April 4, 1939. J. DEUCHES 2,153,078

ELECTRIC RADIATOR

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Fig. 1.

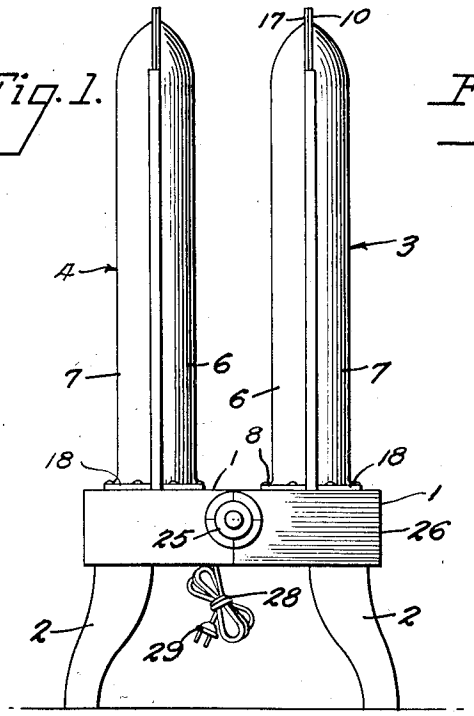


Fig. 2.

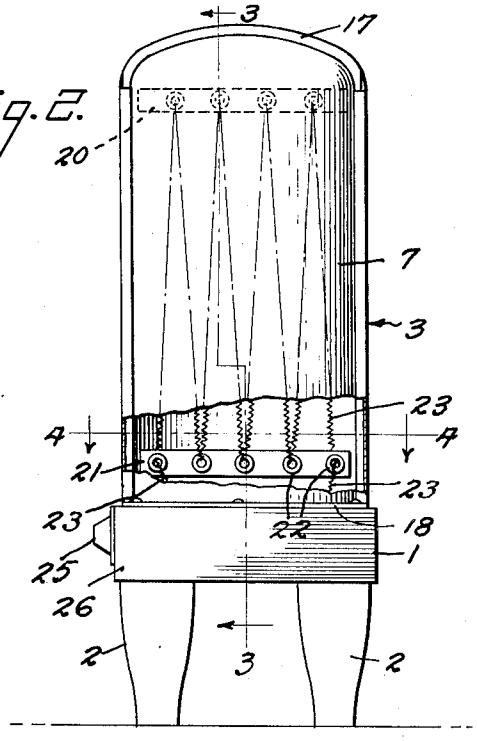


Fig. 3.

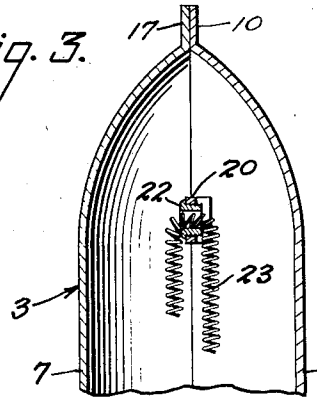
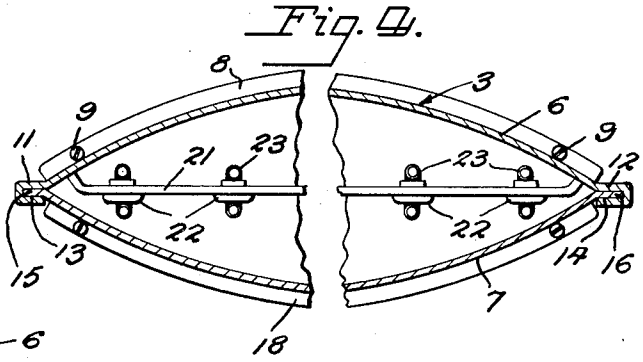
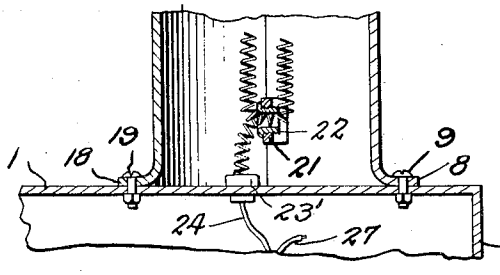


Fig. 4.





Inventor

Joseph Deuches

By Mason Fenwick & Lawrence

Attorneys

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Fig. 5.

