Sept. 4, 1934. L. V. ARONSON 1,972,469

ATOMIZER CONSTRUCTION

Filed Feb. 3, 1930

Fig. 1.

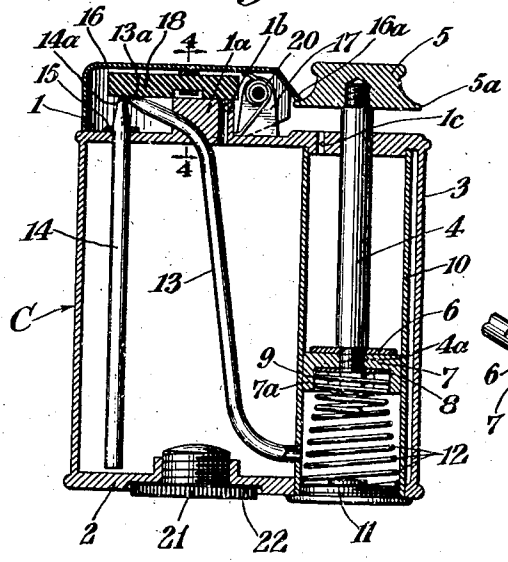


Fig. 5.

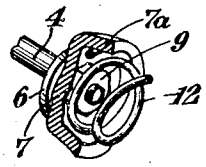


Fig. 2.

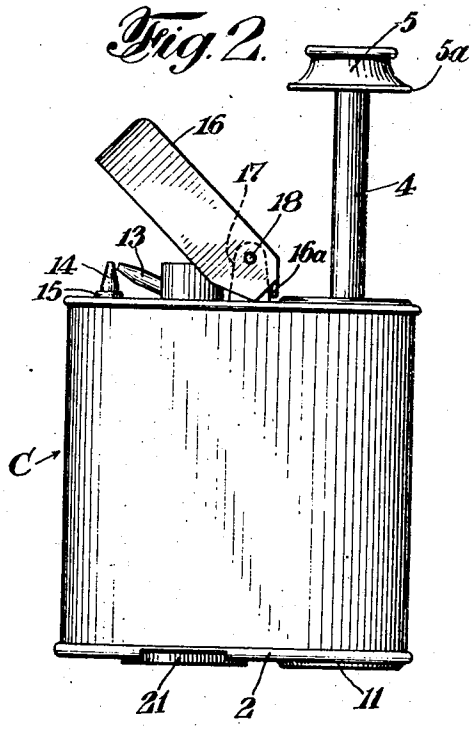


Fig. 3.

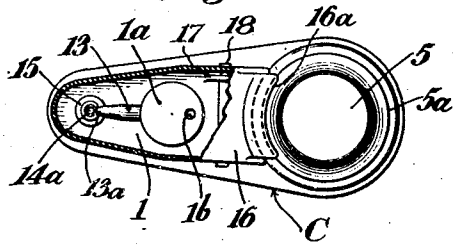
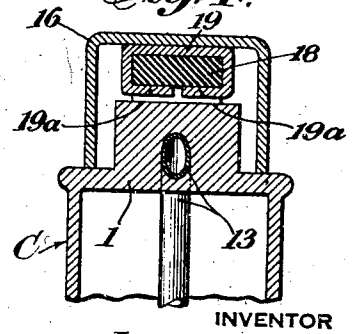


Fig. 4.



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ATOMIZER CONSTRUCTION

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4 Claims. (Cl. 299—88)

My invention relates to atomizers and has particular reference to novel arrangements of some parts of the atomizing mechanism.

My invention relates to novel features of atomizer construction rendering the same simpler, more efficient, more readily manufactured and more readily repaired, when necessary, than are prior art atomizing devices.

Further objects, advantages and characteristics of my invention will become apparent from the following detailed description taken in connection with the accompanying drawing.

My invention resides in the atomizer construction, arrangement of parts and combination of elements of the character hereinafter described and claimed.

For an understanding of my invention and for an illustration of one of the many forms thereof, reference is to be had to the accompanying drawing, in which:

Figure 1 is a vertical, sectional view, partly in elevation, of an atomizer constructed in accordance with my invention;

Fig. 2 is an elevational view of the atomizer shown in Fig. 1 but with some of the parts in different positions;

Fig. 3 is a plan view, partly broken away, of the atomizer shown in Fig. 1;

Fig. 4 is an enlarged, transverse, vertical sectional view, partly in elevation, and is taken on the line 4—4 of Fig. 1, looking in the direction of the arrows; and

Fig. 5 is a fragmentary perspective view of one end of a plunger rod and the spring associated therewith.

