T. A. DE VILBISS.

ATOMIZER.

APPLICATION FILED MAY 21, 1909.

938,648.

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Fig. 1.

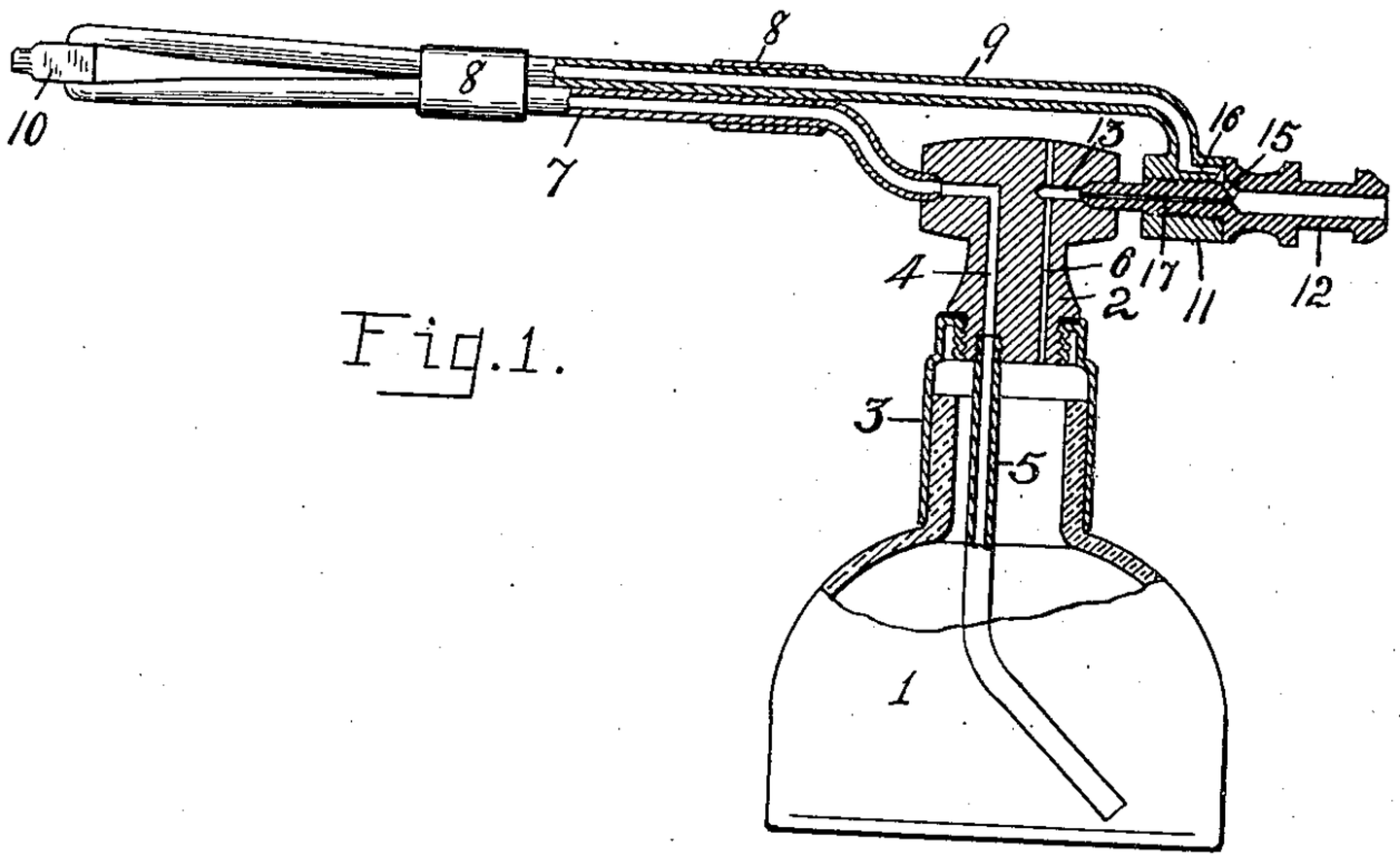
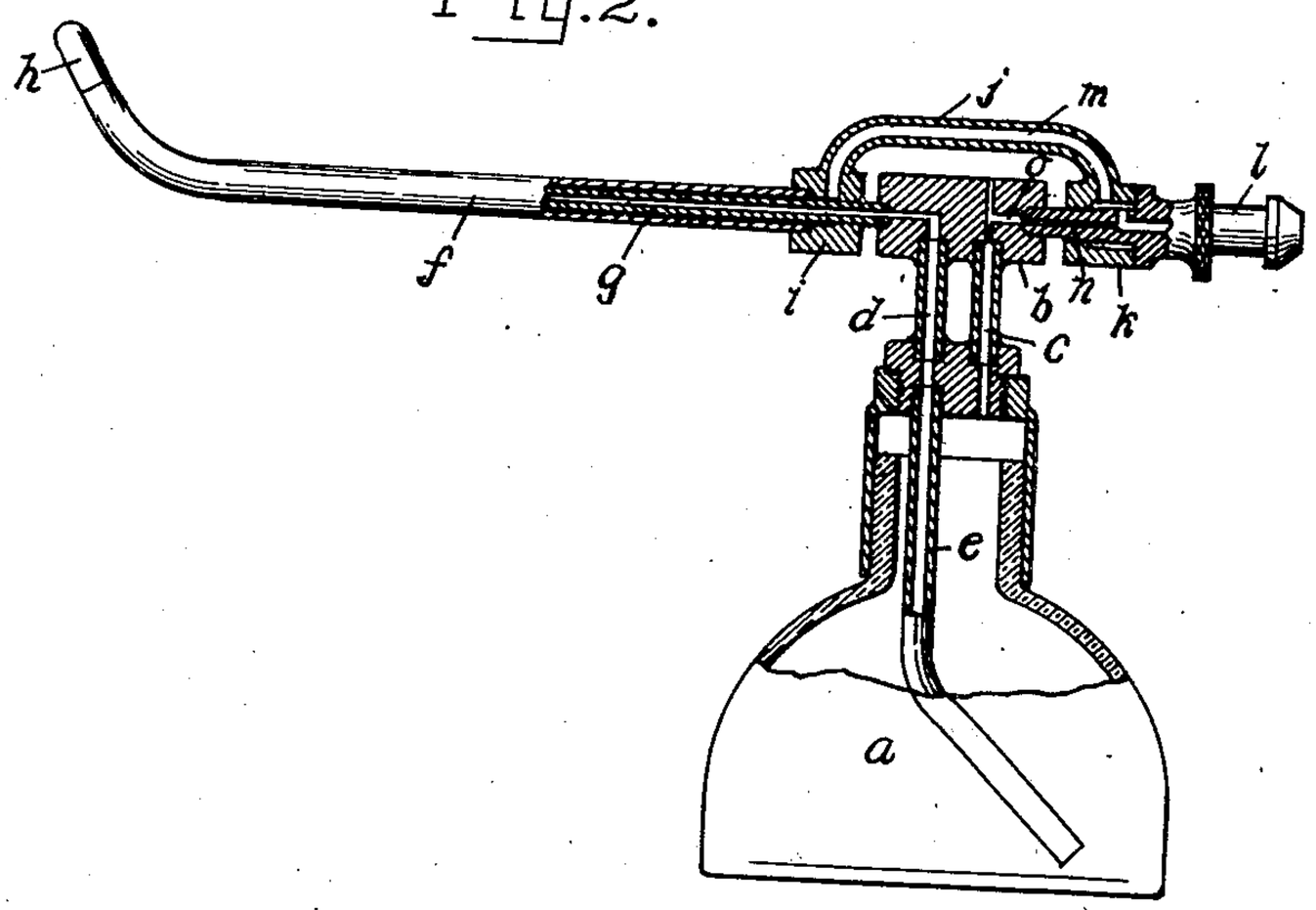


