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## (54) ELECTRIC HEATER

(57) The utility model applies to the electric heater with the housing, electrical heating cable ending with the plug and equipped with the control system is characterized in that the housing (2) consists of four side walls (3) and top wall (4), and a heating system (5) is attached to the internal surface of at least three side walls (3) of the housing (2); the electric heater has the form of the heating cable, and the SPA heating system (7) is attached on the internal surface of the top wall (4) of the housing (2) or to the internal surface of one side wall (3) in the form of electrical heating cable ending with sections of cold cable in the cable box (8) mounted to the internal surface of one side wall (3) of the housing (2), while there is at least one-non through opening (9) on the external surface of the top wall (4) which contacting with SPA heating module (7) on the external surface of the side wall (3) contacting with heating SPA system (7).

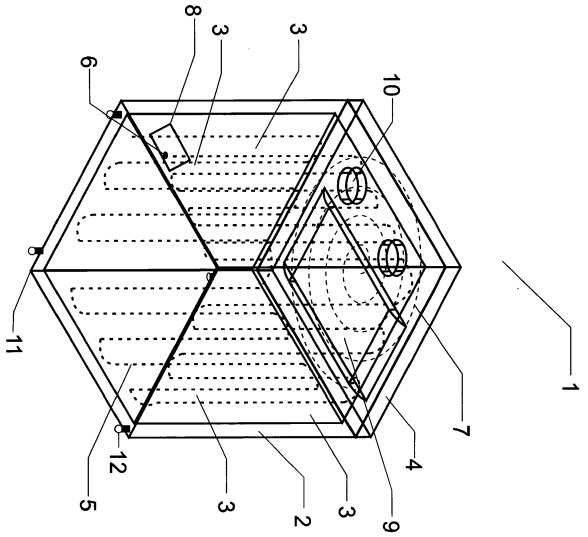


fig. 1

EP 3 184 927 A1

## Description

**[0001]** The utility model is an electric heater having the function of flavouring, ionizing and the humidifying of rooms.

**[0002]** Application description no CN2204956 shows the electric heater with aroma emission or humidifying functions. Electric heating system is located in the housing on the warmer side using the fastening element. The heater contains the temperature controller and thermal insulation in the housing which is connected to the internal closing cap, thus forming an open concave recess under which a filtering element is placed. The container for aroma or water is located in a concave recess connected to the closing cap.

**[0003]** The protective specification of CN 202253913 presents an electric heater with humidifying function, which contains the tank with an opening in the upper section. The opening of the container is fitted with the head and more than the one vapour overflow opening with a cork is placed on the cover of the head. In the middle section the tank is fitted with the partition plate along the horizontal direction where there are deaerating openings connected to the air flow in the lower section of the air pipe. There is more than one water discharge port on the partition plate and it is connected to the water inlet in the upper section of the air discharge pipe. Water outlets in the water system are connected to the heat storage tank, and the system has an electrical heating system.

**[0004]** Protective specification no CN 104728907 presents the electric heater with a housing which is connected to the base via the air pipe and is equipped with moisture detection sensor; the humidifier is located and connected with the heat supply system of the electric heater via a control switch; the vapour outlet is located in the housing; one end of the air pipe is connected with the air outlet from the humidifier and the other end of the air pipe is connected to the vapour outlet.

**[0005]** The heater described in CN204345774 has the first column located on one side of the heater body, with an opening in the upper section of the first column. This column also forms a closed water circuit closed by the lid with openings. The heater has also the second column on the opposite side of the heater body, and the upper end of the second column holds the control panel. The heater is equipped with electrical power supply cable. The heater's advantage is the connection between the water tank and heater body so that the heat emitted in the heater body can be used for water evaporation in water tank and the air humidification in rooms.

**[0006]** The Polish application description 120874 presents an electrical heater made of natural stone which consists of a spiral groove reaching the edge of the plate in one point. Inside the groove there is insulated cable powered on one side which has a blinding cap on one end and the groove is closed using this stonework mortar.

**[0007]** To-date solutions ensure the flavouring or humidifying functions for rooms via potent openings connected to internal heating elements and water supply and discharge systems installed in the heater's housing.

**[0008]** According to the utility model the aim of the application is to ensure humidifying and flavouring rooms by using heat radiated from the electric heater and to improve heat system accumulator for this heater.

