Aug. 19, 1958 M. DREWES, JR 2,848,199

BASEBOARD CONVECTORS

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Fig. 1.

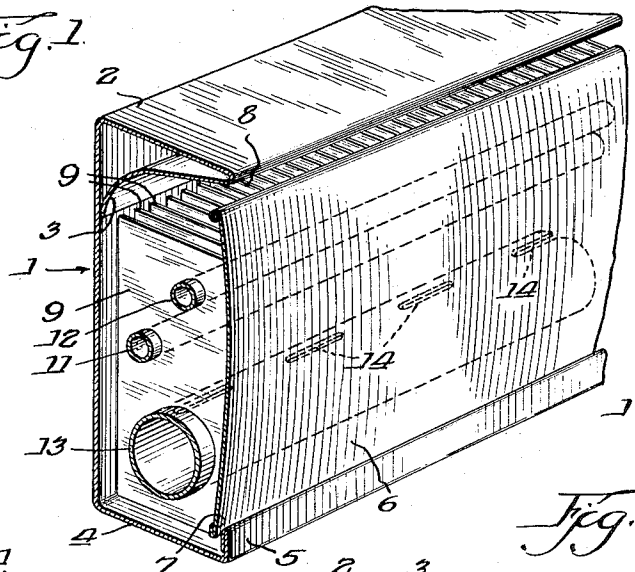


Fig. 5.

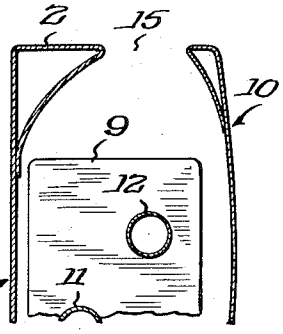
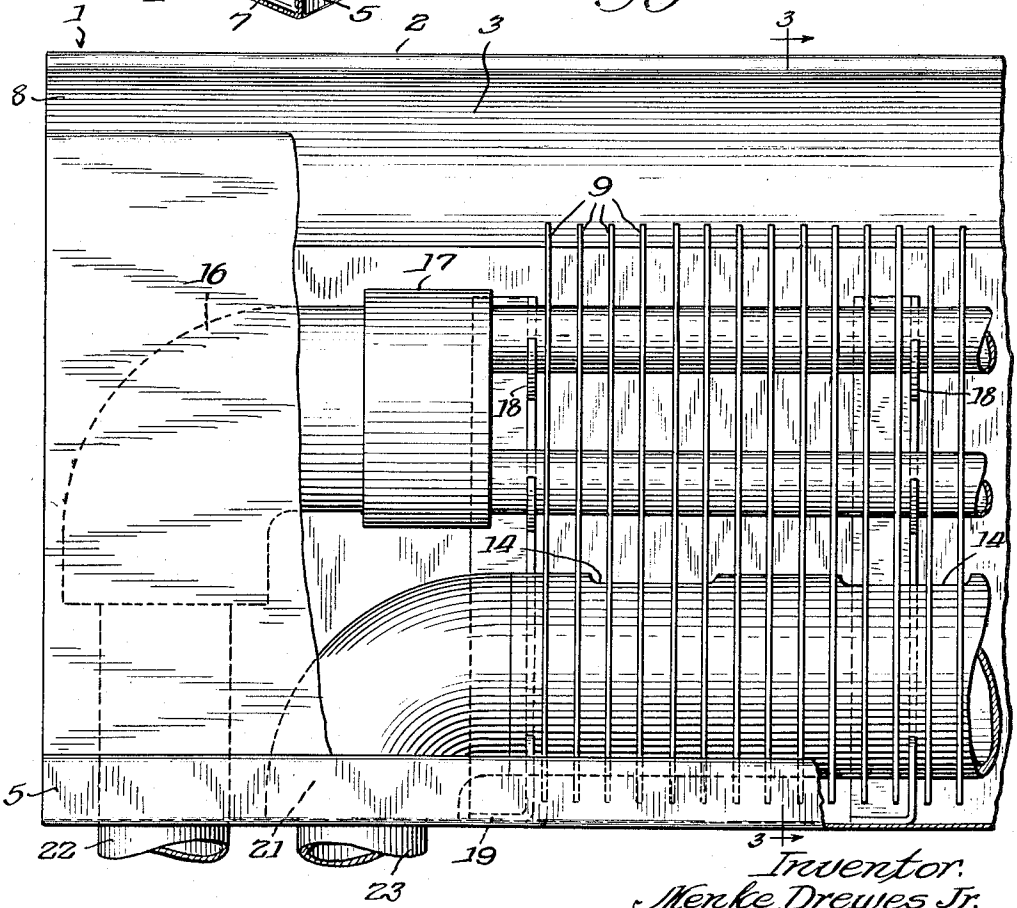


Fig. 2.



