

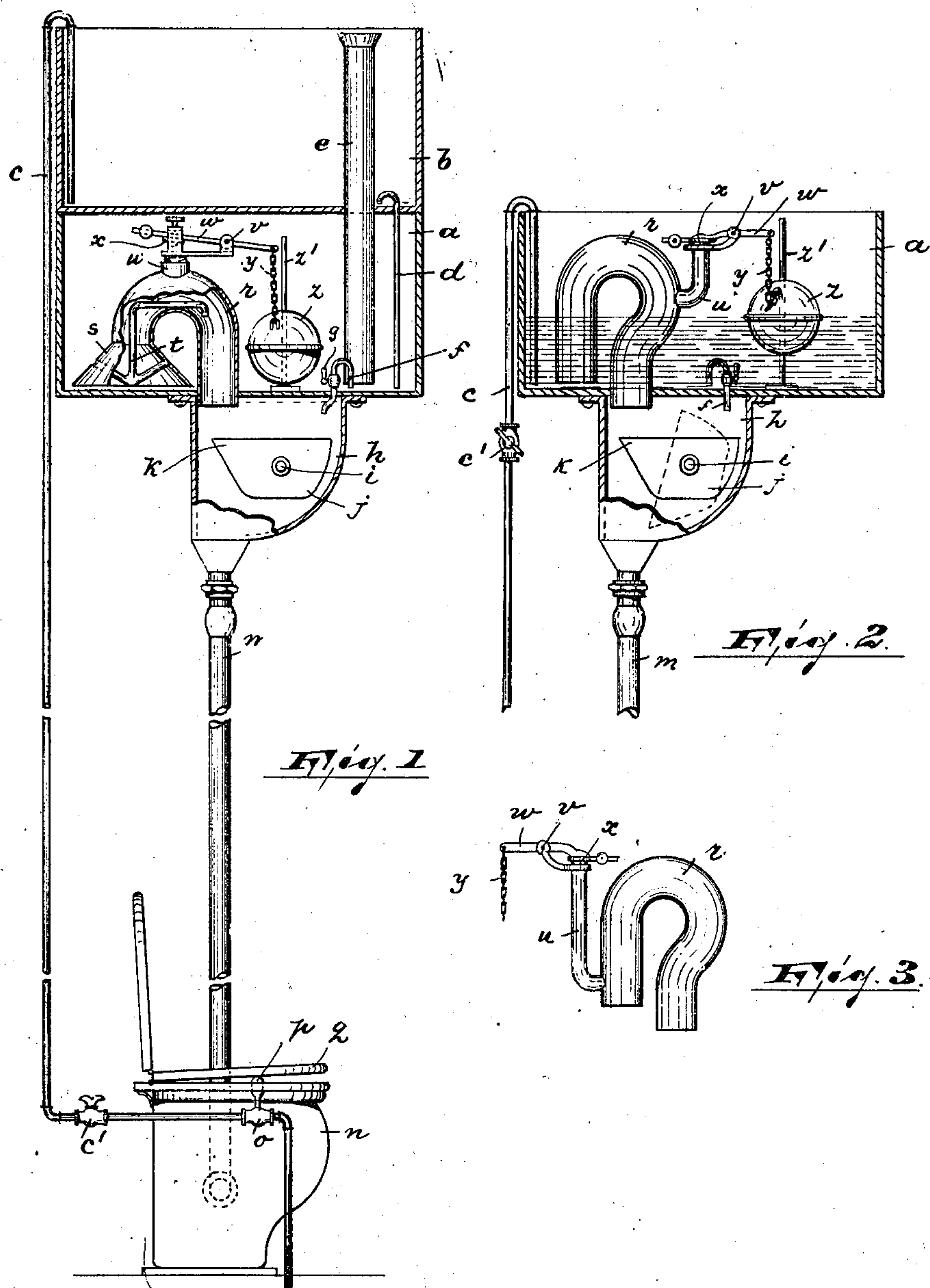
(No Model.)

2 Sheets—Sheet 1.

J. WRIGLEY.
WATER CLOSET FLUSHING APPARATUS.

No. 545,566.

Patented Sept. 3, 1895.