**[0009]** In accordance with the utility model, the electric heater with the housing, electrical heating cable ending with the plug and equipped with the control system is characterized in that the housing consists of four side walls and the top wall, and a heating system is attached to the internal surface of at least three side walls of housing; the electric heater has the form of the heating cable, and the SPA heating module is attached on the internal surface of the top wall of the housing or to the internal surface of one side wall in the form of electrical heating cable ending with sections of cold cable in the cable box mounted to the internal surface of one side wall of the housing, while there is at least one-non through opening on the external surface of the top wall contacting with SPA heating module on the external surface of the side wall contacting with heating SPA system.

**[0010]** As a variant, the upper wall is detachable and it is the cover of the heater.

**[0011]** The cover is 2 - 3 cm thick.

**[0012]** The electrical heating cable has external insulation. The external insulation is made of thermoplastic.

**[0013]** As a variant, the electric heater is equipped with lighting. The lighting is attached to the side walls using the self-adhesive tape.

**[0014]** The electrical heater is equipped with the relay installed in the cable box, which controls heating and is coupled with the automatic control system. The electrical heater is equipped with the relay installed in the cable box, which controls SPA function and is coupled with the automatic control system.

**[0015]** The electrical heater is equipped with the relay installed in the cable box, which controls lighting and is coupled with the automatic control system.

**[0016]** The automatic control system is wireless. The automatic control system contains temperature controller equipped with the detector and the control system.

**[0017]** As a variant, the housing is equipped with the bottom wall.

**[0018]** Bottom corners of side walls or the bottom wall of the housing have wheels.

**[0019]** In one variant, the heating system is attached to the internal surface of the three side bottom wall and the top housing wall, SPA heating system is attached to the internal surface of one side wall of the housing and in there is at least one non-through opening in the external surface of the side wall contacting SPA heating system.

**[0020]** The area of the non-through opening in the external surface of the top wall which contacts with SPA heating element or on the external surface contacting SPA heating is equal or larger than the half of the area

of the external surface of this wall.

**[0021]** A container with at least one non-through opening is placed in the non-through opening in the external side wall in contact with the SPA heating element.

**[0022]** The housing can be made of stone or ceramics. Containers with water, aromas, salts, etc. are put in the top or side walls of the housing. The construction of the heater ensures good heat accumulation, and thanks to the coupled operation of the SPA heating system and aromas, salts, etc., the heater humidifies and flavours rooms and radiates the heat.

**[0023]** The utility model is presented in the drawing, where Fig. 1 depicts the electric heater with the non-through opening in the top wall of the housing, Fig. 2 depicts the electric heater with three non-through openings in the top wall of the lid, which is equipped with lighting and automatic control and lighting control systems, while Fig. 3 depicts the electric heater with non-through opening in the side wall of the housing.

**[0024]** Heater 1 presented in Fig. 1 has a stone housing 2 in the shape of cube with four side walls 3, and the top wall which is 4, 2 cm thick, 45x45cm. Inside the housing2 the heating system 5 in the form of the heating cable with an external thermoplastic insulation ending outside the housing 2 of the heater 1 with plug 6 is attached to the internal surface of four side walls 3, in the glue layer. On the internal surface of the top wall 4 of the housing 2 there is a SPA heating system 7 which is installed in the form of electrical heating cable with external thermoplastic insulation and it is mounted in the glue layer. Ends of the cable are ended with sections of the cold cable installed in the electrical cable box 8 mounted on the internal surface of side wall 3 of housing 2 by using screws (invisible in the drawing) attached to the glue layer.

**[0025]** In the external surface of the top wall 4 of the housing 2 there is one non-through opening 9 with a rectangle-like shape, with an area larger than the half of the area of the top layer 4 of housing 2 and it is the spa module. A container with salt can be placed in the opening. Bottom corners 11 of side walls 3 of the housing 2 are equipped with four undetachable wheels 12.

**[0026]** Depending on the external temperature and degree of stone heating, the heater reaches 80°C, and it is between 60 to 800 W. The mean heater wall temperature is 70°C, 770 W, the heater emits energy up to 7 hours.

**[0027]** Heater 2 presented in Fig. 1 has a stone housing 2 in the shape of a cube with four side walls 3, and the top wall 4, 3 cm thick, 45x45cm. The top wall 4 is the heater lid - it has a denture 13 on the internal surface, it mates with upper edges 14 of side walls 3 and it is mounted detachably to side walls 3. Inside the housing2 the heating system 5 in the form of the heating cable with an external thermoplastic insulation ending outside the housing 2 of the heater 1 with plug 6 is attached to the internal surface of four side walls 3, in the glue layer. On the internal surface of the top wall 4 of the housing 2 there is a SPA 7 heating system 7 which is installed in the form of electrical heating with external thermoplastic insulation and it is mounted in the glue layer. Ends of the cable are ended with sections of the cold cable installed in the electrical cable box 8 mounted on the internal surface of side wall 3 of housing 2 by using screws (invisible in the drawing) attached to the glue layer.

