

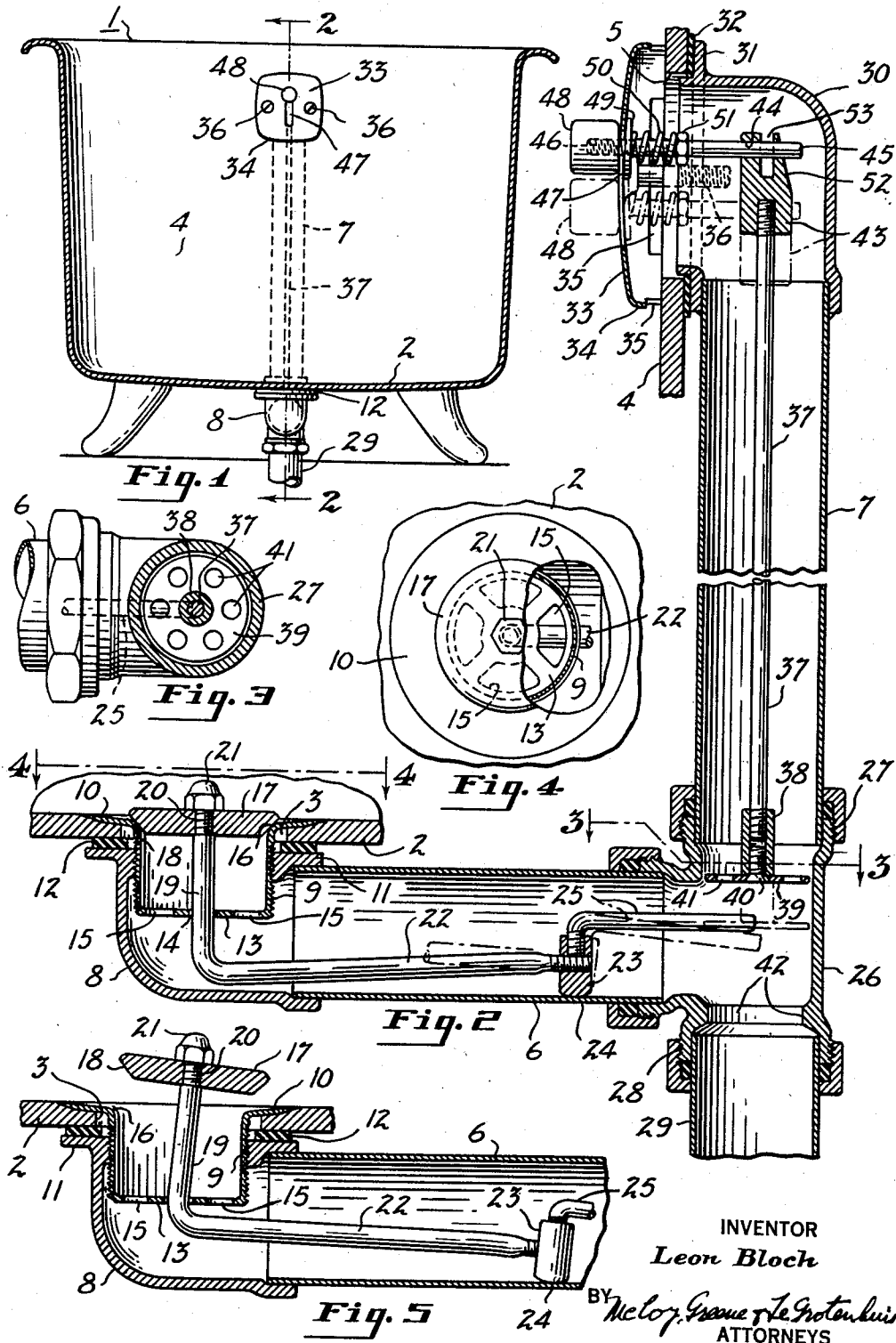
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DRAIN CONTROL DEVICE FOR BATH TUBS

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**DRAIN CONTROL DEVICE FOR BATH TUBS**

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2 Claims. (Cl. 4—199)

This invention relates to drain control devices for bath tubs, and more particularly to a drain valve controlling mechanism having a manually operable actuator mounted on an end wall of the tub.

