No. 771,908. PATENTED OCT. 11, 1904.

H. E. HEATH.

ELECTRIC HEATER.

APPLICATION FILED FEB. 12, 1904.

NO MODEL.

Fig. 1.

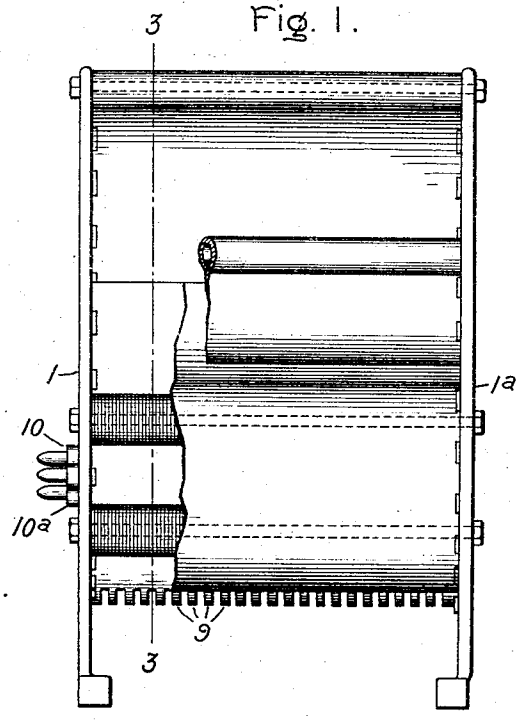


Fig. 2.

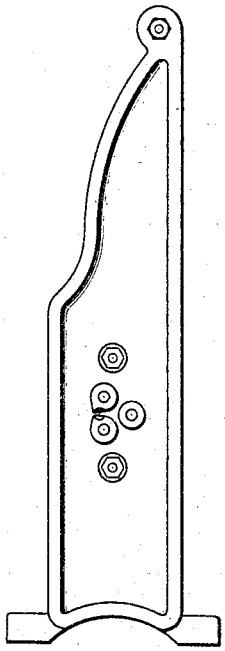


Fig. 3.

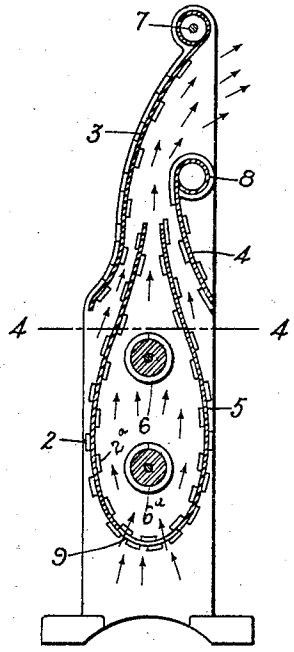


Fig. 4.

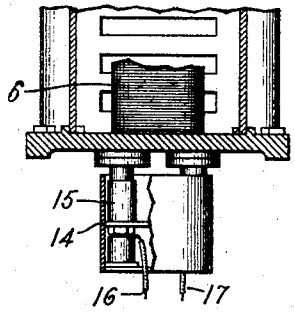
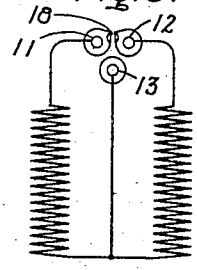


Fig. 5.



Witnesses:

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PHOTO-LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 771,908. Patented October 11, 1904.

UNITED STATES PATENT OFFICE.

HARRY E. HEATH, OF WINDSOR, CONNECTICUT, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 771,908, dated October 11, 1904.

Application filed February 12, 1904. Serial No. 193,227. (No model.)

To all whom it may concern:

Be it known that I, HARRY E. HEATH, a citizen of the United States, residing at Windsor, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

This invention relates to electric heating apparatus, the object being to provide a device of this character which will rapidly deliver a stream of heated air for use in heating small apartments or wherever a quick and clean source of heat is desirable.

One of the principal features of the invention consists in increasing the amount of heated air delivered by the heating element, and therefore conducing to a rapid change of temperature of the room in which the device is employed, by causing a strong upward movement of the air which is heated by the electric heating units and employing this column of moving gas to act as an aspirator to create an induced flow of cooler air, which mingles with and becomes warmed by the highly-heated column, thereby increasing the discharge of moderately-heated air from the device and conducing to a more rapid change of temperature of the room.

In carrying out the invention I provide two metallic standards, which form the main portion of the framework of the device, between which is clamped by bolts a sheet-iron or other thin metal structure having small storage capacity for heat and which therefore quickly attains a good working temperature. This sheet-iron structure forms the main body of the heating device, the heating units being contained within the same. The standards are provided with lugs or similar supports for the edges of the sheet-iron walls, the bolts extending across the standard and threading the curled edges of the sheet-iron parts, binding the whole into a strong but light structure. On one of the standards is mounted an attaching-plug or similar device adapted to coöperate with a terminal leading from a source of electricity through a wall-switch or other suitable cut-out, a number of terminals being provided in the plug, which connect with a plurality of electric heating units. The plug-contacts are so arranged with reference to the coöperating socket that the two terminals carried in the socket may be placed in good conducting relation to different groups of heater units, thereby varying the degree of heat at pleasure.

