C. W. McARTHUR.

MULTIPLE PORT FUSION VALVE.

APPLICATION FILED MAY 9, 1919.

1,358,862. Patented Nov. 16, 1920.

Fig. 1.

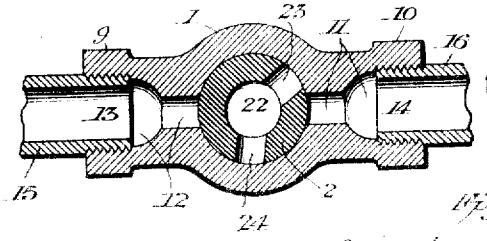


Fig. 2.

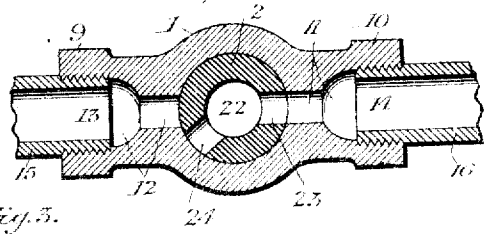


Fig. 3.

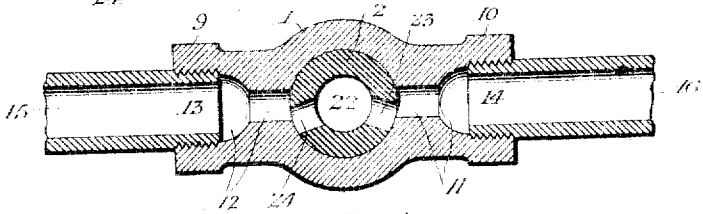


Fig. 4.

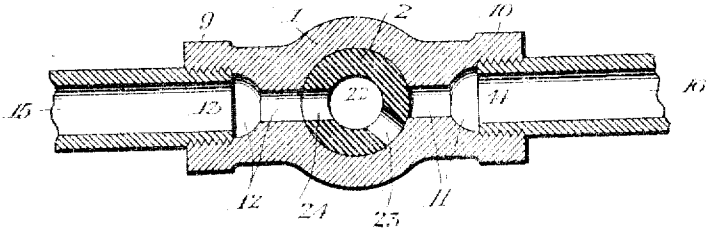


Fig. 5.

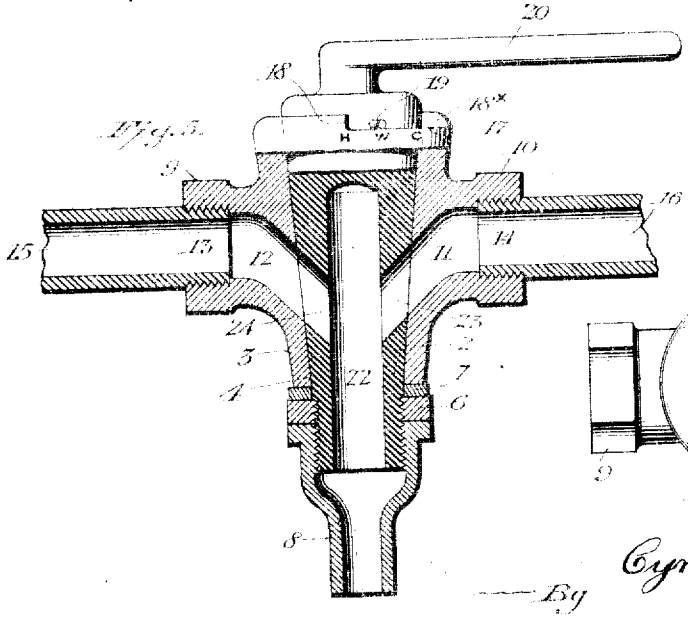
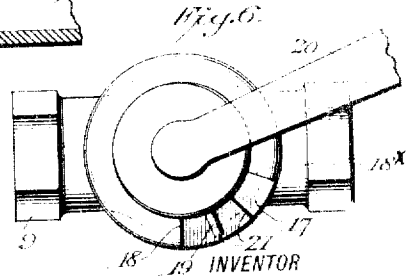


Fig. 6.



INVENTOR

Cyrus W. McArthur.

By H. S. Bailey ATTORNEY

UNITED STATES PATENT OFFICE.

CYRUS W. McARTHUR, OF SILVERTON, COLORADO.

