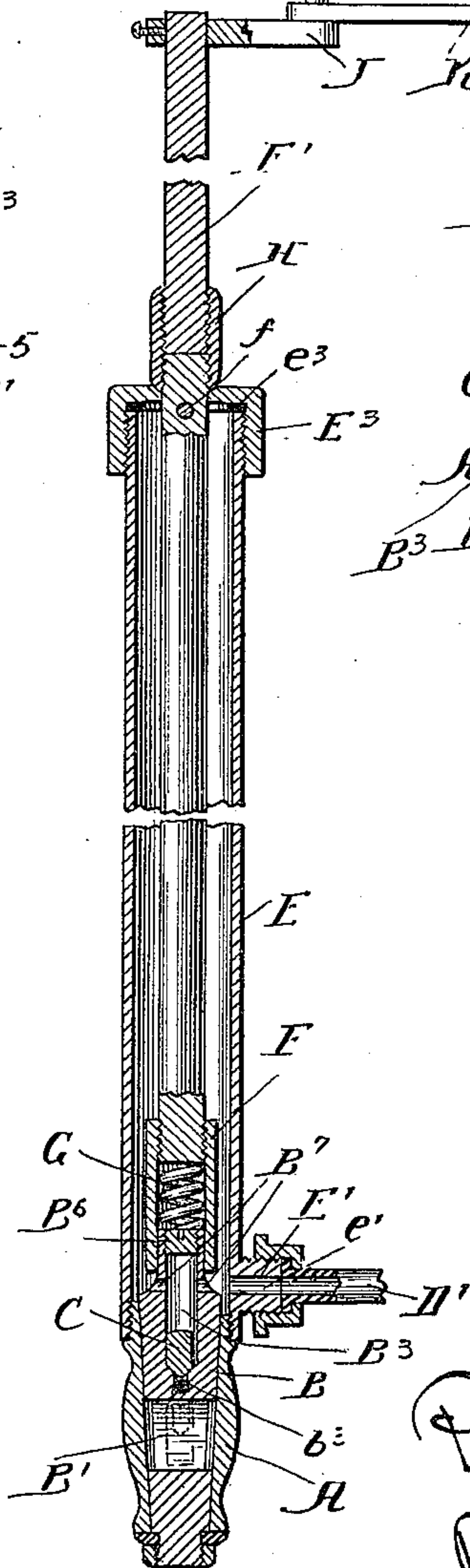
