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3,250,318

BASEBOARD HEATER

Filed Aug. 17, 1961

2 Sheets-Sheet 1

FIG. 1

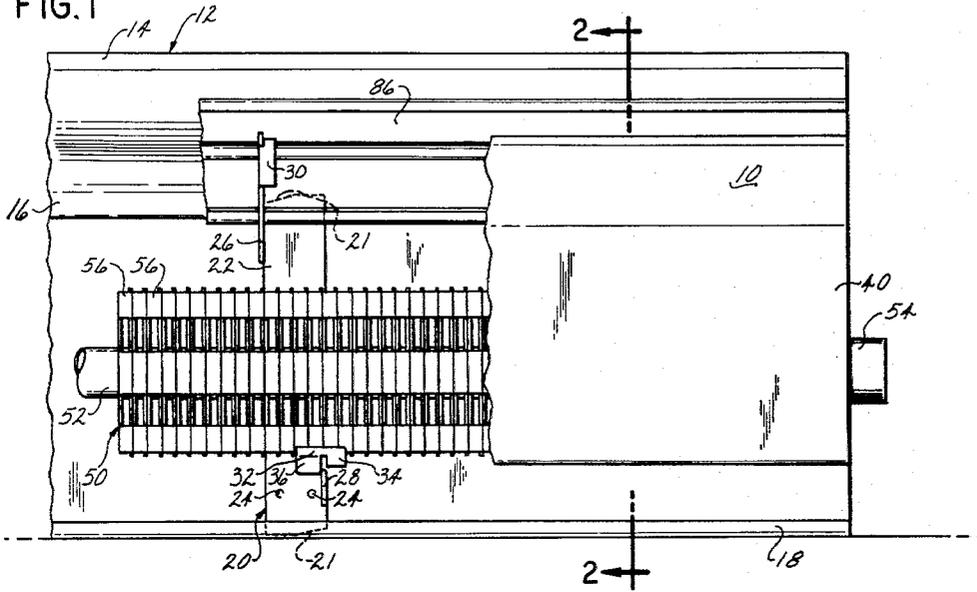


FIG. 2

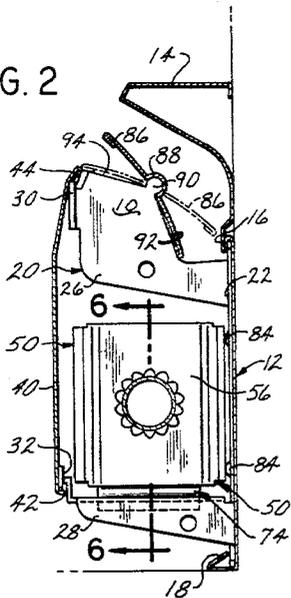


FIG. 3

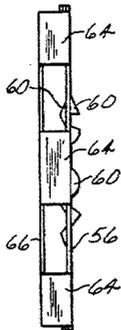
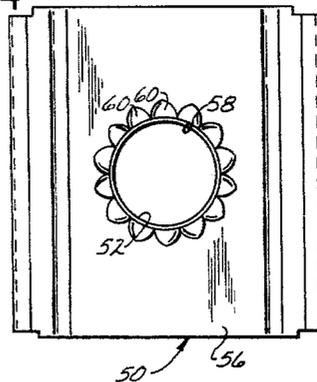


