

(No Model.)

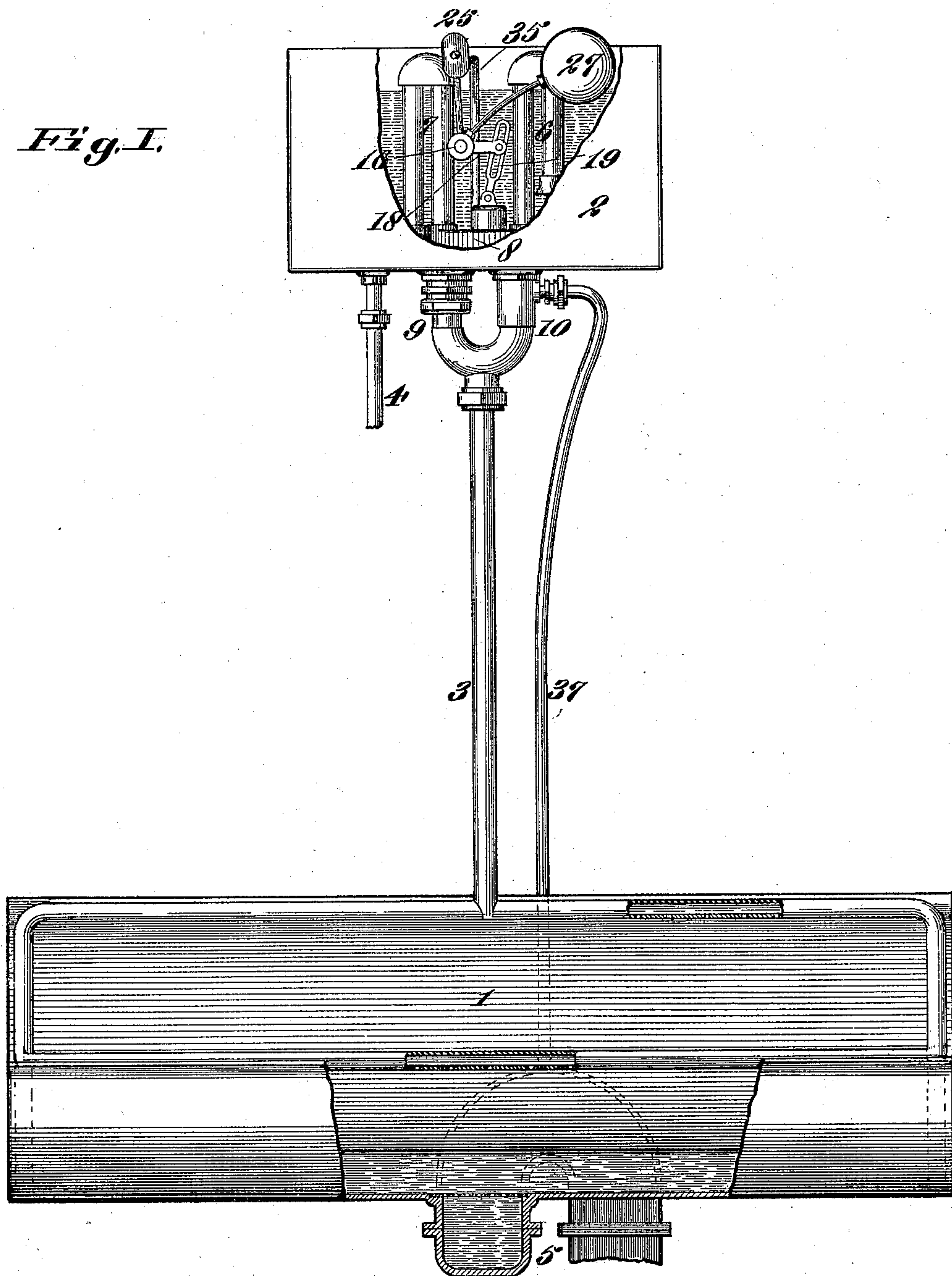
2 Sheets—Sheet 1.

M. J. CURRY.
WATER CLOSET OR URINAL.

No. 544,964.

Patented Aug. 20, 1895.

Fig. I.



