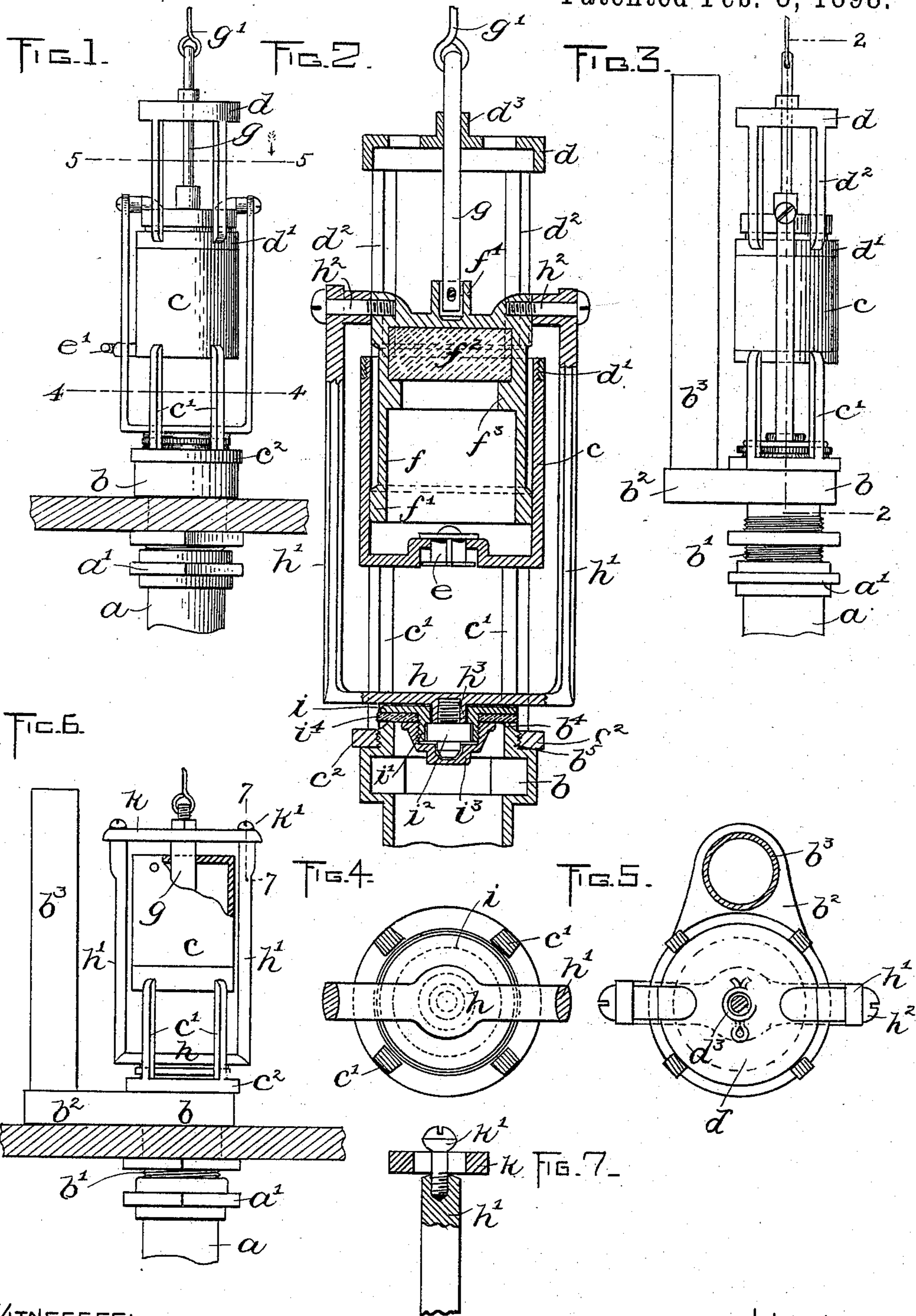


(No Model.)

E. W. ANTHONY.  
FLUSHING VALVE FOR CLOSET TANKS.

No. 598,668.

Patented Feb. 8, 1898.



