Sept. 11, 1956 G. A. MORGAN, SR 2,762,382

DE-CURLING COMB

Filed Dec. 11, 1953

FIG. 1

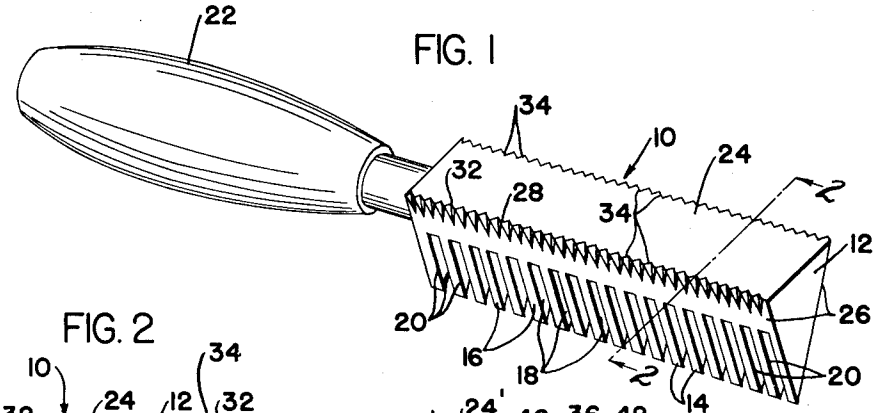

FIG. 2

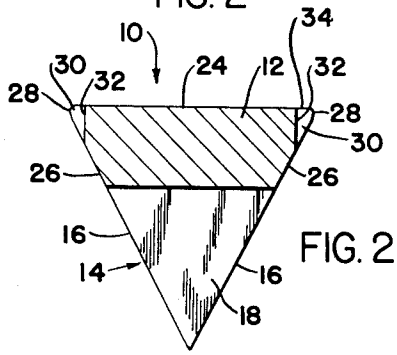

FIG. 3

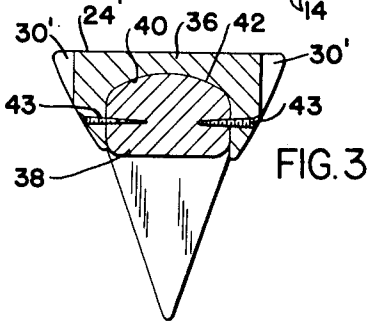

FIG. 4

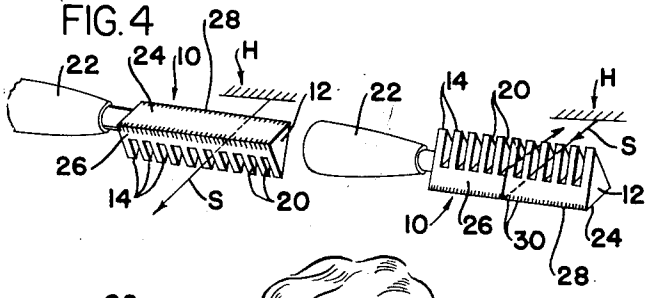

FIG. 5

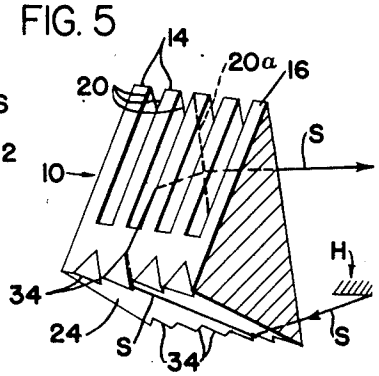

FIG. 6

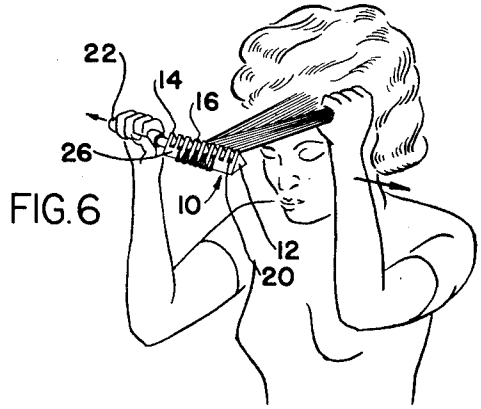

FIG. 7

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DE-CURLING COMB

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This invention relates to improvements in hair combs adapted for removing the curl and kinks from and straightening the hair fibers or strands.

Combing devices for straightening hair have been proposed in the past which are either complicated and expensive in their construction or generally give unsatisfactory results. In one device of the prior art, two sets of combing teeth, one movable relative to the other, are used. This device is expensive to manufacture and furthermore is inconvenient to operate since it requires actuation of a lever to squeeze strands of hair between the two sets of teeth in the comb. If too little pressure is applied in squeezing the hair strands, the efficiency of the straightening operation is reduced; if two much pressure is applied, it is difficult to draw the comb through the hair. My invention comprehends a simple inexpensive de-curling comb which requires no special skill to use and which quickly and effectively removes kinks and curls from hair.

