

(No Model.)

H. D. LAYMAN.
RAILWAY PUMP OR WATER ELEVATOR.

No. 488,362

Patented Dec. 20, 1892.

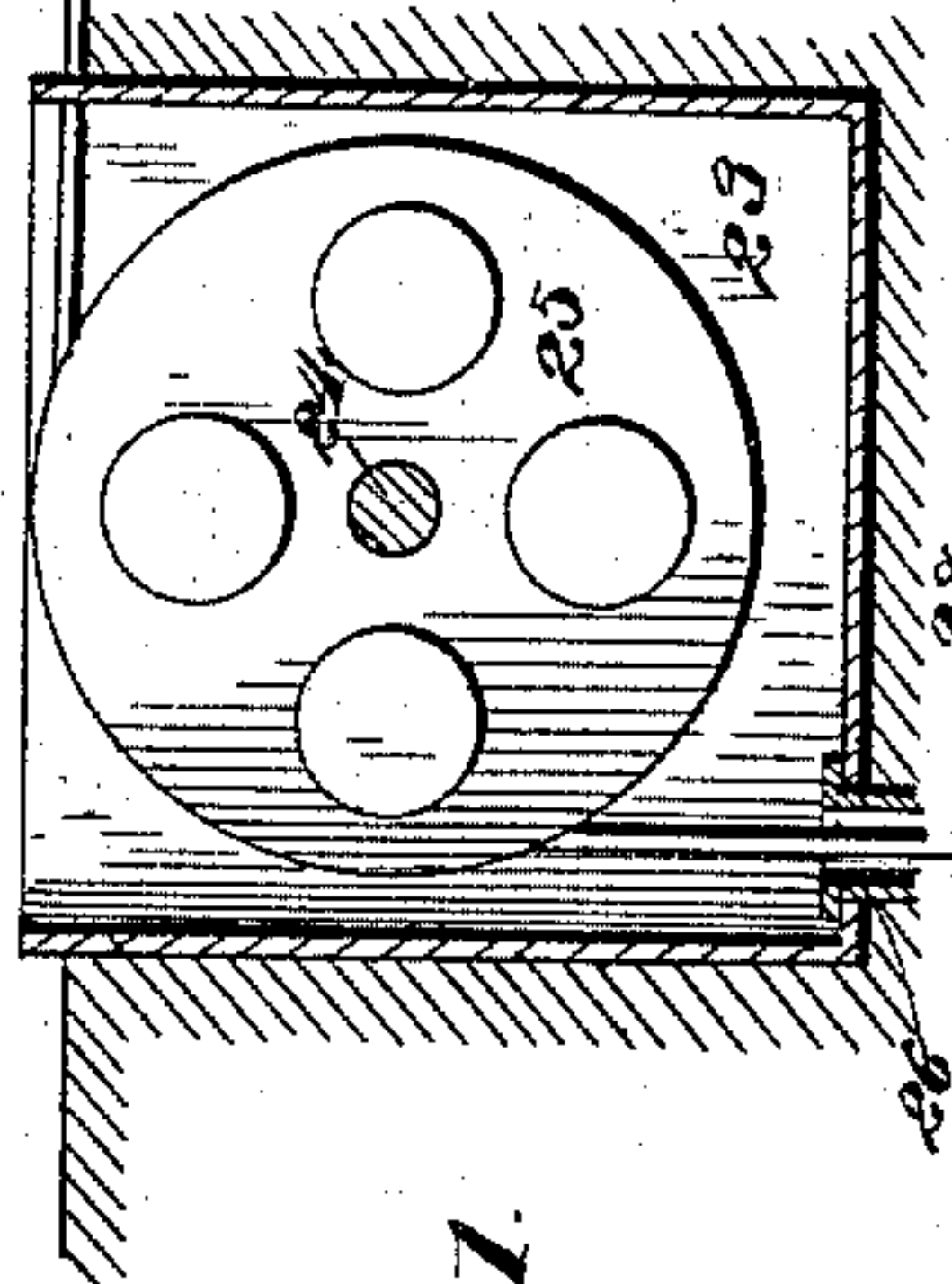
