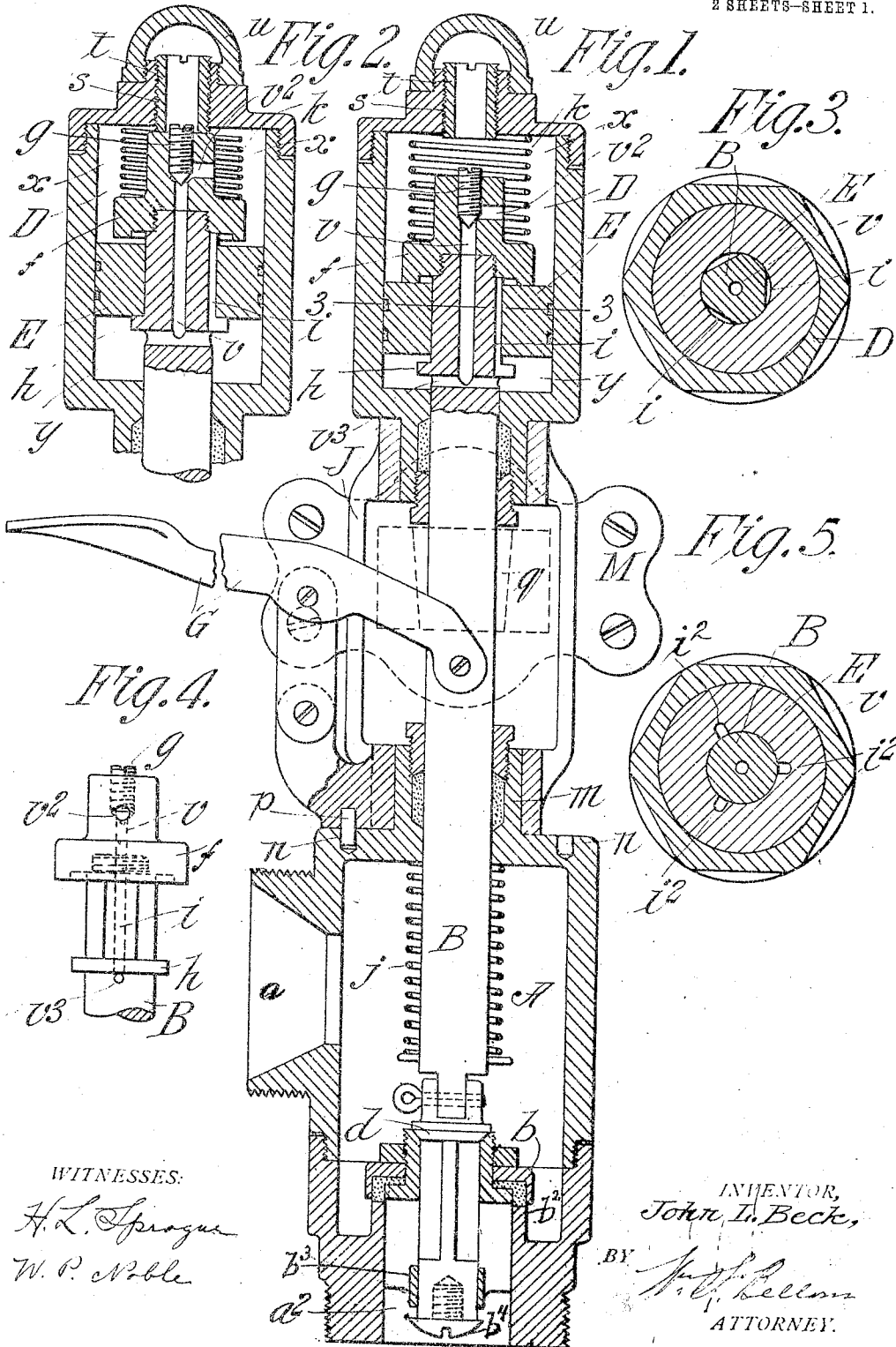


J. L. BECK.
FLUSHING VALVE.
APPLICATION FILED MAY 2, 1912.

1,063,639.

