

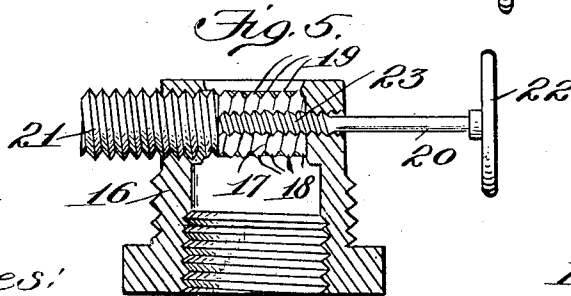
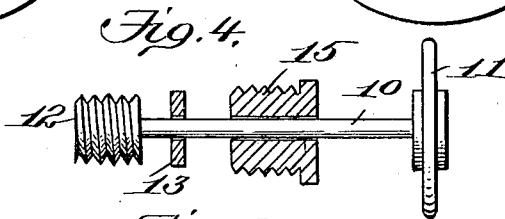
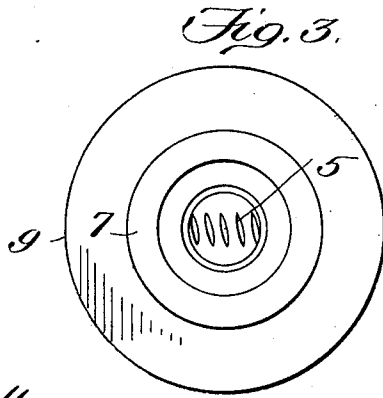
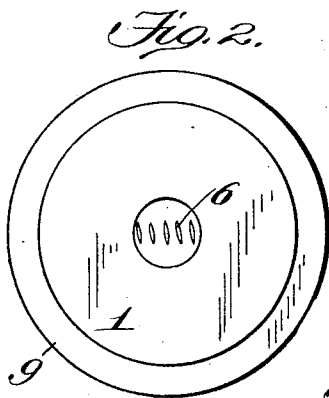
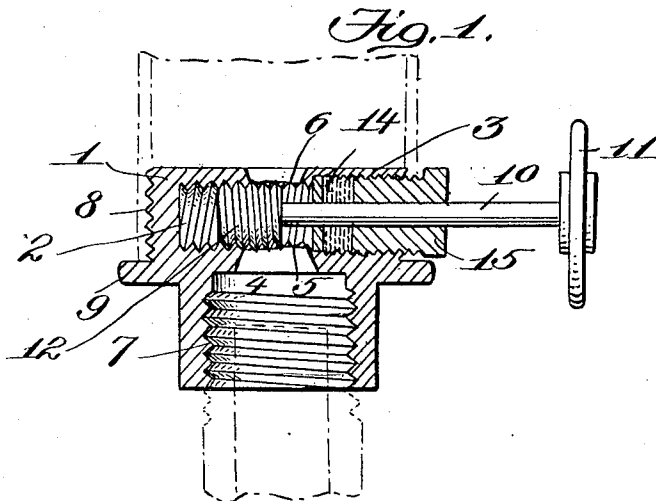
No. 876,285.

PATENTED JAN. 7, 1908.

A. ULLMANN.
REGULATING VALVE.

APPLICATION FILED OCT. 12, 1906. RENEWED JULY 11, 1907.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 6.

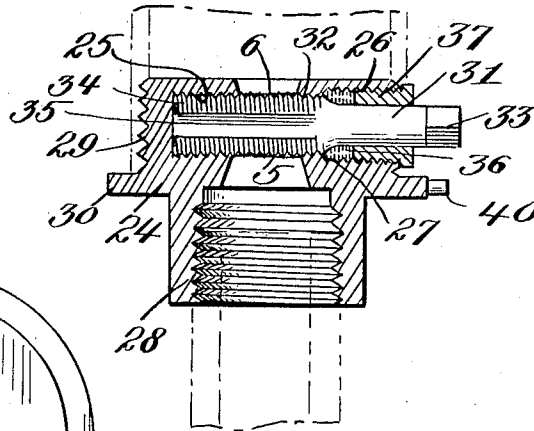


Fig. 9.

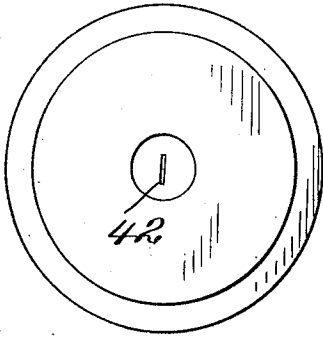


Fig. 7.

