Dec. 22, 1953 S. KERSTEN ET AL 2,663,539

DIVERTER SPOUT PLUMBING FIXTURE

Filed Oct. 27, 1948

2 Sheets-Sheet 1

Fig. 1.

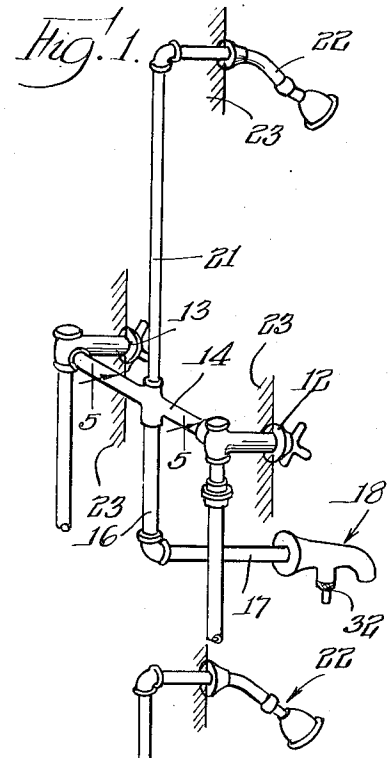


Fig. 6.

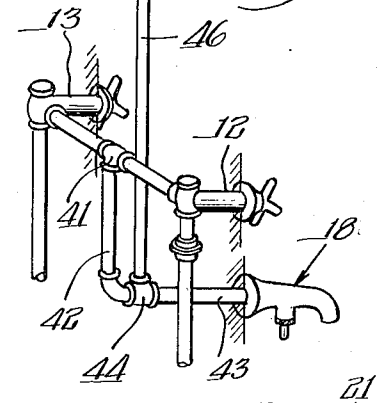


Fig. 5.

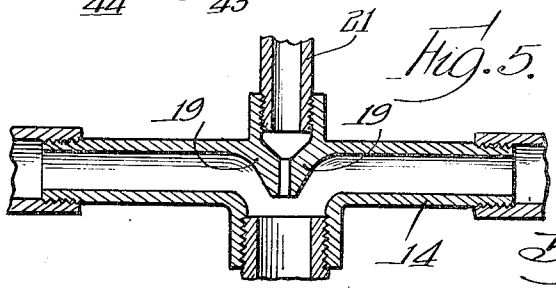


Fig. 2.

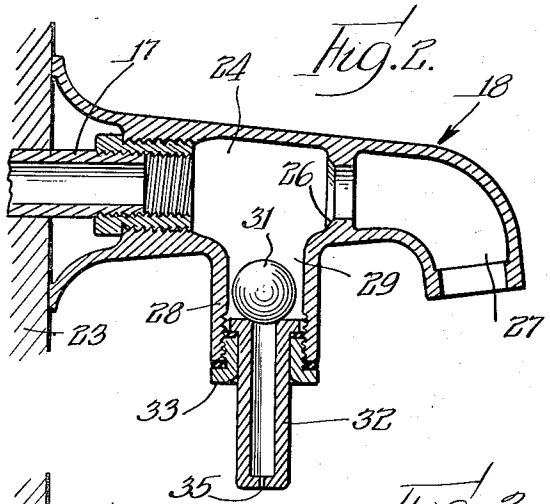


Fig. 3.

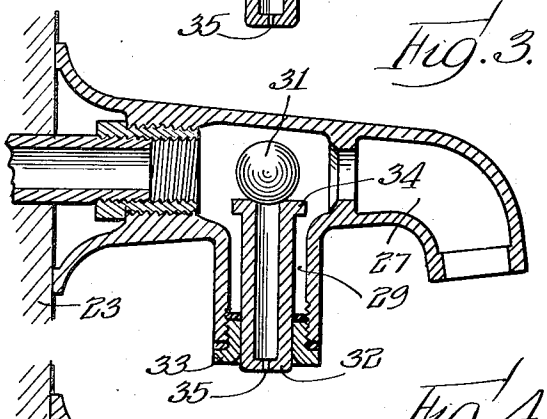
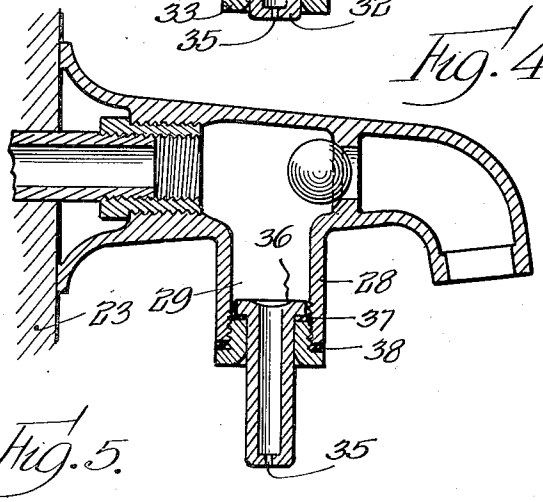


