

H. MOELLER, E. KIEWEG & F. WAGNER.

SWITCH VALVE.

APPLICATION FILED OCT. 24, 1910.

989,175.

Patented Apr. 11, 1911.

2 SHEETS—SHEET 1.

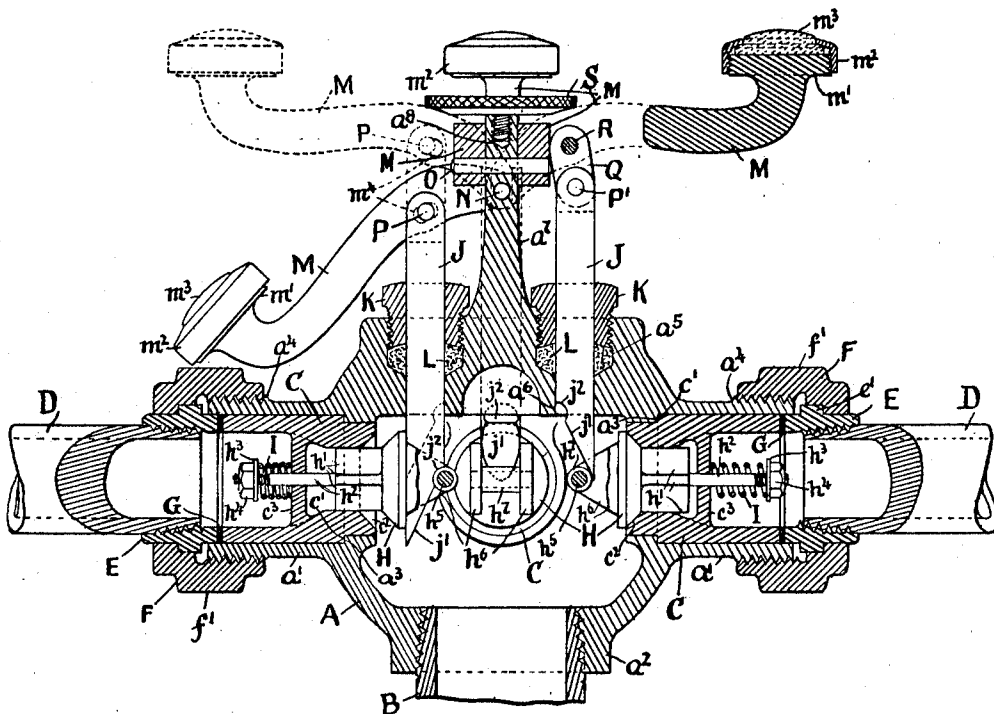


Fig. 1

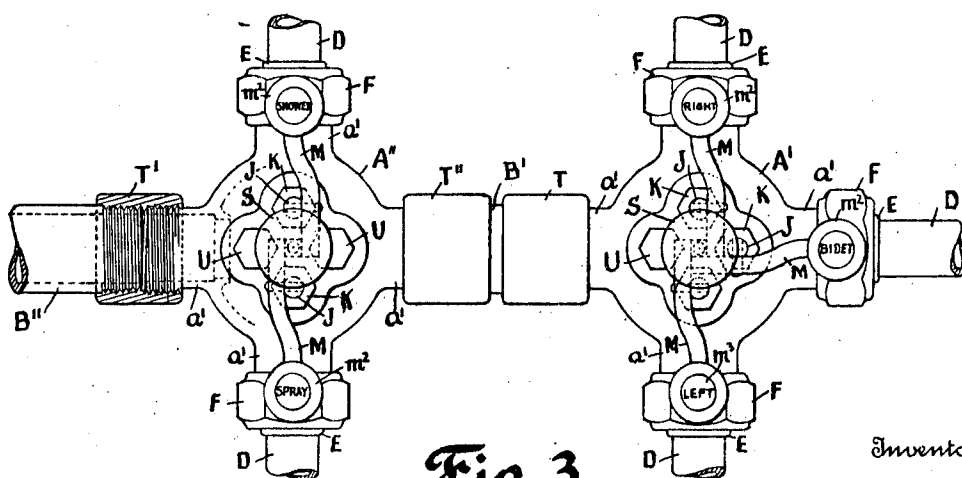


Fig. 3

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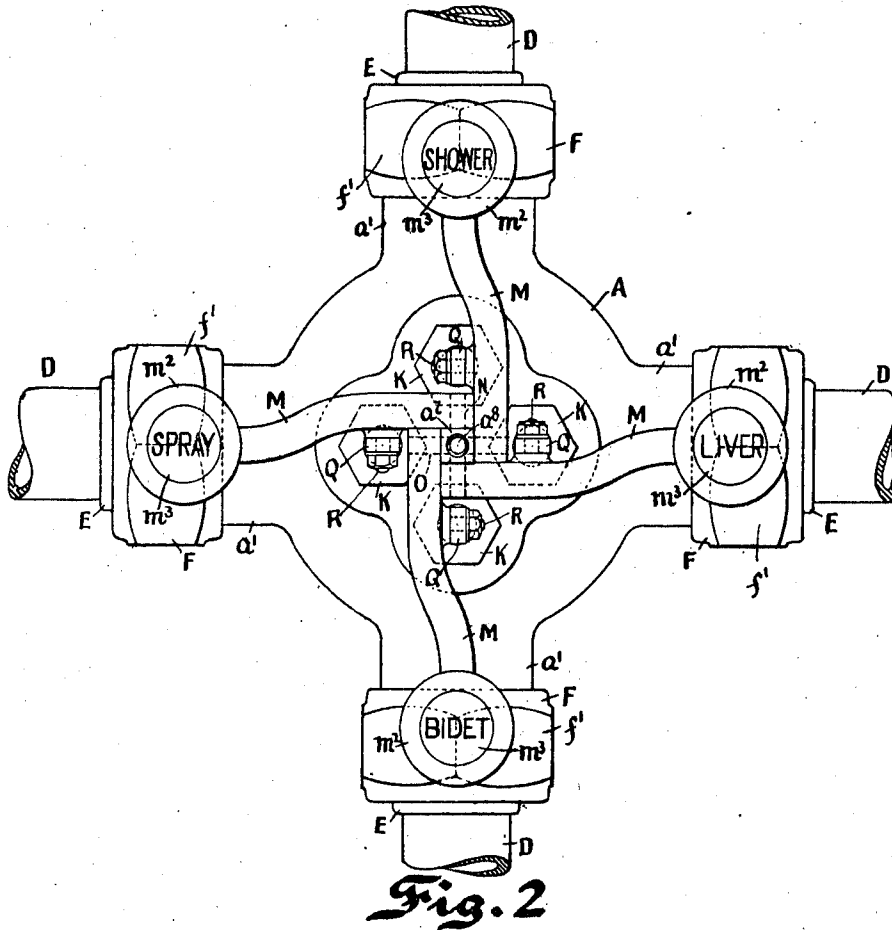
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UNITED STATES PATENT OFFICE.

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SWITCH-VALVE.

989,175.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed October 24, 1910. Serial No. 588,616.

To all whom it may concern:

Be it known that we, HENRY MOELLER, ENGELBERT KIEWEG, and FRANK WAGNER, all of Milwaukee, Wisconsin, have invented a Switch-Valve, of which the following is a specification.

This invention relates to manifold-valves, that is to say, devices of that type which are adapted to receive liquid from a given source, as for example a pipe or duct, and deliver it into one or more of a plurality of branch-ducts or pipes as desired.

Valves of this class are largely in use for shower-baths, and the present invention is particularly adapted to this purpose; while at the same time it will undoubtedly serve equally well for many other purposes, and we therefore do not confine ourselves to any particular use.

According to our invention we provide a plurality of different nozzles each adapted to be connected with one of the branch-pipes, valve-mechanism adapted to open and close each nozzle at will, and devices for independently actuating the valve-mechanism of each nozzle.

The nature of our invention is more particularly disclosed in the following detailed description and is specified in our claims.

Referring to the accompanying drawings, Figure 1 shows in longitudinal section and Fig. 2 in plan an improved form of valve constructed according to our invention; Fig. 3 illustrates in plan how two or more valves may be connected in series. In Fig. 1, a few of the parts which are in front of the plane of section are shown in elevation.

