E. WALDER.

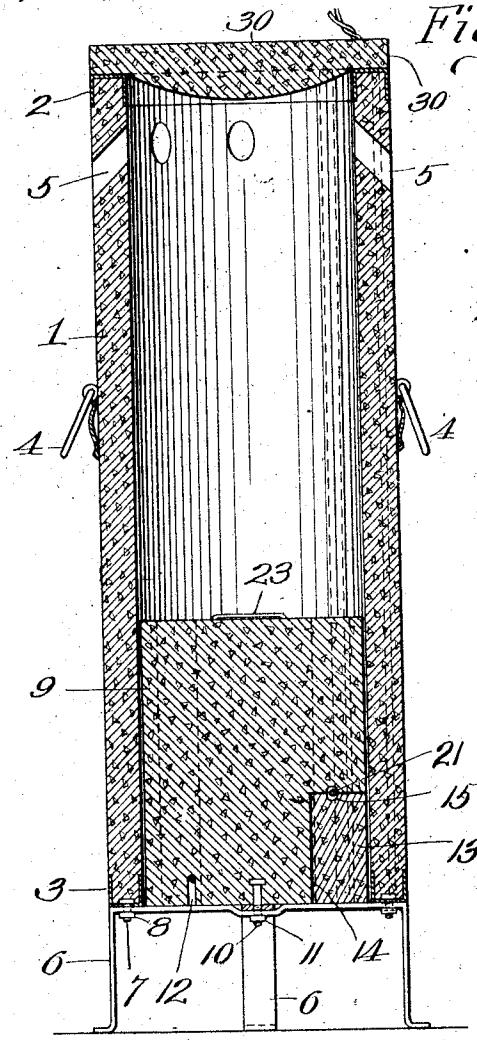
ELECTRIC HEATER.

APPLICATION FILED OCT. 7, 1918.

1,308,211.

Patented July 1, 1919.

Fig. 1.



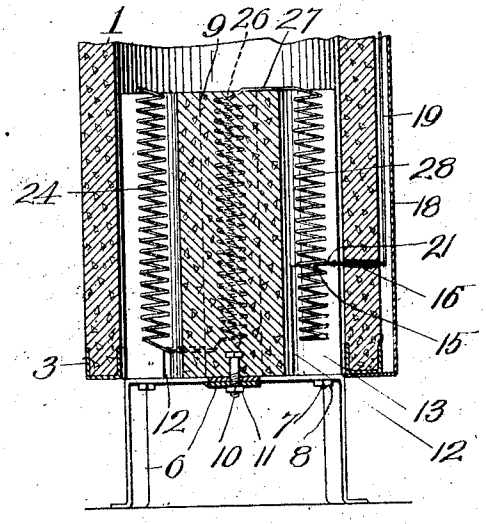


Fig. 3.

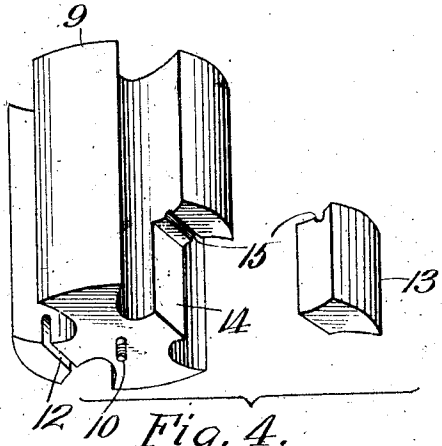


Fig. 4.

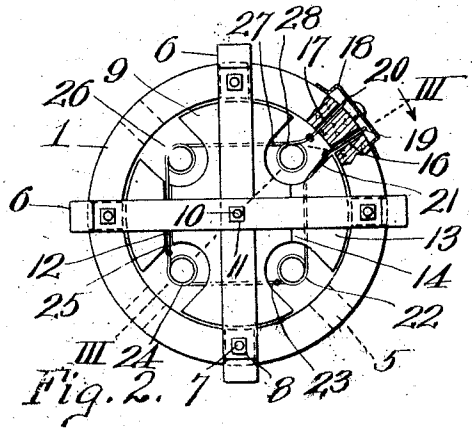


Fig. 2.

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ELECTRIC HEATER.

1,308,211. Specification of Letters Patent. Patented July 1, 1919.

Application filed October 7, 1918. Serial No. 257,115.

To all whom it may concern:

Be it known that I, EDWARD WALDER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

This invention relates to electric heaters and more especially to portable heaters adapted to stand upon a floor and after heating air direct it downwardly for raising the temperature of the lower part of a room more rapidly than would be possible if the heated air was not so directed. A further object is to produce a heater which will remain cool at its exterior surface so as to avoid chance of burning anyone who may chance to touch it. A still further object is to produce a relatively tall and slender heater for facilitating a strong circulation of heated air and composed of heavy insulating material to give the heater stability so that it cannot be readily over-turned. A still further object is to produce a heater of simple, strong, durable and inexpensive construction.

With the objects named in view the invention consists in certain novel and useful features of construction and combinations of parts as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which:

Figure 1, is a central vertical section of an electric heater embodying the invention.

Fig. 2, is an inverted plan view of the heater with its wall partly broken away.

