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DIVERTER VALVE

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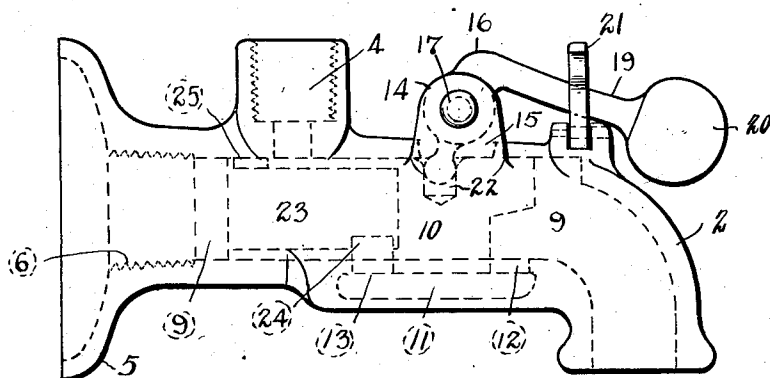


Fig. 1

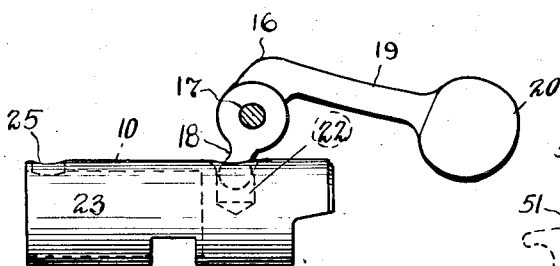


Fig. 2

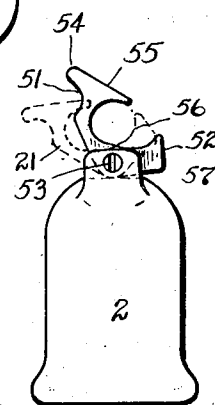


Fig. 4

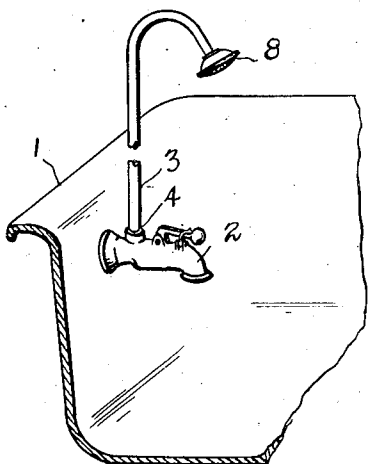


Fig. 3

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DIVERTER VALVE

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14 Claims. (Cl. 251-76)

This invention relates to an improved spout with a diverter valve particularly adapted for use in a plumbing fixture to divert water normally issuing to a bath tub through the usual spout, and to cause it to flow through a shower arrangement above such tub. The valve is of the type which is held in diverting position by force of the pressure of water passing through said spout, and is so devised that it is moved to diverting position by said pressure when a latch is released and returns to latched position when the flow of water is cut off. We have arranged our valve within a spout which is tapped on the upper side for inserting a pipe to support and supply water to a shower device. This permits the substitution of our valve-carrying spout for a spout of the usual type, and the addition of shower equipment, without need of access to the apparatus for mixing hot and cold water which apparatus is usually concealed.

In the drawing:

Fig. 1 is a view of a spout containing our valve with the interior parts shown in phantom; Fig. 2 is a view of the valve plug and the trigger which controls it; Fig. 3 is a view of a shower in position over a tub showing one relation of our spout and valve thereto; Fig. 4 is a view of the latch.

Referring to the drawing, the tub 1, a portion of which is shown, is of the usual type and provided with a mixer (not shown) in which the desired temperature of water is secured by manipulation of hot water and cold water valves in a manner well understood in the art. The tempered water is discharged through a spout shown mounted through the wall of the tub. In Fig. 3 a spout 2 containing the diverter valve of our invention is shown with a shower arrangement affixed by the pipe 3 in the threaded opening 4 of the spout.

A spout containing our diverter valve is shown in Fig. 1. Said spout 2 has a collar 5 and a threaded opening 6 for attachment to the pipe discharging tempered water into a tub, and has a threaded vertical opening 4 on the upper side for the insertion of a pipe 3 supporting, and supplying water to, a shower 8. Through the spout is the usual passage 9 which we finish in part with a smooth cylindrical surface for cooperation with a valve plug 10 hereinafter described. Beneath the passage 9 and within the wall of the spout is a by-pass channel 11, the forward end of which is open to the passage 9 as shown at 12. At the rear of the channel is an opening 13 communicating with the passage 9. Mounted on top of the spout forward of the opening 4 are two

vertical ears 14 between which in the spout wall is a slot 15. An angular lever 16 is mounted between said ears 14 by a pin 17 therethrough. The short element 18 of said lever is held in said slot 15 and in engagement with the valve plug 10 as will be explained. The long element 19 terminates in a small weight 20. Forward of the ears 14 a latch 21 is pivotally mounted transversely of the spout in a position to receive the long arm 19 of the lever, by which it is actuated to latching position holding said arm against movement.

