

920,465.

Patented May 4, 1909.  
2 SHEETS—SHEET 1.

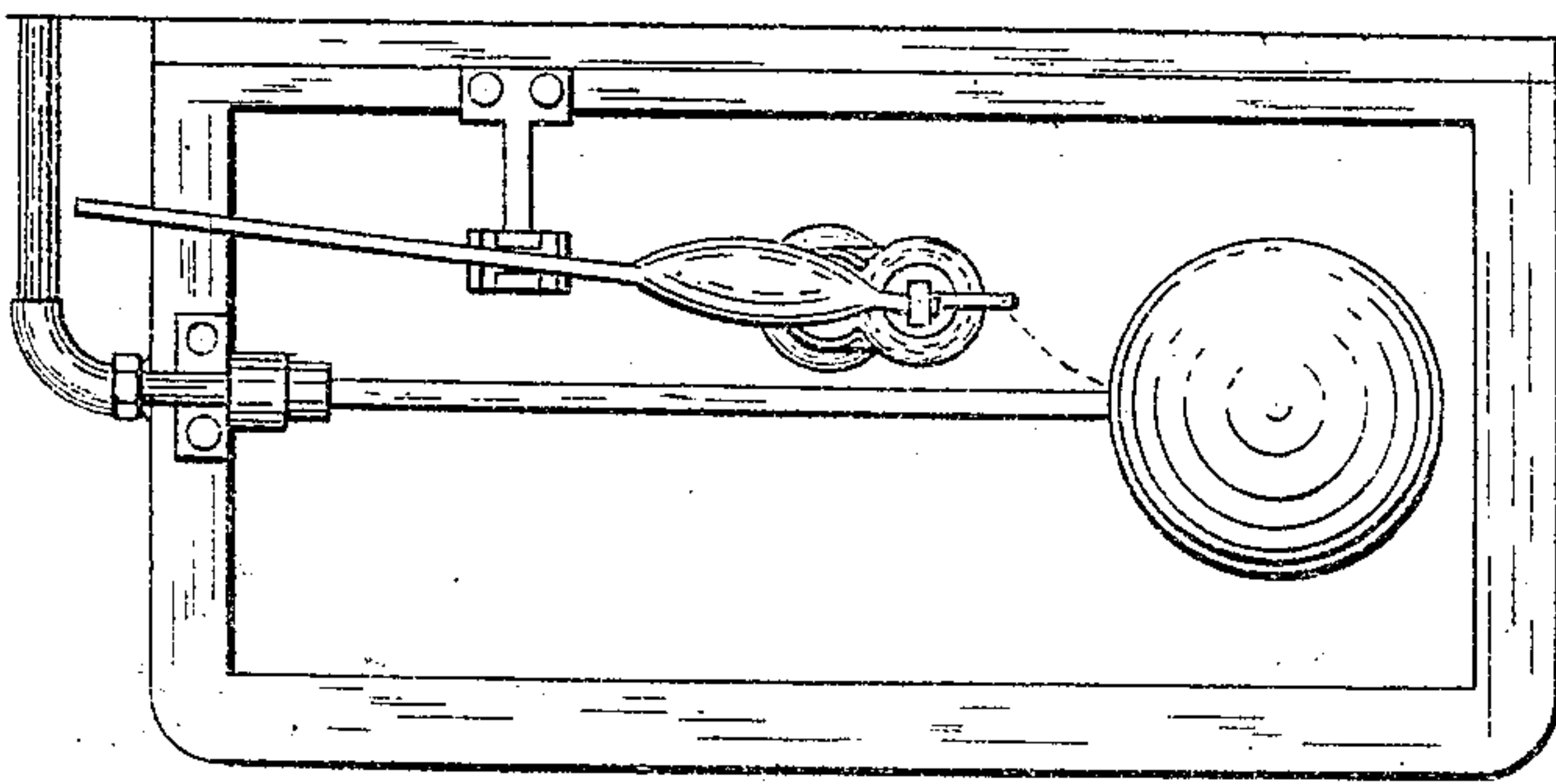


Fig. 2.

