

(No Model.)

2 Sheets—Sheet 1.

H. D. LAYMAN.

AUTOMATIC RAILWAY PUMPING MACHINERY.

No. 490,666.

Patented Jan. 31, 1893.

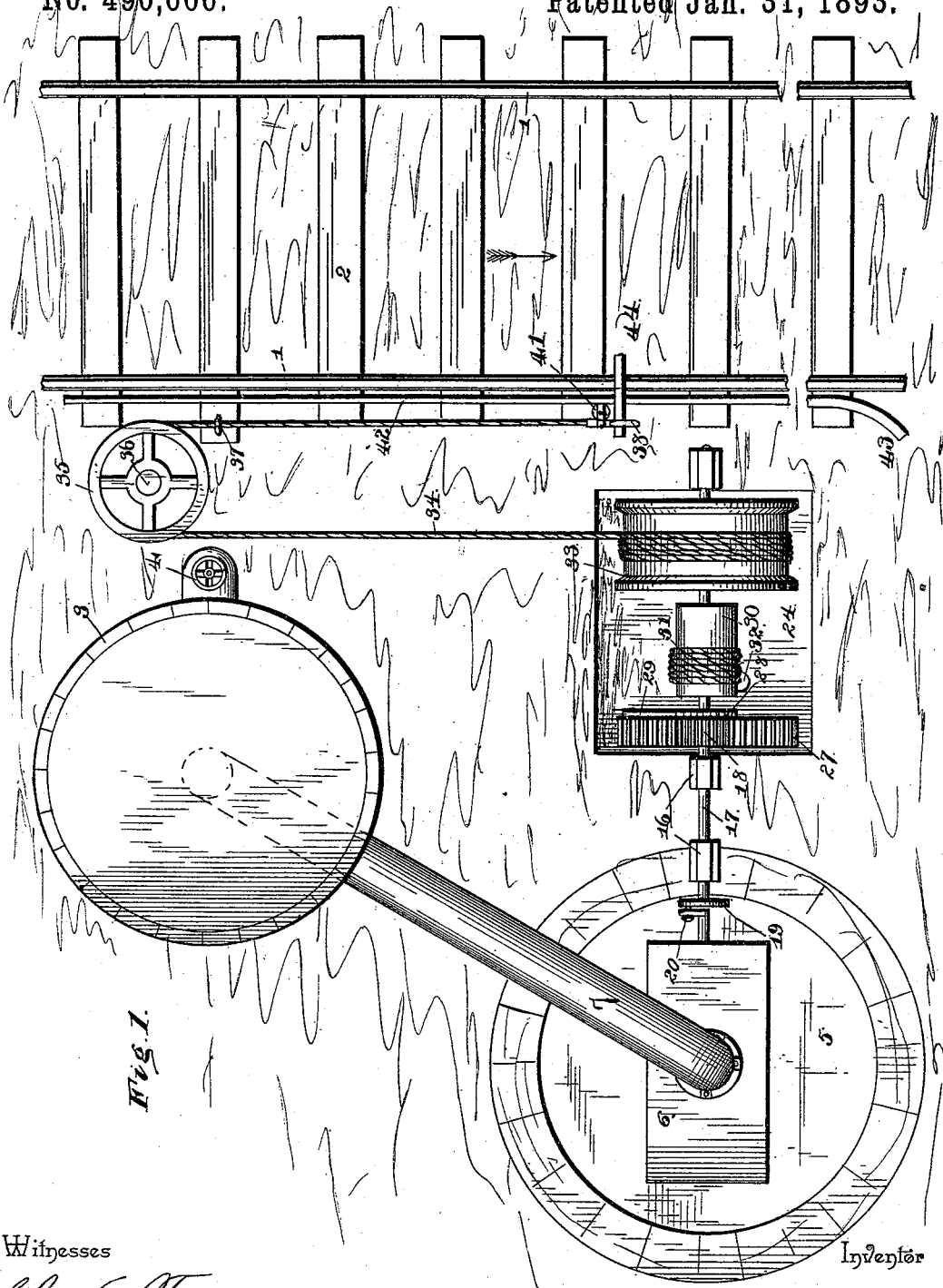


Fig. 1.

