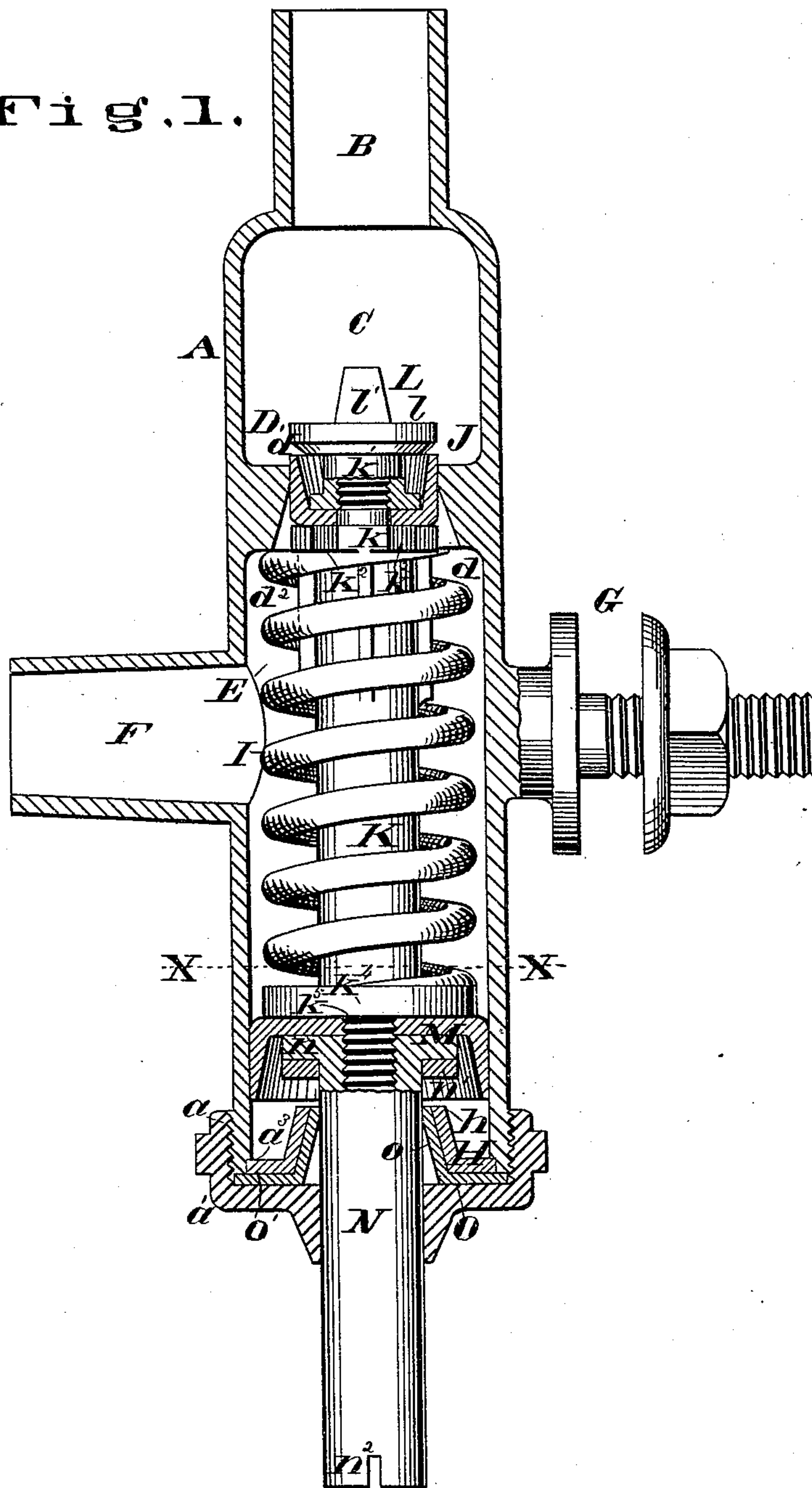


P. WHITE.
Valve for Water-Closets.
No. 215,701. Patented May 20, 1879.

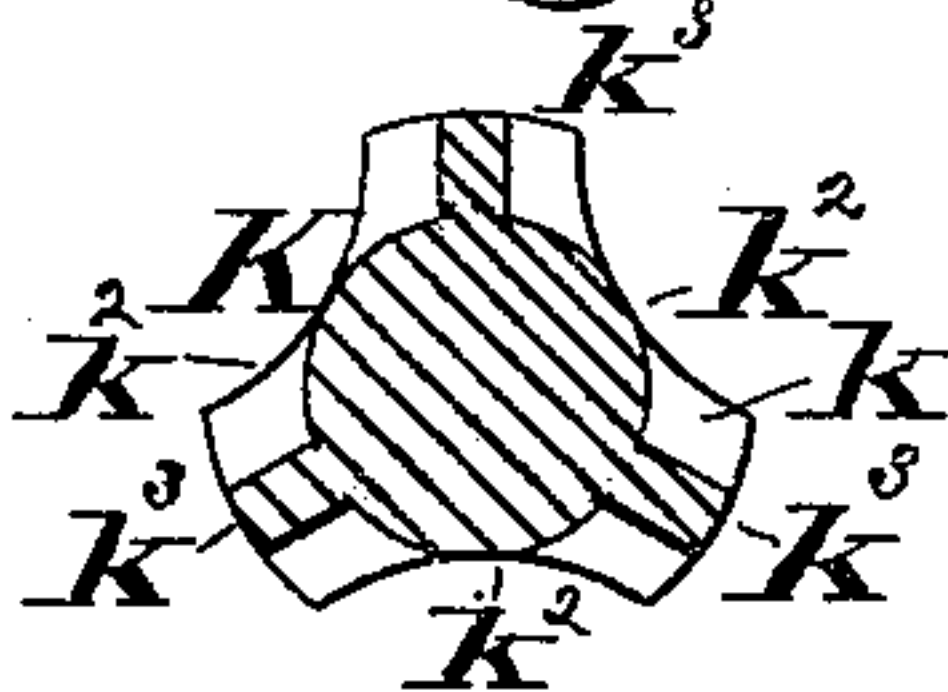
Fig. 1.



Attest.

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Fig. 2.



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Fig. 3.

