May 27, 1924. 1,495,644

P. M. N. POUSSIN

AUTOMATIC ATOMIZER INJECTOR FOR LIQUIDS

Filed Jan. 30, 1924

Fig. 1.

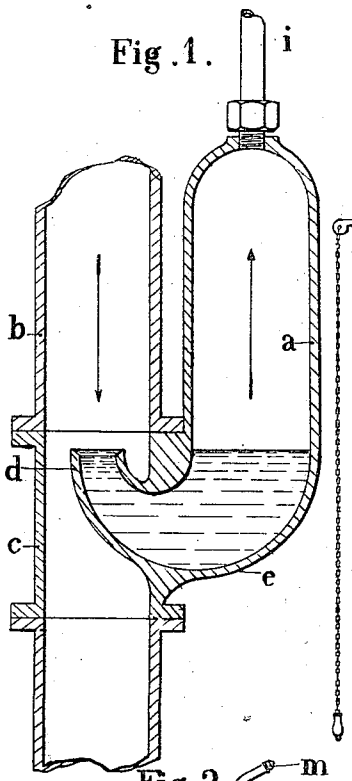


Fig. 2.

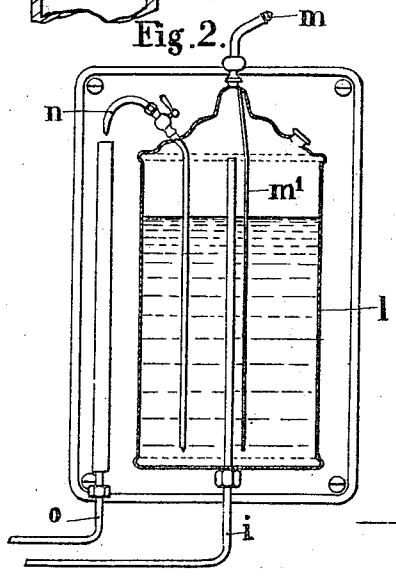


Fig. 3.

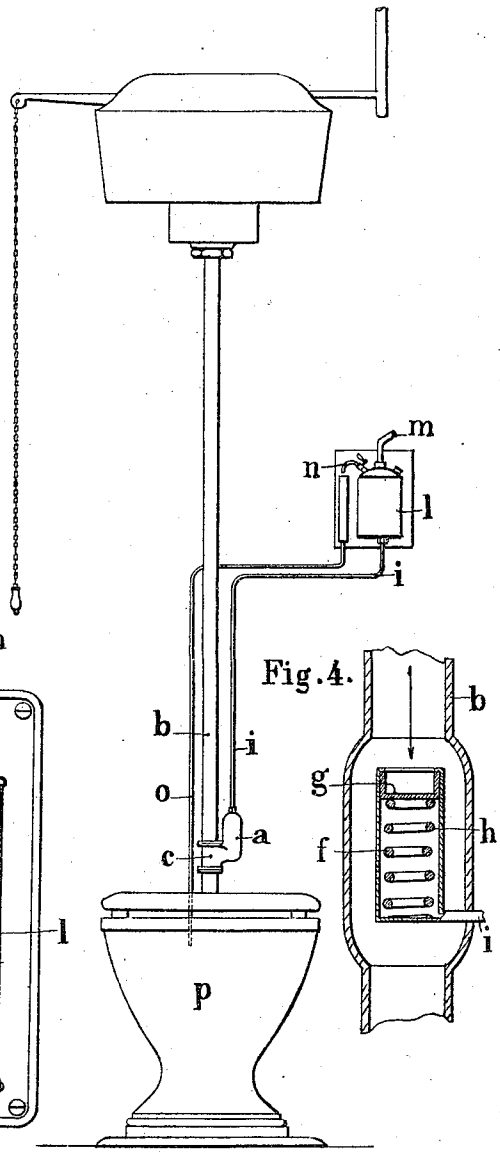


Fig. 4.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC ATOMIZER INJECTOR FOR LIQUIDS.

Application filed January 30, 1924. Serial No. 689,450.

To all whom it may concern:

Be it known that I, PAUL MARIE NICOLAS POUSSIN, of 29 Rue Etienne Marcel, Pantin, Seine, France, engineer, citizen of the Republic of France, have invented Automatic Atomizer Injectors for Liquids, of which the following is a full, clear, and exact description.

This invention relates to an apparatus adapted to eliminate bad smells arising from certain places such as water closets, urinals, etc., provided with a water flushing arrangement.

This apparatus is so devised as to allow of automatically obtaining, by the water flushing of the place to be disinfected, either separately or simultaneously:

a. The atomization of an antiseptic or odoriferous liquid in the atmosphere of the said place;

b. The injection in the pans of this antiseptic or odoriferous liquid.

The apparatus forming the subject-matter of the present invention is essentially characterized by the combination:

a. Of a compressed air generator utilizing, as driving agent, the vis viva of a portion of the flushing water;

b. Of an atomizer, of any type, pulverizing in the atmosphere the antiseptic or odoriferous liquid, under the action of this compressed air;

c. Of an injector sending in the pan, after flushing, an antiseptic liquid, under the same action of the compressed air.

In order that the invention may be clearly understood, a form of construction of the apparatus forming the subject-matter of this invention will be described hereafter, by way of example only, with reference to the accompanying drawing in which:

Fig. 1 is a diagrammatic vertical section showing a form of construction of the compressed air generator.

Fig. 2 illustrates the combined atomizer and injector.

Fig. 3 shows the application of the apparatus in a water-closet.

Fig. 4 is a modification of the compressed air generator.

