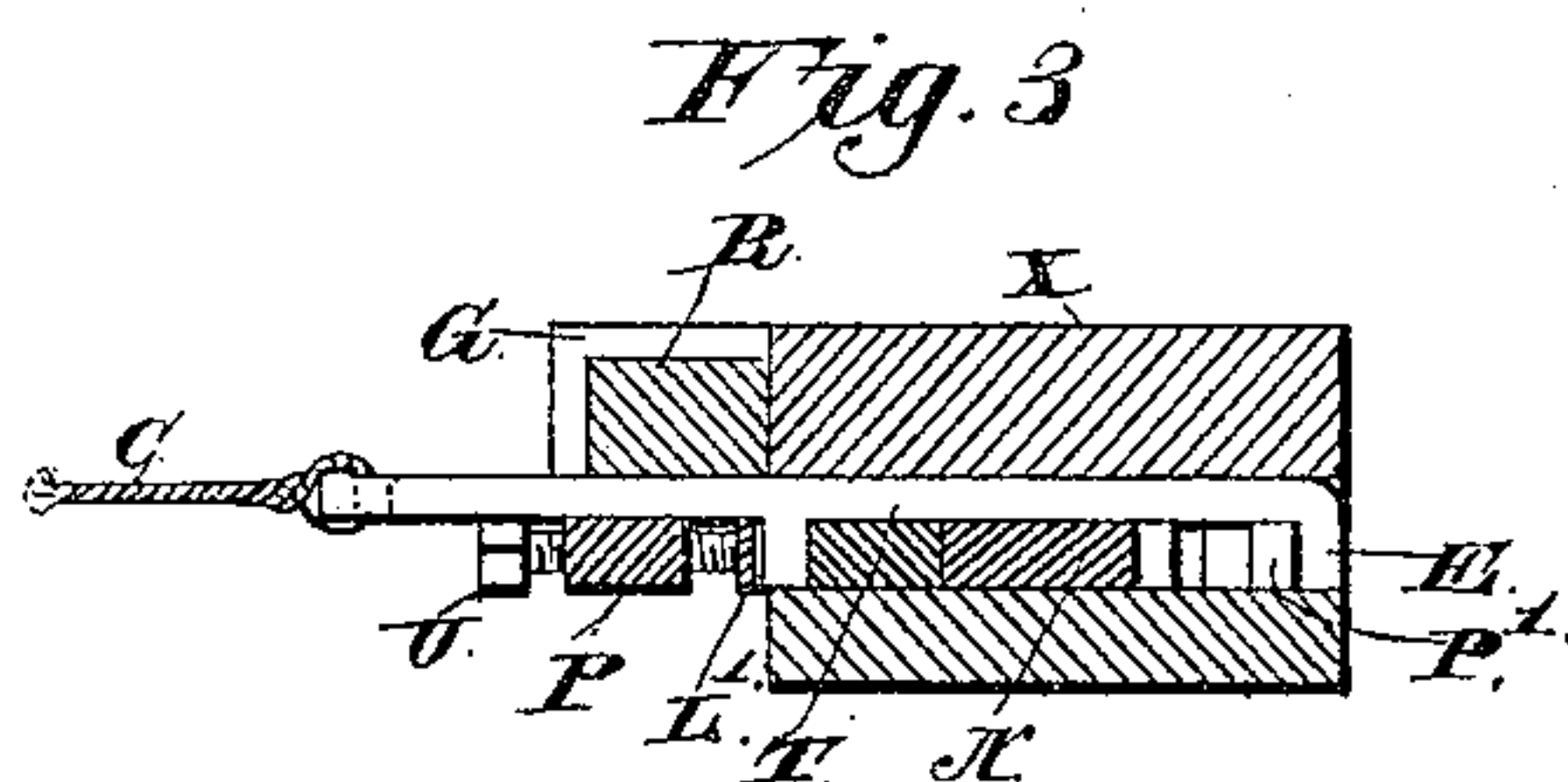


Fig. 3.

