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(54) **INSTANT HEAT HOT AIR CURLING IRON**

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(57) **ABSTRACT**

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.

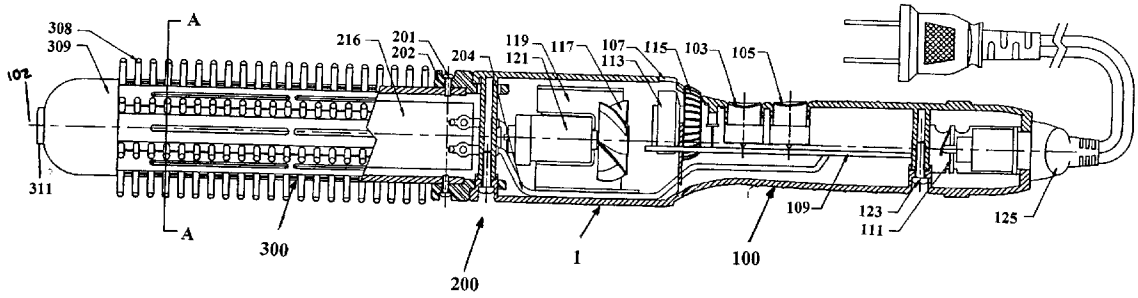

FIGURE 1

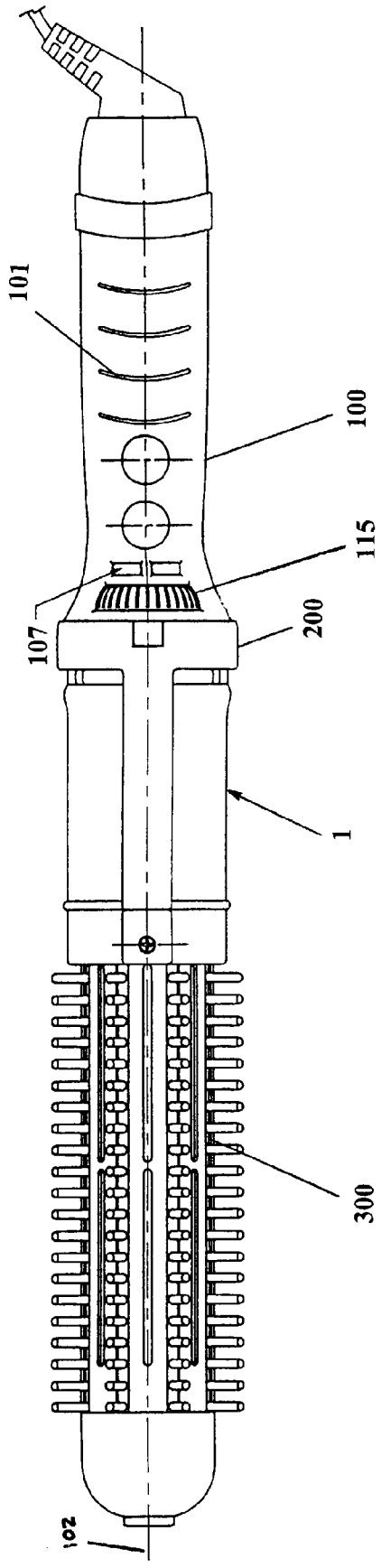

FIGURE 2

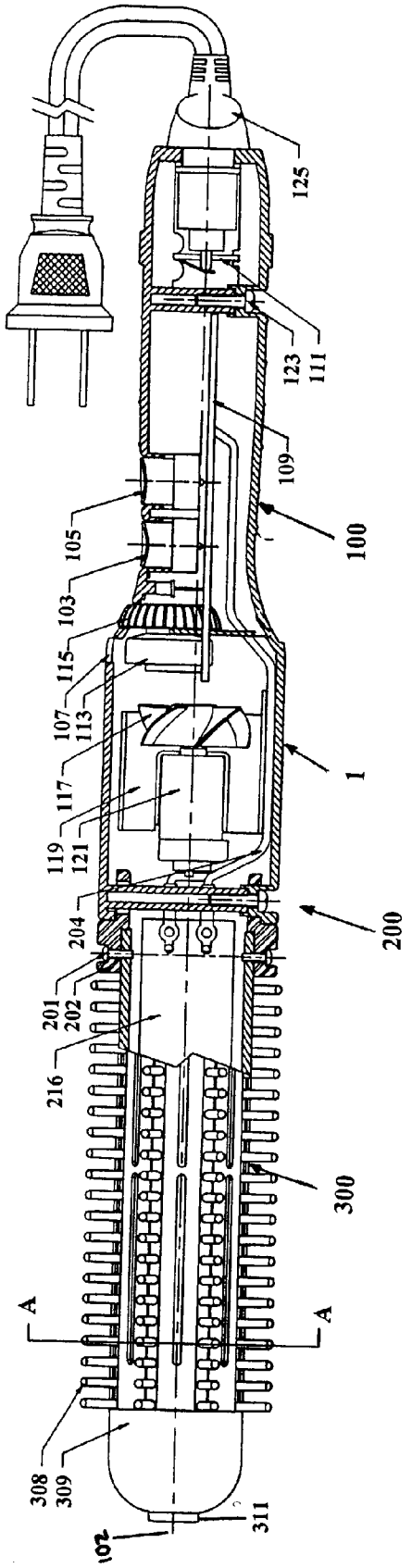
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FIGURE 3