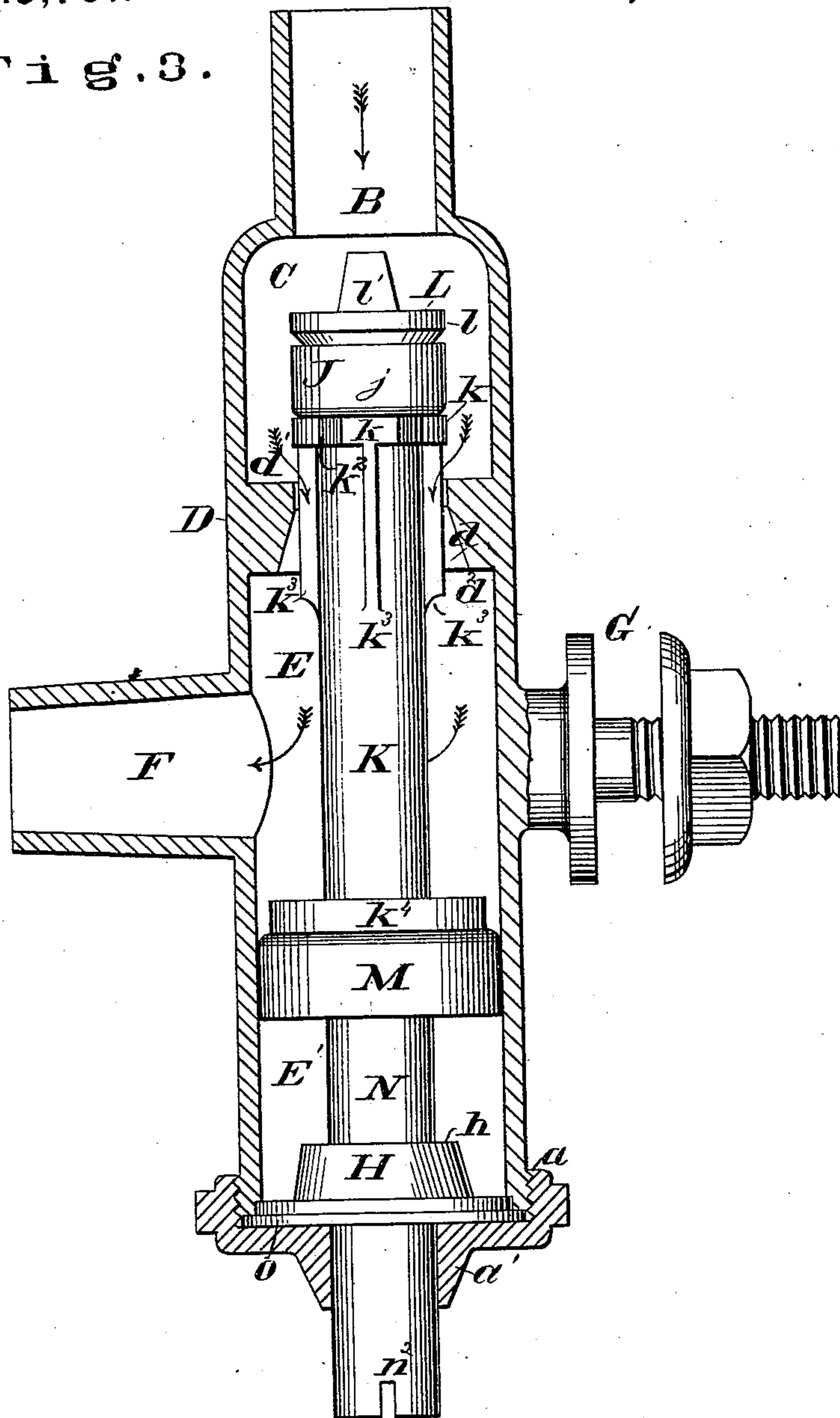
