Dec. 20, 1960 L. L. LERNER ET AL 2,964,770

APPLICATOR

Filed Feb. 17, 1959

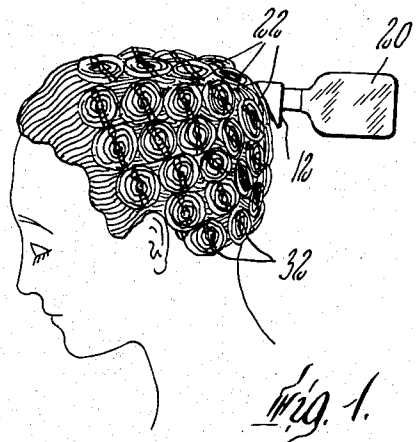


Fig. 1.

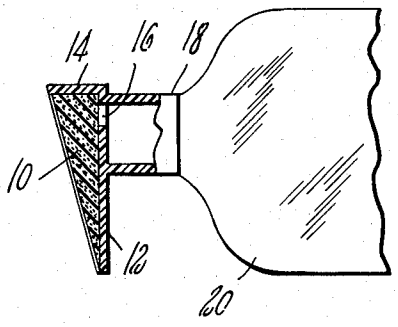


Fig. 2.

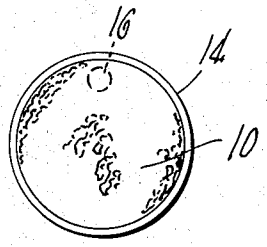


Fig. 3.

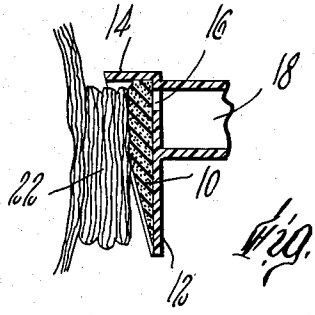


Fig. 4.

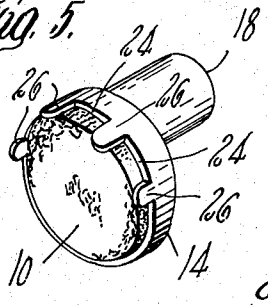


Fig. 5.

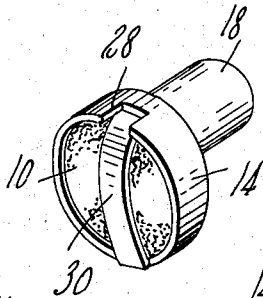


Fig. 6.

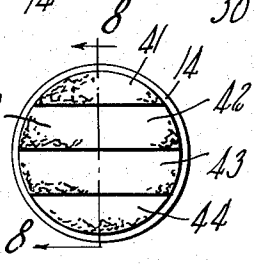


Fig. 7.

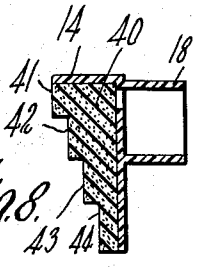


Fig. 8.

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2,964,770

APPLICATOR

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5 Claims. (Cl. 15—136)

This invention relates to an applicator for applying treating liquid to hair and pertains more specifically to an applicator for localized application of treating liquid to hair in the form of pin curls.

In waving and dressing hair, it is frequently desirable to apply a treating liquid to the hair while the hair is held in the form of flat spiral curls by means of pins extending transversely of the curls parallel to the head, such curls being commonly known as "pin curls." For example, waving lotion is frequently applied to the hair in the form of pin curls followed by application of neutralizer solution. In the past it has been difficult to apply such treating liquids to pin curls, particularly on the back and sides of the head, so as to provide thorough impregnation of the curl with the liquid without having excess liquid dropping on the neck, shoulders or clothing of the person being treated.

One object of the present invention is to provide an applicator of improved and simplified construction.

Another object is to provide an applicator of the type described adapted to apply treating liquid to pin curls while minimizing dripping of excess liquid.

Still another object is to provide an applicator which promotes circulation of treating liquid throughout a hair curl such as a pin curl.

A further object is to provide an applicator which avoids deposition of a large quantity of treating liquid on the hair pin used to hold the curl in place and the consequent tendency of the liquid to flow along the hair pin and to drip from its end.

