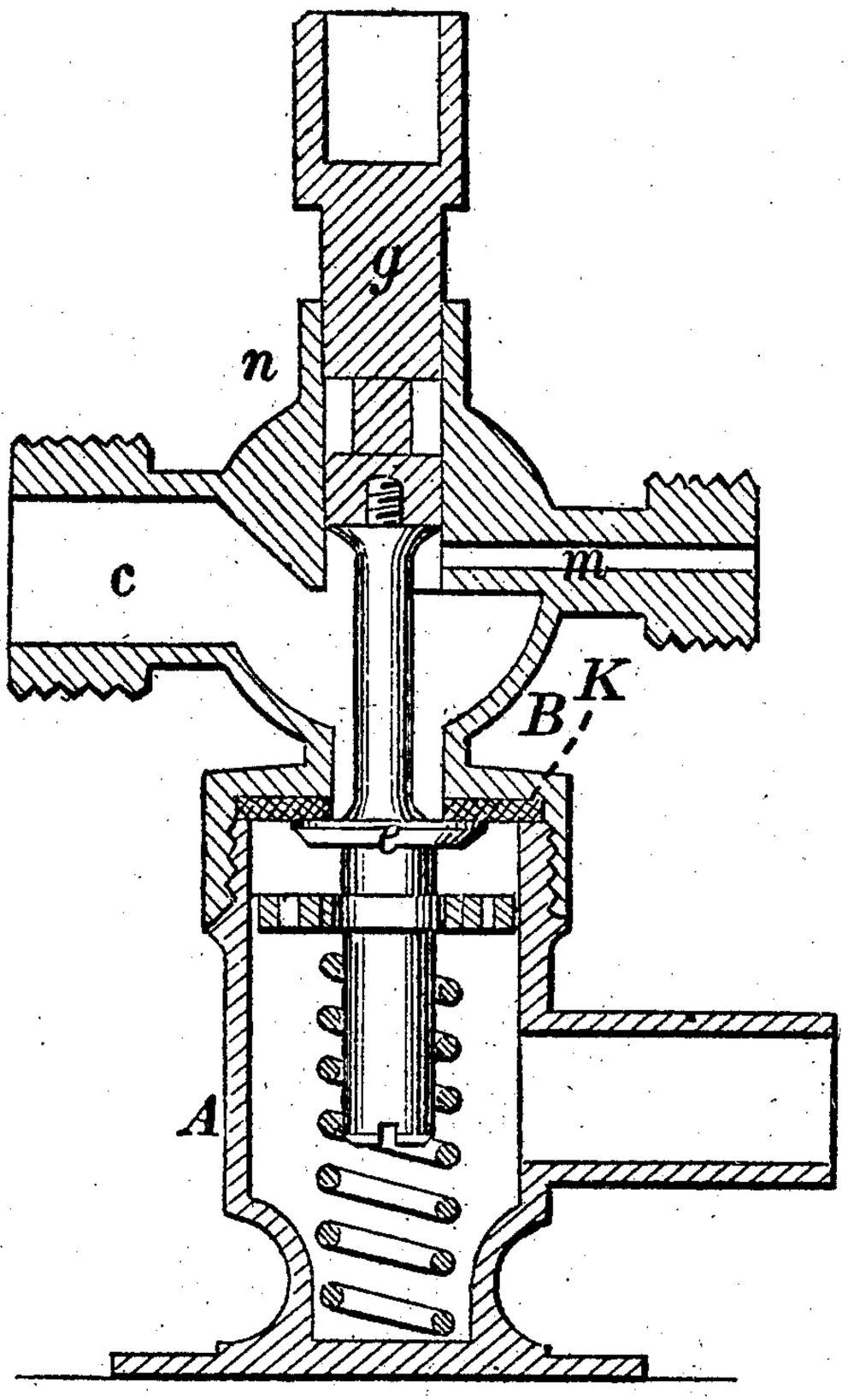
J. BROUGHTON.

WATER CLOSET COCK.

No. 44,783. PATENTED OCT. 25, 1864.



TAKEN FROM PATENT OFFICE REPORT
1864 VOL- II-
ONLY DRAWING ACCESSIBLE (1911)

UNITED STATES PATENT OFFICE.

JOHN BROUGHTON, OF NEW YORK, N. Y.

IMPROVEMENT IN WATER-CLOSET COCKS.

Specification forming part of Letters Patent No. **44,783**, dated October 25, 1864.

To all whom it may concern:

Be it known that I, JOHN BROUGHTON, of the city, county, and State of New York, have invented a new and useful Improvement in Water-Closet Valves, Faucets, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a water-closet valve constructed after my improvement. Fig. 2 is a vertical section thereof. Fig. 3 is a plan view of the strainer *f* seen in position in Fig. 2. Fig. 4 is a side view of a faucet or plain bib with my said improvements applied. Fig. 5 is a vertical section thereof in the line of its longitudinal axis.

Similar letters of reference indicate corresponding parts.

My invention relates, first, to an improved arrangement of parts, whereby the construction of compression valves and faucets is simplified, and an article produced not so liable to derangement or injury from wear; second, to an improved arrangement of a solid-headed valve and a solid-headed actuating-rod, presenting no external joint or connection that could be tampered with, nor any internal joint that can become deranged and cause the valve to leak; third, to an improved method of packing a valve-rod, whereby a simple, cheap, and effective substitute for a stuffing-box is obtained; fourth, to the arrangement of a grate or strainer operating in connection with the supply-chamber and valve in such a manner that chips and foreign substances are effectually excluded from passing through or obstructing the operation of the valve.

