

(No Model.)

T. L. REGESTER.
AUTOMATIC REGULATOR FOR WIND WHEELS.

No. 580,532.

Patented Apr. 13, 1897.

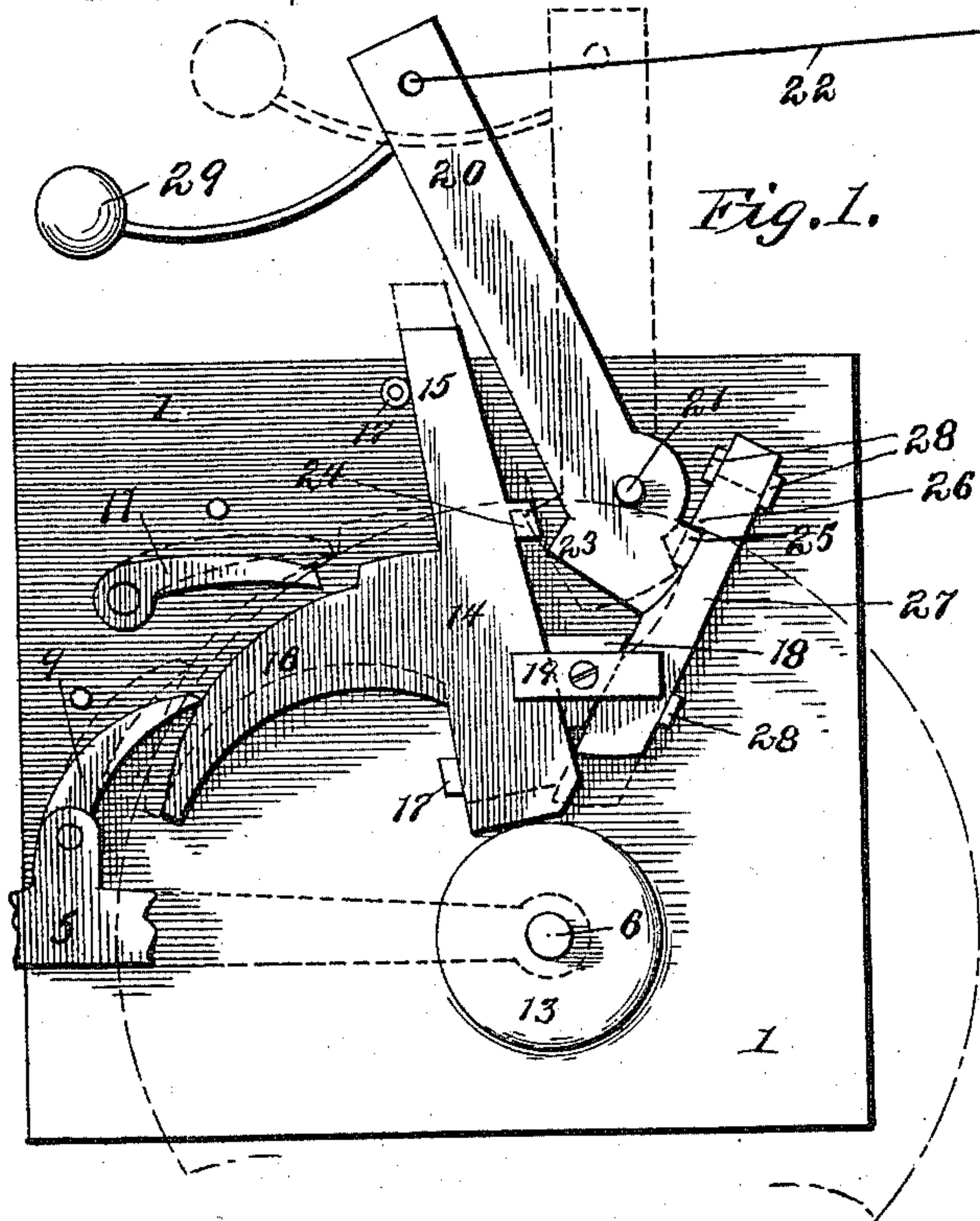


Fig. 2.

