



US 20150047669A1

(19) **United States**

(12) **Patent Application Publication**  
**HUANG**

(10) **Pub. No.: US 2015/0047669 A1**

(43) **Pub. Date: Feb. 19, 2015**

(54) **ICE TREATMENT HAIR CONDITIONING  
CLIP STRUCTURE**

(52) **U.S. Cl.**  
CPC ..... *A45D 19/16* (2013.01)  
USPC ..... **132/271**

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(21) Appl. No.: **14/069,551**

(22) Filed: **Nov. 1, 2013**

(30) **Foreign Application Priority Data**

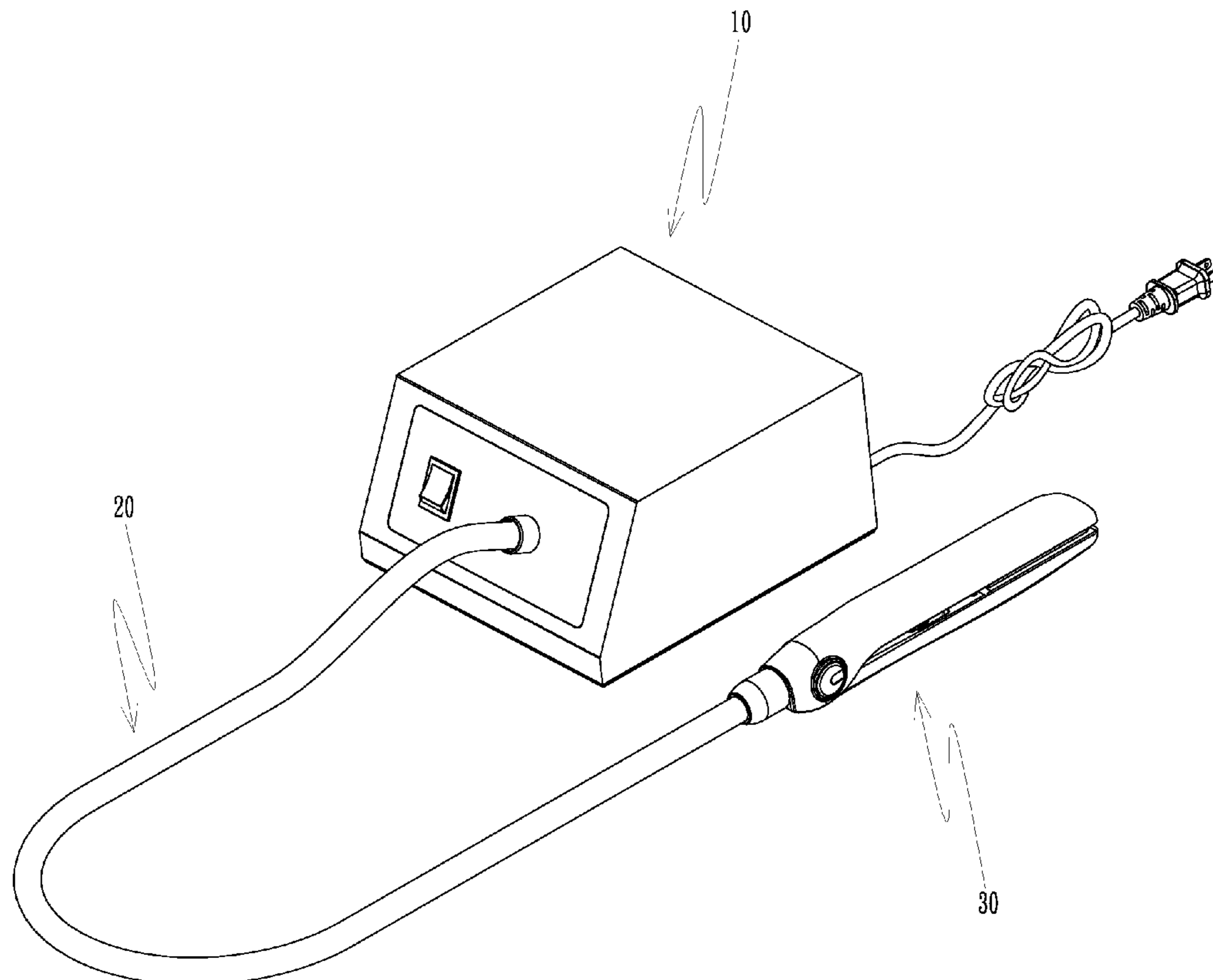
Aug. 19, 2013 (TW) ..... 102215579

**Publication Classification**

(51) **Int. Cl.**  
*A45D 19/16* (2006.01)

(57) **ABSTRACT**

An ice treatment hair conditioning clip structure includes an electronic refrigeration plate of a refrigeration splint for absorbing heat to drop the temperature of a metal refrigeration board below zero, a water-loop pump installed at a cooling module of a cooling host body for pumping a coolant contained in a coolant tank and circulating the coolant in a loop waterway of a heat-exchange metal board, and a heat sink and a fan of the cooling module for dissipating heat. The coolant is returned to the coolant tank of the cooling module, such that the thermal emission reaches a thermal equilibrium to achieve a hair conditioning effect and an excellent stability of the hair conditioning.



