

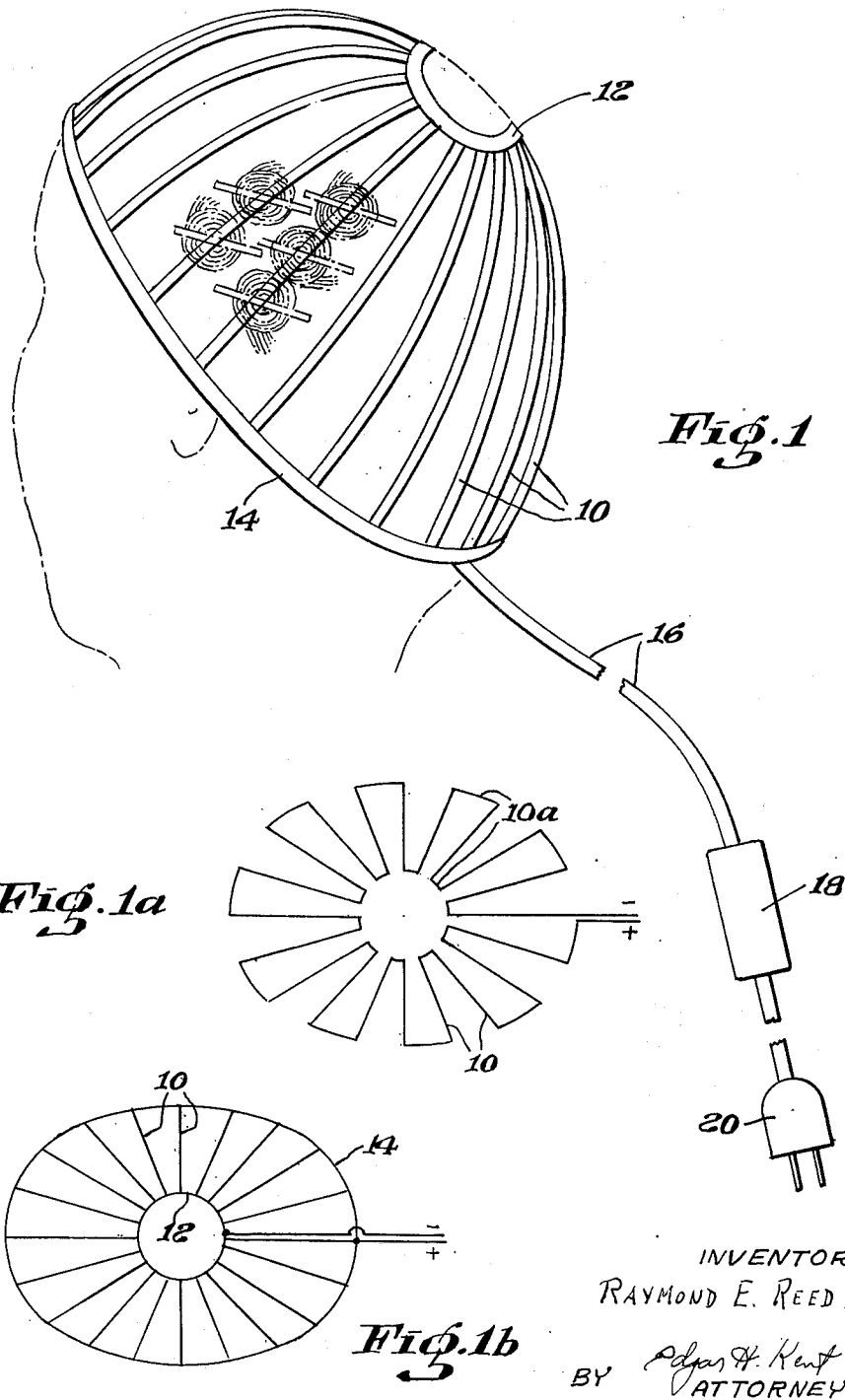
June 8, 1954

R. E. REED
HAIR DRYING CAP

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2 Sheets-Sheet 1



INVENTOR
RAYMOND E. REED
BY *Edgar H. Kent*
ATTORNEY

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Fig. 2

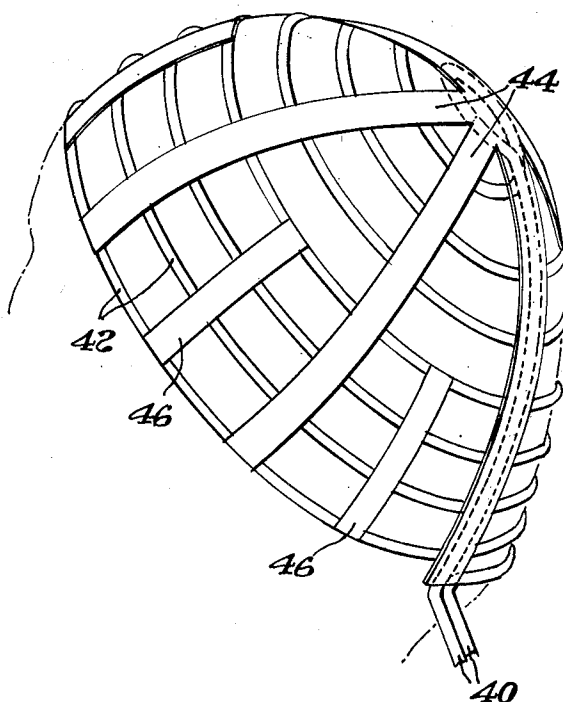
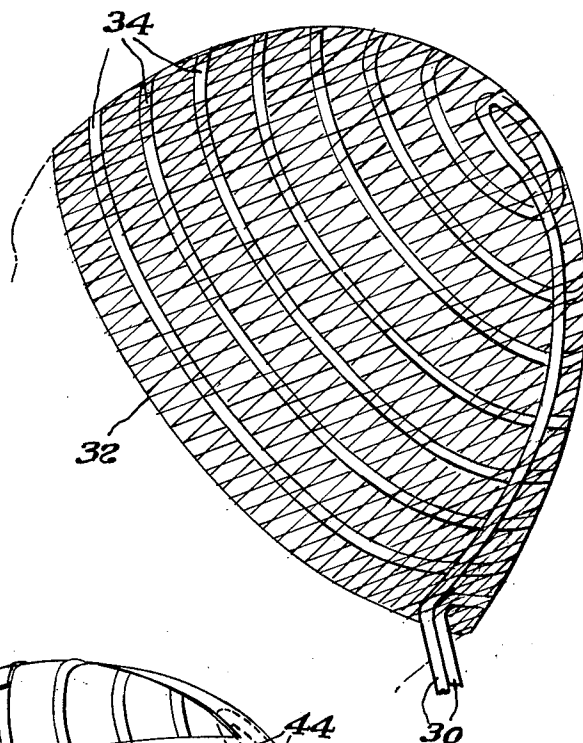


Fig. 3

INVENTOR
RAYMOND E. REED

BY *Edgar H. Kent*
ATTORNEY

UNITED STATES PATENT OFFICE

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HAIR DRYING CAP

Raymond E. Reed, Arlington Heights, Ill., assignor, by mesne assignments, to The Gillette Company, a corporation of Delaware

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This invention relates to hair dryers and more particularly to an electrically heated cap for use in drying hair, particularly dressed hair, on the human head.

In the hair dressing art, hair drying has heretofore been accomplished by directing hot air blasts on the hair or by heat radiation on the hair. Both of these methods involve complicated and expensive apparatus and discomfort in use, and the air blast method is apt to disarrange dressed hair objectionably and is noisy.

To meet these difficulties, it has heretofore been proposed to provide an electric heating and drying cap shaped to fit over the head, the cap consisting of inner and outer protective layers of close woven fabric with electric resistance heating elements disposed between the layers, the assembly including a substantially rigid supporting frame. Such device, however, has not proved successful because its rate of drying is too slow and because it is heavy and uncomfortable to use.

The present invention provides an electrically heated hair drying cap which overcomes these difficulties in that it provides rapid, effective drying without discomfort to the user and at the same time is inexpensive to construct and is noiseless.

I have discovered that an electrically heated drying cap, to provide effective hair drying, should have two structural features, neither of which is present in the aforesaid prior art caps. First, the resistance heating elements, such as the conventional insulated resistance wire, should be exposed to direct contact with the hair. Secondly, the cap should be of open mesh structure, permitting thorough ventilation and escape of moisture vaporized by the heat. Thus, I have found that in prior caps, the protective layer of fabric interposed between the resistance heating elements and the hair prevents satisfactory heat transfer to the hair and, further, the lack of thorough ventilation, even though occasional ventilation openings are provided, greatly slows the drying rate.

