W. C. WESTAWAY.

FLUID VALVE.

APPLICATION FILED SEPT. 28, 1905.

1,011,686.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.

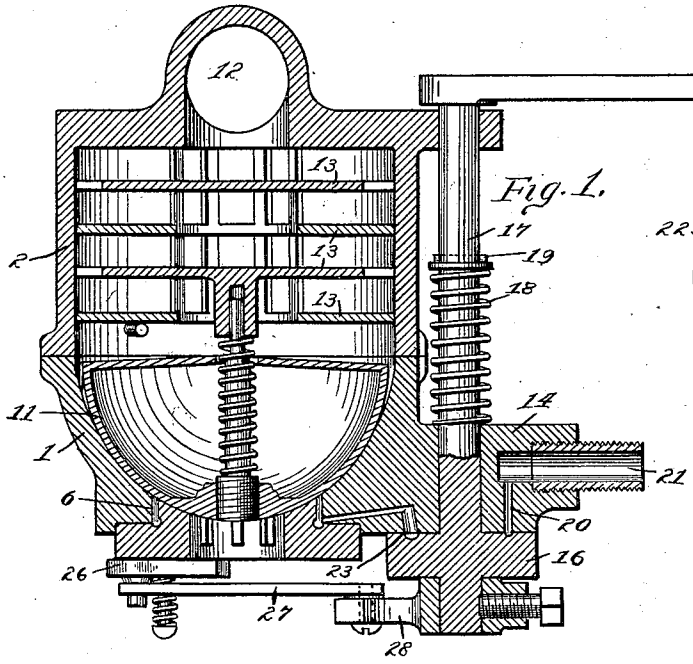

Fig. 1.

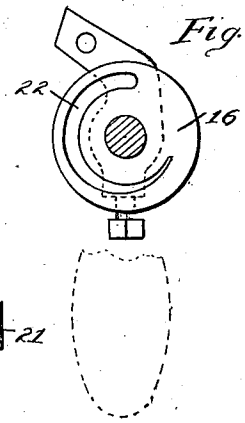

Fig. 6.

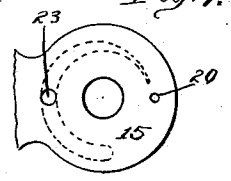

Fig. 7.

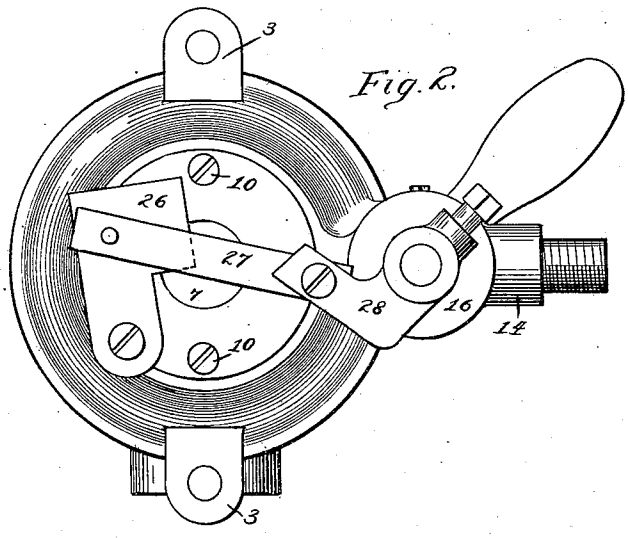

Fig. 2.

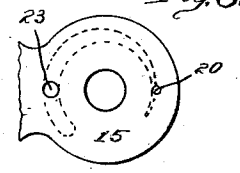

Fig. 8.

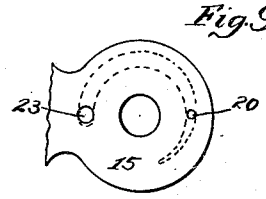

Fig. 9.

