Dec. 14, 1948. E. C. ADAMS 2,455,967

ELECTRIC HEATER

Filed April 10, 1945

Fig.1

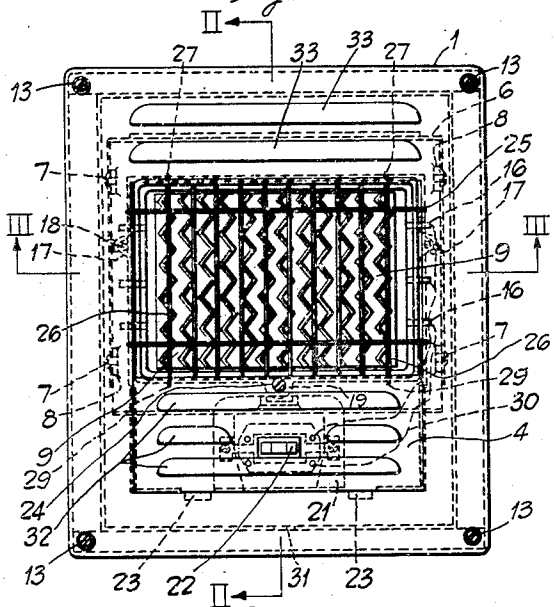


Fig.2

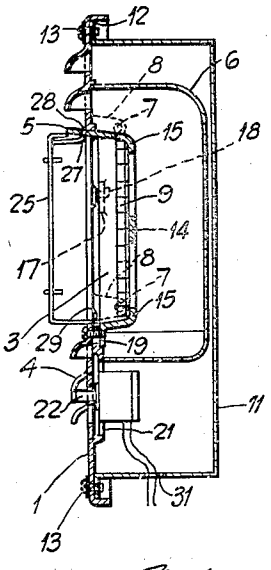


Fig.3

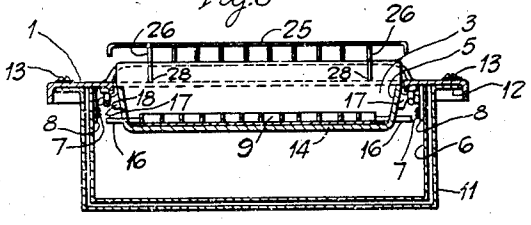


Fig.4

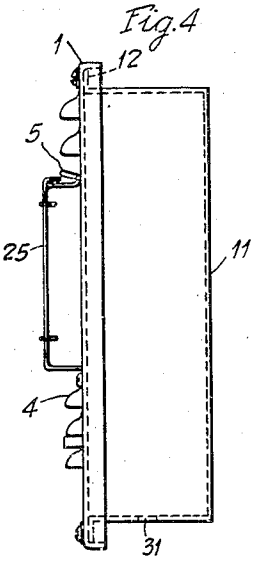
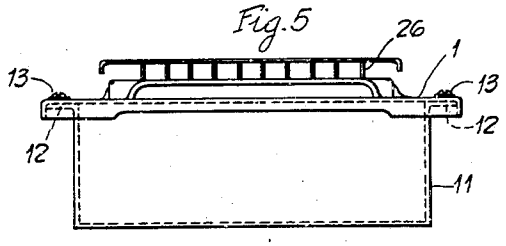


Fig.5



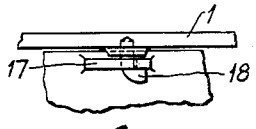


Fig.6

Inventor
Edwin C. Adams
by J. E. Dickenson
atty

Patented Dec. 14, 1948 2,455,967

UNITED STATES PATENT OFFICE

2,455,967

ELECTRIC HEATER

Edwin C. Adams, Pittsburgh, Pa., assignor to Adams Bros. Mfg. Co., Inc., Pittsburgh, Pa., a corporation of Pennsylvania

Application April 10, 1945, Serial No. 587,642

5 Claims. (Cl. 219—34)

1

My invention relates to an improvement in electric heaters, and while not necessarily so limited in its use, is more especially adapted for use in heaters of the radiant electric type, and particularly heaters designed for home use, such as small upright stoves or wall heaters.

In heaters of this kind one of the principal problems which confronts the user is that of replacing the heating elements when they burn out.

