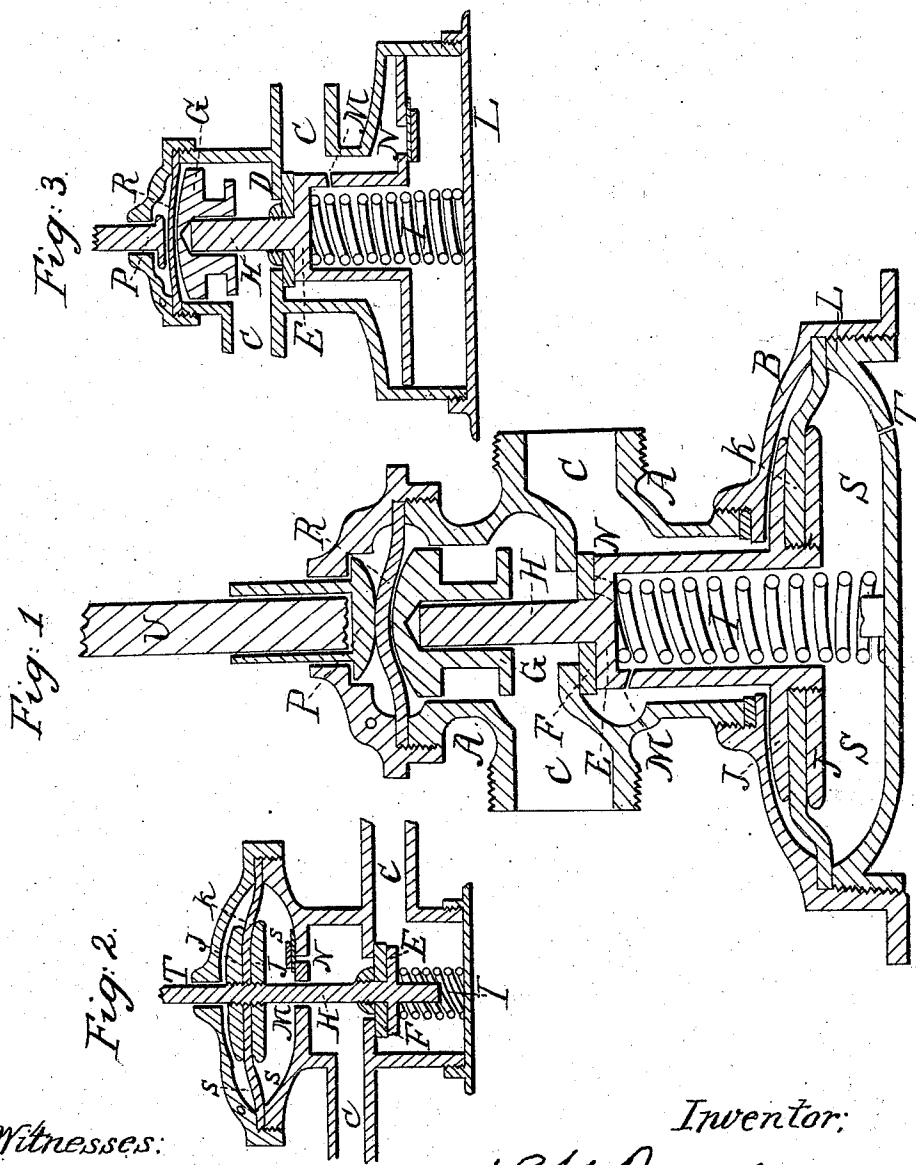


F. H. Bartholomew,
Water-Closet Valve,
No 11,113, Patented June 20, 1854.



Witnesses:
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METHOD OF GOVERNING THE ACTION OF VALVE-COCKS.

Specification forming part of Letters Patent No. **11,113**, dated June 20, 1854.

To all whom it may concern:

Be it known that I, FREDERICK H. BARTHOLOMEW, of the city and State of New York, have invented a new and Improved Method of Governing the Action of Valves of Cocks; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, like letters indicating like parts.

The nature of my invention consists in providing and applying a governor to the valve or valves of a cock adapted to the purposes of a water-closet and other uses, by which means the valve may be made to open or close gradually, and while opening or closing to admit a limited supply of water to pass through, and thus avoid the necessity of employing any cistern or reservoir of water between the main supply and basin, requiring no space, but where it may be out of sight beneath the seat, to be opened by pressure on the seat of the closet or otherwise and self-closing.

To enable others skilled in the art of cock-making and plumbing to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, Figure 1 is a sectional drawing of the full size which I make adapted to a supply-pipe of five-eighths inch bore. Any suitable form of cock or internal parts may be used which are adapted to be attached to the governor or regulator.

