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H. R. SEGAL

1,845,200

ATOMIZER

Filed March 16, 1929.

Fig. 1.

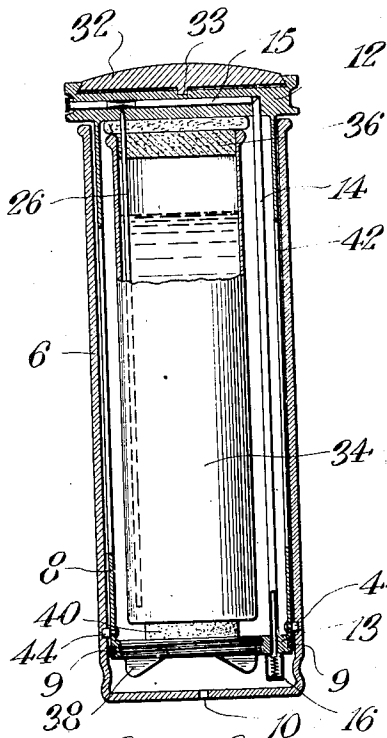


Fig. 2.

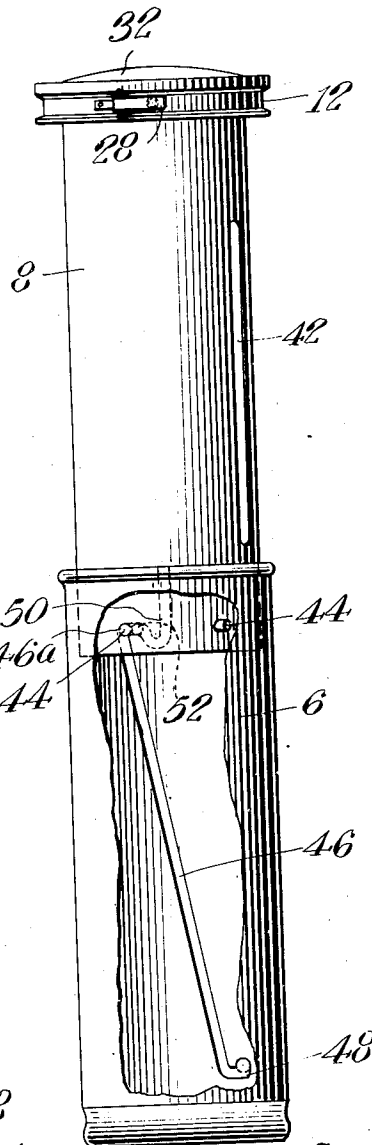


Fig. 3.

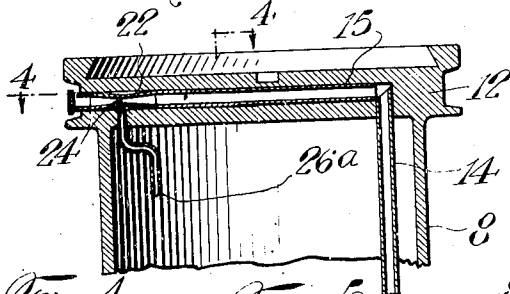


Fig. 4.

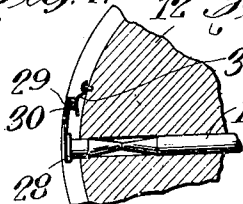
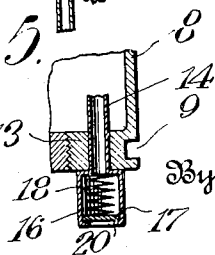


Fig. 5.



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ATOMIZER

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This invention relates to improvements in atomizers it being one of the objects of the invention to provide an improved pocket atomizer which will operate uniformly to spray a small quantity of perfume at each operation of the same.

Another object of the invention relates to the diffusing or spreading of the atomized fluid so that the same will be distributed over an extended area.

It is a further object to provide a refillable vial or other receptacle which may be readily introduced into or removed from the casing members and further to provide means for inspecting the contents of the receptacle at any time.

These and other objects will appear more fully from the following description when considered in connection with the drawings in which:

Fig. 1 is a longitudinal sectional view illustrating one embodiment of my invention.

Fig. 2 is an elevational view of the apparatus shown in Fig. 1 showing the parts moved to different relative positions.

Fig. 3 is an enlarged sectional view of a portion of the apparatus shown in Fig. 1 and illustrating a slight modification thereof.

Fig. 4 is a horizontal sectional view taken substantially on the line 4-4 of Fig. 3.

Fig. 5 is an enlarged fragmentary view of a portion of the apparatus shown in Fig. 1.

