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HAIR STYLING DEVICE

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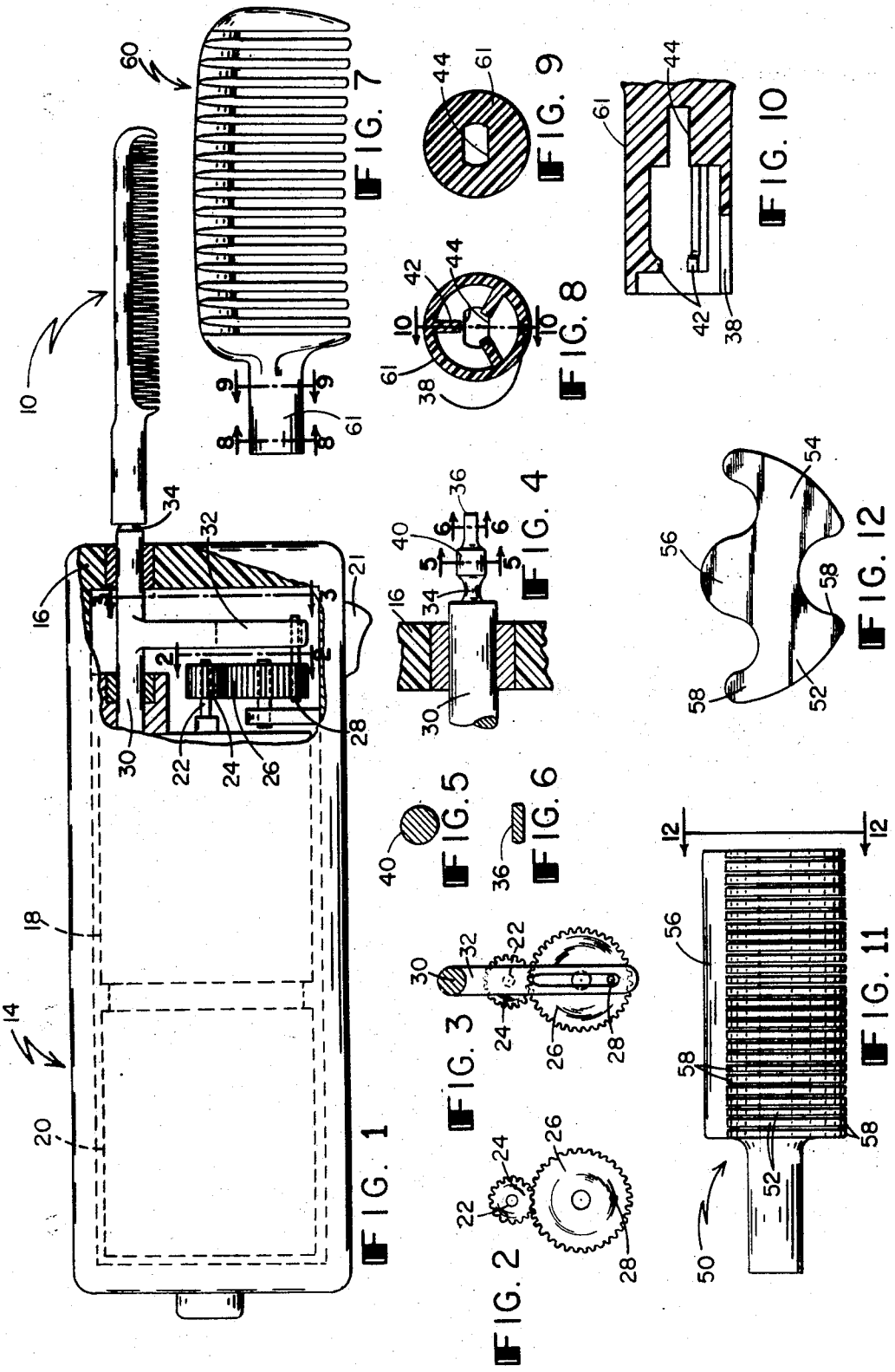

FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

FIG. 7

FIG. 8

FIG. 9

FIG. 10

FIG. 11

FIG. 12

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HAIR STYLING DEVICE

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ABSTRACT OF THE DISCLOSURE

A hair dressing device having an electric motor and drive mechanism releasably connected to a comb for rapidly oscillating the comb about a longitudinal axis.

This invention relates to a device for styling hair and pertains more specifically to a comb mounted on a mechanism for oscillating the comb rapidly about a longitudinal axis.

Modern female hair styles of the so-called bouffant type require a technique known variously as teasing, ratting, or back-combing which involves holding the free end of a hair tress and combing toward the roots of the hair with a comb preferably having relatively narrow spaces between adjacent teeth. Considerable skill is required for optimum results, and the process is very fatiguing when carried out on one's own head because of the many strokes required. In addition, the task of removing the bouffant hair style and restoring the hair fibers to their original generally parallel alignment is both tiring, when carried out on one's own head, and painful because of the many snarls and tangles which must be removed.

