

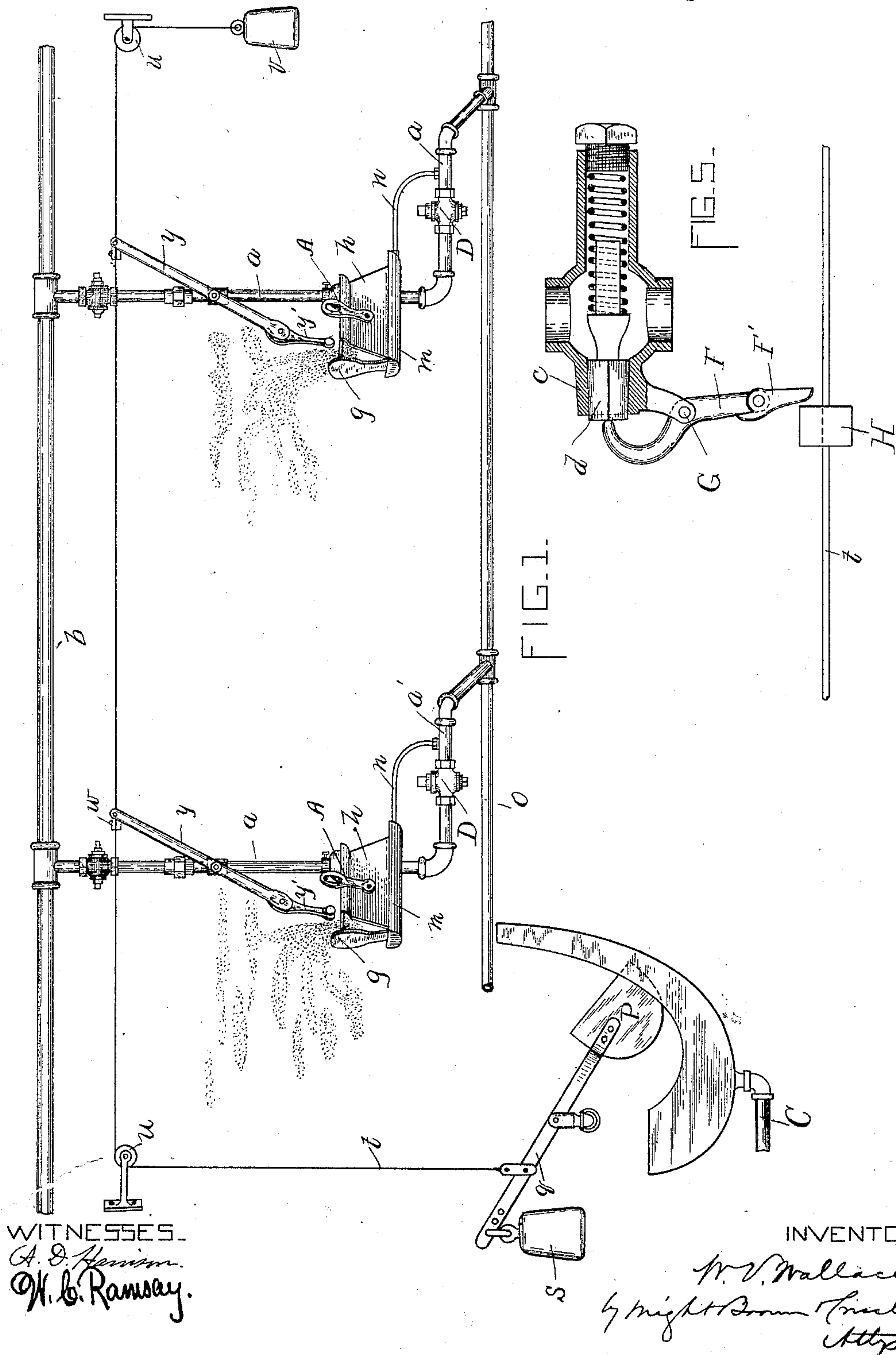
(No Model.)

2 Sheets—Sheet 1.

W. V. WALLACE.  
AIR MOISTENING APPARATUS.

No. 436,762.

Patented Sept. 16, 1890.



