

No. 841,093.

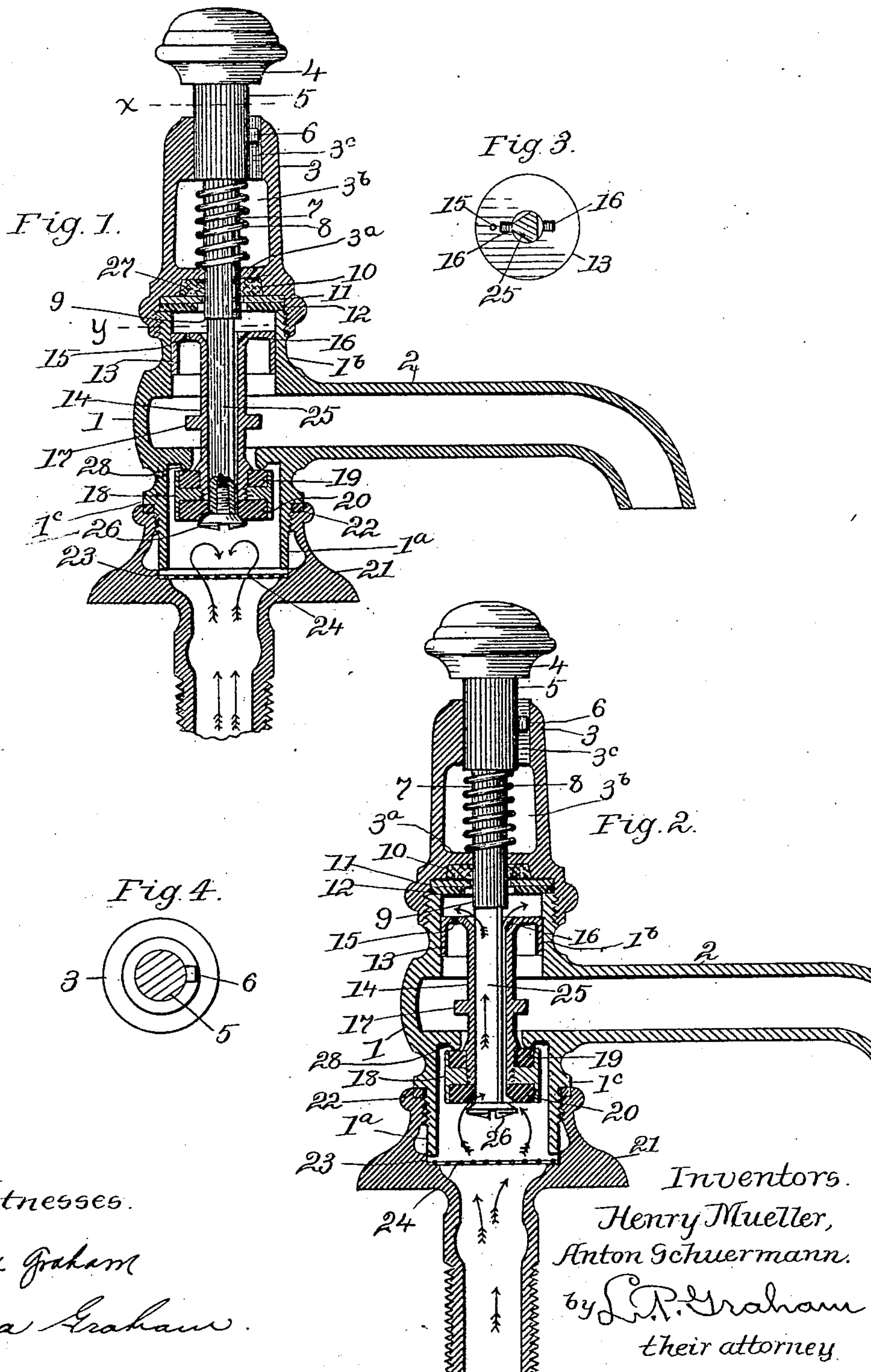
PATENTED JAN. 8, 1907.

H. MUELLER & A. SCHUERMANN.

BASIN COCK.

APPLICATION FILED NOV. 9, 1905.

2 SHEETS—SHEET 1.



Witnesses.
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2 SHEETS—SHEET 2.

