June 14, 1932. I. H. GREENE 1,863,158

SPRAY STOPPER

Filed May 28, 1931

Fig. 1.

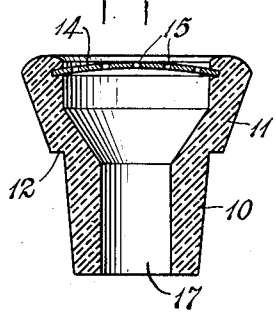


Fig. 2.

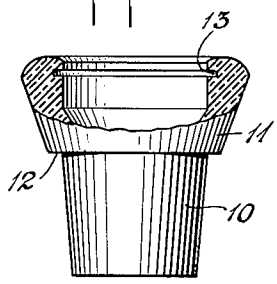


Fig. 3.

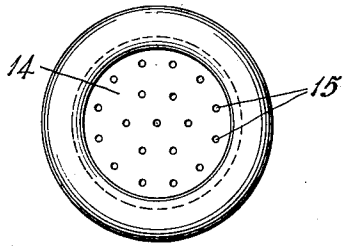


Fig. 4.

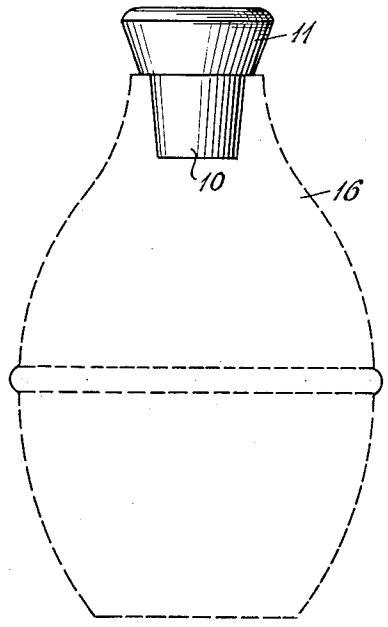
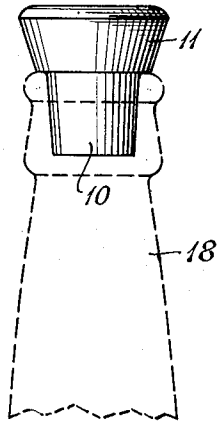


Fig. 5.



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UNITED STATES PATENT OFFICE

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SPRAY STOPPER

Application filed May 28, 1931. Serial No. 540,645.

My invention relates to stoppers and more particularly to the type known generally as a spray stopper. Such a spray stopper is adapted to be inserted into the neck of a bottle, bulb, or the like, which has been charged with a liquid or powder to be sprayed from the container through such stopper. The liquid or powder to be sprayed may be an insecticide, a preservative solution or plain water. Thus it is the practice, for instance, in a household, to spray an insecticide either in the form of powder or a lqiuid upon plants, shrubbery or flowers. The insecticide may also be used for the purpose of spraying clothing such, for instance, as a liquid or powder for preventing the ravages of moths upon stored clothing. As is well known, it is also the practice of housewives to sprinkle water on cloth, dress goods, etc. to dampen the same before ironing. A still further use of my novel stopper is in connection with the spraying of spools of wool, yarn, etc., in mills, just prior to shipment, with so-called "conditioning" solutions. Such solutions contain a preservative chemical and just prior to packing the yarn or wool, the material is sprayed with the liquid. Various other uses for the spray stopper in connection with containers such as a bulb or an ordinary bottle, for instance, the spraying of a wooden floor prior to sweeping the same, will occur to the average individual and it is believed unnecessary to enter into a more detailed discussion of such uses herein.

The object of my invention is to provide a stopper having a central channel, of an elastic material such as rubber which may fit the neck of any ordinary sized bulb or the neck of a bottle such, for instance, as may be found about the household. In accordance with my invention, such rubber stopper is provided with a disc, of metal, celluloid, or phenolic condensation product, having perforations therein, the disc being inserted into a groove provided along the inner periphery of the stopper channel and having its opening facing such channel. A more particular object of my invention is to provide a spray stopper which is easily applied to and removed from the neck of a container, is simple to assemble and to disassemble, will adapt itself to the size of the opening into which it is inserted and is capable of being manufactured at a low cost. While I do not at the present time contemplate stressing the feature of my novel spray stopper in being adapted for use with spray discs having various sizes of perforations therein, it is obvious that such feature may be an important element in the advantages of the structure. I am aware of prior art constructions in which a metal cap having perforations therein is provided at the top of a cork stopper having an aperture therein but my novel spray stopper will be recognized as an improvement on such prior art structures. It is to be noted in connection with such prior art metal cap, and stopper, that it is a combination of two distinct elements, i. e. a cap and a stopper, and that when it is used in conjunction with a container and a powder such, for instance, as an insecticide, moisture condensing upon the metal cap by reason of the difference in temperature of such metal and the surrounding atmosphere, will clog the holes of the metal cap necessitating the removal of the entire cap and stopper from the container for purposes of cleaning the same. It is under such circumstances that a disc easily removable from the stopper and as easily replaced therein, will be found to have particular advantage over the prior art structures.

A specific embodiment of my invention is illustrated in the accompanying drawing in which,

Fig. 1 is a vertical section of a spray stopper constructed in accordance with my invention;

Fig. 2 is a vertical elevation partly in section of the rubber stopper without the metal disc;

Fig. 3 is a plan view of my improved stopper with the metal disc inserted therein;

Fig. 4 shows my improved spray stopper applied to a spray bulb of any suitable configuration; and

Fig. 5 shows the spray stopper inserted into the neck of a container such as a bottle.

