

No. 660,044.

Patented Oct. 16, 1900.

J. BOWMAN.  
WATER CLOSET FLUSH.

(Application filed Oct. 7, 1899.)

(No Model.)

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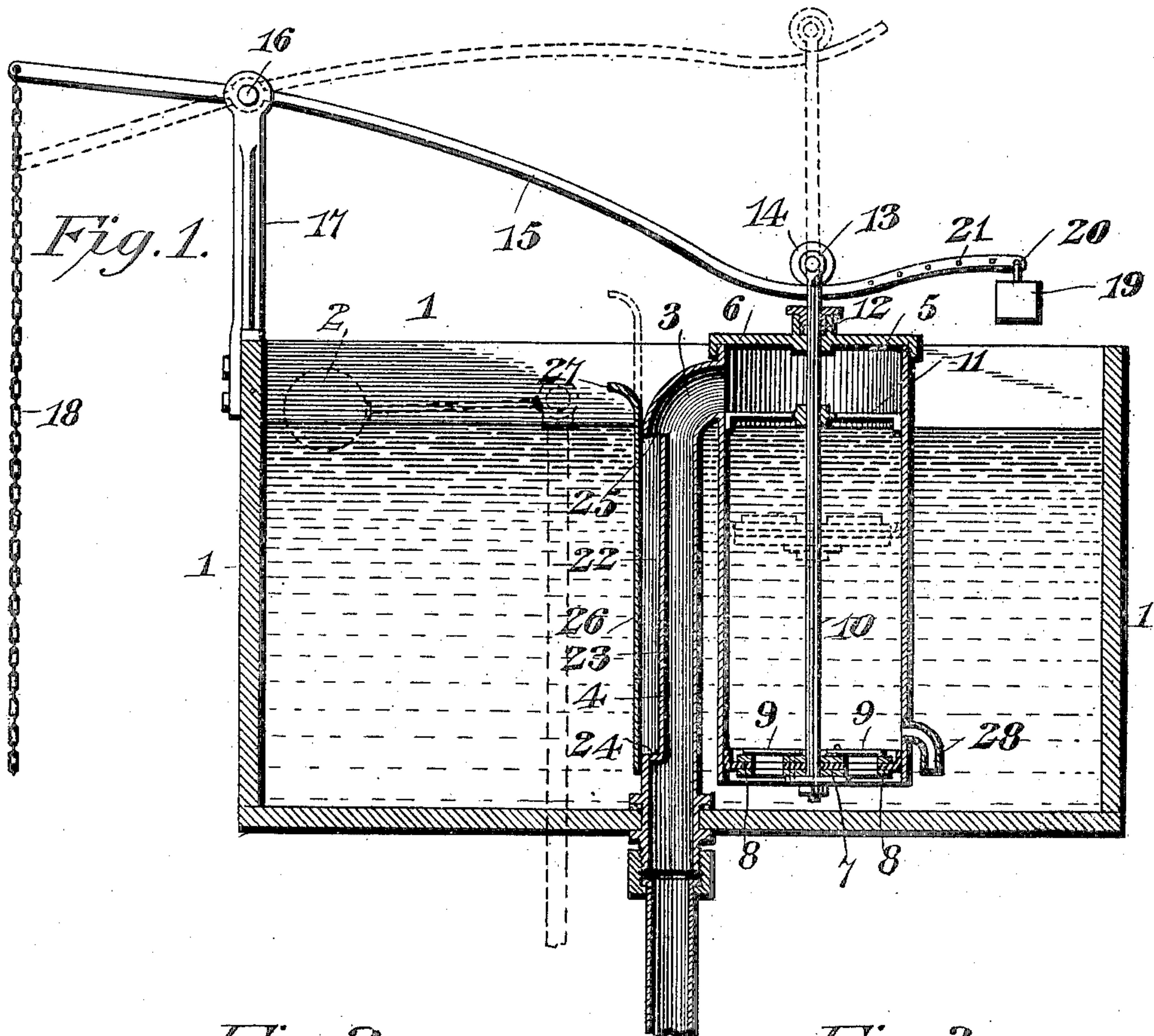
