

STOP-COCK.

Patented Dec. 21, 1875.

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IMPROVEMENT IN STOP-COCKS.

Specification forming part of Letters Patent No. 171,344, dated December 21, 1875; application filed November 27, 1875.

To all whom it may concern:

Be it known that I, JOHN G. L. BOETTCHER, of the city of Brooklyn, county of Kings and State of New York, have invented a new and Improved Stop-Cock, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical section. Fig. 2 is a transverse section in plane *x x*, Fig. 1. Fig. 3 is a transverse section in the plane *y y*, Fig. 1.

Similar letters indicate corresponding parts.

This invention consists in the combination of a valve, a flexible washer, a supporting guide-plate, provided with a screw-shank, and a handle, having a screw-socket to receive said screw-shank, the flexible washer being secured in position on its supporting-plate by the body of the valve itself, so that when the valve is opened all leakage of gas or liquid past the handle of the faucet is prevented. The valve-seat rises from the bottom of a chamber which communicates with the supply-reservoir or fountain, and also with a pressure-gage, so that the pressure of the liquid or gas in the fountain or reservoir is indicated by the pressure-gage, when the valve is opened as well as when the valve is closed. With the discharge-spout of the faucet is combined a pressure-relieving valve, which can be regulated according to the pressure in the supply-reservoir or fountain, and which prevents undue pressure on the pipe connected to the discharge-spout.

In the drawing, the letter A designates the valve-chamber of my stop-cock, which connects by means of a channel, *a*, with a pressure-gage, B, and by means of a channel, *b*, with the fountain or reservoir, to which said stop-cock may be attached by the screw-shank *c*, or in any other desirable manner. From the bottom of the valve-chamber rises a nipple, *d*, the face of which forms the seat for the valve C.

By referring to Fig. 1 of the drawing it will be noticed that, by means of the valve-chamber A, the communication between the fountain or supply-reservoir and the steam-gage is always open, whether the valve is closed or open, and consequently the gage will indicate

the pressure of the fluid or gas in the fountain at all times.

The valve C is secured by means of a screw-nipple, *e*, to a plate, D, and between the valve and the plate is secured a flexible washer, E, which extends out over a shoulder, *f*, formed in the cap F of the valve-chamber. The plate D is provided with recesses *g'*, (see Fig. 2,) which catch over ribs *h* in the cap F, and serve to prevent said plate from turning. From the outer end of the plate D extends a screw-shank, *i*, which fits into a screw-socket formed in the conical head *g* of the handle G. This conical head is ground into a corresponding socket in the mouth of the cap F, and it is retained in position by a screw-cap, H. When the cap is in position the handle can be turned round in either direction, but it cannot move in the direction of its axis, and when the handle is turned the valve is caused to move in or out. The cap F is screwed on the valve-chamber A, as shown in Fig. 1, and as the same is screwed up, the flexible washer E forms the packing whereby the joint between the cap and the valve-chamber is rendered tight. Said flexible washer also forms the packing to produce a tight joint between the valve and the supporting-plate D, and at the same time it allows the valve being moved toward or from its seat *d*. By these means all leakage through the cap F or past the shank of the handle G is effectually avoided.

The washer E may be made of india-rubber, leather, sheet-lead, or any other suitable flexible material.

The nipple *d*, which forms the seat for the valve C, communicates, by means of a channel, *k*, with the discharge-spout I of my stop-cock. The channel *k* extends through a cylindrical extension, *l*, projecting from the outside of the nipple *d*, and over the extension is fitted a valve, *m*, which is inclosed in the chamber K, Figs. 1 and 3, and which is depressed on its seat by a spring, *n*. The outer end of the valve *m* is closed, and it is provided in its side with a hole, *o*. When the main valve C is opened, the pressure of the fluid or gas from the fountain forces the valve *m* out against the action of its spring, until the hole *o* gets past the end of the extension *l*, leaving the fluid or gas free to escape through the dis-

charge-spout I. In the outer end of the chamber K is screwed a disk, *p*, which bears upon the spring *n*, and which can be screwed in or out, so as to regulate the tension of this spring. The discharge-spout is made, by preference, in the form of a corrugated nipple, which is secured to the chamber K by a screw-cap, and to which may be attached a flexible pipe, which serves to conduct the fluid or gas emanating from the fountain or supply-reservoir to the vessel in which the same is to be used.

By means of the valve *m* and its spring *n*, the pressure exerted by the fluid or gas on the flexible connecting-pipe can be regulated, so as to avoid the danger of bursting the pipe. When the pressure in the fountain or reservoir is great, the regulating-disk *p* is screwed in, so as to increase the tension of the spring *n*, and whenever the pressure in the discharge-spout, or in the pipe attached to the same, becomes such that the same, when added to the force exerted by the spring *n*, becomes equal to the pressure of the gas or fluid in the fountain, the valve *m* closes, and it is only opened when the sum of the pressure in the discharge-spout, added to the force of the spring *n*, is less than the pressure in the fountain.

By this arrangement I am enabled to inject carbonic-acid gas from a fountain into a barrel or keg at a pressure which will not be injurious to the connecting-pipe, and the gas

can be made to flow uniformly and just as fast as the same is required. When the pressure in the fountain decreases, the regulating-disk is turned out, the tension of the spring *n* is decreased, and the gas flows again until the fountain is exhausted.

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

1. The combination of the valve C, the flexible washer E, confined between the cap F and the valve-chamber A, the supporting guide-plate D, having the screw-shank *i* and recesses *g'*, fitting over ribs *h* in the cap F, and the handle G, having a screw-socket fitting over the screw-shank of the guide-plate D, all substantially as shown and described.

2. The valve-chamber A, provided with the passages *a* and *b*, and cylindrical extension *l*, in combination with the pressure-relieving valve *m*, arranged in said cylindrical extension of the valve-chamber, the valve C, its operating devices, and a pressure-gage, B, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 20th day of November, 1875.

JOHN G. L. BOETTCHER. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.