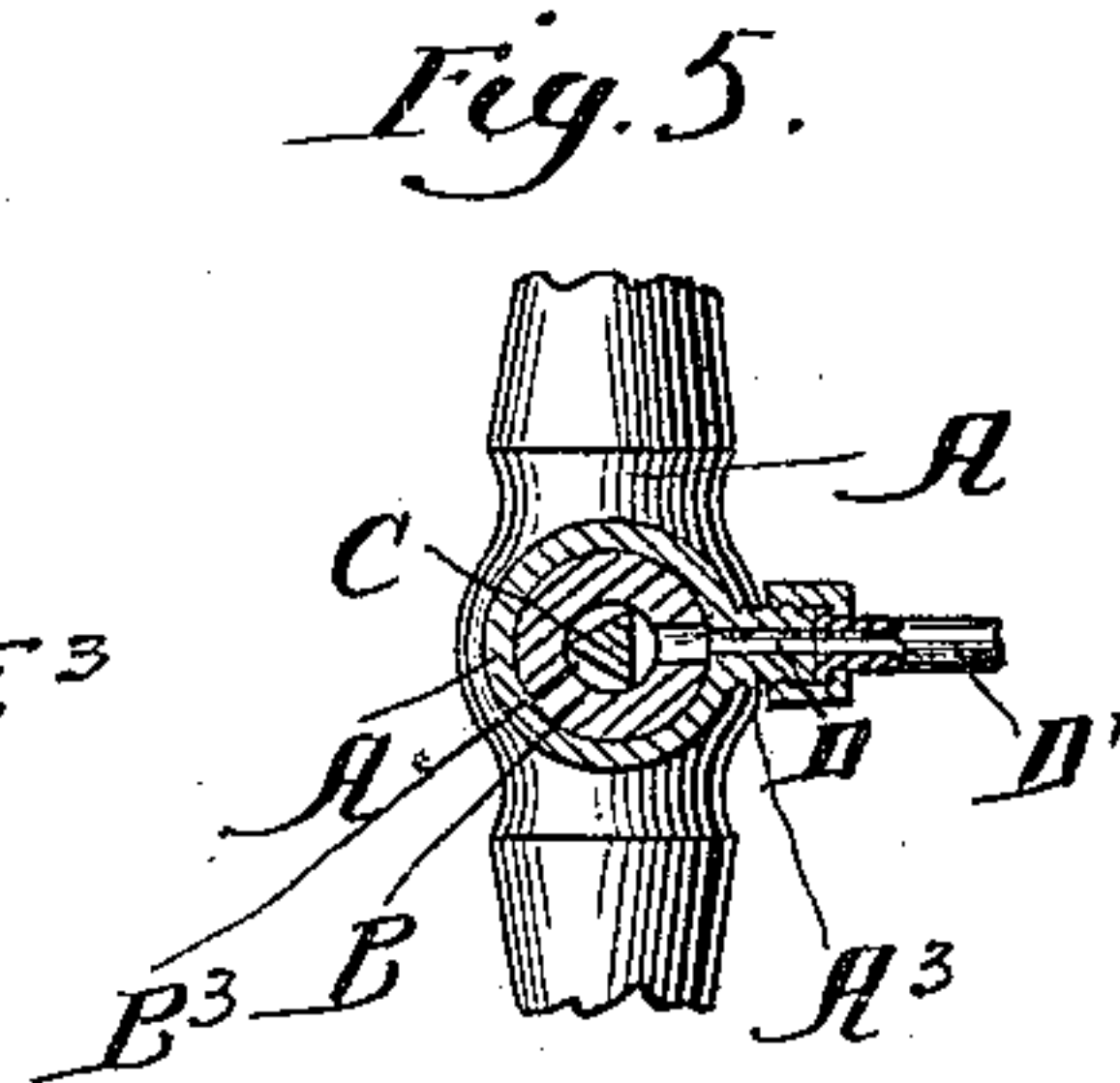
