

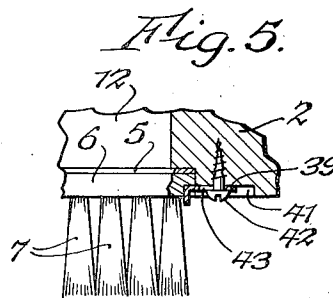
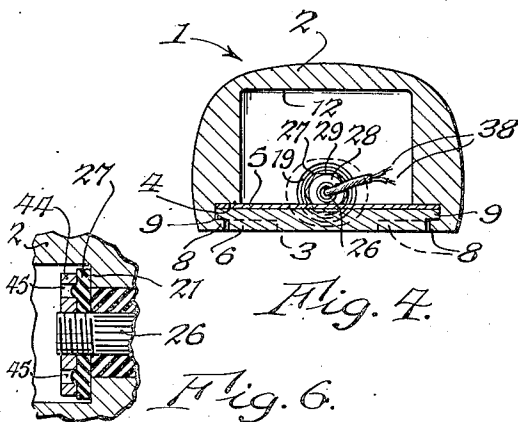
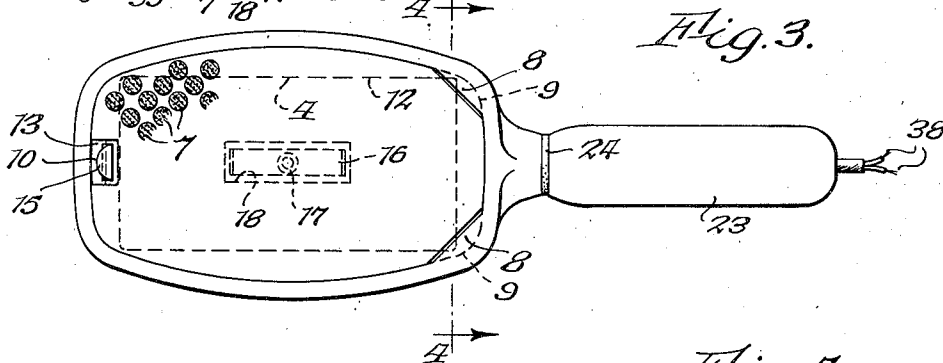
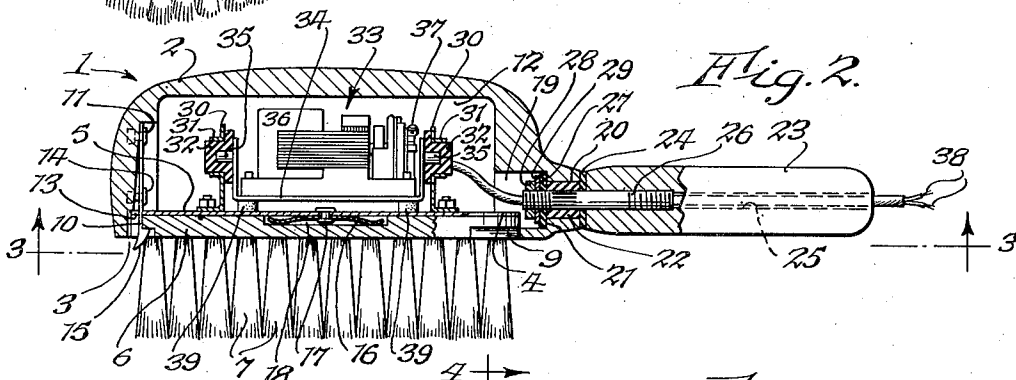
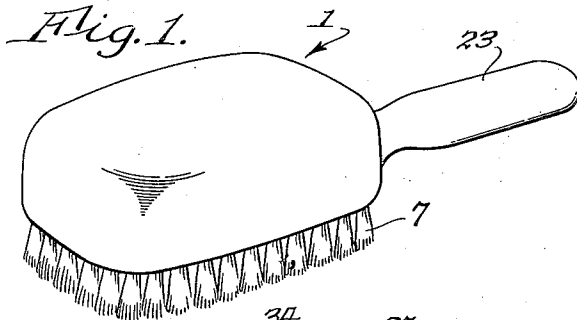
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GYRATING HAIRBRUSH

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GYRATING HAIRBRUSH

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2 Claims. (Cl. 15-22)

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This invention relates to hairbrushes, and particularly to those which are used not only for brushing the hair, but also for stimulating the scalp, inducing a more healthful condition therein, and improving the circulation of blood to the scalp.

