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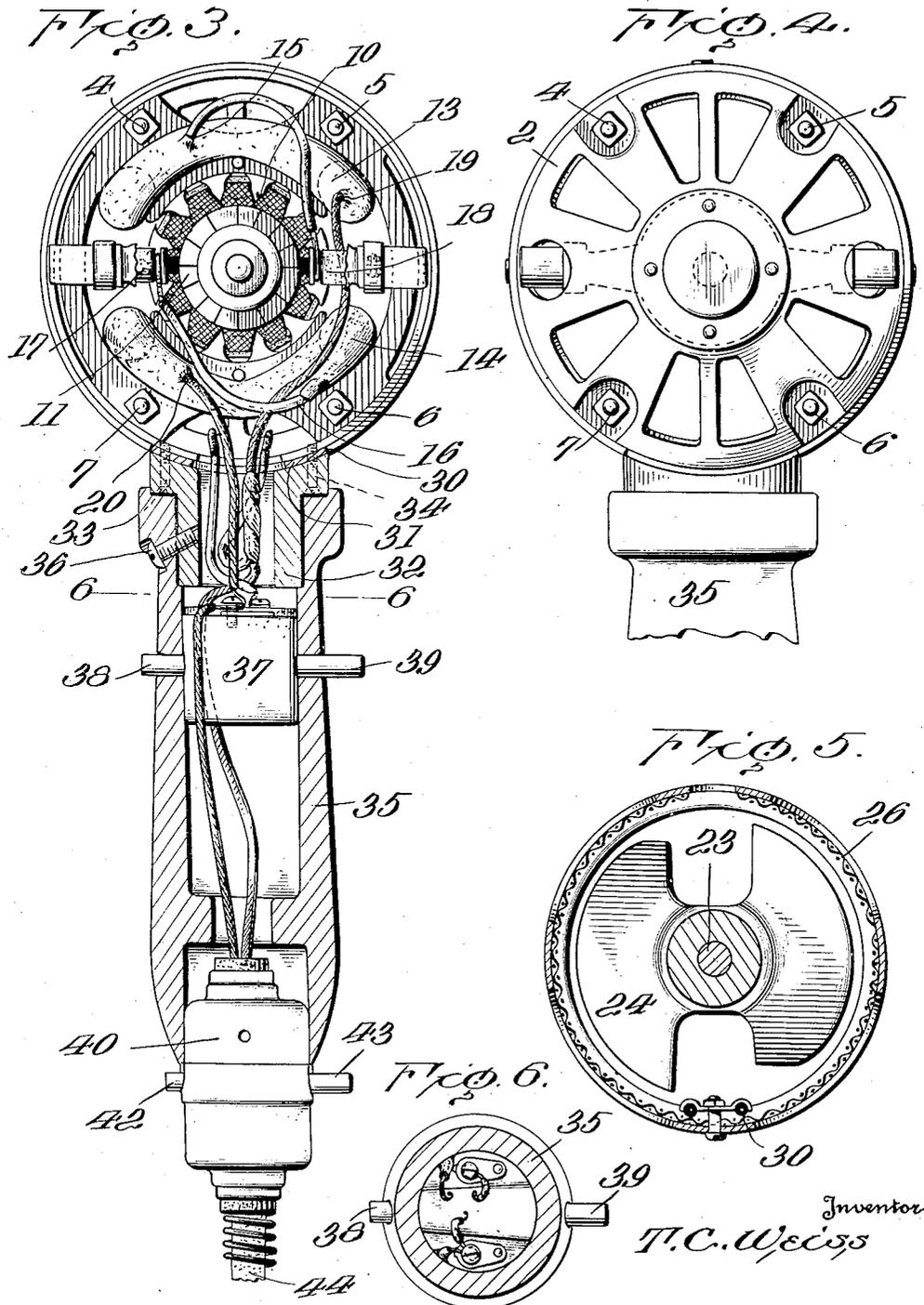
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ELECTRIC HAIR DRIER

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UNITED STATES PATENT OFFICE.

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ELECTRIC HAIR DRIER.

