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C. W. BECK

2,120,948

ATOMIZER

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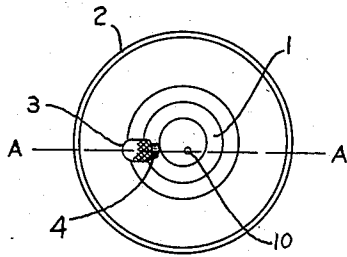


Fig. 2.

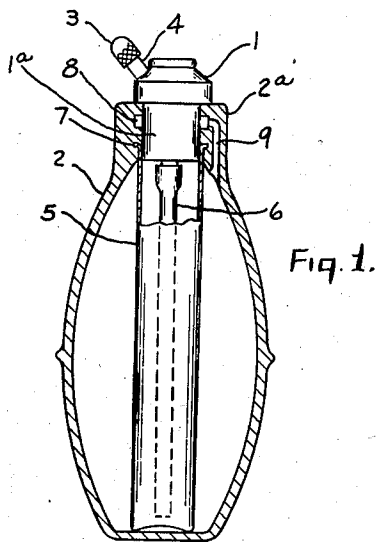


Fig. 1.

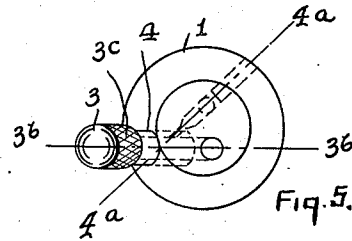


Fig. 5.

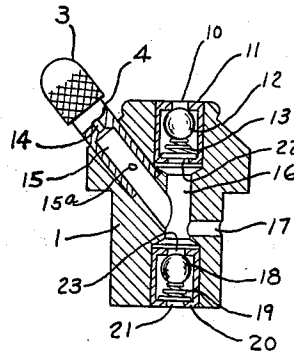


Fig. 3.

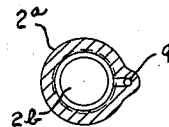


Fig. 6.

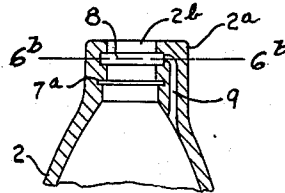


Fig. 7.

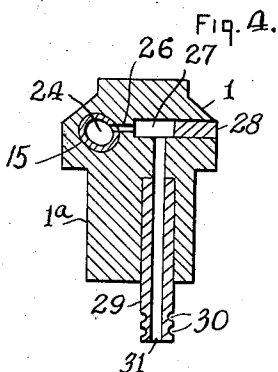


Fig. 4.

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ATOMIZER

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Application November 18, 1935, Serial No. 50,272

5 Claims. (Cl. 299—89)

This invention relates to atomizers and particularly to a species which may be carried about in the pocket, traveling bag, etc. and for use with antiseptics, perfumes, etc.

5 Instead of the usual dual receptacles, one for the air and a separate one for the fluid with unsightly piping and hose connections between them, I provide a soft rubber bulb with a fluid receptacle in its interior and mount the atomizer
10 head jointly on the rubber bulb and the fluid receptacle.

Referring to the drawing:

Fig. 1 is a cross section of a complete atomizer, except as to the head, which latter is shown in
15 elevation, embodying the invention.

Fig. 2 represents a plan view of the atomizer shown in Fig. 1.

Fig. 3 represents a cross section of the atomizer head along lines 3^b—3^b of Fig. 5.

20 Fig. 4 represents a cross section of the atomizer head along lines 4^a—4^a of Fig. 5.

Fig. 5 represents a plan view of the atomizer head shown in Figs. 3 and 4.

25 Fig. 6 represents a cross section of the complete neck of the rubber bulb shown in Fig. 7 along lines 6^b—6^b.

Fig. 7 represents a cross section of the upper part of the rubber bulb, broken away from the main body of the bulb.

30 Again referring to the drawing, the atomizer is composed of a soft rubber bulb 2, which is provided with an open neck 2^a, the neck being hollow and opening into an enlarged cavity of the bulb and which bulb is closed except as to
35 the opening 2^b in the neck. The bulb has a flat surface on the bottom on which to rest. The bulb 2 is constructed to receive a fluid receptacle 5, as illustrated in Fig. 1 and tapers upwards and downwards from its middle to form the neck
40 2^a at its upper end with opening 2^b and an annular air channel 8, in the form of a recess on the inside of the neck, near the top of the bulb. The hollow neck 2^a is further provided with a
45 vertical air passage 9, which is in open communication with the annular air space 8 of the neck. A further horizontal cavity or recess 7^a is arranged on the inside of the neck 2^a a short distance below the annular air space 8, to receive a lip 7 of the fluid receptacle when in position,
50 see Fig. 1.

The atomizer, in addition to the bulb, comprises a fluid receptacle 5 and an atomizer head 1, which latter has a neck 1^a for closing the fluid receptacle and the neck 2^a at the same time.
55 The fluid receptacle is filled first and then the

atomizer head is assembled with the fluid receptacle by its neck 1^a being thrust into the opening of the fluid receptacle into which it fits snugly, a rubber gasket (not shown) being attached to the neck 1^a, after which the fluid receptacle is inserted into the neck 2^b of the bulb into the position shown in Fig. 1.

