

G. LAMB.  
FLUSH VALVE.

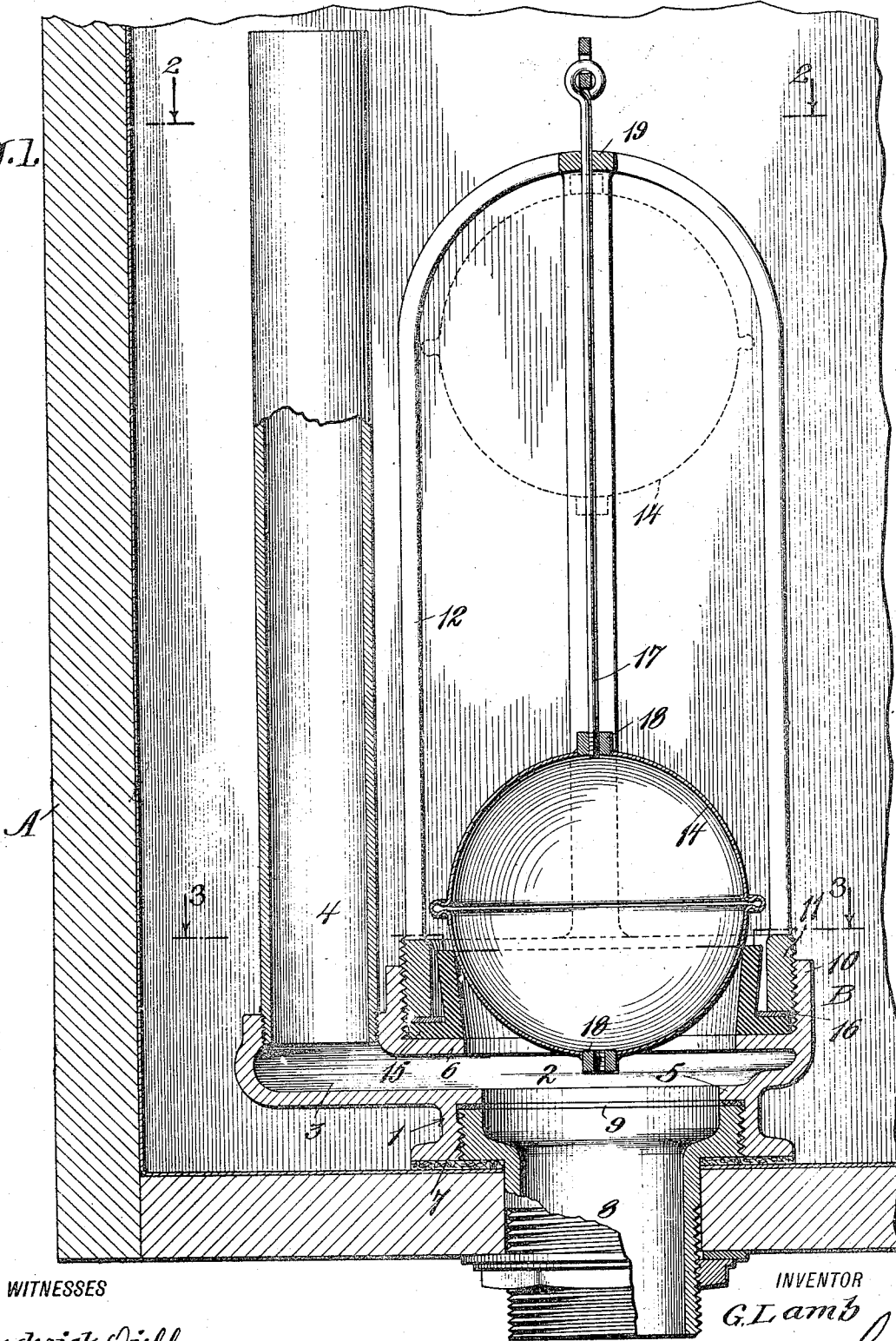
APPLICATION FILED MAY 4, 1916.

Patented July 11, 1916.

2 SHEETS—SHEET 1.

1,190,917.

Fig. 1.



WITNESSES

Frederick Diehl.  
B. Bradway.

INVENTOR

G. Lamb

BY

Munn & Co.  
ATTORNEYS

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2 SHEETS—SHEET 2.

Fig. 2.

