Oct. 14, 1969 P. C. SYMMONS 3,471,872

PLUMBING FIXTURE FOR BATHS

Filed Sept. 21, 1966 4 Sheets-Sheet 1

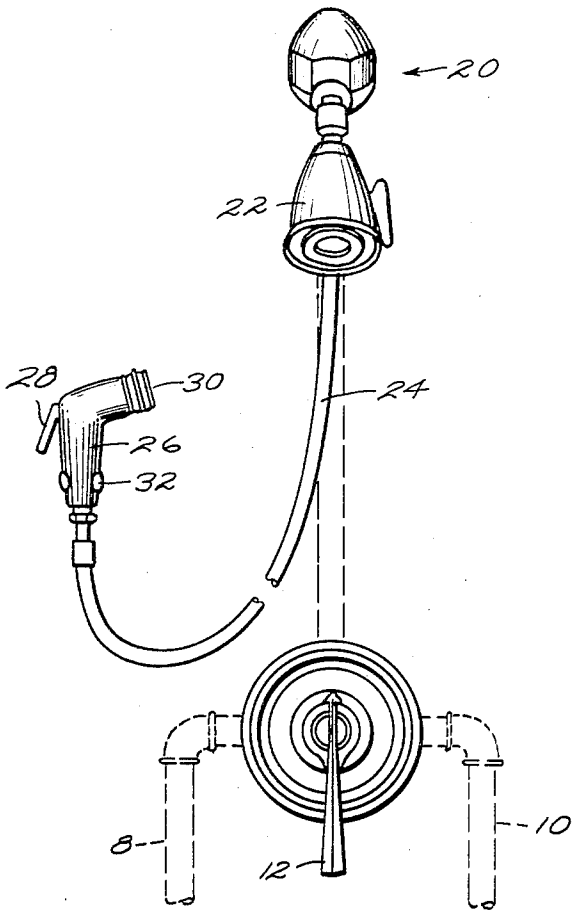


FIG. 1

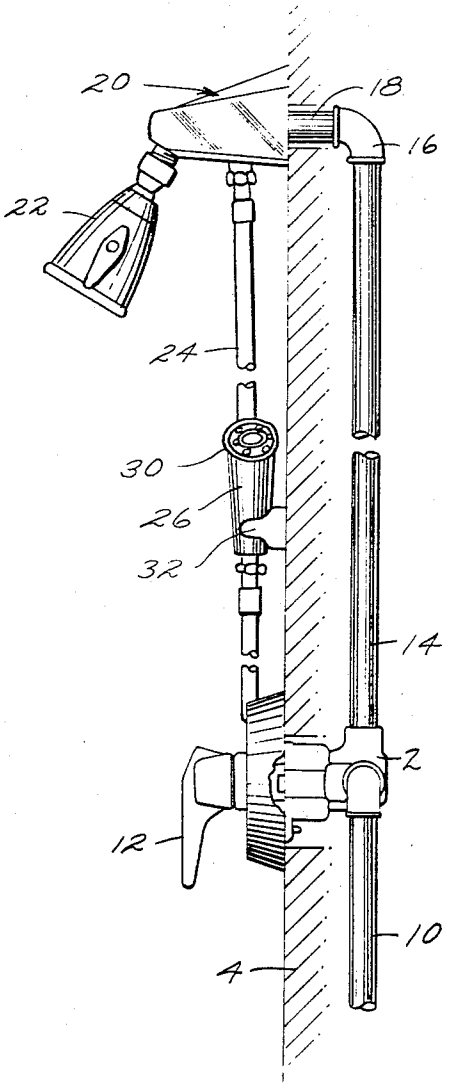


FIG. 2

INVENTOR.
PAUL C. SYMMONS

BY

Nicholas A. Pandusco
ATTORNEY

PLUMBING FIXTURE FOR BATHS

