

L. S. ROTHWELL.
FLUSH VALVE BODY.
APPLICATION FILED NOV. 25, 1910.

1,014,259.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

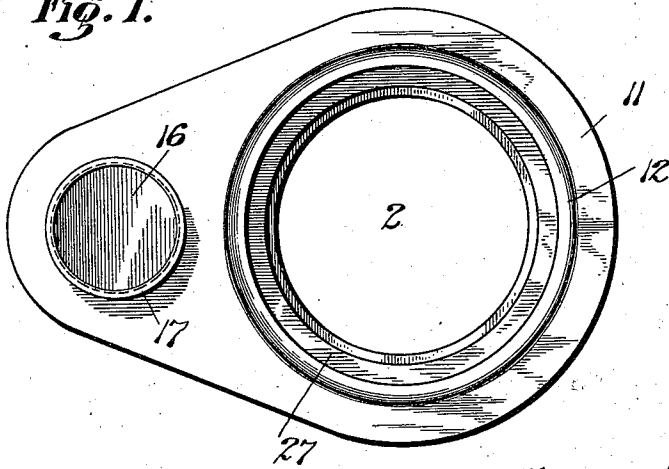


Fig. 2.

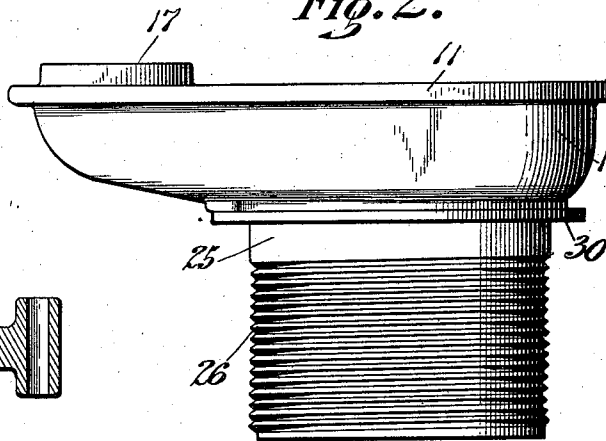


Fig. 3.

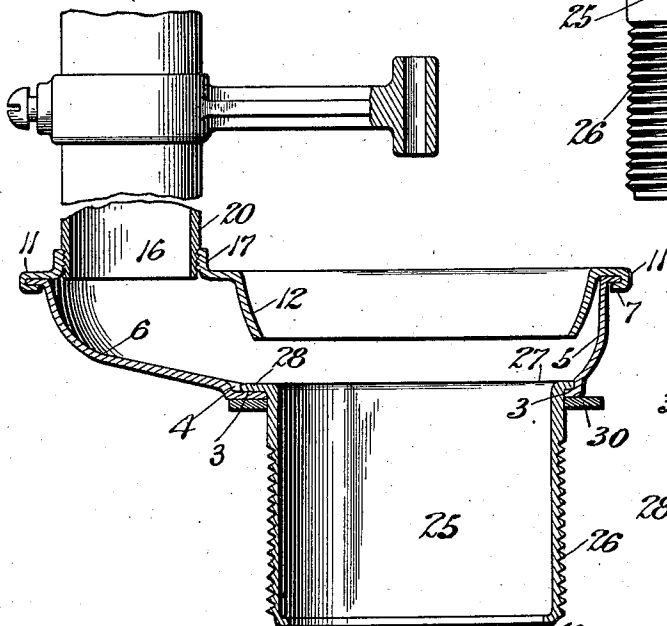
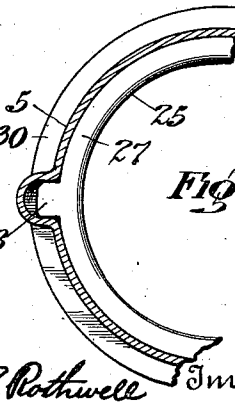


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

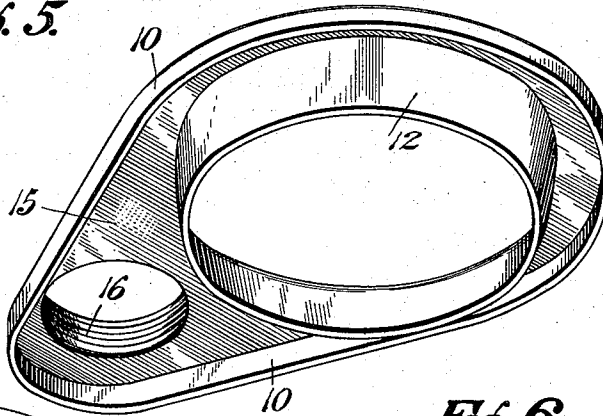


Fig. 8.

