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HAIR GROOMING DEVICE

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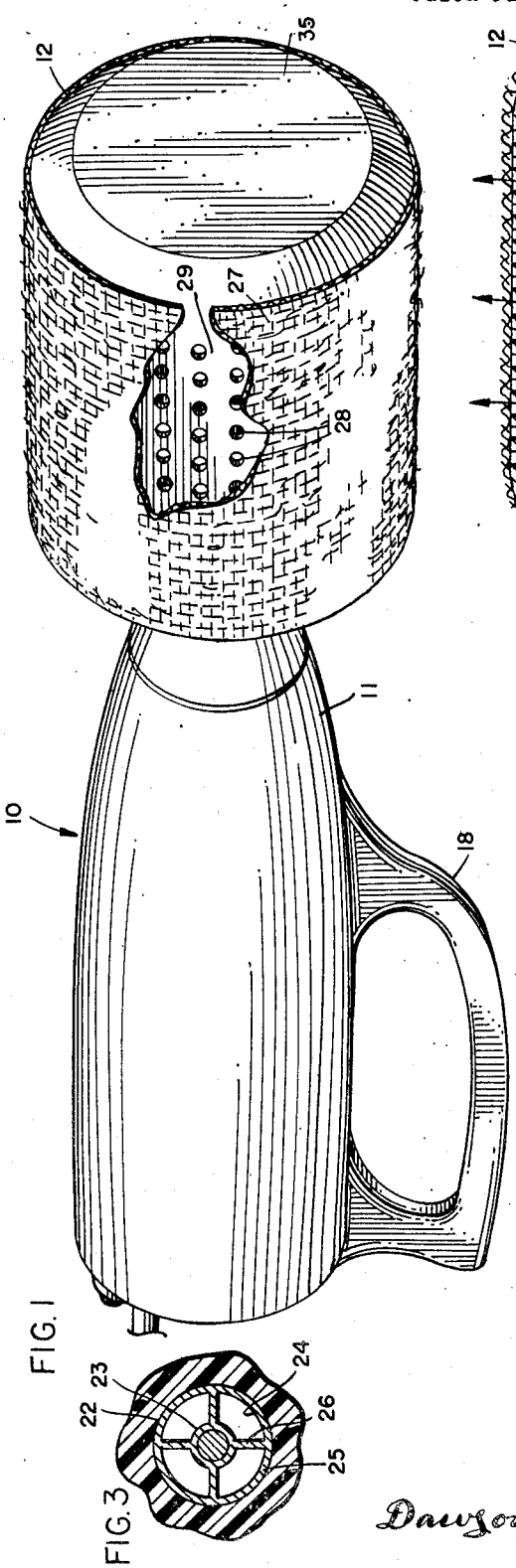