Fig. 2.



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ATOMIZER.

938,648. Specification of Letters Patent. Patented Nov. 2, 1909.

Application filed May 21, 1909. Serial No. 497,495.

To all whom it may concern:

Be it known that I, THOMAS A. DE VILBISS, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Atomizer; and I do hereby 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 accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to atomizers; and has for its object the provision of a simple and efficient instrument of this class, the liquid and air-tubes of which are adjustable to enable the laterally-disposed discharge ends thereof to be shifted to direct their discharge in a multiplicity of directions, as the nature of the use or the parts to be sprayed may require.

The operation, construction and arrangement of the parts of the invention are fully described in the following specification, and while in its broader aspect it is susceptible of embodiment in numerous forms, two preferred forms of the same are illustrated in the accompanying drawings, in which,—

Figure 1 is a side elevation of an atomizer embodying one form of the invention with a portion of the same in vertical section, and Fig. 2 is a similar view of another form of the same.

Referring to Fig. 1 of the drawings, 1 designates the liquid receptacle, the neck of which is closed by the head 2, which may be threaded within a ferrule 3 or secured to the neck in any other suitable manner. The head 2 is formed with a channel 4 the inner end of which opens into a tube 5, which is carried by such head and extends down into the receptacle to near the bottom thereof, and with a channel 6, which serves to open communication between the atmosphere and the interior of the receptacle to admit air thereto.