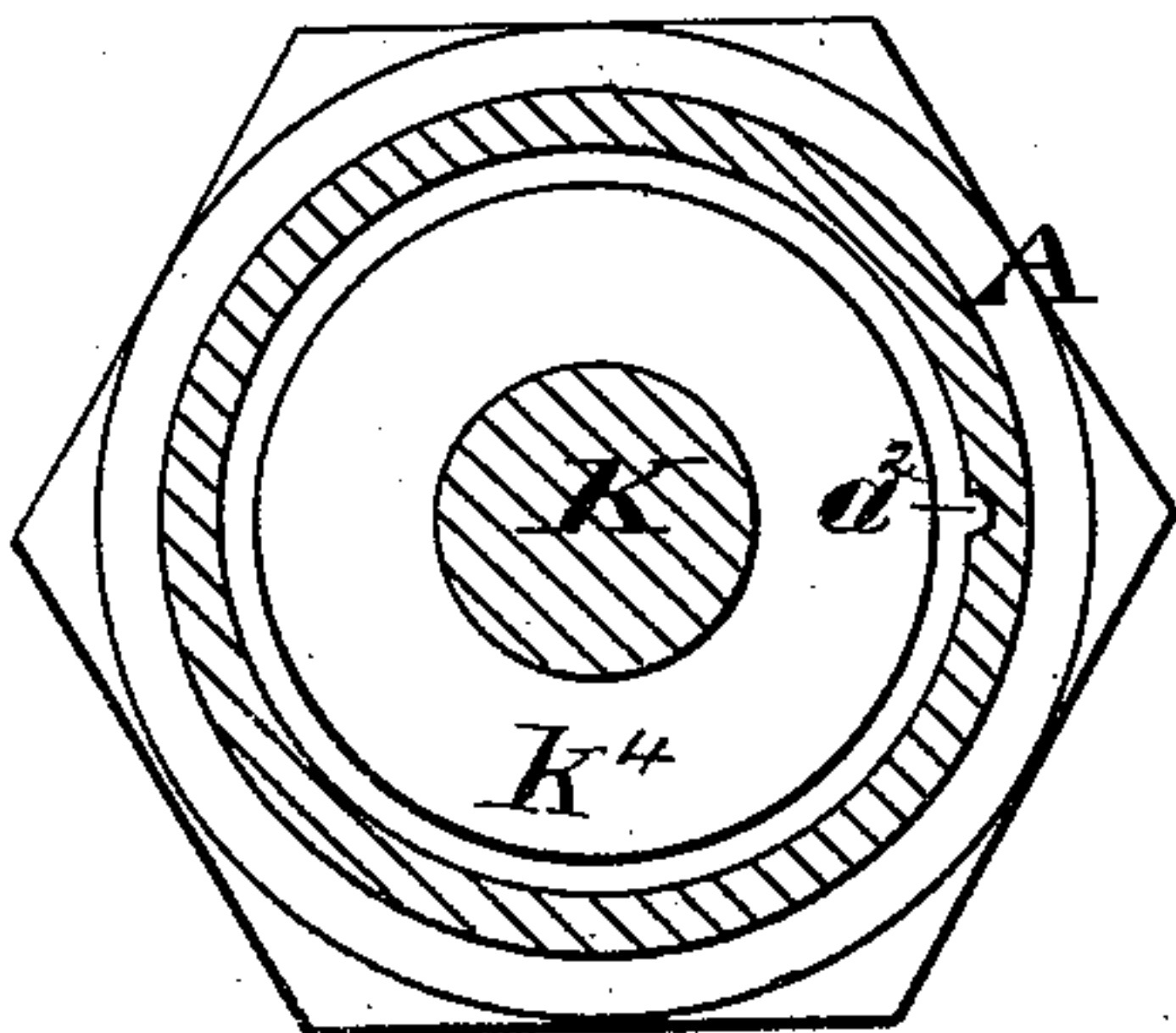


