

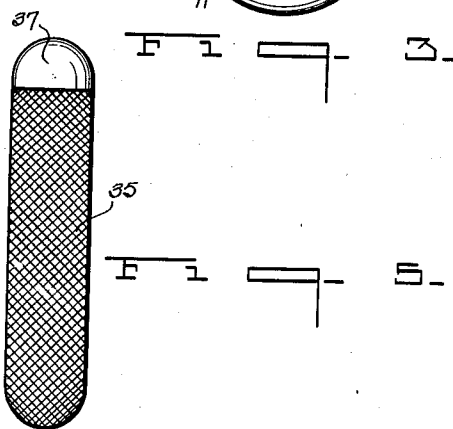
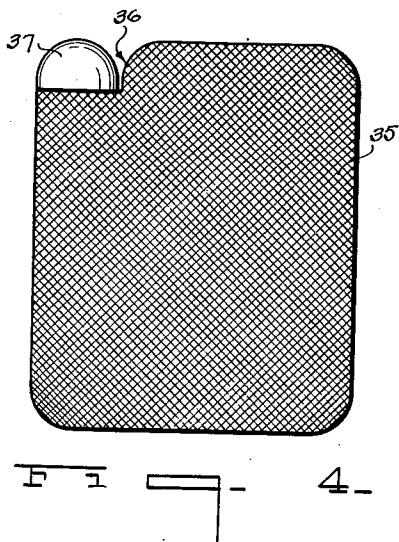
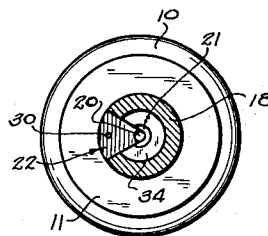
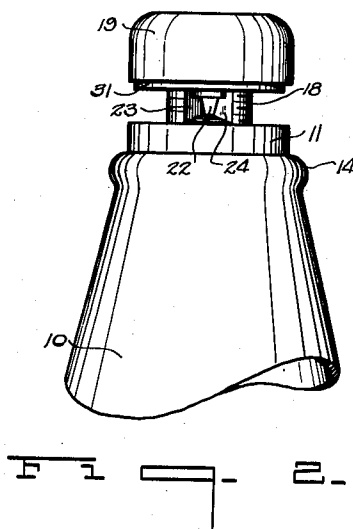
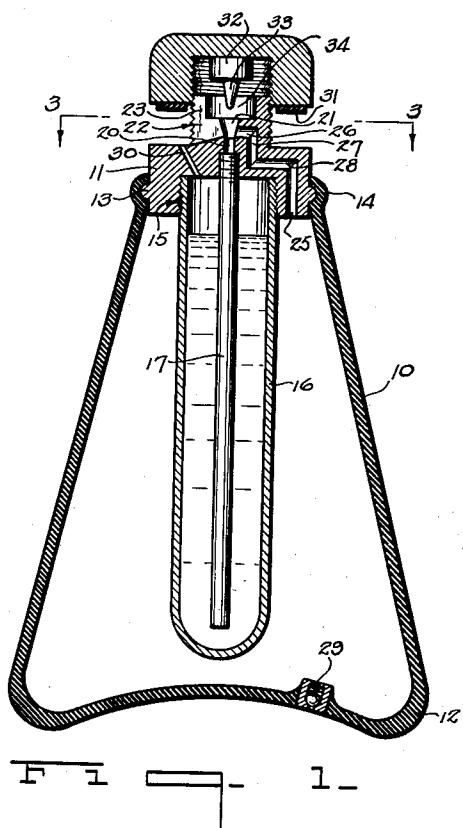
April 15, 1941.

G. R. FORD, JR., ET AL

2,238,315

ATOMIZER

Filed July 10, 1938



Inventors
GEORGE R. FORD JR.
GERALD WHITE.

38

William E. Noble

Attorney

UNITED STATES PATENT OFFICE

2,238,315

ATOMIZER

George R. Ford, Jr., Perrysburg, and Gerald
White, Rossford, Ohio

Application August 10, 1938, Serial No. 224,002

5 Claims. (Cl. 299—88)

The present invention relates to atomizers in general and more particularly to that class of atomizers commonly used for the spraying of perfumes and other toilet liquids.

One of the objects of this invention is the provision of such an atomizer of improved mechanical construction and simplicity of design which is positive and efficient in operation and of exceptionally pleasing and attractive appearance.

Another object of the invention is the provision of such an atomizer of sturdy, durable construction embodying a minimum number of parts which renders it less expensive to manufacture as well as reducing to a minimum the liability of its becoming broken or getting out of proper adjustment.

