

(No Model.)

2 Sheets—Sheet 1.

H. D. LAYMAN.
AUTOMATIC RAILWAY PUMP.

No. 506,241.

Patented Oct. 10, 1893.

FIG. 1.

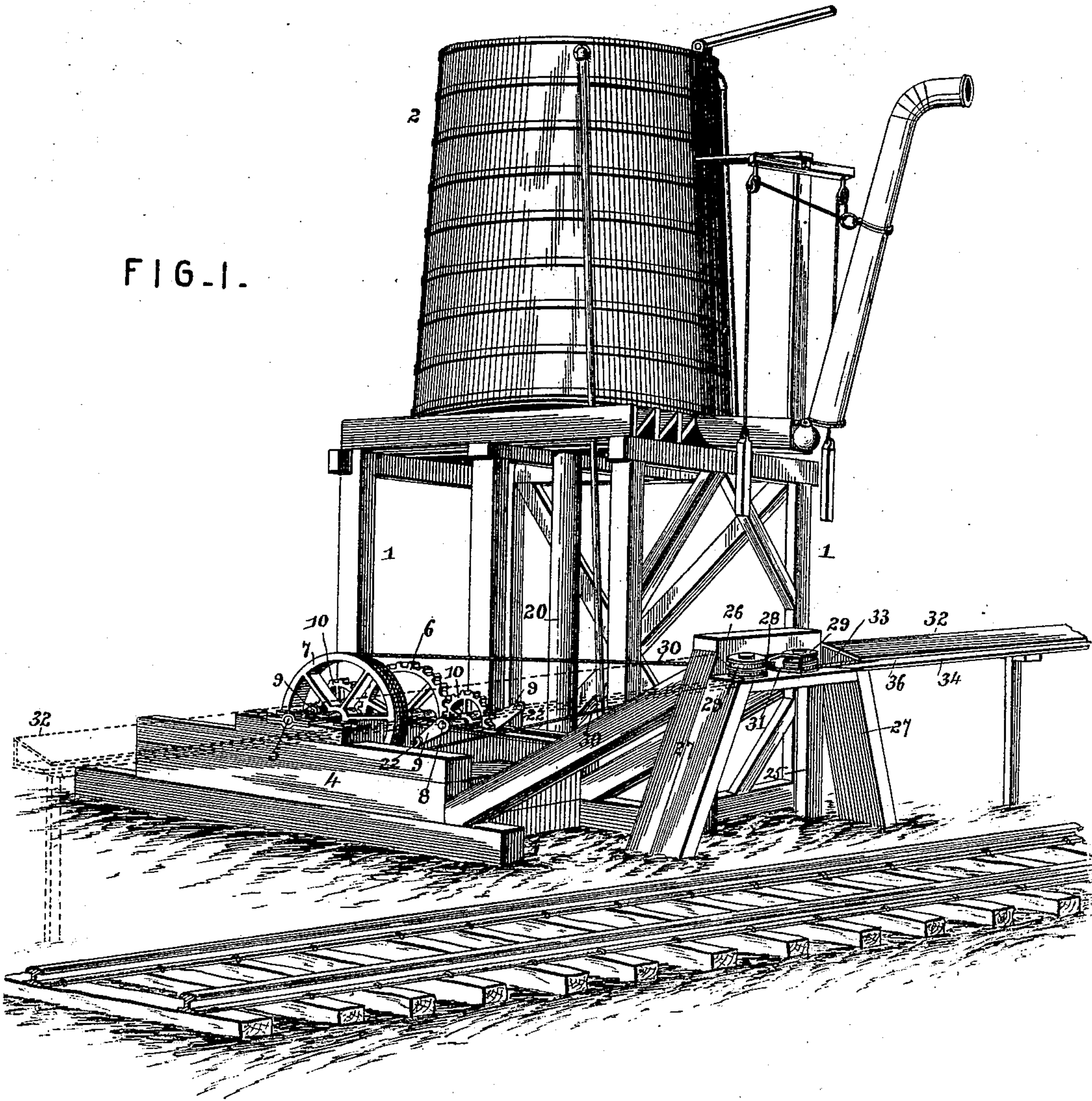
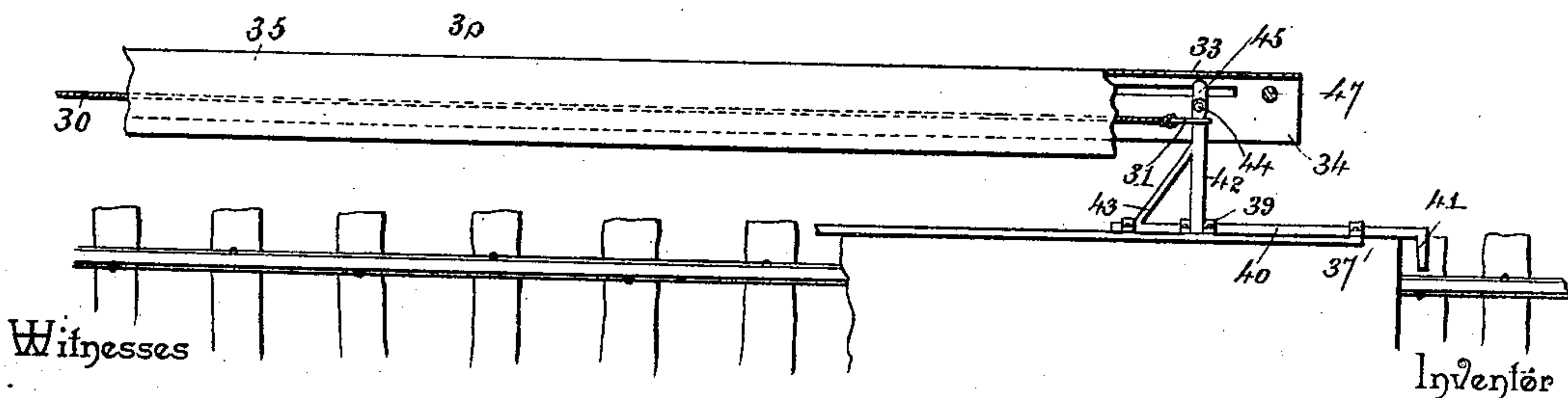


