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(54) WATER VAPOR FIREPLACE

(57) The present invention provides a water vapor fireplace, including a fireplace body, where an upper end of the fireplace body is sleeved with a frame fixedly connected to the fireplace body. A top cover is inserted in the frame, and a light-transmitting channel arranged in a length direction of the top cover is installed on an upper surface of the top cover. A water tank is installed inside the fireplace body, and a mist outlet is installed on the upper surface of the water tank. A light-emitting diode (LED) light group located and installed inside the fireplace body is arranged below the light-transmitting channel. A fan having an air outlet penetrating the water tank is installed on the upper surface of the water tank, a mist maker is installed at an inner bottom of the water tank, and a heating element is installed on a side of the water tank facing the LED light group. The present invention has the following beneficial effects: by adopting a positive temperature coefficient (PTC) heating plate, a safety factor is high, and no "redness" phenomenon on a surface of an electric heating tube type heater is generated under any application condition. Moreover, when an external temperature controller fails, a heating surface temperature of the PTC heating plate will not higher than a set constant temperature, so as to provide an over-temperature protection function and prevent safety hazards such as burns and fires.

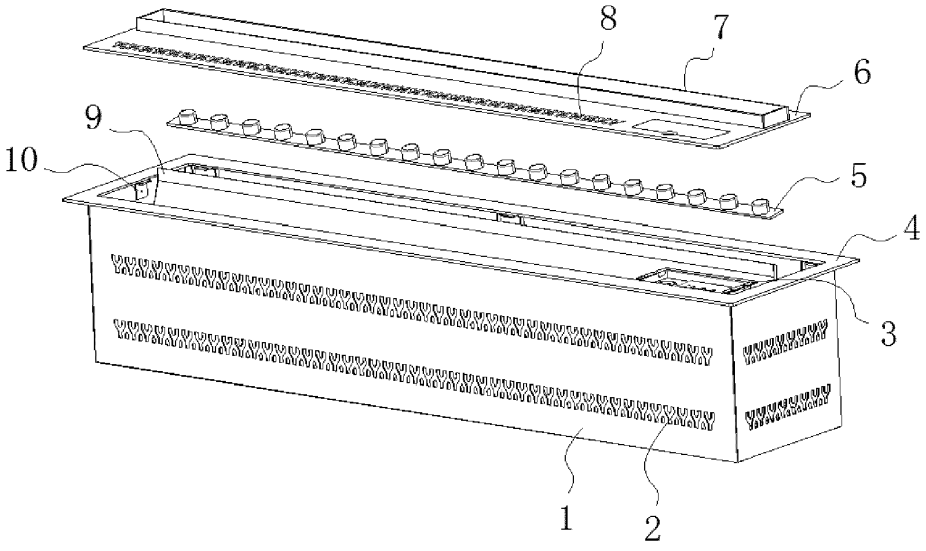

Fig. 1

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Description

Technical field

[0001] This invention relates to water vapor fireplaces. In particular, the present invention relates to the utilization of positive temperature coefficient (PTC) heating plate in a water vapor fireplace.

Background technology

[0002] With the rapid development of science and technology, household water vapor fireplaces are gradually transitioning from heating devices to decorative apparatuses, and significant progress has been made in the technology. Currently, water vapor fireplaces typically utilize halogen lamps, heating tubes, or heating wires as heating elements.

[0003] The halogen lamps have the drawbacks of high temperatures and a susceptibility to being touched in the installed position, leading to scalding. They have a lifespan of 500-600 hours and consume high amounts of power. The halogen lamps are made of materials such as quartz glass, which is likely to be damaged during transportation.

[0004] The heating tubes have the disadvantages of slow heating, a suboptimal initial vapor flame effect, an improved vapor flame effect after normal heating, the occurrence of a redness phenomenon, and poor safety. Uneven heating results in an uneven vapor flame effect. After a period of use, the insulation withstand voltage, leakage current, and insulation resistance of the heating tubes exceed the standard. They cannot be dry burned, and if temperature protection devices malfunction, the heating tubes may be destroyed due to dry burning and even cause fires, damaging surrounding materials.

[0005] The heating wires have the defects that they need to cooperate with cross-flow fans for heat dissipation, resulting in a large size, heavy weight, and high noise. After a period of use, the insulation withstand voltage, leakage current, and insulation resistance of the heating wires exceed the standard. They cannot be dry burned, and if temperature protection devices malfunction, the heating wires may be destroyed due to dry burning and even cause fires, damaging surrounding materials. Furthermore, the heating wires may be oxidized and burn out after long-term operation, affecting their service life and even causing electrical leakage.

Summary of the invention

[0006] In view of the shortcomings of the prior art, an objective of the present invention is to provide a water vapor fireplace, to address the problems found in the background above.

