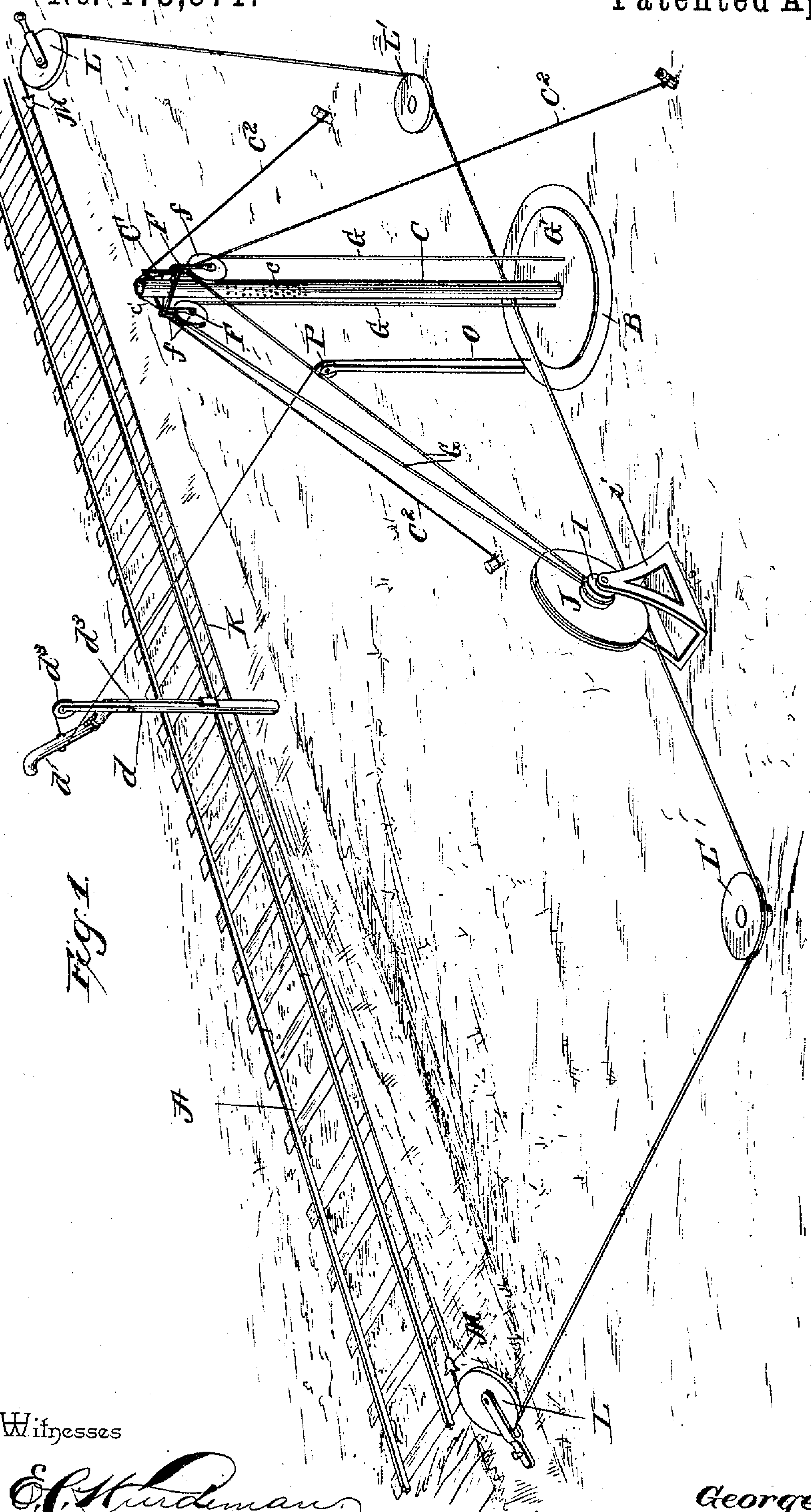
(No Model.)

2 Sheets—Sheet 1

G. P. GLENN.

TANK FEEDER.