Referring to the drawing, C represents any suitable casing, container or receptacle adapted to be supported on any suitable surface or to be carried about in a garment pocket, a hand bag or the like. In the example shown, the casing C comprises a top wall 1 and a bottom wall 2, said walls being joined by side wall structure 3 of any suitable configuration.

Adjacent one side of the aforesaid casing, the top wall 1 is provided with a perforation receiving a rod 4 for reciprocatory movement, said rod 4 carrying a suitable knob 5 at its upper end. The rod 4, at the end thereof removed from the knob 5, carries suitable piston structure and, therefore, preferably comprises a stem 4*a* of reduced diameter externally threaded and receiving a first disk 6, a second disk or washer 7 and a third disk 8, all of the disks being held in assembled relation on the stem 4*a* by a nut 9 threaded to the latter.

The disks 6 and 8, preferably, are formed of sheet-like metallic material and function as backing plates for the disk 7 which is formed of leather, rubberized fabric or the like and, therefore, is flexible so that the outer section thereof forms a circular flange 7*a* when forced into the pump cylinder 10 which is disposed interiorly of the casing C.

In accordance with the form of my invention herein disclosed, but not necessarily, the pump cylinder 10 is so secured interiorly of the casing C that the upper end thereof forms a sealed joint with respect to the top casing wall while the lower end of said cylinder 10 extends, in sealed relation, through a suitable perforation formed in the bottom casing wall 2, said cylinder 10 being interiorly threaded to receive the externally threaded shank of a headed plug or cap 11.

The rod 4 is suitably biased in an upward direction, Figs. 1 and 2, and, for this purpose, there may be utilized a helical spring 12, the lower end of which seats upon the upper face of cap 11 and the upper end of which is disposed around the nut 9 and seats against the disk 8. In accordance with a feature of my invention, the upper end of spring 12 is of such diameter that it snugly fits within the circular flange 7*a* of disk 7 and applies pressure to said flange 7*a* to force the latter against the interior surface of pump cylinder 10. In this manner, during the pumping action, passage or leakage of air between the aforesaid flange 7*a* and the pump cylinder 10 is greatly impeded. This action of the upper end of spring 10 is most marked on the "down" stroke of the rod 4, this being desirable because air is pumped on such stroke of the rod 4.

The mechanism hereinbefore described forms an air pump utilizable for intermittently producing streams of air to effect the atomizing action. For the passage of such air, a pipe or conduit 13 is connected to the pump cylinder 10 at or immediately adjacent the lower end thereof, said conduit 13 extending through the casing C at one side of said pump cylinder 10, and then through the top casing wall 1 where it terminates in a nozzle 13*a* angularly related with respect to a nozzle 14*a* of a pipe or conduit 14 extending downwardly through said top casing wall 1 and terminating interiorly of casing C at one side of the pump cylinder 10.

A collar or ferrule 15 may be disposed on and secured to the upper surface of the top casing wall 1 and around the conduit 14 to more effectually retain said conduit 14 in the upright position illustrated. If desired, the top casing wall 1 may

comprise an upstanding abutment 1*a* through which the aforesaid conduit 13 extends. Likewise, if desired, the abutment 1*a* may comprise a passage 1*b* opening into the casing C at one side of the pump cylinder 10.

A member 16 disposed above the top casing wall 1 is supported for pivotal movement in any desired manner. As herein illustrated and for this purpose, said top casing wall 1 comprises or has a pair of spaced ears 17 upstanding therefrom and having a pin or member 18 extending therethrough for pivotally supporting the aforesaid member 16.

The member 16, preferably, is cap-shaped or shaped somewhat as an inverted receptacle. Disposed therewithin and suitably secured thereto is a pad or member 18 of suitable flexible, resilient material, as soft rubber, cork or the like, which is adapted to close the upper end of the conduit 14 and the upper end of the passage 1*b*. For thus securing the member 18 interiorly of the member 16, there may be utilized a member 19 of deformable sheet material which, as shown in Fig. 4, is soldered or otherwise suitably secured to the lower surface of the top wall of member 16 and which has its ends 19*a* folded or bent around a cut-away section of the member 18.

As illustrated in Fig. 1, the member 16 is in its closed position and from such position is adapted in any suitable manner to be biased toward and into open position as shown in Fig. 2. For thus biasing the member 16 in the manner stated, there may be utilized a spring 20 which is coiled around the pin 18 and has opposite ends thereof coacting, respectively, with the top casing wall 1 and with the interior surface of member 16.

The member 16 comprises a lip or flange 16*a* adapted to coact with a circular flange 5*a* formed on the aforesaid knob 5, whereby the rod 4 is retained in depressed position and the member 16 held in closed position.