FIG. 4



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FIG. 5

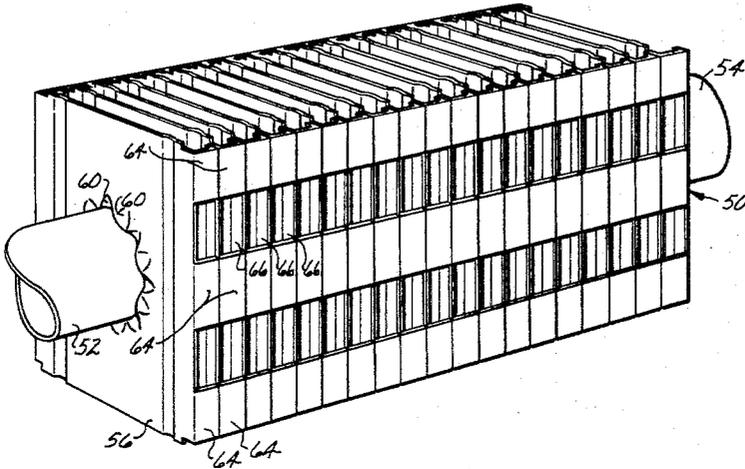


FIG. 6

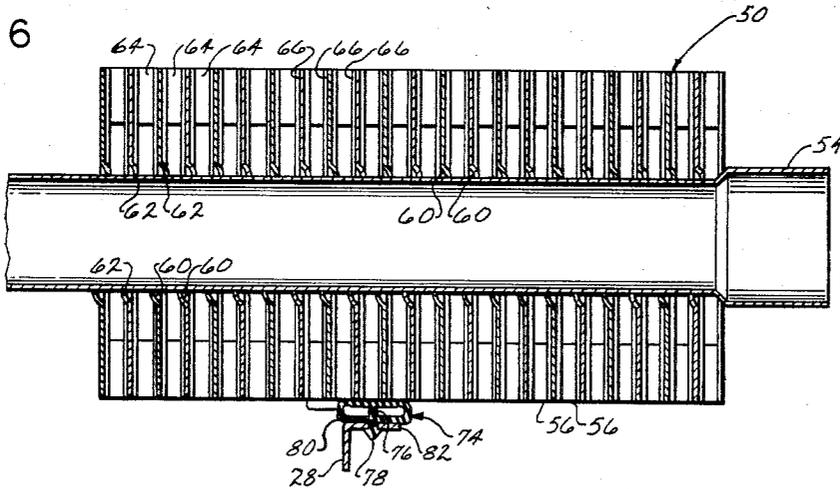
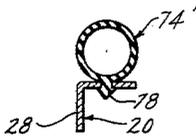


FIG. 7



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**BASEBOARD HEATER**

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8 Claims. (Cl. 165-55)

This invention relates to room heating equipment of the type generally designated as baseboard heaters and which are conventionally installed in place of and give an appearance similar to a wall baseboard.

It is a principal object of this invention to provide in a baseboard heater assembly a new and improved heating unit of the type having a central fluid receiving tube and a plurality of heat conducting fins assembled thereon, which provides highly efficient heat transfer and which is of sturdy construction and capable of being made by economical methods of large scale production.

It is another object of this invention to provide a baseboard heater assembly that supports the heating unit in an improved manner so as to allow the unit to expand and contract during the heating cycle without any binding of parts or the creation of disturbing sounds.

It is a further object of this invention to provide an improved baseboard heater assembly having a plurality of parts that can be readily manufactured by well-known mass production methods and which have novel inter-fitting portions that enable them to be completely assembled with a minimum of labor and without the use of attaching means such as bolts, rivets and screws.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a fragmentary front elevation view partly broken away of a baseboard heater assembly of this invention;

FIG. 2 is a transverse section view of the baseboard heater assembly taken substantially along the line 2-2 of FIG. 1;

FIG. 3 is an enlarged side view of a heat conducting fin in the baseboard heater assembly of FIG. 1;

FIG. 4 is an enlarged end view of a heating unit in the baseboard heater assembly of FIG. 1;

FIG. 5 is a fragmentary perspective view of the heating unit of FIG. 4;

FIG. 6 is an enlarged fragmentary cross section view of the baseboard heater assembly taken substantially along the line 6-6 of FIG. 2; and

FIG. 7 is a fragmentary cross section view of a modification of the heating unit support.

