

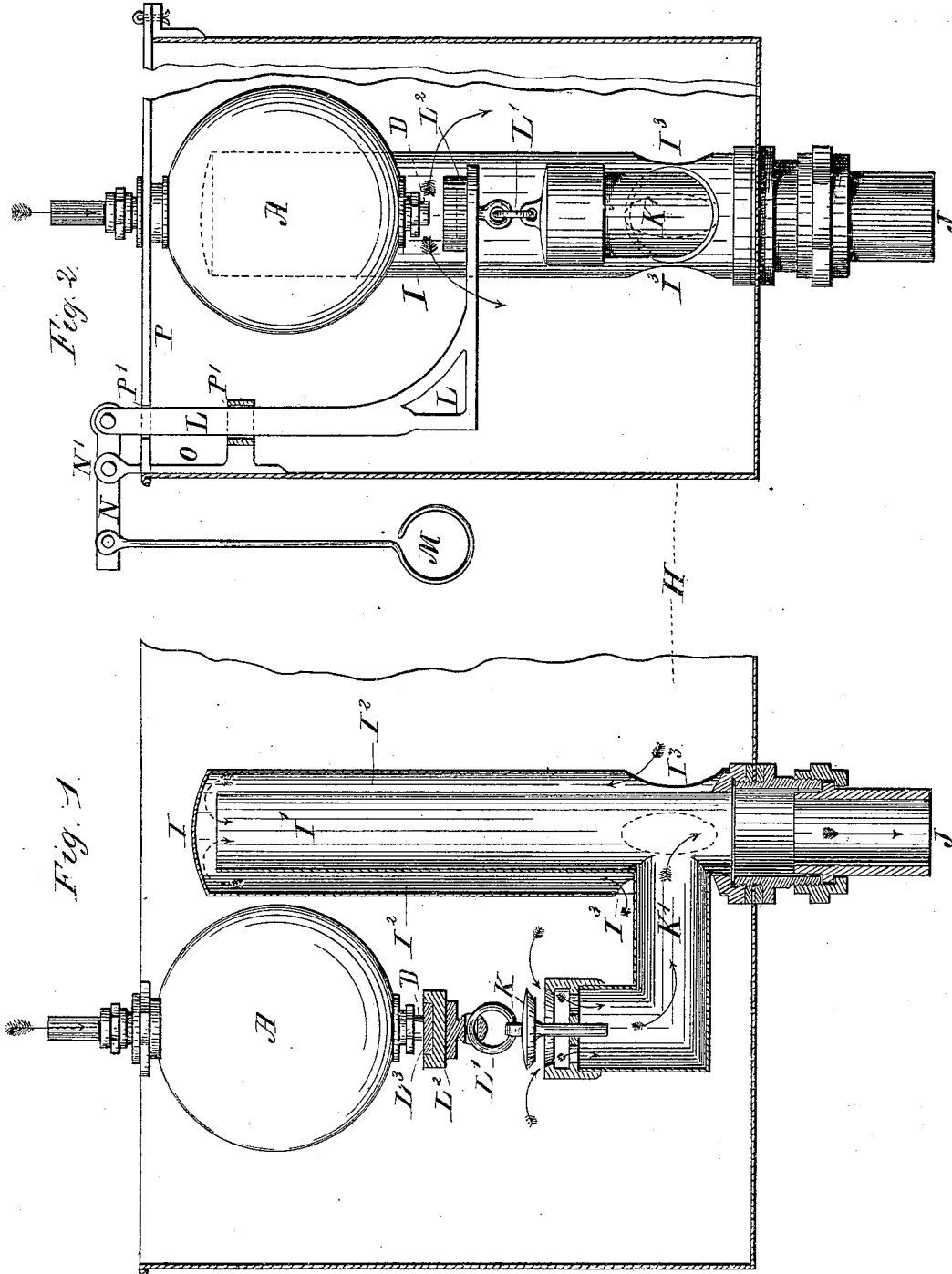
(No Model.)

2 Sheets—Sheet 1.

W. WRIGHT.  
FLUSH CISTERN.

No. 263,450.

Patented Aug. 29, 1882.



Witnesses  
Wm. A. McElwain  
H. A. Daniels

Inventor  
William Wright  
per Henry C. Orth atty.

(No Model.)

