Title: PERMANENT LOD AND HEATING DEVICE FOR EFFECTIVELY TRANSFERRING HEAT TO THE PERMANENT LOD

Abstract: The present invention is related to a heating device used in a rod for permanent wave, which controls capable of heating the rod electrically and effectively. In particular, the present invention is related to a heating device with easy maintenance and safety and a rod for permanent wave with improved structure, which can overcome a problem of sensing a temperature of the heating device and a problem of inefficient electrical heating of the rod for permanent wave. An object of the present invention is to handle the problems by providing a rod for permanent wave having a relatively strong durability as well as an excellent thermal conductivity, and a heating device for electrically heating the rod for permanent wave with the most effective way.
Description

PERMANENT LOD, AND HEATING DEVICE FOR EFFECTIVELY TRANSFERRING HEAT TO THE PERMANENT LOD

Technical Field

The present invention is related to a heating device used in a permanent rod, which controls capable of heating the rod electrically and effectively. In particularly, the present invention is related to a heating device with easy maintenance and safety and a rod for permanent wave with improved structure, which can overcome a problem of sensing a temperature of the heating device and a problem of inefficient electrical heating of the rod for permanent wave.

Background Art

Generally, a conventional heating device used in a rod for permanent wave comprises a conventional electrical heating element which supplies electrical heat, a heating plate which is heated by the electrical heating element, and a heating rod installed on the upper part of the heating plate in the inside of a case.

The rod for permanent wave is inserted into the heating rod. When the rod for permanent wave is heated to the temperature suitable for permanent wave work through the heating rod heated by the electrical heating element, an operator picks up the rod for permanent wave to perform the permanent wave work.

As a conventional heating device used in a rod for permanent wave, a Korean utility model publication No. 2000-202763, A heating device for a rod for permanent wave, and a Korean utility model publication No. 2005-399148, A heating device used in permanent rod, are disclosed.

The heating devices disclosed in the publications have a structure in which a heating member or a plate-type heater as a heating means is attached to a lower end of a heating rod, and heat is transferred to the heating rod directly or indirectly. In the structure, there is an advantage in that heating of the heating rod is performed substantially, and lose of electrical heating is minimized. However, the essential point is focused on heating efficiency of the heating rod other than electrical heating efficiency of the heating rod, and the controlling of a temperature of the heating rod is not considered.

In the present invention, a heating device has a temperature sensor integral with a heating rod in order to heat the heating rod doubly, and to maintain an optimal temperature of the heating rod through controlling of the heating rod at the same time.

In order to achieve such object, the most optimal electrical power is supplied to a
heating device used in a rod for permanent rod which is used for long time, and the electrical power heats the heating rod and the rod for permanent wave efficient to shorten reheating of the rod.

Other object of the present invention is to shorten the time of permanent operation by providing various shapes of the heating rod and improving the rod for permanent wave.

Disclosure of Invention

Technical Solution

Therefore, an object of the present invention is to handle the problems by providing a rod for permanent wave having a relatively strong durability as well as an excellent thermal conductivity, and a heating device for electrically heating the rod for permanent wave with the most effective way.

One preferable embodiment of the present invention, it is economical that a heating rod according to the present invention has an optimal length to save the material used in making the heating rod. The heating rod had various shapes to increase the efficiency of electrical heating of the heating rod.

Advantageous Effects

A rod for permanent wave and a heating device for electrically heating the rod with efficiency according to the present invention, it is possible to control an electrically heating temperature of the heating device via an automatical intelligence control by a temperature sensor in a heating rod. Therefore, it is possible to overcome the problem caused from sensing of the temperature of the heating device and inefficient electrical heating of the rod. Further, as it is possible to electrically heat the heating rod via various shapes of the heating rod, reliability of permanent works can be incredibly increased.