The channel 4 has its upper or outer end horizontally angled with the extreme end thereof enlarged to form a seat or bearing for the inner end of the liquid tube 7, which tube is attached by bands 8, or in any other suitable manner, to the side of the air-tube 9, said tubes communicating at their outer ends with a common spray head or nozzle 10, which is pivotally shiftable relative thereto, as is common in instruments of this class.

The inner end of the air-tube 9 passes over or at the side of the head 2 and terminates in a laterally offset enlargement 11 through which the member 12 threads. This member has its inner end projected beyond such enlargement and pivotally seating, in axial alinement with the inner end of the liquid-tube 7, in the enlarged outer end of a channel 13, which is provided in the head 2 in opposition to the angled upper end of the channel 4 and opens laterally into the channel 6, thus combining with the inner end of the tube 7 to form trunnions for pivotally supporting the tubes 7 and 9 relative to the head. The outer end of the member 12 is adapted to form the nipple to which the usual air supply tube (not shown) attaches, and has its bore communicating with the channel of the tube 9 through the passages 15 and 16 in said nipple and the enlargement 11, respectively, and with the channel 13 in the head 2 through the fine or restricted passage 17 provided axially in the inner end portion of the nipple, as shown. The outer portion of the member 12 shoulders against the outer face of the enlargement 11 to form a close joint therewith, and the inner end of such member seats within the outer end of the channel 13 with sufficient force in opposition to the inner end of the tube 7 to frictionally resist a free pivotal movement of the tubes 7—9 and hold them in any position of adjustment relative to the head 2. It is apparent with this construction that the major portion of the fluid which passes through the nipple 12 under pressure enters the tube 9 and in discharging from the spray-head 10 creates a suction through the liquid-tube 7, channel 4 and tube 5, whereby to draw liquid from the receptacle 1 and discharge it from the spray-head in vaporized form, while a small portion of the pressure fluid is forced into the receptacle through the fine passage 17 in the member 12 and the channels 13 and 6. The principal purpose of the communication between the source of fluid pressure and the receptacle is to facilitate what is commonly termed "a flooding" of the spray parts, which may be accomplished by placing the

thumb over the outer end of the air-channel 6, or stopping it in some other manner, so that all the fluid passing through the passage 17 will be caused to enter the receptacle and form a pressure on the top of the liquid to augment the discharge occasioned by the suction created in the spray-head and effect a consequent greater flow of liquid through the discharge tubes.

In the modification shown in Fig. 2, *a* designates the receptacle, and *b* the head, which closes the neck of the receptacle and carries the spray parts, said head having the air-channel *c* and the liquid channel *d* therethrough, which latter communicates with the interior of the receptacle through a tube *e*. In this instance the air and liquid tubes *f*, *g* are concentrically arranged in advance of the head *b* with an annular space provided between them and with their outer ends curved laterally and provided with a spray-head *h*. The outer tube *f* has its inner end attached to the enlarged end *i* of a yoke *j*, which extends around the head *b* and has an enlargement *k* at its rear end through which a nipple *l* is threaded or otherwise suitably secured. The nipple *l* has its bore in communication with the annular passage between the tubes *f* and *g* through a channel *m* in said yoke, as shown. The inner end of the nipple *l* projects through the enlargement *k* of the yoke and has a pivot bearing in one side of the head *b*, in a similar manner to the form above described, and such nipple end has a restricted passage *n* therethrough which combines with a passage *o* in the head to open communication between the major portion of the nipple bore and the channel *c*. The inner end of the liquid tube *g* projects through the enlargement *i* of the yoke *j* and has a bearing in the enlarged outer end of the channel *d* in axial alinement with the nipple *l* the inner end thrust of which it opposes.

It is apparent with both forms of the invention that the liquid and air tubes may be easily and quickly disengaged from the head carrying the same for the purpose of cleaning, or otherwise, by simply unscrewing the nipple member to release its inner end from engagement with such head.

I wish it understood that my invention is not limited to any specific construction or arrangement of the parts, except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,—

1. In an atomizer, two tubes having a nozzle at their outer ends capable of directing fluid at an angle thereto, a head carrying said tubes for pivotal movements to shift the direction of discharge of the nozzle, one of said tubes having a pivotal bearing against one side of the head and the other tube having a part in pivotal engagement with the other side of such head, means for supplying a liquid to one tube, and means for connecting the other tube with an air-supply.

2. In an atomizer, a receptacle, a head carried thereby, and means having trunnions pivotally bearing against opposite sides of said head, said means having a channel in communication with the interior of the receptacle and a channel in communication with an air-supply, and a common discharge nozzle for said channels.

3. In an atomizer, a receptacle, a head carried thereby, two tubes connected together and having a common discharge nozzle, said tubes having their inner ends in pivotal connection with opposite sides of the head to permit a shifting of said tubes,—one tube communicating with the interior of the receptacle and the other with an air-supply.