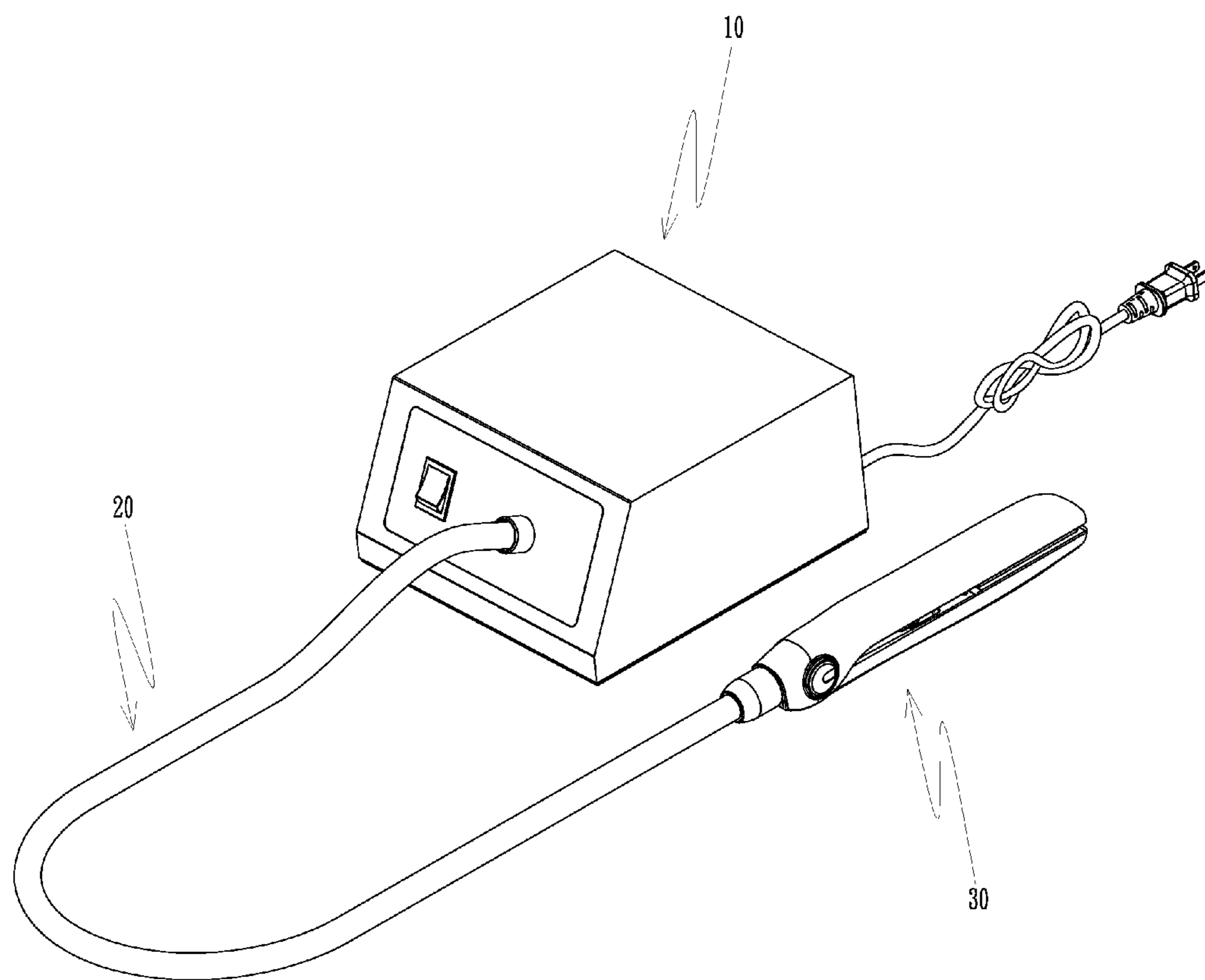


FIG. 1

