Sept. 23, 1941. O. S. BURMAN 2,256,891

DRAIN VALVE FOR LAUNDRY TUBS

Filed Nov. 18, 1940 2 Sheets-Sheet 1

Fig. 1

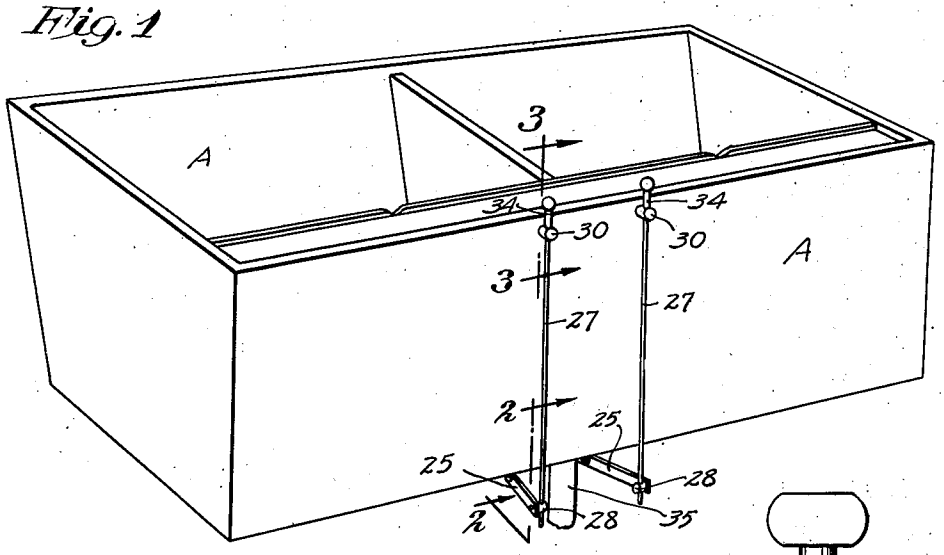



Fig. 3

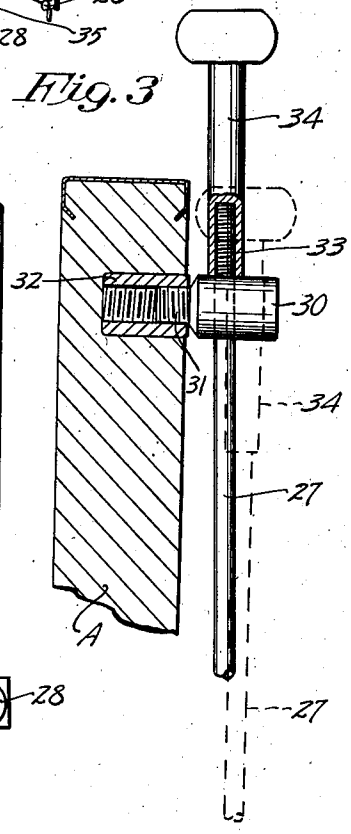
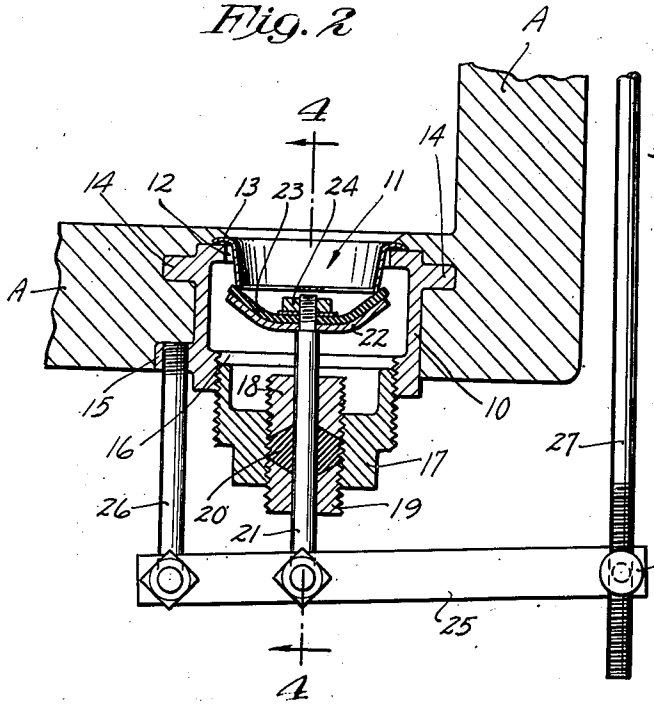



