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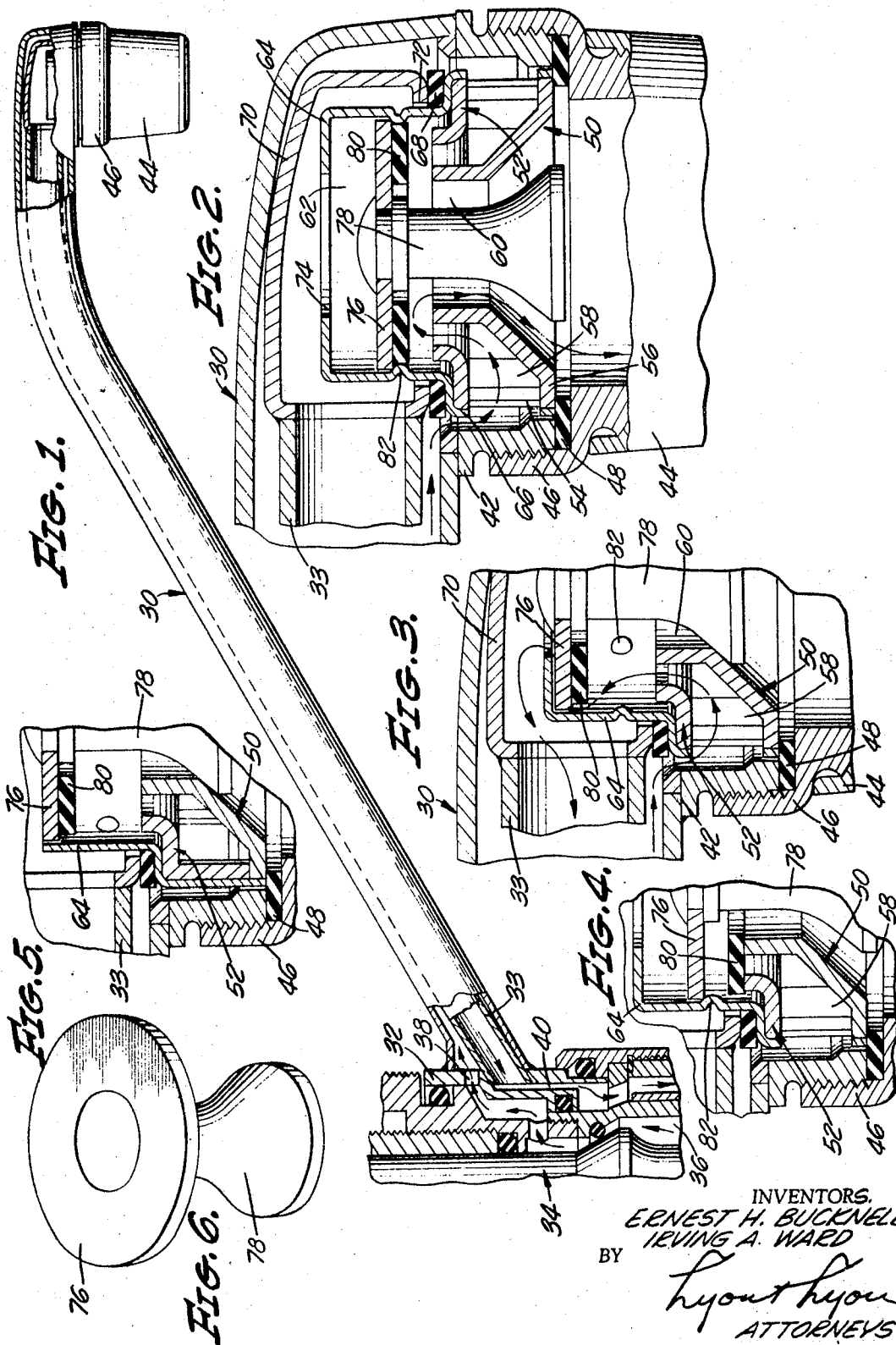
E. H. BUCKNELL ET AL

