

No. 742,541.

PATENTED OCT. 27, 1903.

L. H. WILLIAMS.
PUMP.

APPLICATION FILED MAR. 26, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

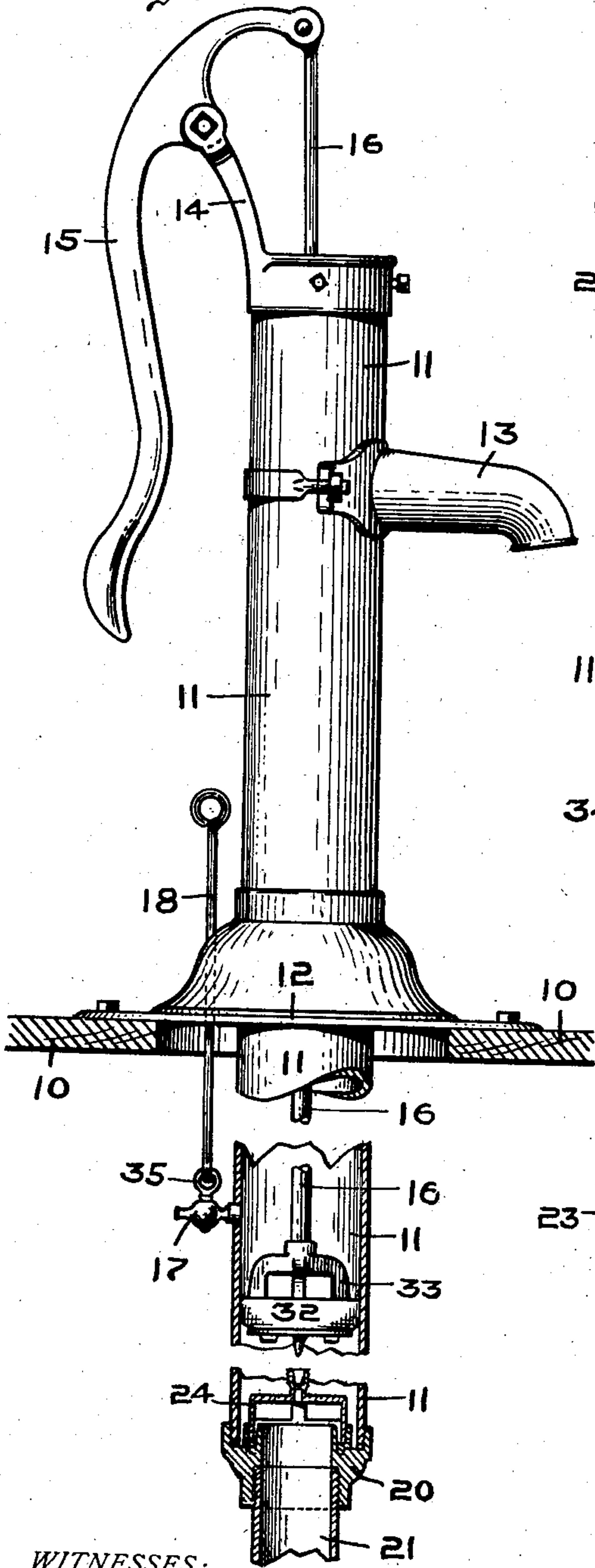


Fig. 2.

