(No Model.) 2 Sheets—Sheet 1.

J. E. VAN SCHAICK.

AUTOMATIC WINDMILL REGULATOR.

No. 458,926. Patented Sept. 1, 1891.

Fig. 4.

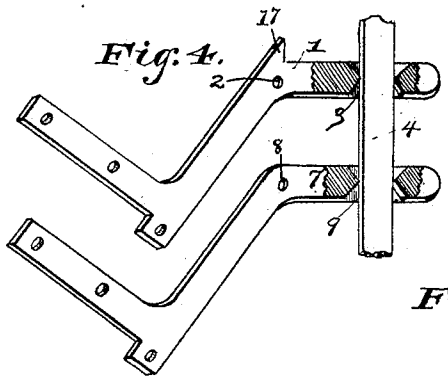


Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

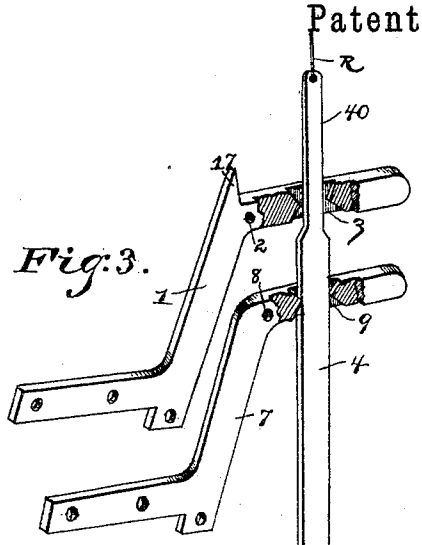


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN E. VAN SCHAICK, OF WALWORTH, WISCONSIN.

AUTOMATIC WINDMILL-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 458,926, dated September 1, 1891.

Application filed January 2, 1891. Serial No. 376,554. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. VAN SCHAICK, a citizen of the United States, residing at Walworth, in the county of Walworth and State of Wisconsin, have invented a new and useful Automatic Windmill-Regulator, of which the following is a specification.

My invention relates to windmills, and is especially adapted to the use of stock-raisers whose supply of drinking-water for stock is pumped by windmills.

The object of my invention is to provide mechanism whereby the power of the windmill is used to draw itself out of the wind when the tank is full and to let the windmill into the wind when the water falls in the tank by the drinking of stock or from other cause. This object I attain by my improved regulator, which consists of the mechanism as hereinafter described at length with reference to the accompanying drawings, in which—

Figure 1 is a view of the regulator in the position that releases the iron rod connected with the regulator-wire, and thereby lets the wind-wheel turn into the wind and permits water to be pumped into the tank. Fig. 2 is a view of the regulator in the position it assumes when the iron rod connected with the regulator-wire is drawn downward, and the wind-wheel thereby drawn out of the wind and the pumping stopped. Fig. 3 is a view of the levers, partly broken away, showing the inside of the clutches in the position they assume when one of them is clutched to the rod, the latter being drawn downward and the wind-wheel out of the wind. Fig. 4 is a view of the levers, partly broken away, showing the inside of the clutches in the position when the iron rod is released, and thereby the regulator-wire released and the wind-wheel in the wind.

Referring to the accompanying drawings, D is a section of the windmill drive-rod, which is vertically reciprocated by the rotation of the wind-wheel.

R is a section of the regulator-wire, a downward pull of which draws the wind-wheel out of the wind, and B is a section of the cross-board in the windmill-tower, used as a guide for the drive-rod D, all as is common in windmills now upon the market.

Coming now to the present invention, 1 is a lever pivoted at 2 to and carried bodily by the drive-rod D, having a clutch 3 at one end adapted to clutch the iron rod 4 and connected at the other end by the wire 5 to the equalizer 6.

7 is a lever pivoted at 8 to the cross-board B, having a clutch 9 at one end adapted to clutch the iron rod 4 and connected at the other end by the wire 10 to the equalizer 6.

4 is an iron rod connected at its upper end with the regulator-wire R, made smaller at its upper end for a short distance, as at 40, for a purpose to be hereinafter described, and of a width or diameter adapted to be engaged by the clutches 3 and 9.

6 is the equalizer, used to equalize the tension on the wires 5 and 10.

11 is a bell-crank lever pivoted at its angle to a support above the tank T, and one of its arms is connected by the wire 13 to the equalizer 6 and the other by the wire 14 to the float 15 within the tank T.

16 is a support for the pivot 2.

17 is a shoulder on the lever 1, and when said shoulder comes in contact with the support 16 the further turning of the lever 1 upon its pivot will be prevented.