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A. V. Brown*

*Inventor,
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(No Model.)

2 Sheets—Sheet 2.

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Fig. II.

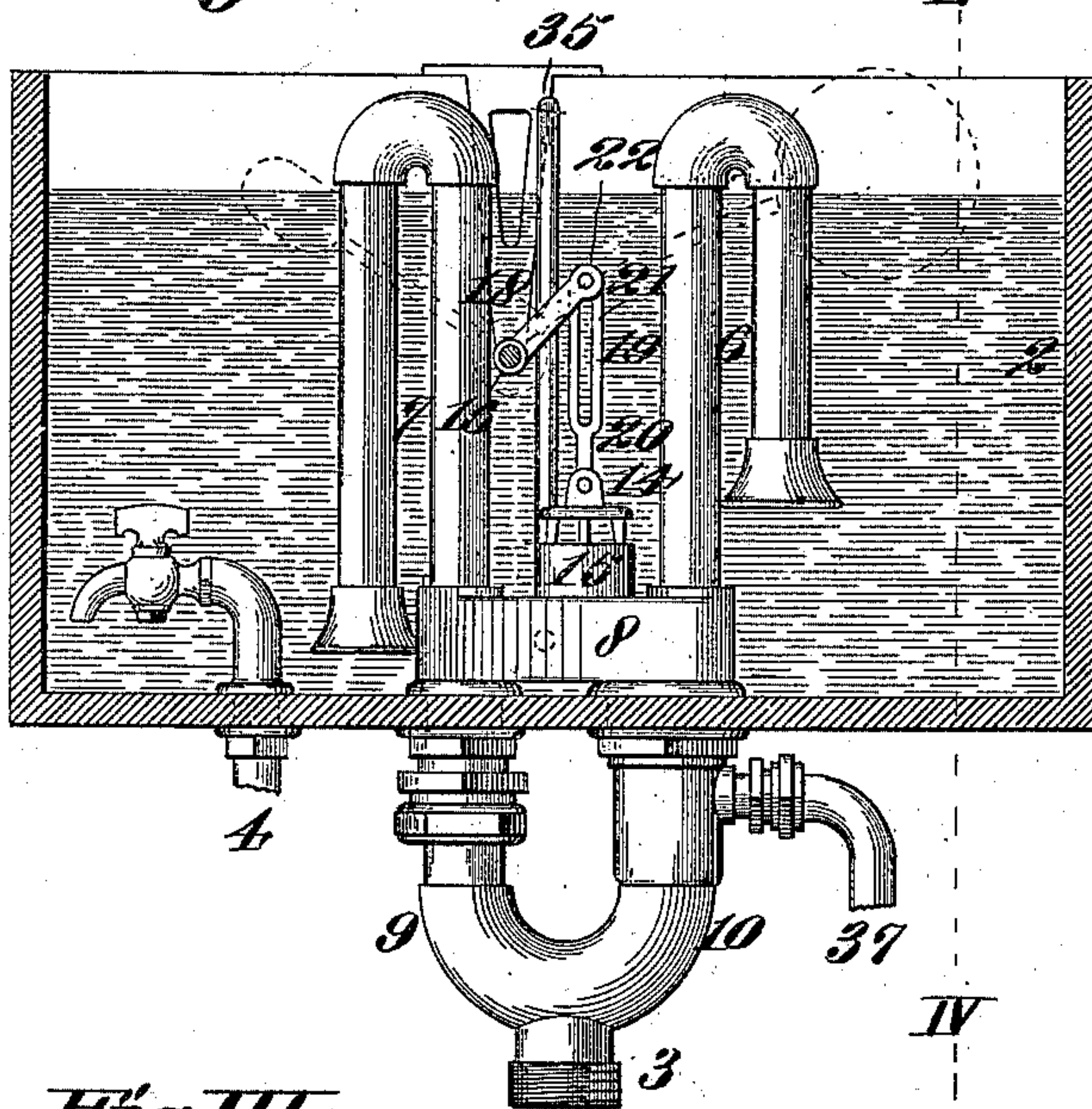


Fig. III.

