June 9, 1959 E. D. ANDERSON ET AL 2,889,834

DEVICE AND METHOD FOR CURLING AND SETTING THE HAIR

Original Filed April 4, 1955 2 Sheets-Sheet 1

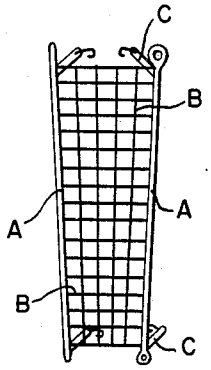


Fig. 1

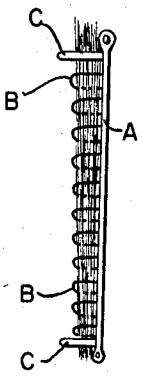


Fig. 2

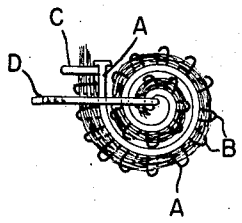


Fig. 3

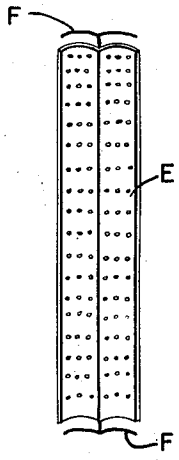


Fig. 4

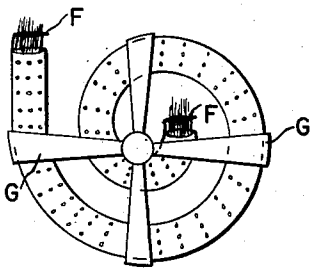


Fig. 5

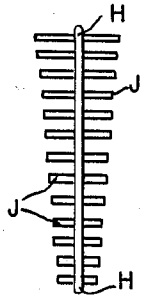


Fig. 6

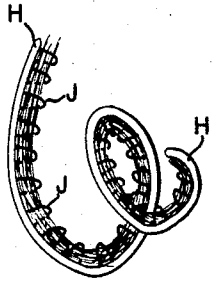


Fig. 7

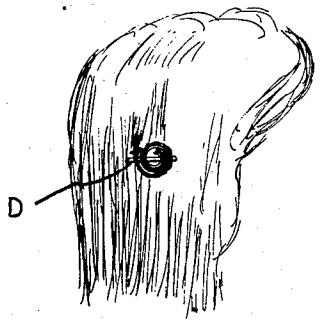


Fig. 8

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DEVICE AND METHOD FOR CURLING AND SETTING THE HAIR

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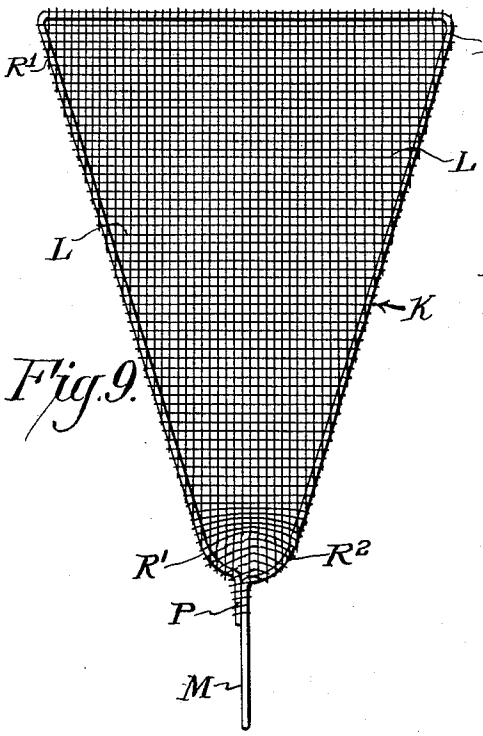


Fig. 9.

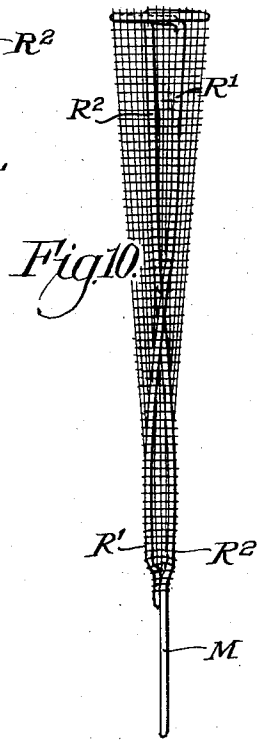


Fig. 10.