With the above construction of parts and the wind-wheel in the wind it will be understood that the drive-rod D is reciprocating and that water is being pumped into the tank T, and when the water in the tank T rises sufficiently the float 15 will rise and the parts will move from the position shown in Fig. 1 to the position shown in Fig. 2. Then the windwheel will be drawn out of the wind and the pumping stopped before the tank overflows. This change of position takes place as follows: As the float 15 rises the tension on the wire 14 will be relaxed, the lever 11 will turn on its pivot, the tensions on the wires 13, 5, and 10 will be relaxed, and the levers 1 and 7, being heavier at the ends connected with the wires 5 and 10 than at the opposite ends, will turn upon their respective pivots 2 and 8 until the clutches 3 and 9 have assumed sufficiently angular positions to clutch the iron rod 4. Then the clutch 3 in its downward movement will clutch the iron rod 4 and at each stroke of the drive-rod D force the iron rod 4 a short distance downward through the latter, and the clutch 9 will

hold the iron rod 4 against returning, the levers turning slightly on their pivots to permit the relatively downward movement of the rod. This will continue until said rod 4 is forced sufficiently downward to bring the small portion 40 of the upper end of the iron rod 4 into the clutch 3. The said small portion of the iron rod 4 being too small to engage the clutch 3, the forcing downward will cease and the wind-wheel will be out of the wind, as shown in Fig. 2, with the tank full of water. Should the drive-rod D be temporarily reciprocated by a side wind on the wind-wheel while out of the wind or by hand, as in the act of pumping manually, the clutch 3 will move freely over the small portion 40 of the iron rod 4 and breakage of parts be avoided.

When the water in the tank T is lowered by the drinking of stock or from other cause, the float 15 will fall and the parts will move from the position shown in Fig. 2 to the position shown in Fig. 1, thus starting the windmill automatically. This change of position takes place as follows: When the water falls in the tank T, the float 15 will fall, the wire 14 will draw downward on the lever 11, the latter 11 will turn on its pivot, the wire 13 will draw upward on the equalizer 6, and the wires 5 and 10 will draw upward, respectively, on the heavy ends of the levers 1 and 7, causing said levers 1 and 7 to turn upon their respective pivots 2 and 8 until the clutches 3 and 9 have assumed a position near enough horizontal to release the iron rod 4. At this time the shoulder 17 will engage the support 16 and prevent further turning of the levers, which might cause them to move so far as to again engage the rod 4. Then the iron rod 4 and the regulator-wire R will move upwardly, as shown in Fig. 1, and let the wind-wheel turn into the wind and the pumping be resumed automatically.

The usefulness of my invention to stock-raisers is thought to be obvious, because it enables them to erect windmills on the farm, in the pasture, and on the ranch that will automatically start the pump when the stock drink from the tank and stop the pump when the tank is full.

I am aware that prior to my invention windmill-regulators have been made connecting a float in the tank with the regulator-wire; but so far as I know they have not come into common use owing to costliness of construction or imperfection of operation.

My regulator is cheap in construction, requires no extra timbers to attach it to a common windmill-tower, requires only a small float, thereby leaving more room for water in the tank, and can be operated in a very shallow tank.

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

1. In a windmill, the combination, with the reciprocating drive-rod, the regulator-wire, and a rod attached to the lower end thereof and having its upper end reduced in size, of weighted levers pivoted near their lighter ends, one to the mill-frame and the other to the drive-rod, clutches in said lighter ends engaging said regulator-rod when the levers are inclined and on the downward movement of the drive-rod, and wires leading from the heavy ends of the levers to a float in the mill-tank, substantially as described.

2. In a windmill, the combination, with the reciprocating drive-rod, the regulator-wire, and a rod attached to the lower end thereof, of weighted levers pivoted near their lighter ends, one to the mill-frame and the other to the drive-rod, the latter lever having a shoulder adjacent its pivot, a support for the pivot on the drive-rod, which support the shoulder strikes when the lever is horizontal, clutches in said lighter ends engaging said regulator-rod when the levers are inclined and on the downward movement of the drive-rod, and wires leading from the heavy ends of the levers to a float in the mill-tank, substantially as described.

3. In a windmill, the combination, with the reciprocating drive-rod, the regulator-wire, and a rod attached to the lower end thereof, of weighted levers pivoted near their lighter ends, one to the mill-frame and the other to the drive-rod, clutches in said lighter ends engaging said regulator-rod when the levers are inclined and on the downward movement of the drive-rod, wires leading from the heavy ends of the levers to the ends of an equalizer, a bell-crank lever pivoted to the mill-frame, a float in the tank, and wires connecting one arm of said bell-crank lever with the float and the other with the center of the equalizer, substantially as described.

4. In a windmill, the combination, with the reciprocating drive-rod, the regulator-wire, and a rod attached to the lower end thereof, of weighted levers pivoted near their lighter ends, one to the mill-frame and the other the drive-rod, the latter lever having a shoulder adjacent its pivot, a support for the pivot on the drive-rod, which support the shoulder strikes when the lever is horizontal, clutches in said lighter ends engaging said regulator-rod when the levers are inclined and on the downward movement of the drive-rod, wires leading from the heavy ends of the levers to the ends of an equalizer, a bell-crank lever pivoted to the mill-frame, a float in the tank, and wires connecting one arm of said bell-crank lever with the float and the other with the center of the equalizer, substantially as described.

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

JOHN E. VAN SCHAICK.

Witnesses:
JAMES M. MILLARD,
ANNA M. READ.