Sept. 12, 1933. N. WEIDNER 1,926,570

ATOMIZER

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Fig. 1.

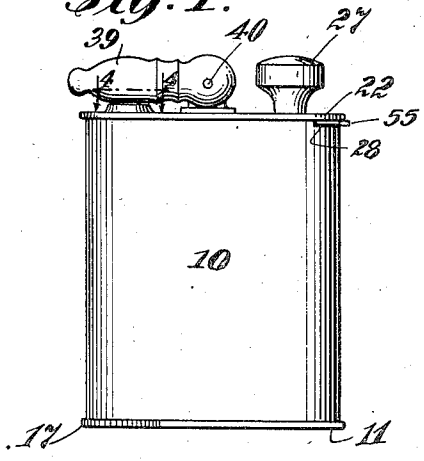



Fig. 2.

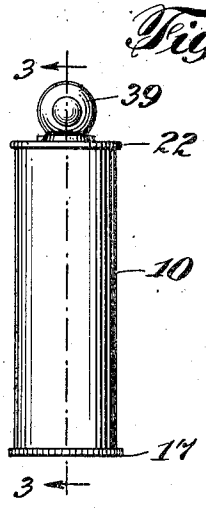



Fig. 3.

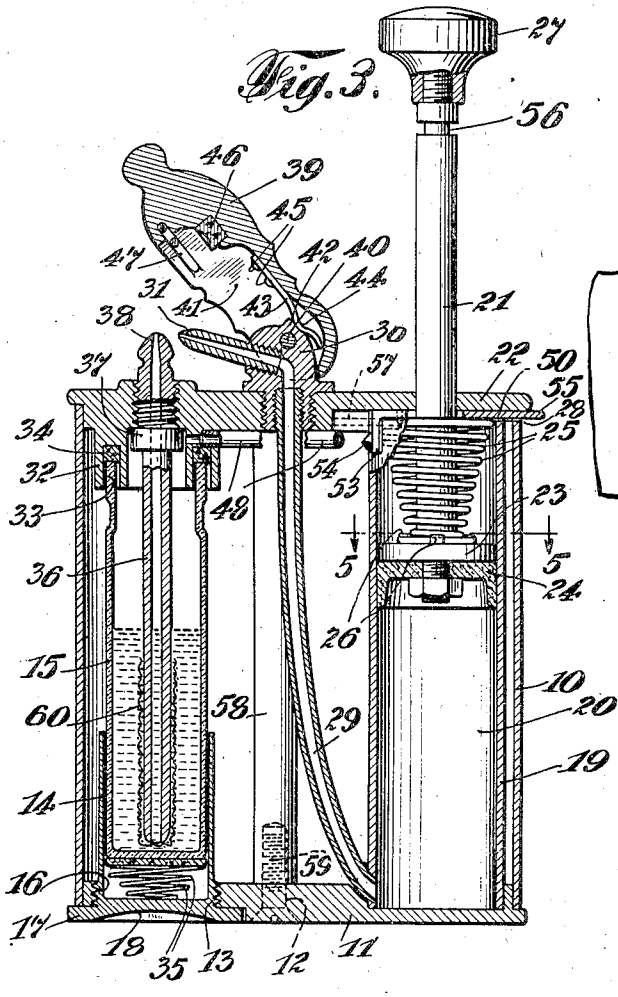



Fig. 4.

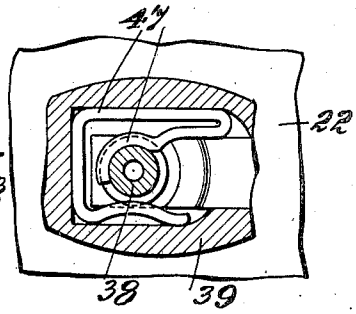
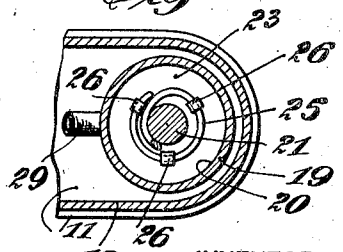



Fig. 5.




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Fig. 6.

