

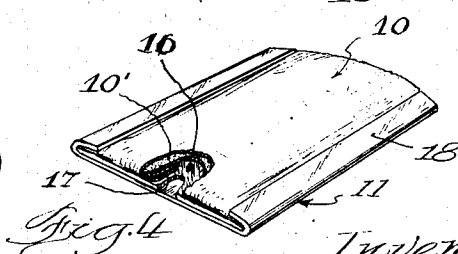
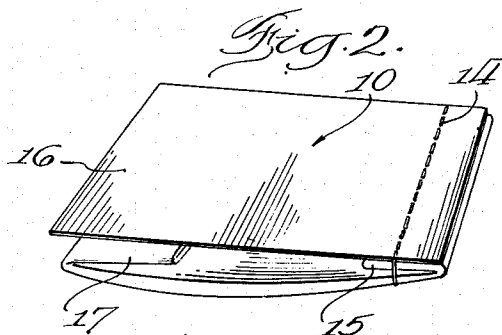
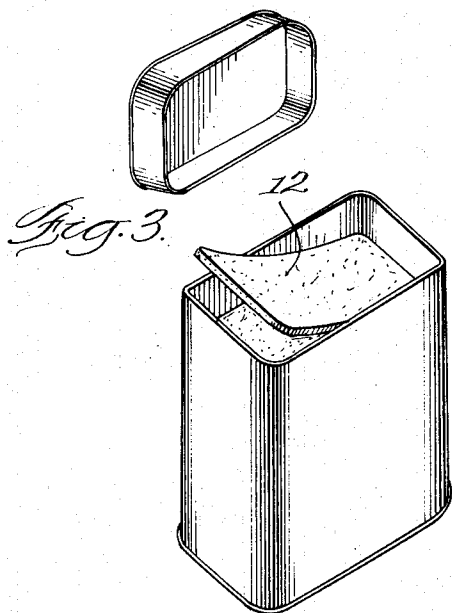
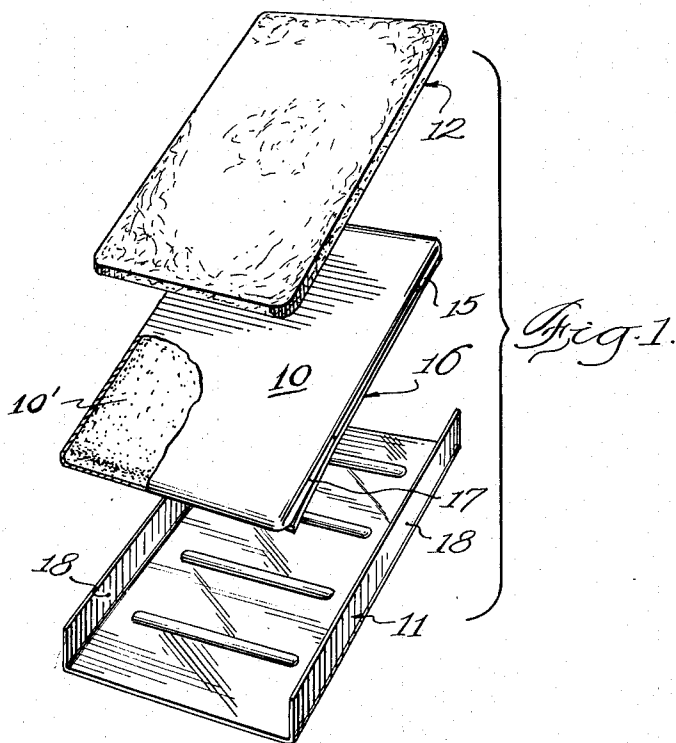
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2,239,410

METHOD AND MEANS OF PRODUCING HEAT BY EXOTHERMIC REACTION

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METHOD AND MEANS OF PRODUCING HEAT
BY EXOTHERMIC REACTION

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10 Claims. (Cl. 132—36.2)

This invention relates to a method and means for permanent waving hair. More particularly, this invention proposes a novel method of producing and utilizing the heat of reaction of a so-called "machineless" permanent waving pad.

The object of this invention is to provide a novel and improved chemical permanent waving pad which will produce heat by an exothermic reaction.

Still a further object of the present invention is to provide a novel method and means for the permanent waving of hair in which the hair will be conditioned at the same time that a wave is being imparted thereto.

A further object of the invention is to provide a novel and improved method of permanent waving hair which will utilize the exothermic heat of reaction between a permanganate and a suitable reagent.

Still a further object of the present invention is to provide a novel and improved method and means of imparting a wave to hair which will utilize the heat of reaction between an oily reagent and a chemical adapted to produce heat in a reaction therewith.

