

No. 719,821.

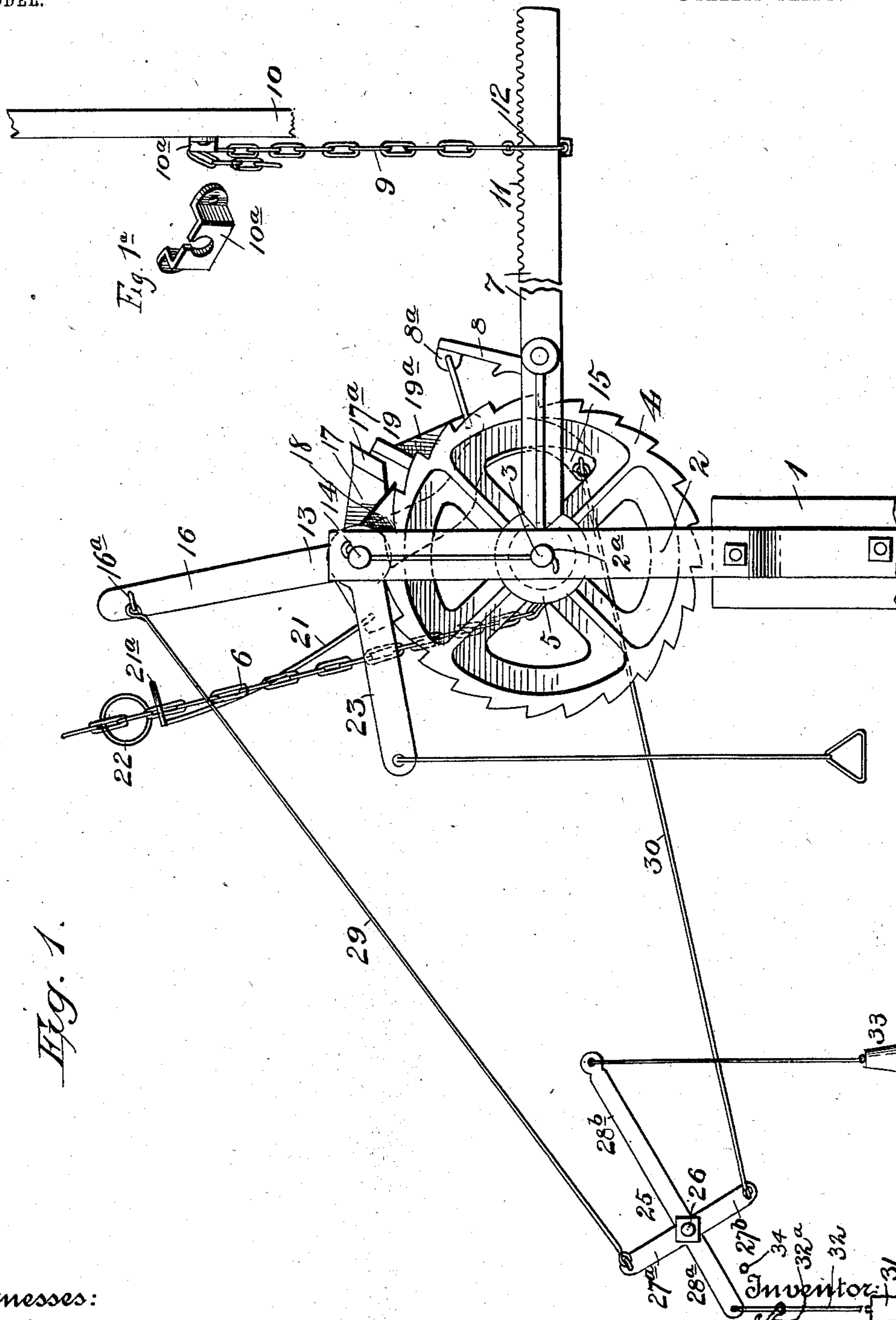
PATENTED FEB. 3, 1903.

K. K. LEROL, JR.
REGULATOR FOR WINDMILLS.

APPLICATION FILED JUNE 9, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
F. L. Orvand.

