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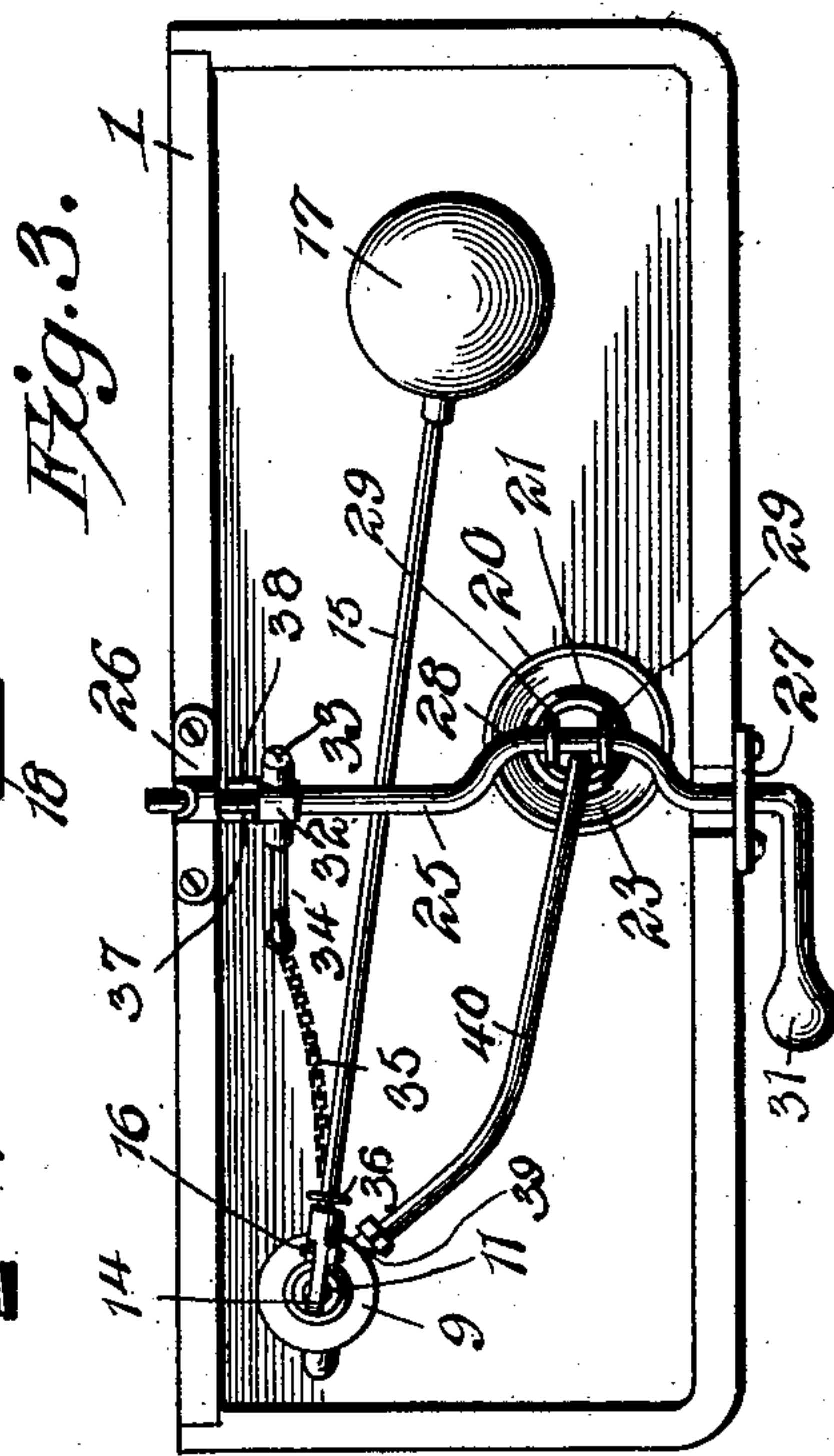
