

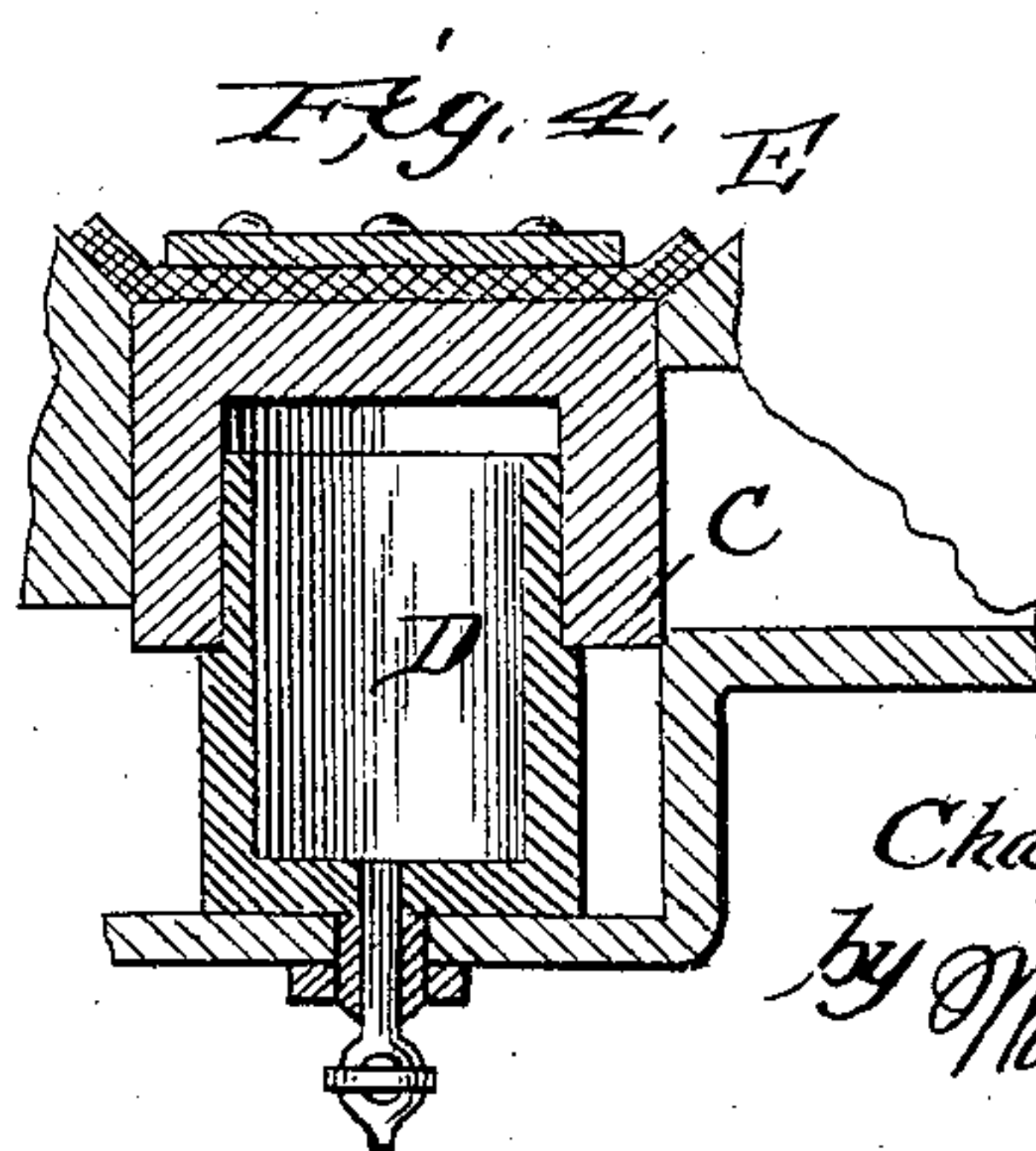
