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(54) **Title**: HAIR STYLING TOOL WITH MOVABLE DIVIDERS

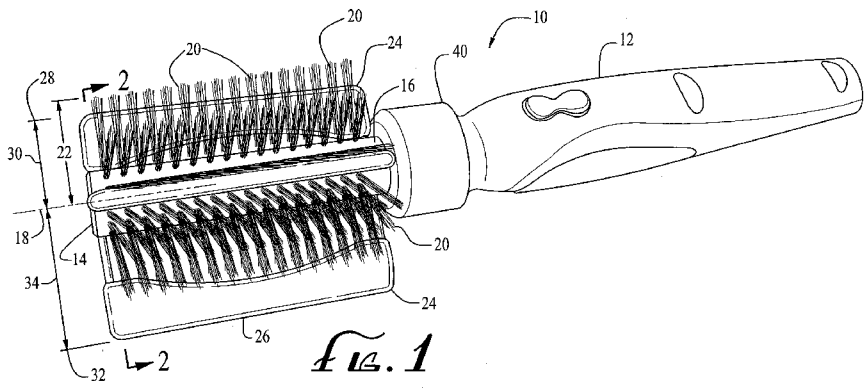

Fig. 1

(57) **Abstract**: A hair styling tool 10 having a plurality of bristles and one or more movable members 24, 66 extending radially outward from the core 16, 56 and movable between opposing positions is provided. The movable members 24, 66 move between a retracted position 28, 70 where the divider is fitted between and even with or slightly above or slightly below the bristles to engage the hair and an extended position 32, 74 where the movable member 24, 66 is moved out beyond the bristles to disengage the hair from the bristles. The hair styling tool 10 having the movable member 24, 66 which engages and disengages the hair with the bristles minimizes tangling of the hair while brushing. The hair styling tool 10 may be a rotating brush 50 optionally equipped with a motor 92.

HAIR STYLING TOOL WITH MOVABLE DIVIDERS

CROSS-REFERENCE TO RELATED APPLICATION

This International Application is related to and claims priority from U.S. Application No. 13/005,468, titled "Hair Styling Tool With Movable Dividers," filed January 12, 2011, the contents of which are incorporated in this disclosure by reference in their entirety.

BACKGROUND

Brushing hair smoothes hair cuticles and pulls oil from the scalp and spreads it throughout the hair, which adds body and sheen to the hair and keeps hair healthier. Many people blow dry their hair while simultaneously brushing their hair, known as a blowout. When simultaneously blow drying and brushing hair, preferable results are achieved by pulling the bristles of a hair brush through the hair while heat, such as hot air from a blow dryer is applied to the hair. Hair is blown out in sections while turning the brush partially and moving the brush through the hair. A user can usually rotate a brush about one half turn manually, and after each half turn, the user pulls the brush from the hair. The brush is then placed on a new section of hair, usually adjacent to the preceding location, and the process is repeated throughout the entire head of hair.

When proper tension is placed on the hair with a brush, the hair is elongated, and when heat is applied during a blowout, even frizzy and otherwise unmanageable hair can achieve a sleek, glossy appearance, which can last for several days. However, blow drying an entire head of hair with professional looking results can be difficult on one's own head of hair as it is difficult to reach the back of the hair while coordinating the brush movements and applying heat from a blow dryer. Professional hair stylists can accomplish these moves more easily, but a professional blow dry can be costly and is unaffordable to most people on a regular basis.

Various brushes, including rotating brushes are known which address the difficulties associated with blow drying hair and seek to maximize the benefits of brushing hair while drying with heat. See, for example, US Pat. No. 6,098,635. Disadvantageously, however,

these brushes can lead to hair tangling for an inexperienced user, especially for longer hair, hair that is improperly sectioned, or improper brush positioning by the user.

Therefore, there is a need for a brush that will efficiently smooth hair cuticles and move oils from the scalp to the ends of the hair to provide a sleek, glossy blowout. There is also a need for a brush that can give professional looking blowout results and that is effectively brushed without tangling.

SUMMARY

According to the present invention, there is provided a hair styling tool that satisfies the above-identified needs. The hair styling tool is a brush with movable dividers that eliminates tangling regardless of the section size of the hair being dried, the hair length, and/or brush placement. The brush has bristles which engage the hair and provide tension when the brush is moved through the hair, either by mechanical or manual rotation. The brush also has movable dividers that move between extended and non-extended (i.e., retracted) positions as the brush rotates. When the brush rotates, the hair that is intended to be brushed encounters a divider in a non-extended position which allows the bristles to freely engage with the hair. The opposite end of the divider is positioned in its extended position, which pushes out any hair currently engaged in the adjacent bristles, which prevents the bristles from engaging any hair in the immediate area. In this manner, the brush bristles engage and disengage hair as the brush rotates and the divider moves from fully extended to non-extended, relative to the bristles (or core of the brush). The hair styling tool with a movable divider thus affords a brush that can effectively brush hair, under rotation, without tangling.

According to one version, the invention comprises a hair styling tool having a handle which is attached to a core having a longitudinal axis, and a plurality of projections, such as bristles, extending radially outwardly from the core a first distance from the longitudinal axis. The hair styling tool also has one or more movable members having a distal surface which extend radially outward from the core and move between opposing positions. The opposing positions include a retracted position where the distal surface of the movable member is distant radially from the longitudinal axis at a second distance that is less than the first distance, and an extended position where the distal surface of the movable member is

distant radially from the longitudinal axis at a third distance that is more than the second distance.

The hair styling tool may comprise first and second movable members where the movable members are connected and positioned at opposing sides of the core, and movable together with respect to the core. According to this version, when the first movable member is positioned in the extended position, the second movable member is positioned in the retracted position, and when the second movable member is positioned in the extended position, the first movable member is positioned in the retracted position, and the pair of movable members are movable together between the opposing positions. According to another version, the hair styling tool may comprise two or more pairs of movable members, where each pair of movable members is connected and positioned at opposing sides of the core, and movable with respect to the core.

According to another version, the invention comprises a rotating hair brush having a handle and a core attached to the handle, where the core has a longitudinal axis and a plurality of projections which extend radially outward from the core at a first distance from the longitudinal axis. The rotating hair brush also has first and second movable members, each movable member having a distal surface which extends radially outward from the core and moves between opposing positions. The opposing positions include a retracted position where the distal surface of the movable member is distant radially from the longitudinal axis at a second distance that is less than the first distance, and an extended position where the distal surface of the movable member is distant radially from the longitudinal axis at a third distance that is more than the second distance. This version of the invention further includes means for rotating the core about its longitudinal axis relative to the handle, such as a motor.

According to another version, the invention comprises a rotating hair brush having a movable member, as described herein and further comprises a heating means. In one example, the heating means comprises a heating element. The heating element may be within or integral with the core such that the core may be heated while the rotating hair brush is in use. In another example, the heating means comprises a heated blower. The heated blower may be within or integral with the handle, or otherwise situated to provide hot air venting out the core or otherwise venting out hot air such that the hair is heated with hot air while the rotating hair brush is in use.

