

Jan. 27, 1953

J. E. KOLB  
RADIANT HEATER

2,627,014

Filed Aug. 25, 1950

2 SHEETS—SHEET 1

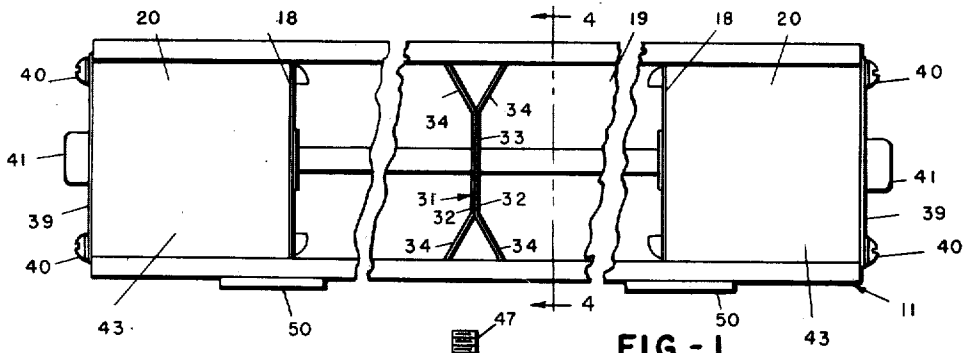


FIG. -1

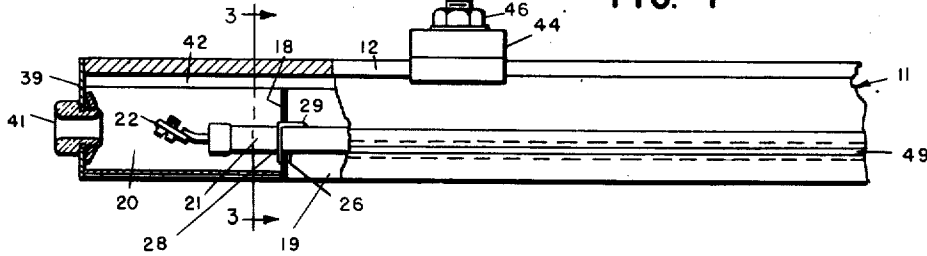


FIG. -2

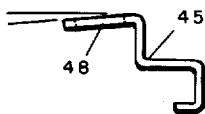


FIG. -5

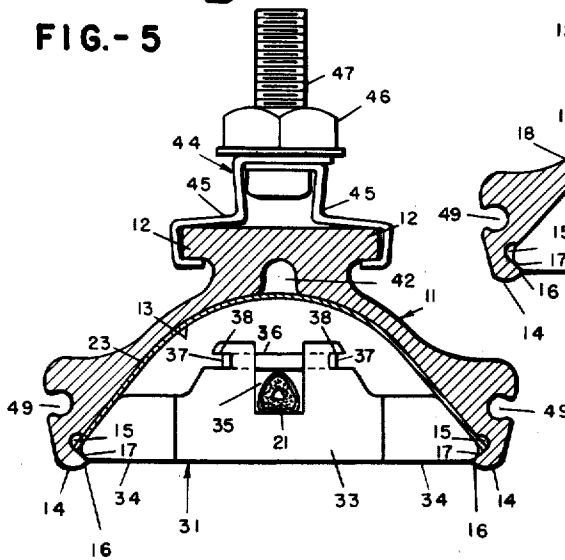


FIG. -4

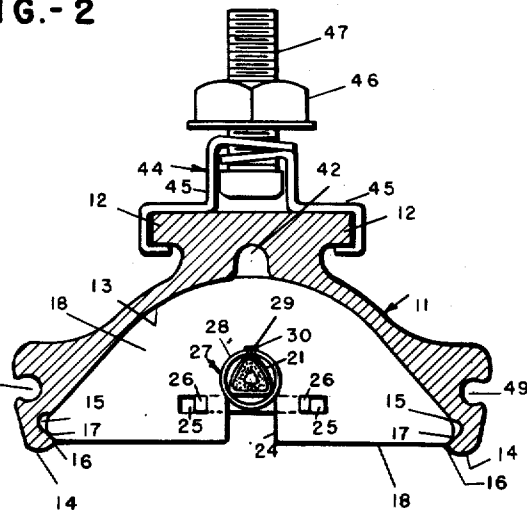


FIG. -3

JOSEPH E. KOLB  
INVENTOR

BY

*Joseph E. Kolb*  
ATTORNEY

Jan. 27, 1953

J. E. KOLB  
RADIANT HEATER

2,627,014

Filed Aug. 25, 1950

2 SHEETS—SHEET 2

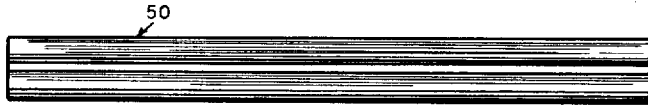


FIG.- 6



