

No. 744,618.

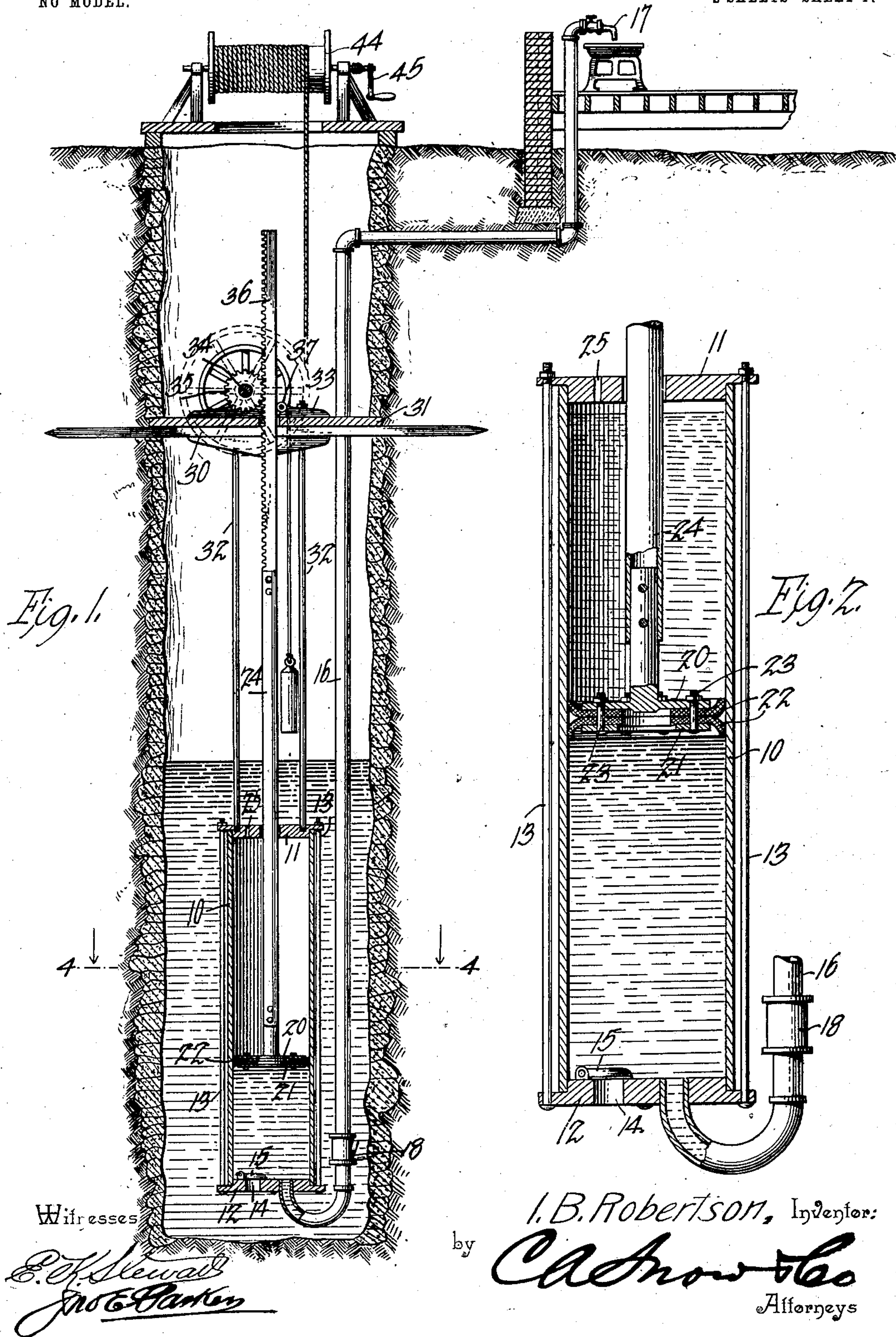
PATENTED NOV. 17, 1903.