An object of the invention is to provide an improved hairbrush which may be employed in the usual manner to brush the hair and scalp, and which, at the same time and by the same brushing operation, will stimulate the circulation of the blood through the scalp and induce a more healthful condition of the scalp, with which a more effective therapeutic action on the scalp may be obtained than has heretofore been possible, with which the bristles are carried on a member which may be removed quickly and easily for cleansing and sterilization, without any danger of injury to the gyrating mechanism within the body of the brush, with which the bristle carrying portion may be removed and replaced without the use of special tools, and which will be light in weight, compact, attractive in appearance, and relatively inexpensive.

Another object of the invention is to provide an improved hairbrush which may be used in an ordinary way to brush the hair and scalp, with which the bristles may be used at the same time to transfer gyratory impulses to the scalp, and with which the gyratory impulses will not be damped by the holding and grasping of the handle while the brush is being used.

Various other objects and advantages will be apparent from the following description of an embodiment of the invention and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawing:

Fig. 1 is a perspective of a hairbrush constructed in accordance with this invention;

Fig. 2 is a longitudinal, sectional elevation of the major part of the same;

Fig. 3 is a bottom sectional plan of the same, the section being taken approximately along the line 3-3 of Fig. 2;

Fig. 4 is a transverse, sectional elevation of the same, the section being taken approximately along the line 4-4 of Fig. 3;

Fig. 5 is a sectional elevation of a portion of the brush illustrating a slightly different manner in which the bristle carrying member can be releasably secured in place; and

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Fig. 6 is a longitudinal, section elevation through the coupling between the handle and shell or housing, and showing a slight modification in the same.

In the embodiment of the invention illustrated in Figs. 1 to 4, the brush includes a housing 1 formed of a hollow shell 2 having an open face 3 with an outwardly facing shoulder 4 around substantially the entire periphery of the opening space, but spaced inwardly from the open face a short distance. A plate 5 of suitable rigid material such as sheet metal is disposed across said open face and flat against said shoulder 4. A member 6 which may be a plate of wood or plastic material, or any other suitable material, is disposed also across said face so as to fill it and to abut against said plate 5. This member 6 carries the usual bristles 7, as usual in hair brushes, and these bristles all extend in the same general direction from the outer face of the member 6 as shown in Fig. 2. The bristles are anchored in recesses in the member 6 in any suitable manner, as usual, in hairbrushes.

The shell 2, adjacent one end of the opening 3, is provided with a pair of flanges 8 that with the shoulder 4 form between them a recess, and the member 6 has a grooved or rabbeted edge portion 9 in its outer face, engaged beneath the ledges 8 when the member 6 is moved into position across the open face 3 of the shell. Suitable confining means is carried by the other end of the shell 2 and engages with the other end of the member 6 to confine it across the open face 3 of the shell. In this embodiment of the invention, the confining means is a latch 10 (Figs. 2 and 3) which is anchored at 11 to an end wall of the shell 2 within the cavity 12 thereof. The latch 10 is urged toward the opposite end of the shell 2, and has a shouldered free end engageable with the outer face of the member 6 to secure member 6 in the open face of the shell, but which may be sprung in a direction endwise of the shell 2 sufficiently to release the member 6 and the plate 5. The plate 5 is provided with a notch 13 through which the latch 10 may extend.

