April 17, 1928. 1,666,531

M. J. GLAUBER

DIVERTER VALVE

Filed Sept. 26, 1927 2 Sheets-Sheet 1

Fig. 1

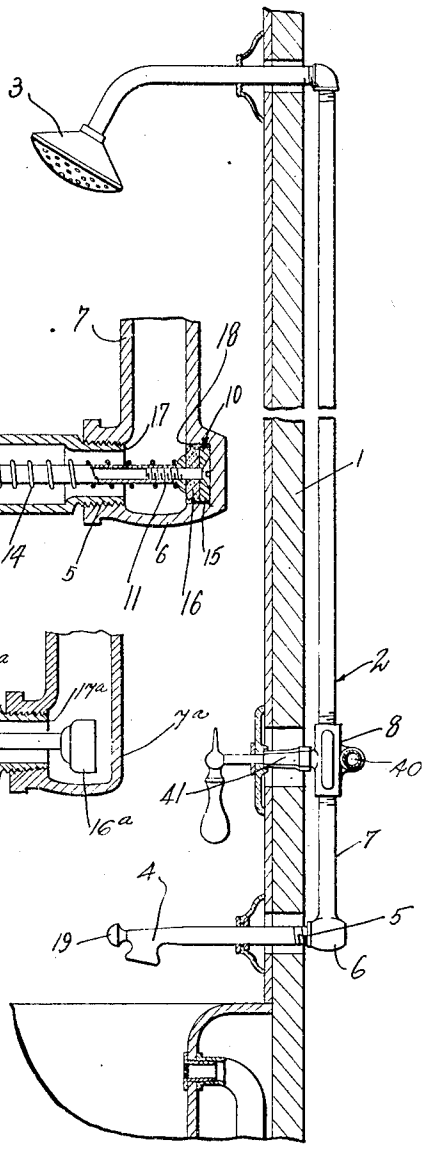
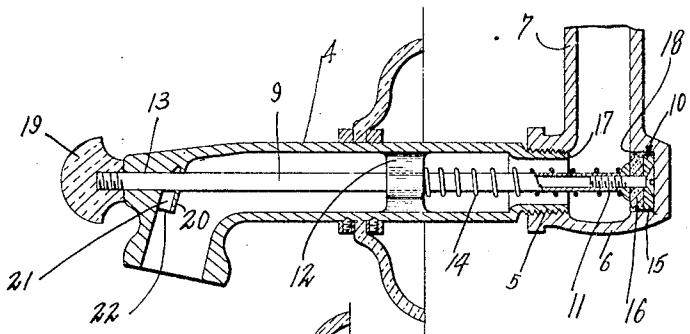


Fig. 2.



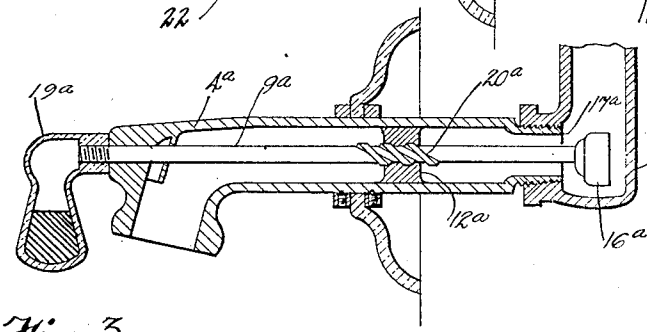


Fig. 3.

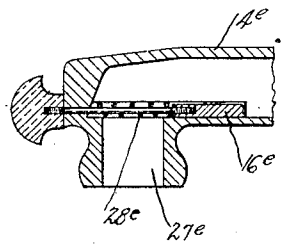


Fig. 7.

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Fig. 4

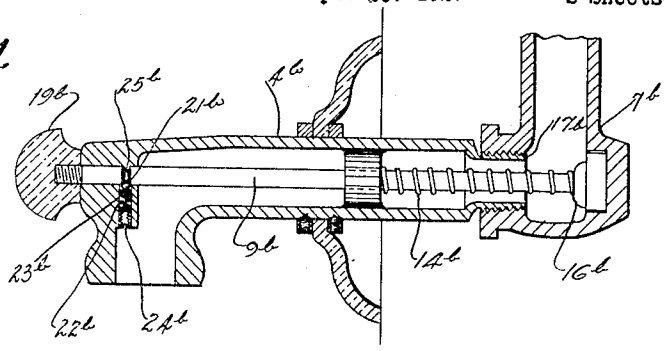


Fig. 5.