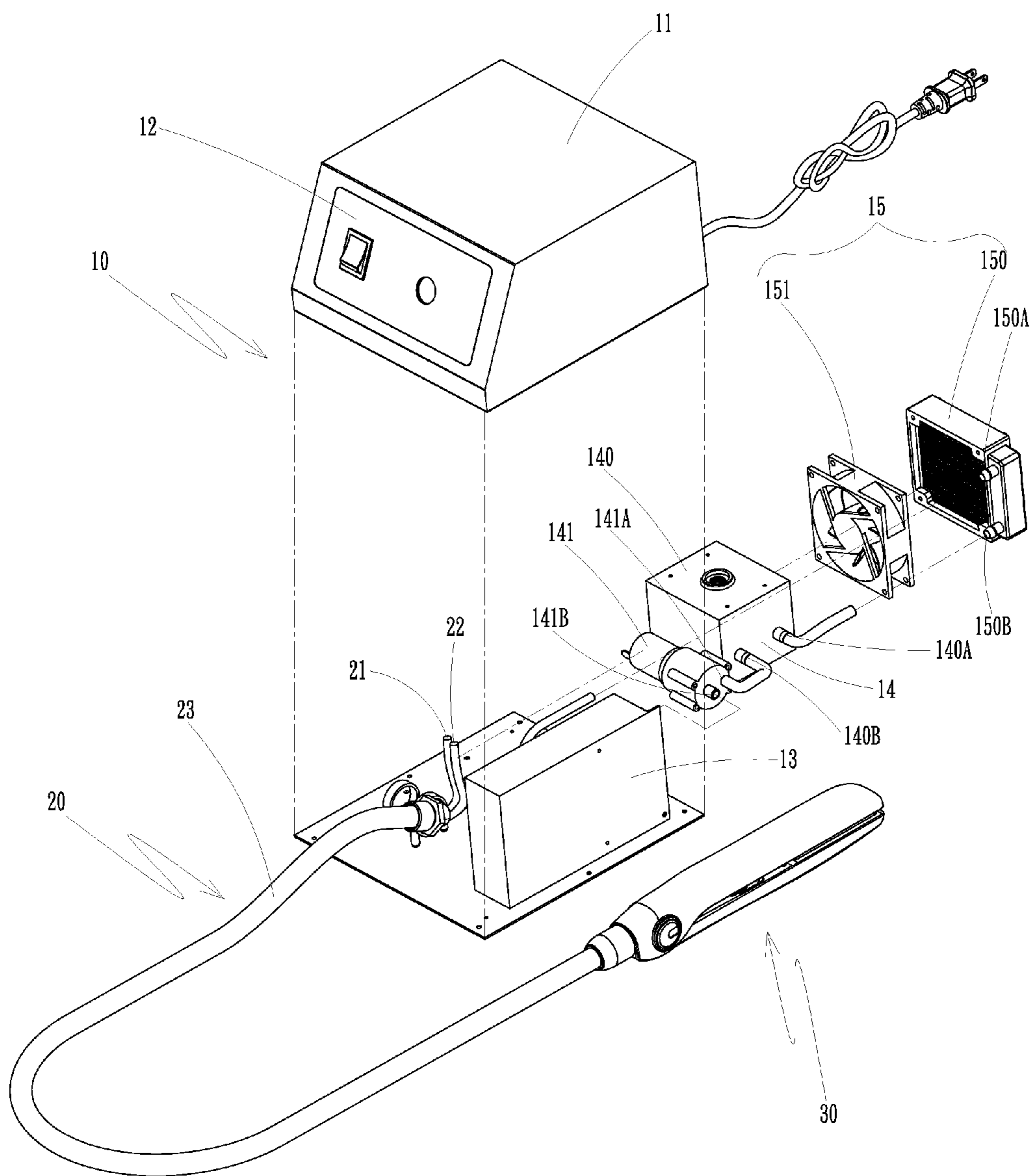


FIG. 2

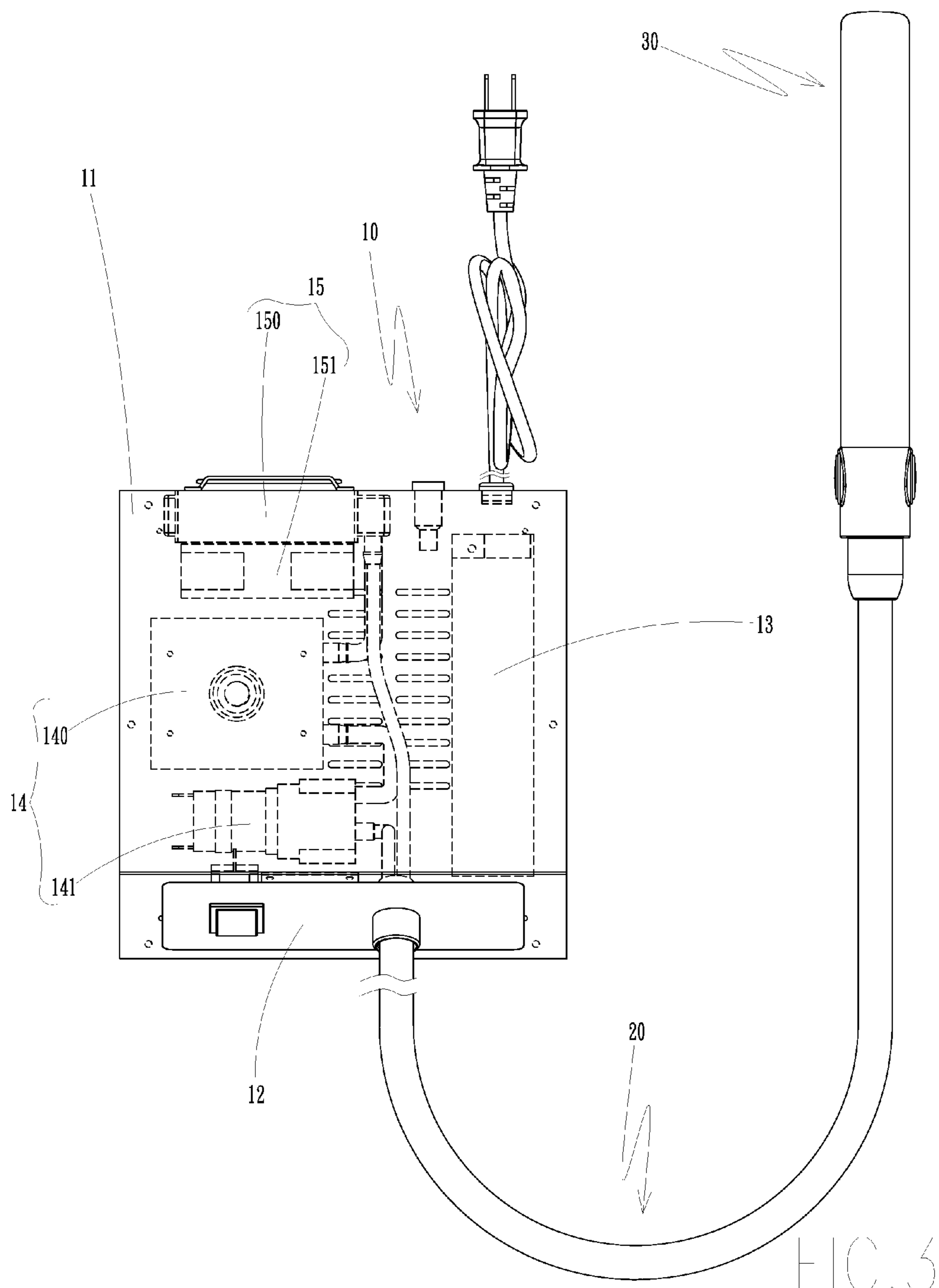