WITNESSES:

Arthur H. Thomas
Runcan M. Roberts

INVENTOR

John Wrigley

BY

Gartner & Co

ATTORNEYS,

(No Model.)

2 Sheets—Sheet 2.

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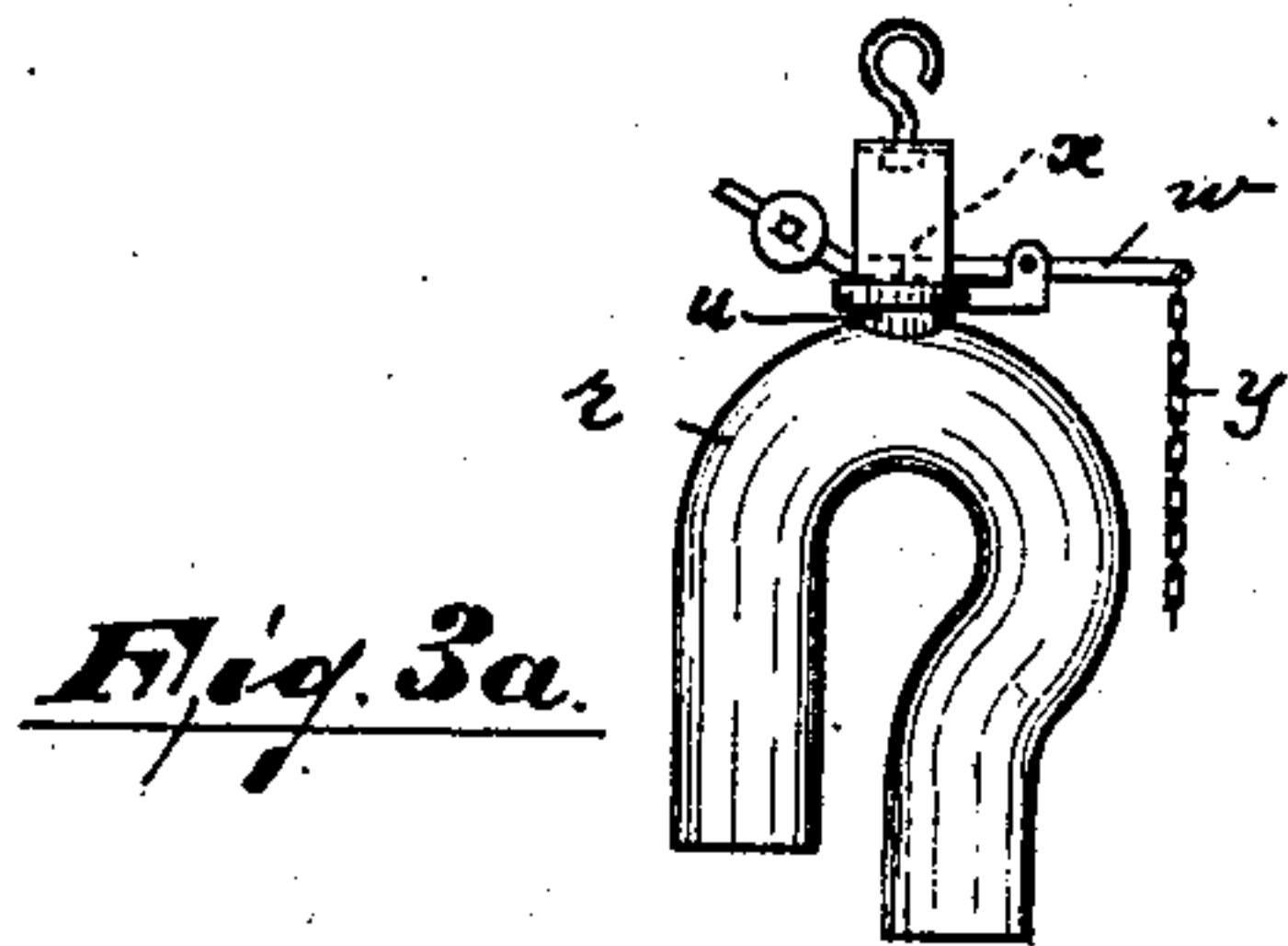


Fig. 3a.

