

E. A. MARTIN.
ELECTRIC AIR HEATER.
APPLICATION FILED JUNE 19, 1918.

1,332,052.

Patented Feb. 24, 1920.

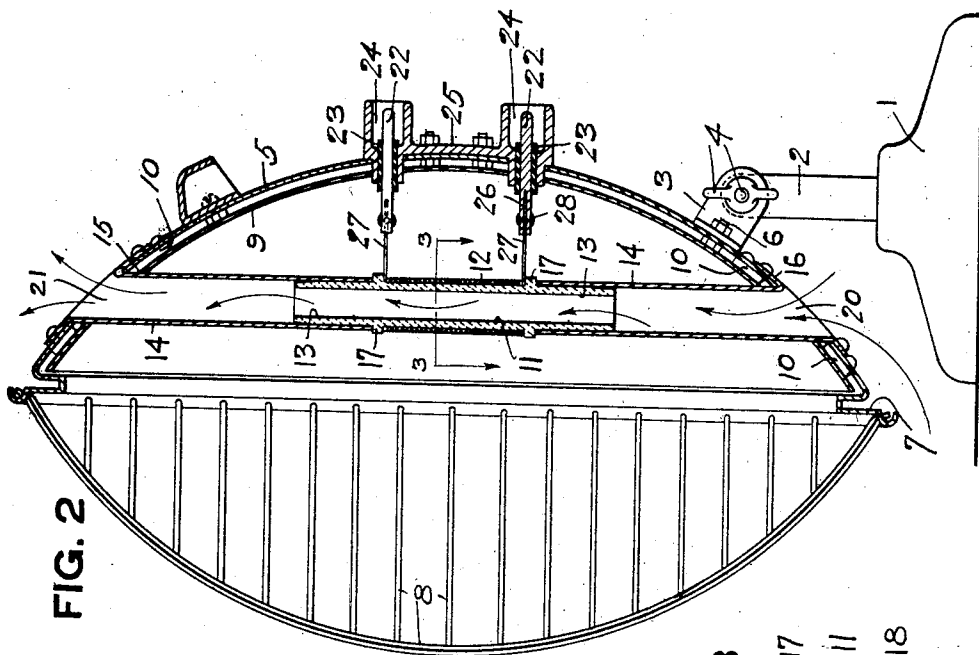


FIG. 2

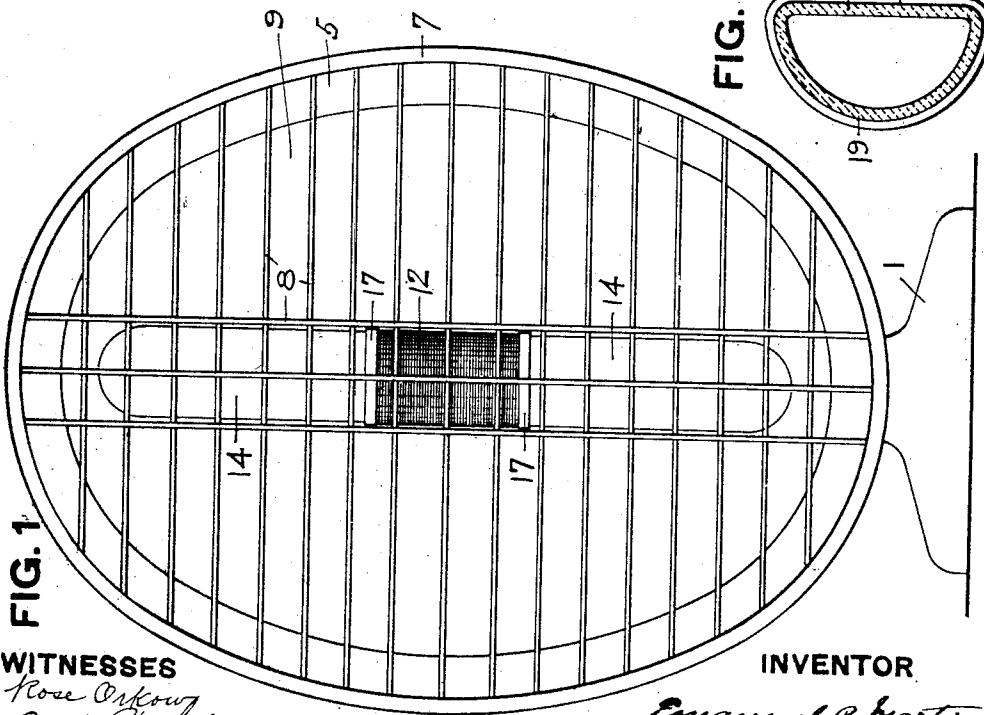
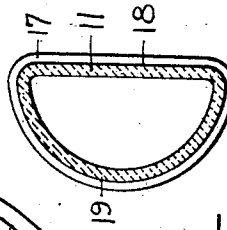


FIG. 1

FIG. 3



WITNESSES

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UNITED STATES PATENT OFFICE.

