United States Patent

[11] 3,604,112

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[54] **METHOD AND APPARATUS FOR HAIR CUTTING**
7 Claims, 11 Drawing Figs.

[52] **U.S. Cl.** **30/200,** 30/133
[51] **Int. Cl.** **B26b 19/20**
[50] **Field of Search** 30/133, 200, 201, 202

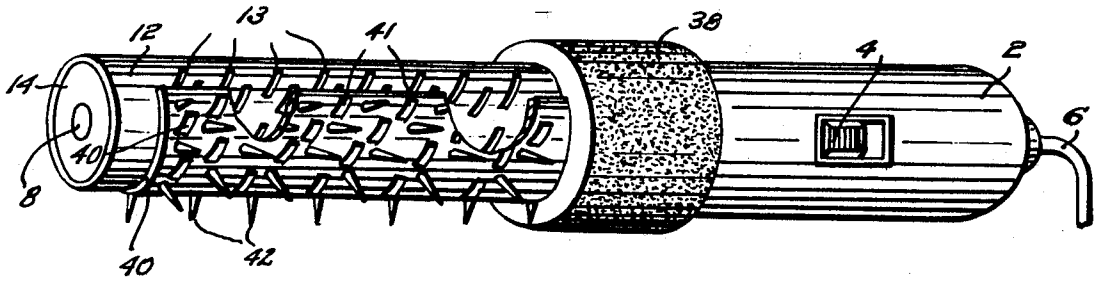
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Assistant Examiner—J. C. Peters
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ABSTRACT: A rotary-blade cutter is combined with an eccentric comb member having rows of teeth, the teeth being made of varying lengths to provide an eccentric effect. The cutter blades when rotated at high speed engage and cut hair ends which are caused to extend through slots in the cutter body. The eccentric comb arrangement operates to provide a variable spacing of the cutting device with respect to the scalp area so that a graduated hair-cutting operation can be efficiently carried out and a desirable trimming effect may be realized.



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SHEET 1 OF 2

Fig. 1.

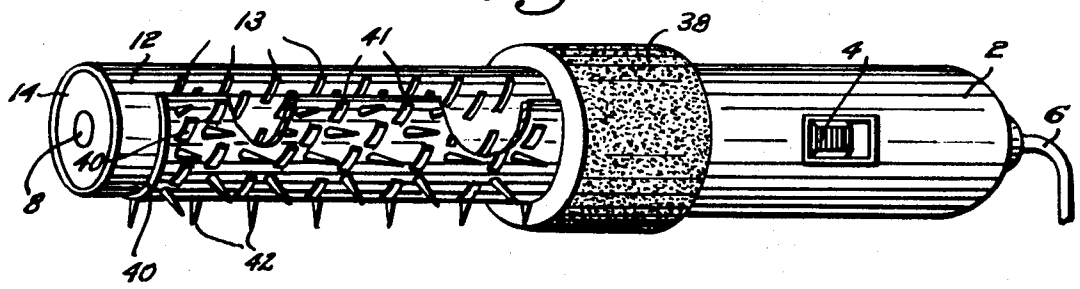


Fig. 2.

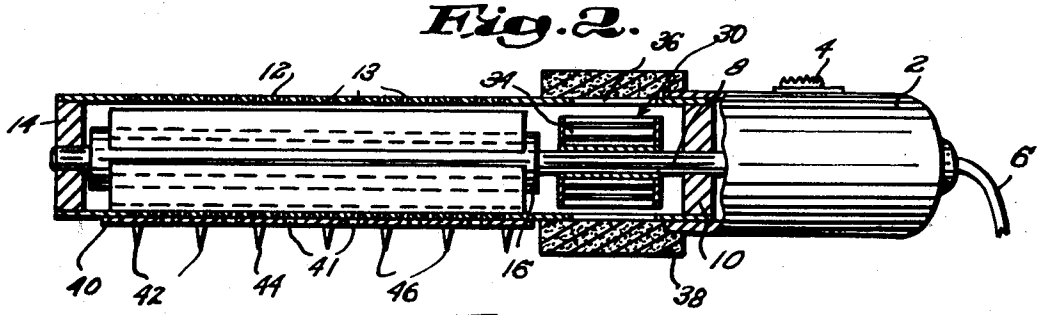


Fig. 3.

