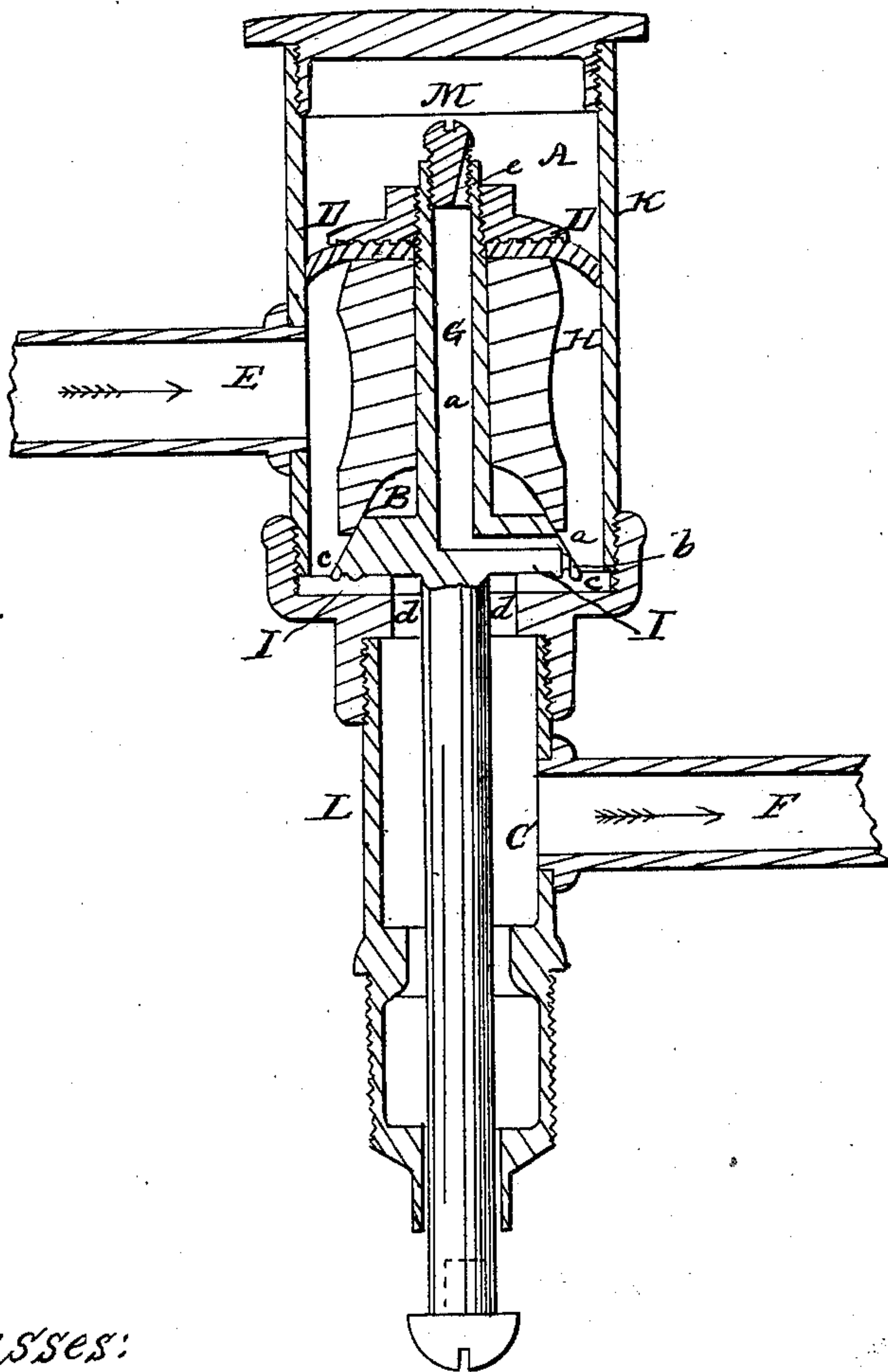


A. & J. London,

Water-Closet Valve.

N^o 57,526.

Patented Aug 28, 1866.



Witnesses:

Samuel W. Piper.
George Andrews.

