Aug. 13, 1929. W. W. HICKS 1,724,585

ELECTRICAL AIR HEATER

Filed July 25, 1927

FIG. 1.

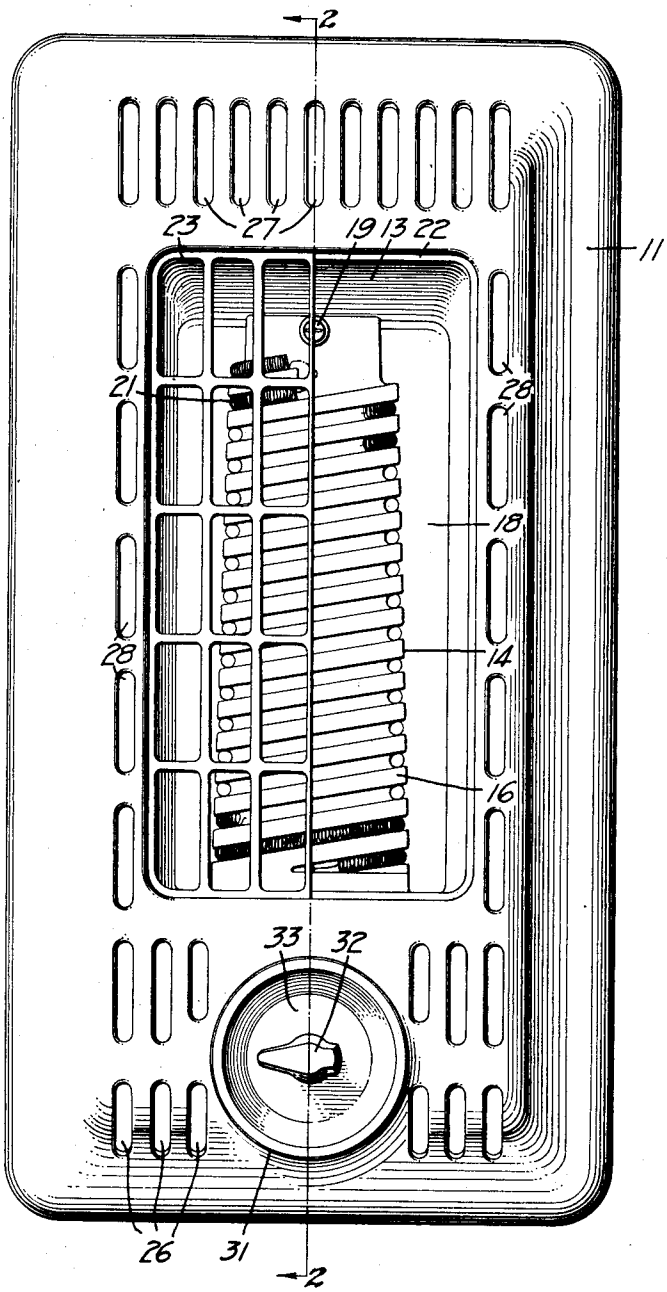
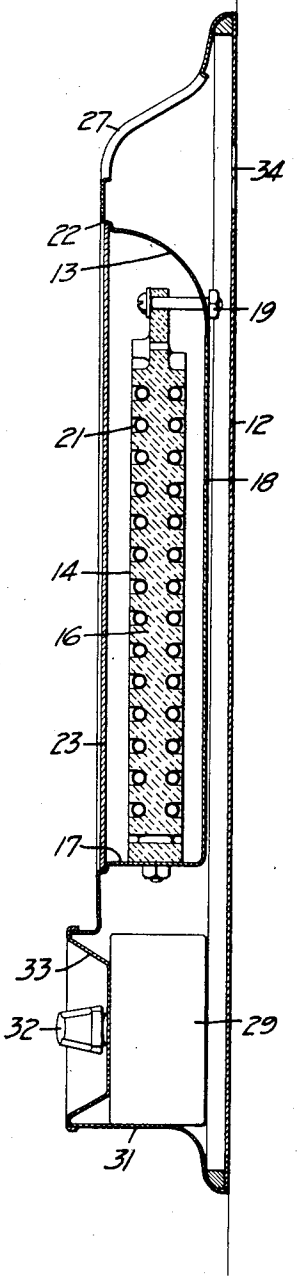


FIG. 2.