FIG. 6.



Witnesses

Inventor

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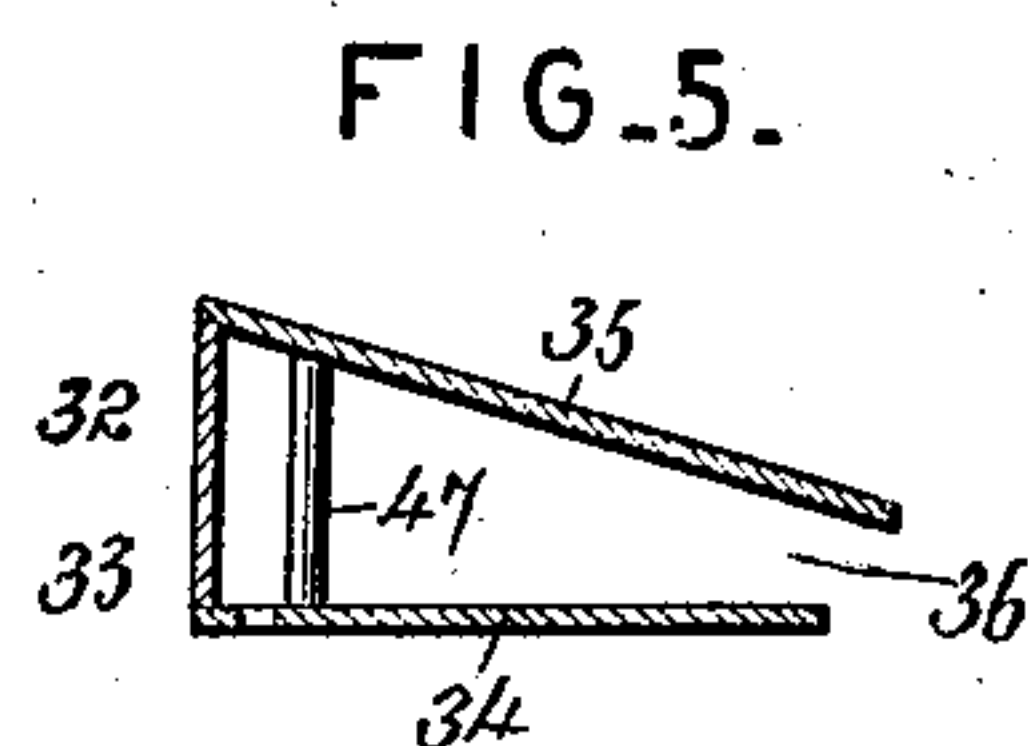
