Dec. 3, 1935. R. H. ZINKIL ET AL 2,022,875

COMBINATION SPOUT AND SHOWER DIVERTER VALVE

Filed Feb. 25, 1933 2 Sheets-Sheet 1

Fig. 1.

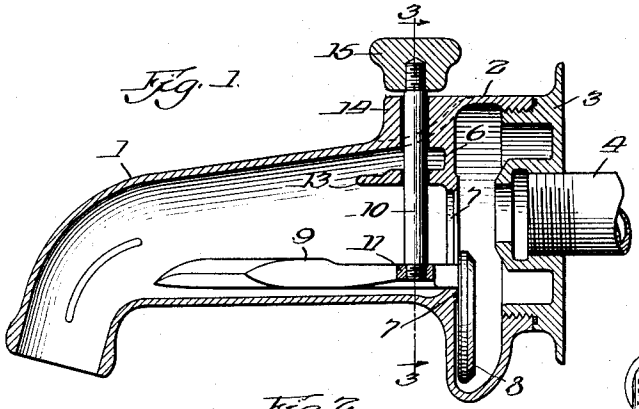


Fig. 2.

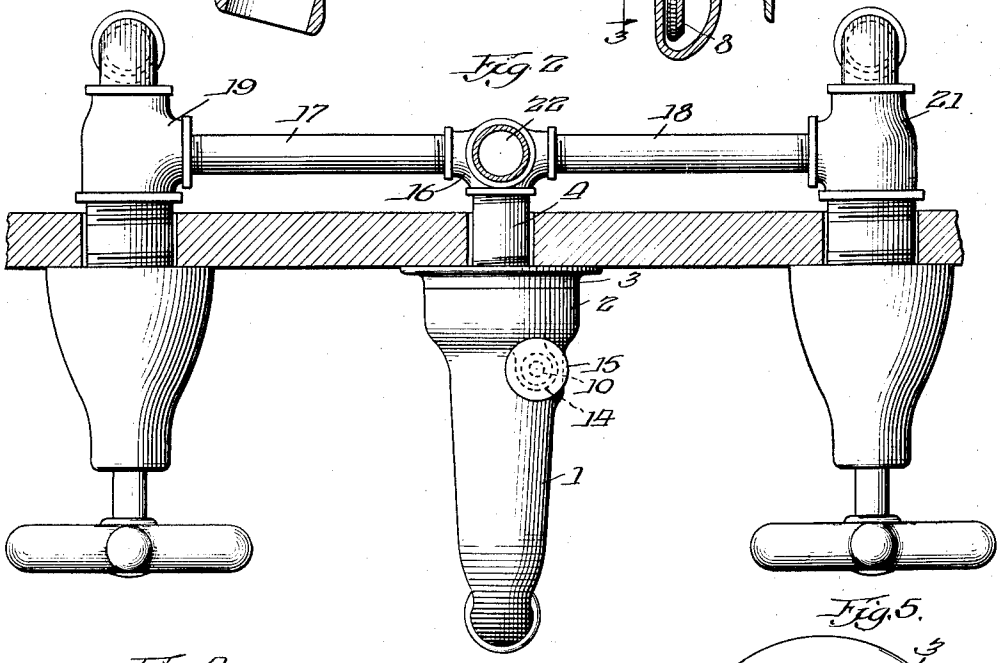


Fig. 4

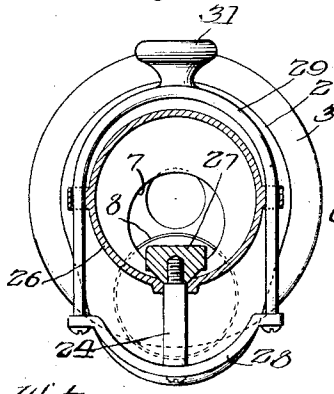


Fig. 3

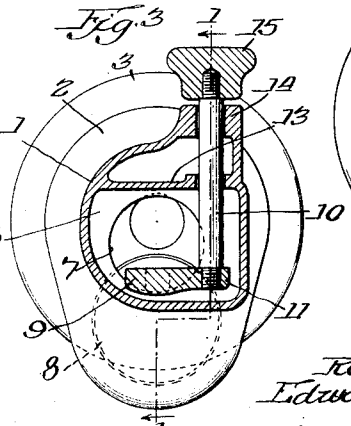
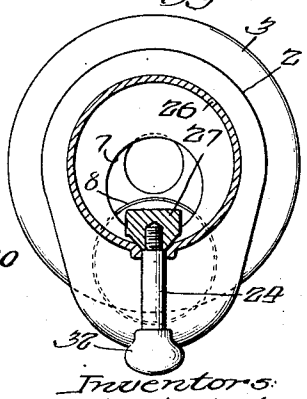


Fig. 5.



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Fig. 6

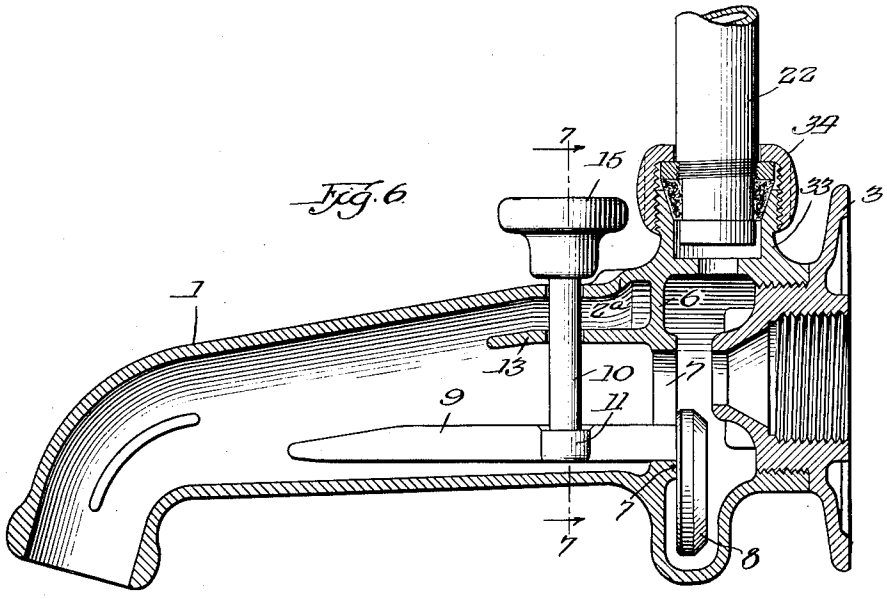
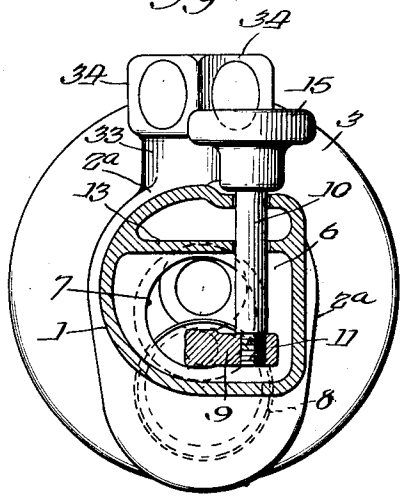


Fig. 7



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COMBINATION SPOUT AND SHOWER DIVERTER VALVE

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9 Claims. (Cl. 251—51)

This invention relates to spouts for bath tubs having as an integral part thereof diverter valves, by operation of which water may be diverted to a shower head.

Combination spouts of this type as now manufactured have certain recognized faults. For example, they have a tendency to leak where the diverter valve stem passes through the spout body due to the fact that the diverter valve stem is directly in the path of flow of water through the spout. This condition also causes the spout to be noisy in operation due to vibration of the stem and valve and interferes with the flow of water through the spout causing a loss in pressure through the fixture.

It is the purpose of our invention to provide a combined spout and diverter valve which is economical to manufacture, pleasing in appearance and overcomes the foregoing deficiencies of present day spouts.

Other novel features and their consequent advantages will be understood by those skilled in the art from a consideration of the following description given in connection with the drawings in which:

Fig. 1 is a vertical longitudinal section taken through the combination spout and diverter valve constructed in accordance with this invention.

