July 25, 1933. R. L. EVANS 1,919,690

METHOD OF AND MEANS FOR PERMANENTLY WAVING HAIR

Filed Jan. 21, 1932

Fig. 1.

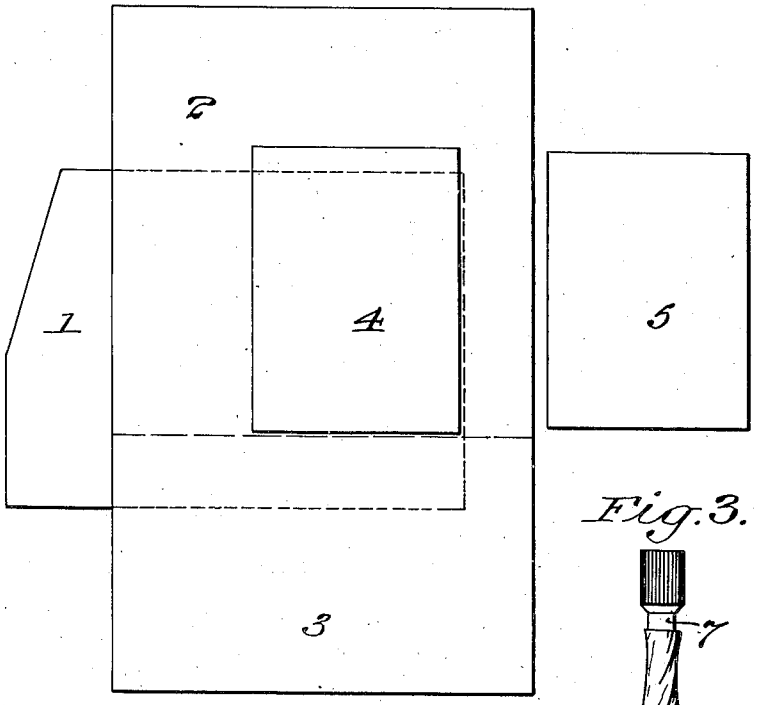


Fig. 2.

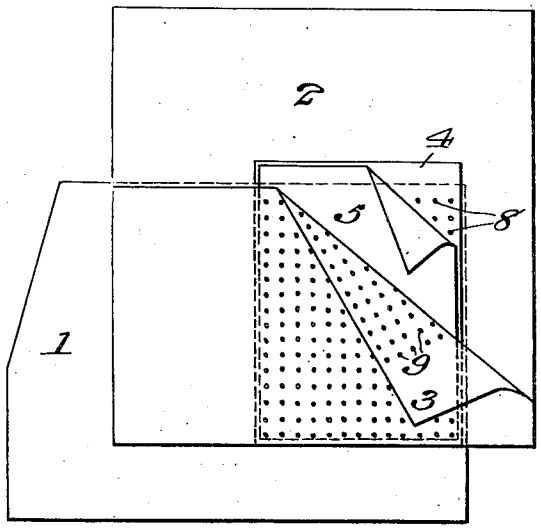


Fig. 3.

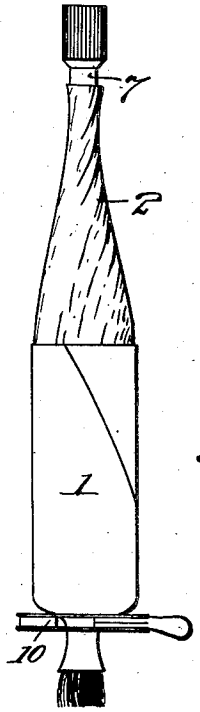
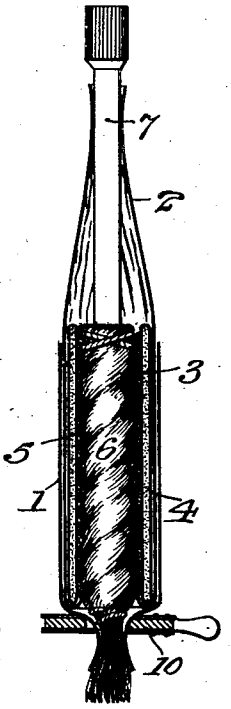


Fig. 4.



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1,919,690

UNITED STATES PATENT OFFICE

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METHOD OF AND MEANS FOR PERMANENTLY WAVING HAIR

Application filed January 21, 1932. Serial No. 587,890.

This invention relates to that class of hair waving in which a so-called permanent wave is imparted to a pre-formed tress of hair by subjecting the tress to the action of a heating chemical, such as calcium oxide, which, when moistened, will of itself generate sufficient heat to impart a permanent wave to the said tress.

This invention comprises a novel method of and a novel means for controlling the development of the heat generated by the self heating chemical wherein certain materials are used to delay the development of the heat, or to accelerate the development of the heat over a longer period of time of the heat or to extend the development than could be done by the self heating chemical itself, said materials being used also for delaying and then accelerating the natural heat development or for delaying, then accelerating, and finally extending the heat development.