Frank G. Radelfinger.

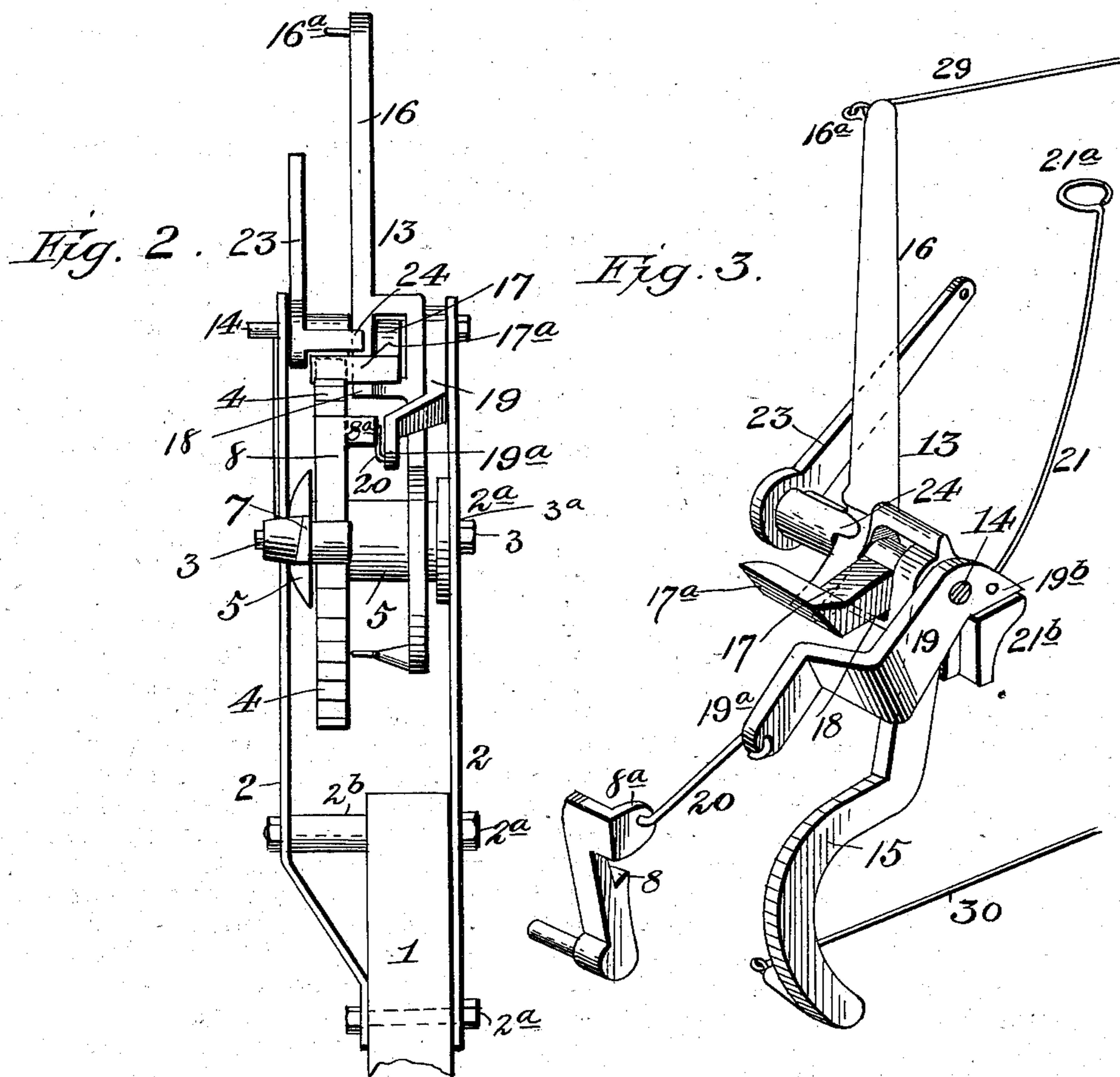
Inventor: K. K. Lerol, Jr.,
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Attorneys.

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F. L. Curand.