In Figs. 4 and 5 the containers to which the stopper is applied are shown in dotted outline.

Referring more particularly to the drawing, in which similar reference characters identify similar parts in the several views, 10 designates the tapered portion of a rubber stopper of substantially annular configuration which is to be inserted into the neck of a container and 11 is the upper portion of the stopper which remains outside of the container, the stopper being seated at 12 against the end surface of the container to which the stopper is to be applied. The portion 11 of the stopper is provided on its inner periphery at a point below the upper end thereof with a circumferential groove 13 into which may be snapped a disc 14 having a plurality of perforations 15 therein. The disc 14 may be inserted into the groove by inserting a portion of its periphery within the channel running centrally throughout the length of the stopper so as to engage a portion of the peripheral groove 13, the disc being then pressed downwardly into the top portion 11 of the stopper, the portion of the stopper opposite that at which the edge of the disc engages the groove 13 being depressed or urged from the center line of the stopper so that the disc 14 may enter the groove 13.

The disc 14 is provided with a plurality of perforations 15 which may be made of any desired size. I have found that apertures of very small diameter are suitable for use with a stopper which is to be applied to a container charged with liquid or powder.

In Fig. 4 I have shown my novel spray stopper applied to the neck of a rubber bulb shown in dotted outline. The elasticity of the body portion 10 of the stopper makes possible the use of my spray stopper with bulbs of different sizes and therefore of different diameters of neck openings. The body portion 10 of the stopper is inserted into the neck and the spray stopper is then pushed downwardly and into the neck of the bulb to such an extent that the upper portion 11 of the stopper will be seated against the top surface of the bulb. When the rubber bulb 16 is now squeezed, the liquid or powder contained therein will be forced upwardly through the channel 17 of the stopper and then outwardly through the apertures 15 of the disc 14 against the material to be sprayed.

In Fig. 5 I have shown my spray stopper inserted into the neck 18, shown in dotted outline, of a bottle, such for instance as an ordinary soda bottle which may then be used as a container for the liquid to be sprayed. By reason of the elastic nature of the body 10, my novel spray stopper can be used with a varying number of sizes of bottles, the stopper being securely seated within the neck of the bottle as shown in Fig. 5.

If it is desired to substitute for the disc 14, another disc having perforations of different size in the surface thereof, it is only necessary to remove the disc without removing the stopper from the container and insert into the groove 13 another disc having apertures of the desired size. In the case of powder being sprayed from the container, if the apertures of the disc 14 become clogged by reason of the deposition on the surface of the metal disc of moisture from the surrounding atmosphere the disc 14 may be easily removed from the head of the stopper, cleaned and reinserted within the groove 13.

The spray stopper of the present invention being made of rubber has the additional advantage over stoppers of the prior art that it will not become dented or otherwise distorted when dropped. Furthermore since my spray stopper may be molded and comprises a single piece of elastic material, its cost of manufacture is much lower than that of similar devices of the prior art in which the stoppers were formed of two pieces, one being a cork stopper and the other being a metal top having a metal lug adapted to be inserted into a channel within the cork.

It will be also noted that my improved spray stopper is held within the neck of the container to which it is applied by very strong frictional contact and is not apt to be dislodged therefrom, for instance, when a bottle to which it is applied is vigorously shaken for the purpose of discharging its contents through the spray stopper. The stopper will also adapt itself, by reason of its elasticity, to the particular configuration of the opening into which it is inserted and will thus be leak-proof along the seat 12, at the same time being securely positioned within the neck of the container.

I claim:

1. A spray stopper comprising a body portion of a resilient material and a head portion having a channel running centrally throughout the length of the stopper, the head portion being provided with an inner peripheral groove, and a disc having a plurality of perforations therein removably seated within said groove, said head portion having a degree of elasticity such that said disc may be inserted in the groove without deforming the disc.

2. A spray stopper comprising a tapering body portion of a resilient material and a head portion of greater diameter than said body portion, said body and head portions having a central longitudinal channel, the head portion being provided with an inner peripheral groove near its upper extremity, and a disc having a plurality of perforations therein removably seated within said groove, said head portion having a degree of elasticity such that said disc may be inserted in the groove without deforming the disc.

3. A spray device comprising a tapering stopper portion of a resilient material and a head portion of greater diameter than said stopper portion, said stopper and head por-

ions having a central longitudinal channel, he head portion being provided with an inner peripheral groove near its upper extremity, and a metal disc having a plurality of perforations therein removably seated within said groove, said head portion having a degree of elasticity such that said disc may be inserted in the groove without deforming the disc.

4. A spray stopper comprising a tapering stopper portion of rubber adapted to be inserted into the neck of a container and having a central channel running longitudinally therethrough, a head portion integral with said body portion and being of greater diameter than said body portion, said head portion having a central channel in communication with the channel of said body portion, a peripheral groove on the inner surface of said head portion and a disc having a plurality of perforations removably seated within said groove.

5. An article of manufacture for use as a spray device in combination with a container, comprising a rubber stopper having a longitudinal channel running centrally throughout the length thereof, said stopper having an inner peripheral groove, and a disc having a plurality of perforations therein removably seated within said groove.

Signed at New York city in the county of Bronx and State of New York this 25th day of May A. D. 1931.

IRVING H. GREENE.