Still a further object of the present invention is to provide a novel and improved method and means of imparting a wave to hair which will utilize the heat of reaction between an alcohol and a suitable reagent.

Still a further object of the present invention is to provide a novel and improved method and means of imparting a wave to hair which will utilize the heat of reaction between glycerol and a suitable reagent.

Still a further object of the present invention is to provide a novel and improved method and means of imparting a wave to hair which will utilize the heat of reaction between a sugar and a suitable reagent.

Still a further object of the present invention is to provide a novel and improved method and means of imparting a wave to hair which will utilize the heat of reaction between a hair-conditioning material and a suitable reagent.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention consists of novel features and combinations hereinafter more fully described, illustrated in the drawing, and particularly pointed out in the claims, it being understood that various changes in the form, proportion, size and minor details of the structure used with my method, and also proportions of material, and

mode of application may be made without departing from the spirit or sacrificing any of the advantages of my application.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawing a preferred embodiment of the apparatus to be used in practicing my new method, and in applying same to the purposes set forth herein. When the drawing is considered in connection with the following description, my invention and its mode of operation and application should be readily understood and appreciated.

Referring to the drawing in which the same characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawing:

Fig. 1 is an exploded perspective view of the complete constituents of a pad adapted to utilize my invention.

Fig. 2 is a bottom perspective view of the sachet portion of my pad.

Fig. 3 illustrates means for packing and shipping the applicators of my pad.

Fig. 4 is a perspective view of a pad assembly embodying my new invention with portions broken away to show the construction thereof.

I have found that it is possible to utilize a reaction which is a simple and easily controlled one in the permanent waving of hair and which utilizes as one of its reagents a permanganate, such as potassium permanganate (KMnO_4) magnesium permanganate ($\text{Mg}(\text{MnO}_4)_2$) and the like. The use of any permanganate is practical because of the excellent oxidizing property thereof. It immediately becomes apparent that any good oxidizing agent may be used in my permanent waving pad with beneficial results.

The oxidizing property of a substance is that property which makes the substance anxious to give up its oxygen to a material which is capable of uniting with the oxygen thus given up. The reaction which thus takes place is practically always accompanied by an evolution of heat, and it is this heat which I propose to utilize.

The reagent which I propose using in conjunction with a permanganate is glycerol or glycerine, as it is popularly known. This substance is an oily viscous liquid which is a good reducing agent. Hence, it has great affinity for oxygen and reacts very easily with oxidizing agents. It is easily handled, and a solution of it, soaked into an applicator, will evaporate very slowly and will, therefore, last substantially indefinitely. Also, an

applicator permeated with a glycerol solution may be conveniently applied to the oxidizing agent, such as, for example, potassium permanganate, contained in a sachet or the like, and an exothermic reaction can occur without the production or use of any running liquids, solutions, or the like, to confine or guard against.

The pad which I contemplate using and which is illustrated in the drawing comprises a sachet 10, a packing member 11, and an applicator 12. The sachet 10 may be in the form of a bag, envelope, or other convenient container, and is formed of fabric or like porous material. The embodiment illustrated is made by folding over the end 15 of a fabric tube and stitching same closed as shown at 14. An insulating member 16 of paper or the like is attached by the same stitching.

The envelope or sachet is partially filled with the proper material 10' and the end folded as shown at 17. Thus, the sachet is complete and ready for use and may be shipped without danger of the material sifting out.

The material 10' placed in the sachet is, for example, a mixture of finely comminuted potassium permanganate and silica, or some other inert filler, or earth.

The use of silica or inert material of such nature is for the purpose of heat control in the well known manner, acting to delay reaction between the material in the sachet 10 and the reagent which is to contact same.

The backing member 11, with which the sachet is associated, is made of stiff foil, such as aluminum or the like, and is provided with flanges 18 on the long edges thereof. These flanges are adapted to be bent over and upon the sachet 10 when same is placed thereon as shown in Fig. 4. The purpose of the backing 11, of course, is to cause the pad to maintain its shape when bent around a tress of hair, and further, to facilitate handling of the pad.

The applicator 12 is simply a piece of absorbent material, such as cotton, flannel or the like, approximately the same size as the sachet. It is impregnated with a suitable solution adapted to react with the active material in the sachet 10. This may be a solution of glycerol, sugar or the like.