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ELECTRIC AIR-HEATER.

1,332,052.

Specification of Letters Patent.

Patented Feb. 24, 1920.

Application filed June 19, 1918. Serial No. 240,756.

To all whom it may concern:

Be it known that I, EMANUEL A. MARTIN, a citizen of the United States, and resident of New York city, in the county of New York and State of New York, have invented a new and useful Improvement in Electric Air-Heaters; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to electric heaters, and is particularly concerned with a device of this general character which may be in the form of a portable heater to be placed at any convenient point, either on the floor, on a desk, or on a window-sill, or it may be made in a form suitable for suspension from an electric light bracket.

The heater, in general, comprises a heating element which is preferably mounted in a vertical position, and is somewhat in the form of a flue adapted to conduct cold air through the heater, whereby the air is heated, thus increasing the efficiency of the device and accomplishing several other advantages, as will be hereinafter described.

The heater also may be provided with a reflector to distribute the heat, and also with a guard to prevent actual contact with the heating element.

With the above and other objects in view, as will be ascertained from the following description, the invention consists in a construction and arrangement of parts a preferred embodiment of which is illustrated in the accompanying drawing, in which Figure 1 is a face view of the portable heater; Fig. 2 is a vertical sectional view taken through heating element; and Fig. 3 is a transverse sectional view of the heating element on the line 3—3, Fig. 2.

In the embodiment of the invention herein selected for illustration, the heater may comprise a base 1 and a standard 2 in the case of a portable heater which is to rest upon the floor, a table, window-sill or the like. To the top of the standard 2 is clamped a bracket 3 by means of a suitable nut and bolt 4, which bracket supports the body proper of the heater.

The heater proper may consist of the body member 5 preferably in the form of a concavo-convex plate, which is attached to the bracket member at 6, and which may be and preferably is, as shown in Fig. 1, of oval form in face view. The perimeter of the body member 5 is provided with the exten-

sion flange 7 upon which may be mounted a guard member consisting of a wire framework or grid 8.

Within the body member 5 of the heater may be mounted a reflector 9 preferably of polished metal which may be spaced away from the body member 5 by means of spacing blocks 10, which blocks may be if desired of heat insulating material, thus leaving a space between the back of the reflector and the inner wall of the body member, which permits more or less free circulation of air and prevents the body of the heater becoming unduly heated; though it is to be understood that the reflector is not necessarily thus spaced as the construction of the heater is such that the body never becomes unduly warm.

One of the distinctive features of my electric heater consists in the construction and arrangement of the heating element proper. This, as clearly shown, in Fig. 2, comprises the heating element proper 11 which may consist of a tube of refractory material such as clay or other suitable electric insulating material. This tube is wound with a number of coils of high resistance wire or conductors. This heating element 11—12 may have the end extensions 13 which are adapted to fit within metal tubes 14, which tubes in turn are secured at 15 and 16 at the top and bottom respectively of the body member 5 of the heater. The central or wound section of the heating member 11 may terminate in annular shoulders 17, if desired, in order to space the coil 12 from the ends of the metal tubes 14.

While my improved heating element 11 may be of any desired cross section within the broad scope of the invention, I prefer to form it of the cross section indicated in Fig. 3, in which the rear or other portion 18 directly opposite the back or body 5 of the heater, as the front of the tube, as at 19, is rounded preferably to semi-circular cross section. This feature has several advantages. In the first place, the curved side or that of greater area of the heating element being presented to the front presents the greater radiating surface, and thus throws a greater amount of heat from the incandescent windings out into the room. Furthermore, inasmuch as the straight rear side 18 of the heating element is flat, it presents a less radiating surface and therefore has less tendency to heat the back or body portion 5

of the heater, and necessitates less indirect reflection of heat. In short, the greater percentage of heat for the heating element is directly radiated out into the room from the front or curved side of the heating element. The construction and manner of mounting this heating element has the further advantage that it forms a vertical tube or flue extending from the bottom to the top of the heater. Consequently, as the heating element at the center is heated, cold air is drawn in at the lower end of this tube, passes through the heated zone of the heated element 11 and is dissipated out through the room through the upper open end 21 of the heating flue. This arrangement adds materially to the heating capacity of the device. Moreover, this feature also serves to carry off and dissipate the heat of the heating element generally instead of directing or concentrating a large percentage of heat against the back or body 5 of the heater. The result generally of the peculiar form and arrangement of my flue-like heating element is to preserve the entire device from overheating and to more effectually dissipate and disseminate the heat of the heater out into the room.

The construction herein referred to has the further advantage that the heating element is supported in the heater entirely independently of the electric connections. As will be seen from an inspection of Fig. 2, the heating coil 12 may be connected to contact posts 22 which extend through the back wall of the heater, as shown and are insulated by suitable bushings 23 within the plug openings 24 of the plug plate 25. These contact posts 22 may be split as at 26 and the connecting terminals 27 of the heating coil 12 may be secured thereto by means of screws 28.