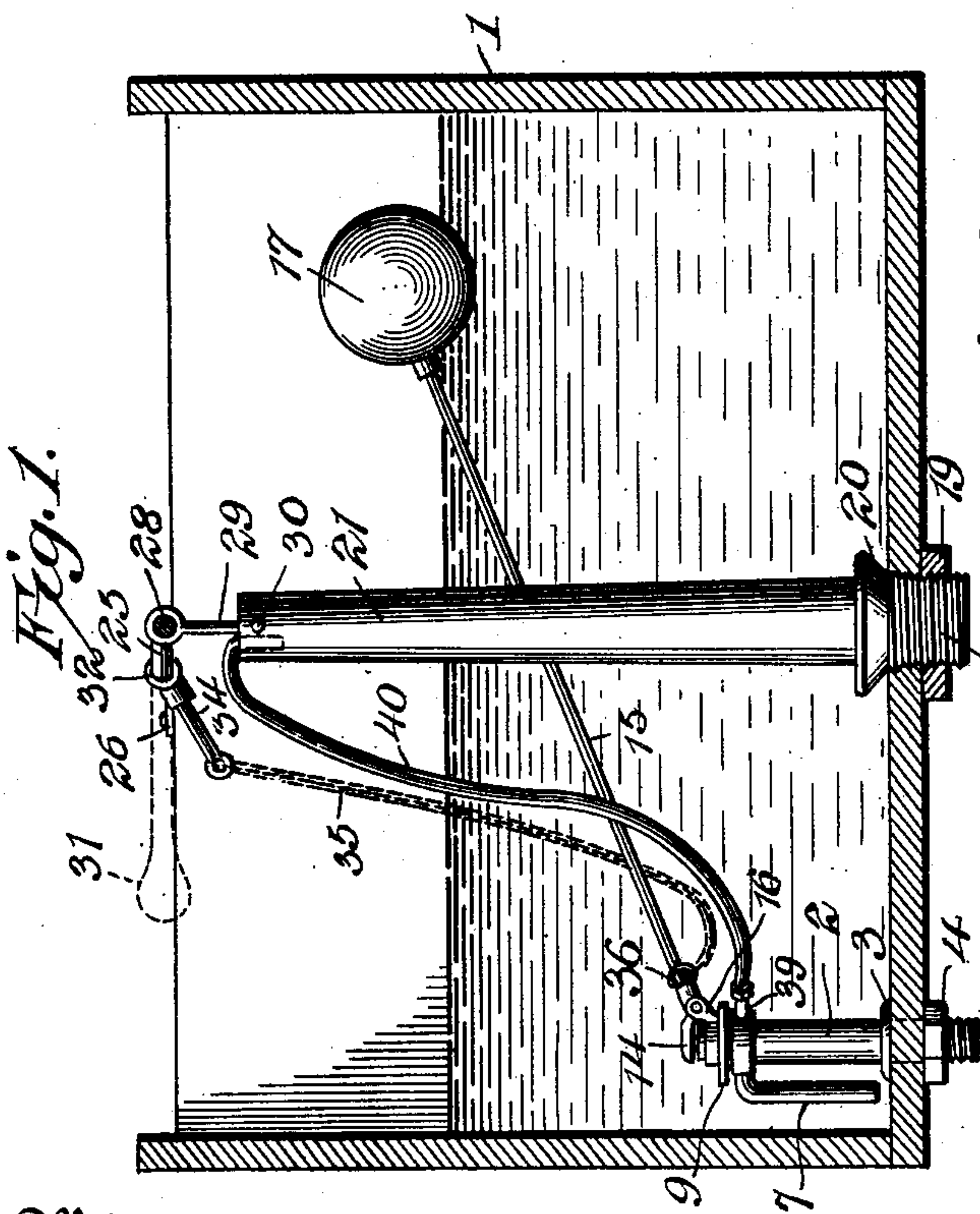
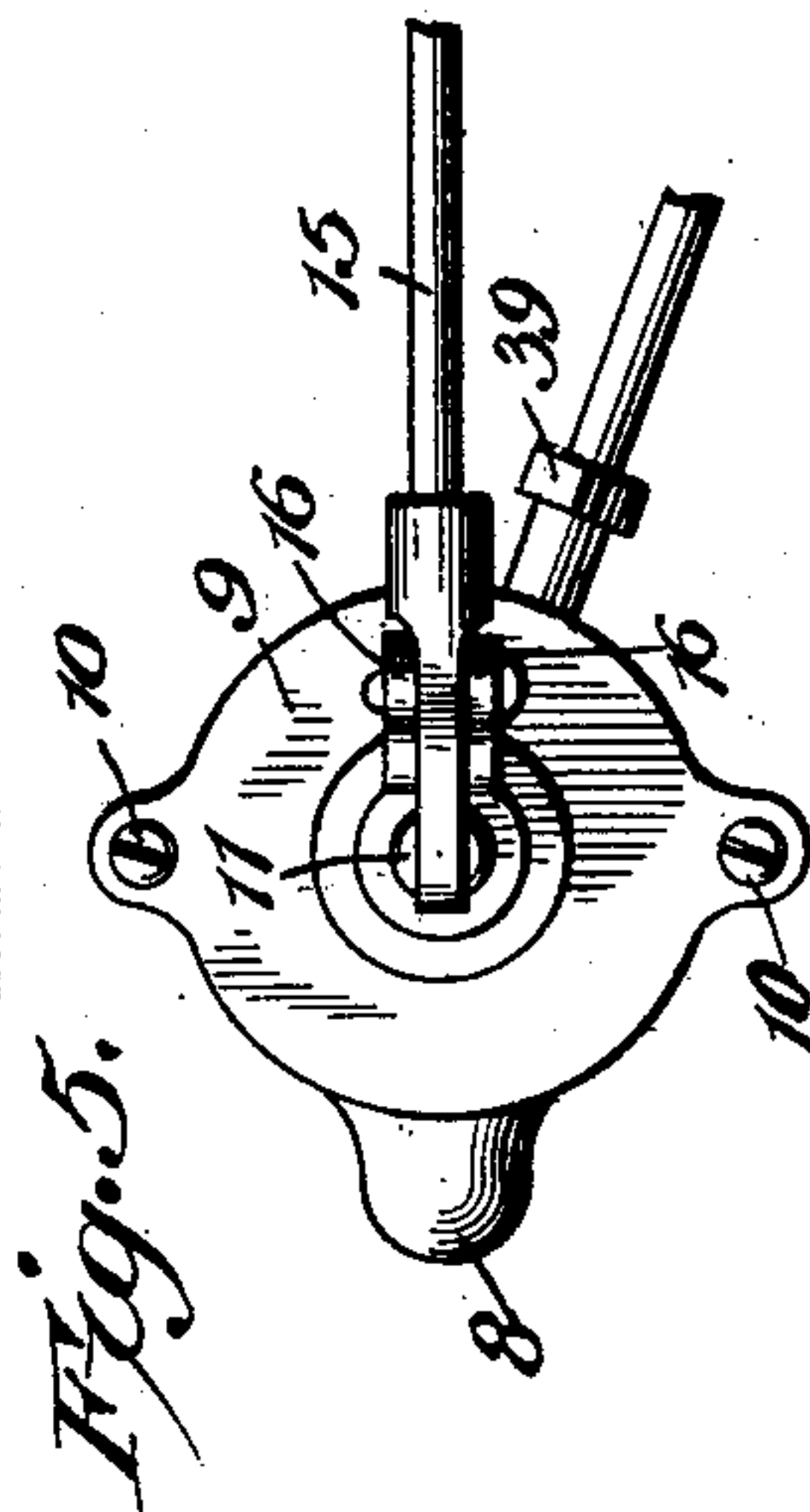