Fig. 4.



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Fig. 7.

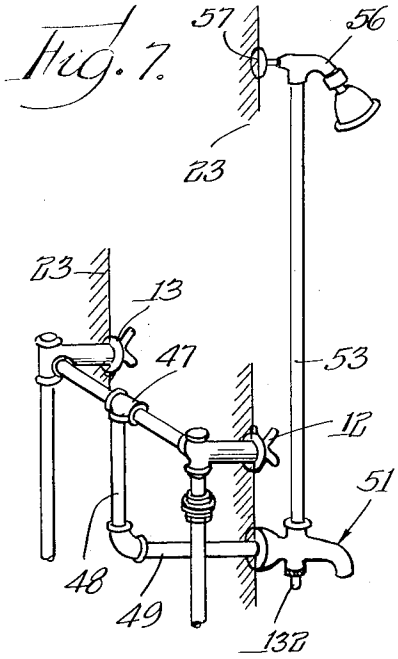


Fig. 8.

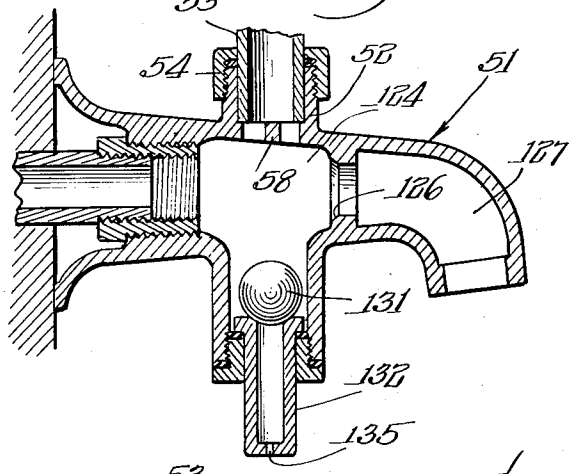


Fig. 9.

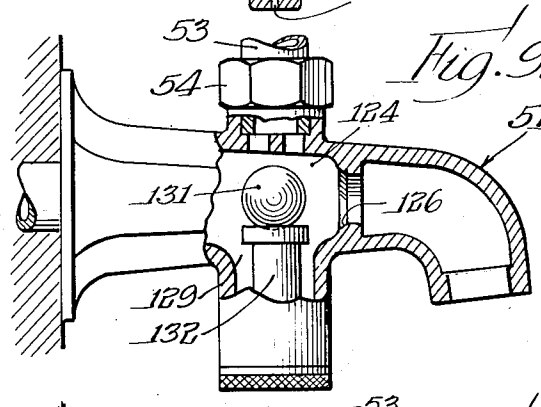


Fig. 10.

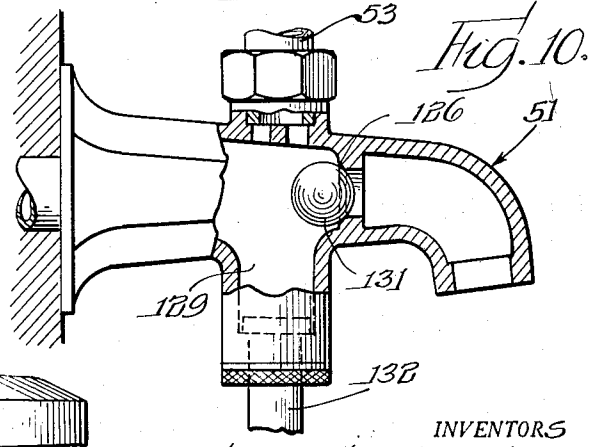
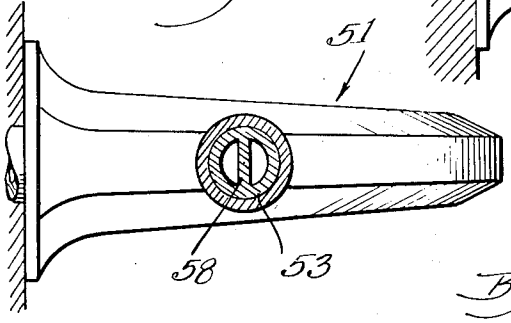


Fig. 11.