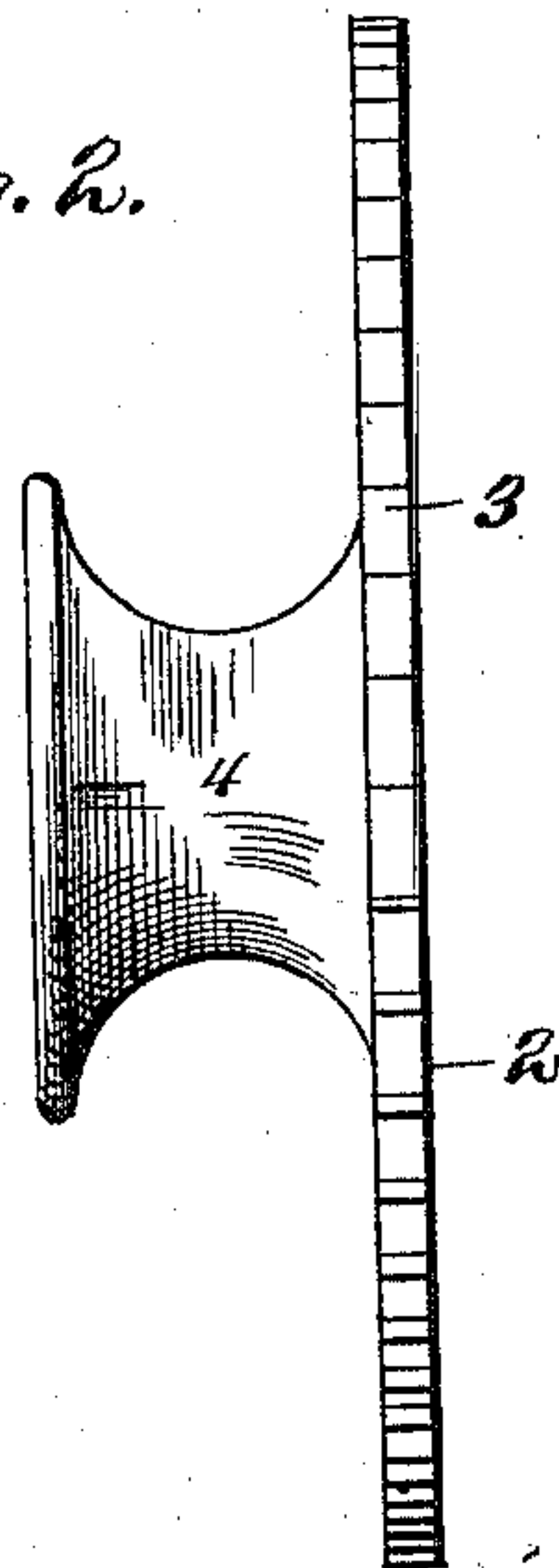


Fig. 4.