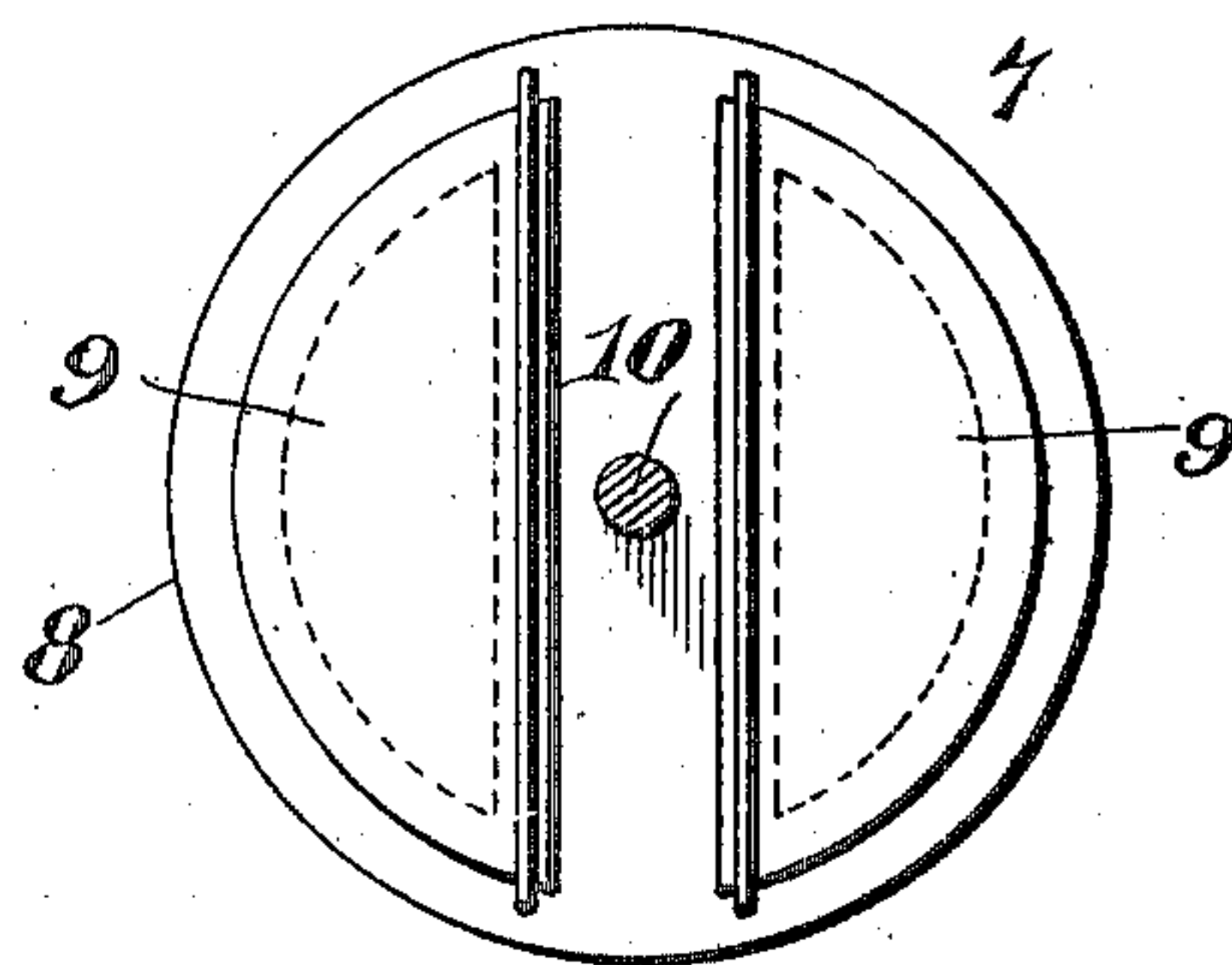
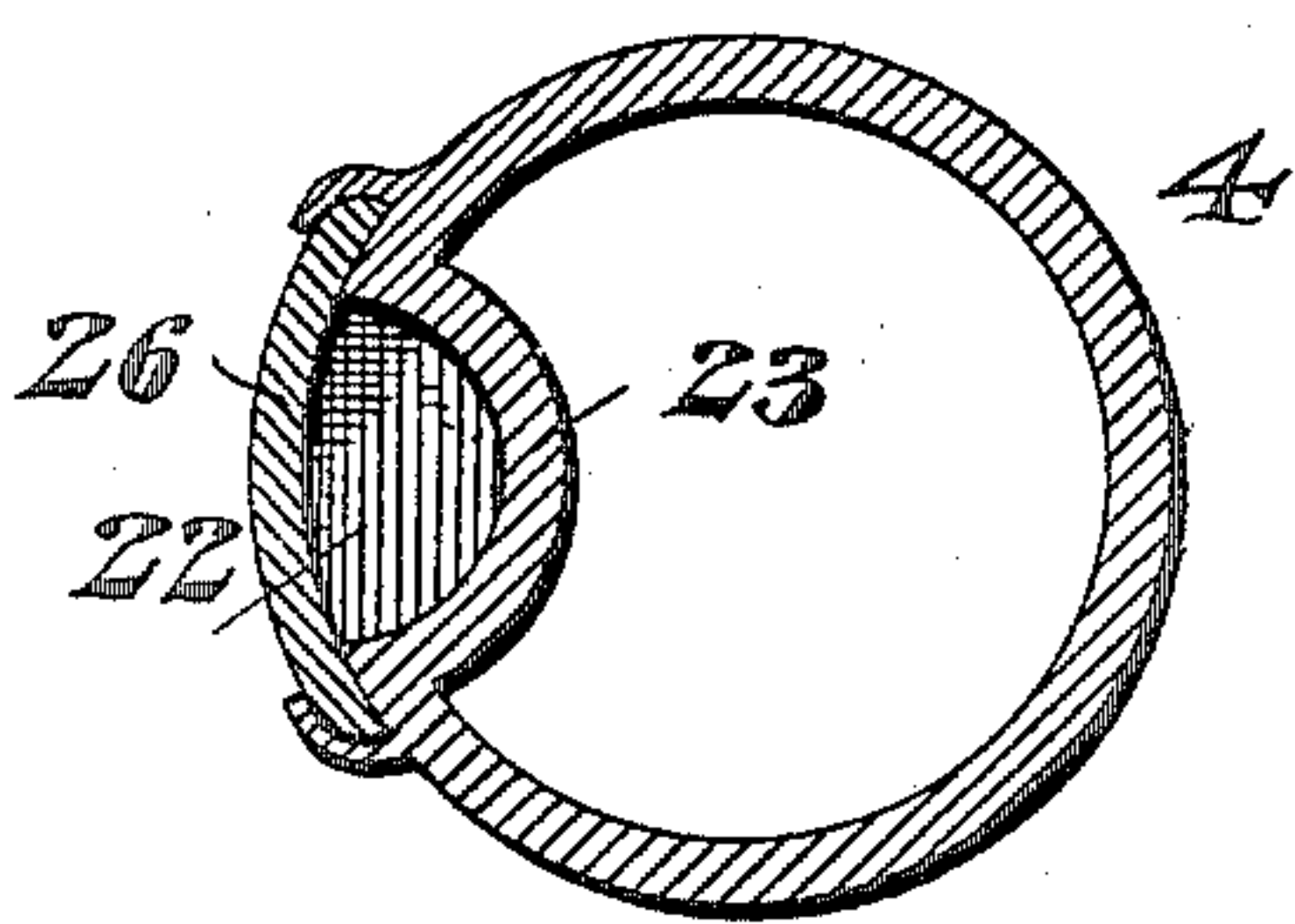