The device of the present invention is applied to a bath tub having a drain outlet in its bottom and an overflow outlet in an end wall, a drain conduit connected to said drain outlet and an overflow conduit connecting said overflow outlet to said drain conduit. The drain outlet is controlled by means of a valve of the pop-up type which is normally held by gravity in closed position on a seat provided by an outlet fitting at the drain outlet. The valve has a vertical stem guided in said fitting and is actuated by a lever in the drain conduit that is connected to the valve stem at its inner end and that underlies the overflow conduit at its outer end, the lever having a downwardly projecting fulcrum member that slidably and rockably engages the bottom of the drain conduit and that is positioned nearer to the outer end of the lever than to the inner end thereof so that a relatively short lever arm is provided outwardly of the fulcrum. The valve lever is actuated by means of a plate attached to a vertically movable rod in the overflow pipe. The actuating rod has a handgrip member attached to its upper end that extends inwardly through the overflow outlet to the interior of the tub. By means of the handgrip member the rod may be moved downwardly to actuate the lever to open the valve, or upwardly to release the lever and allow the valve to close.

The handgrip member is preferably guided and held in adjusted positions on a cover plate attached to the inner face of the tub wall and overlying the overflow outlet, suitable clamping means being provided for yieldably retaining the handgrip member in any position to which it may be adjusted.

Objects of the invention are to provide a drain valve actuating mechanism which is inexpensive and rugged and which is easy to install or remove.

Reference should be had to the accompanying drawings forming a part of this specification in which:

Figure 1 is a transverse section through a bath tub which has the device of the present invention installed thereon;

Fig. 2 is a vertical section on an enlarged scale showing the drain valve and its actuating member;

Fig. 3 is a horizontal section taken on the line indicated at 3—3 in Fig. 2;

Fig. 4 is a fragmentary plan view showing the drain outlet viewed as indicated at 4—4 in Fig. 2; and

Fig. 5 is a fragmentary vertical section through the drain outlet showing the drain valve in open position.

As shown in the accompanying drawings, the invention is applied to a bath tub 1 having a bottom wall 2 provided with a drain opening 3 and an end wall 4 provided with an overflow opening 5. A drain conduit 6 is connected to the tub at the drain opening and an overflow conduit 7 is connected to the tub at the over-

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flow opening 5. The drain conduit 6 has an elbow 8 that is positioned beneath the drain opening 3 and that receives a cup-shaped drain fitting 9 that is externally threaded and screwed into the elbow 8. The fitting 9 has a peripheral flange 10 at its open end that engages the top face of the bottom 2 of the tub around the opening 3. The elbow 8 has a flange 11 that clamps a sealing washer 12 against the bottom face of the wall 2 around the opening 3 when the fitting 9 is screwed into the elbow 8. The fitting 9 has a bottom 13 provided with a central opening 14 and with drain openings 15 around the central opening. At its upper end the fitting 9 has a rounded shoulder 16 that forms a seat for a valve 17 that is provided with a beveled periphery 18 for engagement with the seat 16. The valve 17 is attached to the upper end of a valve stem 19 that is guided in the opening 14 of the fitting 9 and has a reduced threaded upper end 20 that extends through the valve 17, which is clamped to the stem by means of a nut 21.

A rigid actuating lever 22, which may be formed integrally with the stem, is connected to the stem 19 below the fitting 9 within the drain conduit 6, the inner end portion of the lever being disposed at substantially right angles to the stem 19. The outer end of the lever 22 is positioned beneath the drain conduit 7 and the lever has a fulcrum member 23 that projects downwardly therefrom and that is provided with a rounded bottom edge 24 that has rocking, sliding engagement with the bottom of the drain conduit 6.