According to another version, the invention comprises a method of brushing hair comprising the steps of placing the projections of the hair styling tool in a section of hair. Then, before or after the hair is placed in the projections, the rotating means is operated to cause the core to rotate. Then, the projections are pulled through the hair with the core rotating, where the movable member moves between its extended position and retracted position so that in the extended position, the movable member pushes hair away from the bristles to move hair away from the bristles and to keep hair from tangling in the projections.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

Figure 1 is a perspective view of a hair styling tool having features of the present invention which is used for styling hair;

Figure 2A is a sectional view of a hair styling tool of Figure 1, taken through line 2-2 of Figure 1, showing the movable members in one position;

Figure 2B is a sectional view of the hair styling tool of Figure 2A, taken through line 2-2 of Figure 1A, showing the movable members in the opposing position;

Figure 3A is a sectional view of another version of the invention of the brush end shown in Figure 1, taken through line 2-2 of Figure 1;

Figure 3B is a sectional view of another version of the invention of the brush end of Figure 1, taken through line 2-2 of Figure 1;

Figure 3C and Figure 3D are perspective sectional views of different version of the inventions of movable members of the brush end shown in Figure 1;

Figure 4 is a side sectional view of a rotating hair brush, showing a pair of movable members having dampers according to another version of the present invention;

Figure 5A, Figure 5B, and Figure 5C are sectional views of the rotating hair brush shown in Figure 4, taken through line 3-3 of Figure 4, showing bristles and a pair of movable members that engage and disengage a section of hair;

Figure 6 is a side sectional view of the hair styling tool shown in Figure 4, having a heating element which is integral with the core; and

Figure 7 is a perspective view of the hair styling tool shown in Figure 4, having a heated blower and a vented core which provides hot air venting out the core.

DESCRIPTION

According to one version of the present invention, there is provided a hair styling tool for greatly reducing or eliminating tangling when brushing hair. The hair styling tool comprises a handle and a brush head and at least one movable member. The movable member moves between an extended position and a retracted position. The bristles of the brush engage the hair when the movable member is in the retracting position, and the movable member pushes hair away from the bristles of the brush portion of the tool when the movable member is in the extended position. The extending and retracting action of the movable member disengages hair from the bristles thus effectively brushing hair while minimizing tangling.

Referring now to Figure 1, a perspective view of a hair styling tool 10 having features of the present invention is shown. The hair styling tool 10 comprises a handle 12 and a brush end 14, which also may be referred to as a brush, brush end, or brush portion. The brush end 14 is attached to the handle 12 and comprises a core 16 having a longitudinal axis 18 and a plurality of projections 20 that extend radially outward from the core 16 at a first distance 22 from the longitudinal axis 18. The hair styling tool 10 has at least one movable member 24 having a distal surface 26. Preferably, the distal surface of at least one movable member 24 extends substantially the entire length of the core 16.

The movable member 24 extends radially outwardly from the core 16 and is movable between opposing positions. The movable member 24 moves between a retracted position 28, where the distal surface 26 of the movable member 24 is distant radially from the longitudinal axis 18 at a second distance 30 that is less than the first distance 22, and an extended position 32, where the distal surface 26 of the movable member 24 is distant radially from the longitudinal axis 18 at a third distance 34 that is more than the first distance 22. The hair styling tool 10 has at least one and preferably up to eight or more movable members 24.

Figure 7 is a perspective view of the hair styling tool shown in Figure 4, having a heated blower and a vented core which provides hot air venting out the core.

DESCRIPTION

According to one version of the present invention, there is provided a hair styling tool for greatly reducing or eliminating tangling when brushing hair. The hair styling tool comprises a handle and a brush head and at least one movable member. The movable member moves between an extended position and a retracted position. The bristles of the brush engage the hair when the movable member is in the retracting position, and the movable member pushes hair away from the bristles of the brush portion of the tool when the movable member is in the extended position. The extending and retracting action of the movable member disengages hair from the bristles thus effectively brushing hair while minimizing tangling.

Referring now to Figure 1, a perspective view of a hair styling tool 10 having features of the present invention is shown. The hair styling tool 10 comprises a handle 12 and a brush end 14, which also may be referred to as a brush, brush end, or brush portion. The brush end 14 is attached to the handle 12 and comprises a core 16 having a longitudinal axis 18 and a plurality of projections 20 that extend radially outward from the core 16 at a first distance 22 from the longitudinal axis 18. The hair styling tool 10 has at least one movable member 24 having a distal surface 26. Preferably, the distal surface of at least one movable member 24 extends substantially the entire length of the core 16.

The movable member 24 extends radially outwardly from the core 16 and is movable between opposing positions. The movable member 24 moves between a retracted position 28, where the distal surface 26 of the movable member 24 is distant radially from the longitudinal axis 18 at a second distance 30 that is less than the first distance 22, and an extended position 32, where the distal surface 26 of the movable member 24 is distant radially from the longitudinal axis 18 at a third distance 34 that is more than the first distance 22. The hair styling tool 10 has at least one and preferably up to eight or more movable members 24.

Referring now to Figures 2A and 2B, a sectional view of the hair styling tool of Figure 1 taken through line 2-2 of Figure 1 is shown. Figures 2A and 2B show the movable members in one position. The hair styling tool 10 preferably has movable members 24 in pairs, comprising a first movable member 24a and a second movable member 24b. The first and second movable members 24a and 24b are preferably connected and positioned at opposing sides of the core 16 and are movable together with respect to the core 16. More preferably, the first and second movable members 24a and 24b are joined with a connecting rod 36 through the core and slideable between opposing positions.

As shown in Figures 2A and 2B, in a preferred version of the invention, the hair styling tool 10 has a first movable member 24a positioned in the retracted position 28 when the second movable member 24b is positioned in the extended position 32. And, conversely, when the second movable member 24b is positioned in the retracted position 28 when the first movable member 24a is positioned in the extended position 32 and the pair of movable members 24a and 24b are connected and movable together between the opposing positions. Although Figures 2A and 2B show the movable members 24 in their fully extended and retracted positions, it will be understood by those of skill in the art that these are idealized drawings and that the movable members may move between positions that are substantially as shown and positions in between. In a more preferred version of the invention, the hair styling tool 10 has two or more pairs of movable members 24a and 24b, each pair of movable members being connected and positioned at opposing sides of the core, and movable with respect to the core. According to this version, the pair of movable members 24a and 24b are connected and positioned at opposing sides of the core 16, and at least a portion of the plurality of projections 20 are positioned in a row extending parallel to a longitudinal length 18 of the core 16 and between the pair of movable members 24a and 24b.

In a preferred version of the invention, the movable member 24, in the retracted position 28, is retracted to a position which is from about .25 inches beyond the projections 20 to a position which is substantially below the projections, depending to the type of projections 20 used in the hair styling tool 10, such as the type of bristle and tufting of the bristles, such that the hair will engage with the bristles. Preferably, the distal end 26 of the movable member 24 is from about 60% to 85% of the height of the projections 20 when the movable member 24 is in the retracted position 28. In the extended position 32, the movable

member 24 extends to a position beyond the projections 20, which is from about .25 inches beyond the projections to about 1 inch beyond the projections, such that the hair disengages the bristles.

In an exemplary version of the invention, for a styling tool 10 having a core 16, which is about 1 inch (2.5 cm) in diameter, the projections 20 extend about 1.25 inches (3.2 cm) from the core 16. The movable member 24a extends about .875 inches (2.2 cm) from the core 16 when the movable member 24a is in the retracted position 28. The opposing movable member 24b extends about 1.625 inches (4.1 cm) from the core 16 when the movable member 24a is in the extended position 32.

Referring now to Figure 3A and Figure 3B, sectional views of versions of the brush end taken through a plane perpendicular to the longitudinal axis of the core 16 are shown. The core 16 is generally of a cylindrical shape, but may comprise other shapes which suitably incorporate the features of the invention, and may be comprised of a variety of materials including metal, for heat conduction, or plastic or wood, when heat conduction is not desired. The core 16 may also be coated to enhance smoothing and detangling. In a preferred version of the invention, the core is from a diameter of from about .5 inches (1.3 cm) to about 3 inches (7.6 cm), depending on the brushing application.