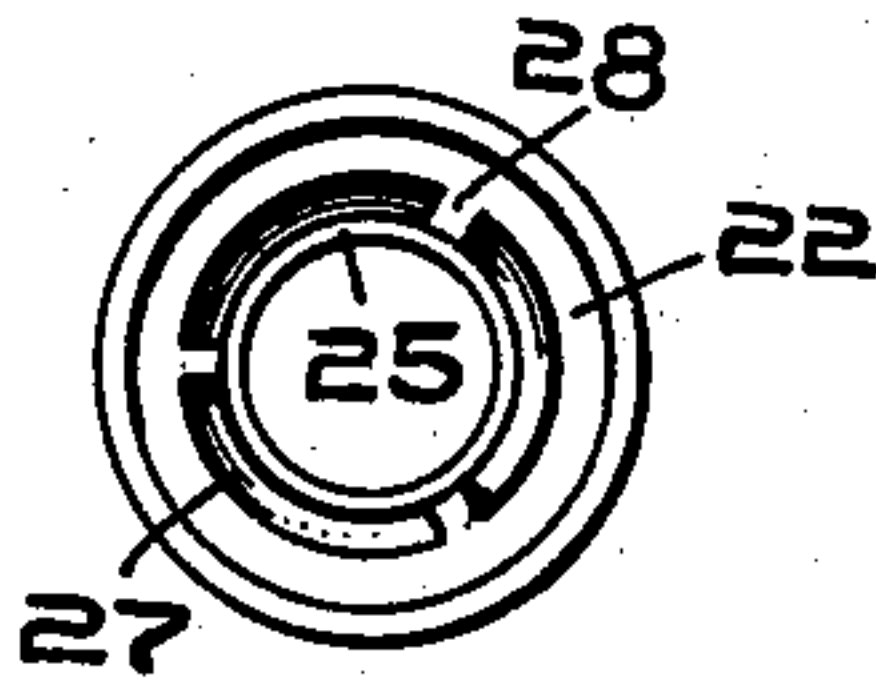


Fig. 3.

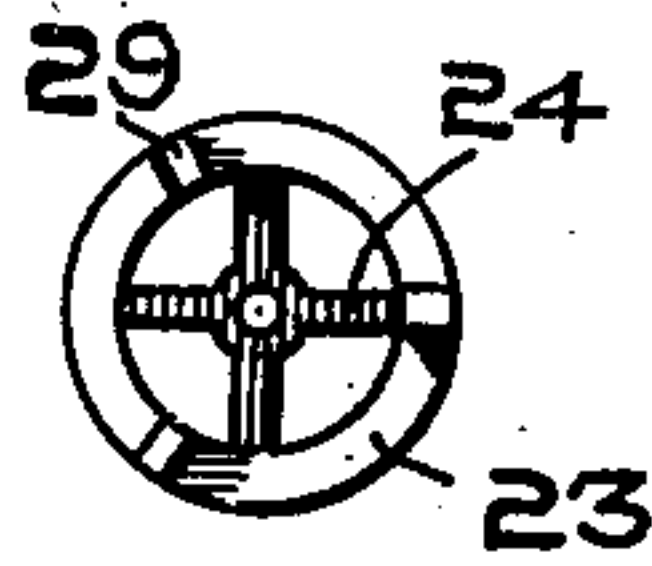
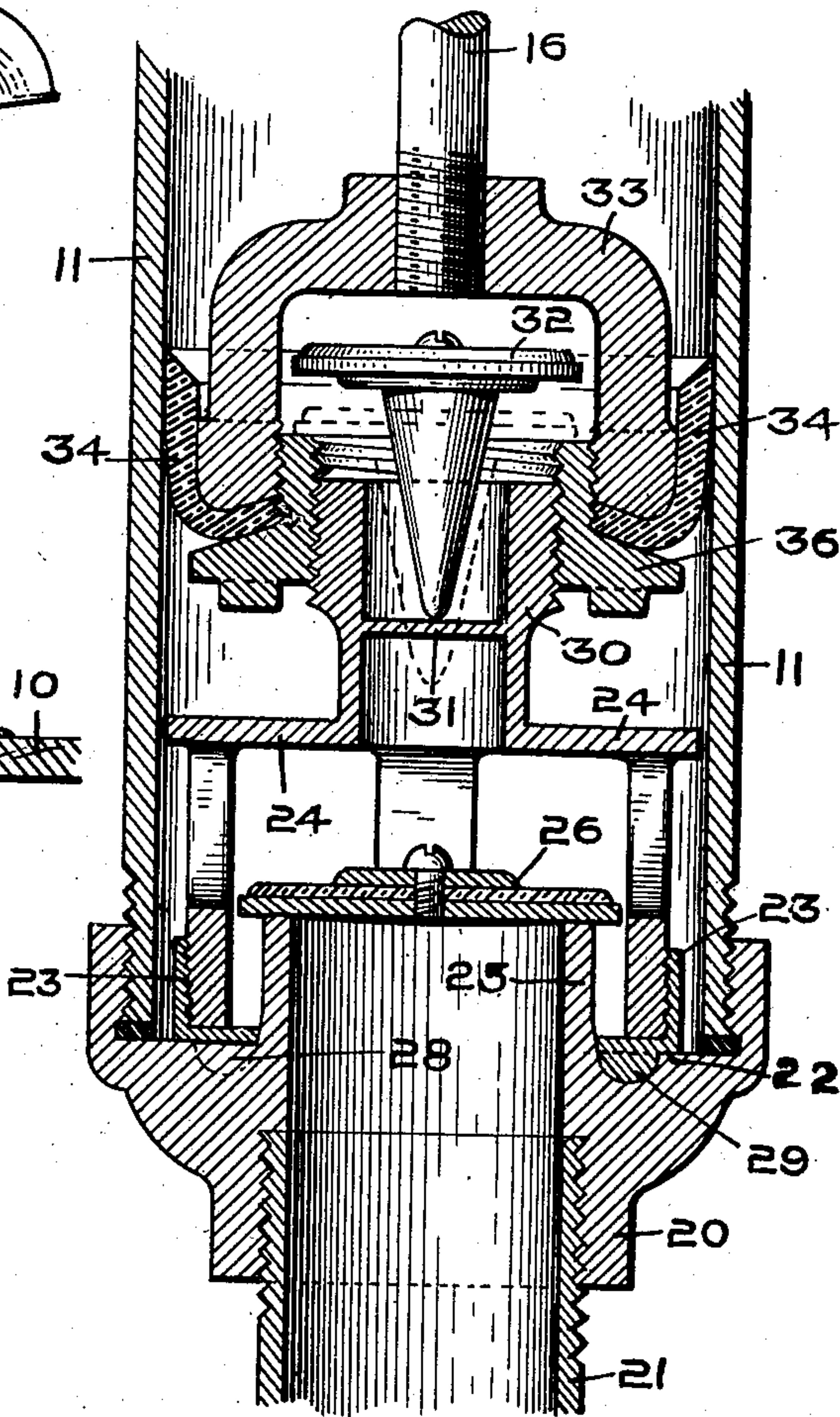