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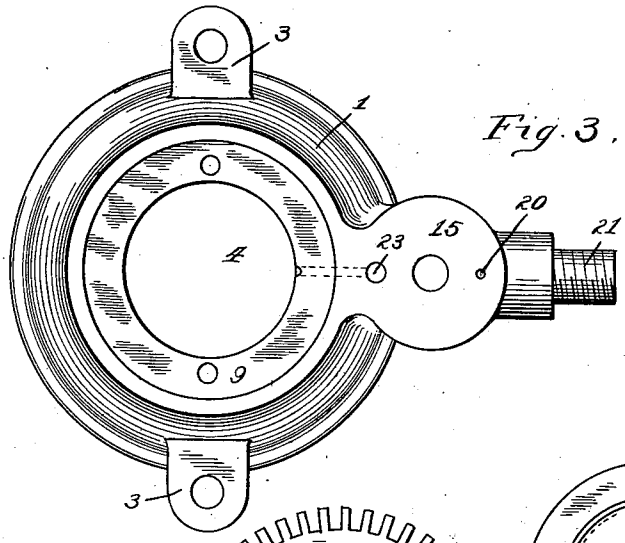

Fig. 3.

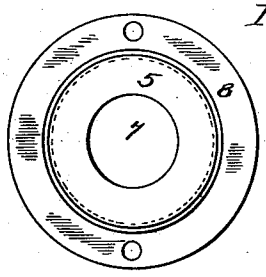

Fig. 4.

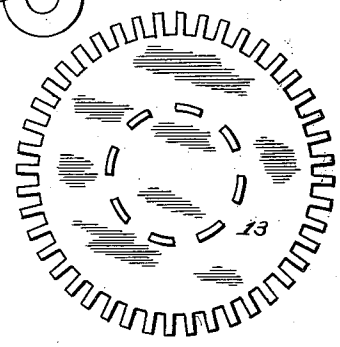

Fig. 5.

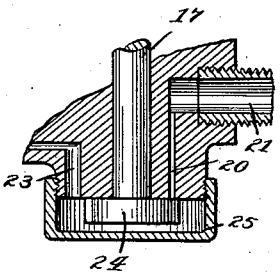

Fig. 10.

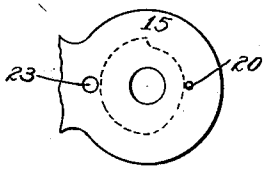

Fig. 13.

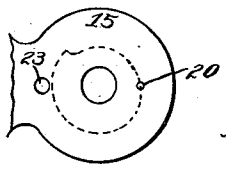

Fig. 12.

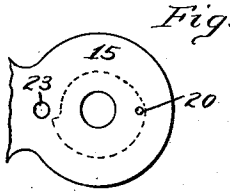

Fig. 11.

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UNITED STATES PATENT OFFICE.

WALTER C. WESTAWAY, OF ROCKFORD, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CHICAGO PNEUMATIC TOOL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

FLUID-VALVE.

1,011,686. Specification of Letters Patent. Patented Dec. 12, 1911.

Application filed September 28, 1905. Serial No. 280,544.

To all whom it may concern:

Be it known that I, WALTER C. WESTAWAY, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Fluid-Valves, of which the following is a description.

My invention belongs to the general class of valves adapted to control the supply of liquid to any suitable device, such for example as the supply of hydro-carbon to a carbureter or the like.

It has for its object the more perfect and delicate control of such supply.

To this end it consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the accompanying drawings wherein like reference characters indicate like or corresponding parts; Figure 1 is a vertical section of a carbureter equipped with my invention. Fig. 2 is a bottom plan of the same. Fig. 3 is a bottom plan of the carbureter shell with parts removed to show the valve seat. Fig. 4 is a plan of the bottom closure of the carbureter. Fig. 5 is a plan of one of the baffle plates of the carbureter. Fig. 6 is a bottom plan of the preferred form of valve in my invention. Figs. 7, 8, and 9 show a bottom plan of the valve seat, dotted lines showing the relative positions of the parts in operation. Fig. 10 is a sectional view showing a modified form of valve, and Figs. 11, 12, and 13 are views similar to Figs. 7, 8, and 9, showing the relative positions of the parts in the operation of the modified form of valve.