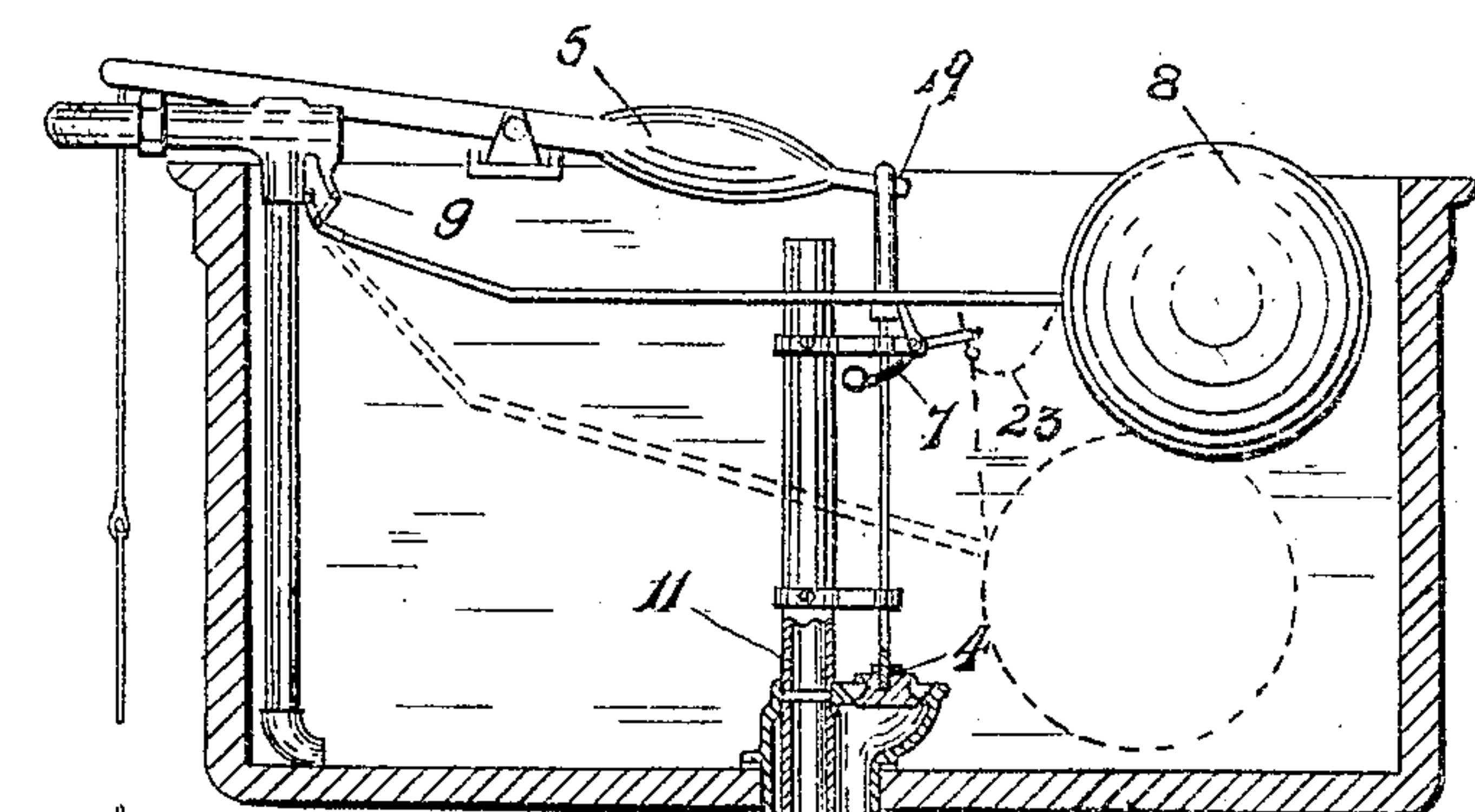


Fig. 1.

