(No Model.) 2 Sheets—Sheet 1.

J. M. LOWE.

WIND WHEEL.

No. 446,783. Patented Feb. 17, 1891.

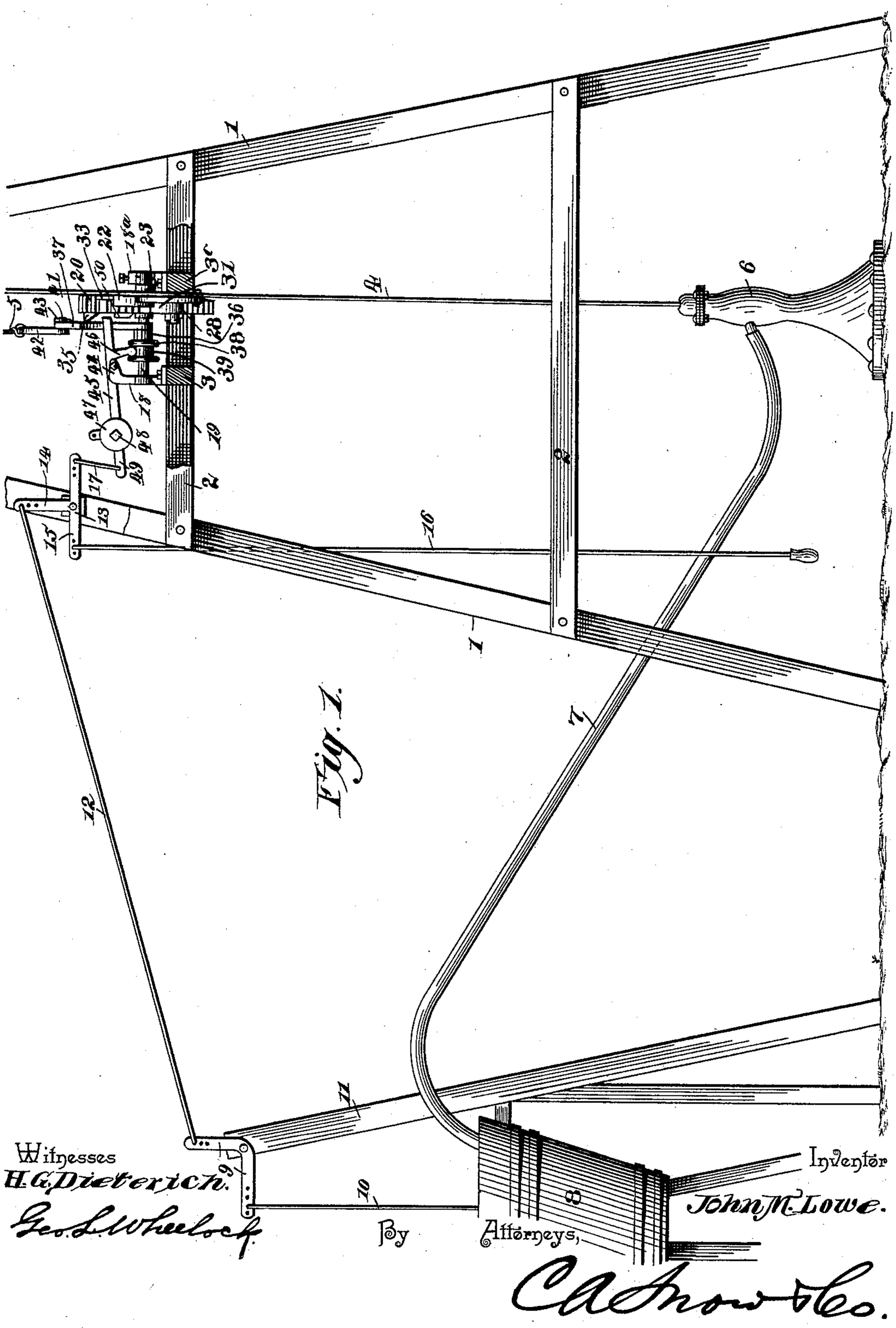

Fig. 1.