Filed Sept. 21, 1966 4 Sheets-Sheet 2

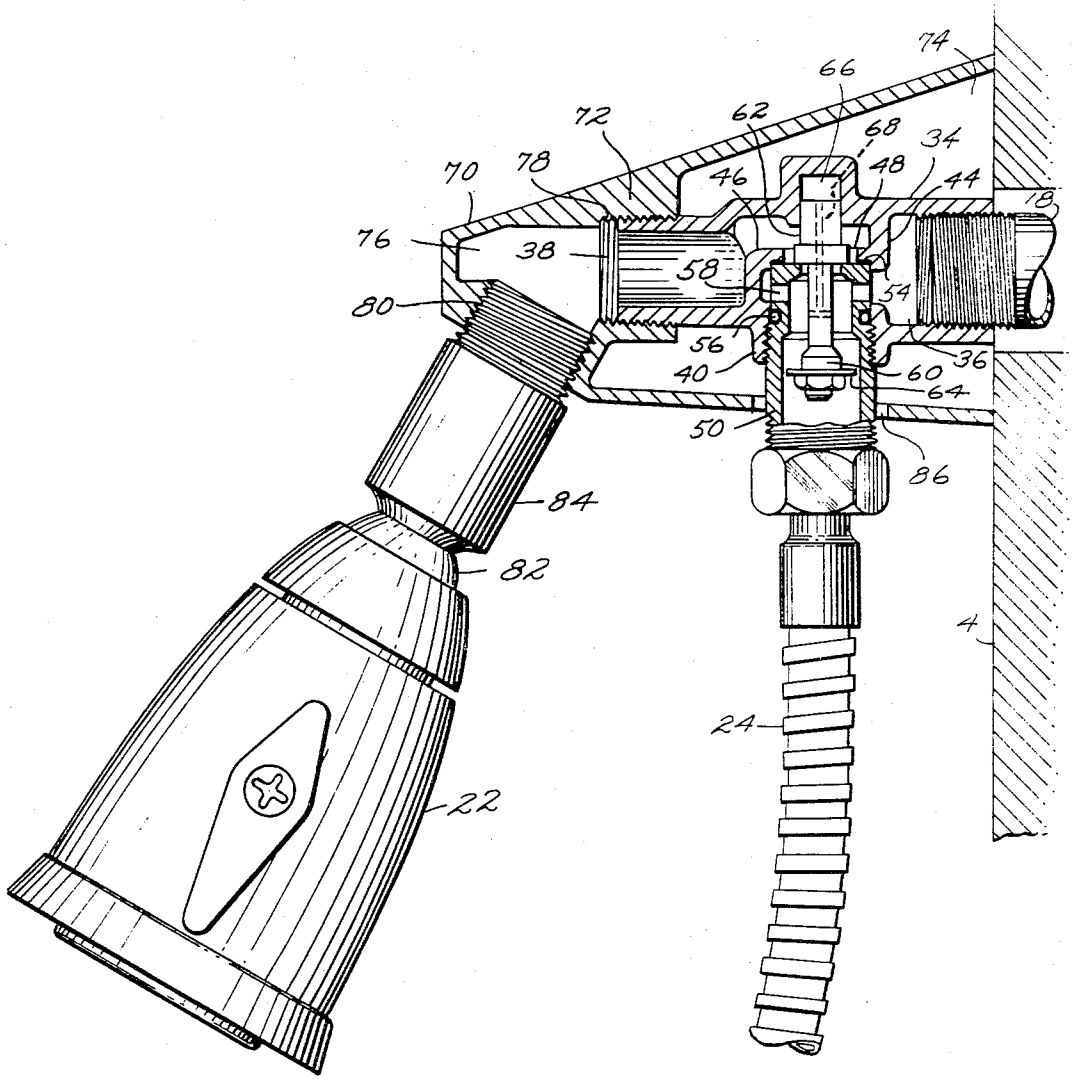


FIG. 3

INVENTOR.
PAUL C. SYMMONS
BY
Nicholas A. Pandiscio
ATTORNEY

Oct. 14, 1969 P. C. SYMMONS 3,471,872

PLUMBING FIXTURE FOR BATHS

Filed Sept. 21, 1966 4 Sheets-Sheet 3

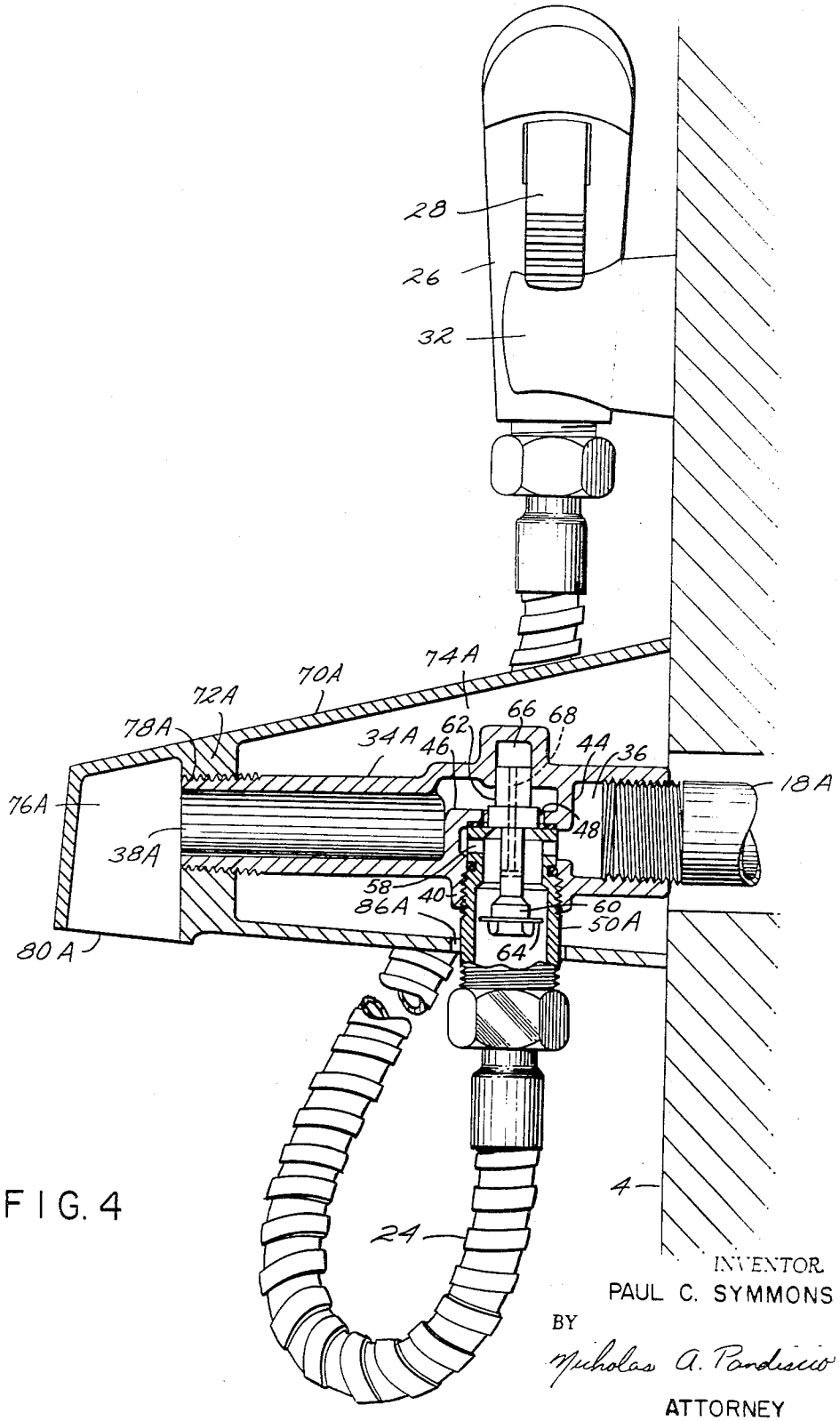