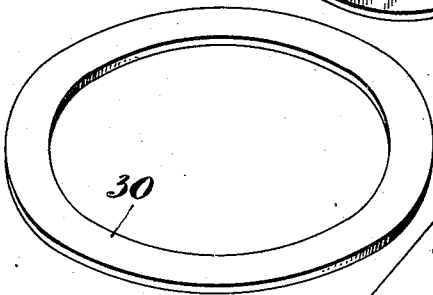


Fig. 6.

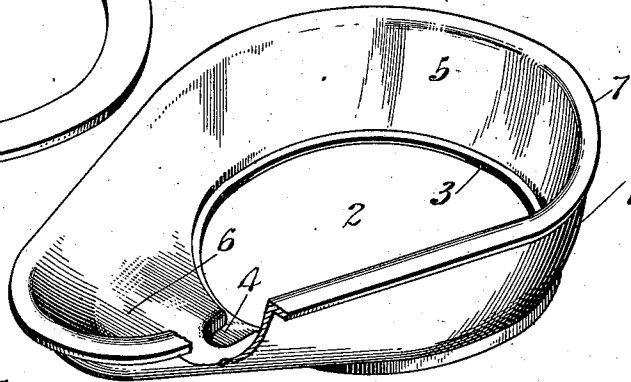
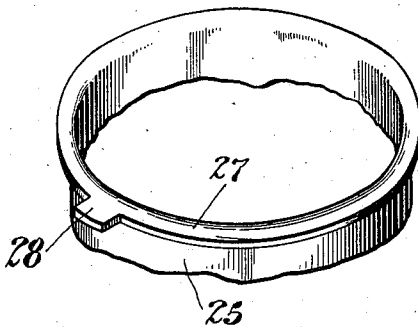


Fig. 7.



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UNITED STATES PATENT OFFICE.

LOUIS S. ROTHWELL, OF BROOKLYN, NEW YORK, ASSIGNOR TO AMERICAN PIN COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

FLUSH-VALVE BODY.

Patented Jan. 9, 1912.

Specification of Letters Patent.

Application filed November 25, 1910. Serial No. 594,068.

1,014,259.

To all whom it may concern:

Be it known that I, LOUIS S. ROTHWELL, a citizen of the United States of America, and a resident of the borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Flush-Valve Bodies, of which the following is a specification.

The present invention relates to improvements in flush valve bodies of the type adapted to be mounted in a flush tank to couple the tank and its overflow pipe with the flush pipe.

Heretofore these flush valve bodies have usually been made of brass castings in various forms and such castings require a great deal of expensive machine work and manual labor to prepare and finish them for use, and even when finished to the degree required for commercial purposes the interior channels of the castings frequently have objectionably rough projections around which foreign substances may collect. Castings are further objectionable because of their weight out of and within the tank. Special care has to be exercised in grinding the seat for the flush valve, said seat being now commonly made of spheroidal shape to receive the rubber valve in the form of a ball or ring.

The object of the present invention is to produce a strong and durable flush valve body of light weight and smooth internal and external finish which will not require any grinding or other tedious and expensive labor to finish it ready for use, which will be economical to produce and superior from a mechanical standpoint to the rough and heavy cast articles heretofore used. To this end, I have constructed my improved flush valve body of two or more pieces of sheet metal stamped or otherwise formed by dies into the proper shapes and secured together by any of the well known methods, such as upsetting, shearing, sweating, soldering, etc.

The preferred form of the invention is made in three parts, each of which is separately formed by suitable dies. The main part or shell is of approximately ovoid or pear shape with an outwardly presented flange at the top and an opening in the bottom at the enlarged end having an inwardly presented flange and a shallow sloping and expanding trough leading thereto from the small end. Fitting upon this main shell is a cap mem-

ber of the same general shape as the main shell member. This cap member is formed with a deep downwardly presented flange of spheroidal shape which rests concentrically within and is spaced from the side wall of the enlarged end of the main shell so as to leave an annular recess therearound and forms a seat for the flush valve. The cap member has a flanged opening cut through it in its small end for the attachment of the overflow pipe. The third member of the flush valve body consists of an externally threaded tube passing through the opening in the bottom of the main shell and formed at its top with an annular outwardly presented flange which rests upon and is supported by the inwardly presented flange of said main shell opening. The wall of the main shell is formed with a radial recess adjacent to the tube supporting flange and the outwardly presented flange at the top of the tube is provided with a radial lug fitting in said radial recess so as to hold the tube rigidly against rotary movement in the main shell when the body is being attached in the bottom wall of the flush tank in readiness for use. These three parts of the flush valve body in the specific form hereinafter described are preferably attached by upsetting the metal or folding over adjacent edges of the flanges one upon another. To provide for the annular seat of the body, surrounding the attached flush outlet tube, I force up the upper end of the tube a bearing ring and this ring may be utilized as the means for securing the flush outlet tube to the main shell.

In order that the invention may be fully understood, I will first describe the same with reference to the accompanying drawings, and afterward point out the novel features more particularly in the annexed claims.