Patented June 3, 1913

2 SHEETS—SHEET 1.



WITNESSES:

H. L. Sprague
W. P. Noble

INVENTOR,
John L. Beck,

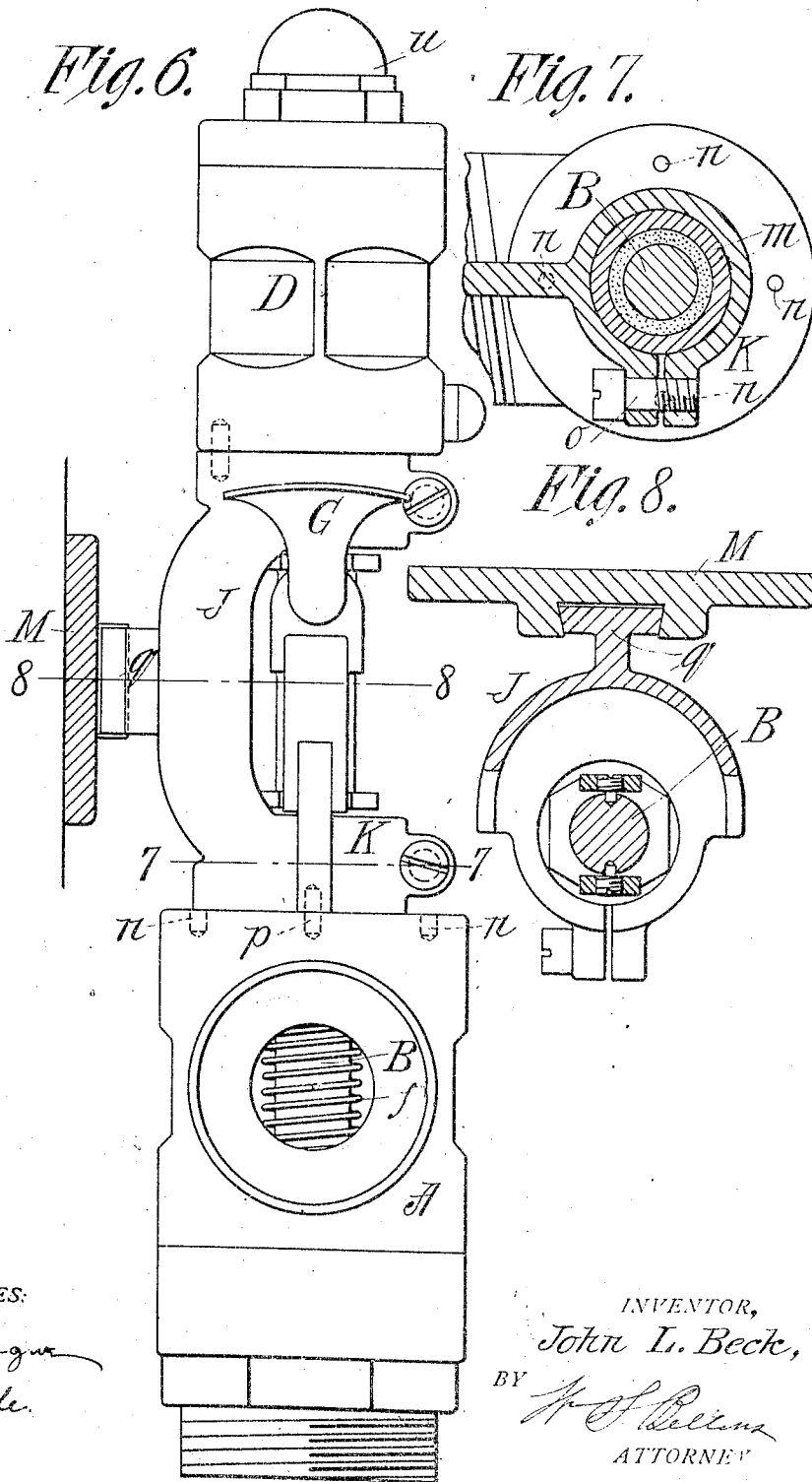
BY *[Signature]*
ATTORNEY.

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H. L. Springer
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John L. Beck,

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UNITED STATES PATENT OFFICE.

JOHN L. BECK, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE STERLING VALVE COMPANY, OF SPRINGFIELD, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

FLUSHING-VALVE.

1,063,639.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed May 2, 1912. Serial No. 694,635.

To all whom it may concern:

Be it known that I, JOHN L. BECK, a citizen of the United States of America, and resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Flushing-Valves, of which the following is a full, clear, and exact description.