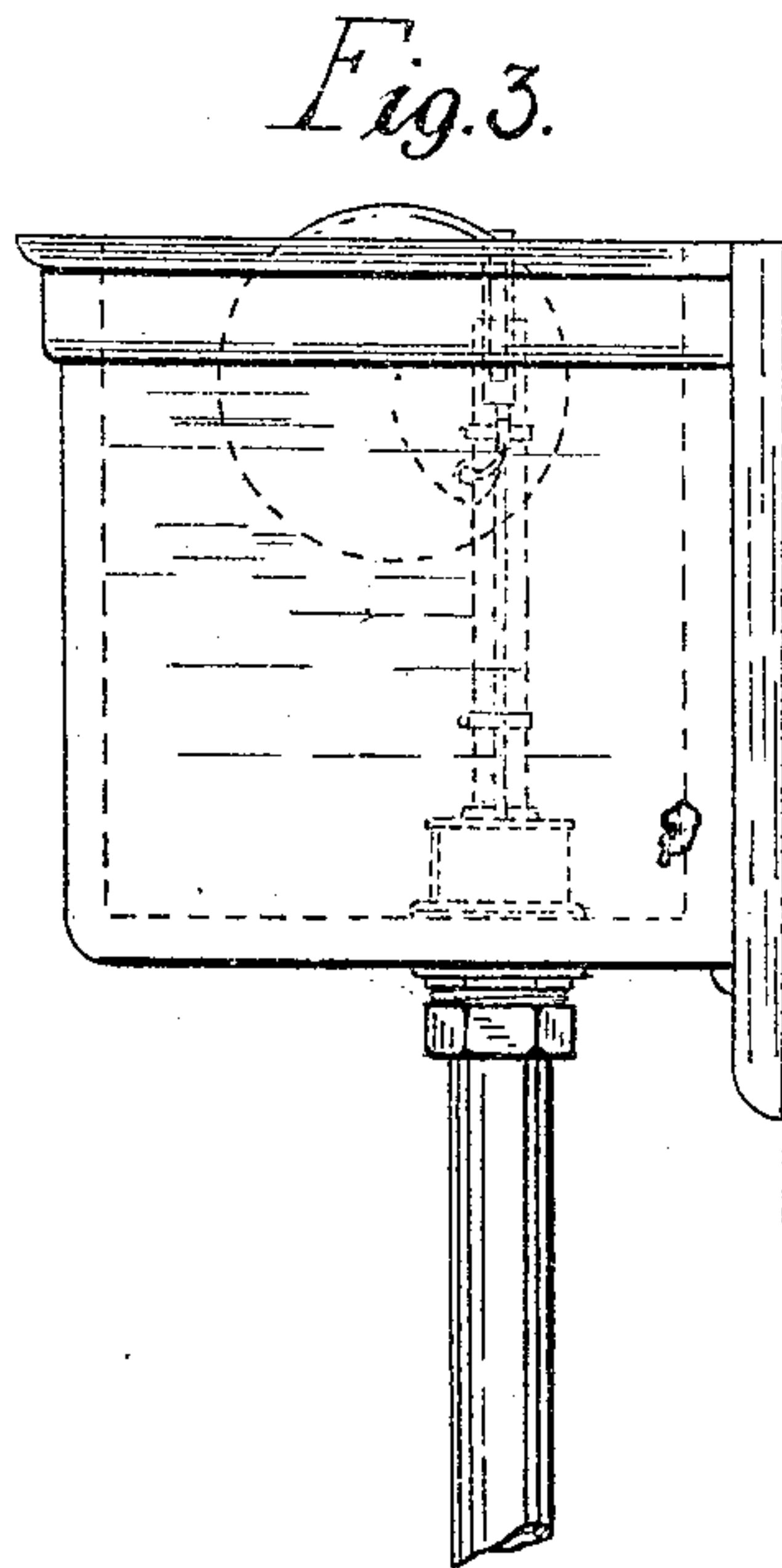
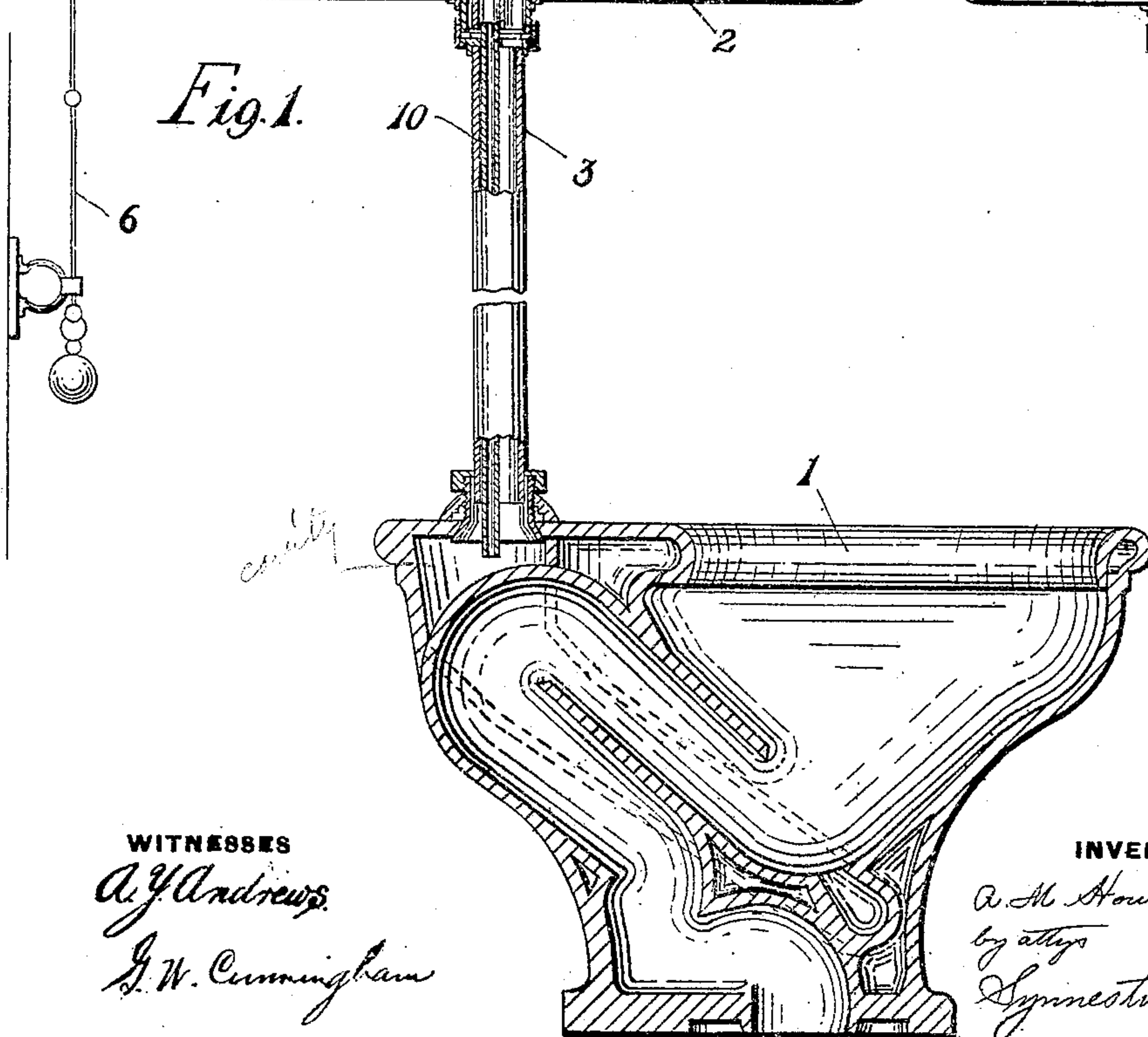


Fig. 3.



