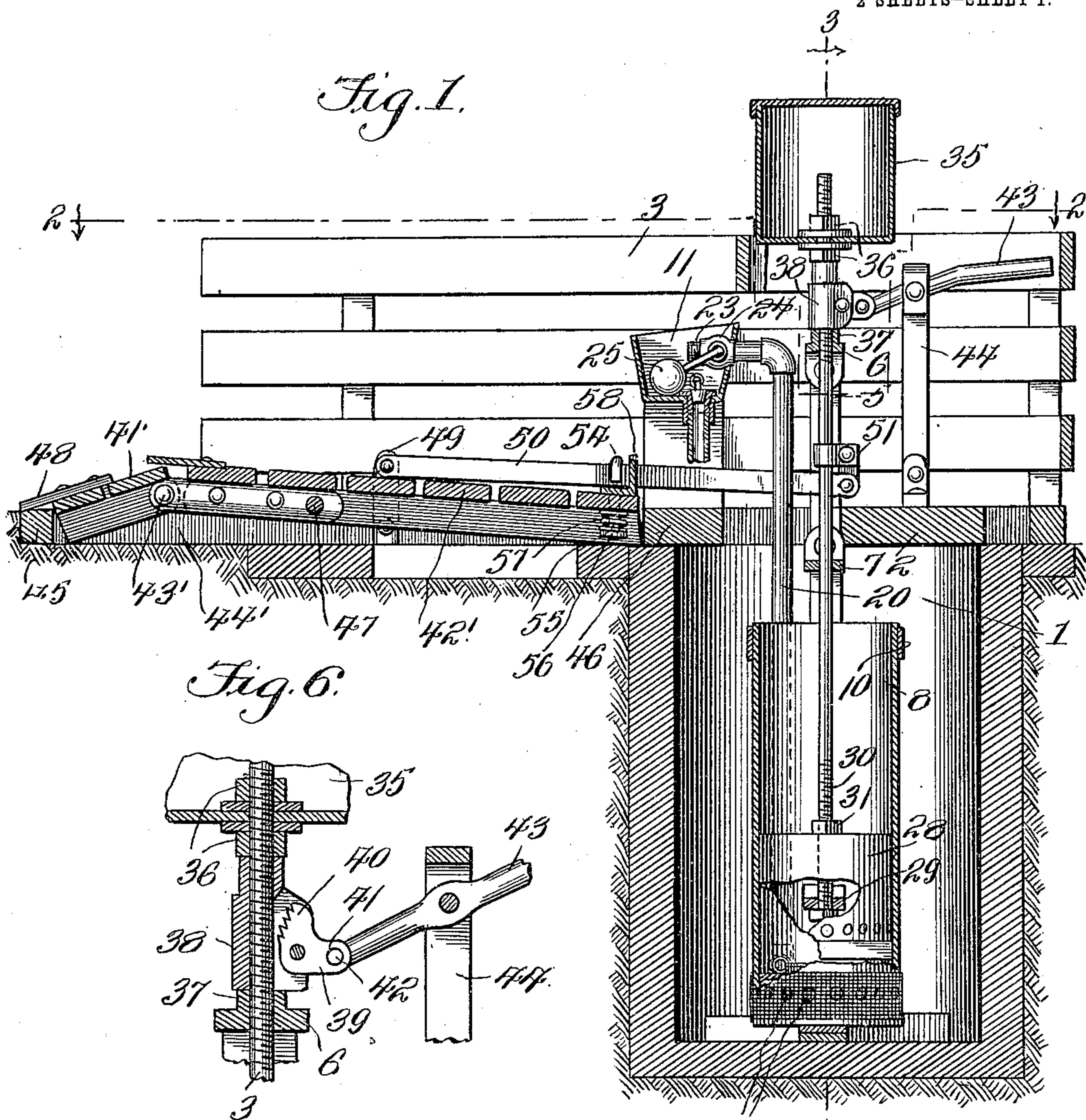


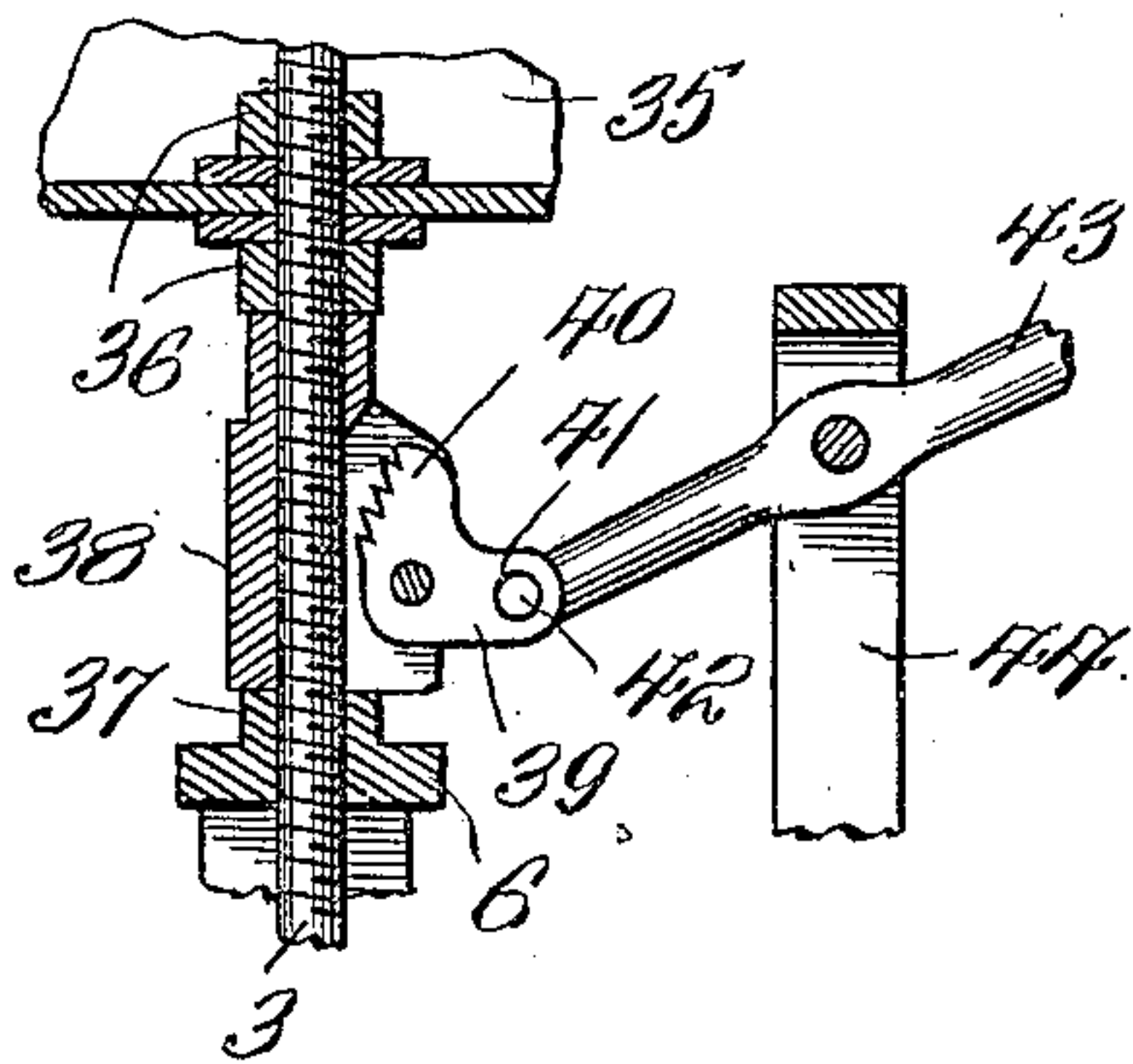
