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METHOD FOR STRAIGHTENING HAIR AND COMPOSITION OF MATTER FOR USE THEREWITH

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Fig 1

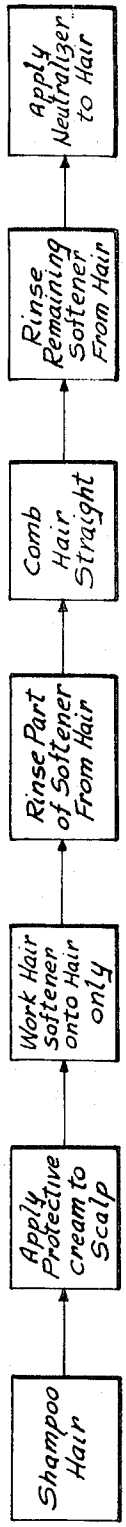


Fig 2

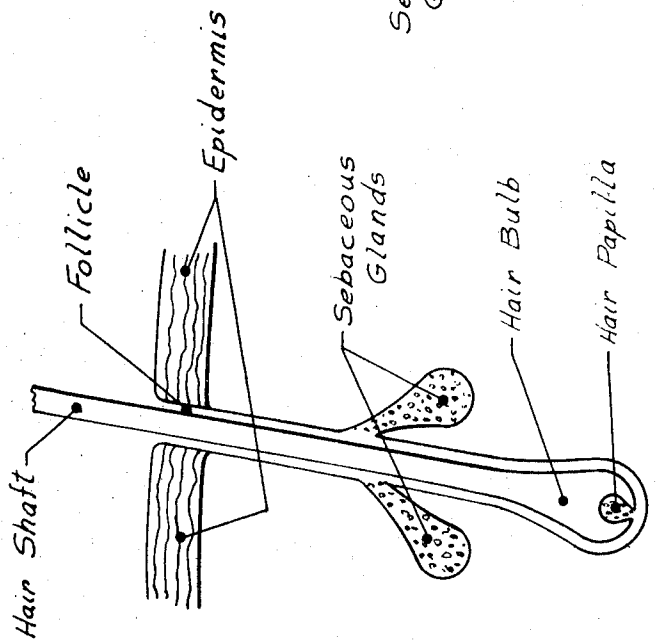
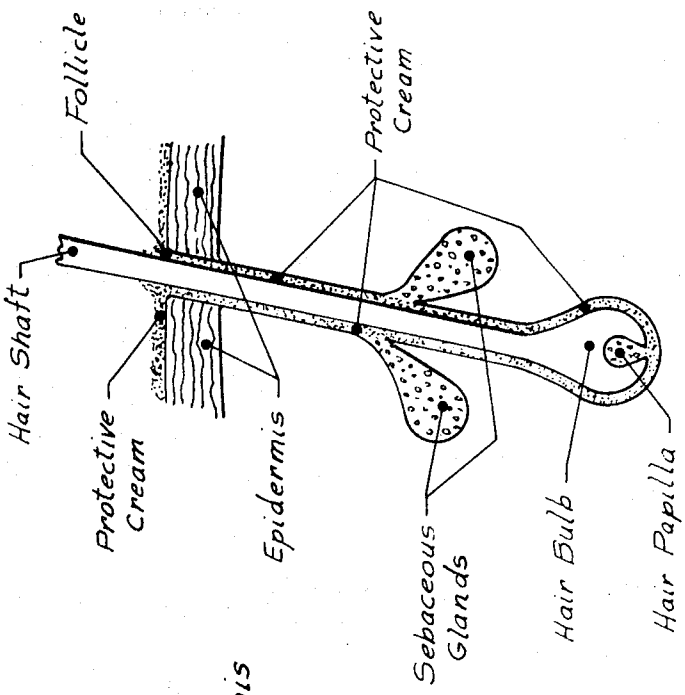


Fig 3



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METHOD FOR STRAIGHTENING HAIR AND COMPOSITION OF MATTER FOR USE THEREWITH

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ABSTRACT OF THE DISCLOSURE

This invention teaches a method of straightening hair by first applying a water soluble, acidic cream to the scalp and then applying a thiol hair softener to the hair.