Other and further objects will be apparent from the drawing and from the description which follows.

In the drawing:

Fig. 1 is a view in elevation of one embodiment of the invention showing the applicator being used to apply liquid to a pin curl;

Fig. 2 is a view in cross-section of the applicator shown in Fig. 1 on an enlarged scale, partly broken away;

Fig. 3 is a view in elevation of the working face of the applicator of Figs. 1 and 2;

Fig. 4 is a view in cross-section, partly broken away, on an enlarged scale showing the applicator of Fig. 1 being applied to a pin curl;

Fig. 5 is an isometric view of a modified form of the invention;

Fig. 6 is an isometric view of another embodiment of the invention;

Fig. 7 is a plan view of still a different embodiment; and

Fig. 8 is a view in cross-section taken along line 8—8 of Fig. 7.

As appears in the drawing, the applicator of the present invention comprises a sponge element **10** which tapers in thickness from one side to the other, as best appears in Fig. 2. The sponge element **10** may be any suitable open-celled sponge material which is inert to the treating liquids employed. Regenerated cellulose sponge has been found to be eminently suited for this purpose. The sponge element is preferably somewhat greater in length and width than the corresponding dimensions of the pin curls on which it is to be used. While the sponge element **10** may be circular in outline, as shown in Fig. 3, it may also be polygonal if desired, as for example square or octagonal. In general, since the average pin curl is about 1 inch to 1¼ inches in diameter, the sponge element should be somewhat greater in diameter; that is, from 1¼ to 1⅜ inches in diameter or even somewhat larger if desired. The angle at which the sponge element is tapered in thickness may be varied from 10° to 45° measured as the included angle at the thin side of the sponge element.

The sponge element is seated in a cup which closely embraces it, the cup having a bottom **12** and upstanding side walls **14** which vary in height from one side to the other in conformity with the tapering thickness of the sponge element **10**, as appears best in Fig. 2. The cup is preferably constructed of a flexible, resilient, synthetic plastic material such as a vinyl resin plastic or other elastic rubber-like material, which is inert to the treating liquids. The cup should possess, of course, sufficient rigidity and strength to provide adequate support for the sponge element **10** when the device is in use. In the embodiment shown in Figs. 2 and 3 the sponge element **10** is secured in place in the cup by means of any suitable adhesive, such as latex cement.

Means for introducing a treating liquid into the bottom of the cap is provided in the form of an aperture **16** in bottom wall **12** which opens into an inlet tube **18** which may be an integral part of the cup. It is important that aperture **16** be located adjacent the thickest portion of sponge element **10** and remote from the thinnest portion. This arrangement ensures that any liquid introduced through aperture **16** will come into contact first with and be absorbed by the thicker portion of sponge element **10** before it comes into contact with the thinner portion. Inlet tube **18** may be connected to a conventional resilient plastic squeeze bottle **20**, as shown in Fig. 1, which serves as a container and source of supply for the treating liquid. It will be understood that any other suitable source of supply may be employed for introducing the treating liquid into the bottom of the cup through inlet tube **18**.

As best shown in Figs. 1 and 4, the sponge element **10** is first impregnated or permeated with the treating liquid by inverting the assembled applicator and bottle, then gently squeezing bottle **20** to force the liquid through aperture **16**. The applicator is then pressed against a pin curl **22** on the head, with the thick side of sponge element **10** uppermost and the thin side toward the bottom. In pressing the applicator against the pin curl, the thicker portion of the sponge only comes in contact with the pin curl and is compressed thereagainst so that the liquid with which the sponge is saturated is squeezed out onto the outer upper portion of the pin curl, as shown in Fig. 4, whence it flows along the individually spirally wound hair strands so as to permeate and penetrate thoroughly the entire mass of the hair contained in the pin curl. Any excess treating liquid above and beyond that which is required to permeate the pin curl is absorbed by the thinner uncompressed portion of the sponge adjacent its lower margin. It is believed that this absorption occurs by light contact between the lower portion of the pin curl, as seen in Fig. 4, and the lower portion of sponge element **10**, without substantial compression of this portion of the sponge element, and that the thus-absorbed liquid in the lower portion of the sponge elements travels thence by capillary action into the upper and thicker portion when

the compression of the latter is released. When the sponge element is again compressed against the pin curl, it is believed, this action is repeated. The continuous path of circulation for the liquid which we believe is thus provided ensures complete and thorough penetration of the pin curl by the liquid.