MULTIPLE-PORT FUSION-VALVE.

1,358,862. Specification of Letters Patent. Patented Nov. 16, 1920.

Application filed May 9, 1919. Serial No. 295,908.

To all whom it may concern:

Be it known that I, CYRUS W. McARTHUR, a citizen of the United States of America, residing at Silverton, county of San Juan, and State of Colorado, have invented a new and useful Multiple-Port Fusion-Valve, of which the following is a specification.

My invention relates to a new fusion liquid faucet valve, and the objects of my invention are:

First: to provide a valve having only two ports that will make a direct fusion of hot and cold water or either hot or cold liquids.

Second: to provide a two port spigot valve, that will allow an operator to turn on either one of two different liquids at a time, or turn on both liquids at the same time, and thus get a mixture of both liquids at the same time.

Third: to provide a two port fusion valve that is provided with a cushioning air chamber in the hand operating plug that is adapted to facilitate the discharging action or flow of either one or both liquids flowing to the two port valve.

Fourth: to provide a multi-port valve in which two liquids of different temperatures, of the same kind of fluid, or two different liquids may be drawn separately or mixed together either of the same temperature or of different temperatures or may be drawn either singly or mixed together.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a longitudinal sectional view through the valve body and its plug through their ports showing all ports closed.

Fig. 2, is a central sectional view through the valve body and its plug, showing the cold water ports of both the plug and the body of the valve registering with each other.

Fig. 3, shows a section through the ports of the plug and the body of the valve showing both hot and cold water ports of both parts of the valve registering with each other.

Fig. 4, shows a section through the ports of both parts of the valve showing the hot water port of the plug registering with the hot water port of the body of the valve.

Fig. 5, is a sectional elevation of the complete valve except its top end, showing all ports registering with each other, and

Fig. 6, is a plan view of the indexed portion of the top of the valve body portion.

Similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings, Figs. 1, 2, 3 and 4 illustrate sectional views of the valve and its hand turning plug through their ports.

In these views the numeral 1 designates the cast body portion of the valve, and 2 designates the plug of the valve.

The body 1 of the valve is provided with a circular center portion 3, through which a tapering aperture 4 is formed in which a tapering plug 2, is fitted snugly but turnable therein.

The lower end of this plug is straight from the lower end of the body or casing 1 of the valve, and a nut 6, is threaded to it; a washer 7, is however preferably placed between the nut 6, and the lower end of the body of the valve.

Below the nut 6, of the plug 2, a reducing nozzle 8 is threaded to the end of the plug to check the discharge.

The body or casing of the valve is provided with two centrally positioned laterally projecting end portions 9 and 10, which are arranged in longitudinal alinement with each other, and the terminal ends of which are formed into hexagonal surfaces for the reception of a wrench.

The axial centers of these laterally projecting wrench receiving ends of the body of the valve are provided with inlet ports 11 and 12, the entrances of which are threaded to receive the ends 13 and 14 of fluid supplying pipes 15 and 16, which are threaded into them.

The fluid inlet ports 11 and 12 are preferably made narrower and also somewhat smaller in width at their inner end portions, and they turn and extend downward at an oblique angle to their entrance ends, and they open into the taper bore of the body of the valve at this downward angle.

The top edge of the body of the valve is provided with a recess 17, the opposite ends of which are provided with square shoulders 18 and 18* against which a stop pin 19 that is secured to the plug bears; this recess de-

fines the swinging movement of the handle 20 of the plug.

The bottom of the recess 17, is flat, and radial lines 21 are formed in it to indicate the points in the limited swinging movement of the handle when the plug will be turned to permit either cold or hot, or a resulting flow of both hot and cold water, which should be naturally warm water.

These lines are marked "Off" "Cold" "Warm" and then "Hot" in the order named, with small letters. In Fig. 6 a plan view of the top of the body of the valve is shown illustrating this manner of indicating marks and letters.

The plug-valve portion of my multiple port spigot or valve, is provided with an axial aperture 22 that extends up through it to near its top end, and from this axial aperture two ports 23 and 24 are formed that radiate upwardly through it to register with the downwardly inclined ports 11 and 12.