Our invention relates to a method for straightening hair, and more particularly to an improved method of straightening hair which permits and obviates hair breakage and scalp irritation owing to the straightening treatment.

A serious problem in hair straightening processes heretofore known is breaking of the hair shaft within the follicle a few days following the straightening treatment. This breakage results from entry of the hair softening agent into the follicles and its penetration down to the hair bulbs and hair papillae. The softening agent swells the hair shafts, trapping a small amount of the softener beneath the surface of the scalp. Often this trapped softener is not rinsed from the scalp or neutralized. It thus remains active and causes irritation of the scalp and breakage of the hair. Then too, prior art hair straightening methods are also unsatisfactory in that they are difficult to control to achieve the removal of only a desired amount of kink or curl from the hair.

We have invented an improved method for straightening hair which prevents hair breakage and scalp injury or irritation. Our new method effectively straightens hair. Our new method is easy and inexpensive to perform, and allows an operator to control the straightening process.

One object of our invention is to provide an improved method for straightening hair which prevents scalp injury and hair breakage.

Another object of our invention is to provide an improved method for straightening hair which is readily and inexpensively performed.

A further object of our invention is to provide an improved method for straightening hair which permits an operator to control the straightening process.

An additional object of our invention is to provide an improved method for straightening hair.

Other and further objects of our invention will appear from the following description.

In general our invention contemplates the provision of an improved method for straightening hair including a preliminary step of applying to the scalp a water soluble astringent cream, which coats the hair shafts in the region of the follicles and which readily penetrates to the hair bulbs and papillae. Next we apply a water soluble thiol hair softening cream such as one containing thioglycolic acid, thioglycerol or the like to the hair shafts about one inch from the scalp and work it outwardly to the hair shaft ends. Softening cream that migrates downwardly to the scalp is diluted and neutralized by the cream rendering it inert with respect to the hair and scalp. We allow the softening cream to remain on the hair until the hair becomes plastic. Next we rinse about half the softener cream from the hair which removes the active thiol, and then comb it straight. Then we rinse the remaining cream from the hair and finally apply a neutralizer of a suitable type known in the art, which we permit to remain in the hair.

In the accompanying drawings which form part of the instant specification and which are to be read in conjunction therewith and in which like reference numerals are used to indicate like parts in the various views:

FIGURE 1 is a block diagram of the steps of a hair straightening process showing one embodiment of our new method;

FIGURE 2 is an enlarged view of a hair and section of the scalp in the region thereof with parts in section, showing its appearance prior to the start of our treatment; and

FIGURE 3 is a view of the hair and scalp shown in FIGURE 2 after we have applied the protective cream thereto.

More particularly, we prefer initially to shampoo the hair with a neutral vegetable or cream shampoo of a suitable type known in the art, as indicated in FIGURE 1. After shampooing the hair we dry it. Then we carefully apply about 2 to 4 oz. of our protective cream directly to the scalp. Conveniently in performing this step of our process we part the hair at about one inch intervals and force the cream from a suitable container onto the scalp—as through a narrow nozzle positioned adjacent to the scalp. It should be noted that the protective cream should only contact the hair shaft immediately adjacent the scalp.

Any suitable cream base known to the art may be employed. Such cream bases are normally emulsions of fatty materials such as oils or waxes and water formed with the use of a hydrophilic agent. The cream base should have a pH of between 1.5 and 5.

This acidic hydrogen-ion concentration is obtained by the addition of a non-irritating acid such as citric acid, acetic acid, phosphoric acid, or tartaric acid. In the example which follows "Neocol 5192" is the trade name for a non-ionic, ethylene oxide fatty alcohol-lanolin complex manufactured by Dispergent Company of Guilford, Conn. It is understood, of course, that any other suitable emulsifying agent may be used such as polyoxyalkylene derivatives of sorbitan fatty acids as, for example, sorbitan monolaurate, sorbitan monopalmitate, sorbitan monostearate, sorbitan monooleate and the like. If desired other emulsifying agents such as non-ionic, long chain, fatty acid partial esters of hexitol anhydrides including sorbitans, sorbides, mannitans and mannides may be employed. These emulsifying agents are non-irritating to the skin.

