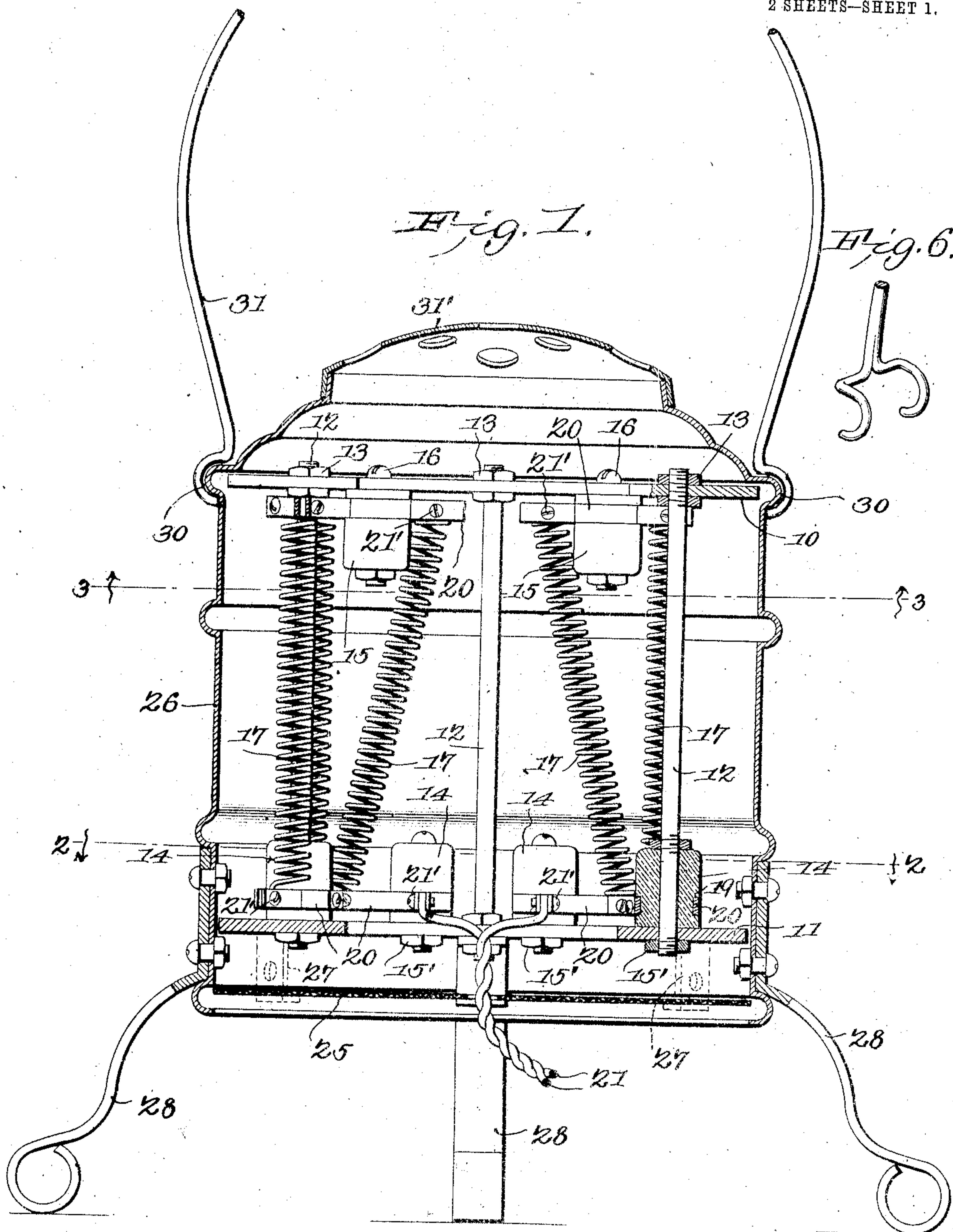


No. 813,113.