The projections 20 extend radially outward from the core 16 and may be attached to the core 16 in a conventional way, depending on the composition of the projections 20.

Preferably, the hair styling tool 10 has a plurality of projections 20 which are positioned in a row extending parallel to a longitudinal length of the core. More preferably, as shown in Figures 3B, the projections 20 are three bristle clusters positioned in rows between each movable member 24. The plurality of projections 20 are generally a type of hair brush bristle including boar bristles, nylon or other plastic bristles, or a combination of bristle types, such as boar and plastic bristles. The boar and plastic bristles used in the present invention may be of varying stiffness for different brushing applications, such as soft bristles for thin or fine hair, and stiff bristles for thick or coarse hair. The nylon or plastic bristles may have rounded or balled ends to prevent scratching of the scalp, and boar and plastic or nylon bristles may be combined in one brush for yet other hair brushing applications. Other options may also be used for the projections, such as tourmaline, silicon

or silicon coated bristles, or other bristle coatings which reduce frizz and enhance smoothing and detangling of the hair.

Referring again to Figures 3A and 3B, the distal end 26 of the movable member 24 may be of solid construction as shown in Figure 3A, or may have a hollow interior, as shown in Figure 3B. Referring now to Figures 3C and 3D, the distal end 26 of the movable member 24 may be of varying shapes, such as rounded, as shown in Figure 3C, or an inverted rounded triangular shape, as shown in Figure 3D, or other suitable shapes having a preferably rounded distal end 26. Further, the hair styling tool 10 may have a combination of shapes used for the distal end 26 of multiple movable members 24. The function of the movable member 24 is to prevent hair from tangling in the brush projections 20. Especially when hair is wet, rotation of the hair tool 10 can carry ends of the hair around the bristles of the hair styling tool 10. The hair ends then can get under other parts of the hair and tangle. The movable member(s) 24 smooth the bottom of the hair when the hair is in the retracted position 28 and push the hair outward when the movable member is in the extended position 32 which makes the hair less likely to tangle.

The movable member(s) 20 may also be formed of a material which retains heat. As hot air from a blow dryer hits the hair and the movable member(s) 20, the movable member(s) 20 warms and heat transfers back to the hair even when hot air from the blow dryer is directed elsewhere. In addition, the movable member(s) 20 may be preheated by aiming the hot air from a hair dryer at the movable member(s) 20 before directing air to the hair.

The distal end 26 of at least one movable member 24 may have a textured surface, or may be comprised of an elastomer such as silicone rubber or TPE to enhance smoothing and detangling of the hair. The distal end 26 may also be comprised of metal, plastic, nylon, wood or other suitable material and have a textured surface and/or an elastomeric coating or inset. The distal end 26 of the movable member 24 may be comprised of a material that retains heat, such that hot air from a blow dryer warms the divider and transfers heat back to the hair.

According to another version of the invention, as shown in Figure 3B, the hair styling tool 10 may also have a damper 38 positioned between an inner portion of the movable

member 24 and the core 16 to reduce vibration and noise when the movable member 24 moves between the retracted position 28 and the extended position 32.

Referring again to Figure 1, the handle 12 may be of any shape convenient for brushing hair, preferably cylindrical in shape, and preferably comprised of a material which is resistant to corrosion and electrically insulating, such as plastic or wood. The handle 12 may additionally have cushioning and/or slip resistant features which are built into the handle or attached thereto, such as foam cushioning and/or slip resistant groves. The handle 12 may also have an anti-tangle collar 40.

According to another version of the invention, a rotating hair brush comprising a handle and a core having projections, such as bristles, and a movable divider is provided. The core is attached to the handle and is capable of rotating independent from the handle. The rotating hair brush may be manually rotatable, or may be powered by an electrical source.

Referring now to Figure 4, a side sectional view of a rotating hair brush 50, according to a preferred version is shown. The rotating hair brush 50 has a handle 52, a distal brush end 54, a core 56 having a longitudinal axis 58, and a rotation means 84 for rotating the core 56 about its longitudinal axis 58 relative to the handle 52. The rotating hair brush 50 has a plurality of projections 62 extending radially outwardly from the core 56 at a first distance 64 from the longitudinal axis 58 and movable members 66 having a distal surface 68. Preferably, the rotating hair brush has a pair of movable members, a first movable member 66a and a second movable member 66b, each movable member 66a and 66b having a distal surface 68a and 68b which extends radially outward from the core 56. The movable members 66a and 66b move between opposing positions including a retracted position 70 and an extended position 74. In the retracted position 70, the movable member distal surface 68 is distant radially from the longitudinal axis a second distance 72, that is less than the first distance 64. In the extended position 74, the movable member distal surface 68 is distant radially from the longitudinal axis a third distance 76 that is more than the first distance 64. Preferably, the first and second movable members 66a and 66b are positioned at opposing sides of the core 56 and connected therethrough with a connecting rod 78. More preferably, the movable members 66a and 66b and projections 62 on the rotating hair brush 50 are capable of engaging hair when the movable members 66a and 66b are positioned in

the retracted position 70 and the movable members 66a and 66b are capable of pushing hair away from the core 54 and disengaging hair from projections 62 when the movable member 66 is positioned in the extended position 74.

As shown in Figure 4, the rotating hair brush 50 may include dampers 80, which operate to reduce vibration and noise between the movable members 66 and the core 56. The rotating hair brush also includes a rotating means 84 for rotating the core 56 about its longitudinal axis 58 relative to the handle 52, and an optionally removable anti-tangle collar 82 capable of preventing hair from tangling at the rotation means 84 when core 56 is rotating relative to handle 52. The handle 52 may house an internal battery 86 or optionally, the rotating hair brush 50 may be directly powered by electricity from an electrical outlet, in which case the rotating hair brush 50 would also include a cord and plug for powering the device (not shown). When the rotating hair brush 50 includes a battery 86 for powering the brush, the battery 86 is preferably rechargeable, and the handle 52 includes a structure for mating with a recharging station (not shown). One or more switches 88 and 90 are located on the handle 52 for controlling the power to the brush's rotating means 84. One of the switches 88 or 90 may control the direction that the brush rotates, while the other switch may be used as on an/off switch, and/or to control brush speed. However, a single speed may be preferable, of from about 30 rpm to about 140 rpm.

The handle 52 may be made sections that are separable for access to the battery 86. Alternately, the battery 86 may be accessible through a removable door (not shown) in the handle 52. The rotating hair brush may also include an end cap 94 that closes the distal brush end 54 of the rotating hair brush 50. The end cap 94 may include an opening for receiving a motor shaft for rotating the core 56. However, as discussed herein, the motor and shaft may be alternately positioned within the hair brush 50.

The rotating means 84 may comprise a motor 92 for rotating the core 56 about its longitudinal axis 56 relative to the handle 52. The rotating means 84 may be located in the handle 52, as shown in Figure 4, or alternately, the rotating means 84 may be located in the core 56 (not shown).

