

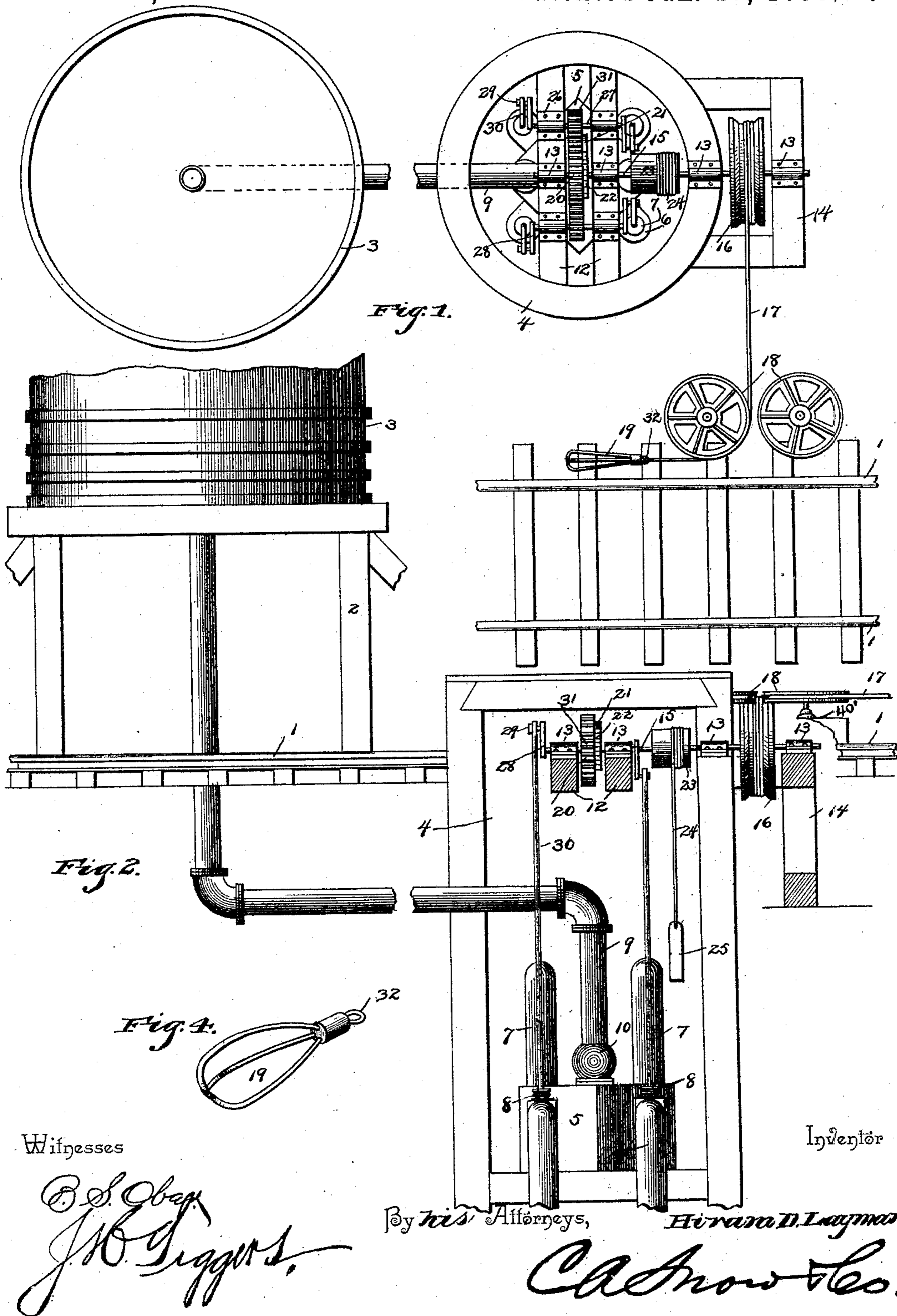
(No Model.)

2 Sheets—Sheet 1.

H. D. LAYMAN.
AUTOMATIC RAILWAY PUMPING MECHANISM.

No. 489,962.