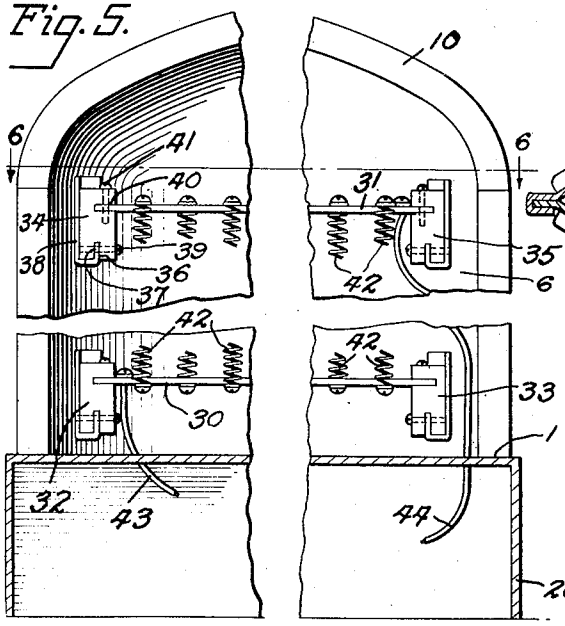


Fig. 6.

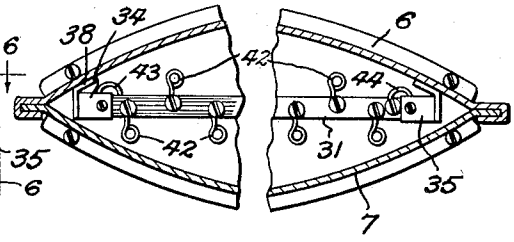


Fig. 8.

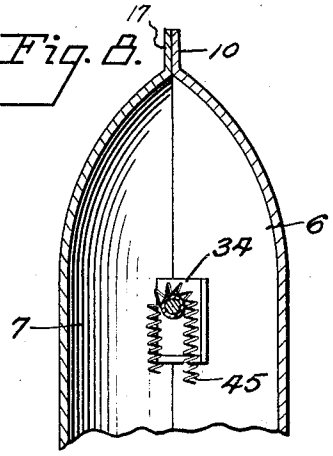


Fig. 7.

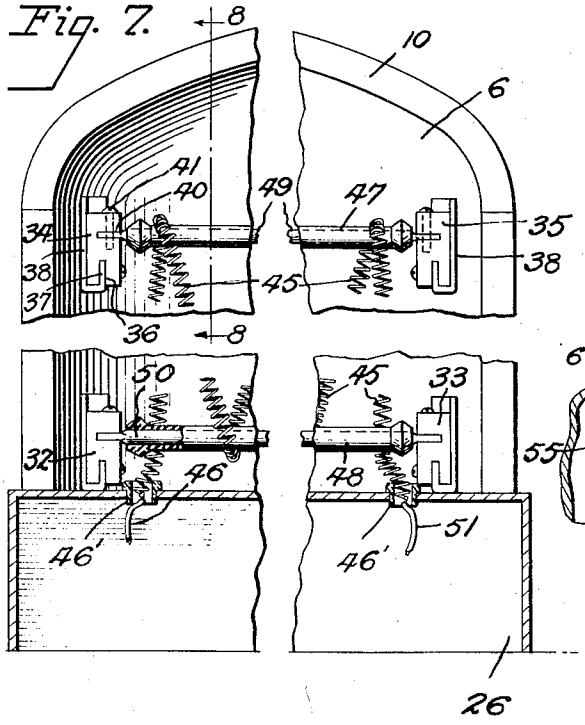


Fig. 9.

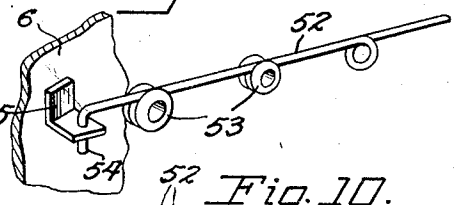
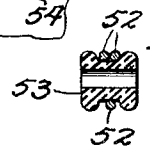


Fig. 10.



Inventor

Joseph Deuches

By Mason Fenwick & Lawrence

Attorneys

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UNITED STATES PATENT OFFICE

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ELECTRIC RADIATOR

Joseph Deuches, Memphis, Tenn.

Application August 10, 1936, Serial No. 95,217

6 Claims. (Cl. 219—38)

This invention relates to electric radiators in general, and more particularly to radiators of the portable domestic type.