According to another version of the invention, the brush section may be removable from the handle 52. According to this version, brush heads with different brush designs, i.e., differing bristles or bristle arrangements may be used interchangeably with the handle

52. Further, when the distal brush end 54 is removable, the user may remove a brush for cleaning, or if the brush bristles break, the user can exchange a damaged brush end with a new brush end. The rotating hair brush may also include means for locking the distal brush end 54 to the handle 52, such as a detent fitting into an indentation, or a bayonet fitting also could be used. Preferably, the connection between the handle 52 and the brush end 54 is rigid so the brush end 54 does not wobble as it rotates. In general, the core 56 is positioned such that it is aligned along the same horizontal axis as the handle 52. However, in some versions, the core 56 and handle are fixed at a lesser angle, and in other versions, the core 56 may pivot with respect to the handle 52 such that the core 56 and handle 52 are positioned at an angle less than 180 degrees, such as an angle between about 175 degrees to about 90 degrees. Preferably, when the handle 52 pivots, the handle 52 will lock in place with respect to the core 56 in the different handle positions.

Referring now to Figure 5A, 5B and 5C, sectional views of the rotating hair brush 50 shown in Figure 4 is shown, illustrating a method of brushing hair according to another version of the invention. As shown in Figures 5A, 5B, and 5C, the rotating hair brush 50 has a plurality of projections 62a, 62b, 62c, and 62d and a pair of movable members 66a and 66b that engage and disengage a section of hair 94.

According to the method, first, as shown in Figure 5A, a section of hair 94 is contacted with a portion of the projections 62a and 62b on the rotating hair brush 50 when the first movable member 66a is positioned in the retracted position 70. As also shown in Figure 5A, the second movable member 66b is in the extended position 74. The rotating hair brush 50 is then rotated, and optionally, the rotating means 92 is started (before or after the hair is contacted) causing the core 56 to rotate about the longitudinal axis 58. Alternately, the rotating brush 50 is manually rotated. Next, as the core 56 is rotated about the longitudinal axis 58, the projections 62a and 62b are pulled through the hair.

Next, as shown in Figure 5B, the first movable member 66a moves to an intermediate position 70(i) where the first movable member 66a begins to extend to a position even with or slightly below or beyond the projections 62a and 62b, contacting the hair 94 with the distal end 68a. The second movable member 66b also moves to a second intermediate position 74(i) which is retracted from the extended position shown in Figure 5A as the core 56 rotates.

Then, as shown in Figure 5C, the first movable member 66a moves to the extended position 74 and the hair 94 is pushed away from the core 56 as the distal end 68a of the first movable member 66a extends beyond the projections 62a and 62b. As also shown in Figure 5C, the second movable member 66b moves to the retracted position 70 as the core 56 rotates and the projections 62c and 62d begin to engage the hair 94.

Thus, according to the method, the movable members 66a and 66b and projections 62a and 62b on the rotating hair brush 50 are capable of engaging hair 94 when the movable members 66a and 66b are positioned in the retracted position 70 and the movable members 66a and 66b are capable of pushing hair away from the core 56 and disengaging hair 94 from projections 62a and 62b when the movable member 66 is positioned in the extended position 74.

According to another version, the invention comprises a rotating hair brush having a movable member, as described herein and further comprises a heating means for heating the hair while brushing. Examples of the heating means comprises a heating element within or integral with the core such that the core may be heated while the rotating hair brush is in use, and/or a heated blower which may be within or integral with the handle, or otherwise situated to provide hot air venting (i.e., moving) out from the core or otherwise blowing out hot air such that the hair is heated with hot air while the rotating hair brush is in use. When the version of the rotating hair brush having a heating means is used according to the method of the invention, the heating means is started before or after the hair is placed in the projections (e.g., bristles), of the hair styling tool and when the hair is brushed, the heating means causes heat to be delivered to the core.

Referring now to Figure 6, another version of the rotating hair brush 50 shown in Figure 4 is shown, having an exemplary version of the heating means. According to this exemplary version of the invention, the heating means is a heating element, shown as a heating rod 96 which is integral, or integrated within the brush end 54 and adapted to provide heat to the core 56. According to this exemplary version, the brush end 54 includes a heat transfer assembly 98 which is positioned between the outer surface 100 of the core 56 and the heating rod 96. The heat transfer assembly 98 comprises a suitable heat transfer material, such as metal, ceramic, or other suitable heat transfer materials. When the heating element 96 is heated, the heat is transferred to the heat transfer assembly 98 and to the outer surface

100 of the core 56. One or more of the switches 88 and 90, located on the handle 52, in addition to controlling the power to the brush's rotating means 84, may also control power to the heating rod 96, and/or may be used as on an/off switch. Further, the switch controlling the heating rod 96 may also include varying ranges of temperature from hot to cool positions. Although two switches are shown and described herein, other combinations of switches, or a single multi-purpose switch may be used on the rotating hair brush 50 with heating means. The rotating hair brush may also be electrically connected to a power source, such as the power cord 102 to provide heat to the heating rod 96 and/or to power the rotating means 84 and/or to control brush speed. However other power sources may be used to heat and rotate the brush as described herein. Other examples of a hair styling tool having a heating element may be seen in US Pat. Nos. 7,631,646; and 7,481,228, the entire disclosure of which is hereby incorporated by reference. Further, although the present disclosure describes a heating element which transfers heat to the outer surface 100 of the core 56 via a heat transfer assembly 98, other heating means and heating elements, such as a radiant heating element, are within the scope of the present invention, as will be understood by those of skill in the art.

Referring now to Figure 7, a perspective view of another version of the rotating hair brush 50 shown in Figure 4 is shown, having an exemplary version of the heating means. According to this exemplary version of the invention, the heating means is a heated blower. According to this exemplary version of the heating means, the components of the hair brush are configured to provide a substantially unobstructed flow of air through apertures 104 in the core 56 of the rotating hair brush 50. According to this version, the heating means comprises a heated blower, which may include a heater assembly 106 (not shown) and a fan assembly 108 (not shown). The heater assembly 106 extends from the fan assembly 108, to within the core 56. In one exemplary version, the heater assembly 106 performs as a resistor to which current is supplied via and power cord 102 or other means, such as battery. The interior of the core 56 may be equipped with heating elements such that air forced through the heating assembly 106 can be heated and forced through the apertures 104 in the core 56 for the purpose of both drying and styling hair. In addition to heating the core 56 and hair exposed to apertures 104, the heating assembly may also be capable of heating the movable dividers 66a and 66b in certain versions of the invention.

One or more of the switches 88 and 90, located on the handle 52, in addition to controlling the power to the brush's rotating means 84, may also control power to the heater assembly 106 and the fan assembly 108, and/or may be used as on an/off switch. The switch controlling the heater assembly 106 may also include varying ranges of temperature from hot to cool positions. Although two switches are shown in Figure 7, other combinations of switches or a single multi-purpose switch may be used on the rotating hair brush 50 with heating means.

As also shown in Figure 7A, the brush end 54 includes a plurality of projections 62 extending from the core 56. Also included on the brush end 54 are a plurality of apertures 104 which provide a path for the flow of air from within the core 56 of the rotating hair brush 50 to the exterior of the core, or otherwise venting out hot air such that the hair is heated with hot air while the rotating hair brush is in use. According to this exemplary embodiment, the core 56 has within it a hollow cavity that allows for the flow of heated air.