We provide a body-member A, ordinarily a metal casting, having four branches or nozzles a' radiating from the center preferably at right angles with each other and in a horizontal plane; and at the bottom of the member A is an inlet or supply nozzle a^2 , which may be internally threaded to form a joint with an ordinary pipe or duct B.

Each of the nozzles a' is bored internally to receive a valve-barrel C, and as shown abutment-shoulders a^3 , c' are formed respectively on the internal face of the nozzle and on the barrel to fix the position of the barrel in the nozzle and form a tight joint. The barrel is held in place against the shoulder a^3 by a special form of union which makes connection with the branch-pipe or duct D; said union comprising an annular

threaded member E adapted to screw on the end of the pipe, a second threaded-member F having a swiveled engagement with the end of the member E by means of the annular lug e' thereof, and a packing-gasket G which is compressed between the members C and E when the joint is made up. The nozzle a' has an external screw-thread a^4 with which the internal thread of the member F engages and said member F may have means for enabling it to be turned, as for example a hexagonal peripheral portion f' . When the joint is made, the valve-barrel C will therefore be held tightly in place and no liquid permitted to leak around it, but the valve-barrel is free to be removed as soon as the joint is made and the valve-plug disengaged from the operating stem as will be hereinafter described.

Each barrel contains a valve-plug H and has a valve-seat c^2 upon which the plug H rests when it is closed. Said plug has also guiding-means, such as radial flanges h' sliding on the inner face of the barrel C and also a stem h^2 which slides in a central hole bored in a spider c^3 as shown. Means for closing the plug H or assisting it to close are preferably provided; such means as shown comprising a coiled spring I surrounding the stem h^2 , resting upon the spider c^3 , and pressing upon the washer h^3 which is held in place by a nut h^4 on the end of the stem h^2 . As the fluid-pressure is from within the member A, said pressure will tend to close the valve when open and to hold it closed, and the closing-spring I may therefore not be positively necessary.

For independently opening the four valves H we provide vertically moving stems J which pass through packing-glands K screwed into recesses a^5 in the top of the member A and compressing beneath them packing-material L. Said rods J are guided in their vertical movement by the cylindrical bores of the glands K and the bores a^5 in the member A through which the ends of the rods project. Said ends are cut obliquely to form cams j' which act upon cross-bars h^5 supported by ears h^6 formed upon the valve-plugs H, and each of said bars h^5 is preferably formed cylindrical and provided with a roller h^7 to relieve friction. At the upper end of the oblique cam-faces j' is preferably formed a slight depression or notch j^2 adapted to form

a seat or rest for the roller h^7 , whereby upon complete depression of the stem J the valve maintains itself in open position when said stem is released.

5 For depressing the stems J we provide a set of hand-levers M pivoted on the upper end of a central post a^7 which is or may be a part of the body A. Said post carries two pivot-pins N, O, each of which forms the fulcrum of two opposite hand-levers. Each
10 hand-lever is connected with its stem J, either directly by means of a pin P mounted on the upper end of the stem and projecting laterally therefrom into a slot m^4 in the lever, or by means of an intermediate link Q
15 which is pivoted on the pin P' and a second pin R projecting from the lever. Both forms are shown in Fig. 1; the link-form in Fig. 2; and the pin and slot-form in Fig. 3.

20 Each hand-lever M is preferably provided on its free end with a knob m^1 exteriorly threaded to receive a threaded thimble m^2 , which holds in place a porcelain button m^3 on which may be inscribed some designation
25 indicating the purpose of the branch-pipe to which it belongs, as for example "shower", "spray" etc. This however is not an essential part of the invention.

It will be readily seen that on depression
30 of any handle M the corresponding stem J will be depressed and the cam-surface j' thereof acting upon the roller h^7 will draw out the valve H and open the passageway of the nozzle a' to the pipe D, admitting the
35 water or other fluid to the fixture served thereby. We do not find it necessary to provide special means for retracting the stems J, because this will be under ordinary circumstances performed by the unbalanced
40 pressure acting directly on the end of the stem J and indirectly through the cam-surface j' by the valve H; so that when released, the valves will close themselves unless the rollers h^7 are engaged by the notches
45 j^2 , in which case a slight pull or jerk on the handle M will serve to release the valve.