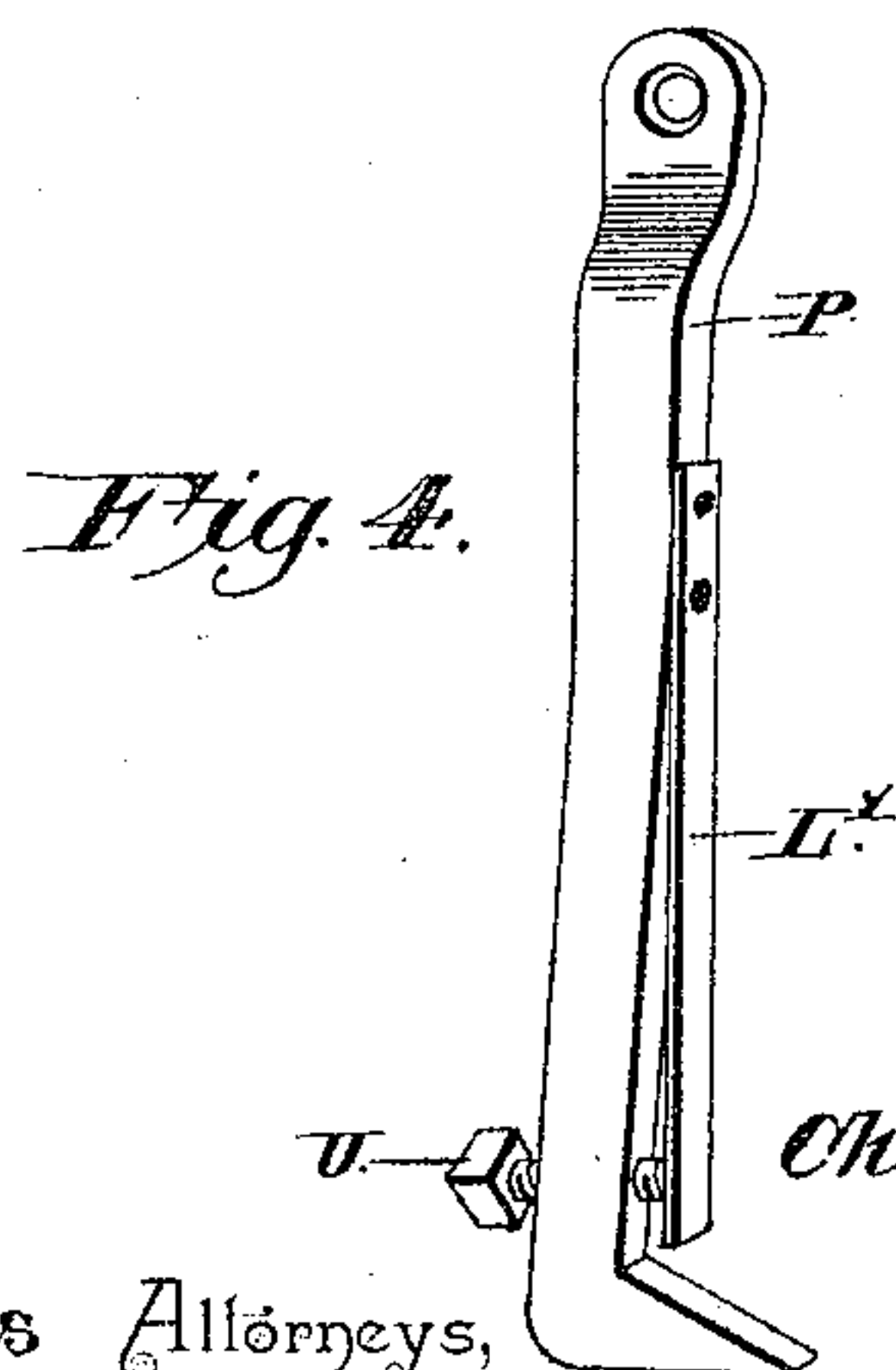


Fig. 4.