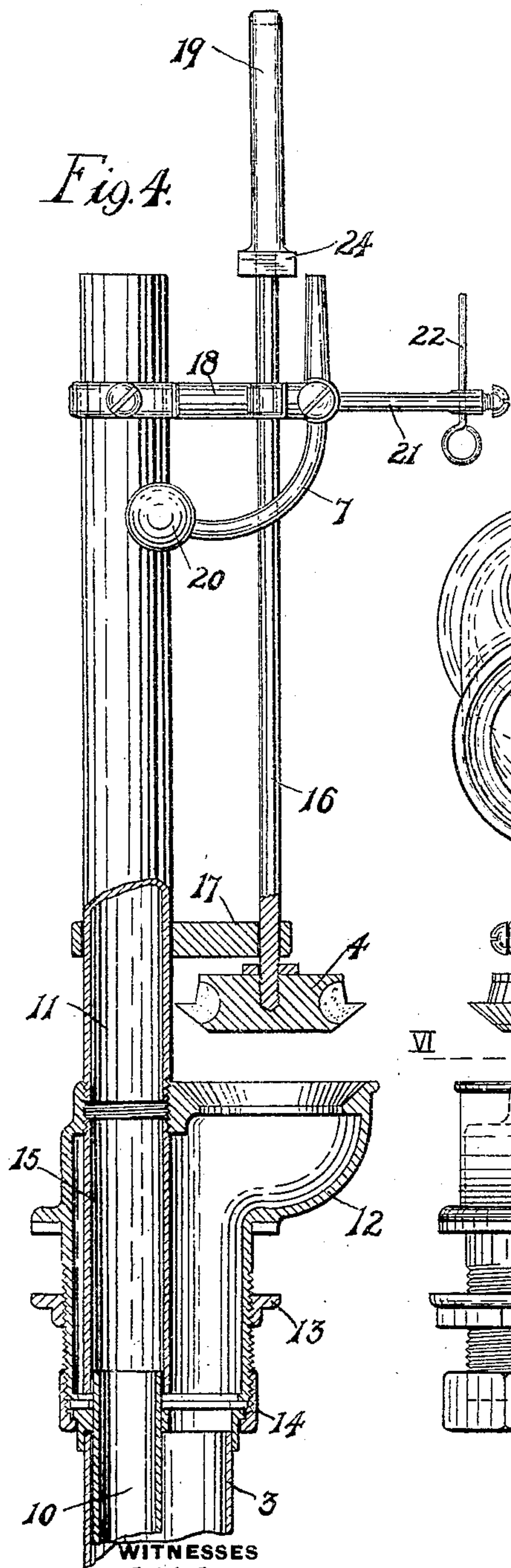
WITNESSES  
*A. J. Andrews*  
*J. W. Cunningham*