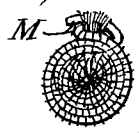


Fig. 11.

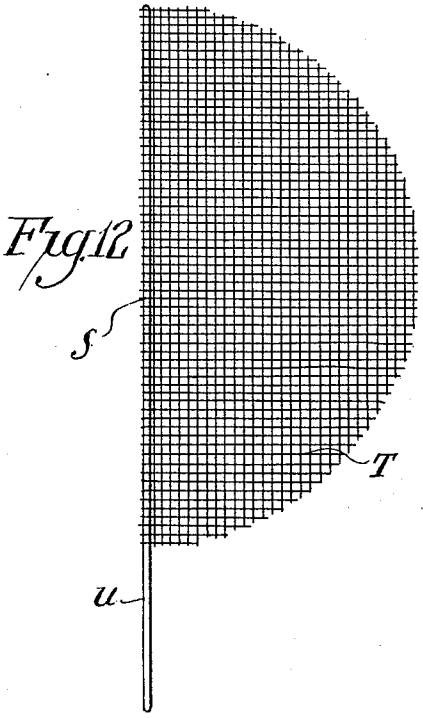


Fig. 12.

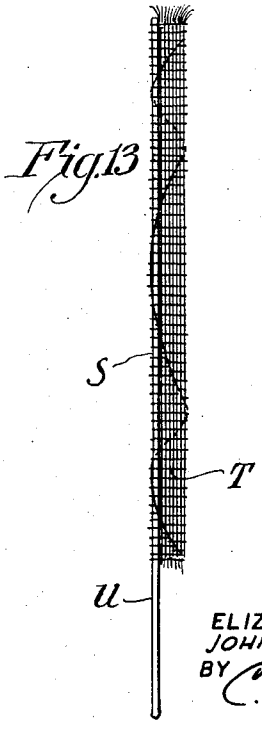


Fig. 13.

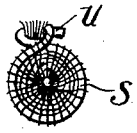


Fig. 14.

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DEVICE AND METHOD FOR CURLING AND SETTING THE HAIR

Elizabeth Dux Anderson and John L. Anderson, Winnetka, Ill.

Continuation of application Serial No. 499,058, April 4, 1955. This application July 23, 1956, Serial No. 599,472

17 Claims. (Cl. 132—7)

This invention relates to a device for curling and setting hair and more particularly to means for preparing and setting pin and other curls.

This is a continuation of our application, Serial No. 499,058, filed April 4, 1955, now abandoned.

One object of the invention is to provide a novel and improved device for preparing and setting curls of hair which is dry or wet with water or waving solution or which is otherwise being set permanently or semi-permanently so that the use of bob pins or other means of fastening the hair is not required.

A particular object of this inventive device is to provide a facile means for preparing pin or other curls. The device is so constructed that after application to a straight lock of hair the combination of device and hair can be curled into the shape desired by the person using the device thereby providing a form which retains the hair during the setting process. The shape which the form provides is retained by the hair after setting in combination with said form and after removal of the device from operative association with said hair.

Further objects will become apparent from the ensuing description of the invention and from the accompanying drawings, wherein:

Figure 1 is a view of one embodiment of the invention in linear position before association with the hair;

Figure 2 is similar to Figure 1 except that a representative device of the invention is shown in a closed, linear position enveloping the hair to be curled;

Figure 3 is another view of a variation of the combination of a device of our invention and hair, for example, as per Figure 2 showing the combination of device and hair in a curled position and illustrating the locking device for insuring the maintenance of the desired shape during the hair-setting step;

Figure 4 is a view of another embodiment of our invention in the open, linear position prior to placing hair in the device;

Figure 5 shows a flat spiral position of the device of Figure 4 which is held in position by a form designed for that purpose;

Figure 6 is a view of yet another embodiment of this invention in an open, linear position somewhat similar to Figure 1;

Figure 7 is similar to Figure 6 except that the combination of the device and enveloped hair is shown in the curled position into which it was moved by the person using it;

Figure 8 is a view similar to Figure 7 in position on the head of a subject showing the necessary operative association of hair and the new device after the desired curl has been formed in the combination, whereby on standing the hair is so shaped semi-permanently, retaining said shape in itself after the removal of the device from operative association therewith, that is whereby the hair is semi-permanently curled in the desired spiral shape.