Witnesses

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WINDMILL.

SPECIFICATION forming part of Letters Patent No. 438,282, dated October 14, 1890.

Application filed April 16, 1890. Serial No. 348,202. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BARNES, a citizen of the United States, residing at West Liberty, in the county of Muscatine and State of Iowa, have invented a new and useful Windmill, of which the following is a specification.

This invention relates to windmills, and more especially to the regulating devices therefor; and the object of the invention is to provide means directly connected with the reciprocating pump-rod of the windmill, whereby the regulator connected to the wind-wheel will be operated and the wheel thrown out of operative position when the tank becomes too full.

To this end the invention consists of a certain arrangement of pawls engaging teeth upon the opposite sides of a bar carried by the regulator-wire, and a double trip connected by a wire with a float in the tank, all as hereinafter more fully described, and as illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a windmill-tower with my improvements detached. Fig. 2 is an enlarged elevation of the pawls and the notched bar. Fig. 3 is a transverse section of the same on the line xx . Fig. 4 is an enlarged perspective detail of the preferred form of pawl.

Referring to the said drawings, F is the frame of the tower, which may be of any preferred construction, and R is the reciprocating pump-rod, which is moved by the rotation of the wind-wheel, as will be clearly understood. Adjacent this rod is a box X, carried by the frame F, which box has guides G, loosely embracing the pump-rod R, and which box has also closed sides, except where they are necessarily open, and a roof whereby it is rendered sleet and dust proof. In Fig. 2 I have shown this box with its face or front side removed, and in a vertical groove within the same slides a notched bar N, whose upper end is connected by a wire W, leading through the roof of the box, with the regulator of the wind-wheel, whereby when the wire is drawn upon the wind-wheel the blades thereof will be turned or thrown out of the wind, and its motion will cease, but at other times the wire is retracted or drawn upwardly by a coiled spring S, as shown in Fig. 1. The said

bar N is notched, as stated, and the notches are located upon the opposite edges thereof, as shown in Fig. 2, and in a suitable recess near one side of the box X is centrally pivoted a pawl P', whose tip is thrown into engagement with the teeth or notches on the bar N by a leaf-spring L. Pivotaly connected at its upper end with the pump-rod R is another pawl P, whose tip passes through a recess in the side of the box X and engages the teeth upon the other edge of the bar, being pressed into operative position by a similar leaf-spring L, as shown, this spring, however, being carried by the pump-rod, so that it shall move up and down with the pawl P. As there is likely to be considerable wear upon the tip of this last-mentioned pawl, I preferably construct it as shown in Fig. 4—that is to say, with a bar of metal L' secured to its front edge, the free end thereof resting upon a set-screw U through the body of the pawl, near its tip. When the latter wears so as to interfere with the successful operation of the parts, the said set-screw is let down a trifle, which motion allows the tip to project farther, as will be obvious.

The letter T designates an inverted-T-shaped tripping-lever, which is pivoted at its foot or upper end, as at t , to the box X, and stands between the notched bar N and the pump-rod pawl P, its inner end passing beneath the bar N and being seated in a transverse notch in the box X, with its extreme E turned up or hooked so as to catch the upper end of the pawl P'. The outer end of the head passes beneath the pawl P on the pump-rod R, and is connected by a cord C with a float O in the tank. The body of this tripping-lever stands in the same transverse plane as the two pawls and the notched bar, while the head thereof, which is at the lower end of the body, stands behind all these parts.