4. In an atomizer, a receptacle, a head carried thereby, two tubes revolubly carried by said head and having a common nozzle adapted to direct its discharge laterally of the tubes, said tubes both being in communication with the receptacle through the head, and means for connecting one tube with an air-supply.

5. In an atomizer, a receptacle, a head carried thereby, a liquid tube having its inner end pivotally seated against said head with its channel in communication with the interior of said receptacle, an air-tube having a part in pivotal contact with the opposite side of the head to the point of bearing of the liquid-tube thereon, said tube being adapted for connection with an air supply and having a restricted channel in communication with the interior of the receptacle, and a common spray-head for said tubes.

6. In an atomizer, a receptacle, a head carried thereby and having an air and a liquid passage in communication with the interior of the receptacle, an air-tube having axially alining parts forming trunnions which have bearings in opposite sides of said head and their channels respectively communicating with the interior of the receptacle through said passage, and a common spray-head for said tubes.

7. In an atomizer, a receptacle, a head carried thereby, an air-tube and a liquid-tube having a common spray-head and axially registering parts in pivotal engagement with opposite sides of said head, the head engaging part of one tube being adjustable, and the liquid-tube having its channel in communication with the interior of the receptacle.

8. In an atomizer, a receptacle, a head carried thereby, and an air-tube and a liquid-tube having a common spray-head and axially registering parts forming trunnions which have bearings on opposite sides of the head, said tubes each having their channels in communication with the interior of the

receptacle through said head, said trunnion parts being relatively adjustable.

9. In an atomizer, a receptacle, a head closing the neck thereof, a liquid-tube having an end pivotally bearing against said head with its channel in communication with the interior of the receptacle, an air-tube attached to said liquid-tube and having a common spray-head therewith, a nipple carried by the air-tube and having a part bearing against said head in axial alinement with the bearing end of the liquid-tube, said nipple having its bore in communication with the air-tube channel and in restricted communication with the interior of the receptacle.

10. In an atomizer, a receptacle, a head closing the neck thereof, a liquid-tube and an air-tube having a common discharge nozzle, said liquid-tube having its inner end pivotally bearing against the side of said head and its channel in communication with the interior of the receptacle, and a member adjustably carried by the air-tube at the side of the head opposed to the inner end of the liquid-tube and having an end bearing against said head in axial alinement with the liquid-tube end, said member forming a nipple for the attaching of an air-supply-tube and having its bore in communication with the air-tube channel and in restricted communication with the interior of the receptacle through the head.

11. In an atomizer, a receptacle, a head carried thereby, an air-tube and a liquid-tube having relatively adjustable axially aligning parts pivotally bearing against opposite sides of said head with their channels in communication therethrough with the interior of the receptacle, said tubes having a common discharge nozzle, and the air-tube being adapted for connection with an air-supply.

12. In an atomizer, a head adapted for connection with a receptacle for liquids, tubes coöperating to pivotally engage said head,—one of the tubes being adapted for connection with a liquid supply and the other tube being adapted for connection with a source of fluid pressure.

13. In an atomizer, a head adapted for connection with a receptacle for liquids, two tubes having relatively adjustable parts cooperating to pivotally engage with said head to permit rotary movements of the tubes relative thereto, said tubes having a common discharge nozzle and one adapted for connection with a liquid supply and the other for connection with a source of fluid pressure.

14. In an atomizer, a receptacle, a head carried thereby and having a channel opening communication between the interior of the receptacle and the atmosphere, a liquid-tube and an air-tube having parts respectively coöperating to pivotally engage said head to permit rotary movements of the tubes relative thereto, said liquid-tube having its channel communicating with the interior of the receptacle and said air-tube adapted for connection with an air supply and having its channel in restricted communication with the air-channel in said head, and a common nozzle for said tubes.

15. In an atomizer, a receptacle, a head carried thereby and provided with an air-passage between the interior of the receptacle and the atmosphere the outer end of which is capable of being closed, an air-tube and a liquid-tube carried by said head for rotary movements relative thereto, the air-tube having communication with said air-passage intermediate its ends, and the liquid-tube having communication with the interior of the receptacle, and means for connecting the air-tube with an air-supply.

16. In an atomizer, a receptacle, a head carried thereby and having a passage opening communication between the interior of the receptacle and the atmosphere, two tubes revolubly carried by said head and having a common nozzle capable of directing its discharge laterally of the tubes, said tubes both being in communication with the receptacle through the head, and means for connecting one tube with an air-supply.

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

THOMAS A. DE VILBISS.

Witnesses:
C. W. OWEN,
D. C. WALTER.