As illustrated in the accompanying drawing, the compressed air generator shown by way of example in Fig. 1, comprises an air chamber *a*, directly branched on the flushing pipe *b* by a connecting sleeve *c* within which opens the vertically extending branch *d* of the bent portion *e* which, constituting the base of the air chamber, is normally filled with water and closes the said chamber.

This branch *d* of the air chamber is thus arranged as clearly shown in Fig. 1, in the axis of the pipe *b*, so that, during flushing, a portion of the water in movement in this pipe *b* exerts a dynamic pressure on the air contained in the chamber *a* through the medium of the water which, contained in the lower bent portion of the said chamber, constitutes, in the form of construction illustrated in Fig. 1, a hydraulic piston.

This arrangement is, of course, given by way of example only, as the compressed air generator can be constituted, as shown in Fig. 4, by an air cylinder *f* arranged within the flushing pipe *b* at a suitable point of the latter and which, freely open at its upper part, contains a piston *g* normally held in its up position by a spring *h* interposed between the said piston and the bottom of the cylinder *f*.

Moreover, whatever may be the arrangement of the compressed air generator, its air reservoir is connected, by a pipe *i*, to the atomizer, a form of construction of which is illustrated by way of example in Fig. 2.

This atomizer, which comprises a vessel *l* containing the antiseptic or odoriferous liquid is provided with a pulverizer *m* and an outlet tube *n* which opens in the pipe *o* leading at its other end into the pan *p*.

The operation of the above described apparatus is as follows:

At the time of flushing, a portion of the water passing down the pipe *b* exerts a pressure on the air contained in the reservoir *a* (Fig. 1) or in the cylinder *f* (Fig. 4).

This compressed air, through the pipe *i*, exerts a pressure on the liquid contained in the vessel *l* of the atomizer.

The liquid driven back by the compressed air rises in the tube m^1 up to the orifice of the pulverizer *m* from which it is projected in the atmosphere in the form of a mist, according to the known principle of actual pulverizers.

On the other hand, the pressure exerted in the vessel *l* drives back, in the tube *n*, a small quantity of the liquid contained in

the said vessel; this liquid flows in the upper part of the pipe *o*, the lower end of which opens in the pan *p*, as explained above.

The cross section and the length of the pipe *o* are so determined that the antiseptic liquid arrives in the pan only when water flushing is terminated, in order to avoid this antiseptic liquid being drawn along in the drain pipes.

The constructional arrangements described above are, of course, given by way of example only; the forms, materials and dimensions of the various constituent parts can be varied without departing thereby from the principle of invention.

In the form of construction described, it has been supposed that the atomizer and the injector formed in fact a single apparatus distributing the same antiseptic or odoriferous liquid, but it is obvious that this atomizer and this injector might be used separately or might constitute two different apparatus distributing liquids also of different nature.

Claims:

1. An apparatus for the automatic pulverization and injection of antiseptic or odoriferous liquid comprising, in combination with an apparatus provided with a water flushing arrangement,—an atomizer,—liquid in this atomizer,—a pulverizing spout on this atomizer,—a tube immersed in the liquid of the atomizer and opening in the pulverizing spout open to the atmosphere,—a second tube also immersed in the liquid of the atomizer,—an injector terminating this second tube outside the atomizer,—a tube arranged in the injector and opening in the pan of the water flushing apparatus,—means for utilizing the vis viva of a portion of the flushing water for compressing air,—means for putting the interior of the atomizer in communication with the source of compressed air and for automatically producing the pulverization in the atmosphere of a portion of the liquid contained in the atomizer and, simultaneously, the distribution, in the pan of the water flushing apparatus, of another portion of the same liquid.

2. An apparatus for the automatic pulverization and injection of antiseptic or odoriferous liquid comprising, in combination with an apparatus provided with a water flushing arrangement,—an atomizer,—liquid in this atomizer,—a pulverizing spout on this atomizer,—a tube immersed in the liquid of the atomizer and opening in the pulverizing spout open to the atmosphere,—a second tube also immersed in the liquid of the atomizer,—an injector terminating this second tube outside the atomizer,—a tube arranged in the injector and opening in the pan of the water flushing apparatus,—an air chamber in communication with the flushing pipe, a piston in this chamber, adapted to be moved by the water in movement in the flushing pipe and for thus utilizing the vis viva of a portion of this water for compressing the air of the said chamber,—means for putting the interior of the atomizer in communication with the source of compressed air and for automatically producing the pulverization in the atmosphere of a portion of the liquid contained in the atomizer and, simultaneously, the distribution, in the pan of the water flushing apparatus, of another portion of the same liquid.

3. An apparatus for the automatic pulverization and injection of antiseptic or odoriferous liquid comprising in combination with an apparatus provided with a water flushing arrangement,—an atomizer,—liquid in this atomizer,—a pulverizing spout on this atomizer,—a tube immersed in the liquid of the atomizer and opening in the pulverizing spout open to the atmosphere,—a second tube also immersed in the liquid of the atomizer,—an injector terminating this second tube outside the atomizer,—a tube arranged in the injector and opening in the pan of the water flushing apparatus,—an air chamber in communication with the flushing pipe, a piston in this chamber adapted to be moved by the water in movement in the flushing pipe and for thus utilizing the vis viva of a portion of this water for compressing the air of the said chamber,—a tube branched on the compressed air generator and opening in the atomizer above the level of the liquid for feeding in this atomizer the compressed air at each flushing and automatically producing the pulverization, in the atmosphere, of a portion of the liquid of the atomizer and, simultaneously, the distribution in the pan of the water flushing apparatus, of another portion of the same liquid.

The foregoing specification of my "automatic atomizer-injector for liquids" signed by me this 16th day of January, 1924.

PAUL MARIE NICOLAS POUSSIN.