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To all whom it may concern:

Be it known that I, THEOBALD C. WEISS, a citizen of the United States, residing at Racine, in the county of Racine, State of Wisconsin, have invented certain new and useful Improvements in Electric Hair Driers, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

This invention relates to electrical hair driers of the type generally used in homes and in barber shops and hair dressing establishments for producing a convenient blast of hot or cold air.

One of the principal objects of this invention is to provide a compact and handy drier combining simplicity of design with durability and effectiveness of operation.

A further feature of this invention resides in providing a novel design of blower and blower nozzle for the drier whereby the air blast is given a spiriform or swirling motion as it emerges from the nozzle which most effectively raises the hair from the scalp at the point of application to produce a quicker and more thorough drying action.

An additional object of the invention resides in locating the air propeller in the nozzle with its axis of rotation in the longitudinal axis of the nozzle and in disposing the heating element between the propeller and the nozzle discharge whereby to secure a more effectively heated blast.

Still another feature of this invention resides in providing a relatively large-mouthed blower nozzle, affording a wide distribution of air, in which is located a relatively small and compact heating unit and blower or air propeller constructed and arranged to confine the air blast to the heating zone as it passes through the nozzle to more effectively heat the air.

Another aim of the invention is to provide a drier of the type described in which the blower is arranged directly in the blower nozzle and by reason of its construction and location acts to blast the air through the nozzle with greater force than do existing blowers of the same size and speed.

Yet a further feature of the invention resides in the arrangement of the heating element and in the arrangement of the

switches on the handle, for controlling the heating element and the motor.

These and other objects will in part be apparent and will in part be obvious from a perusal of the specification when taken in connection with the accompanying drawings in which—

Figure 1 is a side view of the device, certain of the parts being in section;

Fig. 2 is a front view thereof;

Fig. 3 is a sectional view taken in a plane through the handle;

Fig. 4 is a rear view thereof;

Fig. 5 is a view on the line 5—5 of Fig. 1;

Fig. 6 is a view on the line 6—6 of Fig. 3, and

Fig. 7 is a diagrammatic view of the wiring connections, the specific switch contacts being omitted.

In general, the invention resides in providing the drier with a relatively wide-mouthed air nozzle and in locating the blower directly in this nozzle. The vanes of the blower are designed to cause the air current to travel parallel to the center line of the blower shaft thereby moving the air along a straight line centrally of the nozzle and spaced somewhat away from its inner walls. In this manner a powerful direct blast of air is provided. By reason of the central location of this air blast, a much smaller and more compact heating element may be availed of. So also by reason of the novel design of the blower vanes, the air is given a swirling or spiriform motion about the central axis of the blower, instead of pressing the hair down on the head as heretofore, raises the hair from the scalp at the point of application and secures a more effective and quicker drying action.

Referring now to the drawings in detail, the device comprises a two-part casing of any desired shape and size including the front and rear sections 1 and 2, respectively, preferably united as at 3 by four bolts 4, 5, 6 and 7, to form an enclosing housing substantially spherical in shape. These front and rear sections 1 and 2 are provided with bearings 8 and 9, respectively, for the motor shaft on which is disposed any type of armature 10 and commutator 11. The field laminations 12 of desired design, are assembled around the armature, being secured to the front section 1 by means of

the bolts 4, 5, 6 and 7 which also project through the rear section 2 and fastened by nuts as shown in Fig. 4. The field winding 13 and 14 are suitably disposed on these laminations and are provided with connectors 15 and 16 to the commutator brushes 17 and 18 and connections 19 and 20 which pass through the hollow handle described.

In the embodiment shown, the front section 1 has attached thereto in any suitable manner as by riveting 21, a nozzle 22 which substantially encloses the front section, terminating rearwardly at the joint 3. This nozzle is preferably cylindrical in cross section and extends longitudinally concentrically of the axis of the motor shaft 23, which shaft terminates well within the nozzle as shown in Fig. 1. On the end of this shaft is mounted the air propeller or blower 24.

