Dec. 31, 1935. A. W. WHEATON 2,026,110

SELF CLOSING FAUCET

Filed Aug. 24, 1934 2 Sheets-Sheet 1

Fig.1

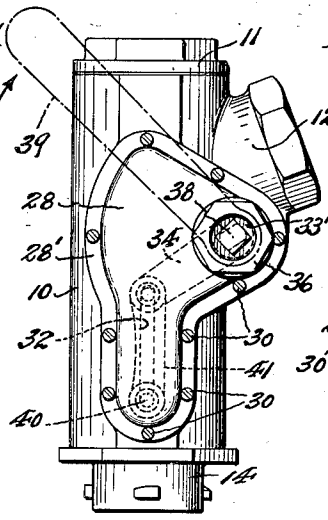


Fig.2

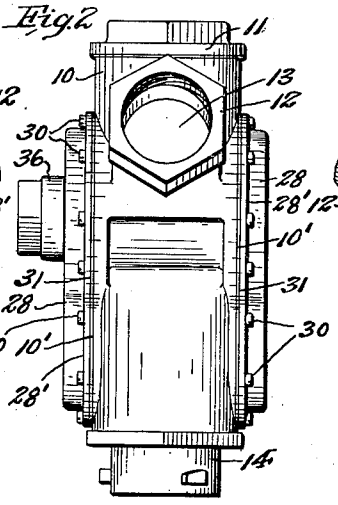


Fig.3

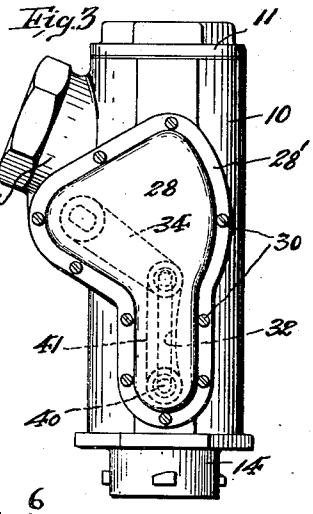


Fig.4

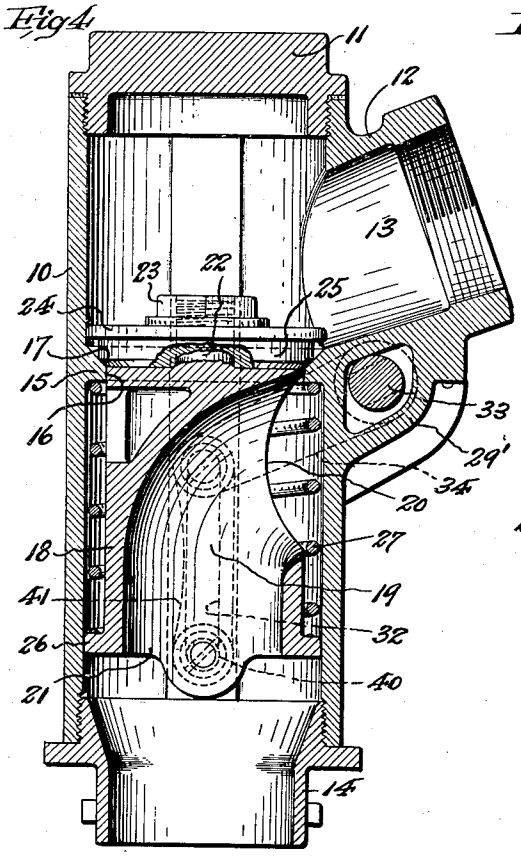
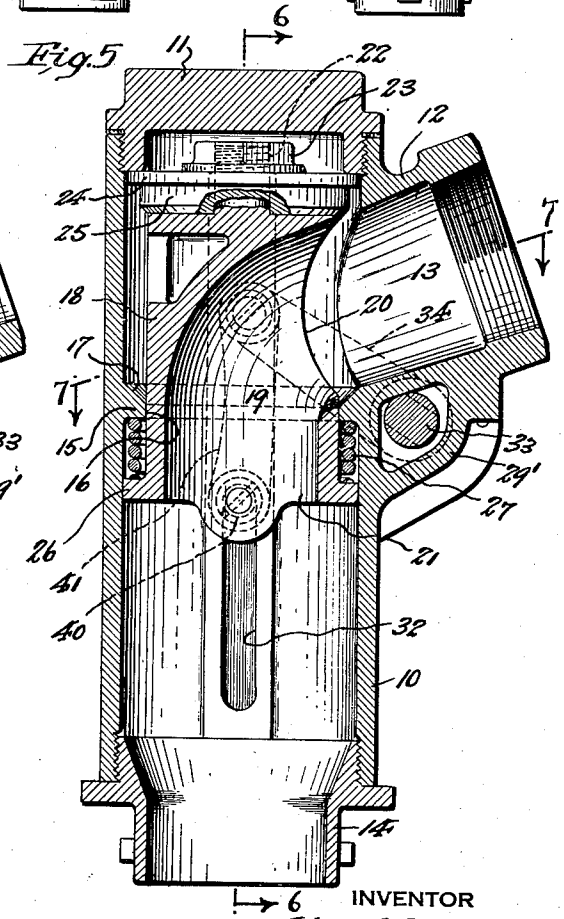