**[0028]** On the external top area of the wall 4 of the housing 2 there are three non-through openings 9: one has a rectangle-like shape and two ones are round, these are spa modules.

**[0029]** Heater 1 is coupled with wireless control system 15 with temperature controller equipped with the touch control panel 16 and software, which communicates wirelessly with the ambient temperature sensor 17 located in the room and on the basis of the sensor readings it turns on heating function by sending a signal to the transmitter for heating control 18 installed in the cable box 8 inside the housing 2. The cable box is also equipped with the function control relay 19 and lighting control relay 20. LEDs are mounted on side walls 3 on the tape 21, by using self-adhesive tape. Housing 2 has a bottom wall 22, in which four wheels 12 are installed.

**[0030]** Electric heater presented on drawing 3 has a ceramic housing 2 in a rectangle-like shapes, with four side walls 3, top wall 4 and bottom wall 22 which is 3 cm thick. Inside the housing, on the internal surface of three side walls 3, top wall 3 and bottom wall 22, in the heating glue layer there is the heating element 5 in the form of electric heating cable with an external thermoplastic insulation ending outside the heater housing 2 of the heater 1 with a plug 6. On the internal surface of the one side wall 3 of the housing 2 which contacts spa module there is a SPA heating system 7 which is installed in the form of electrical heating cable with external thermoplastic insulation. Ends of the cable are ended with sections of the cold cable installed in the electrical cable box 8 mounted on the internal surface of side wall 3 of housing 2 by using screws (invisible in the drawing) attached to the glue layer.

**[0031]** On the external side surface of walls 3 equipped with SPA 7 module there is one non-through opening 9 in the rectangle-like shape, with an area larger than 3/4 of the area of the wall 3, which is the spa module. In opening 9, container 23 with three non-through channels 24 is located; water and aromas are poured in these channels. Channels 24 are on the side of the top wall 4 of housing 2. Bottom wall 22 is equipped with four undetachable wheels 12 installed in this wall.

## Claims

1. The electrical heater with the housing, an electrical heating cable ended with the plug and equipped with the control system is **characterized in that** the housing (2) consists of four side walls 3) and top wall (4), where on the surface of the three side walls of the housing (2) a heating system is installed (5) in the form of electrical heating cable and a spa system (7)

attached to the internal surface of the top wall (4) of the housing (2) or to the internal surface of one side wall (3), which has the form of electrical heating cable and electrical heating cables have are ended with sections of the cold wire installed in the electrical box (8) installed on the internal surface of one side wall (3) of the housing (2), while the external surface of the top wall (4) which is in contact with SPA heating system (7) or in the external surface of the side wall (3) in contact with SPA heating module SPA (7) has at least one non-through opening (9).

**2.** According to patent claim 1 the electric heater is **characterized in that** the top wall (4) is fastened to housing (2) detachably and it is the lid of the heater (1).

**3.** According to patent claim 1 or 2 the electrical heater is **characterized in that** the housing (2) is from 2 to 3 cm thick.

**4.** According to any patent claims 1-3 the electric heater is **characterized in that** the electrical heating cable has external insulation.

**5.** According to patent claim 4 the electric heater is **characterized in that** the external insulation is made of thermoplastic.

**6.** According to of patent claims 1-5 the electric heater is **characterized in that** it is equipped with lighting.

**7.** According to patent claim 6 the electric heater is **characterized in that** the lighting is attached to the side walls (3) by using self-adhesive tape.

**8.** According to any patent claims 1-7 the electrical heater is equipped with the relay installed in the cable box (18), which controls heating and is coupled with the automatic control system (15).

**9.** According to any patent claims 1-8 the electrical heater is **characterized in that** it is equipped with the relay installed in the cable box (8), which controls SPA function (19) and is coupled with the automatic control system (15).

**10.** According to patent claim 1-9 the electrical heater is equipped with the lighting relay (20) installed in the cable box (8), which controls SPA function (20) and is coupled with the automatic control system (15).

**11.** According to patent claims 8-10 the electrical heater is **characterized in that** the automatic control system (15) is wireless.