PATENTED FEB. 20, 1906

A. A. PRATT.
ELECTRIC HEATER.
APPLICATION FILED JUNE 21, 1905.

2 SHEETS—SHEET 1.



Witnesses

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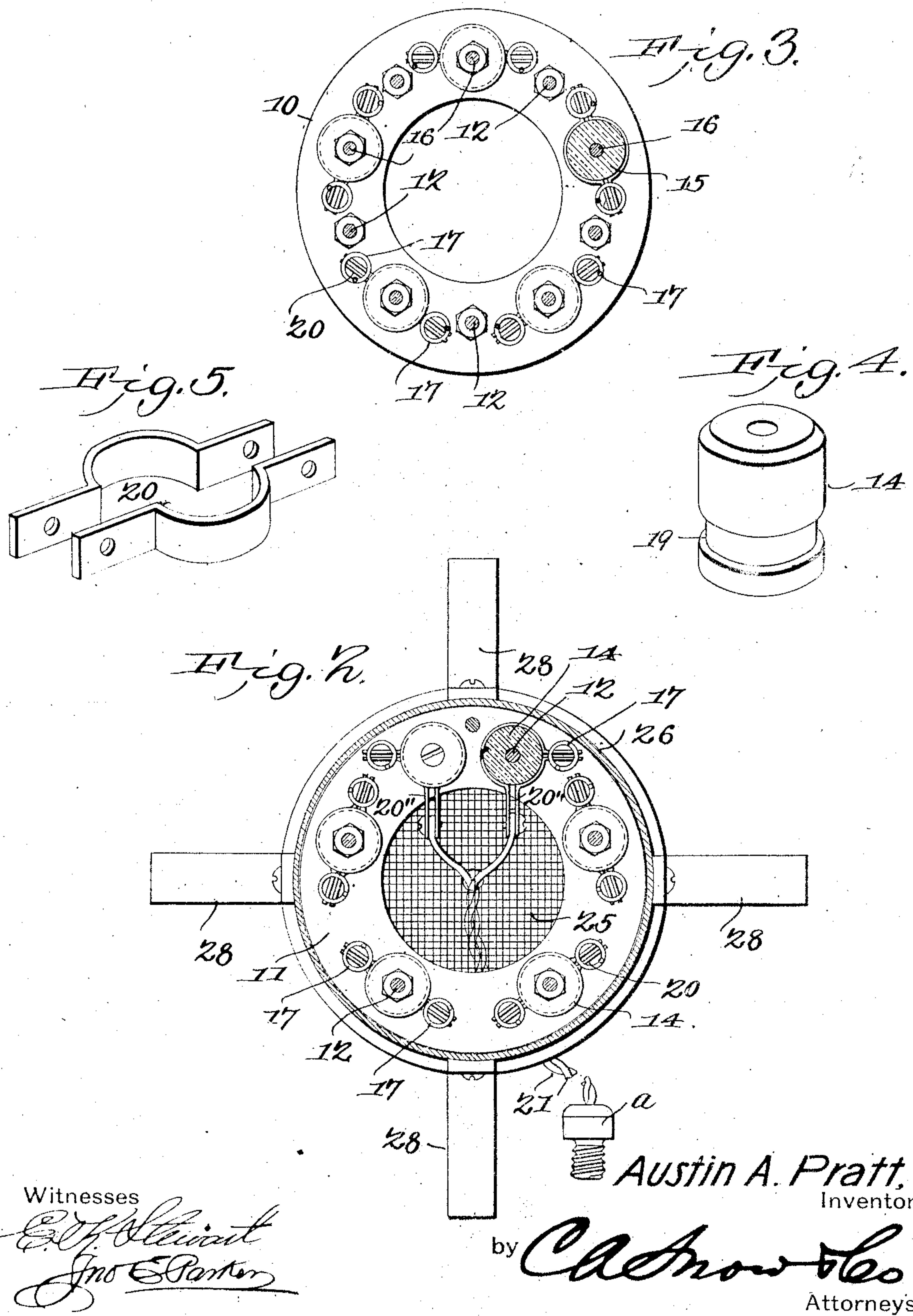
Attorneys

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

AUSTIN A. PRATT, OF LOS ANGELES, CALIFORNIA.

ELECTRIC HEATER.

No. 813,113.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed June 21, 1905. Serial No. 266,313.

To all whom it may concern:

Be it known that I, AUSTIN A. PRATT, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Electric Heater, of which the following is a specification.

This invention relates to electric heating apparatus, and has for its principal object to provide a device of simple and economical construction for heating apartments or for the heating of small quantities of liquid for medicinal or other purposes.

A further object of the invention is to provide a heating device which may be operated at minimum expense and without any odor whatever, all insulating or heat-absorbing material of a character which emits offensive odors when heating being eliminated.

A still further object of the invention is to provide a light and readily-portable heater which may be moved from place to place and in which a current of air is induced by providing an inlet at the bottom of the heater-casing and an outlet at the top thereof, the area of the outlet-openings being somewhat less than the area of the inlet, so that the flow will be checked to a sufficient extent to permit thorough heating of the air as it passes through the casing.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in the novel construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Figure 1 is a vertical sectional view of an electric heater constructed in accordance with the present invention. Fig. 2 is a sectional plan view of the same on the line 2 2 of Fig. 1. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 1 looking toward the top of the heater. Fig. 4 is a detail perspective view of one of the insulating-blocks. Fig. 5 is a similar view of one of the coil-connecting conductors carried by said blocks. Fig. 6 is a detail perspective view of a portion of the detachable handle for carrying the heater from place to place.

Similar characters of reference indicate corresponding parts in each of the several figures.