This invention relates to improvements in flushing valves for waterclosets, of a kind to be employed from the direct pressure supply and without the use of the customary tank.

In the description of valve to which this invention relates, the valve is provided with means for manually opening it, and provided with means, such as a spring, for closing it upon the release of the opening force; and it has in conjunction therewith a controller whereby the closing of the valve under its spring is retarded in order to give a sufficient water delivery to the bowl.

The present invention more particularly pertains to a controller which is effective to cause the retardation of the closing action of the valve for as protracted a period of valve closing action as may be predetermined or arranged for.

The invention is described in conjunction with the accompanying drawings and is set forth in the claims.

In the drawings:—Figure 1 is a vertical sectional view through a valve to have connection with a watercloset bowl or like appliance, and through the novel devices for controlling such valve in its closing action, the parts being shown as in their closed or normal positions. Fig. 2 is a central sectional view through the controller but showing the parts as in their positions when the valve is opened. Fig. 3 is a cross sectional view on line 3—3, Fig. 1. Fig. 4 is a side elevation of the upper part of the valve stem. Fig. 5 is a view similar to Fig. 3, but showing a slight structural variation. Fig. 6 is an elevation of the apparatus; and Figs. 7 and 8 are cross sections on lines 7—7 and 8—8, Fig. 6.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the valve, the inlet *a* of which is to be connected to a direct pressure water supply, and by the but-

let *a*² has connection with the water closet bowl.

*b*² represents a main valve seat in the valve body A, seating on which is the valve *b*, and through which the valve stem is passed, the same having a lost motion play through the perforated web or spider *b*³, and having a head or enlargement *b*⁴ at its lower end for engagement with the portion *b*⁵ of the main valve for lifting the latter from its seat, *d* being an auxiliary valve seating on and to close the opening through the main valve.

The valve stem B is extended and guided through a gland in the top of the valve body and extends through a suitable gland therefor into a cylinder D, which is supported above the valve body by the extension frame J.

E represents the piston closely fitted in an intermediate part of the cylinder chamber, dividing the latter into upper compartment *x* and lower compartment *y*.

The valve stem B has at its upper end a diametrical enlargement or head *f* which, as shown and for practicability of construction, is formed separately from the stem and screw connected therewith.

v represents a passage extending axially in the head and in a portion of the stem below such head, terminating in a transverse port *v*² opening to the upper compartment *x* and in a transverse port *v*³ opening into the lower cylinder compartment *y*.

The screw plug *g* having a tapered end is a provision of well known kind for variably restricting the passage which forms a communication between the upper and lower compartments.

The valve stem is formed with an abutment or shoulder *h* disposed a suitable distance below the enlarged head *f*,—the distance between the shoulder and such head being slightly greater than the length or height of the piston E through which the stem is slidable for lost motion engagement with the piston. The stem in the portion from its head *f* down to a point below the shoulder *h* is reduced or recessed, preferably on several sides as shown at *i*, to form passages through the piston which are normally closed through the co-action of the piston and the valve stem head *f* which acts

as a valve in relation to said piston and as seen in Fig. 1.

G represents a lever for imparting a rising opening movement to the valve stem, and the spring *j* in the valve body A and the spring *k* in the cylinder D which reacts against the head of the valve stem are effective for the exertion of the valve closing force.

Both compartments of the cylinder are to be filled with a liquid, such, for instance, as oil or glycerin.

Assuming the parts to be in the position shown in Fig. 1, then by depressing the lever G to lift the valve stem B and raise the valves *d* and *b* from their respective seats, such rising action of the valve stem will cause a movement of the valve stem head *f* upwardly away from the top of the piston, opening the passages *i*, and the shoulder or abutment *h* then coming to engagement with the under side of the piston will lift it, causing the displacement of the liquid from the upper compartment *x* through the passages *i* into the lower cylinder compartment *y*, as will be understood on referring to Fig. 2. Immediately the force against the valve operating lever G is released, the springs will be effective for imparting an endwise movement to the valve stem in the valve closing direction, and therefore effective for bringing the valve stem head *f* firmly against the top of the piston and cutting off the communication for the flow of liquid from the lower compartment *x* into the upper one through the passages *i*. There is, however, the ever present communication between the compartments through the passage *v* and its branches or ports *v*², *v*³, but this being such a restricted one, the valve will close slowly according to the regulation of the degree of restriction, while the piston descending under the spring pressure is slowly displacing the liquid from the lower into the upper cylinder compartments.