Brief Description of the Drawings

The above objects and other advantages of the present invention will become more apparent by describing in detail the preferred embodiments of the present invention with reference to the attached drawings in which:

Fig. 1 is a perspective diagram which shows a heating device for heating a rod for permanent wave according to the present invention;

Fig. 2 is an exploded perspective diagram which shows a heating device for heating a rod for permanent wave according to the present invention;

Fig. 3 shows a one embodiment of a heating rod according to the present invention;

Fig. 4 shows other embodiment of a heating rod according to the present invention;

Fig. 5 is a perspective diagram which shows a rod for permanent wave according to the present invention;
Fig. 6 is an exploded diagram which shows a rod for permanent wave according to
the present invention; and

Fig. 7-9 are other embodiment of a heating rod and a rod for permanent wave
according to the present invention.

* Brief description of reference numbers*

10 : housing 20 : insulating plate
30 : plate-type heater 32 : protecting plate
32 : electronically heating plate 50 : heating rod
60 : temperature sensor 120 : control panel
130 : bottom plate 200 : a rod for permanent wave
210 : electrically heating tube 300 : electrically heating button

Best Mode for Carrying Out the Invention

A heating device for heating a rod for permanent wave according to the present
invention is characterized by that:

a housing enclosed by a peripheral frame and opened upward;
an insulating plate installed on the bottom of the housing;
a plate-type heater installed on the top side of the insulating plate to be heated via
applied electric power, said heater being installed between protecting plates;
an electrical-heating plate electrically and directly heated from the heated plate-type
heater;
numbers of heating rods fitted onto the electrical-heating plate to be directly heated
from the plate-type heater, said heating rod being finished on a surface identical with
the lower side of the electrical-heating plate; and
said heating rod being formed with numbers of heat-transferring holes on the
outside of the same, air in the heat-transferring hole being heated by transferred heat,
and the heated air being discharged from the hole to heat the inside of the rod for
permanent wave inserted into the heating rod.

In the present invention, a temperature sensor is installed in the inside of at least
one heating rod. The temperature sensor is installed on the middle part of the heating
rod in length direction, and generates a signal for heating the electrical-heating plate
and the heating rod or stopping heating of the electrical-heating plate and the heating
rod according a set temperature of the heating rod.

The heating rod formed with various lengths. The length can be varied freely,
preferably is not exceeded the length scope disclosed in the present invention.

According to the present invention, a rod for permanent wave is inserted into
numbers of heating rods to be electrically heated, said heating rod being fitted in an
electrical-heating plate heated by a surface of a heated plate-type heater to be heated from the heated electrical-heating plate, wherein an electrical-heating tube is formed in the rod for permanent wave with integral in length direction, the inside of the electrical-heating tube is hollow and an electrical blade is extended along the outside of the electrical-heating tube.

Further, numbers of electrical-heating blades are formed symmetrically about a concentric of the electrical-heating tube.

Hereinafter, a preferred embodiment of the present invention will be described in detail with reference to the accompanying drawings. Throughout the drawings, same reference numbers are used for functionally same parts or similar parts.

Fig. 1 is a perspective diagram which shows a heating device for heating a rod for permanent wave according to the present invention, Fig. 2 is an exploded perspective diagram which shows a heating device for heating a rod for permanent wave according to the present invention, and Fig. 3 shows a one embodiment of a heating rod according to the present invention;

When referring Figs. 1 to 3, a heating device 100 for heating a rod for permanent wave according to the present invention comprises a housing 10 enclosed by a peripheral frame 12 and opened upward, an insulating plate 20 installed on the bottom 14 of the housing 10, a plate-type heater 30 installed on the top side of the insulating plate 20 to be heated via applied electric power, said heater being installed between protecting plates 20, an electrical-heating plate 40 electrically and directly heated from the heated plate-type heater 30, and numbers of heating rods 50 fitted onto the electrical-heating plate 40 to be directly heated from the plate-type heater 30, the heating rod being finished on a surface identical with the lower side of the electrical-heating plate.

The heating device 100 according to the present invention is operated by supplying and stopping of electrical power. In one embodiment of the present invention, the electrical power is supplied to the heating device from a control block 110 via an external line. The control block 110 is electrically connected to a control panel 120.

The control block 110 supplies the electric power to the plate-type heater 30 through controlling of the control panel 120 to perform heating caused by electric resistance.