I have discovered that by controlling the development of the heat generated by the exothermically acting chemical I am enabled to ensure the effective waving of the hair with a minimum liability of burning the hair or the scalp of the subject being treated and with the least possible discomfort to the subject.

I have found that the development of the heat generated by the reaction of the self heating chemical with its moistening solution may be delayed in several effective ways.

For instance, an inert powder, such as starch, may be combined in the desired proportions with the heating chemical which is in its dry state, so that when the combined materials are used in a hair waving pad of any well known or approved form, the development of the heat by the heating chemical is delayed, as required, to produce the best effects. It will be understood that the starch acts to delay the reaction between the solution and the heating chemical, probably by preventing the rapid wetting of the heating chemical.

Another way to delay the development of the heat is to combine with the heating chemical or the solution, certain salts, such as ammonium sulphate.

Still another way would be to use soluble neutral materials, such as sugar, either by mixing it in its dry state with the heating chemical in its dry state or by dissolving the sugar in the solution which is used to moisten the heating chemical to control its exothermic action.

Still another way the heating action may be delayed would be to use a basic substance, such as ammonium hydroxide.

Still another way would be to combine a dry base such, for instance, as sodium hydroxide with the heating chemical for delaying the development of the heat.

I have found that the development of the heat generated by the reaction of the self-heating chemical with its moistening solution may be accelerated as, for instance, by the use of an acidic material, either in the dry state combined with the heating chemical or in the solution used to moisten the heating chemical. For example, aluminum sulphate.

I have also found that the development of the heat may be extended successfully over a considerable period of time by combining with the heating chemical a diluent, such as sand.

Another way to extend the development of the heat would be to combine with the heating chemical or the solution a substance which would emit a volatile gas, thereby removing the heat and keeping the temperature down. Such a substance would be an ammonia compound.

I have also found that the rate of cooling after the development of the heat has ceased can be successfully controlled by enclosing the heating chemical in a covering of heat insulating material, such as absestos or wool, so that the heat will be retained for the desired length of time.

I have also found that the swelling or bursting of the pad may be prevented by combining with the heating chemical or the solution a salt, such as ammonium sulphate.

It is to be understood that the heating chemical may be used in its dry powdered

state or that it may be pressed into easily friable cakes, in which case a suitable binder, such as dry glycerine, etc., may be used.

An example of a hair waving pad embodying my invention is represented in the accompanying drawing in which:

Fig. 1 represents an inside plan view of the pad in its unwrapped condition, the inner absorbent sheet being shown at the side of the pad and the inner wrapper sheet being shown unfolded;

Fig. 2 represents an inside plan view of the pad in its unwrapped condition after the inner wrapper flap has been perforated and the inner face of the chemical containing envelope has been perforated, the inner absorbent sheet being shown interposed between the inner face of the heating chemical containing envelope and the inner wrapper flap;

Fig. 3 represents a side view of the pad wrapped around a wound tress as in use; and

Fig. 4 represents a longitudinal central section through the wrapped pad.

The outer wrapper of the hair-waving pad is denoted by 1 and is preferably made of non-absorbent material, as for instance paper. The inner wrapper is denoted by 2 and is preferably made of metal foil. This inner wrapper is provided with a foldable flap 3. An envelope 4 composed of a perforable impervious material, such as metal foil, is attached to the inner face of the inner wrapper 2, which envelope contains a heating chemical, such as calcium oxide in powdered form, which chemical, when moistened, will of itself generate sufficient heat to impart a so-called permanent wave to a preformed tress when enclosed within the pad.

An inner removable sheet 5 of absorbent material, such as cotton fabric is arranged to be moistened and inserted between the flap 3 and the envelope 4 after the inner face of the envelope 4 and the folded over flap 3 of the inner wrapper have been perforated. The pressing of the flap back into place will squeeze the moisture from the wetted inner sheet into the envelope containing the heating chemical.

In practice, the tress 6 is wound as usual around a mandrel 7. The tress may be moistened either before or after it is wound, by a suitable waving solution, such for instance as an ammonia solution. The inner face of the impervious envelope 4 containing the hair waving chemical is perforated as shown at 8, and the folded over flap 3 of the inner wrapper may be perforated at the same time as shown at 9. The inner sheet 5 is moistened by water or by a suitable hair waving solution, such as that used for moistening the tress 6.

Either the solution or the self heating chemical within the envelope may be treated to produce the results hereinbefore set forth.