WITNESSES:

A. S. Harrison  
P. W. Pizzetti

INVENTOR:

E. W. Anthony  
by *Wight Brown Quincy*  
Attor

# UNITED STATES PATENT OFFICE.

EDGAR W. ANTHONY, OF BOSTON, MASSACHUSETTS.

## FLUSHING-VALVE FOR CLOSET-TANKS.

SPECIFICATION forming part of Letters Patent No. 598,668, dated February 8, 1898.

Application filed February 8, 1897. Serial No. 622,438. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR W. ANTHONY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Flushing-Valves for Closet-Tanks, of which the following is a specification.

This invention has relation to flushing-valves for closet-tanks of the class in which the valve is held away from the valve-seat until a checking-cylinder which was filled upon raising the valve is emptied.

The object of the present invention is to equip a valve mechanism of this character with such improvements that the valve will readily and closely seat itself to shut off the outlet and that the whole valve mechanism may be placed at any point in the tank and have its movable parts guided independently of any supports projecting from the walls of the tank.

Heretofore the valve was supported rigidly upon the movable part of the mechanism and was allowed to have no lateral play relatively to the seat, whereby it was unable frequently to accommodate itself to inequalities and unevennesses in the seat, and was therefore inefficient in that it did not entirely cut off the outlet and allowed the water to drip. Again, as heretofore constructed it was necessary to employ some support projecting from the wall of the tank for the purpose of guiding the movable part of the mechanism, thereby increasing the cost of the apparatus as well as increasing the time and labor necessary to mount such a mechanism in place.

My invention, however, consists of a mechanism of the character specified having a valve connected either with the movable piston by means of a pivoted yoke which permits the valve to oscillate for a limited distance and properly place itself upon its seat; and it also consists in supporting the valve on the pivoted yoke so that it is free to move slightly in any direction, which greatly increases the efficiency of the mechanism.

The invention further consists in constructing the valve-casing with a rigid guide supported thereon independently of the walls of the tank, whereby the piston to which the yoke is connected is properly guided in its vertical movements, all as I have illustrated

upon the drawings and shall now proceed to describe in detail, and then point out in the claims.

Reference is to be had to the accompanying drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 shows in front elevation a flushing-valve equipped with my improvement. Fig. 2 represents a longitudinal vertical section through the same. Fig. 3 is a side elevation on the line 2 2, of which Fig. 2 is a vertical section somewhat enlarged. Fig. 4 is a horizontal section on the line 4 4 of Fig. 1. Fig. 5 is a similar section on the line 5 5 of Fig. 1. Fig. 6 shows in front elevation another form of valve mechanism equipped with my improvements. Fig. 7 represents an enlarged section on the line 7 7 of Fig. 6.

Referring to the drawings, *a* indicates the flushing-pipe, suitably connected by a coupling *a'* with the lower threaded end *b'* of the casing *b*, which is formed with a valve-seat *b<sup>4</sup>*. (Shown in Fig. 2.) The casing *b* is formed with a rearward extension *b<sup>2</sup>*, into which the overflow stand-pipe *b<sup>3</sup>* is threaded, so that the overflow may pass down through the pipe *b<sup>3</sup>* and through the casing *b* into the flushing-pipe *a* without any obstruction. Just below the valve-seat *b<sup>4</sup>* the casing is externally threaded at *b<sup>5</sup>* to receive the internally-threaded ring *c<sup>2</sup>*, which is formed on the ends, the four standards *c'* projecting downward from the cylinder *c*, located directly above the valve-seat. Preferably the cylinder, the standards *c'*, and the lower supporting-ring *c<sup>2</sup>* are all cast integrally for the sake of cheapness. The upper end of the cylinder *c* is externally threaded, as at *c<sup>3</sup>*, to receive an internally-threaded ring *d'*, upward from which project four standards *d<sup>2</sup>*, connected at their upper ends to a guide-disk *d*, having a central annular flange *d<sup>3</sup>*. Preferably these parts are also cast integrally. The cylinder is closed at its lower end, except for an aperture which is closed by a check-valve *e* and a reduced aperture adapted to be closed by a valve *e'*, while the upper end of the cylinder is open to receive the tubular piston *f*, thickened at its lower end, as at *f'*, to fit closely therein.

