

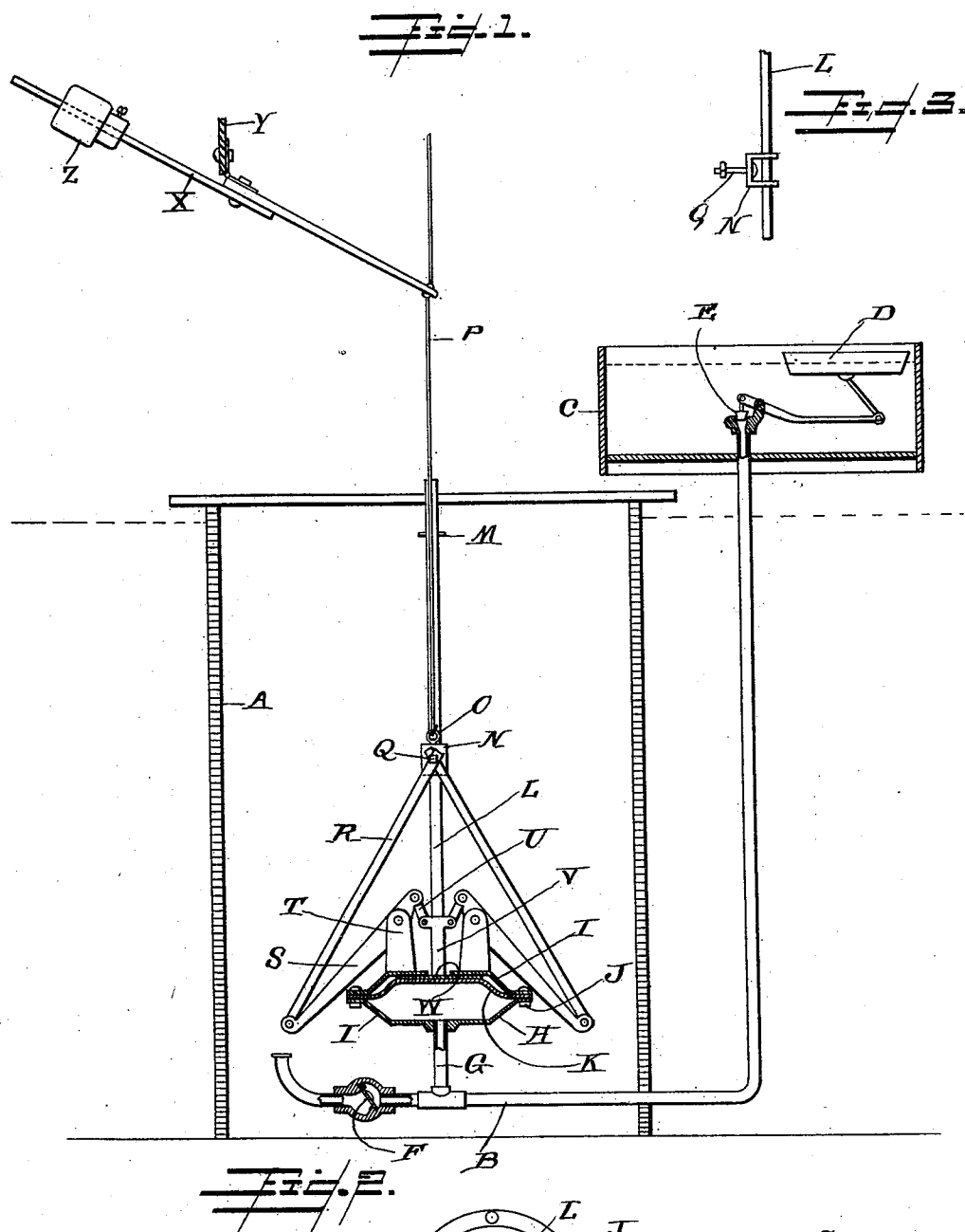
(No Model.)

J. B. GORRELL & A. W. CLAY.

AUTOMATIC WINDMILL REGULATOR.

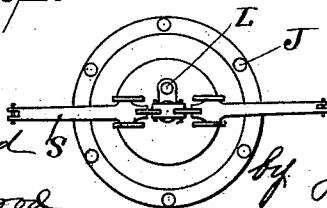
No. 469,738.

Patented Mar. 1. 1892.



Witnesses

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Inventors

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UNITED STATES PATENT OFFICE.

JOHN B. GORRELL AND ADAM W. CLAY, OF LA OTTO, INDIANA.

AUTOMATIC WINDMILL-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 469,738, dated March 1, 1892.

Application filed December 19, 1890. Serial No. 375,177. (No model.)

To all whom it may concern:

Be it known that we, JOHN B. GORRELL and ADAM W. CLAY, citizens of the United States, residing at La Otto, in the county of Noble and State of Indiana, have invented certain new and useful Improvements in Windmill-Regulators; and we 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.

Our invention relates to improvements in automatic windmill-regulators; and it consists in certain novel features, as will be hereinafter described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a side elevation, partly in section, of our improved apparatus. Fig. 2 is a plan view of the regulator, and Fig. 3 is a detail view.