INVENTOR  
*A. M. Houser*  
by attys  
*Symmes & Carpenter*

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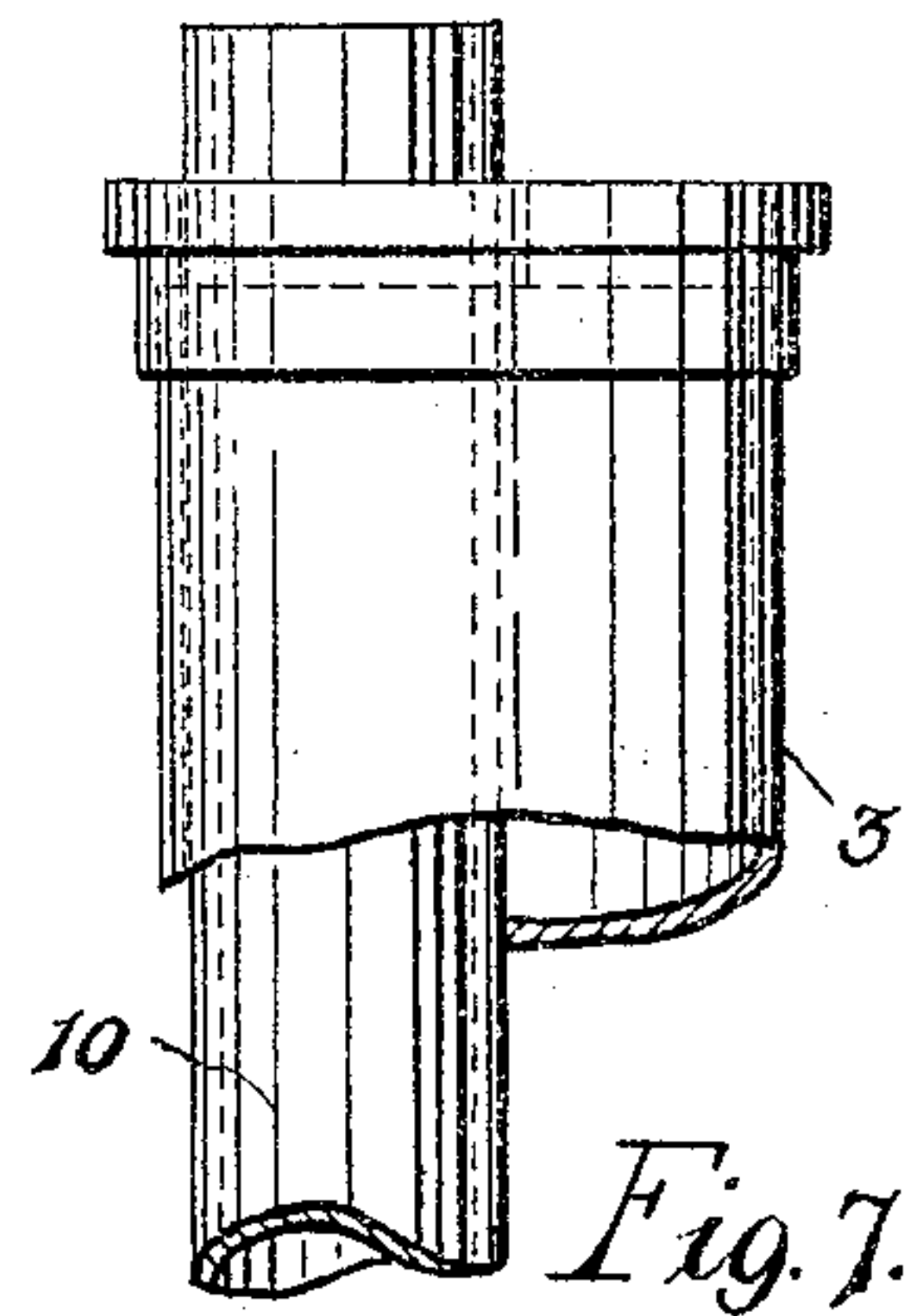
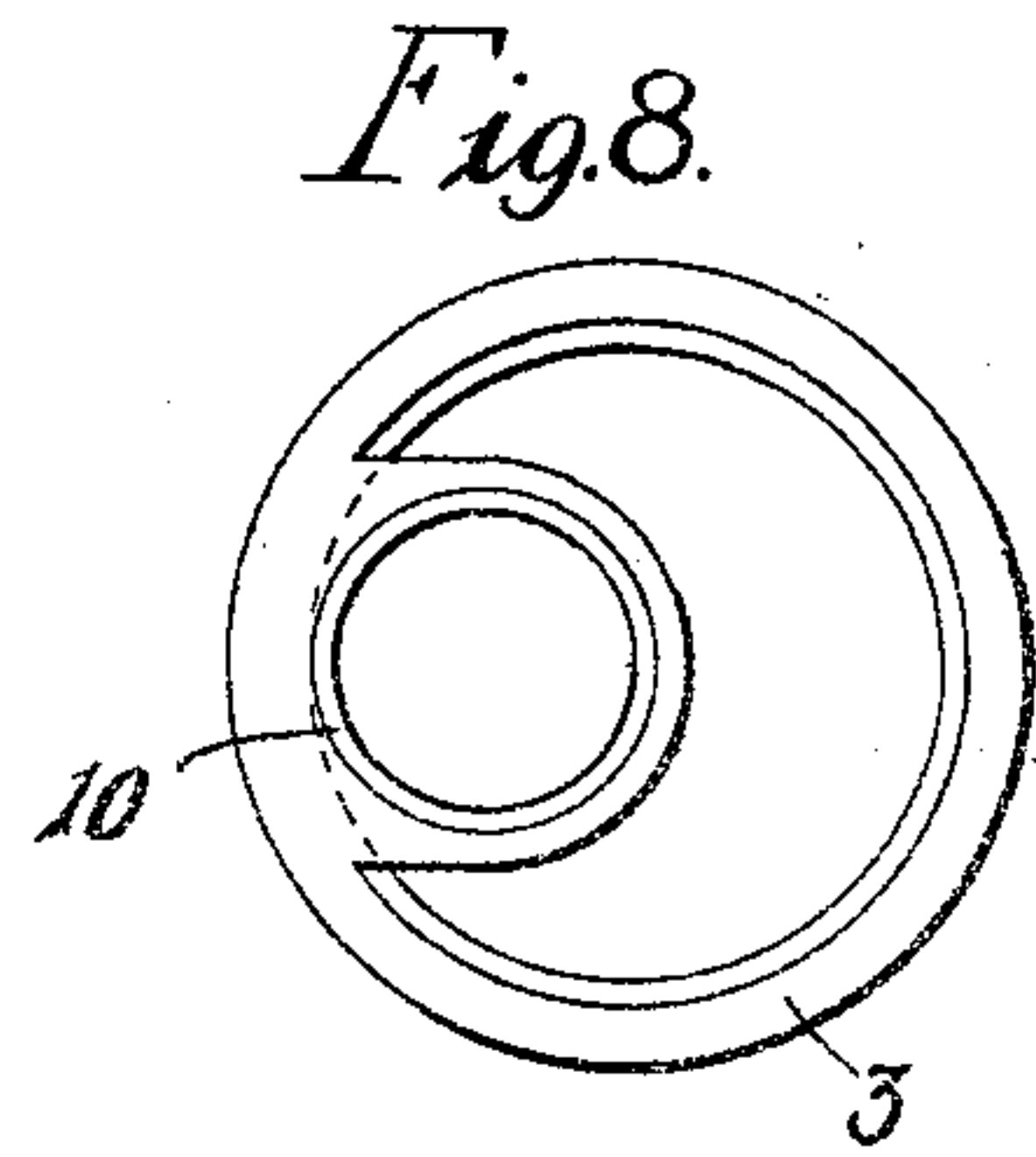
