

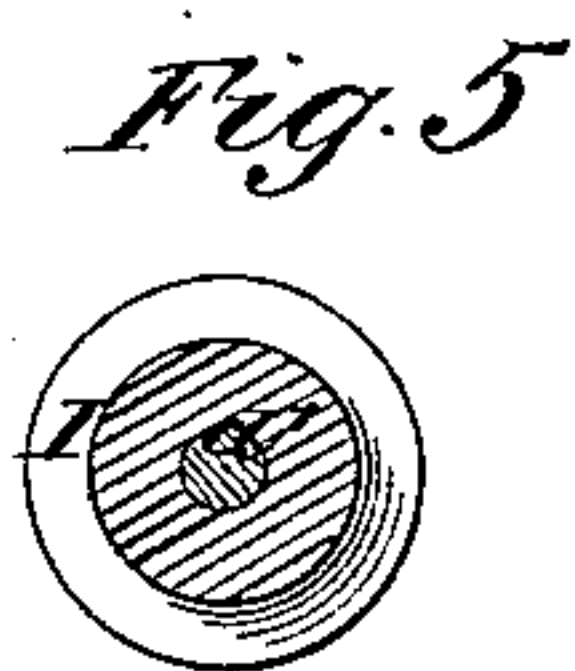
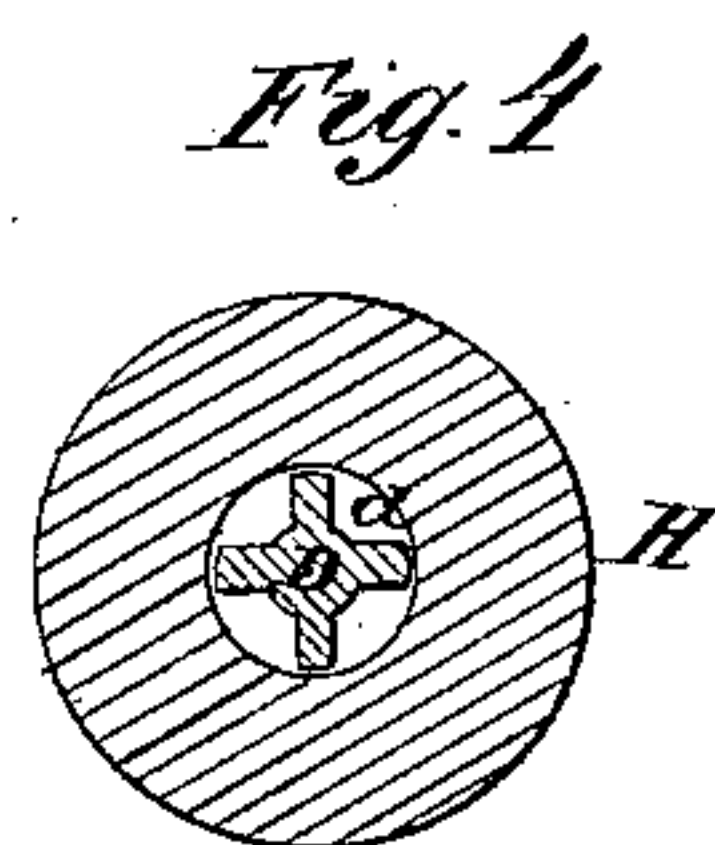