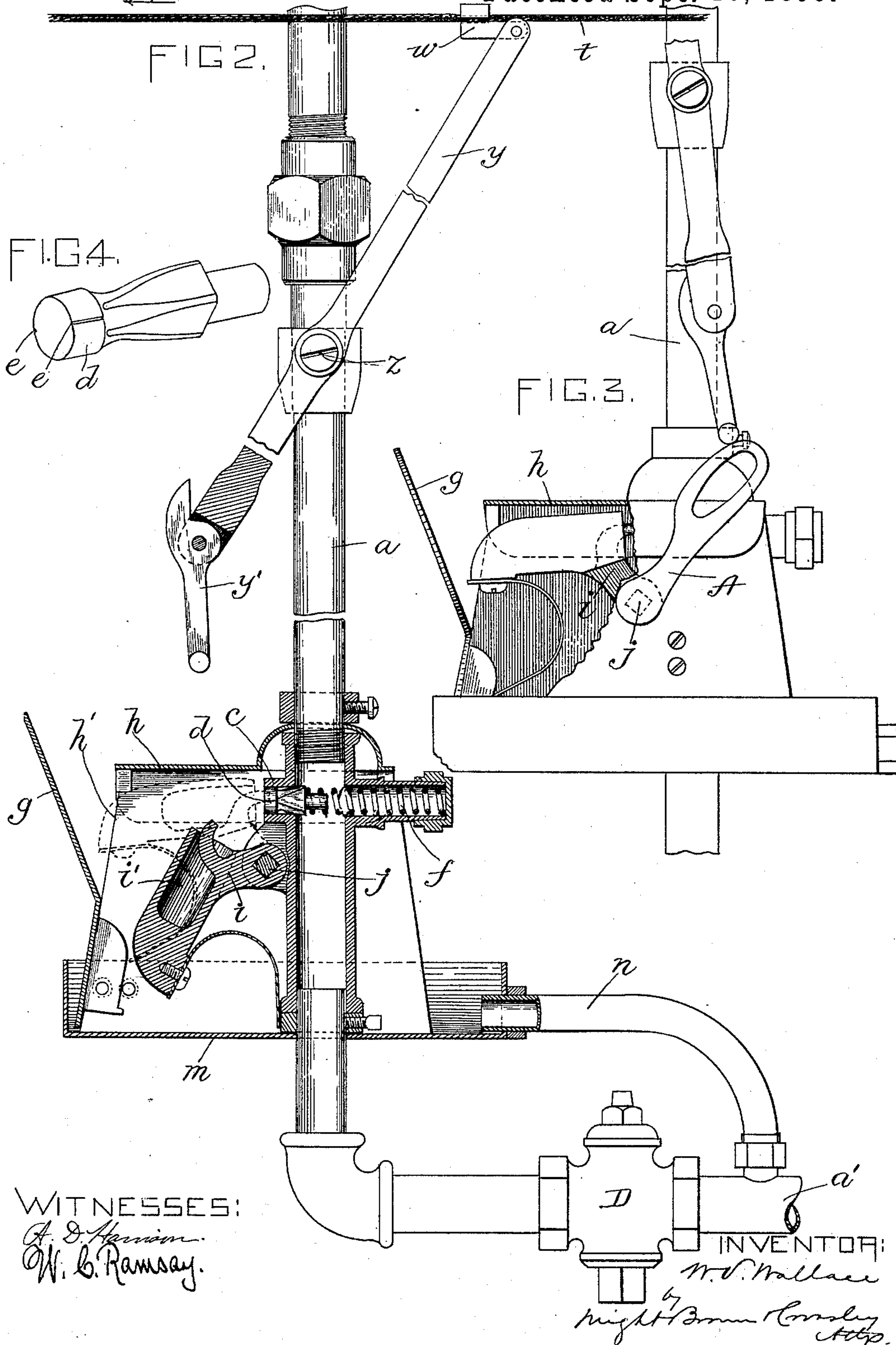
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WITNESSES:

*A. S. Harrison*  
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INVENTOR:

*W. V. Wallace*  
by *Night Brown Crossley*  
*Atty.*



# UNITED STATES PATENT OFFICE.

WILLIAM V. WALLACE, OF PITTSFIELD, ASSIGNOR OF ONE-HALF TO JOHN D. GILMAN, OF BOSTON, MASSACHUSETTS.

## AIR-MOISTENING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 436,762, dated September 16, 1890.

Application filed July 27, 1889. Serial No. 318,912. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM V. WALLACE, of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented certain  
5 new and useful Improvements in Air-Moistening Apparatus, of which the following is a specification.

This invention relates to air-moistening apparatus which employs a water-discharging  
10 nozzle connected with a source of water-supply and provided with a valve-seat and a valve which is normally closed on said seat, the valve or its seat having fine spray-forming  
15 grooves through which the water escapes when the valve is closed in attenuated streams, which are converted into spray or mist on emerging into the air.

In Letters Patent of the United States granted to me February 2, 1886, No. 335,403,  
20 I have shown a spray-forming nozzle of the character above indicated and in connection therewith certain automatic means for opening the valve at intervals to cause the escaping water to flush the said grooves in the valve or  
25 seat and remove therefrom any obstructions that may have lodged therein.