Frank L. Radelfinger.

Inventor:
Knud K. Lerol, Jr.,
by *Lawyer* *Rayger & Co.*
Attorneys.

UNITED STATES PATENT OFFICE.

KNUD K. LEROL, JR., OF HIGHLAND, MINNESOTA.

REGULATOR FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 719,821, dated February 3, 1903.

Application filed June 9, 1902. Serial No. 110,893. (No model.)

To all whom it may concern:

Be it known that I, KNUD K. LEROL, Jr., a citizen of the United States, residing at Highland, in the county of Fillmore and State of Minnesota, have invented new and useful Improvements in Regulators for Windmills, of which the following is a specification.

My invention relates to regulators for windmills; and it consists of improvements on my regulator for which Letters Patent No. 661,455, of November 6, 1900, were granted to me.

The simple and novel construction used by me in carrying out my invention is fully described in this specification and claimed, and illustrated in the accompanying drawings, forming a part thereof, in which—

Figure 1 is a front elevation of my device. Fig. 1^a is a detail perspective of the keeper. Fig. 2 is a side elevation of the same. Fig. 3 is a detail perspective.

Like numerals of reference designate like parts in the different views of the drawings.

The numeral 1 designates a support bearing two upwardly-extending parallel bars 2, secured by bolts 2^a, one of which bears a cylinder 2^b. Mounted intermediate the bars 2 and bearing spindle 3, journaled in apertures 3^a in said bars 2, is a ratchet-wheel 4. An enlarged hub 5 is formed on the wheel 4, which hub is constructed to serve as a drum on which a chain 6 is wound. This chain 6 extends upwardly and is connected to operate the mechanism (not shown) for throwing the windmill in and out of the wind. This said mechanism is arranged to turn the mill into the wind when the chain 6 is unwound off the drum 5, to turn the mill out of the wind when the chain is wound up taut on the drum 5, and to maintain a constant pull on the chain when it is so wound up on the drum, which pull is sufficient to unwind the chain from off the drum when the ratchet 4 is left free to turn, all of which will be readily understood by one skilled in the art.

Fulcrumed on one of the spindles 3 is a lever 7, which carries a pivoted pawl 8, located to engage the ratchet 4. The lever 7 is connected by a chain 9 to a keeper 10^a, engaging a vertical pump-rod 10, operated by the windmill. The arm of the lever is provided with graduations 11, by which the clamp 12 for at-

taching the chain 9 is set to regulate the throw of the lever 7.

A lever 13 is fulcrumed on a cross-pin 14, which extends through apertures in the bars 2. The downwardly-extending arm 15 of the lever 13 is curved to adapt it to clear the drum 5. The upwardly-extending arm is designated 16 and carries an eye 16^a for a purpose which will appear. A gravity-pawl 17 is loosely pivoted on the cross-pin 14 and bears a head 17^a, set to normally engage the ratchet 4, and also located just over a lug 18, formed on the lever 13 and designed to engage the pawl to lift it out of engagement with the ratchet 4 when the lever 13 is operated to release the drum 5 to permit the unwinding of the chain 6. A release-lever 19 is also fulcrumed on the cross-pin 14, and one arm 19^a thereof is connected by a link 20 to an ear 8^a, formed on the head of the pawl 8, while the other arm 19^b is pivotally connected to an arm 21, which bears an eye 21^a on its other end, which eye is engaged by the chain 6. A stop 21^b limits the movement of the lever 19 in one direction. A ring 22 is carried by the chain 6 and forms a stop which limits the downward movement of the chain and operates the arm 21 to push down on the arm 19^b to operate the lever 19 to in turn operate the pawl 8 to disengage it from the ratchet 4 and stop the operation of the ratchet by the pump-rod 10. A trip-lever 23 is fulcrumed on the pin 14 and bears a lug 24, located to engage the arm 16 to operate the lever 13 to release the drum 5 to throw both pawls 8 and 17 out of engagement with the ratchet to release it and permit the chain 6 to pay out to release the mechanism to start the mill.

