METHOD AND APPARATUS FOR STRAIGHTENING HAIR


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4 Claims. (Cl. 132—7)

ABSTRACT OF THE DISCLOSURE

A method and apparatus for straightening human hair by treating strands of the hair with a softening agent and then applying a transverse compressive force to the treated strands by a press having hard flat surfaces. The press has two surfaces hinged at one end with a clamp arm pivotally mounted to apply a hair strand collapsing compressive force intermediate of the ends of the surfaces.

This invention relates generally to straightening strands 5 of hair and apparatus for accomplishing this, and in particular, relates to a process for permanently straightening curly or kinky hair and a press for accomplishing this.

It is the general object of the present invention to provide a method for straightening strands of curly hair without the use of heat.

Another object of the present invention is to provide a method for straightening curly or kinky hair permanently without the use of heat in a quick, simple and inexpensive manner, which may be used by unskilled help or by the user.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawings, which shows several embodiments of the invention, in which:

FIGURE 1 is a perspective elevational view showing one form of a clamp disclosed in the present invention;

FIGURE 2 is a front perspective view of the clamp in open position receiving a swatch of hair;

FIGURE 3 is a cross-sectional view of the clamp in closed operating position;

FIGURE 4 is a cross-sectional front elevational view of another embodiment of the clamp in accordance with the present invention in closed operating position; and

FIGURE 5 is a greatly enlarged, fragmentary, cross-sectional elevational view of a strand of hair.

As shown in FIGURE 5, a strand of hair 10 on the head of a human being is generally tubular in form having an outer layer 12 of a horny substance or cuticle, an inner layer 14 known as cortex, which is softer than layer 12, and a central core 16 called medulla or pith, which is softer than layer 14.

When a strand of hair 10 is wet with certain chemicals, its outer layer 12 becomes softer. Some of these chemicals are those used in cold permanent waving solutions, which are well-known in the art, such as cold waving solutions containing thygolytic acid and ammonia, mercaptans, cystine hydrochloride, etc. These materials are collectively referred to as softening agents in the specification and claims.

These softening agents are believed to reduce the disulfide bonds of the hair, when added to a solution containing the proper pH, and are generally well-known in the art.

A plurality of strands of curly hair 10, shown in FIGURE 2 as a swatch of hair 20, are wet with a softening agent in the ordinary manner. Swatch 20 is then placed in a press 22 for the application of a relatively large compressive force. In general, a pressure of at least 20 p.s.i. applied to the hair strands is satisfactory, but a pressure of at least 25 p.s.i. applied to the hair provides consistently good results. The hair is preferably combed slightly before placed in the press.

One embodiment of a press in accordance with the present invention is shown in FIGURES 1—3. Press 22 has a pair of arms 24 and 26 pivotally connected at one end 28. Arms 24 and 26 have facing surfaces 28 and 30 respectively, which are flat. Press 22 is advantageously made in one piece of a suitable plastic material, which can be flexed over long periods without damage, such as polypropylene. Extending outwardly from the other end of one arm 24, as shown, is a finger 32. Finger 32 is pivotally mounted to arm 24 about connection 34. Extending generally transversely from finger 32 is a shoulder 36 spaced a predetermined distance from the pivotal connection 34 with an inwardly facing lip 38. Lip 38 has a chamfered or beveled edge 39. As shown in FIGURES 1—3, arm 26 has a groove 40 in its outer surface and adjacent its other end 42, which cooperatively mates with lip 38 of finger 32 to hold finger 32 in closed position, which in turn holds arms 24 and 26 in closed position. Advantageously, wall 44 of groove 40 is downwardly tapered. Further, end 42 is beveled along its upper edge.