In said drawings: Figure 1 is a plan view of the improved flush valve body. Figure 2 is a side elevation of the same. Figure 3 is a vertical sectional view of the same showing a part of the overflow pipe attached to the top or cap member. Figure 4 is a detailed plan view illustrating the means supporting the tubular flush outlet up to the main shell member. Figure 5 is a perspective view of the top or cap member of the flush valve body. Figure 6 is a perspective view of the shell member of the device. Figure 7

tail perspective view of the upper flanged end of the tubular flush outlet member. Fig. 8 is a perspective view of the annular seat member which surrounds the tubular member.

1 is the main shell or member which is of approximate ovoid or pear shape. This main shell member has a large opening 2 cut through its bottom wall concentric with the enlarged end of the shell. The opening 2 is defined by a circular inwardly presented flange 3 which provides an annular depression and seat therearound and through which the tubular member (hereinafter referred to) passes and upon which it is supported.

4 is a radial recess pressed into the bottom wall of the member 1 beyond the depression adjacent to and flush with the flange 3. The side wall 5 is slightly inclined and curved downwardly, and at the small end of the member 1 the bottom wall 6 is inclined downwardly toward the flush outlet opening 2. The side wall 5 and bottom wall 6 are so shaped as to form an expanding shallow trough or passageway from the small end of the member 1 toward the flush outlet opening. The side wall 5 of the member 1 is formed with an outwardly presented flange 7 entirely surrounding the member 1 for the purpose which will hereinafter be explained.

10 is the top or cap member of the flush valve body, which cap member is of the same general shape and size as the main shell member 1 so as to seat and fit snugly upon it. This cap member 10 has surrounding its edge an outwardly and downwardly presented flange 11 which fits over the outwardly presented flange 7 of the member 1 and by upsetting or forcing its edge inwardly is caused to snugly embrace the outwardly presented flange 7 for permanently fastening the cap 10 to the main shell member 1.

The cap member 10 is formed adjacent its enlarged end with the integral downwardly presented deep circular flange 12 which is curved slightly to form a spherical valve seat for the flush valve. This flange 12 projects into the main shell member 1 concentrically with the wall 5 at the enlarged end so as to form an annular passageway between the wall 5 and the flange 12 which passageway is in open communication with the space above the tubular flush outlet member hereinafter referred to as a continuance and enlargement of the shallow expanding trough leading from the small end of said casing 1 so as to provide a freer outlet from the overflow

top wall 15 of the cap member 10 at the small end thereof is an opening 16 defined by an upwardly presented and

interiorly threaded annular flange 17 into which the lower end of the ordinary overflow pipe 20 is screwed.

25 is the tubular flush outlet member in the form of a short section of pipe to which the deep curved flange 12 is directed. This member 25 is externally threaded as shown at 26 and is formed at its upper end with an outwardly presented flange 27 which rests upon the inwardly presented flange 3 of the main shell 1. A radial lug 28 formed integral with the outwardly presented flange 27 fits snugly in the radial recess 4 of the main shell 1 so as to prevent the rotation of the tubular member 25 in the shell when the device is being attached in place for use.

The tubular member 25 may be rigidly secured to the shell member 1 by any of the suitable means known in this art. In the particular form illustrated in the drawings, I have shown an annular flat ring 30 which is forced upon the slightly enlarged upper end of the tubular member 25, against the bottom flanged wall of the shell member 1 so as to rigidly secure members 1 and 25 together. This ring may be welded or otherwise fastened in place. The ring 30 is preferably used since it serves the additional function of an annular seat for the valve body to rest against the bottom wall of the flush tank surrounding the outlet opening and affords convenient means for suitably packing the joint between the valve body and the flush tank. It will be understood that the usual securing nut (not shown) is intended to be threaded upon the threaded portion 26 of the tubular member 25 for fastening the valve body into place in the flush tank.

The advantages of the improved flush valve body constructed of sheet metal stampings have been referred to in the preliminary part of this specification. The use of cast metal bodies not only on account of cheapness of construction and lightness in weight, but also because of the finer finish and smoother passageways for the overflow and flush water are entirely smooth and the overflow passageway can be made of larger dimensions for a given size and weight of body than with the old form of cast metal body.

What I claim is:

A flush valve body, comprising a main shell member formed with an outlet opening through its bottom wall and an annular depression and a radial recess beyond said adjacent to said opening, a tubular member extending through said outlet opening and formed with a retaining flange which rests in the annular depression upon the bottom

wall of said main shell member, a radial
lug projecting from the flange of said tubu-
lar member and engaging the radial recess
in said bottom wall, means for securing said
5 tubular member upon said main shell mem-
ber, and a cap member secured to the top
of said main shell member and formed with
an integral downwardly presented circular
valve-seat flange, and an opening to receive
an overflow pipe, substantially as set forth. 10

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."