Figure 9 is a view of a preferred embodiment of this

invention showing the open, non-spiral form prior to placing hair in the device;

Figure 10 shows a non-spiral, folded configuration;

Figure 11 is a view showing the associated hair in combination with the device in the closed spiral configuration; and

Figures 12, 13 and 14 show yet another preferred embodiment in views similar to Figures 9, 10 and 11, respectively.

This device may be illustrated by particular reference to Figures 1, 2 and 3. This comprises in combination a member A, which is preferably in two parts and which is flexible and which can be straightened to an essentially linear form or curled into a spiral or helical form, and the reticulate material, thread-like members B, which can extend from one side of member A to the other as in Figure 2 or can be web-like as in Figure 1 and are desirably provided as integral parts of A and are designed as a means for securely engaging hair in the device in the necessary close operative association therewith; if desired, clamps C, desirably provided as integral parts of A, whose functions are to aid in securely engaging hair in the device and lockingly to engage each side of member A to the other; and member D, shown in Figure 3, which locks the completed curl into position and provides a means for maintaining the completed combination of device and hair in the necessary close operative association during setting of the hair.

The entire device is desirably constructed of plastic of a fairly limp nature, or alternately of rubber, fibrous material, metal, or the like, or of suitable combinations of these.

In operation the device may be used as follows with reference to Figures 1, 2 and 3. (1) Shape the device to an essentially linear, open position similar to Figure 1; (2) Select the strands of dry, damp, or wet hair to be curled or shaped and place them in the open device linearly with respect to the major axis thereof; (3) Close the device and make fast the clamps C, if provided, thereby enveloping the hair; (4) Shape or curl the combination of the device and hair to the desired size and form; (5) Lock the form, if desired, with member D so that the requisite close operative association of device and hair is maintained during the setting process; and (6) If desired, a permanent or semi-permanent set to the curls can be applied chemically or in other ways after the hair is curled in the above manner.

After the hair is set, which can be from a few minutes to several hours and which can be accomplished chemically, by heating, by drying of damp or wet hair, or in other ways, the device is removed from the thus curled hair whereupon the set hair returns spontaneously to the shape formed in combination with the device during the setting period.

Figures 4 and 5 illustrate a variation of the device of our invention which is particularly suitable for construction from plastic. In these figures member E is a flexible, tubular-like member which is multiperforated and which can be opened by means of a slit down its linear axis. To this tube are attached members F, if desired, to aid in holding hair more firmly therein and member G which is a form designed to maintain the spiral shape, if desired, for the combination of hair and device during setting. In operation this embodiment of the invention is formed into a linear shape and opened along the slit, hair is placed therein along the linear axis thereof, the device is closed over the hair and the combination is curled to the desired shape, member G being used, if desired, to help maintain the shape of the combination of device and associated hair.

Figures 6 and 7 show another form of this invention in which member H is preferably of plastic and reticulate

clamps J of metal, spring loaded, but coated with rubber. The device is operated similarly to the process steps illustrated above in discussion of Figures 1, 2 and 3. Clamps J in this case however are placed in such a manner as to make the use of the netting of Figure 1 unnecessary.

Figure 8 illustrates the combination of the device and enveloped hair on the head of a subject indicating how the combination of the device and enveloped hair can be pinned or otherwise fastened close to the head in the desired form to which the said hair is to be shaped.

In all these variations of the invention, the material or materials of construction can be plastic, fibrous material, metal, rubber, or the like, alone or in combination. Thus Figure 1 illustrates a plastic device except for clamps C of metal while Figure 2 shows member A as plastic and members B as fibrous material. In Figure 3, otherwise similar to Figure 2, member D is shown of plastic. Figure 4 is illustrated to be entirely plastic while in Figure 5 members F and G are metal. Figures 6 and 7 are combinations of plastic, rubber and metal. All these hair/device combinations can be formed in many different sizes and shapes. Broadly, the ease of shaping the said combinations to widely differing styles of curls is fundamental to the process so that wide adaptability to various curls, spirals, helices, and the like as well as to the same applied to various styles of hair is easily and readily achieved. Thus the invention is generic to hair of any length, that is, long or short hair, to hair which is naturally curly, artificially curled, or straight, or to hair which is fine, medium, or coarse texture.