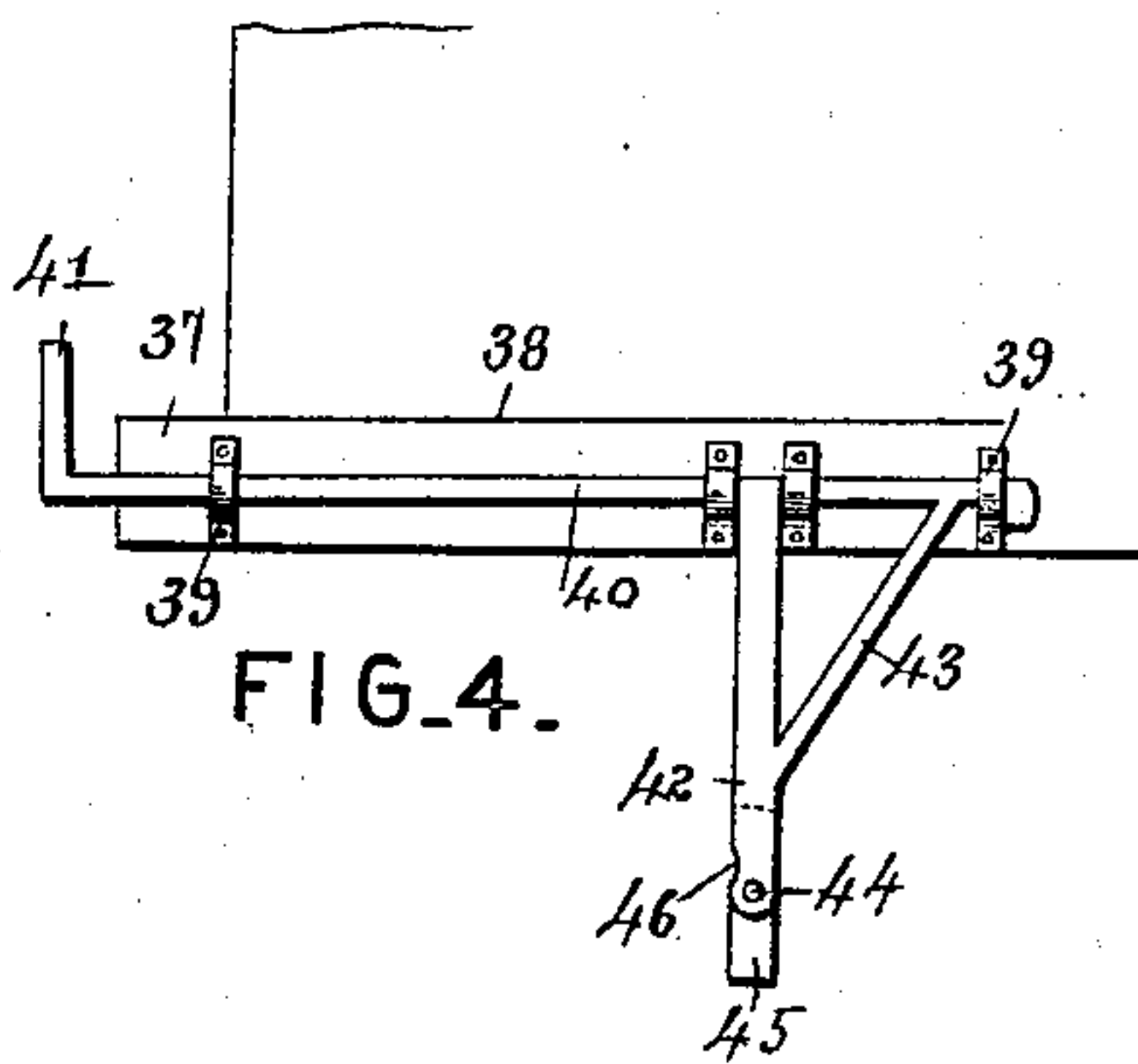
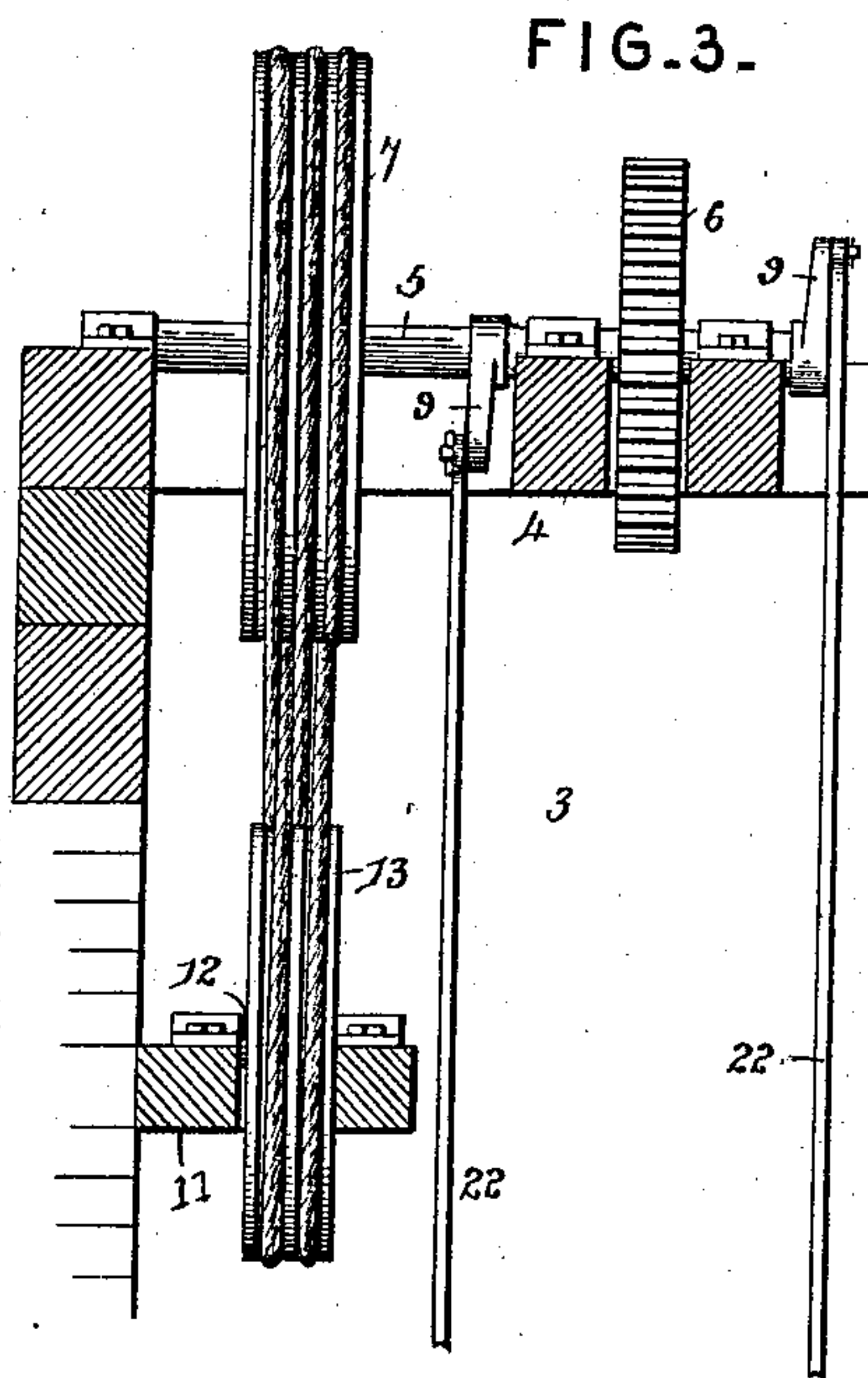