Fig. 2 is a plan view of the combination spout and diverter valve and associated control valves illustrating a typical installation,

Fig. 3 is a vertical transverse section taken on line 3—3 of Fig. 1,

Fig. 4 is a section similar to Fig. 3 but of a slightly modified form of this invention,

Fig. 5 is a section similar to Fig. 3 but of a still further modified form of this invention,

Fig. 6 is a vertical longitudinal section taken through a combination spout and diverter valve adapted for an exposed shower connection, and

Fig. 7 is a vertical transverse section taken approximately on line 7—7 of Fig. 6.

Referring more particularly to Figs. 1, 2 and 3 of the drawings, it will be observed that the spout is formed in the usual shape having a nozzle 1 terminating in an enlarged portion or body 2 threaded to a flange 3 which becomes part of the spout body and which in turn is threaded internally to receive the supply pipe 4. The body of the spout is provided with a partition 6 extending transversely across the body and having a valve port and seat 7 at approximately its center adapted to be closed by a vertically disposed disc diverter valve 8. A horizontally extending counterweight or balance 9 is secured to the valve and extends through valve port 7 into the nozzle portion 1 of the spout. The counterweight 9 is streamlined so as to afford a minimum resistance to the flow of water through the spout.

A valve stem 10 is attached to a lug 11 extending laterally from the counterweight 9 and extends through the spout body to provide a means for moving the valve and counterweight vertically from open to closed position. In open position the valve lies in an enlargement formed in the spout body, and in closed position the valve 8 will seat and close port 7. The diverter valve is held in fluid tight relation against the seat by pressure of the incoming fluid through pipe 4, the counterbalance insuring proper seating relation and equalization of the pressure against the disc. The valve stem 10 extends upwardly through a guide web 13 and is guided in a bearing formed in a boss 14 upon the upper portion of the body of the spout. A knob 15 may be attached to the upper end of the stem to serve as an operating medium for the valve.

It will be observed from the foregoing description that in open position the counterbalance 9 is substantially below the normal flow of fluid through the spout and that the valve stem 10 is to one side of the flow of fluid so that neither counterbalance nor stem are in the path of flow of fluid through the spout. By this arrangement the valve stem does not offer resistance to the flow of fluid and accordingly does not cause a pressure drop and loss through the fixture. Furthermore, not being subject to the main flow of fluid through the fixture it is not caused to vibrate and accordingly the fixture is much quieter in operation. Another important feature is the fact that the stem being out of the main flow of fluid through the fixture does not act as a diverter or baffle and direct the water toward its upper end and cause leakage where the stem passes through the spout body. Leakage at this point is substantially eliminated.

Referring particularly to Fig. 2 there is illustrated a typical installation in which the spout 1 is supplied through pipe 4 which is connected to a cross 16 of special construction as disclosed in the patent granted to M. J. Glauber, No. 1,653,956, issued December 27, 1927, the latter being supplied through hot and cold water pipes 17 and 18, respectively, the hot and cold water being controlled by valves 19 and 21. The shower (not shown) is supplied through the side outlet 22 of the cross 16. It will be apparent that when valve 8 is raised to closed position fluid not

being permitted to pass through the spout will discharge through outlet 22 and to the overhead shower (not shown).

In Fig. 4 is shown a slightly modified form of the invention in which the valve stem extends through the bottom of the spout and is actuated by a yoke extending around the spout and terminating in a knob at the top thereof. The construction employs a valve stem 24 which extends through the bottom of the spout 26, the stem being threaded directly into the counterbalance 27 rather than to a lateral lug as in the previous forms. That portion of the counterbalance 27 which contacts the wall of the spout surrounding the aperture through which the stem projects is machine finished to provide a seating surface whereby the counterbalance prevents undue leakage around the stem when the valve is in open position. A saddle 28 is secured to the lower end of the stem and extends outwardly from each side thereof. A U-shaped yoke 29 is secured to the saddle and extends upwardly and over the spout terminating in a knob 31 at the top by means of which the yoke, saddle, stem and valve may be raised selectively into open and closed positions.