This blower it is noted is arranged with its blades or vanes facing the discharge opening 25 of the nozzle and the vanes are peculiarly designed to cause the air current to travel parallel to the center line of the motor shaft 23 thereby moving the air current along a straight line to the discharge end of the nozzle. As a result of the inward and forward curvature of these blades, their ends are spaced somewhat from the inner walls of the nozzle, and therefore, the air current forced forwardly therefrom in straight lines is also spaced from the inner walls of the nozzle. As a result of this construction, a powerful direct blast of air is secured inasmuch as the blast is directly forwardly and is not retarded or obstructed by frictional contact with the inner walls of the nozzle 22.

Due to the peculiar construction of the air propeller, the air current is given a spiriform or swirling movement about the central axis of the motor shaft 23 so that the air when contacting with the scalp, does not press the hair down flat but, on the contrary, raises it up thereby producing a quicker and more thorough drying action. This is a distinctive feature of the invention.

Preferably to the rear of the blower, the nozzle is formed with air inlet slots 25 which are covered on the inside by means of a wire mesh 26. A similar wire mesh 26 closes the open end 25 of the nozzle. It will be noticed that the casing at the point where the inlets 25 are located is of larger diameter than the front part of the nozzle about the fan. This construction, that is, the enlarged part of the nozzle at the inlet, permits the proper amount of air to be drawn through the opening 25' by the fan and blown out through the nozzle. This is a very important feature of applicant's invention, as experience has shown that if the nozzle is formed of the same diameter throughout its length, that is, without this enlarged portion at the air inlet and behind the propeller, the effect

of the quantity as well as speed of the air discharge is considerably lessened.

The heating element is preferably located in the nozzle between the blower 24 and the discharge end 25 of the nozzle. By means of this location there is less opportunity for the air to lose its heat before reaching the point of application than is the case when the heater is disposed to the rear of the air propeller. Manifestly, the heater may be located otherwise.

So, also, by locating the heating element as aforesaid, it is more accessible for replacement when the heating element becomes impaired by strain of excessive temperature or other causes. In order to permit the ready exchange of these heating elements without requiring the services of an expert the same is provided with a quick detachable connection so that the heater may be quickly removed as a unit. In the present instance, the heater comprises a frame including two metal uprights 27, preferably formed of flattened tube stock. To these uprights 27 are fastened upper and lower mica insulating cross bars 27' supporting the heat coils 28 which are connected at their lower ends with the bases of the metal uprights 27 which thus form conductors. The uprights 27 are provided at their bases with an insulating bridge piece 28' which not only lends rigidity to the upright conductor supports 27, but also provides an additional base support resting on the inner wall of the nozzle 22. The lower ends of the uprights 27 are preserved in their original tubular shape to provide sockets to fit over the contacts 29 carried by a bracket insulatedly connected as at 30 to the inner wall of the nozzle 22. A suitable electrical connector extends rearwardly to the handle.

Due to the fact that the air current travels in a straight line and is confined to a central zone of the nozzle,—that is, since the air is thus spaced from the inner walls of the nozzle, a smaller and more compact heating element may be used than heretofore in wide-mouthed nozzles. Hence the blast is confined to the central heated zone and such blast may then spread outwardly after it leaves the nozzle and is distributed over a wide area which covers most of the scalp. The straight line flow of air is entirely independent of the presence of the nozzle for the reason that when the nozzle is removed, the fan still continues to blow the air in a confined stream which extends in a substantially forward straight line from the edge of the blower blades.

The blower nozzle 22 is cut away at its wider portion at 30 (Fig. 3) to provide a seat for a washer 31 and a short hollow connecting post 32 which is held to the nozzle 22 and casing sections 1 and 2 by means of screws 33 and 34. A hollow handle 35 fits

about this post 32, being attached thereto by means of screws 36.

In the upper portion of this handle is located a switch 37 provided with oppositely extending plungers 38 and 39 extending outwardly through holes in the handle. A similar switch 40 is disposed in the lower portion of the handle, being inserted in the hollow end thereof and held in position by screws 41. This switch is provided with plungers 42 and 43.