We have satisfactorily used protective creams compounded as follows in the practice of our new method. The percentages indicated are percent by weight:

Ingredient	Preferred amount	Range of amount
NEOCOL 5192, percent	12.50	8–15
Mineral oil, percent	3.00	2–10
Paraffin wax, percent	2.5	2–8
Polyoxyethylene lauryl alcohol, percent	0.9	0.5–2
Citric acid, percent	0.75	0.5–1.5
Water, percent	80.35	54–89
pH of the above cream	4.0	1.5–5

Instead of using mineral oil, vegetable oils such as olive oil or cottonseed oil may be employed if desired.

Instead of paraffin wax, spermaceti wax, beeswax or those classes of petrolatum waxes known as microcrystalline waxes may be used. We have found that it is desirable to add a wetting agent such as polyoxyethylene lauryl alcohol or any of the series of polyethylene fatty alcohol derivatives which are excellent wetting agents to the composition in order to stabilize it.

In preparing the cream we heat the Neocol 5192, the oil and the wax to 90° C. and mix them together with approximately 50% of the water which has been preheated to 90°. After thoroughly mixing these ingredients we slowly add to them about 30% of the water, which is at room temperature. We dissolve the wetting agent in 10% water which has been heated to 75° C. and dissolve the citric acid in the remaining 10% of the water, which is at room temperature. After cooling the emulsion to about 55° C., we add the dissolved wetting agent. Following this we cool this mixture to 50° C. and add the dissolved acid. If desired, a suitable coloring material and perfume (known to the art) can also be added to the mix after it has cooled to 50° C. We also find that it is advantageous to add a small amount (approximately 6%) of a suitable preservative such as a methyl ester of para-hydroxybenzoic acid, or ethyl propyl.

The scalp, prior to being treated with our protective cream appears as shown in FIGURE 2, in the region of the hair shaft. The follicle, or depression from which the hair grows, is several times as large as the hair shaft. The hair softening materials of the prior art straightening processes collect in the follicle and often penetrate between the hair shaft and the scalp to the hair bulb and papilla. The softening agent swells the hair shaft which prevents subsequently applied rinses or neutralizers from penetrating below the shaft and removing this material or rendering it inert. This trapped material often so damages the hair as to cause it to break within several days of the treatment.

As shown in FIGURE 3, our protective cream coats the hair shaft in the region of the follicle and readily works its way down to the hair bulb and papilla, also coating the hair shaft beneath the surface of the scalp. Owing to its low pH our cream is astringent and contracts the follicle, thus preventing the softening agent from collecting therein. Moreover, also owing to its low pH, our cream hardens the hair shaft and prevents swelling thereof.

Following the application of the protective cream, we apply to the hair a suitable hair softening cream which includes a thiol hair softening agent such as thioglycolic acid and thioglycerol. The cream base for the hair softener is water soluble and its formula is similar to the formula for the protective cream base. For a hydrophilic emulsifying agent we use from 8% to 15% by weight of Neocol 5192 or any of the equivalents thereof pointed out above. We combine about 2% to 8% by weight of a suitable wax such as spermaceti, cetylalcohol or beeswax with the hydrophilic agent for forming the cream base, and add a major amount of water (66% to 83% by weight), lesser amounts (5% to 8% by weight) of a thiol, such as thioglycolic acid or thioglycerol, and a suitable alkali (2% to 4% by weight) such as ammonia water to establish a pH in the range of 8.5 to 9.5. Glycerol monostearate or other known hydrophilic agents may be combined with mineral oil and fatty materials such as fatty acids or fatty acid esters for forming the cream base as is known to the cosmetic art.

We have successfully used hair softeners having the following formulae in the practice of our new process. The percentages given are by weight.

Ingredient	Preferred amount	Range of amount
NEOCOL 5192, percent	15.40	8–15
Spermacei wax, percent	6.15	2–8
Thioglycolic acid, percent	8.20	5–8
Ammonia water, percent	3.60	2–4
Distilled water, percent	66.65	66–83
pH of the above cream	9.0	8.5–9.5

In the preparation of this hair softening cream we heat the Neocol 5192 and the wax to 80° C. We then add about 30% of the water, which has been preheated to 80° C. to the Neocol 5192 and the wax and mix them well but slowly together. We then add the remaining water, which is at room temperature. Finally we slowly add

the ammonia and the thioglycolic acid to the Neocol 5192, wax and water mass and mix them together. It should be noted that there will be a slight loss of thioglycolic acid in the manufacturing process and that the percentage of acid in the final product is about 7.75%.