FIG. 3

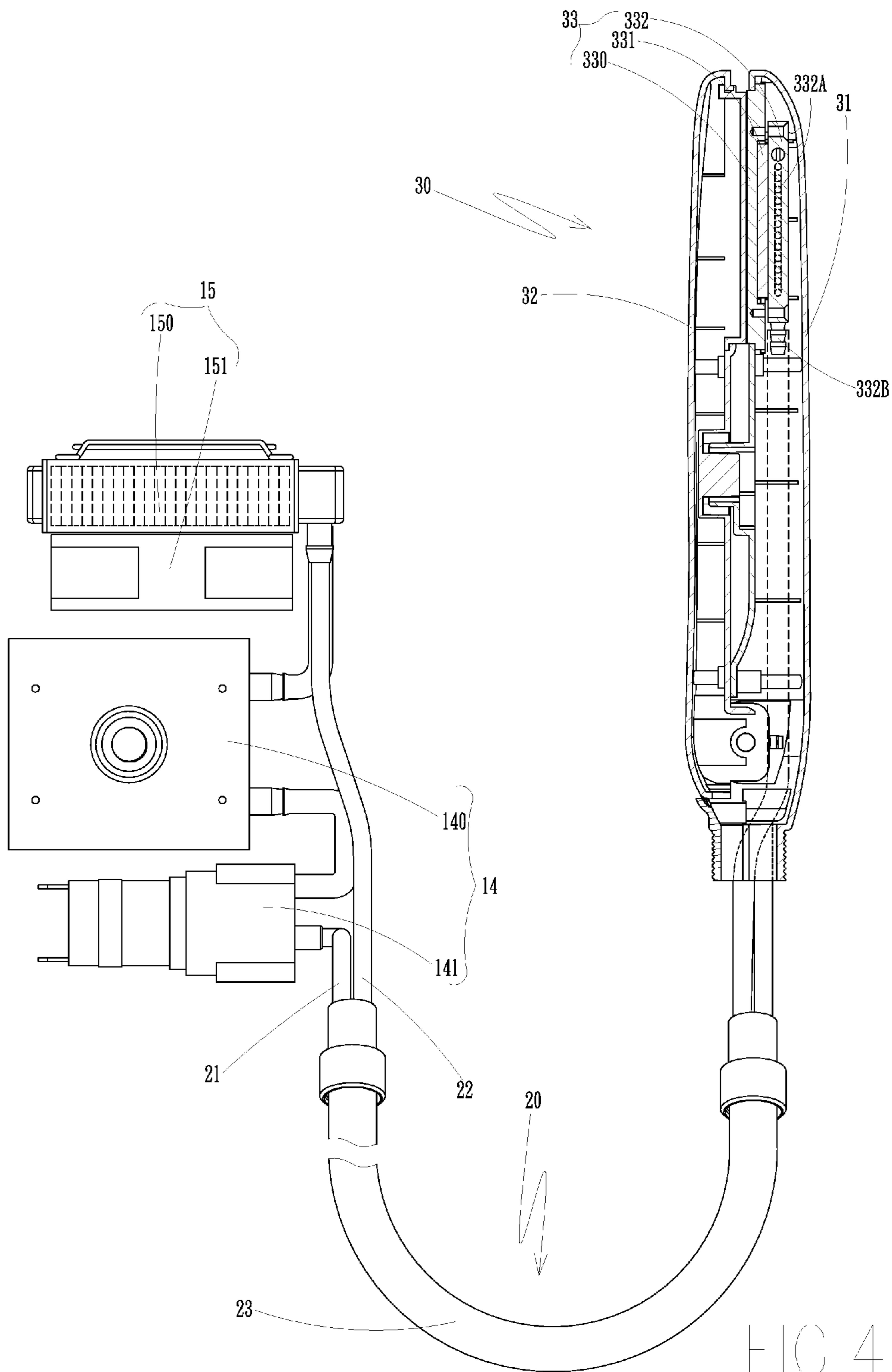