The main object of the invention is to provide a radiator of the character referred to, of simple construction and pleasing appearance, which can be cheaply manufactured in quantities, and which can be readily assembled and disassembled, for the purpose of replacement and repair.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawings:

Figure 1 is an end elevation of one form of the invention;

Figure 2 is a side elevation of the device shown in Figure 1, part of one section of the radiator casing being broken away to show details of construction;

Figure 3 is a broken vertical transverse section, to an enlarged scale, taken on the line 3—3 of Figure 2;

Figure 4 is a horizontal section, to an enlarged scale, taken on the line 4—4 of Figure 2;

Figure 5 is a broken side elevation of a modified form of the invention, one section of the casing of one of the units being removed to show details of construction;

Figure 6 is a horizontal transverse section taken on the line 6—6 of Figure 5;

Figure 7 is a broken elevation of another form of the invention, one section of the casing being removed to show details of construction;

Figure 8 is a vertical transverse section taken on the line 8—8 of Figure 7;

Figure 9 is a fragmentary detail, in perspective, of a substitute form of coil support; and

Figure 10 is a section through a porcelain bushing adapted for use in the support illustrated in Figure 9.

In all forms of this invention, it is preferred that the electric heating coil shall be enclosed in casings mounted on a base; and shall be so constructed as to be readily moved from one location to another, and to be connected detachably and readily, through the usual plug connection, to a source of electric supply. As shown particularly in Figures 1–4 of the drawings, the invention comprises a base 1 provided with feet 2 adapted to support the base at any desired distance from the floor of an apartment or room wherein the heater is to be used.

Any desired number of casings enclosing electrical heating units, may be mounted on the base 1, the size of which will depend, of course, upon the dimensions of the room to be heated. Whatever the size of the base may be, and the number of heating units mounted thereon, it will be understood that all of the casing units are substantially the same in construction. Only two of these units, 3 and 4 are illustrated in Figure 1 of the drawings. Since both units are structurally identical, only one of them, the unit 3, will be described in detail.

The casing unit 3 is formed in two sections, 6 and 7. The section 6 is arcuate in cross-section, substantially as shown in Figure 4 of the drawings. The lower end of the section 6 is provided with a flange 8, adapted to seat on the base 1, and to be suitably secured thereto as by bolts 9. The upper end of the section 6 is bent inwardly and is provided at its outer edge with a flange 10. This flange 10 forms a continuation of, and lies in the same plane, as the flanges 11 and 12 formed on the opposite vertical edges of the section 6.

The flanges 11 and 12 are return bent to form grooves 13 and 14, respectively, adapted to receive slidably the flanges 15 and 16 formed on the opposite edges of the section 7. The upper edge of the section 7 is bent and shaped to form a flange 17, which fits closely against the flange 10. The lower end of the section 7 is also provided with an outwardly directed flange 18 adapted to seat upon the base 1, and to be suitably secured thereto as by bolts 19. It will be evident from the drawings that access may be had to the interior of the casing 3 merely by loosening the bolts 19 on the flange 18, and then sliding the section 7 in the grooves 13 and 14 of the section 6.

It is intended that one of the sections, in this case the section 6, shall remain fixed to the base 1 and shall support the heating elements of the radiator independently of the other section 7, which may be removed without in any way disturbing the heating elements supported by the fixed section 6.

In the form of the invention shown in Figures 1–4, the fixed section 6 has secured near its upper and lower end, a pair of bars 20 and 21 bent at their opposite ends to contact with the inner surface of the section 6 and to be suitably secured thereto as by welding. The bars 20 and 21 are provided with a plurality of spaced apart porcelain bushings 22, screwthreaded into correspondingly threaded apertures formed in the bars 20 and 21.

A resistance coil 23, strung through the bushings mounted on the bars 20 and 21, is connected at one end to a wire 24 leading from a switch 25

conveniently mounted upon the skirt 26 of the base 1. The other end of the coil 23 is connected by wire 27 to the switch 25, which is connected to wiring 28 of any suitable length, and provided with a plug 29 adapted to be connected detachably to any outlet for a source of electric supply.

In the form of the invention shown in Figures 5 and 6, the casing for the heating element is the same as in the other form. In this case, however, a series of parallel heating elements are connected to a pair of parallel bus bars suitably supported at their opposite ends on the fixed section 6. The bus bars 30 and 31 are mounted at their opposite ends in pairs of blocks 32 and 33, 34 and 35, respectively. Each of these blocks may be made of insulating material, such as porcelain. Since all are identical in construction, only one of them, the block 34, will be described in detail. Block 34 is provided at its lower end with a vertical groove 36 adapted to seat in a flange 37 which extends upwardly from the lower end of an angle bracket 38 suitably secured, as by welding, to the inner face of the fixed section 6. Preferably, the flange 37 is screwthreaded to receive the shank of a machine screw 39 extending through an aperture in the bushing adapted to register with the aperture in the flange 36.