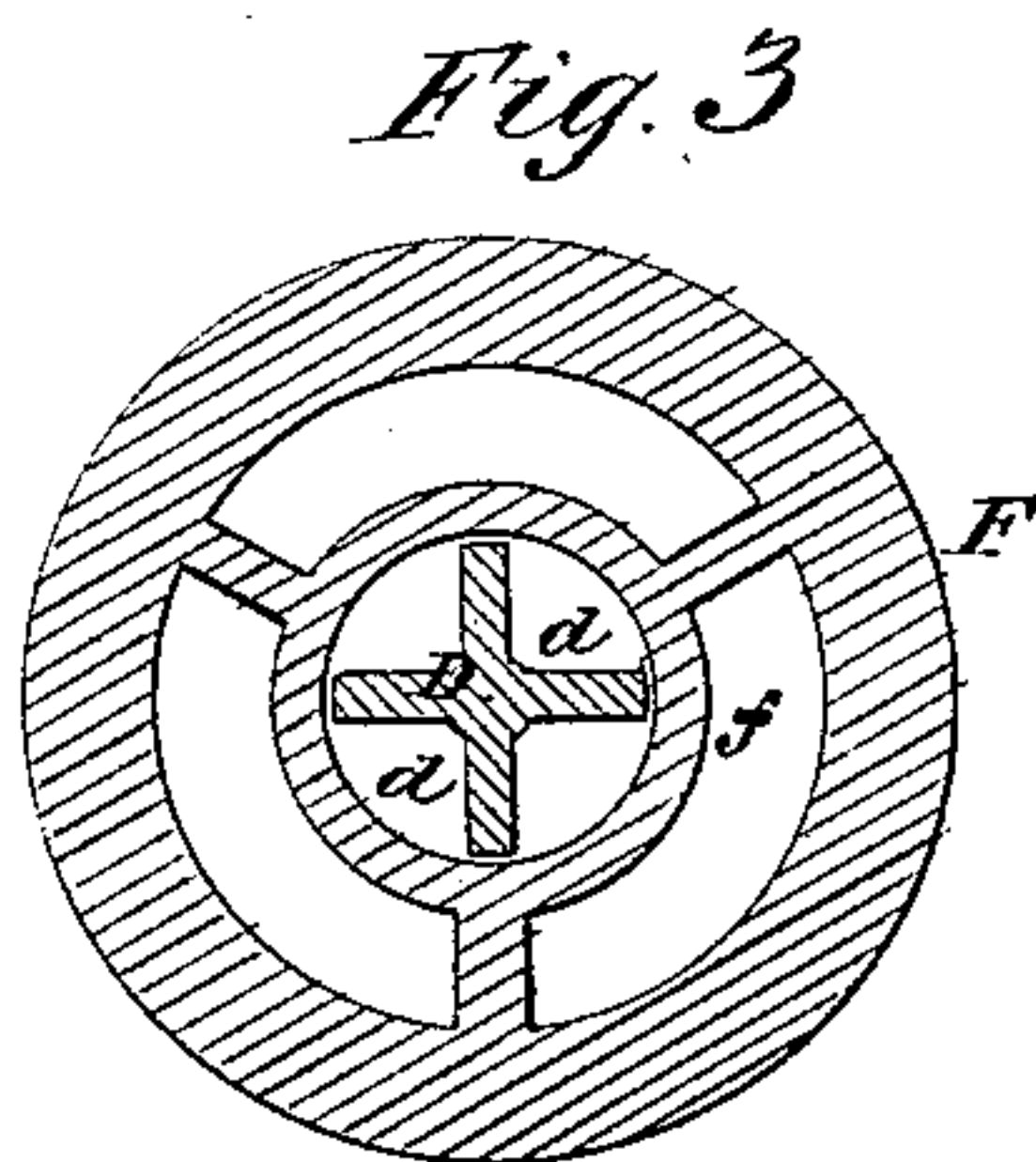