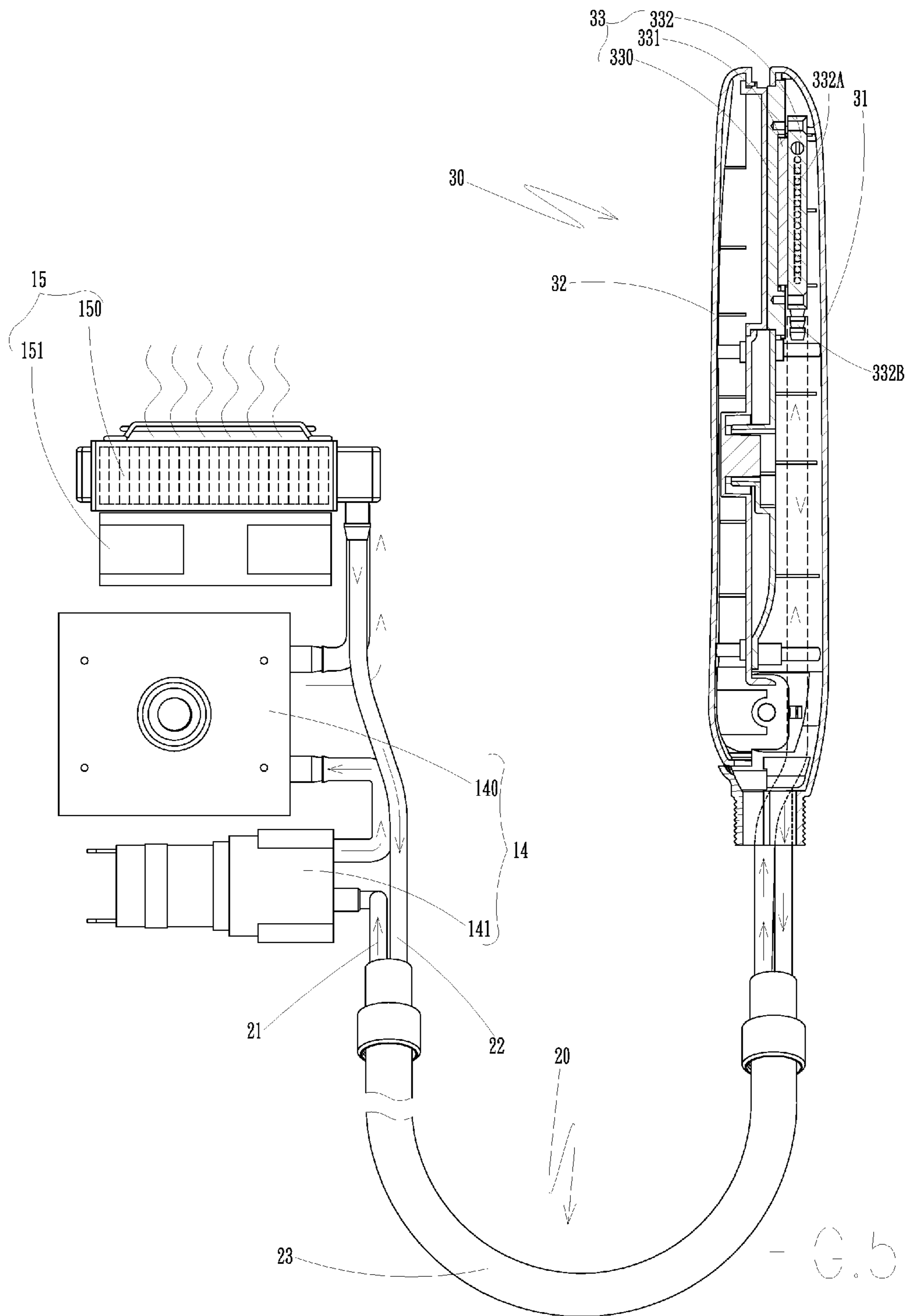
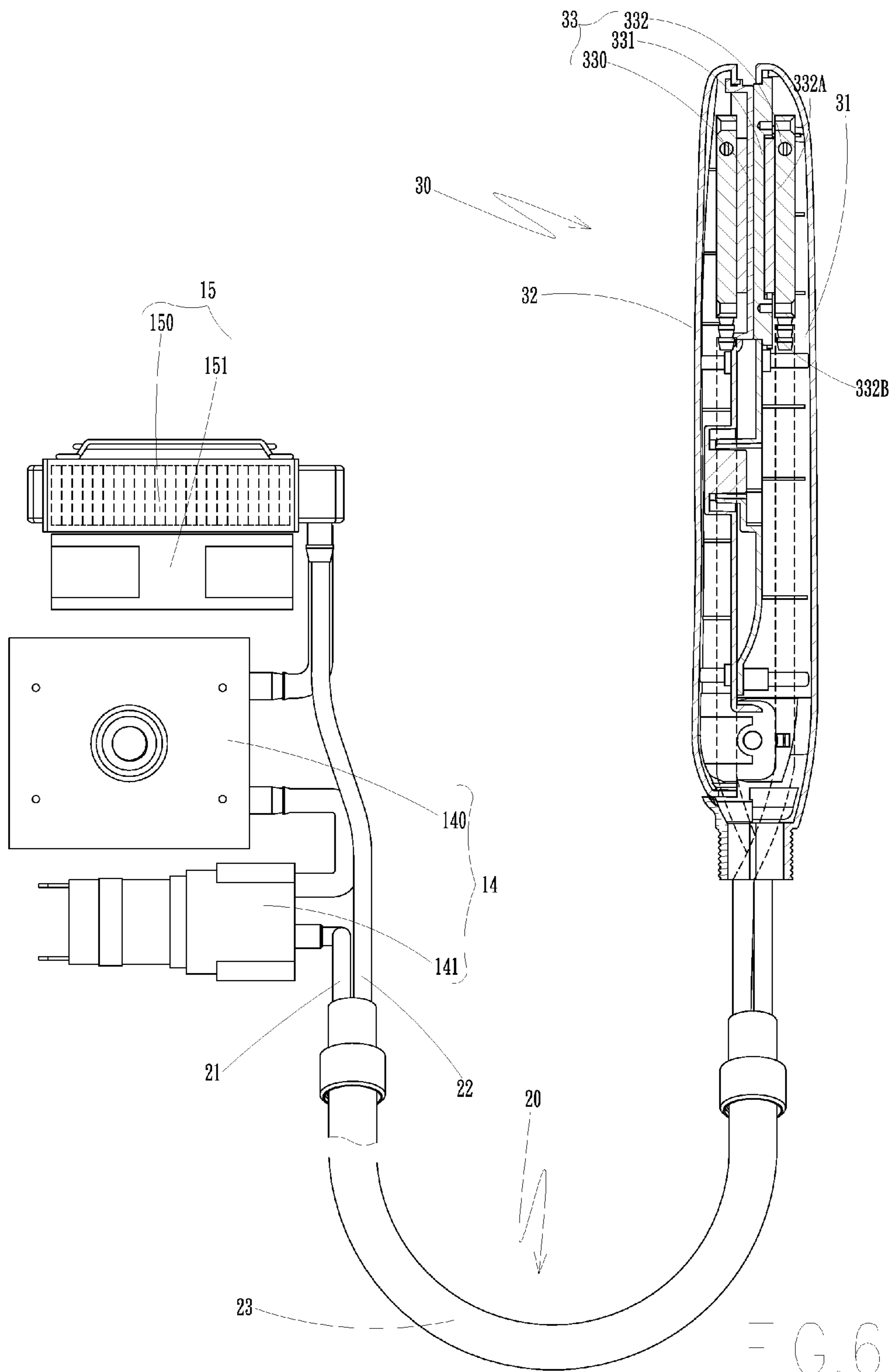