To limit the outward movement of the stems J we may provide a screw-cap S
50 screwed into a threaded hole a^8 in the upper end of the post a^7 as shown. This cap is omitted from Fig. 2 to illustrate the parts below it.

Our valve is adapted not only for use in the manner shown in Figs. 1 and 2, in which
55 the liquid is admitted from the bottom and distributed from the sides, but also in the manner shown in Fig. 3, in which the liquid can be admitted from the sides as well as distributed therefrom. In such case, as
60 shown by the right-hand valve A', the liquid is admitted through the left-hand branch nozzle a' by means of a pipe B'. In such case, as it will ordinarily be desirable to make the feed-pipe bigger than the branch-pipes, the valve-barrel C is removed from

such nozzle and the joint made by means of the coupling T. This gives only three distributing nozzles, and consequently the lever M and stem J belonging to the intake nozzle are removed and the gland K replaced by a
70 screw-plug U; a similar plug being of course inserted in the nozzle a^2 .

Where more than four distributing nozzles are required, the valves can be connected together in series, as also shown in Fig.
75 3. At the left of this figure is shown a second valve A'', whose left-hand nozzle a' is connected to the infeed-pipe B'' by means of the coupling T', and whose right-hand nozzle a' delivers into the pipe B' which is
80 connected thereto by the coupling T''. In such case, two of the levers M and stems J are omitted and two plugs U are used to replace the corresponding glands K. This arrangement gives five distributing nozzles
85 if only two valves are used and additional valves may be added in like manner. It will be understood of course that where close connection between the valves is desired, the extra coupling T² and pipe B' might be
90 omitted and the coupling T join the two nozzles a' directly.

We wish it understood that our invention is not limited to the use of all the above-described features and constructions, for some
95 may be omitted and others may be varied or modified in various ways, as will readily occur to those skilled in the art.

Having thus described my invention, what I claim as new and desire to secure by
100 Letters Patent is:

1. A switch-valve comprising, in combination, a valve-body having an inlet-opening and a plurality of laterally radiating outlet-nozzles, valve-mechanism in each of said
105 nozzles, a plurality of depressible stems having cam-faces adapted to actuate the respective valve-mechanisms, and means for depressing said stems.

2. A switch-valve comprising, in combination, a casing having an inlet-opening and a plurality of laterally radiating outlet-nozzles, a valve-plug in each of said nozzles reciprocating in a radial direction with respect to said casing, a plurality of reciprocating stems having a movement in a line at
115 right angles to that of the respective valve-plugs and actuating the latter, and means for reciprocating said stems.

3. A switch-valve comprising, in combination, a casing having an inlet-opening and a plurality of laterally radiating outlet-nozzles, a valve-plug in each of said nozzles reciprocating in a radial direction with respect to said casing, a plurality of reciprocating stems having a movement in a line at
125 right angles to that of the respective valve-plugs and actuating the latter, and a plurality of individual hand-levers operatively connected with said stems.
130

4. In combination, a hollow body-member having a lateral nozzle, a reciprocating valve-plug in said nozzle moving in line therewith, said plug carrying a transverse cross-bar in the interior of said body-member, a socket in the body member, a reciprocating stem passing through said socket and guided thereby and having a movement transverse to that of said valve and having an obliquely cut lower end which acts on said cross-bar, and means on the outer end of said stem for actuating it.

5. In combination, a hollow body-member having a lateral nozzle, a reciprocating valve-plug in said nozzle moving in line therewith, said plug carrying a transverse cross-bar in the interior of said body-member, a socket in the body member, a reciprocating stem passing through said socket and guided thereby and having a movement transverse to that of said valve and having an obliquely cut lower end which acts on said cross-bar and a hand-lever operatively connected with the outer end of said stem.