[0007] To achieve the objectives, the present invention is implemented through the following technical solutions: a water vapor fireplace includes a fireplace body, where an upper end of the fireplace body is sleeved with a frame fixedly connected to the fireplace body, and a top cover is inserted in the frame. A light-transmitting channel arranged in a length direction of the top cover is installed on an upper surface of the top cover. A water tank is installed inside the fireplace body, and a mist outlet is installed on the upper surface of the water tank. An upper end of the mist outlet extends into a side of the light-transmitting channel. A light-emitting diode (LED) light group located and installed inside the fireplace body is arranged below the light-transmitting channel. A fan having an air outlet penetrating the water tank is installed on the upper surface of the water tank. A mist maker is installed at an inner bottom of the water tank. A heating element is installed on a side of the water tank facing the LED light group. A recess is recessed on a side of the water tank, and a circuit board electrically connected to the LED light group, the mist maker, the heating element, and the fan is installed inside the recess. A cover plate is arranged at an opening end of the recess, and the cover plate is fixedly connected to the fireplace body by means of a plurality of screws.

[0008] Furthermore, the heating element includes a positive temperature coefficient (PTC) heating plate. The PTC heating plate arranged in a length direction of the light-transmitting channel is arranged on a side of the water tank facing the LED light group. A plurality of support bases are uniformly arranged on a lower surface of the PTC heating plate, and the support seats are fixedly connected to the water tank. Each support base has a hollow structure, each support base has a rectangular cross-section. Positioning slots are provided in upper portions of two side surfaces of the support bases adjacent to the water tank. Positioning bars matching the positioning slots are fixedly connected to two parallel side surfaces of the PTC heating plate. The positioning bars are arranged in a length direction of the PTC heating plate and inserted in the positioning slots. The PTC heating plate is electrically connected to a heating plate extension wire by means of a snap-on connector, and an end of the heating plate extension wire is electrically connected to the circuit board.

[0009] Furthermore, an outer side of the PTC heating plate is provided with a shielding cover, and the shielding cover has an L-shaped structure. A side surface of the shielding cover is attached to a side surface of each support base facing away from the water tank, and two first round holes are provided in a position where the shielding cover is attached to each support base. Connection screws are inserted in the first round holes, and an end of each connection screw is threadedly connected to the corresponding support base.

[0010] Furthermore, two second round holes aligned with the first round holes are provided in a surface of each support base facing away from the water tank. A positioning plate is inserted in each support base, and two ends of each positioning plate are fixedly connected to support plates. One ends of the support plates away

from the positioning plates make contact with inner walls of the support bases having the second round holes. Two screw holes aligned with the second round holes are provided in a side surface of each positioning plate. The connecting screws pass through the corresponding first round holes and second round holes and then are threadedly connected to the corresponding screw holes.

[0011] Furthermore, a plurality of L-shaped seats for limiting a position of the top cover are arranged on a lower side of the top cover. Vertical portions of the L-shaped seats are fixed to an inner wall of the fireplace body, and horizontal portions of the L-shaped seats extend into the frame and make contact with the top cover.

[0012] Furthermore, a plurality of positioning seats are installed at a bottom of the water tank uniformly, each positioning seat has a hollow structure, and the positioning seats are fixed in an inner bottom of the fireplace body.

[0013] Furthermore, a mist maker extension wire is electrically connected to the mist maker by means of a snap-on waterproof connector. An end of the mist maker extension wire is electrically connected to the circuit board. A fan extension wire is electrically connected to the fan by means of a snap-on connector, and an end of the fan extension wire is electrically connected to the circuit board. A light group extension wire is electrically connected to the LED light group by means of a snap-on connector, and an end of the light group extension wire is electrically connected to the circuit board.

[0014] Furthermore, a plurality of first heat dissipation openings arranged at equal intervals are machined on a bottom of the fireplace body and a side surface of the fireplace body. A plurality of second heat dissipation openings arranged at equal intervals are provided in the upper surface of the top cover. A plurality of third heat dissipation openings are provided in a side surface of the cover plate uniformly.

[0015] Furthermore, a side of the upper surface of the water tank is provided with a groove for installing a control board. A water inlet is installed at an inner bottom of the groove, and a threaded cap is threadedly connected to an upper end of the water inlet.

[0016] Furthermore, the LED light group is installed inside a heat insulation cover, and the heat insulation cover has a cross section of a U-shaped structure. The heat insulation cover is installed inside the fireplace body.

[0017] The present invention has the beneficial effects as follows:

1. A positioning bar is inserted in the positioning slots of the plurality of support bases on the PTC heating plate, and the PTC heating plate is attached to a side of the water tank, such that insertion of the PTC heating plate and the water tank is achieved, and quick assembly and disassembly of the PTC heating plate and the water tank is further achieved.