FIG. 4



- 6.5



= G.6

## ICE TREATMENT HAIR CONDITIONING CLIP STRUCTURE

**[0001]** The current application claims a foreign priority to the patent application of Taiwan No. 102215579 filed on Aug. 19, 2013.

### FIELD OF THE INVENTION

**[0002]** The present invention relates to an ice treatment hair conditioning clip structure, and more particularly to the ice treatment hair conditioning clip structure applied in the field of hair conditioning devices.

### BACKGROUND OF THE INVENTION

**[0003]** In the conventional hair conditioning methods including perm, hair strengthening and hair coloring, alkaline chemicals are generally used in the aforementioned processes to oxidize and open the originally closed cuticles in order to facilitate the perm and allow dyes to enter into the cortex of the hair to achieve the perm or hair coloring effect, and then acidic chemicals are used for the reduction to close the cuticle. During the aforementioned processes, the cuticle of the hair epidermis cannot be closed to the original opening angle, so that water moisture in a mesenchymal substance (or moisturizing factor) between fibers of the hair in the hair cortex is evaporated excessively. As a result, the hair will become dry and broken and cause the following problems:

**[0004]** 1. Poor hair conditioning effect: After the cuticle of the hair goes through the whole hair conditioning process, the cuticle cannot be closed to the original opening angle, so that the water moisture between the hair fibers of the hair cortex is evaporated excessively, and the hair will become dry and broken, and thus resulting in a poor hair conditioning effect.

**[0005]** 2. Poor stability of the hair conditioning: In the process of blowing the hair by hot air, the expansion caused by heating causes the cuticle to open too much, and thus resulting in a poor stability of the hair conditioning.

### SUMMARY OF THE INVENTION

**[0006]** In view of the aforementioned shortcomings of the conventional hair care and conditioning method with a poor hair conditioning effect and a low stability of the hair conditioning and care, the present invention provides an ice treatment hair conditioning clip structure of the present invention to overcome the shortcomings of the prior art.

**[0007]** To achieve the aforementioned objective, the present invention provides an ice treatment hair conditioning clip structure comprising a cooling host body, a delivery pipe set and at least one hair clip body. The cooling host body includes a housing, an operation control circuit panel, a low-voltage power supply device, a cooling module and a heat dissipating module. The cooling module further includes a coolant tank and a water-loop pump, and the coolant tank has an inlet port and an outlet port, and a coolant is filled into the coolant tank, and the water-loop pump also has an inlet port and an outlet port. The heat dissipating module further includes a heat sink and a fan, and the fan is fixed to and combined with an edge of the heat sink. The heat sink has an inlet port and an outlet port, and the outlet port of the heat sink is connected to the inlet port of the coolant tank through a duct, and the outlet port of the coolant tank is connected to the inlet port of the water-loop pump through a duct. The low-voltage power supply device, the fan of the heat dissipating

module, and the water-loop pump of the cooling module are electrically connected to the operation control circuit panel through a conductive wire. The delivery pipe set includes a first duct, a second duct, and a jacket tube sheathed on the first and second ducts, and the first duct on a side of the delivery pipe set is connected to the outlet port of the water-loop pump, and the second duct is connected to the inlet port of the heat sink. Each hair clip body has an upper clamp and a lower clamp, and the upper clamp has a refrigeration splint, and the refrigeration splint includes a metal refrigeration board, an electronic refrigeration plate and a heat-exchange metal board, and the metal refrigeration board, the electronic refrigeration plate and the heat-exchange metal board are clamped with one another and arranged into a sandwich form, and the heat-exchange metal board contains a loop waterway formed therein, and the loop waterway has two ports formed on a side of the heat-exchange metal board, and the first and second ducts on the other side of the delivery pipe set are connected to two ports of the loop waterway of the heat-exchange metal board, and the electronic refrigeration plate is electrically connected to an operation control circuit panel of the cooling host body through a conductive wire.