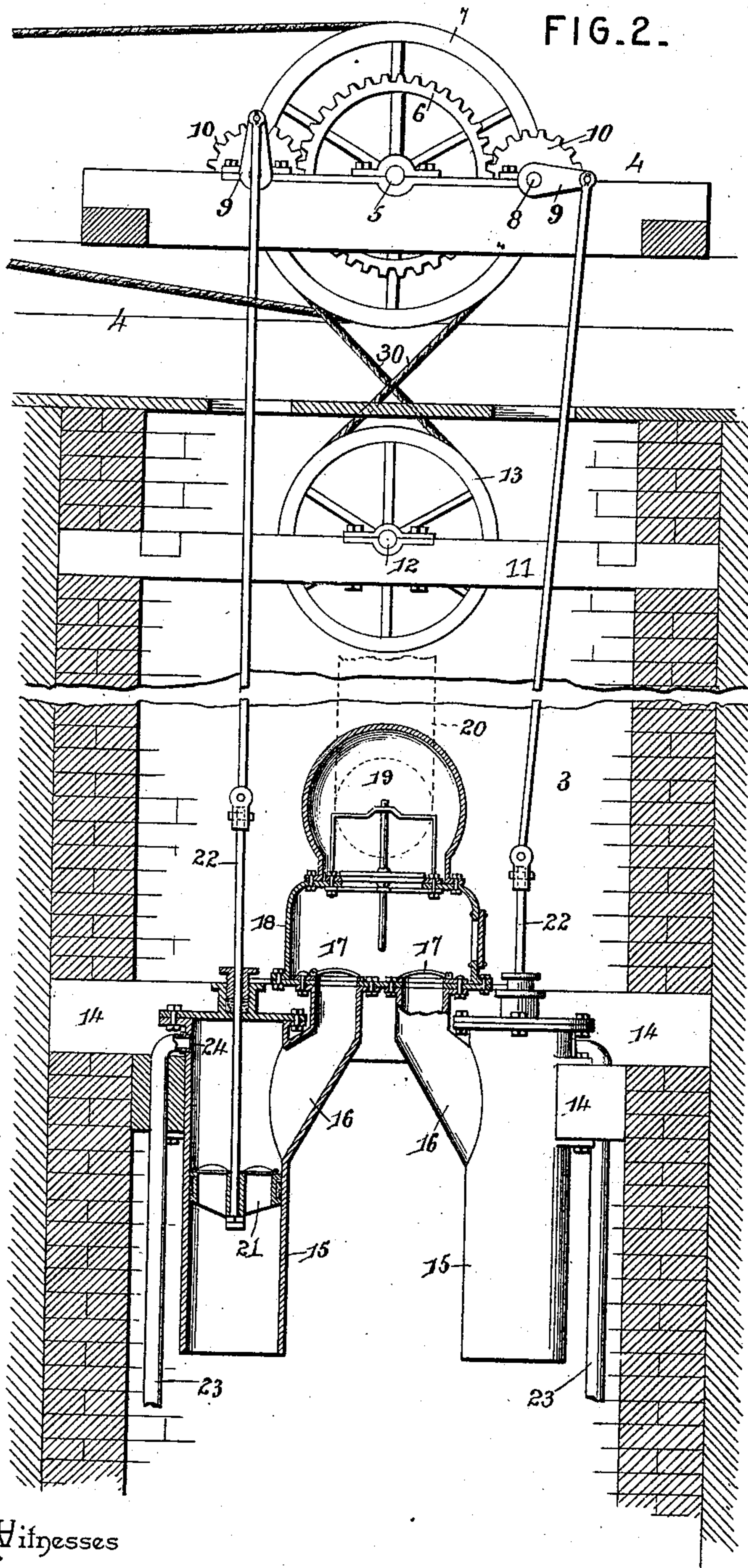
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2 Sheets—Sheet 2.