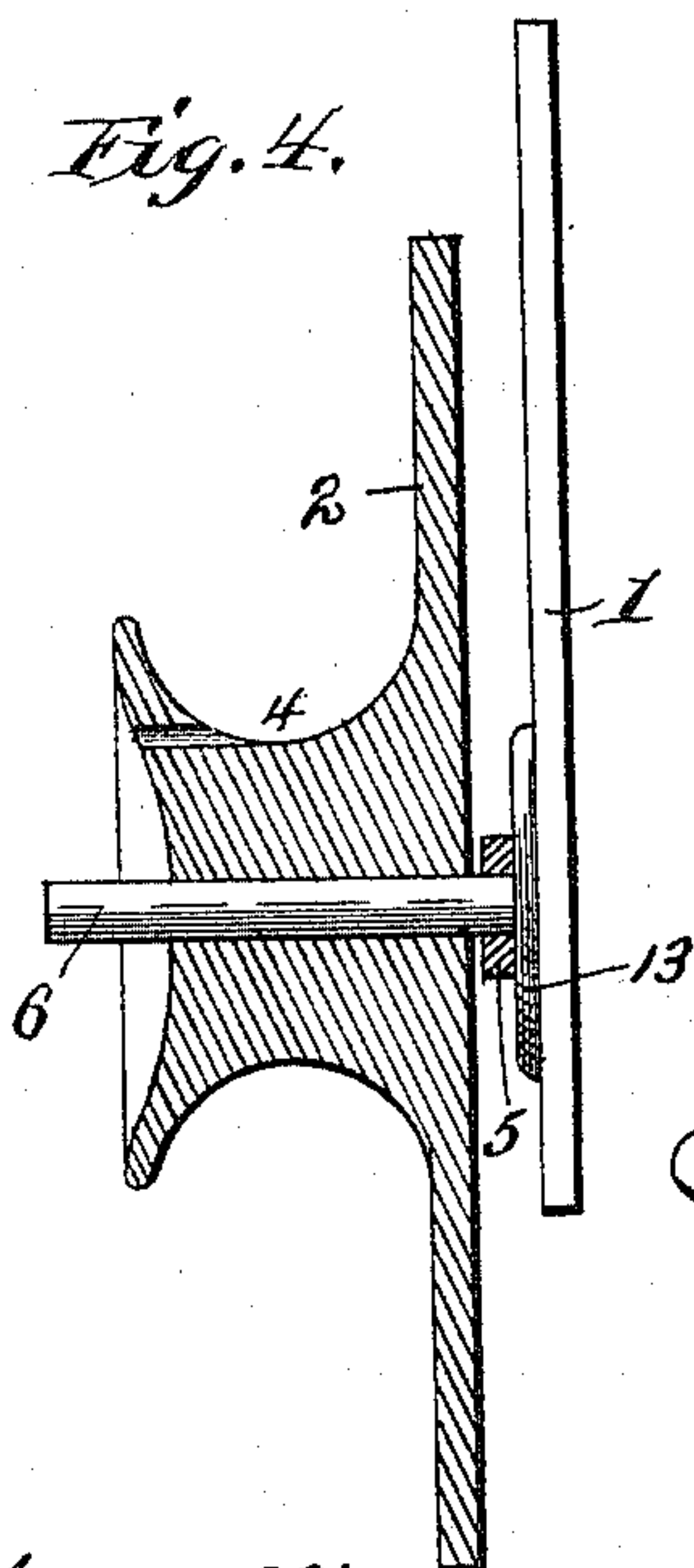
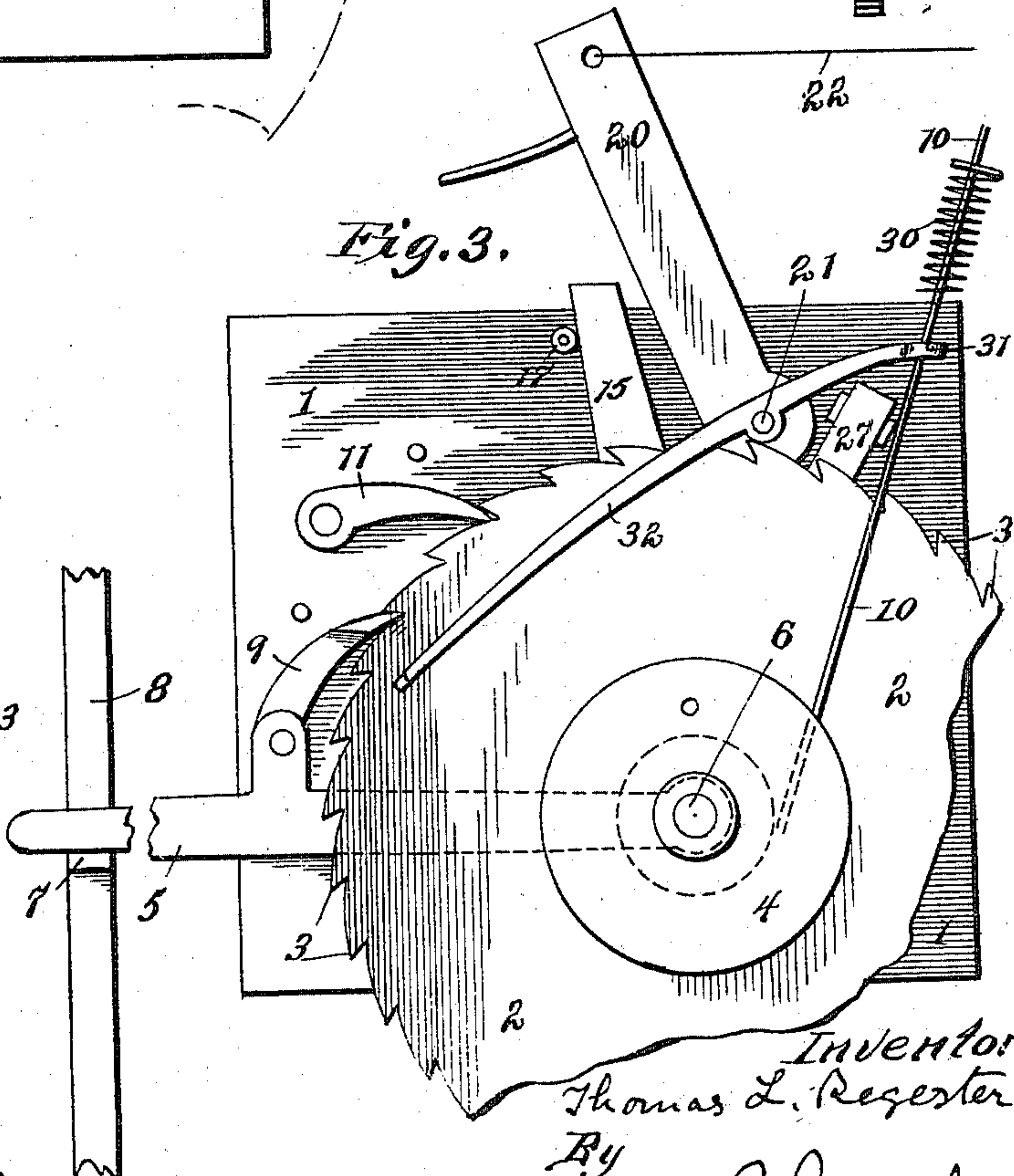