On reference to Fig. 5, it will be appreciated that it is immaterial as to just the location of the passage through the piston from the upper to the lower side of the piston, whether it be within the periphery of the valve stem or by way of recesses *i*² extending through the piston at a portion thereof which must be so inwardly located as to be within the covering or closing range, of the valve stem head.

It will be noted that the body of the flushing valve A is made with an upstanding cylindrical hub *m*, and with a plurality of sockets *n* at quarters and in a common circle concentric of said hub.

The cylinder D is supported by a frame J on which the valve operating lever G is fulcrumed, and which frame at its lower portion is constructed with a clamping yoke K

which is constricted and loosened by operating the binding screw *o*, such yoke having an encircling engagement about the said upstanding hub. The base portion of the supporting frame J is provided with a depending dowel *p* for engagement in any of the several sockets *n*.

The provisions described permit of the revoluble adjustment of the flushing valve A relatively to the cylinder, its supporting frame and the operating lever G so that such valve may be positioned for receiving its connection with the water supply at any side thereof as may be available in different situations.

The frame J which makes the connection between the body of the flushing valve and the regulating device therefor is formed with a dove tailed offset lug *q* which is tapered in its length, and which lug has a supporting engagement in a bracket plate M formed with a vertically tapered way having undercut edges.

The cylinder is shown as formed with a threaded opening *s* centrally through its top in which an externally threaded sleeve or tubular screw *t* is engaged, the lower end of such sleeve projecting more or less as desired below the upper end wall of the cylinder to form an adjustable abutment for variably limiting the endwise opening movement of the valve stem. The opening through the top of the cylinder renders the adjustable passage-restricting screw plug accessible to be turned when the closing cap *u* is unscrewed from the cylinder top.

In cases where the pressure of the water supply is extremely high, a lessened length of opening movement of the valve stem is to be permitted, while in places where the pressure of the water supply is low a longer opening thrust is to be imparted to the valve stem.

I claim:—

1. The combination of a valve casing having a lateral inlet and a terminal outlet, a duplex valve controlling said outlet, said valve comprising an annular main valve carrying an apertured depending spider and an auxiliary valve seating on said main valve, a stem passing through the annular main valve and apertured spider and provided at its terminal with a head normally spaced from said spider but adapted to engage therewith in the opening of the duplex valve, said stem also carrying said auxiliary valve and passing through said casing and terminating in an apertured end, a supporting member mounted rotatably and adjustably on said casing and having dowel pin connection therewith, an operating lever pivoted to said member and also having pivot connection with said stem, a dash pot cylinder secured to said supporting member and receiving the said apertured valve stem end,

a piston within said dash pot cylinder and loosely mounted on said apertured-stem end and cooperating therewith to control the closing movement of the duplex valve and a spring acting on said valve stem to return the duplex valve to closed position.

2. A flushing valve comprising a stem projecting vertically and upwardly therefrom having at the top of its body an upstanding hub, an inclosed casing into which the valve stem extends, located above the valve, means in said inclosed casing cooperating with the valve stem for exerting a retarding action against the closing movement of the stem, and a frame by which the casing is supported, having at the lower portion thereof a clamping yoke revolubly adjustably engaged about the said upstanding hub of the valve body, said valve body and clamping yoke having, the one a plurality of sockets, and the other a dowel engageable in any one of said sockets.

3. The combination with a valve casing having an inlet and an outlet, a valve controlling communication between the inlet and the outlet, a frame having a bearing

sleeve rotatably mounted on the casing and provided with a second sleeve in opposing relation to said first sleeve, a dash pot cylinder mounted in said second sleeve, said sleeves being provided with clamping means for securing them respectively to said casing and cylinder, a valve stem connected to said valve and extending through the valve casing and into the dash pot cylinder, the end of the valve stem received by said dash pot cylinder having longitudinal passages opening to the cylinder, a piston loosely mounted on said valve stem end, a member secured to said valve stem end and adapted to engage said piston to close one of said passages, a lever pivoted to said frame and having pivot connection with the valve stem, a dowel pin connection for adjusting said frame on said valve casing, and a spring for holding the valve normally seated.

Signed by me at Springfield, Mass., in presence of two subscribing witnesses.

JOHN L. BECK.

Witnesses:

WM. S. BELLOWES.

G. R. DRISCOLL.