A general object of my invention is the provision of a de-curling comb which effectively removes the curl and kinks in hair in a minimum number of combing strokes. Another object is the provision of a de-curling comb which subjects kinked and curled hair to a double bending action as the comb is drawn through the hair. Another object is the provision of an improved de-curling comb which has no moving parts and which is economical to manufacture and simple and easy to use. Another object is the provision of an attachment for de-curling combs by which standard combs may be converted economically into an improved comb structure which accomplishes the above mentioned objects. Still another object of my invention is the provision of an improved hair combing technique and method by which curled and kinked hair is quickly, conveniently and effectively straightened.

These and other objects of my invention will become apparent from the following description of preferred embodiments thereof reference being had to the accompanying drawings.

Figure 1 is a perspective view of a comb embodying my invention.

Figure 2 is a transverse section of the comb taken on the line 2—2 of Figure 1.

Figure 3 is a sectional view similar to Figure 2 showing a modified form of comb.

Figures 4 and 5 are schematic drawings showing the angular relationship of the hair and the comb when the latter is partially and fully engaged, respectively, with the hair being treated. For reasons of clarity of illustration, only one strand of hair is illustrated.

Figure 6 is a perspective view showing my improved comb as it is used by an individual in straightening or de-curling hair.

Figure 7 is an enlarged fragmentary schematic drawing of the comb and one strand of hair showing the path of the hair through the comb when the latter is fully engaged with the hair during the combing stroke.

A preferred embodiment of my invention is illustrated in Figures 1 and 2 as a comb comprising a symmetrically

shaped body member **10** having a heel portion **12** and a plurality of longitudinally spaced combing teeth **14** extending outwardly from the heel portion. The body member may be formed as a one piece unit and preferably is triangularly shaped in cross-section with the sides **16** of each tooth **14** converging from a maximum width adjacent the heel portion of the comb to minimum width at the projecting end thereof. The teeth **14** preferably are substantially rectangularly shaped in transverse cross-section with outer or side surfaces **16** and transverse surfaces **18** of each tooth defining relatively abrupt outer tooth edges **20** on opposite sides of the comb. A longitudinally extending handle **22** is secured to the body **10** of the comb for manipulating same.

The heel portion **12** of the comb body **10** preferably has of flat top surface **24** which joins the outwardly converging side surfaces **26** of the heel portion along longitudinally extending edges **28**. In accordance with the precepts of my invention, a plurality of V-shaped notches or grooves **30** are formed in edges **28** of the heel portion with each notch opening outwardly and with the bottom **32** of the notch extending transversely of the heel edge **28**. Each notch extends inwardly into the surfaces **24** and **26** of the heel to a limited degre and forms a pair of inwardly converging sharp edges **34** with the top surface **24**, see Figures 1 and 7. The function of these notches is to engage strands of the hair being straightened and, while holding same in longitudinally fixed position on the heel of the comb during the combing stroke, to permit bending the hair strands around the top edges **34** of the notches to remove the curl and kinks therefrom. As will appear below, the strands of hair are further subjected to a second bending around the outer edges **20** of the teeth during each combining stroke, and hence the hair strands are bent or curved abruptly twice in succession on each stroke which results in greater speed in the de-curling operation as well as a high degree of straightening of the treated hair.

A modified form of my invention is shown in Figure 3 which includes a separate adapter or heel plate **36** designed to be fastened to combs having differently shaped heel portions for adapting such combs for use in the practice of my invention. Plate **36** preferably is coextensive with the comb body **38** and has an undersurface **40** formed to the shape of the back side or heel **42** of the particular comb with which it is used, rounded as shown in Figure 3, and is secured by suitable means such as screws **43** to the comb body **38**. The top side of plate **36** corresponds in shape and form to the heel portion **12** of the comb shown in Figures 1 and 2, having a substantially flat top surface **24'** and longitudinal edges formed with a plurality of notches **30'**. With such an adapter plate, a standard comb can be converted to a comb having the structural characteristics of the comb shown in Figures 1 and 2 whereby to adapt the standard comb for use in accordance with the precepts of my invention and in the manner explained below.

The use of my comb in decurling hair will be understood by reference to Figures 4–7, inclusive. After pre-heating the comb body, the beauty operator or the home user, as illustrated, holds the handle **22** in one hand and first combs the hair forwardly from the user's head by means of teeth **14**. With the other hand, the user grasps a shock of the combed hair, pulling it slightly and forwardly, and engages the teeth of the comb and grasped shock hair close to the head. This step of the operation is illustrated schematically in Figure 4 wherein H indicates the user's head, and S a strand of the shock of hair which is pulled in the direction of the arrow at the free end of the strand.