**[0008]** By the electronic refrigeration plate of the refrigeration splint, the heat of the metal refrigeration board is absorbed to drop the temperature below zero, and then the water-loop pump installed in the cooling module of the cooling host body is operated to pump the coolant out from the coolant tank to circulate the loop waterway of the heat-exchange metal board and return the coolant to the cooling module to dissipate heat by a heat sink and a fan, and then the coolant is returned to the coolant tank of the cooling module to form a circulation loop to dissipate the heat and achieve a thermal equilibrium. When the refrigeration splints installed at the upper and lower clamps of the hair clip body are used for clipping hair, the principle of contraction by cooling will close the excessively opened cuticle of the hair to the original angle, so as to achieve a hair conditioning effect and an excellent stability of the hair conditioning.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0009]** FIG. 1 is a perspective view of the present invention;

**[0010]** FIG. 2 is a partial exploded view of the present invention;

**[0011]** FIG. 3 is a partial exploded side view of the present invention;

**[0012]** FIG. 4 is a top view of the present invention;

**[0013]** FIG. 5 is a schematic view of a cooling circulation of the present invention; and

**[0014]** FIG. 6 is a schematic view of a lower clamp having a refrigeration splint structure in accordance with a preferred embodiment of the present invention.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0015]** The technical characteristics of the present invention will become clearer in light of the following detailed description of illustrative embodiments of this invention. It is intended that the embodiments as disclosed in FIGS. 1 to 6 are to be considered illustrative rather than restrictive.

**[0016]** With reference to FIGS. 1 to 4 for a perspective view, a partial exploded view, a partial exploded side view, and a top view of an ice treatment hair conditioning clip



structure in accordance with the present invention respectively, the ice treatment hair conditioning clip structure comprises:

[0017] a cooling host body 10, including a housing 11, an operation control circuit panel 12, a low-voltage power supply device 13, a cooling module 14 and a heat dissipating module 15, and the cooling module 14 including a coolant tank 140 and a water-loop pump 141, and the coolant tank 140 having an inlet port 140A and an outlet port 140B, and filled with a coolant, and the water-loop pump 141 also having an inlet port 141A and an outlet port 141B, and the heat dissipating module 15 including a heat sink 150 and a fan 151, and the fan 151 being fixed to and combined with a side of the heat sink 150, and the heat sink 150 having an inlet port 150A and an outlet port 150B, and the outlet port 150B of the heat sink 150 being connected to the inlet port 140A of the coolant tank 140 through a duct, and the outlet port 140B of the coolant tank 140 being connected to the inlet port 141A of the water-loop pump 141 through a duct, and the low-voltage power supply device 13, the fan 151 of the heat dissipating module 15, and the water-loop pump 141 of the cooling module 14 being electrically connected to the operation control circuit panel 12 (not shown in the figure) through a conductive wire;

[0018] a delivery pipe set 20, including a first duct 21, a second duct 22, and a jacket tube 23 sheathed on the first and second ducts 21, 22, and the first duct 21 on a side of the delivery pipe set 20 being connected to the outlet port 141B of the water-loop pump 141, and the second duct 22 being connected to the inlet port 150A of the heat sink 150; and

[0019] at least one hair clip body 30, including an upper clamp 31 and a lower clamp 32, and the upper clamp 31 having a refrigeration splint 33, and the refrigeration splint 33 including a metal refrigeration board 330, an electronic refrigeration plate 331 and a heat-exchange metal board 332, and the metal refrigeration board 330, the electronic refrigeration plate 331 and the heat-exchange metal board 332 being clamped and arranged into a sandwich form, and the metal refrigeration board 330 and the heat-exchange metal board 332 being made of materials with a high coefficient of thermal conductivity such as aluminum or copper, and the heat-exchange metal board 332 contains a loop waterway 332A formed therein, and the loop waterway 332A having two ports 332B formed on a side of the heat-exchange metal board 332, and the first and second ducts 21, 22 on the other side of the delivery pipe set 20 being connected to the two ports 332B of the loop waterway 332A of the heat-exchange metal board 332, and the electronic refrigeration plate 331 being electrically connected to the operation control circuit panel 12 (not shown in the figure) of the cooling host body 10 by a conductive wire;

[0020] With the aforementioned components, the ice treatment hair conditioning clip structure of the present invention is achieved.