Fig.5



INVENTOR
Abram W. Wheaton,
BY
George D. Richards
ATTORNEY

Dec. 31, 1935. A. W. WHEATON 2,026,110

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Filed Aug. 24, 1934 2 Sheets-Sheet 2

Fig. 6

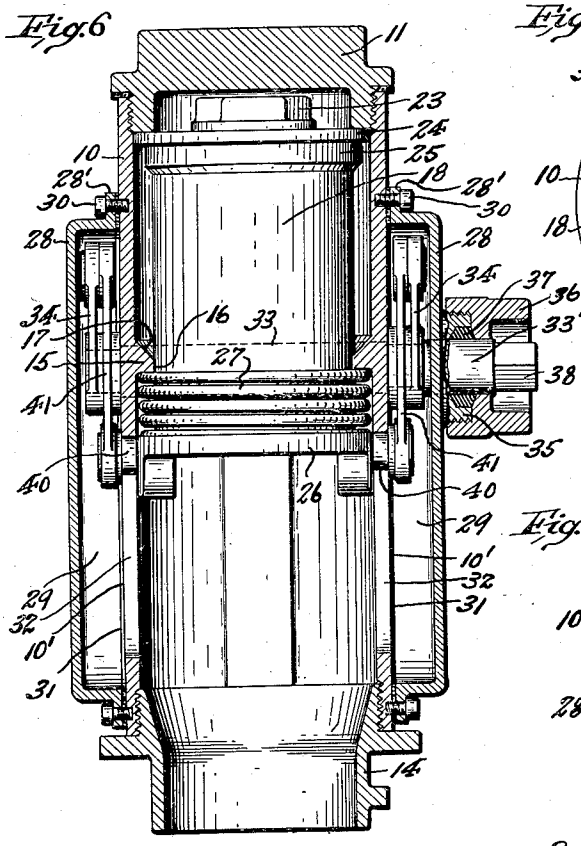


Fig. 7

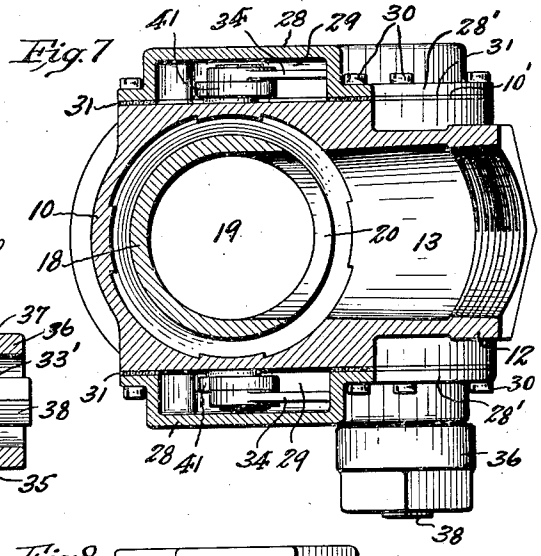


Fig. 8

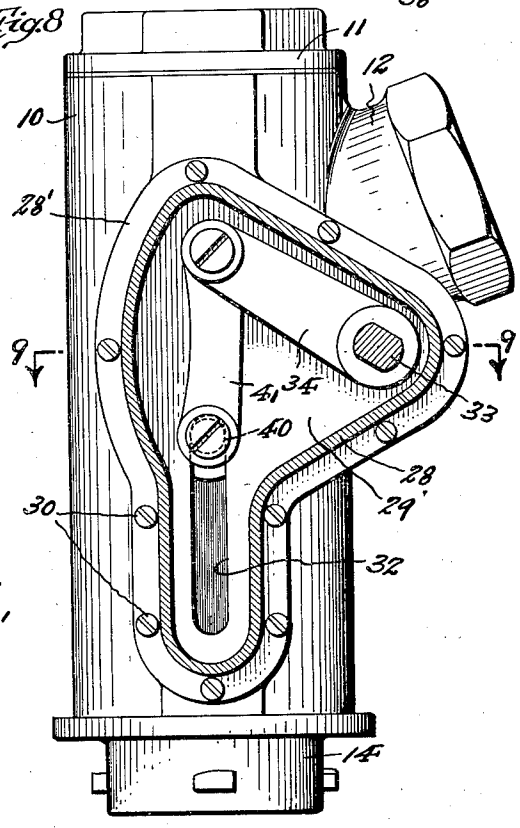
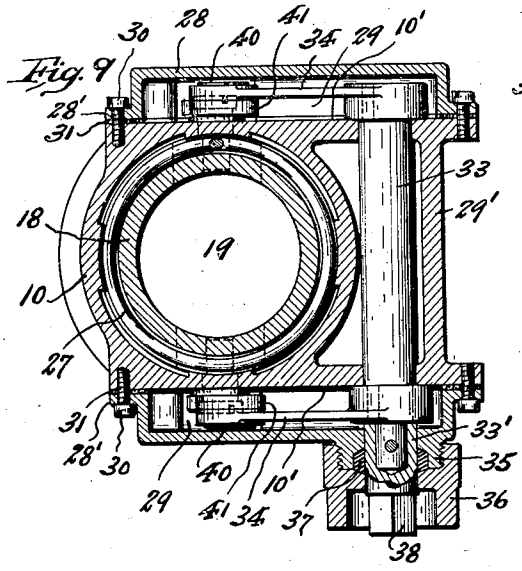


Fig. 9



INVENTOR
Abram W. Wheaton,
BY
George D. Richards
ATTORNEY

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UNITED STATES PATENT OFFICE

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SELF-CLOSING FAUCET

Abram W. Wheaton, Maplewood, N. J., assignor to A. W. Wheaton Brass Works, Newark, N. J., a corporation of New Jersey

Application August 24, 1934, Serial No. 741,243

3 Claims. (Cl. 251—134)

This invention relates, generally, to improvements in valves, and the invention has reference, more particularly, to an improved valve construction of the self-closing faucet type.

This invention has for its principal object to provide a novel valve structure adapted to afford free flow of fluids discharged therethrough with a minimum of turbulence, friction and eddying. To this end the valve structure is provided with a novel valve member cooperative with an internal valve port; said valve member having a fluid diverting means provided with an intake opening adapted to register with the valve casing inlet or intake, when the valve member is in open relation to the valve port, so that a free path of flow, having no internal obstructions, is offered to the fluid.