2. After the PTC heating plate and the support bases are installed in an inserted manner, the L-shaped shielding cover is placed on the outer side of the PTC heating plate, and the shielding cover and the support bases are connected by means of the connection screws, such that the shielding cover covers the PTC heating plate, to achieve an attractive appearance and protection against burns.

3. When the connection screws is used for connecting the shielding cover and the support bases, the positioning plates are inserted in the support bases. The two support plates on each positioning plate are attached to the inner walls of the second round holes in the corresponding support base. Then the connection screws pass through the first round holes and second round holes and are threaded into the screw holes in the positioning plates, to complete installation of the screws. The detachable positioning plates allow for replacement when an internal thread of a screw hole is damaged due to excessive torque. Gaps exist between the positioning plates and the inner walls of the second round holes under support by the support plates. After the connection screws are installed, a part of a rod portion of each connection screw is in an exposed state. When a head of each connection screw is influenced by the heat generated by the PTC heating plate and has a reduced strength due to corrosion, a hacksaw blade is inserted in the space defined by the positioning plate and the support plate, to cut the connection screw, so as to remove the shielding cover and replace the PTC heating plate without damaging other components.

4. By adopting a PTC heating plate, a safety factor is high, and no "redness" phenomenon on a surface of an electric heating tube type heater generates under any application condition. Moreover, when an external temperature controller fails, a heating surface temperature of the PTC heating plate will not higher than a set constant temperature, so as to provide an over-temperature protection function and prevent safety hazards such as burns and fires. The PTC heating plate has advantages of low thermal resistance, high heat transfer efficiency, automatic temperature control, energy-saving, rapid heating for quick vapor effect, uniform heating of the water tank, and excellent vapor flame effect. The PTC heating plate consists of a PTC ceramic heating element and an aluminum tube, ensuring long service life. The PTC heating plate can be designed in various shapes, are lightweight, and easy to install.

5. The circuit board is connected to a fan extension wire with an end extending to the upper surface of the water tank and electrically connected to the fan. The fan extension wire is connected to the circuit board by means of a snap-on structure. During replacement, the fan is simply replaced with a new one, and a fan extension wire of the new fan is connected to a snap port, to complete the fan replacement. The mist maker is fixed to the inner bottom of the water tank by means of a snap-on structure. The

circuit board is connected to a mist maker extension wire with one end connected to a snap-on waterproof connector that extends into the water tank and is electrically connected to the mist maker. The mist maker extension wire has a snap-on waterproof connector to be connected to the circuit board extension wire. During replacement, the mist maker is simply replaced with a new one, and a mist maker extension wire of the new mist maker is connected to the waterproof connector, to complete the mist maker replacement. When the LED light group is replaced, the LED light group can be replaced by removing the top cover, facilitating convenient replacement of vulnerable components.

Brief description of the drawings

[0018] Other features, objectives, and advantages of the present invention will become more apparent from the detailed description of non-limiting embodiments provided in conjunction with the following accompanying drawings:

FIG. 1 is a schematic structural diagram of a water vapor fireplace according to the present invention;
FIG. 2 is a schematic assembly diagram of a light-emitting diode (LED) light group, a positive temperature coefficient (PTC) heating plate, a top cover, a water tank, and a fireplace body of a water vapor fireplace according to the present invention;
FIG. 3 is a sectional view of the water vapor fireplace according to the present invention;
FIG. 4 is a schematic assembly diagram of a shielding cover, a support base, a PTC heating plate, and a water tank of a water vapor fireplace according to the present invention;
FIG. 5 is a schematic assembly diagram of a positioning plate, a support plate, and a support base in the water vapor fireplace according to the present invention;
FIG. 6 is a three-dimensional view of a PTC heating plate in a water vapor fireplace according to the present invention.

[0019] In the figures: 1-fireplace body, 2-first heat dissipation opening, 3-groove, 4-frame, 5-LED light group, 6-top cover, 7-light-transmitting channel, 8-second heat dissipation opening, 9-mist outlet, 10-L-shaped seat, 11-water tank, 12-heat insulation cover, 13-cover plate, 14-third heat dissipation opening, 15-recess, 16-PTC heating plate, 17-fan, 18-mist maker, 19-support base, 20-shielding cover, 21-positioning seat, 22-first round hole, 23-positioning plate, 24-support plate, 25-positioning groove, 26-second round hole, and 27-positioning bar.

Description of the embodiments

[0020] To facilitate a clear understanding of the technical means, creative features, objectives, and effects achieved by the present invention, the following detailed embodiments are provided to further elucidate the present invention.