Fig. 4.



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UNITED STATES PATENT OFFICE.

PETER WHITE, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN VALVES FOR WATER-CLOSETS.

Specification forming part of Letters Patent No. **215,701**, dated May 20, 1879; application filed March 5, 1879.

To all whom it may concern:

Be it known that I, PETER WHITE, of the city of St. Louis, Missouri, have made a new and useful Improvement in Valves, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a longitudinal section of the improved valve, the valve proper being nearly closed; Fig. 2, a detail, being a cross-section taken through the valve-stem; Fig. 3, a longitudinal section, the valve being open, and the spring used in closing the valve not being shown; and Fig. 4, a cross-section taken on the line XX of Fig. 1.

The same letters denote the same parts.

The present invention is especially adapted to water-closets. It can be used, however, in other places. It is valuable in that by means of it the construction of the ordinary water-closet valve is simplified and cheapened, the making of the necessary plumbing connections facilitated, and the leakage incident to the use of water-closet valves as hitherto made largely, if not entirely, prevented.

It has relation to the construction of the valve proper and the parts immediately therewith connected.

It also has reference to the construction of the parts in the upper or outer end of the valve.

Referring to the drawings, A represents the body or shell of the valve, embracing in one piece the inlet B, a chamber, C, immediately within the inlet, the main valve-seat D, the chamber E above the seat, the discharge F, and the lug G, for attaching the valve in position.

The shell is threaded at its top, a , to enable the cap a^1 to be screwed on after the working parts are in place. It is also grooved at a^2 , to provide for the usual gradual closing of the valve, the groove extending from the top a to the discharge F. There is also an offset, a^3 , at the top a to receive a washer, H, as is hereinafter described.

The seat D, upon its upper side, is shaped out to form a tapering or conical recess, d . The seat proper, against which the valve in

closing immediately bears, is below the recess at d^1 , and the opening through the seat D at this last-named point is preferably cylindrical. The upper side of the seat D, without the periphery of the recess at d^2 , affords a bearing for the spring I, that is used in closing the valve.

J represents the valve proper. It is of leather, and in the cup shape shown. The flange j of the valve is fitted to work through the seat d^1 , the passage being closed by the water from the main pressing the flange against the seat d^1 , as indicated in Fig. 1, and being opened when the valve is depressed below the seat d^1 , as indicated in Fig. 2.

K represents the valve-stem. It is provided with a shoulder, k , against which the valve J is held by means of a nut, L, the valve being passed onto the threaded end k^1 , upon which the nut is afterward screwed. The nut at that end which bears against the valve is smaller in diameter than the valve, but at a point below the lower edge of the flange j is provided with a flange, l , that in diameter is equal, or thereabout, to that of the opening d^1 . At the point l the nut is preferably extended and squared, to enable it to be readily attached to the valve-stem. The shoulder k of the stem is notched at k^2 , to provide spaces for the water to pass. The stem above the shoulder k is provided with ribs k^3 , which aid in guiding the stem in its working through the seat D. The stem at its upper end is furnished with a shoulder, k^4 . Above the shoulder, at k^5 , the stem is threaded.