Witnesses

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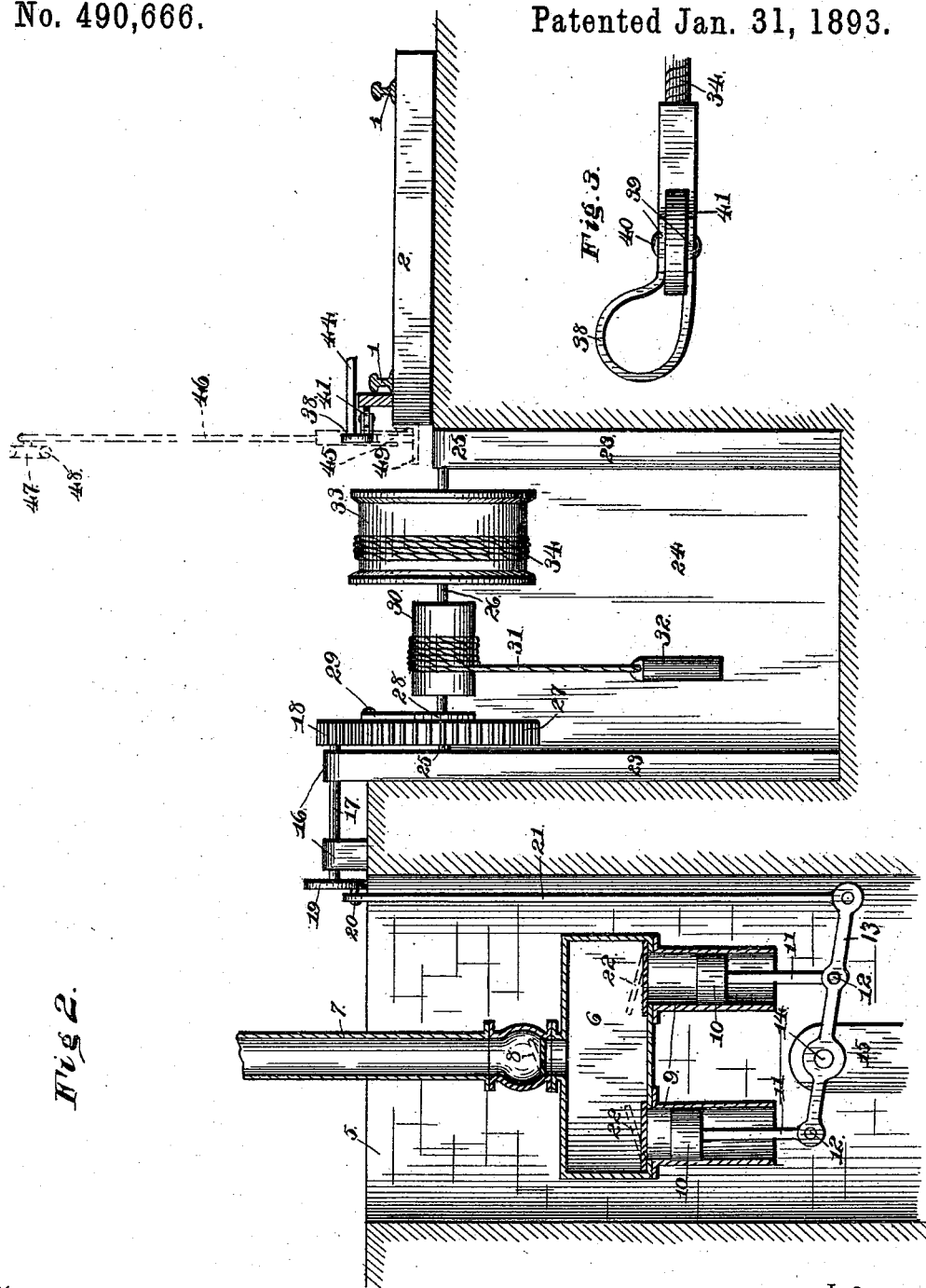
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UNITED STATES PATENT OFFICE.