6. A valve comprising in combination a hollow body-member having a lateral nozzle, said nozzle being bored internally and having means for connecting a pipe thereto, and a valve-barrel loosely and removably fitting in said nozzle and carrying a valve adapted to close said nozzle; said nozzle and barrel being provided with interacting abutment-shoulders which limit the inward movement of said barrel and form a seat therefor; in conjunction with a joint-member which is adapted to abut against the outer end of said barrel when the joint is made and thus hold it against its seat.

7. A valve comprising in combination a hollow body-member having a lateral nozzle, said nozzle being bored internally and having means for connecting a pipe thereto, and a valve-barrel loosely and removably fitting in said nozzle and carrying a valve adapted to close said nozzle, said nozzle and barrel being provided with interacting abutment-shoulders which limit the inward movement of said barrel and form a seat therefor; in conjunction with a joint-ring adapted to screw upon the end of a pipe and also to abut against the end of said barrel and make a tight joint therewith and hold it against its seat, and means for engaging said joint-ring with said nozzle.

8. A valve comprising in combination a hollow body-member having a lateral nozzle, said nozzle being bored internally and having means for connecting a pipe thereto, and a valve-barrel loosely and removably fitting in said nozzle and carrying a valve adapted to close said nozzle, said nozzle and barrel being provided with interacting abutment-shoulders which limit the inward movement of said barrel and form a seat therefor; in conjunction with a joint-ring

adapted to screw upon the end of a pipe and also to abut against the end of said barrel and make a tight joint therewith and hold it against its seat, and an annular joint-member having a swiveled engagement with said joint-ring and an internal thread adapted to engage the external thread on said nozzle.

9. A switch-valve comprising in combination a hollow body-member having a plurality of laterally radiating nozzles, each of said nozzles being adapted for use as an inlet or outlet nozzle and having means for uniting a pipe thereto, valve-barrels adapted to fit each of said nozzles and to be used in those nozzles which are used as outlets, said barrels fitting removably in the nozzles as sockets and adapted to be held in place by the pipe-joints, valve-plugs carried by the respective barrels, and means actuated from the outside of said body-member for operating said valve-plugs.

10. A switch-valve comprising in combination a hollow body-member having a plurality of laterally radiating nozzles, each of said nozzles being adapted for use as an inlet or outlet nozzle and having means for uniting a pipe thereto, valve-barrels adapted to fit each of said nozzles and to be used in those nozzles which are used as outlets, said barrels fitting removably in the nozzles as sockets and adapted to be held in place by the pipe-joints, valve-plugs carried by the respective barrels, each of said valves being reciprocable in a radial direction, a plurality of reciprocating stems passing through said casing and guided in sockets therein and having operative connections with the respective valve-plugs, and means for reciprocating said stems.

11. A switch-valve comprising in combination a hollow body-member having a plurality of laterally radiating nozzles, each of said nozzles being adapted for use as an inlet or outlet nozzle and having means for uniting a pipe thereto, valve-barrels adapted to fit each of said nozzles and to be used in those nozzles which are used as outlets, said barrels fitting removably in the nozzles as sockets and adapted to be held in place by the pipe-joints, valve-plugs carried by the respective barrels, each of said valves being reciprocable in a radial direction, a plurality of reciprocating stems passing through said casing and guided in sockets therein and having operative connections with the respective valve-plugs, and a set of hand-levers operatively connected with the respective stems.

12. In a switch-valve, the combination with the hollow body-member having a plurality of distributing nozzles, valve-plugs closing the respective nozzles, a central post projecting from the exterior face of said body-member, a plurality of hand-levers all

pivotally mounted on said central post and means connecting said hand-levers with the respective valve-plugs.

13. In a switch-valve, the combination
5 with the hollow body-member having a plurality of distributing nozzles and a plurality of socketed orifices, valve-plugs closing the respective nozzles, a central post projecting from the exterior face of said body-member,
10 a plurality of hand-levers all pivotally mounted on said central post and reciprocating stems passing through said socketed orifices in said body-member and guided

thereby and connected at their outer ends operatively with said hand-levers and at 15 their inner ends operatively with said valve-plugs.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

HENRY MOELLER.
ENGELBERT KIEWEG.
FRANK WAGNER.

Witnesses:

RICHARD ELSNER,
F. DIEPENHORST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