In the present invention, the plate-type heater 30 can be handled separately. As shown in one embodiment of the present invention, for example, the plate-type heater may be wound by an electrical-heating line 34 which is formed by a patterned a nickel alloy resistor with a constant width, and may be protected by the protecting plate 32 which is a sheet with an excellent thermal resistance. As the plate-type heater 30 has a good thermal response and a good softness, and can be close to a body to be heated,
the plate-type heater is suitable for a fine heating.

The heating device 100 according to the present invention is spaced apart with constant distance from the control block 110 formed with bottom plate 130. The spaced apart heating device 100 is stacked on the inside of the housing 10 subsequently. The housing 10 is enclosed by a peripheral frame 12 and is opened upward. Meanwhile, a closed end forms a bottom surface 14 and is flat.

The bottom surface 14 of the housing 10 is provided with the insulating plate 20. Preferably, the insulating plate 20 is in surface-contact with the bottom 14 of the housing 10 in order to prevent heat of the plate-type heater 30 being transferred to the outside of the housing 10.

At this time, a resistor 140 is installed on a side of the housing 10 in order to protect the heating device 100 from disconnection caused by over current or over heating.

The plate-type heater 30 is installed on the upper side of the insulating plate 20 to be heated by applied electrical power. As described above, the plate-type heater 30 is positioned between the protecting plates 32. The protecting plate protects the electrical-heating line 34 as a heating element.

The electrical-heating plate 40 is installed on a surface of the plate-type heater 30. The electrical-heating plate is positioned at a site from which an operator can be visible.

The electrical-heating plate 40 is directly heated from the plate-type heater 30. The electrical-heating plate may be made of a plate-type metal, and has a constant thickness.

The electrical-heating plate 40 is installed in the inside of the housing 10, preferably inside of the peripheral frame 12. The peripheral frame 12 defines the circumference of the electrical-heating plate 40.

The electrical-heating plate 40 is provided with numbers of passing-through holes 42. The passing-through hole are spaced apart with a constant distance, and arranged regularly. A heating rod 50 is fitted into the passing-through hole 42.

Preferably, the heating rod 50 is finished at a surface equal to the lower surface of the electrical-heating plate 40. By such finish, the electrical-heating plate 40 presses the plate-type heater 30 through its weight. Therefore, the heating rod 50 is directly received the heat generated by the plate-type heater 30. Further, the electrical-heating plate 40 and the housing 10 are concretely connected to achieve the above-described object.

As one preferred embodiment, the heating rod 50 according to the present invention is formed with numbers of electrical-heating holes 52 on its surface, and the holes are passed through each other.

When the heating rod is electrically heated, the electrical-heating hole heats the air
in the inside of the hole, and discharges the heated air to the outside. At this time, the discharged air is circulated repeatedly to heat the rod for permanent wave 200 shown in Fig. 5, described lately.

Conventionally, an electrical-heating tube 210 is installed in the rod for permanent wave 200, and the tube is electrically heated by the heating rod 50 heated.

In the present invention, it is proper that the heating rod 50 can be embodied in various ways.

In the present invention, a temperature sensor 60 is inserted in the inside of at least one of the heating rods 50 which are fitted into the upper side of the electrical-heating plate 40. The temperature sensor 60 senses a range of 120 ~ 160°C, and can be set to other temperature depending on the state of operation.

In the present invention, the temperature sensor 60 is installed on the middle part of the heating rod 50 in length direction. The temperature sensor 60 can sense the heated state of the heating rod 50 optimally. For example, the temperature sensor 60 conventionally installed on the lower side of the heating rod 50 or the electrical-heating plate 40 can be influenced by the temperature of the heating rod 50 which heats the rod for permanent wave 200. Therefore, the conventional temperature sensor 60 senses sensitively the temperature of the electrical-heating plate 40 than the temperature of the heating rod 50. That is, the conventional temperature sensor 60 cannot sense the temperature of the heating rod 50 exactly, as a temperature difference between the electrical-heating plate 40 and the heating rod 50 is present.