A headed stud 14 may pass loosely through the latch 10 and carries a head to limit the movement of the latch toward the opposite end of the shell 2 when the member 6 and plate 5 are removed from across the open face 3. The outer end of the latch 10 is provided with a beveled cam surface 15 engageable and cammed aside by

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an end edge of the plate 5 and member 6 as those parts are moved into a position across the open face 3 after the opposite ends have first been engaged beneath the overhanging ledges 8. In this way the latch 10 is cammed aside by the plate 5 and the member 6 as they are applied across the open face 3 of the shell 2, and when they reach their positions approximately against the shoulder 4, the latch will snap over the end of the member 6 and confine it to the shell 2. A leaf spring 16 is secured, intermediate of its ends, by a rivet 17 to an interior face zone of the outer face of the plate 5 which abuts the member 6.

The free ends of the spring 16 are normally bowed outwardly away from the plate 5, and are received within a cavity or recess 18 provided on the inner face of the member 6 which abuts the plate 5. When the member 6 is moved into position to close the open face 3 of the shell 2, it compresses the ends of the spring 16 and urges the plate 5 against the shoulder 4, but this yieldingly urges the member 6 outwardly so as to press one end of the member 6 against the under faces of the ledges 3 and the other end against the shoulder on the latch 10. There is a slight clearance between the inner face of the member 6 and the outer face of the plate 5 when they are assembled, but the spring 16 prevents any rattling of the members 5 and 6 in the shell 2. The member 6 can be moved inwardly against the action of the spring 16 slightly to facilitate its release from the latch 10.

The shell 2, at one end, is provided with a passage 19 (Fig. 2) which, intermediate of its ends, is reduced in diameter as at 20, so as to provide a shoulder 21 between the ends of the passage 19 and which faces cavity 12 in the shell 2. Cemented or otherwise secured in the reduced passage portion 20 is a soft, resilient rubber sleeve 22 which extends for the full length of the passage portion 20. A handle 23 is disposed in alignment with the sleeve 22 at the outer end of the passage portion 20. A soft, rubber gasket 24 is disposed against the outer end of the sleeve 22 and the outer end face of the shell 2 surrounding the outer end of the passage portion 20, and between an end of the handle and the outer end of sleeve 22. The handle 23 has a passage 25 extending from end to end thereof, and a pipe or tube 26 is screwed or cemented into the passage 25 at the end adjacent the shell 2 and extends beyond the end of the handle through the bore of the sleeve 22 and into the larger diameter section of the passage 19.

The bore of the rubber sleeve 22 and the periphery of the tube 26 where it passes through the sleeve 22 are preferably both fluted endwise and tightly fitting, so that there will be no relative rotation of the handle 23 and the tube 26 in the sleeve 22. On the end of the tube 26 which is in the passage 19, is disposed a soft, rubber washer 27 which abuts against the end of sleeve 22, extends radially of tube 26 beyond the periphery of sleeve 22, and abuts against the shoulder 21. A nut 28 is threaded upon the end of the tube 26, and a rigid washer 29 is provided on the tube 26 between the nut 28 and the rubber washer 27. By tightening the nut 28, the handle 23 may be secured against removal from the shell 2, yet the sole connection between the handle 23 and the shell 2 will be through the interposed soft, resilient rubber. This makes it possible for the shell 2 to have a limited universal movement with respect to the handle 23 for a purpose which will be explained presently.

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Bearing brackets 30 are secured to the inner face of the plate 5 at spaced points along the length of the same, and these bearing members, adjacent their outer ends, have aligned, tubular cylindrical bearing portions 31 through which extend soft, resilient rubber sleeves 32, which sleeves have outwardly and radially disposed flanges abutting the faces of the members 30 which are towards one another, as shown in Fig. 2. An electric motor 33 of any suitable type is disposed within the cavity or recess 12 of the shell 2, and its frame 34 carries aligned pins 35 which extend in opposite directions from the ends of the frame, and are received in recesses provided in the rubber sleeves or bushings 32. The motor frame has a rotary armature shaft which rotates, when the motor is operated, about an axis preferably substantially coincident with the axis of the aligned pins 35. This motor shaft is axially unbalanced to a substantial extent, well in excess of any unintentional or accidental unbalance due to inaccuracy of manufacture of the motor, and the axis of rotation of this shaft is in a plane which is cross-wise of, and substantially perpendicular to, the lengths of the bristles 7.