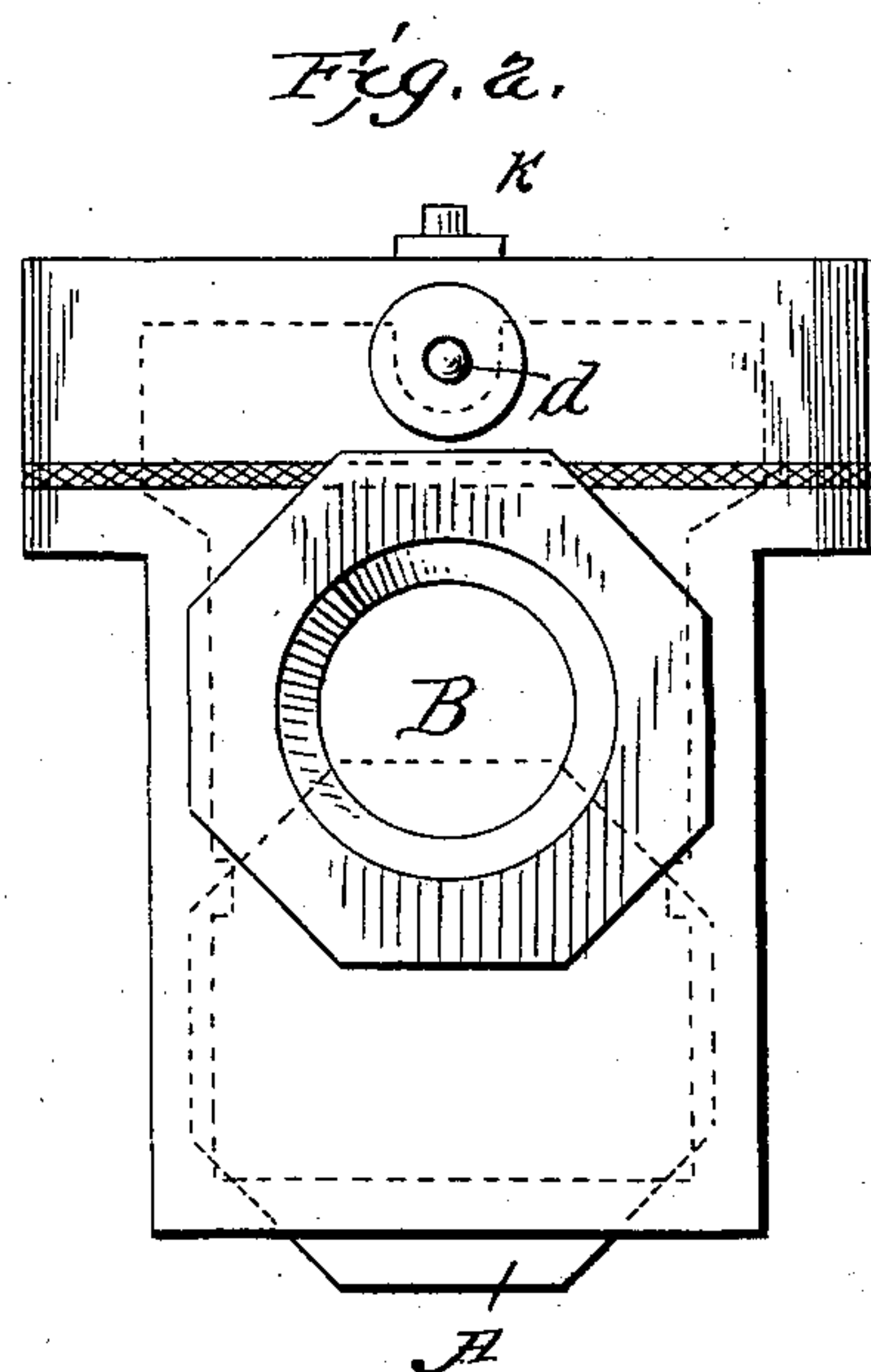
