Oct. 9, 1945. M. WATNICK 2,386,414

RADIATOR ENCLOSURE

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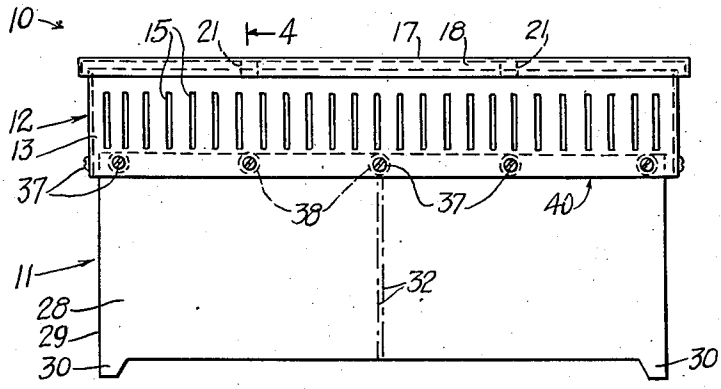


Fig.1

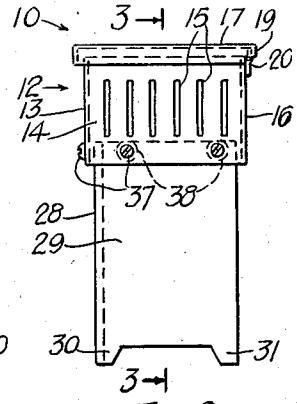


Fig.2

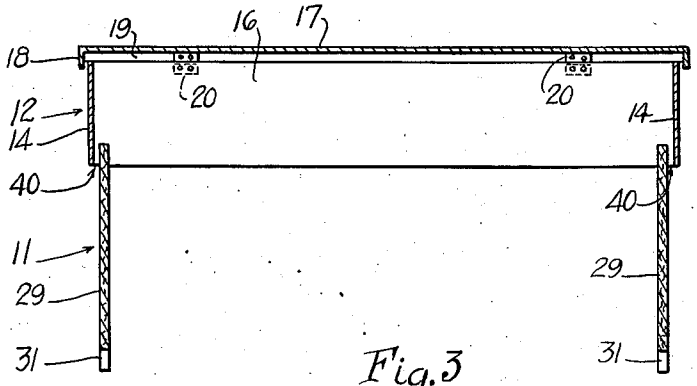


Fig.3

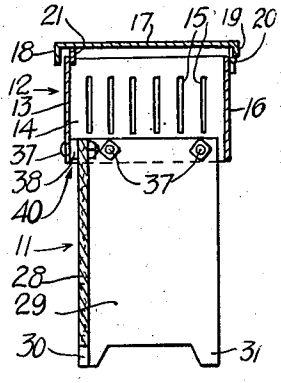
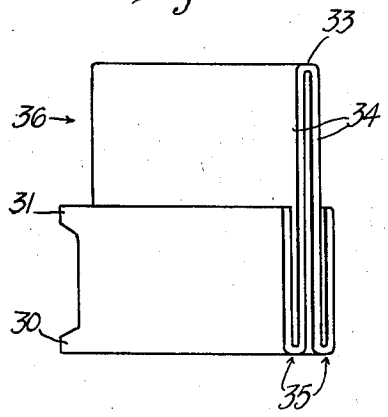


Fig.4

Fig.5



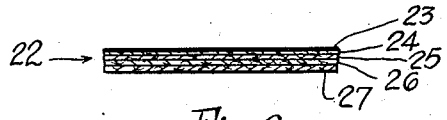


Fig.6

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RADIATOR ENCLOSURE

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2 Claims. (Cl. 257—136)

This invention relates to devices such as radiator enclosures.

One object of the invention is to provide an improved radiator enclosure that is adapted to be readily assembled and disassembled to facilitate handling and shipment thereof.

It is well known that radiator enclosures are large bulky objects, which are expensive to transport and costly to keep in stock. While attempts have been made to provide a knockdown radiator enclosure, having improved means including metallic and insulator sections affording an advantageous relationship and lending themselves to easy assembling at the point of installation, so that shipment in the knockdown form is not only desirable but in fact necessary to obviate possibility of damage to the insulator section.

Another object of the invention is to provide a radiator enclosure having an improved insulator wall which is foldable into compact condition.

