J. KELLY.

VALVE.

APPLICATION FILED DEC. 29, 1910.

1,066,820. Patented July 8, 1913.

Fig. 1.

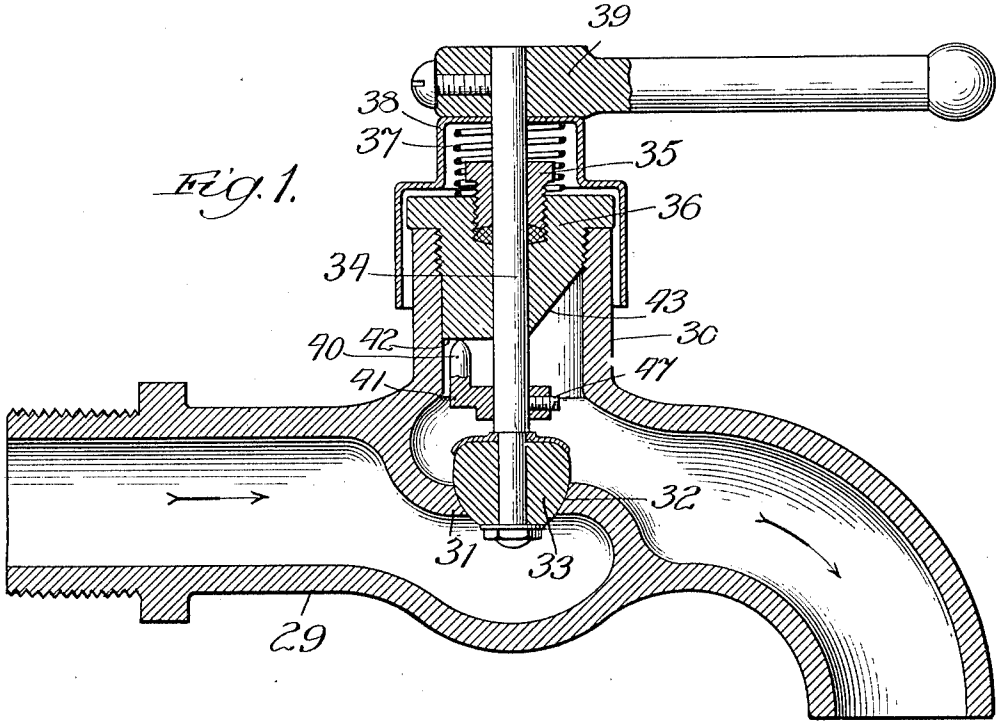
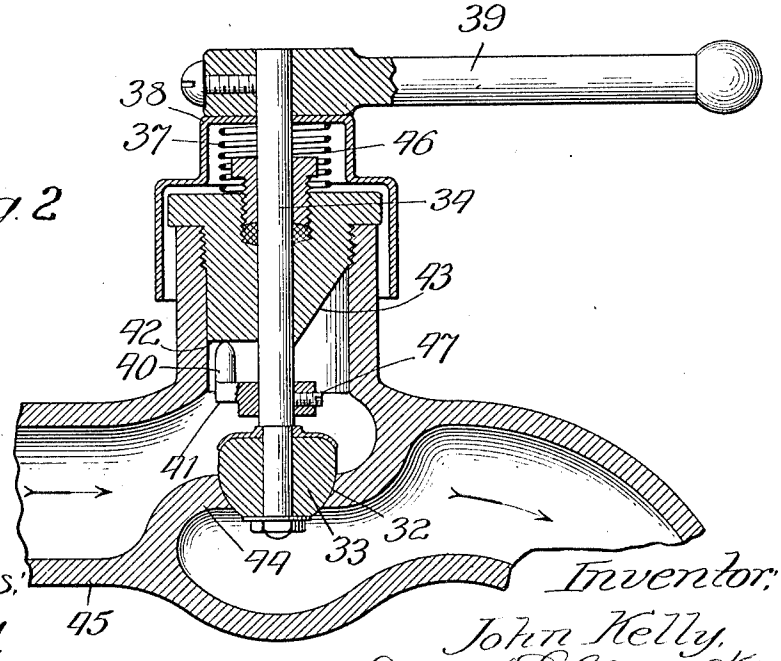


Fig. 2



Witnesses:
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JOHN KELLY, OF CHICAGO, ILLINOIS.