The drying cap in accordance with the present invention provides electric resistance heating elements exposed for contact with the hair, thereby heating the hair by direct conduction and greatly increasing the effective drying heat transfer. The heating elements and supporting structure are preferably flexible allowing shaping to the head, so that the heating elements may be brought into contact with the hair at all points. The cap is of open interstitial structure

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throughout, providing complete ventilation and prompt escape of vaporized moisture, thus greatly speeding the drying rate; and it is light and comfortable.

In a preferred embodiment of the invention, the interstices between heating elements and the elements of any supporting structure are wide enough and so arranged as to permit pulling of the hair through and between them preliminary to dressing. The hair is then dressed, for example in the form of pin curls which are fastened over, and even directly to, the heating elements. I have found that by this arrangement, in which the heating elements are located between the dressed hair and the scalp, a very substantial increase in rate of drying is obtained.

In the accompanying drawings, which show by way of example several forms of heating caps according to the invention:

Fig. 1 is a side elevation view showing the heating cap of the invention in a preferred form, shown applied to a head indicated by dot-dash lines;

Figs. 1a and 1b are circuit diagrams illustrating two different electrical circuits for the arrangement of Fig. 1;

Figs. 2 and 3 are side elevation views of two further, different caps embodying the invention.

Referring to Fig. 1 of the drawings, the cap as there shown has the preferred structure wherein the interstitial openings are not only such as to provide for complete ventilation, but are also sufficiently large and so arranged as to permit application to the head before the hair is dressed and then pulling the hair through and dressing it over the cap. This form of cap as shown comprises a plurality of flexible electric resistance heating elements 10 extending radially between supporting frames 12 at the top and 14 at the bottom. As indicated in Fig. 1a, the elements 10 may be, as is preferred, spaced portions of a single electric conductor looped upon itself. In such case, the portions 10a of the conductor between the radially extending members 10 extend along and are fastened to the supporting frames 12 and 14, which need not be conductive or connected in the circuit. On the other hand, the members 10 may be individual resistance conductors which are electrically connected at their opposite ends to electric conductors which are included in or constitute the frame members 12 and 14 and which are electrically connected respectively to opposite ends of the circuit, as indicated in Fig. 1b.

Frames 12 and 14 are preferably flexible. With the preferred wiring arrangement of Fig. 1a, they may consist, for example, merely of facing tapes between which the top and bottom loop portions 10a of the conductor between elements 10 are anchored by adhesive or stitching; or they may be or comprise a flexible wire or cord about which the loop portions 10a are wound and taped or otherwise fastened. In this case the frame member 14 may be preferably of elastic material or include an elastic band, or it may include a draw string, to tighten the edge of the cap against the head. Where the wiring arrangement of Fig. 1b is used, frames 12 and 14 will comprise an electric conductor, preferably flexible, to which the opposite lead in wires of the circuit are respectively secured.

An electric cord 16, containing the opposite leads of the circuit, is attached to the back of the cap and may contain a small transformer 18, to reduce the voltage, between the cap and the plug 20 by which the device may be connected into an ordinary lighting circuit, the cord being preferably long to provide freedom of movement for the user.

In the preferred use of the cap of Fig. 1, it is applied to the head before the hair is dressed, strands of hair are drawn through the open spaces between the heating elements 10 and are dressed, usually in the form of flat pin curls with the axis normal to the scalp, which are fastened with the usual pins or curl clasps. Such use of the cap is partially illustrated in Fig. 1 by a dotted line showing of a few pin curls so formed and overlying the elements 10, it being understood that in normal use such curls would be formed over substantially the entire area of the head and would overlie the various adjacent heating elements. As previously stated, such an arrangement substantially increases the rate of drying. The pins or clasps used to fasten the curls may to advantage contact or be fastened to the heater elements 10 and thus become part of the heat conducting system. The radial arrangement of elements 10 is particularly desirable for such usage of the cap, since it is relatively easy to draw the hair strands out through the long radial spaces between them, either before or after dressing.