FIG. 4

INVENTOR.
PAUL C. SYMMONS
BY
Nicholas A. Pardisco
ATTORNEY

Oct. 14, 1969 P. C. SYMMONS 3,471,872

PLUMBING FIXTURE FOH BATHS

Filed Sept. 21, 1966 4 Sheets-Sheet 4

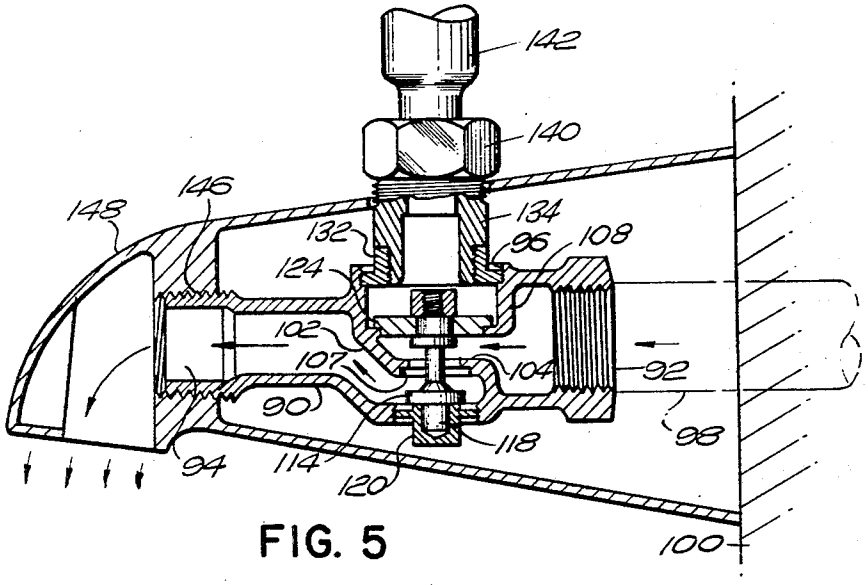


FIG. 5

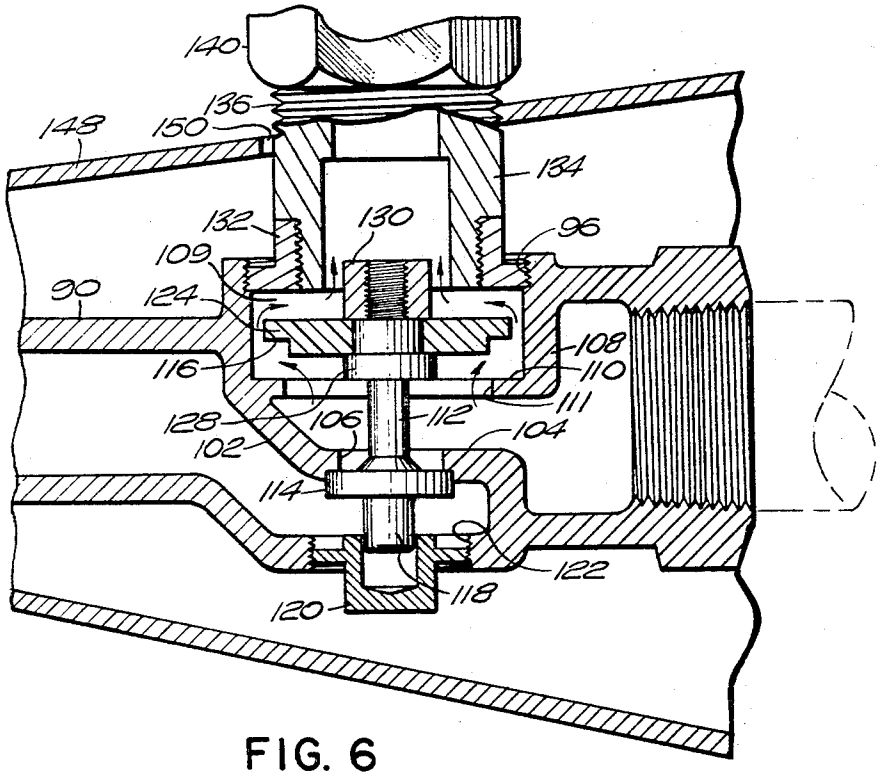


FIG. 6

INVENTOR.