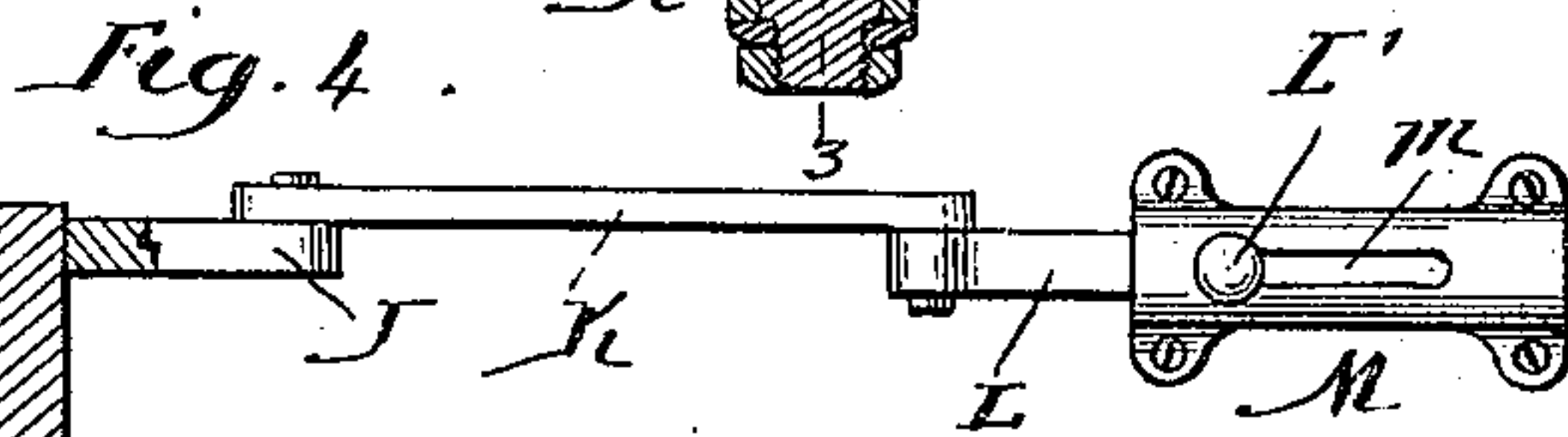
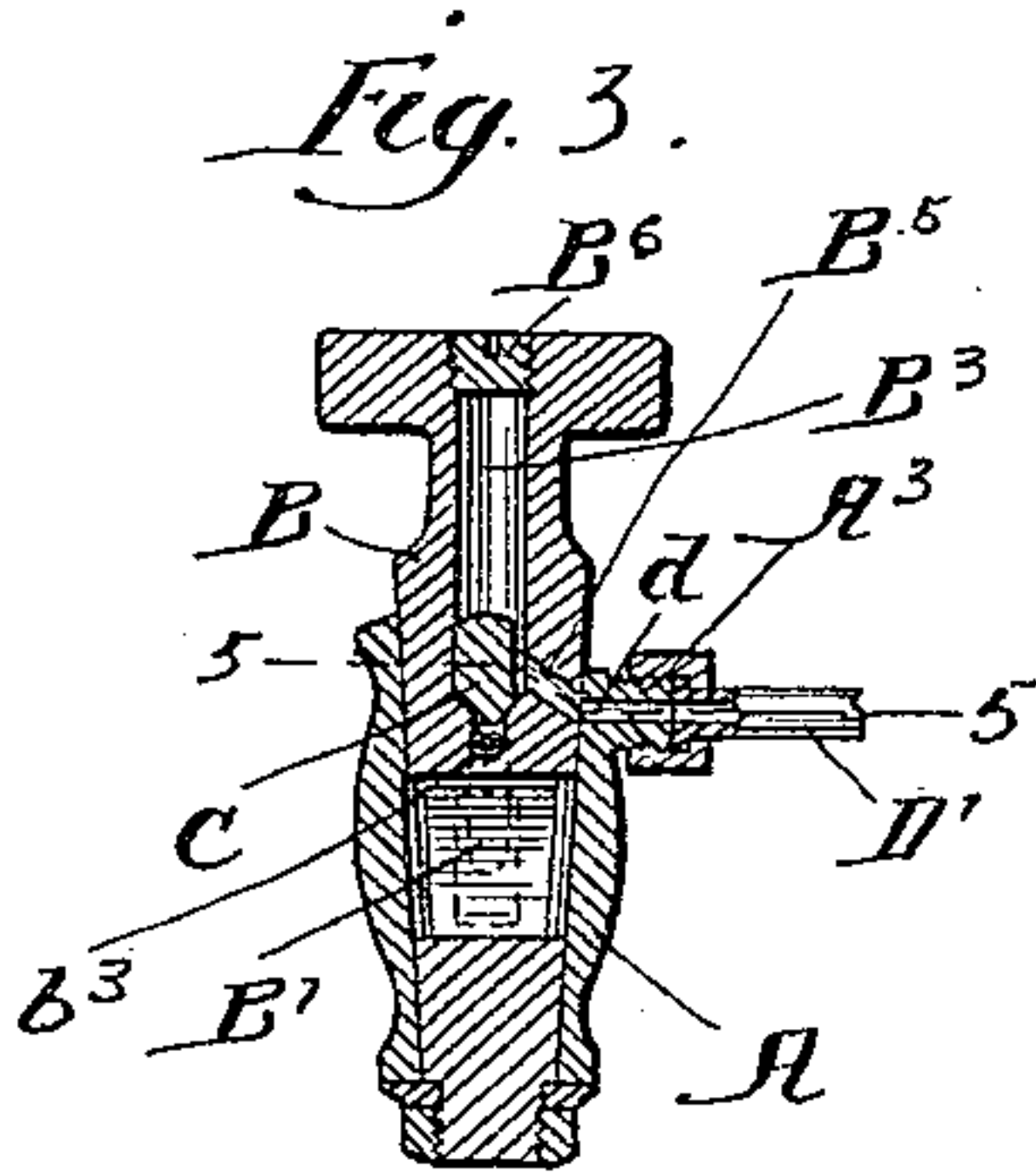