I. B. ROBERTSON.  
PUMP.

APPLICATION FILED NOV. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.





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2 SHEETS—SHEET 2.

Fig. 3.

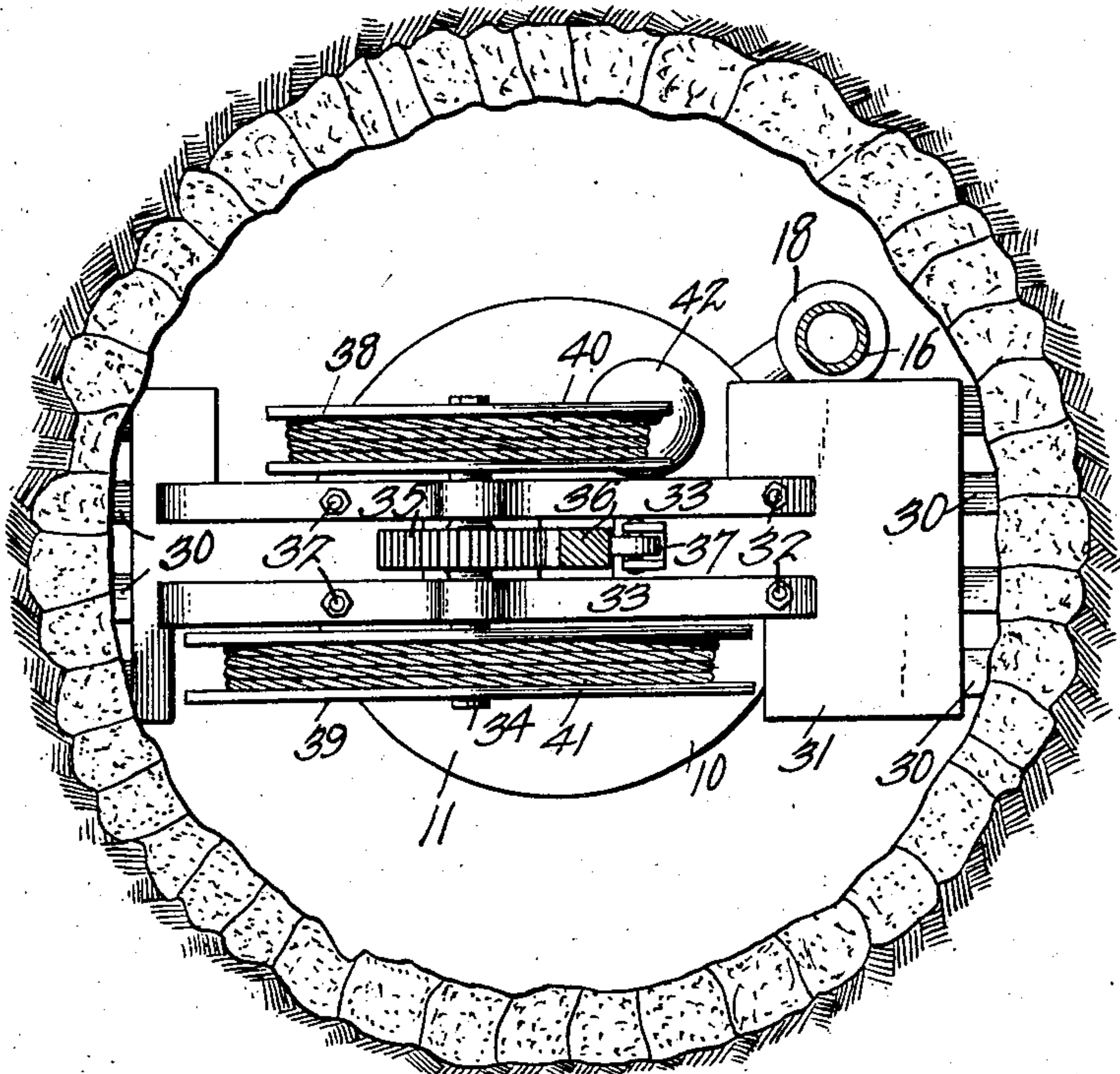
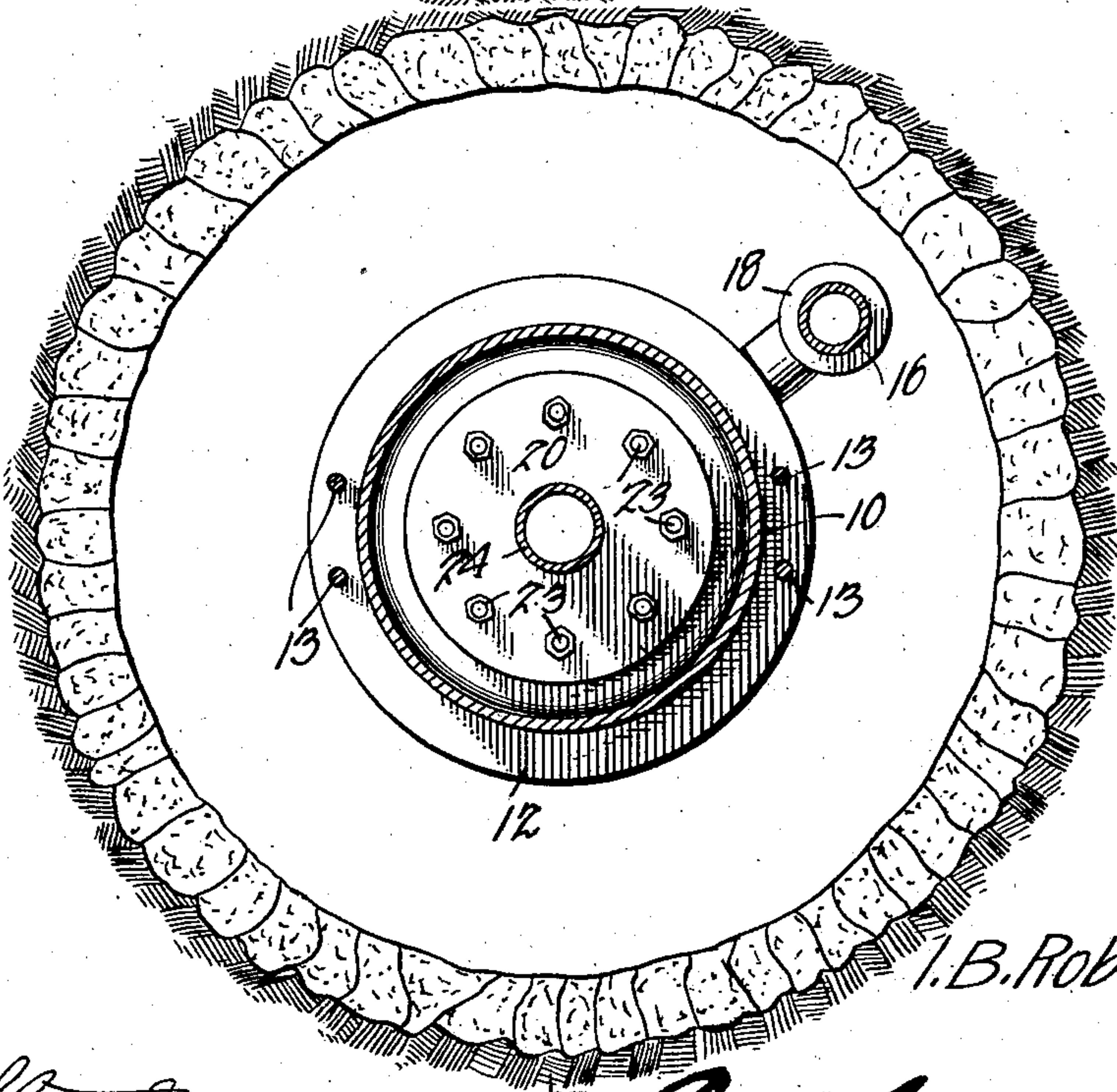


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## PUMP.