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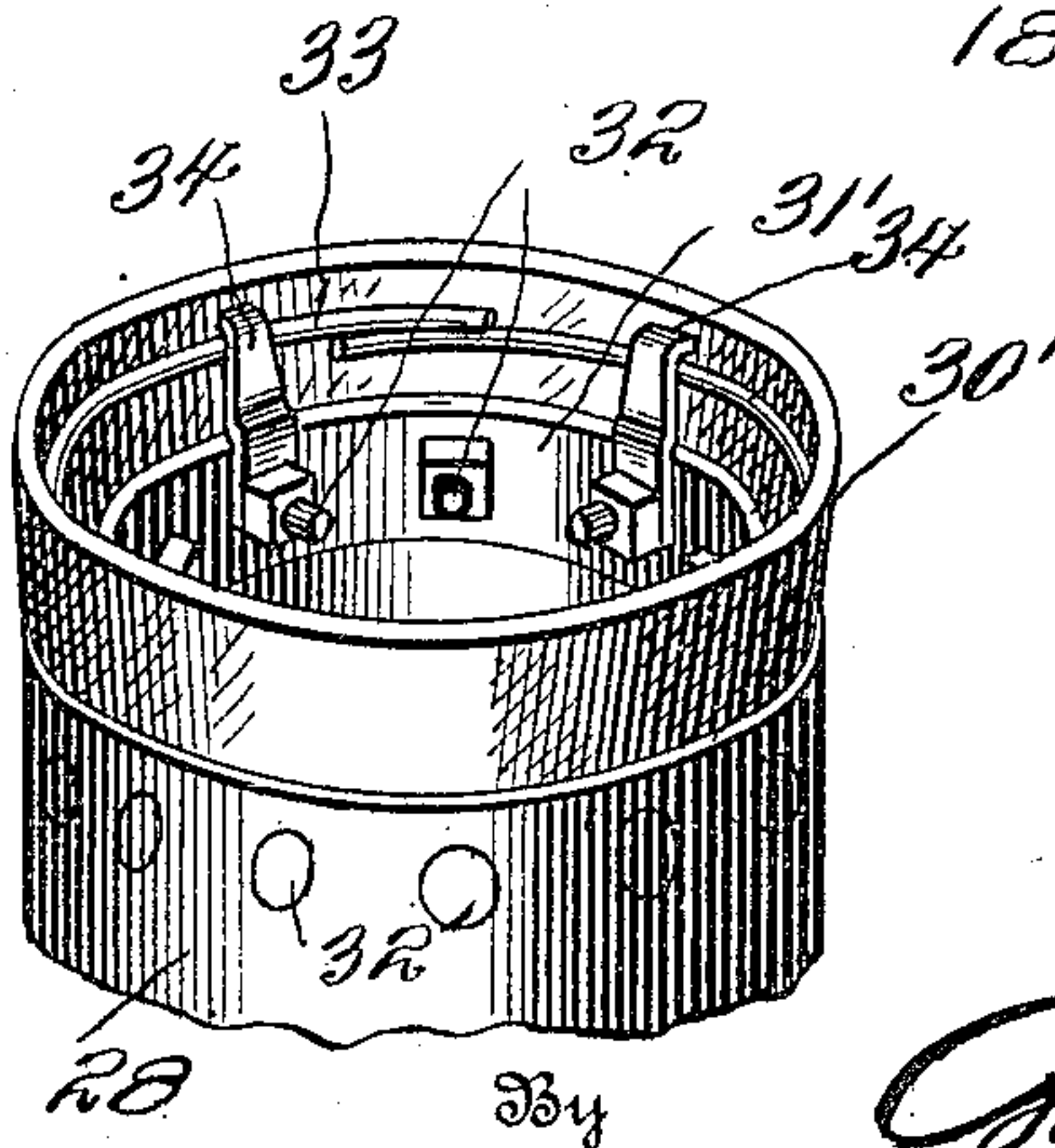
*Fig. 1.*