Referring to the details of the drawings, the atomizer illustrated therein is shown as formed with an outer metallic casing 6 and an inner metallic casing 8 of general cylindrical form, the inner member 8 fitting snugly within the member 6 for providing a piston and cylinder arrangement such that when the two parts are extended as shown in Fig. 2 and thereafter telescoped together to the position shown in Fig. 1, a predetermined air flow is produced, this air flow being utilized for dispensing and atomizing the perfume or other fluid employed. The outer member 6 may be formed with an opening 10 which the user of the article will cover with the thumb or finger in the normal use of the apparatus. Any suitable packing material may be introduced between the members 6 and 8 if de-

sired in order to form a more perfectly acting piston. Such packing is indicated at 9 in Figs. 1 and 5.

The inner member 8 is provided with a head portion 12 which receives and supports the tubing for conducting the air utilized for spraying the atomized liquid. This tubing includes a vertical section 14 and transverse section 15. The section 14 is supported in the base 13 of the inner member 8 and at its upper end in the head 12. The lower end of the section 14 of the tubing may be formed with a one-way valve 16 shown particularly in Fig. 5 wherein the closure member 17 is normally maintained by the relatively weak spring 18 in position to close the aperture 20. By this means any downward flow of air in the tubing 14 is prevented but without materially influencing the flow of air upwardly through the tube 14.

The section 15 of the tubing forms a continuation of the section 14 and includes a reduced portion or venturi 22 adjacent the outlet opening from the tube as shown. A liquid conducting tube 26 communicates with the venturi 22 adjacent its most restricted portion as shown at 24 for the purpose of entraining and atomizing a limited quantity of liquid upon the passage of air outwardly through the air passageway 15 and venturi 22.

The outlet opening from the tube 15 is preferably closed by means of a manual closure member 28 shown as pivotally mounted at 29 and formed with a squared portion 30, engageable with a spring 31 for holding the closure member in any position to which it may be moved. It will be understood that other types of closure members for the outlet opening may be employed.

As will appear more fully below, it is considered desirable to rotate the inner member 8 with respect to the outer member 6 during the compression or telescoping of these two members with the resultant outflow of atomized perfume and air. The compression member 32 formed on the upper end of the inner member 6 is accordingly shown as loosely supported on the head 12 and supported on the central pivot stud 33 for the purpose of reducing the friction between element 32 and

the head 12 when pressure is applied to the opposite ends of the outer and inner members 6 and 8. The same effect can of course be obtained by knurling or otherwise forming a roughened surface on the lower surface of the outer member 6 and providing a member at 32 with a high polish or otherwise formed so as to offer relatively slight obstruction to the turning of the member 32 under the thumb or finger of the user.

The liquid container is formed as a separate vial 34 engageable with a closure member 36 carried by the head 12. The vial 34, when passed over the liquid tube 26 and closure 36, is held in position by means of a removable plug 38 and resilient compression member 40 positioned between the plug and the vial 34. In order that the contents of the vial 34 may be noted at any time without removing the same from the inner casing 8 this casing is provided with opposed slotted openings 42 so that by looking through these openings the contents of the vial can be seen. Placing the openings in opposed relation facilitates an inspection of the contents of the vial particularly when the atomizer is held adjacent a light. The use of the removable vial 34 permits the sale of the entire article and any desired number of sealed vials 34 containing, for example, differently scented perfumes and also permits of the sale of the sealed vials ready to have the sealing members thereof removed, after which they may be introduced into the atomizer.

In order to distribute the perfume over a certain area the inner member 8 is constructed to be rotated substantially 90° during telescoping movement of the inner member 8 into the outer member 6. This is accomplished by means of opposed pins 44 formed on the member 8 and engageable within the opposed helical grooves 46 formed on the inner surface of the member 6. As the member 8 is moved inwardly into the member 6 the former is thus caused to rotate and distribute the spray through the arc depending on the inclination of the grooves 46.

The inner ends of the grooves 46 may be formed with bayonet slots 48 into which the pins 44 may be moved to lock the members 6 and 8 against separation. The complete separation of the members 8 and 6 may be accommodated by means of the surface grooves 50 which form continuations of the grooves 46. The grooves 50 extend circularly from the point 46a, occupied by the pin 44 when the parts 8 and 6 are in their outermost relative positions, for a certain extent after which the grooves extend inwardly and then outwardly to the end of the member 6. The parts 6 and 8 may thus be turned to move the pins 44 through the circular and inwardly extending portions of the grooves 50 after which the parts 6 and 8 may be readily separated by merely drawing the same

apart. In order to prevent the complete separation of the members 6 and 8 in the normal use of the apparatus a machine screw 52 or other stop member may be secured in the outer member 6 to be extended into the circular portion of the groove 50 in position to obstruct movement of the pin 44 outwardly through the slot 50. When desired to separate the inner and outer members the screw 52 may thus be withdrawn from its inner obstructing position so as to permit movement of the pin 44 through the slot 50.