In the upper end of the cavity in the piston is a flange or shoulder  $f^3$ , so that by pouring molten lead in the upper portion of the cavity and then allowing it to cool a weight  $f^2$  is provided and held in place by said shoulder. 5 The piston is formed with an annular flange or ring  $f^4$ , into which projects and in which is secured a piston-rod  $g$ , passing through the annular flange  $d^3$  on the disk  $d$ , which acts as 10 a guide for the said rod. A wire or chain  $g'$  is attached to the upper end of the rod  $g$  and extends down to within reach of a person desiring to raise the valve. Attached to either side of the upper end of the piston are the 15 arms  $h' h'$  of a yoke  $h$ , being pivoted thereto by screws  $h^2$ , which permit of their having a slight oscillatory movement. The cross-bar of the yoke is formed with an internally-threaded downwardly-projecting annular 20 ring  $h^3$ , around which the circular valve  $i$  loosely fits. The said valve is in the form of a disk with an externally-threaded annular flange  $i'$ , which is formed with a shoulder to rest upon a large headed screw  $i^2$ , threaded 25 into the annular ring  $h^3$  of the yoke.

A cap  $i^3$ , having a recess, is screwed on the externally-threaded flange  $i'$  of the valve to clamp a washer  $i^4$  in place thereagainst. The recess in the cap is considerably larger than 30 the parts that fit into it, so that although the washer, the valve, and the cap are all rigidly secured together, yet they are capable of a universal movement about the annular flange  $h^3$  of the yoke.

The cylinder is provided with the reduced aperture extending through the side walls at its lower end, so that when the piston is raised and water is allowed to freely fill the cylinder the water will slowly trickle out of the 40 cylinder as the piston is forced down by its own weight to fit the valve on the seat, thereby allowing a predetermined quantity of water to flow into the hopper.

Now from the foregoing it will be seen that 45 the piston and the piston-rod are guided in their movements by a guide rigidly secured to the casing and supported by bars or standards  $d^2$ , and that by reason of the oscillating disk and the valve having a practically uni- 50 versal movement the said valve may adapt

itself to the seat and fit closely thereto, so as to prevent any dripping of the water there-through.

My improvements are well adapted to a valve mechanism such as shown in Fig. 6. 55 In this mechanism I dispense with the additional guide  $d$ , supported upon the standards  $d^2$ , and close the upper end of the cylinder, so as to form a guide for the piston-rod. The yoke is secured to the piston by the upper 60 ends of the arms  $h'$  being secured to a cross-bar  $k$ , connected to the piston-rod  $g$ . The ends of the said cross-bar  $k$  are slotted to receive round-headed screws  $k'$ , threaded into the arms  $h'$  to permit of the yoke oscillating, 65 as will be readily understood. Otherwise the construction is substantially the same as that illustrated in the other figures.

I claim—

1. In a valve mechanism of the character 70 specified, the combination of the casing having a valve-seat and the threaded portion  $b^5$ , of the ring  $c^2$  having the standards  $c'$  and the cylinder supported by said ring and standards, the piston fitted to said cylinder and 75 having arms  $h' h'$  pivotally connected therewith and depending outside the cylinder, the yoke  $h$  connecting the lower ends of the arms  $h' h'$ , and a valve carried by the said yoke.

2. In a valve mechanism of the character 80 described, the combination of the casing having a valve-seat and the threaded portion  $b^5$ , of the ring  $c^2$  having the standards  $c'$  and the cylinder supported by said ring and standards, the piston fitted to said cylinder and 85 having arms  $h' h'$  pivotally connected therewith and depending outside the cylinder, the yoke  $h$  connecting the lower ends of the arms  $h' h'$ , and a valve loosely connected with the said yoke and adapted to move relatively 90 thereto.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 30th day of January, A. D. 1897.

EDGAR W. ANTHONY.

Witnesses:

A. D. HARRISON,  
P. W. PEZZETTI.