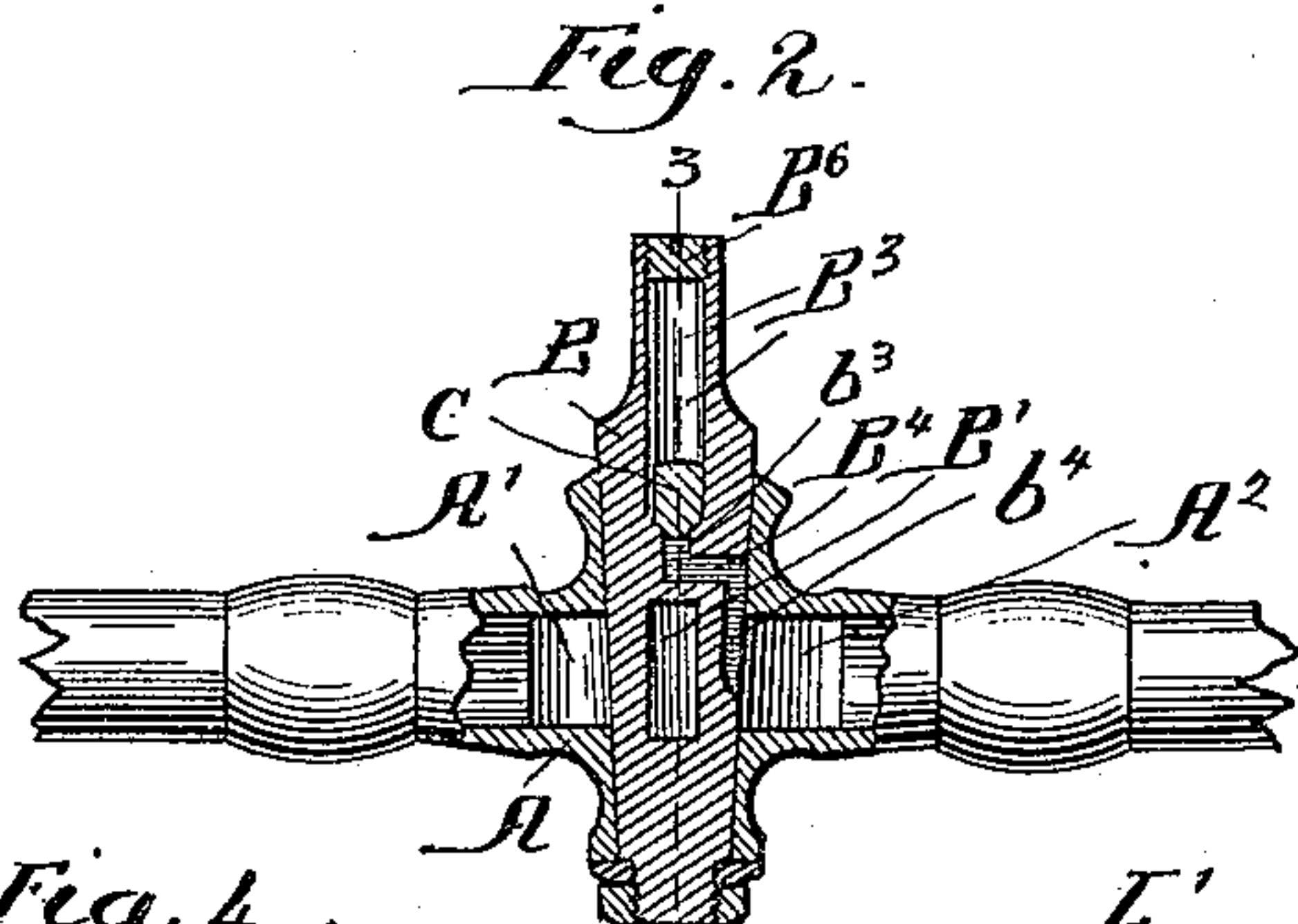