One object of the present invention is to provide a device which facilitates styling of human hair.

Another object is to provide a device which facilitates and accelerates the back-combing of human hair.

Another object is to provide a device which facilitates the removal of snarls and tangles from human hair, particularly from hair which has been back-combed, and which reduces the pain and discomfort of such removal.

The foregoing objects, as well as others which will be apparent from the drawings and from the following description, are accomplished by providing a device including a comb having at least one row of teeth extending from a longitudinal spine together with means for rapidly oscillating the comb about a longitudinal axis which is spaced inwardly from the free ends of the teeth.

The embodiments shown in the drawing are intended to illustrate more fully the nature of the invention without serving as a limitation upon its scope.

In the drawings,

FIG. 1 is a view in side elevation, partly broken away and in section, showing one embodiment of the present invention;

FIG. 2 is a view along line 2—2 of FIG .1;

FIG. 3 is a view along line 3—3 of FIG. 1;

FIG. 4 is a view in section, partly broken away and on an enlarged scale, showing a portion of the drive shaft;

FIG. 5 is a view along line 5—5 of FIG. 4;

FIG. 6 is a view along line 6—6 of FIG. 4;

FIG. 7 is a view in elevation of another comb embodiment interchangeable with the one shown in FIG.1;

FIG. 8 is a view along line 8—8 of FIG. 7;

FIG. 9 is a view along line 9—9 of FIG. 7;

FIG. 10 is a view along line 10—10 of FIG. 8;

FIG. 11 is a view in side elevation showing still another form of interchangeable comb; and

FIG. 12 is a view along line 12—12 of FIG. 11.

As shown by the embodiment illustrated in FIG. 1, the

invention comprises a comb 10 removably mounted on oscillating drive shaft 30 driven from a mechanism mounted within holder 14. Holder 14 is preferably of a size suitable to be used as a handle and is adapted to be readily grasped in the hand of the user. It includes a metal or plastic housing 16 of generally cylindrical shape within which are mounted an electric motor 18 driven from a rechargeable electric storage battery or other power source 20 through suitable connections including a switch button 21 arranged to be actuated by a finger of the user. Mounted on motor drive shaft 22 is a drive gear 24 arranged to mesh with gear 26 carrying an eccentrically mounted pin 28. Comb mounting shaft 30 is rockably mounted in suitable bearings and carries fixed to it a yoke or slotted cam 32 which engages pin 28. The arrangement is such that shaft 30 and cam 32 oscillate through a total amplitude of approximately 30° (15° on each side of dead center) during each cycle, i.e. each revolution of gear 26. While the preferred range of amplitude of oscillation for best results is from 20° to 40°, useful results may generally be obtained in the range 5° to 150°.

Shaft 30 includes a portion 34 of reduced or restricted diameter and a portion 36 at its outer extremity of generally rectangular cross-sectional configuration to serve as a key for the comb 10.

Different comb embodiments 50 (FIG. 11) and 60 (FIG. 7) are provided for mounting interchangeably with comb 10 (FIG. 1). To provide for removably and interchangeably mounting each molded plastic comb 10, 50, 60 on the shaft 30, the skirt 61 (FIGS. 7–10) is split axially at 38 to render it flexible, and inwardly extending detents 42, 42 are provided to mate with and seat in restricted shaft portion 34. A keyway 44 extends longitudinally into each comb 10, 50, 60 of suitable size and shape to mate with key portion 36 of shaft 30.

The combs are removably mounted on shaft 30 by forcing them onto the end of the shaft until key 36 enters keyway 44 and detents 42 seat in restricted portion 34 of the shaft, split skirt 61 springing outwardly enough to enable the detent to pass over cylindrical portion 40 of the shaft.

The device is used by mounting the comb in place, turning on the switch to cause oscillation of the comb, then wielding the comb in a fashion very similar to that of an ordinary non-oscillatory comb. For back-combing, best results are obtained by using a comb having closely spaced short teeth such as the one shown in FIG. 1 having approximately from 14 to 30 teeth per inch. For example, a strand of hair is held out from the head and the comb portion of the device is placed underneath the strand about an inch from the head with the teeth extending upwardly into the strand and, while oscillating, is moved toward the head. This is repeated several times, and subsequently longer strokes are used starting farther from the head until the entire strand has been back-combed. The process is repeated with each separate strand; the greater the number of individual strands so treated, the fuller or bulkier or more bouffant will be the final hair style. The outer surface of the hair style is then finished by smoothing over the top layer of hair using light strokes either with the oscillating comb or a conventional manual comb.