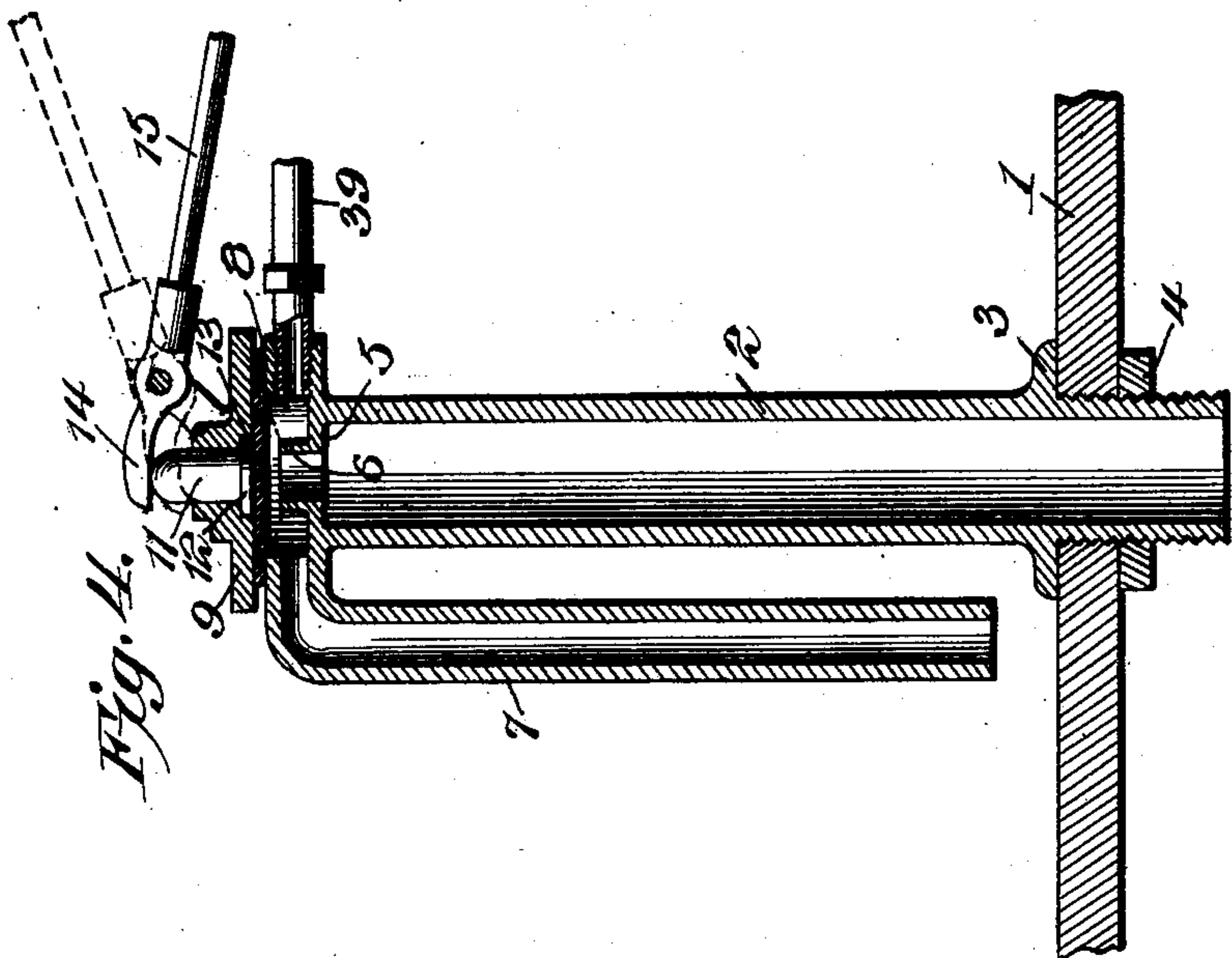
PATENTED DEC. 22, 1903.