Fig. 5.

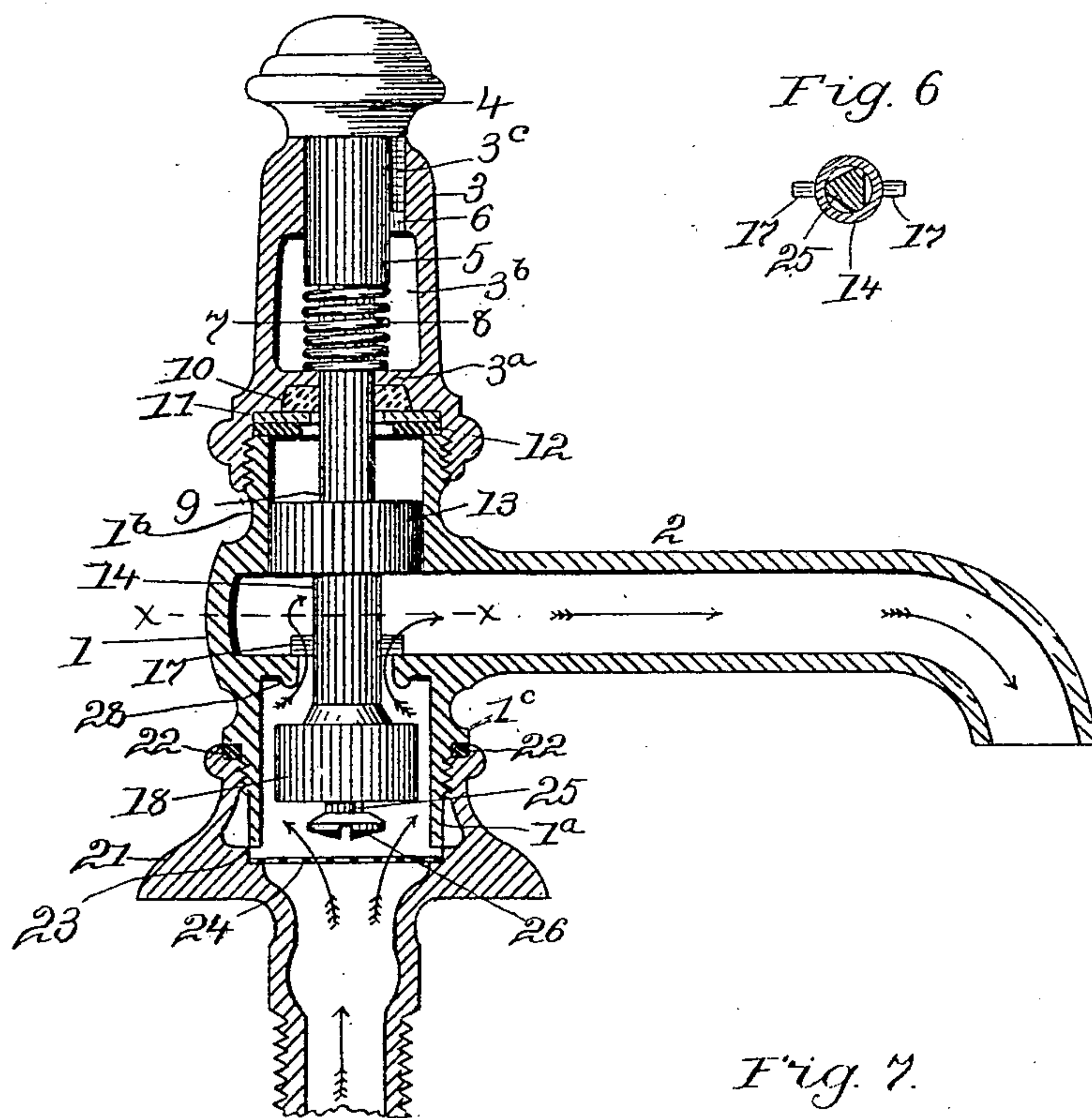


Fig. 6.