An object of this invention is to reduce this problem to a minimum so that the replacing of the heating elements is not much more difficult than that of replacing a burned-out light bulb. This eliminates the necessity of the user, if he is inexperienced as most people are, or timid about electricity, calling in a skilled electrician every time he has a burned-out heating element. It also makes it possible for the manufacturer to dispense the heating elements as a staple article through hardware or other convenient community outlets.

Another problem which confronts the marketing of this kind of heater is the original cost to the consumer which is brought about by the cost of manufacture to the producer. With this thought in mind it is also an object of this invention to provide a heater of the above-described character which is simple and inexpensive to manufacture and assemble.

These and various other objects and advantages of my invention will be readily apparent when the following detailed description is read in conjunction with the attached drawings. As shown in these drawings, Figure 1 is a front elevational view of a heater incorporating an embodiment of the invention and which is designed to fit into a wall recess; Figure 2 is a vertical section of the same heater taken on the line II—II of Fig. 1; Fig. 3 is a horizontal sectional view taken on the line III—III of Fig. 1; Figure 4 is a side elevation of the same heater; Figure 5 is a plane view looking upwardly from the bottom of the heater, and Figure 6 is a fragmentary view on a somewhat enlarged scale showing the hook and lug arrangement by means of which the heating element container is supported in the heater frame.

Referring in detail to these drawings, the numeral 1 designates the frame proper of the heater. As shown, the center of this frame is provided with a large central opening 3, over the lower portion of which a cover plate 4 is removably mounted and in the remaining upper portion of which a heating element supporting container or assembly 5 is demountably secured.

Immediately back of that portion of the opening 3 of the frame 1 in which the heating element container 5 is arranged, there is provided a heat-deflecting casing 6. This casing which is formed of thin material substantially in the shape of an open-top box is held in place by machine screws 7 engaged in lugs 8 comprising a part of or suitably secured to the back of the frame 1.

2

To provide with the frame 1 a housing for the assembly and also assist in deflecting the heat generated in the heating elements 9 so as to protect the wall in which the unit may be mounted, a second casing 11 is provided. This casing is also preferably made of light material in the shape of an open-topped box having flanges 12 at its two ends by means of which it is secured to the frame 1 through the agency of screw bolts 13 which are mounted in aligned openings in the frame 1 and the flanges 12.

As shown best in Figs. 1, 2, and 3, the heating element container 5 comprises a rectangular disk-shaped casting or stamping which is open at the top and bottom except for a centrally disposed strip 14 extending across its bottom and which with an inwardly extending flange 15 also on the bottom of the container forms a support for the heating elements 9.

These heating elements 9, the details of which comprise no part of the present invention, may be made in any suitable way, being shown here of a construction substantially the same as that illustrated and described in United States Letters Patent No. 1,657,808, and held in the container 5 by the rods 16 which are mounted in, but insulated from, the container as disclosed in that patent so as to also constitute the terminals for the heating elements proper.

At the sides thereof the heating element container 5 is provided near its upper end with laterally extending hook-shaped lugs 17 which are arranged to be engaged with rearwardly and upwardly projecting lugs 18 attached to or formed on the rear face of the frame 1 to detachably hold the heating element container 5 in the frame. On the lower end of the heating element container 5 there is provided in the center thereof a downwardly projecting lug 19 which is disposed to fit under and engage the lower side 9 of an open-centered rectangular-shaped bracket 21 which is formed on or secured to the frame 1 to provide a support for a toggle switch 22.

The cover plate 4 for convenience of assembling and replacing the heating element container 5 is provided at its lower end with spaced lugs 23 which are formed to fit back of the frame 1 while its upper end rests on the switch-supporting bracket 21. For fixedly holding both the cover plate 4 and the heating element container in place, a screw bolt 24 is employed and fitted in

aligned holes in the cover plate and the lug 19 on the lower end of heating element container 5, the hole in the container lug 19 being threaded to receive the bolt.

Another feature of the assembly is embodied in the design and arrangement of a guard 25 which is provided to protect the heating elements 9. This guard as shown is made in the shape of a grid out of cross wires which are welded together. The two laterally most disposed vertical wires 26 of this guard are made longer than the rest and bent at their ends so that at the upper ends they have bent portions 27 which fit in openings 28 provided for their reception in the upper wall of the heating element container 5, and at their lower ends with bent portions 29 which fit in between the top of the container 5 and the inner face of the cover plate 4, the latter being preferably provided with notches for their reception to hold them firmly in place.

