

March 24, 1942.

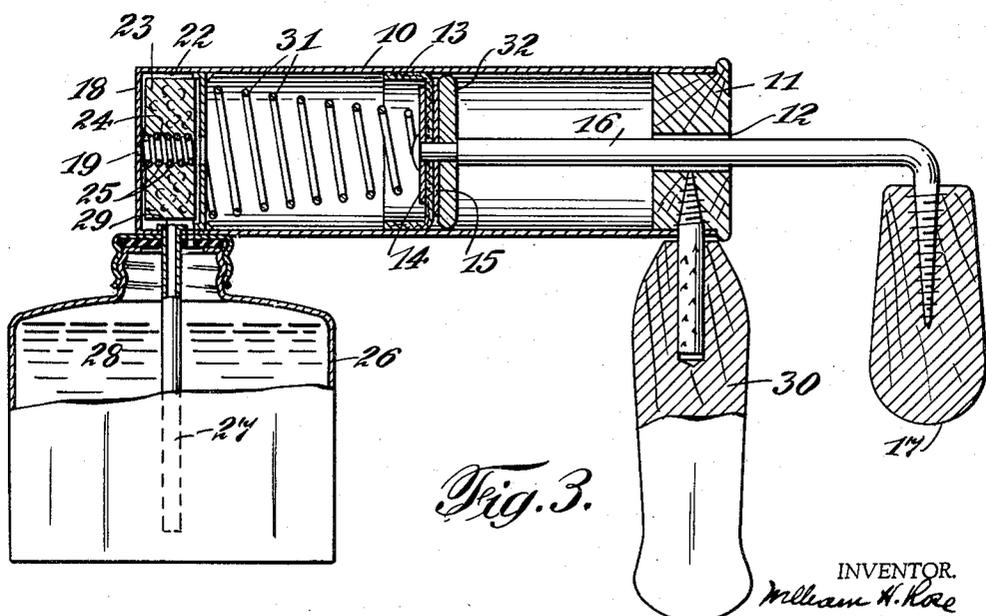
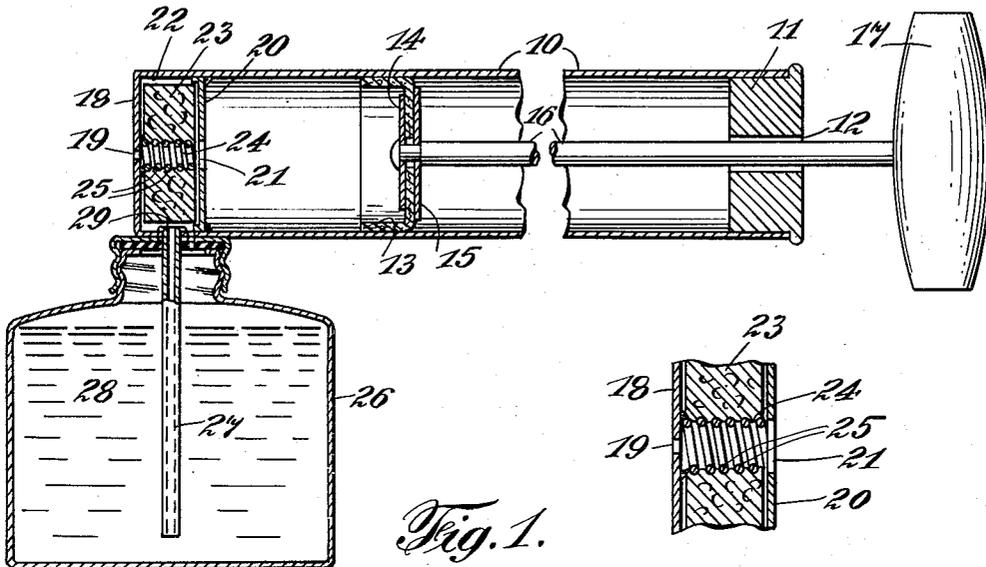
W. H. ROSE