HIRAM D. LAYMAN, OF LITTLE ROCK, ARKANSAS.

AUTOMATIC RAILWAY PUMPING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 490,666, dated January 31, 1893.

Application filed September 28, 1891. Serial No. 407,084. (No model.)

To all whom it may concern:

Be it known that I, HIRAM D. LAYMAN, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Automatic Railway Pumping Machinery; and I do declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

My invention relates to mechanisms for operating railway pumps; the objects in view being to provide a mechanism of cheap and simple construction, adapted to be located at one side of a track and to be operated by the wheels of the passing trains.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a plan of mechanism, located at one side of a railway track. Fig. 2 is a vertical transverse section through the mechanism and track. Fig. 3 is a detail in elevation of the train-engaging loop or eye.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 1 designate the usual track-rails, which are mounted upon the ordinary ties 2, and at the side of the track there is located the watering-tank or reservoir 3, having the discharge 4. Adjacent to the tank and rails, in a well 5, a water-box 6 is located, the same constituting a pump-head, and from the upper side thereof extends a discharge-pipe 7 which at its point of communication with the head 6 is provided with an upwardly-opening valve 8. The remaining end of the pipe 7 communicates with the tank 3. Depending from the under side of the head 6 are the pump-cylinders 9, in which are mounted for reciprocation the plungers 10, pump-rods 11 depending therefrom, and having their lower ends pivoted as at 12 to a walking-beam or lever 13. This lever 13 is fulcrumed at 14, be-

tween the pivots 12, upon any suitable support as 15.

In bearings 16, located at one side of the well 5, a transverse shaft 17 is mounted for rotation, the outer end thereof being provided with a small gear 18, and the inner end with a crank-disk 19, having a crank-pin 20 located directly over the well, and above the free end of the lever or beam 13. The crank-pin and lever are connected by a rod 21. Each of the pump-cylinders 9 is provided with an upwardly opening valve 22.

A pair of vertical standards or posts 23 is let into an opening or cavity 24, formed in the ground between the well 5 and the track, and it is upon one of these posts 23 that the outer bearing 16, for the accommodation of the shaft 17, is formed. The posts 23 are also provided with bearings 25, and in these is mounted a transverse shaft 26, which spans the cavity or hole 24. Upon this shaft a large gear 27 is mounted, the same being loose and adapted to permit of independent movement by the shaft. At one side of the gear 27 upon the shaft 26 there is mounted fixedly upon the shaft a ratchet-wheel 28, and a loosely-pivoted pawl 29 is located upon the face of the gear 27, and adapted to engage the aforesaid ratchet-wheel when the latter with the shaft is moved in one direction.

30 designates a re-winding drum, and secured to the same and wound thereon is the re-winding cable 31, to the free end of which a weight 32 is secured. At one side of the re-winding drum 30 and upon the same shaft 26 there is also mounted a main drum 33, around which is wound a cable 34, having one of its ends secured thereto. The remaining end of the cable is carried parallel to the tracks for a short distance, and subsequently passed around a sheave or pulley 35, which is mounted upon a vertical shaft 36 at one side of the track. The cable 34 is then passed through a guide-eye 37, which is located upon the end of a tie and finally terminates in an eye or loop 38. This eye or loop, as best shown in Fig. 3, is provided with a pair of lugs or ears 39, through which a bearing-bolt 40 is passed. Upon this bolt a roller 41 is mounted for rotation, and the same is designed to travel

along a track-bar 42 which is located upon the ends of the series of ties outside of the track-rails 1. This track-bar has its forward end outwardly curved as at 43, or in other words is diverged from the track-rails.

