Patented July 11, 1933

1,918,158

UNITED STATES PATENT OFFICE

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METHOD OF COLORING HAIR

No Drawing. Application filed November 25, 1931. Serial No. 577,380.

This invention relates to a method of coloring living hair upon the human head and to materials in a form adaptable to application thereto.

The coloring of living hair is an ancient practice, but the demand for such treatment has increased enormously in modern times because of the desire of individuals to maintain an appearance of youth after natural processes have caused the hair to lose its original color. Various coloring materials have been utilized for the purpose of coloring hair.

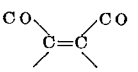
Among the dyes heretofore used are the metallic salts such as silver nitrate, lead acetate, antimony salts and compounds of iron with pyrogallol. Various objectionable features of these dyes include lack of permanency and the poisonous character of some of the salts.

Another method of dyeing hair depends upon the application of such materials as para-phenylene-diamine and para-toluylene-diamine. These compounds, which are known generally as instantaneous dyes, are highly objectionable on account of the toxic effect upon many persons. Application of such dyes often causes local swelling which is exceedingly painful and is accompanied by serious skin eruptions. As a result, the use of these dyes is restricted by legislation which usually requires a test upon a patch of the skin at least twenty-four hours before application to the hair, in order that the sensitiveness of the person may be determined. Moreover, these dyes are not fast and have a tendency particularly in summer to change color, often developing shades of lavender and purple with resulting disfigurement of the individual. Another objectionable feature of the dyes mentioned results from the necessity for applying them in alkaline solutions containing hydrogen peroxide. Such solutions cause the hair to become harsh with loss of strength. It is difficult after such treatment to secure satisfactory waves by the methods commonly employed for waving hair. This is especially important since persons who resort to coloring their hair almost invariably demand waving to complete the treatment of the hair.

No satisfactory and safe method of coloring hair has been available heretofore. Commercial beauty shops have been obliged in many cases to pay heavy damages for injuries resulting from the application of dyes to the hair and usually carry insurance against this contingency. Many persons, moreover, will not risk the treatment even when insurance against injury is provided. Consequently the commercial practice of coloring hair has not been developed satisfactorily and successfully in spite of the desire of many persons for hair coloring treatments.

It is the object of the present invention to provide a method of coloring hair and materials for that purpose which avoid the objectionable features heretofore mentioned, and which afford a simple, safe and certain procedure for the treatment of hair.

In carrying out the invention, we employ compounds which are non-toxic and which can be utilized therefore without danger of injury to the individual. Certain materials and particularly organic compounds which contain the so-called indigoid group represented by the formula;



when converted to the reduced, or leuco form are soluble in water in which a small amount of sodium hydrosulphite and ammonia have been added. Such solutions can be applied with impunity to the hair, causing no damage thereto. The compounds are likewise nontoxic and have, therefore, none of the disadvantages of dyes heretofore employed in coloring hair. The reduced colors are readily oxidized on the hair, for example by exposure to the air, and develop thereon the desired color which cannot be removed even by repeated washing and remains unchanged under all conditions.

We prefer to employ colors derived from indigo and thio-indigo. Indigo and its derivatives furnish mostly blue colors. Thio-

indigo is bluish red and certain derivatives furnish reds, greens, yellows and browns. Various shades can be obtained by mixing these compounds in suitable proportions. Since a large variety of shades of color must be available it is of course impossible to fix any hard and fast rule for the preparation of all of the shades.

As an example of the invention, we may select colors such as 5:5′ dichlorothioindigo or 5:5′ dichloro-6:6′ dimethylthioindigo which are bluish red and blend therewith suitable proportions of brominated-beta-napthalene indigo which is yellowish green with or without indigo to secure dark neutral shades. The amount of each color will depend upon the shades desired. The color must be reduced to the leuco compound of the corresponding indigoid compound. In general we prefer to employ the sodium salts of the leuco compound. The coloring material is dissolved in hot water to which a small amount of sodium hydrosulphite and ammonia are added and is ready for application to the hair.

In coloring the hair, it is first washed, if necessary, after which the solution is applied uniformly with cotton or a small brush. The solution is permitted to remain on the hair until a sufficient amount thereof is absorbed. The time required is variable, depending upon the shade to be produced. The hair is then again washed and dried. The exposure of the hair to the atmosphere after washing and while the hair is drying results in oxidation of the color base to produce the desired color. The hair is then shampooed and dried. As a result of the operation, the hair is permanently colored and may be washed repeatedly without removing the color therefrom.

The solution as described affords all of the necessary material for the treatment, it being unnecessary, as is usual in many hair dyeing operations, to apply hydrogen peroxide or similar chemical agents. It is possible, therefore, to supply coloring material in a single solution of the leuco base adapted to produce the desired color or shade when the material is applied in the manner described to the hair. A typical example of such a solution consists of:

Color	10 gms.
Sodium hydrosulphite	1 gm.
Aqua ammonia	50 cc.
Water	1 liter

Such a solution is adapted to afford a deep color. In light shades the proportion of color would be considerably less.

As will be readily understood, the compounds mentioned herein are merely examples of many available materials which can be utilized for the purpose. It is essential to avoid toxic compounds and also compounds which require the addition of strong alkalis which cannot be applied successfully to human hair. The invention depends upon the application to the hair of ammoniacal solutions of coloring materials in a reduced condition adapted to be oxidized on the hair to produce the desired color.

The hair after treatment as described is soft and free from harshness. There is no substantial loss of strength and the hair takes a permanent wave readily when treated by the usual waving methods. The colors are fast and do not change when the hair is exposed to strong light or becomes moist with perspiration.

Various changes may be made in the procedure and in the materials employed in carrying out the invention without departing therefrom or sacrificing any of the advantages thereof.

We claim:

1. The method of coloring living hair upon the human head which comprises applying an ammoniacal solution of a leuco compound derived from a substance containing an indigoid group to the hair and permitting the color to develop on the hair by oxidation.

2. A method of coloring living hair on the human head which comprises applying a solution containing ammonia, sodium hydrosulphite and a leuco compound derived from a substance containing an indigoid group.

In testimony whereof we affix our signatures.

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