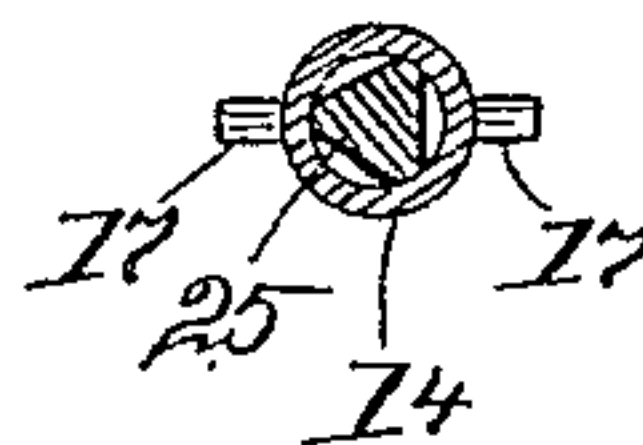
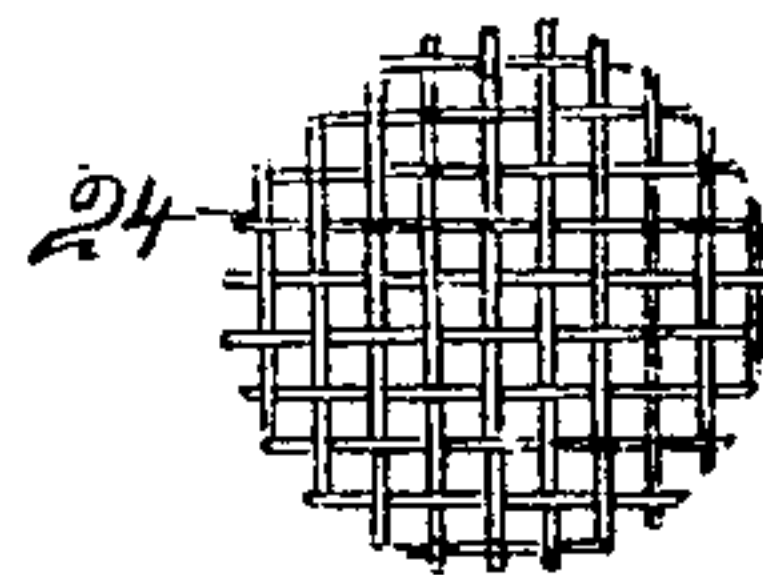


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY MUELLER AND ANTON SCHUERMANN, OF DECATUR, ILLINOIS, ASSIGNORS TO H. MUELLER MANUFACTURING CO., OF DECATUR, ILLINOIS, A CORPORATION OF ILLINOIS.

BASIN-COCK.

No. 841,093.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed November 9, 1905. Serial No. 286,612.

To all whom it may concern:

Be it known that we, HENRY MUELLER and ANTON SCHUERMANN, residents of the city of Decatur, county of Macon, and State of Illinois, have invented certain new and useful Improvements in Basin-Cocks, of which the following is a specification.

Our invention relates to self-closing basin-cocks in which the valves are closed with the water-pressure, and it is exemplified in the structure hereinafter described.

In the drawings forming part of this specification, Figure 1 is a central vertical section through a cock embodying our invention, showing both the main valve and the auxiliary valve entirely closed. Fig. 2 is a section through the cock, showing the auxiliary valve partly opened. Fig. 3 is a plan of the piston against which water-pressure acts to force the main valve partly open, the lower part of the valve-stem being shown in cross-section on line Y in Fig. 1. Fig. 4 is a section through the upper part of the valve-stem on line X in Fig. 1, a lug on the valve-stem and a corresponding groove in the cap being shown in plan. Fig. 5 is a section through the cock, showing the valves thereof entirely open. Fig. 6 is a section through the lower part of the valve-stem and the water-passage encircling the same, the section being taken on line X in Fig. 5 and stop-lugs on the piston-stem being shown in plan. Fig. 7 is a plan of the screen used to exclude sediment and solid particles from the valves of the cock.