VALVE.

1,066,820. Specification of Letters Patent. Patented July 8, 1913.

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To all whom it may concern:

Be it known that I, JOHN KELLY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Valves, of which the following is a specification.

My object is to provide a novel and simple construction of valve-device of the type involving a rotatable and reciprocatory stem carrying a valve coöperating with the seat, which shall be economical of manufacture, easily operated and be positive in its action.

Referring to the accompanying drawing—Figure 1 is a view in longitudinal sectional elevation of a faucet constructed in accordance with my invention, the valve of the faucet being shown closed; and Fig. 2, a similar view of another embodiment of my invention.

Referring particularly to the construction illustrated in Fig. 1, the faucet therein shown is formed of a casing 29 provided between its inlet and outlet 29^a and 29^b respectively, with an upwardly-extending tubular section 30 and a diaphragm 31, the interior of the section 30 opening into the outlet 29^b. The partition 31 contains a horizontally-disposed circular opening, the wall of which forms a seat 32 for a valve 33 preferably of elastic material, such as rubber, which is secured, as is usual in constructions of this type, to the lower end of a rotatable and reciprocatory stem 34, which operates in a stuffing-box 35 screwed into the outer end of a plug 36 extending into the tubular section 30. In this construction the valve 33 seats in opposition to the flow of fluid-pressure through the casing and thus there is a tendency to the unseating of the valve by the pressure of the fluid, a coil spring 37 surrounding the stem 34 and bearing at one end against the upper surface of the plug 36 and at its opposite end against the under side of a cap 38 fitting over the tubular extension 30 and against the under side of an operating lever 39 secured to the upper end of the stem 34, serving to insure the unseating of the valve. The stem 34 is rotated through the medium of a lever 39, lengthwise movement of the stem 34 to cause the valve 33 to be moved relative to its valve-seat 32 being controlled by a tapered pin 40 located in the tubular extension 30 and extending upwardly from a collar 41 rigid with the stem 34, the upper tapered end of the pin 40 coöperating with the lower surface of the plug 36 which is formed with a surface 42 extending substantially at right-angles to the axis of the stem 34, and an inclined surface 43 which inclines upwardly from the lower toward the upper end of the plug, as illustrated in Fig. 1.

The valve 33 is held against the seat 32 in opposition to the fluid-pressure in the casing 29 and the spring 37, by the engagement of the pin 40 with the surface 42 of the plug 36. Thus, when the lever 39 is swung to a position in which the pin 40 is out of engagement with the surface 42 and in contact with the inclined surface 43, the force exerted by the fluid-pressure in the casing 29, aided by the spring 37, causes the valve 33 to be raised from its seat 32, the pin 40 traveling in an upwardly curved path along the inclined surface 43, and the stem 34 and handle 39 turning with the pin 40 as the latter swings about the axis of the stem. The valve 33 is forced against its seat 32 by swinging the lever 39, thereby causing the stem 34 to rotate, and moving the pin 40 against the inclined surface 43, the surface 43 in this movement operating to depress the pin and stem until the pin rides upon the surface 42. In this position of the parts described, the valve 33 is forced against the seat 32 and held in such position by the engagement of the pin 40 with the surface 42.

The construction shown in Fig. 2 is the same as that illustrated in Fig. 1, excepting that the partition 44 in the casing 45 is so disposed as to cause the valve 33 to seat in the direction of the flow of fluid pressure through the casing 45. In this construction the coil spring 46, positioned as described of the spring 37 of Fig. 1, should be of a strength tending to unseat the valve 33 in opposition to the force of the fluid pressure through the casing 45. The valve 33 is held to its seat 32 by the engagement of a pin 40 with the surface 42, and when this pin is moved about the axis of the stem 34 to a position in which it registers with the inclined surface 43, the force of the spring 46 will raise the valve 33, thus causing the pin 40 to move upwardly in a curved path against the surface 43. The valve 33 of this construction is seated in the same manner as described of the construction illustrated in Fig. 1, namely, by swinging the lever 39 and thereby rotating the stem 34, the pin 40 in this operation moving downwardly in a

curved path against the surface 43 and forcing the valve 33 into engagement with the seat 32, the valve being held to its seat by the engagement of the pin 40 with the surface 42.

