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Duell et al.

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[54] **HEAT EXCHANGE ASSEMBLY**

[75] Inventors: **Richard J. Duell**, Syracuse; **Fred V. Honnold, Jr.**, North Syracuse, both of N.Y.

[73] Assignee: **Carrier Corporation**, Syracuse, N.Y.

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[52] **U.S. Cl.** **165/76**, 62/298

[51] **Int. Cl.** **F28f 7/00**

[58] **Field of Search** 165/76–78, 165/125, 137; 62/288, 6, 289, 323, 6, 426, 298, 303

[56] **References Cited**

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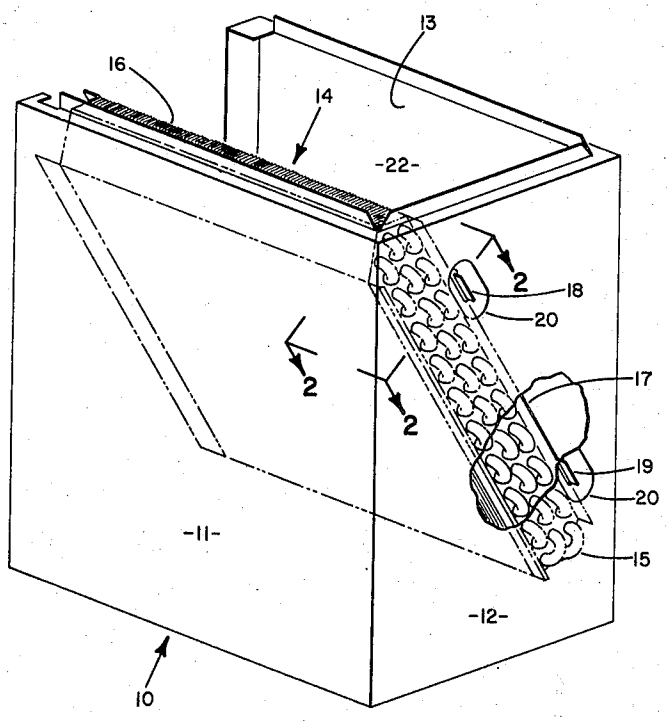
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Primary Examiner—Charles J. Myhre
Assistant Examiner—Theophil W. Streule, Jr.
Attorney, Agent, or Firm—J. Raymond Curtin; Barry E. Deutsch

[57] **ABSTRACT**

A heat exchange assembly comprising a casing including a wall having at least one slot defined therein, said casing defining a chamber. A heat exchange coil is disposed in the chamber of the casing and includes at least one tab extending from an end thereof, the tab being inserted into the slot in the wall of the casing to secure the heat exchange coil within the chamber.