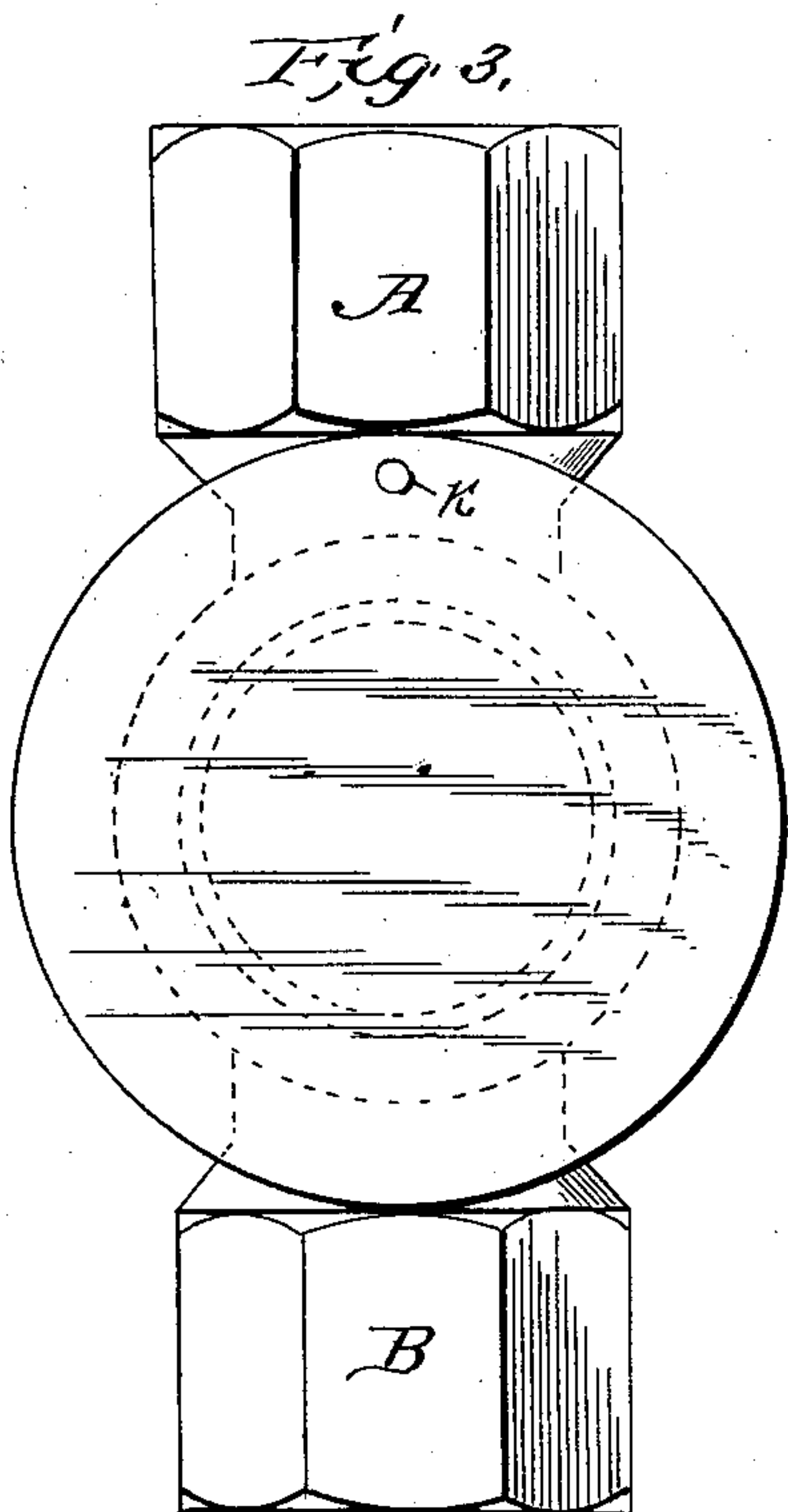
