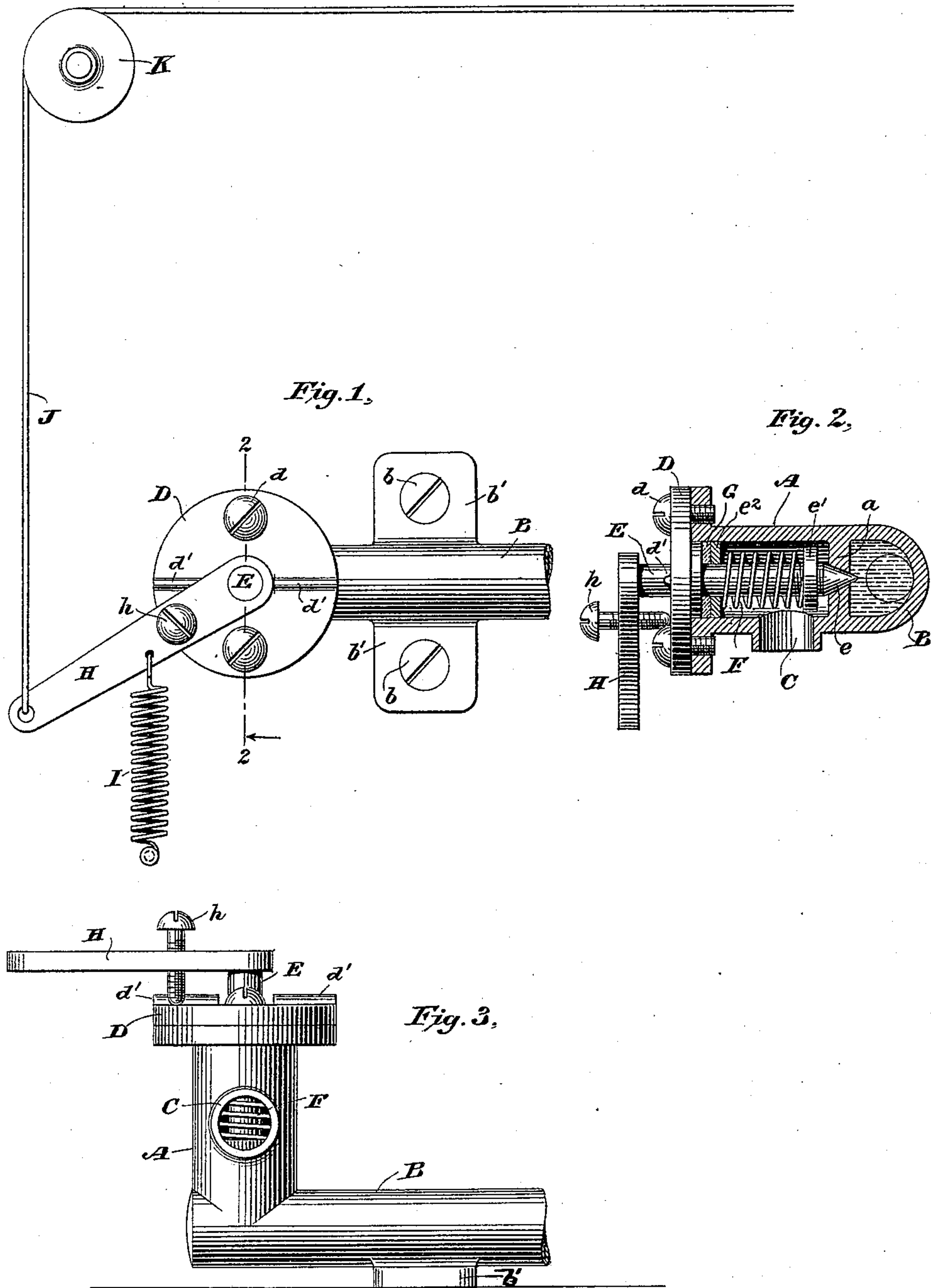


(No Model.)

F. J. MITCHELL.
VALVE.

No. 441,682.

Patented Dec. 2, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

FREDERICK JAMES MITCHELL, OF NEW YORK, N. Y., ASSIGNOR TO CASPER L. COHN, OF SAME PLACE.

VALVE.

SPECIFICATION forming part of Letters Patent No. 441,682, dated December 2, 1890

Application filed March 13, 1890. Serial No. 343,734. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK JAMES MITCHELL, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a certain new and useful Improvement in Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The primary object of my invention is to provide a valve for use in disinfecting systems, and although I do not limit myself to such particular use, since my invention may be used for many other purposes, I will describe it as I now use it in the well-known "germicide" disinfecting system. In such system a concentrated solution of some suitable disinfecting liquid—such as chloride of zinc—is continuously and very slowly delivered into a suitable receptacle, preferably by the apparatus claimed in my application for United States Patent filed December 20, 1889, Serial No. 334,400. When the solution reaches such receptacle it is diluted with water and is thence conducted directly to the closet, sink, or other point desired. It is essential in such system that the water with which the disinfecting liquid is diluted, and which aids in carrying it to the objective point, should be supplied continuously, but at a very slow rate, and it is necessary that such rate should be accelerated at intervals—as, for instance, whenever the closet, sink, or other apparatus is used—in order that the disinfecting liquid may quickly and with certainty reach the point to which it is to be applied, and also that the passages leading thereto may be kept properly flushed. This intermittent or occasional acceleration of the rate of flow also serves to flush the passages of the valve through which the water is supplied, and which would otherwise soon become clogged with sedimentary deposits on account of the necessarily slow rate of flow therethrough.