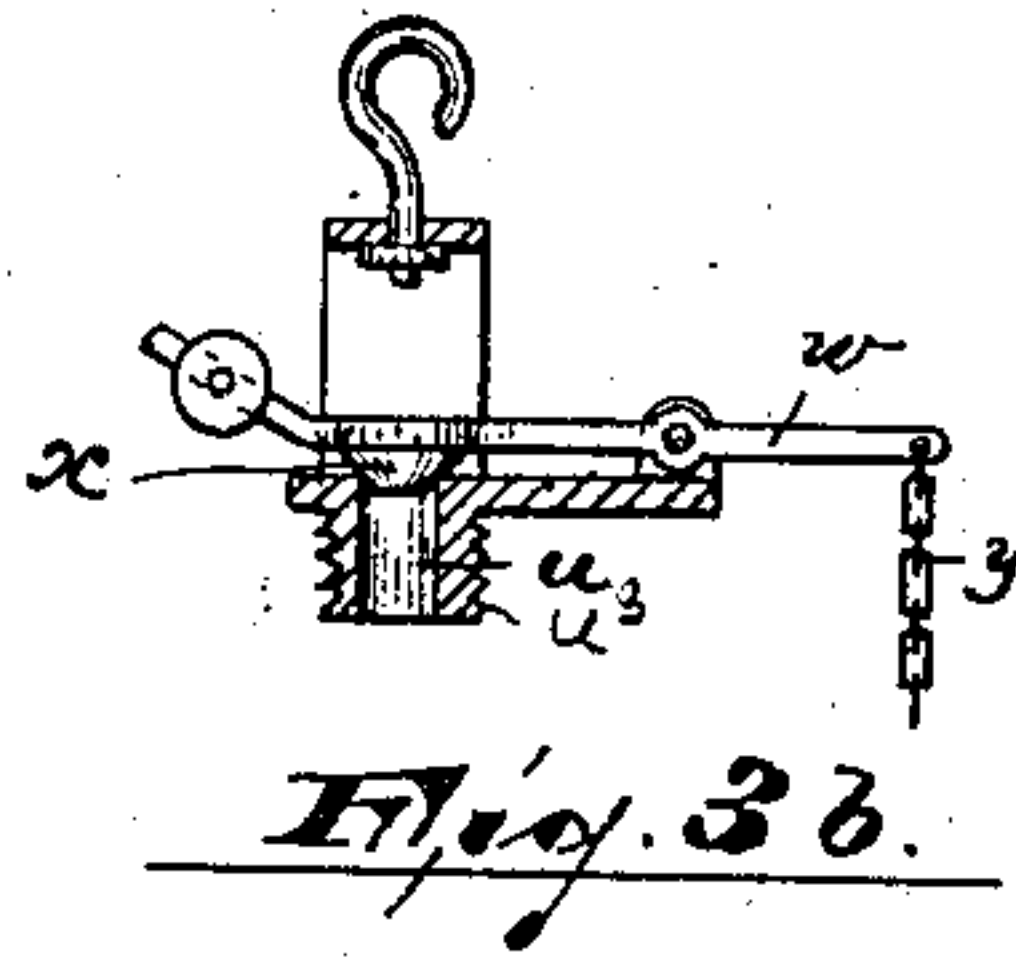


Fig. 3b.