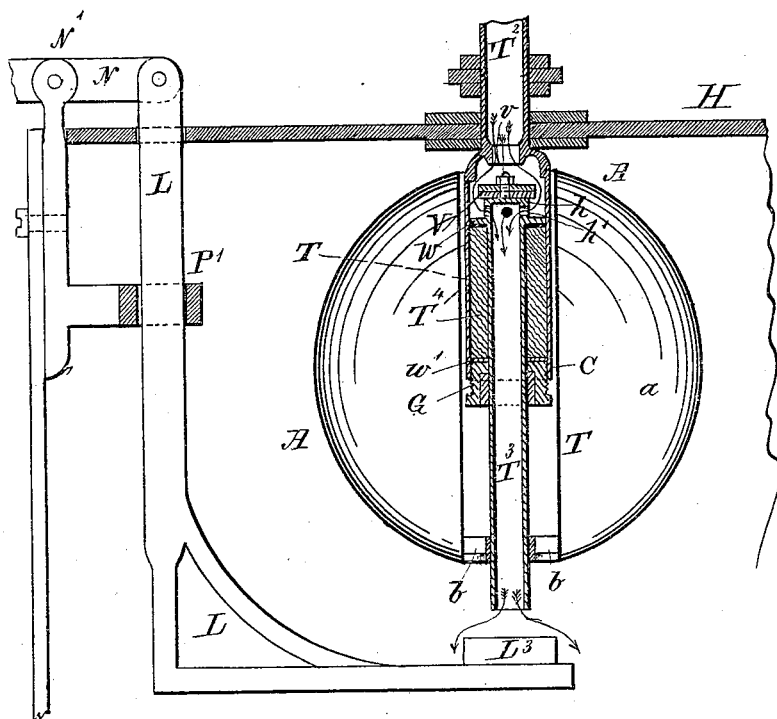
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*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

WILLIAM WRIGHT, OF PLYMOUTH, COUNTY OF DEVON, ENGLAND.

## FLUSH-CISTERN.

SPECIFICATION forming part of Letters Patent No. 263,450, dated August 29, 1882.

Application filed March 23, 1882. (No model.) Patented in England January 25, 1882, No. 379.

*To all whom it may concern:*

Be it known that I, WILLIAM WRIGHT, a subject of the Queen of England, residing at Plymouth, in the county of Devon and Kingdom of Great Britain, have invented a new and useful Flush-Cistern, (for which I have Letters Patent in Great Britain, No. 379, bearing date January 25, 1882,) of which the following is a specification.

This invention will be best understood by reference to the accompanying drawings, in which like letters of reference represent like parts.

The invention may be divided into three parts—viz., the cistern or tank, the ball-valve or regulator for controlling the supply of water to the tank, and the siphon and attachments for discharging or emptying the tank.

First, the tank may be of any ordinary and suitable construction and materials—galvanized iron by preference—and therefore requires no special description.

Second, the ball-valve may be of any suitable or preferred construction, though I preferably employ the construction of ball-valve shown in Letters Patent of the United States granted to me under date of October 4, 1881, No. 247,867.

Third, the siphon, which works in conjunction with the ball-valve and tank.

Figure 1 is a sectional side elevation of the tank, showing the siphon and attachments in section and the ball-valve in elevation. Fig. 2 is a cross-section of the tank, showing the ball-valve, siphon, and attachments in elevation, and also showing the lifting-levers, &c., which operate the starting-valve of the siphon; and Fig. 3 is a section on an enlarged scale of the ball-valve.

A is the ball-valve; I, the siphon; I', the inner tube of the siphon; J, the discharge or flush branch; K, the starting-valve; L, the lever for actuating the starting-valve, and M the handle-rod or equivalent by which the flush is worked from outside.

O and P are any suitable form of bracket and frame to carry the ball-valve and levers, slots P' being provided, where necessary, for the lever to work in. When the rod M is pulled it works the rocking lever N, which works on a pivot, N', and lifts the lever L, which is

loosely connected by a ring or equivalent, L', to valve K, which is in consequence also lifted. The tank having been previously filled by the action of the ball-valve, a rush of water takes place, upon the opening of valve K, through the branch K' into the discharge-branch J. This rush of water draws with it the air contained in the inner tube, I', of the siphon, creating a partial vacuum and sucking in the water which has found its way into the annular space I<sup>2</sup> between the inner and outer tubes of the siphon by means of the openings I<sup>3</sup>, and so starting the siphon, which will quickly empty the tank. As soon as the siphon is fairly started the handle may be released and the valve K closed, as the siphon will draw its supply through the openings I<sup>3</sup> in the outer tube, I.