Another object of the invention is to furnish a portable radiator enclosure comprising an upper metallic section and a lower insulator section creating an improved heat exchange relation for a radiator to promote the circulation of air past the latter.

Another object of the invention is to furnish a radiator enclosure having a non-metallic wall portion adapted to contain special inexpensive ornamentation in a low temperature region.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists in the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated in the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Figure 1 is a view in front elevation showing a radiator enclosure embodying the invention.

Fig. 2 is a view in end elevation thereof.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2, but with certain parts omitted.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is an isometric view showing a wall section of the enclosure in separate condition folded for storage or shipment.

Fig. 6 is a greatly enlarged fragmentary sectional view of the insulator wall portion.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in one and the same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which the invention appertains, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted merely as showing the preferred exemplification of the invention.

Referring in detail to the drawing, 10 denotes a radiator enclosure embodying the invention. The same may include a bottom wall portion or section 11 and an upper wall portion or section 12. The latter may be made of sheet metal and is constructed as a rectangle, open at the top and bottom. The front wall 13 of the section 12, and the end walls 14 thereof may be provided with decorative openings 15 for air circulation, but these openings may be omitted on the rear wall 16. The section 12 may also include a cover 17 of a conventional type, having a continuous front and end flange 18 and a rear flange 19 which is undercut to afford clearance for the opening movement of the cover about the hinges 20 which are riveted to the flange 19 and to the rear wall 16. Projections or stops 21 on the front wall 13 support the cover 17, cooperate with the hinges to hold the cover horizontal when in closed position and to maintain the cover spaced above the rectangular wall of the section 13 to afford an opening for the circulation of air. For the same reason, the area defined by the flanges 18, 19 is larger than that of the rectangular wall so that air heated by the radiator can find ready egress around the edge of the cover, as well as through the ornamental openings 15.

The lower section 11 is made of an insulator material 22 shown in Fig. 6 which may comprise a sheet of decorative paper 23 which may have suitable designs imprinted or painted thereon. This extremely thin paper may have a backing of a tougher paper 24, the latter having a coating of asbestos or other insulator material 25, a filler of felt or other fibrous, textile or binding material 26 and a backing of asbestos or insulating material 27. All of these layers are suitably fabricated together like one integral strong and tough wall; they may be bound together with the aid of suitable adhesives, and may be stitched or otherwise additionally secured together if necessary. Regardless of the specific details of construction, the material 22 is intended to indicate a strong and relatively stiff board of low heat conductivity carrying colored designs which

would be affected by heat, but by reason of the insulator qualities of the board, are adapted for long life, although cheaply applied. Thus the need for enameling or baking colors as on metal is avoided. The insulating character of the section 11 has other advantages in a radiator enclosure as will be presently described.

The wall 11 consisting of a material such as 22 provides a front wall 28 and end walls 29 for the radiator enclosure, with bottom projections or feet 30, 31 disposed at suitable points therealong. This section 28 need not extend along the back of the radiator enclosure which may be wholly open below the top section 12. Centrally formed in the front wall 28 are one or more vertical crease, or weakened or fold lines as at 32, shown in dot-dash lines, adapted to produce a fold 33 in the section 11 when the latter is folded in its detached position as in Fig. 5. When thus folded, the front wall 28 is divided into like wall portions 34. Fold lines as at 32 are also provided to produce folds 35 defining the end walls 29, adapted to lie against the adjacent wall portions 34. Accordingly, the section 11 may be folded into collapsed condition 36 in which it forms four thicknesses of material, resulting in a relatively flat structure which occupies very little space for shipment or storage.

When received at the point of installation, the section 36 is unfolded and secured to the section 12 to provide therewith the section 11, whereby the completed radiator enclosure is produced. For securement, any suitable means may be used, such as bolts 37, and suitable holes may be provided in the section 11, preformed at the factory or formed at the point of installation, to receive the bolts. The section 11 lies within the section 12, inwardly spaced therefrom as by spacer rings or washers 38 disposed about the bolts between the sections 11 and 12. Thus there is an opening of substantial area between the sections 11 and 12 for circulation of air, this opening extending substantially all along the top edge of section 11 and interrupted only by the bolts and the spacers. By reason of these spacers, relatively little heat is transmitted by conduction from the hot metallic section 12 to the insulator section 11. The opening referred is particularly clearly shown in Fig. 3.

