

July 23, 1940.

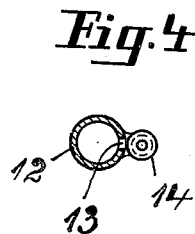
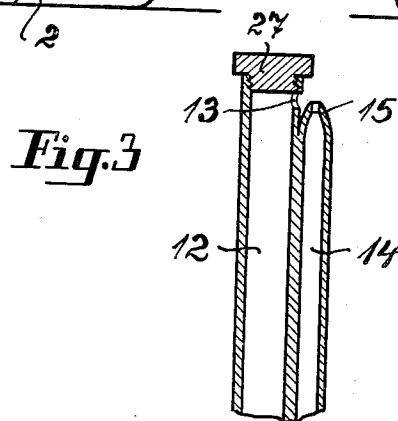
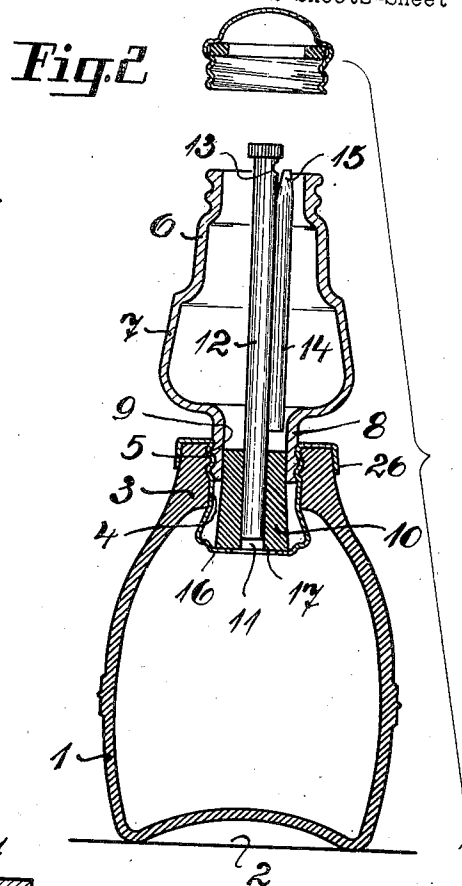
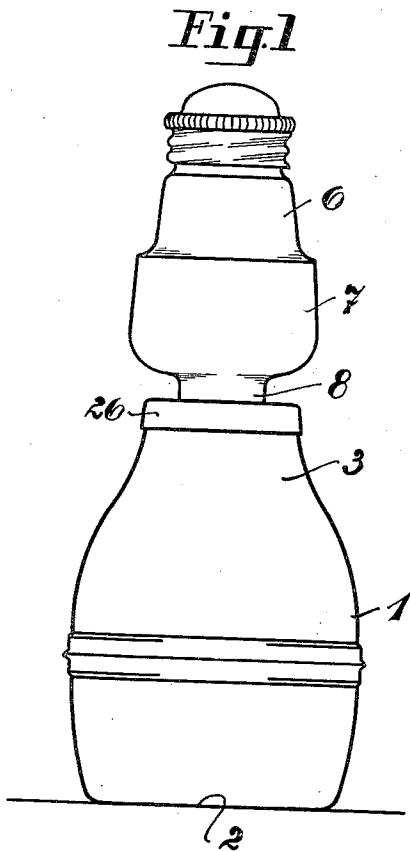
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2,209,261

