Dec. 4, 1928. 1,694,175

G. D. HAUSER

PORTABLE ELECTRIC HEATER

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Fig. 1.

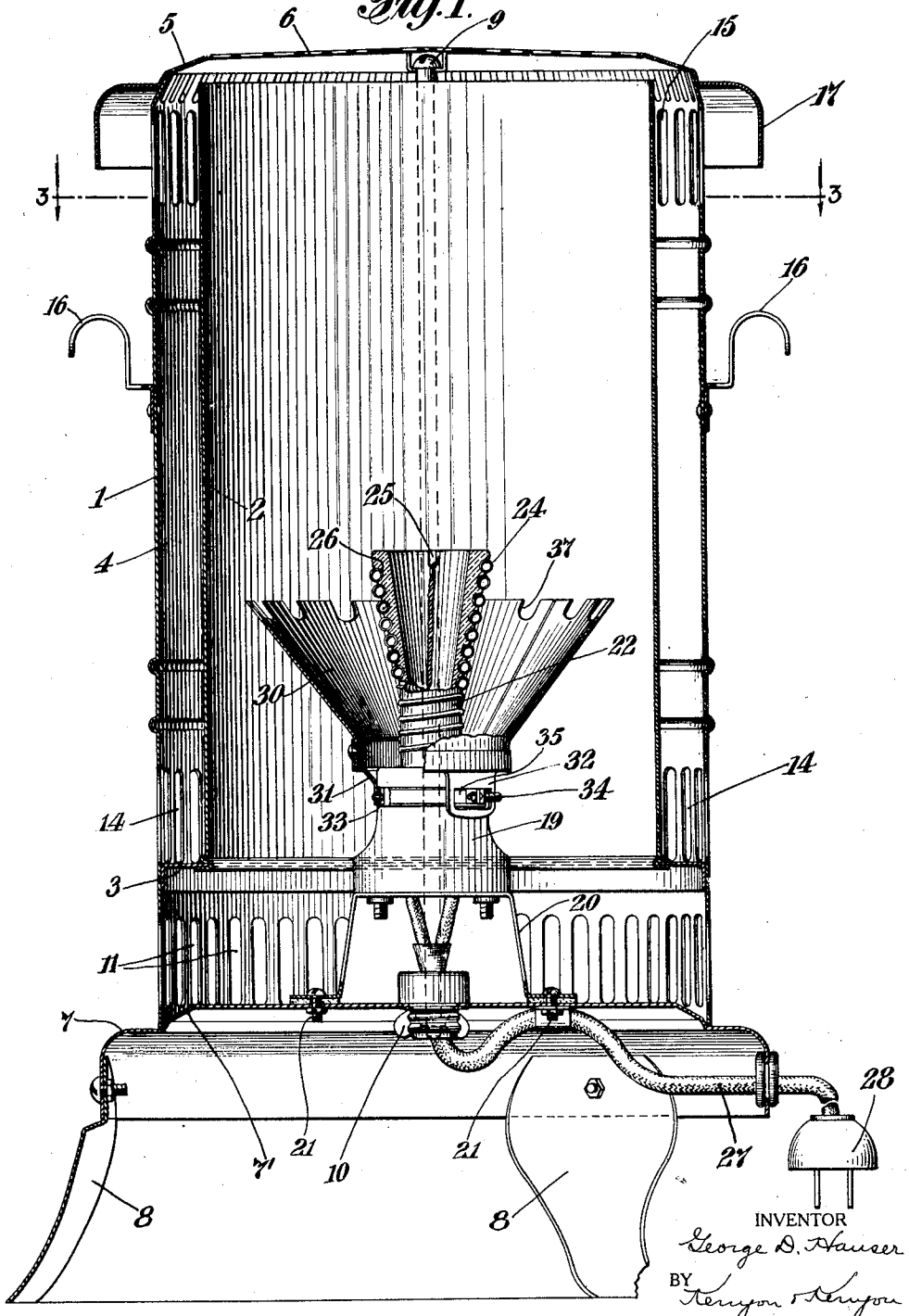

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Fig. 2.