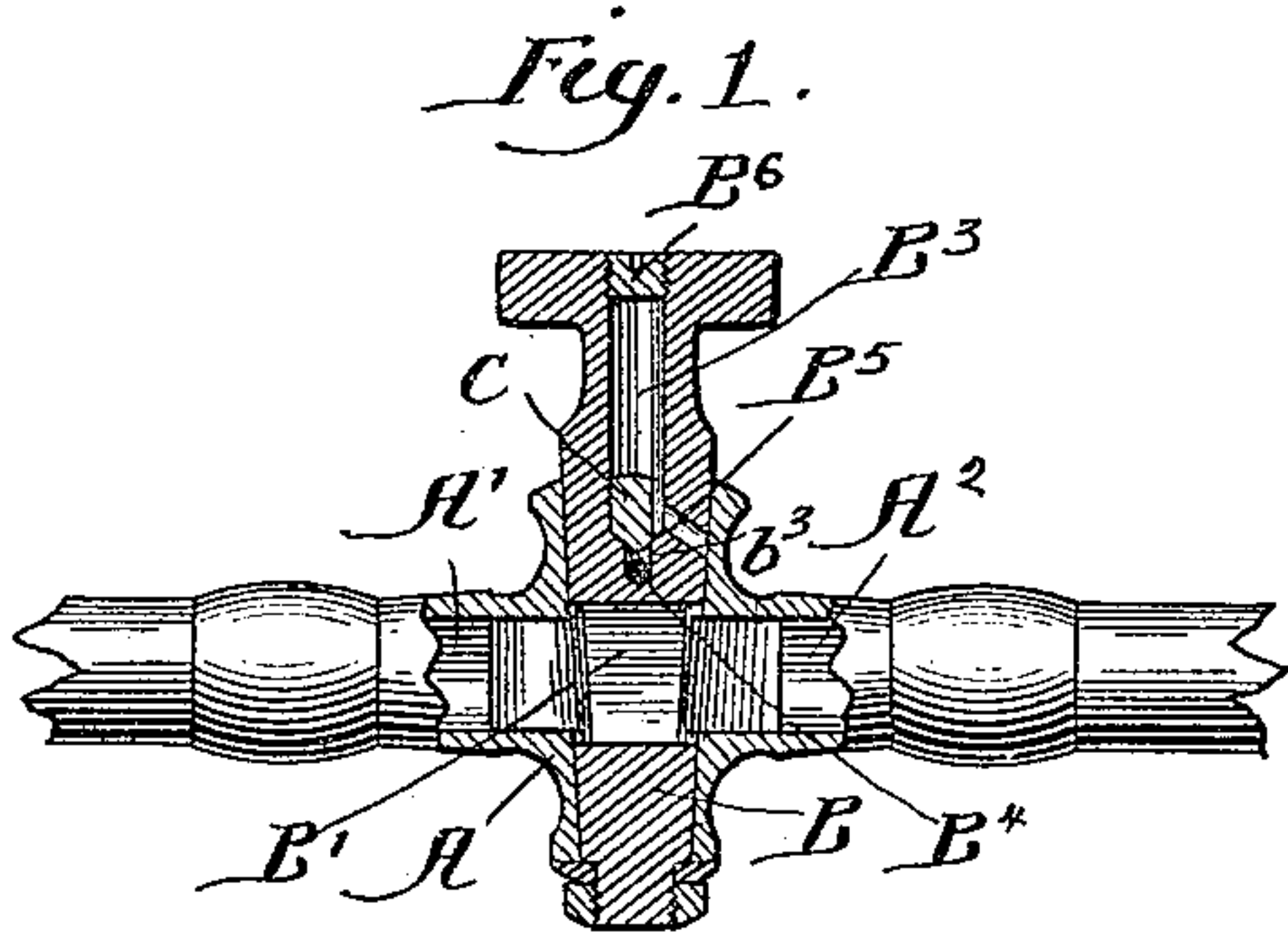