Patented Jan. 17, 1893.



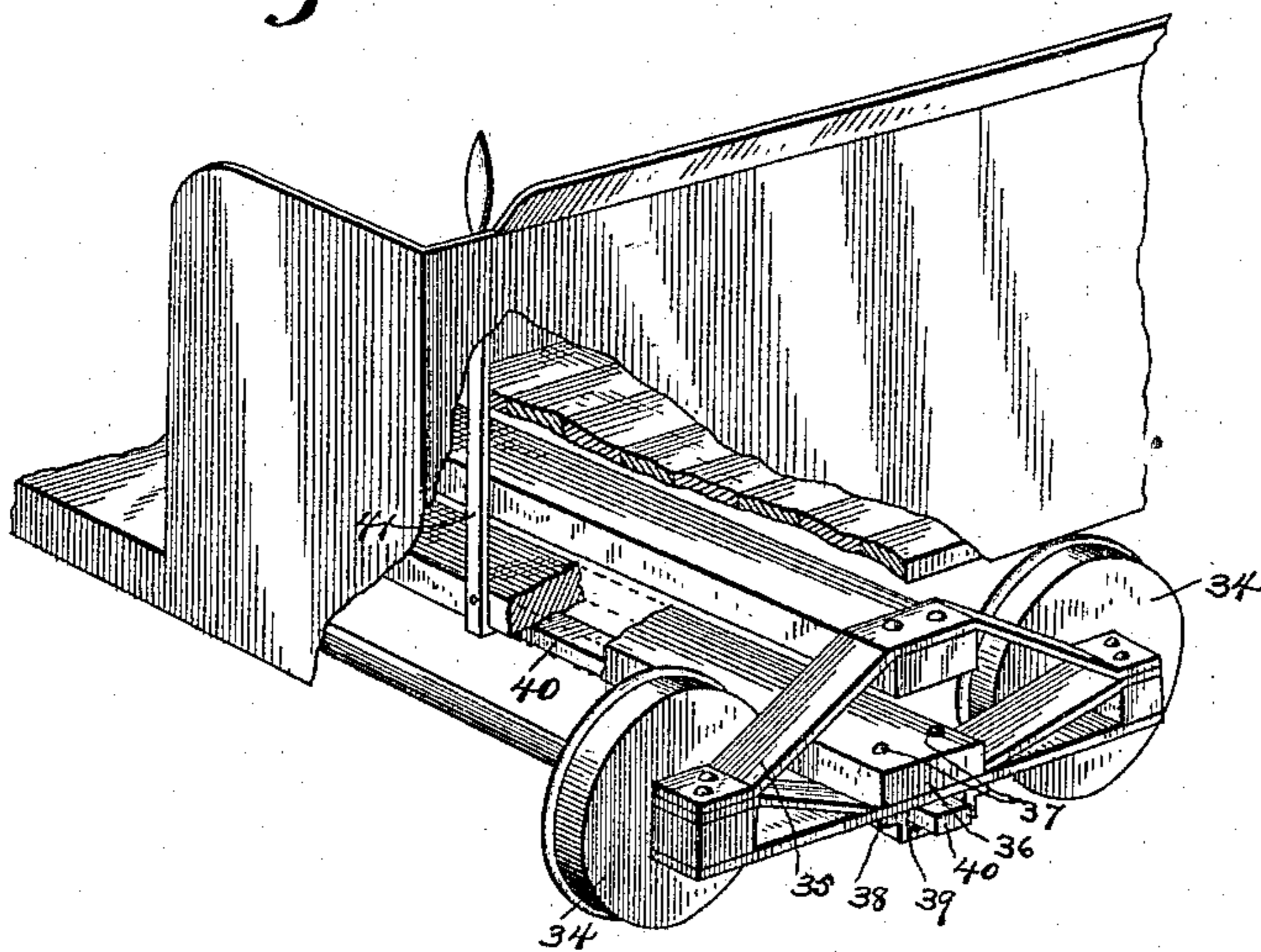