[0021] With reference to FIGs. 1, 2, and 3, the present invention provides a technical solution: a water vapor fireplace includes a fireplace body 1. An upper end of the fireplace body 1 is sleeved with a frame 4 fixedly connected to the fireplace body 1. The frame 4 internally accommodates a top cover 6, and a lower side of the top cover 6 is provided with a plurality of L-shaped seats 10 for restricting a position of the top cover 6. Vertical portions of the L-shaped seats 10 are fixed on the inner wall of the fireplace body 1, and horizontal portions of the L-shaped seats 10 extend into the frame 4 and make contact with the top cover 6. The plurality of L-shaped seats 10 restrict the position of the top cover 6, to guarantee that an upper surface of the top cover 6 is flush with an upper surface of the frame 4. A plurality of evenly distributed first heat dissipation openings 2are machined on a bottom and a side surface of the fireplace body 1, and the upper surface of the top cover 6 is provided with a plurality of evenly distributed second heat dissipation openings 8. The design of the first heat dissipation openings 2 and the second heat dissipation openings 8 facilitates the dissipation of heat inside the fireplace body 1 and promotes overall air circulation.

[0022] FIGs. 1, 2, 3, and 4.illustrate the upper surface of the top cover 6 is provided with light-transmitting channels 7 arranged in a length of the top cover 6. A plurality of hollow positioning seats 21 are uniformly installed at the bottom of the water tank 11 and fixed inside the fireplace body 1, so as to assemble the water tank 11 with the fireplace body 1. The upper end of the mist outlet 9 installed on the upper surface of the water tank 11 extends into one side of the light-transmitting channel 7. One side of the water tank 11 is provided with a groove 3 for installing a control board. The bottom of the groove 3 is provided with a water inlet, and the upper end of the water inlet is covered with a threaded cap in a threaded manner. The groove 3 is also provided with a water vapor fireplace function buttons. The lower side of the light-transmitting channel 7 is equipped with LED light groups 5 located inside the fireplace body 1. The LED light groups 5 are installed within an insulating cover 12 with a U-shaped cross-section, which is then installed inside the fireplace body 1 to restrict the position of the LED light groups 5. The upper surface of the water tank 11 is equipped with an air outlet 17 that penetrates the water tank 11, and a mist maker 18 is installed at the bottom of the water tank 11. One side of the water tank 11 is concave to form a recess 15, and a circuit board electrically connected to the LED light groups 5, the mist maker 18, the PTC heating plate 16, and the fan 17 is installed in the recess 15. An opening end of the groove 15 is fixed to the fireplace body 1 by means of a plurality of screws. A plurality of third heat dissipation openings 14 are evenly arranged on one side of the cover plate 13. The mist

maker 18 is electrically connected to the circuit board by means of a snap-on waterproof connector by means of a mist maker extension wire. The mist maker extension wire is connected to the circuit board at one end, and the fan 17 is electrically connected to the circuit board by means of a snap-on connector by using a fan extension cable. The fan extension cable is connected to the circuit board at one end, and the LED light groups 5 are electrically connected to the circuit board through a snap-on connector by using a light group extension wire. The light group extension wire is connected to the circuit board at one end, and the PTC heating plate 16 is electrically connected to the circuit board through a snap-on connector by using a heating plate extension cable. The heating plate extension wire is connected to the circuit board at one end. The circuit board is connected to a fan extension wire that extends to the upper surface of the water tank 11 and is electrically connected to the fan 17. The fan extension wire uses a snap-on structure to be connected to the circuit board, allowing for easy replacement by simply replacing the fan 17 and connecting the fan extension wire to the snap-on interface. The mist maker 18 is fixed in the bottom of the water tank 11 by means of a snap-on structure, and the circuit board is connected to a mist maker extension wire. The mist maker extension wire is connected to a snap-on waterproof connector that extends into the water tank 11 and is electrically connected to the mist maker 18. The mist maker extension wire uses a snap-on waterproof connector to be connected to the circuit board extension wire. During change, it only needs to change a new mist maker 18, then connect the mist maker extension wire of the new mist maker 18 to the waterproof connector, so as to complete change of the mist maker 18. During change of the LED light groups 5, it only needs to remove the top cover 6 and change the LED light groups 5, so as to realize convenient change of vulnerable parts.