Fig. 2




Inventor
Olof S. Burman
By his Attorneys
Merchant & Merchant

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Filed Nov. 18, 1940 2 Sheets-Sheet 2

Fig. 4

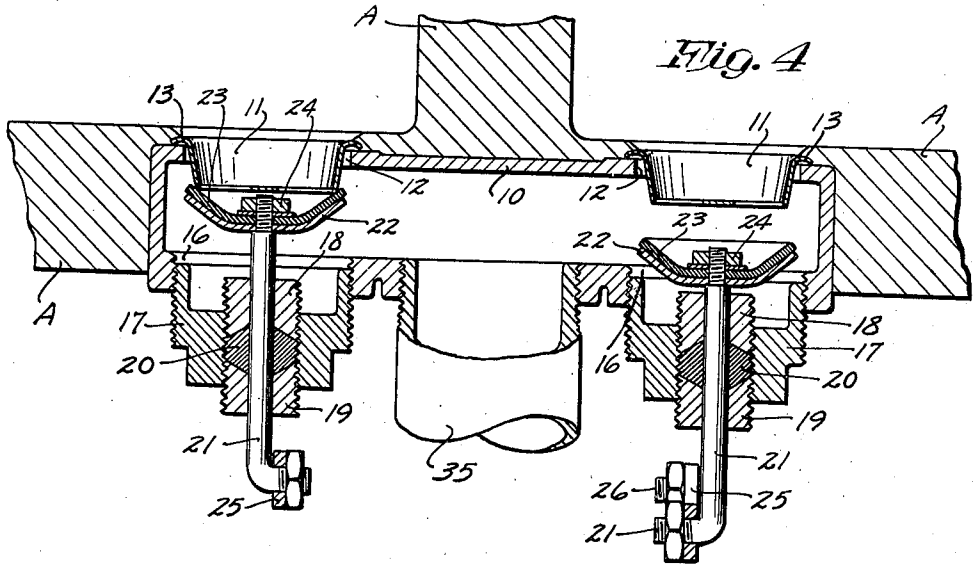



Fig. 5

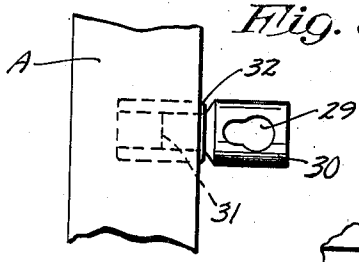



Fig. 6

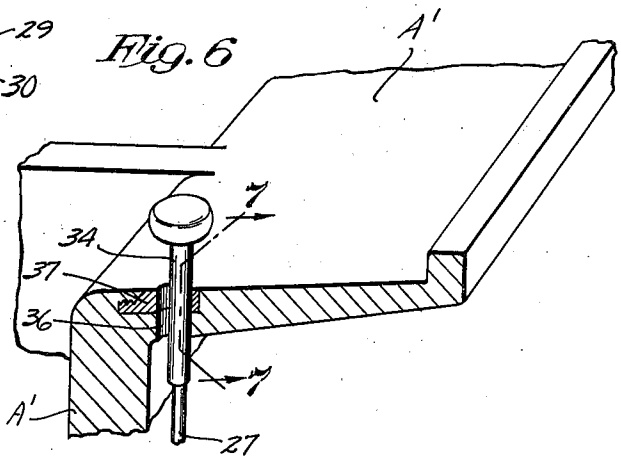
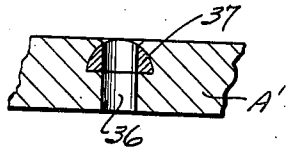



Fig. 7




Inventor
Olof S. Burman
By his Attorneys
Merchant & Merchant

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# UNITED STATES PATENT OFFICE

2,256,891

## DRAIN VALVE FOR LAUNDRY TUBS

Olof S. Burman, Minneapolis, Minn.

Application November 18, 1940, Serial No. 366,102

4 Claims. (Cl. 137—21)

My present invention provides an improved drain valve mechanism especially adapted for use in laundry tubs; and, generally stated, consists of the novel devices, combinations of devices and arrangement of parts hereinafter described and defined in the claims.

In my experience with drain valve mechanisms for use in connection with laundry tubs or the like which are adapted to contain clothes, I have found that a valve mechanism wherein the valves close by downward movement or in the direction of the flow of water drained from the tub, an objection thereto has arisen from the fact that the flow of water will carry particles of the clothes under the raised valve and prevent subsequent closing thereof until the clothes or particles thereof have been pulled out from under the valve. I have, however, found that the above objection can be eliminated by the use of a valve that opens by downward movement and closes by upward movement, in connection with a valve seat or seat-forming element that will hold back flow of the clothes with the discharged water.