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

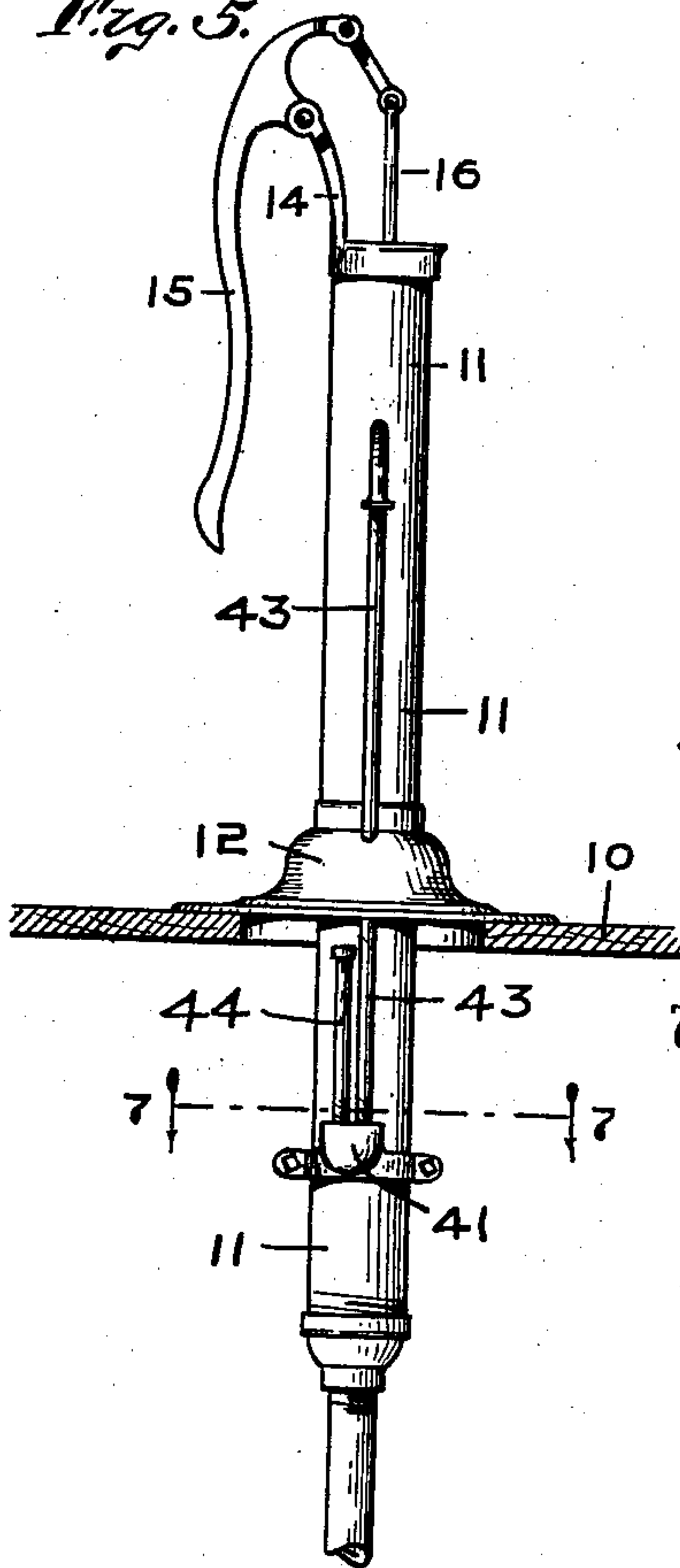


Fig. 6.