[0023] As shown in FIGs. 2, 3, 4, 5 and 6, one side of the water tank 11 facing the LED lamp groups 5 is provided with a PTC heating plate 16 arranged in a length direction of the light-transmitting channel 7, and a plurality of uniformly arranged support bases 19 positioned on the lower side of the PTC heating plate 16 are connected and fixed to the water tank 11. The support base 19 is of a hollow structure, a cross section of the support base 19 is rectangular, and upper portions of two side surfaces of the support base 19 adjacent to the water tank 11 are provided with positioning grooves 25. Two parallel side surfaces of the PTC heating plate 16 are connected and fixed to positioning bars 27 that are matched with the positioning groove 25 and arranged in the length direction of the PTC heating plate 16. One positioning bar 27 on the PTC heating plate 16 is inserted into the positioning grooves 25 on the plurality of support bases 19, and at the moment, the PTC heating plate 16 is attached to the side surface of the water tank 11. Accordingly, the PTC heating plate 16 is inserted into the water tank 11, and the PTC heating plate 16 can be conveniently removed from or mounted on the water tank 11. By using the PTC heating plate 16, a safety factor is high, and the phenomenon of 'becoming red' on a surface of a heater such as an electric heating tube cannot be generated under any application condition. When an external temperature controller breaks down, a temperature of a heating surface of the PTC heating plate 16 does not exceed a set constant temperature, such that the PTC heating plate has an overtemperature protection function, and potential safety hazards such as scalding and fire disasters cannot occur. The PTC heating plate 16 has the advantages of small heat resistance and high heat exchange efficiency, automatically keeps at a constant temperature, and saves power. A temperature rise rate is fast and the atomization effect is fast, such that the water tank 11 can be heated evenly, and the mist effect is good. The PTC heating plate 16 is made of a PTC ceramic heating element and an aluminum pipe, thereby having long service life. The PTC heating plate 16 is changeable in shape, thin and light, and easy to mount.

[0024] As shown in FIGs. 2, 3, 4, and 5, an outer side of the PTC heating plate 16 is equipped with an L-shaped shielding cover 20. The shielding cover 20 is aligned and attached to one side of the support base 19 facing away from the side of the water tank 11. Two first round holes 22 are positioned at a position where the shielding cover 20 and the support base 19 are attached. A side of the support base 19 facing away from the water tank 11 has two second round holes 26 aligned with the first round holes 22. The support base 19 contains a positioning plate 23, and two ends of the positioning plate 23 are fixedly connected to support plates 24 that make contact with the inner wall of the second round holes 26 in the support base 19. The positioning plate 23 has two screw holes aligned with the second round holes 26. After inserting the PTC heating plate 16 into the support base 19, the L-shaped shielding cover 20 is placed on the outer side of the PTC heating plate 16. Then, the shielding cover 20 and the support base 19 are connected by means of connection screws, so as to achieve the purpose of shielding the PTC heating plate 16, and provide thermal insulation. During the installation of the connection screws that connect the shielding cover 20 and the support base 19, the positioning plate 23 is inserted in the support base 19, such that the support plates 24 on the positioning plate 23 make contact with the inner wall of the second round holes 26 in the support base 19. The connection screws then penetrate the first round holes 22 and the second round holes 26, and screwed into the screw holes on the positioning plate 23, to complete the installation of the connection screws. Since the positioning plate 23 is detachable, in response to determining that the internal threads of the screw holes are damaged due to excessive torque, the positioning plate 23 can be replaced. Moreover, there is a gap between the positioning plate 23 and the inner wall of the second round holes 26 in the support base 19, supported by the support plates 24. After the installation of the connection screws,

a portion a rod of the connecting screw is exposed. In response to determining that the head of the connection screw is weakened due to corrosion caused by the heat generated by the PTC heating plate 16, a steel saw blade can be inserted into the space defined by the positioning plate 23 and the support plates 24, to cut off the connection screw without damaging other components. This allows for the removal of the shielding cover 20 and the replacement of the PTC heating plate 16 without influencing other parts.

[0025] The above description and illustration show the basic principles, main features, and advantages of the present invention. It is apparent to those skilled in the art that the present invention is not limited to the details of the exemplary embodiments described above. The present invention can be implemented in other specific forms without departing from the spirit or essential characteristics of the present invention. Therefore, the exemplary embodiments should be considered as illustrative and non-restrictive. The scope of the present invention is defined by the appended claims rather than the above description, and thus includes all changes within the meaning and scope of the equivalent elements of the claims.

[0026] Furthermore, it should be understood that although the specification describes embodiments in accordance with the implementation, not every embodiment includes only one independent technical solution. The description in the specification is for clarity purposes only. Those skilled in the art should consider the specification as a whole, and the technical solutions in each embodiment can be appropriately combined to form other embodiments that can be understood by those skilled in the art.

Claims

1. A water vapor fireplace, comprising a fireplace body (1), **characterized in that** an upper end of the fireplace body (1) is sleeved with a frame (4) fixedly connected to the fireplace body (1), a top cover (6) is inserted in the frame (4), a light-transmitting channel (7) arranged in a length direction of the top cover (6) is installed on an upper surface of the top cover (6), a water tank (11) is installed inside the fireplace body (1), a mist outlet (9) is installed on the upper surface of the water tank (11), an upper end of the mist outlet (9) extends into a side of the light-transmitting channel (7), a light-emitting diode (LED) light group (5) located inside the fireplace body (1) and installed inside the fireplace body (1) is arranged below the light-transmitting channel (7), a fan (17) having an air outlet penetrating the water tank (11) is installed on the upper surface of the water tank (11), a mist maker (18) is installed at an inner bottom of the water tank (11), a heating element is installed on a side of the water tank (11) facing the LED light group (5), a groove (15) is recessed on a side of the water tank (11), a circuit board electrically connected to the LED light group (5), the mist maker (18), the heating element, and the fan (17) is installed inside the recess (15), a cover plate (13) is arranged at an opening end of the recess (15), and the cover plate (13) is fixedly connected to the fireplace body (1) by means of a plurality of screws.