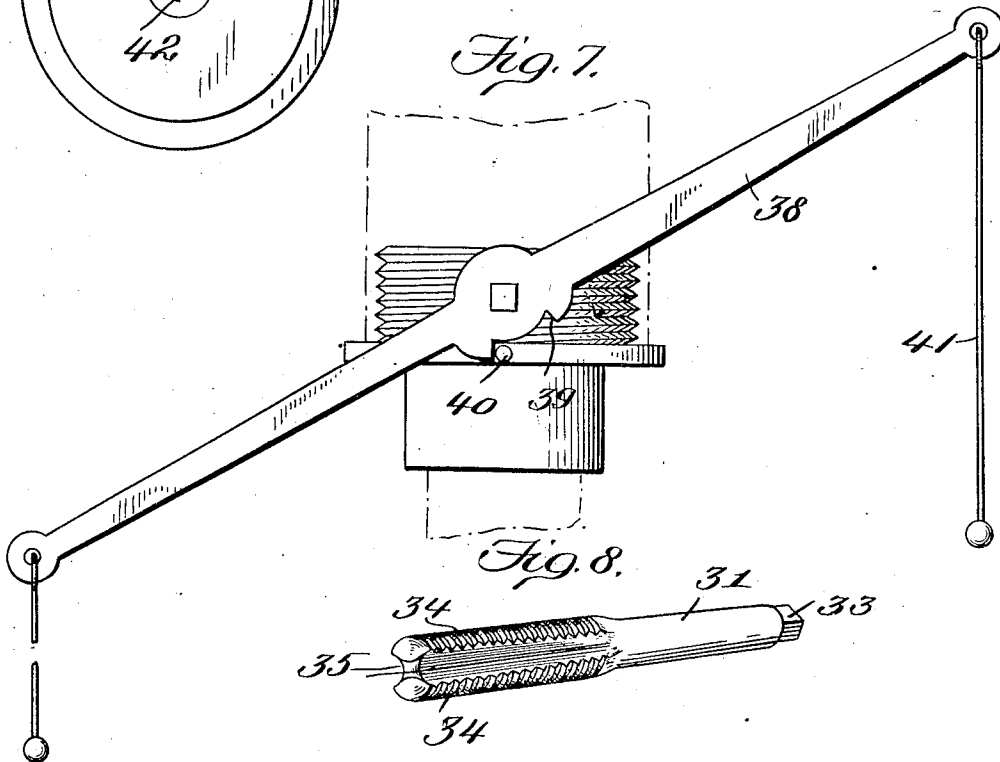
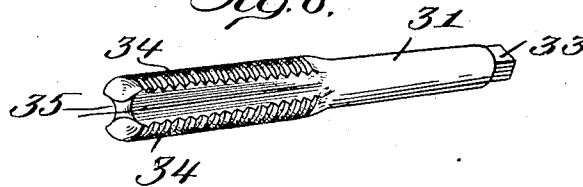


Fig. 8.



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Att'y

UNITED STATES PATENT OFFICE.

ALBERT ULLMANN, OF MACON, GEORGIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS,
OF ONE-HALF TO JULIUS J. WAXELBAUM, OF MACON, GEORGIA.

REGULATING-VALVE.

No. 876,285.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed October 12, 1906, Serial No. 338,669. Renewed July 11, 1907, Serial No. 383,320.

To all whom it may concern:

Be it known that I, ALBERT ULLMANN, a citizen of the United States, residing at Macon, in the county of Bibb and State of Georgia, have invented new and useful Improvements in Regulating-Valves, of which the following is a specification.

This invention relates to valves for regulating the flow of gas, steam, air, water and the like and is designed primarily for use in connection with the regulation of gas from a supply to a burner, yet the valve is adapted for any purposes wherein it is found applicable.

The invention aims to provide a regulating valve in a manner as hereinafter set forth whereby the valve can be adjusted for the regulation of gas, steam, air, water and the like at any pressure.

The invention further aims to provide a regulating valve in a manner as hereinafter set forth, which permits of a minute, as well as always obtaining a positive regulation.

The invention further aims to provide a regulating valve in a manner as hereinafter set forth, with a rotatable valvular member which not only performs its function of opening and closing the inlet and outlet of the valve housing, but also acts as a means to keep the inlet and outlet of the valve housing free from foreign matters so that when the valve is moved to open the inlet and outlet the passage of the fluid will not be retarded.

