United States Patent

[11] 3,622,746

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[21] Appl. No. **20,933**
[22] Filed **Mar. 19, 1970**
[45] Patented **Nov. 23, 1971**
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[32] Priority **July 30, 1969**
[33] **France**
[31] **6926075**

[54] **ELECTRICAL CURLING IRONS**
2 Claims, 2 Drawing Figs.

[52] U.S. Cl. ..... **219/225,** 132/37 R, 219/227, 219/241, 219/515, 337/360
[51] **Int. Cl.** **A45d 1/04,** A45d 1/28, H05b 1/02
[50] **Field of Search** ..... 219/222–226, 240, 241, 512, 515, 227; 337/354, 360, 361, 374, 375; 132/33 R, 37 R, 37 A

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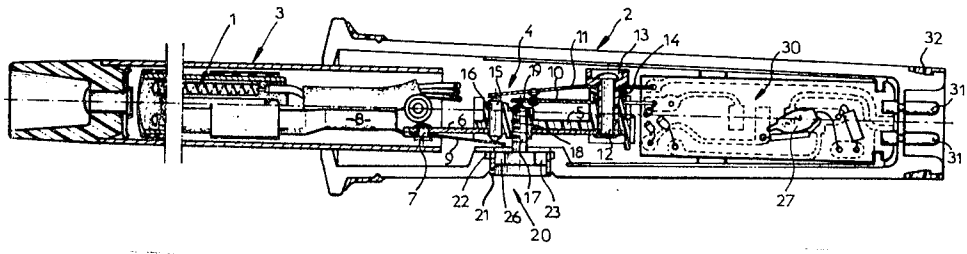
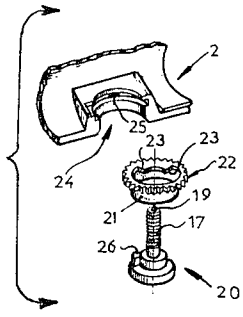
ABSTRACT: The electrical curling tongs comprise a thermostat which is manually adjustable by a knob embedded in a recess provided in the tongs handle. The handle recess includes indentations adapted to mesh with corresponding indentations provided at the periphery of a ring interposed between the knob and the recess for presetting the temperature range of the tongs. The ring includes internal stops and the knob also comprises stop means so that, upon rotating the knob within the ring, the rotary motion of the knob controlling the heating temperature is limited.





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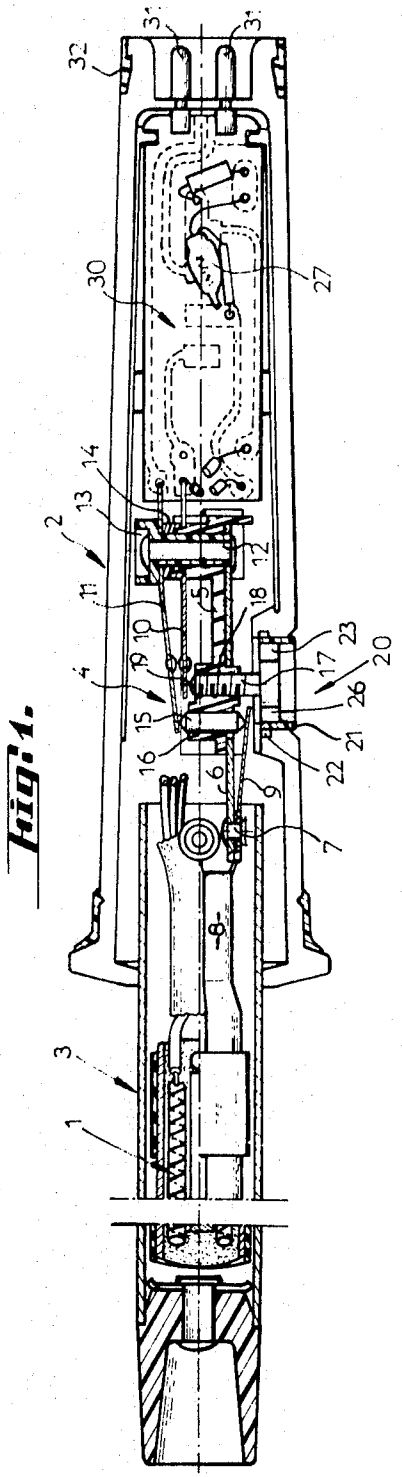

Fig. 1.

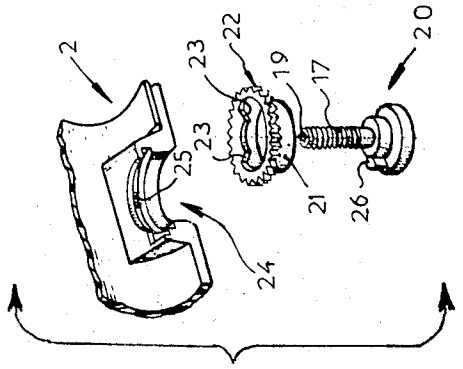

Fig. 2.