The collars of the constructions illustrated are preferably adjustable lengthwise of the stems 34 and are provided with set-screws 47 for securing them in adjusted positions, whereby wear of the pins 40 may be compensated for.

The beveled surfaces on the valve-devices which coöperate with the pins on the stems are in effect cams for producing a wedging action upon the pins, and while I prefer to provide these cams in the form of the beveled surfaces shown, I do not wish to be understood as intending to limit my invention to this particular form of cam, as any other suitable form thereof may be provided.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a valve-device, the combination of its valve-seat, a valve coöperating with said seat tending to move to open position and provided with a rotatable and longitudinally-movable stem, a member provided with a cam-surface, and a pin on said stem interposed between said member and seat and adapted to coöperate with said cam-surface, said member being provided adjacent its cam-surface with a surface with which said pin is adapted to engage for holding said valve in closed position.

2. In a valve-device, the combination of its casing, a valve-seat, a valve in said casing coöperating with said seat and provided with a rotatable and longitudinally-movable stem, said valve closing in the direction of the flow of fluid through said casing, a member on the casing provided with a cam-surface, a pin on said stem interposed between said member and said seat and adapted to coöperate with said cam-surface, and a spring coöperating with said valve and in opposition to the force exerted against the latter by the fluid-pressure, said spring operating to move said valve to open position and said member being provided adjacent its cam-surface with a surface with which said pin is adapted to engage for holding said valve in closed position in opposition to said spring.

3. In a valve-device, the combination of a casing containing an apertured partition, the wall of said aperture forming a valve-seat, a valve coöperating with said seat and closable in the direction of the flow of fluid through said casing, a plug extending into said casing and provided with a cam-surface, a rotatable and longitudinally-movable stem extending through said plug and provided at its outer end with a handle, a pin secured to said stem between said plug and valve and adapted to coöperate with said cam-surface, and a spring interposed between said plug and handle and of a strength sufficient to unseat said valve, said plug being provided adjacent its cam-surface with a surface with which said pin is adapted to engage for holding said valve in closed position.

4. In combination with an apertured housing and a valve having its stem journaled therein, one of said parts having a cam shoulder inclined to the axis of the valve stem; a follower on the other part adapted to engage said cam shoulder during rotation of the valve stem for causing translation of the valve along the axis of said stem toward and from the aperture of the housing, the cam shoulder terminating in a portion whose plane is substantially perpendicular to the axis of the valve stem, and means for yieldingly resisting the seating of the valve.

5. In combination with an apertured housing and a valve adapted for closing the aperture thereof, a stem connected with said valve and mounted in the housing for rotation about its axis and for translation along the same for seating and opening the valve; the housing having a cam shoulder inclined to the axis of the stem, a follower on the stem adapted to engage the said cam shoulder during rotation of the stem for causing the aforesaid translation thereof; the cam shoulder terminating in a portion whose plane is substantially perpendicular to the axis of the stem, and means for yieldingly resisting the seating of the valve.

6. In combination with an apertured housing and a valve mounted for movement therein, one of said parts having a cam shoulder inclined to the axis of the stem of the valve, said stem being rotatable about its axis, a follower on the other part adapted to engage said cam shoulder during rotation of the valve stem for causing translation of the valve along the axis of said stem toward and from the aperture of the housing, the cam shoulder terminating in a portion whose plane is substantially perpendicular to the axis of the valve stem, a flange on the stem outside of the housing and a spring coiled about the stem and positioned to react between said flange and housing.

JOHN KELLY.

In presence of—
R. A. SCHAEFER,
JOHN WILSON.

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