In operation, the bar 44 is projected from any part of the moving train, traveling in the direction of the arrow, and engaged with the loop 38, when the same is located at about the eye 37. In this manner the cable is carried forward, unwinding itself from the drum 33, rotating the latter the shaft 26, the re-winding drum 30, and thus winding up its cable 31 thereon, rotating the ratchet-wheel 28, and through the medium of the gear 27 turning the gear 18, shaft 17, wrist-plate or disk 19, vertically oscillating the rod 21, and thus actuating the pumps, so as to force water through the same into the water-box 6 and from the water-box to the tank. As the cable is advanced by the bar 44, the roller 41 rides against the track-bar 42 until it reaches the curved end 43 by which it is deflected away from the bar 44 and out of engagement therewith. When this release takes place, the pumps stop working and the weight 32 acts in a reverse direction upon the shaft 26, the gear 27 remaining idle and the cable 34 returned to its wound position upon the main drum 33.

In some localities, where snow and ice are prevalent, the same would render the track-bar 42 and the roller 44 inoperative, or ineffectual for the purpose in view; and in such instances I place the roller upon the under side of the loop 38, as indicated by dotted lines in Fig. 2, at 45, and secure to the upper side of the aforesaid loop a vertical trolley-arm 46, the upper end of which is supplied with a trolley-wheel 47, which runs upon a track-bar 48, similar to the bar 42, or a suitable wire. The track-bar 49 employed in this connection, is of L-shape, or horizontally-disposed, having its vertical flange secured to the ends of the series of ties 2. The remainder of the construction is the same as heretofore described, and the operation is identical.

Having described my invention, what I claim is:—

1. The combination with the well, the pump located therein, the tank located at one side of the pump and a pipe connecting the pump with the tank, of an intermediate shaft, bearings for the shaft, a gear loosely mounted on the shaft, mechanical connections between the gear and pump, a ratchet-wheel mounted on the shaft, and rigid therewith, a pawl engaging the ratchet-wheel and pivoted to the loose gear of the shaft, a re-winding drum, a cable thereon, a weight secured to the free end of the cable, a main drum mounted on the shaft at the side of the re-winding drum, a cable thereon, and a loop located at the free

end of the cable and supported in a position to be engaged by a projection on a moving train, substantially as specified.

2. The combination with the pump, plungers, the walking-beam fulcrumed adjacent thereto and connected with the pump, a tank and a supply-pipe having a valve leading from the pump-head to the tank, a transverse shaft located between the well and track, bearing-posts for the shaft, one of which is extended above the other and provided with a bearing in its upper end, a short bearing-post at one side of the latter, a short transverse shaft mounted in the two last mentioned bearings, a crank-disk at one end of the same and provided with a crank-pin, a connecting-rod between the crank-pin and the free end of the plunger-operating lever, a small gear at the outer end of the short transverse shaft, a large loose gear mounted on the first mentioned transverse shaft and engaged with the small gear, a ratchet-wheel at the side of the large gear, and fast upon the shaft, a pivoted pawl at the side of the large gear engaging the ratchet-wheel, a re-winding drum, a cable thereon terminating at its lower end in a weight, a main drum at the side of the re-winding drum, an operating cable thereon, a loop or eye at the free end of the operating cable, and suitable guides for supporting the same at one side of the track, substantially as specified.

3. The combination with the pump, the tank the supply-pipe leading from the pump to the tank, of a track-bar having its forward end curved, located adjacent to the track, an intermediate shaft, bearings for the same, means for communicating motion from the shaft to the pump, means for re-winding the shaft, a main drum on the shaft, a cable wound upon the drum and having its free end located at the side of the track, a loop secured to the end of the cable, and a roller connected to the loop and adapted to engage the track-bar and be deflected by the latter, substantially as specified.

4. The combination with the pump, the tank, the supply-pipe leading from the pump to the tank, and pump-operating mechanism, of a drum for operating the mechanism, a cable passed about the drum, and terminating at its front end in an eye provided at one side with bearing-ears, a loose roller journaled in the eye, and a track-bar supported upon the ties at one side of the track-rails, and forming a path for the roller, the forward end of said track-bar being outwardly curved or deflected, substantially as specified.

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Witnesses:

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