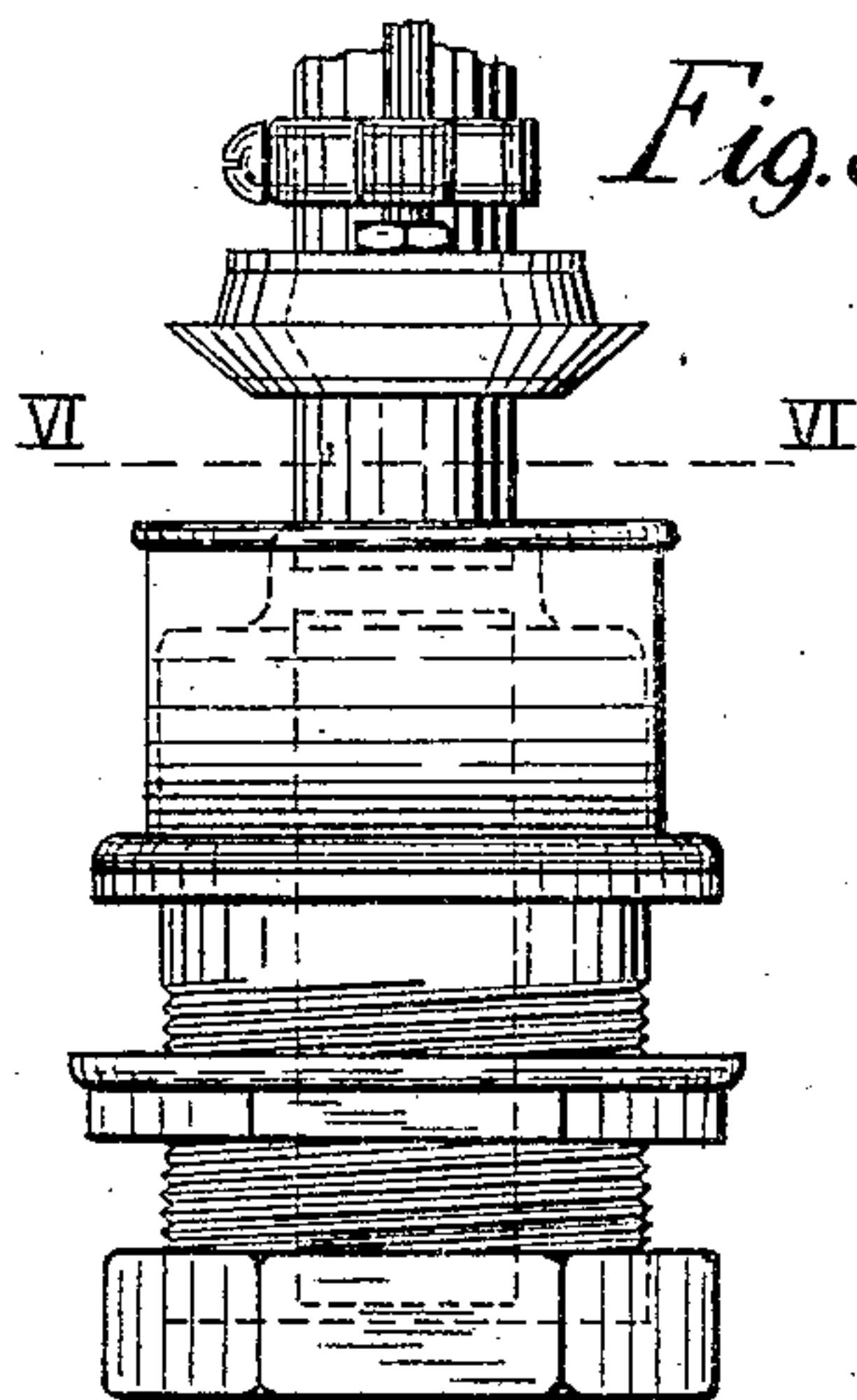
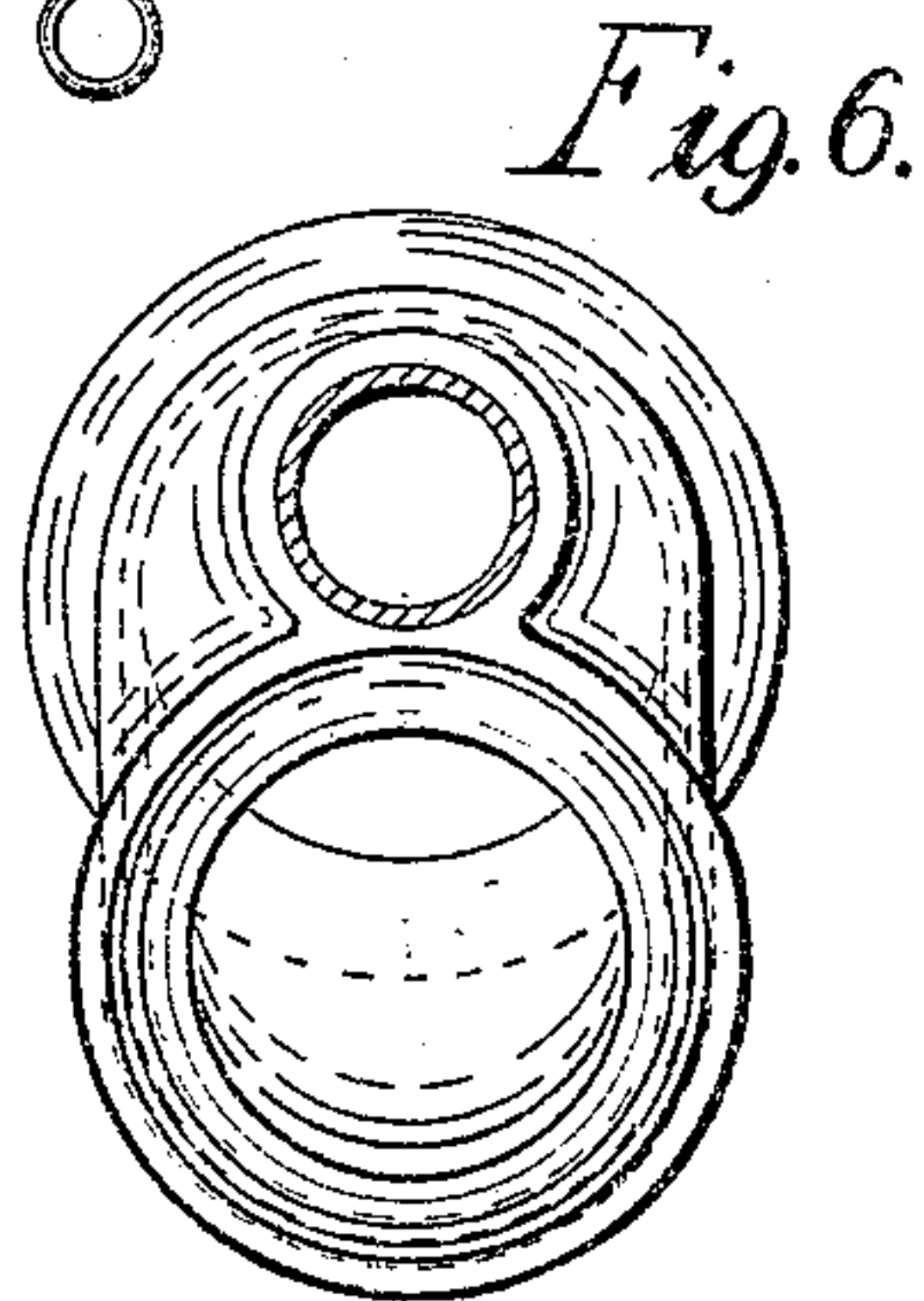
2 SHEETS—SHEET 2.



