(No Model.)

I. Q. GURNEE.

ATOMIZER.

No. 502,904. Patented Aug. 8, 1893.

Fig. 1.

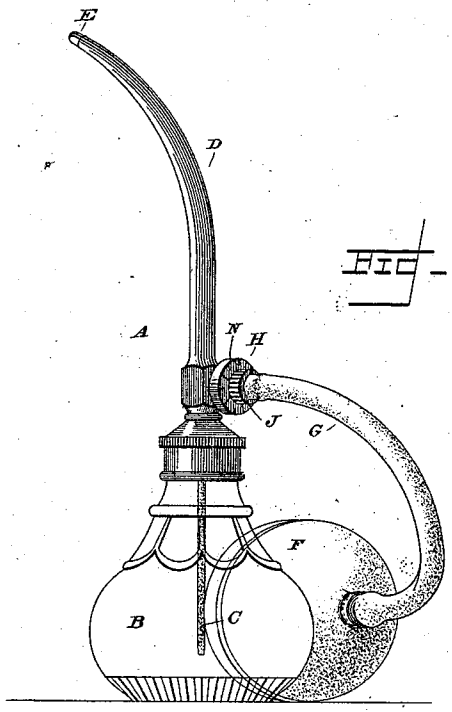


Fig. 2.

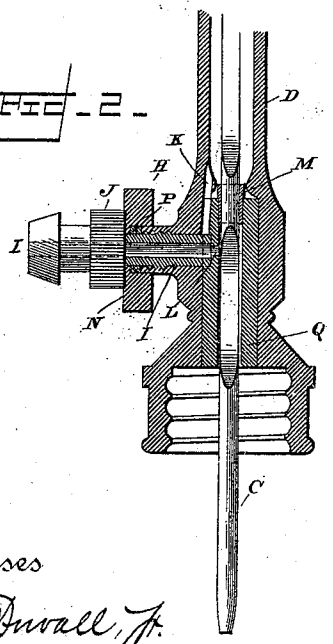
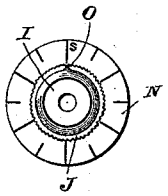


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 502,904, dated August 8, 1893.

Application filed January 18, 1893. Serial No. 458,754. (No model.)

To all whom it may concern:

Be it known that I, ISAAC Q. GURNEE, a citizen of the United States, residing at Butler, in the county of Morris, State of New Jersey, have invented certain new and useful Improvements in a Combined Atomizer and Syringe; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the letters of reference marked on the accompanying drawings, which form a part of this specification.

My invention relates to atomizers and syringes.

The improvements consist in the following construction and combination of parts, which will first be fully set forth in detail and the features of novelty believed to be new then set forth and claimed.

Figure 1 represents an atomizer to which I have applied my syringe and atomizer combination attachment. Fig. 2 is a detail vertical section showing the main operative parts of my invention. Fig. 3 is an end elevation of the valve apparatus.

In the drawings—A represents an atomizer to which I have applied my invention. This atomizer has been suitably modified in its construction to adapt it to the purposes I have in view—that is, the throwing of a solid stream of liquid, or atomizing the same by introducing an air-blast therein; besides graduating the supply of air to be discharged in connection with the liquid to any desired volume, from the maximum discharge to the entire shutting off of the same.

B is the usual fluid receptacle, C, the liquid discharge tube and D, the air discharge tube, surrounding the liquid tube, the spraying action being produced in the usual way at the tip E where both the liquid and air tubes terminate.

F is the usual air bulb, and G, the flexible tube leading therefrom to the air tube D. As ordinarily constructed a portion of the air forced into the tube D goes downwardly into the vessel B to exert a pressure upon the fluid contained therein for the purpose of forcing it up through the liquid tube C, and a part of the air pressure proceeds upwardly through the tube D, exteriorly of the tube C to the tip E where it meets the supply of liquid from the vessel and atomizes it, producing a fine spray.