SPRAYING APPLIANCE

Filed July 21, 1938

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 5

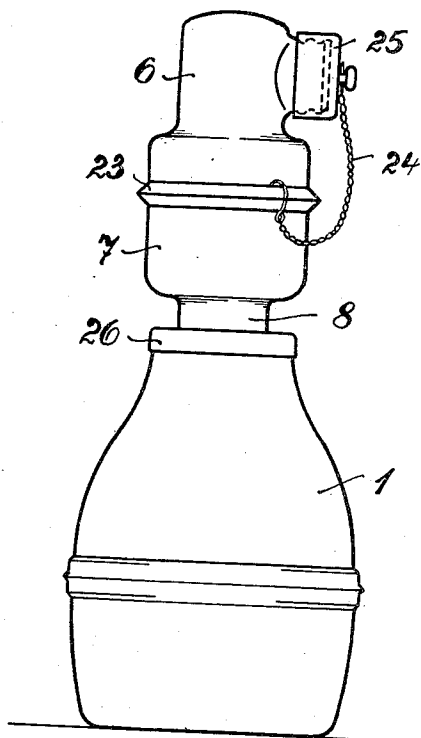


Fig. 6

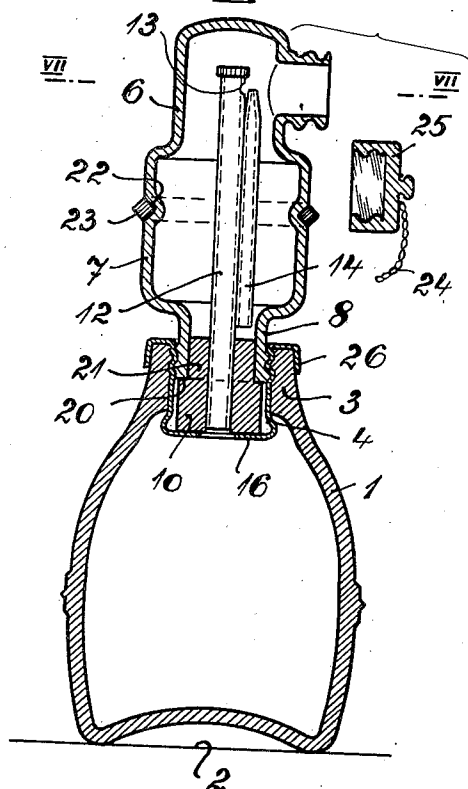


Fig. 9

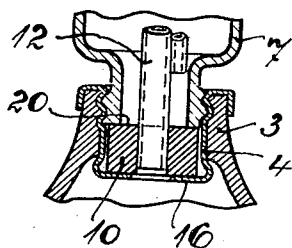


Fig. 8

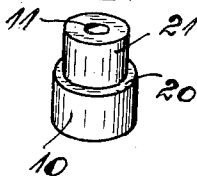
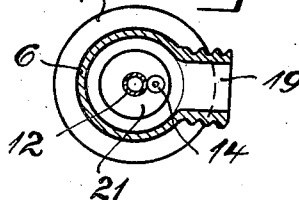


Fig. 7



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UNITED STATES PATENT OFFICE

2,209,261

SPRAYING APPLIANCE

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Application July 21, 1938, Serial No. 220,595
In Germany February 2, 1938

3 Claims. (Cl. 299—88.5)

The invention relates to spraying appliances of the kind comprising a bulb which can stand by itself, and a container directly carried thereby, into which the blast and suction pipes of the container are built and which includes the storage space for the liquid. The invention is more especially intended for application to spraying appliances for use in the treatment of the hair.

In such spraying appliances difficulties arise from the usual connection of the glass body by wedging it into the neck of the bulb because the rubber neck is more or less strongly subjected at the junction to the deleterious effect of the solvent of the liquids which are to be sprayed, for example brilliantine, fixative or hair lacquer. It often occurs, especially when the liquid chamber is refilled, that some of the liquid runs down the outside of the glass and reaches the joint between glass and rubber and causes swelling or similar damage to the rubber.

In order to avoid this disadvantage, the mouth of the neck of the rubber bulb is fitted, in accordance with the invention, with a metal sleeve which is tightly held therein and is provided with impressed threads which fit threads provided on the connecting portion of the glass container. The connection between the bulb and the glass body is thus greatly improved and damage of the outer surface of the neck by liquid running down the glass body and penetrating into the joint is avoided. Moreover, the glass body can be easily removed for the purpose of cleaning the nozzles of the spray tubes.