PAUL C. SYMMONS

BY

Nicholas A. Pandiscio

ATTORNEY

United States Patent Office

3,471,872

Patented Oct. 14, 1969

3,471,872

PLUMBING FIXTURE FOR BATHS

Paul C. Symmons, Newton, Mass., assignor to Symmons Engineering Company, Boston, Mass., a corporation of Massachusetts

Continuation-in-part of application Ser. No. 392,202, Aug. 26, 1964. This application Sept. 21, 1966, Ser. No. 584,315

Int. Cl. B05d 1/00

U.S. Cl. 4—145 22 Claims

ABSTRACT OF THE DISCLOSURE

A plumbing fixture which facilitates provision of a hand-held spray unit in a bathtub or shower installation. It comprises a casing which incorporates a diverter valve assembly and an ornamental housing which conceals the casing and is adapted to function as a tub spout or as a shower head support.

This application is a continuation-in-part of my copending patent application, Ser. No. 392,202, filed Aug. 26, 1964, for "Plumbing Fixture for Baths", now abandoned.

This invention relates to a hand-operated bath installation and more particularly to provision of a moveable spray in a shower or bathtub installation.

The primary object of the present invention is to provide new and improved means for embodying a hand spray unit in a bath. As used herein, the term "bath" is intended to apply to separate tub and shower installations as well as combined tub shower installations.

Another primary object is to provide a new and improved plumbing fixture which is adapted to be attached diverting the flow of water from the shower head to tub spout without need for any dismembering of a building partition and which also incorporates a diverter valve for diverting the flow of water from the shower head to tub spout to a hand operated moveable spray unit.

A more specific object is to provide a new and improved diverter valve assembly which can be used to combine a hand held spray unit with a bathtub spout or a wall mounted shower head.

Another specific object of the invention is to provide a plumbing fixture comprising a diverter valve assembly and an ornamental housing therefor which facilitates provisions of a hand-held spray unit in a bathtub or shower installation, the diverter valve assembly being adapted for use in new or existing installations and the housing designed to conceal the valve assembly and function as a tub spout or a support for a shower head.

A further object is to provide a new and patentable improvement over the prior art. such as the apparatus illustrated and described in U.S. Patent No. 2,867,230, issued Jan. 6, 1959, to R. E. Bletcher et al. for "Diverter Valve for a Shower Installation."

For a fuller understanding of the nature and objects of the present invention, reference should be had to the following detailed description taken in connection with the accompanying drawings wherein:

FIG. 1 is a front view in elevation of wall shower installation embodying the present invention;

FIG. 2 is a side view of the apparatus of FIG. 1;

FIG. 3 is an enlarged sectional view of the top portion of the apparatus of FIG. 2;

FIG. 4 is an enlarged sectional view similar to FIG. 3 of an alternate form of the invention;

FIG. 5 is an enlarged sectional view similar in part to FIG. 4 of still another embodiment of the invention; and

FIG. 6 is an enlarged view of a portion of FIG. 5.

Turning first to FIGS. 1 and 2, there is shown a typical bath shower installation embodying the present invention. The installation comprises a mixing valve 2 mounted in a wall 4 and connected to a pair of pipes 8 and 10 which supply hot and cold water. Valve 2 is of conventional construction, having a rotatable operating handle 12 which is used to select the desired mixed water temperature. Preferably, but not necessarily, valve 2 may be constructed in accordance with the teachings of my U.S. Patents Nos. 2,308,127, issued Jan. 12, 1943, and 3,099,996, issued Aug. 6, 1963 respectively. The mixed water output of valve 2 is discharged into a mixed water supply pipe 14 which extends up behind or within wall 4. The upper end of pipe 14 is fitted with an elbow 16 to which is connected a nipple 18. The latter extends through wall 4 and projects beyond its front surface a suitable distance e.g., 1 inch, for connection to a novel plumbing fixture identified generally at 20 constructed in accordance with the present invention. This plumbing fixture is connected to and supports a swivel mounted shower head 22 and a hand-spray assembly comprising a spray outlet hose 24 and a hand-operated spray unit 26. The latter is of conventional construction comprising a normally closed valve (not shown) which is opened by pressing its operating handle 28, and also a spray head 30. A hanger in the form of a bracket 32 attached to wall 4 is provided to support spray unit 26 when not in use.

Turning now to FIG. 3, the new and improved plumbing fixture 20 includes a diverter valve assembly which comprises a hollow valve casing 34 having an inlet end 36, an outlet end 38, and a side outlet 40. Casing 34 is internally threaded at its inlet end 36 so as to screw into nipple 18. On its inside casing 34 is provided with a generally transversely-extending partition 44 which separates the outlet end 38 from the inlet end 36 and the side outlet 40. Partition 44 includes a longitudinally-extending portion 46 whose plane is parallel to the longitudinal axis of the valve casing and is at right angles to the center axis of side outlet 40. This portion 46 is provided with a hole 48 which provides communication between outlet end 38 on the one hand and inlet end 36 and side outlet 40 on the other hand.