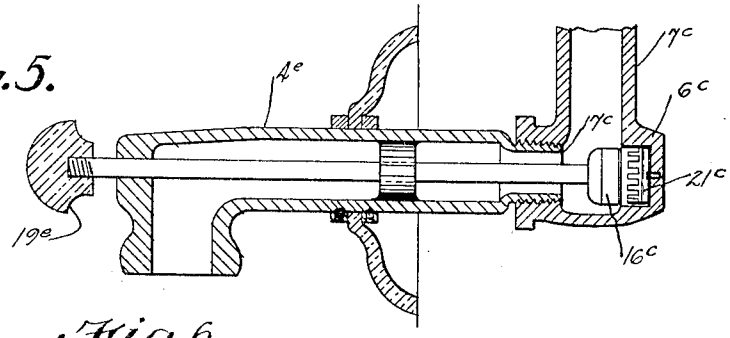


Fig. 6.

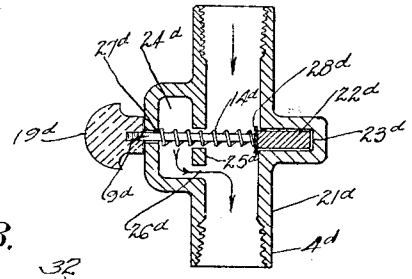
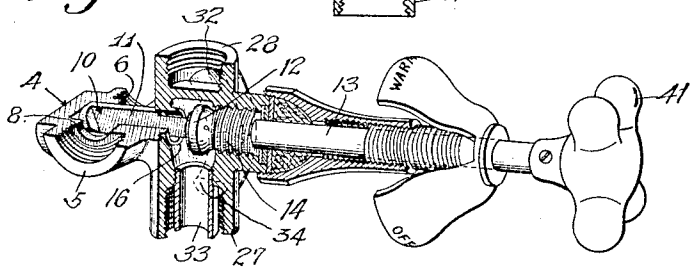


Fig. 8.



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UNITED STATES PATENT OFFICE.

MYRON J. GLAUBER, OF LOS ANGELES, CALIFORNIA.

DIVERTER VALVE.

Application filed September 26, 1927. Serial No. 221,957.

This invention relates to diverter valves, and is more particularly related to a diverter valve adapted to be mounted in the spout of a combination spout and spray fixture for the purpose of diverting the flow of water from the spout to the spray.

Combination spout and spray fixtures as heretofore constructed and, particularly as shown in my copending application for United States Letters Patent filed June 23, 1926, Serial No.117,951 (Patent No. 1,653,956, December 27, 1927), include diverter valves which are adapted to be actuated to divert the water from the spout outlet to the spray head. The diverter valves heretofore employed have been of the positive operating type and difficulty has been encountered in using these types of valves due to the fact that when one person employed the fixture for the purpose of obtaining a shower and actuated the diverter valve to divert the water to the shower head and then cut off the water supply, the next person desiring to obtain a bath might desire to take a tub bath and turning on the water to fill the bath tub would be sprayed with water from the shower head unless he took particular care to actuate the diverter valve to permit the water to flow from the spout of the combination fixture.

An object of this invention is, therefore, to provide a diverter valve adapted to be mounted in the spout of a combination spout and spray fixture and which, when actuated to divert the water through the spray head of the combination fixture is held in the diverting position by the pressure of the water flowing in the fixture so that when the water supply is cut off, the diverter valve is released so that the same will return to the non-diverting position.

Another object of this invention is to provide a diverter valve of inexpensive and simple construction which is automatically held in the non-diverting position and which is held by the pressure of the water flowing through the fixture in the diverting position.

Other objects and advantages of this invention, it is believed, will be apparent from the following detailed description of a preferred embodiment thereof, as illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a side elevation of a combination spout and spray fixture as embodying this invention and illustrating the same as mounted in position in a wall shown in vertical section.

Figure 2 is a sectional side elevation of the spout of the combination spout and spray fixture illustrating the diverter valve embodying this invention as mounted therein.

Figure 3 is a sectional side elevation of a modified form of diverter means embodying this invention.

Figure 4 is a sectional side elevation of a third modified form of diverter means embodying this invention.

Figure 5 is a similar view of another modified form of diverter means embodying this invention.

Figure 6 is a similar view of still another modified form of diverter means embodying this invention.

Figure 7 is a similar view of still another modified form of diverter means embodying this invention.

Figure 8 is a perspective, sectional view of the mixing valve, ejector device, and the device providing the hot and cold water mixing chamber, as shown in my co-pending application, Serial No. 192,099.