It should be especially noted that other variations in the device are possible besides those described here for purposes of illustration. Thus, for instance, in referring to Figures 6 and 7 member H can be located on the inside of the curl rather than on the outside as indicated. Furthermore the device can be used in conjunction with non-flexible spiral or helical forms in order to impart more particular shapes to the hair.

The most important features of our inventive device are the means for securely engaging hair in close operative association with a member characterized by flexibility yet coupled with a degree of rigidity and resistance to deformation in shape, in other words, pliable so that the combination of the device and associated hair can be curled or otherwise shaped as desired, but on release of the shaping force the device retains the hair in the desired shape.

The two embodiments shown in Figures 9 and 12 are of particular interest because of their ease of manufacture. The ultimate shape of the device is largely one of user convenience. The semi-rigid member may be straight as shown in Figure 12 or it may form a closure as in Figure 9. Various forms there between are possible, but generally those given in Figures 9 and 12 are used for their all-around effectiveness and ease of manufacture.

The device in Figure 9 comprises a semi-rigid, resilient support such as a metallic wire, coated, for example, with plastic such as nylon, polyethylene, polyvinylchloride, rubber or the like and a net-like, reticulate member of plastic, fibrous, or other construction. Since inexpensive manufacture of this invention is important to widespread commercialization, the wire coating and net materials are preferably of like nature, for example, of nylon. The support is normally a metallic wire of the customary metals, combinations, or alloys thereof such as iron, copper, aluminum or the like.

The device shown in Figure 9 is desirably constructed by coating a wire, such as 22 to 26 gauge soft copper wire or well-annealed iron wire, with 4 to 12 mils of a low melting nylon and shaping the coated wire to the shape shown or its equivalent. The size of the wire and the thickness of the coating are illustrative only. The size of the device will, of course, determine to some extent the particular materials used and the size thereof.

The one end of the wire is joined by heat sealing at P by application of sufficient heat and pressure. Other ways, such as twisting or tying, may be used in making any of the joints or attachments. A knitted or otherwise formed net of high melting filament nylon is then laid on top of the preshaped nylon coated wire. Application of heat sufficient to soften the coating on the wire but insufficient to disturb the orientation of the nylon net is then made. Generally, the heat is applied from above, and sufficient pressure is applied to fuse the net into the wire coating. If desired, the device is then trimmed or freed of excess net material with a sharp knife edge or by melting the net material at the edge of the device.

Alternately, the device depicted in Figure 9 may be constructed by preparing the rod support into the desired shape, coating with plastic by organisol, plastisol, or other techniques and then by carrying out the operation of net to wire sealing described above. Appropriately prepared molds or dies designed to hold the wire in the desired shape and to facilitate sealing the net to the wire coating by providing more than flat surface contacts, for example, half-circumference contacts can be used to great advantage.

Construction may also be by sealing a suitable net or other reticulate material and shaped wire between strips or sheets of nylon. In all cases, plastics other than nylon can be used as described above although in heat sealing operations usually like materials will seal together better than unlike ones. In place of heat sealing, the device may also be constructed by sewing or tacking, solvent sealing, adhesive sealing, or the like, or suitable combinations thereof. Optionally, the entire device may be dipped in a plastic melt, solution or dispersion in order to provide the proper and requisite bonding strengths. A further method of constructing this embodiment of our inventive device involves placing a shaped wire in a double-sleeved net and sealing or otherwise fixing the wire to the net at the edges. The entire device can also be prepared by injection or compression molding from suitable materials or by molding a combination of a tubular member K with L, the reticulate member, followed by insertion and sealing of the metallic wire.

The above descriptions of manufacturing methods illustrate the wide variety of applicable processes which may be used to prepare our inventive device. Obviously, other methods can be used; the above descriptions are illustrative only. As a further example, one may wish to have corrugated surfaces available for enhanced hair-holding properties. Sometimes this is desired at the ends of the device, that is, at the clamps. A corrugated wire coating can be obtained using an embossed heat-sealing means, for example, or sleeves containing surface irregularities may be employed.