The block 34 is also provided with a horizontal groove 40 adapted to receive one end of the bus bar 31. A screw 41 extends through a vertical aperture formed in the block 34 crossing the groove 40, to engage a screwthreaded aperture formed in the bus bar 31 registering with the vertical aperture formed in the block 34. The other end of the bar 31 is connected in the same manner to the block 35. The bus bar 30 is similarly connected at its opposite ends to the insulating blocks 32 and 33 supported in similar angle iron brackets secured to the fixed section 6. In this form, the heating elements comprise a series of separate coils 42 arranged parallel to each other and secured at their opposite ends to the parallel bus bars 30 and 31. The main wire 43 is connected at one end to the bus bar 30, and at its other end to the usual switch, which in turn is connected to a source of electric heating energy. The other main wire 44 is connected to the aforesaid switch at one end, and to the bus bar 31 at its other end, as will be apparent from the drawings.

It will be apparent that this form of the drawings presents some advantages over the first form, inasmuch as the heating element is built up of a series of separate coils, any one of which may be detached from the bus bars without disturbing the positions of the remaining coils.

A cheaper form of the invention is illustrated in Figures 7 and 8. In this form, a continuous heater coil 45 is supported on the section 6 by a pair of porcelain tubes 47 and 48, which encase the supporting rods 49 and 50 having their opposite ends flattened to seat in the slots 40 of the blocks 32, 33, 34 and 35. These flattened ends are apertured to register with the apertures in the block which receive the screws 41, and to be engaged by said screws for locking the porcelain tubes 47 and 48 in position. The coil 45 is tensioned and strung around the tubes 48 and 49 in zig-zag manner; and is connected at its opposite ends by wires 46 and 51 to the usual switch.

Figures 9 and 10 illustrate a substitute for the parallel supporting bars shown in the other figures of the drawings. In this form of the invention, each bar is formed by a heavy wire 52 coiled around a series of porcelain tubular supports 53; and the ends of the wire 52 are bent to provide members 54 adapted to be suitably supported by brackets 55 secured to the inner face of casing section 6.

It is to be understood that the invention is not to be considered as limited to the specific construction and arrangement described herein, since it is evident that many changes may be made without departing from the scope of the invention as defined by the claims appended hereto.

A very important feature of the invention resides in the method of connecting the heating coils to the control switch. As shown in Figures 2 and 3, the heating coil 23 is connected by heat-resistant leads 24 to the switch 25, the connecting joints being made in the porcelain bushings 23'. In the same manner the heating coil 45 of the modification shown in Figures 7 and 8 is connected at opposite ends by heat resistant leads 46 and 51 to the switch, the joints being made in the bushings 46'. Casing these joints in the porcelain bushings eliminates danger of conflagration in case arcing or sparking should occur.

What I claim is:

1. In an electric heater, a base, a casing supported by said base and extending perpendicular thereto, and comprising a pair of sections slidably connected to each other, an electric heating means mounted on one of said sections only.

2. In an electric heater, a base, a casing supported by said base and extending perpendicular thereto, and comprising a section fixed to the base, and a second section slidably connected to the first named section, an electric heating means mounted on the fixed section only.

3. An electric heater comprising a support, a casing comprising a pair of slidably connected sections extending vertically from said support, a pair of bars secured in parallel spaced apart relationship to one of said sections, bushings spaced apart on each of said bars, a heating coil extending zig-zag through said bushings, and means connecting the ends of said coil to a source of electrical supply, the other section being removable independently of said bars and coil.

4. In an electric heater, a base, a casing supported by said base and extending perpendicularly thereto, and comprising a pair of sections slidably and detachably secured to each other, a pair of supporting bars spaced apart on and fixed to one of said sections, and electric heating means secured to said bars.

5. In an electric heater, a base, a casing extending perpendicularly from said base and comprising a pair of sections slidably and detachably secured to each other, bus bars, insulating means for mounting said bars on one of said sections, heating coils detachably connected at their opposite ends to said bars, and means connected to said bus bars for electrically heating said coils.

6. In an electric heater, a base, a casing extending perpendicularly from said base and comprising a pair of sections slidably and detachably secured to each other, bus bars, insulating means for mounting said bars on one of said sections, heating coils detachably connected at their opposite ends to said bars, means for connecting one of said bars to one terminal of a source of electric current, and means for connecting the other bar to the other terminal of said source.

JOSEPH DEUCHES.