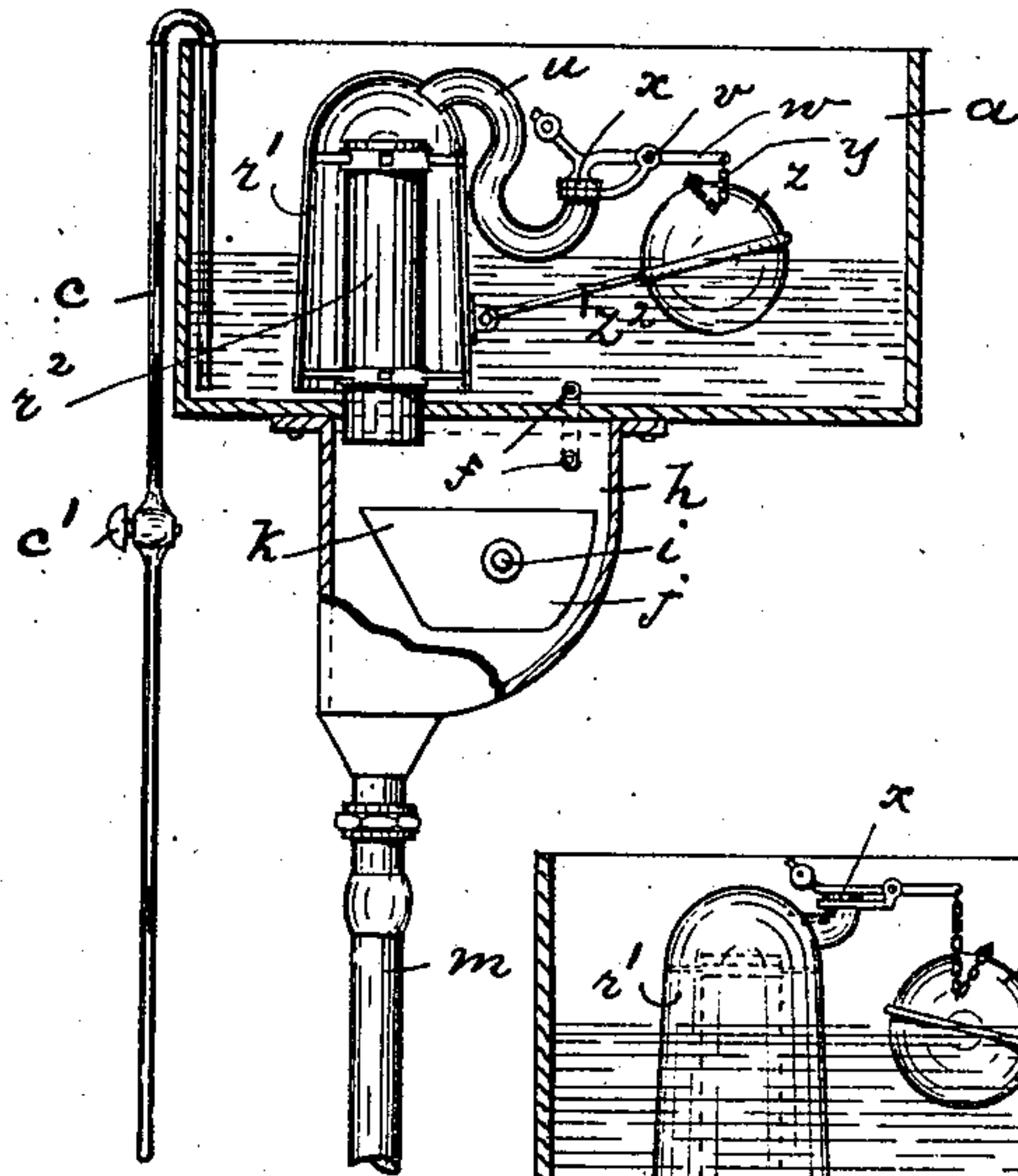


Fig. 4.