The axial aperture 22 extends up into the plug far enough beyond the plug ports 23 and 24 to form an air chamber of area enough to allow a sufficient air cushion to prevent a knocking sound in the valve when both hot and cold waters are turned into the valve, and also to act as a downward forcing medium which will naturally effect a steady smooth flowing discharge of the fluids from the valve.

The two fluid inlet ports 23 and 24 are arranged to extend from the axial aperture in the plug at oblique angles that are preferably of similar degree, in order that a reasonably short swinging movement may be given to the handle.

My invention, however, contemplates any angular or straight or curved arrangement of the ports in the body of the valve and also in its plug that will give me the combination of open and closed ports that form the principle upon which my combined single fluid and fusion fluid valve is constructed.

The operation of my multiple port single fluid flowing of fusion fluid flowing valve is as follows:

Assuming that my spigot valve is to be used for hot and cold water in hotels, residences, office buildings and other buildings and the pipes that are threaded to the opposite ends of the body of the valve are extended to and connected to supplies of hot and cold water, then all that it is necessary to do is to move the handle swingingly to the indicating lines below the handle, as these lines are positioned in such relative relation to the ports in the plug that they indicate the position of the ports when they are wide open, and the stop pin 19 which is positioned at one side of the handle is a close enough guide to move directly over each of the water indicating lines, as it is positioned in the plug and coöperatingly with the recess in the body of the valve to act as a pointer; consequently with the stop pin as a guide the operator simply moves the handle of the plug to the point which brings the pin directly over the cold or hot or the fusion of these two which would be warm water indicating lines.

My spigot valve could also be used for other combinations of fluids and also for easily flowing dry materials; for instance it could be used in restaurants for serving coffee and cream at the same time by making the cream outlet port of a predetermined smaller area than that of the coffee port, it could also be used for mixing wheat and barley or rye either for feed or to grind into bread making flour, if it was made large enough to provide ports of such proportional sizes for the mixture required, and it can be used for other liquids and materials than those mentioned; thus, when the handle of the valve is moved around so that the stop pin is over the "Off" line, the ports in the plug are all closed to the ports of the body valve and this line "Off" would naturally be close enough to the shoulder 18ˣ at the opposite end of the recess in the top or the body of the valve to allow the handle to be moved quickly to and against it when the pin registered over the line.

When, however, an operator moves the handle to get a flow of cold water he stops the pin over the line marked "Cold" then the port 23 of the plug will register fully open with the port 11 of the body of the valve, and cold water will flow from the plug.

If an operator wants hot water the handle is moved until the pin registers over the indicating line "Hot," then the port 24 will register fully open with the inlet port 12 of the body of the valve.

In case, however, an operator desires a flow of warm water, the handle is swung around to bring the pin over the indicating line "Warm;" then both of the ports 23 and 24, in the plug register with both of the inlet ports of the body of the valve but not fully in an open position, as both of these ports are only partly open to the opposite inlet ports of the body of the valve, the combined area of the partly opened ports of the plug is substantially equal to the area of either one of them when fully open to either of the inlet ports of the body of the valve.

I claim—

The combination in a multiple port fusion valve, of a tapering plug shaped body portion, provided with a long, straight axial aperture, the central and lower portion of which forms the discharge passage from the plug, and the upper portion of which is adapted to form an air chamber, said

plug being provided with two inlet ports, one on each of its opposite sides, both ports starting at an equal distance from the lower end of said plug and its axial discharging port, and both ports extending upwardly at similar angles through the shell of said plug, said two ports being positioned to extend radially from the axial port of said plug, but at oblique angles to each other; the lower end of said plug being provided with a threaded portion and the upper end having a hand grasping member on it, with a casing provided with a tapering axial aperture in which said plug fits rotatably, said casing being provided with diametrically opposite inlet ports, the inner ends of which extend downwardly and in positions to register with either one or partially with both ports as said plug is turned in said casing; means for connecting hot and cold water pipes to the opposite inlet ports of said casing, means for securing a discharge nozzle to the lower threaded end of said plug, the discharging end of which is smaller in diameter than the axial aperture of said plug, and an indexed surface on the top of said casing and a pointer on said plug arranged to indicate the opening or closing positions of the ports in said plug with respect to those of said casing.

In testimony whereof I affix my signature in presence of two witnesses.

CYRUS W. McARTHUR.

Witnesses:
MARTIN E. TULLEY,
ALFRED B. ILES.