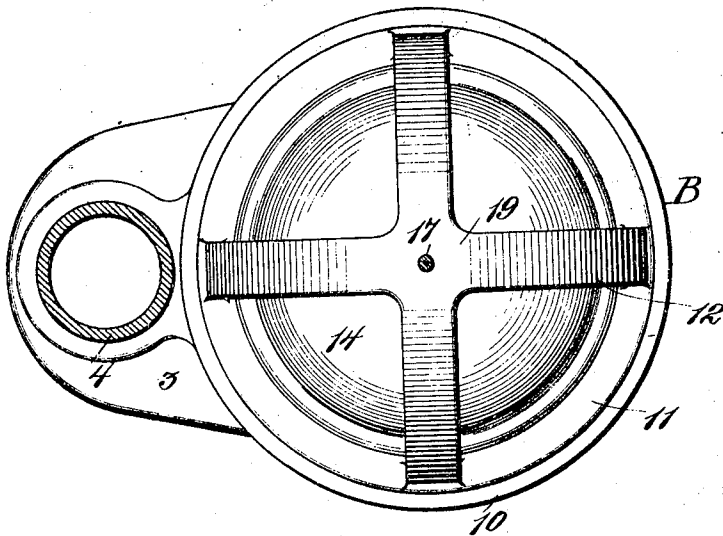


Fig. 3.

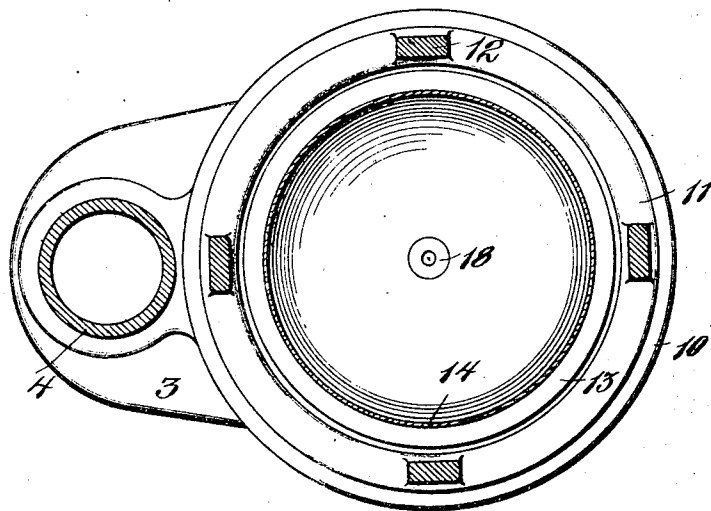
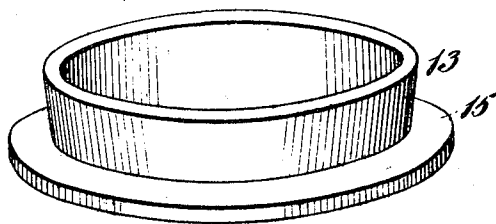


Fig. 4.



WITNESSES

*Frederick Diehl.*  
*O. Bradley*

INVENTOR

*G. Lamb*  
BY *Wm. Co.*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

GEORGE LAMB, OF NEW YORK, N. Y.

## FLUSH-VALVE.

1,190,917.

Specification of Letters Patent.

Patented July 11, 1916.

Application filed May 4, 1916. Serial No. 95,353.

*To all whom it may concern:*

Be it known that I, GEORGE LAMB, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Flush-Valve, of which the following is a full, clear, and exact description.

This invention relates to flush valves especially adapted for water closets of various known types, and it is applicable to water closet tanks of either the overhead or low-down arrangement.

The invention has for its general objects to improve the construction and operation of devices of this character so as to be reliable and efficient in use, comparatively simple and inexpensive to manufacture, and so designed that it can be easily and quickly repaired without any special tools or without any particular skill.

A more specific object of the invention is the provision of a flush valve embodying a hollow metal ball and a rubber seat of special design, whereby tight seating is maintained and the objections found in other valves overcome, the ball being reversibly attached to its stem, so that if the lower half should become dented or otherwise imperfect the ball can be reversed and the upper half used to engage the rubber seat.

Still another object is the provision of a combined guide, cage for the float ball and clamp for the rubber seat, whereby the latter is held effectively in place and capable of adapting itself to the valve for water-tight fitting.

With such objects in view, and others which will appear as the description proceeds, the invention comprises various novel features of construction and arrangement of parts which will be set forth with particularity in the following description and claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention and wherein similar characters of reference indicate corresponding parts in all the views, Figure 1 is a central vertical section of the flush valve applied to a tank; Fig. 2 is a horizontal section on the line 2—2, Fig. 1; Fig. 3 is a horizontal section taken on the line 3—3, Fig. 1; and Fig. 4 is a perspective view of the valve seat.

