June 14, 1932 J. D. RODGERS 1,862,636

ATOMIZER

Filed March 23, 1931

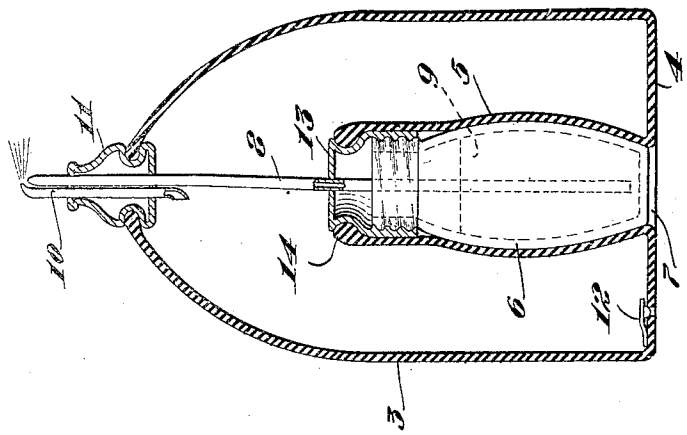


Fig. 2

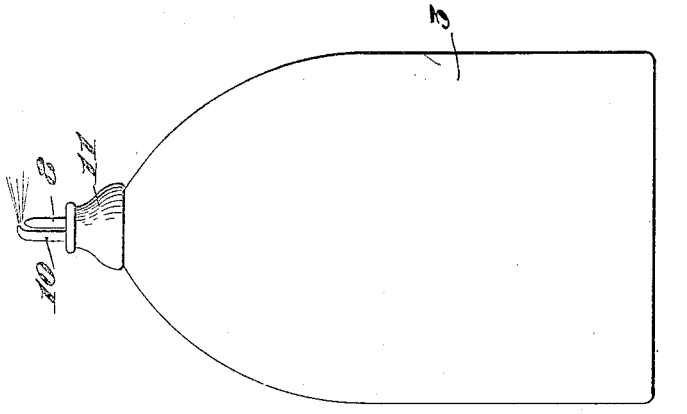


Fig. 1

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UNITED STATES PATENT OFFICE

JOHN D. RODGERS, OF GRIFFIN, GEORGIA

ATOMIZER

Application filed March 23, 1931. Serial No. 524,519.

This invention relates to improvements in atomizers, and has for its principal object the provision of a compact and handy article which is simple and economical to manufacture and in which a compressible bulb is provided with an interior sleeve or tubular portion receiving the liquid receptacle, whereby the receptacle is held in position and protected by the close fitting sleeve against soiling or corrosion.

Further objects reside in the advantageous features of the atomizer herein described in connection with the accompanying drawing illustrating a recommended embodiment of the invention, and the improved features will be pointed out in the appended claims. It will be understood, however, that the structural details of the article herein described may be varied to suit particular purposes without departing from the essence of my invention.

In the drawing,

Fig. 1 is a side elevation of a preferred form of the improved atomizer; and

Fig. 2 is a vertical section of Fig. 1, certain parts being shown in elevation.

In the particular embodiment chosen for the purpose of illustration, the atomizer comprises a compressible bulb 3 of rubber or other suitably resilient material, the base 4 of the bulb preferably being flat and having a tubular reentrant neck portion 5 integral with said base and extending axially within the bulb; a bottle 6 or other receptacle insertible at the bottom mouth or entrance 7 of the reentrant portion or sleeve and removably retained within said neck; and one or more tubes or conduits extending through the top of the bulb and adapted, upon compression of the bulb, to draw the liquid from the receptacle and eject it in the form of a fine spray, in accordance with common practice.

The conduits of the illustrated arrangement comprise an elongate tube 8, extending downwardly through the top of the bulb and into the liquid 9 and terminating near the bottom of the bottle 6; and a relatively short tube 10 entering the top of the bulb parallel to tube 8, and adapted to emit a blast of air when the bulb is squeezed. The outer ends of said tubes may be constricted to provide relatively minute outlets, and the air blast from tube 10 is directed across the outlet of tube 8 to draw the liquid upwardly through the latter tube and spray it in a transverse direction. These tubes may be frictionally supported in a rubber nipple 11 removably held within an opening at the top of the bulb 3, or may be otherwise retained in operative relation.

It will be apparent that the particular nature of the liquid-ejecting conduit, its complemental air exhaust or its supporting elements, are not essential to this invention; any common form or arrangement may be satisfactorily employed. Similarly, the bulb may have the usual one-way valve or vent for admitting air thereto during expansion of the contracted bulb, such for example as the normally closed base valve 12 which remains closed as the bulb is compressed but opens when it is allowed to expand.

The bottle 6 preferably has a detachable cap or cover 13 which prevents its liquid contents from spilling into the bulb cavity, and said cover is preferably formed with an annular groove or recess receiving a complemental shoulder or flange 14 at the inner end of the reentrant neck 5, thereby to hold the bottle against accidental displacement. The tube 8 passes through the cap or closure 13 which fits tightly around the tube to prevent evaporation or escape of its liquid contents. It will be observed that the receptacle 6 is preferably barrel shaped so that it is tightly clasped by the expanded wall of the neck 5, and that the sloping character of the bottle sides may be adequate to prevent casual displacement thereof, apart from the cooperating effect of the neck shoulder 14.