With a valve that closes by upward movement, a sort of reverse upward flow of the water in the closing action will take place which tends to lift or force back any particles of the clothes, lint, or the like, which might otherwise tend to prevent tight closing of the valve against its seat.

My improved valve mechanism not only eliminates the disadvantages of the older forms of valve but also provides features that are important both from a manufacturing point of view and in respect to operation.

In carrying out my invention a valve box or casing, preferably of cast iron, is provided; a dished or cup-shaped valve seat element, preferably of brass, is assembled with the valve box; and the two assembled elements are molded or cast into the bottom of the concrete tub.

In the accompanying drawings the invention is illustrated as applied to a two-compartment laundry tub. Referring to these drawings wherein like characters indicate like parts throughout the several views:

Fig. 1 is a view in perspective showing a two-compartment laundry tub with the valve mechanism applied thereto;

Fig. 2 is a fragmentary vertical section taken approximately on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary vertical section taken approximately on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary vertical section taken through the valve mechanism and portions of the tub on the line 4—4 of Fig. 2;

Fig. 5 is a plan view showing a fragment of the tub and an anchor for the valve actuating connections;

Fig. 6 is a fragmentary view in perspective showing a portion of a laundry tub having a rearwardly projecting shelf and showing an arrangement wherein the anchor for the valve actuating rod is embedded in the shelf; and

Fig. 7 is a fragmentary section taken on the line 7—7 of Fig. 6.

Referring first to the construction illustrated in Figs. 1 to 5 inclusive, the character A indicates a molded concrete laundry tub having two compartments and an inwardly projecting shelf. This tub being of the two-compartment type the cast metal valve box, indicated by the numeral 10, is made long enough to extend on both sides of the tub partition and is initially assembled with two depressed or cup-shaped valve seat-forming elements which, as previously stated, are preferably pressed from sheet brass. The top plate of the box 10 is formed with two large holes 12 in which the valve seats 11 are inserted with the outturned upper edge flanges 13 of the latter seated on the upper or top surface of said valve box. On its exterior box 10 has projecting anchoring ribs 14 and an outstanding lug 15.

In its bottom plate the box 10 is provided with large internally threaded passages 16 that are axially aligned with the valve seats 11. Externally threaded reducing bushings 17 are tightly screwed into the passages 16. These bushings 17 have internally threaded axial passages of much less diameter than the passages 16, and into these reduced passages are applied gland-forming plugs 18 and 19. Compressible packings 20 are interposed between the plugs 18 and 19. Valve actuating stems or plungers 21 are passed axially through the plugs 18 and 19 and the packings 20 and are thus mounted for vertical movements through packed or liquid-tight joints. To the upper ends of the valve stems 21 substantially disc-like valve heads are applied. These valve heads preferably, and as shown, involve dished disc-like metal plates 22 that are faced by correspondingly formed pliable discs 23 of material such as rubber or leather. As shown, these valve heads are placed on threaded and reduced upper ends of the valve stems and are clamped thereto by nuts 23. Here it is important to note that the valve elements 22 and 23 are of slightly greater diameter than the lower edges of the cooperating and overlying valve seats 11, but are of slightly less diameter than the internally threaded passages 16, through which latter, when the bushings 17 are removed, said valves may be freely passed for assembling or repairs. Here it will also be noted that the bottoms of the valve seats 11 are perforated and are preferably made spider-like so that the water will freely pass therethrough but clothing will be caught and held back.

Convenient means for independently operating the said valves is provided. As shown, this means involves levers 25, the stem portions of which

are loosely pivoted to the lower ends of the respective valve stems and the inner ends of which are pivoted to the lower ends of bearing posts **26**, the threaded upper ends of which, as shown, are screwed into the above noted lugs **15**.