Another object of this invention is to provide, in a valve having the above-mentioned characteristics, a novel arrangement of means rendering the valve self-closing; and a further object is to provide a novel construction of means for effecting the opening movement of the valve, whereby such operation may be accomplished with ease, and without risk of binding or undue friction.

Other objects of this invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

An illustrative embodiment of the invention is shown in the accompanying drawings, in which:

Fig. 1 is a side elevation of the novel valve or faucet according to this invention; Fig. 2 is a rear face elevation of the same; and Fig. 3 is an opposite elevation thereof.

Fig. 4 is a longitudinal vertical section of the novel valve or faucet, drawn on an enlarged scale, and showing the same in closed condition; Fig. 5 is a similar view, showing the same in open condition; Fig. 6 is a longitudinal vertical section and part elevation, taken on line 6—6 in Fig. 5; Fig. 7 is a horizontal section, taken on line 7—7 in Fig. 5; Fig. 8 is a side elevation with a cover plate of the valve actuating means in section; and Fig. 9 is a horizontal section taken on line 9—9 in Fig. 8.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

The illustrative embodiment of the novel valve structure according to this invention, and as shown in the accompanying drawings, is of the self-closing faucet type, such e. g. as adapted for use as a discharge means for oil and gasoline tank trucks and similar uses.