For removing tangles and snarls, e.g. for combing out back-combed hair, best results are obtained with a comb having long widely spaced teeth such as the comb 60 shown in FIG. 7 having about 5 to 15 teeth per inch. When removing tangles or snarls, or removing the effects of back-combing, the oscillating comb is inserted first near the free ends of the hair and drawn outwardly away from the head. The process is repeated successively closer to the head or scalp until a strand or tress has been aligned, then carried out on another portion.

The same comb may be used for both purposes, i.e. back-combing and untangling, those which are most effective for this dual purpose having a tooth spacing in the intermediate range, from 12 to 16 teeth per inch.

The frequency of oscillation is not critical, and may vary from about 100 to 4000 or more cycles per minute, the upper limit being dependent primarily upon practical mechanical limitations and on convenient power and weight limitations of the device; preferably the frequency ranges from 1500 to 2000 cycles per minute.

While combs having a single row of teeth may be used, as described above, excellent results in imparting an end curl to hair tresses during styling have also been obtained using a comb **50** of unique configuration as shown in FIGS. 11 and 12 in which two rows of teeth **52** and **54** extend divergently from spine **56** and which embodies at one end a suitable detent and keyway construction for mounting on shaft **30** as shown in FIGS. 8–10. Each tooth has a broad lateral surface extending generally perpendicular to spine **56**, and opposing teeth in the two adjacent rows are aligned with each other to define a single plane generally perpendicular to the spine. Each tooth **52, 54** is wider adjacent its free end when measured transversely of the longitudinal axis of the tooth (said axis extending radially from the axis of the spine) in a plane perpendicular to the spine, than it is adjacent its root end where it joins the spine. The lateral edges of each tooth are concavely curved to provide a pointed portion **58** extending laterally outwardly to facilitate entering a hair tress. Although the extent of divergence of the adjacent rows of teeth is not critical, it should be less than 180°, preferably no more than 150° measured between centers. Excellent results have been obtained with the embodiment shown in FIGS. 11 and 12 in which the rows of teeth diverge about 120° on centers.

In using this comb it is mounted on shaft **30** and oscillated, as described above, then caused to enter a tress of hair which is held near its free end with the other hand. The hair tress tends to wrap around the spine of the comb as it is drawn through the tress with a rotary movement, imparting an end curl to the tress. The direction of turn of the end curl may readily be controlled by the operator. Tooth spacing in this embodiment is approximately the same as that of the other combs described above but is preferably in the intermediate range, from 10 to 15 teeth per inch. Additional rows of teeth may be present if desired.

In each of the embodiments shown the comb oscillates about a longitudinal axis which is spaced inwardly from the free ends of the teeth in the direction of the spine. In the case of comb **10**, the oscillation axis lies in the spine of the comb, while in the case of combs **50** and **60** the oscillation axis lies approximately midway between the free ends of the teeth and the spine. The latter arrangement is desirable in the case of combs having relatively long teeth, e.g. three-fourths inch or more, in

order to minimize the arcuate extent of movement of the free ends of the teeth and to minimize the resultant tendency to rap the head of the user when trying to obtain deep penetration of the hair tress by the comb. In addition, the latter arrangement provides a better balance of moving masses about the axis during oscillation and minimizes the vibration which otherwise tends to occur when using large, long-toothed combs. While it is possible, in the case of short-toothed combs, to locate the axis of oscillation on the opposite side of the spine from the teeth, this is usually undesirable because it increases the complexity of manufacture and because it increases the arcuate extent of movement of the free ends of the teeth and makes the device more difficult to use with comfort.

Although specific embodiments of the invention have been described herein, it is not intended to limit the invention solely thereto but to include all of the variations and modifications which suggest themselves within the spirit and scope of the appended claims.

What is claimed is:

1. A device for dressing hair comprising a comb having at least one row of teeth extending from a longitudinal spine, and means including an electric motor and drive mechanism connected to said motor and releasably connected to said comb for oscillating said comb at a frequency from 100 to 4,000 cycles per minute and at an amplitude from 5° to 150° solely about a longitudinal axis spaced inwardly from the free ends of said teeth.

2. A device as claimed in claim **1** in which said axis lies in said spine.

3. A device as claimed in claim **1** in which said axis lies between said spine and the ends of said teeth.

4. A device as claimed in claim **1** in which said comb comprises at least two rows of teeth extending divergently from said spine and each pair of opposing teeth in adjacent rows define a plane perpendicular to said spine.

5. A device as claimed in claim **4** in which each tooth is wider adjacent its free end, measured in said plane, than adjacent its root and has an arcuate end.

References Cited

UNITED STATES PATENTS

1,819,433	8/1931	Miller	132—160
2,187,076	1/1940	Erickson.	
3,060,941	10/1962	Harloff	132—11
3,272,023	9/1966	Ferguson et al.	132—11
3,349,782	10/1967	Sawin	132—11
2,682,066	6/1954	Keely	15—22
3,233,265	2/1966	Hartmann	15—22

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