The pad is then wrapped around the preformed tress and is preferably secured in position at the scalp end of the tress by a suitable scalp protecting guard of well known or approved form, such for instance as the self locking guard 10 shown in the accompanying drawing. The outer end of the pad may be secured around the mandrel 7, as for instance by twisting the outer wrapper of the pad around the same. The exothermic action starts at once because of the application of moisture by the wetted inner sheet 5 of the pad to the self heating chemical through the perforations in the inner face of the impervious envelope. A regulable heat is then set up within the pad in order to impart a so called permanent wave to the pre-formed tress without requiring application of heat from an outside source. It will be seen that the outside wrapper of the pad serves to confine the heat to a large extent within the pad, the steam generated by the combination of the treating solution with the chemical being permitted to escape through the crimped outer end of the outer wrapper.

The method of and means for accelerating the development of the heat, described but not claimed herein forms the subject matter of my divisional application filed the twenty-first day of September, 1932, Serial No. 634,132.

The method of and means for extending the development of the heat over a longer period of time than could be done by the heating chemical itself, which is described but not claimed herein forms the subject matter of my divisional application filed the twenty-second day of September, 1932, Serial No. 634,290.

The method and means for controlling the rate of cooling after the development of heat generated by the self heating chemical has ceased, which is described but not claimed herein forms the subject matter of my divisional application filed the third day of June, 1932, Serial No. 615,081.

The hair waving pad shown and described but not claimed herein forms the subject matter of my divisional application filed the sixth day of May, 1932, Serial No. 609,755, now matured into Patent No. 1,875 228, dated August 30, 1932.

The method of and means for preventing the swelling of the self heating chemical when moistened, described but not claimed herein forms the subject matter of my divisional application filed the third day of June, 1932, Serial No. 615,080.

The method of and means for delaying the natural development of the heat by combining a suitable material in dry or liquid form with the moistening solution, which

was originally disclosed and claimed herein now forms the subject matter of my divisional application filed the 10th day of November, 1932, its serial number being 641,979.

What I claim is:

1. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair and means for controlling the natural development of the heat without raising its temperature.

2. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair and means for delaying the natural development of the heat without raising its temperature.

3. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair and a material combined with said heating chemical for controlling the natural development of the heat without raising its temperature.

4. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair and a solution combined with said heating chemical for controlling the development of the heat.

5. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair and a material combined with said heating chemical for delaying the natural development of the heat without raising its temperature.

6. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair and a solution combined with said heating chemical for delaying the development of the heat.

7. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair and an inert powder, as starch, combined with the heating chemical for delaying the development of the heat.

8. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and a salt, such as ammonium sulphate, combined with said heating chemical for controlling the development of the heat.

9. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and a solution of a salt, such as ammonium sulphate combined with said heating chemical for controlling the development of the heat.

10. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and a salt, such as ammonium sulphate combined with said heating chemical for delaying the development of the heat.

11. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and a solution of a salt, such as ammonium sulphate combined with said heating chemical for delaying the development of the heat.

12. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and a soluble neutral substance, as sugar, combined with said heating chemical, for delaying the development of the heat.

13. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and a solution of a neutral substance, such as sugar combined with said heating chemical, for delaying the development of the heat.

14. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed without raising its temperature by combining a suitable medium with the exothermic material.

15. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed by combining an inert powder with the exothermic material.

16. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed by combining starch with the exothermic material.

17. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed without raising its temperature by combining a salt with the exothermic material.

18. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed by combining ammonium sulphate with the exothermic material.

19. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural develop-

ment of the heat being delayed without raising its temperature by combining a dry base with the exothermic material.

20. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed without raising its temperature by combining sodium hydroxide with the exothermic material.

21. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed without raising its temperature by combining a soluble neutral substance with the exothermic material.

22. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed by combining sugar with the exothermic material.

23. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and means for first delaying and then accelerating the natural development of the heat without raising its temperature.

24. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and means combined with said heating chemical for first delaying and then accelerating the natural development of the heat without raising its temperature.

25. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and means for accelerating the natural development of the heat without raising its temperature and then extending the development of the heat over a considerable period of time.

26. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and means combined with said heating chemical for accelerating the natural development of the heat without raising its temperature and then extending the development of the heat over a considerable period of time.

27. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and means for delaying and then accelerating the natural development of the heat without raising its temperature and finally extending the development of the heat over a considerable period of time.

28. Means for waving hair including a chemical which, when moistened, will generate sufficient heat to impart a permanent wave to the hair, and means combined with said heating chemical for delaying and then accelerating the natural development of the heat without raising its temperature and finally extending the development of the heat over a considerable period of time.

29. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed and then accelerated without raising its temperature.

30. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed and then accelerated without raising its temperature, by combining a suitable medium with the exothermic material.

31. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being accelerated and extended over a considerable period of time.

32. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being accelerated and extended over a considerable period of time, by combining a suitable medium with the exothermic material.

33. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed, then accelerated and finally extended over a considerable period of time.

34. Imparting a permanent wave to hair by subjecting the hair to heat generated by the reaction of an exothermic material with a moistening medium, the natural development of the heat being delayed, then accelerated and finally extended over a considerable period of time, by combining a suitable medium with the exothermic material.

RALPH L. EVANS.