In the preferred embodiment of this invention, illustrated in the accompanying drawings, 1 illustrates a wall in which a combination spout and spray fixture, including a pipe 2, a spray head 3 and a spout 4, is mounted. The combination spout and spray fixture may be of any suitable or desirable construction such, for example, as are illustrated in my copending applications Serial No. 117,951, filed June 23, 1926, and Serial No. 192,099, filed May 17, 1927, and includes a mixing member for mixing hot and cold water supplied from any suitable source through the connection 40 to the control member or valve 8. Such mixing valve is shown in Figure 8, and as shown the branches 5 and 6 connect with hot and cold water supply pipes. The pipe 2 to the shower is connected at 28 to the mixing chamber and the pipe 7 is connected thereto at the branch 27. The valve stem 13 of the valve 41 carries a plug 10 having a cut-away portion 11 and a connecting member 12. A short section of tube 33 is threaded to the casing and extends down within the coupling section 27, beyond the end 34 of the passage 32. This tube provides an ejector device which creates a suction within the passage 32 and prevents the water from backing up the passage 32, and hence from getting into the

spray pipe 2, when the diverter valve is open. The mixer valve is not claimed herein, but is illustrated merely to facilitate an understanding of the suction or ejector device.

The spout 4 is screw-threaded, as illustrated at 5, to the elbow 6. The elbow 6 may be formed integral with or may be secured to the pipe 7 by means of which the spout 4 is secured to the mixing and control member 8 of the combination spout and spray fixture. Extending through the spout 4 is a valve rod 9, to the end of which is secured a plunger 10, as illustrated at 11. The valve rod 9 extends through a guide 12 formed in the spout 4. The valve rod 9 is also guided by the running fit formed where the same extends through the bore 13 formed in the end of the spout 4. In order to hold the plunger 10 in the non-diverting position to permit the water to flow through the spout 4, a spring 14 is mounted on the valve rod 9 between the guide 12 and plunger 10. The plunger 10 is formed of a cap 15, in which a packing member 16 is mounted. The cap is secured to the valve rod 9 by means of a screw and the plunger 10 seats against the end 17 of the spout 4. When in the non-diverting position, the plunger 10 fits within an enlarged recess 18 formed in the elbow 6. The recess 18 is cut out to a diameter larger than the exterior diameter of the plunger 10 so that water may freely pass around the plunger 10 in the recess 18 and will not tend to force the plunger toward the seat 17. When the valve rod 9 is actuated by pulling the handle 19 thereof outwardly, the plunger 10 seats against the seat 17 and the pressure of the water within the conduit 7 and the elbow 6 holds the plunger seated so that the water will not pass out through the spout 4 but will pass upwardly through the combination spout and spray fixture and out the shower head 3.

In order that packing need not be provided where the valve rod 9 extends through the bore 13 and to prevent water dripping from the spout 4 through the bore 13, the spout 4 is formed with a web 20 which encloses a suction device 21 at the entrance end of the bore 13. Water tending to leak through the bore 13 is drawn backward by an ejector action of the water passing through the spout 4 passing over the end 22 of the web 20, tending to induce air to be drawn through the bore 13 around the valve rod 9 and hence to clear the bore 13 of water which otherwise would leak out of the end of the spout 4 from the bore 13.

The modified form of this invention illustrated in Figure 3 includes a spout 4^a which is connected in any suitable manner with the mixing member 8 and spray 3. A diverter member 16^a is mounted preferably at the inner end of the spout 4^a in position to seat on the seat 17^a. The diverter member 16^a is connected with a rod 9^a which extends through a guide 12^a and is provided at its outer end with a weighted lever handle 19^a. The rod 9^a and guide 12^a are provided with complementary quick thread segments 20^a so that when the rod 9^a is rotated, the diverter member 16^a is moved to and from the seat 17^a. The weighted lever handle 19^a is secured to the rod 9^a so that when the handle 19^a is down in the position indicated in Figure 3, the diverter member 16^a is in the open position, as illustrated. When the handle 19^a is rotated to move the member 16^a to engage the seat 17^a, the water pressure in the connections 6 and 7 maintain the same in this closed position and when the water supply is cut off at the valve 41, the weighted handle swings the rod 9^a causing the member 16^a to move away from the seat 17^a.

The modified form of this invention illustrated in Figure 4 is similar to that illustrated in Figure 2 except that the means provided for preventing the water pressure in the connections 6 and 7 from forcing the diverter member 16^b against the seat 17^b include a spring-pressed pawl 21^b which is mounted in a bore 22^b formed at the end of the spout 4^b. The pawl 21^b is yieldably urged forwardly in the bore 22^b by means of a spring 23^b which is adjustably held in position by means of a screw 24^b. The pawl 21^b fits into a cut-out 25^b formed in the rod 9^b. A spring 14^b similar to the spring 14 is provided for moving the diverter member 16^b away from the seat 17^b when the water under pressure is cut off at the valve 41.