In Fig. 3 the shape of the liquid conducting tube is shown as slightly different from that illustrated in Fig. 1. In Fig. 3 the bent tube 26a permits the venturi 22 to be placed more nearly adjacent to the outlet opening 24 in order to reduce the length of the tube through which the atomized spray must pass.

It is preferred to use the above apparatus by manually separating the two parts 6 and 8 and thereafter compressing the same to produce the desirable air flow through the tubing 14, 15, with the resultant spray of atomized perfume or other fluid. It will be understood that if desired a compression spring may be introduced into the lower portion of the outer member 6 to engage against the lower portion of the member 8 for causing these members to be extended whenever the locked bayonet joint 48 is released to permit such extension.

Having now described my invention, I claim:

1. An atomizer provided with cooperating inner and outer members slidably arranged one within the other and forming respectively a piston and cylinder for producing an air flow, one of said members being rotatable with respect to the other, a liquid holding chamber and means for utilizing said air flow for discharging the contents of said chamber, means associated with said members for producing rotative movement of said rotatable member with respect to the other during relative sliding movement of the same and discharge means formed on said rotatable member and communicating with said chamber.

2. An atomizer provided with cooperating inner and outer members slidably arranged one within the other and forming respectively a piston and cylinder for producing an air flow, a liquid holding chamber within said inner member and means utilizing said air flow for discharging the contents of said chamber, means associated with said members for producing rotative movement of said inner member and chamber relatively to said outer member during relative sliding movement of said members and discharge means formed on said rotatable member and communicating with said chamber.

3. In an atomizer, inner and outer members slidably arranged with respect to one an-

other and forming respectively a piston and cooperating cylinder for producing an air flow, a separate transparent liquid container supported by said inner member, said inner member being formed with an opening exposing said liquid container.

4. In an atomizer, inner and outer members slidably arranged with respect to one another and forming respectively a piston and cooperating cylinder for producing an air flow, a separate transparent liquid container supported by said inner member, said inner member being formed with opposed openings on opposite sides of said receptacle for exposing the later to view.

5. In an atomizer, inner and outer members slidably arranged with respect to one another and forming respectively a piston and cooperating cylinder for producing an air flow, a separate glass vial for holding a liquid, opposed openings on said inner member to expose said vial to view, and means for removably supporting said vial within said inner chamber.

6. In an atomizer, inner and outer members slidably arranged with respect to one another and forming respectively a piston and cooperating cylinder for producing an air flow, a coacting pin and slot mechanism formed on said inner and outer members for producing predetermined relative rotation of said members during relative sliding movement thereof, discharge means formed on said inner member and means for conveying said air flow to said discharge means for discharge therefrom.

7. In an atomizer, inner and outer members slidably arranged with respect to one another and forming respectively a piston and cooperating cylinder for producing an air flow, a coacting pin and slot mechanism formed on said inner and outer members for producing predetermined relative rotation of one of said members relative to the other during relative sliding movement thereof, means for conveying said air flow to said discharge means for discharge therefrom, discharge means on said rotatable member and displaceable means coacting with said pin for normally preventing entire separation of said members.

8. An atomizer provided with cooperating inner and outer members slidably arranged one within the other and forming respectively a piston and cylinder for producing an air flow, a liquid holding chamber movable with one of said members, discharge means for said chamber movable with said member and chamber and means utilizing said air flow for discharging the contents of said chamber through said discharge means, means for producing rotative movement of said chamber carrying member with respect to the other during relative sliding movement of the same,

said means including opposed coacting pins and slots carried by said members.

9. An atomizer provided with cooperating inner and outer members slidably arranged one within the other and forming respectively a piston and cylinder for producing an air flow, a liquid holding chamber movable with one of said members, discharge means for said chamber movable with said member and means utilizing said air flow for discharging the contents of said chamber through said discharge means, means for producing rotative movement of said chamber carrying member with respect to the other during relative sliding movement of the same, and an engagement member pivotally mounted on said inner member and against which pressure may be applied to slide one of said members relative to the other.

Signed at New York in the county of New York and State of New York this 14th day of March, A. D. 1929.

HYMAN R. SEGAL.