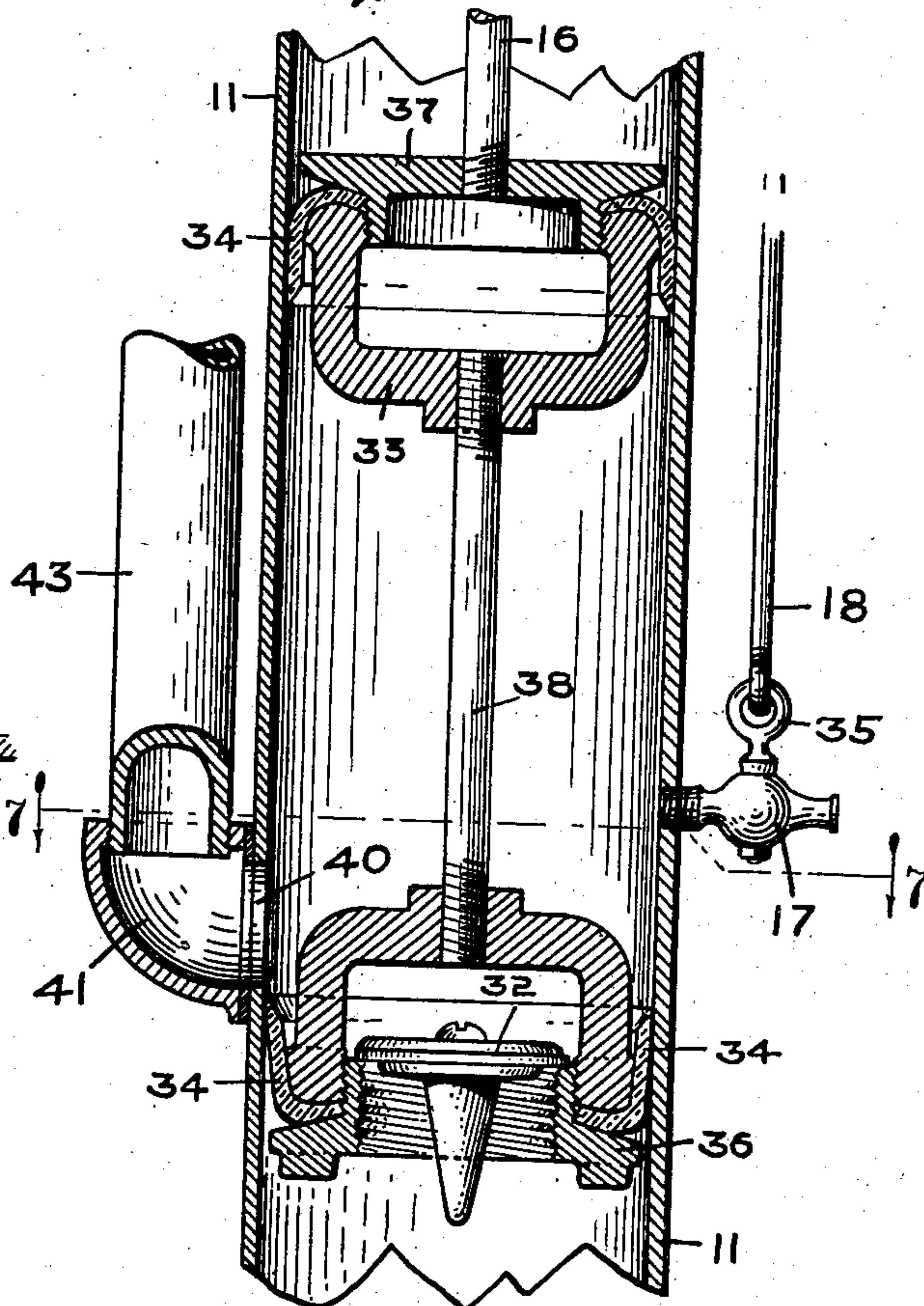