The applicators being adapted to be impregnated with a more or less viscous solution, there is no difficulty in handling same. Hence, the exact solution necessary may be incorporated into the applicator long prior to use, for example, at the place of manufacture, and same may be stored indefinitely. As an example of this, I have found it plausible to prepare the applicators with impregnated solution of predetermined proportions and pack same in hermetically sealed containers, as for example, shown in Fig. 3. In this manner, the exact proportions may be incorporated at the factory and no danger can result from mistakes in proportion. The container is opened by the beautician, and the applicators are immediately placed in a jar or the like, from which same may be utilized as desired. The nature of the substance used is such that practically no evaporation of the reagent (which might cause change in proportions) occurs.

The materials used, as explained previously, can be any of a large number of substances. The applicator is to be steeped or impregnated with a solution of glycerol, sugar, or some such reagent. This reagent can be any oily substance, alcohol, carbohydrate, or hair conditioning ma-

terial such as vegetable oils or glycol products capable of producing exothermic heat in reaction with an oxidizing agent.

The oxidizing agent may be any permanganate, acid or other strong oxidizing agent. Of course, the oxidizing agent must be something capable of reacting with the substance in the applicator. Obviously, other powerful oxidizing agents which will function in the same manner as the permanganates are the chlorates, perchlorates, chromates, dichromates, etc.

While I have described the pad which I contemplate using, it must be understood that the materials which I propose have never heretofore been utilized in hair waving pads, and hence, these ingredients may be utilized with different and varied types of pads or other apparatus, without departure from the spirit of my invention.

Textures of hair vary, and hence, the control of the heat to be applied thereto is of no minor importance. The materials which I propose using are very conducive to a complete control of the heat produced and similar control of the length of time during which the heat produced is applied. In the preferred embodiments, the following general proportions have been found to give satisfactory results:

For bleached, dyed, white or other dry brittle hair, the sachet may contain 20% potassium permanganate and 80% filler. The applicator to be used therewith may be impregnated with a solution of 60% glycerol and 40% water.

For medium texture hair, the sachet may contain 35% potassium permanganate and 65% filler. The applicator for this sachet is impregnated with a solution of 75% glycerol and 25% water.

The sachet used with fine hair may contain 50% potassium permanganate and 50% filler, while the applicator used with this sachet may be impregnated with the same solution as used in the applicator of the pad for medium texture hair and comprising 75% glycerol and 25% water.

The amount of heat, to a great extent, is regulated by the proportion of glycerol to water in the applicator, while the period of time over which the heat is to extend may be regulated by the proportion of permanganate to filler in the sachet.

The above referred to glycerol is not always pure glycerol. I have found it advantageous to intermingle therewith various proportions of vegetable oils and glycol products, which will not as quickly be consumed in the chemical reaction, thus being available for oil treatment and oil conditioning of the hair when the heat from the exothermic reaction of the pad causes vaporization thereof. By variation of the proportions of vegetable oil, glycol and glycerol, it is possible to effect further heat control besides that afforded by variation of the amount of oxidizing agent.

In operation, I utilize the following procedure: First, the tress of hair is wound in the usual manner for the required wave. Then the sachet is selected from a supply to correspond to the texture of the subject's hair. The applicator is then selected from a proper container and is applied to the pad. The pad is then bent around the coiled tress of hair with the applicator directly against the hair. In a short time the pad will begin to heat and will continue for a length

of time and at a temperature measured by the proportions of the materials used.

It is to be noted that the glycerol which is impregnated in the applicator is in a position to be vaporized when steam is produced by reason of the exothermic heat. In other words, not all of the glycerol enters into the reaction, a small part permeating the tress of hair and serving to condition and lubricate same. Thus, when the wave is completely formed, the hair of the tress is glossy and lustrous and has a sheen and soft texture which has never heretofore been possible with machineless waves which tend to dry the hair and leave same lifeless.

It is obvious that a large number of the family of reagents of which glycerol is a member will probably react with powerful oxidizing agents to produce exothermic heat of reaction. These are the alcohols, of which glycerin is a member. While other alcohols may be used, I prefer glycerol because its preservative properties are beneficial for the conditioning of the hair and scalp. Thus, while the reaction is going on between the glycerol and the oxidizing agent, the hair is being subjected to the direct contact with the glycerol and is thus groomed and conditioned thereby.

In practice, I have found it advisable to include certain proportions of glycol products and vegetable oils in the pads to assure that a good proportion of hair-conditioning material will vaporize and benefit the tress of hair operated upon. While it is true that mineral oil would also act the same way, I prefer the above-mentioned vegetable oil.

I have found that carbohydrates will react with strong oxidizing agents to produce exothermic heat. Thus, I have used the present method with a sugar solution instead of a glycerol solution, and have obtained satisfactory results. Obviously, starches and the like may also be utilized.