FIG.- 7

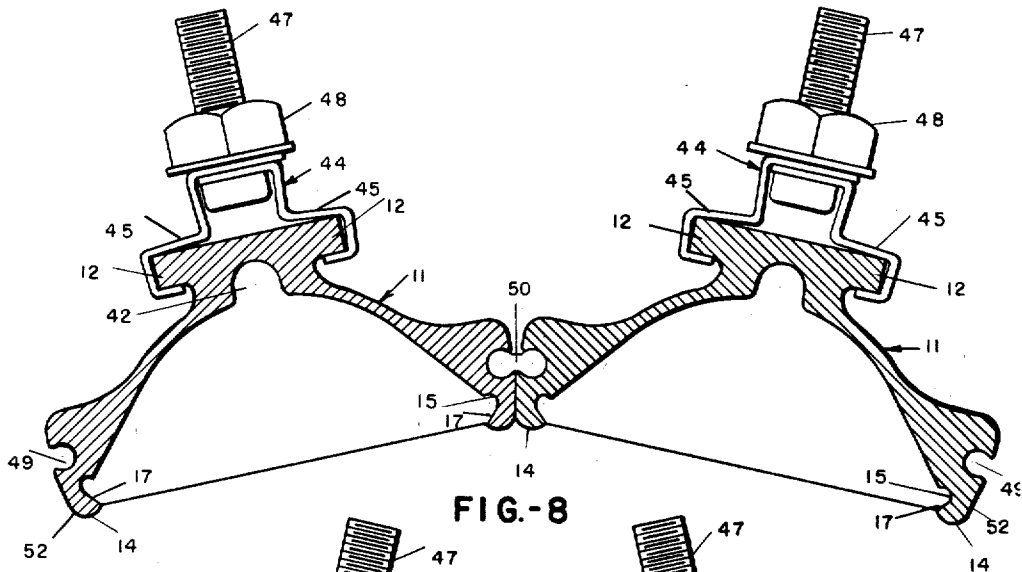


FIG.- 8

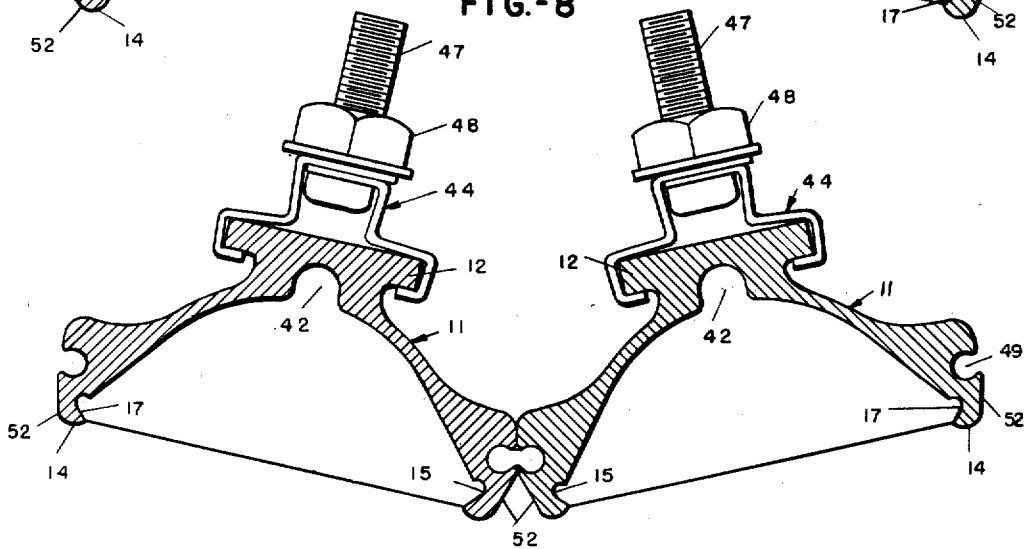



FIG.- 9

JOSEPH E. KOLB  
INVENTOR

BY   
ATTORNEY

## UNITED STATES PATENT OFFICE

2,627,014

## RADIANT HEATER

Joseph E. Kolb, Scott Township, Allegheny County, Pa., assignor to Edwin L. Wiegand Company, Pittsburgh, Pa., a corporation of Pennsylvania

Application August 25, 1950, Serial No. 181,410

4 Claims. (Cl. 219—34)

1

My invention relates to radiant heaters, and the principal object of my invention is to provide an improved heater of that type.