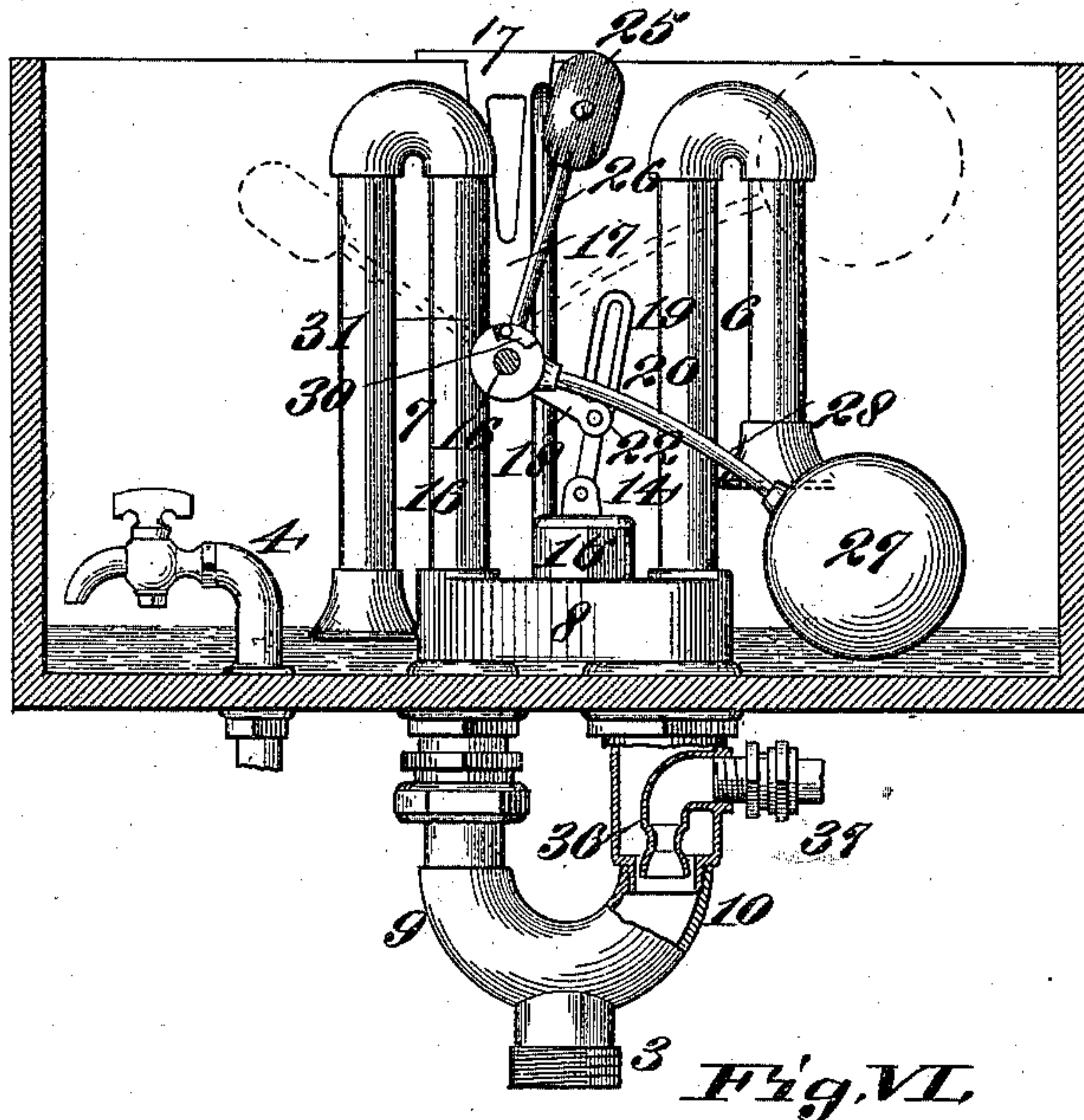