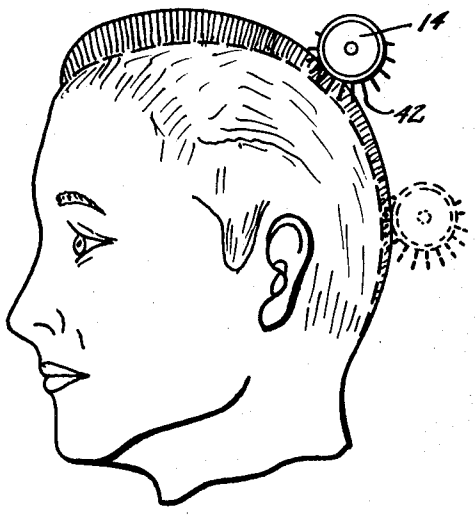
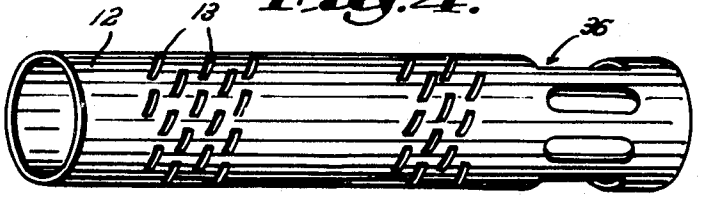


Fig. 4.



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Fig. 5.
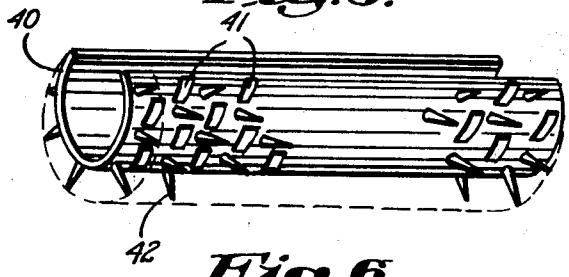


Fig. 6.

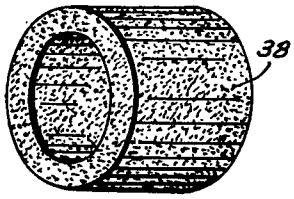


Fig. 7.

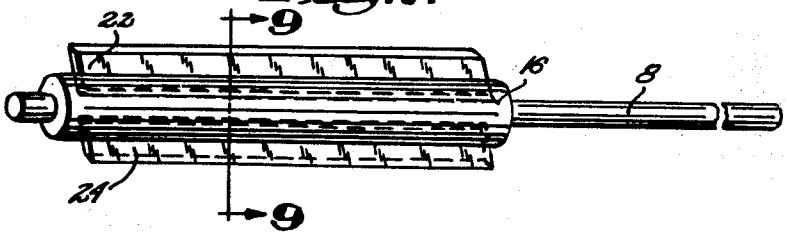


Fig. 8.

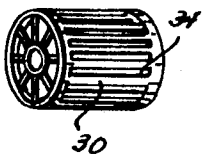


Fig. 9.

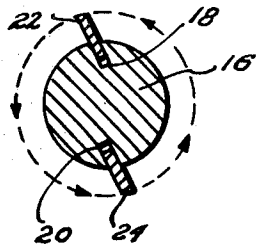


Fig. 10.

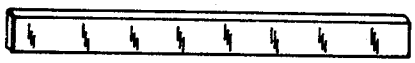
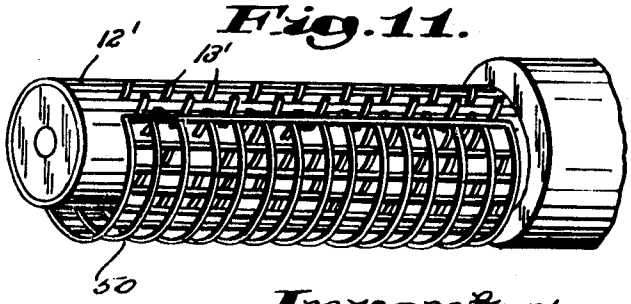


Fig. 11.