The invention further aims to provide a regulating valve which shall be simple in its construction and arrangement, strong, durable, efficient in its use, readily set up and comparatively inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel construction and combination of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, wherein like reference characters denote corresponding parts throughout the several views, and in which—

Figure 1 is a longitudinal sectional view of a regulating valve in accordance with this

invention. Fig. 2 is a top plan view of the valve housing. Fig. 3 is an inverted view thereof. Fig. 4 is a perspective view of the valve spindle and valvular element, stop nut and packing gland. Fig. 5 is a longitudinal sectional view of a modified form of regulating valve in accordance with this invention. Figs. 6, 7 and 8 are, respectively, a longitudinal section, side elevation and detail of another modification. Fig. 9 is a plan showing the valve housing provided with a single outlet or inlet.

Referring to the drawings by reference characters 1 is a valve housing cylindrical in contour and bored to form a chamber closed at one end, said chamber being cylindrical and of two different diameters, the smaller of which is indicated by the reference character 2 and the larger of which is indicated by the reference character 3, and, owing to such manner of forming the chamber a shoulder 4 is provided. The wall of the chamber is screw-threaded, with the channels formed by the threads of the wall of that portion of the chamber of smaller diameter cut away so as to form inlets 5 and outlets 6, the former being larger than the latter and arranged directly thereover. The housing 1 is formed with a screw-threaded nipple 7 for connecting a supply pipe thereto, screw-threaded as at 8, to enable the connecting of an outlet pipe or a gas burner thereto and is provided with a stop flange 9 for said outlet pipe or burner. The position of the inlets 5 with respect to the supply pipe is that they will be arranged approximately centrally with respect to the axis of the pipe and the same is true of the outlets 6 with respect to the burner or outlet pipe.

The reference character 10 denotes a rotatable spindle provided on its outer end with a finger piece 11 and on its inner end with a screw-threaded enlargement 12, which may be an integral part of the spindle 10 or suitably connected thereto and the said screw-threaded enlargement 12 constitutes an adjustable element for successively opening or closing the inlet ports 5 and simultaneously with the opening or closing of the inlet ports 5, successively opening or closing the outlet ports 6. In this connection it will be stated that the closure element 12 engages the screw threads of that portion 2 of the chamber of smaller diameter within the housing 1.

The inward movement of the closure element 12, which movement is had when it is desired to close the ports 5 and 6, is arrested by the inner end of the portion 2 of the chamber in the housing 1 and the outward movement of the element 12 is arrested by a washer 13 loosely mounted upon the spindle 10. The washer 13 is of such a diameter as to be greater than the portion 2 of the chamber and is arranged within the portion 3 of the chamber. The outward movement of the washer upon the spindle is arrested by a packing 14, which surrounds the spindle 10 and the said packing is retained in position by a gland 15, which engages the screw threads of that portion 3 of larger diameter of the chamber in the housing 1. The spindle 10 extends through the gland so that it can freely rotate, but the packing which surrounds the spindle between the washer and the gland acts as a means to prevent leakage. The movement of the washer 13 in an inward direction upon the spindle 10 is arrested by the shoulder 4. That portion of the spindle between the washer and the element 12 is of such reduced diameter as to form a passage around the same within the chamber in the housing 1 so that the gas, air, water or steam can pass around the spindle and thence be discharged through the outlets 6.

In the modification shown in Fig. 5 the housing is indicated by the reference character 16 and is bored entirely through, as at 17, to form a chamber which is of two different diameters and has the wall of that portion of larger diameter screw-threaded. The inlets are indicated by the reference character 18 and the outlets by the reference character 19, the former being larger than the latter and are set up in the same manner as that referred to in connection with the inlets and outlets 5 and 6. The spindle is indicated by the reference character 20 and carries a screw-threaded enlargement 21 which constitutes a closure element. A finger piece 22 is provided for the spindle 20 and the latter is furthermore provided with screw threads 23 which are adapted to engage with the screw threads of the wall of the portion of smaller diameter of the chamber. By this arrangement the spindle has a tight fit.