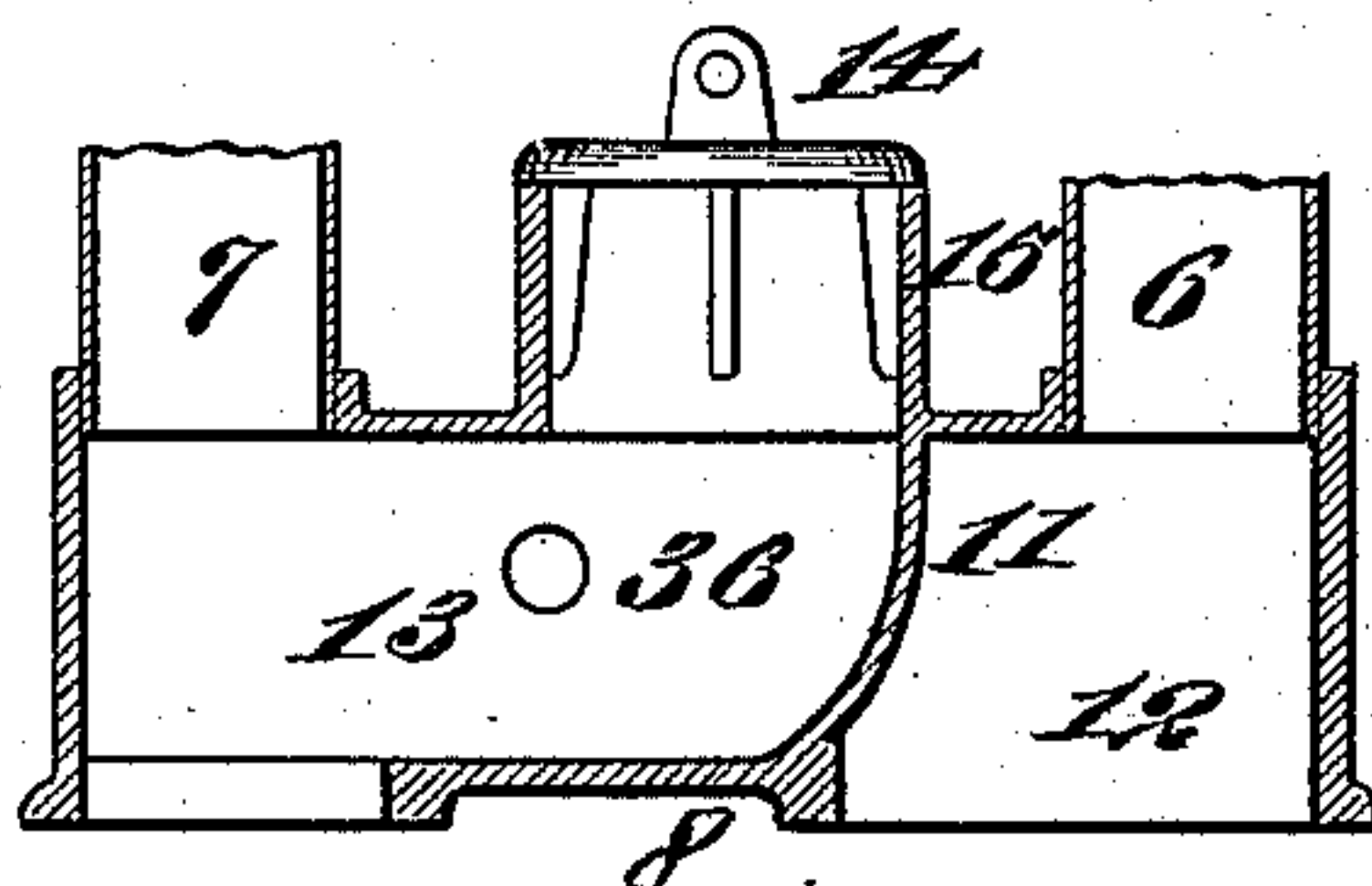