For conveniently manipulating the levers **25** from the upper portion of the tub, upright rods **27** are provided. The lower ends of these rods are threaded and, as shown, work with threaded engagement through heads **28** on the outer ends of the levers **25**. These heads **28** are preferably pivoted on the ends of said levers. At their upper ends the rods **27** are passed through perforations **29** in stud-like heads **30** which, as shown, are anchored to the upper back portion of the tub. These heads **30**, as shown, have threaded stems **31** that are engageable in internally threaded sleeves **32** which latter are cast or molded into the back rear wall of the tub as best shown in Fig. 3. As best shown in Fig. 5, the passages **29** are much in the shape of a keyhole that has relatively large outer portions and narrow inner portions. Also in this preferred arrangement the upper ends of the rods **27** are threaded at **33** to the internally threaded stem-like portions of handle pieces **34** and are tightly screwed on to the upper ends of said threaded rods so that the said rods and handles **34**, when assembled, operate as integral structures. Here it is important to note that large outer portions of the holes **29** are of a diameter that will pass the stem-like portions of the handles **34** therethrough, while the contracted portions of said passages **29** will pass therethrough only the rods **27**.

The adjustment of the valve actuating connections described will be such that when the rod **27** is pulled upward and then moved into the contracted portion of the slot **29**, the lower end of the stem handle **34** will be held on top of the head **30**, as shown, by full lines in Fig. 3, and the valve will be held or locked in a closed position as indicated in Fig. 2 and at the left in Fig. 4.

When, however, the rod is moved to the dotted line position shown in Fig. 3, the stem **34** will drop through the large portion of slot **29** as indicated by dotted lines in Fig. 3, and the valve will be moved to open position, as indicated at the right in Fig. 4.

In casting or molding the tub the assembled valve box and valve seat or seats **11** will be so located that they will be molded into the bottom of the tub. In Figs. 2 and 4 it is clearly shown that the anchoring ribs **14** will be embedded in the tub and that portions of the bottom of the tub will overly the outturned flanges **13** of the valve seats **11**, thereby securely anchoring the valve seats to the valve box and within the body of the bottom of the tub.

The structure just described in detail being for a two-compartment tub, the valve box is provided with a common drain pipe **35** which, as shown, is screwed into an internally threaded passage located in the bottom of the valve box mid-way between the two valves. Of course it will be understood that for a single compartment tub the valve box would be provided with only one valve seat and valve mechanism, but in either event, the drain pipe should extend from the bottom of the valve box.

In Figs. 6 and 7 there is shown a concrete or molded tub A' provided with a rearwardly projecting shelf. For this arrangement the valve actuating rod is passed through a perforation **36** in the shelf of the tub A' and through an anchoring head **37**. This anchoring head **37** is preferably cast into the shelf as shown in Figs. 6 and 7. Preferably the anchoring head **37** is formed by taking one of the heads **30** and sawing or splitting the same axially, thereby making two anchoring heads out of the one element **30**. The above noted elements **27** and **34** are identical elements described in the first instance and operate in the manner already described.

From the foregoing it will be understood that while I have described the preferred forms of the invention, that modifications thereof may be made within the scope of the invention disclosed and claimed.

With the above described structure no strainer above the valve seat or gasket **11** is required and as an important advantage of this structure attention is called to the following facts: If the valve seat should accidentally be cracked or broken during the washing operation, it can be readily removed and the drain passage or opening **12** can then be temporarily filled with a plug or anything else that will stop the flow of water therethrough so that the washing operation does not need to be interrupted or put off until a new valve seat can be provided.

What I claim is:

1. A drain valve assembly including a metallic valve box, an annular valve seat having a depending rim applied in the top of said box and affording an opening thereinto, a reducing bushing detachably applied in the bottom of said box, a plunger working axially through said bushing and provided at its upper end with a valve head engageable with the depending rim of said annular valve seat, and means for vertically moving said plunger and valve head to open and close a drain passage through said box, and which box is adapted to be embedded in a concrete base.

2. A drain valve assembly including a metallic valve box, an annular valve seat applied through the top of said box and affording an opening thereinto, said valve seat having an outstanding flange resting on the top of said box, said valve seat also having a depending rim, a reducing bushing detachably applied in the bottom of said box, a plunger working axially through said bushing and provided at its upper end with a valve head that is engageable with the depending rim of said annular valve seat, said reducing bushing being of slightly greater diameter than said valve head, so that said valve head may be inserted into said box when said bushing is removed, means for vertically moving said plunger and valve head to open and close the drain passage through said box, and which box is adapted to be embedded in a concrete base with a portion of the concrete body overlapping the outstanding annular flange of said valve seat and locking the same to said box.

3. The structure defined in claim 1 in which said reducing bushing is provided with an axially located removable gland-forming plug through which said plunger is directly passed.

4. The structure defined in claim 1 in further combination with a hanger post anchored to one side of said box, and a lever pivoted to said hanger post and connected to the lower end of said plunger, the said elements forming a self-contained assembly.

OLOF S. BURMAN.