In the modification shown in Figs. 6, 7 and 8 the housing is indicated by the reference character 24 and bored to form a chamber closed at one end, said chamber being cylindrical and of two different diameters, the smaller of which is indicated by the reference character 25 and the larger of which by the reference character 26, and owing to such manner of forming the chamber a shoulder 27 is provided. The wall of the chamber is screw-threaded, with the channels formed by the threads of the wall

of that portion of the chamber of smaller diameter cut away so as to form inlets 5 and outlets 6, the latter being of less length than the former. This construction is the same as that shown in Figs. 2 and 3. The housing is formed with a screw-threaded nipple 28 for the purpose of connecting a supply pipe thereto, screw-threaded, as at 29, to enable the connecting of an outlet pipe or gas burner thereto, and is further provided with a stop flange 30 for said outlet pipe or gas burner. The reference character 31 denotes a rotatable spindle having its inner edge enlarged, as at 32, and its outer end squared as at 33. The inner end 32 of the spindle 31 is provided with mutilated screw threads, as at 34, the mutilating being had by cutting away the enlarged inner end on both sides as at 35. Surrounding that portion of smaller diameter of the spindle 31 is a packing 36, and extending in the housing engaging the screw threads of the wall of that portion of greater diameter of the chamber of the housing is a packing gland 37. The latter loosely surrounds the spindle 31 so that the same can be shifted when occasion so requires. The threads on the inner portion of the spindle 31 are adapted to engage in the inlets and outlets so as to close them when the spindle is given a quarter turn. This action will cause the cut-away portions on the enlarged end of the spindle to oppose the inlets and outlets, and consequently the gas can pass into, through, and out of the chamber within the housing. The spindle is shifted through the medium of the arm 38 which is mounted upon the squared end 33 of the spindle and is cut away so as to form a pair of shoulders 39 adapted to abut against a stop 40 projecting from the flange 30. Any suitable means depending from the arm 38, so that the same can be conveniently operated, may be employed, and as shown, each end of the arm 38 carries a depending rod 41. The purpose of the modification shown in Figs. 6, 7 and 8 is to insure a quick opening and shutting of the inlet and outlet openings, as only one-quarter turn of the spindle will accomplish it. When the regulator is out of ordinary reach, the arm 38 is provided with the rods 41, but these rods are dispensed with if the check or regulator is not out of reach.

Now, while in the employment of the regulator in connection with gas lights where a mixture of air is required, a plurality of inlets and outlets is very essential, but a single outlet can be also used for such purpose. If on the other hand the regulating valve is to be used in connection with fluids, water or steam, then in most cases a single inlet and outlet is all that is desirable, and in many cases preferable to a plurality of inlets and outlets.

In Fig. 9 the housing is shown as provided

with a single inlet or outlet, as the case may be, and this opening which constitutes an inlet or the outlet is indicated by the reference character 42.

5 By setting up the valve in a manner as shown a security against leakage is had and a positive stop for the movement of the closure element in both directions is furthermore had.

10 Self-cleaning regulators for gas lights employ for such purpose mechanism on the inside of the regulator body or housing to perfect such cleaning and to adjust the regulation; such mechanism, however, impedes
15 the flow of gas, is liable to derangement, uncertain and unreliable in action. Furthermore it is liable to become clogged by dust, impurities in the gas, or corrosion of metals and last, but not least, adds considerable expense to the cost of the regulator. All the
20 above defects are entirely obviated with the regulating valve constructed in accordance with this invention as it is evident that the addition of a separate mechanism for cleaning purposes or to prevent the regulator from becoming clogged is dispensed with.

In connection with the adaptation of the regulating device to a gas burner it will be stated that gas pressure in different localities
30 varies so much that it requires a regulator so constructed as to enable it to be adjusted for any pressure of gas, and unless an exact regulation is had too much gas is permitted to pass from the outlet ports and the consequence of such, is smoke and a waste of gas, whereas such objection will be obviated by
35 the construction of regulating valve herein set forth, owing to the fact that it is adapted for use for any pressure of gas and the regulation can be very minute and furthermore positive regulation is always obtained. The
40 gas after leaving the supply is divided by the large inlets, then thinned by the passage around the spindle and finally still more divided by the small outlet ports and by such
45 an arrangement the gas will be finally divided and, therefore, will more quickly and perfectly admix with the oxygen causing thereby perfect combustion, as well as avoiding
50 waste of gas and furthermore producing a perfectly white light, irrespective of whether the burner used is an inverted or an upright one. By employing a regulating valve in accordance with this invention there can be no
55 possible waste of gas, so, consequently, there is no smoke, which insures the most economic use of gas, besides producing a perfectly white light. This light is practicable for all purposes of gas lights, from the open gas jet
60 to the modern mantel light of any style and for any kind of gas.