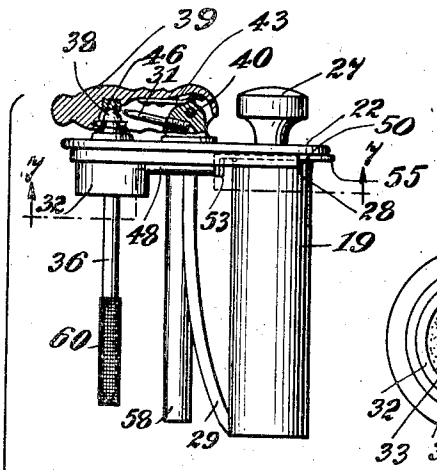
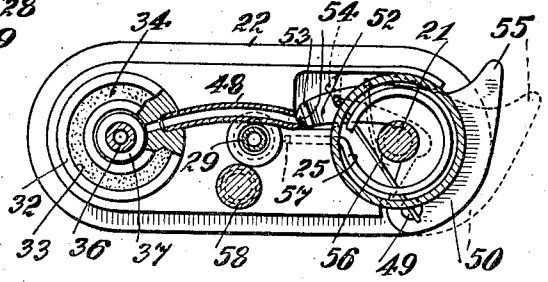
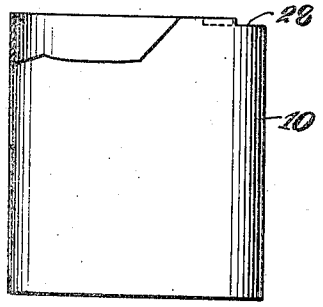



Fig. 7.



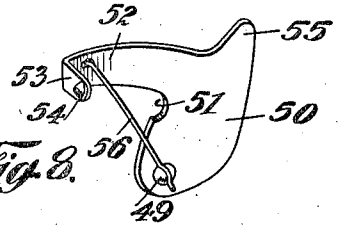
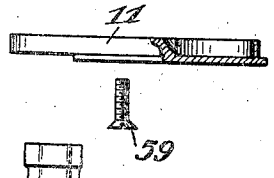




Fig. 8.



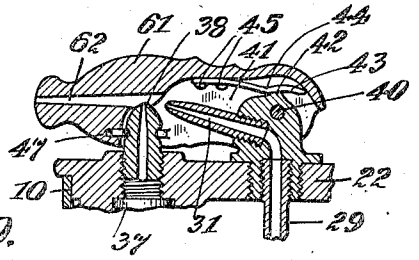
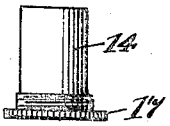
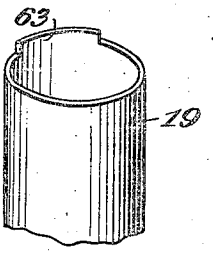




Fig. 9.

Fig. 10.




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Patented Sept. 12, 1933 1,926,570

# UNITED STATES PATENT OFFICE

1,926,570

## ATOMIZER

Nathan Weidner, New York, N. Y.

Application February 28, 1930. Serial No. 432,172

3 Claims. (Cl. 299—88)

My invention relates to atomizers and refers particularly to atomizers of such compactness and construction as will allow of their being conveniently carried upon the person or in pocketbooks or hand bags.

Atomizers of the character described should be absolutely free from leakage, easily and effectively operated, free from stoppage of the several tubes essential in such constructions, noncorrosive, readily refilled and positive in action.

All of the above, and other valuable, attributes are possessed by the device of my application, as will be evident upon a consideration of my specification and its accompanying drawings.

In the accompanying drawings illustrating modified forms of the device of my invention, similar parts are designated by similar numerals.

Figure 1 is a front view of one form of my device.

Figure 2 is an end view of Figure 1.

Figure 3 is an enlarged section through the line 3—3 of Figure 2, in operating position.

Figure 4 is a section through the line 4—4 of Figure 1.

Figure 5 is a section through the line 5—5 of Figure 3.

Figure 6 shows the several elements of my device.

Figure 7 is a section through the line 7—7 of Figure 6.

Figure 8 is a perspective view of my operating device.

Figure 9 is a perspective view of the upper portion of the chamber wall.

Figure 10 is a vertical section of a modified form of a cover of my device.