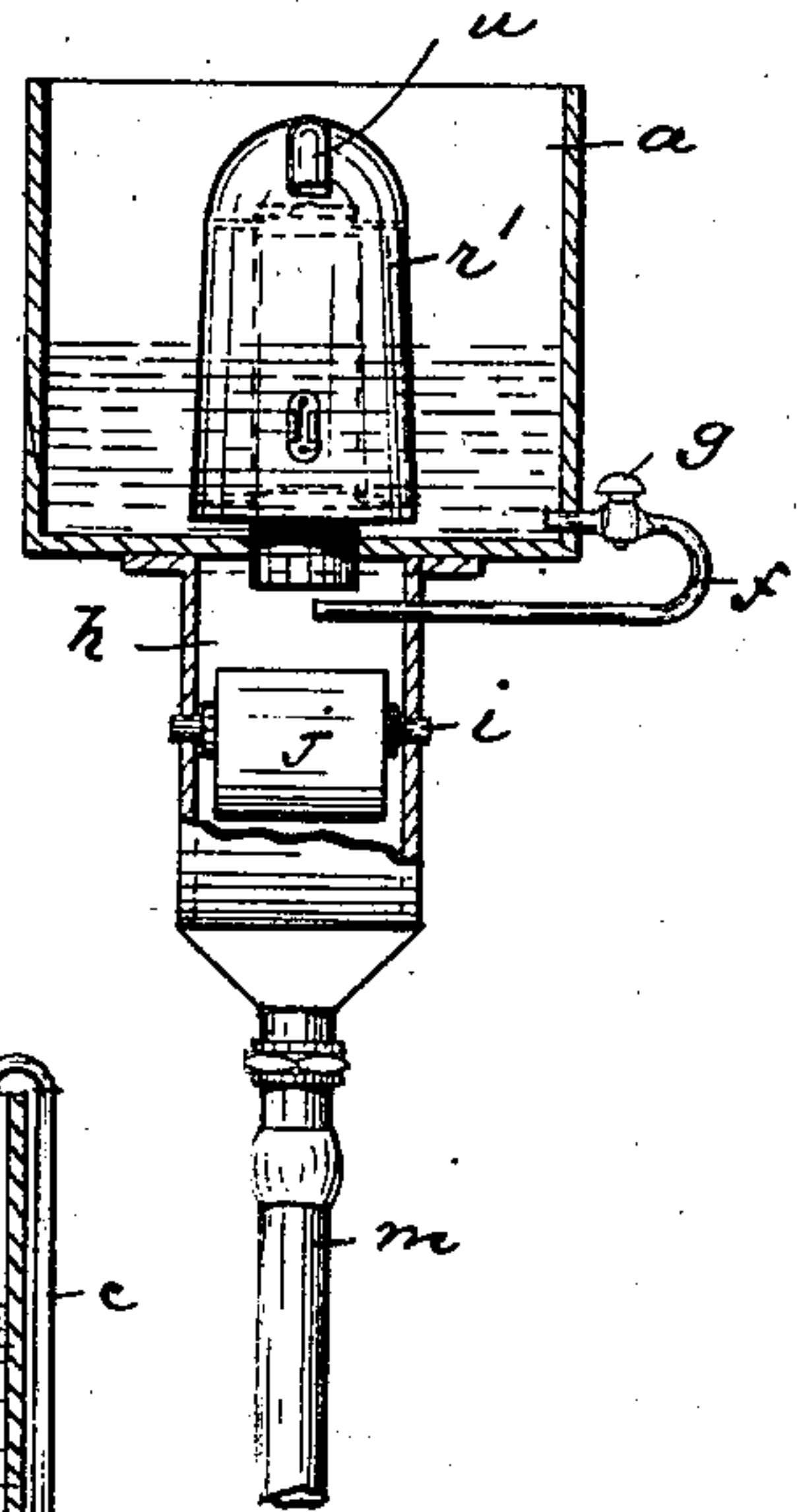


Fig. 5.