In carrying out our invention we employ a reservoir or casing A, which is arranged in the ground and in which the pump operated by the windmill is set up, and at the bottom of this casing we provide the discharge-pipe B, which connects with the delivery-pipe of the pump and extends upward to the tank C, and in the said tank we arrange a float D, designed to operate a valve E in the upper end of the said pipe by the rising and falling of the water in the tank, in the usual manner, as will be readily understood.

Near the point where the pipe B connects with the delivery-pipe of the pump we provide in the said pipe B a check-valve F, which is so arranged as to permit the water to flow from the pump, through the pipe B, to the tank, but also to prevent it from flowing in the opposite direction when the pump is inclined to leak. Near the said valve, and between the same and the vertical branch of the pipe B, we arrange a short vertical pipe G, which extends upward to a cylinder H, which is composed of the substantially-convex disks I I, connected and secured together by bolts J, said bolts also serving to clamp an elastic diaphragm K between the said disks.

L designates a vertically-disposed guide-rod, which is arranged within the casing A and extends through the top of the same, so

that it will not be affected by the warping of the said top, and the said guide-rod is provided near its upper end with lateral stops M, the function of which will hereinafter appear. A slide N is mounted on this guide-rod L, and carries an eye or ring O, to which the lower end of the rope or rod P, which controls the wind-wheel, is secured. To this slide N we pivot, by means of a bolt Q, the upper ends of the links R, the lower ends of which are pivoted to the outer ends of levers S, as clearly shown. These levers S are fulcrumed on posts or standards T, erected on the cylinder H, and the inner ends of the levers are connected by short links U to the upper end of the plunger V, having a presser plate or head W at its lower end, which bears on the diaphragm K.

X designates a lever, which is fulcrumed on one of the beams Y of the wind-wheel tower and is provided with an adjustable weight Z, so as to vary the resistance, as may be desired. The rod or rope P is attached to the inner end of this lever and extends upward to the wheel, as will be readily understood.

In practice, when the tank C is empty, the float B will fall, and consequently the upper end of the pipe B will be open. The water passing from the pump will flow through the pipe B and fill the same and the cylinder H, and will rise through the pipe B and escape therefrom into the tank. The water will not fill the cylinder H at once to cause pressure, but will flow through the pipe B into the tank, and as the tank becomes filled the float will rise and operate the valve to close the said pipe B. The water will consequently be caused to back up in the pipe and the cylinder H, and will lift the diaphragm K, so as to push upward on the plunger V, and thereby operate the levers S and links R, so as to draw downward on the slide N, thus pulling the rod or rope P, so as to throw the wheel out of gear. As the water is used from the tank, the pipe B will of course be opened, and the water in the said pipe being thus free to escape, the weight Z will cause the lever X to swing upon its fulcrum, and thus force the water out of the cylinder into the tank, and at the same time slacken the rope or rod P, and consequently allow the wheel to go into

the wind. The device will thus be again set in operation and the pump caused to force water into the tank.

It will be observed that our device is composed of very few parts, which are compactly arranged, and that it is entirely automatic and efficient in its operation, so that a constant supply of water will be maintained in the tank without any attention on the part of the operator. The guide-rod L serves to hold the connections between the piston or plunger and the slide in their proper positions and to prevent bending or twisting of the said parts, while the lateral stops on the guide-rod prevent the slide moving upward so far as to cause the parts to bind and bend. The construction of the cylinder H is such that a new diaphragm may be easily inserted when the old one is worn out, and the advantages of the device are thought to be obvious without further detailed reference thereto.

Having thus described our invention, what we claim herein as new, and desire to secure by Letters Patent, is—

1. A windmill-regulator consisting, essentially, of the cylinder situated in a tank or reservoir and having a flexible diaphragm, a pipe depending from said cylinder and provided with a T-coupling at its lower end, a pipe connecting one branch of the said T-coupling with a pump, a check-valve arranged in said pipe, a pipe connecting the other branch of the T-coupling with a float-tank, a float mounted in said tank and connected with a valve adapted to plug the end of said pipe, a guide-rod rising from the upper side of the cylinder in the reservoir, a slide mounted in said guide-rod, a cord or rod connecting said slide and the

wind-wheel, a plunger situated within the cylinder above the diaphragm therein, a rod connected to and rising from the plunger, standards rising from the cylinder at the sides of the plunger-rod, levers fulcrumed in said standards and having their inner ends connected by links to the plunger-rod, and links connecting the outer ends of said levers and the slide upon the upright guide-rod, all adapted to operate substantially as and for the purpose set forth.

2. In a windmill-regulator, the combination of a cylinder arranged within a reservoir and connected by pipes with a pump and a float-tank, a float in said tank connected to and adapted to operate a valve to plug the end of the pipe discharging in the tank, a guide-rod rising from the cylinder in the reservoir, a slide mounted on said guide-rod, a flexible diaphragm arranged in the cylinder, a plunger arranged in the cylinder above the diaphragm, a rod rising from said plunger, standards rising from the cylinder, levers fulcrumed on said standards and having their inner ends connected by links to the plunger-rod, links connecting the outer ends of said levers and the slide upon the guide-rod, a rod connecting said slide and the wind-wheel, and a lever carrying a balance-weight connected at one end to the said rod, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN B. GORRELL.
ADAM W. CLAY.

Witnesses:

S. L. WHONSETTEE,
PETER CLAY.