Sept. 27, 1938. E. O. SCHUTTE 2,131,455

ATOMIZER HEAD

Filed Sept. 10, 1937

Fig. 1

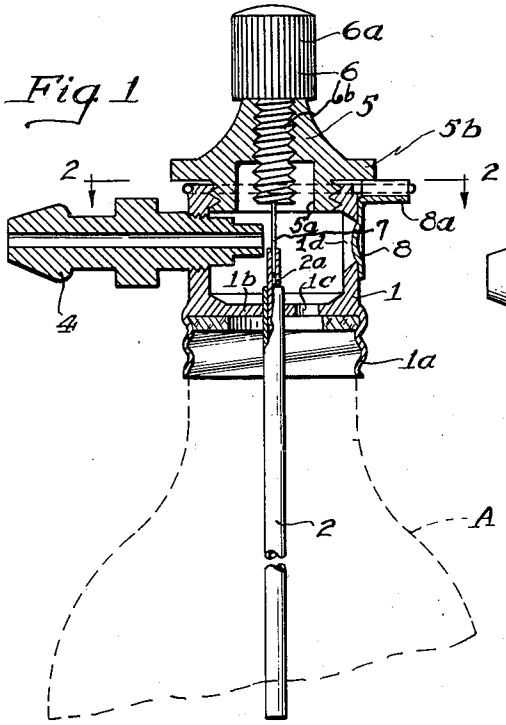


Fig. 2

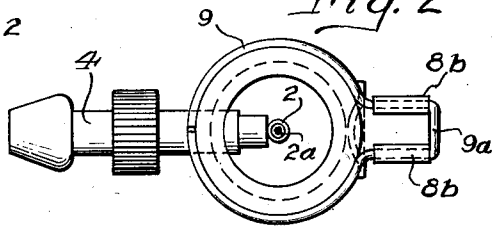


Fig. 4

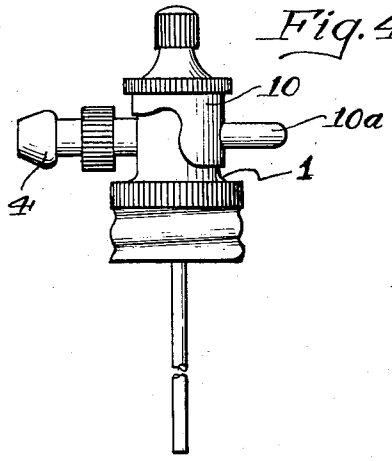
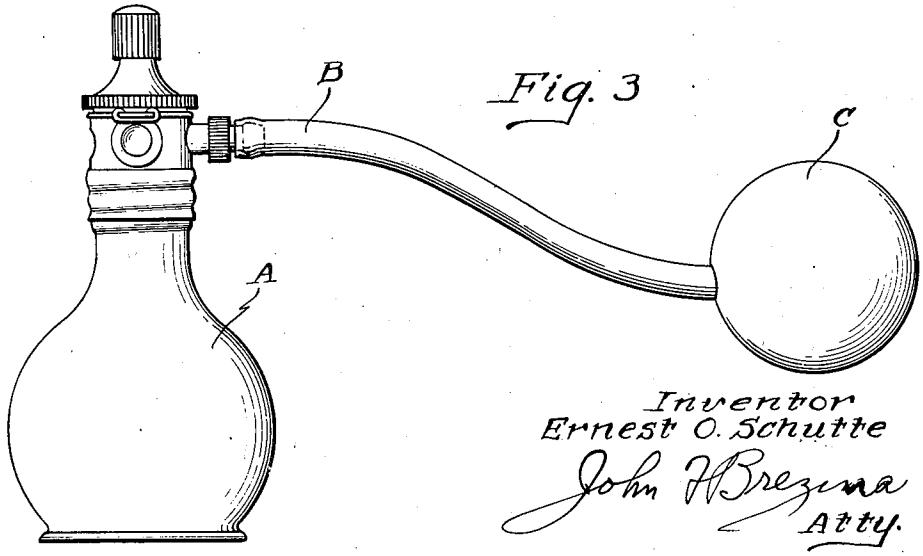


Fig. 3



Inventor
Ernest O. Schutte
John H Brezina
Atty.

Patented Sept. 27, 1938

2,131,455

UNITED STATES PATENT OFFICE

2,131,455

ATOMIZER HEAD

Ernest O. Schutte, Chicago, Ill.

Application September 10, 1937, Serial No. 163,229

5 Claims. (Cl. 299—88)

This invention is an improved form of head for atomizers and is particularly adapted for use in spraying or atomizing fluids such as permanent waving fluid, lacquers, and the like and provides a device which will not easily become clogged, a matter which has made the spraying of these quickly evaporable fluids impossible to the other types of atomizers.

A further object of the device is to provide an atomizer head which may be easily disassembled for cleaning.

A still further object of this invention is the provision of a head for an atomizer which may be easily closed.

A still further highly important object of this invention is the provision of a device of the described class which is simple to manufacture and which is composed of a relatively few number of parts.

