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S. BICHSEL ET AL

2,420,732

PORTABLE HAIR DRIER

Filed Aug. 3, 1945

FIG. 1.

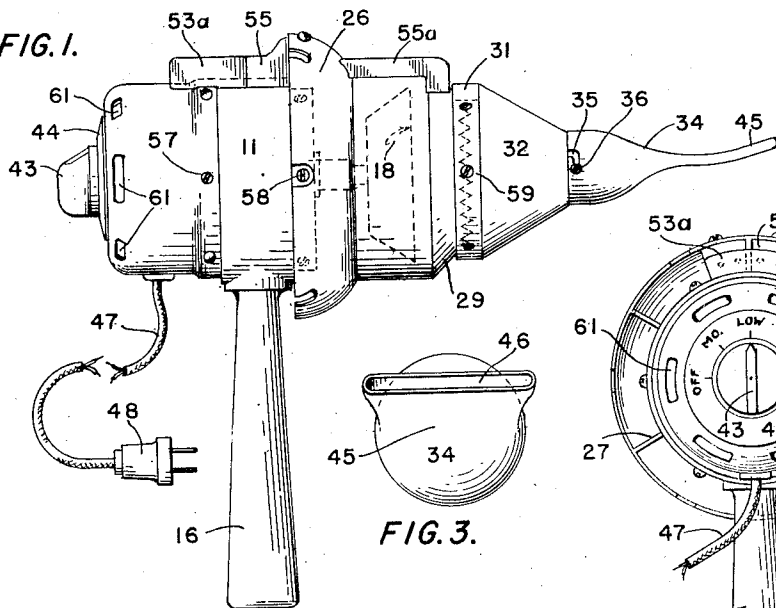


FIG. 3.

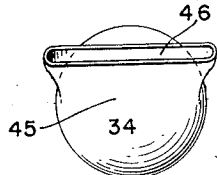


FIG. 2.

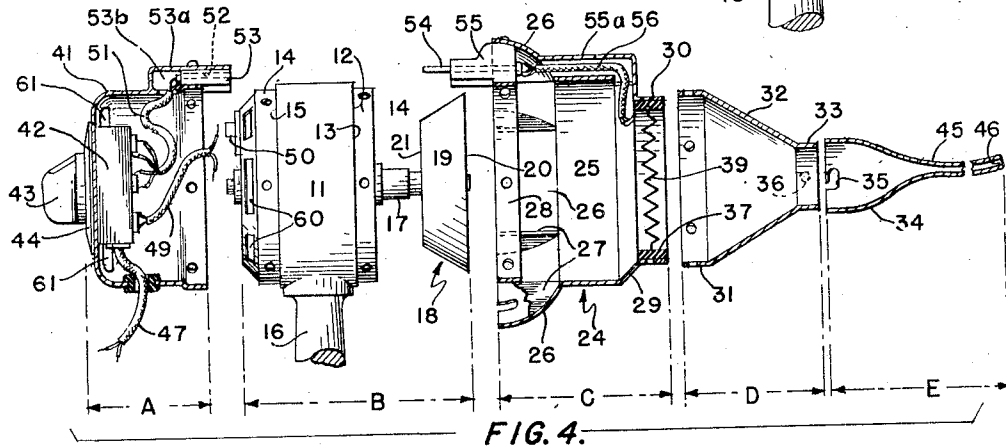
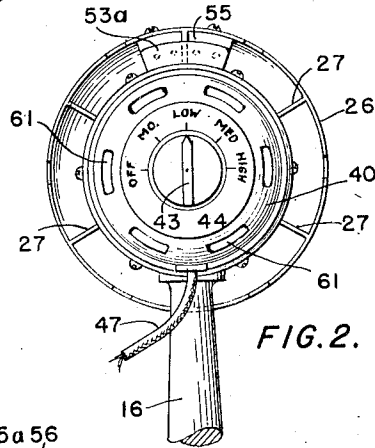


FIG. 4.