In the drawings accompanying this specification and forming a part of this application I have shown for purposes of illustration what I now consider to be the best mode of carrying my invention into practice, and in these drawings:

Figure 1 is a face view of the selected embodiment;

Figure 2 is a partial side view of the heater of Figure 1, with part of the housing structure broken away;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a section on the line 4—4 of Figure 1;

Figure 5 is an enlarged side view of one of the fingers comprised in the clamps provided for mounting the heater;

Figure 6 is an enlarged side elevation of a tie member provided for interconnecting two heaters;

Figure 7 is an end view of the tie member of Figure 6; and

Figures 8 and 9 are views indicating the manner in which two or more heaters may be interconnected.

The illustrated heater comprises an elongated housing structure 11 preferably formed from extruded aluminum, provided along its rear surface with two longitudinally extending ribs 12, and provided in its forward surface with an approximately parabolic concavity 13 having along each edge 14 a recess 15 and a lip 16 together forming a ledge 17.

Mounted in the concavity by means of the ledges 17 are a pair of supporting plates 18 spaced from the respective ends of the housing structure 11 and thereby dividing the concavity 13 into an extended central section 19 and two relatively short end sections 20.

Mounted in the concavity 13, extending longitudinally thereof, is an elongated substantially rectilinear electric resistance radiant heating element 21 traversing the length of the central section 19, supported by the plates 18, having its ends extending into the respective end sections 20, and provided at its ends with terminals 22 for the reception of electric conductors for connecting the element 21 to a suitable source of electric power.

According to the present disclosure the radiant heating element 21 is a metal sheathed embedded-resistor element designed to attain the appropriate temperature to radiate predominantly the particular wave length that may be desired, for example, infra red, and is approximately triangular in cross-section and located substantially at the focus of the parabolic contour of the concavity 13, with one of its faces disposed substantially in a plane parallel to the plane of the two forward edges 14 of the housing structure 11,

2

whereby heat from that face is transmitted directly, and only the heat from the other two faces is required to be reflected.

Preferably the concave forward face of the housing structure 11 is overlaid by a thin sheet 23 desirably formed of anodized rolled aluminum, thus providing a reflecting surface affording higher reflection and less susceptible to deterioration, and inasmuch as it can be inserted at the conclusion of the manufacturing processes, avoiding the possibility of the surface being damaged during the manufacture of the heater.

For the purpose of supporting the element 21 each of the supporting plates 18 is provided with a forwardly opening recess 24 designed to receive the element 21 into desired position, and with a pair of apertures 25 through which is passed a strap 26 overlying the element 21 and serving to hold the element 21 in the desired position but nevertheless leaving the element free to move longitudinally relative to the plates 18 and straps 26, thus to allow for expansion and contraction of the element 21 on heating and cooling of the element.

To prevent undue longitudinal movement of the element 21 relative to the plates 18 and straps 26, the element 21 is provided at the plates 18 with stops 27 each comprising a length of wire having its central portion 28 encircling the element 21 and its end portions 29 disposed parallel to and welded to the element 21 and located in a slot 30 in the corresponding plate 18, thereby serving also to secure the element 21 against rotation.

With this construction, to remove the element 21 it is necessary merely to disconnect the conductors from the terminals 22 and remove the two straps 26.

However, if the length of the element 21 between the plates 18 is such that the element is likely to deform from rectilinear, preferably the element is additionally supported at one or more intermediate plates, and in the present embodiment this is accomplished by providing one or more intermediate supports 31, each comprising two pieces of sheet metal 32 secured together over their central portions 33 and having their ends 34 diverging, constructed to be snapped into position with the ends 34 resting on the body ledges 17, and provided with a recess 35 designed to receive the element 21 in desired position, whereupon the element 21 is held against deviation in the direction of the opening of the recess 35 by means of a strap 36 secured in position by having its ends 37 bent through recesses 38 appropriately located in the lateral edges of the sheet metal pieces 32.

With this construction the element 21 remains free to move longitudinally to allow for expansion and contraction on heating and cooling, and to

3

remove the element it is necessary additionally merely to remove the one or more straps 36 and snap out the one or more supports 31.

In the present embodiment the ends of the concavity 13 are closed by means of end plates 39 each held in position by machine screws 40 and provided with an aperture in which is mounted an insulating bushing 41 for the passage of the conductor to the respective terminal 22.

However, to provide for extending both of the connecting conductors through the same bushing 41, the housing structure 11 is provided with a channel 42 extending between the end sections 20 rearwardly of the reflector sheet 23, whereby the conductor connected to one terminal of the element 21 may be carried from the one end section 20 to the other and thence both conductors extended through the bushing 41 at that end of the heater.