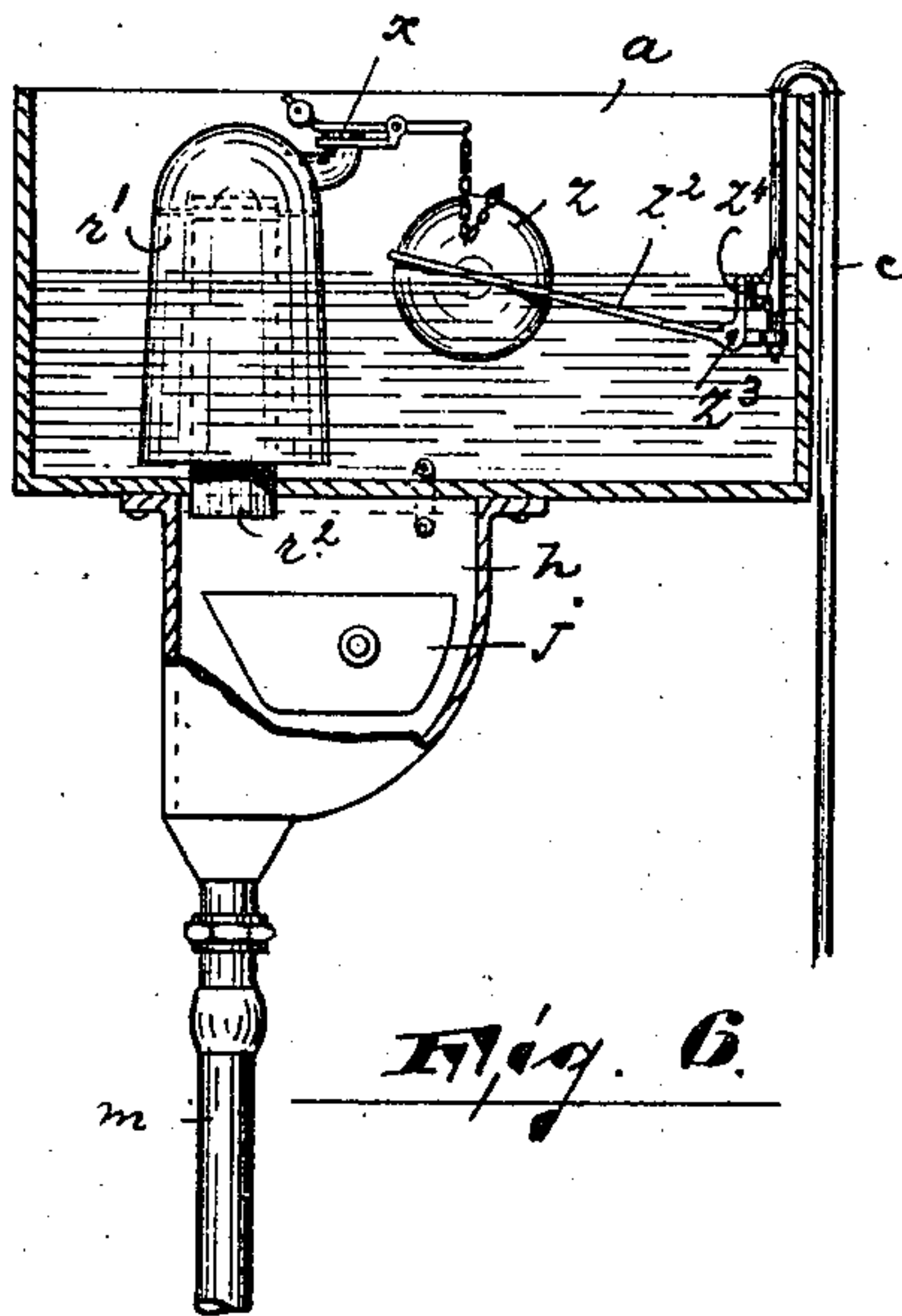


Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN WRIGLEY, OF ELMIRA, NEW YORK, ASSIGNOR OF ONE-HALF TO
MILTON M. ELMENDORF, OF SAME PLACE.

WATER-CLOSET-FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 545,566, dated September 3, 1895.

Application filed March 1, 1895. Serial No. 540,199. (No model.)

To all whom it may concern:

Be it known that I, JOHN WRIGLEY, a citizen of the United States, residing in Elmira, Chemung county, State of New York, have
5 invented certain new and useful Improvements in Water-Closet-Flushing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the
10 art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

15 The object of this invention is to provide a flushing device for water-closets of simple, strong, and durable construction, reliable in operation, and by means of which device the gurgling noise during and after the operation
20 of flushing is fully avoided.

The invention consists in the improved flushing device, its siphon, and automatically-controlled air-valve, and in the combination and arrangement of the various parts
25 thereof, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate
30 corresponding parts in each of the several views, Figure 1 is a central sectional view of my improved device, specially applicable to water-closets where a continuous flushing is required while the said closet is in use.
35 Fig. 2 is a central sectional view illustrating a modified form adapted for public buildings. Figs. 3 and 3^a are detail views of an ordinary siphon-pipe provided with my improved air-valve. Fig. 3^b is an enlarged detail view of
40 the air-valve detached; Fig. 4, a central sectional view of another modified form of the flushing device; Fig. 5, an end view of Fig. 4, certain portions being shown in section and others broken away; and Fig. 6, a detail view
45 illustrating my improved air-valve adapted to a cone siphon of ordinary construction.