Fig. 2.

Fig. 3.



Witnesses

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No. 660,044.

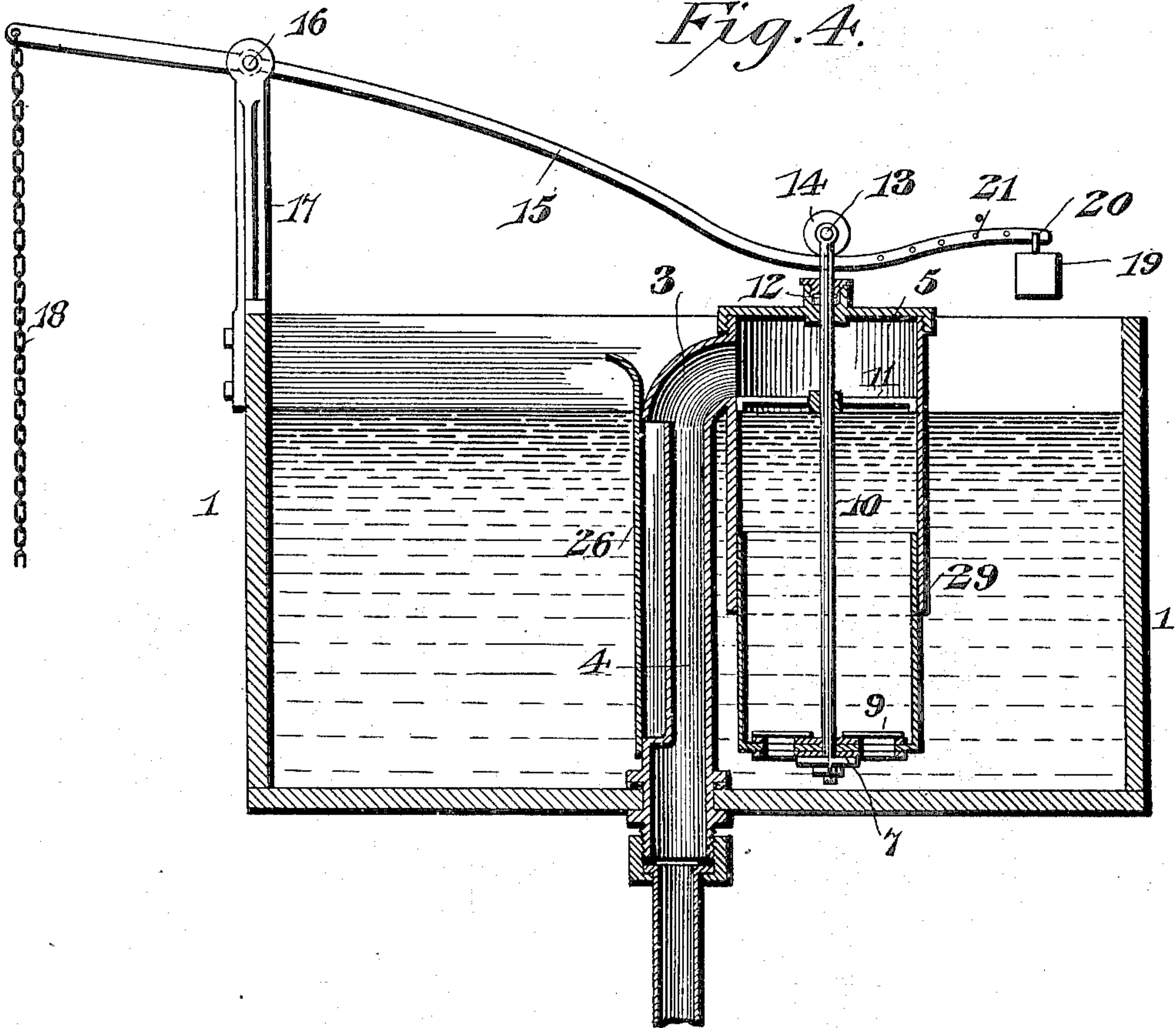
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**3 Sheets—Sheet 2.**