No. 473,571. Patented Apr. 26, 1892.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

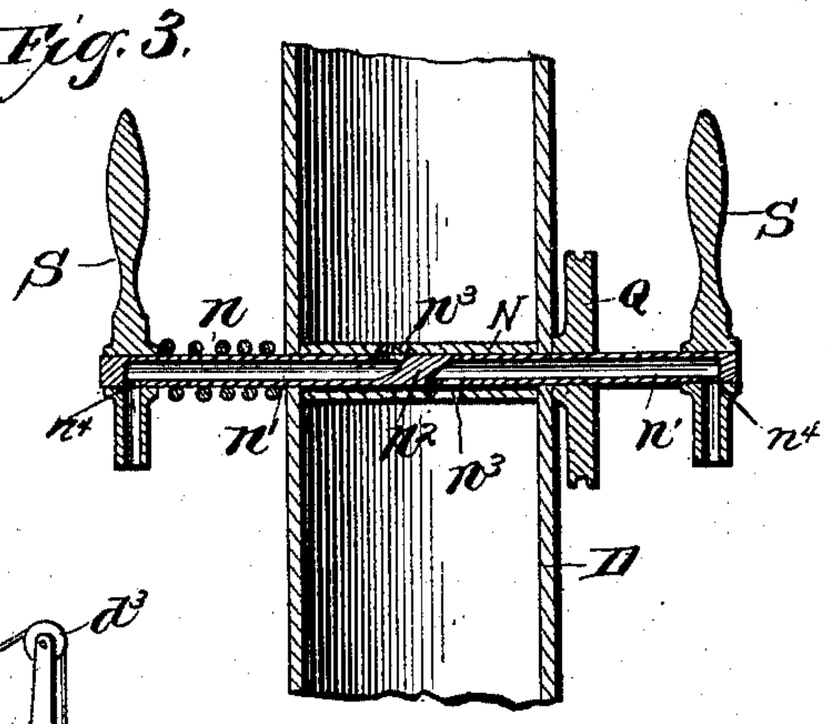

Fig. 2.

Fig. 4.

Fig 5.

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UNITED STATES PATENT OFFICE.

GEORGE P. GLENN, OF JACKSONVILLE, FLORIDA.

TANK-FEEDER.

SPECIFICATION forming part of Letters Patent No. 473,571, dated April 26, 1892.

Application filed January 5, 1892. Serial No. 417,066. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. GLENN, a citizen of the United States, residing at Jacksonville, in the county of Duval and State of Florida, have invented a new and useful Tank-Feeder, of which the following is a specification.

This invention relates to water-elevators; and it has for its object to provide a simple device of this character to automatically elevate water to a desired point, being particularly adapted for use as a tank-feeder for feeding a locomotive-tender with water and so constructed that the motion of the locomotive will operate the elevator.

With these and many other objects in view, which will be quite obvious as the nature of the invention is fully understood, the same consists in an automatic water-elevator constructed and arranged in the novel manner hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a perspective view, partly in section, of a tank-feeder or elevator and an adjacent railway. Fig. 2 is a vertical transverse sectional view of the apparatus. Fig. 3 is a detail sectional view of the oscillating or butterfly vent-valve. Figs. 4 and 5 are a detail plan and sectional view, respectively, of the butterfly vent-valve.

Referring to the accompanying drawings, A represents an ordinary railway, adjacent to which and suitably located and sunk into the ground is a large well or reservoir B, that is designed to hold the water to be elevated to the desired point and in the present instance to supply the water through suitable piping to the tender of a locomotive. Supported within the well B is the stand-pipe C, extending up from the bottom of the well and above the top of the same a sufficient distance to allow the water which may be forced within the same to be elevated to the desired height. The said stand-pipe is provided along a portion of its upper end with a continuous series of water-inlet perforations *c*, through which the water is fed into said stand-pipe, and the same is connected at its lower end within the bottom of the well to the main conducting-pipe D, of a diameter equal to or less than that of the stand-pipe. The said conducting-pipe extends near to the top of the well, and, passing through one side of the same, is carried underground to the edge of the railway-track A, and at this point is provided with the vertically-extending or stand-pipe portion *d*, extending up the usual height of tank-feeders, and is provided with a hinged spout *d'*, which is normally held away from the track by means of the weighted cord d^2, connected therewith and passing over the pulley d^3, extending above the top of the vertical pipe *d*.