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS L. REGESTER, OF STERLING, ILLINOIS, ASSIGNOR TO THE NOVELTY MANUFACTURING COMPANY, OF ROCK ISLAND, ILLINOIS.

AUTOMATIC REGULATOR FOR WIND-WHEELS.

SPECIFICATION forming part of Letters Patent No. 580,532, dated April 13, 1897.

Application filed December 12, 1895. Serial No. 571,870. (No model.)

To all whom it may concern:

Be it known that I, THOMAS L. 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 Wind-Wheels; 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 figures of reference marked thereon, which form a part of this specification.

My invention has reference to improvements in automatic regulators for windmills; and it consists in certain new and useful devices by which the mill has its operation suspended by drawing the wheel out of the wind, and the wheel again allowed to swing into the wind, and the wheel to recommence work as the height of the water in the tank may from time to time require. The mechanism referred to is operated or released through the agency of a float carried on the water of the tank. As the construction of the tower and wheel, as well as that of the tank and the float therein, may be of any of the usual forms, and my invention be applicable to all, I do not deem it necessary to show or describe any more of the parts than will render intelligible the construction, interrelation, attachment, and operation of my invention.

I attain the object aforesaid by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the position of the lower end of the float-lever in relation to the trip for releasing the pawls which respectively operate and retain the winding-drum hereinafter named. Fig. 2 is a side view of the winding-drum referred to and which has been removed from its place in Fig. 1 so as not to obscure the parts shown in said figure which normally lie behind said drum. Fig. 3 is a side view of the parts in position for use. Fig. 4 is a detail in section of the attachment of the pivoted end of the lever actuated by the pump-rod.