Referring now to the drawings in detail, a baseboard heater assembly of this invention, generally designated by the numeral 10, has an elongated back panel 12 that may be affixed to a wall panel or the like as by nails or screws and which includes an outwardly extending hood portion 14 adjacent its upper edge, a downwardly extending lip portion 16 spaced therebelow, and an upwardly extending spring finger or resilient lip 18 at its lower edge. Longitudinally spaced along the back panel 12 are a number of brackets 20 which have a back portion 22 and which are assembled upon the back panel 12 by placing the upper edge of the back portion underneath the lip 16 and depressing the lower edge of the back portion against the spring finger 18 until it is caught thereby. As the lip 16 and spring finger 18 are formed along the entire length of the back panel, the brackets 20 may be

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positioned therealong as desired and may be readily removed by twisting the bracket, preferably clockwise, as seen in FIG. 1, to remove the upper and lower edges of the back portion from behind the lips 16 and 18, such removal being facilitated by the oppositely facing tapered portions 21 on the upper and lower edges of its back portion 22. To assist in retaining the bracket firmly upon the back panel there is shown provided on the bracket back portion a pair of rearwardly facing dimples 24 (FIG. 1) that act to maintain the bracket in engagement with the spring finger 18. The bracket 20 also includes upper and lower outwardly extending arms 26 and 28, respectively, which terminate at their outer edges in longitudinally extending tabs 30 and 32, respectively, the latter of which has an outer portion 34 and a backwardly offset portion 36 adjacent thereto. A front longitudinally extending panel or cover 40 has an upwardly extending lip 42 which is adapted to be received for an interlocking engagement with the tab portions 34 and 36, and has a downwardly turned spring finger or lip 44, which, upon assembling the front panel upon the brackets, is adapted to be flexed about the upper bracket arm tab 30 to provide a snap engagement therewith.

Supported upon the lower bracket arm 28 between the back and front panels is a heating unit 50 which comprises an elongated tubular member 52 preferably made of copper and terminating at one end in an enlarged female tube connector portion 54 (FIG. 6), and a plurality of generally rectangular aligned heat transfer fins 56 having a central circular opening 58 through which the tubular member 52 extends. For rigidly retaining the fins 56 upon the tubular member 52, the periphery about their circular openings 58 are formed to provide a plurality of protrusions 60 which alternately extend in opposite axial directions to define a corrugated inner edge 62 in engagement with the tubular member 52 for firmly supporting the fins and for insuring that the fins are positioned to extend radially from the tube.

Inasmuch as it is desirable to provide a rigid heating unit in which the fins 56 are equally spaced and in which the air flow therebetween provides a high rate of heat transfer, there are provided on the opposed vertical edges of the fins 56 a side wall or spacer preferably comprising a plurality of spacer portions 64 with openings therebetween and terminating with inwardly turned edges or lips 66 that engage adjacent fins. This enables the fin assembly to define a number of air stacks which assist the upward air flow or convection through the heating unit in the same manner as any chimney or stack. Additionally, as the protrusions 60 will cause some air turbulence within the air stream flowing upwardly through the stack, there will be a slight scrubbing effect by the air upon the fins which will remove any air films on the fins to thereby increase the rate of heat transfer between the heating unit and air stream.

In the normal operation of a baseboard heater, the heating unit 50 is periodically supplied with a high temperature fluid, usually hot water or steam, and it is therefore normal for the heating unit to undergo periodic expansion and contraction as it is heated and cooled. In the present invention, allowance is made for the normal expansion and contraction of the heating unit by supporting the unit on an outwardly extending heat resistant resilient support having a tubular cushion portion 74 (FIG. 6) which is of substantially oval shape. The resilient support also has an integral barbed portion 78 that extends through an outwardly extending slot 80 in an upwardly facing flange 82 on the lower arm 28 to engage the lower surface of this flange for firmly retaining the cushion thereon. A central web 76 that is integral with the cushion portion 74 extends from adja-

cent the downwardly extending barbed portion 78 across the minor axis of the oval cushion 74 so as to strengthen the cushion and insure adequate support for the heating unit. As the heating unit 50 contracts and expands, the resilient cushion 74 tends to roll on the flange 82 with a concomitant partial collapsing of the cushion, such rolling movement being possible in either longitudinal direction. Of course, if the expansion or contraction is excessive, then the heating unit 50 will merely slide upon the cushion. Additionally, to assist the contraction and expansion of the heating unit, there are provided on the back portions 22 of the brackets 20 a pair of dimples 84 (FIG. 2) which are engageable with the upper and lower fin spacer portion 64 so as to provide a bearing therefor.

