There is provided a hair curling device having a handle and a barrel. The handle having grippers, an LED lens and being adapted to house a motorized fan assembly and PCB assembly. The barrel housing a heater that extends the entire length of the barrel and having at least one vent therein. Heated air from the heater is drawn through a heat sink and through the at least one vent in the barrel. The heated air from the at least one vent facilitates in drying and styling hair.
INSTANT HEAT HOT AIR CURLING IRON

BACKGROUND OF THE INVENTION

0001 1. Field of the Invention

0002 The present invention relates to a hair styling product. In particular, the present invention relates to hand-held, electrically heated devices for heating, and manipulating and/or curling hair. More particularly, the present invention relates to a hair curling iron device that curls hair and additionally uses hot air to dry hair. Most particularly, the present invention relates to hair irons, such as curling irons and brush irons, that employ a barrel to heat hair disposed or manipulated about the barrel, and additionally blowing hot air to simultaneously dry hair.

0003 2. Description of the Prior Art

0004 Customarily, users of such styling products require clean hair that is also dry to achieve the best styling results. Therefore, the hair has to be washed, blown, then styled. Some users have combined the styling with drying of hair by using a blow dryer while simultaneously using a brush to curl. However, this is a difficult task and is predominantly a technique performed at hair salons. Thus, there is a growing need for hair care devices that are convenient, portable, easily manipulated and provide professional styling results.

0005 Hair manipulating devices that employ an iron, i.e., a tube or barrel, to heat and manipulate hair are well known. Such devices include curling irons, thermal hot air irons and brush irons. Curling irons and some brush irons employ one or more types of heating elements in the barrel to heat the barrel. Examples of such heating elements include a rope heater, i.e., a resistance heater wound on a glass rope and looped inside the barrel, a resistance wire wound on mica and held between metal springs inside the barrel, and a ceramic heater suspended in the barrel between metal contacts and springs. These heating elements commonly extend through and fill the central portion of the barrel. In brush irons, the barrel wall has holes in it and a tooth bar is disposed in the barrel between the heating element and the barrel wall so that teeth of the tooth bar extend through the holes. However, heating the barrel from its central portion does not provide for rapid initial heating of the barrel and is not sufficiently efficient. A thermal hot air iron drives hot air through a barrel and through holes in the wall of the barrel.

0006 U.S. Pat. No. 5,494,058 describes a hair curling iron that includes an air heater and a blower disposed in the handle portion of the curling iron. A steam generator is disposed in the barrel that extends from the handle portion. This patent provides for the presence of a water container located in the barrel portion so as to enable steam to be generated from the barrel portion. The present invention does not include a water container, yet combines heat and air for curling and drying of hair.

0007 U.S. Pat. No. 5,365,037 describes a hand-held electric curling iron whose barrel is adapted to selectively join one of a plurality of different diameter hair rollers. The handle portion includes a fan, and the barrel portion includes a plurality of apertures that enable heated air to be directed onto a roller positioned about the barrel. In contrast, a hair roller does not adapt onto the present device, but rather directly and conveniently styles hair using its barrel portion.

0008 U.S. Pat. No. 4,936,027 describes a hair dryer/steamer combination that includes a handle and a barrel portion. The handle includes a blower and a heater for heating air. The heated air is blown into the barrel and exits from apertures therein. The barrel portion includes a separate heater and water reservoir to enable steam to be produced and carried out by the air flow. The present invention does not have a water reservoir in its barrel portion for a steaming function. Instead, the air blown from the barrel of the present invention is dry air for quick drying of hair while styling.

0009 U.S. Pat. No. 4,602,143 describes a curling iron that includes an infrared radiation source within a hollow barrel. The barrel is substantially transparent to the IR radiation. The handle portion includes a fan for blowing air over the IR radiation source and out of apertures located at the distal end of the barrel. The present invention does not have an infrared radiation source for heated air.

0010 The present invention provides an improved device that not only has a hot barrel for styling hair, but also simultaneously blows hot air to dry hair.

SUMMARY OF THE INVENTION

0011 It is an object of the present invention to provide a device for curling hair.

0012 It is another object of the present invention to provide a device for curling hair having a heater therein.

0013 It is a further object of the present invention to provide a hair curling device that substantially dries hair by using hot air.

0014 It is still a further object of the present invention to provide a hair curling device that provides both high temperature and heated air.

0015 These and other objects and advantages of the present invention are achieved by a hair curling device comprising: a handle, a barrel or barrel portion having a cavity and having a heatable surface with one or more vents to release the heat from the barrel, a heater extending through the cavity of the barrel, and a conductor to direct heat from the heater through the vents of the barrel portion. The handle has an interior for receipt of a fan that blows hot air toward the barrel.