In said drawings, *a* and *b* represent the lower and upper tanks, respectively communicating with each other through pipe *d* and
50 also through the overflow-pipe *e*, as clearly shown. On the under side of the lower tank

a is secured in any desired manner, or made integral therewith, a chamber or receptacle
h, the sides of which form the bearings for the horizontally-arranged shaft *i*, on which is
55 fulcrumed the bucket *j* with pointed mouth *k*. To the bottom of the chamber *h* is secured the flushing-pipe *m*, entering the bowl of the water-closet *n* in the usual manner. Penetrating the bottom of the lower tank *a* and
60 arranged with its outlet above the bucket *j* is a drip-pipe *f*, provided with a regulating-cock *g*. If preferred, said drip-pipe *f* can penetrate the side of the tank *a* and also the side
65 of the receptacle *h*, in which case the regulating-cock *g* is arranged on the exposed portion of said drip-pipe *f*, as clearly shown in Figs. 4 and 5. In the lower tank *a* is also secured a substantially U-shaped siphon-pipe
70 *r*, extending with one end into the receptacle *h*, while its other end extends downward toward and near the bottom of the tank, and is by preference provided with a flaring mouth-piece *s*, Fig. 1. To the top of the siphon-pipe
75 *r* or to one of its sides is secured an air-pipe *u*, terminating in a valve-seat controlled by a valve *x*, arranged on the counterbalanced arm *w*, pivoted, as at *v*, to a bracket on the siphon-pipe. To the opposite end of arm *w*
80 is fixed a chain *y*, connected to a hollow ball *z*, adapted to be moved up and down by the rising and falling of the water in the tank, and by preference guided on the rod *z'*.

In Fig. 4 of the drawings the siphon-pipe *r*² is covered by a cone *r'*, secured by means of
85 a spider or in any desired manner to the top of the said siphon-pipe *r*², and extends downward to near the bottom of the tank. The ball or float *z* is secured to one end of arm *z*², the other end of which is pivoted to the cone,
90 as clearly shown in the drawings. The water is supplied to the tank *b* (or *a*) by means of the ordinary supply-pipe *c*, provided with a stop-cock *c'*. The supply-pipe may also be
95 provided with a valve *o* and handle *p*, controlled by the water-closet seat in the usual manner; but this connection is only used where a continuous flushing during the usage of the water-closet is wanted.

In Fig. 6 is illustrated an ordinary cone
100 siphon *r*³ *r'*, to the top of which is secured the air-pipe *u*, controlled by valve *x*, the latter, as

in the other hereinbefore-described cases, being operated by the ball z . Said ball is secured to one end of lever z^2 , pivoted at z^3 to a bracket, and provided at the other end with a valve z^4 , adapted to control the flow of water from the supply-pipe in the usual manner, as will be manifest.

In Fig. 3^a the air-valve is illustrated as detachable—that is to say, its lower end is threaded at w^3 and adapted to be screwed into an internally-threaded bushing secured to a siphon of ordinary construction in any desired manner.

The operation of my improved device is as follows, reference being had to Fig. 1: The seat q being pressed downward, thus opening the valve o of the supply-pipe c (the stop-cock c' being open) and allowing the water to flow into and fill the upper tank b , the water will descend through tube d into the lower tank a , and by gradually filling the same the ball z will be raised and the valve x , by action of the counterweight on the arm w , will close the air-pipe u . During the gradual filling of the tank a water will flow through drip-pipe f (regulating-cock g being open) into the balanced bucket j , and as soon as the latter is filled the said bucket will tilt over and discharge its contents into the flushing-pipe m , thus creating a vacuum in the receptacle h , and thereby drawing the water contained in tank a through the siphon-pipe r into the said receptacle h and flushing-pipe m . As there is a constant inflow of water into the upper and lower tanks, respectively, the flushing will continue until the pressure on the seat q is released. The water in the lower tank will rapidly descend until the ball, by the descending water, has raised the valve x , thereby allowing air to enter through tube u into the siphon-pipe, and thus break the suction or siphoning force. The water remaining at that time in the upper tank will flow through pipe d into the lower tank, which latter is thus again gradually filled. The water flowing through drip-pipe f into the bucket j will again fill said bucket, and when the same is tilted by the weight of the water a suction is again produced and the water siphoned through pipe r into the flushing-pipe until the ball has again raised the valve x from its valve-seat, thus admitting air through tube u into the siphon-pipe, whereby the siphon action is again broken. By this last-described operation a final flush is obtained. From the above it can be seen that the upper tank serves as a kind of a storage-receptacle for the water, (as there is a constant supply,) and even after the seat is released (the upper tank being still filled) the said water will flow into the lower tank and will be sufficient for the final flush.