INVENTOR
William Wesley Hicks
BY
White, Frost & Fryer
ATTORNEYS

Patented Aug. 13, 1929. 1,724,585

UNITED STATES PATENT OFFICE.

WILLIAM WESLEY HICKS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO WESIX NATIONAL COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF DELAWARE.

ELECTRICAL AIR HEATER.

Application filed July 25, 1927. Serial No. 208,125.

This invention relates generally to electrical air heaters for domestic purposes.

It is a primary object of this invention to greatly simplify the construction and cheapen the cost of manufacture of electrical air heaters.

It is a further object of this invention to devise a novel form of electrical air heater which may be secured to the wall of a room without the necessity of first providing a recess therein.

Further objects of this invention will appear from the following description in which I have set forth the preferred embodiment of my invention. It is to be understood that the appended claims are to be accorded a range of equivalents consistent with the state of the prior art.

Referring to the drawing:

Figure 1 is a front elevational view illustrating an electrical air heater constructed in accordance with this invention.

Fig. 2 is a cross sectional view taken along the line 2—2 of Fig. 1.

The heater of this invention is of the general type which makes use of a metal housing within which one or more electrical heating elements are disposed, whereby convective currents of air within the room may circulate into and out of the housing. In this particular case the housing includes a front plate 11 which may be constructed of either pressed sheet or cast metal. Instead of using additional side, and top and bottom walls, the front plate is bulged forwardly as shown in Fig. 2, so that the housing is completed merely by the addition of a suitable metal back plate or back wall 12. Secured to the front plate 11 and disposed within the housing formed by the front and back plates, there is an open front shell 13 within which is positioned one or more electrical heating elements 14. While a variety of electrical heating elements may be incorporated with the device, the element disclosed gives good results and comprises a relatively flat upstanding refractory support 16 which may rest upon the bottom shelf 17 of shell 13. This refractory support is retained in spaced relationship to the vertical wall 18 of shell 13, and may have its upper portion steadied as by means of spacing member 19. The periphery of the support is grooved both for the purpose of providing an augmented radiation area and to provide means for positioning the convoluted resistance conductor 21.

In electrical air heaters which have been constructed in the past, shells similar to shell 13 shown in the drawing have been employed, but these shells have been constructed as a separate member and then attached to the rear face of a front grill, as shown for example in my Patent No. 1,518,067, issued Dec. 2, 1924. In this invention I propose to make the shell 13 as an integral part of the front plate 11 as shown. In case the front plate is a casting, the shell 13 is cast together with the front plate to form an integral piece, or in case sheet metal is employed, one single sheet may be pressed out to form both the bulged front plate and the shell 13. It is obvious that this construction will effect a substantial saving in the cost of manufacture of an electrical air heater, and at the same time will produce a more rugged structure. Only one manufacturing step is required to construct both the shell and front plate, and the necessity of assembling these elements is obviated. The junction between the shell 13 and the front plate may be formed with a recess or shoulder 22 to provide convenient means for positioning a metal guard 23.

With a heater such as described above considerable heat may be transferred to the metal back wall 12 unless proper provision is made for carrying away such heat by convection currents of air. For this purpose a plurality of apertures 26 are provided in the front plate 11 below the shell 13, and another series of apertures 27 above the shell. These apertures permit convection currents of air to pass into the lower portion of the housing, to flow upwardly between the shell and the back wall 12, and out thru the upper portion of the housing. Direct conduction of heat from the shell 13 to the side portions of the front plate 11 is preferably minimized by providing rows of elongated apertures 28 adjacent the junction between the front plate and the shell 13. This construction is preferable because of the ease with which heat may flow from the shell to the front plate, due to the integral construction.