F. H. LINDENBERG.  
FLUSHING TANK.

APPLICATION FILED FEB. 12, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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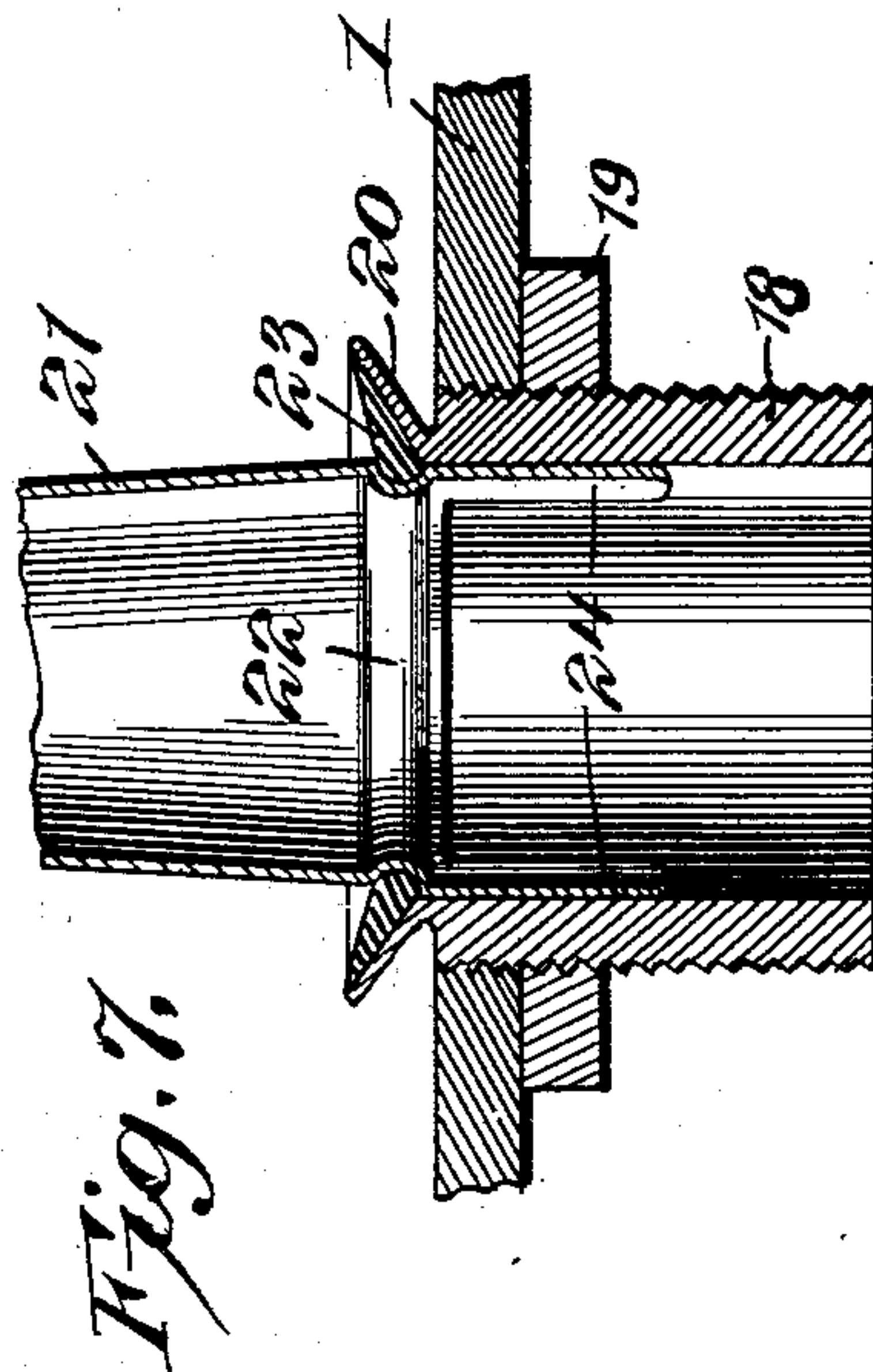
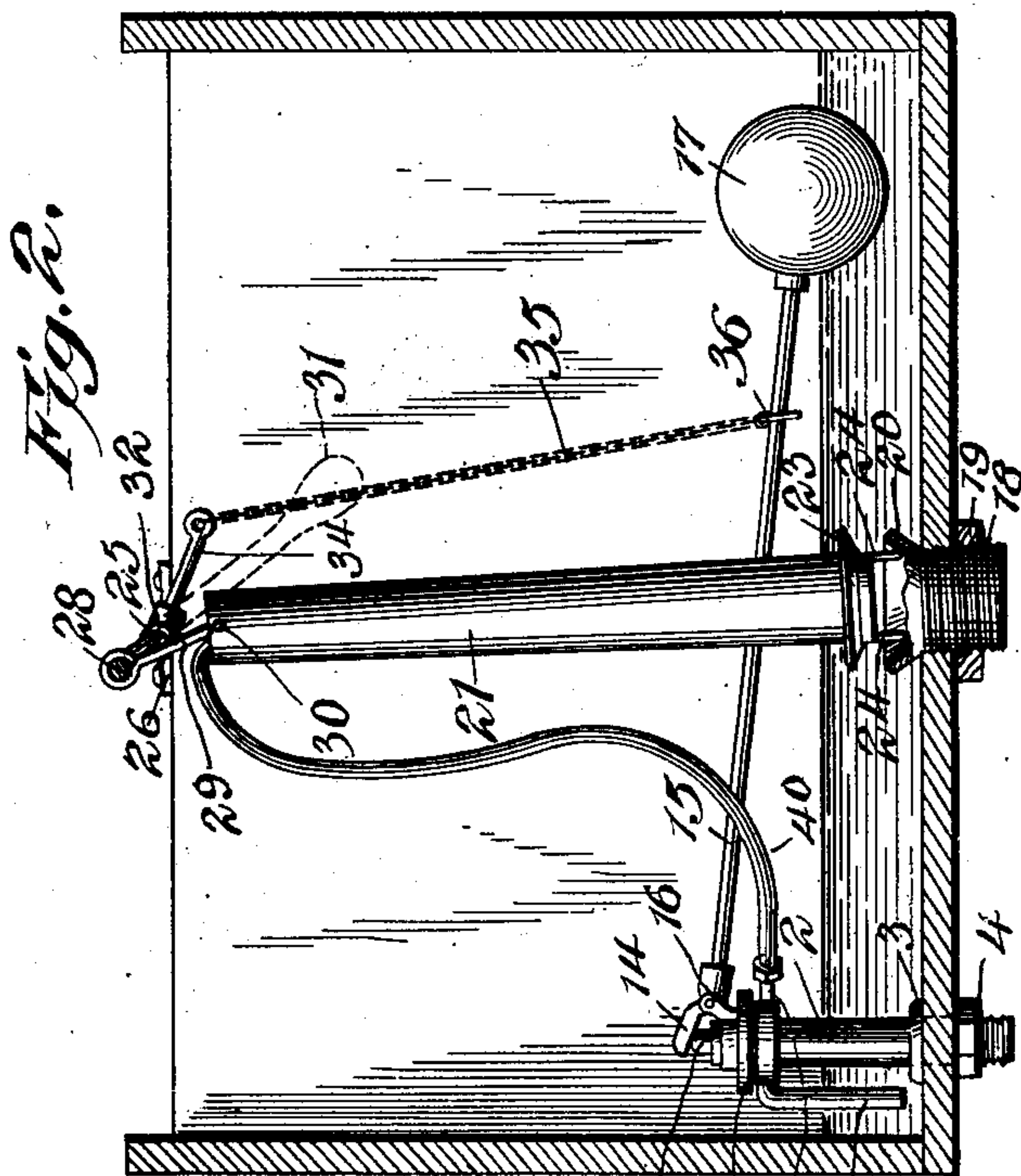
