

W. PORTEOUS & A. B. RONEY.
STOP AND WASTE-COCKS.

No. 195,163.

Patented Sept. 11, 1877.

Fig. 2.

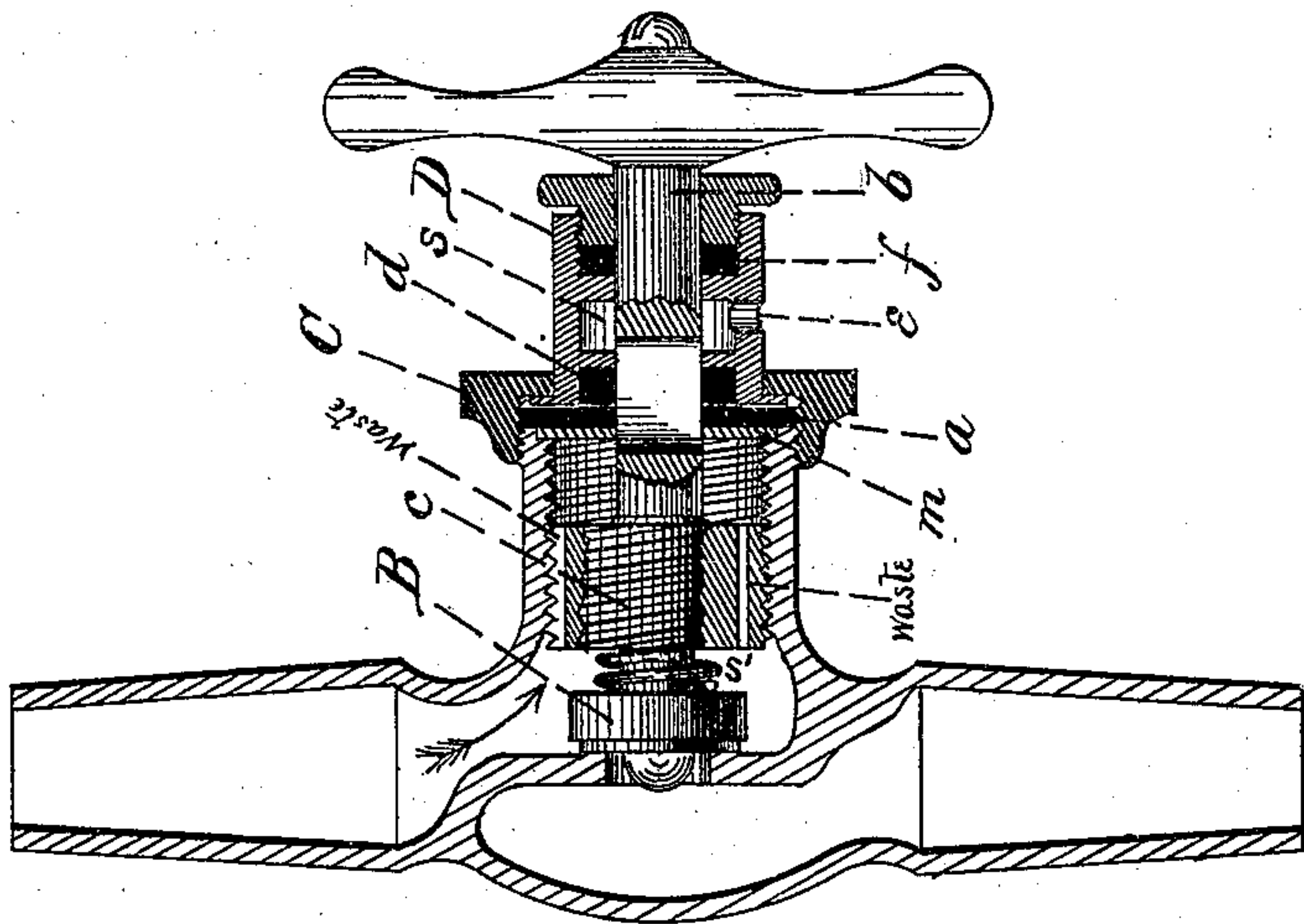


Fig. 3.

