No. 694,107. Patented Feb. 25, 1902.

F. W. MEYER.

FLUSHING VALVE.

(Application filed May 13, 1901.)

(No Model.)

Fig. 1.

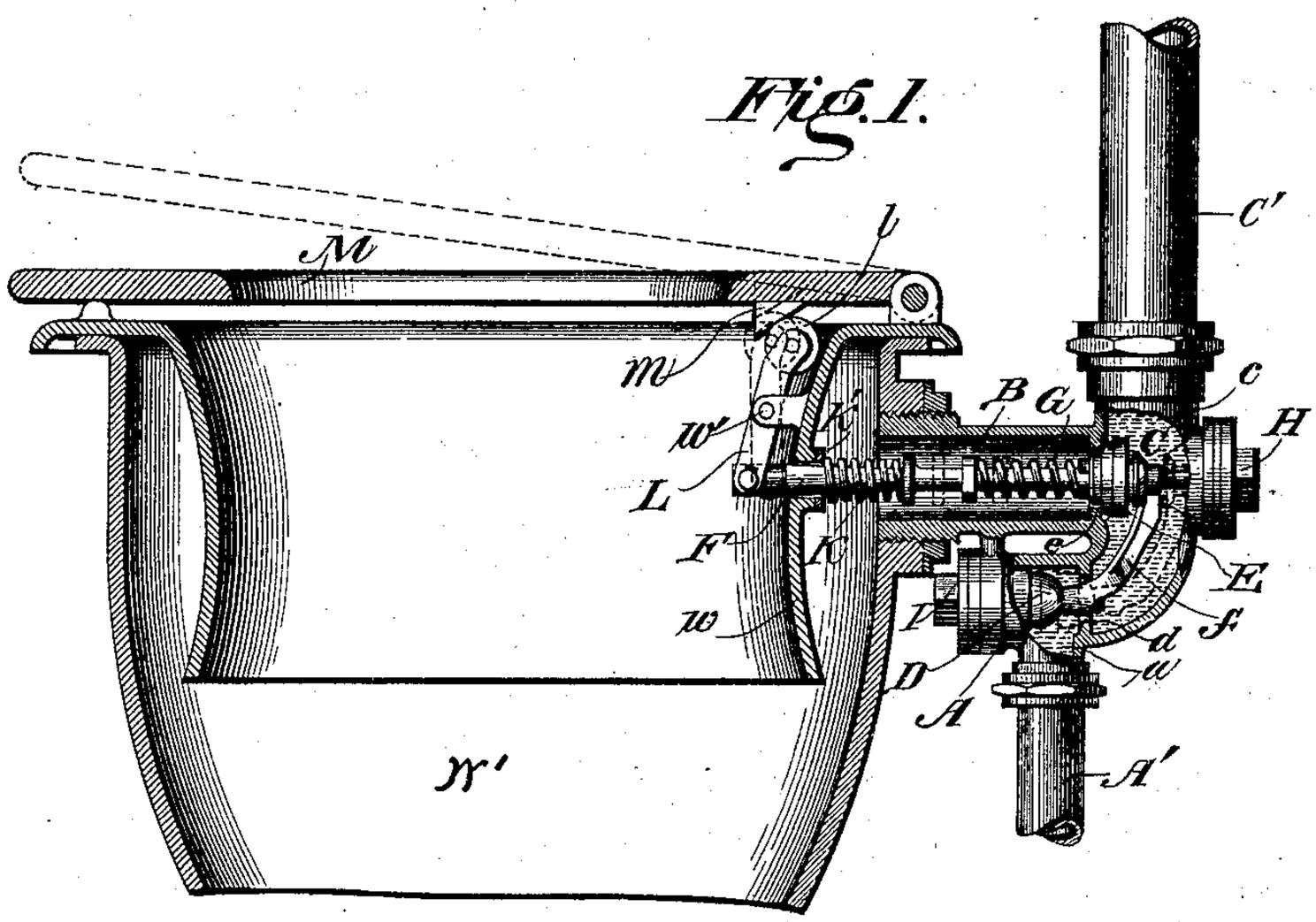
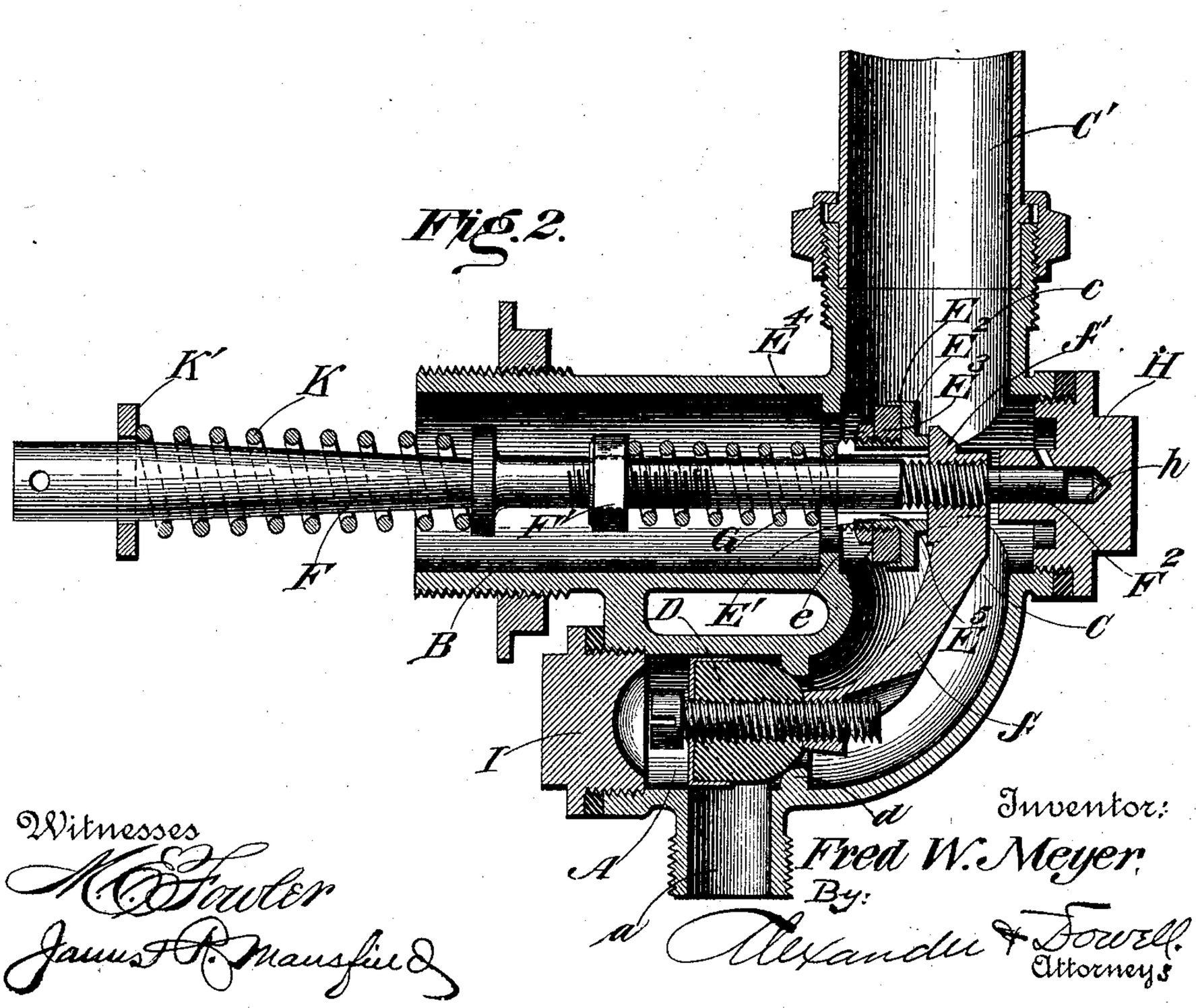


Fig. 2.