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METHOD AND APPARATUS FOR HAIR CUTTING

This invention relates to a hair-cutting appliance and to a method and apparatus which may be utilized to carry out a controlled hair-cutting and trimming operation. The nature of the apparatus and its mode of use is such that the apparatus may, if desired, be self-applied or used on others with excellent results in either case.

In the usual type of haircut, a desired appearance is accomplished by controlling the amount of cutting so that a graduation in length of trimmed hair is realized with the cutting action being carried out close to the head at the back of the neck and the lower side of the scalp and gradually being extended at greater spacing from the scalp area at the top of the head. To accomplish a graduated cutting effect of this nature by means of a self-operated hair-cutting appliance is relatively difficult and even when performed upon another individual requires a considerable degree of skill.

It is, therefore, a chief object of the invention to deal with the problem indicated and to devise a method and appliance for enabling an unskilled individual to carry out a graduated hair-cutting operation in a satisfactory manner.

Another object of the invention is to provide a hair-cutting appliance which is of a novel shape and construction such that the appliance which can be used repeatedly to provide substantially the same shape and style of haircut when ever desired.

Another object of the invention is to combine with a hair-cutting appliance means for evacuating cut hair either into an associated receptacle or some other enclosure body such as a vacuum-type body.

Another object of the invention is to provide in combination with a rotary hair-cutting device a novel guide comb for constantly adjusting the rotary cutter through a range of cutting positions at will.

The nature of the invention and its other objects and novel features will be more fully understood and appreciated from the following description of a preferred embodiment of the invention selected for purposes of illustration and shown in the accompanying drawings, in which:

FIG. 1 is a perspective view of the hair-cutting appliance of the invention illustrating a guide comb member in one operative position.

FIG. 2 is a side elevational view, partly in cross section showing details of the hair-cutting appliance.

FIG. 3 is a diagrammatic view illustrating the hair-cutting appliance in two different positions with respect to the scalp.

FIG. 4 is a perspective view of a slotted cage member through which hair ends are inserted when a cutting operation is carried out.

FIG. 5 is a detail perspective view of the guide comb of the invention removed from the hair-cutting appliance.

FIG. 6 is a perspective view of a receptacle for receiving cut hair.

FIG. 7 is a perspective view of a rotary-blade cutter member.

FIG. 8 is a shaft-enclosing member arranged to guide cut hair into the receptacle of FIG. 6.

FIG. 9 is a cross section taken on the line 9—9 of FIG. 7.

FIG. 10 is a detail view of a cutter element.

FIG. 11 is an illustration of a hair-cutting appliance with a modified form of guide comb.

With the foregoing objectives in mind, I have conceived of a novel method of cutting hair in a uniformly graduated manner which method is based upon the use of a special guide comb utilized in combination with a hand-manipulated rotary-cutting apparatus.

In one preferred method of carrying out my improved hair-cutting technique, I provide an eccentric arrangement of comb teeth of different lengths designed to be located around the rotary cutter in a position such that by engaging the comb teeth with the neck and head portions of an individual, and by progressively moving the apparatus over the scalp area the varying lengths of comb teeth may be caused to come into

contact with the scalp in a changing manner to space the rotary cutter at progressively greater or lesser distances from the scalp. There is thus realized a graduated or regulated depth of cutting which provides the appearance of a professional butch or crew haircut.

Considering the methods and apparatus in greater detail, FIG. 1 illustrates a preferred embodiment of the apparatus in which numeral 2 denotes a handle portion of the cutter apparatus in which is housed an electrical motor of some conventional type controlled by a switch 4. Numeral 6 denotes an electrical conductor for connecting the motor with a power source, although I may, if desired, provide a cordless arrangement with a battery contained in the housing 2 in some convenient manner.

Connected in driving relationship to the electrical motor 2 is a shaft 8 which is received through a bearing 10 and which is centrally located through a cylindrical cage member 12 fitted into one end of the handle 2 as best shown in FIG. 2. The outer end of shaft 8 is supported in another bearing 14 which may also serve to close the outer extremity of the cage 12. Located through the periphery of the cage 12 are a multiplicity of hair trapping slots as 13.