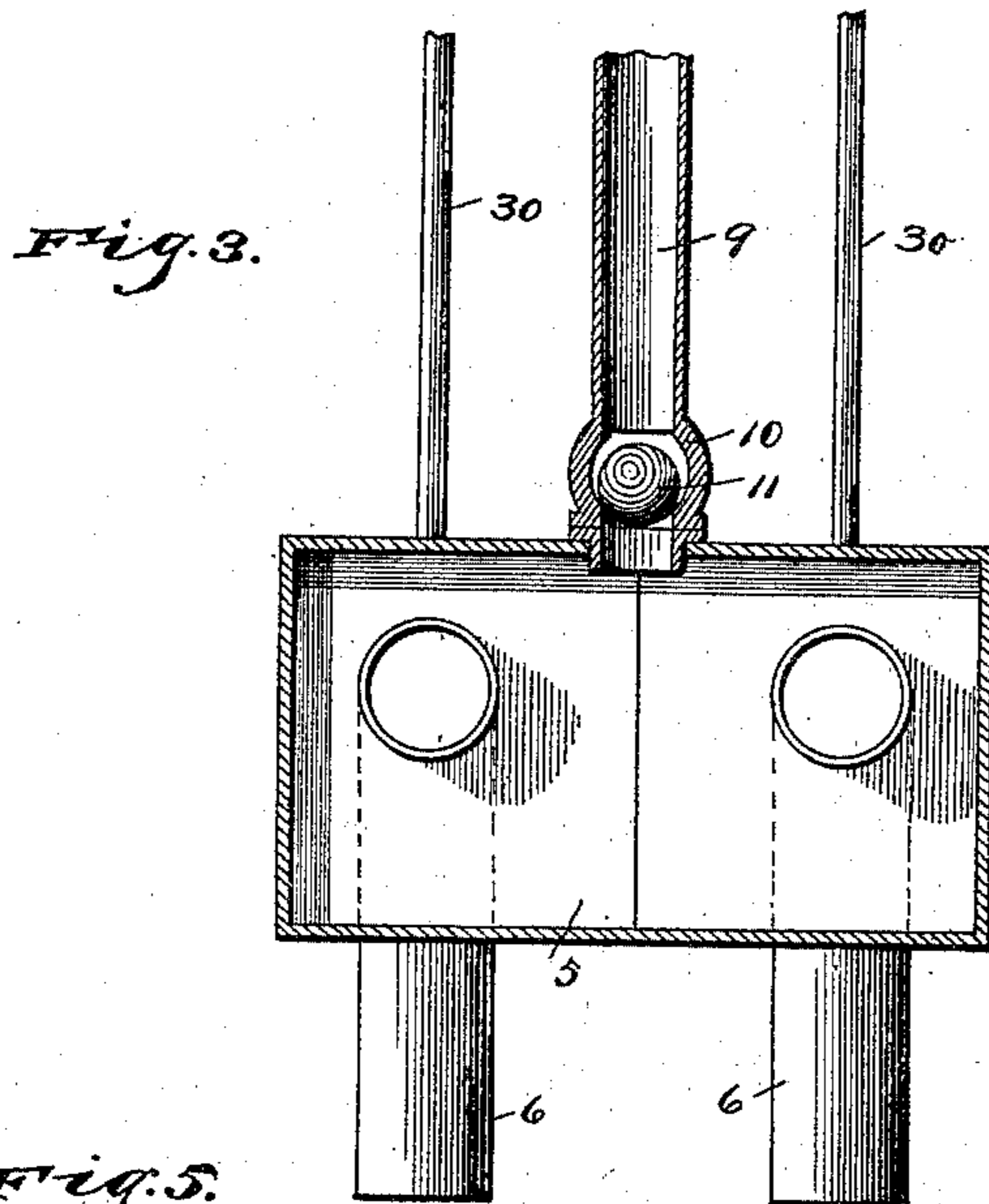
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Witnesses