Advantages of the hair styling tool described herein include the ability of the tool to eliminate tangling while brushing while the hair is being dried, or "blown out" and "styled" with a hand held hair dryer with brushing regardless of hair section size, hair length or brush placement. The design of the rotating hair tool allows the bristles to freely engage a section of hair that is intended to be brushed when the movable member is in the retracted position. Then, as the brush end rotates, the hair encounters a movable member in the extended position and any hair currently engaged in the bristles adjacent to the extended movable member will be pushed out and away from the bristles, thus eliminating tangling in the area of the brush immediately adjacent to the extended movable member. The distal ends of the movable members further serve to concentrate heat and smooth hair while under tension against hair as the brush end rotates. The pattern of bristles engaging and disengaging the hair as the movable member moves from the fully extended to retracted positions, relative to the bristles, ensures that the hair is effectively brushed without tangling. In addition, the rotating hair tool can be used effectively at a variety of angles so that a user can brush and dry his/her own hair, even at odd angles, such as the back of their own hair. Accordingly, the rotating hair tool can be used to apply proper tension on the hair, and when heat is applied during the blow out, even frizzy and otherwise unmanageable hair can achieve a sleek, glossy appearance which can last for several days. Further, with the hair styling tool

according to the invention, an entire head of hair can be blown out and styled with professional looking results on one's own head of hair, thus lessening trips to the salon for a professional blow dry, which can be a significant cost savings to the user.

In certain versions of the invention comprising a heating means, the hair may be heated and styled without the use of a hair dryer, which is highly convenient for the user. In other versions of the invention having a heated blower, the hair may be simultaneously dried and styled. This is a significant time savings for the user.

Although the present invention has been discussed in considerable detail with reference to certain preferred versions of the invention, other versions of the invention are possible. For example, the size and shape of the movable dividers may be varied, as well as the type and length of bristles, the means of rotation, the shape of the brush head, and/or the heating means. Therefore, the scope of the appended claims should not be limited to the description of preferred versions of the invention contained herein.

WHAT IS CLAIMED IS:

1. A hair styling tool comprising:

a) a handle;

b) a core having a longitudinal axis and attached to the handle;

b) a plurality of projections extending radially outwardly from the core a first distance from the longitudinal axis; and

c) a movable member having a distal surface, the movable member extending radially outward from the core and movable between opposing positions comprising:

(i) a retracted position wherein the movable member distal surface is distant radially from the longitudinal axis a second distance that is less than the first distance, and

(ii) an extended position wherein the movable member distal surface is distant radially from the longitudinal axis a third distance that is more than the second distance.

2. The hair styling tool according to claim 1 wherein the tool comprises first and second movable members, the movable members being connected and positioned at opposing sides of the core, and movable together with respect to the core.

3. The hair styling tool according to claim 2 wherein the first movable member is positioned in the extended position when the second movable member is positioned in the retracted position, wherein the second movable member is positioned in the extended position when the first movable member is positioned in the retracted position and the pair of movable members are movable together between the opposing positions.

4. The hair styling tool according to claim 1 wherein the tool comprises two or more pairs of movable members, each pair of movable members being connected and positioned at opposing sides of the core, and movable with respect to the core.

5. The hair styling tool according to claim 1 wherein the movable member further comprises a damper positioned between an inner portion of the movable member and the core.

6. The hair styling tool according to claim 1 wherein the projections are bristles.

7. The hair styling tool according to claim 1 wherein at least a portion of the plurality of projections are positioned in a row extending parallel to a longitudinal length of the core.

8. The hair styling tool according to claim 1 wherein the tool comprises a pair of movable members, the pair of movable members being connected and positioned at opposing sides of the core, and wherein at least a portion of the plurality of projections are positioned in a row extending parallel to a longitudinal length of the core and between the pair of movable members.

9. The hair styling tool according to claim 1 wherein the distal surface of at least one movable member comprises a textured surface.

10. The hair styling tool according to claim 1 wherein the distal surface of at least one movable member extends substantially the entire length of the core.

11. The hair styling tool according to claim 1 wherein the first and second movable members are joined with a connecting rod through the core.

12. The hair styling tool according to claim 1 further comprising means for rotating the core about its longitudinal axis relative to the handle.

13. The rotating hair brush according to claim 12 wherein the means for rotating comprises a motor.

14. The rotating hair brush according to claim 1 further comprising a heating means.

15. The rotating hair brush according to claim 14 wherein the heating means is a heating element.

16. The rotating hair brush according to claim 1 wherein the heating means is a heated blower.

17. A rotating hair brush comprising:

a) a handle;

b) a core having a longitudinal axis and attached to the handle;

c) means for rotating the core about its longitudinal axis relative to the handle

d) a plurality of projections extending radially outwardly from the core at a first distance from the longitudinal axis; and

e) first and second movable members, each movable member having a distal surface and extending radially outward from the core and movable between opposing positions comprising:

(i) a retracted position wherein the movable member distal surface is distant radially from the longitudinal axis a second distance that is less than the first distance, and

(ii) an extended position wherein the movable member distal surface is distant radially from the longitudinal axis a third distance that is more than the second distance, wherein

the first and second movable members are connected and positioned at opposing sides of the core, and movable with respect to the core.

18. The rotating hair brush according to claim 17 wherein the means for rotating comprises a motor.

19. The rotating hair brush according to claim 17 wherein the at least one movable member pushes hair away from the core when the movable member is positioned in the extended position, and retracts to engage hair with at least some of the projections when the movable member is positioned in the retracted position.

20. The rotating hair brush according to claim 17 further comprising a heating means.

21. The rotating hair brush according to claim 17 wherein the heating means is a heating element.

22. The rotating hair brush according to claim 17 wherein the heating means is a heated blower.

23. A method of brushing hair comprising the steps of:

a) placing the projections of the hair styling tool of claim 1 in hair;

b) before or after step (a), starting the rotating means to cause the core to rotate; and

c) pulling the projections through the hair with the core rotating, wherein

at least one movable member moves between the extended position and the retracted position so that in the extended position, the movable member pushes hair away from the bristles to keep hair from tangling in the projections.

24. The method according to claim 23 further comprising before or after step (a), starting the heating means to cause heat to be delivered to the core.