Fixed on the shaft 8, as suggested in FIG. 7, is a cutter arbor 16 which may be more clearly seen from an inspection of FIG. 9 and which, as noted therein, is formed with cutter grooves as 18 and 20. In the grooves 18 and 20 are loosely contained in an angularly disposed manner a pair of diametrically opposed cutter blades 22 and 24. These cutter blades are also shown in detail in FIG. 7 and are preferably of a size such that in a fully recessed position in their respective slots they have their extremities occurring in slightly spaced relationship to the inner peripheral surface of the cage 12, as may be observed in FIG. 2.

It will be seen that when the arbor 16 is driven at high rotative speeds with the cutter blades loosely contained in their slots, the blades are forced outwardly by centrifugal forces and caused to come in sliding contact with the inner periphery of the cage 12 and to continuously engage around this inner peripheral surface with a positive force which acts to provide an efficient shearing action with respect to hair ends which have been caused to protrude through the slots 13 in member 12. It is also pointed out that by the angular disposition of the blades as shown in FIG. 9, they present forward cutting edges which tend to exert more efficient shearing action against the inner peripheral surface of member 12.

Sheared or cut ends of hair resulting from the shearing action of the blades 22 and 24 are drawn away from the cutter blades by means of a revolving evacuator device 30 which is fixed on the shaft 8 at a point closely adjacent to the bearing member 10. The evacuating device is formed with a cylindrical barrel having slots 34 which communicate with openings 36 in the portion of member 12 which is fitted to the handle 2. Located around the evacuator device 30 and the openings 36 is an annular hair receptacle 38 which may be of a fibrous or porous nature for trapping or temporarily holding cut hair ends in the space between the member 38 and the revolving evacuator device 30.

In accordance with the invention, I further provide an eccentric guide comb 40 which is shown in a typical operative position in FIG. 1 and is also shown removed from the apparatus in FIG. 5. As noted therein, the guide comb comprises in one preferred form, a split cylindrical sleeve which is of a diameter slightly less than the diameter of the member 12 so that it may be expanded slightly and then can be snapped on over the cage 12 with a resilient holding force to maintain the comb in a fixed position. I may also desire to further secure the comb by detents or holding slots formed in the member 12 at convenient points.

As will be observed in FIGS. 1 and 5, portions of the comb 40 have located thereto a plurality of spaced-apart hair slots as 41 which are preferably made of a somewhat larger size than the hair slots 13 of the cage 12 to facilitate engagement of hair ends with the cutter blades when the comb is in use.

An important feature of the comb **40** are comb teeth located around the outer peripheral surface of this comb as shown in FIG. **5**. The teeth are preferably arranged in spaced-apart rows and are denoted by numerals **42, 44, 46**, etc. As will be seen in FIG. **5** teeth in each of the rows are of graduated length. The graduation of the length of the teeth is so chosen that relatively longer teeth occur at the intermediate portions of the comb and relatively shorter teeth occur at the split portions of the comb. With such an arrangement, the teeth constitute an eccentric guide basis for variably spacing the cutter blades from a comb-engaged surface.

In operating the appliance, it may be self-applied or used on another individual than the operator. In either case, the electric motor is energized and the cutting arbor and cutting blades are revolved at high rotative speeds at which time the cutting blades are moved by centrifugal forces exerted against the periphery of the cage member **12** and the blades pass over the slots **13** in sliding engagement with the edges of these openings.

It is pointed out that engagement of the blades against the cage functions to continuously sharpen the cutting blades and maintain them in a highly efficient cutting condition. With the blades thus extended and rotating, the user grips the appliance by the handle **2** and holds it in a suitable cutting position so that the comb teeth may be moved along a desired scalp area where a hair-cutting operation is desired.

In FIG. **3** a typical hair-cutting operation is indicated diagrammatically wherein the tool is shown engaged against the back of the head in a lower portion of the scalp area with the relatively short teeth of the eccentric comb being held against the scalp. While held in this position, the appliance is gradually moved upwardly along the scalp area with hair ends continuously being engaged through the comb slots **41** and also through the cage slots **13** into a position to be sheared by the rotating cutter blades.