For controlling the current supplied to the heating elements I have shown a suitable electrical switch 29 which is preferably posi-

tioned within the housing below the heating element. As a means for positioning this switch I have shown a metel casing 31 which is preferably formed integral with the lower portion of the front plate 11. The control knob 32 of the switch is preferably substantially flush with the outer edge of casing 31, and the front face of casing 31 is preferably closed as by means of an inwardly dished member 33.

In installing a heater such as described above, the back wall 12 is secured flat against the wall of a room. For example it is only necessary to drive a nail or screw into the wall and then suspend the device by engaging the nail or screw in the slot 34 provided in back wall 12. The exposed surface of the front plate 11 is preferably finished in a vitrified enamel and the outer surface of shell 13 provided with a reflecting surface, by enameling the same or by other means. The electrical heating element is generally operated at a glowing temperature so that a certain amount of heat is radiated into the room, the remainder of the heat being absorbed by convection currents of air. The bulged construction of the front plate makes possible the formation of a heater housing with only the addition of a back wall, and likewise makes a heater which is neat in appearance when fixed to a wall of a room as described above.

I claim:

1. In an electrical air heater, a metal front plate, a metal front plate bulged outwardly, a backwall secured across the rear face of said plate thereby forming a housing, a shell disposed within the housing and formed integral with said front plate, said shell being spaced from said back wall, and electrical heating means disposed within the shell, said front plate having perforations below and above the shell for passage of convection currents of air.

2. An electrical heater of the wall type comprising a metal front plate bulged outwardly, a backwall secured to said front plate and defining a housing together with said front plate, a shell spaced from said backwall and having its open front side exposed to the intermediate portion of said front plate, an electrical heating element disposed in said shell, and means for suspending said heater upon a flat unrecessed surface of a room wall.

3. An electrical heater of the wall type comprising a metal front plate bulged outwardly, a backwall secured to said front plate and defining a housing together with said front plate, said front plate having openings in the upper and lower portions thereof for passage of convective currents of air and also having an open intermediate portion, an electric heating element cooperatively disposed in front of said backwall and exposed thru the open intermediate portion of said front plate, and means for suspending said heater upon a flat unrecessed surface of a room wall.

4. An electric air heater for wall attachment, an integral metallic front portion outwardly bulged and formed with a central depression in the bulged portion providing a recess, a flat plate secured to the rear face of the front portion in spaced relation to that part of the front portion formed by the depression, said plate being apertured to receive supporting means for the heater, and electrical heating means mounted in the depression formed in the front portion, said front portion having air circulating apertures formed therein around the central depression to provide circulation between the front and back portions.

5. An electric air heater for wall attachment, an integral metallic front portion outwardly bulged and formed with a central depression in the bulged portion providing an outwardly facing shoulder and a recess, a guard member mounted on the front portion in engagement with the outwardly facing shoulder, a flat plate secured to the rear face of the front portion in spaced relation to that part of the front portion formed by the depression, said plate being apertured to receive supporting means for the heater, and electrical heating means mounted in the depression formed in the front portion, said front portion having air circulating apertures formed therein around the central depression to provide circulation between the front and back portions.

6. An electrical heater for attachment to an unrecessed wall comprising a front plate bulged outwardly, a flat back plate extending across the rear edge of the front plate thereby forming a housing with the front plate, said back plate being adapted for attachment against an unrecessed room wall, a shell secured to the front plate intermediate the sides and ends of the same, the rear wall of said shell being spaced from said back wall and thus forming a flue for convection currents of air, and an electrical heating element disposed in said shell, said front wall having openings in the same above and below said shell for passage of convection currents of air.

In testimony whereof, I have hereunto set my hand.

WILLIAM WESLEY HICKS.