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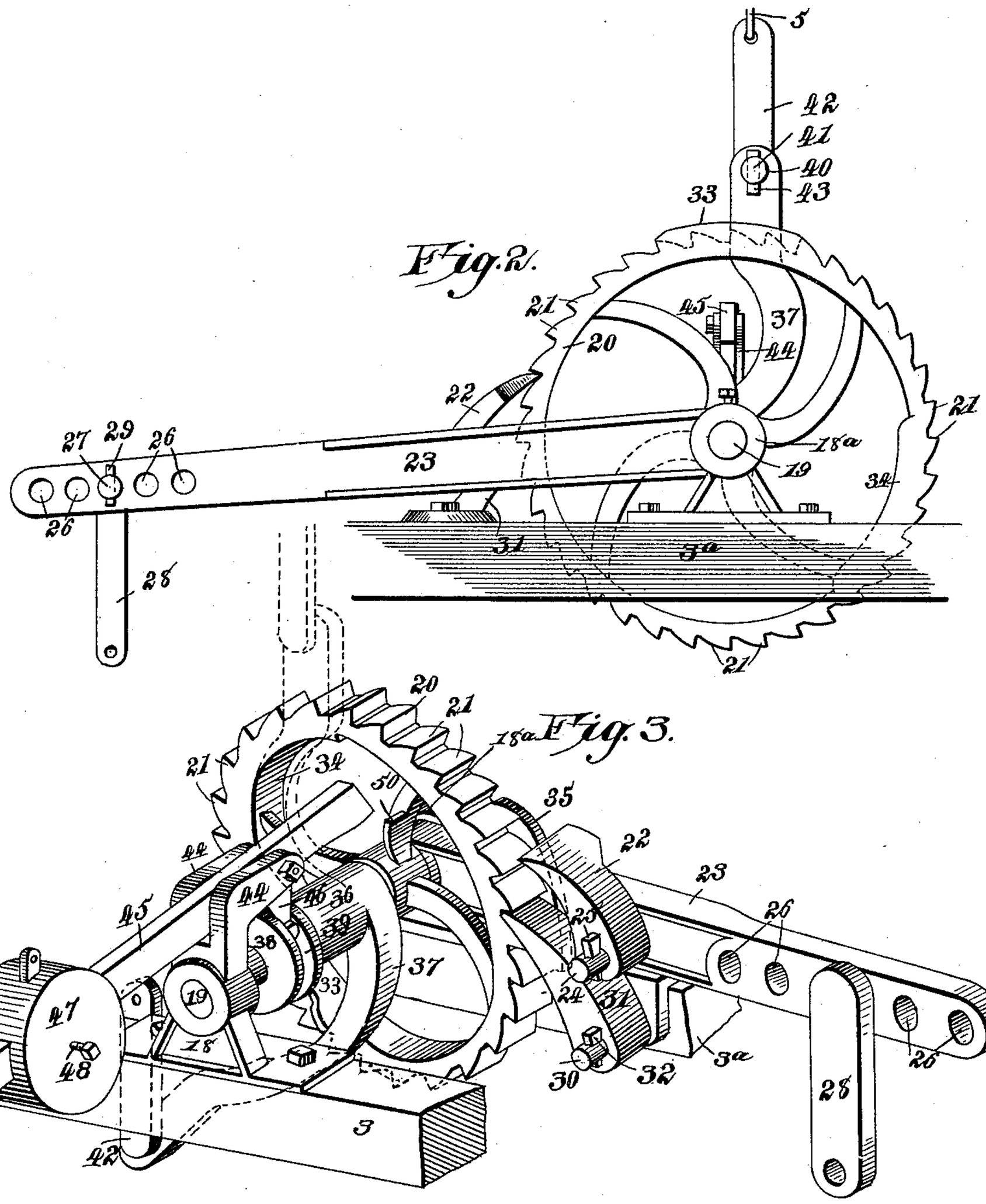

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By his Attorneys,
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UNITED STATES PATENT OFFICE.

JOHN M. LOWE, OF BUTLER, INDIANA.

WIND-WHEEL.

SPECIFICATION forming part of Letters Patent No. 446,783, dated February 17, 1891.

Application filed September 19, 1890. Serial No. 365,487. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. LOWE, a citizen of the United States, residing at Butler, in the county of De Kalb and State of Indiana, have invented a new and useful Windmill, of which the following is a specification.

My invention relates to improvements in regulators for windmills, which regulator is simple, durable, and effective, and has no springs to wear out or weaken; and it consists in certain features of novelty to be hereinafter described, and then pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation showing a windmill plant for pumping water, the derrick being shown in section, with my improved regulator attached. Fig. 2 is a side view of the regulator. Fig. 3 is a perspective view, looking toward the inner side of the ratchet-wheel, of the regulator.