The side outlet 40 is internally threaded to receive a hollow open-ended sleeve 50 which extends into the valve casing a distance sufficient for its inner or upper end to engage the longitudinally-extending portion 46 of partition 44 in coaxial relation with hole 48. It is to be observed that the discharge opening at the upper end of sleeve 50 is smaller than hole 48. To provide a good seal between the end of sleeve 50 and partition 44, the longitudinally-extending portion 46 is provided with a counterbore for hole 48 large enough to seat the end of the sleeve and also an intervening washer 54. An O-ring 56 helps assure a good seal between sleeve 50 and the surrounding wall which defines side outlet 40. A plurality of small ports 58 permit to flow from the inlet end of casing 34 into sleeve 50. water to flow from the inlet end of casing 34 into sleeve 50. is determined by a valve member mounted within the sleeve. The valve member consists of a valve stem 60 having a valve head 62 at its upper end and a piston 64 at its lower end. Valve head 62 is adapted to seat on the upper end of sleeve 50 so as to close off flow of water to end outlet 38. The side wall of valve casing 34 is fitted with a cavity 66 which slidably accommodates and guides the upper end of valve head 62 so the latter may reciprocate axially and also rotate but may not shift laterally. A passageway 68 in stem 60 and valve head 62 functions to allow water to bleed into cavity 66 so as to damp upward movements of the valve head. Piston 64 is larger in diameter than valve head 62 and thereby has a larger effective surface area exposed to water pressure. This is essential in order to have the valve member assume the position

shown in FIG. 3 (where valve head **62** is seated on the end of sleeve **50** to close off the flow of water to outlet end **38**) when the hand spray unit is operated.

Operation of the valve member is straightforward. When the hand spray unit **26** is closed it presents a high resistance to flow which appears as a back pressure in hose **24** which is substantially greater than any corresponding back pressure in the outlet end **38** of casing **34** (shower head **22** offers a resistance to flow which is less than that presented by spray unit **26** when the latter is closed and greater than spray unit **26** when the latter is fully open). Accordingly, the net force applied to the valve member will be upward, so that valve head **62** will be held in open position relative to sleeve **50** and water will flow to the shower head via outlet end **38**. However, when hand spray unit **26** is actuated, the resulting drop in back pressure in hose **24** will produce a change in the effective pressure load on position **64**, causing the net force exerted on the valve member to change direction. When this occurs, valve head **62** will seat on sleeve **50**, terminating flow to shower head **22**. No water will flow out of the shower head so long as the hand spray unit is passing water. However, when the hand spray unit is shut off, valve head **62** will move off of its seat and flow to the shower head will be resumed almost instantaneously.

Also forming part of the new and improved plumbing fixture **20** is a housing **70** which serves two purposes. First of all it provides an ornamental cover or shell for valve casing **34**. Secondly, it functions to support the shower head **22** and to provide a fluid flow connection between the shower head and valve casing **34**. Housing **70** is open at its rear end to fit over the valve casing and is provided with a internal wall portion **72** that subdivides it into a rear chamber **74** that accommodates valve casing **34** and a front flow chamber **76** through which water flows to the shower head. The wall portion **72** has an internally threaded hole **78** whereby the housing is screwed onto the valve casing. The front end of the housing is provided with an internally threaded hole **80** which functions as a discharge port for flow chamber **76**. The shower head includes a conventional ball-socket connection **82** and a sleeve **84** which screws into hole **80**. Housing **70** also has a hole **86** on its bottom side through which sleeve **50** protrudes just enough to make a threaded connection with flexible hose **24**. In practice sleeve **50** and housing **70** are plated to yield a polished, rust resistant surface, as is usual with shower heads and other bath fixtures.

The foregoing construction is easy to install in existing shower baths. In practice valve casing **34**, sleeve **50** and housing **70** are preassembled as one unit and then are mounted in place by screwing the inlet end of the valve casing onto nipple **18**. The unit is screwed on far enough for the rear end of the housing to engage the wall **4**. Thereafter, the shower head and the hand spray unit are attached in the manner described and illustrated. The completed installation is attractive in appearance as well as satisfactory in operation and economical in cost.

A further advantage of the invention is that it is applicable to bathtub spouts as well as to shower heads, as shown in FIG. 4 where like numbers refer to like parts of the embodiment of FIG. 3. The same diverter valve assembly without change may be used for tub spout and shower head installations. However, as illustrated in FIG. 4, it is preferred that the diverter valve casing **34A** be made somewhat longer at its outlet end **38A** so that the point of discharge is further from the supporting wall **4** than is the case with the apparatus of FIG. 3. In the case of the tub spout installation, the diverted valve housing **70A** is constructed to function as a tub spout. In this connection, it is to be observed that housing **70A** has the same general construction as the housing **70** employed for shower head installation, comprising an internal wall portion **72A** that subdivides it into a rear chamber **74A** that accommodates valve casing **34A** and a front flow chamber **76A** through which water is discharged downwardly in the bathtub via a discharge port **80A**. The wall portion **72A** has an internally threaded hole **78A** so that the housing can be screwed onto valve casing **34A**. Housing **70A** also has a hole **86A** on its bottom side for sleeve **50** of the diverter valve assembly. Like the embodiment of FIG. 3, housing **70A** and the associated diverter valve can be installed or removed as a complete assembly. On the other hand, removal of the reciprocal diverter valve member for inspection or repair can be achieved by unscrewing sleeve **50A** from valve casing **34A** without unscrewing the whole fixture from water supply pipe **18A**.