Therefore, in the present invention, the temperature sensor 60 is installed in the inside of the heating rod 50, preferably on the middle part in length direction. When the temperature sensor 60 detects the temperature of the heating rod and the temperature is deviated from a set value, it is possible to maintain the state of the rod for permanent wave 200 optimally by turning on or off the electrical power to heat or cool the heating rod 50.

Again, as described above, the heating rod 50 according to the present invention can be embodied by modifying the heating rod. Fig. 4 shows other embodiment of the heating rod according to the present invention. As shown in the drawing, the heating rod 50 can be installed to have an optimal length for electrically heating the rod for permanent wave 200. The preferable length is in the range of 30mm to 40mm. The length is economical length.

The present invention further comprises the rod for permanent wave 200 according to the present invention further comprises.

The rod for permanent wave 200 according to the present invention is structured as shown in Figs. 5 and 6.

The rod for permanent wave 200 is inserted in the heating rod 50 to be heated.
Numbers of heating rods 50 are fitted into the electrical-heating plate 40 to receive heat from the heated electrical-heating plate 40 which is electrically heated by the surface of the plate-type heater 30.

In the present invention, the term "length direction" means a vertical length in which the heating rod 50 is installed, and the center means the vertical center axis, in case of a circle, center point.

The rod for permanent wave 200 according to the present invention is integrally formed with an electrical-heating tube 210 which is hollow.

The electrical-heating tube 210 may be a conventional aluminum tube, or made of other metal with high thermal conductivity or nonmetal materials.

Unlike conventional electrical-heating tube, the electrical-heating tube 210 according to the present invention is integrally formed with an electrical-heating blade 212. Preferably, the electrical-heating blade 212 is extended along the outer surface of the electrical-heating tube 210 in length direction.

The electrical-heating blade 212 is inserted into the inside of the rod for permanent wave 200 to be integral with the rod for permanent wave which is made of synthetic resins.

By such construction, the temperature heated by the electrical-heating tube 210 is transferred to the main body of the rod for permanent wave 200 without loss, and can be maintained a constant temperature when using.

Preferably, numbers of electrical-heating blades 212 are symmetrically arranged for the center of concentric circle of the electrical-heating tube 210.

By such construction, the electrical-heating blade 212 performs electrical-heating substantially as well as acts as keeping warm. In addition, the main body is reinforced by the electrical-heating blades 212.

And, the heating device 100 and the rod for permanent wave 200 described above can provide a permanent wave apparatus with quickness, a good keeping warm efficiency and economical efficiency.

In the present invention, various modifications can be possible. For example, if necessary, the heating rod 50 having an inclined outer surface and a flat upper end can be possible as shown in Fig. 7. The inside of the rod for permanent wave 200 inserted in the heating rod 50 is inclined and has a shape corresponding to the heating rod.

As shown in drawing, the heating rod 50 and the rod for permanent wave 200 inserted into the heating rod are connected each other via the inclined surfaces, and perform electrical-heating through the inclined surfaces.

The inclined surface is directly in contact with the rod for permanent wave to maximize the efficiency of electrical-heating, and to perform electrical-heating quickly. In addition, the length of the heating rod 50 is relatively shortened, and the
material used in making the heating rod is saved to accomplish economical efficiency. Further, as shown in Figs. 8 and 9, a separate electrical-heating button 300 can be installed on the lower end of the rod for permanent wave 200, and inserted into a cone-type heating rod 50 to perform electrical-heating for the rod for permanent wave 200 efficiently. As shown in drawings, the electrical-heating button 300 has a fixing frame 310 which is installed between the lower end outside and the lower end inside of the rod for permanent wave 200, and an inclined frame 320 which is directly heated by the heating rod 50.

The center of the inclined frame 320 is passed through, and has a constant elasticity. The elasticity acts to contact the inclined frame with the inclined surface of the heating rod 50 tightly and to fix the heating rod 50. That is, the situation that the tight contact between the heating rod 50 and the inclined frame 320 performs quick electrical-heating can be included in the scope of the present invention. Therefore, all of the variations or modification included in the sprit and scope of the present invention can be included in the claims appended.