Although the system is designed to produce heating of the conductor elements only to temperatures which are not uncomfortable to the wearer, even if the elements directly contact the skin or scalp, I have found that the rate of drying with this form of cap is so fast as substantially to equal that produced by the cumbersome and expensive hot air or radiant heating systems heretofore employed.

While in Fig. 1 the frame 14 is complete so that the device is generally cap-shaped even off the head, this frame may be divided at the back, so that the cap is more or less flat off the head, being gathered about and formed to the head at the time of application, with the two ends of frame 14 fastened together.

Fig. 2 shows a different form of heating cap according to the invention in which a single flexible electric resistance heating conductor 30 is formed into a heating cap by weaving it spirally through the meshes of an open mesh knitted hair net 32. In this case the successive convolutions 34 of the conductor correspond to the elements 10 of Fig. 1. The opposite ends of the conductor 30 are connected to the opposite sides of the electric circuit, the connections to which may be as

indicated in Fig. 1, the circuit thus being like that of Fig. 1a.

The cap of Fig. 2 has the advantages of direct contact of the heater elements with the hair and of a completely ventilated structure, but netting, at least of such close mesh as shown, prevents the practice of pulling the hair through the cap, as is readily done with the structure of Fig. 1.

In a third form of the cap, illustrated in Fig. 3, the cap is formed of a single electric resistance heating conductor 40 which is coiled in spiral cup shape as in the device of Fig. 2, the successive convolutions thereof 42 forming the spaced heating elements. In this case the heating elements are held in position by a frame comprising radially extending long ribs 44 integral at the top, and additional short ribs 46, attached to the convolutions, these ribs as well as the conductor being preferably flexible. The circuit in this case is the same as in Fig. 2. This form of cap has the advantages of that of Fig. 1 except that it is not as easy to draw the hair out between the heating elements where it is desired to follow that practice.

The cap of the invention may take other forms than that illustrated in the drawings, providing the primary features of direct contact of heater elements with the hair and open structure are preserved. Thus the heating conductor or conductors may be formed in criss-cross network, if desired, representing a combination of the arrangements of Figs. 1 and 3. Preferably, the conductors and the frame structure, if any is used apart from the conductor or conductors, are flexible to permit shaping to the head and intimate contact with the hair. It will be noted that in all cases the spacing between the elements of the heating system is such as to expose the major portion of the hair directly to the atmosphere, as is preferred for complete ventilation purposes.

The conductor material may be of any suitable form. Lightweight flexible insulated metal resistance wire, such as is used in electric blanket manufacture, is suitable, as is also conductive rubber or rubber-like material. In case the conductor material is not insulated, the structure will include insulation between points of crossing of portions of the conductor material at different potential. Also, the conductors may be of variant cross-section to vary the resistance and consequently the extent of heating at different locations, as desired. The cap may include component heating members which are heat-conductively but not electrically conductively connected to electric conductive heating elements (as is the case when pins or clasps are secured to insulated electric heater wires) and such members are considered as components of the electric resistance heating system.

It will be apparent that in the foregoing description and appended claims I use the term "heating elements" as descriptive of spaced conductor portions of the electric resistance heating system, whether the same be made up of a single conductor or a plurality of conductors connected together.

I claim:

1. A hair drying cap comprising a cap-shaped open mesh flexible netting forming a frame to which is attached an electric resistance heating system adapted for connection at opposite ends to a source of electric current and formed to overlie and conform to substantially the entire head, said cap including spaced flexible insulated heating elements arranged for direct contact with

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the hair, the spaces between said elements being of a size permitting drawing strands of hair therethrough and exposure of the major portion of the hair directly to the atmosphere.

2. A hair drying cap comprising an electric resistance heating system adapted for connection at opposite ends to a source of electric current and formed to overlie and conform to substantially the entire head, said cap including spaced flexible insulated heating elements arranged for direct contact with the hair, said elements being formed of a single strand of flexible insulated electric resistance heating material looped upon itself with the branches of said loops arranged to extend radially of the head substantially from top to base of the scalp, the spaces between said ele-

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ments being of a size permitting drawing of strands of hair therethrough and exposure of the major portion of the hair directly to the atmosphere, and top and bottom frame members attached to the respective ends of said loops to hold the same in position, at least the bottom one of said frame members being flexible.

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