(No Model.)

P. HARVEY.  
STOP AND WASTE VALVE.

No. 440,263.

Patented Nov. 11, 1890.



Witnesses:  
Jean Elliott.  
Julia Usher.

Inventor:  
Patrick Harvey  
By Norton & Burton  
Attorneys



# UNITED STATES PATENT OFFICE.

PATRICK HARVEY, OF CHICAGO, ILLINOIS.

## STOP AND WASTE VALVE.

SPECIFICATION forming part of Letters Patent No. 440,263, dated November 11, 1890.

Application filed April 14, 1890. Serial No. 347,780. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK HARVEY, a citizen of the United States, residing at Chicago, county of Cook and State of Illinois, have invented certain new and useful Improvements in Stop and Waste Valves, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

Figure 1 is a vertical section of my improved stop and waste valve, shown with the parts in the position occupied when the supply is admitted to the house, the section being made in a vertical plane longitudinal with respect to the supply and service pipes. Fig. 2 is a similar section with the valve in the position occupied when the supply is shut off and the water wasting from the house-pipes. Fig. 3 is a section at the line 3 3 on Fig. 2. Fig. 4 is a vertical section of a modification of the device shown in Figs. 1, 2, and 3, the modification consisting of the addition to the former device of a tube screwed into the body of the valve and designed to extend upwardly therefrom to the surface of the ground when the valve is located under ground. The valve is this figure is shown in the position occupied when the supply is shut off and water is wasting from the house-pipes. Fig. 5 is a section at the line 5 5 on Fig. 3.

A is the valve-body having the supply-port A' and service-port A<sup>2</sup>.

B is the valve, being a common form of tapered turn-cock, having the water-way B', which, in the position of supply, opens through the valve in the line of the supply and service ports. In the upper end of the valve B a chamber B<sup>3</sup> is formed by drilling downward to a point a little above the water-way B', and from the lower end of it a smaller duct b<sup>3</sup> is extended nearly to the water-way B'. Into the smaller duct b<sup>3</sup> a hole B<sup>4</sup> is drilled horizontally in a direction at right angles to the direction of the water-way B', opening therefor ninety degrees around from either of the openings of said water-way, and on the surface of the valve B a channel or groove b<sup>4</sup> is formed, commencing somewhat below the horizontal plane of the middle of the height of the water-way B' and ending in the mouth of the duct B<sup>4</sup>. Another duct B<sup>5</sup> is drilled from a point on the surface of the valve in

the vertical plane of the service end of the water-way B' into the chamber B<sup>3</sup>. The bottom of the chamber B<sup>3</sup>—that is, the margin surrounding the upper end of the smaller duct b<sup>3</sup>—constitutes a seat for a check-valve C, which plays freely up and down in the duct B<sup>3</sup>. This check-valve is cut away on three sides, as seen in section in Fig. 5, so that it is substantially triangular in cross-section, being guided by its three angles in the chamber B<sup>3</sup>, and seating over the upper end of the duct b<sup>3</sup>.

The body A is formed with a boss A<sup>3</sup>, protruding horizontally above the plane of the supply and service pipe connections and in a vertical plane at right angles with the direction of the supply and service ducts, and through this boss the waste-duct d is formed, the position of said boss and the duct therein being such that the inner end of said duct is in the horizontal plane of the end of the duct B<sup>5</sup> in the valve B. The upper end of the chamber B<sup>3</sup> is closed by a screw-plug.

The operation of the device as thus far described is that when the water is shut off by turning the valve B to the position shown in Fig. 2 the service-duct A<sup>2</sup> communicates through the groove b<sup>4</sup> with the duct B<sup>4</sup>, and thence with the duct b<sup>3</sup>, and the water, following the path thus indicated, will lift the check-valve C, permitting the water to pass into the chamber B<sup>3</sup> and out through the duct B<sup>5</sup> into the waste-duct d, and thence by the waste-pipe D' into the sewer. It will be observed that in turning the valve B from the position of supply to the position of waste—that is, from the position of Fig. 1 to the position of Fig. 2—the supply will be entirely shut off before the groove B<sup>4</sup> will be exposed at the service-duct, and therefore before the water from the service-pipes can pass out by way of the said groove, so that there is no point at which there is communication from the supply through the service pipe or duct out into the waste. When the valve stands in the position shown in Fig. 2, with the supply shut off, in the event of any back-pressure from the sewer reaching the valve-body through the waste-pipe D' and ducts d and B<sup>5</sup>, such pressure will seat the check-valve C and prevent the access of back-water or sewer-gas past said valve and through or past the



valve B into the service-pipes and thence into the house, and such is the purpose of this construction. In the event of any obstruction keeping the check-valve C from perfectly operating, access thereto may be obtained by removing the plug B<sup>6</sup>.