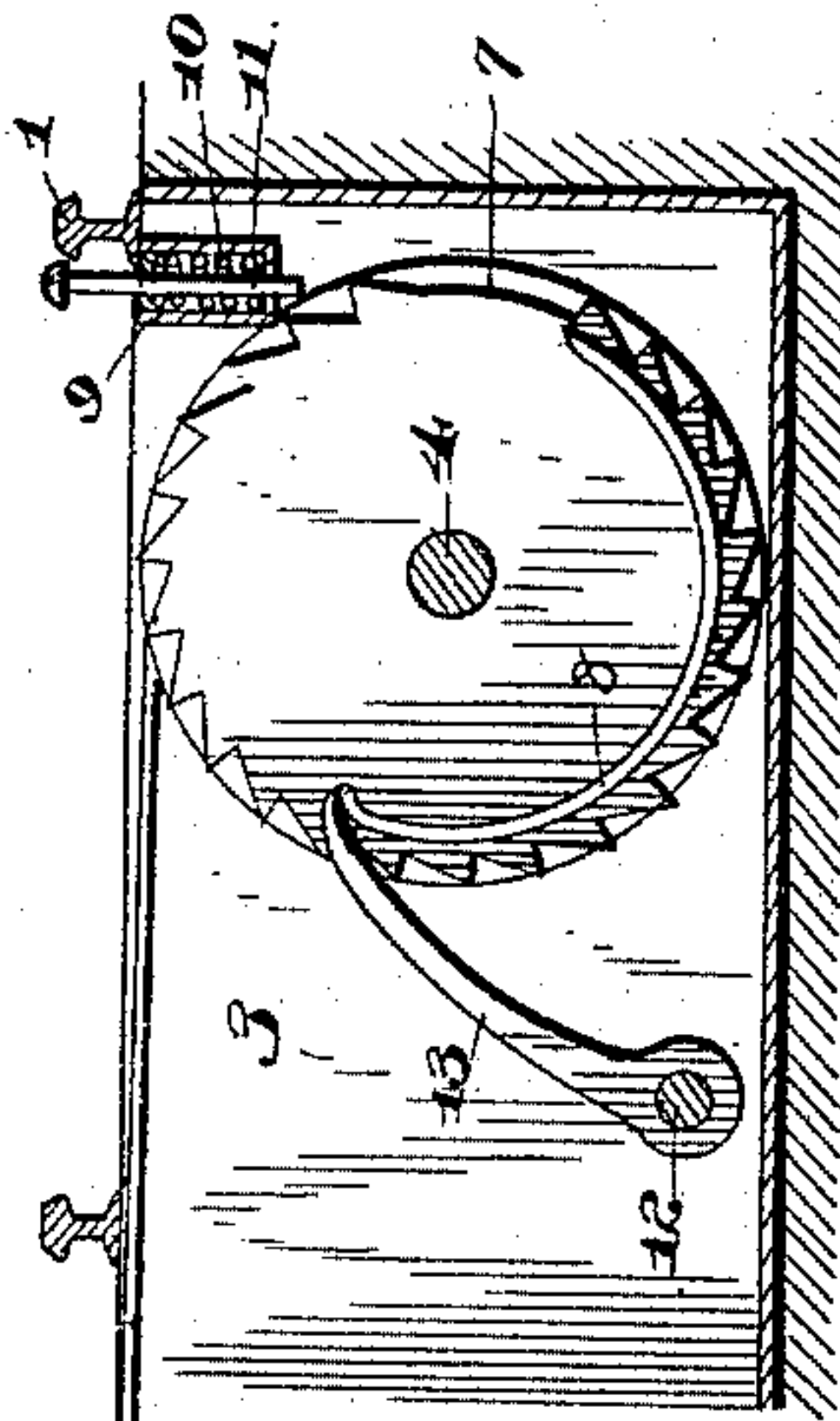
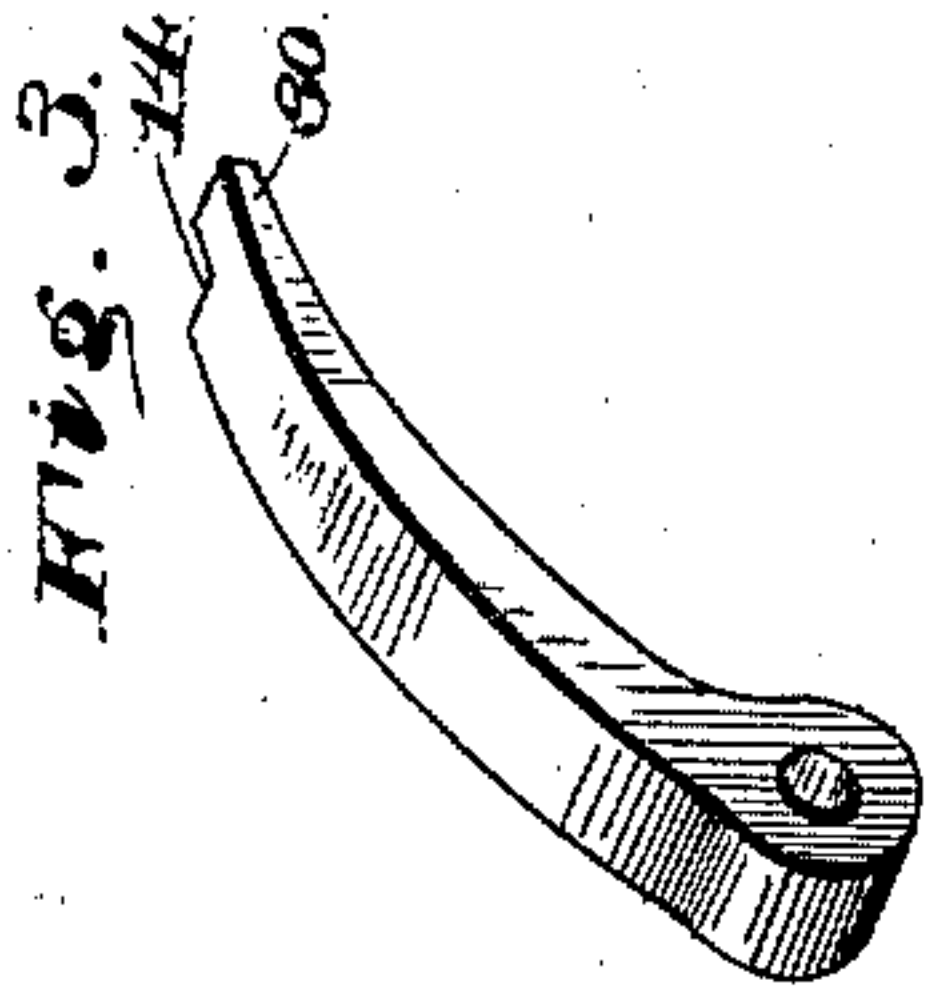