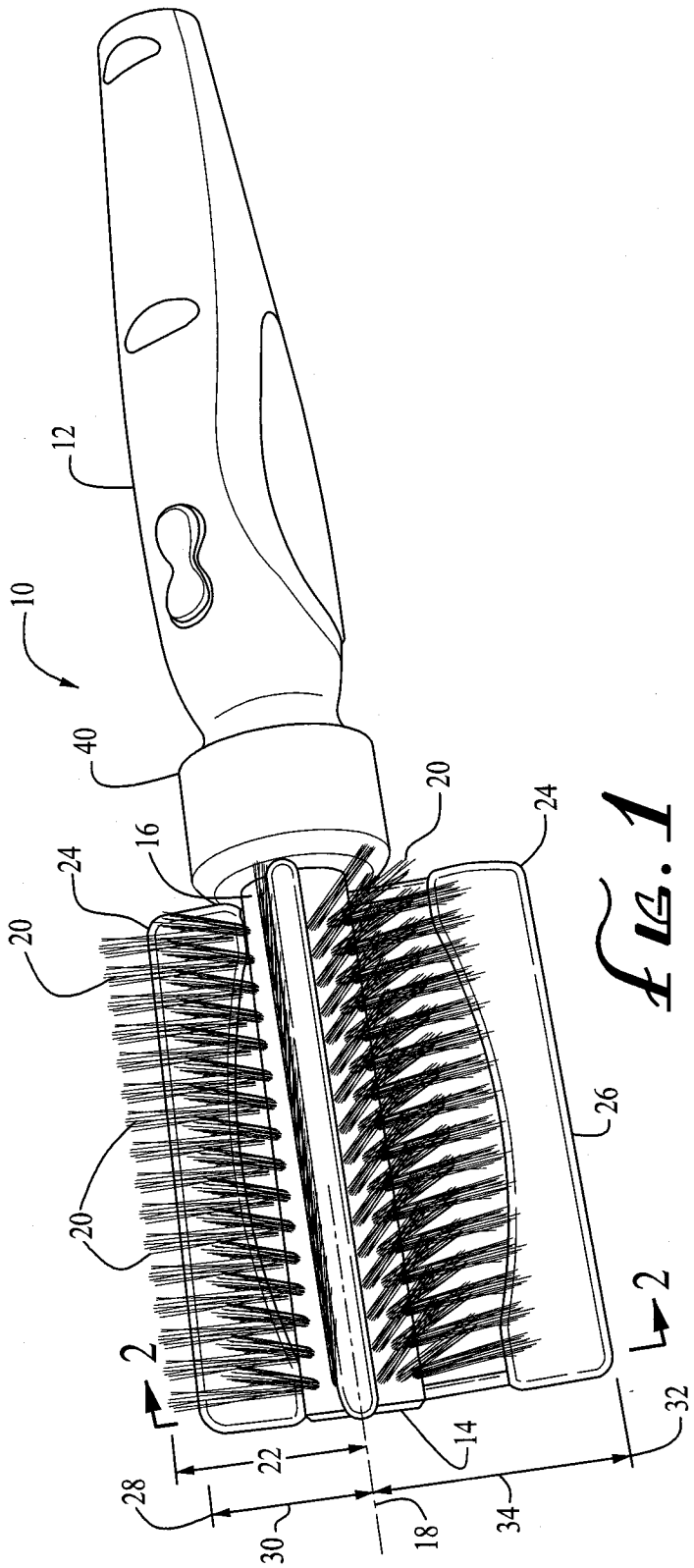

FIG. 1

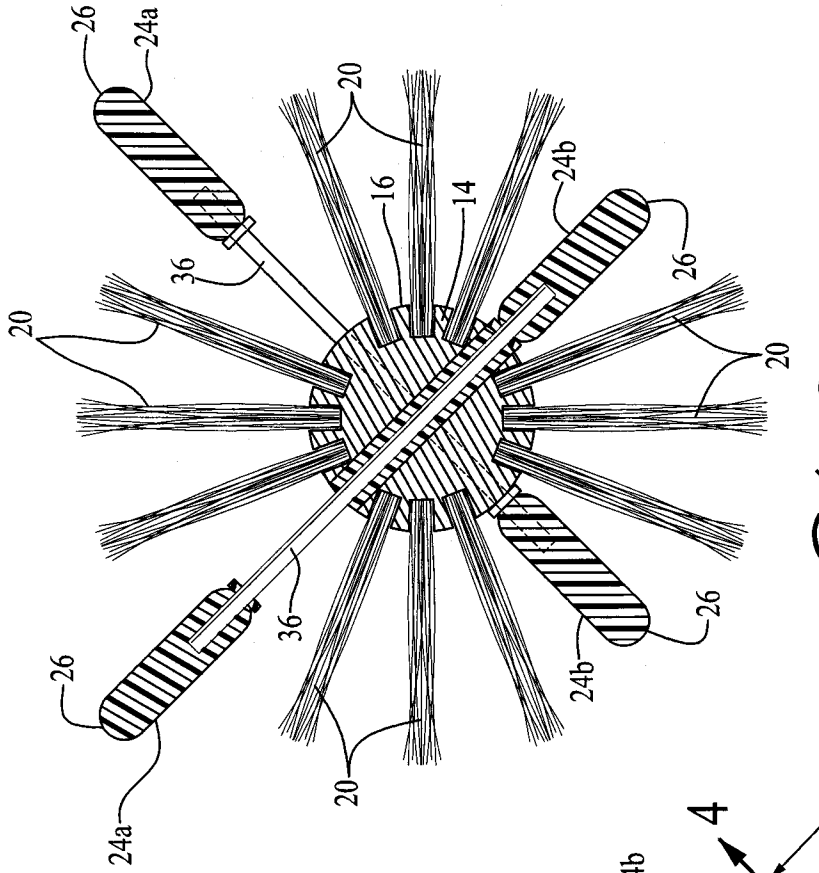
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FIG. 2B

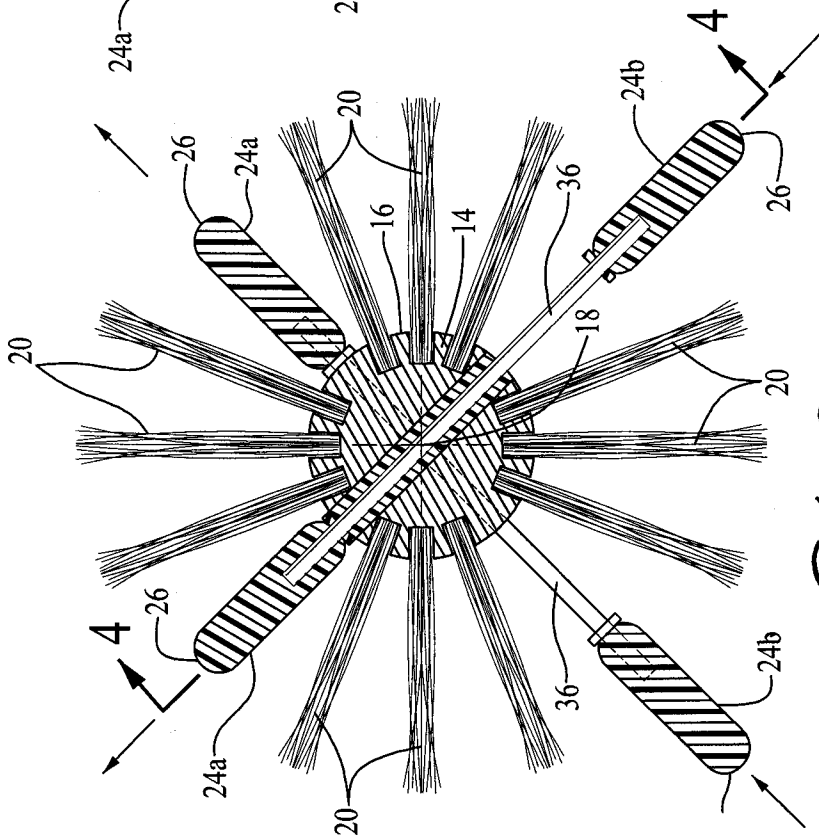
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FIG. 2A