With the comb teeth **14** engaged in the shock of hair being treated and initially extending downwardly as shown in Figure 4, the comb is rotated outwardly from the head

of the user through approximately 180° until the comb teeth extend upwardly. At the same time the user pulls the shock of hair backwardly over the top of the comb to maintain engagement of the hair in the comb teeth as the latter are rotated, and to cause the notches 30 in the edge of the heel portion remote from the user's head to engage the hair strands, see Figure 5. In other words, as the comb is rotated, the shock of hair is progressively wrapped around the comb until the notches 30 in one edge of the heel as well as the teeth 14 fully engage the strands of the shock of hair. Tracing the path of the hair through the comb in the position shown in Figure 5, the strands S pass from the user's head H across the flat surface 24 of the heel portion 12, engage in notches 30 and bend around the longitudinal edge of the heel, pass upwardly along the side surfaces of the heel portion, bend around the corner of the heel portion at the root of the teeth 14 and pass back through the teeth toward the user's head. It will be noted that the comb body is initially positioned adjacent the user's head with the hair engaged as described in the notches and teeth of the comb and in this position is ready for the de-curling operation.

The outer end of the shock of hair next is pulled or tensioned in a direction away from the comb and transversely of the outer edges 20, nearest the user's head, of the upwardly extending teeth 14 so that the hair strands bend sharply and abruptly around the teeth edges 20 proximate to the user's head. As the de-curling stroke is begun, the user moves the comb through the shock of hair in a direction transversely of the direction of entering of the hair strands into the notches 30 and substantially opposite to the direction pull, indicated by the right as viewed arrow in Figure 6, on the outer end of the shock. By moving the comb in this direction, indicated by the left as viewed arrow in Figure 6, the strands of hair which pass from the user's head into the comb are caused to enter the heel plate notches 30 in a direction transversely of one of the edges 34 thereof and to bend sharply therearound, see Figure 7. As the comb is moved outwardly from and to the side of user's head through the tensioned shock of hair, both the edges 34 of one set of the notches 30 and the side edges 20, one edge 20*a* being shown in broken line in Figure 7, of the teeth 14 move over the strands of hair and subject the strands to a double bending action throughout substantially their full length. The position of the comb and the hair during the de-curling stroke is shown in Figures 6 and 7. The operation is repeated on different portions of the user's hair until de-curling of all the hair is complete.

It will be noted that tension to the shock of hair being treated is applied by the pulling of the comb and of the end of the hair in opposite directions by the user's hands. The user therefore can readily determine and can apply the maximum amount of tension to the shock of hair by "feel" and thus attain maximum hair straightening effects without detracting from the speed of the de-curling stroke. Moreover, by tensioning the shock of hair with oppositely applied forces, the proper bending angle of the hair strands around the teeth edges 20 and around the edges 34 of the notches 30 to insure effective removal of kinks and curls therefrom is automatically established. The operation requires a minimum of effort on the part of the user and is well adapted for practice by the unskilled home user as well as the skilled beauty operator because the proper

hair bending angles are automatically established and because the tension forces are applied by both of the user's hands in opposite directions.

Since the comb is symmetrically shaped and is provided with two sets of notches 30 in the heel thereof, it may be used as effectively by either the right or left hand of the operator or user. The V-shape of each notch provides two converging edges 34 over either of which the strands may be bent and hence the direction of pull on the comb and on the shock of hair may be reversed, if desired, to suit the convenience or preference of the user or operator.

Modifications, changes and improvements to the above described preferred embodiments of my invention may be made without departing from the spirit and scope of the invention. Therefore I do not wish the patent to be limited or in any way inconsistent with the extent to which the invention promotes the art. The appended claims define the scope of the invention.

I claim:

1. A hair de-curling comb comprising a comb body substantially triangularly shaped in cross-section and having a heel portion and a plurality of triangularly shaped teeth projecting therefrom, said heel portion having sides merging with the sides of said teeth and having a substantially flat back surface bounded by longitudinally extending edges, a plurality of V-shaped notches formed in said longitudinal edges of the heel portion, each notch extending substantially in the same direction as said teeth and defining with said flat heel surface a pair of inwardly extending converging edges, each tooth being substantially rectangularly shaped in transverse section and having outer edges extending in a direction transversely of said notch edges, the strands of the hair to be straightened being successively bent abruptly around said converging notch edges and certain of said teeth edges during the combing operation whereby the strands are subjected to a double bending action for straightening same.

2. A hair de-curling comb having a heel portion with a flat surface and a plurality of notches formed in the longitudinal edges of said surface and having a plurality of flat longitudinally spaced teeth having edges and projecting from the heel portion normal to said surface, said notches being formed to direct strands of hair received therein into the teeth of the comb and having edges over which the strands are adapted to pass, said teeth having angularly related flat surfaces defining outer edges around which the hair strands are adapted to pass, the notch edges and teeth edges being angularly related to each other whereby when said comb is drawn through the hair, the hair strands are bent successively around teeth and notch edges for straightening same.

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