*Fig. 6.*



*Fig. 5.*



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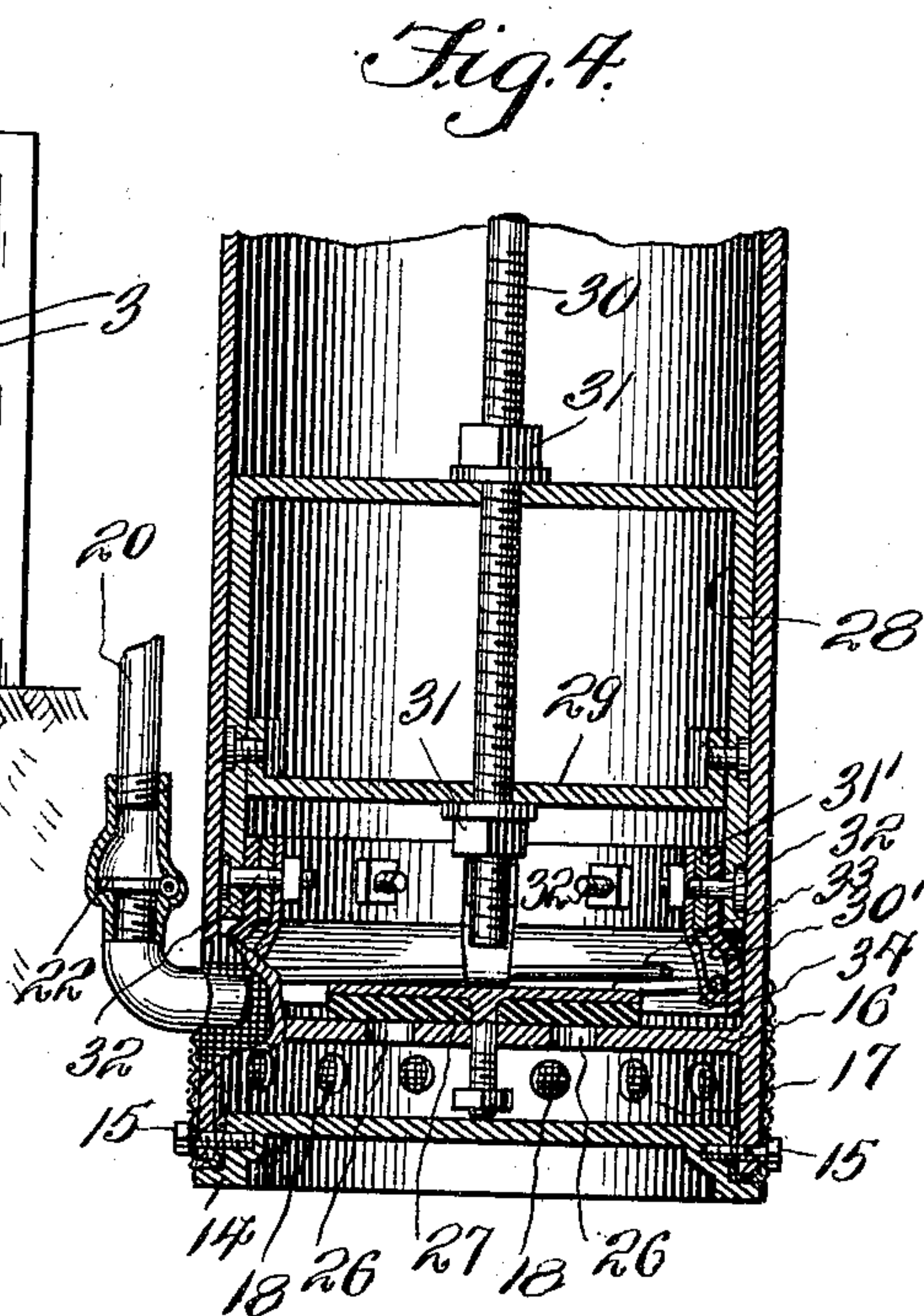