FIG. 1

FIG. 3

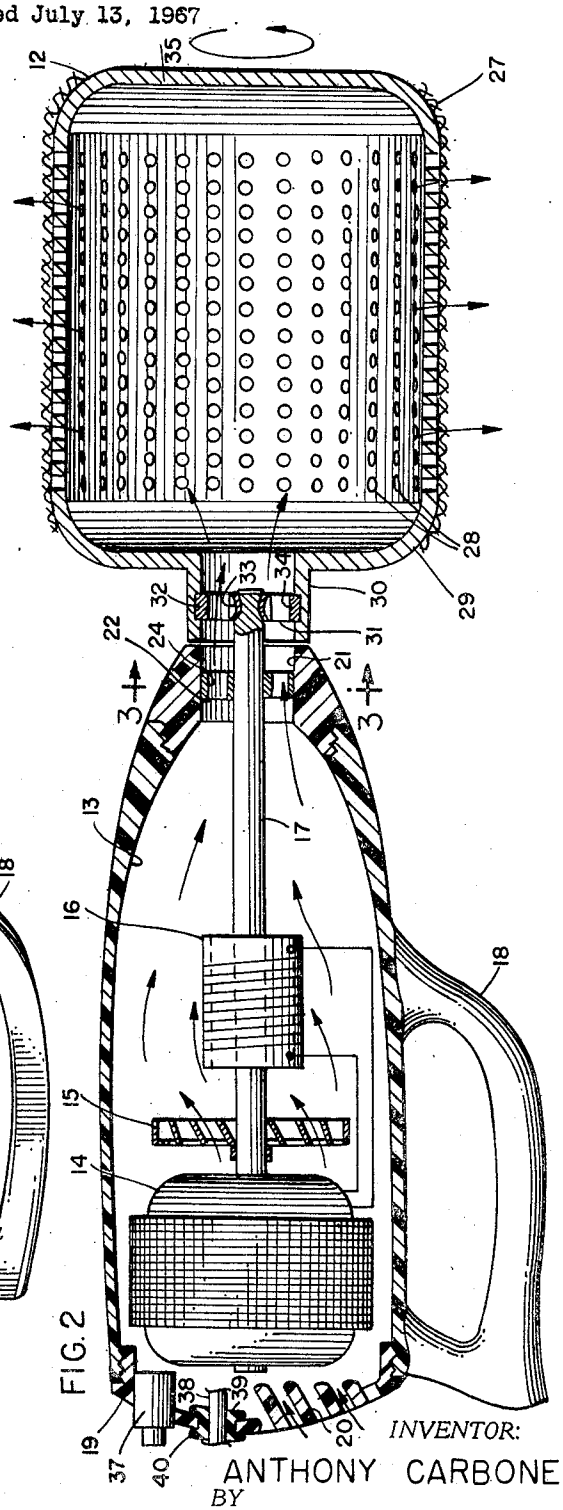


FIG. 2

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HAIR GROOMING DEVICE

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ABSTRACT OF THE DISCLOSURE

A hair grooming device for professional and home use which includes a power-driven porous drum through which heated air is discharged. The frictional porous outer surface of the drum engages and tensions hair as the drum rotates and the simultaneous application of heat to the hair through the heated drum grooms and trains the hair.

Background of the invention

Rotary power-driven hair brushes have been known in the past although such devices have not been widely accepted, either for professional use or for home use, because they provide slight (if any) advantage over more conventional hair brushes. Whether power operated or not, brushes mainly perform the function of brushing, pulling, and combing the hair in one direction. The application of power, as in a rotary brush, does not alter this function and, in some cases, creates problems not seriously encountered when conventional non-power operated brushes are used. For example, long hair, if caught by a rotary power-driven brush, may become wrapped and tangled about the device, thereby defeating the purpose of the brushing operation and, at least in some instances, causing considerable discomfort and inconvenience for the user.

The effects of heat in the styling and grooming of hair are also well known. In recent years heated combs have been used as an aid to the styling of hair. Also, it has long been a common practice to use hair dryers which direct heated air against hair which is temporarily held in place by suitable hair curling devices, netting, and the like. While such heating devices are useful in the styling of hair, their use is highly specialized and, in general, they are not well suited for use in barbershops or at home for the styling and grooming of men's hair.

Description of the invention

One aspect of this invention lies in recognizing that hair, particularly men's hair, may be effectively groomed and styled if streams of heated air are directed against the hair as it is tensioned. Unruly hair, if simultaneously tensioned and heated, will lie properly in place if the tensioning force is exerted in the proper direction.

A further aspect of the invention lies in the discovery that a tensioning force of proper intensity and direction may be readily applied to hair by means of a rotating drum having a friction-producing surface. The friction-producing surface is porous so that heated air may be discharged through the wall of the drum and will impinge on the hair tensioned by the rotating drum.