2,277,530

SPRAYING DEVICE

Filed Feb. 28, 1941

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

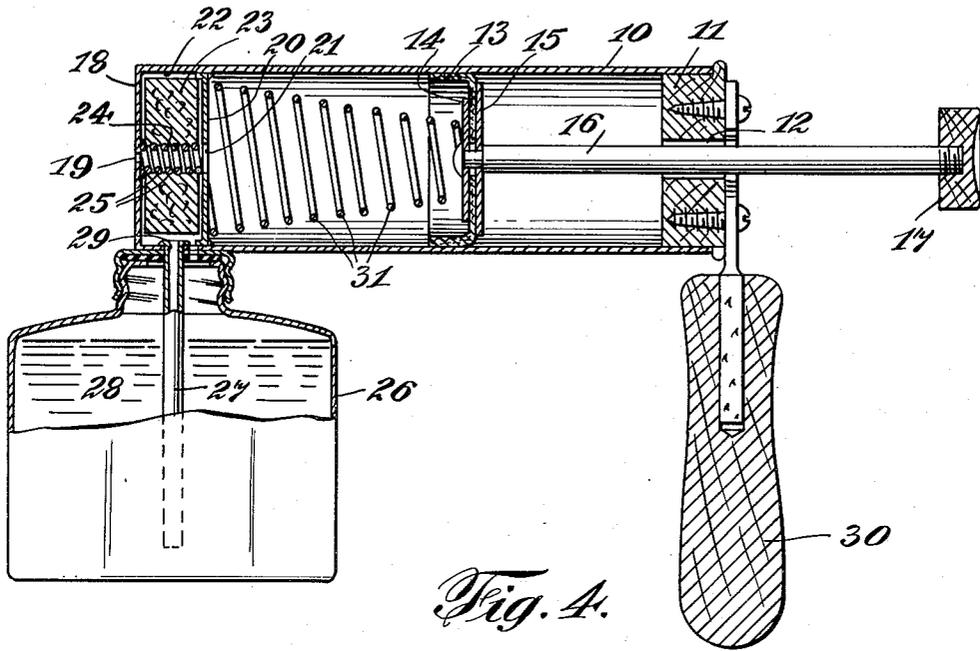


Fig. 4.

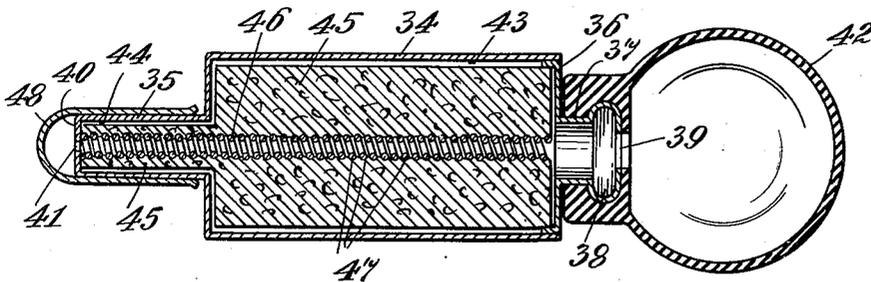


Fig. 5.



Fig. 6.

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UNITED STATES PATENT OFFICE

2,277,530

SPRAYING DEVICE

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Application February 28, 1941, Serial No. 381,107

4 Claims. (Cl. 299—38)

My invention relates to spraying devices and refers particularly to liquid spraying devices.

One of the objects of my invention is a spraying device of convenient operation and positive action.

Another object of my invention is a spraying device having a minimum of moving parts.

Another object of my invention is a spraying device in which a supply of liquid is maintained within the device itself.

Another object of my invention is a spraying device in which there is a coil device for feeding the contained liquid to the exit opening.

Another object of my invention is a spraying device in which the fineness or coarseness of the discharged spray may be governed.

Another object of my invention is a spraying device in which the passage in the absorbent material through which air is forced to produce a spray can be supported and maintained from closing, thus insuring a free and uniform passage of air irrespective of the number of times the device has been used.

Another object of my invention is a spraying device in which the amount of liquid fed to the air stream for the production of a spray may, not only be regulated, but may also be maintained during continued use.

The above-mentioned, and other, valuable features of my device will be evident upon a consideration of my specification and its accompanying drawings.

The forced passage of air through a mass of saturated absorbent material in order to produce a liquid spray in spraying devices has the disadvantage that after considerable use of the device, the air pressure packs the absorbent material into such compactness as to seriously interfere with the passage of air therethrough, thus reducing, and at times preventing, the spraying effect.