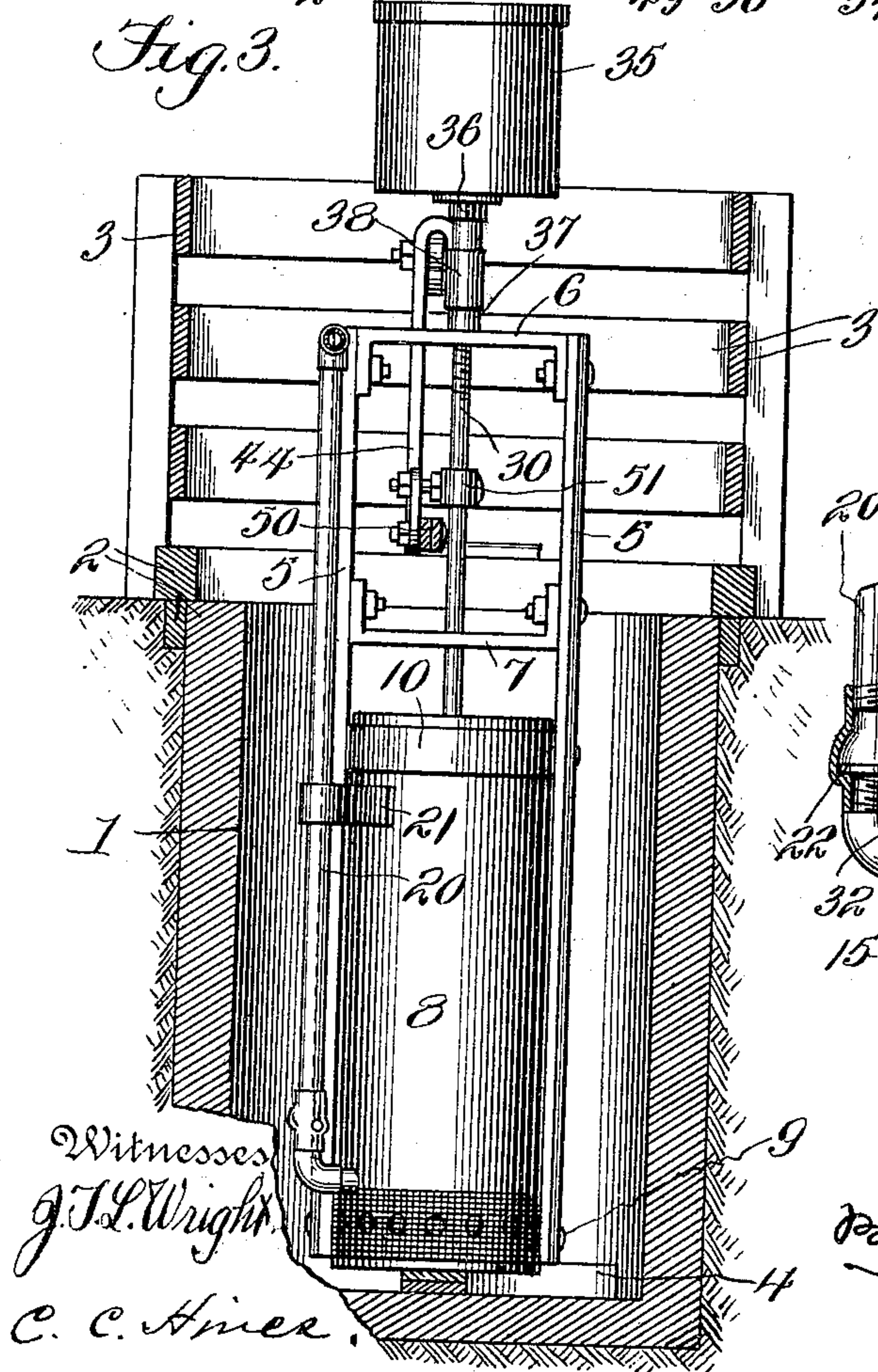
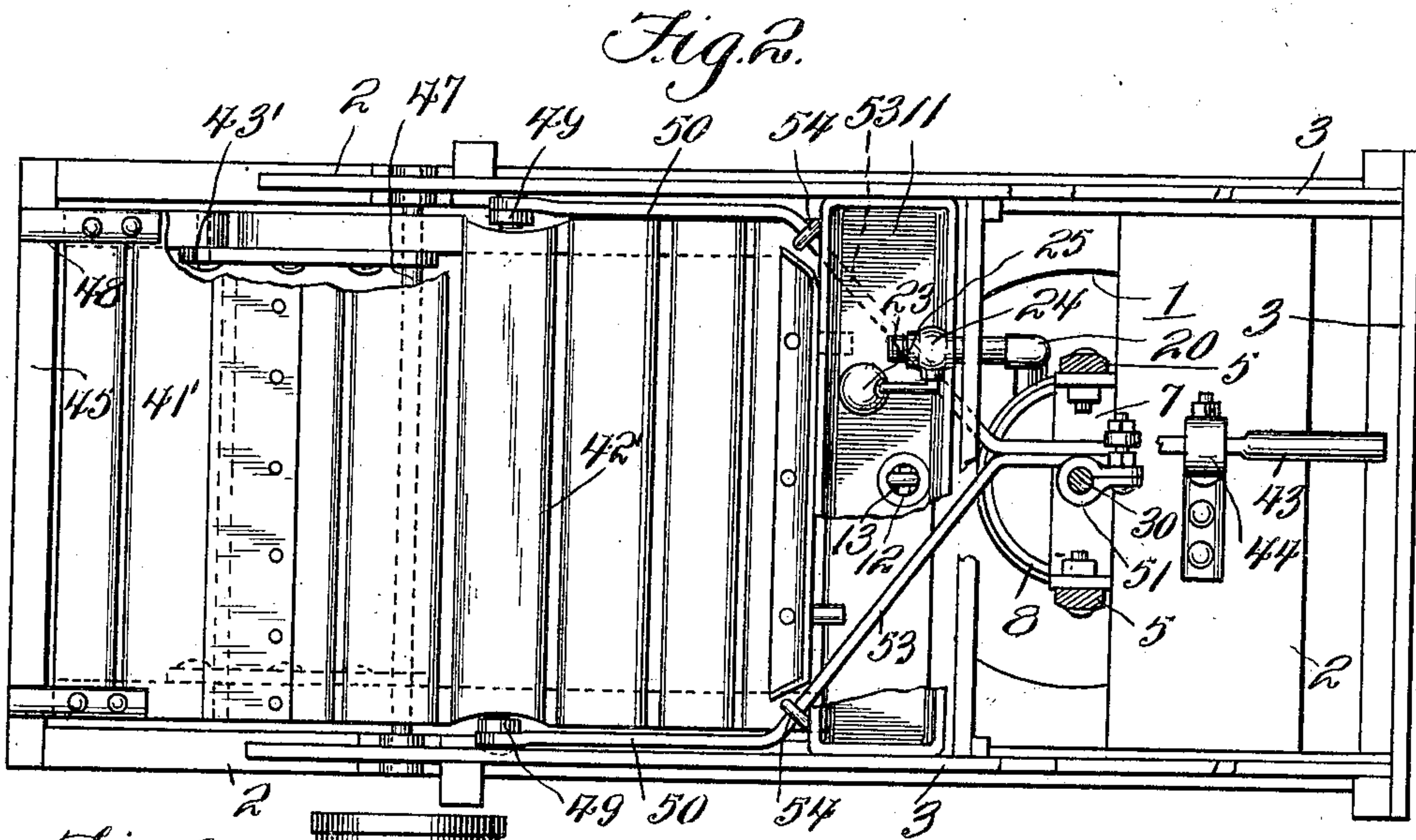