As the appliance is moved upwardly and follows the curvature of the scalp area, relatively longer teeth of the eccentric comb tend to move into contact with the scalp area as suggested by the upper position of the appliance in FIG. **3**. This provides a change in spacing which operates to vary the length of hair which is engaged through the cutter slots and cut. Relatively long lengths are cut in the lower position and these lengths being cut become gradually shorter at the upper portions of the scalp area. It will be noted that the grip upon the handle does not need to be changed since the appliance in following the curvature of the head is turned with a natural flexion of the wrist to bring the relatively long comb teeth into an engaging position. Thus the guide comb **40** does not roll on the scalp, but it becomes changed in its position with respect to a scalp area with relatively short teeth contacting the scalp area at the beginning of a cut, and relatively longer teeth engaging the scalp as the wrist flexion takes place.

A generally similar cutting action can also be realized when the appliance is used by an operator or another individual and in either type of operation, it will be apparent that a graduated hair-cutting operation can be readily achieved in a simple and efficient manner.

In FIG. **11**, I have illustrated another form of eccentric comb **50** consisting of an open mesh structure which is arranged on a cage **12'** in a variably spaced manner. This mesh structure **50** is formed with openings for receiving hair ends therethrough in the manner already described and these hair ends are trapped in the slots **13'** of the member **12'**. Other arrangements may also be resorted to.

I claim:

1. A hair-cutting appliance comprising a cylindrical housing formed with openings for engaging hair ends therethrough, a handle portion mounted at one end of the housing for manually adjusting the position of the housing with respect to a scalp area by means of wrist flexion, said handle having an electric motor operatively connected to the power-driven shaft, a power-driven shaft mounted in the housing, cutter means mounted on the shaft for engaging against inner peripheral surfaces of the housing and shearing hair ends projecting through the housing, and stationary eccentric guide means formed with slots which communicate with the said openings and said guide means located around the housing for supporting the housing in predetermined spaced relationship with respect to a scalp area of an individual in accordance with change in position of the handle.

2. A manually operable hair-cutting appliance comprising a housing formed with openings therein for receiving hair ends therethrough, a handle portion mounted at one end of the housing for manually adjusting the position of the housing with respect to a scalp area, rotary cutter means mounted in the housing for shearing hair ends engaged through the housing, motor means for driving said rotary cutter means mounted in the said handle, revolving evacuating means in the housing for moving cut hair ends away from the cutter means, and eccentric spacing means formed with slots which communicate with the said openings and said spacing means being fixed around the housing for supporting the housing in variably spaced relationship with respect to a scalp area along which a hair-cutting operation is to be carried out.

3. A structure according to claim **1** in which the eccentric guide means consists in a split cylindrical sleeve having rows of teeth extending outwardly therefrom.

4. A structure according to claim **3** in which the teeth in each of the rows are of graduated lengths.

5. A structure according to claim **4** in which the shorter teeth occur adjacent the edges of the split cylindrical sleeve and the longer teeth occur at points intermediate the edges.

6. A hair-cutting appliance comprising a cylindrical housing formed with openings for receiving hair ends therethrough, said cylindrical housing having at one end thereof a handle for manually gripping the appliance and turning it into various positions of orientation with respect to a scalp area in response to a natural flexion of the wrist of a user of the appliance, a power-driven shaft rotatably mounted in the housing, a motor received in the handle and operatively connected to the power-driven shaft, cutter means mounted on the shaft for engaging against an inner peripheral surface of the housing and shearing guide comb means fixed around the housing and formed with slots for guiding hair ends into the openings in the cylindrical housing, and said stationary guide comb presenting a series of spaced rows of teeth for engagement with a scalp area, the teeth in each row being of a length which is graduated with respect to teeth in an adjacent row, thereby to vary the lengths of hair ends guided into the housing in accordance with change in position of the guide comb during said natural flexion of the wrist of a user of the appliance.

7. A structure according to claim **6** in which the series of spaced rows of teeth include centrally located rows of teeth of maximum length and rows of teeth at either side thereof of progressively smaller lengths.