2. The water vapor fireplace according to claim 1, **characterized in that** the heating element comprises a positive temperature coefficient (PTC) heating plate (16), the PTC heating plate (16) arranged in a length direction of the light-transmitting channel (7) is arranged on a side of the water tank (11) facing the LED light group (5), a plurality of support bases (19) are uniformly arranged on a lower surface of the PTC heating plate (16), the support bases (19) are fixedly connected to the water tank (11), each support base (19) has a hollow structure, each support base (19) has a rectangular cross-section, positioning slots (25) are provided in upper portions of two side surfaces of the support bases (19) adjacent to the water tank (11), positioning bars (27) matching the positioning slots (25) are fixedly connected to two parallel side surfaces of the PTC heating plate (16), the positioning bars (27) are arranged in a length direction of the PTC heating plate (16), the positioning bars (27) are inserted in the positioning slots (25), the PTC heating plate (16) is electrically connected to a heating plate extension wire by means of a snap-on connector, and an end of the heating plate extension wire is electrically connected to the circuit board.

3. The water vapor fireplace according to claim 2, **characterized in that** an outer side of the PTC heating plate (16) is provided with a shielding cover (20), the shielding cover (20) has an L-shaped structure, a side surface of the shielding cover (20) is attached to a side surface of each support base (19) facing away from the water tank (11), two first round holes (22) are provided in a position where the shielding cover (20) is attached to each support base (19), connection screws are inserted in the first round holes (22), and an end of each connection screw is threadedly connected to the corresponding support base (19).

4. The water vapor fireplace according to claim 3, **characterized in that** two second round holes 26 aligned with the first round holes 22 are provided in a surface of each support base 19 facing away from the water tank 11, a positioning plate 23 is inserted in each support base 19, two ends of each positioning plat 23 are fixedly connected to support plates 24, one ends of the support plates 24 away from the positioning plates 23 make contact with inner walls of the support bases 19 having the second round holes 26,

two screw holes aligned with the second round holes 26 are provided in a side surface of each positioning plate 23, and the connection screws pass through the corresponding first round holes 22 and second round holes 26 and then are threadedly connected to the corresponding screw holes.

5. The water vapor fireplace according to claim 1, **characterized in that** a plurality of L-shaped seats (10) for limiting a position of the top cover (6) are arranged on a lower side of the top cover (6), vertical portions of the L-shaped seats (10) are fixed on an inner wall of the fireplace body (1), and horizontal portions of the L-shaped seats (10) extend into the frame (4) and make contact with the top cover (6).

6. The water vapor fireplace according to claim 1, **characterized in that** a plurality of positioning seats (21) are installed at a bottom of the water tank (11) uniformly, each positioning seat (21) has a hollow structure, and the positioning seats (21) are fixed in an inner bottom of the fireplace body (1).

7. The water vapor fireplace according to claim 1, **characterized in that** a mist maker extension wire is electrically connected to the mist maker (18) by means of a snap-on waterproof connector, an end of the mist maker extension wire is electrically connected to the circuit board, a fan extension wire is electrically connected to the fan (17) by means of a snap-on connector, an end of the fan extension wire is electrically connected to the circuit board, a light group extension wire is electrically connected to the LED light group (5) by means of a snap-on connector, and an end of the light group extension wire is electrically connected to the circuit board.

8. The water vapor fireplace according to claim 1, **characterized in that** a plurality of first heat dissipation openings (2) arranged at equal intervals are machined on a bottom of the fireplace body (1) and a side surface of the fireplace body (1), a plurality of second heat dissipation openings (8) arranged at equal intervals are provided in the upper surface of the top cover (6), and a plurality of third heat dissipation openings (14) are provided in a side surface of the cover plate (13) uniformly.

9. The water vapor fireplace according to claim 1, **characterized in that** a side of the upper surface of the water tank (11) is provided with a groove (3) for installing a control board, a water inlet is installed at an inner bottom of the groove (3), and a threaded cap is threadedly connected to an upper end of the water inlet.

10. The water vapor fireplace according to claim 1, **characterized in that** the LED light group (5) is installed inside a heat insulation cover (12), the heat insulation cover (12) has a cross section of a U-shaped structure, and the heat insulation cover (12) is installed inside the fireplace body (1).

