No. 831,694. PATENTED SEPT. 25, 1906.

C. A. WULF.

FLUSHING VALVE CONTROLLER.

APPLICATION FILED OCT. 2, 1905.

Fig. 1.

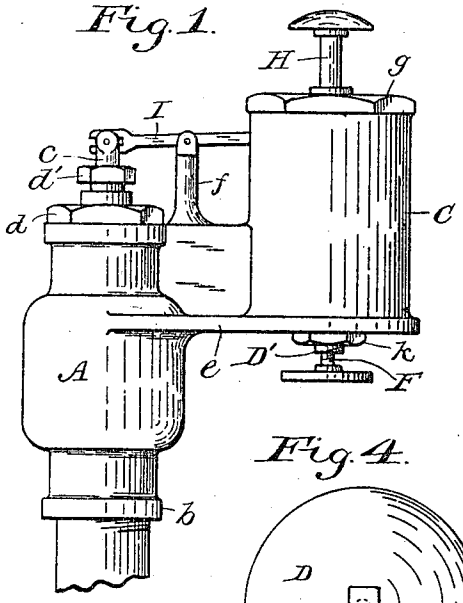


Fig. 2.

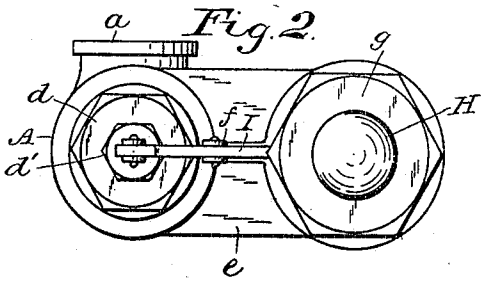


Fig. 3.

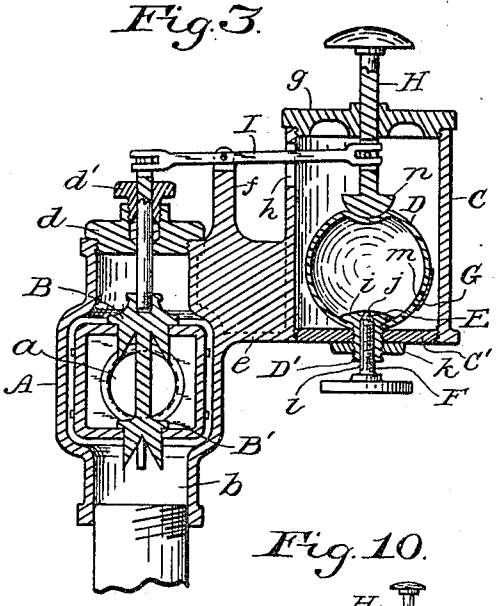


Fig. 4.

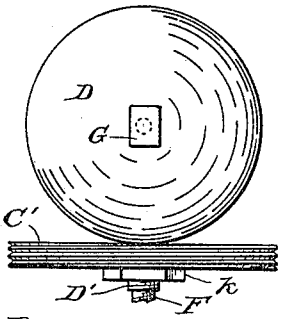


Fig. 5.

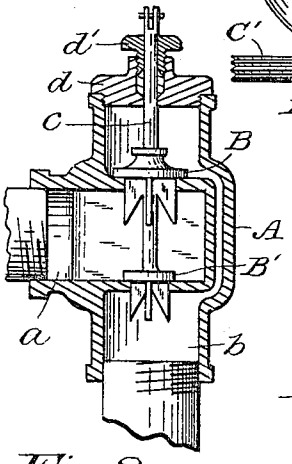


Fig. 6.

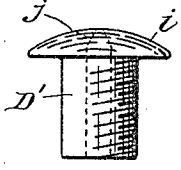


Fig. 7.

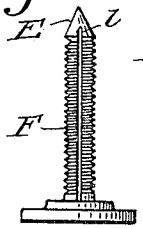


Fig. 8.