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Patented Dec. 22, 1953

2,663,539

UNITED STATES PATENT OFFICE

2,663,539

DIVERTER SPOUT PLUMBING FIXTURE

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Application October 27, 1948, Serial No. 56,744

2 Claims. (Cl. 251—118)

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Our invention relates to combination plumbing fittings of the type permitting water to be directed to either one of two outlets. It relates more in particular to a so-called diverter spout for use in such combination.

There are many instances in which it is desired to deliver hot, cold, or tempered water normally through one outlet and to provide means for diverting such water to another outlet. Illustrative is an arrangement commonly employed in home bath installations in which water is normally delivered through a bathtub spout, but may be diverted to a shower head if desired. Such assemblies generally employ a so-called diverter fixture or diverter spout, so constructed and arranged that water from the hot and cold faucets may be adjusted to the desired temperature through the bathtub spout, and the diverter then operated to direct the water so tempered to the shower head. All such installations and devices, so far as we know, have possessed some undesirable feature. Frequently, for example, when the diverter spout is so arranged that the water is readily diverted to the shower head, the diverter must be operated in the opposite direction to again deliver the water through the bathtub spout when the faucets have been turned off and again turned on. Devices which have overcome this objection have frequently been relatively expensive or complicated or objectionable for some other reason.

The principal object of our invention is the provision of an improved diverter spout for use with assemblies of the type identified.

Another object is the provision of a diverter spout which will automatically return to a position to deliver water through the bathtub spout when the flow of water through the shower head has been discontinued.

Still another object is the provision of a diverter spout construction in which the water is automatically drained from the shower head riser when the hot and cold water valves have been turned off.

Still another object is the provision of an improved combination shower and bathtub installation.

In the drawings we have disclosed certain preferred embodiments of our invention, including two different forms of spouts and three different forms of combination installations employing such spouts.

In the drawings, Fig. 1 is a perspective view of an installation in which the control valves are concealed in a partition, the diverter spout attached to piping for delivery of water to a tub and the shower head projecting above the diverter spout with the piping, including the riser pipe, concealed in the partition behind the spout and the shower head;

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Fig. 2 is an enlarged, vertical, sectional view of the diverter spout shown in Fig. 1, the parts being at the positions which they normally occupy when water is being delivered through the spout to the bathtub;

Fig. 3 is a sectional view similar to Fig. 2, but showing the diverter spout with its parts in the positions which they assume just before the water is about to be diverted to the shower head;

Fig. 4 is a sectional view similar to Figs. 2 and 3, but showing the parts in the positions which they normally occupy when water is being delivered through the shower head;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1, showing a special arrangement of cross fitting;

Fig. 6 is a view similar to Fig. 1, but showing a somewhat different arrangement of piping;

Fig. 7 is a perspective view of an installation showing still another piping arrangement and diverter spout particularly adapted for use in installations in which it is necessary to provide an exposed riser to the shower head;

Fig. 8 is an enlarged, fragmentary, sectional view showing the diverter spout employed in Fig. 7;

Figs. 9 and 10 are enlarged, elevational views, partly in section, showing the diverter spout with its parts in modified positions; and

Fig. 11 is a plan view of the diverter spout of the immediately preceding figures, with the riser pipe in section.

In accordance with the main features of our invention, we provide an entirely free valve body, preferably a ball, but capable of taking some other forms, which valve body is normally housed in a bottom recess of the diverter spout entirely out of the path of the water which flows therethrough when the spout is being used to deliver water to the normal spout outlet. Associated with the valve body, however, and preferably comprising a tubular member projecting through a recess below the valve body, we provide an actuating member completely unattached to the valve body. The valve body is thereby capable of being lifted directly into the path of the water for hydraulic projection to a seat against which it is held by water pressure to prevent discharging water through the spout and thereby diverting the same to another outlet which may be part of the di-

verter spout fitting or a part of the piping construction associated with the diverter spout.