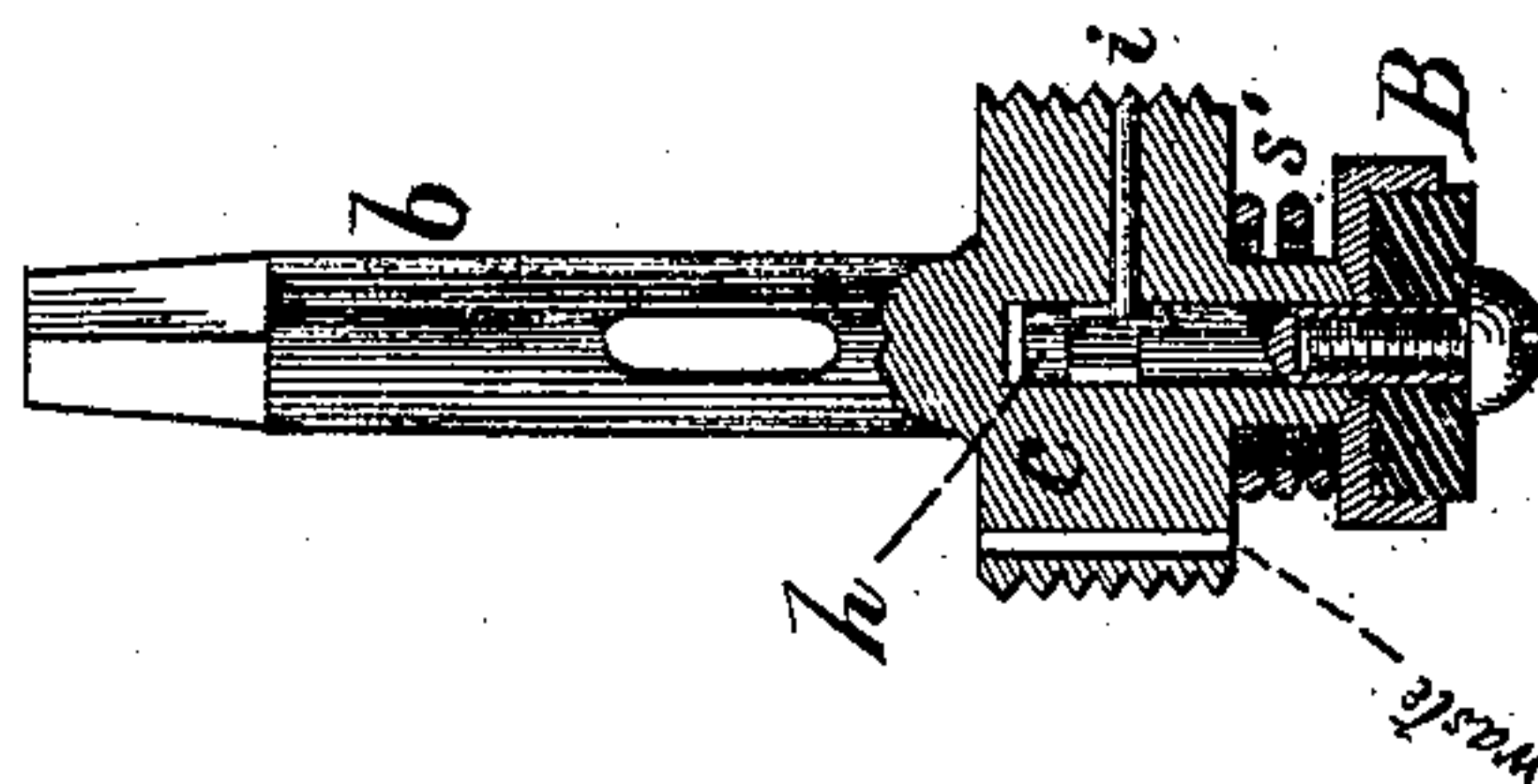
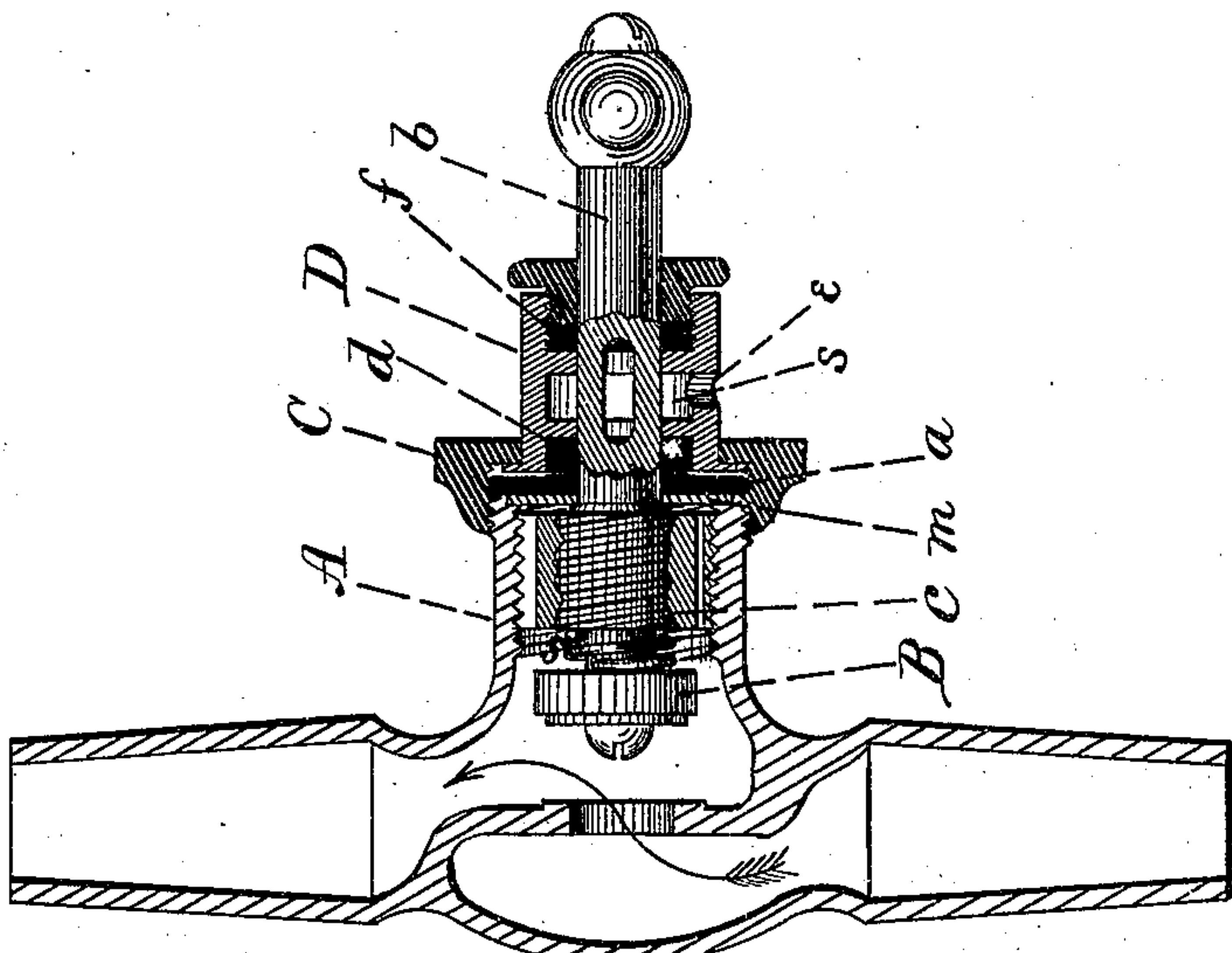


