

(No Model.)

J. HOULEHAN.

AUTOMATIC APPARATUS FOR ACCUMULATING AND UTILIZING POWER.

No. 347,710.

Patented Aug. 17, 1886.

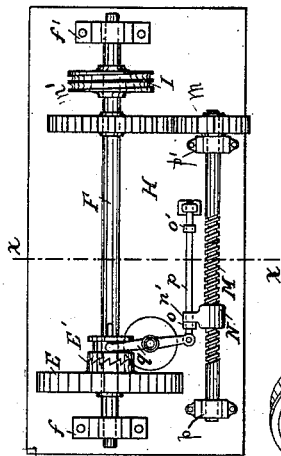


FIG. 2.

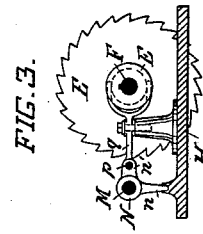
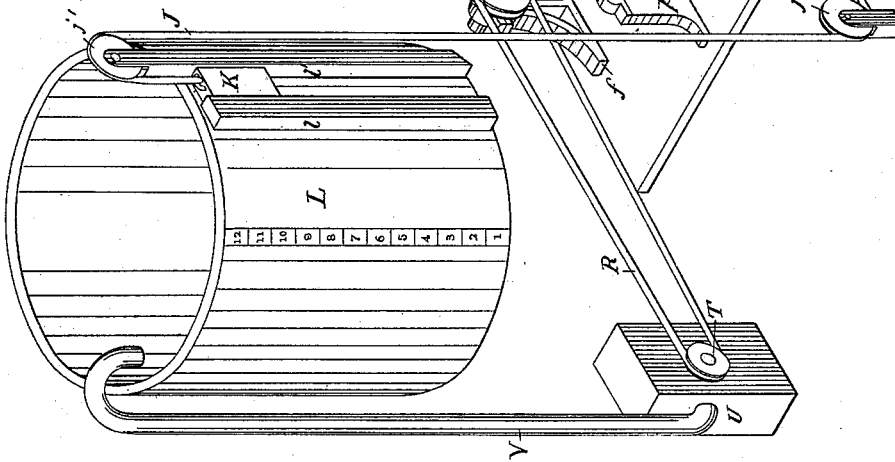


FIG. 3.

FIG. 1.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC APPARATUS FOR ACCUMULATING AND UTILIZING POWER.

SPECIFICATION forming part of Letters Patent No. 347,710, dated August 17, 1886.

Application filed August 1, 1885. Serial No. 173,301. (No model.)

### *To all whom it may concern:*

Be it known that I, JAMES HOULEHAN, of the city of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Automatic Apparatus for Accumulating and Utilizing Power, of which improvements the following is a specification.

Heretofore it has been customary along the lines of railroads, at suitable distances apart, to establish watering-stations, consisting of elevated tanks, for supplying water to the tenders of locomotives, the water being forced into these tanks in many different ways; but the most common means availed of for such purpose being the ordinary windmill, drawing the water through pipe-lines from neighboring streams, or by steam-power from a distant pumping-station; but both of these methods and means, while more or less expensive, have only been partially satisfactory in their action, owing to circumstances and conditions well understood, and it is the object of my invention to overcome these objectionable features, and to economize in the cost of construction and maintaining of a suitable apparatus for such purpose; and to these ends my invention consists of certain novel features in the construction of automatic apparatus actuated by the passage of a train of cars over the rails of an ordinary railroad, whereby I am enabled to accumulate or store up sufficient power to permit of its advantageous utilization in pumping water into an elevated tank through the operation of novel releasing mechanism working automatically—that is to say, in the liberation and gradual restoration of the power-accumulating mechanism to its normal position I accomplish the principal feature of my invention of pumping water into an elevated tank—the construction, arrangement, and combined operation of which apparatus will be hereinafter more particularly explained, and pointed out in the claims.

The nature of my invention is fully illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a perspective view embodying my invention, showing a section of a railroad-

track, an elevated tank, and the automatic accumulating and releasing mechanism. Fig. 2 is a detached plan view showing in detail the automatic releasing devices, and Fig. 3 is a side view on the line  $xx$  of Fig. 2.

In the accompanying drawings, A is an axle, and A' A' are a pair of ordinary railroad-car wheels occupying the usual position on the rails  $a a'$ . At right angles to the rails  $a a'$ —that is, in a crosswise position thereto—is a strong horizontal lever or series of levers, B, having at the farthest end an upward projection,  $b$ , the top of which projection is slightly rounded off, as shown in Fig. 1. This projection  $b$  is at such an elevation relatively to the top of the rails that the inside flange of one of the car-wheels is made to bear thereupon, depressing the horizontal lever B in the passage of the wheels along the track. C is the fulcrum for this lever B, the latter having at its other end a strong pawl or dog, D, for engaging with and actuating a ratchet-wheel, E, arranged upon a shaft, F, placed parallel with the rails  $a a'$ . Each depression of the lever B by the passage of the car-wheel riding over the projection  $b$  moves the ratchet-wheel E one tooth or notch by means of the dog or pawl D.

Beneath the horizontal lever B, at suitable distances apart, are two spiral springs,  $c c'$ , for the purpose of raising the projection  $b$  of said lever B after each depression by the passage of the car-wheels over it. These springs  $c c'$  are secured in suitable sockets,  $e e'$ , which are firmly embedded in the ground.

G is a locking pawl or dog, pinned or otherwise secured to a suitable upright or projection,  $d$ , which projection is secured rigidly to a bed-plate, H, to which bed-plate is firmly secured the bearings  $f f'$ , carrying the shaft F.