A water-elevating bucket E is provided at its center with a bottom perforation *e*, that allows the same to fit snugly upon the vertical stand-pipe C and slide up and down the same from within the well to the top of the stand-pipe and back again. The said bucket is provided with the upwardly-opening ball or other check-valve *e'*, which as the bucket slides down the stand-pipe within the well, allows the same to be filled with water, and as the bucket is slid up the stand-pipe the water is held within the same until it has reached the top of the stand-pipe and allows the water to escape therein through the inlet-perforations *c*. From the top of the stand-pipe C is suspended a triangular pulley-supporting frame C', having supporting rods or hooks *c'*, engaging over the top of the stand-pipe and extending from the angles of the frame. Supporting and steadying ropes or cables C^2 are connected to the angles of said triangular frame, and, passing downwardly are securely anchored to the ground. Suspended on opposite sides of the stand-pipe C and from the triangular frame C' are the pulley-frames F, located within each of which are the wheels or pulleys *f*, over which pass the two hoisting ropes or wires G, that are connected with bails H upon the top of the elevating-bucket E and upon each side of the stand-pipe C, and said hoisting ropes or wires G are connected at their other ends to an adjacent winding-drum I, journaled in suitable supports *i*, supporting the same above the ground. Also, journaled in said supports *i* and upon the same shaft as the winding-drum and connected therewith is the endless rope or cable operated wheel J, over which is wound the endless operating-cable K, passing from said wheel along the track in both directions, and passing over the adjusting pulleys or wheels L, journaled in frames suitably secured above

the surface of the ground and so located as to permit the portion of the endless cable nearest the rail to travel in close proximity thereto in order to allow the same to be controlled by the engine coming in either direction. Said cable is also passed under suitable idlers L′ to change the direction of the cable as desired. The said cable is provided near each horizontal wheel or pulley with the oppositely-disposed hooks M, that are engaged by a suitable drop-hook or other device let down from the engine or tender as it passes along the railroad, and thus carries the cable along with it to the point opposite which the feeder is located. This drawing of the cable in either direction causes the drum carried by the cable-wheel J to wind up the hoisting ropes or wires G thereon, and thus elevate the hoisting-bucket E up to the top of the stand-pipe C; but from the moment the said bucket during its ascent strikes the perforations of the stand-pipe C it commences to discharge its contents into the same through the inlet-perforations *c*, and, on account of its height, thus causes the same to flow through the conducting-pipe D to the butterfly check-valve N, located in the said pipe within the well B. The valve N is normally kept closed by a spiral spring *n* around its projecting axis *n′*. The valve N is mounted on the oscillating hollow axis *n′*, journaled in the pipe D and extending to either side of the same. Upon one end of the projecting hollow axis is secured the operating-pulley Q, to which is connected the valve-cord O, passing over the guide-pulley P, supported above the well, and is thence passed to and connected with the hinged feeder-spout *d′*, whereby the same may be readily controlled by the fireman or operator when the spout is adjusted in position for delivering the water. Now it can be readily seen that after the fireman properly locates the nozzle of spout *d′* and pulls slightly on the valve-cord O, running over pulley P and operating-pulley Q, which is fixed to the axis of the valve N, the latter will open and the water will continue to flow from the hoisting-bucket E and into the tender-tank until the said bucket is emptied or until the check-valve N is automatically closed by the fireman's letting the spout-cord go. When the cable is released from the engine or tender, either automatically or otherwise, the hoisting-bucket of its own weight begins to slowly descend the stand-pipe into the well, where it fills again and is ready for the next locomotive.

It may be noted that the butterfly-valve N serves as a check-valve in both directions, but is intended, mainly, to hold the flowing water in check till the fireman has adjusted the nozzle of the spout *d′*, and also to stop the flow when sufficient water has been taken. In warm climates the year round and in cold climates during the summer season this check-valve holds the stand-pipe full of water constantly up to the perforations when the lift has exceeded the draft and both stand-pipes remain full to the height of the lower one; but for the winter season in cold climates the valve N is constructed on a hollow or tubular axis, as already stated, and having a partition n^2 at the center transversely and a small opening n^3 on each face of the valve, on both sides of the partition n^2, so that when the valve is closed one end of the axis serves as a vent to return the water from the shorter stand-pipe into the well and the other end of the axis likewise returns the water from the taller stand-pipe. The projecting ends of the tubular axis n' are each provided with the escape or discharge openings n^4, through which the water escapes from either side of the valve, as the case may be. Each end of the valve-axis also works in the stops S, working over the discharge-openings in said axis ends and forming ordinary stop-cocks projecting beyond the pipe. When venting is necessary, the stops are set permanently by any suitable means in such position that a quarter-turn of the valve-wheel to open the valve will close them and a quarter-turn back to close the valve will open the vents; but when venting is unnecessary the stops are simply closed and allowed to revolve with the axis of the valve.