The particular form of the device of my invention shown in the accompanying drawings comprises a casing 10 having a bottom 11 and open at the top. The bottom 11 has an opening 12 and a threaded face opening 13. A receptacle holder 14, carrying the removable receptacle 15, has a lower threaded portion 16 capable of meshment with the threads of the opening 13 and an extended annular flange 17 having an elongated recess 18 therein. An annular wall 19 forms a cylindrical piston chamber 20 which is closed at the bottom and open at the top. To maintain the wall 19 in upright position, it has an extended portion 63 fitting into a recess in the cover 22.

Within the chamber 20 and longitudinally movable therein is a piston rod 21, extending through an opening in the casing cover 22 and carrying a piston head 23 to which is attached a leather washer 24. A conical spiral spring 25 is positioned above the piston head 23 and attached thereto by being passed through the members 26, 26 carried by the piston 23. The means of attachment of the other end of the spring 25 will be described later. The rod 21 carries a head 27. A portion 28 of the upper edge of casing 10 surrounding the chamber 20 is cut away for purposes described later. A tube 29 opens into the lower portion of the chamber 20 and extends upwardly of the device through an opening in the cover 22 and thence upwardly and angularly outwardly of the member 30, which is attached to the cover 22, terminating in an end 31 in which the opening of the tube is restricted.

The cover 22 carries the downwardly extended annular flange 32 having an annular recess 33 therein, into which the upper portion of the receptacle 15 fits, forming a hermetical seal with the yieldable material 34 when the cover is in closed position. A conical spiral spring 35 forces the receptacle wall within the recess 33 and against the sealing material 34. A tube 36 carrying a stop collar 37 is threaded within an opening of the cover 22 and terminates in the tip 38 in which the opening is restricted. A wire strainer 60 covers the lower opening of the tube 36, a lid, a closure member, 39 is pivoted at 40 to the member 36 and has a recess, or chamber 41. The upper face of the member 36 has an extended portion 42 and a flat spring 43 having the extended portion 44 is attached to the inner face of the closure 39 by means of rivets 45, 45. A yieldable material 46 is carried within a recess of the closure 39 and is so positioned that it abuts upon, and closes, the opening in the tip, or nozzle, 38 when the closure is in closed position thus completely closing the orifice of the tube 36. The closure 39 carries also a bended wire member 47 which fits around the nozzle 38 when the closure is closed, thus assisting in retaining the closure in closed position. It will be noted that the spring 43 will tend to retain the closure 39 in open position, as shown in Figure 3 and will tend to retain the closure in closed position as shown in Figure 6.

A tube 48 passes through the member 32, thus admitting air into the receptacle 15.

Pivotally attached at 49, to the under face of the cover 22 is an operating member 50, having the recess 51, the arm 52 which is bent to the arm 53 carrying a closure plug 54, and an extended arm 55. A resilient member, or spring, 56 is carried by the pivot 49 and the arm 52 of the member 50, the resiliency of which tends to retain the member 50 in the position shown in full lines in Figure 7. When the member 50 is in its normal position, the closure plug 54 abuts upon and closes the tube 48, and the edge of the recess 51 enters the annular recess 56 of the piston rod 21, thus maintaining it within the chamber 20.

The upper end of the spring 25 is inserted within a hole 57 in the top plate 22.

A rod 58 carried by the top 22 has a threaded

hole in its lower position, into which the screw 59 is capable of being threaded.

When the device is in closed position, the material 46 closes the nozzle 38 and the closure plug 54 closes the tube 48, thus preventing the admission of air into the receptacle, and liquid within the receptacle 15 can not escape. When the operating member 50 is moved into the position shown in dotted lines in Figure 7, the rod 21 is released and is moved outwardly of the casing and the tube 48 is opened to allow the admission of air into the receptacle 15. The lid 39 is now raised and the piston moved up and down within the cylinder 20. The downward movement of the piston forces air through the tube 29 and the end 31 causing a liquid within the receptacle to pass through the wire strainer 60 and the tube 36 and atomizing it through the nozzle 38. During the movement of the piston, the air tube 48 will remain open, as the edge of the recess 51 of the member 50 will abut upon the rod 21, thus maintaining the plug 54 from contact with the tube. During the movement of the piston air will be admitted to the upper portion of the chamber 20 and the device through the opening between the top 22 and the cut-out portion 28 of the casing 10.