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UNITED STATES PATENT OFFICE.

FREDERICK WILLIAM MEYER, OF LOUISVILLE, KENTUCKY.

FLUSHING-VALVE.

SPECIFICATION forming part of Letters Patent No. 694,107, dated February 25, 1902.

Application filed May 13, 1901. Serial No. 60,075. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM MEYER, of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Flushing-Valves; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is a flushing-valve for sinks, water-closets, &c., and is an improvement upon the valve shown in Patent No. 661,885, granted to me November 13, 1900; and the object of my present invention is to provide a valve which will flush the closet, sink, &c., at a desired pressure of water and will automatically regulate itself, so that it will not flush under higher pressures, but will first reduce the pressure and then cause the flushing, as hereinafter more fully explained.

The invention therefore consists in the novel construction and combinations of parts, as set forth in the several claims herein, and the accompanying drawings illustrate the invention as applied to a water-closet.

Figure 1 is a side view of the valve applied to a water-closet bowl, showing the operative connection between seat and valve, Fig. 2 being an enlarged section through the complete valve.

The valve-casing is roughly of U shape, having an inlet-chamber A and an outlet-chamber B, connected by the flushing-chamber C. The inlet-chamber A communicates with the service-pipe A′ at opening *a* and with the lower end of chamber C, but communication between chambers A and C being controlled or closed by a valve D, and communication between chambers B and C may be closed by valve E on a stem F, extending through chamber B, as shown, and projecting into the closet-bowl W′. The casing is provided with suitable seats *d e* for valves D E, respectively, as shown, and said valves open in opposite directions and are arranged substantially as in my said patent, so that when one is open the other should be closed. For this purpose the valve D is attached to an arm *f*, attached to the inner end of rod F within chamber C, substantially as shown in my said patent. To obtain an automatic regulation of the flushing pressure, however, the valve E is not rigidly connected to stem F, but is of peculiar construction and controlled by a spring which can be adjusted so as to unseat the valve E at a predetermined pressure after valve D is closed. For this purpose the valve E is composed of a sleeve E′, loosely mounted on stem F and having a disk E^2 attached to its inner end, and preferably threaded exteriorly, and a large washer E^3, confined on the sleeve between disk E^2 and ring or nut E^4 on the sleeve. The valve E is confined on stem F, between the head *f′* of arm *f* and a spring G interposed between the sleeve E′ and a collar F′ on stem F and normally pressing the valve E against the head *f′*. This sleeve E′, moreover, is provided with one or more longitudinal channels or passages E^5, through which water can flow when head *f′* is separated from the sleeve by the inward movement of valve-stem F.

The chamber C has an outlet *c* above valve E, which communicates with a flushing or storing tank or reservoir (not shown) through a pipe C′, as usual.

The inner end F^2 of stem F is guided in a hole *h* in a screw-cap H, closing an opening in the casing directly opposite seat *e* and through which access can be had to valve E. The outer end of chamber A is closed by a similar screw-cap I, by removing which access can be had to valve D. These screw-caps facilitate assembling of parts and cleansing of the casing.

Stem F projects into the closet-bowl and through an opening in the flushing-rim *w* therein, the inner end of spring K having a bearing against this rim *w*, a washer K′ being interposed between the spring and flushing-rim to prevent water splashing through the opening of the rim. The inner end of rod F is hinged to the lower end of an oscillating lever L, fulcrumed on a stud *w′*, attached to the rim *w*, the upper end of this lever L carrying a friction-roller *l*, which is adapted to engage a cam *m* on the seat or set-hinge M, as indicated in the drawings. Spring K is powerful enough to normally hold the seat slightly raised and valve D closed; but when pressure is exerted on the seat, as in use, lever L is rocked, forcing rod F inward, opening valve D and closing valve E. Thereupon water