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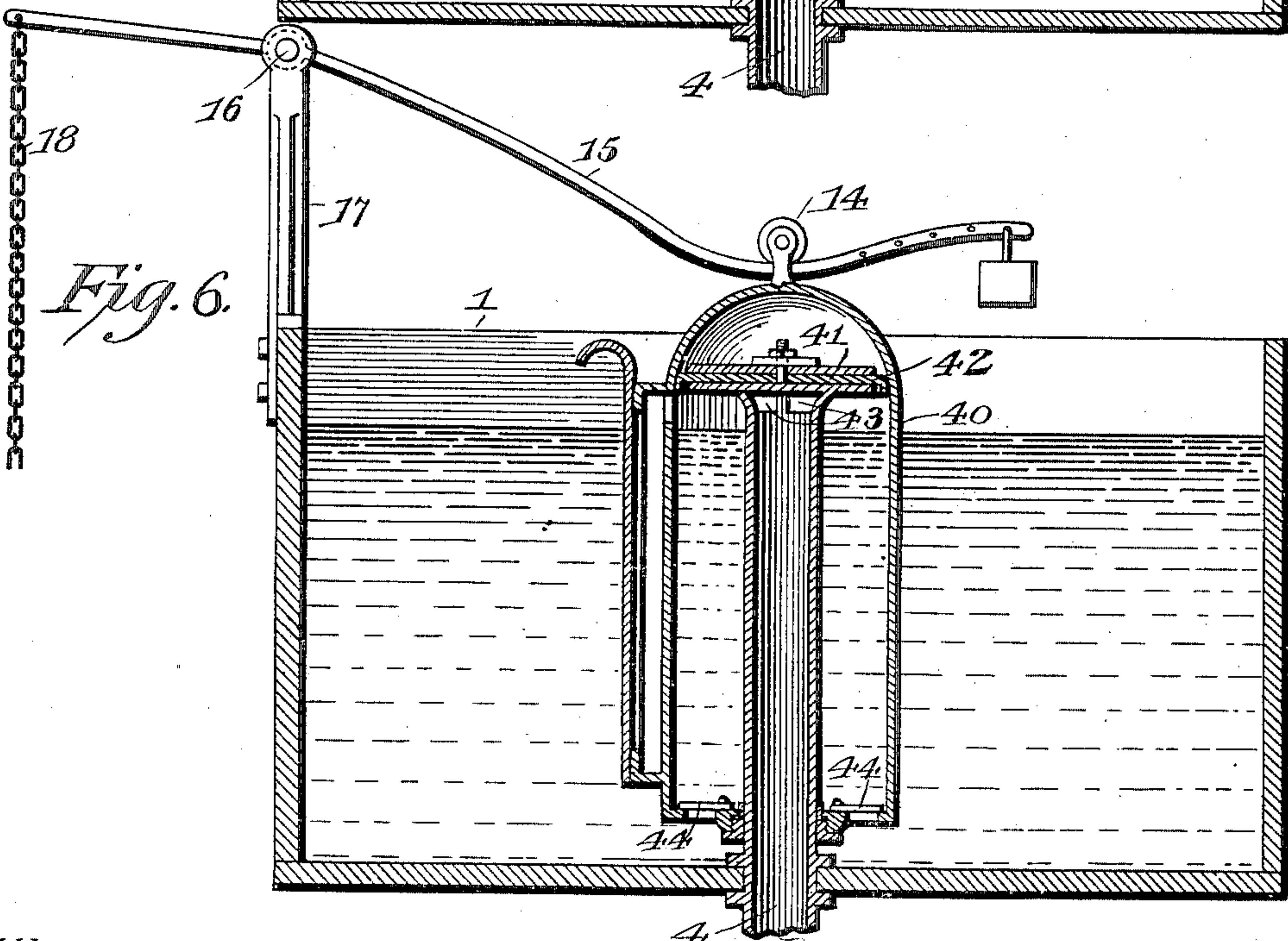