In operation a strand of hair is placed linearly on or in the combination of net and semi-rigid member; side $R_1 R_1'$ is folded down over the hair followed by $R_2 R_2'$ or vice versa, thereby forming a reticulate sac about the linear hair, as shown in Figure 10. Upon spiralling the device, it is held more firmly on the hair by the clamping action of the wire member M. The combination of hair and device is spiraled or curled to the position illustrated in Figure 11; and the end M of the device is looped over or under adjacent hair and the head end of the curl to lock the combination of device and hair to the head in the desired necessary close operative association during setting. In the formation of the reticulate sac, the sides or members R^1 R^1 and R^2 R^2 may be simply folded together, the device being, in effect, folded in half.

In Figure 12 another embodiment of our invention is shown which is of material construction somewhat similar to the device illustrated in Figure 9. It also involves a single support. In this form, however, the support, such as a coated wire member S, is substantially linear

when manufactured and a flag or side piece T of net is attached thereto as illustrated in Figure 12. Optionally, another member similar to S along the open edge of member T is provided although no wire core is found in this outer member. The shape of member T is not critical, square, triangular or other shapes being operable; preferably, a shape similar to that illustrated is used. In operation, member S is placed parallel to the hair strands to be curled and member T is wrapped around the hair and member S forming in effect a cylindrical or conical sac-net which is then wound or spiraled into the desired shape. End U is then passed in a manner similar to member M of Figure 9 under or over the curl in order to impart stability to the operative association.

In Figure 12 it can be seen that a single support is employed in a straight-piece configuration in the initial form. The reticulate material is of such size and shape as desired. Thus, it may be diamond, square, rectangular, oval and the like in shape and its size depends upon the amount of hair to be treated.

If desired a second netting, similar or different in size and shape to T may be mounted on the left or other side of support S shown in Figure 12. With a plurality of reticulate members on the same member, it is possible to treat different units of hair lying close together in different ways. Thus, one unit may contain more or less hair than the other. Further, one unit may be rolled to the right and the other to the left providing for different twists and curl effects. Still further, the units may receive different setting treatments, as, for example, by use of inserts bearing differing concentrations or kinds of setting materials. Instead of using two separate members T, the support may be positioned within the confines of such a member instead of at one extremity. For example, a support S can be mounted and fused along the center line of a circular member T.

While in some of the devices such as that shown in Figure 12, the extremities of the netting are attached to the support to an extent of only about one-half, the exact amount of bonding at extremities in this form is not critical and it may be as low as 0% and as high as 100%. If an extremity rather than an internal positioning of the support is being used, generally only one edge is employed in the fixation. An amount of the support is left free of reticulate material, and as described above, this free end serves as a handle and as a clamp. Its size is a matter of convenience to the use and user. Similarly, the gauge of the net material may be varied to fit the needs of the user.

This is true also for the form shown in Figure 9. However, as noted, this form employs a greater amount of bonding. In the form shown, all edges of the netting are bonded to the support. Here again, however, the support is unitary. The ends of the support may come together as shown in Figure 9 at P where the plastic in contact is fused together so that the ends are one in effect. In another modification the ends of a single wire are placed together at the top of the device, the wire being shaped as shown in Figure 9 so that the handle or clamp is actually loop or U-shaped. Here again, if the support is a wire coated plastic or if it is all plastic, the ends are bonded together by melt or other fusion methods. In still another way the form shown in Figure 9 can be made. Two pieces of coated wire are shaped to form, in effect, question marks. These are placed together. One is a regular mark and one is a mark in reverse with the top ends overlapping and the stems adjacent. Again, bonding by heat or other fusion at the extremities forms the unitary support of this embodiment.

In all these embodiments hair waving or setting solutions, sprays, or the like can be applied to the hair before, during or after curling. In one preferred embodiment a substantially dry waving solution is placed on the reticulate member or on a similarly shaped added member prior to placing hair therein and after associating hair with the device and performing the shaping of the associated hair and device, the solution is caused to transfer to the hair within the so-formed curl by application of suitable fluid, liquid, spray, or the like.