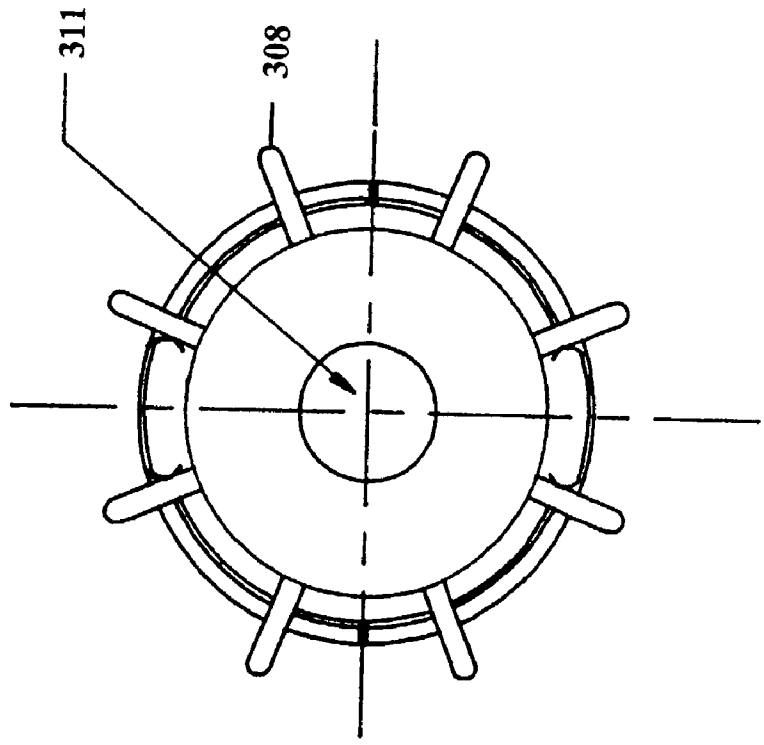


FIGURE 4

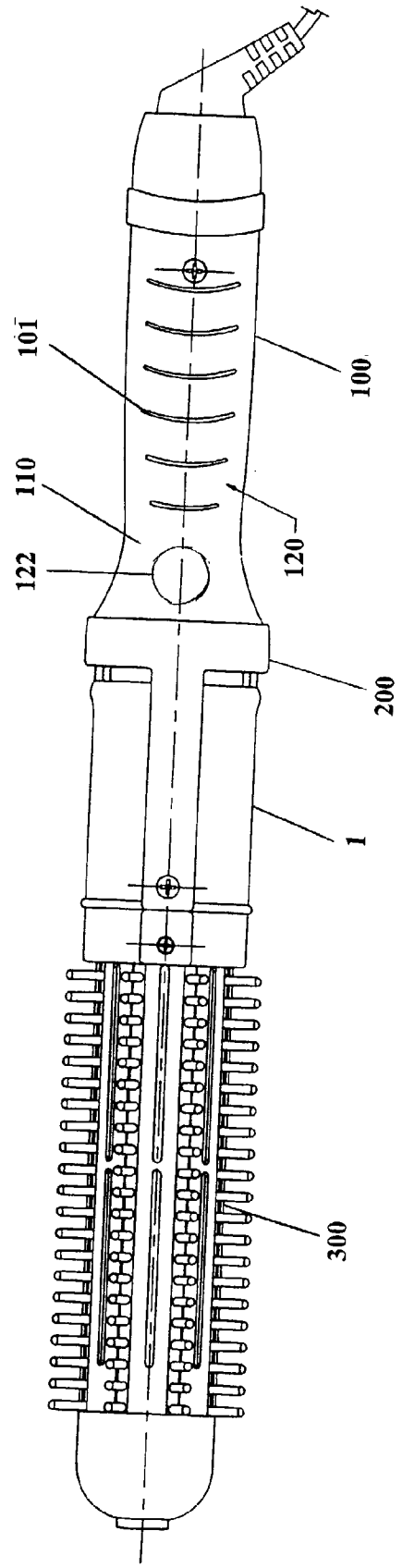


FIGURE 5

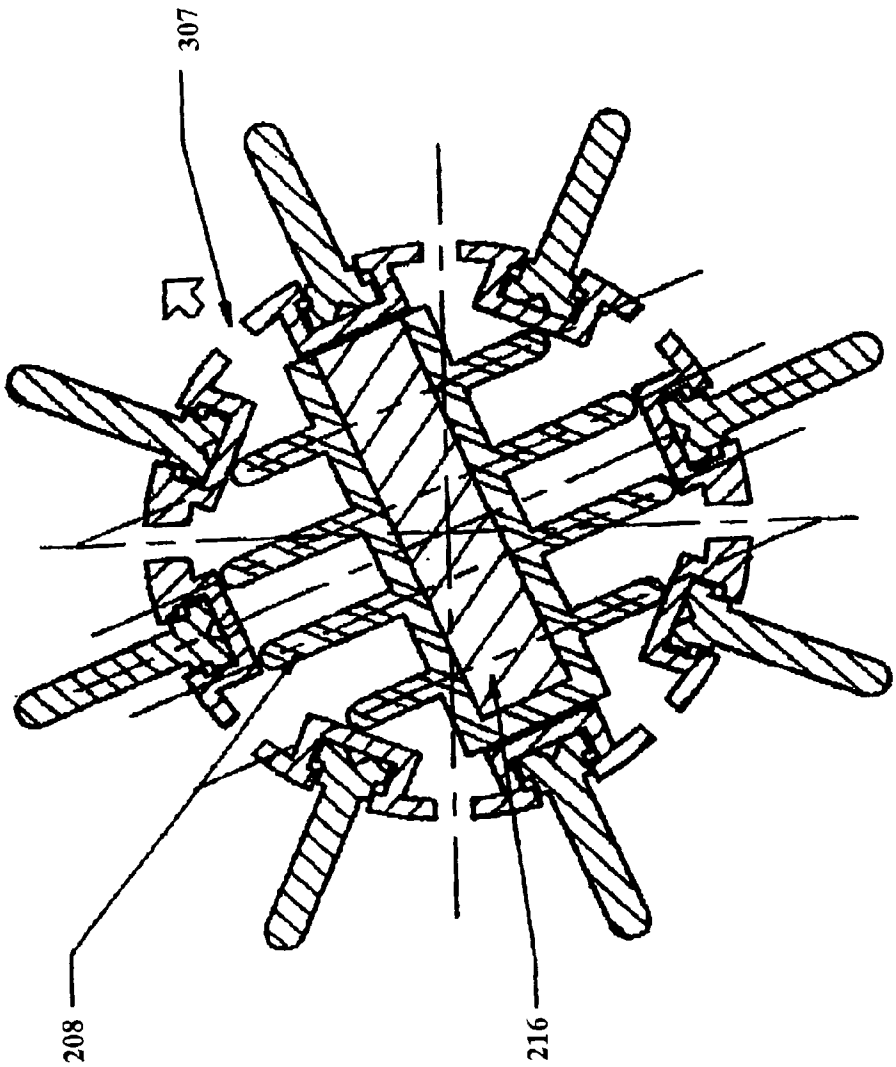
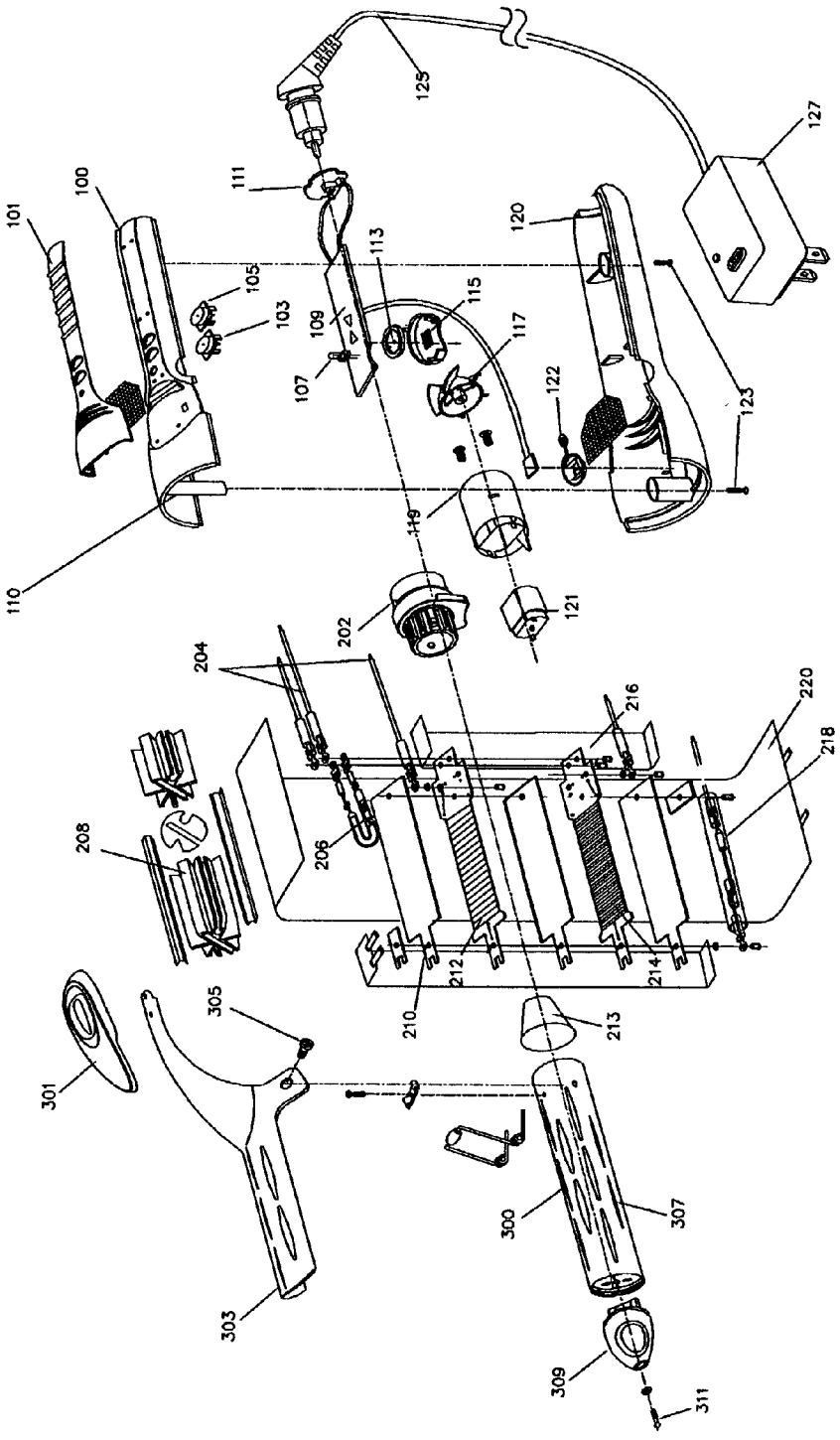


FIGURE 6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INSTANT HEAT HOT AIR CURLING IRON

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 fully 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 convector 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 portion **300** houses heater **216**. Heater **216** spans the entire interior portion of barrel portion **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° C. This temperature range is considered low. With the present curling device **1**, high temperatures, namely temperatures at around 150° C. 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 transferring 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.

* * * * *