The cock-body 1 has the spout 2 and the two cylindrical extensions 1^a and 1^b. The upper extension 1^b of the cock-body is externally threaded at its upper end, and a cap 3 for the body is internally threaded at its lower end to screw onto the body. A fiber washer 12 rests on the upper end of the upper cylindrical extension of the body, a brass washer 11 is placed on the fiber washer, and the cap 3 has an internal shoulder which clamps the two washers in place to form a joint. A partition 3^a is formed in the cap above the brass washer 11, and a recess in the under surface of the partition contains packing 10. The upper end of the cap is shaped to receive the upper part 5 of the valve-stem, and a recess 3^b is formed in the

cap between the upper end thereof and the partition 3^a. The lower cylindrical extension 1^a of the cock-body is threaded externally above its lower end, and a base 21 is internally threaded at its upper end to screw onto the said lower extension of the cock-body. A fiber washer 22 fits between a flange 1^c of the lower body extension and a shoulder on the upper end of the base. The base has an annular receptacle 23 for the screen 24, which receptacle is the same size as the external dimensions of the lower extension of the cock-body, and when the body is screwed onto the base and the fiber washer 22 is firmly compressed the lower end of extension 1^a is just above but out of contact with the edge of the screen. A partition in the cock-body just below the spout has the seat 28 for the main valve of the cock.

A piston 13 fits slidably in the upper cylindrical extension of the body above spout 2. A tubular piston-stem 14 extends downward from the piston, traversing the spout-passage and extending beyond the main valve-seat, and a valve-shell 18 is screwed onto the lower end of the tubular piston-stem. The valve-shell has a central horizontal partition, and it is provided with two rubber washers 19 and 20—one above and the other below the partition. The upper rubber washer 19 closes against seat 28 and constitutes the main valve of the cock, while the rubber washer 20 acts as a seat for the auxiliary valve 26. The valve-stem comprises the upper part 5, which is circular in cross-section, the intermediate reduced circular part 7, and the still further reduced triangular part 25. The part 5 conforms to the aperture in the upper end of the cap 3. The reduced part 7 forms a shoulder for spring 8, and the reduced triangular part 25 forms the shoulder 9 to bear against the piston at a certain stage in the valve-opening operation. The part 25 of the valve-stem is triangular in cross-section from shoulder 9 to the valve 26. It is of a size to fit slidably in the tubular piston-stem, and the spaces between the plane faces of the stem and the circular inner surface of the piston-stem form passages for water. The auxiliary valve 26 is in the form of a screw, as a matter of preference,

and it is screwed into an internally-threaded bore in the end of the valve-stem, as shown in broken section in Fig. 1 of the drawings.

Lugs 17 are formed on the tubular piston-stem 14, and they strike against the partition beneath which valve-seat 28 is formed when the piston is in its lowest operative position, (see Fig. 5,) wherein the lugs are shown acting as stops for the piston.

The piston-stem is only partly obstructed by the triangular part 25 of the valve-stem, and when the auxiliary valve 26 is forced away from its seat, as shown in Fig. 2, water will pass through the piston-stem and enter the space in the body above the piston. A waste-hole 15 is formed through the piston, and a pair of grooves 16 form enlargements of the upper end of the passage-way through the piston-stem, for a purpose to be herein-after explained. A push-button is formed on or attached to the upper end of the valve-stem, and a lug 6 on the valve-stem slides in the groove 3^a in the upper end of the cap and prevents the stem from turning.

The piston 13 has a larger area than has the valve-shell 18, and a water-space is left above the piston when the valves are closed.

A spring 8 fits between partition 3^a of the cap and the upper shoulder of the valve-stem, and it tends to hold the valves closed, as shown in Fig. 1. When enough pressure is applied to the push-button to overcome the tension of spring 8 and the water-pressure against the small auxiliary valve 26, the auxiliary valve will open slightly; water will at once rise through the passage-way 14 to above the piston, and the pressure on the larger piston area will cause the main valve to open to some extent. As soon as the pressure is relieved by escape of water through the spout the automatic opening of the main valve will cease; but continued pressure on the push-button will bring the shoulder 9 of the valve-stem against the upper surface of the piston and will force the main valve wide open. Preliminary opening of the auxiliary valve is an operation requiring but little effort. Preliminary opening of the main valve is automatic, as hereinbefore explained, and completion of the valve-opening operation requires but little, if anything, more than compression of spring 8. When pressure on the push-button is discontinued, the spring will at once close the auxiliary valve, thus cutting off water-pressure from above the piston, and the flow of water through the spout will act with the spring to force the main valve closed. The space above the piston will be filled with water; however, which must escape through the waste-hole 15 before the closure of the main valve can be completed, and this causes a valve-closing motion sufficiently slow to prevent water-hammer. It is obvious that the waste-hole should not be small enough to cause needless delay in closing

the valve, and if the hole were too large it would not permit the development of enough pressure on the piston to unseat the main valve.