Fig. VI.



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Fig. IV.

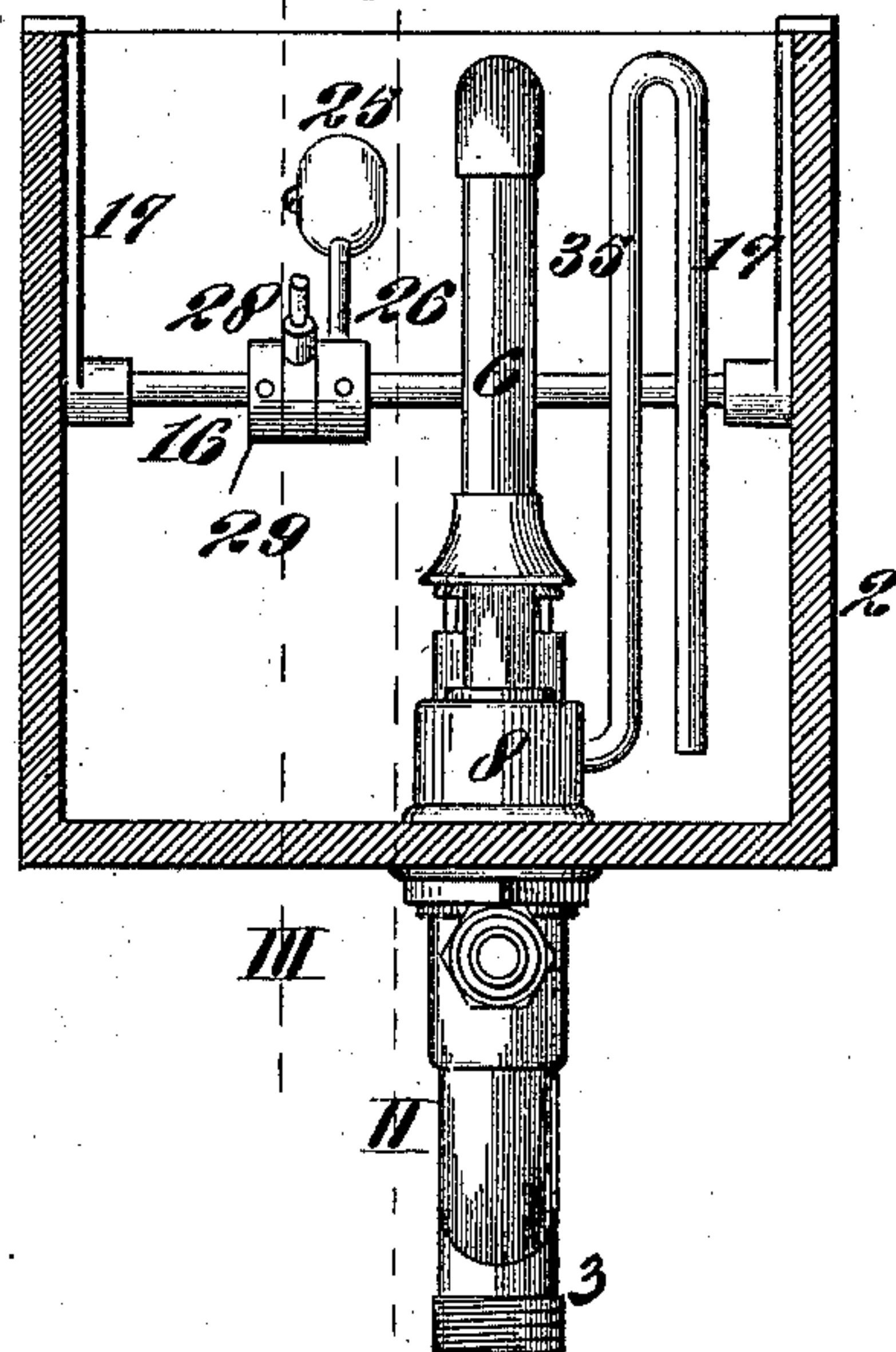
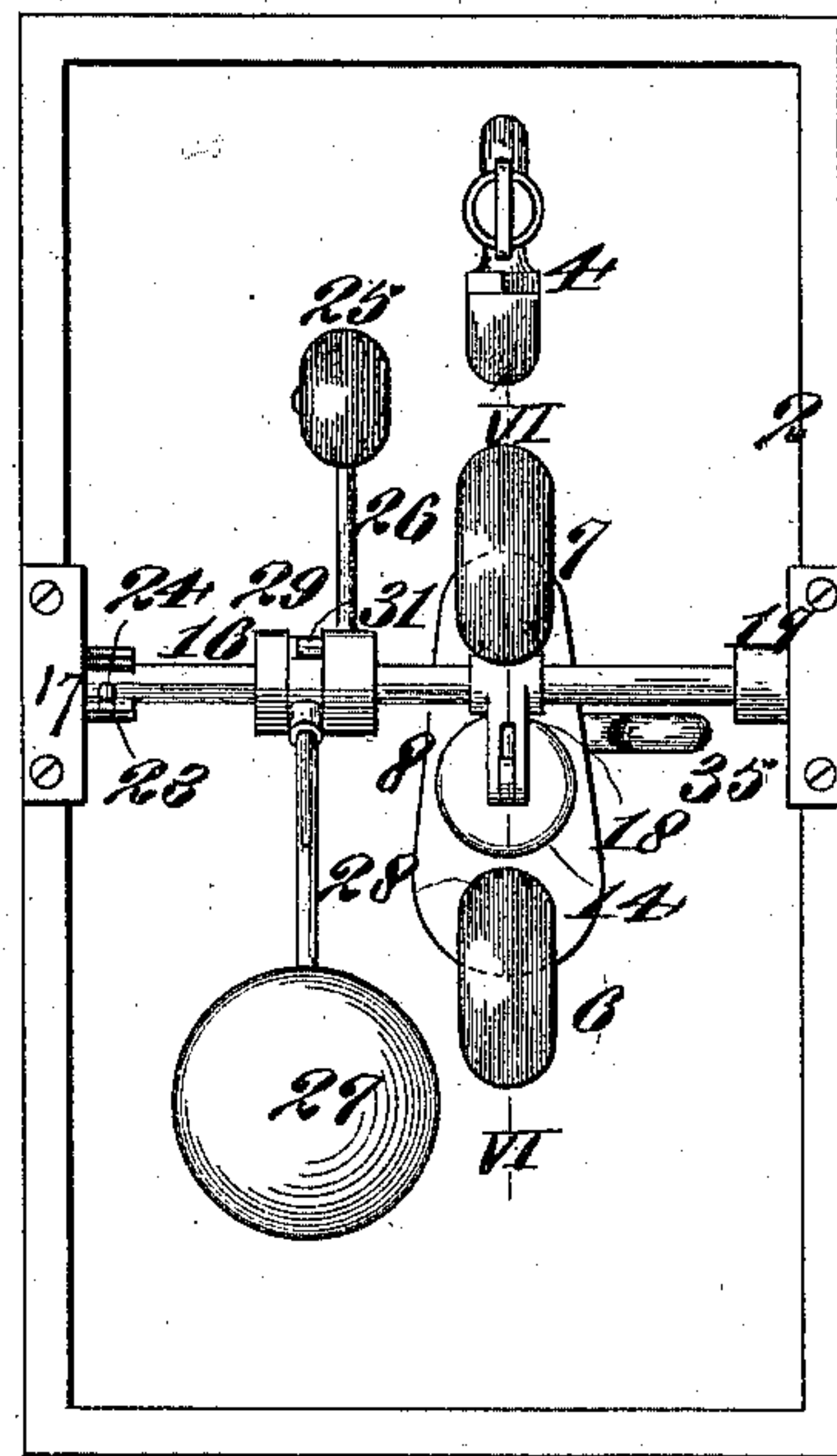