1 represents the derrick having the side bars 2, to which are secured the supporting-bars 3 3ª of the regulator. The windmill is not shown; but I have shown the pump-rod 4 and the wire 5, which is adapted to throw the windmill in and out of gear.

6 is a pump having pipe connection 7 with an elevated tank 8, said tank having within it a suitable float. (Not shown.) Said float is suspended from the lower end of a bell-crank lever 9 by means of the wire connection 10, said bell-crank being pivoted to a post 11, that is inclined or extends over the tank 8. The upper end of the bell-crank lever 9 is attached to the upwardly-extending stem 14 of a T-lever 13 by means of a connecting-wire 12. To the outer end of the head 15 of the T-lever is secured a pull-cord 16 and to the inner end of which lever is secured a connecting-wire 17.

The regulator consists of the following parts: Extending upwardly from the supporting-bars 3 3ª are lugs or supports 18 18ª, connecting which is a stationary shaft 19, which constitutes a bearing for several parts of the regulator. Between the side bars 3 3ª and at one end of shaft 19 is a large ratchet-wheel 20, having teeth 21, which are presented toward a pawl 22 of a horizontal lever 23 in such a manner as to be engaged by said pawl when the lever is moved up and down. Said lever is fulcrumed on the shaft 19, and said pawl is pivoted on a stud 24, projecting from one side of the lever, and retained thereon by a cotter-key 25, which passes through the end of said stud. The outer end of the lever is provided with a series of holes 26, in either one of which fits a stud 27, projecting from one end of link 28, said link being retained in the opening to which it is applied by a cotter-key 29, passing through the end of its stud. The other end of said link is pivotally connected with the pump-rod 4, and as said link may swing back and forth on its pivot when the pump-rod is reciprocated it will not in any manner interfere with the vertical movement of said rod. Pivoted on a stud 30, projecting from the bar 3ª, is a detent or pawl 31, which engages the teeth of the ratchet-wheel, and which is retained on said stud by a cotter-key 32, passing through the end of the stud. There are at about equal distances apart on the ratchet-wheel 20 and formed integral therewith a lug 33, projecting laterally on the inner side of the periphery of the wheel, a weighted portion 34 and a delay portion 35, consisting of a flange at one side of the circumference of the wheel, so as not to interrupt the circular series of ratchet-teeth.

36 is a box or sleeve adapted to slide upon the shaft 19, and which is provided at one end with an upwardly-extending falciform-lever 37, and the other end of which is provided with a pair of circumferential flanges 38, forming between them a groove 39. The free end of the lever 37 is provided with a slot 40, to receive a stud 41, projecting from one end of a link 42, which is retained in either of said openings by means of a cotter-key 43, passing through one end of said stud. The other end of the link 42 is connected with the wire 5, so that the windmill may be thrown automatically into and out of gear.

The support 18 at one end of the shaft 19 is provided with upwardly and inwardly extending paired ears 44, between which is pivoted intermediate of its ends the trip-lever 45, the inner end of which extends nearly to the ratchet-wheel. Projecting from the un-

der side of the lever 45 is a projection 46, the lower end of which is received by the groove 39. The outer end of the link is provided with a sliding weight 47, adjustable thereon by means of a set-screw 48. The wire 17, which is connected at its upper end with the T-lever 13, is secured to the outer end of the trip-lever 45 at 49.

The regulator being constructed as shown and described, its operation will be as follows: The tank 8 being full of water and the windmill out of gear, the parts of the regulator will be in position shown in full lines in Fig. 3—that is, the lug 33 at the side of the ratchet-wheel will be at the bottom of the wheel in engagement with the lever 37, the dog or detent 31 will be in engagement with the middle tooth between the ends of the flange 35, and the pawl 22 of the horizontal lever 23 will be in engagement with the flange or delay portion 35, so that the up-and-down movement of the lever 23 will not cause its pawl to act upon the ratchet-wheel. As the water lowers in the tank, the float (not shown) within it pulls the inner end of the T-lever 13 upwardly through the medium of the connections above described, thus lifting the outer end of the trip-lever 45, which causes the box or sleeve 36 to move toward the support 18, thus releasing the lever 37 from the lug 33 and permitting the windmill-wire 5 to pull the lever up straight and bringing the wind-mill into gear. As soon as the lever 37 is swung up the inner end of the trip-lever 45 will be in engagement with a stop 50, projecting from one side of the ratchet-wheel and the lever remains in engagement with the stop while the windmill is pumping water into the tank. During this time the pawl 22 is out of engagement with the ratchet-teeth, it being in engagement or resting against the delay portion 35. As the tank fills with water, the float is raised, thus causing slack in the wire 17 and permitting the lever 45 to descend by reason of its weight 47, thus forcing the lever 37 over against the ratchet-wheel and freeing the stop 50 from the inner end of said trip-lever. The ratchet-wheel is then free to revolve, its weighted portion turning it until the pawl 22 of the lever 23 is brought into engagement with one of the ratchet-wheels. As the ratchet-wheel continues to revolve, the lug 33 forces the lever 37 around and downwardly and pulls the windmill out of gear, as before. In operation the pawl 22 catches in the ratchet-wheel two teeth above the pawl or detent 31. The stroke of the lever 23 is adjustable, as shown, to accommodate itself to different strokes of the pump-rod.