The valve structure comprises a main valve casing 10, internally screw threaded at its upper end to receive a closure cap 11. Integral with the main casing 10, and extending laterally and preferably angularly therefrom at a point adjacent to its upper end, is an intake branch 12, the inlet passage 13 of which communicates with the interior of said main casing 10. The free end portion of said intake branch 12 is internally threaded for coupling the same in operative connection with a tank or the like (not shown), which it is to serve. Said main casing 10 is preferably, although not essentially, internally screw threaded to receive one element 14 of a hose coupling connection, so that, if desired, a discharge hose may be coupled to the outlet end of the valve or faucet.

Provided within the interior of said main casing 10 below the intake branch 12 thereof, is a transverse partition 15, in which is provided an opening or port 16, the upper margin of which is bounded by a chamfered valve seat 17.

Vertically movable within the main casing interior, and slidable through the valve seat port 16, is a fluid flow guiding or diverting means, the same comprising a cylindrical member 18 having a curvilinear passage 19 with its intake 20 at the side of said member adjacent to its upper end and its outlet 21 at the open lower end of the latter. An axial upwardly projecting threaded stud 22 is provided in connection with the upper extremity of said diverting member 18. Secured over this stud, and to the upper extremity of said diverting member 18, by the nut 23, is a valve disk 24 having a facing washer 25 to engage the valve seat 17, and thus close the port 16, when the diverting member 18 is in its downwardly moved inactive position (as shown in Fig. 4). At its lower extremity, said diverting member 18 is provided with an external annular flange or shoulder 26. Exteriorly encircling the diverting member 18, between the underside of said partition 15 and said flange or shoulder 26, is a compression spring 27 which functions to move said diverting member 18 downwardly to inactive position, thus, at the same time, seating the valve disk and its facing washer in closing relation to the valve seat port 16 (as shown in Fig. 4).

The opposite exterior lateral sides of the main casing 10 are suitably shaped to provide seating faces 10' (see Fig. 9) for the application thereto of removable housing members 28, which provide enclosing chambers 29 in which are arranged valve actuating elements hereafter described. Said housing members 28 are provided with peripheral perforate flanges 28', through which

fastening screws 30 are engaged to secure said housing members to the main casing. Gaskets 31 are inserted between the housing members 28 and the main casing 10 to establish therebetween fluid tight joints. Formed in the opposite side walls of said main casing 10, between the interior of the latter and the housing chambers 29, are vertical guide slots or ways 32, which are situated below the valve seat opening or port 16. Suitably journaled to extend transversely in and between the housing members 28, at the rearwardly off-set portions thereof, is a shaft 33. Extending between said housing member 28 at the back of said main casing 10 is a transverse housing portion 29' which encloses the intermediate portion of said shaft 33. Fixed on the respective ends of said shaft, so as to be respectively disposed and movable within the chamber 29 of the respective housing members 28 are lever arms 34. One of said housing members 28 is provided with an external stuffing box 35 and cooperating gland 36, through which an extension 33' of said shaft 33 exteriorly projects. Arranged in said stuffing-box is a suitable packing 37 to surround said shaft extension and provide a fluid tight joint around its exteriorly projecting portion. The external end of said shaft extension 33' is provided with a squared end portion 38, to receive operative application thereto of a suitable wrench lever 39 (shown in dotted outline in Fig. 1); by which said shaft 33 may be actuated. Connected with the lower end of said diverting member 18, to project laterally from opposite sides thereof, are journal studs 40. These studs 40 extend respectively through the respective guide slots or ways 32 into the chambers 29 of the respective housing members 28. Pivotally secured by their upper ends to the free ends of the lever arms 34, and by their lower ends to said journal studs 40, are connecting links 41.