Fig. 1.



Witnesses.

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN STOP AND WASTE COCKS.

Specification forming part of Letters Patent No. **195,163**, dated September 11, 1877; application filed June 9, 1877.

To all whom it may concern:

Be it known that we, WILLIAM PORTEOUS and ALEXANDER B. RONEY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Stop and Waste Cocks; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical longitudinal section, showing valve open and waste closed. Fig. 2 is a similar view, showing valve closed and waste open. Fig. 3 is a detail section, showing the arrangement of main and secondary stems and valve.

This invention relates to stop and waste cocks of that class in which the valve opens and closes by the reciprocation of the stem, caused by the engagement of a threaded collar on the stem with the threaded chamber on the cock; and consists in the construction and combination of parts, substantially as herein-after fully described and claimed.

The drawings show a stop-cock of the above class having our improvements.

A designates the threaded body or chamber; B, the valve; *b*, its stem, having the threaded collar or enlargement *c*. The chamber or body A is rabbeted on the interior of its end for the seating of a metallic washer, *m*, surrounding the stem. Outside this a packing, *a*, is placed, and all secured by a cap, C, screwing down on the body A, as shown; but between the cap C and packing *a* comes the flange of a movable waste-water chamber, D, of peculiar form. In the face of its flange an annular recess is cut to receive a packing, *d*, which closely hugs the stem *b*. The waste-space *s*, in chamber D, is made continuous around the stem, and communicates with the exterior through an opening, *e*, to which an ordinary waste-tube may be applied. Thus constructed, the chamber D may be revolved to any degree, in order that the waste-tube may be applied in any direction.