A is the shank or supply-chamber of the cock whose upper end is secured to the lower end of the walls of the discharge chamber B by the usual screw-joint *a*, the upper end of the shank coming against and compressing the packing *k* against the valve seat *o*, and the lower end of the walls of the discharge-chamber B resting upon a shoulder, *a'*, formed on the exterior of the shank just above its induction-pipe I. The discharge-chamber B has an induction-pipe, C, and a vent-pipe, *m*, at opposite points of its greatest diameter, and each of which opens into the chamber, as shown in the figures. When the cock is to be used for water-closets, these pipes C and *m* should be formed in suitable shape to receive screw-threads on their peripheries, so that they can be joined to their proper connections, or they can be prepared to receive such connections in any other way. The upper end of the discharge-chamber B is formed with a neck, *n*, which extends high enough to receive and guide the valve-rod *g* in its movements. This neck is continued below the mouth of the vent *m*, so as to form a seat for the lower part of the valve-rod *g*, which, from a line below its packing *j*, forms a valve, *g'*, to the vent-passage *m*. The continuation of the neck to so low a point in the discharge-chamber of the water-closet valve contracts the discharge-passage *d'* in the manner shown in Fig. 2; but the passage should be made wide enough to allow plenty of water-way for the supply of water required to be used.

The head of the valve-rod *g* is enlarged, as shown at *h*, where the enlargement forms a shoulder which comes in contact with and rests upon the top of the nipple or neck *n* of the discharge-chamber. A handle or lever is to be fixed to the head of the valve rod in any convenient way wherewith to operate it.

The valve-rod *g* is turned down between lines 1 2 to form a groove about it, which receives a ring of compressed cork, which forms a tight but self-expanding and easy-working packing. The rod is jointed at *i* to the valve-stem *d*, which passes down through the discharge-chamber into the shank A, where it is enlarged, as seen at d^2. The circular valve *e* is fitted to the stem at the line where the enlarged part d^2 begins. This valve has a plane face above where it rests against the packing K, and a conical face below.

A grate or strainer of annular shape is secured on the part d^2 of the stem and at such a point on it as never to come as low as the top of the induction-chamber when the valve-stem is forced down to open the valve. A spiral spring, *l*, resting upon the bottom of the shank A, embraces the part d^2 of the stem and bears against the lower face of the strainer. The office of the spring is to keep the valve closed, in which, of course, it is aided by the pressure of the water against its lower face.

The construction of the faucet shown in Figs. 4 and 5 is after the same principle, with-

out the vent-passage and the strainer and spring, all of which may be applied if they are desired. For a self-closing faucet or basin-cock the spring may be applied behind the valve, similar to the arrangement in Fig. 2, a shoulder or other provision being made in the shank for a bed for the spring; and for a beer-faucet the strainer may be attached to or cast on the valve-stem, as shown in Fig. 2, thus making it in operation equivalent to the grated end of the ordinary beer-faucets now in use.

The operation of the several parts will be readily understood. By pressing against the head of the rod *g* it will move down until it rests against the upper end of the nipple *n*, when the vent *m* will be closed by the part *g'* of the rod, and the valve *e* will be opened, thus allowing the water to pass up through the perforations in the strainer *f* into the discharge-chamber B, and thence to the closet-basin through a pipe connected to the eduction-pipe C. When the valve-rod *g* is released, the action of the spiral spring *l* will close the valve, when the vent *m* will be opened by the ascent of the valve-rod, allowing the water remaining in the eduction-pipe to run off through the vent into a waste-pipe to be attached thereto. When the valve is opened, the pressure of the water upon its upper and lower faces will tend to keep it nearly in equilibrium, so that very little force will be needed to keep it open, and when it is closed the pressure will hold it close against its seat and compress the packing, so as to secure it against leaking.

Thus while my faucet is free from the complications of construction and the disadvantages of working of such faucets as open and close by means of screw-joints, it has all the advantages of the best and most expensive compression-faucets now in use, and is capable of being opened and closed much more readily.

In the faucet shown in Figs. 4 and 5 it will be seen that the metallic parts are reduced to four in number, and there are but two joints—one connecting the supply and discharge chambers, and the other connecting the valve-stem and actuating-rod. The outside is neat in appearance, while there is a total absence of screw-heads, springs, washers, and handles that can be tampered with and deranged, and the whole must be torn from its pipe-connections before it can be made inoperative, thus making it especially adapted for factories, stores, offices, and tenement-houses, where a good reliable brass faucet not liable to become deranged is required.

I claim as new and desire to secure by Letters Patent—

1. The arrangement of the solid valve *e* and solid-headed valve-rod *g*, connected together, substantially as shown, and supported by and working in the tubular bearing of the nipple or neck *n*, in combination with the supply and discharge chambers and the elastic valve seat K, all constructed and operating substantially as described.

2. Forming an annular groove upon that part of the valve-rod *g* which slides within the neck of the chamber B, and filling the same with cork or other elastic material, substantially as and for the purpose above described, and thus dispensing with a cover on the end of the neck.

3. The arrangement of a grate or strainer upon the valve-stem below the valve and moving within the supply-chamber above the induction-pipe, substantially as described.

JOHN BROUGHTON.

Witnesses:

M. M. LIVINGSTON,

C. L. TOPLIFF.