[0021] With reference to FIGS. 2 to 5 for the partial exploded view, the partial sectional side view, and the top view of an ice treatment hair conditioning clip structure of the present invention and the schematic view of a cooling circulation in accordance with the present invention respectively, the first duct 21 on a side of the delivery pipe set 20 connected to the outlet port 141B of the water-loop pump 141, and the second duct 22 is connected to the inlet port 150A of the heat sink 150, and the first and second ducts 21, 22 on the other side of the delivery pipe set 20 are connected to two ports of the loop waterway 332A of the heat-exchange metal board

332 respectively, and the electronic refrigeration plate 331 is electrically connected to the operation control circuit panel 12 (not shown in the figure) of the cooling host body 10 through a conductive wire. By the electronic refrigeration plate 331 of the refrigeration splint 33, the heat of the metal refrigeration board 330 is absorbed to drop the temperature below zero, and then the water-loop pump 141 installed at the cooling module 14 of the cooling host body 10 is operated to pump the coolant out from the coolant tank 140 to a loop waterway 332A of the heat-exchange metal board 332 and circulate the coolant back to the cooling module 15 to dissipate heat by the heat sink 150 and the fan 151, and then return the coolant to the coolant tank 140 of the cooling module 14 to form a cooling circulation loop, so as to dissipate heat and achieve a thermal equipment. When the refrigeration splints 33 of the upper and lower clamps 31, 32 of the hair clip body 30 are used for clipping hair, the principle of contraction by cooling will close an excessively opened cuticle of the hair to the original angle to achieve the hair conditioning effect and an excellent stability of the hair conditioning.

[0022] With reference to FIG. 6 for a schematic view of both upper and lower clamps of an ice treatment hair conditioning clip structure having a refrigeration splint structure in accordance with a preferred embodiment of the present invention, the overall structure of this embodiment is the same as the one as illustrated in FIGS. 1 to 4 except that the upper clamp 31 or the lower clamp 32 has a refrigeration splint 33, and the refrigeration splint 33 includes a metal refrigeration board 330, an electronic refrigeration plate 331 and a heat-exchange metal board 332, and the metal refrigeration board 330, the electronic refrigeration plate 331 and the heat-exchange metal board 332 are clamped and arranged into a sandwich form, and the metal refrigeration board 330 and the heat-exchange metal board 332 are made of materials with a high coefficient of thermal conductivity such as aluminum or copper. By the refrigeration splint 33 of the upper clamp 31 or the lower clamp 32, the cooling effect of the overall structure can be improved to broaden the scope of applicability of the present invention.

[0023] In summation of the description above, the present invention has the following advantages:

[0024] 1. Excellent hair conditioning effect: The electronic refrigeration plate of the refrigeration splint is provided for absorbing the heat of the metal refrigeration board to drop the temperature below zero, and then the water-loop pump installed in the cooling module of the cooling host body is operated to pump the coolant out from the coolant tank to the loop waterway of the heat-exchange metal board and circulate the coolant back to the cooling module to dissipate heat by the heat sink and the fan, and then return the coolant to the coolant tank of the cooling module to form a cooling circulation loop, so as to dissipate heat and achieve a thermal equilibrium. When the refrigeration splint of the hair clip body is used to clip hair, the principle of contraction by cooling will close the excessively opened cuticles of the hair to the original angle to achieve an excellent hair conditioning effect.

[0025] 2. Excellent stability of the hair conditioning: When the refrigeration splint of the hair clip body is used to clip hair, the principle of contraction by cooling will close the excessively opened cuticles of the hair to the original angle, so that the overall hair conditioning effect can be improved to provide an excellent stability of the hair conditioning.

What is claimed is:

1. An ice treatment hair conditioning clip structure, comprising:

a cooling host body, including a housing, an operation control circuit panel, a low-voltage power supply device, a cooling module and a heat dissipating module, and the cooling module further including a coolant tank and a water-loop pump, and the coolant tank having an inlet port and an outlet port, and a coolant being filled into the coolant tank, and the water-loop pump also having an inlet port and an outlet port, and the heat dissipating module further including a heat sink and a fan, and the fan being fixed to and combined with an edge of the heat sink, and the heat sink having an inlet port and an outlet port, and the outlet port of the heat sink being connected to the inlet port of the coolant tank through a duct, and the outlet port of the coolant tank being connected to the inlet port of the water-loop pump through a duct, and, the low-voltage power supply device, the fan of the heat dissipating module, and the water-loop pump of the cooling module being electrically connected to the operation control circuit panel through a conductive wire;

a delivery pipe set, including a first duct, a second duct, and a jacket tube sheathed on the first and second ducts, and the first duct on a side of the delivery pipe set being

connected to the outlet port of the water-loop pump, and the second duct being connected to the inlet port of the heat sink; and

at least one hair clip body, each having an upper clamp and a lower clamp, and the upper clamp having a refrigeration splint, and the refrigeration splint having a metal refrigeration board, an electronic refrigeration plate and a heat-exchange metal board, and the metal refrigeration board, electronic refrigeration plate and heat-exchange metal board being clamped and arranged into a sandwich, and the heat-exchange metal board containing a loop waterway formed therein, and the loop waterway having two ports formed on a side of the heat-exchange metal board, and the first and second ducts on the other side of the delivery pipe set being connected to two ports of the loop waterway of the heat-exchange metal board, and the electronic refrigeration plate being electrically connected to an operation control circuit panel of the cooling host body through a conductive wire.

2. The ice treatment hair conditioning clip structure of claim 1, wherein the metal refrigeration board and the heat-exchange metal board are made of a material with a high coefficient of thermal conductivity selected from the group consisting of aluminum and copper.

3. The ice treatment hair conditioning clip structure of claim 1, wherein the lower clamp includes a refrigeration splint.

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