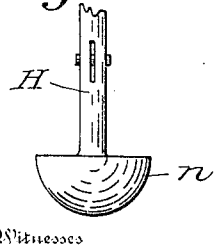
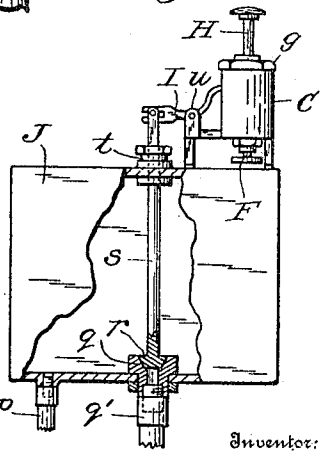


Fig. 9.

Fig. 10.



Witnesses

John H. Sarver.

Stella Snider.

Inventor:

Charles A. Wulf.

by E. T. Silvius,

Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

CHARLES A. WULF, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF TO EARL L. CRABB, OF INDIANAPOLIS, INDIANA.

FLUSHING-VALVE CONTROLLER.

No. 831,694. Specification of Letters Patent. Patented Sept. 25, 1906.

Application filed October 2, 1905. Serial No. 280,947.

To all whom it may concern:

Be it known that I, CHARLES A. WULF, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Flushing-Valve Controllers; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to devices for automatically closing water-closet flushing-valves after having been opened for flushing purposes, the invention having reference particularly to flushing-valve controllers that are designed to close the valves slowly and are adapted to be adjusted so as to control the closing of the valves with more or less retarding thereof.

Objects of the invention are to provide a flushing-valve controller of simple and relatively inexpensive construction that will not be liable to derangement and which will be suitable for controlling balance-valves that may be connected to service-pipes of sufficient capacity to supply flushing-water without the use of a reservoir, to provide a flushing-valve controller that may be connected to various types of flushing-valves and also be adapted to be connected to flushing-reservoirs and the flushing-valves thereof, and to provide a flushing-valve controller that may be readily adjusted to suit requirements.

With the above-mentioned and minor objects in view the invention consists in a flushing-valve controller comprising an air-vessel having a yielding elastic part and provided with a valve for regulating the admission of air thereto and a check-valve for the free escape of air from the vessel and means for operatively connecting the vessel with the stem of a flushing-valve; and the invention consists, further, in the novel parts and the combinations and arrangements of parts, as hereinafter particularly described and claimed.

Referring to the drawings, Figure 1 is a side elevation of a flushing-valve casing and the improvement connected therewith; Fig. 2, a top plan thereof; Fig. 3, a vertical central sectional view thereof; Fig. 4, an elevation of the air vessel, showing the check-valve thereof; Fig. 5, a sectional view of the flushing-valve casing, showing the valve therein; Fig. 6, an elevation of the nipple for holding the air vessel in operative position and having a valve-seat therein; Fig. 7, a side elevation of the regulating-valve of the air vessel; Fig. 8, a fragmentary side elevation of a handle for operating the flushing-valve; Fig. 9, a fragmentary sectional view of the air vessel, showing the check-valve thereof in open position; and Fig. 10, a side elevation of a closed flushing reservoir or tank partially broken away and showing the flushing-valve thereof and the controller mounted on the reservoir and connected with the flushing-valve.

Similar reference characters in the drawings designate like elements or features in the several figures thereof.

In the drawings, A designates the casing of the flushing-valve, *a* the inlet, and *b* the outlet, of the casing; B and B′, a pair of valves connected together and commonly known as "balanced" valves, which are suitably seated in the casing; *c*, the valve-stem, and *d* the cap of the casing provided with a packing-nut *d*′. The flushing-valve may be of any suitable construction, the most simple easily-operated forms being preferable for the purpose.

A controller-casing C, having a slot *h*, is supported by a bracket *e*, that is attached to the casing A; but it may be otherwise suitably supported, and an air vessel D is supported in the casing C and covered thereby. A post *f* is attached to the bracket *e*. In its most simple form the air vessel is formed as a hollow "rubber" ball normally maintaining a spherical shape, the composition of the ball being of suitable material for the purpose and for holding air. The casing C has a cap *g*. A nipple D′ extends through the bottom C′ of the casing C and has a head *i* within the vessel for holding the vessel tightly on the bottom of the casing C, the nipple being threaded internally and externally and having a valve-seat *j* therein and a binding-nut *k* thereon, the latter having bearing against the under side of the bottom of the casing for securing the air vessel. A controlling-valve E on the end of a threaded stem F is fitted to the valve-seat *j* and controlled by the stem, which is arranged movably in the nipple, the stem having a groove *l* in its side to admit air to the valve for admission to the air vessel. In the wall of the air vessel D is an out-

let-opening *m*, normally covered by a check-valve G, opening outwardly. A handle H is guided in the cap *g* of the casing C and has a foot *n* in engagement with the top of the air-vessel D. A lever I is pivoted between its ends to the post *f* and has one of its ends connected to the handle H and the other one of its ends connected to the stem *c* of the flushing-valve.