The particular type of motor illustrated in Fig. 2 is of the make and break type employing a horseshoe magnet energized by a coil 36 and having a soft iron core attracted into a position across the poles of the magnet when the coil is energized. A make and break mechanism 37 is operated by the rotary shaft at the proper intervals so as to de-energize the coil 36 as the armature moves into a straight across position with respect to the poles of the electromagnet. This is a well known type of simple and inexpensive motor which is used extensively in many electric dry shavers or razors, but in accordance with this invention the shaft is provided with a weight at one side of its axis of rotation, so as to provide therefor, a substantial axial unbalance. The coil 36 is connected in series with the make and break mechanism 37 and with circuit wires 38 which extend through the tube 26 and passage 25 of the handle to the outer end thereof, and then sufficiently further to enable connection to a suitable commercial current outlet. There should be sufficient slack wire to enable the handle 23 to be grasped and the brush manipulated in brushing the scalp without interference from the wires 38, as usual in electric razors. Soft, resilient rubber pads 39 are interposed between the frame 34 and the plate 5, so as to yieldingly resist rotation of the frame 34 about the pins 35.

When a hairbrush constructed as shown in Figs. 1 to 4 has the wires 38 connected to a source of current, a quick sudden sidewise movement of the brush while grasping the handle 23 will cause the unbalanced weight on the rotary shaft of the motor to start the shaft turning far enough to cause the make and break mechanism to close the circuit to the coil 36, and thereupon, the motor will start regular operation. If desired, the motor may have a disc on its rotary shaft exposed through a slot in the shell 2 by which the shaft may be given a short rotary increment of movement sufficient to close the make and break mechanism and thus start the motor. This exposed disc for starting this type of motor is common in electric razors or dry shavers. As the shaft of the motor rotates, the unbalanced weight thereon will tend to drag the motor bodily with it in a closed loop path about the axis of rotation of the motor shaft, which force, tending to move the motor bodily, will depend, for the value of it,

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in part upon the amount of the unbalance, or the weight which constitutes the unbalance. The motor is spaced everywhere from the plate 5, and is solely and floatingly mounted on the plate 5 only from the rubber cushions or bushings 33 and the pads 39. The motor is thus free to float or move bodily, or to gyrate bodily, in a closed loop path of small amplitude about the axis of rotation of the shaft, the extent of gyration or diameter of the path being determined to some extent by the resiliency of the rubber which mounts the motor frame and the extent of the unbalance.

Since the resilient supports for the motor are carried by the plate 5, the moving mass of the motor will impart gyratory impulses to the plate 5 and through it to the shell 2 including the member 6 and the bristles 7, and thus the bristles 7 will be given gyratory impulses about an axis in a plane perpendicular to the lengths of the bristles. When the bristles are applied to the scalp, as in the act of brushing the scalp, the bristles will transmit the gyratory impulses to the scalp and thereby induce in the scalp, an improved circulation of blood which greatly improve the health of the scalp and creates a pleasant and healthful stimulation of the scalp. This action occurs even while the brush is being moved over the scalp with the bristles performing their usual function of brushing the scalp to remove dandruff and to straighten or brush the hair. Because of the floating mounting between the handle 23 and the shell 2, the shell 2 can gyrate to a substantial extent independently of the handle 23, and thus the gyratory impulses given to the bristles by the motor in the shell 2 will not be damped or restricted unduly by the firm grasping of the handle 23 in one's hand while using the brush. Preferably, the axis of the handle tube 26 is parallel to the axis of rotation of the unbalanced motor shaft.

When one desires to remove the bristles for sterilizing or cleaning, it is merely necessary to spring the latch 10 to the left in Figs. 2 and 3, so as to release the member 6. The member 6 can then be swung outwardly slightly at its released end, and then moved endwise to remove its undercut portion 9 from beneath the ledges 8. The plate 5 will be held in the shell 2 by the latch 10 while the member 6 is being sterilized or washed. After the bristles have been carefully washed and sterilized, they can be re-applied to the open face 3 of the shell 2 by first inserting one end beneath the ledges 8 and then swinging the other end of the member 6 against the plate 5 until it cams aside and passes the latching shoulder of the latch 10. Latch 10 holds member 6 securely in the shell 2, with the arms of the spring 16 under compression.