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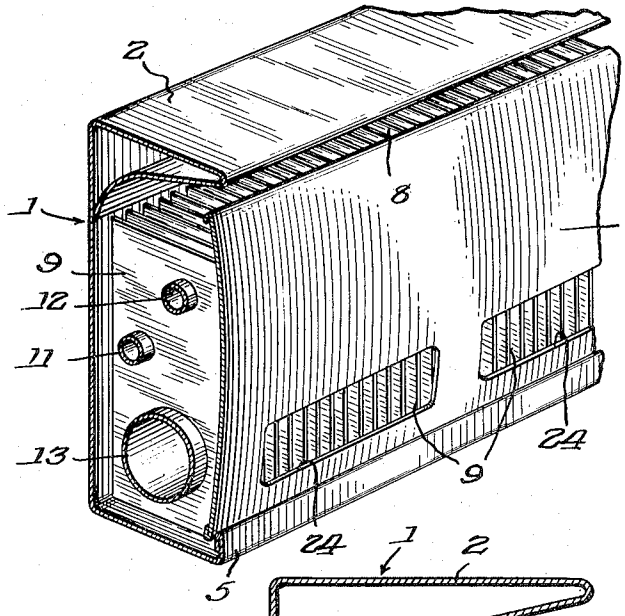


Fig. 4.

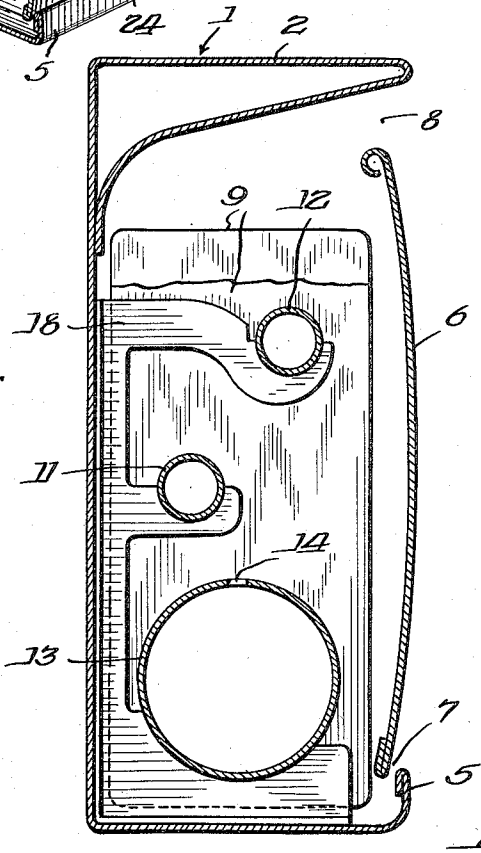


Fig. 3.

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BASEBOARD CONVECTORS

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Application November 28, 1955, Serial No. 549,278

2 Claims. (Cl. 257—133)

This invention relates broadly to a novel form of heat exchanger suitable for use in heating a room in a home and equally applicable to aircraft, automobiles, and railroad cars.

One of the more important objects of this invention is to provide for a finned constructed which mechanically is of relative simplicity in construction and easy to manufacture.

Another important object is to provide for a form of thermal contact in which there is relatively high efficiency in both heating and cooling operations.

Another object is to provide for a construction which can be made relatively lightweight in assembly and comparatively small in addition to permitting its encasement in efficiently designed sheet metal housing.

Other objects and advantages will become more readily apparent upon proceeding with the following description read in the light of the accompanying drawings in which:

Fig. 1 is an exterior perspective view of a preferred embodiment of my invention;

Fig. 2 is a front view with a portion of the enclosure removed;

Fig. 3 is a sectional assembly view taken on the line 3—3 of Fig. 2;

Fig. 4 is an exterior perspective view of a modified form of enclosure; and

Fig. 5 is a sectional view of a further modified form of enclosure.

Similar reference numerals refer to similar parts throughout the several figures.

Referring now to Fig. 1, an enclosure generally designated 1 is provided with a top portion 2, a rear portion 3 and a base or drain pan 4 constituting three sides of the enclosure. The drain pan is preferably made with a forwardly extending lip or edge 5 and in spaced-apart relation to the lip 5 and the upper portion of the enclosure. A front wall 6 is provided in spaced relation as at 7 to the lip 5 and its upper end in spaced relation as at 8 to the top surface of the enclosure.

A plurality of fins 9 in closely spaced transverse relation are mounted respectively on the horizontally extending tubes 11 and 12. The joint between the fins and the tubes is relatively tight because of the high hydraulic expansion of the tubes into the fins, thereby making an excellent thermal contact to assure a thermal transfer from the tubes to the fins during the cooling cycle when air is used, and pre-cooling the air to a degree before the air actually makes contact with the upper tubes 11 and 12 and the upper portion of the finned body provided by the assembly of the fins 9.