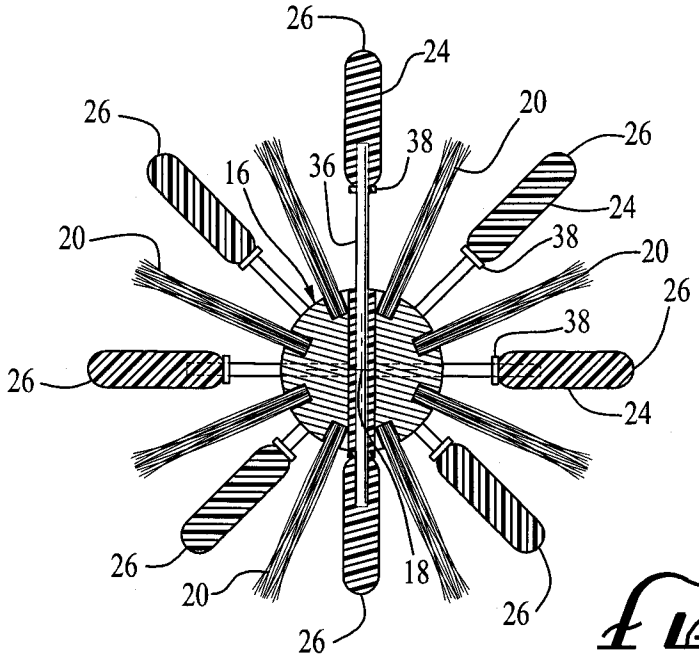

FIG. 3A

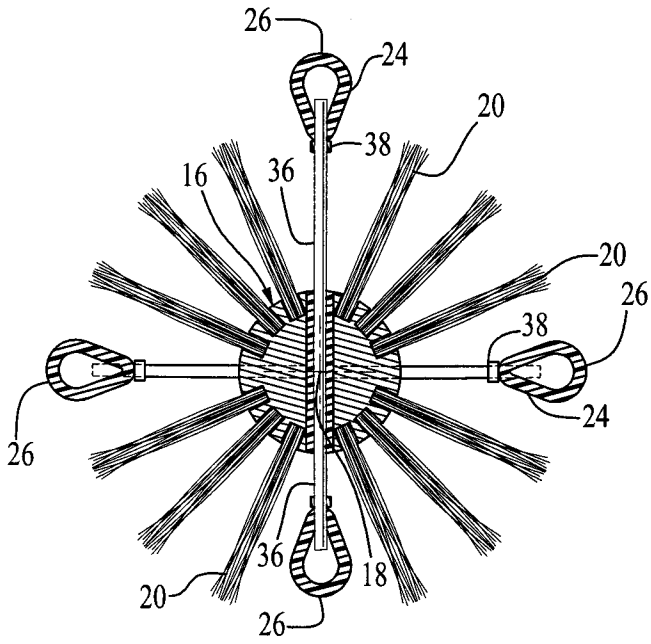

FIG. 3B

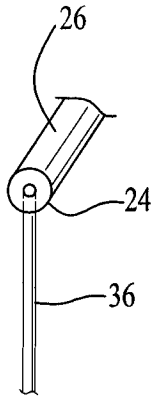

FIG. 3C

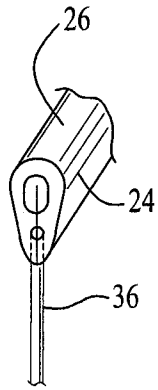

FIG. 3D

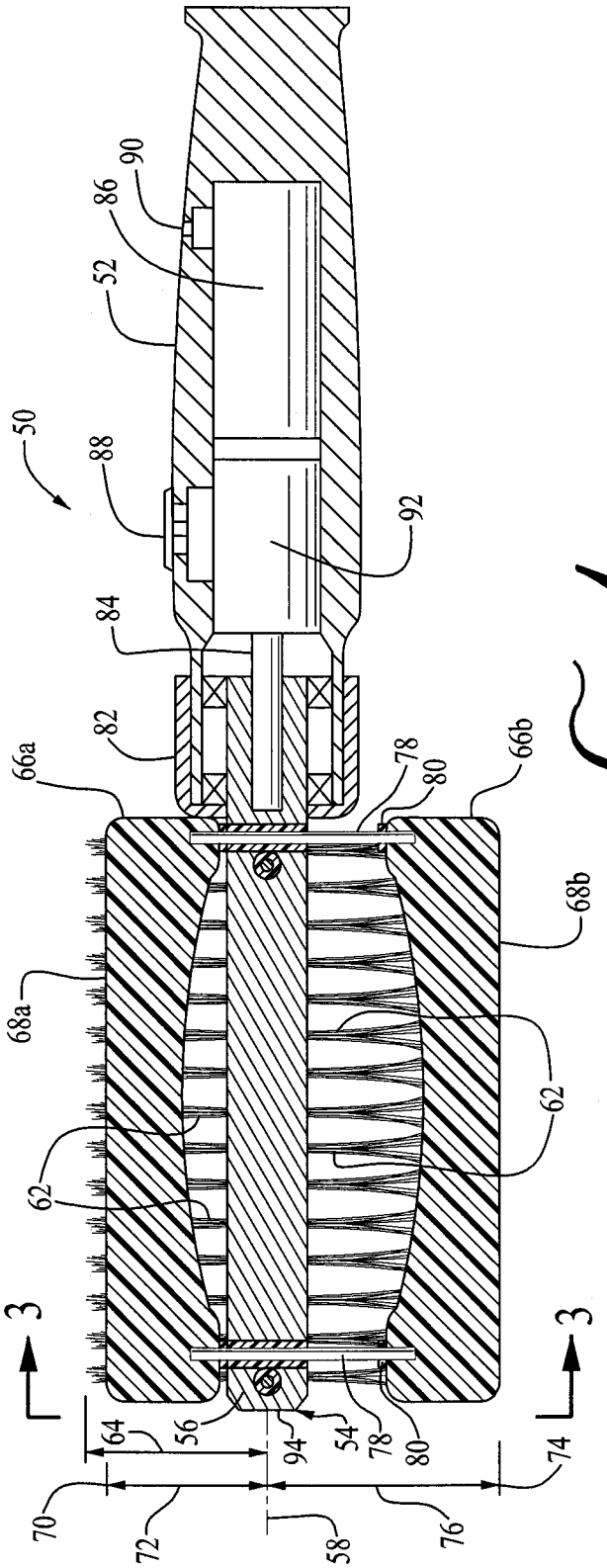
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FIG. 4