SPECIFICATION forming part of Letters Patent No. 744,618, dated November 17, 1903.

Application filed November 8, 1902. Serial No. 130,581. (No model.)

*To all whom it may concern:*

Be it known that I, IVY B. ROBERTSON, a citizen of the United States, residing at Manchester, in the county of Chesterfield and State of Virginia, have invented a new and useful Pump, of which the following is a specification.

The invention relates to certain improvements in well-pumps, and has for its principal object to provide an improved form of pumping device whereby a supply of water may be held under pressure in a pump-barrel within the well and gradually discharged through a valved pipe leading to a house or other point where the water is to be utilized.

A further object of the invention is to provide a simple form of mechanism which may be placed as a whole within a well or in operative relation to a spring or other supply of water and adapted to receive and store any desired quantity of water, the construction being such as to permit the apparatus being lowered into the well and then secured in position, with its lower end submerged in the water.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of a well-pump constructed and arranged in accordance with my invention and illustrating the same in position within a well. Fig. 2 is a similar view, on an enlarged scale, of the combined reservoir and pump-barrel. Fig. 3 is a sectional plan view of the pump-actuating mechanism. Fig. 4 is a sectional plan view on the line 4 4 of Fig. 1, illustrating the construction and arrangement of the pump-piston.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The device forming the subject of the present invention is especially intended for supplying water under pressure to dwelling-houses and other places in country districts where water-distributing systems are not in general use, and the device may be employed for pumping water from a well, spring, or other water-supply at any desired distance from the point at which the water is to be used.

In the drawings, 10 designates a pump-barrel or reservoir, preferably in the form of an elongated cylinder, formed of non-corrodible material and provided with removable upper and lower heads 11 and 12, respectively, the heads being provided with extended annular flanges, which are connected together by tie-bolts 13 in order to clamp the heads in place. The lower head is submerged in the water or other liquid to be pumped or is connected therewith by a suitable suction-pipe, the water entering the lower end of the cylinder through an opening 14, covered by a down-closing flap-valve 15. The lower end of the cylinder is connected to one end of a water-discharge pipe 16, having at or near its opposite end a suitable valve, which in the present instance takes the form of a faucet 17, and in said pipe is a check-valve 18, serving to prevent a backflow of water from the pipe to the cylinder.

In the cylinder is placed a piston comprising an upper disk 20 and a lower ring 21, between which are clamped a number of packing-rings 22, the whole being secured together by a plurality of bolts 23. The disk of the piston is secured to the lower end of a piston-rod 24, extending up through a guiding-opening in the upper head of the cylinder and connected to the operating devices. In order to permit free upward movement of the piston, a number of openings 25 are formed in the upper head for the discharge of water which may accumulate above the piston, and



in some cases it may be desirable to wholly submerge the cylinder in order to practically equalize the pressure on both sides of the piston, and thus lessen the power required to operate the pump.

At a point at or near the top of the well are placed a number of cross-bars 30, carrying a platform 31, which serves to properly support the cylinder in place, the cylinder and platform being connected by a plurality of tie-rods 32.

On the platform is placed a bracket or standard 33, having a bearing for the support of a horizontally-disposed shaft 34, and at an intermediate point on the shaft is keyed a pinion 35, intermeshing with a vertical rack 36, connected to or formed integral with the piston-rod and extending through a guiding-opening in the platform, a small roller 37 being preferably arranged at the rear of the rack-bar in order to keep its teeth properly in mesh with those of the pinion. At opposite ends of the shaft 34 are drums 38 and 39 of different diameter, to which are secured the ends of flexible cords or chains 40 and 41, respectively. The free end of the chain or cord 40 carries a weight 42, the size of which is proportioned to the size of the cylinder and the length of the water-discharge pipe 16. The weight in descending acts to revolve the drum 28 and through it the shaft 34 and pinion 35, and thus cause the descent of the vertical rack and piston-rod, the piston serving to expel the water from the lower end of the reservoir through the pipe 16 when the faucet 17 is opened to permit the discharge of water.