The present invention has for its object to provide a simple, durable, and effective apparatus, one or more of said spray-forming  
30 nozzles and automatic means operated by the accumulation of a part of the water discharged through said nozzles to open the valves thereof at intervals and cause the said flushing action.

To this end the invention consists in the improved apparatus which I will now proceed to describe and claim.

In the accompanying drawings, forming a part of this specification, Figure 1 represents  
40 a perspective view of my improved apparatus. Fig. 2 represents a side elevation, partly in section, of a portion of said apparatus. Fig. 3 represents a side elevation of a part of the apparatus, showing the valve-opening device in position to hold the valve open. Fig.  
45 4 represents a perspective view of the valve enlarged. Fig. 5 represents a modification.

The same letters of reference indicate the same parts in all of the figures.

50 In the drawings, *a a* represent branch pipes, which communicate with a water-supply pipe

*b*, the latter being connected with any suitable source of water-supply. The supply-pipe *b* is preferably arranged horizontally near the ceiling of the room containing the apparatus, the  
55 branch pipes *a* extending downwardly therefrom. There may of course be any desired number of said branch pipes *a*, and as each, with the accompanying devices to be described, is a duplicate of the others a description of one will suffice. Said pipe *a* has an  
60 outlet *c*, the inner surface of which constitutes a seat for a valve *d*, which is normally held in contact with said seat by a spring *f* or other suitable means, so that it can be  
65 pushed back from the seat. In the periphery of the valve are formed fine file-marks or attenuated longitudinal grooves *e e*, which extend lengthwise of the valve and permit the  
70 escape of attenuated streams of water from the outlet *c* when the valve is closed, the water emerging from the outlet in a finely-subdivided condition. A plate *g* is arranged to  
75 stand in the way of the particles of water passing from the outlet to further subdivide said particles, the result being a mist or fog, which is diffused through the atmosphere of the room.

*h* represents a hood or casing which incloses the space immediately surrounding the  
80 outlet *c*, and has an opening *h'* at one end, said opening being partly covered by the plate *g*, the fog or vapor passing out of the casing through the opening *h'*.

*i* represents an arm or finger, which is secured to a rock-shaft *j*, which is pivoted to an  
85 ear on the pipe *a*. Said finger is arranged to strike the valve *d* when raised to the position shown in dotted lines in Fig. 2 and in full lines in Fig. 3, and thereby open the valve  
90 and cause a sufficiently-rapid escape of water through the outlet *c* to flush the grooves *e* and remove any foreign matter that may have lodged therein.

*m* represents a tank or drip-receptacle secured to the pipe *a* below the outlet *c* and arranged to receive the water that accumulates  
95 on and drops from the plate *g*.

From the receptacle *m* the drip-water flows through an outlet-tube *n* into a branch pipe  
100 *a'*, communicating with a pipe *o*, which conducts away the water received from the re-



ceptacle *m* and discharges it into a cup *p*, which is supported by one arm of a lever *q*. Said lever is pivoted at *r* to a suitable fixed support and has a weight *s* on its other arm.

5 The weighted arm of the lever is connected with a cord *t*, which passes upwardly to a pulley *u*, and from thence along over another pulley *u'*, and has a weight *v* attached to its free end. Said cord is secured to a clamp *w*,  
10 which is pivoted to one arm of a lever *y*, the latter being pivoted at *z* to the pipe *a*. To the other arm of the lever *y* is pivoted a latch or toe-piece *y'*.

A represents an arm attached to the rock-shaft *j*, to which the valve-opening arm *i* is attached outside of the casing *h*, said arm projecting upwardly within the path of the toe-piece *y'*, so that said toe-piece will strike the arm A when the lever *y* is oscillated.

20 The operation is as follows: A portion of the water discharged through the spray-forming grooves *e* accumulates on the plate *g* and falls from thence into a receptacle *m*, from which it flows through the pipes *na'o* to the cup *p*.