My invention, by means of which I attain the foregoing advantages, consists, generally, in means for intermittently or at intervals, regular or otherwise, accelerating the rate of flow through a valve through which the

normal rate of flow is very small; and it consists, further, in mechanism for regulating the area of the valve-orifice, so that the normal rate of flow through the same may be increased or diminished, as desired.

In the accompanying drawings, Figure 1 is a perspective view in elevation of my improved valve and connections. Fig. 2 is a view thereof in cross-section on the line 2 2, Fig. 1; and Fig. 3 is a perspective view thereof showing the under side of the valve.

The same letters are used to designate like parts in all the views.

In said drawings, A is the valve-body, B the inlet-passage, and C the outlet-passage. The bonnet D is secured to the flanges of body A by the screws or tap-bolts *d*. The valve-stem E is provided with a conical valve *e*, which is adapted to fit the valve-seat *a*. The valve-stem E is also provided with the fast collar *e'*, which may be adjustable, if desired, and with the loose collar *e''*, between which is secured the coil-spring F. The lower end of the valve-stem and the collar *e'* are preferably screw-threaded, so that by turning said collar the tension of spring F may be varied, as desired. A packing G is held between the loose collar *e''* and the under side of bonnet D, and serves as a stuffing-box for the valve-stem by fitting closely around the same, and so preventing leakage. This packing may be of leather, rubber, or other suitable material. A rock-arm H is properly secured to the upper end of the valve-stem E. To the under side of the arm H is secured a projection *h*, (which is shown as a screw passing through the arm,) and the upper surface of bonnet D is provided with a beveled step or projection *d'*, with which, as the arm H is swung around or vibrated, as hereinafter described, the projection *h* will engage, and as it passes over said step the valve-stem E is lifted and the valve *e* momentarily carried away from its seat, being returned to its original position by the action of spring F as soon as projection *h* clears the step *d'*. A spring I (or weight) tends to hold the arm H in the position shown in Fig. 1, and said arm is connected, as by a chain, wire, or cord J, to any object that is adapted to impart the requisite movement

with the desired frequency to the apparatus. For instance, the same may be connected or attached to the door, lid, or handle of a closet, so that when the closet is used the arm H will
5 be carried over the projection d' .

I prefer, in the use of my valve for the particular purposes above referred to, to keep the valve e slightly off its seat normally, so that a very small quantity of water will pass
10 through the same when the parts are in the position shown in Fig. 1. This is accomplished by simply turning the screw h so that it will press against the bonnet D with sufficient force to lift the valve the desired amount,
15 and the distance between said valve and its seat may be increased or diminished, as desired, by merely turning said screw in one direction or the other.

When my valve is used in connection with
20 other apparatus for the purpose to which I last referred—namely, the disinfection of a closet—the valve is secured to a suitable support by screws b passing through lugs b' . The inlet B is connected with the water-supply
25 and the arm H is connected by the cord or chain J (which passes over the sheave K) to any movable part of the closet—such as the door or lid—so that the opening of the same will swing the projection h over step d' , and
30 the closing of the same will permit the spring I to carry the arm back to its original position. If desired the parts may be arranged so that either movement of the door or lid will produce the desired movement of arm H.
35 The other parts of the apparatus or system are so arranged that the water passing through the valve will be delivered through the outlet-passage C into the receptacle which receives the concentrated disinfectant, and it
40 will thus be seen that each time the closet is used the flow of water through the valve will be suddenly increased, the valve-orifices will be thoroughly flushed, and the diluted disinfectant will be carried quickly to the portion
45 of the closet to which it is to be applied.

If desired the spring I may be entirely omitted and the spring F so connected with the valve stem and body as to carry the arm H back to its original position by the torsional stress of the spring F.

I do not claim herein the method of disinfecting to which I have referred, nor do I claim the combination of my improved valve with other parts and features of the system, as I intend to file separate applications for
55 them; but

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

1. In a valve, the combination of the valve-stem E, provided with the valve e , the spring
60 F surrounding said stem and adapted to normally hold the valve to its seat, the collar e^2 loosely mounted on said stem and furnishing a bearing for the upper end of said spring, the packing G, held between the collar e^2 and
65 the bonnet of the valve, the arm H rigidly secured to said stem and provided with a projection h , and the step d' on the bonnet of the valve, substantially as and for the purposes set forth.

2. In a valve, the combination of the valve-stem E, provided with the valve e , the spring
70 F surrounding said stem and adapted to normally hold the valve to its seat, the collar e^2 loosely mounted on said stem and furnishing a bearing for the upper end of said spring, the packing G, held between the collar e^2 and the
75 bonnet of the valve, the arm H, rigidly secured to said stem and provided with a projection h , and the step d' on the bonnet of the valve, and mechanism, substantially as shown, for vibrating said arm and returning
80 it to its normal position, substantially as and for the purposes described.

FREDERICK JAMES MITCHELL.

Witnesses:

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