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DISPENSING NOZZLE

This invention relates to a dispensing nozzle and particularly to a nozzle for dispensing creams or other liquids, preferably viscous liquids.

There are applications where it is desirable to locate a cream or other liquid at relatively precise positions. One such application is hair colouring which basically has to be placed at or near the root zone.

Normally, dispensing containers for liquids such as hair colouring have a single nozzle and it is a relatively tedious procedure to work over the whole head of hair to ensure that the colouring is evenly distributed thereover.

It is the object of the present invention to provide a dispensing nozzle which permits more ready distribution of liquids to required areas.

The invention includes in its broadest sense a dispensing nozzle which is adapted to be connected to a container of liquid and which has a dispensing head which has a plurality of nozzles associated therewith.

It is preferred that the nozzles lie in a side by side relationship and they may lie along a line or along a curve to

enable more ready following of the surface to which the liquid is to be delivered.

In order that the invention can be more readily understood, I shall describe one particular embodiment of a dispensing nozzle made in accordance with the invention.

The nozzle may be of injection moulded plastics material, although the materials of construction are not part of this invention and preferably has an internally screw threaded inlet which is adapted to be connected to the neck of a bottle holding the material to be dispensed.

For the purposes of this description, we shall describe the nozzle as used in distributing hair colouring, but it is to be understood, that it could be used in other applications, say to locate conditioner or shampoo adjacent the roots of the hair, or in other applications, where a liquid is to be located over a substantial area.

Connected to the inlet, there can be a plenum or the like which extends on each side of the inlet symmetrically and which is in connection with the inlet, and thus the contents of the container to which the nozzle is to be connected.

Extending outwardly from the plenum are a number of delivery nozzles each of which can preferably be of the same length and

which are equally spaced along the plenum, the spacing being of the order of 2 to 10 millimetres and preferably of the order of 5 millimetres apart, centre to centre.

The spacing is selected depending upon the viscosity of the liquid to be dispensed and the required delivery.

The number of nozzles can vary from as few as four or five and could be as many as ten or twelve although, practically, for hair tinting purposes, I have found that eight nozzles seems to be a desirable number.

The plenum itself may be straight, that is that the centres of the nozzles lie along a straight line and in a vertical plane which passes through the plenum but the plenum could be curved so that the nozzles are located around the arc of a circle.

This arrangement can be most satisfactory for use on a scalp which could be considered to have generally spherical properties and the arc could be such as to enable the nozzle to move over portions of the scalp with each of the nozzles in direct contact with the scalp.

In use, in either case, I provide a container of colouring material and to this fit the nozzle.

It may be preferred to provide the nozzle separately from the

container of the material although a cap or caps could be provided to cover the individual delivery nozzles.

The material to be dispensed is then delivered to the scalp by bringing the dispensing nozzle into contact with the scalp and applying pressure to the container which causes delivery of the liquid through the various dispensing apertures over the width of the delivery nozzles and in this way, a substantial area of the scalp can be covered with one pass of the device and with the colouring being directed adjacent the root zone of the hair so that it is applied at the required position.

It is only necessary to repeat this operation to cover the whole of the area to provide good delivery of the colouring material.

I have found that this operation is very much quicker and easier than has been the case using a single nozzle.

To assist in understanding the invention, reference will be made to the accompanying drawings which show one example of the invention.

FIG. 1 shows the basic form of the dispensing nozzle in perspective view;

FIG. 2 shows the dispensing nozzle of FIG. 1 in plan view through points 2;

FIG. 3 shows a second example of the dispensing nozzle with a central plunger for regulating the flow of liquid, in perspective view;

FIG. 4 shows the dispensing nozzle of FIG. 3 in side plan through ponts 2 and shows its connection to the container of liquid;

FIG. 5 is the same as FIG. 4 but shows the view with the plunger depressed so that liquid can flow from the container into the dispensing head and nozzles;

FIG. 6 shows the dispensing nozzle of FIG. 3 in cross-sectional view through points 4 in FIG. 5.

Referring to FIGS. 1 and 2, the preferred embodiment of the dispensing nozzle 1 consists of a dispensing head 2 which is hollow and from which a series of nozzles 3 extend more or less at right angles and which are also hollow so that there is ready access from the head. At one end of the head is a means of attachment 4 to the container of liquid. In this example the means of attachment is by an internally threaded screw cap.

Referring to FIGS. 3 to 6, the second embodiment of the dispensing nozzle 1 has, in addition to the features described above, within the head, a plunger 5 which functions to seal the head and prevent liquid flow. The end of the plunger 5 is seen protruding from the end of the head opposite the connection to the container of liquid.

Referring now to FIGS. 2 and 3, the plunger 5 consists of a sealing end 6 which is capable in the non-use position of being seated securly in the neck 8 of the head. When in this position no liquid can flow into the head. Leading from the sealing end 6 is an extension 7 which runs the length of the head and passes through a hole in the end of the head to the outside. The protruding portion of the extention is such that when compressed the plunger is pushed laterally within the head so that the sealing end is forced out of the neck of the head a sufficient distance to allow a suitable flow of liquid into the head and nozzles.

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The claims defining the invention are as follows:

1. A dispensing nozzle which is adapted to be connected to a container of liquid and which has a dispensing head which has a plurality of nozzles associated therewith.
2. A dispensing nozzle as claimed in claim 1 with the dispensing head being substantially straight and extending directly outward from the point of connection to the container.
3. A dispensing nozzle as claimed in claim 1 with the dispensing head being substantially curved and extending outward in an arced manner from the point of connection to the container.
4. A dispensing nozzle as claimed in any of the preceding claims in which the plurality of nozzles are in a straight line along the length of the dispensing head.
5. A dispensing nozzle as claimed in any of the preceding claims in which the plurality of nozzles are of different lengths
6. A dispensing nozzle as claimed in claim 5 in which the relative lengths of the plurality of nozzles is such that they easily follow the contours of the surface over which they must pass.
7. A dispensing nozzle as claimed in any of the preceding claims in which the plurality of nozzles are equally spaced along the dispensing head.

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8. A dispensing nozzle as claimed in any of the preceding claims in which the plurality of nozzles can be capped when not in use.

9. A dispensing nozzle as claimed in any of the preceding claims in which the dispensing head is permanently connected to the container of liquid and which is disposed of with the empty container, after use.

10. A dispensing nozzle as claimed in any of claims 1 to 8 in which the dispensing head is detachably connected to the container of liquid.

11. A dispensing nozzle as claimed in claim 10 in which the dispensing head is connected to the container be means of a threaded screw cap attachment.

12. A dispensing nozzle as claimed in any of the preceding claims in which the flow of liquid is regulated by a plunger or similar device.

13. A dispensing nozzle as claimed in claim 12 in which the plunger normally forms a seal between the dispensing head and the container of liquid but which seal can be broken by applying pressure to an extension of the plunger which protrudes from the dispensing head, thus allowing liquid free access to the dispensing head and plurality of nozzles.

14. A method of applying liquids to specific locations using a dispensing nozzle as claimed in any of the preceding claims.

15. A method as claimed in claim 14 for applying shampoo,

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conditioner, dye or other liquids to where the roots of hair are attached to the body.

16. A method as claimed in claim 15 for use on human beings.

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