To open the faucet valve above-described, a suitable wrench 39 is applied to the squared end 38 of the shaft 33—33', and thereupon the same is swung or turned in a clockwise direction to rotate said shaft. Such movement of the shaft functions to swing upwardly the lever arms 34 from their normal down-swung position which they occupy when the valve is closed. The upward swinging movement of said lever arms 34 is transmitted through the links 41 to the diverting member 18 and the valve means 24—25 carried thereby, thereby lifting these parts vertically upward, against the compression of the spring 27, within the main casing 10. Such upward movement of these parts removes the valve means 24—25 from closed relation to the valve seat port 16, and at the same time raises the diverting member 18 to operative position wherein the intake 20 of its passage 19 is aligned with the inlet passage 13 of the intake branch 12 of the main casing 10. When the parts are in the described operative positions, the discharge of fluid through the faucet valve takes place. The fluid entering the faucet valve through the inlet passage 13 of the intake branch 12 is smoothly and easily diverted, with a minimum of impedance and friction, through the unobstructed passage 19 provided by the diverting member, and consequently undue turbulence or eddying is avoided, and a free full flow of the fluid is discharged through the open faucet valve.

Owing to the fact that the diverting and valve means is supported at opposite sides by the lifting means, a very smooth and easy operation of the valve mechanism is assured, whereby sticking, binding or undue friction is entirely eliminated.

When the wrench 39 is released from upswinging pressure, the spring 27 will quickly and easily return the diverting member and valve to normal initial positions, with the latter seated in closed relation to the valve seat port 16.

As many changes could be made in the above-described construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:—

1. A valve, comprising a main casing having a lateral intake branch adjacent to its upper end, an outlet at its lower end, and a valve seat port intermediate said intake branch and outlet; a diverting member vertically slidable through said valve seat port, a valve means carried by the upper end of said diverting member and operative on movement with the latter to open and close said valve seat port, said diverting member having an unobstructed curvilinear passage adapted, on upward movement of said diverting means, to be aligned between said intake branch and the outlet of said casing, an external annular flange at the lower end of said diverting member, a spring means externally encircling said diverting member between said flange and said valve seat port, said spring means being operative to yieldably hold said diverting member in inactive position and said valve means in closed relation to said valve seat port, and means connected with said diverting member for manually raising the same to active position and moving said valve means to valve seat port opening position.

2. A valve, comprising a main casing having a lateral intake branch adjacent to its upper end, an outlet at its lower end, and a valve seat port intermediate said intake branch and outlet; a diverting member vertically slidable through said valve seat port, a valve means carried by the upper end of said diverting member and operative on movement with the latter to open and close said valve seat port, said diverting member having an unobstructed curvilinear passage adapted, on upward movement of said diverting means, to be aligned between said intake branch and the outlet of said casing, an external annular flange at the lower end of said diverting member, a spring means externally encircling said diverting member between said flange and said valve seat port for yieldably holding the diverting member in inactive position and said valve means in closed relation to said valve seat port, means providing housing chambers at opposite sides of said main casing, said main casing having vertical slots in its side walls respectively communicating with said housing chambers, said diverting member having pivot studs projecting through said slots respectively into said opposite housing chambers, a shaft journaled in and between said housing chambers, lever arms on said shaft within said housing chambers, links connecting said lever arms with said pivot studs of said diverting member, and exteriorly exposed means for actuating said shaft.

3. A valve, comprising a main casing having a lateral intake branch adjacent to its upper end, an outlet at its lower end, and a valve seat port intermediate said intake branch and outlet;

a diverting member vertically slidable through said valve seat port, a valve means carried by the upper end of said diverting member and operative on movement with the latter to open and close said valve seat port, said diverting member having an unobstructed curvilinear passage adapted, on upward movement of said diverting means, to be aligned between said intake branch and the outlet of said casing, an external annular flange at the lower end of said diverting member, a spring means externally encircling said diverting member between said flange and said valve seat port for yieldably holding the diverting member in inactive position and said valve means in closed relation to said valve seat port, means providing housing chambers at opposite sides of said main casing, said main casing having vertical slots in its side walls respectively communicating with said housing chambers, said diverting member having pivot studs projecting through said slots respectively into said opposite housing chambers, a shaft journaled in and between said housing chambers, lever arms on said shaft within said housing chambers, links connecting said lever arms with said pivot studs of said diverting member, one of said housing members having a stuffing box means through which an end extension of said shaft projects exteriorly therefrom, and said shaft extension having a polygonal end portion to receive application of an actuating wrench thereto.

ABRAM W. WHEATON.