It is preferred not to secure the spray pipes in the threaded connecting portion of the glass body by fusion, as is usual, but to secure them by means of a stopper of plastic-elastic material, such as cork, rubber or the like, which carries the tubes, which may be easily removed for the purpose of cleaning their blast and suction openings. In order to ensure that the stopper fits tightly within the lower opening of the liquid-container when the latter is screwed into the metal sleeve, the sleeve is provided with a bottom portion against which the stopper is pressed.

In order to ensure that, after the stopper has come into contact with the bottom of the threaded sleeve, inequalities in the material or other unavoidable irregularities do not result in a displacement of the spray tubes carried by the stopper from their correct axial adjustment, so that the stream of liquid spray impinges to a greater or lesser extent upon the walls of the outlet opening with resultant reduction in the spray effect and perhaps precipitation of coarse drops and waste of liquid, the stopper which carries the spray tubes is, in accordance with a further feature of the invention, provided with a coaxially projecting bearing surface, which, upon insertion into the opening of the neck of the con-

tainer, bears coaxially upon its edge and thus ensures the correct axial position of the spray tubes even if the stopper is compressed when the container is screwed in owing to abutment against the bottom wall of the threaded metal sleeve.

The invention is illustrated by the specific forms of spraying appliance which will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows, in side elevation, a spraying appliance in accordance with the invention in the closed condition.

Figure 2 represents a vertical section on the line II—II of Figure 1.

Figure 3 represents, to an enlarged scale, a longitudinal section through the two spray tubes, which are connected together, and

Figure 4 represents a sectional view thereof.

Figure 5 shows another form of the device in side elevation, and

Figure 6 represents a vertical sectional view thereof.

Figure 7 represents a section on the line VII—VII of Figure 6.

Figure 8 represents a perspective view of the stopper for closing the bottom of the liquid chamber, and

Figure 9 illustrates a modified form in a partial sectional view equivalent to that of Figure 6.

The bulb 1 is provided beneath with the standing surface 2 and above with a thickened connecting neck 3. A comparatively thin-walled metal sleeve 4 is tightly gripped in the mouth of the neck 3, and is provided near its upper edge with an impressed thread 5, which serves for the connection with the body of the spray chamber 6, the lower part of which forms the storage space 7 for the liquid. For the purpose of connecting the spray chamber 6 to the bulb, the latter is provided at its lower end with a reduced connecting portion 8, resembling a bottle-neck, which is provided near its upper edge with an external thread 9 which fits the thread 5 of the metal sleeve 4, so that it can be screwed into the sleeve. The closure of the mouth of the connecting portion 8 is effected by a stopper 10, which is preferably made from synthetic rubber or cork or some other elastic material which is resistant to the liquid to be used. The stopper 10 is provided with a longitudinal bore 11, into which the blast pipe 12, which is preferably of metal, is inserted from above. The blast hole 13 of this pipe is in the side wall thereof and is in the form of a simple hole; the suction pipe 14, also of metal, is conveniently arranged alongside and soldered to the blast pipe so that its reduced end 15 opens at a slight distance in front of the blast opening 13.

The metal sleeve 4 has a bottom 16, which is 60

provided with a central aperture. The length of the stopper 10 is conveniently such that it seats tightly against this bottom, when the connecting portion is screwed in, the seating of the upper end of the stopper in the mouth of the connecting portion 8 being at the same time ensured.

For the purpose of a good connection of the metal sleeve 4 with the neck 3, the upper edge of the sleeve is flanged outwardly and backwardly in such a manner that it fits tightly against the outer surface of the neck 3. This arrangement also ensures, that, in the event of overflow, which can easily occur when the liquid container is filled, liquid flowing down the outer wall cannot reach the outer surface of the rubber neck itself at the junction with the glass body, so that its durability is not influenced by swelling or solution of the rubber.

In the arrangement illustrated by Figs. 1 and 2, the spray openings conveniently lie at the height of the edge of the mouth of the atomizer chamber. In the form according to Figs. 5 and 6, however, the atomizer chamber has a lateral spray neck 19.