I have overcome this serious disadvantage, by introducing a coil of material, such as of metal, through the absorbent material and passing the forced air through this coil. A liquid may readily pass into the coil interstices by capillary attraction, or through the action of the plunger, while at the same time it prevents all possibility of the absorbent material packing or of preventing free passage of the forced air.

Further, it is evident that the amount of liquid deposited in the interstices of the coil is dependent upon the diameter of the material of which it is formed and upon the spaces between the coils, and that, therefore, the amount of liquid sprayed

at each operation can be governed and controlled, which is not possible when the air is forced through a mass of absorbent material, the physical condition of which changes with use.

The construction of the devices of my invention presents many valuable features over the former described devices adapted for spraying liquids.

In the accompanying drawings illustrating several modifications of my device, similar parts are designated by similar numerals.

In the accompanying drawings, Figure 1 is a vertical cross-section of one form of a device of my invention.

Figure 2 is an enlarged cross-section of the absorbent material and coil elements of the device of Figure 1.

Figure 3 is a vertical cross-section of a modified form of a device of my invention.

Figure 4 is a vertical cross-section of a modified form of a device of my invention.

Figure 5 is a vertical cross-section of a modified form of a device of my invention.

Figure 6 is a top view of a modified end element of Figure 5.

The particular form of the device of my invention illustrated in Figures 1 and 2 comprises a cylindrical member 10, one end of which is closed by the closure member 11, having a centrally positioned opening 12 therein.

Within the cylindrical member 10 is a plunger, or piston, comprising the member 13 of rubber, leather, fabric or other suitable material, having the two metallic discs 14 and 15 upon opposite sides thereof, and a rod 16 passing through centrally positioned openings in the members 13, 14 and 15 and extending through the opening 12 of the closure member 11, the exterior end of the rod 16 carrying the handle 17.

The other end, or exit end, portion of the cylindrical member 10 is covered by the fixedly attached closure member 18 having an opening 19 therein.

Within the cylindrical member 10 and spaced from the end member 18 is a fixedly attached partition 20 having an opening 21 therein, thus forming a chamber 22.

Within the chamber 22 is a disc 23 of absorbent material of felt, asbestos, or other suitable material and having an opening 24 therein.

The opening 19 of the member 18, the opening 21 of the member 20 and the opening 24 of the member 23 are in alignment with each other and I prefer that the opening 19 of the member

18 be of smaller diameter than the opening 24 of the member 23.

Within the opening 24 of the member 23 is a coiled member 25, which may be of metal or other suitable material, and the diameter of the material forming the coil may be of any desired diameter and the coils may be separated from each other by any suitable distance. The coil 25 is fixedly attached to the end member 18 by solder, or otherwise.

Positioned below the chamber 22 and fixedly attached to the cylindrical member 10 is a liquid-receptacle 26 having a tube 27 extending from the lower portion of the receptacle 26 into the chamber 22 through an opening 29 in the lower portion of the cylindrical member 10.

The operation of the device is as follows:

In order to first charge the absorbent disc 23 with the liquid 28 in the receptacle 26, the piston is moved inwardly and outwardly a few times, and during each such inward and outward movement a portion of the liquid 28 is drawn upwardly through the tube 27 into contact with the absorbent disc 23.

When the disc 23 has been charged with the liquid 28 for the first time, the operation of the device is as follows: During the first charging of the disc 23, the liquid 28, by capillary attraction or otherwise, has entered the interstices between the coil 25. An inward movement of the plunger member 13 will force this liquid outwardly through the opening 19 of the end member 18 in the form of a fine spray and will at the same time draw a supply of liquid 28 into the chamber 22 and the disc 23, through the tube 27 and the outward movement will draw some of the liquid 28 from the disc 23 into the coil interstices and at the same time draw an additional quantity of the liquid 28 through the tube 27 into the chamber 22 and the absorbent disc 23.

It will thus be seen that the absorbent disc 23 will be constantly supplied with the liquid 28, and that the interstices of the coil 25 will constantly have a supply of liquid 28 to be sprayed outwardly through the opening 19 of the member 18.