The hand trip-wire 16 is in all cases attached to the outer end of the T-lever and hangs down within convenient reach, so that the windmill may be tripped by hand, if desired.

Should the tank be below the derrick 1 and not removed therefrom, as shown in Fig. 1, a float would be attached to the lower end of wire 16, the parts necessary for the operation of the tank shown being of course dispensed with.

What I claim is—

1. In a regulator for windmills, the combination, with a ratchet-wheel provided with a portion of a flange on one side of its periphery, a shaft on which the wheel is mounted, and devices controlled by said wheel for automatically throwing the windmill out of gear, of a pawl adapted to engage one of the ratchet-teeth when the wheel is at rest midway between the ends of said flange portion, a horizontal lever fulcrumed on said shaft and adapted for connection at its outer end with the pump-rod, and a pawl pivoted to said lever and adapted to rest upon said flanged portion, substantially as and for the purpose set forth.

2. In a windmill-regulator, the combination of a shaft, a ratchet-wheel mounted loosely thereon, means for turning said wheel, a lug projecting from one side of the periphery of said wheel, a sliding sleeve on the shaft provided with a lever having a pivoted link at its outer end adapted for connection with the wire for throwing the windmill into and out of gear, and a trip-lever adapted to slide the sleeve on its shaft, thus throwing aforesaid lever out of engagement with said lug, substantially as set forth.

3. In a windmill-regulator, the combination of a shaft, a wheel mounted loosely on said shaft and provided with a lug on one side of its periphery, a sliding sleeve on said shaft provided with a groove at one end and a lever at the other end adapted for connection with the wire that throws the windmill into and out of gear and engaged by said lug, and a trip-lever provided with a projection for engagement in said groove, substantially as set forth.

4. In a windmill-regulator, the combination of a shaft, a wheel mounted loosely on said shaft and provided with a lug on one side of its periphery, a sliding sleeve on said shaft provided with circumferential flanges at one end, forming a groove between them, and a lever at the other end adapted to be connected with the wire that throws the windmill into and out of gear and engaged by said lug, and a trip-lever provided with a pendent projection for engagement with the groove between said flanges, substantially as set forth.

5. In a windmill-regulator, the combination of a shaft, a ratchet-wheel mounted loosely on said shaft, means for turning said ratchet-wheel, a sliding sleeve on said shaft, a lever projecting from said sleeve and adapted to be moved by said wheel, a trip-lever, means in connection therewith for sliding said sleeve on its shaft, and a stop on the wheel adapted to engage the inner end of said trip-lever, substantially as and for the purpose set forth.

6. In a windmill-regulator, the combination of a shaft, a wheel mounted loosely on said

shaft and provided with a lug on one side of its periphery, a sliding sleeve on said shaft provided with a groove at one end and a lever at the other end adapted for connection with a wire which throws the windmill into and out of gear and engaged by said lug, a pivoted trip-lever having a projection received by said groove, and a stop on one side of the wheel adapted to engage the inner end of the trip-lever, substantially as set forth.

7. In a windmill-regulator, the combination of a ratchet-wheel, a shaft on which it is mounted, devices controlled by the wheel for automatically throwing the windmill out of gear, said ratchet-wheel having a weighted portion and a blank portion or flange, a horizontal lever adapted for connection with the pump-rod, and a pawl turned by the lever adapted to rest upon said blank portion, all substantially as and for the purpose set forth,

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

JOHN M. LOWE.

Witnesses:
H. J. CROOKS,
J. H. COE.