When a continuous flushing is required, such as for public buildings, railroad-depots, &c. the devices shown in Figs. 2 and 4 are used. The cock c' of the supply-pipe is left open, so as to allow a certain quantity of water

to flow into the tank a . The water from said tank will flow through drip-pipe f into the bucket, fill the same, and tilt it over, thus producing a vacuum in the receptacle h and a suction in the siphon-pipe. The water is thus discharged through said siphon-pipe into the flushing-pipe until the water falling too near the bottom of the tank carries the ball down with it and thus opens the valve x , admitting air into the siphon-pipe r , whereby the siphoning action is broken. The water will again rise in the tank, and after the valve is closed the heretofore-described operation is repeated.

From the foregoing it can be seen that the noise, so disagreeable during and after the flushing of water-closets, is fully avoided, as the air passing into the siphoning-tube does not become mixed with the water.

It is obvious that various alterations can be made without changing the scope of my invention. Therefore I do not intend to limit myself to the precise construction shown and described, but

What I claim as new, and desire to secure by Letters Patent, is—

1. In a flushing device for water closets, a tank, a receptacle arranged on the under side of the tank, a fulcrumed tilting bucket supported in said receptacle, a drip pipe leading from the tank into the receptacle and above the bucket, a cock in said drip pipe and a valve controlled siphoning pipe in said tank and communicating with the said receptacle, all said parts substantially as and for the purposes described.

2. In a flushing device for water closets, a lower and upper tank, a drip pipe connecting the upper and lower tanks, an overflow pipe leading from near the top of the upper tank into the lower tank, a receptacle on the under side of the lower tank, a tilting bucket fulcrumed in said receptacle, a drip pipe leading from the lower tank into the receptacle and above the bucket, a valve controlled siphoning pipe in said lower tank and communicating with the said receptacle, and a valve controlled supply pipe leading into the upper tank, and means for controlling said valve in the supply pipe, all said parts, substantially as and for the purposes described.

3. In a flushing device for water closets, a tank, a receptacle on the underside of the tank, a fulcrumed tilting bucket in said receptacle, a drip pipe leading from the tank into the receptacle and above the bucket, a cock in said drip pipe, a siphoning pipe in the tank and communicating with the receptacle, a valve controlling said siphoning pipe and means for automatically controlling said valve, all said parts, substantially as and for the purposes described.

4. In a flushing device for water closets, a tank, the flushing pipe communicating with said tank, through an intermediate receptacle, a fulcrumed tilting bucket in said receptacle, a drip pipe leading from the tank into the re-

ceptacle and above the bucket and provided with a regulating cock, a siphoning pipe in said tank and communicating with the receptacle, a valve controlling said siphoning pipe, a fulcrumed lever carrying said valve, and a float connected with said lever, all said parts substantially as and for the purposes described.

5. In a flushing device for water closets, a lower and upper tank, a drip pipe connecting the upper and lower tanks, an overflow leading from near the top of the upper tank into the lower tank, a siphoning pipe in the lower tank, means for starting said siphoning pipe, means for breaking the action in the siphoning pipe, and a valve controlled supply pipe leading into the upper tank, all said parts, substantially as and for the purposes described.

6. In a flushing device for water closets, a

lower and upper tank, a drip pipe connecting the upper and lower tanks, an overflow leading from the upper tank into the lower tank, a valve controlled supply pipe for the upper tank, a siphoning pipe in the lower tank, an air pipe communicating with said siphon pipe, a valve on the free end of the air pipe, means for controlling said valve, and means for controlling the valve of the supply pipe, all said parts substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of February, 1895.

JOHN WRIGLEY.

Witnesses:

ALFRED GARTNER,
WM. D. BELL.