The device includes a housing which may be easily held in one hand and which preferably contains both an electric motor and electric heating means. Air drawn into the housing flows over and about the motor and may be at least partially heated thereby. In the preferred form of the invention, the air also is directed over and about the electric means, such means serving to increase the temperature of the air to a level suitable for most effective application to the hair of a user. The heated air is forced from the housing into a drum rotated by the electric motor, the hollow drum having a porous wall for

the radial discharge of the heated air. The drum may be formed of a selected material so that its outer surface has the frictional properties capable of tensioning hair but, most desirably, the drum is covered by a replaceable porous sleeve formed of silk, perforated leather, or some other material which provides a friction-producing surface. During operation, the drum and sleeve become heated by the air passing therethrough and, therefore, hair is heated not only by the outwardly flowing air but also by direct contact with the heated drum and sleeve.

Drawings

Referring to the drawings:

FIGURE 1 is a perspective view of a hair grooming device embodying the invention;

FIGURE 2 is a longitudinal sectional view of the device;

FIGURE 3 is a transverse sectional view taken along line 3—3 of FIGURE 2.

Description of drawings

In the embodiment of the invention illustrated in the drawings, the numeral **10** generally designates a hair grooming device having a housing or casing **11** and a drum assembly **12**. The housing defines a chamber **13** which contains an electric motor **14**, a circulating fan **15**, and electric heating means **16**. The motor shaft extends outwardly beyond one end of the housing and is connected to one end of the hollow drum **12**.

A handle **18** is provided by the housing so that the entire unit may be easily held by one hand of a user. In the illustration given, the handle is formed integrally with the housing and the entire housing is formed of a rigid plastic material such as, for example, polystyrene. It is to be understood, however, that the housing may be formed of metal, or may be formed of a combination of metal and plastic to utilize the heat-insulating properties of plastic.

The rear end cap **19** of the housing is provided with a plurality of air intake openings **20**. The motor **14** is mounted within the casing adjacent the openings and is cooled by the inflowing air. The air is in turn heated by the motor and, after passing forwardly about the motor, passes about and through the heating means **16**. In the illustration given, the heating means consists simply of an electric heating coil which is concentric with motor shaft **17**. The forward movement of air results from the operation of impeller **15** which is mounted upon the motor shaft, preferably between the motor and the heating means.

The heated air is discharged from the housing **11** through an enlarged opening **21** in the housing's front end. A bearing element **22** is secured within opening **21** and is provided with a central hub **23** which rotatably supports the forward end portion of shaft **17**. Large arcuate openings **24** between the hub **23** and the annular peripheral portion **25** of the bearing permit the unobstructed forward flow of heated air from the housing. As shown most clearly in FIGURE 3, the hub **23** is supported by radial portions **26** which extend between the hub and the annular portion of the bearing and which may be formed integrally with the remainder of the bearing element.

Drum **12** may be formed of any suitable material although metal is preferred because of its heat-conductive properties. In the illustration given, the drum is generally cylindrical in shape so that upon rotation the drum has a uniform peripheral speed. However, in some instances it may be desirable to taper the drum forwardly to a slight extent, one purpose of the taper being to insure a tight non-slipping interfit between the drum and its cover **27**.

As shown most clearly in FIGURE 2, the drum is provided with a multiplicity of small openings **28** in its cylindrical wall **29**. At one end, the drum is provided with a concentric hollow neck portion **30** which is provided with means **31** for securely attaching the drum to the end of motor shaft **17**. In the embodiment illustrated in the drawings, such means comprises a bearing similar in construction to bearing element **22**, the peripheral portion **32** of bearing **31** being securely anchored to the neck portion **30** of the drum and the central portion **33** of the bearing being rigidly secured to shaft **17**. Openings **34** in element **31** provide for the passage of heated air into the interior of drum **12** from housing **11**.