flows through chambers A C into the flushing or storage tank (not shown) and accumulates therein under more or less pressure. Now when the seat is released the stem F is shifted inwardly by spring K, so as to close valve D and tension-spring G, which will exert itself to open valve E; but if the pressure of water in chamber C is such that spring G cannot overcome it the pressure is gradually reduced by the water escaping from chamber C into chamber B through the small passages E^5 in the sleeve E', as shown, these passages being ordinarily closed by the head *f'* of an arm *f;* but when stem F is initially moved back this head *f'* is moved slightly away from the sleeve, allowing water to pass between the head *f* and disk to passage E^5, and the water continues to escape through these passages until the pressure in chamber C is reduced sufficiently to enable spring G to unseat valve E, which it then does quickly, and the water rushes out through chamber B, flushing the closet thoroughly. The spring G may be adjusted so as to effect the unseating of valve E only at or below a certain pressure, and then if the pressure in chamber C is above the desired flushing-pressure valve E will not be opened until the pressure is reduced to the desired point. When rod F is again actuated so as to unseat valve D, it simultaneously positively closes valve E, so water will accumulate in the flushing-tank as is desired.

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

1. The combination in a valve, of the casing, the chambers therein, the valve-stem, the valve loosely mounted on said stem having minute water-passages therethrough, a head adjustably connected to the stem adapted to seat the valve and close the passages when the stem is moved in one direction, and a spring on said stem at the opposite side of the valve interposed between a collar on the stem and the valve, and adapted to unseat the valve when the stem is moved inwardly and the water-pressure is suitably reduced, all constructed and adapted to operate substantially as described.

2. In a valve, the combination of the casing having outlet and flushing chambers, a valve for closing communication between said chambers, and a stem supporting said valve, said valve comprising a sleeve loosely mounted on the stem, and having longitudinal water-passages extending through the valve; and a washer and disk on the sleeve; with a head on the stem adapted to forcibly seat the valve and close the said passages when the stem is moved outward, and a spring for unseating the valve when the pressure is sufficiently reduced, all constructed and adapted to operate substantially as and for the purpose described.

3. In a valve, the combination of the casing having outlet and flushing chambers, a valve for closing communication between said chambers, and a stem supporting said valve, said valve comprising a sleeve loosely mounted on the stem, and a washer confined between a disk and a nut on the sleeve, said sleeve having longitudinal water-passages extending through the valve; with a head on the stem adapted to forcibly seat the valve and close the said passages when the stem is moved outward, and a spring interposed between a collar on said stem and said valve, and adapted to unseat the valve when the pressure is sufficiently reduced, all constructed and arranged to operate substantially as and for the purpose described.

4. In a valve, the combination of the inlet, outlet, and flushing chambers, the oppositely-disposed valves closing communication between the storing-chamber and inlet and outlet chambers respectively, a valve-stem upon which the outlet-valve is slidingly mounted, and to which the inlet-valve is rigidly connected, and passages for escape of water past the outlet-valve; with means for operating said stem to open or close the inlet-valve, and to close the outlet-valve when inlet-valve is opened, and a spring adapted to unseat the outlet-valve at or below a certain pressure in the storage-chamber, when the said inlet-valve is closed, substantially as described.

5. In a valve, the combination of the inlet, outlet and flushing chambers, the oppositely-disposed valves closing communication between said storing-chamber and inlet and outlet chambers respectively, a valve-stem upon which the outlet-valve is slidingly mounted, and to which the inlet-valve is rigidly connected, said outlet-valve having passages for escape of water therepast before it is unseated; with means for operating said stem to open or close the inlet-valve, and to close the outlet-valve when the inlet-valve is open, and a spring on said stem adapted to unseat the outlet-valve at or below a certain pressure in the storage-chamber after the said inlet-valve is closed, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FRED. WILLIAM MEYER.

Witnesses:
GEO. J. CHURCHARD,
HERMAN MAAS.