The threads upon the elements 12 and 21 not only act as a means to open and close the inlet and outlet of the housing to regulate the
65 amount of gas required, but also act as a

means to clean or keep the inlet and outlet free from foreign matter so they will not be stopped up from any cause whatsoever. The inlet and outlet have the same pitch as the pitch of the threads of the closure elements, as well as corresponding in contour thereto as is evident, so that the thread of the closure element will completely close the inlet and outlet when occasion so requires in a successive manner—that is to say, the outlets will be closed successively, as well as the inlets, or opened as the case may be, so, under such circumstances a regulation can be had from the maximum to the minimum and at any intermediate point between the
70 maximum and the minimum.

The regulation of the supply of steam, air, water and the like can be had in the same manner as the regulation of gas, and, although as before stated, the invention is designed primarily as a gas check or regulator,
85 yet it is adapted for any purposes or uses wherein it is found applicable.

What I claim is—

1. A regulating valve embodying a housing provided with a series of slots, and a rotatable element provided with screw threads corresponding in contour to the slots, said threads adapted when said member is rotated in one direction to be free of the slots
90 and when rotated in the opposite direction to engage in and close the slots.

2. A regulating valve comprising means constituting a chamber provided with a screw-threaded wall, portions of the channels of the threaded wall cut away to form slots, and a rotatable element provided with screw threads, said threads adapted when the element is rotated in one direction to be free of the slots and when rotated in the opposite direction to engage in and close the slots.

3. A regulating valve comprising a housing provided with a plurality of inlets and a plurality of outlets, and a rotatable screw-threaded element having the threads thereof engaging in said inlets and outlets for simultaneously closing them.

4. A regulating valve comprising a housing having a bore constituting a valve chamber, the wall of said chamber being screw-threaded and with certain of the channels formed by the threads cut away so as to form inlets and outlets, and a rotatable cylindrical element extending into said chamber and having peripheral threads adapted to engage in the threads formed in the wall of the chamber, the threads of said element adapted when the latter is rotated in one direction to be free of the inlets and outlets and when rotated in the opposite direction to close them.

5. A regulating valve comprising a housing having a bore constituting a valve chamber, the wall of said chamber being screw-
130

threaded and with certain of the channels formed by the threads cut away so as to form inlets and outlets, and a rotatable cylindrical element extending into said chamber and having peripheral threads adapted to engage in the threads formed in the wall of the chamber, the threads of said element adapted when the latter is rotated in one direction to be free of the inlets and outlets and when rotated in the opposite direction to close them, said housing provided with means to arrest the inward movement of said element and means extending into the chamber for arresting the movement of said element in the other direction.

6. A regulating valve comprising a housing provided with inlet and outlet ports, and a screw-threaded element adapted to have the threads thereof engage in said ports for closing them, means for rotating said element in both directions thereby opening and closing the said ports, and means for limiting the movement of said element in either direction.

7. A regulating valve comprising a housing provided with a chamber having one portion thereof of greater diameter than the other, the wall of said chamber being screw-threaded, the channel formed by the thread of that portion of smaller diameter having parts thereof cut away to form ports, a rotatable screw-threaded element operating in that portion of smaller diameter of said chamber and having the thread thereof engaging in the said ports for closing them when the element is rotated in one direction and for opening them when the element is rotated in the opposite direction, and means for rotating the said element.

8. A regulating valve comprising a housing provided with a chamber having one portion thereof of greater diameter than the other, the wall of said chamber being screw-threaded, the channel formed by the thread of that portion of smaller diameter having parts thereof cut away to form ports, a rotatable screw-threaded element operating in that portion of smaller diameter of said chamber and having the thread thereof engaging in the said ports for closing them when the element is rotated in one direction and for opening them when the element is rotated in the opposite direction, means for rotating the said element, combined with means arranged in that part of the chamber of greater diameter for limiting the movement in one direction of said element.

9. A regulating valve comprising a housing provided with a chamber having one portion thereof of greater diameter than the other, the wall of said chamber being screw-threaded, the channel formed by the thread of that portion of small diameter having parts thereof cut away to form ports, a rotatable screw-threaded element operating in

that portion of smaller diameter of said chamber and having the thread thereof engaging in the said ports for closing them when the element is rotated in one direction and for opening them when the element is rotated in the opposite direction, means for rotating the said element, combined with means arranged in that part of the chamber of greater diameter for limiting the movement in one direction of said element, and means inclosing a portion of said operating means and arranged in said chamber to prevent leakage.