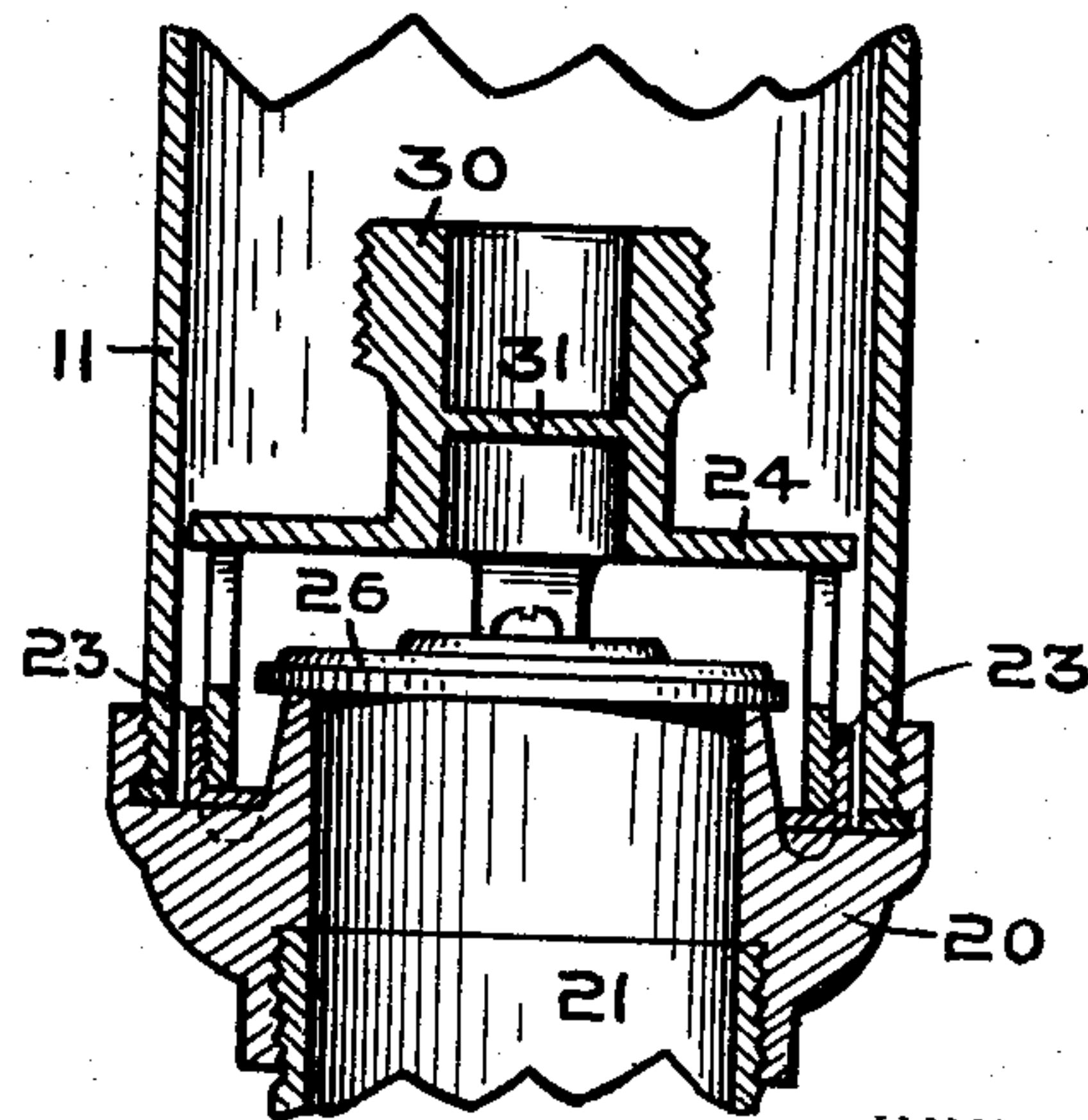