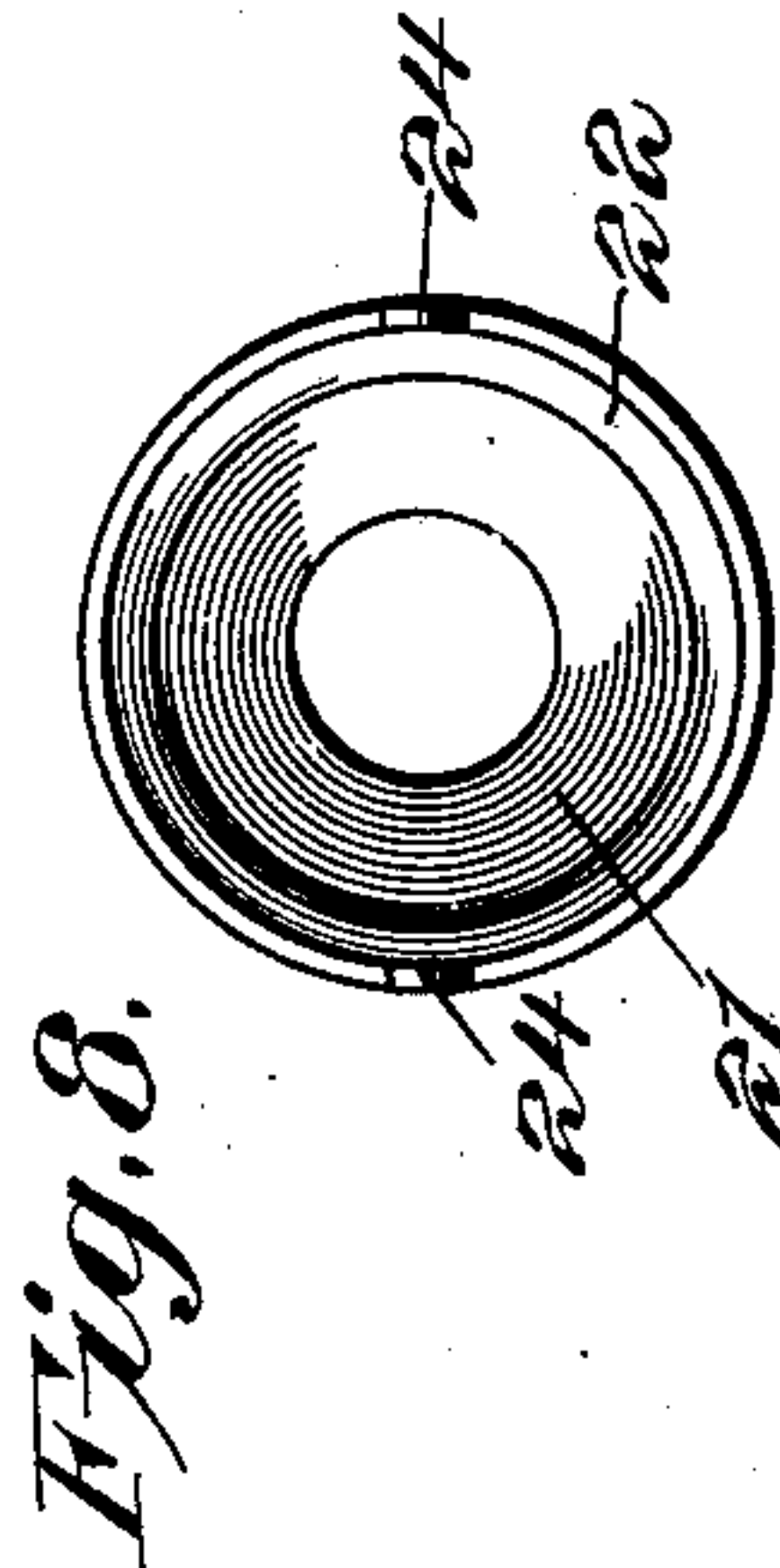
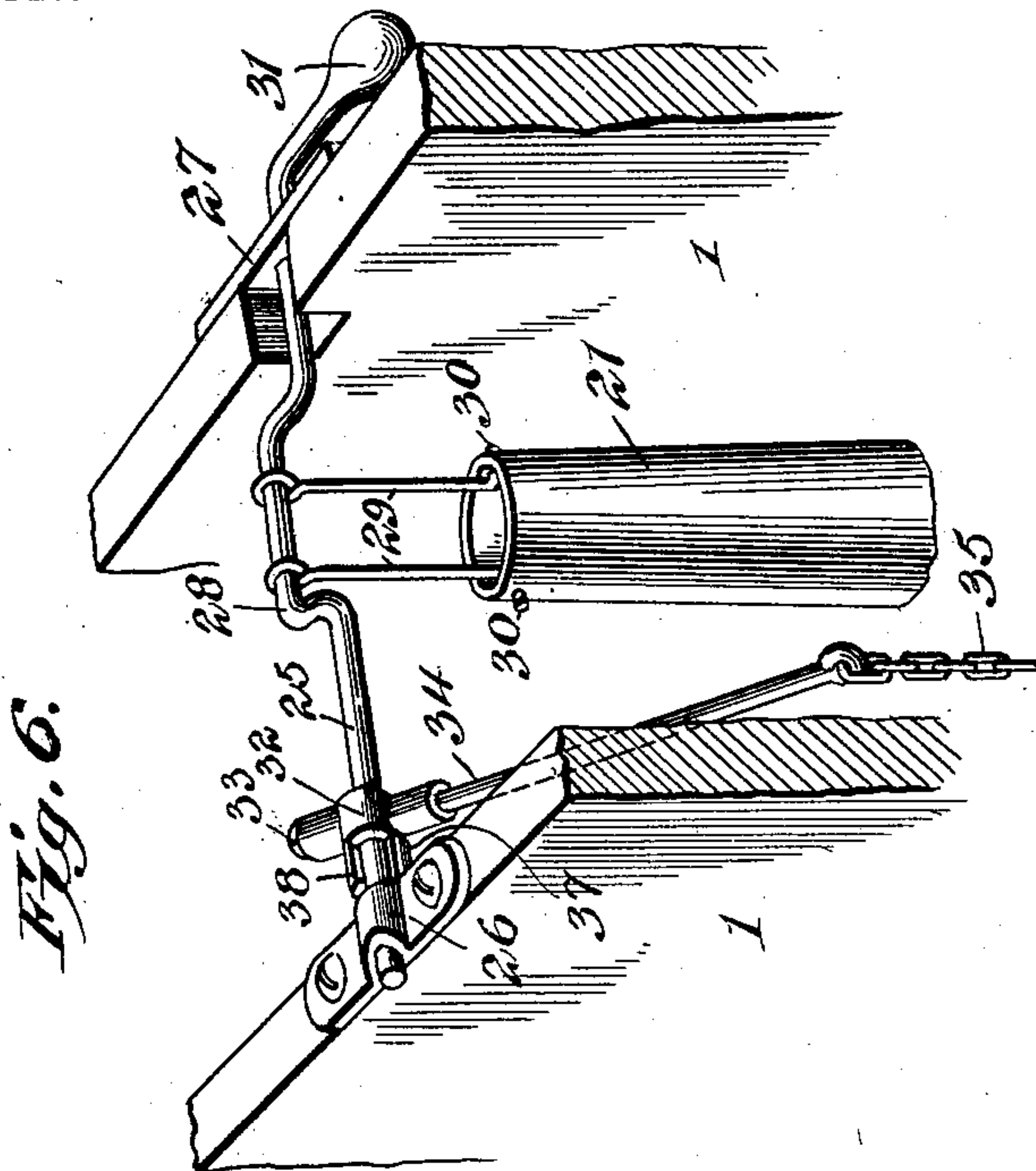
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