At a lower portion, the larger tube 13 below the tubes 11 and 12 is provided also, being attached by expansion into the fins as above described in connection with the tubes 11 and 12. It should, however, be noted that the larger tube 13 is slotted as at 14, the slots being arranged in spaced-apart relation longitudinally preferably on an upper surface of the tube 13. It will be appreciated that

the slots 14 are provided for the purpose of conducting and emitting air through said slots, the intervals being arranged in such manner as to provide the utmost performance in the efficiency of the heat exchanger.

It will be appreciated that the basic function of the device being to heat a home is accomplished preferably by circulating warm water through the tubes 11 and 12, or, of course, steam or any other heated liquid may be used as the heating medium. The latter transfers or conducts heat into the fins which have been attached securely to the tubes 11 and 12 as above mentioned.

During the heating period when the heat exchanger is used preferably on the wall, near the floor level, the heating of the room will be accomplished through convection, since the air will travel through the passage 7 and around up over the tubes 11, 12 and 13, such efficiency being adjustable in that in addition to or substituting therefor air from a conventional blower, suitably located and ducted by means of tubes, ducts or pipes, may be channeled into the tube 13 and thus permitted to escape under pressure through the slots 14.

The device has also a larger use in that during a period in which cooling of the room is desired, chilled liquid may be circulated through the tubes 11 and 12 instead of, say, steam or hot water, and again the heat exchange as in the heating period above referred to will occur through the tubes to the fins.

However, because of the density of the cold air, it is necessary that air be introduced to move the cold air into the room, which is again accomplished through the use of the aforementioned blower or other suitable air driving means.

It is common knowledge that a cold surface will, because of the lowering of the dew point temperature of the surrounding air, cause condensate to form on this cold surface, and therefore, a means for a condensate drip container or drip pan is provided as at 4 so that the collected condensate may be suitably piped to a house drain, not shown. The latter drain may of course be integral with the enclosure as described or else it may be a separate pan. The upper surface of the enclosure as at 2 may be made with a longitudinal opening or passage for additional circulation, as at 15 shown in Fig. 5, in which case the passage may be dispensed with and the passage 15 substituted therefor.

As shown more clearly in Fig. 2, a header such as shown at 16 and connected as at 17 to the tubes 11 and 12 concurrently supply the heating or cooling medium to the said tubes.

It will, of course, be appreciated that a support, such as that indicated at 18 in Figs. 2 and 3, may be used to carry the assembled tubes and fins. The exhaust may also be fixedly attached as at 19 to the pan 4 and which construction is shown more clearly in Fig. 2. The sources of supply for the respective media used for cooling or heating for the header 16 are shown with the piping at 22 and for the large tubing 23 leading into the header 21 as also more clearly shown in Fig. 2.

In some forms of construction, it may be desirable to reduce or perhaps entirely eliminate the passage 7 as shown in Fig. 1 and as shown more clearly in Fig. 4 substitute a series of spaced-apart passages 24 in a lower portion of the forward face 6 of the enclosure 1.

It will be clear that this unit can be made small in appearance and relatively lightweight in structure having a considerable degree of advantage from the standpoint of portability. The fin and tube structure can be encased in an attractively designed sheet metal housing or made from other suitable material which may be painted to fit the decor of any home or room which may employ this

type of baseboard convector, for example, for heating or cooling.

While, of course, only a few modifications have been shown of the article embodying my invention, it should be clear that other forms might be used falling within the spirit of the invention and the appended claims.

I claim:

1. A combined heating and cooling apparatus comprising an enclosure, heat exchange means within the said enclosure including a plurality of substantially horizontally disposed tubes having respective inlets and outlets for conducting hot or cold fluids therewithin, additional substantially parallel tubular means within the enclosure below the first named tubes, the latter tubular means being connected to an air supply under pressure and having spaced apart slots at predetermined intervals for emission of air upwardly past the said first named tubes, the said enclosure having a forwardly extending drain pan portion from a rear wall thereof and positioned below the slotted tubular means for collection of condensate from the said tubular means, vertically positioned fins on the said horizontally disposed tubes extending transversely relative to the said tubes and said slotted tubular means, the enclosure having an upper open portion and a lower relieved portion at a forward end portion thereof, the extension of said drain pan forming with said enclosure said lower relieved portion.

2. A combined heating and cooling apparatus comprising an enclosure, heat exchange means within the said enclosure including a plurality of substantially horizontally disposed tubes having inlets and outlets for conducting hot or cold fluids optionally therewithin, additional tubular means within the enclosure below the first named tubes, the latter tubular means being connected to an air supply under pressure and having spaced apart slots longitudinally extending at predetermined length intervals for the emission of air upwardly past the said first named tubes, substantially parallel fins in spaced apart relation mounted over and snugly fitted on peripheral portions of the said tubes and said slotted tubular means, the said enclosure having at a forward end thereof a wall with upper and lower elongated transverse passages substantially defining the height of said enclosure wall, the said slots being of such length and spacing as to be intersected by one or more of said fins.

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