In the preferred form shown in Figs. 1 to 9 inclusive, 1 represents the base, and 2 the top of a shell or casing forming a mixing chamber of a carbureter or similar device. The two may be secured together in any preferred manner. As shown, the parts are provided with registering lugs 3, which may be secured together with bolts or equivalent means. The base shown is concave and is formed with a circular opening 4 for the reception of a similarly formed part 5 which is slightly smaller than the opening, and which, when in place is spaced therefrom on all sides to form an annular liquid inlet 6. The part 5 is also annular, inclosing an opening 7 which serves as an inlet for air, and is provided with an outwardly extending flange 8, constructed to be snugly seated in a corresponding recess or depression 9, formed in the base. Any suitable means may be employed to secure the parts together. As shown screws 10—10, serve this purpose. A guided movable deflector 11, within the shell, serves to direct the current of air over the inflowing liquid, the mixture finally escaping by means of an outlet 12. Baffle plates 13, may be positioned in the shell to aid in securing a more perfect commingling of the air and liquid.

The carbureter described forms the subject matter of a separate application for Letters Patent, Serial No. 280,545, filed September 28 1905 and is here described only for the purpose of illustrating the operation of my invention when employed with this class of devices.

The base is provided with an offset 14 provided with a valve seat 15 and a support for the valve 16 whose stem 17 passes therethrough. A spring 18 resting upon the face of the offset or extension 14 and beneath a pin or equivalent part 19 on the stem, serves to resiliently hold the valve to its seat. An inlet duct 20, serves to conduct the liquid from the supply pipe 21 to the valve 16, which is provided with a groove 22 formed in its face, which closing against the valve seat, forms a duct for the liquid. The groove 22 is peculiarly formed, being slightly eccentric to the valve stem and gradually and regularly increased in size, and preferably in depth, from one end to the other, and may for convenience, be termed "an increasing spiral groove". (Figs. 6, 7, 8, 9.) An exit duct 23 formed in the valve seat and extending to the fluid inlet 6 serves to conduct the liquid to the mixing chamber. It will thus be seen that when the valve is closed the face of the same covers and effectually closes the end of the inlet duct 20 (see Fig. 7). As the valve is rotated the duct 20 is first slightly opened by the edge of the groove slightly passing the same permitting but a small quantity of liquid to enter the groove 22, which conducts it to the exit duct 23 by which it is finally directed to the mixing chamber. (See Fig. 8.) Further rotation of the valve serves to uncover the end of the duct 20 by degrees and finally to bring the larger and deeper part of the groove in to complete

registry therewith thus opening the valve to its maximum capacity (see Fig. 9.) It will be seen that by this construction a simple valve is produced, very sensitive in adjustment and effective in operation.

In the modified form shown in Figs. 10 to 13 inclusive, the valve consists of an eccentric plate 24 on the valve stem 17, a cup 25 inclosing the valve and its seat. The operation is substantially the same the edge of the plate coöperating with the inlet duct 20 in the same manner that the wall of the groove 22 does. The inflowing fluid flows into the cup 25 and thence through the exit duct 23 to the mixing chamber. The source of the liquid, as shown, is preferably above the level of liquid inlet to the chamber insuring the flow of the liquid through the duct 23. The pulsating operation of the carbureter also tends to draw the liquid into the shell.

In the preferred form of carbureter shown, the air inlet is provided with a shutter valve 26, which is so connected with the valve stem 17 that the shutter valve 26 and the liquid valve 16 operate synchronously thus maintaining the relative proportions of air and fluid delivered to the mixing chamber. As shown a link 27 connects the air valve 26 with an arm 28 fixed to the valve stem, a set screw 29 affording means for adjusting the arm 28 on the valve stem.

It will be seen that in each case a wall eccentric to the axis of rotation cuts by the edge of the inlet duct gradually uncovering the same and controlling the quantity of fluid admitted. Hence where in the claims I refer to a valve the regulating portion of which is mounted eccentrically to the axis of its rotation, I wish to be understood as including a valve operating substantially as described, whether the eccentric element consists in a groove or equivalent part formed in the face of the valve, or in the periphery or outer wall of the valve itself.

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

1. A valve comprising a body member with a surface constituting a valve seat, an opening projecting through said body portion, a valve adapted to engage said valve seat, a rotatable stem for the valve projecting through said opening in the body portion, inlet and outlet ducts projecting through said body portion on opposite sides of said stem, said valve disk having on that surface which engages the valve seat a continuous curved regulating portion, which is mounted eccentrically to the axis of its rotation, and normally closes one of said ducts only, the normally closed duct being uncovered upon rotation of the valve.