Preferably, we part the hair and separate it into one inch hanks. We apply a small amount of softening cream to the hair shafts of each hank about one inch from the scalp. About 4 oz. is sufficient for a single treatment. We work the cream into the hair shafts, working it outwardly toward the end of the hair shaft, which assists in straightening the hair. Then we pull a comb through each section once. After the hair has processed 10 minutes we pull a comb through it twice and then allow it to continue to process until it has straightened the desired amount, which may be determined by visual inspection. The total process time required depends upon the particular hair and ranges from 15 to 30 mintues. The process should not be continued more than 30 minutes. It should be noted that some hair softening cream migrates to the scalp. But this softening cream is diluted and neutralized by the protective cream.

After the hair has straightened the desired amount we rinse about 50% of the softening cream from the hair with warm water. With about 50% of the softening cream remaining in the hair we comb for approximately 5 minutes. Then we rinse the remaining softening cream from the hair with warm water. It will be appreciated that some of the protective cream will likewise be rinsed from the scalp. The protective cream which is not so rinsed away is not injurious to the hair or irritating to the scalp and does not interfere with the growth of healthy hair.

Finally we thoroughly rinse the hair with an aqueous solution of a suitable thiol neutralizer known in the art, such as a dilute solution of hydrogen peroxide. We find that it is advantageous to comb the hair as the neutralizer is applied in order to assure that each strand is neutralized. In addition to neutralizing the trace of hair softener which remains after rinsing with water, the neutralizer fixes the softened and straightened hair. We do not remove the neutralizer from the hair.

It should be noted that a small amount of our protective cream may be advantageously applied in certain instances to the hair shaft prior to applying the softening cream in order to protect sensitive hair shafts, such as those which have been bleached, from damage by or overreaction with the softening cream.

Thus it will be seen that we have accomplished the objects of our invention. In our new process we cover the scalp with a protective cream which prevents the hair softening agent from being trapped beneath the surface of the scalp and causing hair breakage and scalp irritation. Our new process may readily and inexpensively be performed. With our process an operator is able to determine when a desired amount of curl has been removed from the hair and stop the process at this point by rinsing the straightening cream from the hair.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of our claims. It is further obvious that various changes may be made in details within the scope of our claims without departing from the spirit of our invention. It is therefore to be understood that our invention is not to be limited to the specific details shown and described.

Having thus described our invention, what we claim is:

1. A method for straightening hair including the steps of applying to the scalp a water soluble acidic cream having a pH of from about 1.5 to about 5 and containing a non-irritating acid, then applying to the hair shaft a water soluble cream containing a thiol compound and having a pH of between about 8.5 to 9.5.

2. A method for straightening hair including the steps of applying to the scalp a water soluble acidic cream hav-

ing a pH of from about 1.5 to 5 and containing a non-irritating acid, which cream readily penetrates to the hair bulb and papilla, then applying to the hair shafts a water soluble cream having a pH of about 8.5 to 9.5 and including a thiol compound.

3. A method for straightening hair including the steps of coating the scalp with a water soluble acidic protective cream having a pH of about 1.5 to 5 and containing a non-irritating acid, which readily penetrates to the hair bulb and papilla, then coating the hair shafts with a water soluble hair softening cream having a pH of about 8.5 to 9.5 and containing a thiol compound, allowing the softening cream to coat the hair until it is plastic, then rinsing a substantial amount of the softening cream from the hair, then combing the hair, then rinsing the remainder of the softening cream from the hair, and then applying a neutralizer for thiol to the hair shafts.

4. A method for straightening hair including the steps of coating the scalp with a protective cream comprising an emulsion of fatty materials, a non-irritating acid, and water, the protective cream having a pH in the range of 1.5 to 5, and then coating the hair shafts with hair softening cream comprising a thiol compound dispersed through an emulsion of fatty materials and water, the softening cream having a pH in the range of 8.5 to 9.5.

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U.S. Cl. X.R.

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