When assembled as in Figs. 1 and 2, the insulator section is maintained rigid by the section 12, the wall 28 being held in one plane, and the end walls 29 being maintained at right angles to the front wall, by reason of the positive interconnection between the sections 11 and 12. The latter section is supported by the section 11, which rests on its feet 30, 31. All parts of the radiator enclosure may lie spaced from the radiator itself. The folds as at 33 and 35 will be quite unnoticeable, and the highly decorative appearance of the section 11 will add style and character to the radiator enclosure because effects can be obtained with decorative paper which cannot be secured with metal. Also the decorative paper effect may blend in with that which is used to cover the walls of the room, and in fact the same paper may be used.

It is considered that the radiator enclosure 10 affords a superior heat exchange efficiency for the radiator, other things being equal. The transmission of heat from a radiator to a room is principally by convection. The insulation section 11 of the radiator enclosure avoids heat loss by radiation, and retains the heat so that the air is more rapidly heated than otherwise. This accelerates the rate of circulation of the air and hence produces a more rapid transfer of heat to the atmosphere. In a thermal sense, it lengthens the path of heating through the radiator enclosure. The increase in velocity of the air aids in overcoming the resistance to air flow due to the radiator enclosure. It is well known that such enclosures reduce the transmission of heat from a radiator to a substantial degree, which may be as much as twenty-five percent or even higher, whereas with my enclosure that reduction need not exceed about ten percent, this result being directly traced to the use of the insulator section 11. As the air becomes heated, so that the temperature difference between the air and the radiator diminishes, the air enters the top section 12, where sufficient heat is available for the metallic wall of the enclosure, and here the air receives its final temperature increase from the section 12 as well as from the radiator. This top metallic section 12 is better adapted to sustain the heat than the composition section 11, which might warp or buckle if the temperature therein becomes excessive, and cause deterioration of the ornamental paper layer 23. By spacing the sections 11 and 12 away from each other, a higher degree of uniformity of temperature is obtained in the section 11 than would otherwise be possible, and hence any tendency to buckling is prevented. Thus the section 11 is well adapted to carry the load of the top section 12. Further, there results the passage 40 through which a secondary flow of air occurs into the radiator enclosure to supplement that which enters through the bottom. The area of the passage 40, which occurs substantially all along the top of the section 11, may be considerably greater than the area of decorative openings, which as a rule are small, and often accumulate considerable dust. In the case of the passage 40, the same is so covered, as by the cover 17, that it normally remains quite clean and free of dust that might retard air flow. The air entering the passage 40 cools off that portion of the lower section 11 which is nearest to the metallic section of the radiator enclosure.

It will thus be seen that the invention combines the advantages of an easily transportable knockdown radiator enclosure, with features of superior decorative qualities which are easily changed to suit, and with better heat transmission.

I claim:

1. A radiator enclosure including a top section and a bottom section, the top section being a generally rectangular metallic structure, the bottom section consisting substantially entirely of a fibrous, board-like insulator wall having throughout the same an outer covering of decorative paper continuously secured thereto, the insulator wall having vertical wall portions including a side wall portion and end wall portions and being otherwise open at the top and bottom and at its remaining side, the wall portions being interconnected by hinge portions integral with at least part of the insulator wall, the latter having an upper edge portion protectively disposed within a lower edge portion of the top section and in spaced relation to the latter, and spacing means detachably interconnecting said upper and lower edge portions at spaced points so that the lower section supports the upper section and whereby the flow of heat from the top section to the bottom section is arrested to avoid damage to the decorative paper cover, in cooper-

ation with the insulator material of the bottom section.

2. A radiator enclosure having a generally rectangular bottom section having two vertical fold lines defining a long side wall and relatively narrow end walls, a third intermediate fold line whereby the long side wall can be folded centrally for compactness in storage, with the end walls folded on their fold lines, said section consisting of a relatively stiff board of insulator material and a covering of decorative paper material secured to the board throughout said section, and a generally rectangular metallic casing section having a side wall and end walls detachably connected respectively to the side wall and end walls of the said bottom section, the latter having sufficient strength to support the metallic casing, the top edge portion of the bottom section lying protectively within the bottom edge portion of the metallic casing, the latter having a top wall and having sufficient rigidity to prevent folding of the bottom section, when the sections are interconnected.

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