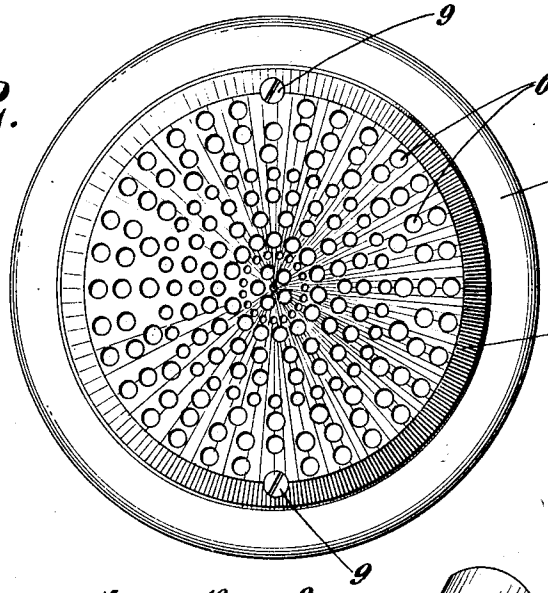
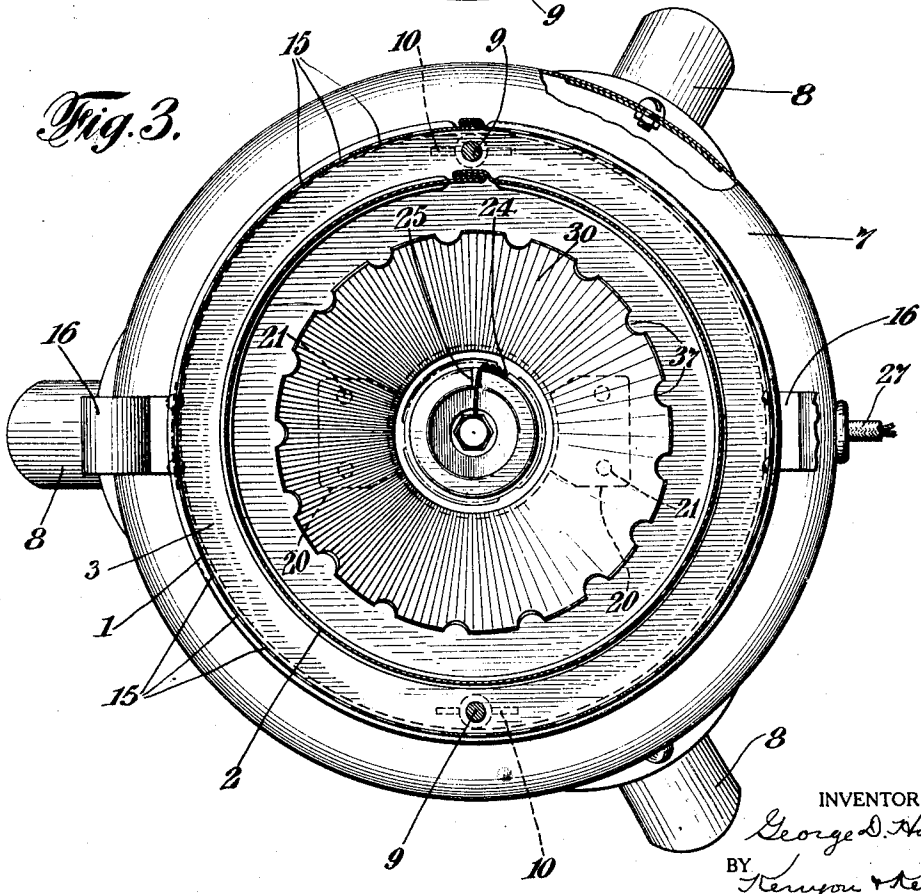


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE D. HAUSER, OF UTICA, NEW YORK, ASSIGNOR TO UTICA PRODUCTS, INC., OF UTICA, NEW YORK, A CORPORATION OF NEW YORK.

PORTABLE ELECTRIC HEATER.

Application filed June 24, 1925. Serial No. 39,229.

My invention relates to heaters and more particularly to portable electric heaters. One of the objects of the invention is to provide an improved heater which is efficient for heating and which at the same time remains sufficiently cool at its outer or peripheral wall to be readily handled, for example, when it is desired to move the heater from one place to another.

Other objects, features and advantages of the invention will appear more fully in the following detailed description and appended claims.

The accompanying drawings forming a part of this specification illustrate one embodiment of the invention.

In the drawings,

Figure 1 is a central vertical sectional view of the said embodiment of the invention.

Figure 2 is a top plan view thereof; and

Figure 3 is a view taken on line 3—3 of Fig. 1.

The body of the heater as shown comprises an outer vertical cylindrical shell 1 and an inner cylindrical shell 2 which is secure in spaced relation to the shell 1 by the flange 3 so as to provide an annular air space 4 between the said shells. The flange 3 may be spot welded or otherwise secured within the shell 1, this flange as shown fitting within a groove or recess at the lower end of the shell 2. A top 5 perforated in the central portion thereof, as shown at 6, rests upon the top of the shell 1, this top being positioned above the top of the shell 2 for a purpose which will presently appear. The shell 1 rests upon a base 7, fitting closely around a central raised portion 7′ of said base. Said base is supported as shown by legs 8. The shells 1 and 2, flange 3, top 5, base 7 and legs 8 are desirably formed of sheet metal. To hold these parts in proper relation to each other, screw bolts 9 are provided, these bolts extending through the cover, flange 3 and the base 7 and being provided at their lower ends with threaded portions carrying wing nuts 10 for drawing the various parts tightly together. This arrangement affords a simple relatively cheap construction permitting ready assembly and taking apart of the various parts of the body of the heater.

The lower part of the shell 1, at a point below the flange 3, is provided with openings 11 through which the air to be heated may pass laterally with respect to the heater into the interior thereof and then upwardly into the heating space 12 within the shell 2. This air after being heated, as hereinafter described, passes upwardly out of the shell 2 and through the perforations in the top 5 to the atmosphere.