The operation of the atomizer will be understood from the foregoing description, and it is apparent that the liquid receptacle may readily be grasped by the fingers or by a suitable implement and drawn outwardly of the reentrant neck through its open mouth or entrance 7. After refilling the bottle it may again be inserted and will be gripped by the resilient wall of the neck. The bottle may be slipped off the lower end of the tube 8 dur-

ing its removal from the bulb, or the tube may be retained by the closure 13 and drawn away from the nipple 11; and, upon replacing the bottle, the conduit may be reinserted through the nipple or bottle closure, or both, without difficulty.

It will be observed that the receptacle is protected against corrosion or soiling from air, gases or moisture within the bulb by reason of the surrounding and tightly fitting wall of the tubular sleeve or neck portion which preferably constitutes an integral part of the bulb. If the receptacle is made of glass or other frangible material, it is also substantially protected from cracking or breaking by the circumposed, resilient bulb. The improved atomizer is compact and easy to handle, yet accommodates a receptacle of reasonable capacity and affords adequate air space in the chamber between the interior sleeve and outer wall of its bulb for emitting a forceful blast of air through its air tube when the bulb is compressed.

I claim:

1. An atomizer comprising a resilient bulb having an integral, resilient reentrant neck portion provided with an entrance at one end, a receptacle insertible through said entrance and removably gripped within said neck portion, a liquid-ejecting conduit extending from the receptacle through the opposite end of the neck portion and thence outwardly of the bulb, and means for ejecting liquid through said conduit.

2. An atomizer comprising a resilient bulb having an integral, resilient, reentrant neck portion projecting inwardly from its base and terminating remote from the top thereof, the outer end of the neck having an entrance opening through said base, a receptacle insertible through said entrance and resiliently embraced by said neck, a liquid-ejecting conduit extending from the receptacle through the inner end of the neck and thence through the top of the bulb, and means for ejecting liquid through said conduit.

3. An atomizer comprising a resilient bulb having an integral, reentrant neck portion projecting inwardly from its base and spaced from its sides, the outer end of the neck having an entrance opening through said base, a receptacle insertible through said entrance and resiliently embraced by said neck, a liquid-ejecting conduit extending from the receptacle through the inner end of the neck and thence outwardly at the top of the bulb, and means for ejecting liquid through said conduit.

4. An atomizer comprising a compressible bulb provided with an interior neck of resilient material and having a base opening leading into said neck, the neck being spaced from the sides and top of the bulb, a receptacle insertible through said opening and removably retained within said neck, a liquid-ejecting conduit extending from the receptacle through the top of the bulb, and means for ejecting liquid through said conduit.

5. An atomizer comprising a compressible bulb provided with an interior neck of resilient material and having a base opening leading into said neck, the neck being spaced from the sides and top of the bulb, a receptacle insertible through said opening and removably retained within said neck, the receptacle having a closure gripped by the inner end of said neck, to prevent accidental displacement of the receptacle, and a liquid-ejecting conduit extending from the receptacle through said closure and thence through the top of the bulb, and means for ejecting liquid through said conduit.

6. An atomizer comprising a compressible bulb provided with an interior neck of resilient material and having a base opening leading into said neck, the neck being spaced from the sides and top of the bulb, a receptacle insertible through said opening and removably retained within said neck, a detachable cap for the mouth of the bottle, said cap having an annular recess receiving a complemental shoulder adjacent the inner end of the neck thereby to hold the receptacle against accidental displacement, a liquid-ejecting conduit extending from the receptacle through said cap and thence through the top of the bulb, and an air conduit communicating with the interior of the bulb and with said liquid-ejecting conduit for atomizing the liquid in said receptacle.

7. An atomizer comprising a resilient bulb having an integral, reentrant neck portion projecting inwardly from its base and spaced from its side and top portions, the outer end of the neck having an entrance opening through said base, a receptacle insertible through said entrance and being removably gripped by the resilient wall of said neck with the bottom of the receptacle disposed approximately at said entrance, a liquid-ejecting conduit leading from the receptacle outwardly through the top portion of the bulb, and an air conduit communicating with the interior of the bulb and with said liquid-ejecting conduit for atomizing the liquid in said receptacle.

8. An atomizer comprising a resilient bulb having an integral, reentrant neck portion projecting inwardly from its base and spaced from its side and top portions, the outer end of the neck having an entrance opening through said base, a receptacle insertible through said entrance and being removably gripped by the resilient wall of said neck with the bottom of the receptacle disposed approximately at said entrance, the mouth of the receptacle having a detachable cap and said cap and the inner end of the neck being shaped to provide complemental interengag-

ing elements for holding the receptacle in place, a liquid-ejecting conduit leading from the receptacle through said cap and thence through the top portion of the bulb, and an air conduit entering the bulb through said top portion and having its outer end disposed in operative relation to the mouth of said liquid-ejecting conduit for atomizing the liquid in the receptacle.

Signed by me at Boston, Massachusetts this 14th day of March, 1931.

JOHN D. RODGERS.