The electrical cone from the heating element 28 and from the motor winding pass through the hollow handle to the two switches 37 and 40 and thence out through the end of the handle as by the connector 44, as usual. The switches are of any desired type and the wiring diagram is illustrated in Fig. 7. The switch 37 controls the on and off for the heater, while the switch 40 controls the on and off for the motor and heater.

It is clear that a device constructed as above set forth is most compact, is symmetrical in shape, and handy to use. So also by arranging the handle at an angle to the blower nozzle and by locating the blower or fan with its axis in the longitudinal plane of the nozzle and at an angle to the handle there is little or no appreciable gyroscopic effect from the high speed fan upon the handle, so that the device is easy to manipulate.

In operation, the device is held in one hand, the plunger of switch 40 is operated and a cold blast of air is forced from the mouth 25 of the nozzle. On operation of the switch 39, the circuit is made through the coils 28 of the heating element so that the cold air drawn in through slots 25 at the rear of the blower is heated before its discharge.

It is obvious that minor changes in the details of construction and the arrangement of the parts may be made without departing from the spirit of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters-Patent, is—

1. In a hair drier or the like, the combination of a casing formed with an air discharging vent, and an air propeller arranged in said casing, said propeller being constructed and arranged to force the air through said vent in a spiriform or swirling movement, and a heating element arranged in said casing in the path of said air discharge.
2. In a hair drier or the like, the combination of a casing formed with an air nozzle and a propeller arranged in said nozzle, said propeller being constructed and arranged to force the air therethrough with a spiriform or swirling movement, and a heating element arranged in said nozzle in the path of said air discharge.
3. In a hair drier or the like, the combina-

tion of a casing formed with an air nozzle and an air propeller in said casing constructed and arranged to force the air spirally through said nozzle in a column spaced from the inner walls of said casing, and a heating element arranged centrally of said nozzle and substantially co-extensive with the cross sectional area of said air path.

4. In a hair drier or the like, the combination of a casing formed with an air nozzle and an air propeller in said casing constructed and arranged to cause the air to travel through said nozzle in a column spaced from the inner walls of said nozzle, a heating element disposed in said nozzle, said element having a cross sectional area substantially co-extensive with the cross sectional area of said air path.

5. In a hair drier or the like, the combination of a casing formed with an air nozzle, a heating element arranged therein in spaced relation from the inner walls of said nozzle, and an air propeller for forcing air through said nozzle, said propeller being constructed and arranged to confine the air to the heating zone as in its passage through said nozzle.

6. In a hair drier or the like, the combination of a casing provided with a hollow handle, and an air nozzle, a motor shaft disposed in said casing, an air propeller on said motor shaft for forcing air through said nozzle, a heating element in said casing, electrical connections passing through said handle to the motor, a switch arranged at the lower end of the handle for controlling the passage of current to said motor, and a switch arranged at the upper portion of said handle for controlling the passage of current to said heating element.

7. In a hair drier or the like, the combination of a casing formed with opposed bearings and a handle, a motor shaft arranged in said casing and rotatably journaled in said bearings with one end of the shaft projecting therethrough, a tubular nozzle secured to the front of said casing concentrically around said projecting shaft, an air propeller secured to the end of said shaft, a heating element arranged in said nozzle, and electrical connections from a source of current to said motor and heating element.

8. In a hair drier or the like, the combination of a casing formed with an air nozzle, a motor shaft arranged in said casing, a propeller connected to the motor shaft and disposed in said nozzle so as to discharge air therethrough, electrical leads in said nozzle, a heating element arranged in said nozzle between said propeller and the discharge end of said nozzle, said heater having a quick detachable connection with said electrical leads.

9. In a hair drier or the like, the combination of a casing formed with an air nozzle,

a motor shaft arranged in said casing, a propeller connected to the motor shaft and disposed in said nozzle so as to discharge air therethrough, electrical leads in said nozzle, a heating element comprising a pair of metallic uprights having tubular lower ends adapted to make a quick detachable connection with said leads, an insulating member carried by said uprights, and a heating coil carried by said insulating member and connected to said uprights. 10

In testimony whereof, I affix my signature.

THEOBALD C. WEISS.