Said latch as shown in Fig. 4 comprises two arms 51 and 52 upturned on either side of a pivot-pin 53. The arm 51 is hook-shaped and has a projection 54 whereby it is moved to release the arm 19. To secure automatic latching in case the latch is tilted to latching position when the lever element 19 is free, the upper surface 55 of the hook and projection is so inclined that the descending arm 19 will move the latch to open position when it encounters said inclined surface. On the inside surface of the other arm 52 is an inclined surface 56 adapted to receive the descending lever element 19 which will thereby move the latch to operating or holding position as shown at 57. To retain the latch in this position until released by manual operation the arm 52 is weighted. The valve plug 10 is snugly fitted within the finished portion of the spout passage 9. On the upper side of said plug is a hole 22 which engages the short arm 18 of the lever 16. This hole 22 is in the forward end of the plug 10 which end is solid. The rear portion of the plug 10 has an interior longitudinal passage 23 open at the rear and closed at the forward end by the solid portion of said plug. A transverse slot 24 in the under wall of said plug communicates with the interior passage 23 just back of the solid portion of said plug. This slot 24 is so positioned as to be moved over the opening 13 between the interior passage 9 of the spout and the by-pass channel 11 when the plug is held in locked position by the lever 16 and the latch 21. In the upper wall of said plug near the rear end thereof is an opening 25 communicating with the interior passage 23, which opening is so positioned that it underlays the opening 4 in the spout wall when said plug is freed by the latch and moves to forward position under the pressure of the water flowing through the spout.

In operation the spout will provide a clear passage for water therethrough when the plug is latched in the position shown in Fig. 1. Water entering from the mixer will flow through the passage 9 until it encounters the plug 10, it will

flow through the passage 23 in said plug and pass through the apertures 24 and 13 into the by-pass channel 11 and escape through the opening 12 back to the main spout passage 9 and into the tub.

But, when the latch 21 is tilted and the arm 19 released after tempering the flowing water to the temperature desired, the force of the water acting against the solid portion of the plug will move the plug forward, closing the opening 13 into the by-pass channel and moving the opening 25 beneath the opening 4 whereby the water will escape through the shower arrangement.

When the water is turned off, the weight 20 through the lever 16 will move the plug backward to the initial position and the latch 21 will be actuated by the descending arm 19 which it will engage and hold, leaving the valve in condition for mixing and tempering the flowing water before the shower is again used.

It is obvious that our spout with its improved diverter valve may be substituted for a spout located above a tub and discharging thereinto, with the same advantages as when used as shown in Fig. 3.

Other modes of applying the principle of our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:

1. In a fitting for supplying water to a bath tub or the like, a spout having a discharge opening and an auxiliary opening and having an interior passage therethrough to the discharge opening, a portion of which passage constitutes a seat for a sliding valve plug, a by-pass channel within the wall of said spout, an inlet port and an outlet port between said channel and said passage, a valve plug closely and slidably fitted within the said spout, an opening in the rear end of said plug, a hole in the wall of said plug communicating with said opening and so placed as to communicate with said auxiliary opening when the plug is moved to a forward position, another hole in the wall of said plug communicating with said opening in the rear of the plug and so placed as to communicate with said inlet port when said plug is moved to a rearward position, means adapted to move said plug to a rearward position and means adapted to secure said first-named means when it has so moved said plug.

2. In a fitting for supplying water to a bath tub or the like, a spout having a discharge opening and an auxiliary opening and having an interior passage therethrough to the discharge opening, a portion of which passage constitutes a seat for a sliding valve plug, a by-pass channel within the wall of said spout, an inlet port and an outlet port between said channel and said passage, a valve plug closely and slidably fitted within the said spout, an opening in the rear end of said plug, a hole in the wall of said plug communicating with said opening and so placed as to communicate with said auxiliary opening when the plug is moved to a forward position, another hole in the wall of said plug communicating with said opening in the rear of the plug and so placed as to communicate with said inlet port when said plug is moved to a rearward position, a weighted lever pivotally mounted on said casing and through a slot therein engaging said plug, and a latch mounted on said casing be-

neath said lever adapted to be moved to latching position by said lever as it falls and to restrain same from rising.

3. In a fitting for a bath tub or the like, a tubular spout provided with two discharge openings, a close fitting plug slidably mounted within said spout and having interior passages connecting the interior of said spout with each of said discharge openings alternately when said plug is in forward and rearward positions respectively, a weighted lever operative through an opening in the wall of said spout adapted to move said plug to a rearward position and adapted to move to permit the force of water running through said spout to move said plug to forward position and a latch adapted to hold said lever when said plug is in rearward position.