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Inventor

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UNITED STATES PATENT OFFICE.

HIRAM D. LAYMAN, OF LITTLE ROCK, ARKANSAS.

AUTOMATIC RAILWAY PUMPING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 489,962, dated January 17, 1893.

Application filed March 14, 1892. Serial No. 424,887. (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 a new and useful Automatic Railway Pumping Mechanism, of which the following is a specification.

My invention relates to an automatic railway pump, and machinery for operating the same, the main objects in view being to provide machinery of simple construction, adapted to be operated by the moving train, and to force water from any source of water supply, for instance from a well, to the tank above; and to provide means for automatically disengaging the cable for operating the machinery from the moving train.

With these main objects in view, the invention consists in certain features of construction and combinations of parts hereinafter specified and more particularly pointed out in the appended claims.

Referring to the drawings:—Figure 1 is a plan view of a portion of a track, a tank and pumping machinery constructed in accordance with my invention. Fig. 2 is a vertical section through the well, the pump being shown in side elevation. Fig. 3 is a vertical section of the pump. Fig. 4 is a detail of the engaging-device. Fig. 5 is a perspective of the front end of tender.

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

1 designates the opposite track-rails, at one side of which is located the structure 2 for supporting the supply-tank 3. At one side of the track there is in this instance a well 4, or the same may be omitted and any other ordinary water-supply substituted. Within the well is located a water-box 5, and in this instance the same is rectangular in plan, having a pump 6 located opposite each of its sides. The water-box is provided with air-chambers 7, and valves 8 form a means of communication between the pump and water-box. Rising from the water-box at the center thereof is a discharge-pipe 9, the same passing through the side of the well and up to and communicating with the water-tank 3. The pipe 9 at its point of communication with the water-box is provided with a valve-chamber 10,

within which is located a ball-valve 11, or other style of valve may be employed.

12 designates a pair of transverse beams, upon which are mounted opposite bearings 13. A similar bearing 13 is located in the side of the well-casing, and still another bearing 13 is located outside the well-casing upon a bearing-truss or frame 14. Mounted in these bearings is a transverse bearing-shaft 15, and upon the shaft between the outer bearings 13 a power-drum 16 is mounted. A cable 17 is made fast at one end to the drum, extends laterally from the same toward the track, passes between a pair of guide-pulleys 18, and lies alongside the adjacent rail of the track. At its extremity a connecting-device 19 is secured, which will be particularized hereinafter. Between the inner bearings 13, immediately above the pump, a gear 20 is loosely mounted on the shaft 15, and the same is provided on one side with a pawl 21, spring-pressed into engagement with a ratchet-wheel 22, made fast upon the shaft, whereby the shaft and gear move together in one direction, but the shaft is enabled to move in an opposite direction independent of the gear. At one side of the bearings 13 between which the gear 20 is located, a re-winding drum 23 is mounted upon the shaft, and about the same in a direction opposite to the disposition of the cable 17 is wound a cable 24, to the lower end of which is secured a retracting or re-winding weight 25. At the opposite sides of the gear 20, and shaft 15, in pairs of opposite bearings 26 mounted upon the beams 12, are short transverse shafts 27, the extremities of which extend beyond the bearings 26, and terminate in cranks 28. To each of the cranks 28, by means of a wrist-pin 29, is connected the upper end of a piston rod 30, one of which is provided for each of the pumps 6. Between the bearings 26, each of the shafts 27 has rigidly mounted thereon a small pinion or gear 31, which engages with the intermediate or main gear 20 at opposite sides of the latter.

Referring to Fig. 3, I have illustrated a form of engaging or connecting device which I prefer to employ, and the same consists of a three-pronged loop, 19, heretofore mentioned, the prongs diverging from a rear eye 32 in

which the end of the cable is secured, the said prongs after such diverging being inwardly bent as shown. By reason of the employment of the two prongs, it will be seen
 5 that which ever way the device is dropped to the ground, when released in the manner hereinafter described, one of said prongs will be uppermost or in position to be caught by the engaging device extending from the mov-
 10 ing train, under the control of the engineer, and which I will now proceed to describe.