The most important features of our process are engaging hair firmly in linear association with the extended form of our device and shaping the combination of the device and enveloped hair into the desired form, whereby the combination of the device and hair retains the shaped form on release of the forming pressure during setting and whereby the hair is semi-permanently curled or formed into the desired shape on removal of the device from the close operative association therewith.

Our invention is thus a device for fixing hair in set positions, such as curls, comprising a semi-rigid, resilient supporting member affording an open, substantially non-spiral form and a closed, substantially spiral form, said forms being stable but yielding to deformation, and, in combination or coacting with the support, a reticulate member. The extended non-spiral form has two states or configurations: the completely open state in which the device receives the hair and the folded configuration in which the hair is enveloped just prior to its being shaped into a spiral. The supporting means may be positioned in the center or at the edges of the device as is shown in the figures. The process of our invention is fixing hair in set configuration such as curls wherein strands of hair are placed on reticulate material fixed to a semi-rigid supporting member, folding the reticulate material over and about the said placed hair, and exerting pressure on the said supporting member or on the entire device until the resultant unit assumes the desired configuration. The reticulate nature of the device permits the passage of fluid to and from the hair within or held by the device.

As many widely different embodiments of this invention may be made without departing from the spirit and scope hereof, it is to be understood that the invention is not limited to the specific embodiments hereof, except as defined in the appended claims.

We claim:

1. An elongate device for fixing hair in set positions in the presence of fluid which device comprises a semi-rigid, pliable supporting member extending longitudinally on said device and a reticulate member, said device having an open substantially non-spiral form and a closed, substantially spiral form, said forms being stable but yielding to deformation and said reticulate member permitting passage of fluid to and from the hair and said spiral form being attained through a spiralling of said pliable supporting member.

2. A device in accordance with claim 1 wherein the said supporting member and the said reticulate member are integral.

3. A device in accordance with claim 1 provided with clamping means.

4. A device in accordance with claim 1 in which at least one of said members is formed from a plastic material.

5. A device in accordance with claim 1 in which one member is formed from a plastic and the other is formed from a metal.

6. A process for fixing hair in set positions such as curls which comprises placing strands of hair on reticulate material fixed to a semi-rigid, pliable supporting member extending substantially longitudinally and coextensively with said reticulate material; folding the reticulate material over and about the said placed hair; and exerting pressure through the said supporting member on its major axis, spiralling it thereon until the resultant unit assumes the desired spiralled shape.

7. A device in accordance with claim 1 in which the said longitudinally extending supporting member is positioned centrally in the said device.

8. A device in accordance with claim 1 in which the

said longitudinally extending supporting member is positioned coextensively with the said device.

9. An elongate device for fixing hair in set positions in the presence of fluid which comprises a semi-rigid, pliable, unitary supporting member coextensive with the length of the said device and fixed thereto a reticulate member, said device having an open substantially non-spiral form and a closed substantially spiral form, said forms being stable but yielding to deformation and said reticulate member permitting passage of fluid to and from the hair and said spiral form being attained through a spiralling of said pliable supporting member.

10. An elongate device for fixing hair in set positions in the presence of fluid which comprises a semi-rigid, pliable supporting member coextensive with the length of the said device and a reticulate member fixed to a portion of said support at an extremity of said reticulate member, said device having an open substantially non-spiral form and a closed substantially spiral form, said forms being stable but yielding to deformation and said reticulate member permitting passage of fluid to and from the hair and said spiral form being attained through a spiralling of said pliable supporting member.

11. A device in accordance with claim 10 wherein the said pliable member is unitary.

12. A device in accordance with claim 10 in combination with a chemical for treating the hair.

13. A device in accordance with claim 10 wherein only one edge of the said reticulate member is fixed to said pliable member.

14. A device in accordance with claim 10 in which the portion of said support having no reticulate member fixed thereto has a length affording means for handling said device.

15. A device in accordance with claim 14 in which said means includes means for clamping said device.

16. A process for fixing the hair in set positions such as curls which comprises placing strands of hair on reticulate material mounted on a portion of a semi-rigid, pliable, unitary supporting member extending substantially longitudinally and coextensively with said reticulate material; folding said reticulate material over and about said placed hair; and exerting pressure through the said supporting member until the entire resultant unit, including said supporting member, assumes the desired spiralled shape.

17. A process in accordance with claim 16 which includes the step of treating the hair with a chemical.

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