Fig. 3, is a vertical section taken on the line III—III of Fig. 2.

Fig. 4, is a detail perspective view of parts forming certain passages for directing air against the heating elements of the heater.

In the said drawing, 1 designates a cement or concrete cylindrical shell forming the body of the heater, said cylindrical shell being capped at its upper end by a flanged ring 2 and by a similar ring 3 at its lower end, and near its upper end the body is provided with a plurality of downwardly and outwardly sloping hot-air discharge passages 5.

6 designates crossed legs of inverted U-form and preferably produced from metal bars, and said legs are secured to the bottom of the body by means of bolts 7 extending down through the ring 3, and nuts 8 engaging the lower ends of the bolts and the underside of the legs.

A concrete or analogous core 9 is substantially in the shape of a Maltese cross in end view so as to provide between its arms and the body 1, a series of vertical air passages. This core rests upon the crossed legs, and is prevented from sliding toward the opposite end of the body in the event the latter is inverted when being moved, by means of a bolt 10, the said bolt being embedded in the core and extending through the crossed legs and engaged at its lower end by a retaining nut 11.

One of the arms of the cross shaped core is provided in its lower end with a groove 12 for a purpose hereinafter mentioned, and the diametrically opposite arm has a removable portion 13 normally fitting in a recess 14 in said arm, the upper end of the said removable portion and the lower end of the overlying portion of said arm being grooved to conjointly form a passage 15 in the same horizontal plane as a radial passage 16 in the body or shell of the heater, and adjacent said passage 16 the body or shell is provided with a similar passage 17.

A conduit 18 is secured in any suitable manner to the outer side of the shell body and preferably extends for the full length of the same as a holder and protector for a pair of electric feed wires 19 and 20 adapted for connection with an electric lamp socket or the like, not shown. Said wires 19 and 20 extend inwardly through passages 16 and 17 respectively and are conjointly accessible when the removable section 13 of the core 9, is removed. A conductor 21 is attached to the inner end of conductor 19 and thence extends into one of the vertical passages formed by the core and through the passage 15 of the latter into another of said vertical passages, and within the last-named passage is electrically connected to the lower end of a heating coil 22 arranged vertically in said passage. The upper end of the heating coil 22 is connected at the upper end of the core by a conductor 23 to the upper end of a similar heating coil 24 in another of said upright passages. The lower end of the last-named coil is connected by a conductor 25 extending through groove 12 of the core, to the lower end of a heating coil 26 in the fourth of said upright passages,

and a conductor 27 connects the upper end of the last-named coil to the upper end of a coil 28 in the passage first-named, the lower end of said coil 28 being connected to the inner end of the conductor 20.

It will thus be seen that the coils are connected in series and that the current flows through them successively and because of their resistance, highly heats them. The heating of these coils of course raises the temperature of the surrounding air in the respective vertical passages, which air is instantly displaced and forced upward by cooler air, this action continuing and the hot air being discharged downwardly and outwardly through the air exit openings 5 due to the fact that the shell or body is provided with a cover 30 and pressure is developed in the shell or body. The discharge of air downward of course tends to heat the lower part of the room more rapidly than would be the case if the hot air was free to ascend immediately it escaped from the heater.

The body of the heater and its cover being made of cement or concrete not only provides for circulation of hot air as distinguished from radiation thereof for the purpose of stimulating the circulation and guarding against injury to anyone or anything coming in contact with the heater when in operation, but it also provides sufficient weight to guard against easily overturning, and this stabilization of the heater is further increased by the use of the heavy concrete core disposed at the bottom of the body or shell. The making of the core with a separable section permits of the ready connection of the lead wires 19 and 20 with wires connected to the endmost of the series of heating coils. The core furthermore acts to concentrate the air around the heating coils so that practically no heat shall be lost by radiation at the bottom of the heater.

From the above description it will be apparent that I have produced an electric heater embodying the features of advantage set forth as desirable in the statement of the object of the invention, and which is susceptible of modification in various particulars without departing from the principle of construction involved or sacrificing any of the advantages of the appended claims.

I claim:

1. An electric heater, comprising an upright hollow body or shell provided with discharge openings at its upper end, a cover for the body, a core within the lower end of the body of substantially cross shape in end view, a series of resistance devices arranged in the spaces between the arms of the cross-shaped core and electrically connected together in series, and conductors connected to opposite ends of the series of resistance devices.

2. An electric heater, comprising an upright hollow body or shell provided with discharge openings at its upper end, a cover for the body, a support for holding the body in elevated position, a core within the body and resting on said support and provided with a series of upright passages, resistance devices arranged in said passages and electrically connected together in series, and electric current conductors connected respectively to the resistance devices at the ends of said series.

3. An electric heater, comprising an upright shell or body of a heavy non-conducting material and provided at its upper end with downwardly and outwardly sloping exit openings, a support holding the body in elevated position, a heavy core of non-conducting material within the body and resting on said support and provided with a series of upright passages, resistance coils arranged in said passages of the core and electrically connected together in series, electric conductors connected to said series of resistance coils, and a cover for said shell.

In testimony whereof I affix my signature.

EDWARD WALDER.