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Witnesses

Inventor

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UNITED STATES PATENT OFFICE.

HIRAM D. LAYMAN, OF LITTLE ROCK, ARKANSAS.

AUTOMATIC RAILWAY-PUMP.

SPECIFICATION forming part of Letters Patent No. 506,241, dated October 10, 1893.

Application filed January 16, 1893. Serial No. 458,478. (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-Pump, of which the following is a specification.

My invention relates to improvements in that class of devices known as "tank-feeders" or "railway-pumps;" the objects in view being to provide a cheaply constructed simple mechanism adapted to be employed in connection with tanks and to be operated by the passing trains so as to pump water from wells or other sources of supply into said tanks to be conveniently drawn off when desired.

Although I have herein shown and described the invention, as will hereinafter appear, in connection with railway-tanks, it will be obvious that the said mechanism may be employed for various purposes, such for instance, as pumping water out of mines, &c. I therefore do not limit my invention to the specific use described; but hold that I may apply the same to any of the various uses that may suggest themselves.

With these and other objects in view, the invention consists in certain features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a perspective view of a tank, and mechanism constructed in accordance with my invention connected therewith, the same being located at one side of a track. Fig. 2 is a vertical section of a well, the pump to be operated by the mechanism and the mechanism located over the pump. Fig. 3 is a transverse vertical-section of said mechanism. Fig. 4 is a side elevation of a portion of a tender, the same being provided with a lever for engaging with and operating the feed-mechanism. Fig. 5 is a transverse section through the way for carrying the cable. Fig. 6 is a plan of one of the guide-troughs and a portion of a tender.

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

Upon a suitable tower or frame 1, constructed in any desired manner, is supported the tank 2; the same being thus elevated; and the tank is of the ordinary construction,

and hence needs no detail description. Below the tank, or to one side of the same, there is, in this instance, located a well 3, and upon the top of the same is supported a rectangular bed-frame 4. The bed-frame 4 is provided with bearings transversely opposite each other, and in the central pair is located a main transverse shaft 5, which shaft carries a spur-gear 6, and also a grooved drum-wheel 7, said gear and drum-wheel being made fast to and adapted to revolve with the shaft. In the end-bearings of the said bed-frame 4 are located transverse shafts 8, the ends of which terminate in crank-arms 9, and between said bearings upon the shafts 8 there is mounted small spur-gears 10, two of which engage with the spur-gear 6 at opposite sides thereof.

In a suitable frame 11 located below the bed-frame 4 and within the well there is journaled a transverse shaft 12, and said shaft carries a grooved take-up wheel or pulley 13, which is located below the grooved-wheel or pulley 7. The wheel 7 preferably has a series of three grooves, while the take-up wheel has a series of two grooves, all for a purpose hereinafter explained; though the number of grooves may be varied as desired. Below the frame 11 is situated the pump-frame, which consists of opposite pairs of cross-timbers 14, and to these timbers are secured a series of four pump-cylinders 15, whose discharge branches or pipes 16, are provided with upwardly-opening valves 17, and communicate with a receiving-chamber 18. Above the receiving-chamber 18 is located the discharge-chamber 19, and from it leads the discharge-pipe 20, that communicates with the aforesaid tank 2. Within the pump-cylinders 15, valved piston-heads 21, are located and adapted to reciprocate, the same being connected with suitable operating-rods 22, whose lower ends are pivotally connected with the crank-pins of the crank-arms 9 located upon the shafts 8. Communicating with the upper end of each cylinder above the piston-head 21 is a supply-pipe 23 the same being provided with an inwardly-opening valve 24, whereby it will be observed each pump is a lift-pump.

At the sides of the track and between it and the mechanism thus described there is located a breast-frame which is constructed as follows: Pairs of standards 25, rise from

the ground and support a cross-head 26, said standards and cross-head being braced by oppositely-inclined braces 27. The cross-head has an opening 28 formed therein, and in said opening is journaled a pair of grooved guide-pulleys 29 having an intermediate space. It will be understood that the frame thus described may be altered in its construction, the only essentiality being that it is so constructed as to support the guide-pulleys.

30 designates a cable, the ends of which are provided with metal loops or eyes 31, and between the ends and the loops the said cable is passed about the pulley 7, thence downward in the reverse direction around the pulley 13, again over the pulley 7, and again over the pulley 13, and thence around the pulley 7, its two terminals passing out between the guide-rollers 28. It will be seen that when one terminal or loop 31 is supported between the guide-rollers in position for engagement by the engine the other terminal will be unwound from the pulley and extend some considerable distance down the track. In order to provide a suitable support for the cable thus extended there is located at each side of the pulleys a long trough or guide-way 32, the same having a general triangular-shape in cross-section and consisting of the back-wall 33, bottom 34, and inclined top 35. The outer edge of the top overlaps the corresponding edge of the bottom, whereby a shed is formed for preventing water from gaining access to the interior of the trough and the bottom of said trough preferably terminates short of the back-wall thereby forming an opening or slot 36, whereby any moisture that may gain access may readily drip, so that the trough is kept dry and the cable is preserved against impairment by the weather.

37 designates the front portion of a tender of ordinary construction, and 38 designates one of the sills at the sides thereof. Upon each sill of the tender there is located a plurality of keepers 39, and in these keepers there is journaled a rock-shaft 40, one end of which is bent at an angle to form a stud 41. Between the ends of the rock-shafts there projects therefrom a rock-arm 42, and the same is braced at its outer side by an inclined brace 43. To the outer or free end of this rock-arm there is pivoted as at 44 a latch 45. This latch is pivoted between its ends so that its inner end overlaps that of the rock-arm and the corresponding edges of the latch and rock-arm are provided with a shallow groove or recess 46.