3,461,901

DIVERTING SPOUT

Filed Aug. 13, 1964

2 Sheets-Sheet 1



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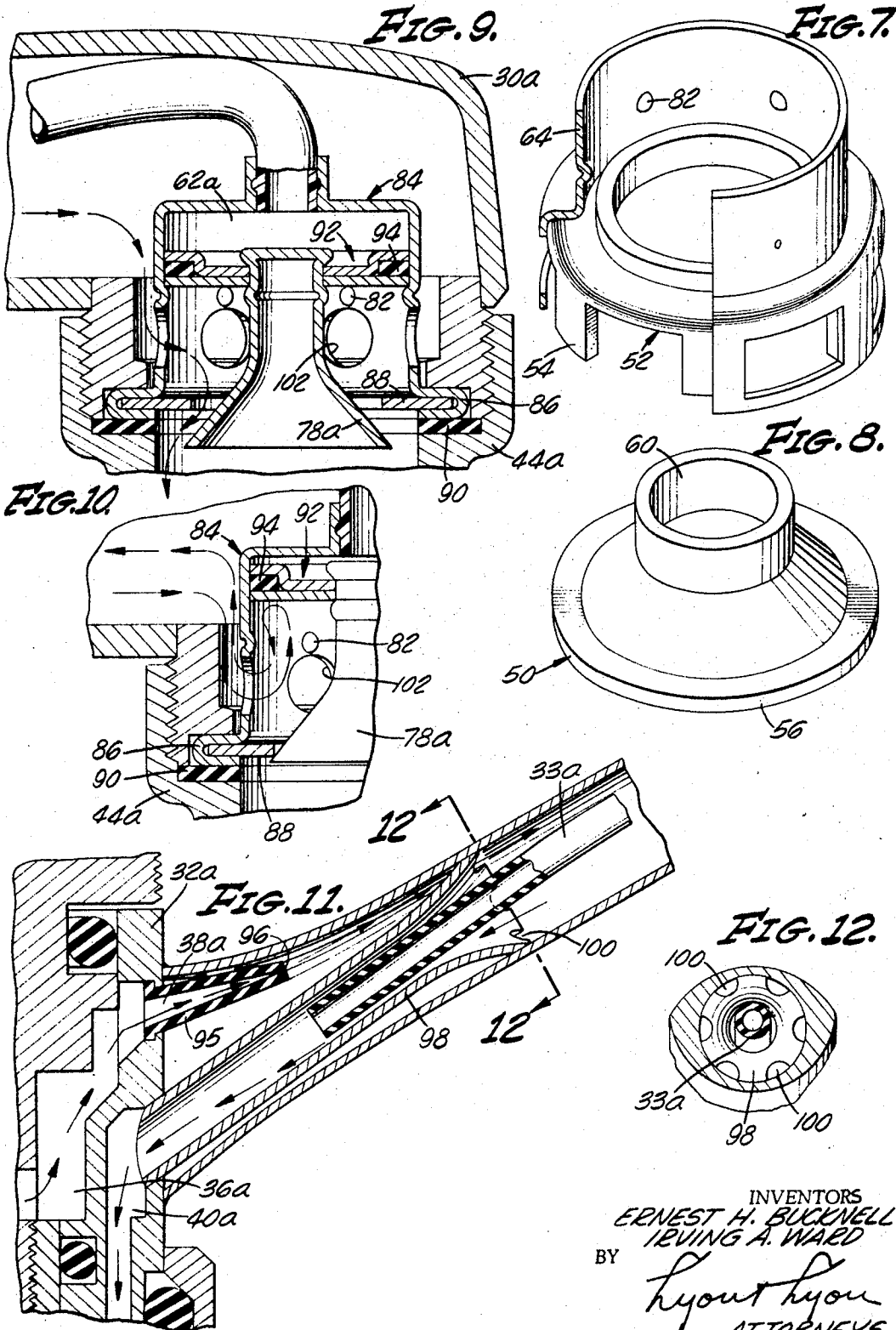
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DIVERTING SPOUT

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2 Claims

ABSTRACT OF THE DISCLOSURE

The disclosure relates to valves outletting through a single spout with a diverter construction therein for diversion to a secondary line through a diverter tube in the spout.