FRANK H. LINDENBERG, OF COLUMBUS, OHIO.

## FLUSHING-TANK.

SPECIFICATION forming part of Letters Patent No. 747,447, dated December 22, 1903.

Application filed February 12, 1903. Serial No. 142,988. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK H. LINDENBERG, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Flushing-Tanks, of which the following is a specification.

This invention relates to flushing-tanks, and while applicable in many different relations is especially designed for use in connection with water-closet bowls. It is, furthermore, designed to provide improvements in the inlet and the outlet of the tank and in the means for controlling the same.

A still further object of the invention is to provide for automatically supplying the bowl with water from the tank after the main flush has been completed by the closing of the outlet.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claim without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a vertical longitudinal sectional view of a flushing-tank embodying the features of the present invention, showing the several parts in their normal positions when the tank is full of water. Fig. 2 is a similar view showing the positions assumed by the parts of the device when the tank is empty. Fig. 3 is a top plan view of the tank. Fig. 4 is an enlarged longitudinal sectional view of the valve-controlled inlet. Fig. 5 is a top plan view thereof. Fig. 6 is a detail perspective view showing the manner of suspending the valve-tube which controls the outlet. Fig. 7 is an enlarged detail sectional view taken through the outlet with the valve-tube seated therein and closing the same, and Fig. 8 is a bottom plan view of the valve-tube.

Like characters of reference designate corresponding parts in all figures of the drawings.

The tank 1 is of common or ordinary form,

preferably open at the top, so as to give access to the interior thereof for convenience in repairing and readjusting any of the operating parts of the device should they become damaged or out of place.

Water is admitted to the tank by means of the usual supply-pipe, (not shown,) which is connected to the lower screw-threaded end of the tubular inlet 2, said lower end piercing the bottom of the tank and provided with an annular shoulder 3, lying against the upper face of the bottom 1, with a nut 4 fitted to the projected end of the tube and set snugly against the bottom of the tank to hold the tube rigidly in an upright position. Near the top of the tube there is an internal substantially horizontal web or partition 5, having a central opening which is surrounded by an upstanding annular flange 6, which forms a nipple that is smaller in diameter than the interior of the tube. An elbowed branch tube 7 has its upper end piercing the main tube 2 and in communication with the compartment which is above the partition 5, said tube 7 being smaller in diameter than the main tube and having its lower open end terminated adjacent to the bottom of the tank. Lying flat across the open top of the main tube 2 is an elastic valve-disk 8 of rubber or other suitable material, and upon the top of this valve-disk is a metallic cap-plate 9, which, as best indicated in Fig. 5, is provided with diametrically opposite ears, through which pass fastenings 10, that engage corresponding ears upon the top of the tube 2, and thereby hold the valve-disk in place. As shown in Fig. 4, the valve-disk 8 is disposed above the valve-seat formed by the flange 6 in order that water may pass upwardly through the tube 2 and thence out through the tube 7. It is designed to provide for forcing the central portion of the valve-disk downwardly into engagement with the seat 6, so as to close the valve-port, as indicated by dotted lines, and it is accomplished by means of a plunger 11, which works through a central opening in the cap-plate 9. The lower end of this plunger is provided with an enlargement or head 12, which rests upon the disk and is received within a socket 13 in the bottom of the plate 9, thereby to prevent upward displacement of the plunger. The up-



per rounded end of the plunger normally projects through the top of the plate 9 and is frictionally engaged by the foot 14 of a controlling-lever 15, the latter being fulcrumed  
 5 between a pair of ears 16 upon the cap-plate 9, as clearly indicated in Fig. 5. At the outer end of the lever 15 is a float 17, which rises and falls with the water within the tank, and thereby automatically operates the plunger  
 10 11 to open and close the valve-port 6.

The outlet for the tank, as best shown in Fig. 7, consists of an external screw-threaded tubular bushing 18, which pierces the bottom of the tank and is projected below the same  
 15 for connection with the flushing-pipe, which leads to the bowl. A suitable nut 19 is fitted upon the bushing and against the lower side of the tank, so as to hold the bushing in place. At the upper end of the bushing is an up-  
 20 wardly and outwardly flared flange 20, which forms a valve-seat. This outlet is normally closed by means of an upstanding valve-tube 21, which is provided at its lower end with an annular groove, preferably formed by a  
 25 bead 22, pressed inwardly in the tube. A rubber or other elastic valve-ring 23 is slipped over the top and snapped into the seat formed by the annular groove or bead 22, and this ring is adapted to be normally seated upon  
 30 the valve-seat 20, so as to close the outlet 18. From the lower end of the tubular valve-stem 21 extend pendent guide projections 24, which are designed to work within the bushing 18, and thereby guide the valve-stem in its up-  
 35 ward and downward movements and also prevent lateral displacement of the lower end of said stem.

