PATENT SPECIFICATION

454,430

Application Date: March 29, 1935. No. 9879/35.

Complete Specification Accepted: Sept. 29, 1936.

COMPLETE SPECIFICATION

Improvements in Permanent Hair Waving

I, JOHNNY MÜRSCH, a subject of the King of Denmark, residing at Ryesgade 3, Copenhagen, Denmark, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention refers to a new and improved method for waving the human hair.

Permanent hair waving is generally performed in such a way that the hair is wound around a suitable curler or mandrel, and subjected to a heating process within a closed casing by means of heat supplied by electricity or by pads containing chemical charges adapted to generate heat when acted upon by an appropriate liquid.

Hair waving apparatus has been previously proposed in which the hair is subjected simultaneously to heat and pressure; the said apparatus comprising either (a) clamping devices consisting of a pair of spring-loaded jaws adapted to be applied about a wound tress and either heated electrically in situ to an unspecified temperature or preheated before application to the tress to 150—200° C., (b) a fluid-tight casing through which steam is passed and which tightly encloses the wound tress, or (c) a casing containing an exothermical chemical which, when moistened, swells and applies pressure to the enclosed wound tress and also produces the necessary heat for steaming the tress.

The present invention consists therein that the wound hair is surrounded by heating bodies, which simultaneously are heated to or produce a temperature of 120 to 140° C. and act upon the hair with a steady uniform mechanical pressure over the whole of its surface. This simultaneous heating and pressure action results in an extremely reliable and uniform permanent waving, giving a smooth and bright surface.

A uniform pressure over the whole surface of the wound hair can be obtained by hydraulical means. This can for instance be obtained in an apparatus similar to that described in British Specification No. 449,400 by substituting a receptacle made from a liquid tight elastical material for the bag containing exothermical material and passing heated oil through the receptacle with such hydraulic pressure that the pressure upon the surface of the wound tress will be from 2.8 to 4.3 lbs. per square inch. Instead of passing oil into it, the receptacle may consist of a wholly closed liquid bag interposed between the wound hair and the surrounding casing. This liquid bag may be directly heated by electrical heating bodies built in the casing in known manner and the desired mechanical pressure can be obtained thereby that the casing in known manner exerts a yielding pressure on the liquid bag.

The magnitude of the mechanical pressure required for obtaining a reliable permanent waving is dependent upon the temperature in such a way, that when the temperature is high e.g. 140° C. only a very small mechanical pressure is necessary and when the temperature is low an increased pressure is necessary.

The most suitable mode of carrying the invention into effect is, however, to use as the source of heat, suitable chemicals adapted to generate heat by the addition of an appropriate liquid, since the employment of electric heating elements involves the risk of a complete drying out and a charring of the hair unless the progress of the waving process is carefully observed and the electric current is switched off at the correct moment. Such a control is very difficult to perform in hairdressing saloons in which the attendants are also engaged in other ways during the continuation of the process.

When using chemicals as a source of heat, it is possible to predetermine the exact amount of heat and the temperature through careful selection of the quantity of the chemical as well as of the liquid used, so that the process, when once started, may be automatically continued without human control and without the risk for super-heating or charring. The mechanical pressure action also required according to the invention is obtained by

using a chemical which during the reaction simultaneously with the generation of heat is also materially increased in respect of volume, such increase in volume being transformed into a pressure action in a suitable apparatus.

Such an apparatus is described in British Specification No. 449,400 and comprises a hollow perforated curler or mandrel which is rotatably mounted in a supporting clamp adapted to engage the root of the hair. A jacket consisting of two parts is tightly surrounding a linen bag with a piece of paper fastened thereon, said bag surrounding the wound tress. The bag contains an exothermical chemical which when moistened with water absorbed by said piece of paper rises to a temperature of 120—140° C. and simultaneously increases in volume so that it causes a material mechanical pressure on the hair. In practical use the bag contains 16 grams exothermical material and the piece of flannel is able to absorb 6 grams of water. The said water quantity is only a little more than necessary for complete saturation of the exothermical material. When the apparatus is assembled and the piece of paper is pressed against the linen bag the water quantity absorbed by the piece of paper is almost immediately drawn up by the contents of the linen bag. Instead of using a piece of paper the water can be supplied in any other suitable way e.g. directly from a measuring glass or pipette. As the exothermical material is finely pulverised and thus acts plastically the pressure over the whole surface of the wound up hair will be uniform.

The reaction material used in practice is made in the following way:

The raw material is limestone which is crushed and mixed with 4% finely pulverised quartz (SiO_2) and 3% alumina (Al_2O_3). The mixture is burnt in a muffle oven which holds 1 m^3 at a temperature of 1300° C. From the burnt mass 1/4 m^3 is taken out from the middle of the mass and the rest is thrown away. The product taken out then is finely pulverised and consists of calcium oxide, calcium-silicates and aluminates in accordance with the added ingredients.

During the heat generating reaction, the chemical is materially increasing in respect of volume simultaneously with the increase of temperature, and as soon as the chemical completely fills up the interspace between the closed metal casing and the wound up hair, it also begins to compress the enclosed hair. Thereafter, the pressure increases until the reaction is completed and the temperature decreases again. The proportion between the weight of the liquid and the weight of the exothermical material is, in case water and calcium oxide are used, 1:3 or 1:4.

The pressure action causes a good heat conduction and this secures that the hair will actually receive the desired temperature of 120° C. to 140° C. within the period of time in which the reaction is performed, and that the hair is subjected to a uniform and elastic tension to its whole length. The pressure against the surface of the tress preferably is 2.8 to 4.3 lbs. per sq. inch.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A method for permanent hair waving when the hair is wound up on a curler, characterised in that the wound hair is surrounded by heating bodies, which simultaneously are heated to or produce a temperature of 120° to 140° C. and act upon the hair with a steady uniform mechanical pressure over the whole of its surface.

2. A method according to Claim 1, characterised in that exothermic chemicals are employed for generation of the heat, which chemicals have the property of materially increasing their volume during the reaction.

3. A method for permanent hair waving substantially as described.

Dated this 29th day of March, 1935.

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Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1936.

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