When it is desired to dissemble the device, the screw 59 is removed and the top 22 with its attached parts are withdrawn from the casing.

When it is desired to remove the receptacle the member 14—17 is removed.

In the modified form of my device shown in Figure 10, the cover 61 is similar to the cover 39 previously described, except that the material 46 is removed and a hole 62 is made in the cover, thus allowing the device to be operated without opening the cover.

Among the valuable properties of my device are the following:—

I employ a removable glass receptacle, thus overcoming the corrosion incident to metal containers and allowing the use of special design containers; I employ a strainer over the liquid pipe thus preventing the stoppage of the fine exit pipe; I employ a spring above the piston thus overcoming the difficulty incident to springs below the piston interfering with the passage of air through the exit; when my device is in closed position, the admission of air into the receptacle is prevented thus producing an absolutely leakless device; my piston is locked within the device when not in use; a single movement locks the piston and closes the air tube to the receptacle; a single movement unlocks the piston and opens the air tube to the receptacle; the receptacle can be readily removed and refilled or replaced without disturbing any of the other elements of the device; the device can be disassembled by the removal of a single screw; the cover can be retained in either open or closed position and numerous other attributes which render it of the greatest value.

I do not limit myself to the particular size, shape, number, material or arrangement of parts as shown and described as these are given simply as a means for clearly describing the device of my invention.

What I claim is:—

1. In an atomizer in combination, a casing, a removable liquid container within said casing, means for maintaining said container in upright position, resilient means pressing said liquid container upwardly, means for sealing the upper open end of said liquid container, a liquid delivery tube extending from the lower inner portion of said liquid container outwardly of the device, an atomizer end to said liquid delivery tube, an air pressure chamber within said casing, an air tube extending from said air pressure chamber outwardly of the device so positioned as to cause an atomization of liquid within said liquid receptacle when air is passed through said air tube, an air admission tube admitting air to said liquid container, a piston within said air pressure chamber, a rod carried by said piston and extending outwardly to the casing, a recess in the upper portion of said rod, a spring positioned above said piston normally retaining said rod in its extended position, means capable of fitment within said rod recess retaining said piston in its lowered position and closing said air admission tube and means for admitting air to said pressure chamber.

2. In an atomizer in combination, a casing, a removable liquid container within said casing, removable means for maintaining said container in upright position, resilient means pressing said container upwardly, a cover for said casing, means carried by said cover sealing the upper open end of said container when the cover is closed, a liquid delivery tube extending from the lower inner portion of said liquid container outwardly of said cover, an atomizer end to said liquid delivery tube, an annular wall carried by said cover forming an air pressure chamber within the device, an air tube extending from said air pressure chamber outwardly through said cover so positioned as to cause an atomization of liquid within said liquid container when air is passed through said air tube, an air admission tube carried by said cover admitting air to said liquid container, a piston within said air chamber, a rod carried by said piston and extending through said cover, a spring positioned above said piston normally retaining said piston in the upper portion of said air chamber, means for admitting air to said pressure chamber, and means for retaining said piston in its lower position and closing said air admission tube.

3. In an atomizer, in combination, a casing, a removable liquid container within said casing, removable means for maintaining said container in upright position, resilient means pressing said container upwardly, a cover for said casing, means carried by said cover sealing the upper open end of said container when the cover is closed, a liquid delivery tube extending from the lower inner portion of said liquid container outwardly of said cover, an atomizer end to said liquid delivery tube, an annular wall carried by said cover forming an air pressure chamber within the device, an air tube extending from said air pressure chamber outwardly through said cover so positioned as to cause an atomization of liquid within said liquid container when air is passed through said air tube, an air admission tube carried by said cover admitting air to said liquid container, a piston within said air chamber, a rod carried by said piston and extending through said cover, a recess in the upper portion of said rod, a spring positioned above said piston normally retaining said rod in its extended position, means capable of fitment within said rod recess retaining said piston in its lowered position and closing said air admission tube and means for admitting air to said pressure chamber.

NATHAN WEIDNER.