The lower end of the chain or cord 41 is secured to the winding-drum 39 and extends up to the top of the well, its upper end being secured to a windlass 44, having a detachable crank-handle 45, which is removed from the windlass after the device is fully wound.

In operation the windlass is turned to wind up the chain or cord 41 and revolve the drum 39 and shaft 34. The turning of the shaft 34 effects the winding of the chain or cord 40 on the drum 38 and at the same time raises the rack and the piston, the latter being moved upwardly in the cylinder and water flowing through the inlet-opening 18 until the cylinder is filled. The winding-crank is then detached in order not to interfere in any manner with the descent of the piston. The cylinder may be of sufficient size to store water for a day's supply for an ordinary household at one winding, the weight of the piston and rack and the size of the weight 42 being proportioned to the capacity of the cylinder and the length of the water-discharge pipe.

It will be observed that as the cylinder is connected to and suspended from the platform which carries the operating mechanism it is unnecessary to drain the well to provide a foundation for a permanent pumping-cylinder, the platform and its transverse sup-

porting-bars being placed in any desired position in accordance with the distance of the water-level from the surface of the ground. The device, further, is of such nature as to permit its ready transportation from place to place, and it may be adjusted in position without the exercise of any special skill on the part of the operator.

Having thus described the invention, what I claim is—

1. A portable pump mechanism comprising a removable platform arranged within a well, a pump-cylinder suspended from the platform, a valved discharge-pipe connected to said cylinder, a piston disposed in the cylinder, a piston-rod, a rack having rigid connection with the rod, a shaft adapted to bearings on the platform, a gear mounted on the shaft and meshing with the rack, a pair of winding-drums of different diameter also mounted on said shaft, a windlass at the mouth of the well, a cord or chain connecting the windlass-drum to the larger of the winding-drums, and a weighted cord or chain carried by the smaller of said winding-drums.

2. A portable pumping mechanism, comprising a removable platform, a support for the platform, a pumping-cylinder suspended from the platform and provided with an opening at its upper end, water inlet and outlet openings arranged at the lower end of the cylinder, a valved discharge-pipe connected to the outlet-opening, a shaft having supporting-bearings on the platform, a gear-wheel carried by the shaft, a piston disposed within the cylinder, a piston-rod secured to said piston, a rack having a rigid connection with the piston-rod, means for holding the rack in mesh with the gear, a pair of drums of different diameter secured to the shaft, a weighted cord or chain passing around the smaller drum and having one of its ends secured thereto, a windlass arranged above the platform, and a flexible cord or chain connecting the windlass-drum to the second and larger drum carried by the said shaft.

3. A portable pumping apparatus for wells and the like, comprising a removable platform, means for supporting the platform within the well, a cylinder, suspension-rods connecting the upper portion of the cylinder to the platform, said cylinder having an opening at its upper end and a valved inlet-opening at its lower end, a discharge-pipe connected to the lower portion of the cylinder, a check-valve disposed in the discharge-pipe, a pair of brackets carried by the platform, a horizontally-disposed shaft having bearings in said brackets, a gear-wheel carried by the shaft, a piston arranged in the cylinder, a piston-rod connected to the piston, a rack rigidly connected to the piston-rod, a rack-guiding roller for holding said rack in mesh with the gear, a winding-drum secured to the shaft, a weighted cord or chain passing around the



winding-drum and having one end secured thereto, a second winding-drum of larger diameter than the first and also carried by the shaft, a windlass having a detachable crank,  
5 and a weighted cord or chain connecting the windlass-drum to said second winding-drum.  
In testimony that I claim the foregoing as

my own I have hereto affixed my signature in the presence of two witnesses.

IVY B. ROBERTSON.

Witnesses:

A. L. ADAMSON,  
M. C. MANN.