

UNITED STATES PATENT OFFICE.

CHARLES BARNES, OF WEST LIBERTY, IOWA.

WINDMILL-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 456,264, dated July 21, 1891.

Application filed October 31, 1890. Serial No. 369,881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BARNES, a citizen of the United States, residing at West Liberty, in the county of Muscatine and State of Iowa, have invented a new and useful Windmill-Regulator, of which the following is a specification.

This invention relates to windmill-regulators; and the object of the same is to provide a device wherein the motion of the wind-wheel and the action of the pump-rod will have no effect when the water in the tank is low, but will gradually throw the wheel out of operation when the tank is nearly full.

To this end the invention consists of the specific details of construction hereinafter described and claimed, and as illustrated in the drawings, in which—

Figure 1 is a vertical section of my improved regulator in place on the windmill frame-work, with the parts in position as when the tank is being filled. Fig. 2 is a similar view of the regulator proper when the tank is full and the device is moving the wheel out of the wind. Fig. 3 is a plan view with the roof of the regulator-case removed. Fig. 4 is a detail in perspective of the pump-rod, the regulator-beam, the link connecting them, and the operating-pawl. Figs. 5 and 6 are perspective details of the regulator-drum and the catch-lifting bar.

Referring to the said drawings, 11 is a box or casing in which my improved regulator is located and by which it is protected from the elements, such casing being preferably supported by the windmill-frame. Through eyes 20 in this casing reciprocates the pump-rod 5 in the usual manner.

21 is a block having slots 22, through which pass screws or bolts 23 into the body of the pump-rod, whereby the block 21 may be adjusted vertically, and pivoted to this block is a link 6, whose other end is pivotally connected to the regulator-beam 2.

Upon a supporting-base 10, within the casing 11, is mounted the regulating mechanism proper, which comprises the following devices: 1 is a regulator-drum located between a yoke 12 and the base 10 and held in position by the pivot 30, and the periphery of this drum is provided with teeth 31, except at one side, where the teeth are cut away at

32, as best seen in Fig. 5. In a groove 36 around the edge of the drum is wound the regulator-wire L, whereby when the drum is rotated the wire will be drawn upon to stop the motion of the wind-wheel by turning its blades, by moving its tail, or in any other well-known manner. The inner end of the regulator beam 2 is pivotally mounted upon the pin 30, and an operating-catch 3 in the shape of a pawl is pivoted at one end to the beam 2, and rests at its free end upon the ratchet-teeth 31, as shown. A retaining-catch 4 is pivoted to the base 10, and also engages the teeth 31. By this means, when the pump-rod 5 reciprocates and the beam 2 is oscillated around its pivot 30 the operating-catch 3 moves the drum 1 forwardly step by step and the retaining-catch 4 holds the drum while the operating-catch returns to engage the next tooth. In this manner the drum can be rotated until the cut-away portion 32 of the teeth comes under the tips of the catches, when it will cease to be rotated, although the catches continue to move. At this time the regulator-wire L is drawn downwardly sufficiently to completely stop the motion of the wheel.

Pivoted to the base 10 is a bar 7, whose tip *d* is quite heavy, and comprises three upwardly-extending pins or fingers, as best seen in Fig. 6, and between these fingers rest the catches 3 and 4. To the other extremity of this bar is connected a cord *h*, leading over a pulley P to a weight H, and also a cord *g*, leading in the opposite direction over a pulley P' to a float G in the tank Z, which float is heavier than the weight H, although the cord *h* and weight H might be omitted, if the tip *d* is sufficiently heavy.

With the above construction of parts the operation will be as follows: The tank Z being empty and the windmill in motion, the float G is of course near the bottom of the tank, the bar 7 is turned, as is seen in Fig. 1, the catches 3 and 4 are out of engagement with the drum 1, (which may be termed the "regulator" proper,) and the regulator-wire L is slack, so as to permit the motion of the wheel. As the float G rises with the rising water in the tank, the weight H (or the weighted tip *d*) descends, and the bar 7 gradually turns upon its pivot, so that its tip *d* falls slowly

and permits the catches 3 and 4 to descend until they engage the teeth 31 of the drum 1. The operating-catch 3 being still in motion, (communicated from the pump-rod 5 through the block 21, links 6, and beam 2,) as soon as its tip engages the teeth 31 it commences to turn the regulator proper 1 and to draw on the regulating-wire L, and by the time the cut-away portion of the drum has come under the tips of the catches the wind-wheel has been thrown completely out of the wind. The point of connection between the link 6 and the pump-rod 5 may be adjusted by loosening the screws or bolts 23 and moving the block 21, its slots 22 sliding over said screws. By this adjustment the length of movement of the wire L will not be effected, although the points at which said movement commences and finishes will be adjusted. This is to make up for contraction, expansion, and stretching of the wire L, as well as for other adjustments to compensate for variations due to extraneous causes.

Obviously if the link end 6 of the beam 2, Fig. 1, were raised the tips of the catches 3 and 4 would be moved to the right, and hence would operate through a different arc around the drum 1. The stroke of the catches would therefore be finished at a point farther down on the right side of said drum, and the latter would be turned to a different point, as the movement imparted by the catches does not cease until the cut-away portion 32 comes under their tips.

8 is a stop seated in one of a number of holes 9 in the base 10 for limiting the motion of the bar 7 to prevent said bar from being thrown out of operative position when the float drops completely to the bottom of the tank, and the float G may also be raised and lowered upon the cord *g* in order to regulate the time at which the rising of the float G will permit the movement of the bar 7.

Although I have not illustrated it, it will be obvious that the cord *g* may be led over several pulleys P' or over bell-cranks, whereby the tank Z and the float G therein may be located at a considerable distance without impairing the successful operation of this regulator.

Other details of construction may be

adopted or changes made without departing from the spirit of my invention.

What is claimed as new is—

1. In a windmill-regulator, the combination, with the regulator-drum having a groove in its periphery and the regulator-wire wound in said groove, the face of the drum being also provided with ratchet-teeth which are cut away at one point, of the pump-rod, an operating-catch driven thereby, a retaining-catch, the tips of said catches standing side by side and simultaneously engaging the teeth on the drum, and the cut-away portion of the latter coming under said tips when the wind-wheel is out of the wind, a pivoted bar having a weighted head at one end provided with pins engaging said catches, and a cord leading from the other end of said bar to a float in the tank, substantially as described.

2. In a windmill-regulator, the combination, with the regulator proper, catches engaging the same, and a regulator-wire leading from said regulator to the wind-wheel, of a pivoted bar having pins engaging said catches, a weight at one end of said bar, and a cord leading from the other end of the bar and provided with a float in the tank which is heavier than said weight, substantially as described.

3. In a windmill-regulator, the combination, with the regulator proper, catches engaging the same, and a regulator-wire leading from said regulator to the wind-wheel, of a pivoted bar having a weighted head provided with pins engaging said catches, a stop-pin inserted in one of a number of holes for limiting the movement of said bar, a cord leading in one direction from said bar, passing over a pulley, and provided with a weight, and a cord leading in the other direction from said bar over a pulley and provided with a counterbalancing float in the tank which is heavier than said weight, substantially as hereinbefore set forth.

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

CHARLES BARNES.

Witnesses:

CHAS. E. BALL,
A. A. BALL.