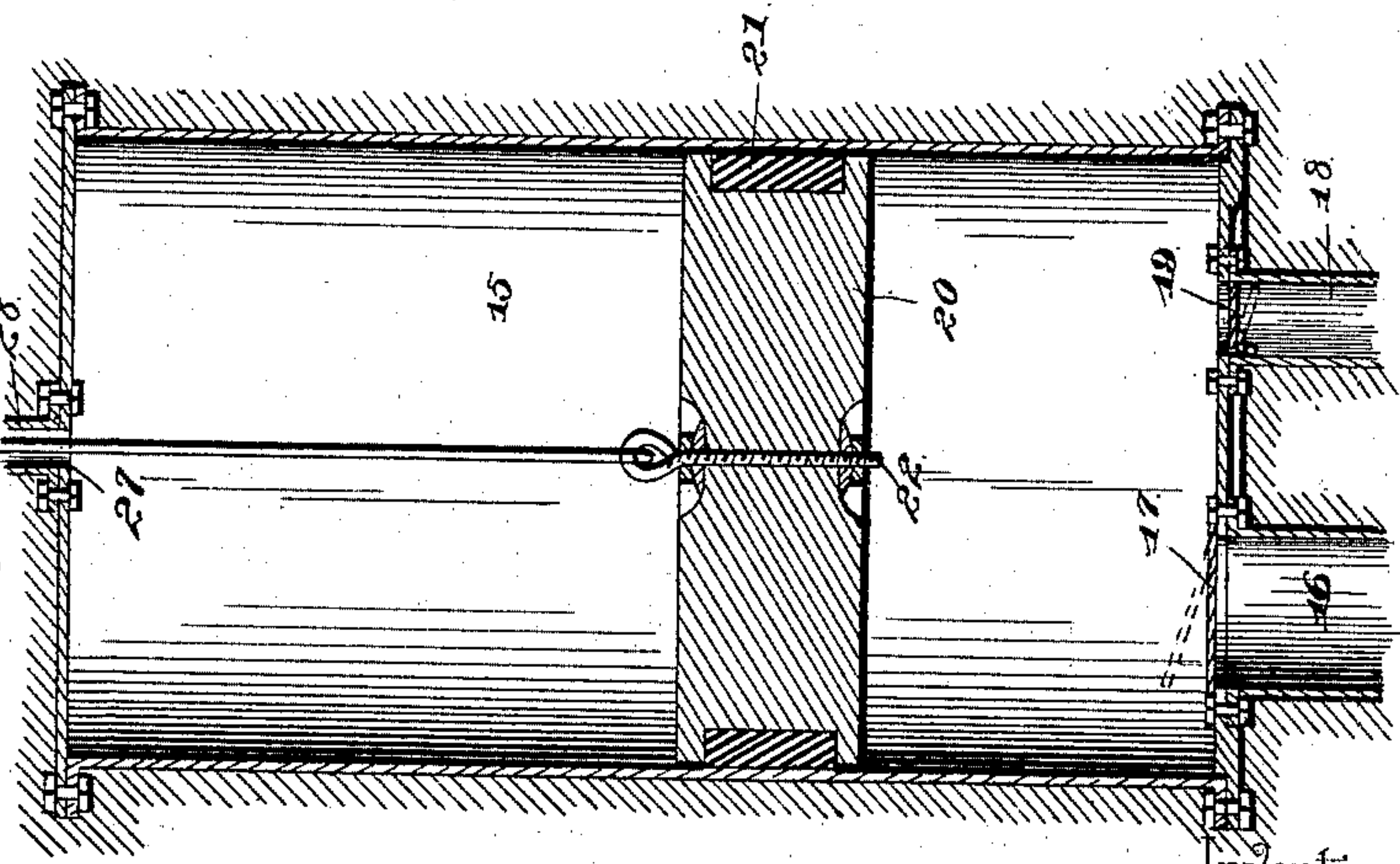
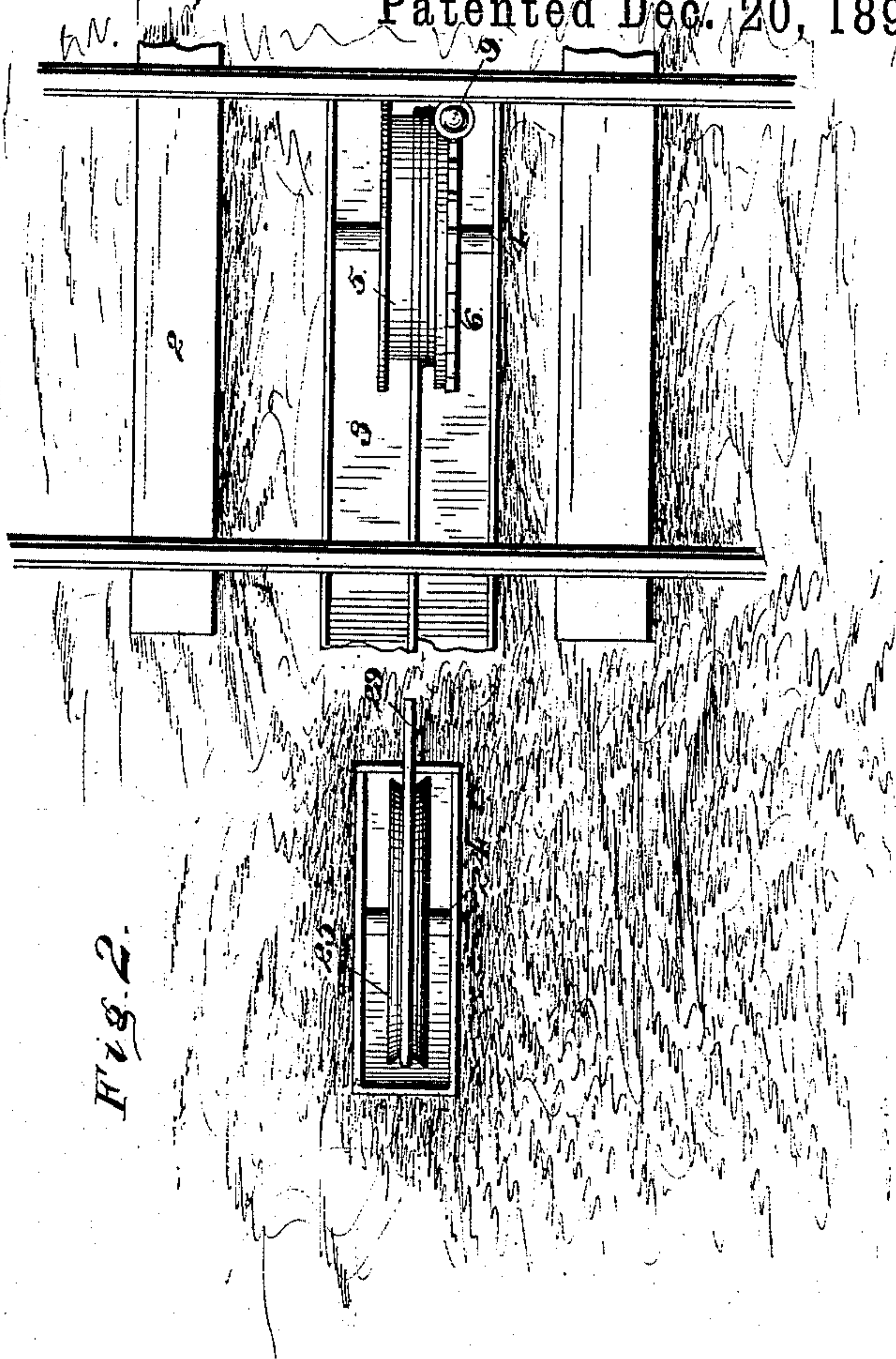