BRIEF DESCRIPTION OF THE DRAWINGS

0016 FIG. 1 is a plan view of the hair curling device of the present invention;

0017 FIG. 2 is a cross-sectional view of the hair curling device of FIG. 1;

0018 FIG. 3 is an end view of the device of FIG. 2;

0019 FIG. 4 is a plan view opposite that of FIG. 1 of the device of FIG. 1;

0020 FIG. 5 is a cross-sectional view taken along lines A-A of FIG. 2; and

0021 FIG. 6 is an exploded view of a preferred embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

0022 Referring to the figures and, in particular, FIG. 1, the hair curling and drying device of the present invention is
generally represented by reference numeral 1. The hair curling device 1 has a body 200 that includes a handle 100 and a barrel or barrel portion 300 secured to the handle. Preferably, handle 100 and barrel portion 300 are in axial alignment. Grippers 101 are provided on handle 100 for secure holding of device 1. Handle 100 also preferably has an LED lens or display 107 to advise a user when power is turned on, and a variable resistor knob 115 to vary the temperature of the device 1.

0023] Referring to FIG. 2, handle 100 is connected to a power source, such as an electrical outlet, via a power cord with bushing 125. Handle 100 has a swivel board 111 to permit rotation of power cord 125. Handle 100 preferably also has a PCB assembly 109 that is operatively connected to and transmits power from power cord 125 to components of curling device 1. This connection includes a self-tapping screw 123 holding PCB assembly 109 in place. Handle 100 preferably also has a first switch 103 and a second switch 105. First switch 103 preferably is an "ON" switch, and second switch 105 preferably is an "OFF" switch. First switch 103 and second switch 105 preferably are also each connected to PCB assembly 109.

0024] Handle 100 preferably has a hollow or cavity that houses a fan 117. Fan 117 is preferably connected to a drive shaft (not shown) of a motor 121 and adapted to rotate about a central longitudinal axis 102 in response to motor 121. A motor mount 119, partially surrounding fan 117, preferably functions as a ventilator to direct air into barrel portion 300. Also preferably, PCB assembly 109 has a variable resistor cap 113, which works in conjunction with a variable resistor knob 115 to control the amount electric current running through a heater or heatable element 216.

0025] Barrel porti0n 300 houses heater 216. Heater 216 spans the entire interior portion of barrel porti0n 300. Heater 216 is connected by lead wire 204 to PCB assembly 109. Heater 216 preferably is made of mica.

0026] Handle 100 is preferably substantially hollow and has an upper part 110 and a lower part 120 shown in FIG. 4. Both upper part 110 and lower part 120 preferably have protuberances or rows of grippers 101 to facilitate gripping of handle 100 by a user as shown in FIGS. 1 and 4. It should be understood that any known mechanism for facilitating handling of the device by a user can be used, such as, for example, grooves and crevices, as grippers.

0027] Barrel portion 300 is secured to handle 100 by any suitable known means, but preferably using one or more machine screws 201. An insulator 202 is preferably positioned between barrel portion 300 and handle 100 to prevent heat from escaping from either component. In one embodiment of the invention shown in FIG. 3, barrel portion 300 preferably has a series of tines or teeth 308 that protrude, preferably evenly, from the barrel and are adapted to distribute hair.

0028] As shown in FIG. 5, heater 216 in barrel portion 300 is preferably rectangular in cross-section and positioned in a heat sink 208. The heat from heater 216 is drawn to heat sink 208 and, preferably, via heat air apertures 307, to the exterior of barrel portion 300 for styling hair. Apertures 307 can be apertures or vents through the wall of barrel portion 300 that allow heat to be emitted from the interior of the barrel to the exterior of the barrel and ultimately to the hair of a user.

0029] The benefit of the present curling device 1 is the following. A typical air brush curling iron has temperatures that are below 100°F. This temperature range is considered low. With the present curling device 1, high temperatures, namely temperatures at around 150°F. can be achieved. These high and/or higher temperatures help to improve the curl. The present curling device 1 has the benefit of heated air, which facilitates drying damp hair. These and related benefits associated with the present invention can be achieved with heater 216, fan 117 and ventilator 119 being operatively arranged within handle 100.

0030] FIG. 6 is an exploded view of one embodiment of the present invention. This embodiment includes a spoon or clip 303 with thumb grip 301, instead of tines, to secure hair. Also from this perspective, additional internal parts are identified. In handle 100, the handle housing shows upper part 110 of handle 100 as a separate section that connects to the lower part 120 of the handle. The upper part of this embodiment shows separate "On" and "Off" switches (103 and 105 respectively), and includes grippers 101 for better handling of the curling iron.