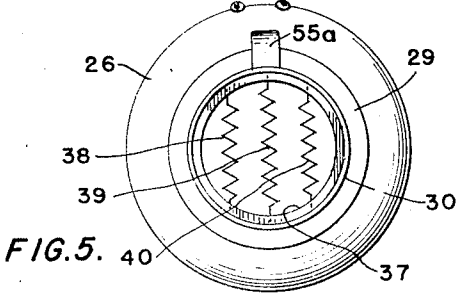


FIG. 5.

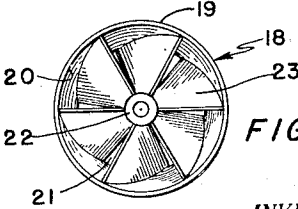


FIG. 6.

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## UNITED STATES PATENT OFFICE

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## PORTABLE HAIR DRIER

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1 Claim. (Cl. 34—243)

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This invention relates to improvements in hair driers of the type commonly known as portable hand driers.

One object of this invention is the provision of a portable hair drier wherein lightness of weight is achieved by the particular construction and arrangement of the separate units which comprise the device, and which units are easily connected to form the whole or disconnected for replacement of parts, or for repairing or cleaning.

Another object is the provision, in a hair drier of the type described, of one or more type nozzles which may be used and in which the desired type nozzle is easily attached.

A further object of this invention is the inclusion in a hair drier of the type described, of a fan or air-propelling means for directing the air without loss, out through the ejector portion of the device.

A further object of this invention is the inclusion of a specially formed, removably attached, flattened spout or nozzle which permits of the application of air directly to the hair close to the scalp, thus facilitating the drying process.

A still further object of this invention is the provision of an organization in which the constituent elements are so arranged structurally and functionally as to assure improved results with materials and members which may be manufactured at reasonable cost, may be easily assembled and which will be efficient in operation with minimum wear to the parts.

The invention possesses other objects and features of advantage, some of which, with the foregoing will be set forth in the following description and in the claim wherein parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit. In the accompanying drawings there has been illustrated the best embodiment of the invention known to us, but such embodiment is to be regarded as typical only of many possible embodiments, and the invention is not to be limited thereto.

The novel features considered characteristic of our invention are set forth with particularity in the appended claim. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of a specific embodiment when read in connection with the accompanying drawings, in which:

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Fig. 1 is an elevational side view of the drier.

Fig. 2 is an elevational rear view of the drier.

Fig. 3 is an end view of a nozzle or spout.

Fig. 4 is a collective view of the various units of the device drawn apart and shown in section with the exception of the motor and its connected air propeller or fan.

Fig. 5 is an elevational end view of a part, and Fig. 6 is an elevational front view of the air propeller or fan.

Referring in detail to the parts, 11 designates the outer casing of a motor having rim and shoulder formations 12 and 13, respectively, at its front end and 14 and 15, respectively, at its rear end. A hand hold or handle 16 is secured to the said motor casing at its lower portion. The shaft 17 of the motor 11 has attached to its outer end an air propeller or fan 18 comprising a conically shaped shell or rim band 19, having a large opening 20 at its front and a smaller opening 21 at its rear. The hub 22 of the air propeller fits over and is securely fastened to the said shaft 17 by any suitable means and securely fastened between the said hub and said rim band and extending radially therebetween are inclined blades 23 which, as shown, are adapted to rotate counterclockwise. However, the direction of the rotation of the air propeller is dependent upon the inclination of the blades.

Secured to the motor casing and enclosing the said air propeller 18 is a housing unit 24 which is formed with a compartment 25 in which the air propeller rotates. The rear of the housing unit 24 is formed with an annular, apron-like projecting portion 26 having fins 27 which function as stiffeners and hold in place a ring 28 which engages over the rim 12 and against the shoulder 13 upon said motor casing 11.