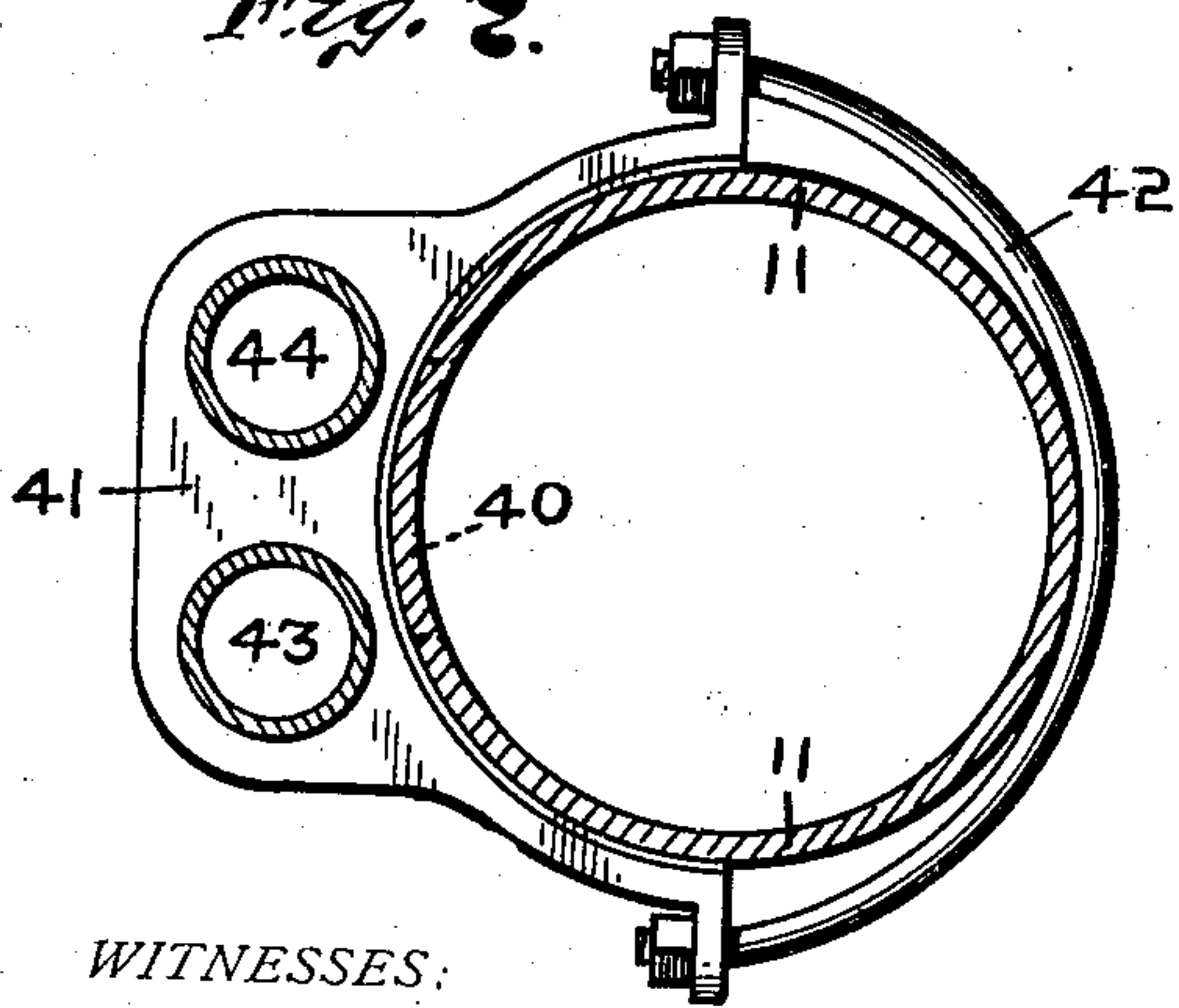