For the purpose of converting such a construction so it will have the properties of a syringe, and also graduate the supply of air to the tip E, I provide a valve apparatus H, preferably at the juncture of the air pipe G with the tube D. This valve is provided with a threaded sleeve I to which the pipe G is attached. Sleeve I has a lengthwise adjustment in the opening provided for it in the tube D, and it also has a milled thumb-piece J rigidly attached thereto, by means of which the screw-sleeve I is moved in or out so as to cover or uncover the passage K, or to adjust it to any intermediate position over said passage.

L is an opening in line with the sleeve I, the two communicating in all the adjustments of the sleeve.

M is a bushing-stopper which effectually acts to cut off any communication of the air pressure from the bulb F upwardly through the tip, except as hereinafter noted.

In the relative position of the parts shown in Fig. 2 my invention is adjusted for use as a syringe. All the air forced into the device through the pipe G passes through the opening L and down into the vessel D for the purpose of ejecting a solid stream, the air passage being cut off and the bushing M preventing any flow of air whatever out through the air tube D. When it is desired to change the syringe action to that of an atomizer the thumb-piece J is turned in order that the inner end of the sleeve I may uncover the air passage K, thereby permitting a portion of the air to operate upon the liquid in the vessel B, and the balance to pass up through the passage K into the upper air tube D for the purpose of atomizing the fluid at the tip E.

For the purpose of graduating the amount of air which may be allowed to escape up the passage K, I provide an annular dial-face N having a series of graduating marks thereon—as shown in Fig. 3—in conjunction with which a pointer mark O on the thumb-piece J, is made to register. When the pointer O is in line with the scale-mark "S" the sleeve I is

at the limit of its inward movement, and the air passage K is entirely shut off—see Figs. 2 and 3. When it is desired to open up the communication with the air passage K the thumb piece J is turned to the left to such a degree as will open the passage K to any degree desired in order to let more or less air into the upper tube D. I may establish certain marks upon the scale-face N, with which the point O may register, as will indicate that the air is entirely shut off from the passage K, or is fully on; or is at any predetermined point between the two. The scale-piece N is rigidly attached to the tube D in any suitable way, after it has been properly adjusted thereon, and a packing P is interposed between the sleeve and the scale-piece to prevent any leakage of air between the two.

All the main operating parts are preferably made of hard rubber, and in order to introduce the air passage K a removable bushing or sleeve Q is introduced into the tube D, which permits the passage K to be made therein before the bushing Q is inserted.

I have described one way in which my combined syringe and atomizer may be constructed. It should be understood however that my invention is broader than the particular structure herein shown and described.

I may embody my invention in structures other than the one here presented and still come within the spirit of my invention.

I claim—

1. The combination of an air pipe, an adjustable sleeve located therein having a thumb-piece, and a scale-piece upon the air tube.

2. The combination of a liquid tube, an air tube concentric with the liquid tube, an air supply tube leading thereto, and a plug or stop-sleeve slipped upon the liquid tube above the air-supply tube, adapted to close air-tight the passage through the air tube.

3. The combination of a liquid tube, an air tube, a supply tube leading to the latter, a stop in the air tube above said supply tube, and a channel communicating with said air tube above and below the stop.

4. The combination of a liquid tube, an air tube a supply tube leading to the latter, a stop in the air tube above said supply tube, a channel communicating with said air tube above and below the stop, and a valve in said channel.

5. The combination of a liquid tube, an air tube concentric with the liquid tube throughout the length of the air tube, a bushing or sleeve within the air tube concentric with both the liquid and air tube, and having a port therein, and a channel leading from the air tube to said port.

6. The combination of a liquid tube, an air tube, having an air-supply connected thereto, and a sleeve in the latter having a lengthwise movement for graduating the connection between the air and supply tubes.

7. The combination with a liquid tube, an air and an air-supply tube, of a scale upon the supply tube, a rotary valve in the supply tube, and a pointer or index upon the valve adapted to traverse the scale.

8. The combination of an air supply tube, a liquid tube, an air tube, a bushing or sleeve within the air tube and outside the liquid tube, and concentric with both the air and liquid tubes, said bushing having an axial opening therethrough and a lateral opening therein, the latter communicating with the air-supply tube.

In testimony whereof I affix my signature in presence of two witnesses.

ISAAC Q. GURNEE.

Witnesses:
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