It will be seen that I have provided a radically new and novel method of producing a permanent wave by means of the exothermic heat of a chemical reaction. It will further be seen that I have devised a new method of waving hair, in which one of the chemical reagents used to produce exothermic heat to cause a wave to be produced in a pre-formed tress of hair, is a hair-conditioning oil or the like material such as glycerol, glycol products, alcohols, vegetable oils, mineral oils and/or combinations thereof, and hence the hair of the said tress is thereby conditioned at the same time as it is being waved.

Further, it must be apparent that I have by my new invention eliminated the need of a large amount of materials and apparatus heretofore used in the art of chemical hair waving. Especially, I refer to extraneous oils, and solutions, and liquids, necessary to be applied to the pad or the tress and the containers, basins, and the like used in handling same.

It is believed that my invention, its mode of operation and practice, the apparatus to be used in carrying same out, and many of its advantages should be readily understood from the foregoing without further description, and it also should be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the details, proportions, and steps of practice, are, nevertheless, capable of wide variation within the purview of my invention, as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. A permanent waving pad for imparting a

wave to a pre-formed tress of hair by means of the heat of an exothermic chemical reaction, said pad containing a permanganate adapted to enter into said exothermic chemical reaction, and a glycerol in solution for reaction with said permanganate, the amount of heat produced by said chemical reaction being controlled by applying said glycerol to said permanganate in a pre-proportioned solution thereof.

2. A permanent waving pad including a permanganate, a glycerol and means for establishing contact between said permanganate and said glycerol to cause thereby an exothermic chemical reaction.

3. A permanent waving pad including a permanganate, a glycerol for reaction with said permanganate, and means for establishing contact between said permanganate and said glycerol to cause thereby an exothermic chemical reaction, said permanganate being disposed in a permeable container, said means comprising an applicator impregnated with said glycerol, adapted to be placed in contact with said container, thereby causing said glycerol to seep through said container to said permanganate.

4. In a permanent waving pad containing a permanganate, a glycerol adapted to react with said permanganate to cause thereby exothermic chemical reaction, an applicator member impregnated with said glycerol and disposed against said pad with one side thereof adapted to contact a tress of hair.

5. In means for carrying out permanent hair waving operations, an exothermic chemical heating mixture adapted to be placed in heat transferring relationship with a wound strand of hair, said mixture consisting mainly of a salt rich in available oxygen and combined with a suitable filler to form a substantially dry mix, and a solution for reacting with said mixture at the time the mixture is used, the solution including a glycerol.

6. In means for carrying out permanent hair waving operations, an exothermic chemical heating mixture adapted to be placed in heat transferring relationship with a wound strand of hair, said mixture consisting of potassium permanganate combined with a suitable filler to form a substantially dry mix, and a solution for reacting with said mixture at the time the mixture is used, the solution including a glycerol.

7. In means for carrying out permanent hair waving operations, an exothermic chemical heating mixture adapted to be placed in heat transferring relationship with a wound strand of hair, said mixture comprising a substantially dry mix containing permanganate combined with a filler, a solution consisting mainly of a glycerol for exothermic reaction with said permanganate, and means for establishing contact between said solution and permanganate to bring about said exothermic chemical reaction.

8. In means for carrying out permanent hair waving operations, an exothermic chemical heating mixture adapted to be placed in heat transferring relationship with a wound strand of hair, said mixture comprising a substantially dry mix containing permanganate combined with a filler, a solution consisting mainly of a glycerol for exothermic reaction with said permanganate, and means for establishing contact between said solution and permanganate to bring about said exothermic chemical reaction, said means including a permeable container within which said mix is disposed, and a sheet of absorbent material

saturated with said solution and adapted when placed in contact with a wall of said permeable container to bring about the exothermic reaction by reason of solution seeping through said container to said permanganate.

9. In means for carrying out permanent hair waving operations, an exothermic chemical heating mixture adapted to be placed in heat transferring relationship with a wound strand of hair, said mixture comprising a substantially dry mix containing permanganate combined with a suitable filler, a solution containing glycerol, glycol and a vegetable oil for exothermic reaction with said permanganate, and means for establishing contact between said solution and permanganate to cause thereby the said exothermic chemical reaction.

10. In means for carrying out permanent hair waving operations, an exothermic chemical heating mixture adapted to be placed in heat transferring relationship with a wound strand of hair, said mixture comprising a substantially dry mix, containing permanganate combined with a filler, a solution containing glycerol, glycol and vegetable oil adapted to react with said permanganate to cause thereby exothermic chemical reaction, an applicator member impregnated with said solution and adapted for disposition against said pad with one side thereof contacting a tress of hair whereby a portion of said solution will permeate the hair to condition the same while the exothermic reaction is taking place.

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