A further object of the invention is the provision of such an atomizer including a hollow compressible casing in which the liquid to be sprayed in adapted to be received and which, upon being compressed, will cause the liquid to be discharged in the form of a fine spray, thereby eliminating the use of a separate compressible bulb such as has heretofore been commonly employed.

A still further object of the invention is the provision of novel means for sealing the atomizer against leakage of its contents, thereby permitting it to be readily carried in a purse of the like as well as eliminating loss of its contents should it be accidentally overturned.

Other objects and advantages of the invention will become more apparent during the course of the following description when taken in connection with the accompanying drawing.

In the drawing wherein like numerals are employed to designate like parts throughout the same:

Fig. 1 is a vertical sectional view through an atomizer constructed in accordance with this invention;

Fig. 2 is a side elevation of the upper portion thereof;

Fig. 3 is a horizontal transverse section taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a side elevation of an atomizer of modified design but also embodying the principles of this invention; and

Fig. 5 is an end view of the atomizer of Fig. 4.

With reference now to the drawing, and particularly to Figs. 1 to 3, the numeral 10 refers to the hollow compressible body member of casing preferably formed of rubber, rubber composition, or the like, and which is deformable in a manner to discharge the liquid from the atomizer in the form of a fine spray as will be more clearly here-

inafter apparent. The casing 10 may be of any desired shape but is here shown as being substantially frusto-conical and carrying at its upper end the spray head 11. The side wall of the casing should be made sufficiently thin and yieldable to permit it to be readily compressed, while at the same time being of sufficient stiffness or rigidity to properly support the atomizer in an upright position. To this end, the lower corner portion of the casing can be made relatively thicker, as indicated at 12, to assist in properly supporting the atomizer in upright position.

The spray head 11 is preferably cylindrical and is provided with a circumferential rib 13 over which the upper end or neck 14 of the casing is adapted to snugly fit. Formed in the bottom of the spray head 11 is a cylindrical, internally threaded recess 15 within which is threaded the upper end of a hollow container 16 projecting downwardly into the casing 10 and adapted to contain the liquid to be sprayed. Also carried by the spray head, centrally thereof and extending therefrom down into the container 16, is a spray tube 17, the lower end of which preferably terminates relatively close to the bottom of said container.

The spray head 11 is further provided with an upwardly extending cylindrical neck 18 externally threaded and adapted to receive thereon the cap 19. The spray tube 17 communicates at its upper end with a vertical opening 20 formed in the spray head and which opening registers with an upwardly flared opening 21 formed in the neck 18. The opening 21 communicates with the lateral spray orifice 22 also formed in said neck and having outwardly diverging side walls 23 and 24. The spray head 11 is also formed with a double stepped-down passageway comprising a vertical portion 25 communicating with the casing 10, a horizontal portion 26 intersecting the opening 21 at substantially right angles and the intermediate connecting vertical and horizontal portions 27 and 28 respectively.

In operation, compression of the flexible casing 10 will serve to expel a blast of air therefrom through the passageway 26 across the opening 21 and this discharge of air under pressure will create sufficient vacuum to draw the desired amount of liquid upwardly from the container 16 through spray tube 17 and discharge it laterally through the spray orifice 22. The liquid thus drawn upwardly from the container will be disintegrated in the usual manner into small particles and disseminated so that the same will be emitted from the orifice 22 in the form of a fine

spray. Upon the release of pressure from the casing 10, outside air will be drawn therein, to replace the air previously expelled, through a one-way valve 29 provided in the bottom thereof and which may be of any desired type. Likewise, the spray head 11 may be provided with duct 30 communicating with the container 16 to supply the required air thereto.

When it is desired to use the atomizer, it is simply necessary to unscrew the cap 19 to the desired extent to uncover the spray orifice 22. Obviously, this cap need not be completely removed and, in fact, it is preferred that it be left on as it forms the top of the spray orifice 22 and controls the size thereof. When the atomizer is not in use, the cap 19 is screwed down tight to seal the same and prevent leakage of the liquid should the atomizer be accidentally overturned. To assist in effectively sealing the atomizer, a gasket 31 of rubber, felt, or some other suitable material may be provided upon the bottom of the cap 19 to engage the upper surface of the spray head and also to close the duct 30 upon tightening of said cap. For the purpose of preventing the liquid from accidentally flowing from the container 16 through the spray pipe 17, the cap may also be provided upon its under surface with a cylindrical stopper 32 formed with a depending tapered plug 33. When the cap is closed, the plug 33 is adapted to be snugly received in the opening 21, while the stopper 32 will be received within a recess 34 formed in the neck 18.