To enclose the terminals and improve the appearance, the open faces of the end sections 20 are closed by plates 43 held in position by the longitudinal ledges 17 extending along the two side edges 14 of the housing structure 11.

In the present embodiment each heater is arranged to be mounted by means of preferably two clamps 44 each comprising a pair of fingers 45 engageable over the ribs 12 of the housing structure 11 and contoured to be drawn into tight clamping relation upon tightening of the nut 46 of a bolt 47 passing through apertures 48 in the fingers 45 and serving also to mount the heater from the desired support, each clamp 44 being adjustable along the length of the housing structure 11 to accommodate to the particular support to which the heater is to be mounted.

To provide for assembling a plurality of the heaters in side by side relation, the housing structure 11 is provided in the outer surface of each edge 14 with a longitudinally extending undercut groove 49, and thereby adjacent heaters are connected by means of preferably two tie members 50 shown particularly in Figures 6 and 7, each having parallel enlargements 51 designed to be received in the adjacent grooves 49 of the two heaters, thus to connect the adjacent heaters, but to permit the heaters to be disposed at relative angles within the limits determined by the contour of the exterior faces 52 of the edges 14, as indicated in Figures 8 and 9.

From the foregoing it will be apparent that the illustrated embodiment of my invention accomplishes at least the principal object of my invention. However, also it will be apparent that various changes and modifications may be made, within the scope of my invention. Accordingly it is to be understood that the present disclosure is illustrative only, and that my invention is not limited thereto.

Wherefore I claim:

1. An electric heater, comprising at least two elongated housings arranged in side-by-side relation, with each housing providing an elongated substantially rectilinear outwardly directed concavity, a radiant heating element mounted in each concavity, a radiant heating element mounted in housings in side-by-side relation in a manner to permit relative bodily adjustment of the housings for variation in the direction of heat radiation, said means including an undercut groove extending longitudinally along the adjacent sides of each of said housings, and a connector member having spaced parallel enlargements insertable into coincident undercut grooves with one of the enlargements in the groove in one of the housings

4

and the other of the enlargements in the groove in the other of the housings.

2. An electric heater, comprising at least two elongated housings arranged in side-by-side relation, with each housing providing an elongated substantially rectilinear outwardly directed concavity, a radiant heating element mounted in each concavity, and means for securing said housings in side-by-side relation in a manner to permit relative bodily adjustment of the housings for variation in the direction of heat radiation, said means including an undercut groove extending longitudinally along the adjacent sides of each of said housings, and a one-piece connection member having spaced rigidly interconnected parallel enlargements insertable into coincident undercut grooves with one of the enlargements in the groove in one of the housings and the other of the enlargements in the groove in the other of the housings.

3. An electric heater, comprising, at least two elongated housings arranged in side-by-side relation, with each housing providing an elongated substantially rectilinear outwardly directed concavity, a radiant heating element mounted in each concavity, and means for securing said housings in side-by-side relation in a manner to permit relative bodily adjustment of the housings for variation in the direction of heat radiation, said means including an undercut groove extending longitudinally along the adjacent sides of each of said housings, and a connector member having spaced parallel enlargements insertable into coincident undercut grooves with one of the enlargements in the groove in one of the housings and the other of the enlargements in the groove in the other of the housings, said undercut grooves being disposed between the top and bottom of said housings whereby the relative adjustment of the housings to vary the direction of heat radiation is limited by the spacing between the parallel enlargements on the connector.

4. An electric heater, comprising, at least two elongated housings arranged in side-by-side relation, each housing providing an elongated substantially rectilinear outwardly directed concavity, a reflector and a heating element mounted in each concavity, and means for securing said housings in side-by-side relation and in a manner to permit bodily adjustment of the housings for at least limited variation in the direction of radiated and reflected heat from said heating element and said reflector, said means including an undercut groove extending longitudinally along the adjacent outer sides of the pair of housings and a connector member having spaced parallel enlargements insertable into coincident undercut grooves with one of the enlargements in the groove in one of the housings and the other of the enlargements in the groove in the other of the housings.

JOSEPH E. KOLB.

#### REFERENCES CITED

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

#### UNITED STATES PATENTS

Number	Name	Date
1,784,171	Bertling	Dec. 9, 1930
2,232,499	Waterbury	Feb. 18, 1941
2,347,113	King	Apr. 18, 1944
2,421,447	Watkins	June 3, 1947
2,476,492	Hersh	July 19, 1949
2,495,513	Doyle	Jan. 24, 1950