Fig. V.



Inventor:
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attys

UNITED STATES PATENT OFFICE.

MICHAEL J. CURRY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE N. O. NELSON MANUFACTURING COMPANY, OF SAME PLACE.

WATER-CLOSET OR URINAL.

SPECIFICATION forming part of Letters Patent No. 544,964, dated August 20, 1895.

Application filed April 25, 1895. Serial No. 547,089. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. CURRY, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Water-Closets or Urinals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a device for automatically effecting the flushing of the bowl of a water-closet or urinal.

My invention further relates to a mechanism for breaking the flow of water through the long leg of a duplex siphon, the long leg of the siphon affording the afterflow of the bowl.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is an elevation, part in section, illustrative of my invention. Fig. II is a section taken on line II II, Fig. IV. Fig. III is a similar view taken on line III III, Fig. IV. Fig. IV is a section taken on line IV IV, Fig. II. Fig. V is a top or plan view. Fig. VI is a detail section taken on line VI VI, Fig. V.

Referring to the drawings, 1 represents a urinal-bowl, though the device may be used with a closet-bowl as well; 2, the water-tank; 3, the flush-pipe from the tank to the bowl; 4, the pipe through which the tank is supplied with water, and 5 the bowl-trap. Within the tank is a duplex siphon consisting of a short leg 6 and a long leg 7, both of which connect with a box 8, with which the pipe 3 communicates through branches 9 and 10. The box has a partition 11, (see Fig. VI,) dividing it into two chambers 12 and 13, the short leg 6 of the siphon and the branch 10 of the pipe 3 communicating with the chamber 12 of the box, and the long leg of the siphon and the branch 9 of the pipe 3 communicating with the chamber 13 of the box.

14 is the discharge-valve for starting the siphons. It is located over the chamber 13 of the box and seats on a neck 15, projecting upwardly from the box. To the mechanism for operating this valve my invention in part relates, and one of the prime objects of this part of my invention is to insure the regular

and constant operation of this valve, regardless of whether there is a strong or very weak flow of water into the tank. This is accomplished by my arrangement, inasmuch as the valve does not depend for its operation upon the force of the inflow of water, but the mechanism is merely set in motion by the influx of water raising a float, and when the float reaches a certain elevation the mechanism operates by a force apart from the float and opens the valve. Referring to this part of my invention, 16 represents a rock-shaft journaled within the tank, preferably by means of brackets 17, secured to the sides of the box. Secured to the rock-shaft is a crank 18, connected to the valve 14 by a link 19, that is pivoted to the valve at 20 and which has a slot 21 to receive a pin 22 in the end of the crank 18. The rocking of the shaft 16 is limited by a pin 23, (see Fig. V,) playing in a notched-out part 24 in one of the brackets 17.

25 represents a counterbalance-weight secured by its stem 26 to the shaft 16. This weight is above the shaft, and the rocking movement of the shaft is sufficient to permit the weight to move from one side to the other of a vertical line through the shaft.

27 is a float loosely mounted on the shaft 16 by means of a stem 28, the hub of the stem of the float being held against the hub of the stem of the weight 25 by means of a collar 29. The hub of the float-stem has a notch 30 (see Fig. III) to receive a pin 31 on the hub of the stem of the weight. As water enters the tank it gradually lifts the float 27, and the first part of the upward movement of the float has no effect upon the rock-shaft 16 or the weight 25. There is no such effect upon the rock-shaft or the weight until the end of the notch 30 comes against the pin 31. The float then commences to turn the shaft and to move the weight across a vertical line drawn through the shaft, and as it does so the pin 22 is moving upward in the slot 21 of the link 19. Finally the float rocks the shaft to an extent that causes the weight to pass over this vertical line, (or over its center of gravity,) and then the weight falls by gravity, and rocking the shaft 16 causes the valve 14 to be opened as the pin 22 now comes against the end of the slot 21. The valve is thus opened, not by

the water-pressure acting upon it, but by the force of gravity of the weight 25, so that the valve will be opened, even though there is an extremely low pressure of water in the pipe 4, as this pressure does not in itself open the valve. As the weight passes over the center of the shaft 16 the valve is opened into the position shown in Fig. II, the falling of the weight in this direction and the opening of the valve being limited by the pin 23 coming against the other side of the notch 24. As water passes through the valve the siphons are set in operation and the water begins to descend in the tank, when the float will commence to descend again, bringing the weight back to its normal side of the center of the shaft 16, when the valve will again be closed. It is evident that, instead of securing the crank 18 and weight 25 rigidly to the shaft and having the shaft rock, the shaft might be fixed and the weight and crank formed integral or secured together and mounted loosely on the shaft, when, of course, the float would also be mounted loosely on the shaft, as with the arrangement shown.