C. F. YOUNG & L. A. BERGER.  
WATER ELEVATING APPARATUS.  
APPLICATION FILED OCT. 29, 1910.

993,432.

Patented May 30, 1911.

2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

CLIFTON F. YOUNG AND LEWIS A. BERGER, OF CIRCLEVILLE, OHIO.

## WATER-ELEVATING APPARATUS.

993,432.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed October 29, 1910. Serial No. 589,758.

*To all whom it may concern:*

Be it known that we, CLIFTON F. YOUNG and LEWIS A. BERGER, both citizens of the United States, residing at Circleville, in the county of Pickaway and State of Ohio, have invented certain new and useful Improvements in Water-Elevating Apparatus, of which the following is a specification.

This invention relates to pumps for elevating water from wells or other sources of water supply to stock troughs, hydrants, house service systems, spraying apparatus, etc., one object of the invention being to provide a simple, inexpensive, reliable and efficient pump adapted for these and other general uses.

Another object of the invention is to provide a pump which may be operated automatically by the stock or by hand at will, which guards against liability of injury to the stock when used to supply a stock trough, and which on each actuation of the piston will store and supply a comparatively large amount of water.

With these and other objects in view, the invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:

Figure 1 is a central vertical front to rear section through the pump and tilting platform. Fig. 2 is a top plan view of the same with parts broken away and other parts shown in horizontal section on the line 2—2 of Fig. 1. Fig. 3 is a vertical transverse section on the line 3—3 of Fig. 1. Fig. 4 is a transverse section on an enlarged scale through the cylinder and piston. Fig. 5 is an inverted perspective view of the piston. Fig. 6 is a sectional elevation of the piston rod and parts of the means for manually operating the pump.

Referring to the drawings, 1 designates a well, at the top of which is a stationary platform 2 and a suitable fence or inclosure 3, the latter being open at the front for the passage of persons and stock to and from the pump. The said platform 2 forms a cover for the well and support for the parts of the pump, while the inclosure 3 protects the pump from injury by the stock and insures the approach and withdrawal of the stock in a prescribed path.

Arranged within the well is a base 4, composed of crossed bars, from which rise stand-

ards 5 connected by cross pieces 6 and 7, forming a frame inclosing the pump cylinder 8 which is secured at its lower end to the standards by suitable fastenings 9 and is encompassed at its upper end by a retaining band 10, whereby said cylinder is held in position. The frame extends above the well and through the platform 2, as shown, and terminates at its upper end in rear of a drinking trough 11 arranged transversely of the passage and suitably supported from said platform 2 or the sides of the inclosure 3. Said trough is provided with a waste outlet 12 closed by a suitable plug, stopper or valve 13.

The cylinder 8 is submerged in the water in the well and closed at its lower end by a bottom or head 14 secured thereto by screws 15. Above the head 14 the cylinder is provided with a false bottom or head 16, forming an intervening water inlet chamber 17, into which the water flows from the well through lateral openings 18 covered by a guard screen 19, whereby the access of dirt and refuse to the cylinder is prevented. A water delivery pipe 20 is connected with the cylinder by a bracket 21 and communicates at its lower end with the cylinder immediately above the head 16. At the lower end of the pipe is a check valve 22 to prevent the return of water to the cylinder, and at the upper end of the pipe is a nozzle 23 arranged to discharge into the trough. A valve 24 governs the discharge of water from the nozzle and is controlled by a float 25, whereby the flow of water to the tank is cut off when the water therein reaches a prescribed level. Ports 26 are provided for the feed of water from the chamber 17 to the lower end of the body of the cylinder, which ports are controlled by a suction valve 27.

The pump piston 28 reciprocates within the cylinder and comprises a hollow air containing body or shell open at bottom and closed at top, said shell being of greater length than the diameter to contain a comparatively large body of air and snugly fitting the cylinder and having an intermediate cross bar or spider 29. The said cross bar and the top of the shell are formed with registering openings receiving the lower threaded end of the piston rod 30, which is clamped thereto by nuts and washers 31. An annular packing strip or ring 30' fits at its upper edge within the piston and is held in posi-



tion by a clamping ring 31' secured to the piston by bolts 32. The lower edge of the ring extends below the piston and is pressed fluid-tight against the cylinder by an annular expansible spring 33. Said spring is engaged and held in place by hooked clips 34 suspended from the bolts 32. On its upward or suction movement the piston draws water into the body of the cylinder, and on the downward movement of said piston a portion of the water is forced out through the delivery pipe, while the air contained in the piston is compressed behind the body of water, providing for the continued flow of the water under pressure until the amount drawn in is fully discharged.