6 Claims, 2 Drawing Figures



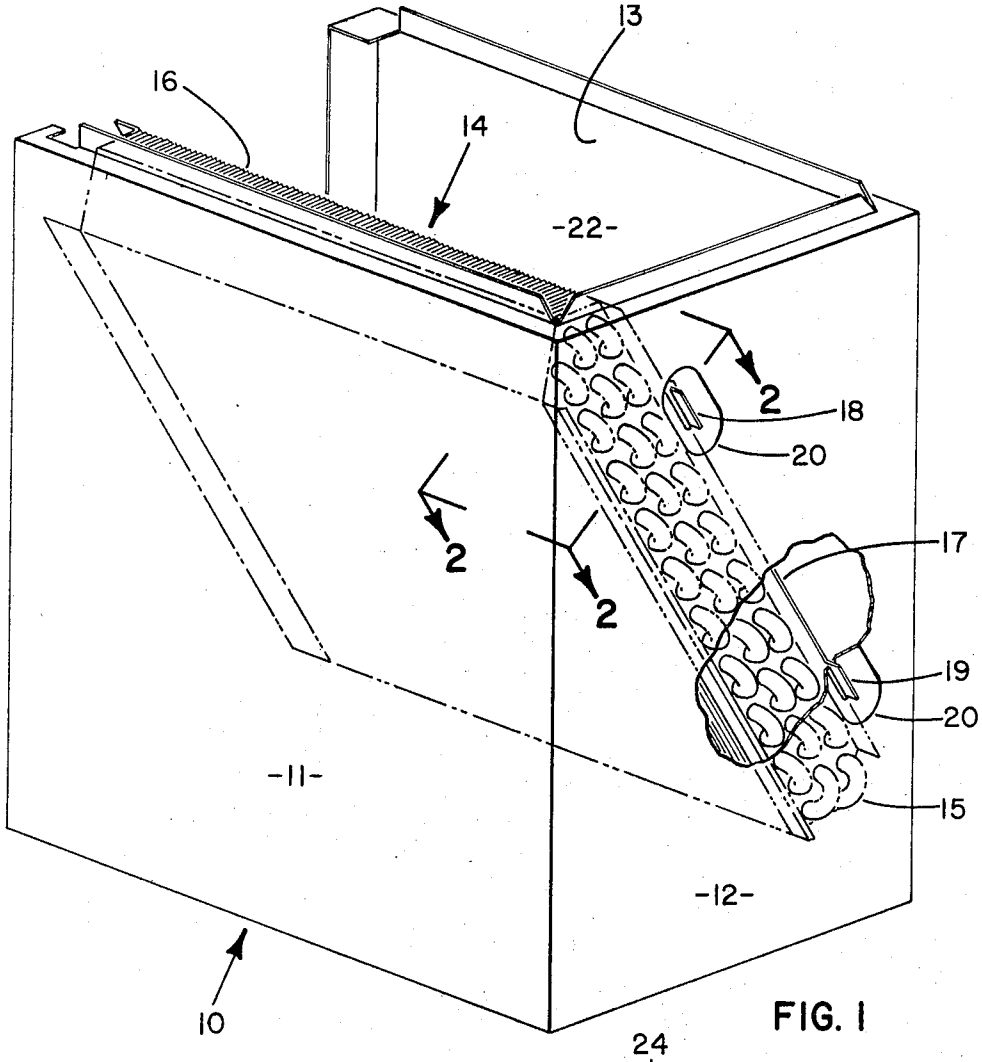


FIG. 1

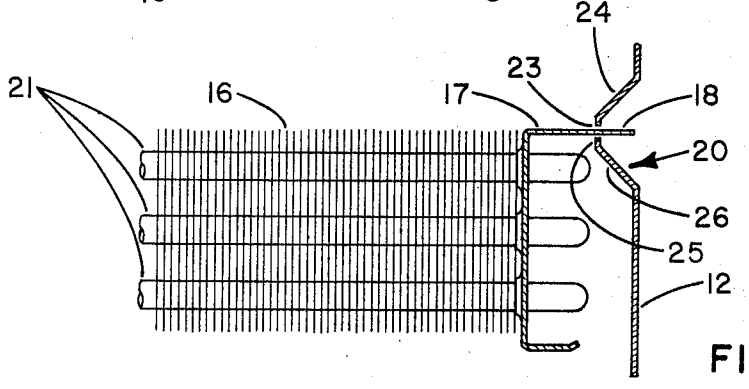


FIG. 2

HEAT EXCHANGE ASSEMBLY

BACKGROUND OF THE INVENTION

The present invention relates to heat exchange assemblies and in particular, to those assemblies having a heat exchange coil disposed within a casing.

Heat exchange assemblies are employed in many varied applications. A typical application relates to the utilization of a heat exchange coil disposed within a casing, the coil serving as an evaporator for a central air conditioning installation. As is known to those skilled in the art, in central air conditioning applications involving residential homes, the evaporator coil is typically located in the supply air duct leading from the furnace of the home. When central air conditioning is being added to a home already having a forced air furnace, the evaporator coil is provided from the manufacturer in an assembly including a casing which eventually is "spliced" into the supply air duct of the existing installation.

Heretofore, many conventional fasteners, such as screws or similar devices, have been used to secure the coil within the casing. As is obvious, the insertion and tightening of such fasteners increases the cost of producing the heat exchange assembly. By reducing the number of fasteners required in manufacturing the heat exchange assembly, a substantial cost reduction in producing the assembly may be obtained.

Furthermore, when servicing is required at the installation site, the cost of obtaining such service is increased due to the many individual fasteners which must be removed to permit removal of the coil from its casing. Thus, as is obvious, the elimination of conventional fasteners not only will reduce the cost of manufacturing a heat exchange assembly of the foregoing type, but will also reduce the cost of servicing the same.

SUMMARY OF THE INVENTION

It is therefore an object of this invention to mount a heat exchange coil of a heat exchange assembly within its casing without requiring the utilization of many conventional fasteners.

It is a further object of this invention to mount a heat exchange coil within a casing without necessitating the utilization of many conventional fasteners so that the coil may be readily removed for servicing.

It is yet another object of this invention to form at least one slot in a wall of a casing of a heat exchange assembly for receiving a tab extending outwardly from a heat exchange coil for securing the coil within the casing.

It is still another object of this invention to mount a coil within a casing by having a tab extending from the coil and being received within a slot provided in an embossment formed in a wall of the casing, the tab being prevented from extending beyond the back surface of the wall.

