The invention relates to an arrangement for the heating of porcelainous stoneware plates for use as an accumulator and a radiant element for heating, comprising the use of porcelainous stoneware plates having a rear cover of synthetic metal (1), which enable a heating element (3) to be joined to same in such a way as (i) to heat the stoneware plate through the incorporation of any type of electrical resistors (6) or the adjacent incorporation of a container for a fluid (4), such as water or oil, and (ii) to maintain heat irradiation once the actuation of the heater has been stopped.
The present invention relates to an arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating, using a new product formed by porcelaneous stoneware joined to a synthetic metal providing important improvements in the impact resistance of the stoneware and in the integration and adherence of different elements in the synthetic metal.

BACKGROUND

Patent document EP1455146 discloses an improved electric convector system consisting of a casing incorporating a filament, plate or piping resistor joined to a porcelaneous stoneware plate. The drawback is that the stoneware plate has innumerable problems while fixing the different elements or components thereto due to its brittleness and rigidity. The mechanical securing means such as clamps, guides, screws, etc., often also cause its breaking or cracking due to the impact of the tool on the surface of the plate.

DESCRIPTION

An arrangement for heating has been designed with the present invention which allows applying a new product formed by porcelaneous stoneware consisting of non-dry pressed, non-glazed ceramic tiles with very low water absorption, and therefore subjected to a single firing, joined to a synthetic metal in turn formed by a compound made from joining metal powder and a polymer. The arrangement for heating is based on joining the mentioned new product to any type of heating device or element, such that in addition to achieving its function by means of any type of electrical resistors it allows the adjacent incorporation of a container tank or radiator of fluid, such as water or oil, which once heated raises the temperature of the porcelaneous stoneware, maintaining said temperature for a time greater than the fluid radiators known up until now.

As has been mentioned, the invention further incorporates the complementary and thermostatic regulation elements necessary for the maintenance of the room at the desired temperature, as well as suitable securing elements.

The invention is thus configured as an arrangement able to be generally used as an element generating heat to the exterior both by convection and by radiation, the porcelaneous stoneware plate being the heat accumulator element, achieving the generation of gradual heating and the subsequent increase of its temperature in accordance with the existence of any heat generating system, such as any type of resistor, planar with an aluminum or filament circuit or a container tank for a fluid for example, and which, independently thereof, and once the actuation of said heat generating system or fluid has been stopped, acts as a radiator generating its actuation in accordance with the heat accumulated on the porcelaneous stoneware plate, such plate operating as a radiant and accumulator element for its use in heating.

The porcelaneous stoneware plate is fixed to the different elements as a result of being joined in cold conditions to a synthetic metal formed by a compound made from joining metal powder and a polymer. This joining offers substantial improvements to the heater since:

- It increases the impact resistance of the stoneware.
- The application of the synthetic metal in a liquid state allows fixing metal supports on the stoneware plate, such as clamps, anchors or any type of fixing of the stoneware to the wall or to other elements.
- Since it is a joining in cold conditions, it allows the integration or adherence of different elements such as sensors, radiant elements, control and protective equipment in the synthetic metal.

In summary, the incorporation of the synthetic metal in the porcelaneous stoneware acts as a glue which, upon being applied in the rear part of the plate, allows incorporating any anchoring means or component of the convector, which will be fixed when the product has dried.

DESCRIPTION OF THE DRAWINGS

To complement the description and for the purpose of aiding to better understand the features of the invention, a set of drawings is attached to the present specification as an integral part thereof, in which the following is shown with an illustrative and non-limiting character:

FIG. 1 shows a perspective view of the rear part of the arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to the invention, in which an embodiment thereof incorporating a radiator or container for a fluid as a heating element is shown.

FIG. 2 also shows a perspective view of the rear part of an example of the arrangement for the heating of porcelaneous stoneware plates with a rear cover of synthetic metal for use as an accumulator and a radiant element for heating according to the invention, in this case incorporating a resistor as a heating element.

FIG. 3 shows an exploded view of the invention according to the example depicted in FIG. 2, such that all the elements involved therein are shown, as well as its configuration and arrangement.

FIG. 4 shows a longitudinal sectional view of the example depicted in FIGS. 1 and 2.

PREFERRED EMBODIMENT OF THE INVENTION

In view of the mentioned figures and according to the adopted numbers, it can be observed therein how the arrangement for the heating of porcelaneous stoneware plates with a rear cover of synthetic metal (1) for use as an accumulator and a radiant element for heating is formed from the adjacent incorporation thereto of a heating element (3) which can be of any type.

Said heating element (3) can be a radiator or container for a fluid (4) as can be observed in the example shown in FIG. 1, or it can be incorporated inside an enveloping casing (5) in the event that it is a resistor (6), as observed in the example depicted in FIGS. 2 and 3.