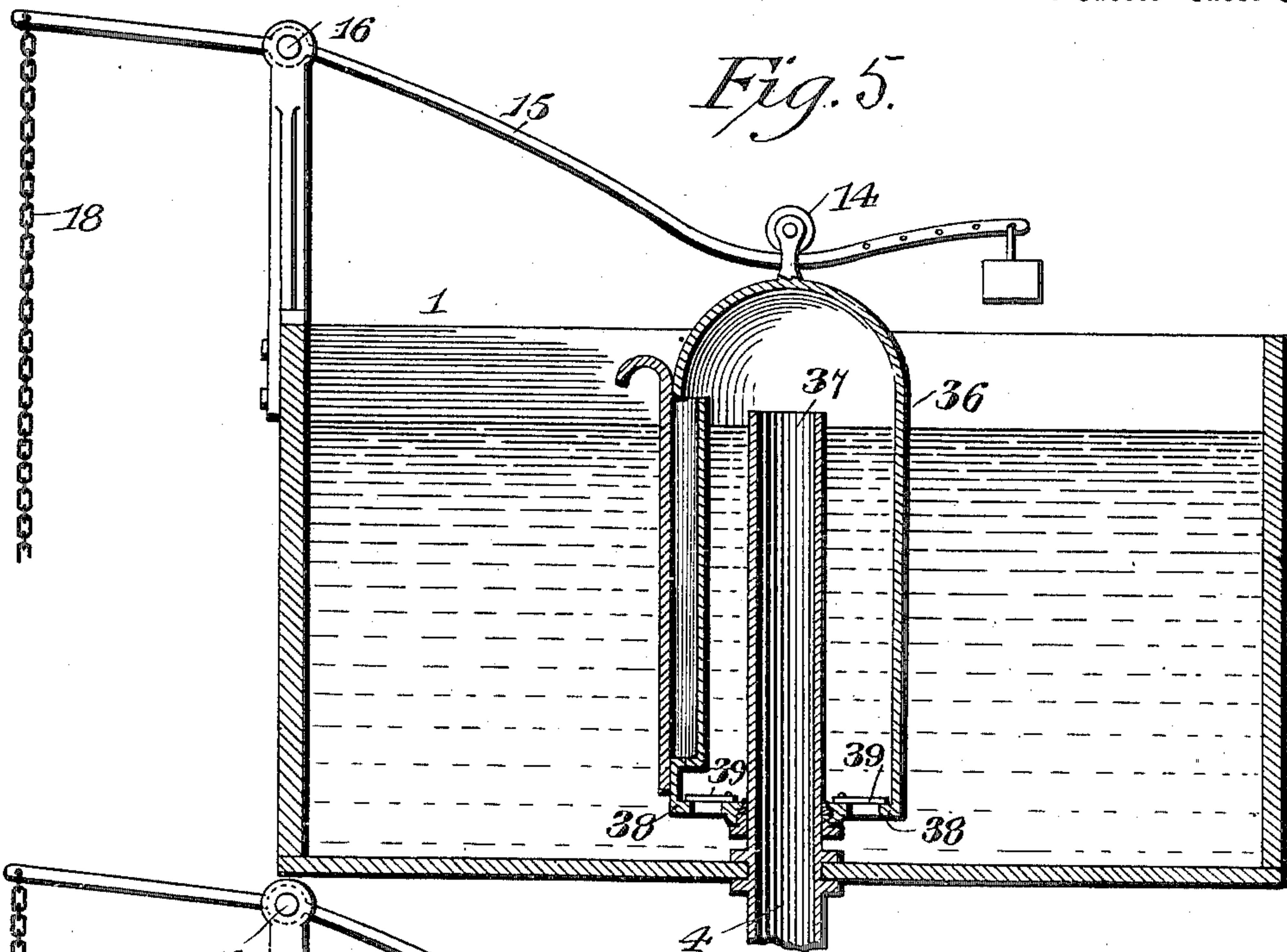
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