The resilient supporting cushion could be of other than oval shape, a modification being shown in FIG. 7 wherein the oval cushion 74 is replaced by a round tubular cushion 74', and the central web 76 is removed. As with the oval cushion, the round cushion 74' can be retained on the lower arm 28 of the bracket 20 by a barbed portion 78; however, numerous other means of retention could be used, as, for example, by placing the round cushion 74' about an elongated outwardly extending lip (not shown) on the lower bracket arm 28.

In order to control the rate of air movement upwardly through the baseboard heater assembly between the front and back panels and therefore through the heating unit, there is provided an elongated sheet metal damper 86 which has a centrally offset channel portion 88 of generally cylindrical shape for receiving a partially circular tang 90 that extends upwardly from the upper bracket arm 26. The channel offset 88 is so dimensioned that it has a slight resilient engagement with the tang 90 so that the damper 86 is frictionally retained in any position that is manually selected between a fully opened position, shown in solid lines in FIG. 2, where the damper 86 engages an edge stop 92 on the upper arm 26, and a fully closed position, shown in phantom in FIG. 2, where the damper engages an edge stop 94 on the upper arm 26 at which point the outer edge of the damper lies adjacent the upper edge of the front panel and the rear edge of the damper lies adjacent the lip 16 on the back panel.

The baseboard heater assembly of this invention therefore incorporates a unique structure that enables the assembly parts to be individually made from sheet metal and then readily assembled into a compact sturdy unit without the use of screws or nails other than to secure the assembly to a wall. Additionally, the heating unit provides a sturdy and efficient means for transferring the thermal energy from the unit to the air passing through the heater, and is supported in a manner which enables it to expand and contract freely and without creating disturbing noises.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

We claim:

1. An elongated baseboard heater comprising, a plurality of longitudinally spaced brackets adapted to be secured adjacent a wall having outwardly extending arms, outwardly extending resilient supports having hollow tubular cushion portions and downwardly extending portions affixed to said arms for securely mounting the cushion portions and for permitting limited longitudinal resilient movement of the cushion portions on the outwardly extending arms, and an elongated heating unit including a central fluid receiving tubular member with a plurality of radiating fins thereon, said heating unit being supported on said tubular cushion portions where-

move with longitudinal movement of the heating unit during contraction and expansion thereof.

2. A baseboard heater comprising, a plurality of brackets adapted to be secured adjacent a wall having outwardly extending arm portions, said arm portions including upwardly facing flanges, resilient supports having tubular cushion portions and downwardly extending portions affixed to said flanges, said tubular cushion portions being of generally oval shape and having therein central integral webs extending from adjacent said second portions across the minor axis of the oval cushion portions, and an elongated heating unit including a central fluid receiving tubular member with a plurality of radiating fins thereon, said heating unit being supported on said tubular cushion portions whereby the tubular cushion can resiliently move with the movement of the heating unit during the expansion and contraction thereof.

3. A baseboard heater comprising a plurality of brackets having back portions adapted to be secured adjacent a wall and outwardly extending arms, resilient supports having outwardly extending tubular cushion portions and integral downwardly extending portions affixed to said arms, said tubular cushion portions being of generally oval shape and having therein central integral webs extending from adjacent said downwardly extending portions across the minor axis of the oval cushion portions, an elongated heating unit supported upon said oval cushion portions, and outwardly extending dimples on said back portions engageable with the heating unit for providing a bearing surface therefor.

