

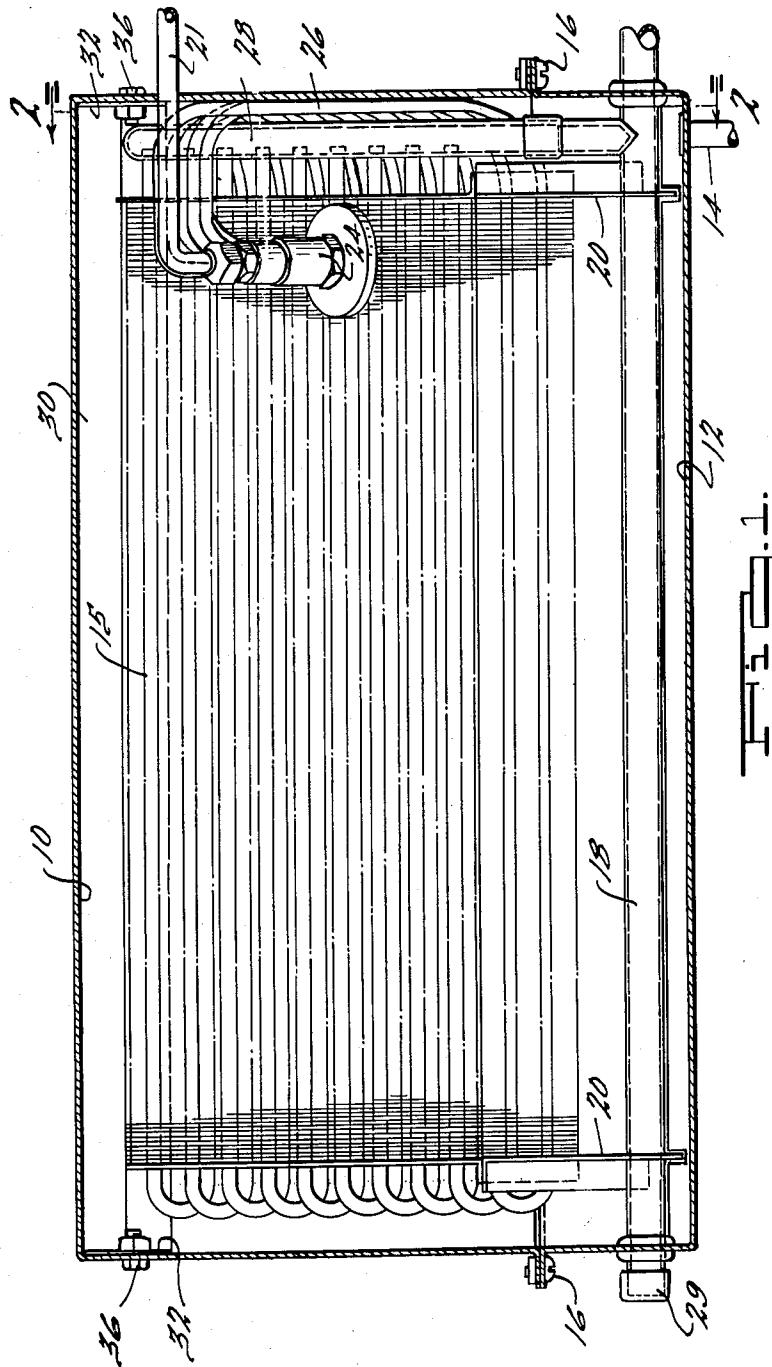
May 8, 1956

R. L. BRUGLER ET AL
HEAT EXCHANGE COIL ASSEMBLY

2,744,393

Filed July 23, 1953

2 Sheets-Sheet 1



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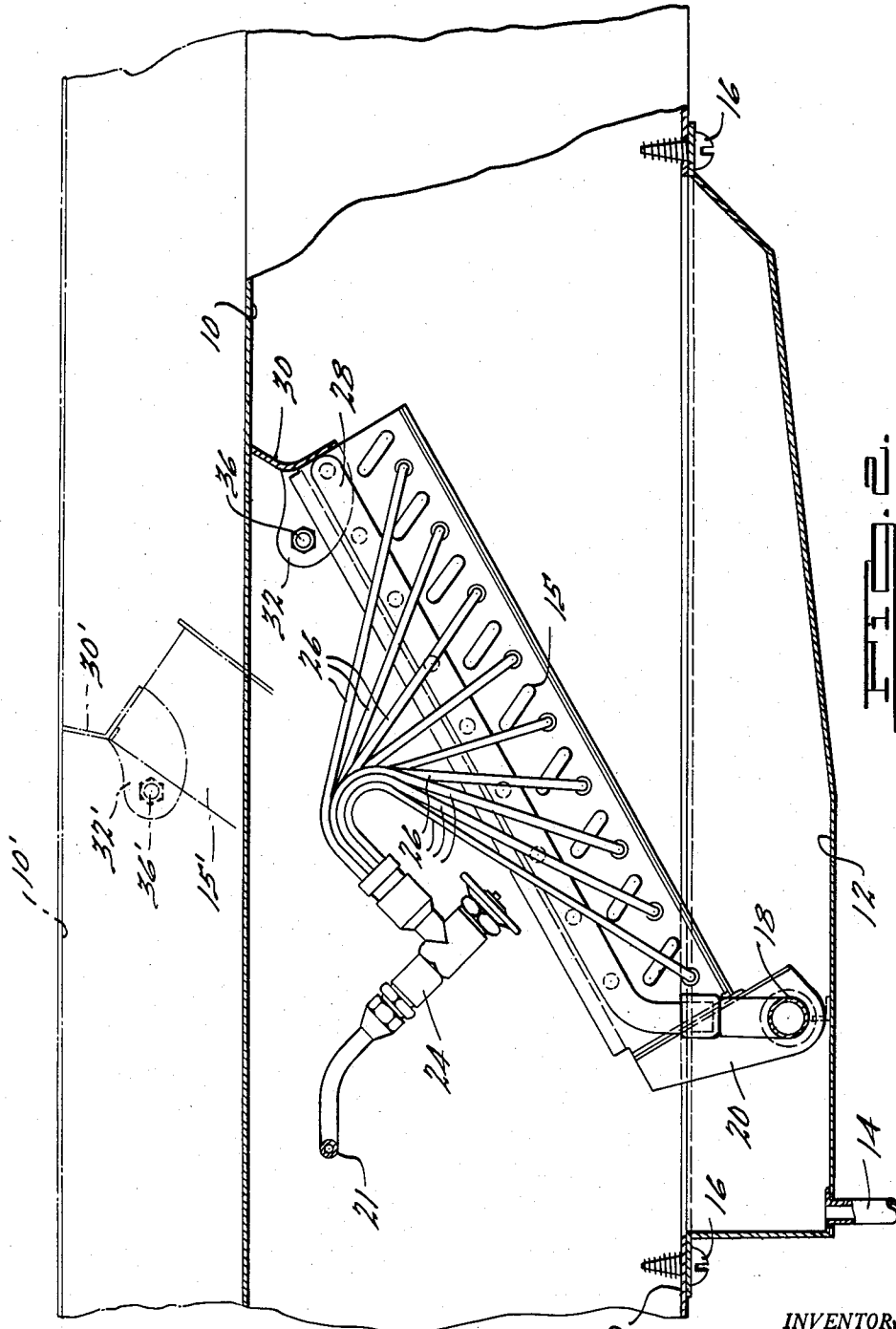
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HEAT EXCHANGE COIL ASSEMBLY

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Application July 23, 1953, Serial No. 369,817

2 Claims. (Cl. 62—140)

This invention relates to a heat exchange coil assembly and more particularly to a coil assembly adapted for installation in air ducts of various dimensions.

Heretofore, in refrigeration installations in which a coil is installed in a duct during the installation of an air conditioning unit it has been the practice to install the coil transversely of the duct and normal to the direction of air travel. Air conditioning installations do, however, often have ducts of different dimensions in otherwise similar installations and in the past it has been necessary to increase the thickness of the coil to compensate for a decrease in height of the duct in order to obtain a given heat exchange capacity from the coil. This installation procedure is expensive for it requires an inventory of coils of various heights and thicknesses.

It is a principal object of this invention to provide one coil that is capable of being installed in ducts of different heights and to accomplish this by mounting the coil for pivotal movement with a refrigerant flow passage passing through the axis about which this movement occurs.

Although an evaporator coil has been illustrated and will be described herein it is to be understood that the invention could be applied to a condenser coil or other heat exchange coil.

In the drawings:

Fig. 1 is a vertical sectional view of a duct in which the coil assembly is installed

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

It is to be understood that the heat exchange coil to be described herein is intended for use as one component of a refrigeration system. It is contemplated that the assembly be sold as a unit for installation by a contractor as an incident to installing an entire air conditioning or refrigeration unit. The other refrigeration components such as a compressor or condenser are not illustrated or described herein as they do not form a part of our invention.