This invention relates to an improved diverter spout.

In many types of plumbing installations it is desirable to provide a hand spray valve on a flexible hose as well as a spout outlet. For this purpose it has been the prior practice to insert a transfer valve in the fixture which either directs flow from the spout or the spray. The size and design of the transfer valve is dictated to a substantial degree by the space available and is complicated if a control rod such as used by a single-lever faucet or a drain passes through the spout hub. Further, if repair or replacement of the valve or other mechanism is necessary, complete dismantling is required.

It is an object of this invention, therefore, to provide a diverter spout wherein the valve mechanism is provided at the outlet to be easily repaired and replaced if necessary.

It is a further object of this invention to provide a device wherein far greater freedom of design of the diverting mechanism is possible in an installation of this type.

Still a further object of this invention is to provide a diverter spout wherein the critical level is raised substantially above the flood level of a sink, avoiding possible gravity flow from the spray outlet to the water source.

Other objects and advantages will be readily apparent from the following description.

In the drawings:

FIGURE 1 is a side elevation with parts broken away of a diverter spout embodying this invention.

FIGURE 2 is an enlarged section of the diverter unit in the spout flow position.

FIGURE 3 is a fragmentary section similar to FIGURE 2 and is in the spray flow position.

FIGURE 4 is a fragmentary section similar to FIGURE 2 with flow shut off.

FIGURE 5 is a view similar to FIGURE 3 illustrating support of the piston chamber forming element.

FIGURE 6 is a perspective of the spout outlet valve.

FIGURE 7 is a perspective with parts broken away of the piston chamber forming element and its support.

FIGURE 8 is a perspective of the spout outlet valve seat.

FIGURE 9 is a section of the diverter portion of a modification in the spout flow position.

FIGURE 10 is a fragmentary view similar to FIGURE 9 in the spray flow position.

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FIGURE 11 is a fragmentary section of the spout support assembly of the modification of FIGURE 9.

FIGURE 12 is a view taken along line 12—12 of FIGURE 11.

Referring first to the embodiment illustrated in FIGURES 1 through 8, a spout 30 has a sleeve 32 at one extremity which surrounds a water supply valve 34. In this embodiment the valve is similar to that illustrated and described in United States Patent No. 2,998,824 although it is not intended to limit this invention to any particular valve. Flow of hot and/or cold water proceeds up channel 36 through outlet passages 38 into spout 30. Mounted within spout 30 is a tube 33 which communicates at sleeve 32 with passage 40 which in turn connects with a remote spray valve (not shown). The spout at its outlet end has an externally threaded adapter 42 fixed, such as by welding, thereon upon which an aerator 44 may be positioned by a second adapter 46. Packing 48 is secured between adapters 42 and 46, forming a base for the spout outlet valve seat 50 (see FIGURE 8).

An annular ring 52 has legs 54 (see FIGURE 7) depending therefrom which rest on peripheral flange 56 of valve seat 50, forming a flow passage 58 therebetween whereby water flows through spout 30 around tube 33 into passage 58 through opening 60 in valve seat 50 and is discharged into the sink through aerator 44.

Piston chamber 62 is formed by a cylindrical element 64, the lower periphery of which overlies ring 52 at 66. A sealing washer 68 is positioned between same and the enlarged header 70 on tube 33, which header has an opening 72 receiving cylindrical element 64 which in turn has an opening 74 therein.

A metering piston 76 fits loosely within chamber 62 on a flared button 78, the lower extremity of which fits within valve seat 50. A resilient check washer 80 is positioned on button 78 between piston 76 and the opening 60 on valve seat member 50.