The form shown in Fig. 4 is designed to be used when the check-valve is to be buried, and the tube E, which is screwed onto the upper part of the valve-body A, is designed to prevent the access of sand to the valve and to permit the valve-stem to be guarded to the surface of the ground. The construction in respect to the arrangement of the water-way B', chamber B<sup>3</sup>, ducts b<sup>3</sup> B<sup>4</sup>, and groove b<sup>4</sup> is the same as in the form already described. The valve-body, however, does not have the waste boss and duct D and d; but, on the contrary, the waste is discharged from the valve above the body by means of the ducts B<sup>7</sup> proceeding laterally from the chamber B<sup>3</sup> above the body A, so that they open into the tube E, and said tube has the laterally-projecting boss E', through which the waste-duct e' leads from the interior of the pipe to the waste-pipe D', which leads to the sewer. The upper end of the valve in this form of construction, instead of having the T-handle shown in the other form, is squared to receive the key F, which extends down through the tube E from the top and operates the valve. The socket in the end of said key, and which fits over the squared end of the valve, is longer than said protruding squared end, and contains the coiled spring G, which reacts between the bottom of the socket—that is, the end of the key-stem—and the end of the valve stem or head. A cap E<sup>3</sup> covers the end of the pipe E, being apertured at the center to permit the stem of the key F to protrude, and a stop-pin f is inserted through said stem before the key is put in position in the tube E, and at such distance from the lower end of said key that when the tube is screwed onto the body A and the cap E<sup>3</sup> is screwed down onto the upper end of the tube, the key being in proper position on the squared end of the valve, the spring G will be tightly compressed and will tend to react downward against the valve and upward against the key, holding the stop-pin F snugly up against the cap E<sup>3</sup>. A gasket e<sup>3</sup> is inserted in the cap E<sup>3</sup> to cause it to make a water-tight junction with the upper end of the tube E. The aperture through which the stem of the key F protrudes through said cap E<sup>3</sup> is countersunk upon the upper side, and a coupling H, which is screwed onto the protruding end, is suitably tapered at the lower end to fit said countersink, so that it may be ground into the same and make a tight fit at that point when it is screwed down far enough onto the key-stem. This coupling serves to receive a rod F', which is extended upward to any point where it is convenient to operate the valve. It will be observed that the waste from the house-pipes, when the sup-

ply is shut off, passing into the pipe E will escape into the waste-pipe in the same manner as in the former-described construction it escaped from the valve-body into said waste-pipe, and that any back-pressure of gas or water from the sewer operating through the pipe D' will seat the check-valve C, as before described, and will be prevented from escaping at the upper end of the pipe E by the cap E<sup>3</sup> and by the close fit of the coupling H thereinto, as above described.

The purpose of the spring G is to take up any wear which may occur between the valve B and the body A by forcing the valve constantly down into said seat in the body as fast as wear may occur.

An important advantage of causing the waste-duct to lead from the pipe E rather than directly from the valve-body is that by this means any leakage which may occur around the valve, instead of accumulating in the pipe E where it might freeze, is carried off into the waste-pipe.

A crank-arm J is secured at the upper end of the rod F' by a set-screw j, so that it may be set at any position on the rod which may be necessary to permit it to have a free quarter-turn, even though it may be, as will usually be the case, close to a wall or other obstruction which might prevent the necessary quarter-turn but for such adjustability. It may frequently happen that the necessary position for the check and waste valve is not directly below the most convenient position for operating it in the house, and lateral connections must be made from the upper end of the operating-stem to the point where the user will operate. I have indicated simple connections for that purpose consisting of a link K, connected to the end of the crank-arm J and extending horizontally to a horizontal slide L, guided in a suitable box or slide-bearing M, which is slotted at m, the handle or knob L' of the slide L protruding through said slot, so that the slide may be moved horizontally the length of the slot, and by said movement give to the crank J the necessary quarter-turn to operate the valve. By this means the position of the knob L' in the slot m will indicate whether the valve is open for supply or stands half-way to shut off the supply and at the same time retain the water in the pipes, or fully closed to shut off the supply and permit the water to waste from the pipes.