The modified form of my device shown in Figure 3 is similar to that shown in Figures 1 and 2, except for convenience with one hand, the handle 17 is directed downwardly and a second handle 30 is positioned to allow of both handles 17 and 30 to be grasped by one hand, the closing of which will force the plunger inwardly and the opening of the hand will allow the spring 31 to move the plunger outwardly. A second supporting guide member 32 is introduced as an additional guide with the member 11.

The modified form of my device illustrated in Figure 4 is similar to that shown in Figure 3, and is a one-hand operated device, in which the handle 30 is grasped by the hand and the thumbs of the hand employed to move the plunger inwardly by pressure upon the handle 17.

The modified form of my device shown in Figure 5 comprises a cylindrical member having the enlarged portion 34, the reduced forward end portion 35. The 36 rearward end portion of the cylindrical member 34 carries the member 36, extending outwardly 37, and then into the bulbous member 38, having an opening 39 therein. The end portion 36 is turned downwardly forming the cap 40 having an opening 41 therein. A resilient hollow rubber ball 42 is removably attached to the 36-37-38 as shown.

Positioned within the chambers 43 and 44, 75

formed respectively by the cylindrical elements 34 and 35 is a cylindrical absorbent member 45, having a longitudinal opening 46 therethrough. Positioned within the opening 46 is a coil 47 similar to those previously described in the device of Figures 1 and 2. A removable closure cap 48 is carried by the extension portion 35.

The operation of this form of my device is as follows:

10 The rubber ball 42 is removed and sufficient liquid is introduced through the opening 39 to saturate the absorbent material 45 and the rubber ball 42 is replaced and the cap 48 is removed. A collapsible pressure will force air through the interstices of the coil 47 and outwardly of the opening 41 in the end 40 in the form of a fine spray. The release of the pressure upon the ball 42, will allow air to enter the device drawing some of the liquid in the absorbent material 45 into the coil interstices, in addition to the natural capillary attraction of the strands. It is evident that this spraying operation may be continued as long as there is sufficient liquid within the absorbent material.

25 Figure 6 represents a multi-opening element which can be substituted for the single opening element 38 of Figure 5.

It will thus be seen that my invention presents spraying devices in which the amount of liquid subjected to the spraying operation may be governed and controlled and that this quantity of liquid can be maintained during continued use.

I do not limit myself to the particular material, sizes, shapes, or positions of parts specifically shown and described as these are given solely for the purpose of clearly describing my invention.

What I claim is:

1. In a spraying device, a liquid-containing compartment having an exit opening and being adapted to be connected to a source of air pressure, a liquid absorbent material within said liquid-containing compartment, a coiled member within said liquid absorbent material directed toward said exit opening, and means whereby air from said air source is adapted to force liquid drawn from the space between the coils of said coiled member through said coiled member into said exit opening causing said liquid to be emitted in the form of a spray.

2. In a spraying device, a liquid-containing compartment having an exit opening and being adapted to be connected to a source of air pressure, a liquid supply container connected to said liquid-containing compartment, means adapted to draw liquid from said liquid supply container into said liquid-containing compartment, a liquid absorbent material within said liquid-containing compartment, a coiled member within said liquid absorbent material directed to said exit opening, and means whereby air from said air source is adapted to force air through said coiled member causing said liquid to be emitted in the form of a spray.

3. In a spraying device, a liquid-containing compartment having an exit opening and being connected to a hollow rubber ball, a liquid absorbent material within said liquid-containing compartment, a coiled member within said liquid absorbent material directed toward said exit opening, and means whereby air from said rubber ball is adapted to force liquid drawn from the space between the coils of said coiled member through said coiled member into said exit open-

ing causing said liquid to be emitted in the form of a spray.

4. In a spraying device, a liquid-containing compartment having an exit opening and being connected to a hollow rubber ball, a liquid supply container connected to said liquid-containing compartment, means adapted to draw liquid from said liquid supply container into said liquid-

containing compartment, a liquid absorbent material within said liquid-containing compartment, a coiled member within said liquid absorbent material directed to said exit opening and a rubber ball adapted to force air through said coiled member causing said liquid to be emitted in the form of a spray.

WILLIAM H. ROSE.