**12.** According to patent claims 8-10 the electric heater is **characterized in that** the automatic control system (15) is equipped with the ambient air temperature sensor (17) and control panel (16).

**13.** According to any patent claims from 1 to 13 the electric heater is **characterized in that** housing (2) is equipped with bottom wall (22).

**14.** According to any patent claims 1-13 the electrical heater is characterized that bottom corners (11) of side walls (3) or bottom wall (22) of the housing (2) are equipped with wheels (12).

**15.** According to any patent claims from 1 to 14 the heater is **characterized in that** the heating system (5) is attached to the internal surface of three side walls (3), the bottom wall (22) and the top wall of (4) the housing (2), and SPA system (7) is attached on the internal surface of the side wall (3) of the housing (2), and there is at least one non-through opening (9) in external surface of the side wall (3) in contact with SPA heating module (7).

**16.** According to any patent from od 1 to 15 the electric heater is characterized that the non-through opening (9) made in the top surface of the top wall (4) which contacts SPA heating system (7) or in the external surface of the side wall (3) which contacts with the heating spa system (7) has an area equal or larger than the half of the external surface of this wall (3,4).

**17.** According patent claims 15 and 16 the is **characterized in that** (9) in the non-through opening there is a container, (23) equipped with at least one non-through channel (24).