It has been found that while the embodiment of the device as shown in Figs. 1–4 of the drawing performs satisfactorily, the hair pins employed to secure the pin curl in place sometimes interfere with adequate compression of the sponge element **10** because they become engaged by the wall **14** of the cup. In order to avoid this difficulty, wall **14** of the embodiment shown in Figs. 2 and 3 may be cut away in spaced localized zones **24, 24** at the high side of the cup to a level below that of the adjacent face of the sponge element **10** in its normal uncompressed condition. The remaining narrow fingers **26, 26** which project upwardly at spaced intervals around the thicker portion of sponge element **10** serve adequately to restrain and support the liquid during use while the cut-away portions **24, 24** accommodate any hair pins which are present in the pin curl.

Still another embodiment is shown in Fig 6 in which a single narrow localized zone of the higher side of wall **14** is cut away at **28** to a level below that of the adjacent face of the sponge element **10** in its normal uncompressed condition. in addition, a narrow retaining band **30**, preferably of the same resilient flexibility plastic material from which the cup itself is constructed, extends across the exposed face of sponge element **10** from the bottom of cut-away zone **28** to the margin of the cup at the opposite or lower side of sponge element **10**. This retaining band **30** serves a dual function in that it retains sponge element **10** within the cup, thus eliminating the necessity for adhesive and making the sponge element readily replaceable, and also serves to prevent the face of sponge element **10** from coming into contact with the hair pin **32** (Fig. 1) which normally extends transversely across each curl and substantially eliminate excessive flow of liquid along the length of the pin together with drippage from its end. During use of this embodiment of the invention the applicator must be positioned so that band **30** is aligned with hair pin **32**. Cut-away zone **28** serves to accommodate an end of the hair pin when the latter is longer than the diameter of the applicator.

It is not essential that the operative face of the sponge element be smooth or flat; in the embodiment shown in Figs. 7 and 8 the sponge element **40** tapers in thickness by a succession of steps **41, 42, 43, 44** each of which has a flat segmental face extending at right angles to side wall **14**, the faces being connected by risers which are generally perpendicular to the faces. In this embodiment the included angle of the sponge element is measured as the angle between the flat rear face of the sponge element and a plane extending through corresponding parts of successive steps.

It will be appreciated that although a squeeze bottle has been shown as a source of supply for the treating liquid so that the applicator need only be inverted and the bottle gently equeezed in order to saturate the sponge member with treating liquid, any other conventional source of supply may be employed and a pump may be used if desired to force the liquid into the rear of sponge element **10**. In any event, the sponge element is first impregnated with treating liquid and the liquid is then transferred to the hair curl by compression of the thicker portion of the sponge element against it while the thinner side of the sponge element remains uncompressed and disposed at the bottom of the applicator in position to re-absorb any excess treating liquid which flows down onto it, thus minimizing the drippage.

Although specific embodiments of the invention have been herein described, it is not intended to limit the invention solely thereto, but to include all of the obvious modifications and limitations within the spirit and scope of the appended clams.

What is claimed is:

1. An applicator for applying treating liquid to the hair comprising a sponge element tapering in thickness from one side to the other, a cup in which said sponge element is seated, the walls of said cup varying in height from one side to the other in conformity with the tapering thickness of said sponge element, and means for introducing said treating liquid into the bottom of said cup through a restricted aperture adjacent the thickest portion of said sponge element and remote from the thinnest portion thereof.

2. An applicator as defined in claim 1 in which said cup has walls of resilient, flexible, synthetic plastic.

3. An applicator as defined in claim 2 in which the walls of the cup at the high side are cut away at spaced intervals to a level below that of the adjacent face of the sponge element in its normal uncompressed condition.

4. An applicator as defined in claim 2 in which the walls of the cup at the high side are cut away in a narrow zone to a level below that of the adjacent face of the sponge element in its normal uncompressed condition, and in which a retaining band is provided extending across the face of said sponge element from the bottom of said cut-away zone at one side of said cup to the other side thereof to hold said sponge element seated in position.

5. An applicator as defined in claim 2 in which the open face of said sponge element is smooth and flat.

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