To use press 22, a swatch of hair 20 is placed between surfaces 26 and 28 in its curley state, and arms 24 and 26 are pivotally into abutting relation, as seen in FIGURES 2 and 3. Finger 32 is pivoted inwardly toward arms 24 and 26. Shoulder 36 on finger 32 is spaced from pivot 34 a distance slightly less than the distance from pivot 34 to the upper edge of wall 44 of groove 40. Lip 38 of shoulder 36 flexes past the beveled upper edge of wall 44 and locks into place within groove 40. The beveled edge 39 of lip 38 cooperatively engages tapered wall 44 and the inner surface 41 of shoulder 36 engages beveled edge of end 42 of arm 26, so as to urge surfaces 28 and 30 into tight compressive engagement. The compressive force exerted on the individual strands 10 of swatch 20 by press 22 at least about 20 p.s.i., collapses layers 12, 14 and 16 of strand 10. Preferably press 22 remains in closed operative position exerting a collapsing pressure for about 10 to 30 minutes, depending on the type and amount of softening agent used and the nature of the hair strands. Press 22 is removed by pivoting finger 32 clockwise about pivot 34, as seen in FIGURE 3, which allows lip 38 over the upper edge of groove 40 allowing arms 24 and 26 to separate. Swatch 20 is removed and combed. Hair strands 10 remain straight and flat.

Another embodiment of the press is shown in FIGURE 4 where inward compressive force is applied at an end and the center. Press 50 has arms 52 and 54 pivotally mounted at one end about pivot 56. Pivotally mounted about the other end 58 of arm 54 at 60 is a finger 62. Finger 62 is pivoted intermediate of its ends at 64. At the end of finger 62 is a shoulder 66 having an inner tapered tip 68. Lip 68 cooperatively mates with a groove 70 in arm 52. Pivot 64 is slightly below the upper edge of end 72 of arm 52 when in clamping position, so as to urge ends 58 and 72 together. Further, adjacent groove 70 is an outwardly directed rib 74, which is forced inwardly by the clamping action of finger 62.

It is to be understood that the compressive force exerted on hair strands 10 in accordance with the present invention must be of a magnitude sufficient to collapse the individual hair strand and make it flat by pressing, which has been found to be at least 20 p.s.i. The arms of the press should be rigid so as not to flex during compression. If the compressive force is applied at an end of the arms, the compressing surfaces could have a slight convex curvature, so that the application of a compressive force at the ends would tend to make the surface flat.
It is to be understood that the above described arrangements and construction are simply illustrative of the application of the principles of the invention. Certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. A press for collapsing strands of hair without the use of heat, said press comprising a pair of rigid arms having abutting inner hard flat surfaces, said arms being pivotally joined at one end, one of said arms having a depression in its outer surface spaced inwardly from its other end, a finger pivotally joined to the other end of said other arm, said finger having a transversely extending shoulder and facing said one arm, said shoulder having a lip extending therefrom generally parallel to said finger and facing said arms, said lip being radially equal to the distance from said finger pivot as is the outer surface of said other end of said one arm when said flat surfaces abut, so that said lip is flexibly urged past said other end of said one arm into said depression when said finger is pivoted toward said one arm for forcing said flat surfaces into hair collapsing pressure.

2. A press according to claim 1 in which the wall of said depression closest to said other end is tapered and said lip of said finger is tapered for cooperatively mating with said tapered wall of said depression.

3. A press for collapsing strands of hair without the use of heat, said press comprising a pair of generally hard flat surfaces pivotally joined at one end for moving said flat surfaces into and out of abutting relation, said surface adapted to engage a substantial length of a strand of hair, a clamping arm pivotally mounted on the end of one of said flat surfaces opposite said flat surfaces joining end and having a portion overlying the other flat surface intermediate of its ends when in clamping position, and arm holding means on said other surface intermediate of its ends for cooperatively locking said arm for clamping said surfaces together in hair strand collapsing engagement, said hair strand being under a pressure of at least 20 p.s.i.

4. A press for collapsing strands of hair without the use of heat, said press comprising a pair of rigid arms having abutting inner flat hard surfaces, said arms being pivotally joined at one end, one of said arms having a depression in its outer surface intermediate of its ends, a finger pivotally joined to the other end of said other arm, said finger being bendable intermediate of its ends and adjacent the upper edge of the other end of said one arm, a shoulder extending transversely from the end of said finger and facing said arm, said shoulder cooperatively engaging said depression for forcing said flat surfaces in hair crushing compression.

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