In operation, as the pump-rod reciprocates the pawl P is moved up and down, its tip moving in a slot Q in the edge of the box X, and the pawl is held out of engagement with the notched bar by the body of the lever T bearing against it when such lever is drawn outwardly by the weight of the float communicated through the connection. When the water rises in the tank and arrives at the desired limit of its height, the float has been

lifted and the cord has been slackened sufficiently to allow the tripping-lever T to move about its pivot *t* so that the points of the two paws are pressed by their respective springs into engagement with the notches on the bar N. The pitman-rod R continuing to reciprocate, the pawl P forces the bar N downwardly, and the pawl P' holds it until the pawl P ascends and makes renewed engagement with the notches. This motion of the bar N entirely trips the wind-wheel; or if a wind-wheel of the proper style be used it throws the blades partially out of the wind, so as to retard the movement of the wheel, and hence lessen the amount of water pumped or the amount of work done. When, however, the bar N has reached its lowermost position, the wire W has been drawn down sufficiently to completely stop the motion of the wheel.

It will thus be seen that my improved windmill-regulator comprises but few parts, which are exceedingly simple in their construction, and yet effective in their operation. All the mechanism is inclosed within a tight box except the pawl P, and that pawl is pivoted directly to the pump-rod R instead of through the instrumentality of levers or other connections, as in devices of this character heretofore manufactured. It will be understood, of course, that the weight of the wire W and bar N is sustained by a suitable spring at the head of the windmill, (not here shown,) preferably the same spring which holds the blades or the wheel in the wind at times when the wire W is not drawn upon.

Having thus described my invention, what I claim is—

1. In a windmill-regulator, the combination, with the grooved box, the double notched bar connected to the regulator-wire and moving in the groove in said box, and the vertically-reciprocating pump-rod, of a pawl pivoted at one end to said pump-rod and having a laterally-projecting tip engaging the notches on one edge of said bar, a plate secured to said pawl on the side adjacent said box, a screw through the pawl bearing against said plate, a pawl at the other side of said bar, its tip engaging the notches on that edge, a float in the tank, and connections, substantially as described, between said float and paws for moving their tips simultaneously in opposite directions, as and under the conditions set forth.

2. In a windmill-regulator, the combination, with the double notched bar connected to the regulator-wire, a spring for holding said bar normally elevated, and the pump-rod recip-

rocating vertically adjacent to said bar, of a pawl pivoted at one end to said pump-rod, its tip engaging the notches on one edge of said bar, a centrally-pivoted pawl at the other side of said bar, its tip engaging the notches at that edge thereof, a float in the tank, a tripping-lever having projections engaging the pump-rod pawl below its pivot and the other pawl above its pivot, and a wire connecting said tripping-lever with the float, the whole operating substantially as and under the conditions set forth.

3. In a windmill-regulator, the combination, with a closed box having a vertical groove, and the pump-rod reciprocating vertically against one edge of said box, of a double notched bar sliding in said groove and connected to the regulator-wire, a retaining-pawl pivoted in said box and engaging the notches on one edge thereof, an operating-pawl pivoted to the pump-rod, extending through a slot in one edge of the box and engaging the notches on the other edge of said bar, a float in the tank, and connections, substantially as described, between said float and pawl for moving their tips simultaneously in opposite directions, as and under the conditions set forth.

4. In a windmill-regulator, the combination, with a closed box having a vertical groove and a recess in one edge, and the pump-rod reciprocating vertically against said edge, of a double notched bar sliding in said groove and connected to the regulator-wire, a centrally-pivoted retaining-pawl mounted in the box at the rear edge of said bar, its tip engaging the notches on that edge, an operating-pawl pivoted at one end to said pump-rod, its other end or tip extending through said recess in the edge of the box and engaging the notches in the front edge of the bar, an inverted-T-shaped tripping-lever, the upper end of its shank pivoted in said recess and the lower end thereof standing in the same plane as the notched bar and the pawl, the head of said lever standing in rear of such plane and its rear end being turned up and engaging the upper end of said retaining-pawl, a float in the tank, and a wire connecting said tripping-lever with the float, the whole operating substantially as and under the conditions set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

CHARLES BARNES.

Witnesses:

CHAS. E. BALL,
A. A. BALL.