4. A baseboard heater comprising a plurality of brackets having back portions adapted for being secured adjacent a wall and outwardly extending upper and lower arms, said lower arms having outwardly extending slots therein, outwardly extending resilient supports having tubular cushion portions and downwardly extending barbed portions received within said slots, an elongated heating unit including a central fluid receiving tubular member with a plurality of fins thereon supported on the tubular cushions, and an elongated front panel having portions interfitting with the forward edges of the upper and lower arm portions to provide support therefor.

5. A baseboard heater comprising a first elongated panel adapted for being secured to a wall and defining a forwardly projecting hood adjacent the upper edge thereof, a plurality of brackets having back portions mounted adjacent the first panel and outwardly extending arm portions, means for securing the brackets on said first panel, said arm portions having upwardly facing flanges with outwardly extending slots therein, resilient supports having outwardly extending tubular cushion portions on the arm flanges and downwardly extending barbed portions received within the flange slots and engaging the flanges at the lower surfaces thereof, a longitudinally extending heating unit including a central fluid receiving tubular member and a plurality of radiating fins supported thereon, said heating unit being supported on the tubular cushion portions, and a second elongated panel supported on the forward ends of the arm portions.

6. A baseboard heater comprising a first elongated panel adapted for being positioned along a wall and formed to define a forwardly extending hood adjacent the upper edge thereof, a plurality of brackets having back portions adapted for being secured adjacent the first panel, said brackets further having upper and lower spaced arm portions projecting outwardly beneath said hood, an elongated heating unit including a central fluid receiving tubular member and a plurality of radiating fins thereon supported on the lower arm portions, a second elongated panel in engagement with and supported upon the forward ends of the upper and lower arm portions, said upper arm portions having upwardly extending tangs lying below the forwardly extending hood, and an elongated damper member having a central channel offset

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receiving the bracket tangs for pivotally supporting the damper below the hood between open and closed positions, said damper in said closed position having its forward edge adjacent the upper edge of the second elongated panel and its rear edge adjacent the first elongated panel.

7. A baseboard heater comprising, a first elongated panel adapted for being positioned along a wall and formed to define a forwardly extending hood adjacent the upper edge thereof and a pair of opposed longitudinally extending lips disposed therebelow, a plurality of brackets having back portions interfitting behind and removably supported by said pair of opposed lips, said brackets further having upper arm portions extending outwardly beneath said hood, an elongated heating unit supported by said brackets below said upper arm portions, a second elongated panel in engagement with and supported upon the forward ends of the arm portions, said arm portions having upwardly extending partly circular tangs, and an elongated damper member having a central longitudinally extending channel offset portion receiving the bracket tangs for pivotally supporting the damper below the hood, said channel offset portion resiliently engaging said tangs whereby the damper is maintained in an adjusted position by the frictional engagement of the damper with the tangs.

8. A baseboard heater comprising, a first elongated sheet metal panel adapted for being positioned along a wall, said first panel being formed to define an outwardly projecting hood adjacent its upper edge and a pair of opposed longitudinally extending lips disposed therebelow, a plurality of sheet metal brackets having back portions interfitting within and removably supported by said pair of opposed lips, said brackets further having upper and lower outwardly extending spaced arm portions having longitudinally extending tabs at the forward ends thereof, an elongated heating unit including a central fluid receiving tubular member with a plurality of radiating fins thereon supported upon the lower arm portions, said bracket back portions having outwardly extending dimples formed thereon engageable with the heating unit

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for providing a bearing surface therefor, a second elongated sheet metal panel having opposed lips at the edges thereof interfitting with the upper and lower arm tabs for supporting the second panel longitudinally upon the brackets, said upper arm portions defining on the upper surfaces thereof a pair of stops with tangs therebetween, and an elongated sheet metal damper having a central longitudinally extending offset portion receiving said tangs for pivotally supporting the damper for movement between the stops.

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