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ELECTRICAL CURLING IRONS

The present invention has essentially for its object improvement in electrical curling irons.

The invention relates more particularly to electrical curling irons of the type described in U.S. Pat. application Ser. No. 718,101 filed on Apr. 2, 1968 in name of the same applicant for now Pat. No. 3,543,392. "Electrical curling tongs."

In the said patent there is described improvements to electrical curling irons equipped with a thermostatic device, of the type comprising a cylindrical heating portion in which is mounted a heating resistor element and on which are wound the locks of hair, a handle extending in prolongation of the said heating portion and a tongue hinged on the apparatus and adapted to grip round the said heating portion, thus forming a clamp which holds the lock of hair wound.

Such arrangements are well known nowadays and widely used for domestic as well as trade purposes. The present invention therefore relates to improvements to such apparatus, resulting in easier use and simpler manufacture thereof, while at the same time ensuring greater flexibility in use.

Indeed, it has appeared that the users of such curling irons are not desirous of using the said irons all the time at one and the same temperature. It was essential to provide means to vary the temperature of the curling iron according to the type of hair to be curled. It is most convenient to be able to use various temperatures according to the type of hair to be dressed. Thus, for frangible hair it is recommended to use relatively low temperatures which cannot be detrimental to the hair while at the same time ensuring perfect dressing thereof.

To this end, the improvements forming the subject matter of the present application are essentially characterized in that they comprise: an insulating thermostat support mounted between the cylindrical heating portion, advantageously through the medium of a member forming a thermal bridge, and a fixed point on the handle on which are mounted stationary and movable contacts; an insulating inertia-block sliding freely in a hole of the said support and resting, by its two ends projecting from the said support, respectively upon a bimetallic element and upon the said movable contact; and a screw acting on the said stationary contact to control the spacing between the stationary and movable contacts and thus adjust the heating temperature.

According to another feature of the present invention, the said screw comprises a threaded portion passing right through the said support provided to this end with a tapped hole, one end of the said threaded portion bearing upon the stationary contact while the other end comprises a control knob advantageously embedded in the said handle.

It is thus obvious that the thermostatic assembly and the control means thereof are advantageously housed within the handle and integral therewith without complicating the structure of the apparatus in a manner which would be detrimental to practical and rational use thereof. In addition, the user may adjust the heating temperature according to her requirements, depending on the type of hair concerned.

According to another feature of the present invention, a ring or the like is inserted between the control knob and the wall of the handle recess in which the said control knob is embedded, the said ring comprising on its periphery indentations, notches or the like meshing with corresponding indentations provided in the said recess, as well as two stops limiting the rotation of the said screw in the said ring, the latter enabling the user to previously set the temperature range of the apparatus.

Obviously it is advantageous to be able to perform an additional adjustment enabling the user to adjust at will and beforehand and the said temperature range by modifying the position of the indented ring in the recess.

According to still another feature of the invention, the said insulation support is mounted on a plate which is at one end riveted with the bimetallic element on the member forming a thermal bridge, and at the other end assembled with the stationary and movable contacts by means of a rivet passing right through the said insulating support at the level of the aforesaid fixed point.

The various thus imbricated members constituting the thermostat therefore form a compact assembly which may readily be placed within the handle or two half-shells forming this handle.

The invention will be better understood and other objects, features and advantages thereof will appear as the following explanatory description proceeds with reference to the appended drawing given solely by way of example and wherein:

FIG. 1 shows a longitudinal sectional view of a curling iron according to the invention; and

FIG. 2 is an exploded view showing details of the manually adjustable control knob.

According to the form of embodiment illustrated in the drawing, there is shown a resistor element **1** mounted in the cylindrical heating portion **3** of the apparatus, and a handle **2** constituted by two half-shells. A detailed description of these members is besides given in the aforementioned U.S. patent filed in the name of the same applicant.

According to the invention, the thermostatic assembly **4** housed in the handle **2** nondeformable essentially an insulating support **5** preferably made from a nondeformable thermoplastic material such as a polyamide reinforced with glass fibers, the said support being mounted on a plate or the like **6** riveted at one end **7** on a member **8** forming a thermal bridge together with a bimetallic element **9**. It should be noted that the member **8** is made from a suitable heat-conducting material, for instance aluminum, and is placed in close contact with the heating resistor element **1**, so that the temperature of the bimetallic element **9** approximates that of the resistor element **1**.