10. A regulating valve embodying a housing provided with a series of ports and a rotatable closure element substantially cylindrical in contour and arranged in said housing, said element having its periphery provided with means adapted to engage in said ports when the element is rotated in one direction, thereby closing the ports, said means when the element is rotated in the opposite direction adapted to be free of the ports.

11. A regulating valve comprising a housing provided with a series of inlets and a series of outlets, and a rotatable closure element arranged in said housing, said element provided with means adapted when said element is rotated in one direction to engage in said inlets and outlets for closing them, said means when said element is rotated in the opposite direction being free of said inlets and outlets.

12. A regulating valve comprising a housing provided with a series of inlets and a series of outlets and means adapted to simultaneously engage in the inlets and outlets for successively closing the inlets and successively closing the outlets.

13. A regulating valve comprising a housing provided with a series of ports, and a cylindrical element arranged in the housing and having its periphery provided with means adapted to engage in the said ports for successively closing them.

14. A regulating valve comprising a housing provided with a series of ports and a screw-threaded element arranged in the housing and adapted to have the threads thereof engage in the ports for successively closing them.

15. A regulating valve embodying a housing provided with a series of ports, and an inwardly and outwardly movable cylindrical element arranged within the housing and having its periphery provided with means adapted to engage in said ports when moved inwardly to successively close them and when moved outwardly to successively open the ports.

16. A regulating valve embodying a housing provided with a series of ports, an inwardly and outwardly movable cylindrical element arranged within the housing and hav-

ing its periphery provided with means adapted to engage in said ports when moved inwardly to successively close them and when moved outwardly to successively open the ports, and stops for limiting the movement of the said means in either direction.

17. A regulating valve comprising a housing provided with a chamber and a plurality of inlets opening into said chamber, and an inwardly and outwardly movable means arranged in the chamber and having its periphery provided with means adapted when moved in one direction to engage in the inlets for successively closing them and when moved in the opposite direction to successively open them.

18. A regulating valve comprising a housing provided with a chamber and a plurality of inlets opening into said chamber, an inwardly and outwardly movable means arranged in the chamber and having its periphery provided with means adapted when moved in one direction to engage in the inlets for successively closing them and when moved in the opposite direction to successively open them, and means for closing said chamber to prevent leakage.

19. A regulating valve comprising a housing provided with a chamber, said housing further having a series of inlets opening into said chamber and a series of outlets for said chamber, an inwardly and outwardly movable means arranged in said chamber, and adapted when moved in one direction to simultaneously engage in the inlets and outlets for successively closing them and when moved in an opposite direction to successively open the inlets and the outlets, and means for closing said chamber to prevent leakage.

20. A regulating valve comprising a housing provided with a chamber, said housing further having a series of inlets opening into said chamber and a series of outlets for said chamber, an inwardly and outwardly movable means arranged in said chamber and adapted when moved in one direction to simultaneously engage in the inlets and outlets for successively closing them and when moved in the opposite direction to successively open the inlets and the outlets, and a

spindle extending in said chamber and connected to said means for operating the latter.

21. A regulating valve embodying a housing provided with an inlet and outlet, and an inwardly and outwardly movable means arranged within the housing and adapted to engage in the inlet and outlet when moved inwardly to close them and when moved outwardly to open them.

22. A regulating valve comprising a housing provided with a chamber having an inlet and an outlet, an inwardly and outwardly movable means arranged within the chamber and adapted when moved in one direction to engage in the inlet and outlet for closing them and when moved in the opposite direction to open them, and means for closing said chamber to prevent leakage.

23. A regulating valve comprising a housing provided with a chamber, said housing further having an inlet and an outlet, and an inwardly and outwardly movable means arranged within said chamber and adapted when moved in one direction to engage simultaneously in the inlet and outlet for closing them and when moved in the opposite direction to open the inlet and outlet.

24. A regulating valve comprising a housing provided with a chamber, said housing further having an inlet and an outlet for said chamber, and a shiftable means adapted when moved in one direction to engage in the inlet and outlet for closing them and when moved in the opposite direction to open the said inlet and outlet.

25. A regulating valve comprising a housing provided with a chamber, said housing further having an inlet and an outlet for said chamber, a shiftable means adapted when moved in one direction to engage in the inlet and outlet for closing them and when moved in the opposite direction to open the said inlet and outlet, and means for closing said chamber to prevent leakage.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALBERT ULLMANN.

Witnesses:

JOHN T. MINOR,
JOSEPH F. OLIVER.