In the first case, the mentioned radiator or container for a fluid (4), which can be of water or oil, will be fixed to the porcelaneous stoneware plate with a rear cover of synthetic metal by means of the synthetic metal (2b) of said porcelaneous stoneware plate (2a). The fluid, water or oil, contained in the radiator or container (4), which will be suitably heated
by means of relevant conduits and boiler devices (not shown), having the thermostatic regulation elements, is configured as a heating element (3), transmitting said heat to the porcelaneous stoneware plate with a rear cover of synthetic metal (1).

[0019] The arrangement further incorporates, in the second embodiment, a plurality of complementary and thermostatic regulation elements necessary for the functionality thereof, allowing the maintenance of the room at the desired temperature, such as a load thermostat (8) provided with a securing flange (9) for the securing to the bulk, flange located in the lower part of the enveloping casing (5), an air intake grate (10) also on said lower part, a control box (11) provided with a safety thermostat (12) and suitably protected by a protective plate with micanite (13), a deflector plate (14), a support (15) for the resistor (6), a load button (16) and a bipolar switch (17). The arrangement thus achieves, through the heat accumulated in the porcelaneous stoneware plate (1) by means of a heating element (3), whether it is the radiator (4) or the resistor (6), gradually causing its heating and the subsequent increase in its temperature, that such plate maintains and irradiating heat once the actuation of said heating element (3) has been stopped, such that said porcelaneous stoneware plate (1) acts as an accumulator and a radiant element, which causes a considerable prolongation of temperature maintenance with the subsequent energy savings for heating any environment.

1. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating characterized by using porcelaneous stoneware plates with a rear cover of synthetic metal which enable a heating element to be joined to same such that in addition to achieving the heating of the stoneware plate by means of the incorporation of any type of electrical resistors or the adjacent incorporation of a container for a fluid, it allows maintaining heat irradiation once the actuation of the heater has been stopped.

2. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 1, characterized in that the stoneware plate with a rear cover of synthetic metal is formed by a tile, the rear surface of which incorporates, homogeneously covering said area, synthetic metal formed by joining metal powder and a polymer.

3. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 1, characterized in that the heating element is located directly in contact with the synthetic metal of the stoneware plate in the event that it is a radiator or a container for a fluid, or is incorporated inside an enveloping casing in the event that it is a resistor.

4. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 1, characterized in that the porcelaneous stoneware plate is fixed to the heating element, and to any other complementary or securing element, as a result of the rear cover of synthetic metal of the porcelaneous stoneware plate to which the heating element is firmly adhered upon drying of said synthetic metal.

5. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 1, characterized by the fact that the synthetic metal which has been joined to the rear part of the porcelaneous stoneware plate does not lose its adherence properties when said plate is heated, and in that upon being heated it acts as an additional element transmitting the heat produced by the resistors, or heatings of any type adhered to the porcelaneous stoneware plate.

6. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 1, characterized in that the porcelaneous stoneware plate is joined to the synthetic metal in cold conditions, which allows the integration or adherence of different elements in the synthetic metal.

7. The arrangement of claim 2, wherein the tile has a rectangular planar configuration.

8. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 2, characterized in that the heating element can be located directly in contact with the synthetic metal of the stoneware plate in the event that it is a radiator or a container for a fluid, or it can be incorporated inside an enveloping casing in the event that it is a resistor.

9. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 2, characterized in that the porcelaneous stoneware plate is fixed to the heating element, and to any other complementary or securing element, as a result of the rear cover of synthetic metal of the porcelaneous stoneware plate to which the heating element is firmly adhered upon drying of said synthetic metal.

10. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 2, characterized in that the porcelaneous stoneware plate is fixed to the heating element, and to any other complementary or securing element, as a result of the rear cover of synthetic metal of the porcelaneous stoneware plate to which the heating element is firmly adhered upon drying of said synthetic metal.

11. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 2, characterized by the fact that the synthetic metal which has been joined to the rear part of the porcelaneous stoneware plate does not lose its adherence properties when said plate is heated, and in that upon being heated it acts as an additional element transmitting the heat produced by the resistors, or heatings of any type adhered to the porcelaneous stoneware plate.

12. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 4, characterized by the fact that the synthetic metal which has been joined to the rear part of the porcelaneous stoneware plate does not lose its adherence properties when said plate is heated, and in that upon being heated it acts as an additional element transmitting the heat produced by the resistors, or heatings of any type adhered to the porcelaneous stoneware plate.

13. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 2, characterized in that the
porcelaneous stoneware is joined to the synthetic metal in cold conditions, which allows the integration or adherence of different elements in the synthetic metal.

14. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 3, characterized in that the porcelaneous stoneware is joined to the synthetic metal in cold conditions, which allows the integration or adherence of different elements in the synthetic metal.

15. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 4, characterized in that the porcelaneous stoneware is joined to the synthetic metal in cold conditions, which allows the integration or adherence of different elements in the synthetic metal.

16. An arrangement for the heating of porcelaneous stoneware plates for use as an accumulator and a radiant element for heating according to claim 5, characterized in that the porcelaneous stoneware is joined to the synthetic metal in cold conditions, which allows the integration or adherence of different elements in the synthetic metal.

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