Fig. 1.



Witnesses

Inventor

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By *his* Attorneys,

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UNITED STATES PATENT OFFICE.

HIRAM D. LAYMAN, OF LITTLE ROCK, ARKANSAS.

RAILWAY PUMP OR WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 488,362, dated December 20, 1892.

Application filed March 28, 1891. Serial No. 386,873. (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 Railway Pumps or Water-Elevators; and I 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in railroad pumps and water elevators, the objects in view being to provide a pump and mechanism for operating the same, which mechanism is set in motion by the wheels of the moving train.

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 transverse section through the railroad-track, and a pump-mechanism embodying my invention. Fig. 2 is a plan view. Fig. 3 is a detail in perspective of the pawl hereinafter described.

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

The opposite rails 1 rest upon the usual ties 2, and between said rails an excavation 3, is formed and provided with a suitable box sunken therein. A shaft 4, extends transversely of the box and has mounted thereon a drum 5, at one side of which a ratchet-wheel 6, is located, this ratchet-wheel is provided with a plain or untoothed portion 7, and at one side thereof with a curved flange 8, arranged near the periphery of the wheel. A small case 9, is located at the side of one of the rails within the excavation, and in said case there is mounted for reciprocation a vertically movable plunger 10 having a supporting-spring 11, which maintains the head of the plunger about on a level with the head of the rail adjacent to which it lies. Pivoted within the box upon a transverse shaft 12, is a pawl 13, the same being provided at its outer free end with a notch 14.