The atomizer head 1, is made of screw stock suitable for the antiseptic or other fluid to be used therein, or it may be made of a die casting. The head 1 proper is arranged with air passages as illustrated in section in Fig. 3 and fluid passages as illustrated in Fig. 4. It will be noted that the fluid passages enter into and terminate in mixing chamber space 15 at 15^a
10 Fig. 3. These fluid passages are shown in cross section in Fig. 4 and designated as 26 and 27, while the mixing chamber 15 with mixing space 15 is shown in cross section in Fig. 4. See Fig. 5 lines 4^a—4^a for the direction of the fluid pas-
15 sages into the mixing chamber 15 of nozzle 4.

As will be noted the atomizer head has mounted on it nozzle 4 onto the outer end of which is screwed cap 3 to seal the end of the nozzle with a gasket seated on the inside of cap 3 (not
20 shown). The atomizer head also has mounted at the neck end 1^a a fluid tube 29 provided with notches 30 for attaching rubber hose 6 to reach the bottom of the fluid receptacle and in the fluid passage 27, a plug 28 is arranged to close
25 that passage, so that the fluid will be elevated through rubber tube 6 into passage 31, thence into passages 27 and 26 into opening 15^a in the mixing chamber 15 and ejected through opening 14 of nozzle 4. The atomizer head further is
30 provided in the air passage 16, at its upper and lower enlarged openings, with two check valves 11 and 20. These check valves are made up of casings 11 and 20 which contain ball valves 12 and 18, and springs 13 and 19, which are held
35 in the casings by the flanges illustrated in the drawing. These check valves are further provided with openings 10 and 22 and 21 and 23 respectively on the upper and lower check valves, so as to be in open communication with air pas-
40 sage 16. It will also be noted that air passage 16 is in open communication with mixing chamber 15 of nozzle 4 and that a passage 17 is placed in the right side of the neck also in open communication with air passage 16, for the purpose
45 of permitting the air to pass from the inner side of the bulb 2, through slot 9, into annular air space 8, thence into air passage 17 and into air channel 16. The lower check valve will permit air to enter into the fluid chamber but will not 55

permit fluid to enter the air channel 16 or 17, while the upper check valve will permit air to enter passage 10 for the inflation of the bulb, but will not permit the exit of air through passage 10 when the bulb is deflated by hand. Cap 3 of the head 1 is knurled as indicated at 3^c.

The neck opening 2^b is somewhat smaller than the outside diameter of the fluid receptacle, so that when assembled the neck 2^a will fit snugly around it and make a tight joint between the neck of the bulb and the neck 1^a of the atomizer head with the enlarged part of the atomizer head resting against the top of the neck of the rubber bulb, as illustrated in the assembly of Fig. 1. It will be apparent to anyone skilled in the art, that a pressure on the soft rubber bulb will expel the air when the cap 3 is removed and mix the fluid with it in the mixing chamber 15 to atomize it and expel it in that form through passage 14 and that when the bulb is released from its deflated condition that the springiness of the bulb will suck in air through passage 10, as well as through the nozzle opening 14 and pass down through air channels 16, 17, thence through 8 and through 9 into the body of the bulb until it is again fully inflated with air when the operation of expelling and atomizing is repeated.

I claim:

1. An atomizer comprising a hand operated bulb having a hollow neck formed with a longitudinal air passage leading into its interior, said neck having an annular cavity on its inner circumference communicating with said longitudinal air passage, a fluid receptacle within said bulb and having an external peripheral lip receivable in the neck of said bulb to support the fluid receptacle, a head having air and fluid passages which communicate respectively with said annular air passage and the interior of the fluid receptacle, a spray nozzle carried by the head, said

spray nozzle having communication with the air channel and the fluid receptacle.

2. An atomizer in accordance with claim 1, wherein there are check valves for controlling the air and fluid passages of the head.

3. An atomizer comprising a hand operated bulb having a hollow neck with an air passage located within the neck of said bulb leading into its interior, a fluid receptacle within said bulb, means within the neck to support the fluid receptacle, a head directly mounted on said bulb, said head having air passages which communicate directly with the air passage within the neck of said bulb leading into the interior of the bulb and fluid passages which are in open communication with the fluid receptacle, and a spray nozzle carried by said head, said spray nozzle having an enlarged chamber at its inner end and within the head, into which the air and fluid passages converge to atomize the fluid and eject it from the nozzle when the bulb is operated.

4. An atomizer comprising a hand operated bulb provided with a hollow neck, said neck having an air passage on the inside thereof leading into the interior of said bulb, a fluid receptacle located within said bulb, means on the inside of said neck of the bulb to support the fluid receptacle, a head supported by said neck and provided with air and fluid passages communicating respectively with the air passage in said neck and the interior of the fluid receptacle, said head also being provided with a mixing chamber into which the air and fluid passages converge and a spray nozzle communicating with said mixing chamber and carried by said head.

5. An atomizer in accordance with claim 4 wherein there are check valves for controlling the air and fluid from the fluid receptacle into the head.

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