25 When a sufficient quantity of water accumulates in said cup to overbalance the weight *s*, the cup falls and tilts the lever *q* on its pivot, thereby raising the weight *s* until the water is emptied from the cup *p* into a receptacle

30 B, from which it escapes through a waste-pipe C. This movement of the lever *q* allows the weight *v* on the free end of the cord *t* to pull the cord so as to move the lever *y* to the position shown in Figs. 1 and 2. The water being

35 discharged from the cup *p*, the weight *s* returns the lever *q* to its former position, and in so doing pulls the cord *t* in the direction indicated by the arrow, Figs. 1 and 2, thus causing the lever *y* to swing in the direction

40 required to bring its toe-piece *y'* into contact with the arm A and swing said arm, as shown in Fig. 3, thus raising the valve-opening finger *i* and causing it to open the valve momentarily, the valve being released when the

45 toe-piece *y'* passes by the arm A. A brief forcible discharge of water through the outlet is thus caused, and whereby the grooves are cleared from obstructions lodged therein. The water thus discharged is prevented from

50 striking the plate *g* and escaping through the opening *h'* by the finger *i*, which is provided with a chamber or cavity *i'*, arranged to receive the water discharged by the opening of the valve, said water falling from said cavity

55 into the receptacle *m*. It will be seen, therefore, that a portion of the water escaping from the outlet *c* is converted into fog or mist and escapes into the atmosphere, while a portion is collected in the receptacle *m* and passes

60 from thence to operate the valve-opening devices, the result being the opening of the valve and the cleansing of its grooves at intervals.

The outlet *c* is considerably above the lower  
65 end of the pipe *a*, and the said pipe below the outlet *c* constitutes a receptacle for sediment in the water. The branch pipe *a'* is provided

with a valve D, which may be opened when desired to permit a flow of water through the branch pipe *a'* for the purpose of removing  
70 the deposit of sediment. By thus providing for the collection of sediment below the outlet *c* the grooves *e* are less frequently obstructed than would otherwise be the case.

It is obvious that the cord *t* may operate  
75 any desired number of valve-opening levers *y*. I have here shown two pipes *a*, each having the valve and valve-opening devices above described, the levers *y* of said opening devices being connected to the one cord *t*.  
80

The grooves *e* may be formed in the valve-seat in the outlet *c*, instead of in the valve, or in both the valve and seat.

It is obvious that the devices through which the valve-opening lever *y* operates on the valve  
85 *d* may be variously modified, and I do not therefore confine myself to the particular devices shown—viz., the arm or finger *i*, the pivot or rock-shaft *j*, and arm or lever A; but may communicate motion from the valve-

90 opening lever *y* to the valve by any other suitable means. In Fig. 5 I show a modification in which a valve-opening lever F is employed, the same being pivoted at G to an ear on the outlet *c* and arranged to bear at its  
95 inner end directly on the valve *d*. The outer end of said lever has a pivoted toe F', which stands in the path of a collar H on the cord *t*. When the cord is moved in one direction by its weight *v*, the toe F' yields and allows  
100 the collar to pass by it without moving the lever F; but when the cord is moved in the opposite direction by the weight *s* the toe is rigid and the collar, through said toe, moves the lever F and causes it to open the valve.  
105

I claim—

1. In an air-moistening apparatus, the combination, substantially as set forth, of a pipe connected with a source of water-supply and having an outlet and a valve therein, one of  
110 said parts having spray-forming grooves, a drip-receptacle below said outlet, a pivoted weighted lever having a cup arranged to receive water from said drip-receptacle, a weighted cord connected with said weighted  
115 lever, and a valve-opening arm or lever arranged to be operated by said cord, the arrangement being such that the cord is moved in one direction and set for action by its weight when the cup is depressed by the ac-  
120 cumulation of water therein, and is moved in the opposite direction and caused to operate the valve-opening arms or levers when the weighted end of the cup-supporting lever falls.  
125

2. The combination of the pipe *a*, having the outlet *c* and the grooved valve *d* therein, the arm or finger *i*, adapted to displace said valve and provided with the water-receiving cavity *i'*, and the drip-receptacle arranged to  
130 receive water from said cavity, as set forth.

3. The combination of the pipe *a*, having the outlet *c* and the grooved valve therein, the arm or finger *i*, adapted to displace the



valve, the drip-receptacle below the said outlet, the casing *h*, arranged over and communicating with the drip-receptacle and inclosing the outlet and the arm *i* and provided  
5 with an opening *h'*, and the plate *g*, located at one side of said opening and arranged to break a portion of the water discharged from the valve into mist or spray and guide the water not thus broken into the drip-receptacle, as set forth.  
10

4. The vertical pipe *a*, having the outlet *c*, located above its lower end and provided with a valve and a valve-seat, one of said parts having spray-forming grooves, the portion of

the pipe below said outlet constituting a re- 15  
ceptacle for sediment, and a valve *D*, whereby said portion may be opened to permit of the removal of the sediment accumulated therein, as set forth.

In testimony whereof I have signed my 20  
name to this specification, in the presence of two subscribing witnesses, this 27th day of May, A. D. 1889.

WILLIAM V. WALLACE.

Witnesses:

JOHN D. GILMAN,  
C. F. BROWN.