JONATHAN BOWMAN, OF SAN ANTONIO, TEXAS.

## WATER-CLOSET FLUSH.

SPECIFICATION forming part of Letters Patent No. 660,044, dated October 16, 1900.

Application filed October 7, 1899. Serial No. 732,943. (No model.)

*To all whom it may concern:*

Be it known that I, JONATHAN BOWMAN, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Water-Closet Flush, of which the following is a specification.

My present invention relates to a novel siphon flushing apparatus for water-closets.

The object of my invention in its broadest aspect is to provide an apparatus which may be operated without waste, in which the quantity of water to be discharged at each flushing can be readily regulated, and which will effectually eliminate the objectionable leakage incident to the employment of movable valves in the discharge leg or branch of the siphon. Subordinate to this general object are others, which will more fully hereinafter appear as the necessity for their accomplishment is developed in the succeeding description.

Referring to the drawings, Figure 1 is a sectional view of a flush-tank provided with my improved apparatus, the position assumed by the parts during the operation of flushing being shown in dotted lines. Fig. 2 is a sectional view through the discharge branch of the siphon, showing the regulator. Fig. 3 is a plan view of the piston. Fig. 4 is a view similar to Fig. 1, showing a modified form of pump. Fig. 5 is a view similar to Figs. 1 and 4, but illustrating another form of combined siphon and pump. Fig. 6 is a sectional view showing still another and possibly the preferred form of siphonic pump.

Referring to the numerals of reference on the accompanying drawings, in which like numerals refer to corresponding parts throughout the several views, 1 indicates a flushing-tank provided with an ordinary form of supply mechanism 2.

3 indicates a flushing-siphon comprising a comparatively-long discharge branch 4, extending upwardly through the bottom of the tank and opening at its upper end into a cylinder 5, constituting the short or supply branch of the siphon, having a closed upper end provided with a cover or cap 6 and open at its lower end, which extends nearly to the bottom of the tank. 7 indicates a piston movable within the cylinder 5 and provided with peripheral packing 8, one or more inwardly-

opening or clack valves 9, and coaxial piston-rod 10, guided by the frame 11 and passing through the stuffing-box 12 above the cylinder, where it finally terminates in a bifurcated end 13, in which is revolubly mounted a roller 14.

15 indicates a flushing-lever fulcrumed, as at 16, upon a standard 17, carried by the tank and passing between the bifurcation 13 of the piston-rod and under the roller 14. Thus when the flushing-lever is actuated by a pull upon the chain 18 the piston-rod will be reciprocated vertically, causing the ascent of the piston within the cylinder, the parts being thereafter restored to their normal positions by a counterweight 19, the hook 20 of which is designed to engage one of a series of apertures 21 through the lever 15 beyond the roller 14. It is obvious that when the piston 7 is elevated sufficiently within the cylinder to discharge enough water into the long arm of the siphon to create siphonic action the water in the tank will continue to flow through the branch 4 and into the receptacle to be flushed until the level of water within the tank falls below the lower end of the cylinder. It is unnecessary, however, in most instances to discharge the entire contents of the tank at each flushing, and I have therefore devised a simple regulator by means of which the quantity of water discharged at each operation may be determined with accuracy, and which, unlike the ordinary float-controlled devices, will not continue the discharge when the tank has been refilled even though the pull upon the chain 18 be continued. In other words, I regulate the flush and necessitate a separate actuation of the flushing-lever for each flushing operation.

I have illustrated several forms of regulators, the essential feature of all of which is the breaking of the siphonic action by admitting air into the siphon at predetermined water-levels. The preferred form of this regulator, however, comprises a longitudinal slot 22 in the side of the branch 4 of the siphon and extending from a point adjacent to the bottom of the tank, preferably to high-water mark. The branch pipe 4 is provided coextensive with the slot 22 with a longitudinal concavity 23, closed at the bottom, as indicated at 24, and having an open top 25, which



opens communication between the interior of the tank and the interior of the siphon by way of the slot 22.

It will now be obvious that if provision be made for closing the slot along the upper portion the siphonic action will be continued until the water-level has reached the lower limit of the closure, at which time air will be admitted into the siphon and the siphonic action will thus be interrupted. It is precisely in this manner that the desired end is attained.

What I will term a "regulating-shutter" 26, which is simply a longitudinal shield for the slot 22, is slidably mounted upon the branch 4 over the slot and is provided at its upper end with a handle 27, by means of which it may be raised or lowered, accordingly as it is desired to permit the ingress of air to the interior of the siphon at any desired point. Thus the flush is regulated by the position of the regulating-shutter 26, and as water rises through the valves of the piston in the cylinder to same level as that in the tank the overflow does not depend upon the air-regulator. Of course water will rise in the tube to level of that in the tank, just as in the cylinder, and the long leg of siphon will form an overflow, whether the flush-regulator be entirely closed or not, whenever the water in the tank rises above the head of the long leg. A separate overflow may be provided, if desired, at any point in the tank between head of long leg and high-water mark. At times, if desired, a telltale-overflow may also be attached to the improved device and be of any well-known form, the said attachment not being shown, because it will be well understood by those skilled in the art how its application could be made and the convenience arising from its use.