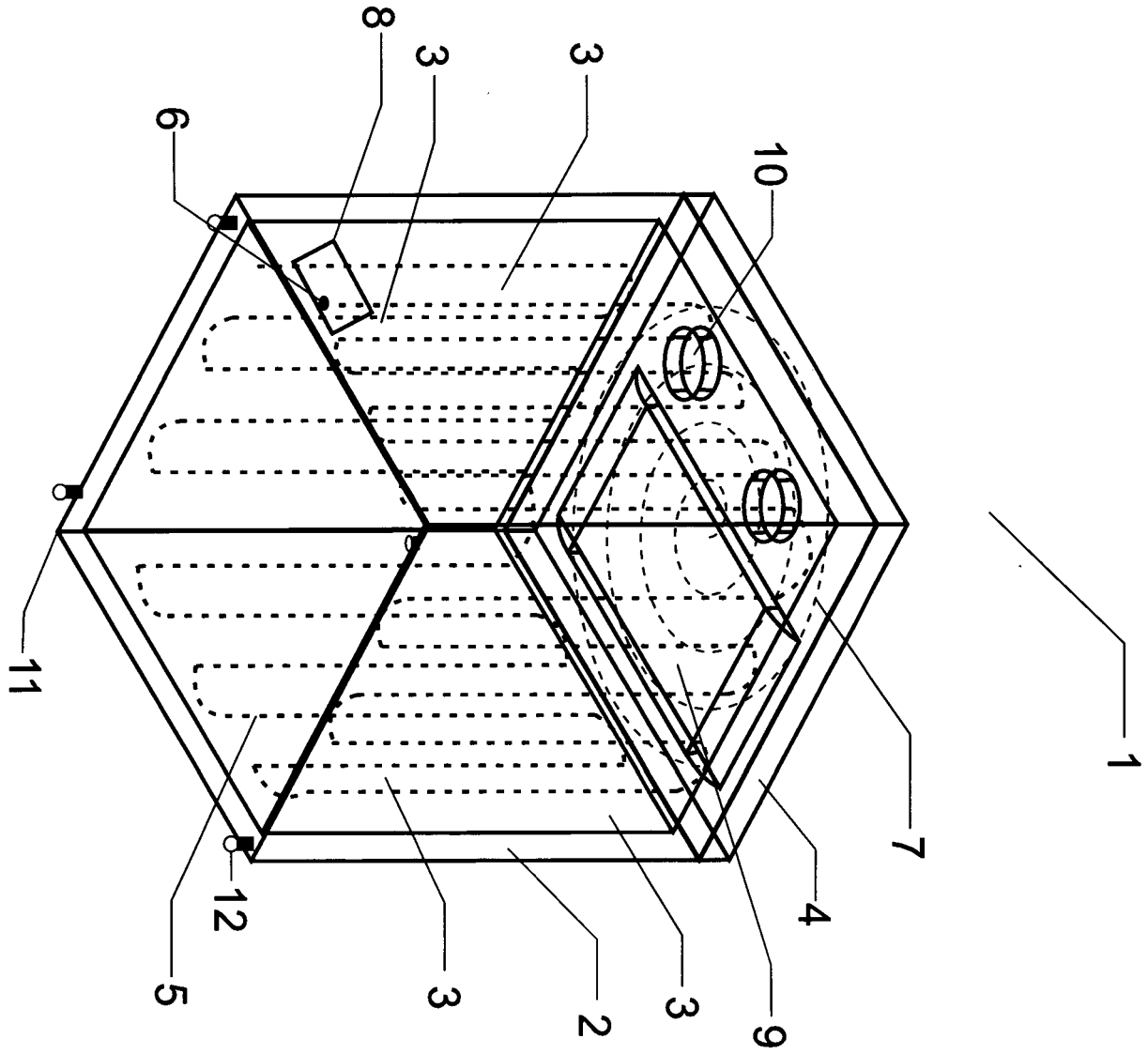


fig. 1

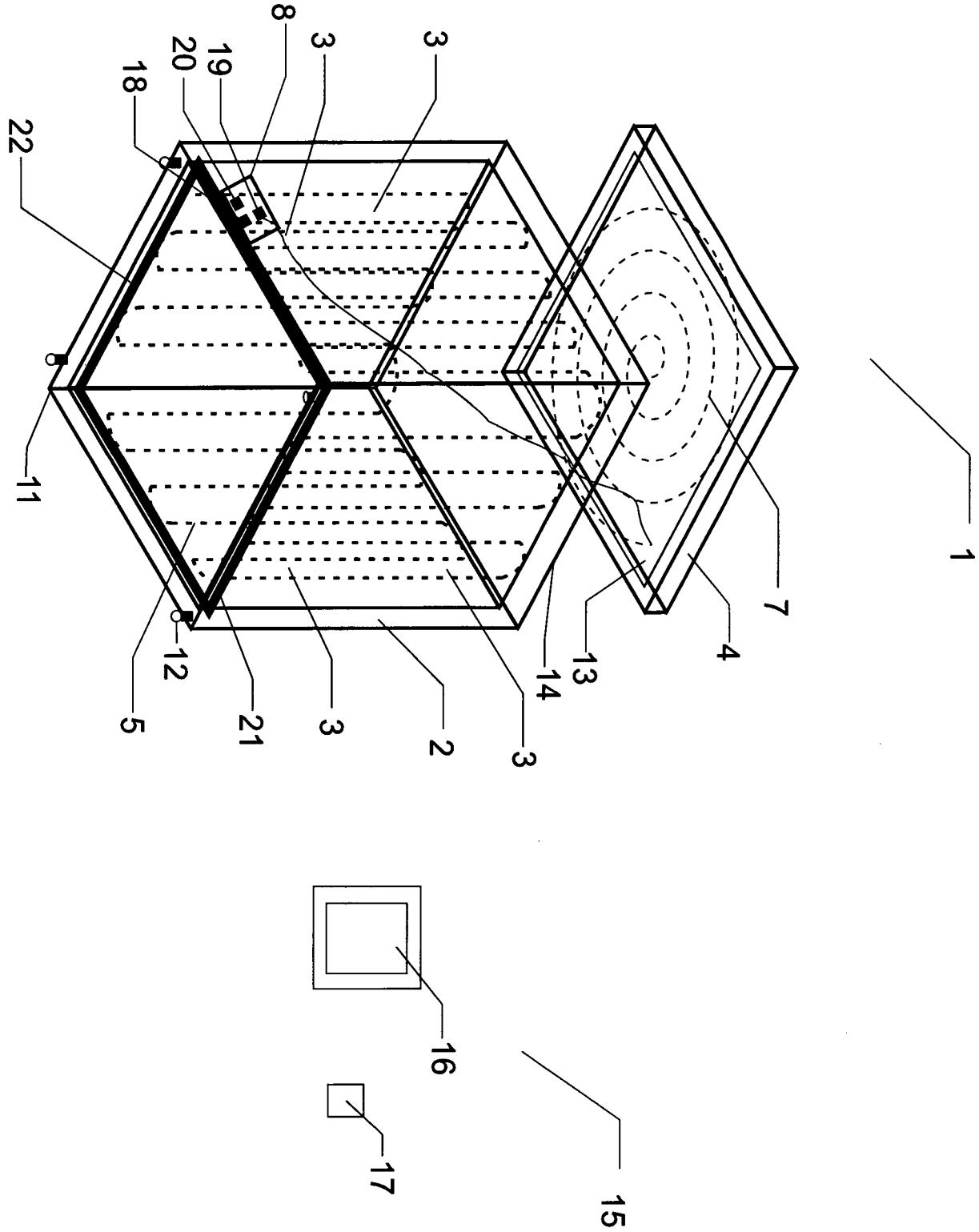


fig. 2

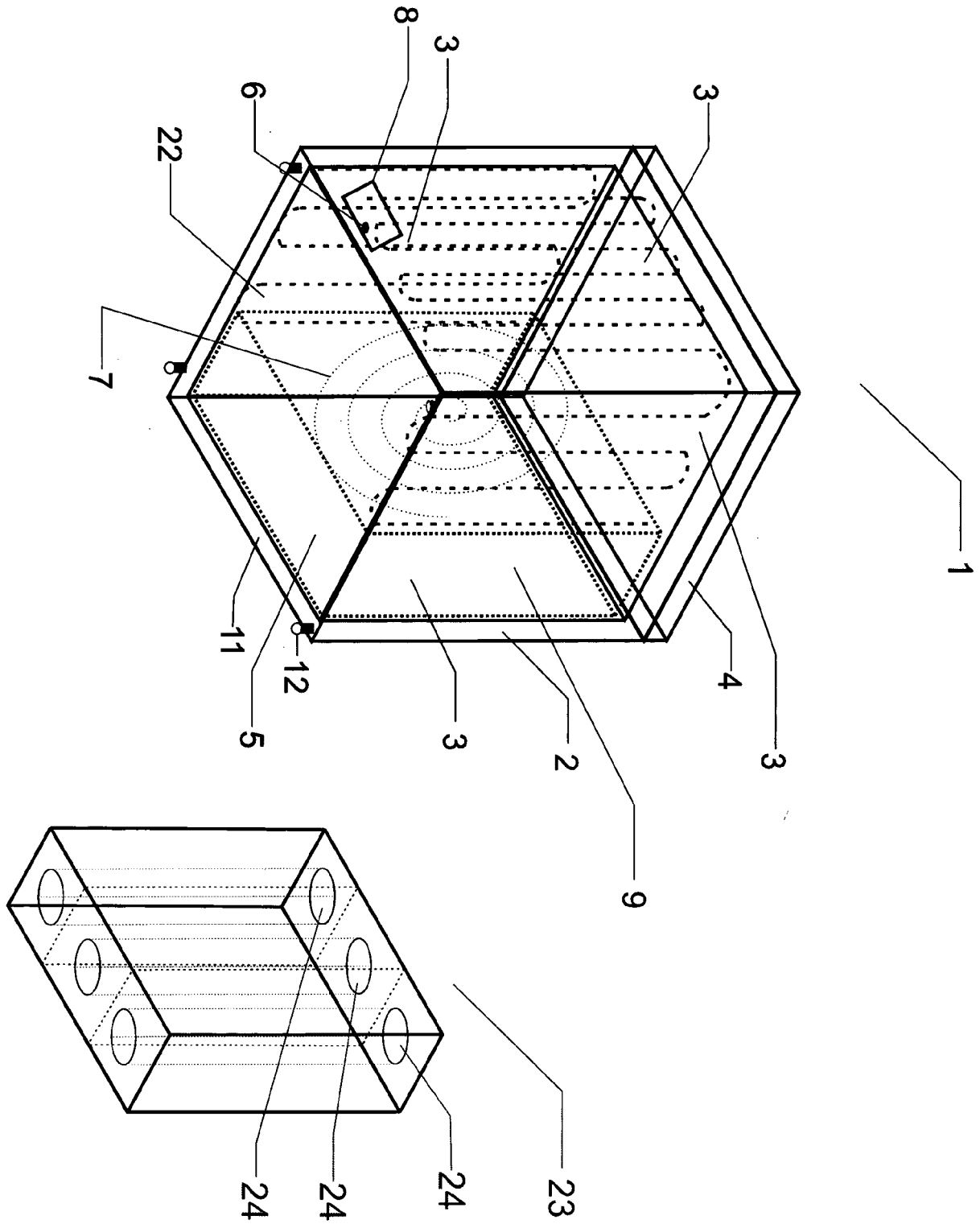


fig. 3

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# EUROPEAN SEARCH REPORT

Application Number
EP 15 46 0130

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TECHNICAL FIELDS SEARCHED (IPC)

F24H
A61H
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F24F
H05B

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| Munich | 27 September 2016 | García Moncayo, O |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
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EPO FORM 1503 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 46 0130

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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