In the drawings, Fig. 1, A A is the body or main barrel of the cock; B, the standard, and C C induction and eduction ways; D, valve-seat, having two faces when valves G and E are both employed; E, the valve employed for shutting the discharge when the cock-stem H is not depressed, having a stem H, on which is placed valve or plug G, fitted to the upper part of the cock so as to keep the stem in proper position. From valve E downward extends a shank or hollow cylinder having flanges J J, one of which is screwed on, holding a disk or diaphragm K of leather, rubber, or other suitable substance. L is a screw-inserted cap confining tightly the edge of the disk K, thus forming an expanding and contracting or "variable chamber" S S, which communicates with the exterior, or the only

outlet of which is a small orifice M; or in some cases a larger additional orifice N (as hereinafter described) or hole T may be employed instead of M, if air be employed to fill the variable chamber S S. I is a spring (spiral, I use) inclosed in the shank, employed to close the valve E when the closet is not occupied. N is an orifice larger than M, (the latter being of the size of a, say, No. 6 needle,) and which N, when the valve E is depressed, will admit chamber S S to discharge rapidly and G to shut down quickly, the washer F being employed also as a valve for N, closing that communication with S S while valve E is closing. O is a cap screwed on the top, in which is arranged thimble P, which holds the rod by which the cock is operated. R is a disk, (I use rubber,) which is confined at the edge closely by O to the cock, entirely closing up the end of the cock, and by its flexibility or yielding allowing the internal parts of the cock to be worked by thimble P, which is connected to a yielding seat of the U closet by rod U or stem H, or thimble P may be packed.

Operation: Upon putting this cock in use, when stem H is depressed the contents of chamber S S are gradually discharged in proportion to the size of outlets M or N or T or capacity of chamber S S. I use an action of stem H of about one-half of one inch, (more or less.) While S S is discharging, water is discharging through C C until by the pressure upon H by the weight of person on the seat or any other method adapted to the purpose of opening valve E the valve G shall be depressed or closed upon seat D (upperside) and so stop the discharging of water. (Valve G may be omitted, if desired to have constant discharge of water while valve E is opened.) Upon the pressure being removed from H valve E will gradually close while chamber S S is inflating or filling and admit a discharge of water into basin when the pressure upon H is removed, thus giving (when valve G is employed) a double discharge of water into the basin or through the cock without the aid or use of any intervening cistern, reservoir, or chamber for holding a supply of water between the main supply and the basin, and which cock and governor may be arranged beneath the seat and out of sight and require and discharge a limited and economical use of water however long the

seat of the water-closet may be depressed, avoiding that interference with the supply or pressure of water to other parts of the same building which is occasioned by the use of a cock which gives a constant discharge while the seat is depressed. This cock I have applied to a "pan-closet," in which I dispense with valve G, (see Fig. 2,) attaching the lever of the closet to rod U, thus giving a supply of water to the basin when the pan is discharged and shut, avoiding the use and expense and space required for cisterns now used. I have applied variable chamber S S directly to the lever of a pan-closet, thus regulating the closing of valve E and obtaining proper discharge of water into the pan after the lever is dropped and pan shut.

Fig. 2 is a modification of my improvement, having the chamber S S arranged above the valve, in which disk or diaphragm K answers the double purpose of K and R, as shown in Fig. 1, in which Fig. 2 when the stem is closely fitted in cap O a "variable" air-chamber is combined with the water-chamber, the disk K dividing them. In Fig. 2 the orifice N is closed by a valve so arranged as to allow valve E to shut quickly, but to prevent it from opening suddenly, admitting water to flow while it is closing. No valve is provided in this modification for stopping discharge when valve E is opened. The stem H, Fig. 2, must fit close at M.

Fig. 3 is another modification of my improvement, in which, instead of employing the disk K or bellows plan, I propose the well-known piston-and-cylinder device. I employ a waste-passage, arranged in any suitable part of the cock, so as to admit the water remaining in that part of the cock and discharge-pipe between the basin and outlet-valve to escape and avoid freezing.

I am aware that self-acting cocks in which the valve is closed by a spring against the pressure of water to avoid the concussion are well known, the same having been patented by myself, and are arranged beneath the seat

and opened by pressure thereupon, giving a continuous discharge of water while depressed.

I am also aware of the double-valve three-way cock, combined with an air vessel or chamber for receiving and discharging the water after the depression is removed, said cock being arranged and the valves being operated in like manner as last described—that is to say, by a spring in one direction and by depression in the other, the same being secured to me by patent.

What I claim as my invention and improvement in the construction of cocks, and for which I desire to secure by Letters Patent, is—

1. The combination of either one or two valves E G attached to one stem, either of which valves shall alternately open or close the main or principal passage of water through, as described, with a spring I, or the equivalent, for the purpose of moving and holding the said valve-stem in one direction, as described; and an expanding and contracting chamber S S, said chamber being entirely excluded from the air and inclosed entirely within the water, and communicating through a contracted passage M with the water only, as described, the whole operating substantially as and for the purposes set forth.

2. The method of controlling the motion of a valve by means of a variable chamber, substantially as described, when said variable chamber shall communicate by a contracted passage either with the interior or water region of the cock, exclusively or otherwise, shall be entirely excluded therefrom, whereby no water shall be allowed to waste away through the variable chamber in either arrangement, operating substantially as described.

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Witnesses:

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