I prefer to employ as a heating unit an edgewise-wound ribbon, which consists of a flat conducting-ribbon wound on edge in the form of a tube the several convolutions of which are separated by a refractory insulating-spacer. A unit of this kind may be run at a red heat without damage and when employed in connection with the type of heater hereinbefore briefly described affords a heater of great capacity relatively to its size and one which does not easily deteriorate.

The several features of novelty of the invention will be hereinafter more fully set forth, and will be definitely indicated in the claims appended to this specification.

In the drawings, Figure 1 is a front elevation, partly broken away, of a heating device embodying my improvements. Fig. 2 is a side elevation showing the arrangement of the plug-contact on the side of one of the standards. Fig. 3 is a sectional view on a plane indicated by the line 3 3 of Fig. 1. Fig. 4 is a partial view of a section, taken on the plane indicated by the line 4 4 of Fig. 3; and Fig. 5 is a diagram of the connections between the plug-terminals and the heater units.

1 1^a represent two metal standards, which may be castings, provided on the inner face with cast or integral lugs 2 2^a, adapted to act as stiffening-supports for the edges of sheet-iron or other sheet-metal walls 4 5, extending from one standard to the other.

The lower sheet-metal part of the heater 5 is bent to a form substantially like that indicated in Fig. 3, forming a chamber with a narrow mouth opening upward, and the bolts which support the heating units pass through this chamber. The units are indicated at 6 6^a, two being employed in the type shown in the drawings, though the number may be varied according to the capacity of the device. These units may be of any approved construction.

I prefer, however, to employ the type above referred to, consisting of an edgewise-wound conducting-ribbon coiled into a close helix and provided with a spacer between the consecutive turns of a refractory insulating material.

The sheet-metal walls 3 and 4 are supported on bolts 7 8, arranged at different elevations in a vertical plane, the lower edges of which overlap by a considerable margin the upper open end of the chimney 5. Thus when the device is in service the heating units 6 6^a attain a more or less high temperature, according to the circuit connections, and the heated air rising creates a draft at the top opening, which establishes suction on relatively cooler air entering at the channels formed by the lower ends of the walls 3 4. The arrows in Fig. 3 indicate the action. Thus there is created an induced flow of air at the sides of the heater-chamber which becomes warm in transit over the walls of the latter and mixes with the column of hot air delivered by the latter, and thus sets in motion a large quantity of heated air. The draft is maintained by a series of slots 9, formed by punching the sheet which forms the chamber 5 before it is bent. The arrangement of these slots is clearly indicated in Fig. 1.

The arrangement of the connector for varying the heat is indicated in Fig. 5. As here shown, it is a plug composed of a plurality of metal pins supported on porcelain or other insulating-bushings 10 10^a, &c. The three pins 11 12 13 connect electrically with the resistance units, 13 being connected with the connected ends of the two units and 11 and 12 with the free ends. Over these pins is inserted a socket 14, containing two elastic-metal cups, as 15, forming terminals of leads 16 17, which proceed from any suitable source of electric energy. The cups 15 are so spaced that they may be pushed upon the pins 11 and 12 or 11 and 13 or 13 and a projection 18, which is formed of a part of the pin 11 and part of the pin 12. Thus if the socket is placed over pins 11 and 13 the left-hand unit is inserted; if it is placed over 11 and 12 both units are inserted in series; if placed over 13 and 18 both units are connected in parallel, in which latter condition the maximum degree of heat is delivered.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. An electric heater comprising a heating device or unit inclosed within a chamber provided with openings on different levels to create a draft of hot air, and a secondary chamber arranged at the discharge end and provided with feed-openings for an induced flow of cooler air.

2. An electric heater provided with a heating unit surrounded by a chamber having metal walls with openings at different levels, and a second chamber having metal walls through which the hot air discharges, the lower walls overlapping the discharge end of the heat-chamber.

3. An electric heater provided with heating units inclosed within sheet-metal walls for quick heat transmission, and means for creating an induced flow of air over said walls and mixing it with the heated air discharged from the chamber.

4. An electric heater comprising vertical standards, one or more electric heating units supported therein, a sheet-metal chamber slotted at the bottom and open at the top, and means for inducing a flow of cooler air to mix with the heated air discharged from the chamber.

5. An electric heater provided with a plurality of heating units, and a terminal connector having metal contacts connecting the heat units in different relations, said contacts being equidistantly spaced to coöperate with a two-part socket connecting with a source of electric energy.

In witness whereof I have hereunto set my hand this 10th day of February, 1904.

HARRY E. HEATH.

Witnesses:
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