Where it is desired that the shorter diverter valve assembly of FIG. 3 be useable for tub spout as well as shower head installations, the tub spout type housing **70A** may be made with its internal wall portion **72A** extending further back so as to be engageable with the threaded end **38** of valve casing **34**. Alternatively housing **70A** may be made shorter so that its internal wall portion **72A** can be screwed onto diverter valve casing **34** a sufficient amount before the rear end of the housing engages the supporting wall **4**.

Of course, in the case of a bathtub installation, the supporting bracket **32** for the hand spray unit **26** is mounted at a point convenient to the bather, preferably slightly above and to one side of the spout-shaped housing **70A**.

FIGS. 5 and 6 illustrate another modification of the invention that is designed to prevent backflow of water into the supply line from a bathtub. Although it rarely occurs, it is possible due to a sudden high water demand elsewhere, e.g., when a fire department connects one or more high pressure pumping units to a water main, for a negative pressure to be created in a domestic water supply line. If at the time this negative pressure condition exists the hand spray unit **26** is opened below the surface of a pool of bath water, the negative pressure may suck the bath water far enough back into the supply line to contaminate the water supply. This type of siphoning action is obviated by the embodiment of FIGS. 5 and 6. This alternative form of the invention comprises a diverter valve casing **90** having an inlet end **92**, an outlet end **94**, and a side outlet **96**. The inlet end **92** is internally threaded so as to screw into a nipple (shown in phantom at **98**) that connects to a mixed water supply pipe located behind a wall **100**.

The interior of valve casing **90** is provided with a transversely extending partition **102** which separates the outlet end **94** from the inlet end **92** and the side outlet **96**. Partition **102** includes a longitudinally extending portion **104** whose plane is parallel to the longitudinal axis of the valve casing and is at right angles to the center axis of side outlet **96**. This portion **104** is provided with a hole **106** which provides communication between outlet end **94** on the one hand and inlet end **92** and side outlet **96** on the other hand. Hole **106** is counterbored so as to provide a valve seat **107**.

Also formed integral with the valve casing is an interior partition **108** that joins with partition **102** and surrounds side outlet **96** so as to define an exit chamber **109**. This partition **108** includes a portion **110** that extends parallel to the longitudinal axis of the valve casing and includes a hole **111** that is formed co-axial with side outlet **96** and hole **106**. Hole **111** is substantially larger than hole **106**.

Mounted within the valve casing is a diverter valve assembly consisting of a valve stem **112** having a first valve head **114** at its lower end and a second larger valve head **116** at its upper end. Preferably valve head **114** is formed integral with valve stem **112**. Alternatively valve head **114** may be sweated onto the valve stem or secured thereto by other appropriate means, e.g., by brazing or soldering. Valve head **114** is sized to mate with valve seat **107**. The bottom end of valve stem **112** is enlarged as shown at **118**. This solid enlargement of stem **112** is slidably position in

a cup **120** formed in the underside of the valve casing. The internal diameter of the cup **120** is sized so as to slidably accommodate the enlargement **118** of the valve stem. The clearance between cup **120** and the valve stem enlargement **118** is sufficiently small to keep the valve stem aligned with the axes of holes **106** and **111**, but large enough to permit water to flow into and out of the cup as the valve assembly moves upward and downward respectively. The displacement of the water in the cup by valve stem enlargement **118** damps downward movement of the valve assembly.

The larger valve head **116** is small enough to fit within hole **111** but has a peripheral flange **124** sized to engage partition **110** which serves as a valve seat. Valve head **116** is formed as a separate disc and has a center hole sized to accommodate the valve stem **112**. The latter has a flange **128** that limits downward movement of the valve head **116**. The upper end of the valve stem is threaded to accommodate a nut **130** which serves to clamp valve head **116** against flange **128**.

At this point it is believed to be apparent that the valve assembly is adapted to alternately connect the inlet end **92** to outlet end **94** or side outlet **96**, with hole **106** permitting passage of water to outlet end **94** when valve head **116** engages its valve seat **110**, and hole **111** permitting flow of water to side outlet **96** when valve head **114** engages its valve seat **107**.

The side outlet **96** is threaded to receive a bushing **132**, which in turn is threaded on its interior to receive a hollow open ended sleeve **134**. The outer end of sleeve **134** is threaded as shown at **136** to receive a coupling nut **140** attached to a ferrule **142** that is secured to the end and forms part of a flexible outlet hose (not shown) similar to hose **24** shown in FIGS. 3 and 4. It is to be understood that this hose is provided at its opposite end with a hand-operated spray unit similar to spray unit **26** shown in FIG. 1.

The outlet end **94** of the diverter valve casing is threaded as shown at **146** to receive a housing **148** in the form of a tub spout. Housing **148** is essentially the same as housing **70A** shown in FIG. 4. On its upper side housing **148** has a hole **150** through which extends sleeve **134**.

The foregoing apparatus is assembled as one unit so that installation merely involves screwing the inlet end **92** of the valve casing onto nipple **98**. Assembly of the apparatus also is straightforward. First the diverter valve is assembled in the valve casing; then with sleeve **134** removed, housing **148** is screwed onto the valve casing. Thereafter sleeve **134** is screwed to the valve casing and the flexible hose (not shown) is attached by screwing its coupling nut onto sleeve **134**. Removal of the diverter valve assembly from the valve casing also is easily accomplished. First sleeve **134** and housing **148** are removed. Then bushing **132** and cup **120** are unscrewed from the valve casing. Thereafter nut **130** is removed to free valve head **116**. The latter is removed via side outlet **96** while valve stem **112** with valve head **114** is removed via hole **122**.