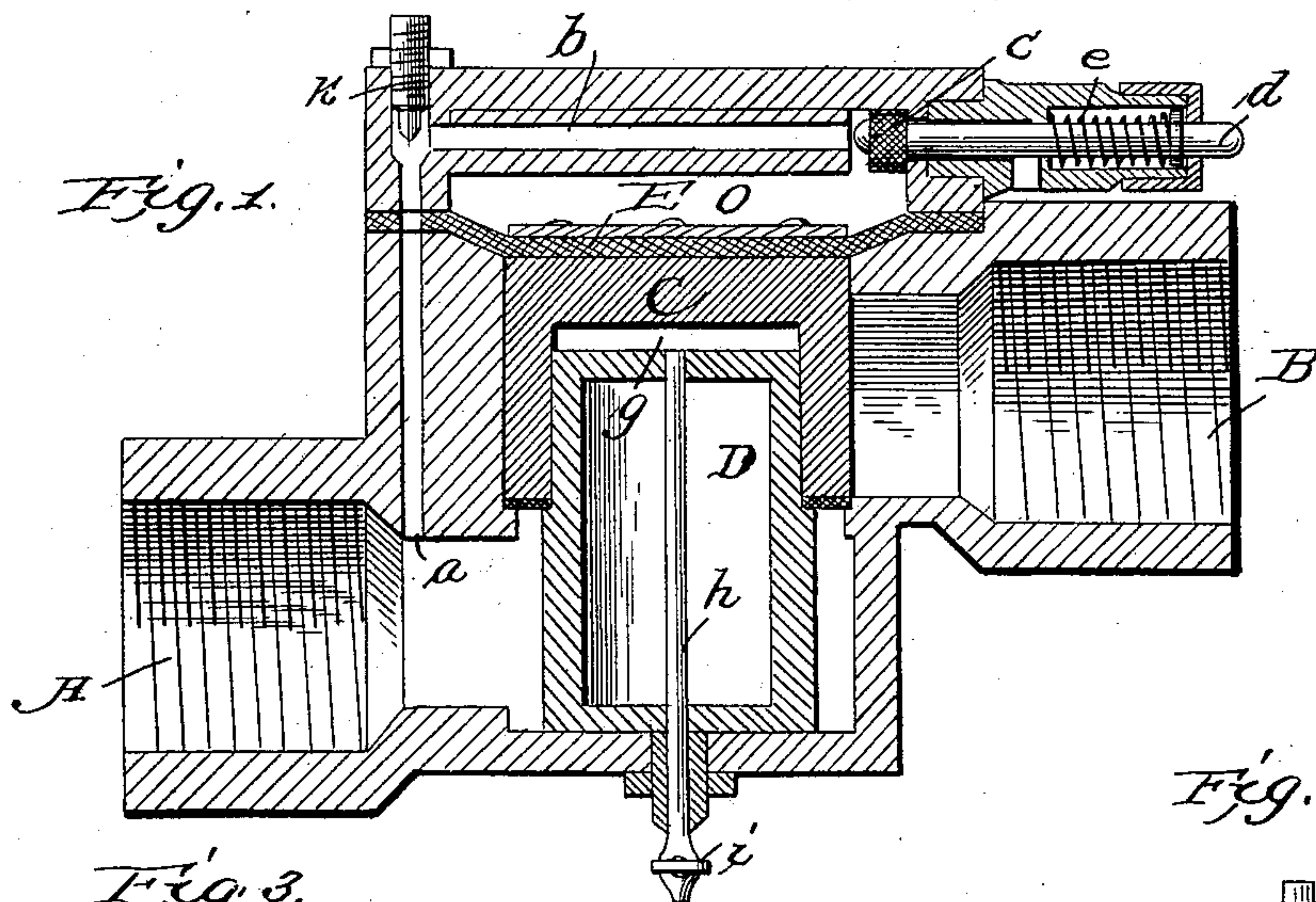
No. 608,454.