4. In a fitting for a bath tub or the like, a tubular spout provided with two discharge openings, a close fitting plug slidably mounted within said spout and having interior passages connecting the interior of said spout with each of said discharge openings alternately when said plug is in forward and rearward positions respectively, a weighted lever operative through an opening in the wall of said spout adapted to move said plug to a rearward position, and adapted to permit the force of water running through said spout to move said plug to forward position and a latch, operative by impact of said lever as it descends, adapted to catch and hold said lever when said plug is moved to rearward position.

5. In a fitting for a bath tub or the like, a tubular spout provided with two discharge openings, a close fitting plug slidably mounted within said spout and having interior passages for connecting the interior of said spout with each of said discharge openings alternately when said plug is in forward and rearward positions respectively, means adapted to move said plug to a rearward position, and means adapted to latch said first-named means when said plug is in rearward position.

6. In a fitting for a bath tub or the like, a tubular spout provided with two discharge openings, a close fitting plug slidably mounted within said spout and having interior passages for connecting the interior of said spout with each of said discharge openings alternately when said plug is in forward and rearward positions respectively, means adapted to move said plug to a rearward position, and means operated by said first named means adapted to hold same when it has moved said plug to rearward position.

7. A diverter valve comprising a spout and an element slidably mounted within said spout, an auxiliary outlet in said spout, a passage through said element connecting said outlet with the interior of said spout in the rear of said element when said element is forced to forward position by water flowing therethrough, a main discharge outlet in said spout, a passage through said element connecting the latter outlet with the interior of said spout to the rear of said element when said element is moved backward to a rear position, means to move said element to such rear position and means to latch said first-named means.

8. A diverter valve, comprising means adapted to conduct a fluid therethrough, two discharge openings in said means, an element within said means adapted to move under pressure of a fluid passing through said means to a position closing one of said openings and opening the other opening, counter-weighted means adapted

to move said element to, and hold it in, a position opening the first said opening and closing said other opening when no fluid is passing through said first-named means, and means adapted to latch said counter-weighted means after so moving said element.

9. A diverter valve, comprising means adapted to conduct a fluid therethrough, two discharge openings in said means, an element within said means adapted to move under pressure of a fluid passing through said means to a position closing one of said openings and opening the other opening, counter-weighted means adapted to move said element to, and, hold it in, a position opening the first said opening and closing said other opening when no fluid is passing through said first-named means, and means adapted to latch said counter-weighted means responsive to movement thereof as it so moves said element.

10. A diverter valve, comprising a body having an interior passage-way, two discharge outlets through the walls of said passage-way; an element fitted within said passage-way movable under pressure of a fluid flowing through said passage-way to a forward position covering one of said outlets and uncovering the other; means automatically moving said element rearwardly, when no fluid is flowing through said passage-way, uncovering the first said outlet and covering the other; said element having an interior passage which opens rearwardly to the said passage-way and forwardly to the first said outlet when said element is in said rearward position; and means releasably latching said element in its said rearward position.

11. A diverter valve, comprising a body having an interior passage-way, two discharge outlets through the walls of said passage-way, an element fitted within said passage-way movable under pressure of a fluid passing therethrough to a forward position, means automatically moving said element to a rearward position when no fluid is passing through said passage-way, and means releasably latching said element in said rearward position; said element having a passage which, when said element is in forward position, connects one of said outlets with said passageway to the rear of said element, and a passage which, when said element is in rearward position, connects the other of said outlets to said passage-way to the rear of said element.

12. A diverter valve, comprising a body having an interior passage-way; two discharge outlets through the walls of said passage-way; a valve plug fitted within said passage-way; movable under pressure of a fluid flowing therethrough to a forward position opening communication between the said passage-way and one of said outlets and closing communication between said passage-way and the other of said outlets; means automatically moving said plug to a rearward position, when no fluid is flowing through said passage-way, closing communication between said passage-way and the first said outlet and opening communication between said passage-way and the other said outlet; and means releasably latching said plug in said rearward position.

13. A diverter valve, comprising a body having an interior passage-way; two discharge outlets through the walls of said passage-way; a valve-plug fitted within said passage-way, movable under pressure of a fluid flowing therethrough to a forward position uncovering one of said outlets whereby it is in open communication with said passage-way, and communication between said passage-way and the other said outlet is closed; means automatically moving said plug to a rearward position, when no fluid is flowing through said passage-way, covering the first said outlet and opening communication between said passage-way and the other said outlet through a passage within said element; and means releasably latching said valve plug in said rearward position.

14. In a diverter valve, the combination of a body member provided with an inlet and first and second outlet passages, a member movable in said body and adapted when in first and second position to establish communication between said inlet and said first and second outlet passages respectively, and a gravity actuated lever, a latch on said body member, said lever being associated with said member effective to normally move the latter into and maintain the same in said first position, said member so arranged that when said latch is released, fluid under pressure in said inlet may move said member from said first position into and maintain the same in said second position.

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