0031] A variable temperature controller 115 allows the user to adjust the heat setting of the curling iron. Features such as the following are found within the upper and lower halves of the handle: PCB assembly 109, swivel board 111, variable resistor cap 113, fan 117, motor mount 119 and motor 121. Self-tapping screws 123 are used to connect upper part 110 and lower part 120 together. Lower part 120 preferably has a fan control or momentary on/off switch 122 for controlling fan 117. Power cord 125 includes an immersion protection 127 as a safety feature.

0032] Heater 216 preferably includes an insulator 202, a lead wire 204, at least one heat sink 208, a heater winding 212, a motor dropping winding 214 and an insulating film 220, and preferably Kapton insulation. Heater 216 is also preferably adapted with a suitable temperature cut-off safety mechanism. The cut-off safety mechanism can be any mechanism known in the art. For example, heater 216 can be adapted with a sensor 206, and a fuse or thermal cut-off 218. Sensor 206 is preferably a sensor bead (NTC) and adapted to monitor changes in temperature. Thermal cut-off 218 is preferably adapted to break the flow of electrical current at a predetermined temperature and thus, shut down device 1.

0033] Barrel portion 300 can have a clip or spoon structure 303 attached thereto for receiving and holding a lock of hair. Spoon 303 can be adapted with a lever arm having a thumb grip 301 as mentioned above. Barrel portion 300 preferably has an air baffle 213 adjacent insulator 202. Baffle 213 facilitates in the distribution of air through barrel portion 300. Barrel portion 300, preferably also has a cool tip 309 for easy handling and a screw cap 311 to fasten the tip 309 onto the barrel.

0034] It should be understood that the foregoing description is only illustrative of the present invention. Various alternatives and modifications can be devised by those skilled in the art without departing from the present invention. Accordingly, the present invention is intended to embrace all such alternative modifications and variances.
What is claimed is
1. A hair curling device, comprising:
   a handle having a hollow cavity for housing a motor, a fan
   and a ventilator;
   a heating element; and
   a barrel connected to said handle and having a plurality of
   apertures therein for permitting air heated by said
   heating element to escape.
2. The hair curling device of claim 1, wherein said handle
   has at least two control switches.
3. The hair curling device of claim 2, wherein said at least
   two control switches include a first “ON” switch and a
   second “OFF” switch.
4. The hair curling device of claim 1, wherein said handle
   has at least one gripper.
5. The hair curling device of claim 1, wherein said handle
   and said barrel are in axial alignment.
6. The hair curling device of claim 5, further comprising
   a plurality of tines protruding from said barrel for engaging
   hair.
7. The hair curling device of claim 1, further comprising
   a PCB board housed in said handle and adapted for trans-
   ferring power to said motor, fan and heating element of the
   hair curling device.
8. The hair curling device of claim 1, further comprising
   an insulator positioned between said handle and said barrel.
9. The hair curling device of claim 1, wherein said
   ventilator partially surrounds said fan and directs air into
   said barrel over said heating element.
10. The hair curling device of claim 1, wherein said
    heating element is made of mica.
11. The hair curling device of claim 1, wherein said
    heating element spans an entire interior portion of said
    barrel.
12. The hair curling device of claim 1, further comprising
    a variable temperature controller for adjusting the heat
    produced by the hair curling device.
13. The hair curling device of claim 1, wherein said handle
    has a plurality of grippers.
14. The hair curling device of claim 1, wherein said
    handle has a momentary on/off switch.
15. The hair curling device of claim 1, further comprising
    a temperature sensor.
16. The hair curling device of claim 1, further comprising
    a thermal cut-off mechanism.
17. The hair curling device of claim 1, wherein said
    handle has at least one heat sink.
18. The hair curling device of claim 1, wherein said barrel
    has an air baffle.
19. The hair curling device of claim 1, wherein said barrel
    has a corresponding clip pivotably attached thereto for
    receiving and holding hair close to said barrel.
20. The hair curling device of claim 19, wherein said clip
    has a lever that when a user applies force to said clip moves
    away from said barrel.
21. The hair curling device of claim 20, wherein said lever
    has a grip.
22. A hair curling device, comprising:
   a handle having a hollow cavity for housing a motor, a fan
   and a ventilator; and
   a heating element
   a barrel connected to said handle and having a plurality of
   apertures therein for permitting air heated by said
   heating element to escape; and
   an insulator positioned between said handle and said
   barrel.

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