Operation of this alternative embodiment will now be described. Assume for the purpose of this description that the flexible hose **24** shown in FIG. 4 is connected to sleeve **134** and that the valve in its hand spray unit **26** is closed. With the water supply shut off, gravity causes the diverter valve assembly to be in the position of FIG. 5, in which position hole **111** is closed by valve head **116** and hole **106** is open. If the water supply is now turned on, the valve assembly will remain in its FIG. 5 position and water will flow out of the tub spout via hole **106** and outlet end **94**. Water will continue to be discharged in this manner until the valve in hand spray unit **26** is opened, whereupon the drop in pressure on the upper side of valve head **116** will permit the incoming water (if its pressure is sufficient) to move the diverted valve assembly upward to the position shown in FIG. 6, in which position hole **106** is closed off by valve head **114** and hole **111** is open. Reclosing of the valve of hand spray unit **26** changes the pressure balance on the diverter valve assembly, causing the latter to return to its FIG. 5 position. In the event a negative pressure is suddenly created in the water supply line at a time when the hand spray unit is submerged in bath water with its valve open, the resulting upset in pressure balance will cause the diverter valve assembly to shift back to the position of FIG. 5, in which position valve head **116** prevents bath water from flowing back into the water supply line via hole **111** while valve head **114** exposes hole **106** to the outlet end **94**. However, since the tub spout is above the maximum bath water level, the only thing that can be sucked into the water supply line via the tub spout is air. It is believed to be apparent that this anti-backflow position of the diverter valve assembly is not disturbed if the valve of hand spray unit **26** recloses while the negative pressure condition still exists. Restoration of a positive water pressure at the inlet end of casing **90** permits the diverter valve to shift to the position of FIG. 6 when the hand spray valve is opened.

The plumbing fixtures provided by the present invention are convenient and very useful accessories which can be easily installed in both new and old dwellings without need for special wall construction or reconstruction. It is to be noted also that the exterior appearance of housings **70**, **70A** and **148** can be easily modified to embody any one of a variety of pleasing designs.

I claim:

1. A plumbing fixture comprising an elongated casing having an inlet portion and first and second outlet portions, said casing threaded at said inlet portion whereby said casing may be connected to a water supply pipe, a partition within said casing between said inlet and outlet portions, said partition having an opening therein, a sleeve mounted in said first outlet portion, said sleeve open at its opposite ends and having ports intermediate said ends for passage of water from said inlet portion, one of said ends abutting said partition in alignment with said opening, a valve assembly within said sleeve, said valve assembly having valve means operative to close off flow of water through said one end into said second outlet portion and pressure responsive means for operating said valve means when the downstream pressure at the other end of said sleeve is lowered relative to the downstream pressure at said one end of said sleeve, a housing for said casing having a first opening through which said sleeve projects and a second opening communicating with said second outlet portion, and a normally closed hand spray unit including a flexible hose secured to said other sleeve end, whereby when said hand spray unit is opened said pressure responsive means causes said valve means to substantially close off flow of water into said second outlet portion and diverts it into said first outlet portion for discharge through said hand spray unit.

2. A plumbing fixture as defined by claim **1** wherein said casing and housing have cooperating screw means securing said housing onto said casing.

3. A plumbing fixture as defined by claim **1** wherein said housing is a tub spout.

4. A plumbing fixture as defined in claim **1** further including a shower head attached to said housing so as to discharge water passing through said second opening.

5. For use with a bath having a water supply pipe projecting from a wall, an apparatus comprising an elongate casing having an end inlet port at one end, an end outlet port at its opposite end and a side outlet port, said casing adapted for connection of said end inlet port to said water supply pipe, said casing also having a first screw thread at said one end, a diverter valve unit mounted in said casing, said diverter valve unit including a valve member mounted so as to permit flow of water from said end inlet port to said end outlet port as long as the back pressure at said side outlet port exceeds the back pressure at said end outlet port, a housing covering said casing from view, said housing having a second screw

thread on an interior part thereof, said housing secured to said casing by engagement of said first and second screw threads, said housing having a water discharge opening communicating with said end outlet port, and a hand operated spray unit including a flexible hose coupled to said side outlet port, said hand operated spray unit normally closed whereby to maintain a substantial back pressure at said side outlet port.

6. The combination of claim **5** further including a sleeve secured to said side outlet port, and further wherein said hose is connected to said sleeve.

7. For use with a bath having a water supply pipe projecting from a wall, an apparatus comprising a casing having an end inlet, an end outlet and a side outlet, said casing adapted for connection of said end inlet to said water supply pipe, an interior partition in said casing separating said end and side outlets, said interior partition including an opening providing communication between said end outlet and said end inlet, a diverter valve unit in said casing, said diverter valve unit including a reciprocal valve member in line with said side outlet and mounted so as to permit flow of water from said end inlet to said end outlet so long as the back pressure at said side outlet exceeds the back pressure at said end outlet, an open-ended sleeve sealed to said partition in coaxial relation with said opening and having ports communicating with said end inlet, said sleeve providing a seat for said valve member, a housing surrounding and covering said casing, said housing including means securing said housing to said casing, said housing having a water discharge opening communicating with said end outlet, and a hand operated spray unit including a flexible hose coupled to said side outlet, said hand operated spray unit being normally closed whereby to maintain a substantial back pressure at said side outlet.