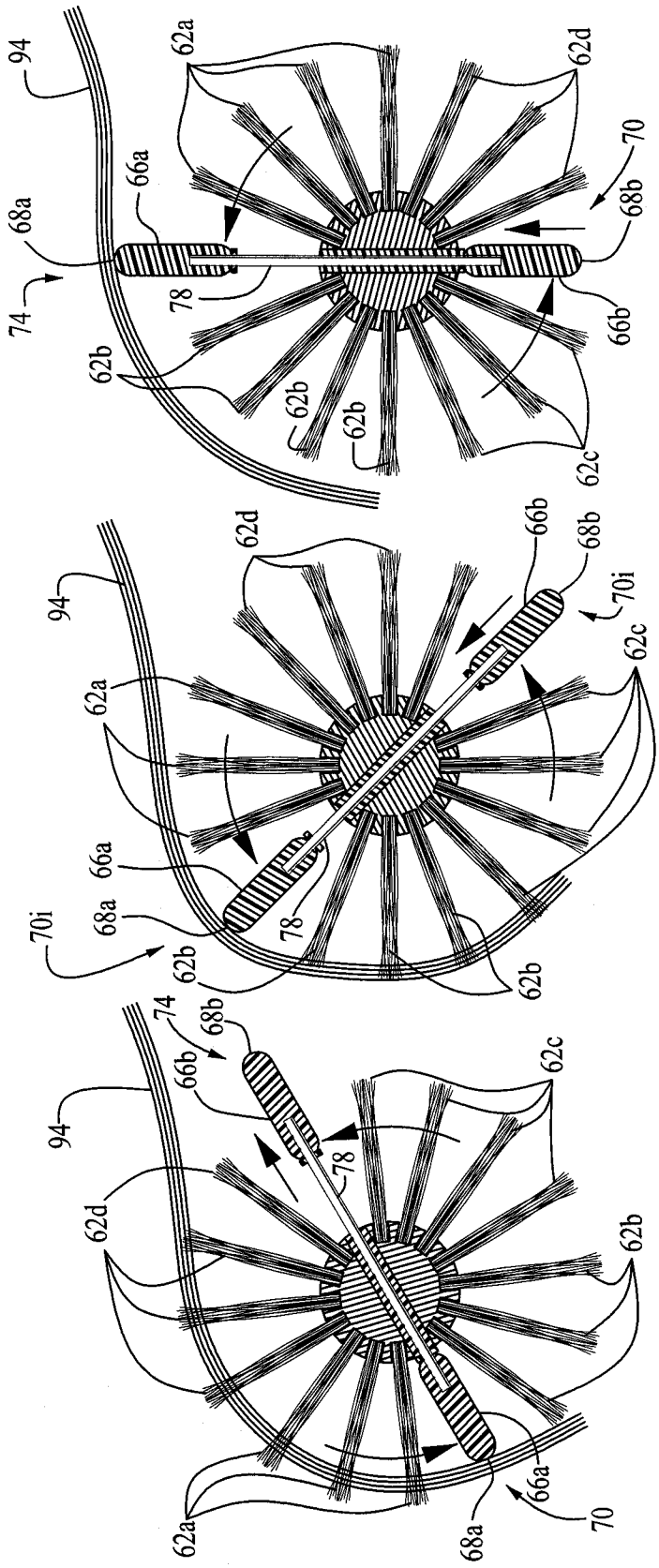

FIG. 5A FIG. 5B FIG. 5C

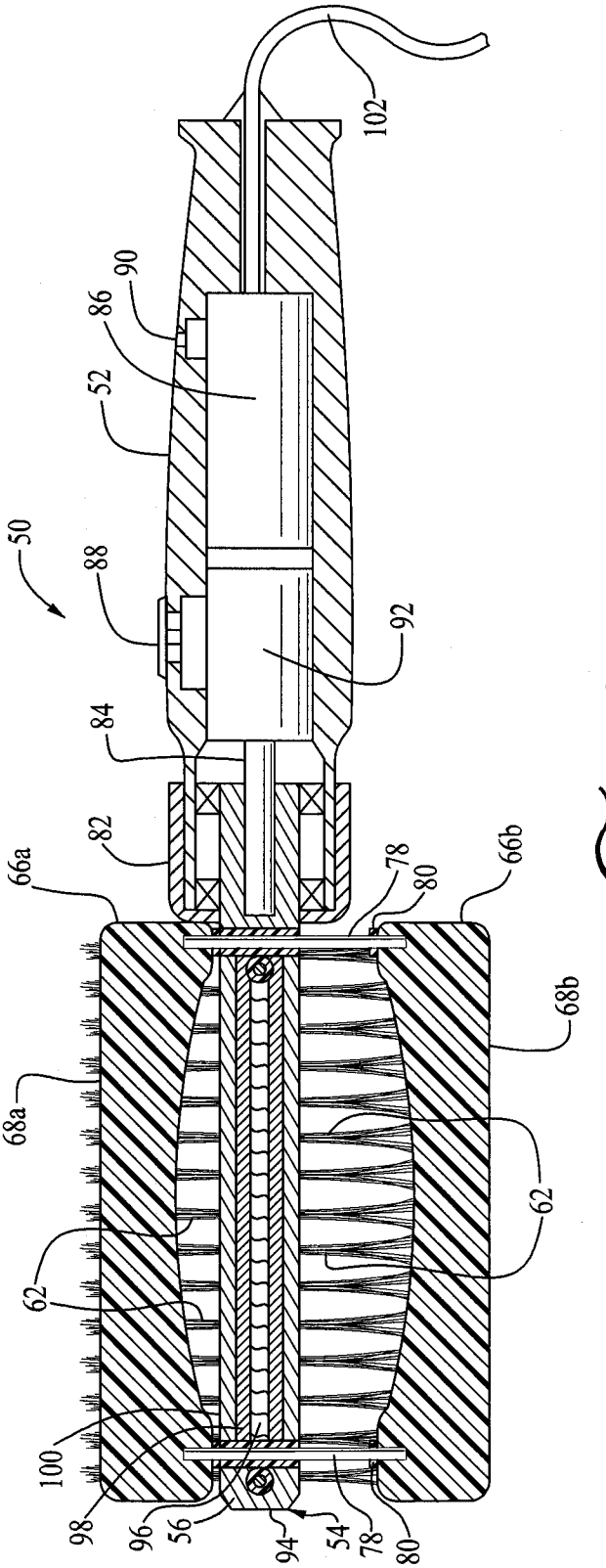
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Fig. 6

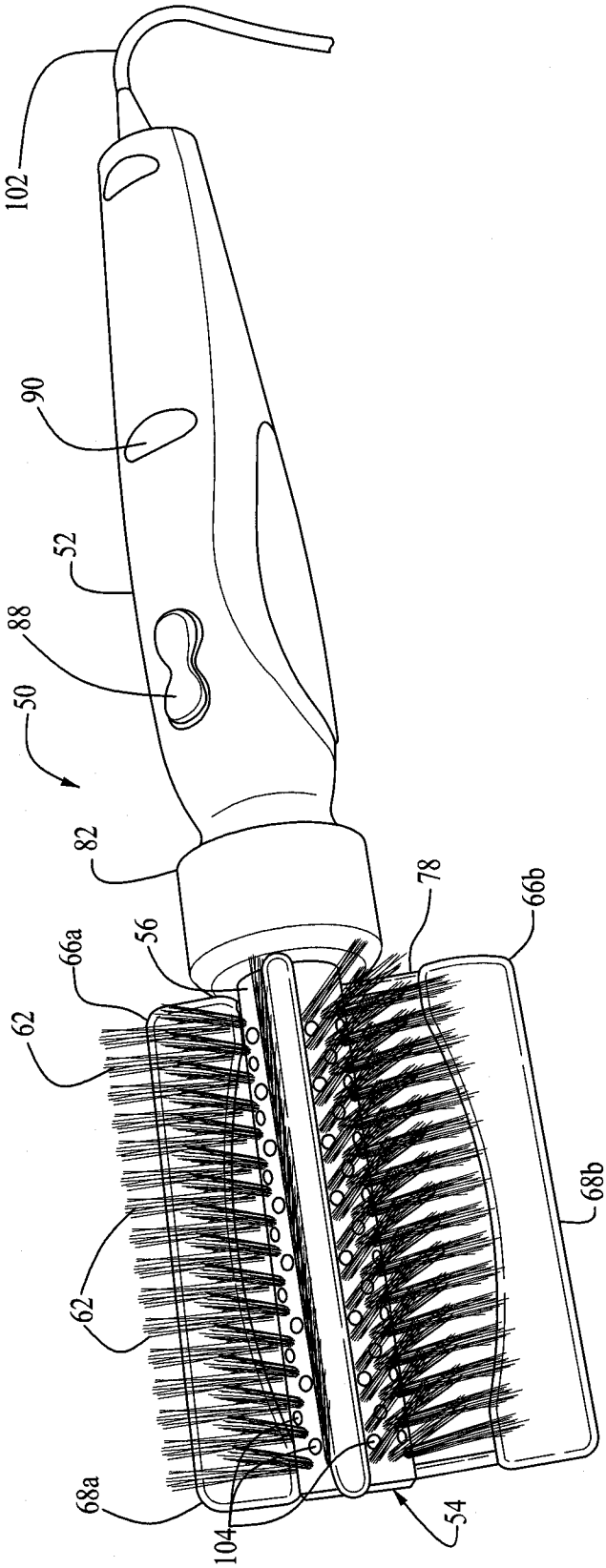

Fig. 7