The shoulder formed by the projection of the circular part 7 of the valve-stem beyond the triangular part 25 is sufficiently broad to cover the passage-way through the piston-stem when the shoulder is in contact with the piston, and some provision is desirable to prevent shutting off the flow under these circumstances. Ordinarily the contacting surfaces will be rough enough or uneven enough to prevent complete closure of the passage-way; but the grooves 16, placed on opposite sides of the passage-way, lead beyond the shoulder 9 and assure a water passage under all circumstances. An angle of the triangular part of the stem may close one of the grooves 16; but it is impossible that both may be closed at the same time.

The valve-stem is held from turning in the cock by the lug 6 engaging the groove 3^a of the cap. This provision prevents the valve 26 from becoming unscrewed from the valve-stem and also prevents the push-button from turning out of position.

The push-button is preferably provided with the word "Push" and with either "Hot" or "Cold," and these should be placed to read properly from the front of the basin.

The lugs 17 form positive stops to limit the downward motion of the piston and the main valve, and they do not materially interfere with passage of water through the spout. The screen 24 is a reticulated or perforated plate, and it is held somewhat loosely on its seat by the lower end of the lower extension of the cock-body. The water-pressure tends to hold the valves closed; but as soon as the auxiliary valve is forced partly open the water-pressure acts in the opposite direction to give the main valve its initial opening movement.

The valve-stem may be made to engage the piston from above and the valve-shell from below, and in case the piston or the valve should become clogged they may be moved up and down by means of the valve-stem until the obstruction is removed.

We claim—

1. A basin-cock comprising a body having a passage-way leading upward into the cock and sidewise therefrom, a valve-seat in the passage-way below the sidewise extension thereof, a closed cylindrical extension of the cock-body above the sidewise extension of the passage-way, a piston in the cylindrical upward extension of the body, a hollow piston-stem leading downward from the piston to below the valve-seat, a main valve on the lower end of the piston-stem closing upward against the seat, a valve-stem extending downward through the closed upward extension of the body and through the piston-

stem, an auxiliary valve on the lower end of the valve-stem adapted to close the hollow piston-stem, and a shoulder on the valve-stem adapted to strike the piston when the
5 auxiliary valve is opened.

2. A basin-cock comprising a body having a passage-way leading upward into the cock and sidewise therefrom, a valve-seat in the passage-way below the sidewise extension
10 thereof, a closed cylindrical extension of the body above the sidewise extension of the passage-way, a piston in the cylindrical upward extension of the body, a hollow piston-stem leading downward from the piston to
15 below the valve-seat, a main valve on the lower end of the piston-stem, closing upward against the seat, a valve-stem composed of two parts of different diameters, the larger part extending downward through the
20 upward extension of the body into contacting proximity with the piston and the smaller part extending upward through the piston-stem and screwing into the larger part, an auxiliary valve on the lower end of
25 the valve-stem adapted to close the hollow piston-stem, a push-button on the upper end of the valve-stem and a spring tending to hold the valve-stem raised.

3. A basin-cock comprising a body having
30 a passage-way leading upward into the cock

and sidewise therefrom, a valve-seat in the passage-way below the sidewise extension thereof, a cylindrical extension of the body above the sidewise extension of the passage-way, a closure for the upper end of the upward cylindrical extension, a piston in the upward extension of the body, a hollow piston-stem leading downward from the piston to below the valve-seat, a valve-shell with a central horizontal partition attached to the
35 lower end of the piston-stem, a rubber washer in the upper compartment of the shell closing upward against the valve-seat in the passage-way, a rubber washer in the lower compartment of the shell forming a
40 continuation of the water-passage through the piston-stem and a valve-seat for an auxiliary valve, a valve-stem extending downward through the upward extension of the body and through the piston-stem and an
45 auxiliary valve on the lower end of the valve-stem adapted to close upward against the lower rubber washer in the valve-shell.

In testimony whereof we sign our names in the presence of two subscribing witnesses. 55

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ANTON SCHUERMANN.

Witnesses:

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