In Fig. 10, J designates a closed reservoir connected to a service-pipe *p*, that in many cases may be too small to instantly supply a flushing stream of water. *q* designates the flushing-valve seat; *r*, the flushing-valve at the outlet-pipe *q'* and having a stem *s* extending through the top of the reservoir and a packing-box *t*, with which the top is provided. A post *u* and the casing C are suitably supported on the reservoir, and tne lever I is pivoted to the post and connected to the stem *s* for the control of the flushing-valve. In order to adjust the air vessel D of the controller vertically, the bottom C' of the casing C is screwed into the casing and may be removed therefrom in order to replace an old air vessel with a new one. Various modifications may be made in the connections between the flushing-valve and the air vessel D, as will be obvious. It will be understood that the lower portion of the air vessel D may be unyielding, provided that the upper portion thereof, or that which is engaged by the handle H, is elastically yielding and hemispherical in shape. When the service-pipe is large enough in diameter to supply a flushing-stream, the flushing-valve casing is to be connected directly to the service-pipe, and a flushing-pipe will be attached to the casing, the reservoir being required only with a small service-pipe. If preferred, the flushing-valve and controller may be located immediately beneath the reservoir in connection with the flushing-pipe, as is obvious.

In practical use the handle H is to be pushed or moved downward manually in order to open the flushing-valve, the foot *n* of the handle forcing the top of the air vessel D inward toward the center of the vessel, thus forcing some of the air out of the vessel through the opening *m*, which will be immediately closed by the valve G, when the motion of the handle ceases. Air will then slowly enter the vessel past the valve E, which may be adjusted to admit the air with more or less velocity, the air entering the vessel permitting the walls of the vessel to assume their normal position, so that the vessel again becomes spherical, thus slowly pushing the handle H back to its normal position and at the same time closing the flushing-valve.

Having thus described the invention, what is claimed as new is—

1. A flushing-valve controller including a controller-casing having a cap and also a removable bottom, a fixed post in proximity to the casing, a handle guided in the cap of the casing and having a foot on an end thereof within the casing, an air vessel mounted on the removable bottom of the casing opposite to the foot of the handle, and a lever pivoted to the post and connected to the handle for operating the flushing-valve.

2. A flushing-valve controller including a controller-casing having a bottom screwed removably into an end thereof, a nipple screwed into the bottom, a valve in the nipple, an air vessel secured by the nipple to the bottom, a fixed post, a valve-lever pivoted to the post, and a handle connected to the lever and having a foot opposite to the air vessel, the vessel having an outlet-opening.

3. A flushing-valve controller including a controller-casing having a bottom and also a cap, a hollow flexible air vessel mounted on the bottom of the casing and having an outlet-opening in the side thereof provided with a valve, the vessel having an inlet-opening, a handle guided in the cap of the casing and having a foot in contact with but not attached to the air vessel, a fixed post, and a valve-lever pivoted to the post and connected to the handle.

4. In a flushing-valve, the combination of a valve-casing provided with a bracket, a balance-valve in the valve-casing provided with a stem, a post attached to the bracket, a controller-casing attached to the bracket and having a cap and also a removable bottom, the controller-casing having also a slot therein, a hollow flexible air vessel attached to the removable bottom of the controller-casing and having an outlet-opening in the side thereof provided with a valve, the vessel being inclosed in the controller-casing and having an inlet-valve, a handle guided in the cap of the controller-casing and having a foot within the casing opposed to the vessel, and a lever extending through the slot of the casing in connection with the handle and the valve-stem and pivoted to the post, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES A. WULF.

Witnesses:
WM. H. PAYNE,
E. T. SILVIUS.