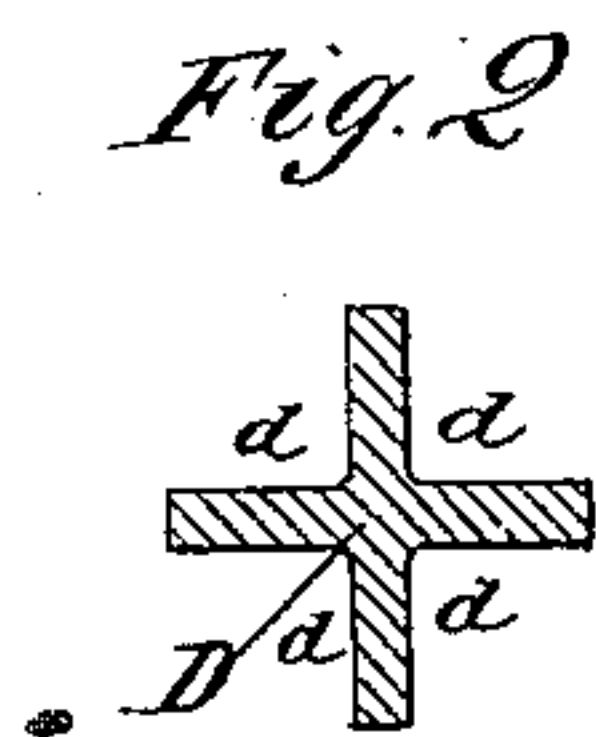
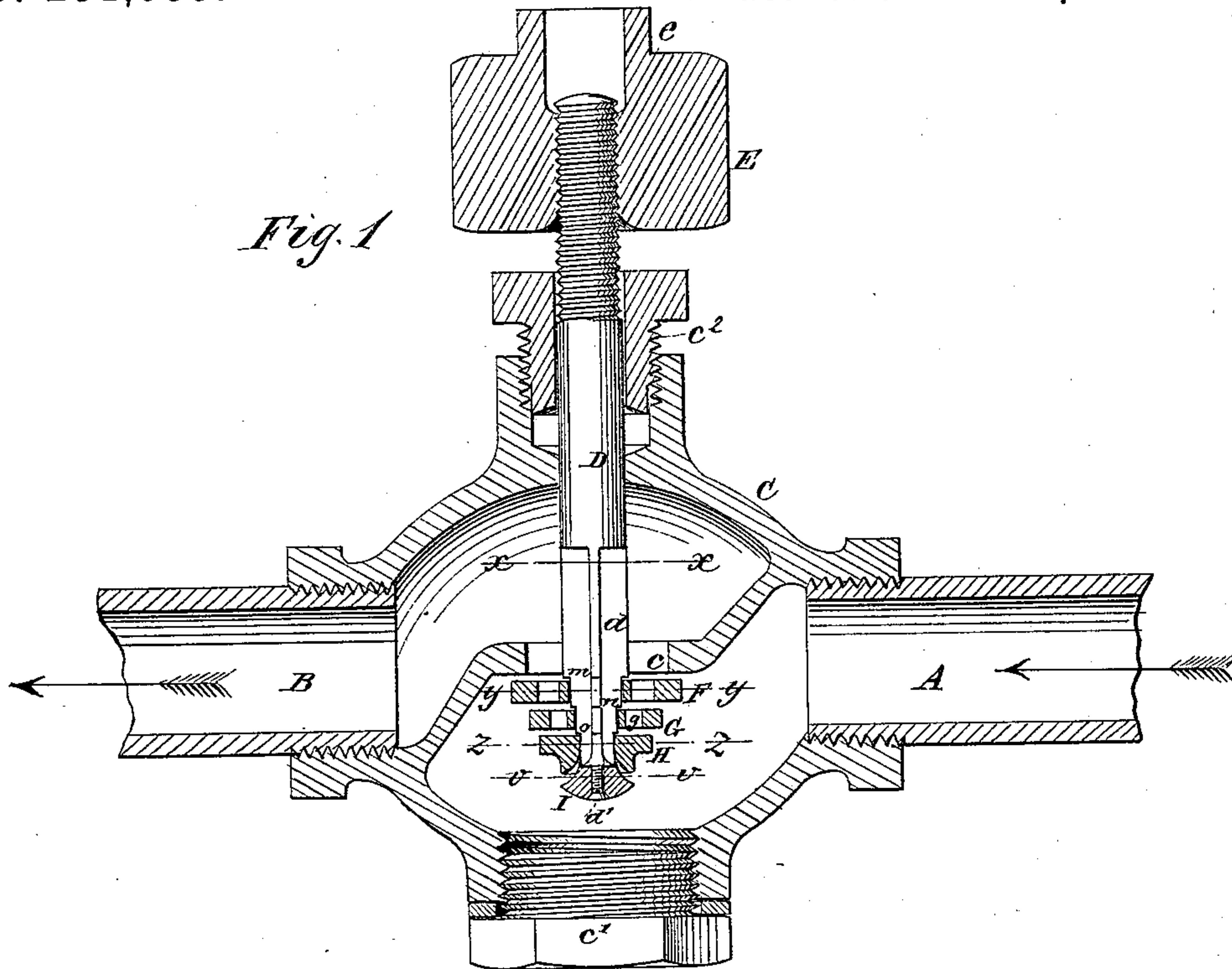
(Model.)