The lever 22 has an outer end portion 25 that is rigidly attached to the fulcrum member 23, that is substantially parallel to the inner portion of the lever, that is offset upwardly with respect to the inner portion of the lever and that is considerably shorter than the inner portion of the lever. In assembling, the lever is inserted into the drain conduit 6 through the drain opening 3 and positioned therein with the fulcrum member 23 resting on the bottom of the conduit and the stem 19 extending upwardly into the opening 3. The fitting 9 is then threaded onto the stem 19 and screwed into the elbow 8, the drain openings 15 providing convenient means for engagement with a suitable tool for turning the fitting. The valve 17 is then attached to the upper end of the stem 19 and seats by gravity on the shoulder 16 of the fitting 9. By reason of the long lever arm between the fulcrum member 23 and valve stem 19, the valve 17 may be of light weight. The offsetting of the outer end portion 25 of the lever makes possible greater angular movement of the lever and facilitates the insertion of the lever into the conduit through the drain opening 3 and the removal thereof from the conduit.

The drain conduit 6 is connected to the overflow conduit 7 through a T fitting 26 which has an upwardly extending branch 27 attached to the lower end of the drain conduit 7 and a downwardly extending branch 28 connected to the upper end of the drain pipe 29. The overflow conduit 7 has an elbow 30 at its upper end which fits within the drain opening 5 in the end wall of the tub, the elbow 30 having a flange 31 which clamps a sealing washer 32 to the outer face of the tub around the outlet opening 5. A cover plate 33 is provided for the opening 5 that engages the interior face of the end wall 4 around the opening 5, the cover plate 33 being provided with a marginal flange 34 that engages the wall 4 and that is provided with openings 35 which permit free flow of water from the interior of the tub through the overflow opening 5 into the overflow conduit 7. Bolts 36 extending through the plate 33 pass through the opening 5 and are screwed into the

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elbow 30 to clamp the cover plate 33 and the elbow 30 to the tub wall.

A vertical actuating rod 37 is positioned in the overflow conduit 7 and has a threaded lower end screwed into the upper end of an attaching sleeve 38 to the lower end of which a plate 39 is attached by means of a screw 40 passing through the plate 39 screwed into the lower end of the sleeve 38. The plate 39, which may be in the form of a circular disk, is engageable with the outer end portion 25 of the valve lever 22 when moved downwardly to rock the lever and open the valve 17. The threaded connection between the sleeve 38 and the rod 37 permits the length of the actuator to be adjusted and the plate 39 is provided with openings 41 to permit free flow of water from the overflow conduit 7 to the drain pipe 29. In order to prevent the rod 37 from dropping into the drain pipe 29; the downwardly extending branch 28 of the T fitting 26 is provided with an internal rib 42 that is of a diameter less than that of the plate 39.

Suitable manually operable actuating means is connected to the upper end of the rod 37. As herein shown the rod 37 has an attaching member 43 rigidly secured to its upper end that is provided with a horizontal opening 44 to receive a horizontal supporting pin 45. The supporting pin 45 has a threaded outer end portion 46 that extends through a vertical slot 47 in the cover plate 33. A handgrip knob 48 is screwed onto the outer end of the pin 45 by means of which the supporting pin 45 may be moved vertically in the slot 47 to raise or lower the actuating rod 37. The supporting pin is yieldably retained in adjusted positions with respect to the cover plate 33 by means of a washer 49 that engages the interior face of the plate 33, the washer 49 being pressed against the plate 33 by suitable means such as a coil spring 50 on the pin 45 and interposed between the washer 49 and a nut 51 on the threaded portion 46 of the pin. Adjustment of the nut 51 provides the pressure on the washer 49 desirable for yieldably retaining the supporting pin 45 in any position of vertical adjustment in the slot 47 to which it may be manually moved. The supporting pin 45 is removable with the plate 33 when the plate 33 is detached from the tub wall 4, and the actuating rod 37 and actuating plate 39 are insertable into the overflow conduit 7 through the opening of the elbow 30 and removable through said opening. To facilitate the entry or removal of the actuating rod 37 through the elbow 30, the actuating member 43 may be provided with a beveled face 52 at its upper end and with a slot 53 extending downwardly from the top thereof to lessen the weight of the attaching member and provide a slightly flexible tapered wall to facilitate entry and removal of the attaching member through the elbow opening.