Referring to Fig. 5, which I have shown a perspective of a portion of a tender, 34 designates the opposite wheels, 35 the spring, and
 15 36 the sand-bolster, through which extend the usual bolts 37. 38 designates a metal strap or keeper, perforated at its ends to receive the bolts of the sand-bolster, and between such perforations is depressed as at 39. In
 20 such depression or offset is located the bar 40, to the inner end of which is pivoted a lever 41, within reach and under control of the engineer or his assistant, whereby through a vibration of the lever the bar will be reciprocated and thus thrown out into position or with-
 25 drawn out of position. When thrown out into position for operating the pumping mechanism, the same will engage with the engaging device 19, in the manner heretofore specified, and the cable will be drawn out with the
 30 movement of the train, thus rotating the drum 16, the shaft 15, winding up the small cable 24, and its weight 25, and communicating motion to the main gear 20, which motion is conveyed through the medium of the
 35 small gears 31 to the shafts 27 and thence to the opposite pump-rods, which are simultaneously operated to force water into the water-box 5 and from thence through the dis-
 40 charge-pipe 9, up into the tank, from which it is drawn off in the ordinary manner. Some distance from the point of engagement between the bar and engaging device of the cable there is located a curved releasing or
 45 throw-off rod 40', best shown in Fig. 1, and when the cable has been drawn out to such an extent that the connecting-bar and engaging device reach this point, the throw-off
 50 rod over which the connecting device rides, serves to move the connecting-device laterally, thus effecting an automatic disengagement between the parts. Immediately upon this release the re-winding weight 25 serves
 55 to rotate the drum 23, the shaft 15 and the main drum 16, the gears 20 and 31 remaining idle and non-operative upon the shaft during the descent of the aforesaid re-winding weight 25. Inasmuch as the re-winding cable 24
 60 passes around the drum 23 reversely to that of the cable 17, it will be obvious that as the said cable 24 unwinds, the released cable 17 will be wound, and thus brought to a position to be engaged by a subsequent train and re-operate the pump mechanism.

Having described my invention, what I claim is:—

1. The combination with the track, the well at one side of the same, and the tank located at one side of the well, of the series of pump-cylinders, the intermediate water-box with
 75 which they communicate, the discharge-pipe leading from the water-box to the tank, the transverse shaft supported within and partly without the well, the gear-wheel mounted
 75 loosely thereon and provided with a pawl, a ratchet-wheel fixed upon the shaft at one side of the gear, the rewinding drum mounted on the shaft, the cable thereon, and provided at
 80 its lower end with a re-winding weight, the power drum fixed upon the shaft, the cable wound thereon and extending therefrom, guide-devices for the cable, and an engaging
 85 device at the free end of the same lying at the side of the track, the pair of opposite short transverse shafts arranged at the sides of the main shaft, and terminating at their
 90 ends in cranks, piston-rods connected to the crank, and descending into the pump-cylinders, and gears mounted on the shafts and engaging the gear of the main shaft, substantially as specified.

2. The combination with the track, the tank, the pump-mechanism, the drum, the cable extending from the drum and terminating at one side of the track, of an engaging device
 95 located at the end of the cable and adapted to engage a bar extending from the moving train, and the curved throw-off rod or automatic detacher 40' located in the path of the engaging device and at one side of the track, substantially as specified.

3. The combination with the pump-operating mechanism, comprising a cable, combined with the herein-described bar-engaging device, consisting of an eye to which the cable
 105 is attached, and the series of three prongs bent to form loops and diverging from the eye, substantially as specified.

4. The combination with the track, the pump-operating mechanism, the cable for operating the same and the connecting three
 110 pronged catch 19 secured to the cable at one side of the track, of a tender, its sand-bolster, the pair of bolts extending through the same, the offset, strap or keeper perforated to receive the bolts, the engaging-bar mounted for reciprocation in said keeper, and the hand-
 115 lever pivotally connected to the inner end of the bar and extending within reach of the engineer, substantially as specified.

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

HIRAM D. LAYMAN.

Witnesses:

J. H. SIGGERS,
 H. G. PIERSON.