The shaft F is provided at one end with a grooved rope or chain wheel, I, for the reception of the chain J, which passes over suitably-located carrying-pulleys  $j j'$ , carrying at the other end a heavy weight, K, sliding within guides  $l l'$ , secured to the outside of the tank L.

It will be readily understood from the foregoing description and drawings that the ac-

tion of the lever B upon the dog or pawl D, engaging in the respective teeth of the ratchet-wheel E, will be such as to cause the shaft F to revolve, elevating the weight K by means of the rope or chain J passing over the pulleys *j j'* to the desired position, and when this weight has reached its desired position, as shown in Fig. 1, it then gradually descends, and in so doing accomplishes its specific function of pumping the water into the elevated tank until this weight K shall have returned to its normal position at the bottom of the tank L.

The release and restoration of the weight K to its normal position is accomplished automatically by the novel system of mechanism in the following manner: The ratchet-wheel E is loose upon the shaft F, and is fitted with a sliding clutch, E', which, when in gear with the ratchet-wheel E, imparts motion from the latter to the shaft F. Parallel with the shaft F, I provide a screw-shaft, M, held in suitable bearings, *p p'*, secured to the bed-plate H, and which shaft M receives motion from the shaft F by means of the spur-wheels *m m'*. N is a sleeve threaded to act as a nut upon the screw-shaft M, and is prevented from turning upon its axis by a downward projection, *n*, held in a groove in the bed-plate H, so that the turning of the screw-shaft M draws the sleeve N backward and forward, bringing the two extremities of motion in contact with the collars *o o'*, secured upon a rod, *p*, passing through a projection, *n'*, of the sleeve N. This rod *p* is jointed at one end to a lever, *q*, the other or bifurcated end of which actuates the clutch E'. It will now be seen that the projection *n'*, coming in contact with the collar *o*, will, by means of the lever *q*, push the clutch out of gear with the ratchet-wheel E. This takes place whenever the weight K has reached its highest position, or the position shown in Fig. 1 of the drawings. The shaft F being thus released from the ratchet-wheel E and the dogs or pawls D and G, through the action of the clutch E', the weight K is free to descend, giving motion to the shaft F in the opposite direction, and continuing to revolve the same until the weight K has descended to its normal position. When the weight has completed its descent, the releasing mechanism will have moved the sleeve N toward the other end of the screw-shaft M, when the projection *n'* is brought into contact with the collar *o'*, and moves the rod *p* in the direction required for again engaging the clutch E' with the ratchet-wheel E, thus automatically establishing the conditions required for again raising the weight by the passage of the train over the projection *b* on the lever B. The motion given to the shaft F by the descent of the weight K is conveyed to any suitable pump by a chain or strap, R, running over pulleys S and T, the latter upon pulley T being secured in any suitable manner to the pump U,

which, through means of a pipe, V, discharges the water into the tank L.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic apparatus for accumulating and utilizing power, the combination, with the tracks *a a'*, of the lever B, having a projection, *b*, thereon, springs *c c'*, secured in sockets *c c'*, said springs abutting against the under side of said lever, the pivoted support C for the lever B, the ratchet-wheel E, actuated by the pawl D, pivoted to the lever B, and the locking-pawl G, pivoted to a support which is rigidly secured to the bed-plate H, and the shaft F, held in bearings *f f'*, all arranged substantially as described, for the purposes set forth.

2. In an automatic apparatus for accumulating and utilizing power, the combination, with the lever B, having a projection, *b*, thereon, of the springs *c c'*, held in sockets *c c'* and abutting at their upper ends against the under side of the projecting lever B, the pivoted support C, the pawl D, actuating the ratchet-wheel E, and the pawl G, pivoted to a support rigidly secured to the bed-plate H, for locking said ratchet-wheel, the shaft F, held in bearings *f f'*, the chain-wheel I, and rope or chain J, the pulleys *j j'*, the tank L, with the sliding guides *l l'*, and weight K, all arranged and operating as described, for the purposes set forth.

3. In an automatic apparatus for accumulating and utilizing power, the combination, with the ratchet-wheel E loose on its shaft F, of the clutch E', actuated by the bifurcated lever *q*, pivoted at one end to the rod *p*, the screw-shaft M, the spur-wheels *m m'*, the sleeve N, and projection *n*, held in a groove in the bed-plate H, and the collars *o o'*, secured to the rod *p*, which limit the backward and forward movement of the threaded sleeve N along the rod *p*, and all arranged substantially as described, for the purposes set forth.

4. In an automatic apparatus for accumulating and utilizing power, the combination, with the projecting lever B, having springs *c c'*, secured in sockets *c c'*, of a pivoted support, C, pawls D and G, ratchet-wheel E, loosely secured to the shaft F, which is held in bearings *f f'*, the bifurcated lever *q*, pivoted at one end to the rod *p*, and the other end engaging in the clutch E', the spur-wheels *m m'*, secured to the shafts F and M, respectively, and the sleeve N, drawn backward and forward by the screw-shaft M through the actuation of said spur-wheels, causing the clutch E' to engage with and disengage the ratchet-wheel E through the action of the bifurcated lever *q*, pivoted at one end to the rod *p*, all arranged substantially as and for the purposes set forth.

5. The combination, with the automatic releasing mechanism consisting of the shafts F

and M, spur-wheels  $m$   $m'$ , ratchet-wheel E, clutch E', and bifurcated lever  $q$ , pivoted at one end to the rod  $p$ , and at the other end actuating said clutch through the backward and  
5 forward movement of the threaded sleeve N over the screw-shaft M, between the collars  $o$   $o'$  on the rod  $p$ , of the pulleys  $j$ ,  $j'$ , S, and T, ropes or chains J R, pump U, pipe V, tank

L, guides  $l$   $l'$ , and weight K, all arranged substantially as described, for the purposes set forth.

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