Referring to Fig. 5, it will be observed that a somewhat similar arrangement is provided in which the valve stem and counterbalance are below the normal flow of fluid through the spout when the valve is in open position. In this instance, however, the stem 24 is provided on its lower end with a knob 32 by means of which the stem and valve may be selectively moved into open or closed position.

Referring to the form of this invention shown in Figs. 6 and 7 this modification is adapted for use where an exposed shower connection is to be used. The spout 1 is the same as that described in Figs. 1 to 3 with the exception that the body portion 2a is enlarged or elongated to permit the inclusion of a boss 33 which provides for a shower outlet upon the exposed portion of the spout, that is, exterior of flange 3. The boss is bored interiorly to receive the end of a shower connection and threaded externally to receive a packing nut 34. In this form of the invention when diverter valve 8 is closed the water will pass up through the shower connection, that is, through boss 33 and the shower pipe instead of through the outlet 22.

It will be obvious that the illustrated forms of this invention are merely typical and practical embodiments thereof, and that changes may be made in details of the constructions shown without departing from the spirit and scope of this invention as defined in the appended claims.

We claim:

1. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a valve stem extending from the exterior of said spout body into the interior thereof at the outlet side of said port disposed substantially out of the path of liquid flow through said port, means extending through said port rigidly connecting said valve and stem, and a counterbalance rigidly connected with said means extending along the spout a substantial distance beyond the position of the valve stem for counterbalancing the valve positioned and streamlined to be embraced by the flow of water when the valve is open for preventing valve vibration.

2. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a valve stem extending from the exterior of said spout body into the interior thereof at the outlet side of said port disposed substantially out of the path of liquid flow through said port, means extending through said port rigidly connecting said valve and stem, and a counterbalance in said spout body located at the outlet side of said port rigidly connected with said stem.

3. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a valve stem extending from the exterior of said spout body into the interior thereof at the outlet side of said port disposed substantially out of the path of liquid flow through said port, means extending through said port rigidly connecting said valve and stem, and a counterbalance in said spout body located at the outlet side of said port rigidly connected with said stem, said counterbalance lying along the bottom of the spout body when the valve is open.

4. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a valve stem extending from the exterior of said spout body into the interior thereof at the outlet side of said port, means extending through said port rigidly connecting said valve and stem, and a counterbalance rigidly connected with said means extending along the spout a substantial distance beyond the position of the valve stem for counterbalancing the valve positioned and streamlined to be embraced by the flow of water when the valve is open for preventing valve vibration.

5. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a valve stem extending from the exterior of said spout body into the interior thereof at the outlet side of said port, means extending through said port rigidly connecting said valve and stem, and a counterbalance in said spout body located at the outlet side of said port rigidly connected with said stem.

6. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a valve stem extending from the exterior of said spout body into the interior thereof at the outlet side of said port, means extending through said port rigidly connecting said valve and stem, and a counterbalance in said spout body located at the outlet side of said port rigidly connected with said stem, said counterbalance lying along the bottom of the spout body when the valve is open.

7. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a counterbalance rigidly connected with said valve extending through said port and lying along the spout bot-

tom when the valve is open, and a valve stem extending from the exterior of said body upwardly into the interior thereof at the outlet side of the port and secured to the underside of said counterbalance.

8. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve extending in a vertical plane and disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a counterbalance rigidly connected with said valve extending through said port and lying along the spout bottom when the valve is open, and a valve stem extending from the exterior of said body upwardly into the interior thereof at the outlet side of the port and secured to the underside of said counterbalance.

9. A combination spout and diverter valve comprising a spout body having a valve port and seat therein, a disc valve disposed on the inlet side of said port movable laterally relatively to the port for closing the same, a counterbalance rigidly connected with said valve extending through said port and lying along the spout bottom when the valve is open, a valve stem extending from the exterior of said body upwardly into the interior thereof at the outlet side of the port and secured to the underside of said counterbalance, and means connected with said stem extending around said spout body to the upper side thereof providing a handle for raising said valve to closed position.

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