The front portion of the said housing member 24 is contracted as at 29 to form an annular rim 30 over which a connecting rim 31 of a funnel-shaped reducing member 32 engages to hold the said reducing member thereon. The narrow end of said reducing member 32 is formed with an annular rim 33 over which a nozzle or spout 34 is adjusted. Angular grooves or slots 35 are formed upon the said nozzle and engage a pin 36 secured upon the said annular rim 33, and afford a means for readily attaching or detaching the said nozzle. Fastened to the inner walls of the rim 30 is an insulating supporting ring 37 upon which are secured electrical resistance units 38, 39 and 40 which are electrically connected to an electrical current source.

A rear cap member 41 is provided to house an

electrical control switch 42 having an outer operating button 43 co-acting with an indicator dial 44 upon the outer rear end of said cap member 41.

The said cap member 41 is formed with a slightly broadened end portion to form an annular rim 51a which is adapted to engage over the rim 14 and against the shoulder 15 on the said motor case 11.

Referring again to the nozzle 34, it will be noted that the said member has an elongated and flattened end portion 45 with a slotted broadened opening or outlet 46. This particular formation permits the operator to reach into the portions of the hair nearest the scalp to facilitate the drying process. Leading from the said cap member 41, and connected to said switch 42 is an electrical current conductor 47 having a plug connector 48 at its outer end. An electrical conductor 49 connects the switch 42 with the motor 50 when the parts are assembled and secured together. A multiple electrical current conductor 51 connects the said switch 42 with receptacle members 52 of a plug connector unit which is mounted in an insulator block 53 which is in turn secured to the cap member by means of an enclosing case 53a, as shown. The complementary plugs 54 are mounted in an insulator block 55 which is secured to the said fan housing 24 within the upper part of the apron 26 between said apron and ring 28. The said plugs 54 are electrically connected to the aforesaid heating units 38, 39 and 40 by means of a multiple conductor 56 within a conduit 55a.

In Fig. 1, the drier is shown complete and ready for use, while in Fig. 4, as hereinbefore stated, the units comprising the whole are disconnected and drawn apart and shown in section. The letter A designating the said cap member 41, B the motor 11, and connected air propeller 18; C the housing 24 for the air propeller 18 and heating units 38, 39 and 40; D the reducing member 32 and E the nozzle 34. When the parts are assembled, the conductor 49 is joined to the motor and the plugs 54 engage the receptacle or receiving portions 52, and the whole is firmly secured by means of screws 57, 58 and 59, while the nozzle is adapted for easy removal by means of the slot 35 and screw or pin 36.

The air propeller 18 is so shaped, particularly the conically shaped rim 19, that all of the air set in motion by the revolution of the fan is driven forward toward the nozzle; the air which tends to move radially, by centrifugal action, is deflected by the inner surface of the rim 19.

While in the drawings a nozzle with an elongated flattened outlet is shown, any other type of nozzle may be used and fitted for attachment

to the device or the nozzle may be removed and the drier used without same.

Air inlets 60 and 61 are provided in the motor casing 11 and cap member 41, respectively, to allow air to enter the motor for cooling purposes. The apron 26 extending annularly around the motor provides an air inlet to the air propeller. We claim:

The combination in a portable hair drying apparatus of an electrically operated driving unit having a hand holding means thereon, an air propeller attached upon the shaft of said driving unit, the said air propeller having radially arranged fan blades and an annular conical air deflecting flange secured to the outer edges of the said radially arranged fan blades, a cylindrical housing unit detachably secured to the said driving unit and adapted to enclose the said air propelling unit, electrically energized heating elements within the said cylindrical housing unit, an air concentration unit detachably secured to the said housing unit, an outlet nozzle detachably secured to the said air concentration unit, a switch housing unit detachably secured to the rear of said driving unit, a switch in said switch housing unit connected in the circuit to the said driving unit and to the said heating element, a plug connecting element upon the said cylindrical housing unit, a plug receiving receptacle upon the said switch housing unit adapted to receive said plug connecting element to close electrical circuits to the said electrically energized heating units when the aforesaid switch is on and when the said cylindrical housing unit is connected to the said driving unit, and means for supplying electric current to the said driving unit and heating elements.

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