Referring to the drawing, A designates an ordinary water closet tank of the high or

low type in which is arranged the flush valve B. This valve embodies a casing 1 of any suitable material and it is provided with a chamber 2 which has a laterally extending hollow arm 3 for receiving the overflow pipe 4. The chamber 4 is provided with a lower internal annular flange 5 and an upper internal annular flange 6, and under the flange 5 the open bottom of the casing is provided with an internal thread 7 into which screws a spud 8, the diameter of which may be varied according to the style of water closet in which the valve is to be used. Between the top of the spud and the flange 5 is a packing ring 9. Rising from the top of the valve body is a cylindrical flange 10 internally threaded to receive the externally threaded base ring 11 of the cage 12. Within the top of the valve casing is an annular rubber seat 13 for the ball valve 14. This seat is in the form of a ring of approximately cylindrical shape and has an external annular flange 15 which is clamped between the base ring 11 of the cage and the seat formed by the flange 6, there being interposed between the base ring of the cage and clamping flange 15 of the ball valve seat, a metal washer 16. The valve 14 is in the form of a hollow metal sphere and slightly larger in diameter than the normal internal diameter of the cylindrical rubber seat 13, and when the ball valve or float drops it enters the cylindrical valve seat and makes a tight engagement therewith, the valve seat slightly expanding in all directions under the weight of the valve and attached parts, and the water acting on the valve. The base ring 11 is of larger internal diameter than the external diameter of the cylindrical valve seat, so as to provide clearance for the lateral expansion of the latter. The valve seat is a staple article in the plumbing trade, being used as a water closet flush spud washer, so that it is possible for a householder to readily obtain such a washer and substitute it for a worn flush valve seat whenever occasion requires.

The ball valve or float 14 is suspended on the lower end of a stem 17 which screws into an internally threaded nipple 18, there being such a nipple both at the top and bottom. The lower nipple forms a drain for any liquid which might accumulate in the ball float. Furthermore, by providing two nipples it is possible to reverse the ball valve whenever the lower half becomes imperfect,

and does not properly seat. This reversal is easily accomplished by unscrewing the stem, turning the valve over, and again screwing in the stem. The valve stem is  
 5 guided through a bearing 19 at the point of juncture of the vertical arched bars which form the cage 12. These bars of the cage form a convenient gripping means for enabling the cage to be screwed into or  
 10 screwed from the casing of the valve, as when a new valve seat is to be inserted. It will thus be seen that no special tools are required, and any person of ordinary skill can keep the flush valve in operative  
 15 condition. The stem 17 is connected with suitable operating means for lifting the valve whenever the water is to discharge from the tank.

By reason of the special construction of  
 20 the valve seat the flush valve will be maintained in operative condition for a great length of time and avoids the annoyance of frequent repair, as in ordinary flush valves now in use. Furthermore, the valve is  
 25 simple in construction, noiseless in action and is adaptable for the various styles of water closets and tanks now in common use.

From the foregoing description taken in connection with the accompanying drawings,  
 30 the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together  
 35 with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made when desired as fall within the  
 40 scope of the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A float valve comprising a chambered  
 45 casing through which water is adapted to flow, a valve seat of cylindrical form and expandible in diameter at its upper end, a cage having a screw connection with the casing and clamping the valve seat in place,  
 50 the body of the cage forming a handle for

facilitating the screwing and unscrewing of the cage, a ball valve disposed in the cage and engageable with the seat, and a stem connected with the valve and extending upwardly therefrom, the top of the cage having  
 55 a guide through which the stem extends.

2. A flush valve comprising a chambered casing through which water is adapted to flow, a cylindrical rubber valve seat yieldable laterally at its top edge and having an  
 60 annular flange at its bottom, means for clamping the flange tightly against the valve casing, and a ball valve adapted to enter the seat and engage the top edge thereof.

3. A flush valve comprising a chambered  
 65 casing through which water is adapted to flow and having an internally threaded flange at its top, a ring screwing into the flange, a rubber valve seat of annular form disposed within the ring and of less diameter  
 70 than the same and having an annular flange clamped between the ring and valve casing, and a rigid ball valve engageable internally of the seat.

4. A flush valve comprising a chambered  
 75 casing through which water is adapted to flow and having an internally threaded flange at its top, a ring screwing into the flange, a rubber valve seat of annular form disposed within the ring and of less diam-  
 80 eter than the same and having an annular flange clamped between the ring and valve casing, and a rigid ball valve engageable internally of the seat, said ring having a cage extending upwardly therefrom for guiding  
 85 the ball valve and forming a handle for the screwing and unscrewing of the ring.

5. A flush valve comprising a seat, a ball of slightly larger diameter than the seat and engageable therewith, a stem, and separate  
 90 means at diametrically opposite points on the ball for permitting the latter to be reversed for connection with the stem.

6. A flush valve including a hollow metallic ball having apertured nipples at the top  
 95 and bottom, the lower nipple forming a drain and the upper nipple forming means for connection with an operating stem.

GEORGE LAMB.