W. R. FREEMAN.

AUTOMATIC SERVICE COCK.

No. 251,035.

Patented Dec. 20, 1881.



Witnesses:  
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John M. Stettin

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# UNITED STATES PATENT OFFICE.

WILLIAM R. FREEMAN, OF SAN ANTONIO, TEXAS.

## AUTOMATIC SERVICE-COCK.

SPECIFICATION forming part of Letters Patent No. 251,035, dated December 20, 1881.

Application filed September 29, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. FREEMAN, of San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Improvement in Automatic Service-Cocks, of which the following is a specification.

The object of my invention is to furnish an improved automatic valve to form the connection between the water-main or distributing-pipe and the service-pipe of a building for regulating the flow and pressure of water in such service-pipe and preventing overpressure, and yet so constructed that it may be operated by hand, when desired—as, for instance, when it is needed to shut off the water from the main in order to repair or attach branches and faucets to the service-pipe.

The operation of the invention will be easily understood by the following description, with reference to the accompanying drawings, in which—

Figure 1 represents a longitudinal vertical central section of a service-cock constructed according to my present invention. Figs. 2, 3, 4, and 5 are enlarged detail cross sections of the same, taken through the lines *x x*, *y y*, *z z*, and *v v*, respectively.

Similar letters of reference indicate corresponding parts in the several figures.

The arrows indicate the direction of the water-current.

A is the inlet-nipple or short pipe, by which the service-cock is connected to the main pipe under ground, and B the end of the service-pipe connected to the outlet of the service-cock.

C is the valve-case, having a partition for a valve-seat, *c*, and otherwise constructed as the case of an ordinary check-valve, with the exception that as the valve is arranged to close upward an opening is provided in the bottom of the case for allowing the insertion of the valve from the under side, and is then closed by a screw-plug, *c'*.

D is the round vertical valve-stem, fitted to slide water-tight in a stuffing-box, *c<sup>2</sup>*, so that its upper end may be accessible from the outside. The upper end of the valve-stem D is threaded to receive and support under ordinary pressure a suitable threaded weight, E, as shown in Fig. 1. The weight E has upon its upper surface a square nipple, *e*, or other suitable device or projection, by which it may

be grasped with a wrench from above ground and turned upon the stem D, to act for the combined purposes of weight and nut. The lower end of the valve-stem D is fluted, preferably in the cruciform shape shown in the drawings, to form water-channels *d*, extending on both sides of the valve-seat partition from beneath the valve to a suitable distance above the same. The lower fluted portion of the stem D is gradually diminished by a series of parallel rabbets, forming shoulders or stops *m n o* in the periphery of the stem, and the valve proper consists of a series of flat valve-disks, F G H, of parallel surfaces and diminishing sizes, as shown in Fig. 1, which disks have circular central openings of proper sizes to adapt them to slide upon the respective rabbeted portions of the stem, while leaving the channels *d* open, the thickness of the disks and length of the rabbeted portions being so proportioned that the disk F cannot fall far enough to catch with its upper surface below the shoulders *n*, nor the disk G far enough to get its upper surface below the shoulders *o*. The disk F has perforations *f*, and the disk G smaller perforations *g*. The smallest disk H is countersunk in its lower surface to fit and act as valve against the surface of the knob I as valve-seat. The latter is screwed upon a threaded pin, *d'*, projecting from the extreme lower end of the stem D, and prevents the disks from falling off the stem. The lower end of the threaded pin *d'* may be riveted to prevent the knob I from unturning. By this construction, the valve-openings, as well as channels *d*, being gradually diminished with the respective disks, it will be understood that when properly proportioned the disks F G H will regulate the even flow of the water in the service-pipe, an increased velocity causing one or more of them to rise and proportionally decrease the area of valve-opening. Combined increased pressure and velocity would gradually raise the valve until its disks H G F would become closed together and to the valve-seat *c*, leaving access for the water only through the small area of the channels *d* in the central opening of the disk H. Under hydrostatic pressure only the valve-disks F G H will, of course, not act; but when such pressure increases sufficiently to endanger the service-pipe the valve-stem D and weight E will rise high enough to entirely close the



valve by bringing all the disks F G H and knob I together, like one solid valve closed against the seat *c*. The weight E is, of course, proportioned to the effect of pressure due to the area of the valve-stem D, and to the maximum pressure allowed in the service-pipe with safety.

When it is desired to shut off the water from entering the service-pipes, this is effected by simply applying a wrench to the nipple *e* and screwing down the weight E against the stuffing-box until the stem D, raised thereby, closes the valve. By unscrewing the weight E and pushing down the stem D the valve is again opened.

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

1 As a new article of manufacture, a service-cock in which the valve is arranged to close in the direction of the supply-current against a partition, *c*, forming a valve-seat in the chest C, and is counteracted by an exterior weight, E, upon the valve stem D, said weight being

proportioned to the pressure at which the valve should close, substantially as hereinbefore set forth.

2. A service-cock in which the valve is composed of a series of valve-disks movable between offsets upon a weighted stem, and arranged to close in the direction of the supply-current, substantially as hereinbefore set forth.

3. The weighted valve-stem D, provided with channels *d* and shoulders *m n o*, in combination with the valve-disks F G H, movable upon the stem, and the cone-knob I, substantially as hereinbefore set forth.

4. In combination with the threaded outer end of the stem D of a valve, F G H, closing in direction of the supply-current, the threaded weight E, arranged to be operated by a wrench, for the double purpose of weighting the valve and closing it, when desired, substantially as set forth.

WM. R. FREEMAN.

Witnesses:

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