Preferably associated with the valve actuating member, we also provide a bleeder opening, so arranged that when the flow of water to the second outlet is discontinued by turning off the faucets controlling the water supply, the pressure will be relieved sufficiently to permit the valve body to fall into its normal recess in the diverter spout, drain the water from the riser and associated piping, and set the diverter spout into condition for normal operation for delivery of water to a bathtub outlet or the like.

In Fig. 1 we show an installation in which the hot and cold water control valves 12 and 13, respectively, deliver water to a cross fitting 14 for normal delivery downwardly through pipe 16 and pipe 17 to the diverter spout, indicated generally by the reference character 18. As shown in Fig. 5, the cross fitting 14 is provided with a pair of baffles 19 for normally directing the water to the pipe 16, although in many installations it is not necessary to employ a special cross fitting with baffles of this character. Fig. 1 also shows a riser pipe 21 leading from the cross fitting 14 to a shower head fixture 22. As the drawing indicates in this installation, only the shower fitting 22, diverter spout 18, and adjustable portions of the control valves project through the surface of the wall comprising the partition 23, the piping otherwise being entirely concealed, as is common in modern, new installations.

The diverter spout 18 comprises a body portion 24 with an interior thread suitably arranged for attachment to the pipe 17. Immediately in line with the outlet from the pipe 17 and, therefore, in the path of the water we provide a valve seat 26 leading to an outlet 27. Below the main body portion is a generally tubular bottom projection 28 forming an inner bottom recess 29, by means of which a ball valve 31 may be housed as in Fig. 2, so as to be entirely out of the path of water flowing from the pipe 17 to the outlet 27. A generally tubular actuating member 32 is vertically reciprocable in a packing nut 33 and has an annular flange 34 which rests against the top of the packing nut when the actuating member 32 is in its lowermost position. At the bottom the actuating member has a bleeder opening 35 and a its top, a seat 36 for the ball 31. Gaskets 37 and 38 are provided at two positions between the packing nut 33 and the bottom projection 28. The interior of the body portion of the diverter spout is pitched toward the bottom recess 29 so that at any time water is not flowing in the diverter spout, the ball will automatically move into the direction of the said recess. The actuating member 32 is also relatively free in the packing nut 33, so that it will fall by its own weight to the position shown in Figs. 2 and 4.

One manner of employing the diverter spout of our invention is in an installation such as shown in Fig. 1. When so used, the control valves 12 and 13 are adjusted to temper the water as desired, the water so-tempered automatically and normally flowing through the outlet 27. When the water has been tempered as desired—and this can be determined by merely holding the hand below the diverter spout—the actuating member 32 is lifted to place the ball 31 in the path of the water as it moves from pipe 17. The ball so-raised will be substantially in the position shown in Fig. 3, and from this position will be moved by water pressure against the seat 26, and will be held against such seat by hydraulic pressure. The water will then

be forced up through the opening between the baffles 19 and the riser 21 for delivery through the shower head. As soon as pressure has begun to build up, the actuating member 32 is released and it falls to the position shown in Fig. 4 and remains in this position so long as water is being delivered through the shower head. When the control valves are turned off and there is no longer water pressure in the system, a small amount of water will bleed through the opening 35 and allow the ball to move away from its seat. The ball will then move by its own weight through the water to the position shown in Fig. 2 and such water as remains in the riser and associated piping will be discharged through the outlet 27. The parts will remain in this position until the control valves are again turned on and the actuating member 32 again lifted. Until the actuating member 32 is so lifted, water will be discharged through the outlet 27 just as if the fixture comprised only the ordinary bathtub spout. When the diverter spout is used in this manner, the sealing of the ball 31 against its seat and the sealing of the flange 34 against the gasket 37 will prevent loss of water at the bottom of the spout.

The installation shown in Fig. 6 is substantially the same as shown in Fig. 1, the spout 18, shower head 22, and control valves 12 and 13 being the same as in the first-described embodiment. In Fig. 6, however, the water is delivered to a T 41, to a pipe 42, and by connection to an ordinary elbow to a pipe 43 for delivery to the spout 18. Inserted in the line comprising the pipe 43, however, is a T 44, by means of which a riser 46 is connected into the system. This arrangement makes it unnecessary to employ special types of cross fittings, but has the disadvantage that two pipes must be contained within the partition. In this system, however, as will be obvious, our diverter spout can operate exactly as in the first-described embodiment.