A four-armed lever 25 is fulcrumed on a stud 26, located adjacent to the ratchet mechanism. This lever has two pairs of oppositely-extending arms the members of which are designated 27^a 27^b and 28^a and 28^b, respectively. The arm 27^a is connected by a wire 29 to the arm 16 and the arm 27^b is connected by a wire 30 to the arm 15. A float 31 is connected by a wire 32 to the arm 28^a and is located within a water-tank. The wire 32 has a hook 32^a therein, which can be engaged on a pin 34. A counterpoise 33 is suspended

from the arm 28^b. The pin 34 serves as a stop to limit the downward movement of the arm 28^a and the float 31.

The operation of my device can now be
5 sketched.

We will suppose that the water in the tank has reached the low-water mark. This will cause the float 31 to lower the arm 28^a, pull the wire 29 taut, and operate the lever 13 to
10 release the drum 5 to cause the lug 18 to engage the gravity-pawl 17 to throw it out of engagement with the ratchet 4, and thereby release the ratchet and permit the chain 6 to unwind from the drum 5 and release the mech-
15 anism for throwing the mill into the wind, as before set forth. When the tank has been filled, the rising of the float 31 will lower the counterpoise 33 to operate the lever 25 to pull the wire 30 taut and operate the lever 13 to
20 simultaneously release both of the pawls 8 and 17 to bring them into engagement with the ratchet 4. Since the pump-rod 10 is reciprocating, it will operate the lever 7 to turn the ratchet one or more teeth, depending
25 on the position of the clamp 12 at each upward movement. The pawl 17 will prevent backward movement of the ratchet and the chain will therefore be wound up on the drum to operate the mechanism for throwing the
30 mill out of the wind. Simultaneously with the turning of the mill out of the wind the stop-ring 22 will engage the arm 21 to operate the release-lever 19 to disengage the pawl 8. The pawl 17 will retain its hold and pre-
35 vent the unwinding of the chain 6 until the float again reaches its lowermost position.

If it is desired to start the mill before the water is down to low mark, it is only necessary to pull down on the wire 23^a, connected
40 to the trip, when the lever 13 will be operated to release the chain 6 to start the mill. The mill may also be stopped when desired by pulling down the poise 33 and engaging the hook 32^a thereon on the pin 34. This ac-
45 tion will operate the device the same as when the tank is filled and stop the mill. Care must be taken to release the wire 32 when you wish the mill to start.

I do not wish to be limited as to details of
50 construction, as these may be modified in many particulars without departing from the spirit of my invention.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a windmill-regulator, the combination of a ratchet-wheel, a lever-arm bearing a pawl engaging said ratchet, an adjustable clip mounted on said lever-arm, and a flexible member connected at one end to said clip and
60 adapted to be detachably connected at any point to a pump-rod, substantially as described.

2. In a windmill-regulator, the combination with a ratchet-wheel bearing a drum, of a lever bearing a pawl located to normally en-
65 gage said ratchet, said lever being adapted to be connected to a pump-rod, a releasing-lever connected to said pawl, a pusher-arm pivoted to said releasing-lever, and a flexible
70 member passing around said drum and bearing a stop located to engage said pusher-arm to operate said releasing-lever to disengage said pawl from said ratchet, substantially as described.

3. In a windmill-regulator, the combination of a ratchet-wheel bearing a drum, of a lever bearing a pawl normally engaging said
75 ratchet, said lever being adapted to be operated by a pump-rod, a release-lever, means
80 for connecting said release-lever and said pawl, a pusher-arm pivoted to said release-lever and having an eye on its outer end, a flexible member passing around said drum and
85 through said eye, and a stop mounted on said flexible member and located to engage said pusher-arm as said flexible member is wound up on said drum, substantially as described.

4. In a windmill-regulator, the combination of a ratchet-wheel, a lever-arm bearing a pawl
90 engaging said ratchet, a flexible member connected at one end to said lever-arm and constructed to be connected at any point of its length to a point on a pump-rod and a keeper
95 mounted on said pump-rod to serve as an attachment for said chain, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

KNUD K. LEROL, JR.

Witnesses:

M. SCANLAN,
M. BARRETT.