According to a further feature of the invention the outer surface of the stopper 10 can be provided in the middle as shown in Fig. 6, with a step 20, which seats upon the edge of the externally threaded connecting portion 8 of the glass container when the parts are assembled together. The step 20 forms a flat surface which projects at right angles to the axis of the longitudinal hole 11 of the stopper and thus ensures the correct axial adjustment of the blast pipe within the container. The correct axial position of the spray stream in the height-plane of the spray opening is thus ensured. The correct lateral adjustment of the spray stream can be ensured easily enough when the upper reduced portion 21 of the stopper 10 is inserted.

The diameter of the upper reduced portion 20 of the stopper is, for the latter purpose, preferably so chosen that it can be pushed into the orifice of the neck 8 with a tight fit. This firm seating of the stopper is not, however, absolutely necessary if care is taken, by means of marks and stops, that the spraying device is fixed in the correct angular position. It is possible, as shown for example in Figure 9, to omit the reduced portion of the stopper altogether so that the sealing surface 20 forms the outer edge of a flat upper boundary for the stopper which carries the blast pipes.

The glass container can be provided at a suitable height with an annular depression 22 in which a rubber ring 23 suitable for damping shocks can be mounted. This ring preferably serves for securing the chain 24 for the screw cap 25, by means of which the glass container can be closed when not in use. The glass body of the container need not be made from easily breakable glass tubing and can be cheaply made, as is usual with glass bottles, from comparatively shockproof pressed glass, so that, even if the hollow glass body sometimes gets broken, it can easily be replaced at small expense and with little waste of time and energy. It is shown that the sleeve has an extension at the top forming a flange 26 which overlies the upper edge of the neck of the bulb and protects the material of the bulb from deposits which may have an injurious effect on the said material.

As can be seen from Figure 3, the blast pipe 12 is conveniently closed at the upper end by means of a removable screw-stopper 27, so that the pipe can be opened and cleaned out if it should become blocked by lacquer deposits.

Instead of glass, artificial resin, porcelain or metal can be used as the material from which the atomizing chamber 6 is made.

I claim:

1. A spraying appliance having a collapsible bulb having an open neck, a comparatively thin-wall sleeve depending into the neck of the bulb, the said sleeve having a bottom with an aperture therein, the said sleeve being threaded at the upper end of the neck, a container for fluid having a cylindrical bottom threaded into the said sleeve, a stopper resting on the bottom of the sleeve and having an aperture alining with the aperture of the bottom of the sleeve and the said stopper fitting within the cylindrical extension of the container, the said extension serving to retain the bottom of the stopper in engagement with the bottom of the sleeve, a blast pipe in the aperture of the stopper extending into the container, a suction pipe associated and co-operating with the blast pipe, and the said container having a side opening above the liquid level in alinement with a blast hole of the blast pipe.

2. In a spraying appliance, a collapsible bulb having a supporting base whereby the said bulb may stand vertically, and an open neck, a metal sleeve depending into the neck of the bulb and having an apertured bottom, the said sleeve being secured in the neck of the bulb and having a flange overlying the neck of the bulb, an apertured stopper in the sleeve, the aperture of which registers with the aperture of the sleeve, a fluid container having a cylindrical extension fitting in the sleeve and secured thereto and in which the stopper is lodged, a blast pipe in the aperture of the stopper extending upwardly in the container and having a blast opening, the said container having a side opening alining with the said blast opening, and a suction pipe extending into that portion of the container containing the fluid and having an orifice in alinement with the blast opening.

3. A spraying appliance having a collapsible bulb with an open neck, a comparatively thin walled sleeve depending into the neck of the bulb, the said sleeve having a bottom with an aperture therein, means by which the sleeve is anchored in the neck, a container for fluid having a cylindrical bottom anchored in said sleeve, a stopper resting on the bottom of the sleeve and having an aperture alining with the aperture of the bottom of the sleeve, and the said stopper fitting within the cylindrical extension of the container, the said extension serving to retain the bottom of the stopper in engagement with the bottom of the sleeve, a blast pipe in the aperture of the stopper extending into the container and having a blast opening in alinement with an opening in the side of the fluid container near the top thereof, and a suction pipe extending into that portion of the container having the fluid and having an orifice alining with the blast opening.

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