Mounted upon the upper threaded end of the rod is a weight holding receptacle 35, secured thereto by nuts 36, and arranged on said rod between said receptacle and a guide tube 37 carried by the bar 6 in a sliding sleeve 38. Said sleeve carries a pivoted pawl or dog 39 having a toothed inner end 40 to engage the threads or ratchet teeth on the rod and having its outer end formed with an aperture 41 to receive the laterally bent end or crank 42 of an operating lever 43, said lever being pivotally mounted upon a swinging standard 44, so that upon disengaging the end 42 from the aperture 41 the lever may be swung to an inoperative position out of the way of the rod. The toothed end of the dog is normally held by gravity out of engagement with the rod, allowing the latter to have free independent movement, but by upward pressure on the apertured end of the dog the toothed end thereof will be thrown into engagement with the threads of the rod, thus forming a clutch connection between the lever and rod to couple the same together when the lever is operated. A manually operated means is thus provided to enable the rod and piston to be raised on the suction motion against the resistance of the weighted element 35, which, upon the release of the rod, will force the rod and piston downward on the compression and discharge stroke. It will be understood that when the lever is released the sleeve 38 will drop down onto the guide tube 37 and the dog will tilt to retracted position, allowing free down movement of the piston under the action of the weighted element.

A tilting platform is provided to enable the pump to be automatically operated by live stock on their passage to the watering trough. This tilting platform is arranged between the trough and entrance to the inclosure 3 and comprises front and rear sections 41' and 42', one relatively shorter than the other, said sections being pivotally connected at their adjacent ends by a cross rod or bolt 43'. Said tilting platform is movable in a recess 44' in the stationary

platform 2 and the relatively outer ends of the sections thereof abut against cross piece abutments 45 and 46 at the ends of the recess to firmly stay the tilting platform in its tilted condition. As shown, the platform sections 41' and 42' incline toward each other and are highest at their adjacent ends, and the section 42' is pivotally mounted on a cross rod or bolt 47 fixed in the side walls of the recess at a point between its center and outer pivoted end. The section 41' is provided with a joint plate 48 to overlap the cross piece 45, while the outer short end of the section 42' carries a joint plate 48' to overlap the adjacent ends of the two platform sections when the same are depressed, whereby a smooth surface is provided for the travel of the stock thereon. Rising from the platform 2 are short standards 49, to which are pivoted the forward ends of lever arms 50, which are pivotally connected at their rear ends to a clip 51 engaging the piston rod. The arms extend along the sides of the section 42' of the tilting platform to the inner end of the inner platform section and are thence bent inwardly as at 53, at an oblique angle and together coupled to the clip, forming a yoke-shaped lever for transmitting motion from the tilting platform to the piston rod. The arms are engaged adjacent their bent ends by the hooked upper ends 54 of rods 55 slidable through the platform section 42' and having heads 56 at their lower ends, between which and said platform section are arranged coiled cushioning springs 57. These yielding or cushioning connections between the platform and lever arms provide for the gradual transmission of power from the platform to the piston rod, thus relieving the latter from shocks and jars when the platform is depressed by the weight of the stock. Said cushioning connections also prevent injury to the lever arms when any material resistance to the downward movement of the piston is established, as when a supply of water still remains within the cylinder. A guard flange or fender 58 rises from the inner edge of the platform section 42' to prevent any of the live stock from slipping off the inner end of the platform or attempting to pass beneath the trough.

It will be understood, of course, that in the use of the device as a hand pump the lever arms 50 are disconnected from the piston rod and the receptacle 35 is partially or wholly filled with stones or other material of sufficient weight to depress the piston for the discharge of the water. Each time the hand lever is operated the piston will be raised, thus drawing in water, and upon the release of the lever said lever will be returned to normal position and the piston forced downward by the weighted re-



ceptacle. The mode of operation, conveniences and advantages of the invention in this connection will be readily appreciated, and it is obvious that the delivery pipe may be connected with a house service system or arranged to supply water for any purpose.

In the use of the device as an automatic pump actuated by the weight of the live stock, the lever 43 may be disconnected from the clutch device and the receptacle 35 allowed to remain but left unweighted, or the lever, receptacle and clutch device may be entirely dispensed with. In such use of the device the weight of an animal stepping upon the outer platform section 41' will depress said section and the outer end of the platform section 42', thus elevating the inner end of the platform section 42, whereby motion will be transmitted through the lever arms to raise the pump piston on its suction stroke. When the animal steps upon the inner end of the platform section 42' said section will be depressed, restoring the platform to normal position and forcing the piston downward on its discharge stroke, whereby a supply of water will be forced through the pipe 20 to the trough. Upon the backward travel of the animal over the platform sections, the latter will be restored to normal position, ready for a repetition of the above described operation.