Any suitable toggle switch 22 may be mounted by screw bolts in the bracket 21 and provided with leads 30 for connecting it to the terminals 16 of the heating elements 9 and the housing casing 11 provided with a knock-out opening 31 by means of which the current supply may be conveniently connected to switch 22.

To afford a passage for circulating air through the heater the cover plate 4 is provided with louvres 32 and the frame 1 at the top thereof with similar louvres 33.

As will be readily appreciated from the foregoing description, the only operations required to replace a heating element container 5 once it is burned out is to remove the screw 24, take off the cover plate 4 and guard 25, lift out the heating element container 5, disconnect the leads 30 from the oil container, reconnect these leads 30 to the new container, hook the new container in place, replace the guard and cover plate 25 and 4 respectively, and put the screw 24 back in place. The original assembly of the unit merely involves the latter operations. With such an arrangement the heating element assembly 5 can be made up for replacements and sold similar to light bulbs.

It is to be understood, of course, that various modifications of the foregoing improvement may be embodied in a heater construction without departing from the spirit of my invention, and all such modifications are intended to be covered by the appended claims.

I claim as my invention:

1. In an electric heater, in combination a main frame having an opening therein, a heating element container insertable from the front into said opening, a lug secured to said frame for supporting said container, a hook on said container for engaging said lug, a cover plate for a portion of said opening adjacent that portion filled by said container, a lug on said cover plate disposed to make locking engagement with said frame, a lug on said container for engaging said cover plate, and detachable element for securing said cover plate to said last-mentioned lug and locking the cover plate and the heating element container securely in said main frame.

2. In an electric heater, in combination a main frame having an opening therein, supporting lugs secured to said frame at the sides of said opening, a heating element assembly insertable from the front into said opening and having a hook member at each side thereof for engaging said lugs, a cover plate to fit over the portion of said opening adjacent the portion filled by said heating element assembly, a lug on said cover plate disposed to make locking engagement with said frame to hold the plate in place, a lug on the end of said heating element assembly disposed to engage the inner face of said cover plate and a detachable element disposed to connect said cover plate to said last-mentioned lug and lock the cover plate and the heating element assembly securely in said main frame.

3. In an electric heater, in combination a main frame having an opening therein, supporting lugs on said frame at the sides of said opening, a heating element container insertable from the front into said opening and having a hook member at each side thereof for engaging said lugs, a switch-supporting bracket secured to said frame at the end of the opening in the frame opposite that to which the heating element container is attached, a cover plate to fit over the portion of the opening adjacent the portion filled by said container and rest on said bracket, a lug on said cover plate disposed to make locking engagement with said frame, a lug on said container disposed to engage said cover plate, and screw means for removably connecting said latter lug to said cover plate and locking the cover plate and the heating element container securely in said main frame.

4. In an electric heater, in combination a main frame, having an opening therein, a heating element container insertable from the front in said opening, a lug secured to said frame for detachably supporting said container, a hook on said container for engaging said lug, a cover plate for a portion of said opening adjacent the portion filled by said container, a lug on said cover plate for engaging said frame, a lug on said container for engaging said cover plate, a guard adapted to fit over that portion of the opening in said frame filled by said container, means at one end of said guard for demountably engaging it with said container, means at the other end for engaging it between said container and said cover plate, and means for detachably connecting said cover plate to said lug on the container.

5. In an electric heater, in combination a main frame having an opening therein, a heating element container insertable from the front into said opening, supporting lugs for said container secured to said frame at the sides of said opening, hook members on the side of said container for engaging said lugs, a wire guard disposed to fit over said container and having projections at one end fitting into openings in said container and projections at the other end disposed to rest on said container, a cover plate to fit over the portion of said opening adjacent that filled by said container, lugs on said cover plate for engaging said frame, a lug on said container for engaging said cover plate and means for detachably securing said cover plate to said last-mentioned lug and for locking the projections on said guard adjacent to the latter between the cover plate and said container.

EDWIN C. ADAMS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,657,808	Steffen	Jan. 31, 1928
1,672,725	McCormick	June 5, 1928
1,688,168	Whittaker	Oct. 16, 1928
1,697,176	Forshee	Jan. 1, 1929