By this construction, it will be seen that the support of the heating element within the heater is in no way dependent upon the strength or arrangement of the electrical connections, as is the case in a number of constructions now in use, but my heating element is entirely self supporting and is rigidly held in proper position by means of the sleeves 14.

The advantages of the invention therefore consist in part in the fact that the heating element is of flue-like form, whereby a current of cold air constantly passes through the same, becomes heated and is disseminated out into the room. This heat flue is vertically arranged and therefore adds to the draft force acting on the current of air passing through the heater. The passage of air through the heating element in this manner serves to maintain the body of the heater as a whole at a lower temperature, and therefore the users thereof are not liable to be subjected to painful burns by handling

the same. The shape of the heating element, as illustrated in cross section, in Fig. 3 conduces to a wider dissemination of the heat out into the room instead of back against the body of the heater. It will be noted also from the manner of mounting the heater upon the stand or base 1—2 by means of the bracket 3—4 the heater may be readily turned to any position or to any angle to the vertical to direct the heat rays more effectively in any desired direction. Finally, it may be noted that my improved heater may also be suitably connected directly to a lighting bracket and may, if desired, be suspended therefrom without the necessity of using the base or standard 1—2.

While the construction here selected for illustration includes a reflector it is to be understood that the heater depends for its efficiency not so much on reflective heat as upon its capacity for heating the air surrounding the heating element and radiating that heat out into the room.

While I have herein described a particular embodiment of my heating device and have specified certain particular constructions and arrangements of parts, it is to be understood that the invention is not limited strictly to these elements, but may be varied in details within the scope of the appended claims.

What I claim is:—

1. An electric heater comprising a hollow radiant heating element, a concave reflector for gathering and distributing radiant heat from the said heating element, and an air flue communicating with the interior of the said heating element and adapted to conduct heated air upwardly away from the said heating element.

2. An electric heater comprising a radiant heating element composed of a tubular core of electrically non-conducting material, a conductor wound upon the said core and adapted to radiate heat therefrom, a concave reflector for gathering and distributing radiant heat from the said heating element, and a flue member communicating with the interior of the said tubular heating element and adapted to conduct heated air upwardly away from the said heating element and out of the said reflector.

3. An electric heater comprising a radiant heating element composed of a tubular core of electrically non-conducting material disposed with one end above the other, a conductor wound upon the said core and adapted to radiate heat therefrom, a concave reflector for gathering and distributing radiant heat from the said heating element, and two flue members disposed one above and one below the said heating element, and in line therewith, the said flues communicating with the interior of the said heating element and with the outer air.

4. An electric heater comprising a radiant heating element composed of a tubular core of electrically non-conducting material having spaced annular flanges, a conductor wound upon the said core between the said flanges, and tubular flue members fitting over the ends of the said core and spaced from the said conductor by the said flanges.

5. An electric heater comprising a radiant heating element composed of a tubular core of electrically non-conducting material having spaced annular flanges and having one side flattened, a conductor wound upon the said core between the said flanges, a reflector disposed adjacent to the said flattened side of the said heating element and adapted to gather and distribute radiant heat from the said heating element, and tubular flue members fitting over the ends of the said core and spaced from the said conductor by the said flanges, the said flue members serving to support the said heating element and to conduct cold air thereto and heated air therefrom.

6. An electric heater or radiator comprising a body portion, a support therefor, a flue-like electric heating element firmly supported on said body portion, a concave reflector disposed behind the said heating element, electrical connections for said heating element connected therewith at approximately the center of the said reflector and entirely independently of the support of the heating element on the body portion.

7. An electric heater or radiator comprising a concave reflector, a support therefor, a heating element mounted on said reflector

and arranged to extend vertically thereof, said heating element being in the form of a hollow tube or flue whereby currents of air may enter at the bottom of said flue, become heated by the heating element and be dissipated on the top of said flue-like heating element, and electrical connections for the said heating element connected therewith at approximately the center of the said reflector, the said connections being entirely independent of the support of the said heating element.

8. An electric heater or radiator comprising a concave reflector, a support therefor, a heating element comprising a hollow partially flattened tube formed of refractory material, and disposed vertically within the said reflector with its flat side toward the reflector, resistance windings disposed on the said tube, electrical connections for said windings, supports for said tube comprising tube-like extensions thereof, said extensions being firmly secured within the reflector of the heater at top and bottom thereof, said heating element and said connections forming a flue-like structure whereby cold air entering at the bottom thereof and passing through the heating element will be disseminated from the top of said flue-like structure.

In testimony whereof I, the said EMANUEL A. MARTIN, have hereunto set my hand.

EMANUEL A. MARTIN

Witnesses:

ROSE ORKOW,
CELIA PTASHNIK.