In Fig. 5, a slightly different manner of detachably fastening the member 6 is illustrated. When using this embodiment of the invention, the latch 10 is omitted and the ledges 8 are applied to the end of the shell 2 where the latch 10 was previously applied, and, at the handle engaging end of the shell 2, which is the end shown in Fig. 2, a small plate is confined for sliding movement in a small recess 41 by the head of a screw 42 that passes through a slot 43 in the plate 39 into the shell 2. This plate 39 has an outwardly turned flange at one end by which it can be shifted into and out of overhanging relation to the member 6, so as to confine it against the plate 5. To release the member 6 which carries the bristles 7, the member 6 is first pushed

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inwardly slightly to compress the spring 16, whereupon the plate 39 may be moved sidewise until it no longer overhangs the member 6, and then the member 6 can be removed by the same type of movement used to remove member 6 in Figs. 1 to 4. In other words, the latch 10 is merely replaced by the sliding plate 39, but with the plate and ledges at the ends of the shell 2 opposite from the ledges and fastening means of Figs. 1 to 4.

In Fig. 6, a slight modification of the connection between the handle 23 and the shell 2 is illustrated, the main difference being that the nut 28 and washer 29 are replaced by a nut 44 which overhangs the shoulder 21 and abuts directly against the rubber washer 27. The nut 44 is provided with apertures 45 extending from face to face thereof, so that when the nut 44 is tightened against the rubber washer 27, the rubber of the washer will bulge into the openings 45, as shown in Fig. 6, and serve as keys or yielding pins that will resist accidental unscrewing of the nut 44.

While the brush has been referred to as a hair brush, it will be understood that it has been so designated because the device appears to be most useful as a hair brush, and that the novel features embodied therein may be used for any other device where similar problems are encountered.

Throughout the specification and claims wherever the term "rubber" has been used, it is to be understood that such term is intended to include within its scope, not only natural rubber and sponge rubber, but also any and all of the synthetic rubbers or rubber substitutes which may be available and which have similar soft, resilient properties, or any other equivalent soft, resilient cushioning means.

It will be understood that various changes in the details, materials and arrangements of parts, which have been herein described and illustrated in order to explain the nature of the invention may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

I claim:

1. A hairbrush comprising a shell having an open face with an outwardly facing shoulder adjacent said open face, a plate abutting against said shoulder and removable through said open face, a member disposed face to face against the outer face of said plate and carrying a plurality of bristles extending in the same general direction from the outer face of said member, resilient means interposed between said plate and member and urging the latter outwardly through said open face, said shell and member having interengaging means for releasably securing said member and plate across and closing said opening, and means mounted in said shell on the inner face of said plate for imparting to said plate, and through it, to said member and bristles, gyratory impulses about a small closed loop path having an axis in a plane cross-wise of the lengths of said bristles.

2. A hairbrush comprising a shell having an open face with an outwardly facing shoulder along a substantial part of said open face, but spaced inwardly from said open face, a plate disposed across said open face and abutting flat against said shoulder, a member having bristles extending in the same direction from one face thereof, disposed in said open face with its face opposite the bristle carrying face adjacent said plate, said shell having at one edge, a recess in which an edge of

said member is engaged, means adjacent the opposite side of said shell for releasably engaging said member and holding it in said face, resilient means interposed under stress between the adjacent faces of said plate and member and urging the latter out of said shell, an electric motor disposed within said shell and having an axially unbalanced rotary shaft driven thereby, means for confining said motor to the inner face of said plate, and soft, resilient, cushioning means interposed between said motor and said plate and forming the sole and floating support for said motor on said plate, with the axis of rotation of said shaft in a plane cross-wise of the lengths of said bristles.

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