Any suitable liquid medium, as a perfume or some medicinal agent may be suitably introduced to the casing C. For this purpose, the bottom wall 2 of said casing C may be provided with an interiorly threaded aperture adapted to receive a threaded plug 21, a gasket or the like 22, preferably, being disposed between the head of plug 21 and the adjacent surface of said bottom casing wall.

With the casing C containing a desired amount of a suitable liquid medium, the knob 5 may be depressed from the position shown in Fig. 1. In response to such depression of the knob 5, the lip 16*a* of member 16 clears the flange 5*a* of knob 5 and said member 16, under the influence of spring 20, moves to open position carrying the member 18 from the nozzle 14*a* and passage 1*b*. Thereupon, the knob 5 may be reciprocated by thumb or finger action to pump air through the conduit 13, a perforation 1*c* being provided in the top casing wall 1, if desired, to permit entrance of air interiorly of the pump cylinder 10 each time that the plunger 4 moves downwardly.

The air streams thus intermittently produced by pump action emerge from the nozzle 13*a* of conduit 13 at relatively high velocity and sweep past the nozzle 14*a* of conduit 14 to cause the liquid medium to rise from the casing C through the conduit 14 by an aspirating action, said liquid medium, as it leaves the nozzle 14*a*, being atomized and projected in a direction from right to left, Fig. 2, as a fine mist or spray.

During the atomizing action, the member 16 has swung to open position to remove the member 18 from the nozzle 14*a* and the passage 1*b*. Accordingly, air freely enters the interior of casing C through the passage 1*b*, during the atomizing action, to prevent the formation of a partial vacuum in said casing.

Upon completion of the atomizing action, the knob 5 may be returned to its fully depressed position and then the member 16 may be moved to closed position whereby the lip 16*a* of the latter is moved into the path of the flange 5*a* of knob 5. The latter may now be freed from restraint and allowed to rise, the flange 5*a* thereof coming into engagement with said lip 16*a* whereby the parts are retained in the position illustrated in Fig. 1.

An important feature of my invention resides in the construction of the air pump. As hereinbefore described, the plug 11 is threaded into the wall of the pump cylinder 10 opposite the cylinder wall through which the rod 4 reciprocates. Heretofore, it has been customary to gain access to the pump cylinder through a plug threaded into the top casing wall, the pump plunger being mounted for reciprocatory movement in said plug. With such an arrangement, the working parts of the piston and spring are inaccessible unless removed entirely from the pump cylinder. However, in accordance with my invention as herein disclosed, the plug 11 may be detached whereby access may be had to the various operating parts of the pump should it become necessary to repair the same. Moreover, various manufacturing operations, as a plating operation, is more expeditiously performed when the pump construction is as herein disclosed.

While the invention has been described with respect to a certain particular preferred example which gives satisfactory results, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. In an atomizer, a casing, means for atomizing liquid material contained in said casing, said atomizing means comprising a conduit opening above the casing top wall, a movable cap-shaped member above the top wall of said casing, a pad of resilient material in said cap-shaped member, said pad in one position of said cap-shaped member closing said conduit, and means for securing said pad in said cap-shaped member, said means comprising a band secured interiorly of said cap-shaped member and clamped around said pad.

2. In an atomizer, a casing, means for atomizing liquid material contained in said casing, said atomizing means comprising a conduit opening above the casing top wall, a movable cap-shaped member above the top wall of said casing, a pad of resilient material in said cap-shaped member, said pad in one position of said cap-shaped member closing said conduit, and means for securing said pad in said cap-shaped member, said means comprising a band of flexible sheet material secured interiorly of said cap-shaped member and having opposite ends thereof clamped around said pad.

3. In an atomizer, a casing adapted to form a liquid chamber, an abutment rising from the top casing wall, said abutment and wall having a passage extending therethrough for admitting air to the interior of said liquid chamber, a cover member movable into engagement with the top sur-

face of said abutment for closing said passage, and atomizing means comprising an air-passing conduit extending through said top casing wall and said abutment, said abutment serving as an anchor for said conduit.

4. In an atomizer, a casing adapted to form a chamber for liquid, a conduit extending through the top wall of said casing, means for atomizing and discharging the liquid from said conduit, an abutment rising from the top casing wall at one side of said conduit, said abutment and wall having a passage extending therethrough for admitting air to the interior of said chamber, and a cover member carried by said casing and movable into engagement with the top surface of said abutment for closing said passage, said cover member closing said conduit when thus in engagement with said abutment top surface.

LOUIS V. ARONSON.