Similar numerals refer to similar parts throughout the different views.

Referring to Fig. 3, the plate 1 is suitably fastened to a cross-beam attached to any convenient portion of the tower. The wheel 2 is suitably pivoted on the plate 1 and provided on its perimeter with the ratchet-teeth 3 and on its side with the rope-winding sheave 4. The lever 5 is pivoted at one end on the post 6, which forms the pivotal seat of the wheel 2, and is projected beyond the plate 1 into position to be engaged near its opposite and free end by lugs 7, formed on the usual vertical pump-rod 8. Actuating-pawl 9, seated on the lever 5, engages the teeth 3 of wheel 2 successively as the free end of lever 5 is oscillated in a vertical plane by the pump-rod 8, and thus intermittently rotates said wheel for the purpose of winding on sheave 4 the lower end of the rope 10, the upper end of which is attached in the usual way to the wind-wheel to draw the latter out of the wind. The retaining-pawl 11 is seated on the plate 1 and engages the teeth 3 alternately with pawl 9 to prevent the retrogression of said wheel 2.

The main purpose of my invention is to cause the wind-wheel to actuate the wheel 2 and draw said wind-wheel out of the wind through the medium of rope 10 when the water-tank is sufficiently full, to disengage pawl 9 after the rope 10 is wound up, so as to preclude any casual starting of the wind-wheel to attempt any further winding of wheel 2, and to release pawl 11 and allow the rope 10 to unwind and the wheel to swing into operative position when the water in the tank has been depleted to a predetermined depth.

Referring to Fig. 1, the post 6 furnishes the pivot for both the wheel 2 and lever 5, and is preferably formed with a swelled base 13. The trip 14 is formed with a vertical portion 15 and a lateral arm 16. It is adapted to reciprocate vertically, being held between ways or studs 17 and the opposing triangular stud 18, all formed on plate 1, and is held in place by a short cross-plate 19, riveted on stud 18. The oscillating float-lever 20 is pivoted at its lower end on stud 21, formed on plate 1, and projecting upward therefrom is connected at its upper end, by means of the wire 22, in any suitable manner to the usual float in the

water-tank. Near the lower end of lever 20, at the side adjacent to the trip 14, is formed a flange 23, adapted to engage a stud 24, formed on the adjacent side of trip 14. A similar flange 25 is formed on the opposite side of lever 20 in position to engage a recess 26, formed in the edge of the key 27, the latter being set in ways 28 and the opposite face of the triangular stud 18, and held also by the plate 19. The parts, as shown in full lines in Fig. 1, are as in position when the tank being full of water and the wire 22 thereby slackened the counterpoise 29 has thrown the upper end of lever 20 to the left and dropped trip 14, thereby permitting the pawl 9 to engage the teeth 3 and through the successive vertical oscillations of the lever 5, occasioned by the pump-rod 8, wind the wire 10 upon the sheave 4, and thereby draw the wind-wheel out of the wind and suspend the further action of said wheel; but lest some sudden change in the wind should casually start the wind-wheel, and thereby further wind on sheave 4, with the probability of breaking the machine, I provide on the rope 10 a coiled spring 30 or other protuberance or enlargement at such point that when said rope has drawn the wind-wheel entirely out of the wind the lower end of the spring 30 will engage the top of an eye 31 on the end of an arm 32, (through which eye the rope 10 passes,) and said arm being pivoted at 21 on the vertical lever 20 the result will be that the opposite end of arm 32 will be raised and suspended, carrying with it upward the free end of the pawl 9 and holding the latter out of engagement with the teeth 3, when any further casual movement of the lever 5 will be harmless because not imparted to the wheel 2. The pawl 9 extends laterally beyond the side of the wheel 2, so that arm 31 in passing outward over the face of said wheel engages such extension.