The frame of the heater comprises upper and lower rings 10 and 11, that are rigidly connected together by a plurality of equidistantly-spaced vertical rods 12, the upper and lower ends of which are threaded and extend through openings formed in the rings. The upper ring is clamped in position by nuts 13, carried by the rod, while the lower end of the rod passes also through a block 14, formed of porcelain or similar material, the block and ring being held in proper position by suitable clamping-nuts 15' on the threaded lower portion of the rod. These lower blocks constitute supports for the connecting devices at the lower ends of the coils. Secured to the upper ring are a number of porcelain blocks 15, held in place by suitable bolts 16, and these form supports for the connecting devices at the upper ends of the coils. The several coils 17 are preferably formed of German silver or other material of high resistance and extend in vertical or approximately vertical lines between the upper and lower connecting devices. Each of the porcelain blocks is provided with an annular groove 19 for the reception of a connecting device in the form of a pair of plates 20, the central portions of which are approximately semi-circular and are provided at their outer ends with openings for the passage of connecting-screws 21', which also serve to lock the ends of the coils to the strips. The upper ring is provided in the present instance with five porcelain blocks 15, while the lower ring is provided with six of said blocks, two of the blocks being arranged closely together, as shown in Fig. 2, and being provided with specially-formed connecting-strips 20, the inner ends of which are extended beyond the inner edge of the lower ring and are adapted to receive the ends of the current-conducting wires 21. The current-conductors 21 may lead from an ordinary lamp-socket plug *a*, as shown in Fig. 2, the wires being led up through a central opening formed in a reticulated disk 25, that is disposed below the lowermost ring.

The several resistance-coils are connected in a continuous series leading from one of the connecting-strips 20' to the other, and as the coils are arranged in a continuous annular series a volume of air passing upward will be

thoroughly heated. The resistance-coils and their supports are contained within a suitable casing 26, which in the present instance is connected to the coil-supports by means of clips 27, that are held in place by the lower ends of three of the vertical bolts 12 and are provided with openings for the passage of securing-screws, that extend also through the casing. These clips 27 have in bent lower ends, as shown by dotted lines in Fig. 1, for the support of the reticulated screen 25. The casing is supported by a number of legs or standards 28 at a convenient height from the floor or other surface, and the upper portion of the casing is beaded, as at 30, for the reception of the opposite ends of a spring-handle 31, which may be employed to carry the heater from place to place and which may be quickly adjusted to or removed from position. The top of the casing may be in the form of a solid cap, but preferably is provided with a centrally-disposed removable cover 31', having openings for the passage of the heated air, and the combined areas of the several openings are less than the area of the inlet at the bottom of the casing, so that passage of air through said casing will be retarded to an extent sufficient to permit the volume of air to be thoroughly heated before it is discharged. By removing the upper cap member 31 a water vessel or the like may be placed in position for the purpose of heating small quantities of water or other liquid.

It will be noted that the insulating devices are formed of porcelain or a similar material and that the remaining portions of the heater are wholly of metal, all insulating or heat-absorbing material having a tendency to emit odors when heated being eliminated.

The construction is such that in the event of rupture of any one of the coils it may be quickly replaced, and the construction of the whole is much more economical than is usual in heating devices of this class.

Having thus described the invention, what is claimed is—

1. In an electric heater, a casing, a pair of supporting members arranged therein, insulating-blocks carried by said members, conducting-clips supported by the blocks, and a plurality of series-connected resistance-coils extending between said clips.

2. In an electric heater, a casing, upper and lower supports disposed therein, insulating-blocks on said supports, metallic clips carried by the insulating-blocks, resistance-coils connected in a continuous series by said clips, and means for connecting the coils to the clips and for clamping the latter in position on the blocks.

3. In an electric heater, a casing, a pair of frame-rings arranged within the casing, connecting-bolts extending between the rings, insulating-blocks held in place on the lower ring by means of said bolts, a series of insulating-blocks secured to the upper ring, the blocks of the respective rings being disposed in staggered relation, current-conducting strips clamped on the blocks, and resistance-coils connected in series by said strips.

4. In an electric heater, a casing, upper and lower frame-rings arranged therein, insulating-blocks carried by the upper and lower rings, the blocks of the respective rings being disposed in staggered relation, each of said blocks having a peripheral groove, strips of conducting material arranged within the grooves and clamped in place, and resistance-coils connected in a continuous series by said strips.

5. In an electric heater, the combination with a casing, of upper and lower rings, insulating-blocks carried by the rings and provided with grooves, insulating-strips arranged in said grooves, resistance-coils connected in a continuous series by said strips, two of the strips being extended inward over the edge of the lower ring for connection to current-conducting wires.

6. In an electric heater, a casing, upper and lower frame-rings arranged therein, connecting-bolts extending between the rings, clips secured to the lower ring, means of securing the casing to the clips, a reticulated disk supported by the clips at a point below the lower ring, and a perforated cover forming the top of the casing.

7. In an electric heater, the combination with upper and lower frame-rings, of a plurality of vertical bolts connecting the rings, insulating-blocks carried by the rings, current-conducting strips supported by the blocks, resistance-coils connected to said strips, a casing surrounding the frame and having a detachable perforated cap to permit the insertion of a vessel within the casing.

8. In a device of the class specified, the combination with a casing, of a pair of superposed and spaced supports, insulators carried thereby, and a plurality of resistance-coils extending between the insulators and arranged in a continuous annular series, forming a central passage for the air to be heated.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

AUSTIN A. PRATT.

Witnesses:

CARL A. STUTSMAN,
EDWARD W. FORGY.