End wall **35** of the drum is imperforate and the enlarged opening of neck portion **30** of the drum communicates directly with opening **21** of the housing. Thus, air heated within the housing and driven forwardly by impeller **15** is discharged only through the peripheral openings **28** in the drum's cylindrical wall **29**. The sleeve **27** which is tightly fitted about the drum's cylindrical surface is porous in nature so that the heated air may readily pass therethrough. The sleeve may be formed from any of a wide variety of materials which provide a surface capable of frictionally engaging and tensioning human hair as the drum rotates. I have found that finely knitted or woven fabrics of silk or nylon are particularly effective but fabrics formed from other fibers having similar properties may also be used. Furthermore, perforated leather, particularly with the suede side exposed, is also suitable, as would be plastic materials which simulate the texture and properties of leather. Finally, the sleeve, or the drum itself in the absence of such a sleeve, may be provided with a multiplicity of small projections or bristles which, because of their shortness, serve to increase frictional resistance and promote the hair-tensioning effect rather than to brush through the hair in the manner of a conventional brush.

Housing **11** is provided with a suitable switch **37** for controlling operation of the motor and heating means. In FIGURE 2, the switch is shown mounted in end wall **19** of the housing and the electric cord **38** for the electric elements of the unit also extends through end wall **19**, being supported therein by a resilient bushing **40**.

Operation

In operation, the friction sleeve **27** of the rotating drum is simply urged into contact with the hair, the direction of the drum's rotation in the area of contact corresponding with the direction in which the hair is to be styled or trained. As the friction sleeve engages the hair, the hair is tensioned and straightened. At the same time, heat is transmitted to the hair through the heated drum by reason of the direct contact between the hair and the sleeve and by reason of the outwardly flowing heated air. It has been found that the heated air is of particular importance in causing the hair to retain the position into which it has been tensioned by the rotating drum.

The sleeve may be retained upon the drum by any suitable means. If the sleeve is to be permanently secured to the drum, then a suitable adhesive might be used. I have found, however, that where the sleeve is formed of a stretchable material, as for example a knitted or woven fabric, and where the sleeve in an untensioned state has a smaller internal diameter than the outside diameter of the drum, a secure frictional interfit between the sleeve and drum will occur and will obviate the necessity of any additional attaching means. In normal use, slippage between the drum and sleeve will not occur and yet removal of the sleeve will be simple enough so that such a sleeve may be removed and replaced by a clean sleeve whenever such a change is desired.

What is claimed:

1. A hair grooming device comprising a housing, heating means disposed within said housing, a hollow drum rotatably mounted upon said housing, said drum having a multiplicity of openings extending through the side wall thereof and having an outer surface capable of frictionally engaging and tensioning hair when said drum is rotated in sliding surface contact with such hair, means for rotating said drum with respect to said housing, and means for directing heated air from said housing into said drum for discharge from said drum through the openings thereof as said drum rotates.

2. The structure of claim **1** in which said means for rotating said drum comprises an electric motor mounted within said housing.

3. The structure of claim **1** in which said means for directing heated air from said housing into said drum includes an impeller disposed within said housing.

4. The structure of claim **1** in which said drum includes a friction sleeve extending about the side wall of said drum, said sleeve being porous to permit the discharge of heated air therethrough.

5. The structure of claim **1** in which said heating means comprises an electric heating element disposed within said housing.

6. A hair grooming device comprising a housing having air intake openings therein, heating means disposed within said housing for heating air passing inwardly through said intake openings, a hollow drum assembly rotatably mounted upon said housing, said housing and drum assembly having communicating passages for the flow of heated air from said housing into said drum assembly, means within said housing for directing heated air into said drum assembly, said drum assembly including a multiplicity of side wall openings for the discharge of heated air therefrom, means provided by said drum assembly for frictionally engaging and tensioning hair when said drum is rotated in sliding surface contact with such hair, and means within said housing for rotating said drum assembly.

7. The structure of claim **6** in which said means provided by said drum for frictionally engaging and tensioning hair comprises a porous sleeve extending about said side wall, the heated air discharged through the openings of said drum assembly passing outwardly through said porous sleeve.

8. The structure of claim **6** in which said drum assembly is generally cylindrical in shape.

9. The structure of claim **6** in which said sleeve is formed of stretchable material and is removably mounted upon said side wall.

10. The structure of claim **6** in which said housing is provided with a handle.

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