Other and further objects of this invention will be apparent from the drawing and from the detailed specification which follows.

On the drawing:

Fig. 1 is a cross sectional view of the device showing particularly the various operating parts hereinafter described and particularly how the needle extends into the downwardly extending tube of the atomizer head.

Fig. 2 is a cross sectional view taken of the line 2—2 of Fig. 1.

Fig. 3 is a side elevational view of the head attached to a conventional receptacle and having a conventional hand operated bulb attached to the same.

Fig. 4 is a side elevational view of a modified form of the device, this view particularly illustrating a modified form of closure for the exhaust aperture in the atomizer head.

As shown on the drawing, the letter "A" indicates a conventional bottle or similar receptacle adapted to hold a quantity of whatever liquid it is desired to atomize. The numeral "1" is used to indicate the main body portion of the atomizer head which is adapted to be preferably screwed onto an appropriately threaded neck of the bottle or receptacle A by means of integral screw threaded portion *1a*. The main body portion 1 is partially closed above the screw threads *1a* by a transverse portion *1b* which, as shown in Fig. 1, extends substantially across the lowermost portion of the head proper and serves as a base or mounting for the normally perpendicularly extending tube 2 which is adapted as shown to extend substantially into the receptacle A and liquid contained therein. An aperture *1c* is provided in transverse portion *1b* to permit any liquid which does not pass out from the head 1 to return to the bottle or receptacle A.

The head 1 is further provided with a side aperture *1d* which is the normal outlet for the sprayed material, the said aperture *1d* being closable by means hereinafter more fully set out and described. A further aperture, having screw threads provided therein, is formed in a side opposite to aperture *1d*, this last mentioned aperture being adapted to threadably receive the connection 4 which serves as a means of connecting the conventional rubber tube B which, in preferred form, connects to a manually operable bulb C supplying the necessary force of air to atomize the fluid.

The head 1 is provided with an aperture at the top substantially as shown in Fig. 1, this aperture being internally screw threaded to receive the cap 5 which, as shown, is exteriorly threaded at its lowermost portion *5a* so as to entirely enclose the top of the main body portion 1. A preferred form of cap or top 5 is shown on the drawing, in preferred form having a knurled rim *5b* permitting the cap to be easily removed from body portion 1. Further, as shown in Fig. 1 the cap 5 has an outwardly extending aperture which is internally screw threaded as shown to receive the portion 6 which, being exteriorly screw threaded as shown, is adapted to completely close the top of portion 5 when in its forwardmost position. Portion 6 has a knurled cap portion *6a* which permits easy screwing of the portion 6 in or out of the cap as desired.

Placed on the end in relatively close juxtaposition to the screw threads *6b* of portion 6 is an outwardly extending needle 7 which is adapted to fit into the reduced portion *2a* of the downwardly extending tube 2 when portion 6 is screwed to its farthest inwardly position. The purpose of the said needle or rod 7 is to close portion *2a* and tube 2 and to serve additionally as a cleaning member for portion *2a*.

The main body portion 1 of the invention is closable by a rotatable closure, the preferred form of which is shown in Figs. 1, 2 and 3, and a modified form of which is shown in Fig. 4. In that preferred form shown in the first 3 aforementioned figures the closure consists of a disc 8 which is bent inwardly as particularly shown in Fig. 1 so that when it comes into registry with aperture *1d* it will snap substantially into said aperture effectively closing the same. The disc 8 has a downwardly extending portion *8a* which is composed of an integral sheet of metal the

side edges 8b of which are forced backwardly toward one another and over the downwardly extending substantially U-shaped portion 9a of the split ring 9. Ring 9 fits, as shown in Fig. 1, in an annular recessed portion of the body portion 1 and immediately under the knurled portion 5b, of top portion 5. Further, the ring 9 is split as shown in Fig. 2 at its rearward central portion permitting said ring 9 to expand and thus permitting disc 8 to slide around the side of main body portion 1 and also permitting the said disc 8 to snap substantially into a relatively fixed position in aperture 1d thus closing the same.

In that modified form shown in Fig. 4 the only difference between that structure and that shown in Figs. 1, 2 and 3 is in the closure portion which is shown in the side elevation. In this modified form the closure consists of an annular portion 10 substantially enclosing the uppermost part of body portion 1 and being widened at its forwardmost portion so as to practically enclose the entire foremost part of body portion 1 and being rotatable thereon in such a manner that when handle 10a is turned at substantially a right angle to portion 4 or aperture 1d the spray head is in operable position and when portion 10 is turned by means of handle 10a substantially to that position shown in Fig. 4 the aperture 1d is covered and effectively closed. There is no spring-like action in the modified form shown in Fig. 4 as contrasted to that preferred form shown in Figs. 1, 2 and 3 and it is imperative, therefore, that portion 10 be only slightly larger than the main body portion 1 and retained thereon by friction which must be sufficient to substantially close aperture 1d when handle portion 10a and integral annular portion 10 are in the position shown in Fig. 4.