In Figs. 4 and 5 is illustrated an atomizer constructed in the same manner as described above but which is of such shape and size as to adapt it to be carried in a purse or vanity. This atomizer has the same general appearance as a cigarette case and includes a hollow compressible body member or casing 35 of substantially rectangular form having substantially parallel top and bottom, side, and end walls. The upper portion of the casing 35 is reduced in height at one end, as indicated at 36, and the liquid spray means illustrated in Figs. 1, 2 and 3 is associated therewith. The only portion of said spray means disclosed is the cap 37, but inasmuch as the only difference between the atomizer shown in Figs. 4 and 5 and that illustrated in Figs. 1 to 3 is the shape of the casing, it is not believed necessary that the details of construction need be here disclosed. When it is desired to use the atomizer of Figs. 4 and 5, the cap 37 is unscrewed to the desired extent and the flexible walls of the casing 35 compressed to discharge the liquid therefrom in the same manner as described above.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

We claim:

1. An atomizer, comprising a hollow compressible casing containing an air supply, a spray head carried at the upper end of said casing and provided with a lateral spray orifice in communication with the said casing, a container for the liquid to be sprayed carried by said spray head and disposed within said casing, said container also being in communication with the spray orifice so that upon compression of said casing, the air discharged therefrom will draw the liquid upwardly from the said container and

discharge it through the said spray orifice, and a cap carried by said spray head forming the top of the spray orifice and adjustable to control the size thereof.

2. An atomizer, comprising a hollow compressible casing containing an air supply, a spray head carried at the upper end of said casing and provided with a lateral spray orifice in communication with the said casing, a container for the liquid to be sprayed carried by said spray head and disposed within said casing, a spray tube carried by the said spray head and having its lower end received within the said container and its upper end in communication with the said spray orifice so that upon compression of said casing, the air discharged therefrom will draw the liquid upwardly from the said container through the said spray tube and discharge it through the said spray orifice, and a cap threaded upon the upper end of said spray head forming the top of the spray orifice and adjustable to control the size thereof.

3. An atomizer, comprising a hollow compressible casing containing an air supply, a spray head carried at the upper end of said casing and provided with a lateral spray orifice, said spray head being also formed with a vertical opening in communication with said orifice and a passageway communicating with said casing and intersecting said vertical opening at substantially right angles, a container for the liquid to be sprayed carried by said spray head and disposed within said casing, a spray tube also carried by the said spray head and having its lower end received within the said container and its upper end communicating with said spray orifice through said vertical opening so that upon compression of said casing, the air discharged therefrom through said passageway will draw the liquid upwardly from the said container through the said spray tube and vertical opening and discharge it through the said spray orifice, and a cap carried by said spray head forming the top of the spray orifice and adjustable to control the size thereof.

4. An atomizer, comprising a hollow compressible casing containing an air supply, a spray head carried at the upper end of said casing and provided with a lateral spray orifice, said spray head being also formed with a vertical opening in communication with said orifice and a passageway communicating with said casing and intersecting said vertical opening at substantially right angles, a container for the liquid to be sprayed carried by said spray head and disposed within said casing, a spray tube also carried by the said spray head and having its lower end received within the said container and its upper end communicating with said spray orifice through said vertical opening so that upon compression of said casing, the air discharged therefrom through said passageway will draw the liquid upwardly from the said container through the said spray tube and vertical opening and discharge it through the said spray orifice, and a cap threaded upon the upper end of said spray head and having a portion thereof adapted, when said cap is closed, to be received within said vertical opening in said spray head to prevent leakage of liquid from said container.

5. An atomizer comprising a hollow compressible casing containing an air supply, a spray head carried at the upper end of said casing and provided with a lateral spray orifice in communication with the said casing and having a vertical

opening in the bottom thereof communicating at its upper end with the spray orifice, a container for the liquid to be sprayed carried by said spray head and disposed within said casing, a spray tube also carried by said spray head and having its lower end received within the said container and its upper end secured within the said spray head and communicating with the lower end of the vertical opening therein so that upon compression of said casing, the air discharged there- 10

from will draw the liquid upwardly from the said container through the said spray tube and discharge it through the said spray orifice, and a cap carried by said spray head forming the top of the spray orifice for controlling the size thereof and adapted, when closed, to prevent leakage of liquid from said container.

GEORGE R. FORD, JR.
GERALD WHITE.