Patented Aug. 2, 1898.

C. GULLAND.  
VALVE.

(Application filed Dec. 29, 1897.)

(No Model.)



Attest  
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# UNITED STATES PATENT OFFICE.

CHARLES GULLAND, OF PITTSBURG, PENNSYLVANIA.

## VALVE.

11722

SPECIFICATION forming part of Letters Patent No. 608,454, dated August 2, 1898.

Application filed December 29, 1897. Serial No. 664,218. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES GULLAND, a citizen of the United States, residing at Pittsburg, county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Valves, of which the following is a specification.

My invention relates to the class of valves as illustrated in Letters Patent of the United States granted to me on the 7th of December, 1897, No. 595,061.

It is the object of the present invention to improve the construction shown in the patent referred to and to produce a valve which can be closed automatically with a pressure equal on each side, so as to avoid any reaction on the pipes connected therewith.

In the accompanying drawings I have illustrated my invention, in which—

Figure 1 is a sectional view of the valve. Fig. 2 is a front view, and Fig. 3 a rear view, of the coupling containing the operating parts. Fig. 4 is a sectional view of a modification.

The invention is adapted for use on railway stand-pipes, water-plugs, and fire-hydrants, and is also capable of use where water is run to a tank with a ball-float to operate the supplemental valve.

In the drawings, A represents the inlet-passage, and B the outlet-passage. In a chamber made intermediate of the inlet and outlet passage is a piston D, and covering this piston is a cylindrical cap C, which is secured to a diaphragm E, the edges of which are clamped between parts of the casting, as shown in Fig. 1. It will be observed that with the use of the cylindrical cap connecting the diaphragm there is a bearing provided for the entire surface of the diaphragm, and there is no pressure upon unsupported parts, as in my former construction. Above the diaphragm is located a pressure-chamber O, and this is in communication with the inlet-port A through a passage *a*, which enters the pressure-chamber O through a horizontal continuation *b* of the passage *a*. A valve *c*, carried on a stem *d*, closes the opening of the pipe *b* in its abnormal position, but normally leaves the passage free, a spring *e* keeping the valve and stem retracted. Thus in its normal position the force of the water is exerted on the upper side of the diaphragm and keeps the exit-opening closed. The spindle

*d* projects outside of this casing, and by forcing this in to close the exit-opening of the pipe *b* the flow of water above the diaphragm is stopped, and the pressure exerted against the under face of the cylindrical cap C will force this upward and the water contained above the diaphragm will flow out from the chamber around the spindle *d* and out at the opening *f*, while the cylinder-cap will be raised from its seat and the water will flow around the piston D and out through the exit-opening B. In order to make a cushion effect, the cap C has an air-tight connection with the cylinder D, and the air-space *g* is controlled by a pipe *h*, extending through the piston and the bottom of the casting and provided with a cock *i*.

The flow of water may be regulated to the chamber O by the screw *k*, which is used to contract the passage *a*, as may be found desirable.

In Fig. 4 I have shown a modification in which the piston D is open at its upper end, and with this construction it may not be necessary to have the relief-valve, though I may use it or not, as may be found desirable.

I claim—

1. In a valve, an inlet-passage and an outlet-passage, a piston arranged intermediate of the openings, a cylindrical cap surrounding the upper end of the piston, a diaphragm secured to said cap, a pressure-chamber above the diaphragm and means for controlling the pressure to said chamber, substantially as described.

2. In a valve, a stationary piston, a cylindrical cap surrounding the upper end thereof, the diaphragm secured thereto, a pressure-chamber above the diaphragm an inlet to said chamber, an outlet from said chamber and a valve controlling the inlet and outlet ports, substantially as described.

3. In a valve, a piston located intermediate of the inlet and outlet ports, a cylindrical cap closing the passage around the piston, a diaphragm secured to the cap and an air-chamber between the cap and piston, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES GULLAND.

Witnesses:

J. A. WILSON,  
JAMES SMITH.