Fig. 7.



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UNITED STATES PATENT OFFICE.

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PUMP.

SPECIFICATION forming part of Letters Patent No. 742,541, dated October 27, 1903.

Application filed March 26, 1902. Serial No. 100,093. (No model.)

To all whom it may concern:

Be it known that I, LEE H. WILLIAMS, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Pump; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like figures refer to like parts.

The object of this invention is to improve the means in suction-pumps whereby the lower valve is removed from the pump or repaired without removing the pump, so that the upper valve may be opened when it is desired to remove the valve mechanism to permit the water in the pump to escape in the well, and thus render it easy to remove the valve mechanism without lifting the column of water above it and the column of water below it. This and the other features of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Figure 1 is a side elevation of the pump with the base and a portion of the pump in vertical section and portions of the pump broken away. Fig. 2 is a plan view of the valve-cap. Fig. 3 is a bottom view of the valve-cage. Fig. 4 is a central vertical section of the pump with the valves connected and on a larger scale. Fig. 5 is a side elevation of a continuously-acting force-pump. Fig. 6 is a vertical central section through the continuously-acting force-pump, showing the application of my invention to that style of pump. Fig. 7 is a cross-section on the line 7-7 of Figs. 5 and 6.

The drawings show a member or platform 10, through which the pump-barrel 11 extends, the pump-barrel being secured in place on the platform by the base 12. Above the platform there is a spout 13 and at the upper end of the pump-barrel a fulcrum or bearer 14, on which the handle 15 is fulcrumed. The pump-rod 16 extends from the handle down into the pump-barrel. Below the platform an air-cock 17 is secured to the pump that is controlled by the rod 18.

The foregoing parts, as shown in Fig. 1, are old. A cap 20 is secured to the lower end of

the pump-barrel 11, said two members being threaded to permit such union. This cap has secured to it the pipe 21, that extends into the well. The cap 20 has on its upper side a shoulder 22 for the lower part 23 of the valve-cage 24. The part 23 has a ring internally threaded to screw upon the externally-threaded lower end of the valve-cage, as appears in Fig. 4. There is a central upwardly-extending collar 25 in the cap, which serves as a seat for the lower puppet-valve 26. Around this seat 25 there is a groove 27, which has across it three stop-lugs 28, adapted to engage three corresponding lugs 29 on the valve-cage as the latter is turned. A hollow sleeve 30 is secured to and extends centrally up from the cage 24 and at its upper end is externally threaded. A rib 31 extends centrally across the opening through said sleeve. The function of this rib is to support the upper puppet-valve 32 when it is brought down into the position shown in Fig. 4, and at such time the bucket is screwed down upon the threaded portion of said sleeve 30, as appears in said Fig. 4.

To accomplish the foregoing effect, the lower plate 36 of the bucket is internally threaded. The bucket consists of said plate 36, the cage 33, puppet-valve 32, and the cup-leather 34, the latter being clamped between the parts 36 and 33. The part 33 of the bucket is secured to the lower end of the pump-rod 16, and the bucket is screwed upon the sleeve 30, extending up from the lower valve-cage by the rotation of the bucket through the pump-rod 16. To effect rotation, the pump-rod is separated from the handle 16.

When it is desired to remove the bucket, it is usually difficult with the ordinary mechanism heretofore employed, as it lifts the column of water in the pump above the bucket, as well as the column of water in the pump below the bucket, and since that water is very heavy it is extremely difficult to remove the bucket.

In this pump while the device is in use the two valve mechanisms are separated and in the position shown at the lower end of Fig. 1. Then the water is drawn up through the cap and lower valve, and on the downward stroke

of the bucket it passes up through the bucket and the valve therein and is lifted out by the upward stroke of the bucket. When it is desired to remove the valve mechanisms and to avoid the resistance of the column of water in the pump, as has been noticed, the pump-rod 16 is disengaged from the handle and let down slightly until the lower part of the bucket rests upon the sleeve 30 from the lower cage. Then the pump-rod is turned so as to screw the bucket to said sleeve of the lower cage until the parts assume the position shown in Fig. 4. As the bucket moves downward during such process, the upper puppet-valve 32 is elevated by the rib 31, whereby the water above will pass through the bucket when the pump-rod 16 is lifted sufficiently to cause the lower plate 23 of the lower cage to lift the lower puppet-valve 26 from its seat. As soon as this latter valve is lifted from its seat all the water in the pump will flow down into the well and no resistance will be offered to the removal of the valve mechanism.

The valve mechanism is restored in place by inserting it in the pump-barrel until the parts are down into the position shown in Fig. 4, and then by unscrewing the bucket until it is disengaged from the sleeve 30 and securing the upper end of the pump-rod to the handle the parts are put again in position for use, as shown in Fig. 1. During the screwing of the bucket onto the sleeve 30 from the lower cage, as well as the unscrewing of the same, the lugs 28 hold the lower cage from rotation.