2. A valve comprising a body member with a surface constituting a valve seat, an opening projecting through said body portion, a valve adapted to engage said valve seat, a rotatable stem for the valve projecting through said opening in the body portion, inlet and outlet ducts projecting through said body portion on opposite sides of said stem, said valve disk having on that surface which engages the valve seat a continuous curved regulating portion, which is mounted eccentrically to the axis of its rotation, and normally closes one of said ducts only, the normally closed duct being uncovered upon rotation of the valve, and means for holding the valve disk in adjusted positions, said means including a spring engaging at one end said body portion and at its opposite end a part carried by the valve stem.

3. A valve comprising a valve seat provided with separated passages therethrough constituting an inlet duct and an exit duct opening into the same face of the valve seat, a rotatable valve for said seat with a continuous curved regulating portion mounted eccentrically to its axis of rotation, normally closing the inlet duct only but upon rotation gradually uncovering the same, a stem for the valve, the valve stem and inlet and exit ducts extending parallel to one another.

4. A valve comprising a valve seat having a substantially flat surface provided with an inlet duct, and an exit duct opening into the same face of the valve seat, a rotatable valve having a substantially flat surface for said seat provided with a single tapering groove formed in the flat surface thereof closing against the seat and registering continuously with the exit duct and gradually uncovering the inlet duct.

5. A valve comprising a body member with a surface constituting a valve seat, an opening projecting through said body portion, a valve adapted to engage said valve seat, a rotatable stem for the valve projecting through said opening in the body portion, inlet and outlet ducts projecting through said body portion on opposite sides of said stem, said valve disk having on that surface which engages the valve seat a continuous curved and tapering groove constituting a regulating portion, which is mounted eccentrically to the axis of its rotation, and normally closes one of said ducts only, the normally closed duct being uncovered upon rotation of the valve, said valve stem teminating at its outer end in an operating handle and a supporting member for the stem intermediate its ends projecting from said body portion.

6. In a valve, the combination of a body portion constructed upon its lower face to constitute a valve seat and having a vertically extending opening therethrough, a valve disk adapted to engage said seat and having a stem projecting through the opening, vertically extending openings in said

body portion terminating at their lower ends in the surface of the valve seat and connecting at their upper ends with transversely extending openings in the body portion leading to the outside, and said openings constituting respectively inlet and outlet ducts, the valve seat and valve disk forming therebetween a continuous curved regulating portion which is eccentrically arranged relative to the axis of rotation of the valve disk and normally closing the inlet duct only, the normally closed duct being uncovered upon rotation of the valve.

7. In an apparatus of the character described, the combination of a shell or casing having a laterally offset portion adjacent its base and constructed upon its lower face to constitute a valve seat and having a vertically extending opening therethrough, a valve disk adapted to engage said seat and having a stem projecting through the opening, vertically extending openings in said body portion terminating at their lower ends in the surface of the valve seat and connecting at their upper ends with transversely extending openings in the valve portion one of which transverse openings is enlarged for the reception of an inlet pipe, and the other of which leads to the interior of the casing at its base, the valve seat and valve disk forming therebetween a continuous curved regulating portion which is eccentrically arranged relative to the axis of rotation of the valve disk and normally closing the inlet duct only, the normally closed duct being uncovered upon the rotation of the valve.

8. In an apparatus of the character described, the combination of a shell or casing having a laterally offset portion adjacent its base and constructed upon its lower face to constitute a valve seat and having a vertically extending opening therethrough, a valve disk adapted to engage said seat and having a stem projecting through the opening, vertically extending openings in said body portion terminating at their lower ends in the surface of the valve seat and connecting at their upper ends with transversely extending openings in the valve portion one of which transverse openings is enlarged for the reception of an inlet pipe, and the other of which leads to the interior of the casing at its base, the valve seat and valve disk forming therebetween a continuous curved regulating portion which is eccentrically arranged relative to the axis of rotation of the valve disks and normally closing the inlet duct only, the normally closed duct being uncovered upon the rotation of the valve, the valve stem having intermediate its ends a retaining device, and at its upper end an operating handle, a spring mounted on the stem and engaging at opposite ends respectively the top of said offset portion of the casing and the retaining device on the stem, and an apertured supporting extension on the casing adjacent the upper end thereof adapted for the reception of the upper end of the stem.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

WALTER C. WESTAWAY.

Witnesses:
BLANCHE PARDRIDGE,
R. F. LOCKE.