For raising and lowering the valve-stem the latter is hung from a rotatable shaft 25, which extends transversely across the top of  
 40 the tank and has its opposite end portions mounted in bearings 26 and 27, carried by the opposite top edges of the tank. At an intermediate portion the shaft 25 is provided  
 45 with an elbow or double crank 28, from which pivotally depend a pair of links or hangers 29, the lower ends of which enter the top of the tubular valve-stem 21 and are provided with outturned hooked portions 30, which  
 50 pass through corresponding perforations in the stem, whereby the latter is swung from the crank 28. By this manner of hanging the valve-stem from the crank portion of the shaft when the latter is rotated in one direc-  
 55 tion the valve-stem will be elevated, so as to lift the valve-ring 23 from the valve-seat 20, and thereby permit water to flow out of the tank through the outlet 18 and thence to the bowl for the purpose of flushing the latter.  
 60 When the shaft is rotated in the opposite direction, the valve-stem will of course be lowered and the valve 23 again seated, so as to close the outlet.

For convenience in manipulating the shaft  
 65 one end thereof is projected externally of the tank and provided with a crank-arm or handle 31, which is designed to be manually forced

downwardly in any suitable manner, preferably by means of the usual chain hanging therefrom, but not shown in the present drawings. 70

Upon one end portion of the shaft 25, preferably opposite the handle 31, there is a tubular bracket 32, (best shown in Fig. 6,) which has a set-screw 33, piercing the bracket and engaging the shaft to adjustably and rigidly  
 75 secure the bracket thereto. At a point diametrically opposite set-screw 33 an arm 34 projects from the bracket, and a chain 35 loosely depends from the free end of this arm, the lower end of the chain being pro-  
 80 vided with a link 36, slidably embracing the float-lever 15. The bearing-bracket 26, which is adjacent to the bracket 32, is provided with a lug or projection 37, that extends into the tank and lies in the path of a corresponding  
 85 lug or projection 38, carried by the bracket 32. These lugs or projections are normally separated, as indicated in Fig. 6; but when the handle 31 has been manipulated to turn the shaft 25 it will of course be understood  
 90 that the latter rotates until the lugs or projections contact, which is at a point immediately after the crank 28 passes its upright position. By this means rotation of the shaft  
 95 25 is limited, and when it has been stopped by the stop-lugs or projections it is held in this position by the weight of the valve-stem  
 100 21, with the valve 23 above the seat 20, whereby the outlet is opened, and water will continue to rush out through the outlet until the  
 105 latter is closed. It will of course be understood that the float 17 falls with the level of the water in the tank until the chain 35 is taut, when the weight of the float drawing upon the arm 34 is sufficient to rotate the  
 110 shaft 25 backwardly to its normal position, thereby automatically seating the valve 23 and closing the outlet. As the float-lever descends the plunger 19 rises under the action of the elastic valve-disk 9, thereby opening  
 115 the inlet and permitting the tank being again automatically filled.

It will here be noted that as the branch tube 7 is smaller in diameter than the main inlet-tube 2 there is sufficient pressure within  
 120 the chamber at the top of the inlet-tube to force some of the water outwardly through a supplemental outlet 39, to which is connected a pipe 40, having its upper end in communication with the tubular valve-stem 21, said  
 125 pipe preferably being flexible, so as to move with the valve-stem, and having its upper end dipped down into the valve-stem, whereby after the outlet-valve 23 has been seated and no more water can pass out through the out-  
 130 let 18 a supplemental supply of water is introduced into the top of the tubular valve-stem 21, through which it passes to the bowl, so as to fill the trap thereof after the flush has been completed.

A very important feature of this invention resides in the provision of the open-ended tubular valve-stem 21, whereby said valve-stem forms an overflow-tube should the inlet-valve



fail to close. It will here be noted that this member 21 has a four-fold function—that is to say, its lower end forms a valve to close the outlet 18. The remaining portion of the member forms a connection between the valve portion and the means for raising and lowering the valve. In connection with the flexible tube 40 it forms means for refilling the bowl after the main flush has been completed and also forms an overflow-tube, as hereinbefore set forth.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

15 The combination with a tank having an inlet-tube with an open top and a transverse partition provided with an opening, a branch tube leading from the main tube above the partition and smaller in diameter than the  
20 main tube an elastic valve-disk carried by the

top of the main tube, a cap-plate holding the valve in position, a plunger working through an opening in the cap-plate to force the valve against the partition and close the opening thereof, a float-lever fulcrumed on the tube and having one end controlling the plunger, an outlet for the tank, an open-ended tubular valve-stem having an external valve-ring controlling the outlet, elevating means for the outlet-valve, a flexible tube leading from the main inlet-tube above the partition thereof to the interior of the tubular valve-stem, and a flexible connection between the means for operating the outlet-valve and the float-lever to close the valve at the lower limit of the float-lever.

FRANK H. LINDENBERG.

In presence of—

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