The end of the lever L is swelled out and carries a boss, L<sup>2</sup>, which is recessed and fitted with a soft packing, L<sup>3</sup>, such as leather, cork, india-rubber, or the like. When this lever is lifted this soft packing touches and stops the end of the tube D of the ball-valve A, holding it up and preventing it from dropping as the water runs out of the tank until the handle is released, when water will begin to flow in again through the ball-valve, as shown by the arrows in Fig. 2.

As above stated, any suitable ball-valve may be used, though I prefer that construction of ball-valve described in the Letters Patent of the United States hereinabove referred to, and shown in Fig. 3, and which I will briefly describe, as follows:

a is the hollow ball, of copper or other suitable material, through the center of which is inserted a tube, T, connected air-tight to the ball a. One end of tube T is partly closed by a bridge, b, by which the ball is connected to the valve, but is free to move up and down outside it. The valve consists of an outer tube, T', having on the top the valve-seat v, through which the fluid enters by a suitable straight or curved branch, T<sup>2</sup>.

Within tube T is a smaller and generally longer tube, T<sup>3</sup>, carrying on its upper end the valve V, of rubber or other like material. The upper end of tube T<sup>3</sup> has a head, h, provided with ports h', for the entrance of the fluid to the small tube, and a washer, w, fitting loosely inside tube T. A loose washer, w', is placed

upon tube  $T^3$ , and between it and washer  $w$  is a piece of rubber tube,  $T^4$ . The end of tube  $T^4$  is screw-threaded, and into this screws a gland,  $G$ , adapted to be turned by hand.

5 The action of this valve is as follows: The fluid enters through the branch  $T^2$ , forcing back valve  $V$ , passes the seating and valve, and enters tube  $T^3$  through the holes  $h'$ , as shown by the arrows. As the ball  $a$  rises it  
10 lifts tube  $T^3$  and valve  $V$  till the opening is entirely closed and no more fluid can pass; but as the level of the fluid in the cistern or vessel sinks the ball drops with it and opens the valve again.

15 I do not bind myself to the precise shape or form of the various parts of this invention, as these may be varied within reasonable limits, (for instance, a simple bent pipe could be used for the siphon instead of the inner and outer  
20 tubes shown in the drawings, the branch  $K'$  being attached to its longer limb,) nor to employ any special materials in constructing these valves and tank; but I prefer to use such materials as will not readily corrode—such, for  
25 instance, as galvanized iron for the tank, copper or zinc for the ball and siphon, and brass for the valve, seating-ring, and lever.

These flush-cisterns could be worked with a ball-valve of ordinary construction, the lever  
30  $L$  being arranged to hold up the ordinary ball-lever while raising the starting-valve. I however much prefer the special form of ball-valve previously mentioned.

Having now described my invention and  
35 the method of performing the same, I wish it to be understood that what I claim, and desire to protect by Letters Patent, is—

1. In a flush-cistern in which is employed a siphon-discharge, the combination, with the  
40 starting-valve for said siphon, of appliances whereby the starting-valve may be raised from its seat and the supply of water to the cistern simultaneously stopped, substantially as and for the purposes specified.

45 2. In a flush-cistern in which is employed a

siphon-discharge and a ball-valve, the combination, with the starting-valve for said siphon and the ball-valve, of appliances whereby the starting-valve may be raised from its seat and the ball-valve simultaneously actuated to shut  
50 off the supply of water to the cistern.

3. In a flush-cistern, the combination, with a siphon-discharge, a starting-valve for the same, and a supply-valve, of a lever interposed between the supply-valve and said starting-  
55 valve, and operating to raise the latter valve from its seat to start the siphon and simultaneously therewith shut off the supply of water to the cistern, substantially as and for the purpose specified.

4. In a flush-cistern, a ball-valve having the supply-valve located within it and arranged to operate said valve by its movements, a siphon-discharge, and starting-valve for the same, combined with appliances interposed between  
65 the two valves, and operating to raise the starting-valve off its seat and simultaneously therewith close the supply-valve within the ball, substantially as and for the purpose specified.

5. The combination, with the ball-valve  $A$ ,  
70 constructed to operate substantially as described, and the siphon  $I$ , of the starting-valve  $K$  and the operating-lever  $L$ , carrying a valve-packing,  $L^3$ , all arranged for co-operation substantially as shown and described.

6. In a flush-cistern, the combination of the  
75 ball-valve  $A$ , constructed as described, the siphon-discharge  $I$   $I'$   $K'$ , the starting-valve  $K$ , and lever  $L$ , carrying the valve-packing  $L^3$  and connected with said starting-valve, all constructed and arranged for co-operation sub-  
80 stantially as described.

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Witnesses:

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