In chamber D, above the waste-space, a third packing, *f*, is inserted, and a stuffing-box screwed down on top of it.

The collar or enlargement *c* of stem *b* is perforated or grooved, or the inner face of body A is grooved or channeled, to afford a constant open communication between the two ends of collar *c*. Above the collar *c* the stem *b* is slotted, grooved, or otherwise channeled for a short distance.

The operation is as follows: Suppose the cock is open, as in Fig. 1. In this position, though water may pass the collar *c*, it can go no farther than packing *a*, because the act of opening has withdrawn the stem *b* till its channel no longer lies below the packing *a* and *d* and ring *m*, but is above them, and consequently no water can find its way from body A to waste-chamber D; but, now, in closing the cock the valve-stem *b* is advanced into the body till, immediately before reaching the full-closed position, the channel of the stem appears below the ring *m*, when the waste is open from body A to chamber D, and the water is prevented from leaking beside the stem by the packing *f* of stuffing-box inserted at outer end of chamber D. In again opening the cock, a quarter-turn of the stem effectually closes the waste, presenting the solid metal of the stem to the pressure of the water.

The mechanism is simple and possesses many advantages. It has no spring, and consequently if it operates once it does so always, and cannot fail to work. This is not the case when a spring or cushion is used, as it weakens through lapse of time, requires constant attention, and, owing to the varying pressure of water in pipes, the spring is apt to work or yield at the wrong time. Rubber springs oxidize or rot and become useless, particularly when hot water is used; but our device, being all brass, except the usual necessary packings, is not open to any such objections. Should the waste get out of order, or new packing be required in waste-chamber, everything except the valve may be taken out and repaired without the disagreeable necessity of closing the street-valve, and thus no annoyance arises. By tightening the cap when the packings become worn, they are compressed and spread, so as to be as good as new.

In addition to the above functions, it is desirable that the waste should not discover till the valve is completely shut, and that the

valve should not open till the waste is closed. This we accomplish in the following manner: In cocks of this class the valve B is swiveled, by reason of its secondary stem *h* passing into a cylindrical cavity in the enlargement *c* of the main stem *b*, where it is secured by a pin *i*, inserted through the enlargement *c*, and its inner end playing in a circumferential groove in stem *h*, just wide enough to receive it.

We make the groove wider than pin *i*, so as to permit a slight longitudinal motion of stem *h* in reference to pin *i*; and we place a spiral spring, *s'*, around the neck of the enlargement *c*, between it and the valve B. Now, if the valve be shut, in opening no effect is produced on the valve for the first half-turn of stem *b*, because the wide groove in stem *h* allows the stem *b* to rise a little before pin *i* strikes the upper side of the groove, and the valve is meanwhile held to its seat by the elasticity of the spring *s'*. This half-turn closes the waste, and the valve opens on further turning of stem *b*. In closing, the opposite result is produced—that is, the spring *s'* causes the valve B to strike its seat before the waste can discover, after which a half-turn of stem *b* brings the stem *b* down solid on the valve and opens the waste.

The spring, being operative during only an instant of time in opening or closing, is not open to the objections above cited, as they are to be understood as the essential element in opening and closing the waste; but here the spring is applied to the valve for a different and secondary purpose.

We claim—

1. In combination with the body A and waste-chamber D, the reciprocating stem *b*, having the threaded enlargement *c*, and slotted, grooved, or channeled above the enlargement, substantially as described, to furnish outlet from body A to chamber D.

2. In combination, the movable chamber D, recessed, and having a flange projecting between the body and its cap, and the packing *d*, with the body A and stem *b*, substantially as and for the purposes described.

3. In that class of stop-cocks in which the valve is lowered to its seat by a threaded enlargement on its stem engaging with the threaded body of the cock, a waste-passage constructed in the stem or its enlargement, substantially as shown, leaving a permanent passage-way for the waste-water from the water-way of the valve-shank to that portion of the body above said enlargement.

4. The combination of main stem *b* with stem *h*, pin *i*, and spring *s'*, the stem *h* having a circumferential groove wider than the head of pin *i*, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 18th day of May, 1877.

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Witnesses:

THOS. BINGHAM,
THOS. J. MCTIGHE.