The actuating plate at the lower end of the rod 37 which is adjustably attached to the rod, is movable downwardly into engagement with the end portion 25 of the valve actuating lever and upwardly out of engagement with the lever. When the actuating rod 37 is moved downwardly by means of the handgrip member 48, the outer end of the actuating lever 22 is rocked downwardly and the valve 17 is lifted as shown in Fig. 5 of the drawings. When the actuating rod 37 is lifted to its uppermost position as shown in full lines in Fig. 2, the plate 39 is lifted out of engagement with the valve actuating lever and the valve is returned to closed position by gravity. During the actuation of the valve the stem 19, which has a slightly loose fit in the opening 14 of the fitting, is moved upwardly and rocked through a small angle and the fulcrum member 23 slides on the bottom of the drain conduit 6 to accommodate the movement of the valve and valve stem.

A considerable saving in the cost of the drain control device is effected by reason of the light weight pop-up valve made possible by the long lever arm between the valve and the fulcrum of its actuating lever and an additional saving in cost of manufacture is effected by reason

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of the light weight actuating member supported in all positions by a vertically slidable actuating member carried by the overflow opening cover plate.

It is to be understood that in accordance with the provisions of the patent statutes, variations and modifications of the specific devices herein shown and described may be made without departing from the spirit of the invention.

What I claim is:

1. In a bath tub having a drain opening in its bottom and an overflow opening in an end wall, a cup-shaped drain fitting in said drain opening having a bottom with a central opening and drain apertures and an open upper end formed to provide an annular valve seat, a cover plate secured to the inner face of said end wall over said overflow opening, said cover plate having openings for flow of water from the tub to said outlet opening and a vertically disposed slot, a drain conduit receiving said drain fitting and extending along the underside of said tub toward said end wall, an overflow conduit connecting said overflow opening to said drain conduit, a valve having a downwardly tapered periphery that fits said valve seat, a stem attached to said valve and slidable in said central opening, a lever in said drain conduit rigidly connected to said stem and having its outer end beneath said overflow conduit, a fulcrum member carried by said lever and slidably and rockably engaging the bottom of said drain conduit, said lever being removable with said fitting through said drain opening, a handgrip member slidably mounted in said vertical slot and extending into said overflow conduit, spring pressed means for yieldably clamping said handgrip member to said plate in different positions of adjustment in said vertical slot, a rod in said overflow conduit detachably connected to said handgrip member and extending downwardly therefrom, and an actuating plate attached to said rod above said lever and engageable with said lever to rock the same and lift said valve from its seat, said rod and plate being removable through said overflow opening upon removal of said cover plate and handgrip member.

2. In a bath tub having a drain opening in its bottom and an overflow opening in an end wall, a cup-shaped drain fitting in said drain opening having a bottom with a central opening and drain apertures and an open upper end formed to provide an annular valve seat, a cover plate secured to the inner face of said end wall over said overflowing opening, said cover plate having openings for flow of water from the tub to said outlet opening and a vertically disposed slot, a drain conduit receiving said drain fitting and extending along the underside of said tub toward said end wall, an overflow conduit connecting said overflow opening to said drain conduit, a valve having a downwardly tapered periphery that fits said valve seat, a stem attached to said valve and slidable in said central opening, a lever in said drain conduit rigidly connected to said stem and having its outer end beneath said overflow conduit, a fulcrum member carried by said lever and slidably and rockably engaging the bottom of said drain conduit, said lever having a long arm that is integral with said stem and at substantially right angles thereto and attached at its outer end to said fulcrum above the bottom thereof and a short arm parallel with said long arm, rigidly attached to said fulcrum and upwardly offset with respect to said long arm, said lever being removable with said fitting through said drain opening, a vertically movable operating member carried by said cover plate and extending into said overflow conduit, means for holding said operating member in different positions of vertical adjustment, a rod in said overflow conduit detachably connected to said operating member and extending downwardly therefrom, and an actuating plate attached to said rod above said upwardly offset arm of said lever and engageable with said arm to rock the lever and lift

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said valve from its seat, said rod and plate being removable through said overflow opening upon removal of said cover plate and operating member.

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