The other part of my arrangement referred to consists in a means for breaking the flow of water through the long leg of the siphon. This consists of a pipe 35, formed in the shape of a goose-neck and having one end communicating with the chamber 13 of the box 8, as shown at 36, Fig. VI, the other and open end of the pipe being located a short distance above the bottom of the tank, as shown in Fig. IV, the elevation of the lower end of the pipe being above that of the open mouth of the long leg of the siphon. The function of this pipe is to admit a supply of air to the branch 9 of the pipe 3 for the purpose of breaking the flow of water through the long leg of the siphon. In the absence of this pipe the leg of the siphon takes air as the surface of the water reaches the mouth of the siphon in a quantity insufficient to break the flow of water. Water is constantly entering the tank, of course, through the supply-pipe, and the siphon, after taking air, begins drawing water again, then again taking air, and this performance continues indefinitely, while by the use of the pipe 35 air is admitted to the box 13 after the surface of the water is beneath the open end of the pipe and before the surface of the water reaches the mouth of the long leg of the siphon, and this air entering the box acts to break the flow of water through the long leg of the siphon instantaneously. Such means for breaking the flow of water through the short leg of the siphon is not necessary, first, because at the time the water is broken in this leg of the siphon water is passing out through the long leg, and the combined passage through the two legs of the siphon is so much greater than the influx of water that the short leg of the siphon breaks without difficulty, and again the branch 10 of the pipe 3, with which the short leg of the siphon connects, is contracted by the jet 36 of

the trap-pipe 37, (see Fig. V,) so that there is a comparatively small area of space through which water passes from the short leg of the siphon, and but a comparatively small amount of air is therefore necessary to break the flow of water. The pipe 37 connects with the trap of the bowl, as in McFarland's patent, No. 460,485, issued September 29, 1891, to the N. O. Nelson Manufacturing Company. It will be observed that the weight 25 is secured to its stem by a set-screw, so that it can be adjusted in and out, as may be desired.

I claim as my invention—

1. The combination of a tank, a flush pipe, a valve permitting water to pass from the tank to the flush pipe, a shaft, a lost motion connection between said valve and shaft, a float connected to said shaft, and a counterbalance weight mounted on the shaft and adapted to open said valve when moved beyond its center of gravity by said float; substantially as set forth.
2. The combination of a tank, a flush pipe, a valve admitting water from the tank to the flush pipe, a shaft, a crank on the shaft, a lost motion connection between said shaft and valve, a weight secured to the rock shaft, and a float mounted loosely on said shaft and having a lost motion connection with said weight, substantially as and for the purpose set forth.
3. The combination of a tank, a flush pipe, a valve admitting water from the tank to the flush pipe, a shaft, a crank on the shaft, a slotted link connecting the said crank to said valve, a weight secured to the rock shaft, and a float mounted on said shaft, substantially as and for the purpose set forth.
4. The combination of a tank, a flush pipe, a valve for opening a communication between said tank and said pipe, a shaft journaled in said tank, a crank on said shaft connected to said valve, a lever secured to the shaft and a float mounted loosely on said shaft and having a lost motion connection with said weight, substantially as and for the purpose set forth.
5. The combination of a tank, a flush pipe, a valve opening a communication between said tank and pipe, a shaft, a crank secured to the shaft and having a lost motion connection with said valve, a weight secured to the shaft, and a float mounted loosely on the shaft, said float having a notch receiving a pin on said weight, substantially as and for the purpose set forth.
6. The combination of a tank, a flush pipe, a valve for opening up communication between said tank and pipe, a rock shaft journaled in said tank, means for limiting the movement of the shaft, a crank secured to the shaft, a slotted link connecting said crank to said valve, a weight secured to the shaft and a float mounted loosely on the shaft and having a lost motion connection with said weight, substantially as and for the purpose set forth.
7. The combination of a tank, a flush pipe, a valve for opening a communication between said tank and pipe, means for operating said

valve, a box located at the bottom of the tank
and with which said pipe communicates by
means of branches, a duplex siphon commu-
nicating with said box, and the legs of which
5 are different lengths, and a pipe 35 located
within the tank and communicating with the
chamber of said box with which the long leg
of the siphon communicates; said box having

a partition dividing it into two chambers with
which the legs of the siphon respectively com- 10
municate, substantially as set forth.

MICHAEL J. CURRY.

In presence of—

E. S. KNIGHT,
A. C. BROWN.