The opposed end of the plate **6** on which the insulating support **5** rests is secured to the handle **2** and assembled with stationary and movable blades or contacts **10** and **11** respectively, by means of a long-shank rivet **12**. Of course, insulating washers **13** and **14** are provided between the contacts **10** and **11**.

As appears clearly from the drawing, an insulating inertia block or pin **15** slides freely in a hole **16** provided in the insulating support **5**. The said insulating pin **15** extends entirely through the sad support as well as the plate **6** so as to bear at its two pointed ends respectively upon the bimetallic element **9** and the movable contact **11**.

A screw **17** also passes through the insulating support **5** which is provided to this end with a tapped hole **18**. The end **19** of the said screw abuts against the stationary contact **10**. The screw **17** is controlled by means of a control knob **20** embedded in a recess **24** of the handle **2**. A crown, ring or the like **21** provided at its periphery with indentations **22** is interposed between the knob **20** and the wall of the recess **24** in which the said knob is embedded. The indentations **22** mesh with corresponding indentations **25** machined in the handle **2**. The crown or ring **21** also comprises two internal stops **23** limiting the rotary travel of the knob **20** which is also provided with corresponding stops **26**, and therefore the rotary travel of the screw **17**.

According to the improvements provided by the invention, a small printed circuit **30** enabling the advantageously dispense with any wiring within the handle **2** is mounted at the end of the said handle. Of course, the contact prongs or pins **31** for connection to the supply source are mounted at one of the ends of the printed circuit, while the other end of the circuit is connected to the terminal of the thermostatic assembly just described. Moreover, the said circuit also comprises the element of a small signal or pilot lamp **27** which enables the user to supervise the operation of the apparatus.

Lastly, the improvements according to the invention comprise a ring or the like **32** preferably made from injected thermoplastic material and used to assemble the two shells forming the handle **2**, rearwardly of the iron as clearly shown in the drawing. Of course the said ring may have any shape and size and may be made from any suitable material provided effective clamping of said half-shells is obtained.

The operation of the thermostatic assembly just described is very simple. The position of the crown **21** is suitably adjusted.

This adjustment may be performed for instance during the manufacture of the apparatus. By rotating the screw **17** by means of the control knob **20** one adjusts the spacing between the stationary and movable contacts **10** and **11**, and this enables the user to adjust the temperature of the resistor element **1**, in response to which the bimetallic element **9**, by acting upon the insulating pin **15**, opens the heating circuit or, more precisely, separates the movable contact **11** from the stationary contact **10**. The user may therefore obtain the desired heating temperature according to the type of hair concerned.

Of course, the invention is by no means limited to the form of embodiment described and illustrated which has been given by way of example only. Thus, the aforesaid printed circuit may comprise all necessary elements enabling the mounting of a voltage-varying device, such as a double-voltage device. The invention therefore comprises all the means constituting technical equivalents to the means described as well as their combinations, should the latter be carried out according to the spirit of the invention and within the scope of the appended claims.

What is claimed:

1. Electrical curling tongs comprising: a heating cylindrical portion around which locks of hair are to be wound; a resistor unit mounted inside said cylindrical portion; a handle extending said cylindrical portion; a hingedly mounted tongue capable of closely fitting said cylindrical portion and forming a gripper for holding the hair; an adjustable thermostat mounted in said handle and including a bimetallic member and a set of stationary and movable contacts; insulating support means having said thermostat secured thereon; plate means upon which said insulating support means rest; first rivet means securing said set of stationary and movable contacts and said plate means to said insulating support means; thermal bridge means interposed between said heating portion and said thermostat; second rivet means securing said thermal bridge means and said bimetallic member to said plate means; insulative pin means freely sliding in said insulating support means, said pin means having two ends for resting respectively upon said bimetallic member and said movable contact; electrical connection means including two contact prongs extending outwardly of said handle; printed circuit means mounted inside the handle between said two prongs and said thermostat; pilot lamp means associated with said printed circuit means; and control means acting upon said stationary contact for controlling the spacing between said stationary and movable contacts in order to adjust the heating temperature of the tongs; said handle comprising a recess with indentations therein, and said control means comprising a manually adjustable knob located in said recess; screw means extending from said knob and passing through said insulating support means; and an adjustable ring interposed between said knob and said recess, said ring having peripheral indentations adapted to mesh with said recess indentations, internal stop means on said ring, said knob also having stop means adapted to cooperate with said internal stop means of the ring in order to limit the rotary motion of said screw means when rotating said knob within said ring, whereby said screw means provides for presetting of the temperature range of said tongs by modification of the position of said screw means in said recess.

2. Electrical curling tongs as defined in claim **1**, wherein said handle includes two shell-halves and a clamping ring mounted at the outer end of said handle for firmly maintaining said two shell halves together.

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