While this invention has been described in connection with what is presently considered to be the most practical and preferred embodiment, it is to be understood that the invention is not limited to the disclosed embodiments, but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims.

As described above in detail, by a rod for permanent wave and a heating device for electrically heating the rod with efficiency according to the present invention, it is possible to control an electrically heating temperature of the heating device via an automatical intelligence control by a temperature sensor in a heating rod. Therefore, it is possible to overcome the problem caused from sensing of the temperature of the heating device and inefficient electrical heating of the rod. Further, as it is possible to electrically heat the heating rod via various shapes of the heating rod, reliability of permanent works can be incredibly increased.

[80]
Claims

[1] A heating device capable of heating a rod for permanent wave electrically and effectively comprising:
   a housing enclosed by a peripheral frame and opened upward;
   an insulating plate installed on the bottom of the housing;
   a plate-type heater installed on the top side of the insulating plate to be heated via applied electric power, said heater being installed between protecting plates;
   an electrical-heating plate electrically and directly heated from the heated plate-type heater;
   numbers of heating rods fitted onto the electrical-heating plate to be directly heated from the plate-type heater, said heating rod being finished on a surface identical with the lower side of the electrical-heating plate; and
   said heating rod being formed with numbers of heat-transferring holes on the outside of the same, air in the heat-transferring hole being heated by transferred heat, and the heated air being discharged from the hole to heat the inside of the rod for permanent wave inserted into the heating rod.

[2] The heating device as claimed in claim 1, wherein a temperature sensor is installed in the inside of at least one heating rod, installed on the middle part of the heating rod in length direction, and is operated via a set temperature of the heating rod to heat the electrical-heating plate and the heating rod or to stop heating of the electrical-heating plate and the heating rod.

[3] The heating device as claimed in claim 1, wherein said heating rod has 30mm to 40mm in length.

[4] A rod for permanent wave is inserted into numbers of heating rods to be electrically heated, said heating rod being fitted in an electrical-heating plate heated by a surface of a heated plate-type heater to be heated from the heated electrical-heating plate, wherein
   an electrical-heating tube is formed in the rod for permanent wave with integral in length direction, the inside of the electrical-heating tube is hollow and an electrical blade is extended along the outside of the electrical-heating tube.

[5] The rod for permanent wave as claimed in claim 4, wherein numbers of electrical-heating blades are formed symmetrically about a concentric of the electrical-heating tube.

[6] The rod for permanent wave as claimed in claim 4, wherein the upper end of the heating rod is flat and a surface slanted toward downward, the rod for permanent wave is inserted in the slanted surface, and an electrical button installed in the inside of the lower part of the rod is abutted against the slanted surface to
perform electrical-heating.
A. CLASSIFICATION OF SUBJECT MATTER

A45D 4/06(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC8 A45D 4/06, A45D 4/16, A45D 2/36, A45D 6/02, A61K 7/06

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Japanese Utility models and applications for Utility Models IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKIPASS (KIPO internal) & keywords "permanent, rod, heating, device, wave, electric and similar terms"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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<tr>
<td>A</td>
<td>KR 10-2000-0012220 A (KIM, KWANG NAM) 06 March 2000 See the abstract, Claims 1-3, and Figures 1-6</td>
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<td>JP 04-250107 A (MATSUSHITA ELECTRIC WORKS LTD ) 07 September 1992 See the abstract, Claims 1-3, and Figures 1-8</td>
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<td>JP 2003-052443 A (NEW WAVE EXPRESS KK) 25 February 2003 See the abstract, Claims 1-5, and Figures 1-6</td>
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☐ Further documents are listed in the continuation of Box C
☒ See patent family annex

* Special categories of cited documents
"A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search
06 SEPTEMBER 2007 (06 09 2007)

Date of mailing of the international search report
07 SEPTEMBER 2007 (07.09.2007)

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea
Facsimile No 82-42-472-7140

Authorized officer
CHO, Sung Ho
Telephone No 82-42-481-5615
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