The bucket is somewhat peculiarly formed, as shown in Fig. 4, to cause the cup-leather to expand and fit the pump-barrel closely. For this purpose the upper surface of the lower plate 36 is made flaring or conical, sloping downward and outwardly. The lower part of the upper cage 33 is beveled reversely, so that its lower surface will be parallel substantially with the upper surface of said lower plate 36, and its outer lower corner is curved. By reason of this peculiar form of the lower part of the cage, as it is screwed down upon the cup-leather it will expand the cup-leather, and the sloping top of the plate 36 against which the cup-leather is forced will permit such expansion. Therefore there is a tendency on the part of the cage to spread the upper part of the cup-leather as it is forced down.

The feature of invention consists in the means for letting the water out of the pump-barrel above the valve. The drain-cock 17 is provided with a stem 35, and the rod 18 extends up through the base 12, so that said drain-cock can be opened or closed by rotating the rod 18.

In Figs. 5, 6, and 7 I show a continuously-acting pump, in which the invention is employed. There the water-outlet from the pump-barrel instead of being above the platform, as shown in Fig. 1, is below the platform. As seen in Fig. 6, a port 40 is made in

the pump-barrel, that leads into a chamber 41, and such chamber has two outlets from which the pipe 43 leads up through the base of the pump to a point near the top thereof, that is open for the discharge of water, and from the other opening from said chamber 41 the pipe 44 extends, the upper end of said pipe 44 being closed to form an air-chamber.

In a continuously-acting force-pump there are two buckets, one above and one below, secured together by the rod 38, connected to the cage of each bucket. The lower bucket has the same construction as that above described. The upper bucket is similar in construction to the lower bucket excepting the parts are in a reversed position. There is no puppet-valve and no port or opening through the plate 37 which corresponds with the part 36 in the lower bucket. Hence the water cannot pass above the upper bucket, and as it descends the water is forced out through pipe 43. One of these connected buckets is above and the other below the drain-cock 17.

An important feature of the invention also consists in the construction whereby priming is rendered needless, at least after the pump has been once primed. The cap 20 at the lower end of the pump-barrel has a water-tight chamber surrounding the upwardly-extending collar 25, that forms a seat for the valve 26, which remains filled with water after the water has been let out of the barrel of the pump or the valve-cages been elevated, as above described. Consequently when the valve-cages are replaced the valve 26 will first seat itself on the collar 25, and then the lower part of the cage 24, including the plate 23, will go down into the annular chamber containing the water, and thus cause the water in said chamber to rise over the valve 26 and make an air-tight joint. In other words, the pump is a self-primer. If the check-valve 26 should become dry from non-use for a period of time, it could be moistened without the ordinary process of priming by connecting the two cages together in the manner heretofore described and by moving the lower cage two or three very short strokes, so as to splash the water standing in the lower cap 20 around the valve-seat up over the valve.

What is claimed to be the invention, and desired to be secured by Letters Patent, is—

1. In a pump, two valves and valve-cages, one of said cages having a threaded sleeve extending from it and the other cage having a threaded opening to receive said sleeve, and a rib in the sleeve for engaging the upper valve and holding it open after the cages are connected.

2. In a pump, two valves and two cages, a pump-rod secured to the upper valve-cage, means for temporarily securing the two cages together by the rotation of the pump-rod, means connected with the lower cage for opening the upper valve when the two cages are united, a seat for the lower valve which extends upward within the lower valve-cage

and is of smaller diameter than the lower valve, and a plate secured to the lower end of the lower valve-cage surrounding said lower valve-seat that elevates said lower valve when the lower cage is elevated.

5 3. In a pump, the combination with a pump-tube, of a cap screwed thereon with an integral upwardly-extending central valve-seat whereby a chamber is left surrounding said
c valve-seat, a valve adapted to rest upon said seat, a cage surrounding said valve and seat with its lower end resting in the chamber sur-

rounding the valve-seat, means on the lower end of the cage for elevating the valve when the cage is elevated, a pump-rod, and means 15 for connecting the pump-rod with said cage to elevate it.

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named.

LEE H. WILLIAMS.

Witnesses:

FLORENCE E. BRYANT,
V. H. LOCKWOOD.