The modified form of this invention illustrated in Figure 5 is similar to the forms of this invention illustrated in Figures 2 and 4 except that there is provided in the rear of the coupling member 6^c a crimp-spring catch member 21^c which fits over the diverter member 16^c and acts to yieldably hold the diverter member 16^c away from the seat 17^c.

In the modified form of the invention shown in Figure 6, the coupling member 21^d is connected to the mixing member 8 by suitable couplings, at the point occupied by the pipe 7 in Fig. 1, the coupling end 4^d being suitably connected with the spout 4. Mounted in the coupling member 21^d is a diverter plate 22^d which is adapted to be moved across the passage formed through the pipe 7 to prevent water from flowing through the spout 4. The pressure of the water holds the plate 22^d in this position against the urge of a spring 14^d to return the same into the pocket 23^d formed in the coupling member 21^d. In order to prevent leakage where the rod 9^d connected with the plate 22^d passes out from the coupling member 21^d when water is permitted to flow through the pipe 7, a chamber 24^d is pro-

vided in the coupling member 21^d which is separated from the passage formed through the pipe 7 by means of a partition 25^d so that the water passing downward through the coupling member 21^d tends to draw air from the chamber 24^d through the opening 26^d and hence around the rod 9^d where the same passes through the bore 27^d formed in the connecting member 21^d. The end 28^d of the plate 22^d closes the passage around the rod 9^d to the chamber 24^d when the plate 22^d is moved across the passage formed through the connecting member 21^d.

In the modified form of this invention illustrated in Figure 7, there is provided a spout 4^e in which a diverter plate 16^e is mounted in position to be moved over the passage 27^e against the tendency of the spring 28^e to maintain the same in the position illustrated in Figure 7. When the water pressure is in the spout 4^e by the valve 41 being opened, the diverter member 16^e is held over the passage 27^e causing the water to be diverted from the spout 4^e up through the shower head or spray 3. When the water is shut off at the valve 41, the spring 28^e acts to return the diverter member 16^e from the diverting position.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth but my invention is of the full scope of the appended claims.

I claim:

1. In a diverter valve, the combination of a spout, a valve rod extending longitudinally of the spout, a plunger secured to the valve rod, and means for yieldably holding the plunger in non-diverting position.

2. In a device of the class described, the combination of a spout, a valve rod extending longitudinally of the spout, guide means formed in the spout, a plunger secured to the valve rod, and means interposed between the plunger and guide for normally holding the plunger in the non-diverting position.

3. The combination with a spout and spray fixture, of a diverter valve including a valve rod mounted in the spout of the fixture, a plunger secured to the valve rod and adapted to be held in the closed or diverting position by the flow of water in the said fixture, and means in the spout for normally holding the plunger in the open, or non-diverting, position.

4. A combination spout and spray fixture, including a spray head, a spout, means connecting the spout and spray head, a diverter valve mounted in the spout and including a rod extending longitudinally of the spout, a plunger secured to the end of the rod and adapted to be actuated to a diverting position to divert the water from the spout through the spray head, and means mounted in the spout for normally holding the plunger in the non-diverting position.

5. In a device of the class described, the combination of a spout, a member for connecting the spout to the control member of a combination spout and spray fixture, a rod extending longitudinally of the spout, a plunger secured to the end of the rod, the plunger normally fitting in an enlarged recess formed in the connecting member, and means mounted in the spout for normally holding the plunger in said recess.

6. In a diverter valve, the combination of a spout, a valve rod extending longitudinally of the spout, a plunger secured to the end of the valve rod, means for normally holding the plunger in open or non-diverting position, and means within the spout for drawing air through the bore through which the valve rod extends from the spout when the plunger is in open position.

7. A combination spout and spray fixture including a spray, a spout, means for connecting the spout and spray with a source of water under pressure, a diverter member adapted to remain normally open to permit water to flow from said source through the spout and adapted to be closed to cause said water to flow through the spray, the diverter member being held closed by the pressure of the water, and means to return the diverter member to the open position when the flow of water from the source is stopped.

8. The combination with a spout and spray fixture including a spout, a spray, means for connecting the spout and spray to a source of water under pressure, valve means for controlling the flow of water from the source to the spout and spray, of a diverter member normally open to permit the water to flow from the source through the spout, the diverter member when closed diverting the water to the spray and being held closed by the water pressure, and means operably connected with the diverter member for opening the same when said valve means are closed.

9. In a combination spout and spray fixture, the combination of a spout, a spray, means connecting the spout and spray to a source of water under pressure, a diverter member, the diverter member being normally open or in non-diverting position to permit flow through the spout and being held closed by the water pressure to cause the flow to be diverted through the spray, and means operably connected with the diverter member for moving the diverter member to the open position when the supply of water from said source is stopped.

Signed at Los Angeles, California, this 15th day of September 1927.

MYRON J. GLAUBER.