We claim:

1. A water elevating apparatus comprising a cylinder having check-valved inlet and outlet ports at the bottom thereof, a piston operating in said cylinder and consisting of a hollow air containing shell, a flexible packing strip projecting below the lower edge of the shell, an expansible annular spring forcing said strip in contact with the wall of the cylinder, and clips engaging and holding said spring in position, and means for raising and depressing the piston.

2. A water elevating apparatus comprising a well or the like, a frame having a cross bar, a cylinder in the well supported by said frame and having check-valved inlet and discharge ports at its lower end, a piston in said cylinder consisting of a hollow air containing shell, a rod extending upward through said cross bar and connecting with the piston, a weighted piston depressing element connected with the upper end of the rod, a piston elevating lever, a sleeve slidable on the rod between said cross bar and the weighted element, and a pivoted dog carried by the sleeve and connected with the lever and operating on the piston elevating movement of said lever to couple said lever and sleeve to the rod.

3. A water elevating apparatus comprising a cylinder having check-valved inlet and outlet ports, a piston comprising a hollow shell operating in said cylinder, a rod ex-

tending upwardly from the piston, a trough, a conductor leading from the outlet port to the trough, a tilting platform terminating at its inner end below and adjacent to the front of the trough, said platform comprising an inner long section pivotally mounted between its center and outer end and an outer short section pivoted to the outer end of said inner section, a yoke lever pivotally connected with the rod and having its arms extending along and pivoted to the inner end of the long platform section, and cushioning connections intermediate said pivot points between said lever arms and said inner end of the long platform section.

4. A water elevating apparatus comprising a cylinder having check-valved inlet and outlet ports, a piston operating in said cylinder, a rod extending upwardly from the piston, a sectional tilting platform, a yoke lever having its arms pivotally mounted independently of the platform and pivotally connected with the rod, and cushioning stops slidably mounted on the platform section between said pivot points and yieldingly connecting said inner platform section between said pivot points with the arms of said lever.

5. A water elevating apparatus comprising a cylinder having check-valved inlet and outlet ports, a piston comprising a hollow air-containing shell operating in said cylinder, a rod extending upwardly from the piston, a tilting platform consisting of relatively long and short inner and outer sections pivotally connected at their adjacent ends, said long sections being pivotally mounted between its center and outer end, a yoke lever having its arms pivotally mounted independently of the platform and pivotally connected with the rod, and cushioning stops slidably mounted on the platform section between said pivot points and yieldingly connecting said inner platform section between said pivot points with the arms of said lever.

6. A water elevating apparatus comprising a cylinder having check-valved inlet and outlet ports, a piston comprising a hollow air-containing shell operating in said cylinder, a rod extending upwardly from the piston, a tilting platform consisting of relatively long and short inner and outer sections pivotally connected at their adjacent ends, said long section being pivotally mounted between its center and outer end, lever arms pivotally mounted independent of the platform and pivotally coupled to the rod, and yielding cushioning connections between said lever arms and the inner end of the inner platform section.

7. A water elevating apparatus comprising a cylinder having check-valved inlet and outlet ports, a piston operating in said cylinder, a rod extending upwardly from the pis-



ton, a sectional tilting platform, an elevated trough disposed between the rod and platform and communicating with the outlet port of the cylinder, an operating connection between the rod and platform and extending beneath the trough, and an upright guard at the inner end of the platform and movable therewith and covering the space between the same and bottom of the trough.

10 8. A water elevating apparatus comprising a cylinder having check-valved inlet and outlet ports, a piston comprising a hollow air-containing shell operating in said cylinder, a rod extending upwardly from the piston, a tilting platform consisting of relatively long and short inner and outer sections pivotally connected at their adjacent ends, said long section being pivotally mounted between its center and outer end, lever arms pivotally mounted independent of the platform and pivotally coupled to the rod, rods slidable through the inner end of the inner platform section and having headed lower ends and hooked upper ends

15 25 engaging said lever arms, and coiled springs

about the rods between their headed ends and said inner platform section.

9. A water elevating apparatus comprising a cylinder having check-valved inlet and outlet ports, a piston comprising a hollow air-containing shell operating in said cylinder, a rod extending upwardly from the piston, a tilting platform consisting of relatively long and short inner and outer sections pivotally connected at their adjacent ends, said long section being pivotally mounted between its center and outer end, lever arms pivotally mounted independent of the platform and pivotally coupled to the rod, and yielding cushioning connections between said lever arms and the inner end of the inner platform section.

30 35 40

In testimony whereof we affix our signatures in presence of two witnesses.

CLIFTON F. YOUNG.  
LEWIS A. BERGER.

Witnesses:

HULDAH NEWTON,  
H. W. PLUM.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."

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