Inventor:

Archibald & James London.

by their attorney
R. W. Ledy

UNITED STATES PATENT OFFICE.

ARCHIBALD LOUDON AND JAMES LOUDON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN WATER-CLOSET VALVES.

Specification forming part of Letters Patent No. 57,526, dated August 28, 1866.

To all whom it may concern:

Be it known that we, ARCHIBALD LOUDON and JAMES LOUDON, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Water-Closet-Valve Apparatus; and we do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, which is a vertical section of it.

The purpose of the said apparatus is to allow the valve of the supply-pipe of a water-closet to close upon its seat gradually after having been raised, and also to regulate such closing of the valve so as to obtain the amount of water which, under the head or pressure under which the water may enter the valve-chamber, may be required to effect the cleansing of the pan of the closet.

The valve is usually raised by a lever, which, on being pulled up by a handle attached to it, is generally allowed to fall suddenly away from the valve-stem. Were the valve opened and closed by its lever, a sufficient amount of water for the purposes of the pan would not be likely to flow through the valve-seat; but when the lever is used simply to raise or force the valve off its seat, and such valve, by other means, is caused to slowly descend, the water has a chance to flow through the valve-seat while the valve is in the act of descending.

The means usually adopted for causing such slow descent of the valve have been a vacuum-chamber, a flexible cup-valve, and a small passage of communication between the spaces immediately above and below such cup-valve, all of which we do not claim as our invention.

In the drawings, A denotes the vacuum-chamber, having the valve-seat I at its bottom. This chamber is formed in a cylindrical vessel or case, K, into the side of which the induction-pipe E opens. The opening *d* of the valve-seat leads into a tubular or chambered extension, L, from which the eduction-pipe F extends and opens communication with the pan of the water-closet.

The valve B, which is placed in the chamber A, has its stem C extending down through the part L in manner as represented.

The under surface of the valve we form with an annular groove, *c*, to open to the passage *a* by means of a hole, *b*, leading from one to

the other. The purpose of such annular groove *c* and hole *b* is to prevent the valve from closing on its seat with a sudden concussion or blow, as it is apt to do when without such groove and hole. By means of the groove *c* and the hole *b* the water in the chamber A has a chance to operate to press the valve upward a little, as well as downward. The water, which will be in the groove *c* while the valve is in the act of closing on its seat, will serve as a cushion to resist the descent of the valve, such water, while being compressed, being expelled from the groove through the passages *b*.

The cup-valve is shown at D, it being a leather disk secured to a tubular post or spindle, G, extending up from the valve B. The passage *a* extends through the valve and the said post in manner as represented.

A regulating-screw, M, is screwed into the upper end of the passage *a*. This screw is provided with a tapering recess or notch, *e*, made in its side. As the screw is screwed into the passage the water-inlet becomes diminished, and thus, by means of the notched screw, we can regulate the size of the passage for the flowage of water into the space over the cup-valve.

Another improvement we have made consists in the arrangement of a weight, H, on the spindle G and between the valves B and D. It is common in valve apparatus of the kind described to use a helical spring for depressing the valve, and to place it over the valve D; but such a spring is apt to become clogged with matters in the water or to lose its elasticity after a while. We employ the weight between the two valves because it is not subject to the above-mentioned difficulties incident to the spring, and because, by its situation, it will be washed clear of all deposits on it.

In the operation of this valve apparatus the valves B and D will simultaneously be forced upward during the act of raising the handle of the lever arranged under the stem C. The water which may be in the space or chamber over the valve D will be forced down into the space below such valve. As soon as the valves commence to fall the valve D, by the pressure of the water against its lower surface, will be

spread out against the inner surface of the chamber A, and the fall of the valve will be in proportion as the space over it may become filled with water, such water being caused to pass into it through the channel *a* and the notch *e* of the screw-plug M. When it may be desirable to increase the period of the falling of the valve, we have only to screw the plug M downward to the necessary extent.

We claim as our invention the following, viz:

1. The combination of the passage *a* through

the spindle or post G with the regulating-screw M, provided with a recess, *e*, as described.

2. The combination of the cushioning-channel *c* and its opening *b* with the valve B and its seat I, when combined with the valve D and the chamber A so as to operate therewith, as specified.

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Witnesses:

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