I claim—

1. In a stop and waste valve, in combination with the valve-body having supply and service ports, a rotatable plug-valve having a transverse water-way to afford communication between the supply and service ports and having a chamber above such water-way and having a second water-way leading from the surface of the valve at a point between the ends of the first water-way to such chamber, and a check-valve in such chamber seating at the entrance thereto of the second wa-



ter-way, said valve having a discharge-duct leading from such chamber, substantially as set forth.

2. In a stop and waste valve, in combination with the valve-body having supply and service ports and a waste-port, a rotatable plug-valve having a transverse water-way to afford communication between the supply and service ports and a chamber above such water-way, and a second water-way leading from the surface of the valve between the ends of the first water-way to such chamber, and a check-valve in such chamber seating at the entrance therinto of the second water-way, said valve having a discharge-duct leading from said chamber and opening at the valve-surface in the horizontal plane of the waste-port and at such point in the circumference of said valve that it coincides with the waste-port when the first water-way is out of line with the supply and service ports, substantially as set forth.

3. In a stop and waste valve, in combination with the valve-body having supply and service ports, the rotatable plug-valve B, having the transverse water-way to afford communication between the supply and service ports, the vertical chamber B<sup>3</sup>, extending to the top of the valve-stem and closed by a plug at the upper end and having the duct b<sup>3</sup>, leading from its lower end to a point a little above the said water-way, and the lateral duct B<sup>4</sup>, leading from the duct b<sup>3</sup> and merging in the superficial groove b<sup>4</sup>, said groove terminating in the horizontal plane of said water-way, and the waste-discharge duct leading from the chamber B<sup>3</sup> to the surface of the valve, and the check-valve C, located in the chamber B<sup>3</sup> and retained therein by the plug B<sup>6</sup> and seating in the mouth of the duct b<sup>3</sup>, substantially as and for the purpose set forth.

4. In a stop and waste valve, in combination with a valve-body having supply and service ports, and the rotatable valve B, having the water-way B' to afford communication between the supply and the service ports, and a second water-way leading from the horizontal plane of the first water-way at a point between the ends of the latter and communicating with a waste-duct discharging above

the plane of the first water-way, the vertical chamber B<sup>3</sup>, communicating at the bottom with said second water-way, and the triangular check-valve C, adapted to be guided longitudinally in said chamber by its angles and to a seat at the bottom of said chamber and afford water communication past its sides, substantially as set forth.

5. In a stop and waste valve, in combination with a valve-body having supply and service ports, and the tube E, joined to the upper end of said body, the rotatable plug-valve B, having the service-water way B' and the waste-water way leading from the surface of the valve at the horizontal plane of the service-water way upward past the latter and discharging above the valve-body, the vertical chamber B<sup>3</sup> constituting part of said waste-water way and containing the check-valve C, said pipe E having the waste-port e' communicating with the sewer, the pipe E being closed at the top and having the key F, extending down through it to operate the valve, substantially as set forth.

6. In a stop and waste valve, in combination with the valve body having supply and service ports, and the rotatable valve having water-ways, substantially as described, the pipe E, joined to the top of the body and enclosing the stem of the valve and having a waste-port leading to the sewer, the key F, extending up through the pipe from the valve-stem, and means exterior to the pipe for rotating the key and thereby the valve, said key being connected to the valve by a socket which receives the valve-head and being stopped against upward movement by the cap of the pipe, and the spring G, interposed in the socket in the key above the valve-head, tending to react downward upon the latter, substantially as and for the purpose set forth.

In testimony whereof I have set my hand, at Chicago, Illinois, in the presence of two witnesses, this 11th day of April, 1890.

PATRICK HARVEY.

Witnesses:

CHAS. S. BURTON,  
JEAN ELLIOTT.