It should be obvious, therefore, from the detailed drawing and from the above detailed description which I have made that I have provided a head for an atomizer or spray which may be easily taken apart for cleaning and which may be easily and effectively closed in such a manner that quick drying fluids will not easily clog the same. When it is desired to use my invention the portion 6 is screwed upwardly thus lifting the integrally formed needle 7 out of the reduced portion 2a of tube 2 in which it normally reposes when portion 6 is screwed down to its lowermost position. Then, by turning the closure portion 8 or the modified form 10 shown in Fig. 4 away from aperture 1d, the device is ready for use. Partially open bulb C will force air across the uppermost opening in tube 2a and has a tendency in manner well known to atomize the liquid which is blown out through aperture 1d. Any of the liquid which does not pass through aperture 1d will be collected in the main body portion 1 and will seep back into the receptacle A through the aperture 1c in transverse portion 1b.

The usual lacquers and hair drying fluids and the like are so quickly evaporable that it is necessary, in most instances, to close the atomizer and screw down portion 6 whenever the atomizer is to be put out of operation for even a short period of time. At such times all the operator need do is to push the closure 8 into registry with aperture 1d or, in using that modified form shown in Fig. 4, to rotate portion 10 so that it passes over the aperture 1d, and then screw down portion 6 so that needle 7 extends substantially into the reduced portion 2a of tube 2. Reversal of the aforementioned manner of handling again puts the atomizer head into operable position.

While I have described this invention in considerable and in quite specific detail I do not wish to be limited to the exact structure shown except as limited by the appended claims, and various changes may be made in the embodiment of the invention herein specifically described without departing from or sacrificing any of the advantages of the invention or any features thereof, and nothing herein shall be construed as limitations upon the invention, its concept or structural embodiment as to the whole or any part thereof except as defined in the appended claims.

I claim:

1. In a spray head for atomizers the combination of a main body portion having a side exhaust aperture, said main body portion adapted to be placed on a fluid container, a fixedly mounted tube extending perpendicularly from the central part of said main body portion and into said fluid container, means for introducing a current of air into said main body portion and across the upper end of said fixedly mounted tube, a retractible needle extending perpendicularly downward in said main body portion in register with the end aperture of said tube and adapted to extend substantially into said tube in extended position and a closure for the exhaust aperture of said main body portion mounted on said main body portion.

2. In a device of the described class the combination of a hollow main body portion having a side aperture therein, screw threads on the lowermost part of said main body portion for attachment thereof to a fluid container, an air inlet in said main body portion, a tube rigidly attached to the internal surface of said main body portion and extending downwardly into said fluid container and terminating at its topmost end substantially in register with said air inlet and the side aperture in said body portion, a threadably extensible needle extending downward in said main body portion and extensible substantially into the end aperture of said tube in most extended position and a horizontally semi-rotatable closure for the side aperture in said main body portion.

3. In a device of the described class the combination of a hollow main body portion having a pair of side apertures therein in cross-register with one another, one of said side apertures being screw threaded to receive a nozzle, the other forming an outlet, said main body portion also having an upper internally threaded aperture and a lower aperture in communication with a fluid container permitting return of fluid to said container, a nozzle threadably mounted in one of side apertures in said body portion, a tube extending into said fluid container, said tube rigidly fastened to said head and having an open end terminating in said hollow main body portion in register with said nozzle and said outlet, a needle bearing member threadably extensible in said upper aperture in said main body portion, said needle adapted to extend into the end of said tube in extended position and a rotatable circular sleeve mounted externally on said main body portion adapted to form a closure for said main body portion.

4. In a device of the described class a hollow main body portion having a pair of side apertures in register and a top and a bottom aperture therein, an air nozzle, one of said side apertures

being internally threaded to receive said nozzle, the aperture opposite said nozzle forming an outlet for atomized liquid, the top aperture being internally threaded to receive an externally threaded needle bearing stub bolt, the bottom aperture being in communication with a fluid container attached to said main body portion, said aperture adapted to permit return of unreleased fluid to said container, a tube rigidly fastened to a bottom wall portion of said main body portion, said tube extending downwardly into said fluid container and terminating substantially in register with the lower lip of said air nozzle, and a closure for said outlet aperture comprising a split annular spring horizontally rotatable on said main body portion and a dished disk rigidly fastened thereto, said disk adapted to be turned to fit into said outlet aperture thereby closing the same.

5. In a device of the described class the combination of a hollow main body portion having an outlet aperture therein, a removable cap for said main body portion having an internally threaded hole therein, an externally threaded screw threadable into said hole in said cap, a needle point on said screw, an externally mounted annular closure for said aperture in said main body portion, a fixedly mounted air nozzle extending into said main body portion opposite said outlet aperture, a transversely extending lower wall in said main body portion having an aperture therein in communication with a fluid container, a tube extending substantially perpendicularly into said fluid container, said tube affixed to said lower wall and terminating in said hollow main body portion in register with the lowermost portion of said air nozzle, said needle point on said screw being adapted to enter the topmost end aperture of said tube and to extend substantially thereinto when in most extended position.

ERNEST O. SCHUTTE.