The well may be tightly covered by a cover G′, inclosing the top of the well, so as to prevent freezing in the well, in which case the bucket lifts the cover, which is of its own diameter and thus forms its own cover, while rising and returns it exactly to its place again on returning into the well.

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

1. In a water-elevator, the combination of a well, a stand-pipe supported within and extending above said well and provided with a series of perforations, a conducting-pipe connected with the lower end of said stand-pipe within the well, a valved water-elevating bucket sliding over said stand-pipe, and means for elevating said bucket to the top of the stand-pipe, substantially as set forth.

2. In a water-elevator, the combination of a well, a stand-pipe supported within and extending above said well and provided with a continuous series of perforations along a portion of its length, a conducting-pipe connected with the lower end of said stand-pipe within the well, a water-elevating bucket sliding over said stand-pipe and provided with bottom upwardly-opening valves, a winding-drum adjacent to said well, elevating wires or ropes connected with said winding-drum and said bucket, and means for operating said winding-drum in either direction, substantially as set forth.

3. In a water-elevator or tank-feeder, the combination, with a railway, of a well located adjacent to said railway, a stand-pipe supported within and extending above said well and provided with a continuous series of perforations or openings along a portion of its length, a valved conducting-pipe connected

with the lower end of said stand-pipe within the well and provided with a weighted hinged spout alongside of the track, a water-elevating bucket sliding over said stand-pipe and provided with bottom upwardly-opening valves, a cable-wheel carrying a winding-drum located adjacent to said well, elevating wires or ropes connected with said winding-drum and passing over pulleys at the top of the stand-pipe and connected with said bucket, and an endless horizontal cable stretched parallel with said track and passing over said cable-wheel and provided with hooks adapted to be engaged by suitable devices lowered from the passing engine, substantially as set forth.

4. In a water-elevator, the combination of a well, a perforated stand-pipe supported within and extending above said well, a braced pulley-supporting frame suspended from the upper end of said stand-pipe, pulleys suspended from said frame on opposite sides of the stand-pipe, a valved conducting-pipe connected with and forming a continuation of said stand-pipe, a valved water-elevating bucket sliding over the stand-pipe, elevating-ropes passing over said pulleys and connected with said bucket, and means for operating said ropes, substantially as set forth.

5. In a water-elevator, the combination of a well, a cover inclosing said well, a perforated stand-pipe, a conducting-pipe connected with and forming a continuation of the stand-pipe, a valved water-elevating bucket sliding upon said stand-pipe and of the same diameter as said well-cover, which also forms a cover for the bucket when rising, and means for elevating said bucket upon said stand-pipe, substantially as set forth.

6. In a water-elevator, the combination, with a well and means for forcing the water therefrom, of a conducting-pipe provided with a hinged and weighted spout at its discharging end, an oscillating double check-valve mounted on an axis journaled within said conducting-pipe, a valve-wheel connected with said axis, and a valve-cord connected to said valve-wheel and said hinged spout, substantially as set forth.

7. In a water-elevator, the combination, with a well and means for forcing water from the same, of a conducting-pipe connected with the discharge or force pipe within the well, an oscillating double check-valve mounted upon a hollow vent-axis journaled in said conducting-pipe within the well, said axis being provided with vent-discharge openings within the well, and means for controlling the said valve, substantially as set forth.

8. The combination, with a conducting-pipe, of a hollow valve shaft or axis journaled in said pipe and provided with a central partition, vent-openings on opposite sides of said partition and the axis itself, and the vent-discharge cocks at each end projecting on each side of said pipe, and an oscillating valve mounted on said shaft or axis within the pipe and provided with vent-openings on each face thereof, communicating with the opposite openings in said axis or shaft, substantially as set forth.

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

GEORGE P. GLENN.

Witnesses:
SAML. W. FOX,
N. A. HULL, Jr.