WITNESSES

*A. J. Andrews.*

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# UNITED STATES PATENT OFFICE.

ARTHUR M. HOUSER, OF CHICAGO, ILLINOIS, ASSIGNOR TO CRANE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## WATER-CLOSET.

No. 920,465.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed January 6, 1908. Serial No. 409,382.

*To all whom it may concern:*

Be it known that I, ARTHUR M. HOUSER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Closets, of which the following is a specification.

The invention relates to water closets and particularly to the mechanism for flushing the closet.

The invention has for its primary object, the provision of a simple and inexpensive flushing arrangement which will insure a practically noiseless passage of the water in the tank to the closet bowl.

One embodiment of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a longitudinal section through the closet,

Figure 2 is a plan view of the tank employed,

Figure 3 is an end elevation of the tank,

Figure 4 is an enlarged detail side elevation and section of the flushing valve mechanism,

Figure 5 is a side elevation of the parts shown in the lower portion of Figure 4,

Figure 6 is a section on the line VI—VI of Figure 5,

Figure 7 is a side elevation of the flushing pipe, a part thereof being broken away to show the air pipe, and

Figure 8 is an end view of the flushing pipe shown in Figure 7.

Referring to the general arrangement as shown in Figures 1, 2 and 3, 1 is the closet bowl which may be of any approved construction, 2 is the tank, 3 is the flushing pipe provided at its upper end with the valve 4, 5 is the weighted lever for operating the valve 4, which lever is provided at its end with the usual operating chain 6, 7 is the catch for holding the valve 4 in raised position while the tank is being emptied, 8 is the float for controlling the inlet valve, and 9 is the inlet valve which may be of any desired type.

The construction whereby the operation of the closet in flushing is made substantially noiseless comprises the air escape pipe consisting of the lower pipe member 10 and upper member 11, the lower pipe member 10 extending at its lower end to a point adjacent the lower end of the flushing pipe 3, and the

upper pipe member 11 extending upwardly so that its upper end lies at a point intermediate the normal surface of the water and the top of the tank. A large part of the noise occasioned by the operation of a closet occurs because the water entering the upper end of the flushing pipe is unable to freely pass down through the pipe because of the air already occupying the pipe, which air obstructs the passage of the water and occasions a very considerable amount of noise. By my construction a free escape of the air from the flushing pipe 3 is provided for, as the air forced downwardly by the incoming water at the top of the flushing pipe readily passes upward through the pipe members 10 and 11, thus not only avoiding the noise formerly incident to the passage of the water through the flushing pipe, but also permitting a greater velocity of flow through the bowl due to the free unobstructed passage of the water through the flushing pipe. By having the upper end of the pipe member 11 terminate intermediate the normal surface of the water and the top of the tank this pipe is made to constitute an overflow pipe to prevent too great a rise of level in the tank in case the valve 9 leaks. The pipe thus accomplishes the double function of permitting a free escape of air from the flushing pipe during the operation of such pipe and also providing for the overflow in case of a leakage of the inlet valve.

The means for supporting the pipes 10 and 11 and the upper end of the pipe 3 are shown in Figure 4 and 5, wherein 12 is the valve seat casting secured in the bottom of the tank 2 by means of the clamp nut 13. The lower end of this casting 12 is coupled to the upper end of the flushing pipe 3 by means of the coupling sleeve 14 in the manner shown, and the lower end of the pipe 11 is screw threaded into the upper end of this casting. The ends of the pipes 10 and 11 are connected by means of the coupling member 15, which arrangement provides for the convenient assembling of the parts.

The means for operating the valve are shown most clearly in Figures 1 and 4 and comprise the valve stem 16 guided in the supports 17 and 18 secured to the pipe 11, the loop 19 carried at the top of the valve stem 16 and adapted to receive the end of the weighted lever 5, the catch 7, provided



at its end with the weight 20 and the arm 21, the pin 22 carried in the end of the arm 21 and the chain 23 (Figure 1) which loosely connects the pin 22 with the float 8. In operation the pulling of the chain 6 raises the right hand end of the weighted lever 5, which end by virtue of its engagement with the loop 17 raises the valve 12 to the position shown in Figure 4. When the loop 17 reaches this position, the catch 7 swings so that its nose engages the underside of the collar 24 at the bottom of the loop 17, so that the valve is held in unseated position. The valve remains in this unseated position until the float 8 reaches the position shown in dotted lines of Figure 1, at which time the slack in the chain 23 is taken up, and the catch 7 swung so that its nose is carried from under the collar 24 thus permitting the valve 4 to seat itself again.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:—

1. In combination in a closet having a tank, a bowl provided with a receiving cavity and connections therefrom leading into the bowl, an upright flushing pipe leading from the tank to the cavity and provided with a valve at its upper end, and a vent having its lower end terminating in the said cavity, and its upper end extending to a point above the surface of the water in the tank and adapted to permit the upward escape of

air from the cavity as the flushing water flows downward through the flushing pipe.

2. In combination in a closet having a tank, a bowl provided with a receiving cavity and connections therefrom leading into the bowl, an upright flushing pipe leading from the tank to the cavity and provided with a valve at its upper end, and a vent having its lower end terminating adjacent the lower end of the flushing pipe in position to receive the air forced into the cavity by the down flow of water through the flushing pipe and extending upward from such point.

3. In combination in a closet having a tank, a bowl provided with a receiving cavity and connections therefrom leading into the bowl, an upright flushing pipe leading from the tank to the cavity and provided with a valve at its upper end, and a vent having its lower end terminating adjacent the lower end of the flushing pipe in position to receive the air forced into the cavity by the down flow of water through the flushing pipe and extending upward from such point to a point in the tank intermediate the top thereof and the surface of the water therein.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

ARTHUR M. HOUSER.

Witnesses:

PAUL CARPENTER,  
ALFRED Y. ANDREWS.