15 designates a sunken cylinder, to which from any suitable source the water supply pipe 16 leads the same having its upper end closed by an upwardly opening valve 17. A discharge-pipe 18 leads from the bottom of the cylinder and the same is provided at its upper end with a downwardly opening valve 19. A weighted plunger or piston 20 is located in the cylinder and adapted for vertical reciprocation, the same being provided with a packing ring 21. An eye-bolt 22 passes through the plunger.

Above the sunken cylinder a box or casing 23 is located, and upon a transverse shaft 24, located therein a pulley 25, is mounted for rotation. The box is provided at one corner with an opening 26 and the same is vertically above a small opening 27 formed in the center of the upper head of the cylinder 15, the two openings being joined by an intermediate pipe 28. A cable 29, is bolted upon the drum 5, secured to the same, passes therefrom over the pawl 25, down through the tube 28, and connects with the eye-bolt 22 of the plunger or piston-head.

This completes the construction, and the operation is as follows: The flanges of the wheels of trains passing over the tracks successively depress the reciprocating pawl 10 and it acting upon the ratchet-teeth of the wheel 6 serve to rotate the wheel, the shaft 4, drum 5, winding the cable thereon and elevating the weighted plunger 20. As the weighted plunger is elevated it creates a vacuum in the cylinder 15 thus raising the valve 17 and drawing water through the supply pipe 16. The pawl 13 serves as a holding pawl and prevents the ratchet-wheel from retrograding. It will be seen that as the notched-portion 14 of the pawl engages the teeth of the ratchet-wheel, the overlapping portion or finger 30, located at one side of the notched-portion will be struck by the flange 8 of the ratchet wheel and thus the notched-portion of the pawl will be raised from engaging with the teeth of the ratchet wheel. The rotation of the ratchet wheel continues until the train has passed over the reciprocating pawl when the blank or untoothed portion of the wheel will be adjacent to the pawl 13 and flange 8 will have served to raise the pawl out of engagement with the teeth of the

ratchet wheel. Immediately upon the arrest of motion of the reciprocating pawl 10 the weight of the plunger will serve to unwind the cable and rotate the ratchet until the pawl 5 is passed from over the flange 8 and can engage with the teeth of said wheel whereby the motion of said wheel is arrested. As the plunger descends the valve 17 closes and the valve 19 is forced open water being forced 10 through the pipe 18 to any suitable reservoir or tank. It will thus be seen that after the plunger has been elevated a certain distance it will be mechanically and automatically returned to a lowered position.

15 Having thus described my invention what I claim is:

1. In a pump of the class described, the combination with the track, the drum located below the same, the shaft for the drum, a 20 ratchet wheel mounted upon the shaft, a spring-pressed plunger located at one side of one of the rails and adapted to actuate the wheel, a pawl for locking the ratchet wheel, a cylinder having supply and discharge pipes 25 at the lower end thereof, a weighted plunger mounted in the cylinder, a cable wound upon the drum and connected to the plunger, and means for withdrawing the pawl from the ratchet wheel at each partial rotation of the 30 latter, substantially as specified.

2. In a pump mechanism of the class de-

scribed, the combination with the track, the shaft 4 located between the rails thereof, the drum mounted on the shaft, the ratchet wheel 35 at one side of the drum having the plain portion 7, and flange 8 at one side of the same, and the pawl 3 for engaging the teeth of the ratchet-wheel, and having its free end provided with the notch 14 and finger 30, the latter adapted to be actuated by the flange, of 40 the cylinder 15 arranged below the drum and provided with the supply-pipe 16 having the inwardly opening valve 17 and the discharge pipe 18 having the downwardly opening valve 19, the weighted plunger 20 having the eye 22 45 the casing 23 located above the cylinder, the pulley 25 rotatably mounted thereon, the tube 28 connected with the upper end of the cylinder with the casing, the cable connected to the drum passing over the pulley and connected to the eye of the plunger, the casing 9 50 arranged above the ratchet wheel, the vertical reciprocating plunger 10 located in the casing, and the spring for normally elevating the same, substantially as specified. 55

In testimony whereof I have affixed my signature in the presence of two witnesses.

HIRAM D. LAYMAN.

Witnesses:

B. THRUSTON,
JOE ASHER.