M represents a cup-shaped leather, that is passed over the threaded end k^5 , and that rests upon the shoulder k^4 of the valve-stem.

N represents an extension of the valve-stem, that is screwed onto the stem K. At its lower end it is furnished with a flange, n , that, when the extension N is attached to the stem K, bears against the leather M, and thereby holds the latter in place. Above the flange n a leather washer, n^1 , is arranged upon the stem N. The stem N extends upward through the cap, and at its outer end, at n^2 , is grooved, to enable it to be readily attached to or detached from the main stem.

O represents a cup-shaped washer upon

the stem N, its central portion, *o*, fitting the stem, and its outer portion or flange, *o'*, being held between the cap and body.

H represents a metallic cup-shaped washer, arranged upon the stem N just below the washer O, and held in the shoulder in the top of the body. These washers O H serve to pack the joint around the stem N at the top of the valve.

The operation is as follows: On depressing the stem N K, so as to bring the valve into the position shown in Fig. 2, the water, entering through the inlet, encounters the flange *l* of the nut L, and is thereby spread sufficiently to pass to the outside of the flange *j*, and thence through the opening *d*¹ into the chamber E and out the discharge F. The water passes through the notches *k*² as soon as the valve J passes the seat *d*¹. During the discharge the water passes above the supplementary valve, and that portion of the water which enters the space above this valve serves, subsequently, in closing the valve, to prevent its sudden closure by its being forced to escape slowly through the groove *a*². The valve is closed by the flange *j* coming against the seat *d*¹, and being pressed against that part by the water which now enters the space within the flange *j*.

The flange *l* serves to guide the stem in inserting it in position. The conical recess *d* enables the valve J to be shaped and rounded, so that it can be made to pass through the opening *d*¹ in inserting the valve in the body A. A spring, I, that bears below upon the shoulder *d*² and above against the shoulder *k*⁴, serves to close the valve when the pressure upon the outer end of the stem N is removed.

The effect and aim of the leather washer *n*¹ is to prevent any leakage from the space E' above the valve M past the stem N, for when the valve J closes, the lower edge, *h*, of the washer H becomes seated against the washer *n*¹. This meeting of the parts *n*¹ and *h*, in addition to its cutting off the water from the stem N, also serves to limit the upward movement of the stem K N and valve J.

The present construction is favorable for

making the plumbing connections therewith in this, that such connections can be made at the points B and F before the movable parts of the construction are inserted in the body A. The connections can be readily remade without affecting the working of the movable parts, and the latter can be easily removed at any time from the body A.

I claim—

1. The combination of the seat *d*¹, valve J, and flange *l*, substantially as described.
2. The combination of the seat *d*¹, valve J, stem K, and the nut L, provided with the flange *l*, substantially as described.
3. The seat D, having the recess *d* and seat *d*¹, and the stem K, having the shoulder *k*, and the valve J, having the flange *j*, combined substantially as described.
4. The body A, having the inlet B, the seat D, and the discharge F, arranged as described, in combination with the stem K and cup-shaped valve J, operating substantially as described.
5. The combination of the body A, having the inlet B and seat D, arranged as described, and having the chamber C between such inlet and seat, the stem K, and the cup-shaped valve J and flange *l*, substantially as described.
6. The combination of the body A, stem K N, flange *n*, washer *n*¹, and washer H, having the flange *h*, substantially as described.
7. The combination of the body A, stem K N, shoulder *k*⁴, valve M, flange *n*, and washers H *n*¹, substantially as described.
8. The combination of the body A, stem N, flange *n*, washers *n*¹ O H, and cap *a*¹, substantially as described.
9. The combination of the body A, seat D, stem K N, valve J, spring I, shoulder *k*⁴, valve M, flange *n*, and washers *n*¹ H, substantially as described.
10. The combination of the body A, seat D, stem K N, valves J M, nut L, spring I, shoulder *k*⁴, flange *n*, and washers *n*¹ O H, substantially as described.

PETER WHITE.

Witnesses:

CHAS. D. MOODY,

WM. F. NIEDRINGHAUS.