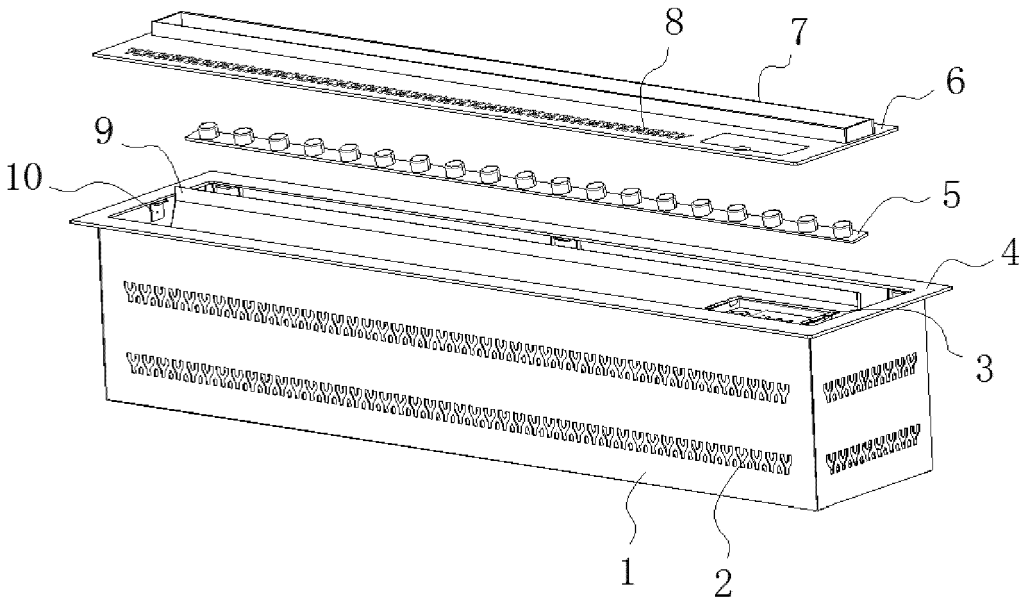

Fig. 1

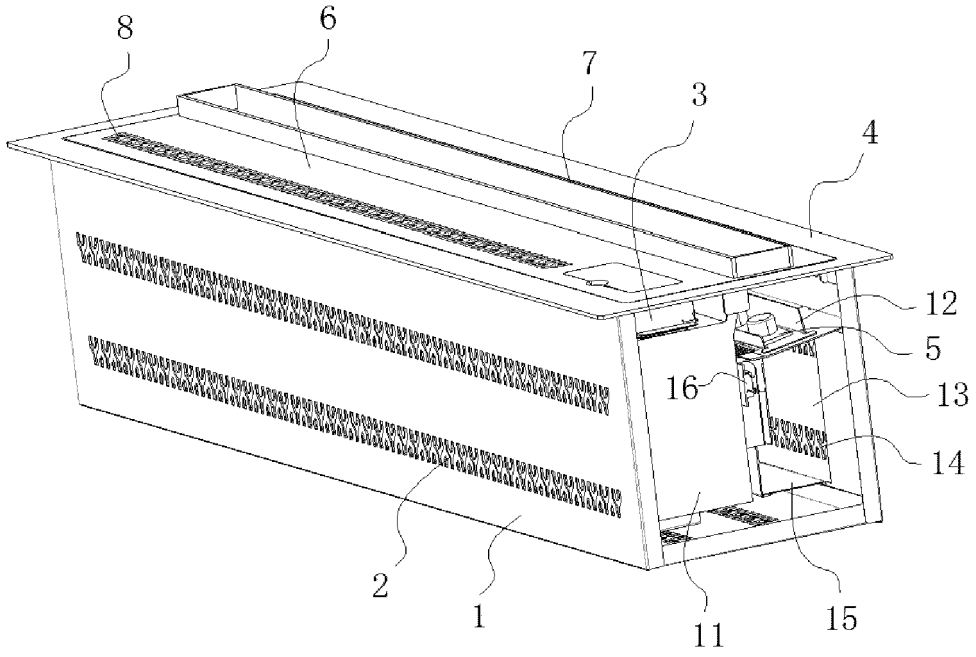

Fig. 2

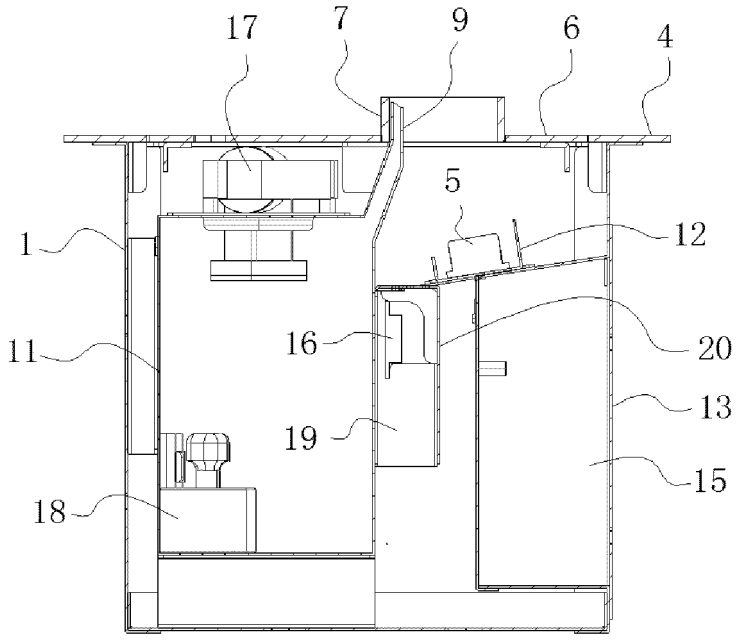

Fig. 3

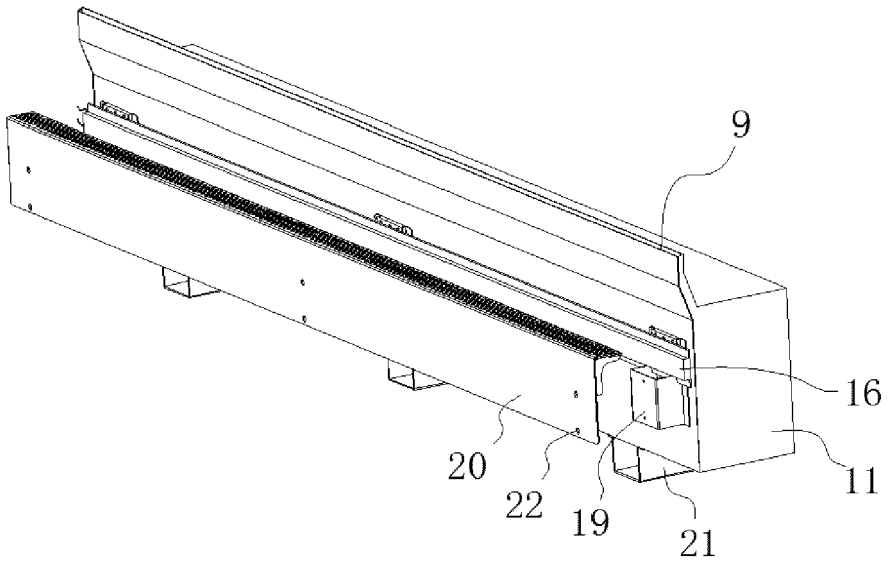

Fig. 4

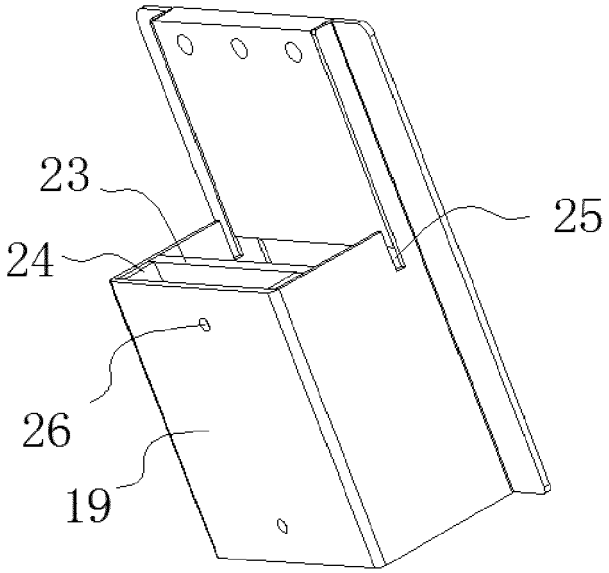

Fig. 5

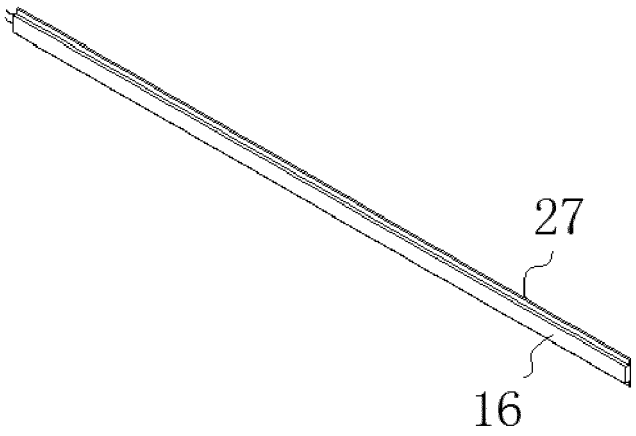

Fig. 6

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EUROPEAN SEARCH REPORT

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Place of search	Date of completion of the search	Examiner
The Hague	15 January 2024	Fest, Gilles

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