The form of the invention shown in Figs. 7 to 11, inclusive, is meant to be used on an old installation, or in any type of installation where, because of convenience or necessity, some of the pipe is exposed. In this form the control valves 12 and 13 are within the partition 23 and they discharge water through horizontal pipes to a T 47, through a vertical pipe 48 and horizontal pipe 49 to a modified type of diverter spout, here indicated generally by the reference character 51. All of the piping, except the handles of the valve controls 12 and 13 and the spout 51, may be concealed within the partition 23, this being a typical installation found in bathrooms in which shower facilities were not originally provided.

The diverter spout 51 is in most respects identical with the diverter spout 18 and to identify identical portions we employ the same reference characters used in the first-described embodiment, with the prefix 1 to indicate modification. Thus, the main body portion is indicated by the reference character 124, the valve seat by the reference character 126, etc.

At the top of the diverter spout 51, we provide an apertured boss 52 for the attachment of a riser pipe 53 by means of a construction embodying a packing nut 54 or any usual construction employed in the plumbing art for the attachment of pipes to fittings. The pipe 53 leads to a shower head fixture 56, provided with a bracket 57 for attachment to the wall 23. A guard 58 is provided to prevent any possibility of the ball 131 being forced against or into the pipe 53. It is, of course, understood that the ball 131 and as-

sociated parts may be so dimensioned as to avoid any possibility of the ball becoming lodged in the riser pipe.

The device shown in Figs. 7 to 11, inclusive, functions in substantially the same manner as the device described in the original embodiment; except, however, that the water, instead of moving back through a pipe system, is caused to rise directly in the riser 53 from the diverter spout body. In all other respects, however, the functioning is identical, it being obvious that when the ball is against its seat, as shown in Fig. 10, the water will rise in pipe 53 and be discharged at the shower head outlet; but, as soon as the control valves 12 and 13, have been closed, the ball 131 falls back into the recess 129 and permits the water to drain from the riser through the outlet 127. In both instances, the ball 131 may be introduced simply by removing the packing nut at the end of the lower projection and introducing the valve body. The diverter spout may be serviced or inspected in the same manner; and, if after long, continued use it should be necessary to repair the seat, it may be done in the usual manner. It will be understood, also, that the diverter spout may be furnished with any suitable type of seat, such as a renewable seat or the like, all of which are known in the plumbing art.

The invention has been described in detail to permit those skilled in the art to practice same, but its scope will be defined in the claims.

What we claim as new and desire to protect by Letters Patent of the United States is:

1. A plumbing fixture in the form of a diverter spout comprising a body portion having a lower generally tubular recess, a water discharge outlet, a water inlet, a valve seat disposed in the flow path on the outlet side and in proximity to the said recess, a ball valve in the recess normally out of the path of the water as it flows to said outlet and adapted to be forced against the said seat when introduced into the path of the flowing water stream, and an actuating member projecting downwardly from the said recess and adapted to be raised to elevate the ball valve into the path of the stream for lodgment against the said valve seat, said actuating member having a tubular portion projecting downwardly through the body, an upper annular flange and a seat for the ball, a recess at the bottom of the tubular portion,

means communicating said recess with the atmosphere to function as a continuous bleeder while the ball valve is against the first-mentioned seat, but closed when the ball is against the second-mentioned seat.

2. A plumbing fixture in the form of a diverter spout comprising a body portion having a lower generally tubular recess, a water discharge outlet, a water inlet, a valve seat disposed in the flow path on the outlet side and in proximity to the said recess, a ball valve in the recess normally out of the path of the water as it flows to said outlet and adapted to be forced against the said seat when introduced into the path of the flowing water stream, and an actuating member projecting downwardly from the said recess and adapted to be raised to elevate the ball valve into the path of the stream for lodgment against the said valve seat, said actuating member having a tubular portion projecting downwardly through the body, an upper annular flange and a seat for the ball, a recess at the bottom of the tubular portion, means communicating said recess with the atmosphere to function as a continuous bleeder while the ball valve is against the first-mentioned seat, but closed when the ball is against the second-mentioned seat and packing means between said annular flange and the body portion.

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ALTON F. SAUTTER.

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