Flow through the spout outlet and aerator has heretofore been described (see FIGURE 2). When the normally closed spray outlet is opened, a reduced pressure exists at the uppermost surface of piston 76. Water pressure on the undersurface causes same to rise in chamber 62 until the flared lower extremity of button 78 contacts the flared central segment of valve seat member 50, blocking off flow through the spout outlet and diverting same around piston 76, through opening 74 and tube 33 to the spray outlet (see FIGURE 3).

Should conditions capable of creating a back siphon between the water source and spray occur, anti-siphon washer 80 will drop to the position seen in FIGURE 4, shutting off passage 58 preventing same.

An annular shoulder 82 in cylindrical element 64 functions to limit movement of piston 76, and hence button 78, in a downward direction.

A modification is illustrated in FIGURES 9 through 12. In this embodiment an adapter 42a is secured to spout 30a and an aerator 44a screwed thereon. Chamber 62a is formed by an element 84 which has an outwardly extending periphery 86 projecting between adapter 42a and aerator 44a holding a valve seat 88 in position. Washer 90 prevents leakage at this point. Piston 92 carrying a washer 94 is provided to reciprocate in chamber 62a and carries button 78a, the flared extremity of which is positioned beneath valve seat 88. In FIGURE 11 flow to the spout is illustrated. Water enters channel 36a and out passage 38a. A resilient tube 95 is positioned surrounding passage 38a and same tapers to a point having a slit 96 there-through. When flow is through passage 38a to the spout, tube 95 flexes to open slit 96 and permit flow. When flow terminates, the tube closes to form a check valve, preventing back flow to the water source.

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Spray outlet passage 40a communicates with a tube 98 which receives the extremity of tube 33a and has holes 100 to permit flow therethrough. When flow is to the spout outlet—that is, with the spray outlet closed—water proceeds from channel 36a through passage 38a, tube 95 and slit 96, through openings 100, through holes 102 in element 84, through valve seat 88 and out the spout outlet and aerator 44a. If the spray outlet is opened, a reduced pressure is created in tube 33a which is communicated to chamber 62a. Water pressure on the underside of piston 92 will cause same to rise, lifting button 78a until same engages valve seat 88, shutting off flow through the spout outlet.

While what hereinbefore has been described is the preferred embodiment of this invention, it is readily apparent that alterations and modifications can be resorted to without departing from the scope of this invention.

We claim:

1. In spout and diverter construction; a discharge or outlet spout extending generally horizontally and having a generally vertical spout mouth with a downwardly directed discharge opening; a diverter tube in said spout having a closed end in the spout mouth with a lower surface orifice in the spout mouth above the discharge opening; a secondary valve normally blocking said diverter tube and openable as desired to permit flow in said tube; a diverter in said spout mouth below said orifice; and diverter being a unitary diverter element comprising a housing having a bottom valve opening and containing a vertically movable differential area piston valve which moves up to seal the valve opening from below and down to expose said valve opening; said piston, when down,

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as is normal, permitting full flow through said valve opening and discharge opening and no flow into the diverter tube orifice and adapted to be moved upwardly automatically on the opening of said valve by water pressure to close said valve opening and said discharge opening to inhibit flow through said discharge opening and to permit full flow into the diverter tube orifice; said diverter, including its housing and valve as a unitary diverter element, being insertable as a unit into the spout mouth upwardly through its discharge opening; and a ring threaded onto said spout mouth at the discharge opening to retain said unitary diverter element in said discharge opening.

2. In a construction according to claim 1; the closed end of said diverter tube upwardly abutting the upper wall of said spout mouth and thus providing an abutment against which the diverter element is thrust by adjustment of said ring on said spout mouth.

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137—454.6, 801; 239—25, 428.5

Disclaimer

3,461,901.—*Ernest H. Bucknell* and *Irving A. Ward*, Los Angeles, Calif. DIVERTING SPOUT. Patent dated Aug. 19, 1969. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest. Hereby enters this disclaimer to her entire interest in all claims of said patent.

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