These and other objects of the present invention are obtained by providing a heat exchange assembly including means defining a casing having a wall with at least one slot defined therethrough. The casing means defines a chamber having a heat exchange coil disposed therein. The coil includes at least one tab member extending therefrom, the tab member being inserted into the slot of the wall of the casing means to secure the heat exchange coil within the casing means chamber.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a perspective view, partially broken away, illustrating the instant invention; and

FIG. **2** is a sectional view taken along lines **2—2—2** of FIG. **1.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing, there is disclosed a heat exchange assembly including the present invention. In referring to the various figures of the drawing, like numerals shall refer to like parts.

Heat exchange assembly **10** includes a casing or wrapper having opposed side walls **11** and **13** and a rear wall **12** connected together to define therebetween a chamber **22.** It should be understood, the wrapper includes a front wall (not shown) which is removable. A heat exchange coil **14** is disposed within chamber **22.**

Coil **14** preferably includes a plurality of plate fins **16** extending outwardly from tubes **21.** Tubes **21** have a suitable heat exchange medium flowing therethrough. The ends of tubes **21** are suitably connected together by return bends **15** so a continuous flow circuit is provided for the heat exchange medium passing through the tubes. A tube sheet **17** is preferably provided at one end of heat exchange coil **14.**

Heat exchange assemblies of the type heretofore disclosed, are employed in various applications. One typical application includes the utilization of the heat exchange coil as an evaporator of a refrigeration unit employed in an air conditioning system for residential homes. When the heat exchange assembly is employed as an evaporator, it is typically installed in a supply air duct leading from the furnace of a forced air heating system for the home.

Heretofore, it has been the practice to employ many conventional fasteners, such as screws or similar devices, to secure coil **14** within the casing. However, as is obvious, the utilization of many conventional fasteners, not only increases the cost of manufacturing the heat exchange assembly, but also increases the cost of servicing the same.

To overcome the problems heretofore encountered by the utilization of conventional fasteners, the present invention preferably employs two outwardly extending spaced apart tabs **18** and **19.** Tabs **18** and **19** preferably extend from and are formed integrally with tube sheet **17.**

Rear wall **12** of the casing, preferably has two spaced apart slots **23** (shown in FIG. **2**) formed therethrough. Slots **23** are formed in embossments **20** of wall **12.** As shown in FIG. **2,** embossments **20** include inwardly extending, inclined sidewalls **24** and **26,** connected together by a rear wall **25.** Slot **23** is actually formed in wall **25.** Tabs **18** and **19** are inserted into slots **23** when it is desired to mount coil **14** within chamber **22** defined by the casing of the heat exchange assembly. The utilization of tabs **18** and **19** in combination with slots **23** substantially reduce the number of conventional fasteners required to secure the heat exchange coil **14** within the casing of the assembly. Thus, the cost of manufacturing and servicing the heat exchange assembly is substantially reduced. In addition, by employing

inwardly extending embossments **20,** the outer ends of tabs **18** and **19** are prevented from extending beyond the plane defined by the outer surface of wall **12.** The disposition of tabs **18** and **19** relative to the plane defined by the outer surface of wall **12** is important for purposes of shipping and installation. If tabs **18** and **19** were to extend beyond the surface of wall **12,** the tabs might be readily damaged by, or cause damage to the shipping carton.

While a preferred embodiment of the present invention has been described and illustrated, the invention should not be limited thereto, but may be otherwise embodied within the scope of the following claims.

We claim:

1. A heat exchange assembly comprising:

a. means defining a casing including a wall having at least one slot defined therein, said casing means defining a chamber; and

b. a heat exchange coil disposed in said chamber of said casing and having at least one tab member extending therefrom, said tab member being inserted into said slot of said wall of said casing means to secure said heat exchange coil within said chamber of said casing means.

2. A heat exchange assembly in accordance with claim **1** wherein said heat exchange coil includes a tube sheet provided at one end thereof, said tab member being formed integral with said tube sheet.

3. A heat exchange assembly in accordance with claim **2** wherein said slot is provided in an inwardly extending embossment formed in said wall.

4. A heat exchange assembly in accordance with claim **1** wherein said slot is provided in an inwardly extending embossment formed in said wall.

5. A heat exchange assembly comprising:

a. casing means including a pair of side walls, and a rear wall connected together to define a chamber therebetween, said rear wall having a pair of spaced apart slots formed therein; and

b. a heat exchange coil disposed in said chamber, said coil including at least one tube sheet provided at one end thereof, a pair of spaced apart tab members extending outwardly from said tube sheet, said tab members being insertable into said slots of said rear wall to secure said coil within said casing means chamber.

6. A heat exchange assembly in accordance with claim **5** wherein each of said slots is provided in an inwardly extending embossment formed in said rear wall.

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