8. The combination of claim **20** wherein a hose is connected to one end of said sleeve.

9. The combination of claim **20** including screw means connecting said sleeve to said side outlet, and further wherein said casing includes means for slidably guiding a valve member as it moves relative to a valve seat.

10. The combination of claim **5** wherein said housing is a bathtub spout having a flat end surface for engagement with said wall.

11. The combination of claim **5** further including a shower head supported by said housing and communicating with said water discharge opening.

12. A plumbing fixture comprising an elongated valve casing having an inlet and first and second outlets, said casing adapted for connection of said inlet to a water supply pipe, said casing also having a first screw thread, means within said casing defining a first passageway connecting said inlet to said first outlet and a second passageway connecting said inlet to said second outlet, a valve assembly slidably positioned within said casing for movement along a predetermined axis between a first position in which it blocks said first passageway and said second passageway is open and a second position in which it blocks said second passageway and said first passageway is open, said valve assembly including pressure-responsive means for moving it to one or the other of said positions according to the differential between the fluid pressures downstream of said passageways, a housing surrounding said casing having a first water discharge opening communicating with said first outlet and a second opening aligned with said second outlet, said housing having a second screw thread, said housing being secured to said casing by engagement of said second screw thread with said first screw thread, and tubular means connected to said casing for coupling said second outlet through said second hole to a handspray unit selectively operable to vary the pressure downstream of said second outlet so as to cause movement of said valve assembly from one to the other of said positions.

13. A plumbing fixture as defined by claim **12** wherein said housing is a tub spout.

14. A plumbing fixture as defined by claim **12** wherein said inlet and said first outlet are at opposite ends of said casing and said second outlet is in the side of said casing at right angles to said inlet and said first outlet.

15. A plumbing fixture as defined by claim **12** wherein said tubular means is a sleeve connected to said second outlet and extending through said second hole.

16. A plumbing fixture as defined by claim **15** wherein when said casing is oriented so that said sleeve is vertical and projects above said housing, gravity influences said valve assembly to said second position.

17. A plumbing fixture as defined by claim **16** wherein when said casing is oriented so that sleeve is vertical and projects below said housing, gravity influences said valve assembly to said first position.

18. A plumbing fixture as defined by claim **12** wherein said inlet and said first outlet are at opposite ends of said casing and said second outlet is in the side wall of said casing.

19. A plumbing fixture as defined by claim **12** wherein said casing includes first and second valve seats in said first and second passageways respectively, and said valve assembly comprises a valve stem and first and second valve heads carried by said stem and disposed for seating alternately on said first and second valve seats respectively, said stem including an axial extension at one end, and further wherein said casing includes means coacting with said axial extension to maintain said stem in alignment with said axis and to slidably damp movement of sad valve assembly in at least one direction along said axis.

20. A plumbing fixture comprising an elongated casing having an end inlet, an end outlet and a side outlet, said casing adapted at said end inlet for connection to a water supply pipe, a partition in said casing between said end outlet and said side outlet, said partition having a hole provding communication between said end inlet and said end outlet, a diverter valve unit within said casing, said diverter valve unit extending through said hole and being mounted for reciprocal movement along a predetermined axis between first and second positions, said valve unit and casing having cooperating means for closing off flow of water from said end inlet to said end outlet via said hole only when said valve unit is in said one position, said valve unit including pressure-responsive means for moving said valve unit from said second position to said first position when the downstream pressure at said side outlet is lowered relative to the downstream pressure at said end outlet, said casing having first screw means at said end outlet, a housing for said casing, said housing having a dicharge port at one end and also an opening in its side, said housing also having an internal wall, said wall having an aperture and second screw means, said housing surrounding said casing and being secured thereto by cooperative engagement of said first and second screw means so that said end outlet communicates with said discharge port via said aperture, said opening being aligned with said side outlet, and a sleeve having one end secured to said casing in communicating relation with said side outlet, said sleeve projecting through said side opening whereby to discharge water from said side outlet outside of said housing.

21. A plumbing fixture according to claim **20** further including a normally closed hand spray unit having a flexible hose secured to said sleeve, whereby when said hand spray unit is opened said pressure responsive means cause aid diverter valve unit to move to aid first position to substantially close off flow of water to said end outlet and divert it into said side outlet for discharge through said hand spray unit.

22. A plumbing fixture according to claim **20** wherein said diverter valve unit and said casing have additional

cooperating means for closing off flow of water from said end inlet to said side outlet when said valve unit is in said second position.

References Cited

UNITED STATES PATENTS

2,314,071	3/1943	Bucknell et al.	137—119
2,867,230	1/1959	Bletcher et al.	137—119
2,846,691	8/1958	Zettinig	4—148
2,949,933	8/1960	Moen	137—119 XR
3,012,251	12/1961	Fife	4—192
3,080,570	3/1963	Weddendorf	4—192
3,110,038	11/1963	Dornbierer	4—145
3,119,403	1/1964	Stilwell et al.	137—119

MERVIN STEIN, Primary Examiner

G. H. KRIZMANICH, Assistant Examiner

U.S. Cl. X.R.

137—119