This completes the invention, with the exception of the two liberating-posts 47, that are located some distance down the track and are in the path of the latch 45, when the rock-arms 42 are extended laterally. In this manner, as will be obvious, the latches will be operated upon their pivots 44, or swung to the rear, and will thus liberate the eye or ring 31, of that end of the cable that may be engaged

in the manner hereinafter described. The rock-arm 42 normally hangs in a vertical position, but it will be seen that an operator, such as a fireman, may with the eye-end of his shaker-bar engage the bent end 41 of the rock-shaft and elevate or partially rotate the rock-shaft, whereby the rock-arm 42 is elevated.

In practice as will be apparent, one of the metal loops 31 is always located between and held supported in a horizontal position from the guide-pulleys 29 and a passing train having its rock-arm above described swung outward therefrom will engage the eye or loop 31 and thus carry the cable, with the cable running in the trough, as before explained, and the rock-arm 42 that engages the cable extending into the slot in the front of the trough. As the cable is drawn out it will be obvious that the mechanism described will be set in motion the pumps being operated and serving to collectively force water into the receiving-chamber 18, thence upward through the valved opening into the discharge-chamber 19 and out through the discharge-pipe 20 into the tank. As one terminal of the cable is thus unwound or carried in the direction of the moving train, it will be obvious that the reverse action is taking place upon the remaining terminal of said cable, in that it is being drawn inward or toward the guide-pulleys. At the time that the latch 45 is operated to liberate the unwinding terminal the loop at the opposite end of the cable will have been brought to the position shown in Fig. 1, that is ready to engage any train going from either direction, so a repetition of the operation takes place. In this manner it will be seen that the passing trains are utilized to keep the pump-mechanism operating, and thus fill the tank so that it is always ready for use.

The tank is provided with the usual overflow-pipe so as to carry off any surplus of water should the mechanism be operated too frequently for the consumption of the water, so that in this manner a complete supply is always at hand.

Having described my invention, what I claim is—

1. In a mechanism of the class described, the combination with a water-supply, pumps leading therefrom, a shaft arranged above the pumps, a grooved pulley mounted on the shaft, a spur-gear mounted on the shaft, of opposite transverse shafts, gears located thereon engaging with and driven by the spur-gears, crank-arms at the ends of the shafts, pump-rods leading from the crank-arms to the cylinders of the pumps, a take-up pulley located below the first mentioned pulley and provided with grooves, a framework having a guide located at one side of the mechanism, and a cable passed about the two pulleys and having its two terminals extending forward from opposite sides of the upper pulley and passing

through the guides, said cable being provided at its ends with engaging devices, substantially as specified.

2. In a mechanism of the class described,
5 the combination with a water-supply, a pump, a cable-driven power for operating the pump, a cable connected with the power and terminating in eyes, a guide-frame through which the terminals are passed, a trough at each
10 side of the guide-frame and provided with a slot, of a car, a rock-shaft journaled at each side of the car and provided with a rock-arm, a latch pivoted between its ends to the end of the rock-arm, and liberating-posts located
15 at the ends of the guide-frame, substantially as specified.

3. In a mechanism of the class described, the combination with a water-supply, a pump, a cable-driven power for operating the pump,
20 a cable connected with the power and terminating in eyes, a guide-frame through which the terminals are passed, a trough at each side of the guide-frame and provided with a slot, of a car, a rock-shaft journaled at each
25 side of the car, rock-arms depending from the shafts, and latches pivoted between their ends to the outer ends of the rock-arms, the corre-

sponding edges of the latches and arms being slightly recessed to engage the guide-eyes of the cable, substantially as specified. 30

4. The combination with a water-supply, a cable-driven power, and a pump connected with the water-supply and operated by such power, of the guide-frame located at one side of the track and of the power, said guide-
35 frame being provided with an opening, pulleys located in the guide-frame, a cable connected with the power and having its terminals provided with eyes and extending between the pulleys, and the trough for receiving the cables, said trough being provided
40 with a bottom, a back-wall arranged in rear of the bottom and combining therewith to form an opening, and an inclined top supported by the back-wall and having its front
45 edge projecting beyond that of the bottom, 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:

JOHN H. SIGGERS,
GEO. C. SHOEMAKER.