To permit the circulation of air through the space 4 a plurality of openings 14 are provided, as shown, in the lower part of the shell 1 at a point immediately above the flange 3, another set of openings 15 being formed in the shell 1 adjacent the top thereof. When the shell 2 becomes heated, air enters the openings 14 in a lateral direction with respect to the heater, this air passing upwardly from the baffle 3 through the space 4 and some of it passes out through openings 15 in a lateral direction with respect to the body of the heater. Some of the air from the space 4 passes over and above the shell 2 and out through the openings 6, absorbing some of the heat from the hot air from the space 12 so as to increase the volume of heated air and somewhat lower the temperature thereof. The passing of the air upwardly through the air space 4 serves to maintain the outer peripheral wall 1 of the body of the heater relatively cool; and I have found that with a heater constructed in this manner the said outer wall may be readily grasped by the hands without danger of burning so that the heater may be thereby readily moved from one place to another. To facilitate handling of the heater, finger pieces 16 may be secured to the wall 1 at opposite points thereof, as shown in Fig. 1. The cover 5 may as shown be provided with an extension 17 serving as a guard about the upper part of the shell 1 adjacent the openings 15. The flange 3 and the bottom portion 7′ are preferably made solid or imperforate so as to avoid the danger of heated particles falling downwardly from the spaces 4 and 12 to the floor.

The heating element shown includes an electric light socket 19 supported within the body of the heater, as by bridge 20 which is secured to the top of the base portion 7′ by screws 21. Mounted within the socket 19 is a hollow plug of refractory material 22 supporting a heating element 24 in the form of a wire of high electrical resistance. The element 24 as shown extends from the usual central contacts of the socket 19 and plug 23 through a groove 25 in plug 22, extending thence along a spiral groove 26 in the ex-

terior of the plug 22 to the usual peripheral contacts in the plug 22 and socket 19. Current from a suitable source may be supplied to the contacts in the socket 19 through a cable 27, the outer portion of which as shown is provided with a plug 28 adapted to be connected to a source of electricity such as the usual electrical wiring in dwelling houses.

To effectively direct the air heated by the element 24 upwardly out through the top of the heater, I provide a reflector 30 which is desirably mounted on the socket member 19. The lower end of reflector 30 is provided with downwardly extending tabs 31, 32. The tab or tabs 31 are secured as by riveting to a ring 33 surrounding the socket 19, the ring 33 being adapted to be fixedly secured about the socket 19 by screw 34 passing through the free outwardly directed end portions of said ring. These end portions of the ring extend through a slot 35 in the tab 32 whereby the necessary expansion and contraction of the said ring is permited to enable the same to be secured in place or released and at the same time the projecting end portions of the ring assist in holding the reflector against up and down movement.

The heating element 24 and the reflector 30 are desirable arranged in the lower part of the body of the heater. The air entering the openings 11 passes upwardly in the shell 2. Near the upper part of the reflector 30 it is thoroughly heated and directed upwardly out through the top of the heater, the up-draft within the shell 2 tending to increase the up-draft in the annular air space 4. The reflector 30 as shown is in the form of an inverted truncated cone with its outer edges spaced from the wall 2. The said reflector acts as a shield between the inner lateral wall 2 and the heating element 24 and thereby assists in maintaining the outer lateral wall 1 cool. If desired, the reflector may be provided with suitable openings, for example, peripheral recesses 37 as shown in Fig. 1 to permit the current of air to pass in close proximity to the heating element 24.

It is to be understood that changes within the scope of the appended claims may be made in the structure shown and described without departing from the spirit and scope of the invention.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent of the United States is:—

1. A heater comprising a body having an outer lateral wall, an inner lateral wall having a heating space within the same and a perforated top wall, said lateral walls being spaced apart to provide an air space between them, and said body being provided with means for admitting separate bodies of air laterally to the lower parts of said air space and said heating space respectively, and to permit the escape of air from the upper part of said air space, said spaces being closed at the bottoms thereof and open to the atmosphere through said perforated top wall, an upwardly directed reflector within said body adjacent the lower part thereof, and a heating element within said reflector.

2. A heater comprising a body having spaced inner and outer lateral walls, a tapered reflector within said body, and a heating element within said reflector.

3. A heater comprising a body having spaced inner and outer lateral walls, and a perforated top wall, an upwardly directed conical reflector within said body, and a heating element within said reflector.

4. A heater comprising a body, a tubular shell within said body and spaced therefrom to form an annular air chamber, said shell terminating above the bottom of said body and having a baffle plate extending from its lower edge to said body, an upwardly-directed tapered reflector at the lower end of said shell, and a heating element within said reflector, said shell and air chamber being in communication with the atmosphere independently of each other.

5. A heater comprising a body having a perforated top wall, a tubular shell within said body and spaced therefrom to form an annular air chamber, said shell terminating above the bottom of said body and having a baffle extending from its lower edge to said body, an upwardly-directed tapered reflector at the lower end of said shell, and a heating element within said reflector, said body being provided with apertures for permitting circulation of cool air through said annular chamber and also with apertures for admitting air to the interior of said shell.

In testimony whereof, I have signed my name to this specification.

GEORGE D. HAUSER.