It is generally desirable to have an evaporator coil extend transversely of an air conveying duct and it is our intention that the coil be tilted in the duct when the height of the duct is insufficient to accommodate installation of the coil at right angles to the direction of air travel. It is preferable if the coil is tilted so that it leans downstream of the duct.

In Figs. 1 and 2 of the drawings an evaporator coil assembly is shown installed in a duct 10. The evaporator coil assembly includes a condensate collecting pan 12 provided with a suitable drain 14 and an evaporator coil 15. The pan 12 is adapted to be secured to the duct 10 by fastening devices such as screws 16. An opening 17 is cut in duct 10 to permit insertion of the coil 15 in the duct 10 and a pipe 18 is rotatably mounted in the condensate pan 12 and extends transversely thereof. The condensate pan 12 serves as a stationary member for supporting the rest of the evaporator coil assembly and suitable structural means in the form of brackets 20 are carried by the pipe 18 and support the evaporator coil 15 on the pipe 18.

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As indicated in Fig. 1 the angle of inclination of the evaporator coil 15 may be varied to suit the installation of this coil in any particular duct 10 and the vertical height of the duct 10 will predetermine the angle at which the coil is installed therein. Pivotal movement of pipe 18 in pan 12 accommodates the selection of the angle at which the coil is installed in the duct 10. Refrigerant is admitted from a line 21, which is illustrated as penetrating a side wall of the duct 10, to the evaporator coil 15 through the usual expansion valve 24 and refrigerant lines 26. Refrigerant is discharged from the evaporator coil into a manifold 28 which is connected in fluid flow relationship with the pipe 18 so that refrigerant which is discharged from the evaporator coil travels both through the manifold 28 and through the pipe 18. Suitable connections may be made to either end of pipe 18 to conduct the refrigerant to a compressor or other refrigeration apparatus. A plug or cap 29 is used to close the unused end of pipe 18.

The evaporator coil 15 is preferably provided with a flange 30 at its upper edge to form an air seal with the upper surface of the duct 10. The flange 30 is provided with ears 32 each of which have an opening 34 and bolts 36 extend through openings 34 and the side walls of duct 10 to hold the evaporator 15 in its inclined position in duct 10.

In Fig. 2 the broken line representation of a duct and a portion of the evaporator coil assembly illustrate the unit installed in a larger duct. The parts in Fig. 2 have been indicated by the prime of the corresponding numbers in the solid line showing in that figure.

It is our intention that the heat exchange coil assembly which we have illustrated herein as including an evaporator coil pivotally mounted in a condensate pan be manufactured as a unitary assembly which will adapt itself to most existing air conveying ducts.

We claim:

1. A device for cooling air including a duct providing an air passage and having an outer wall provided with an opening and a heat exchange assembly mounted on said duct; said heat exchange assembly comprising a condensate collecting pan secured to said duct around the periphery of said opening and extending outwardly from said outer wall, said pan serving as a closure for said opening, a pipe extending transversely of said pan outwardly of said outer wall and pivotally mounted in said pan for rotation about the axis of said pipe, a flat refrigerant evaporator coil positioned within said duct by insertion through said opening, means supporting said coil on said pipe for pivotal movement therewith to accommodate the initial installation of said coil in said duct at a preselected inclination to said duct and manifold means secured to said coil and said pipe for movement therewith, said manifold means defining a refrigerant flow connection between said coil and said pipe.

2. A device for cooling air including a duct providing an air passage and a heat exchange assembly mounted on said duct, said duct having first and second substantially parallel outer walls with an opening provided in said first outer wall, said heat exchange assembly comprising a condensate collecting pan secured to said first outer wall around the periphery of said opening and extending outwardly from said first outer wall, said pan serving as a closure for said opening, a pipe extending transversely of said pan outwardly of said outer wall and pivotally mounted in said pan for rotation about the axis of said pipe, a flat refrigerant evaporator coil positioned within said duct by insertion through said opening, means supporting said coil on said pipe for pivotal movement therewith to accommodate the initial installation of said coil in said duct at a preselected inclination to said duct, manifold means secured to said coil and said pipe for movement therewith, said manifold

means defining a refrigerant flow connection between said coil and said pipe, and a sealing flange carried by said evaporator coil in abutting relationship with the inner surface of said second outer wall.

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