As the water recedes in the tank, the float, which has more weight than the counterpoise 29, gradually, through the medium of the wire 22, draws the upper end of the lever 20 to the right or from the pump-rod 8, in which movement the flange or ledge 23 of lever 20 engages the under surface of the lug 24 on trip 14, and the continuation of said movement of lever 20 lifts the trip 14 upward and into the position shown in dotted lines in Fig. 1. Meanwhile the key 27, having been permitted to drop by its own gravity, projects slightly below the lower end of said trip and holds the latter in its said elevated position. In this upward movement of the trip 14 the arm 16 thereon engages and lifts out of engagement, with the teeth 3, both pawls 9 and 11, and holds said pawls thus suspended. This permits the wheel 2 to rotate backward and the rope 10 to unwind therefrom as the wind-wheel swings into the wind. So long as the trip 14 is held by the key 27 in said elevated position the oscillations of lever 5 will have no effect on wheel 2, because both of the pawls

9 and 11 are held out of engagement with said wheel and pawl 9 simply slides on the arm 16 of said trip. The pump is now working, and as the water rises in the tank it slackens the wire 22 by lifting the float and permits the counterpoise 29 to gradually draw the lever 20 into the position shown in full lines in Fig. 1, when the ledge 25 of said lever engaging the recess 26 of key 27 draws the latter from beneath the trip 14 and permits said trip to drop, carrying its arm 16 down behind the wheel 2 and allowing the pawls 9 and 11 to again engage the teeth 3, when the further action of the pump will gradually wind the rope 10 around the wheel 4 and draw the wind-wheel out of the wind and suspend its action, as before described.

The advantage of my invention is that it furnishes a positive and exact automatic means of adjusting the operation of the pump to the demand for water in the tank. It has no springs in its operative parts and dispenses with the usual notched bar.

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

1. In combination, a lever 20 provided with a counterpoise 29 and ledges 23 and 25, a rope 10 suitably attached at its upper end to the wind-wheel, a wheel 2 provided with peripheral notches or teeth 3, and sheave 4 attached to and adapted to wind the lower portion of said rope, a lever 5 adapted to be oscillated in a vertical plane by the usual pump-rod, and provided with pawl 9 and adapted to successively engage the teeth 3, a retaining-pawl 11, a trip 14 provided with arm 16 and lug 24, and a key 27 provided with a recess 26 substantially as shown and for the purpose set forth.

2. In an automatic regulator for windmills, a wheel provided with peripheral teeth 3, and sheave 4, a lever 5 adapted to be oscillated by the usual pump-rod, a pawl pivotally secured thereto in position to engage the teeth 3, a retaining pawl or detent situated upon some portion of the machine in position to engage the teeth 3, a rope connected with said sheave, a longitudinally-movable trip 14, provided with an arm 16 upon one edge and a lug 24 upon the opposite edge, the arm extending under the free ends of said pawls, and an oscillating counterbalanced lever 20 provided with a flange or ledge 23, for engaging with the lug 24 and moving the trip, substantially as set forth.

3. The combination of the pivoted arm 32 provided with the eye 31, the wheel-withdrawing rope 10, means substantially as shown for winding said rope, a spring 30 seated on said rope and adapted to engage the eye 31 and elevate the opposite end of said arm and intermit the action of the pawl 9 which operates said winding mechanism, substantially as shown and for the purpose described.

4. In an automatic regulator for windmills, a winding-wheel adapted to wind the usual

wheel-withdrawing rope 10 an actuating-lever 5 provided with pawl 9 adapted to engage and rotate said wheel, a longitudinally-movable trip 14 adapted to intermittently suspend the action of said pawl, a longitudinally-movable key 27 for locking the lever, substantially as shown and for the purpose described.

5. In combination with the usual wind-wheel-withdrawing rope 10 provided with the stop 30, a wheel 2 adapted to wind said rope, a pawl adapted to rotate said wheel, and a

pivoted arm 32 adapted to be actuated by said stop 30 and raise and hold said pawl out of engagement, substantially as shown and for the purpose described.

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

THOMAS L. REGESTER.

Witnesses:

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CHATTIE L. MANAHAN.