28 indicates a smaller tube extending upwardly from a point near the bottom of the tank and piercing the cylinder immediately above its lower end. The tube serves the dual purpose of admitting water to the interior of the cylinder in the event of derangement of valves 9 and is designed to break siphonic action in the event of its being desired to empty the tank during an inflow of water sufficient to prevent the level from dropping below the cylinder within a reasonable time.

In Fig. 4 I have illustrated a modification which consists in substituting a sectional telescopic cylinder 29 for the cylinder 5 and its piston 7, (illustrated in the first two figures of the drawings,) the action of the pump thus formed being substantially identical with that shown in the first two figures and therefore appearing to require no further description.

In Fig. 5 of the drawings I have shown a possible variation of the siphonic-pump construction. In this instance the long discharge or flushing branch of the siphon is extended coaxially into a cylinder 36, provided with a regulator of the type illustrated

in Fig. 1 and having an open top 37 above the water-level in the tank. The bottom 38 of the cylinder is provided with upwardly-opening valves 39 and constitutes a pump the elevation of which by the actuation of the lever 15 will cause the water to be raised and directed through the flushing branch pipe.

In Fig. 6 of the drawings still another variation and possibly a preferred construction is shown. The cylinder 40 has its upper end closed, and the upper interior end of the flushing-pipe is provided with a fixed head or piston 41, fitting snugly within the cylinder. The piston is surrounded by suitable packing 42, and openings 43 are formed in the flushing-pipe just under the piston. Valves 44 open into the cylinder at its bottom, and it is provided with a regulator of a construction already described in connection with Fig. 1 of the drawings.

Obviously the construction and operation of the regulator are not effected by its transposition from the fixed discharge branch 4 of the siphon (shown in Fig. 1) to the movable inlet branch or cylinder, (shown in Figs. 5 and 6,) the only essential being that the siphonic action may be interrupted by the admission of air at any desired water-level.

The cylinder 40 constitutes a bell, and special utility resides in the provision of a closed air-space between the stationary piston and the upper end of the bell or cylinder. As the cylinder 40 is elevated the contained water will be discharged through the flushing-pipe to create siphonic action, and as no air-inlet is provided above the piston the gradual enlargement of the air-space will create a partial vacuum at the upper end of the bell. The return of the bell or cylinder to its normal position will therefore be effected without the necessity for the employment of a weight, which would be necessary to return the piston were it not for the suction thus created.

From the foregoing it will be observed that I have invented a simple, durable, and highly-efficient flushing apparatus for closets, and while the present embodiment of my invention appears to be preferable I do not desire to limit myself to the details specified, but desire to change, modify, and vary them at will within the scope of the protection prayed.

What I claim is—

1. In a flushing apparatus, the combination with a tank, of a cylinder disposed vertically therein having a siphon attachment, one of the latter parts being provided with a longitudinal slot and a longitudinal concavity co-extensive with the inside of the slot closed at its bottom and open at its top and constituting a regulating means, and an adjustable covering device for regulating the said slot and establish adjustable communication between the same and the part in which it is located to control the flush.

2. In a flushing apparatus, the combination with a tank, of a siphon including a vertical



cylinder, a piston movably mounted in the cylinder, mechanism above the tank to operate the piston, a regulator-tube extending inside the siphon and open at its upper extremity, and a vertically-adjustable closure for said tube to control the ingress of air to the siphon through said tube at any desired water-level.

3. In a flushing apparatus, the combination  
10 with a tank and siphon, of a pump in the short branch of the siphon, means for operating the pump, a longitudinal slot in one branch of the siphon, a longitudinal concavity coexten-

sive with the inside of the slot, closed at its bottom and open at its top and constituting 15 a regulating-slot, and a regulator-shutter adjustably fixed over the slot and designed to determine the water-level at which air will be admitted to the interior of the siphon.

In testimony that I claim the foregoing as 20 my own I have hereto affixed my signature in the presence of two witnesses.

JONATHAN BOWMAN.

Witnesses:

N. B. HAMILTON,

J. S. MCNEEL, Jr.