

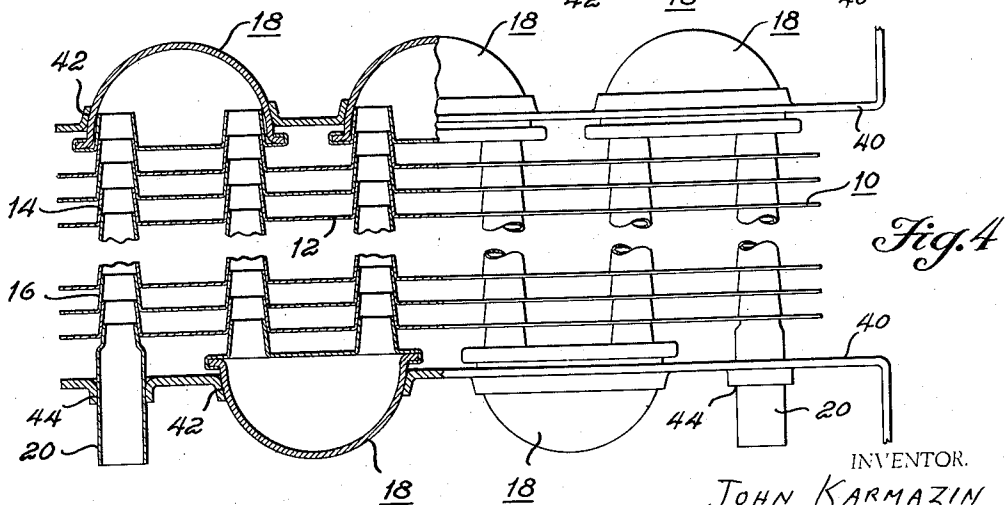
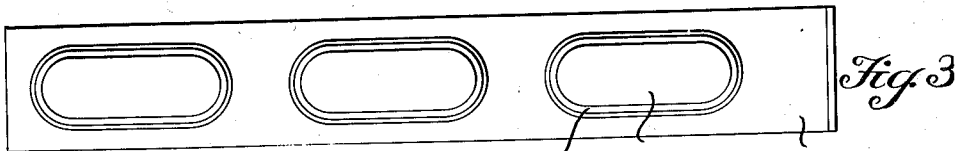
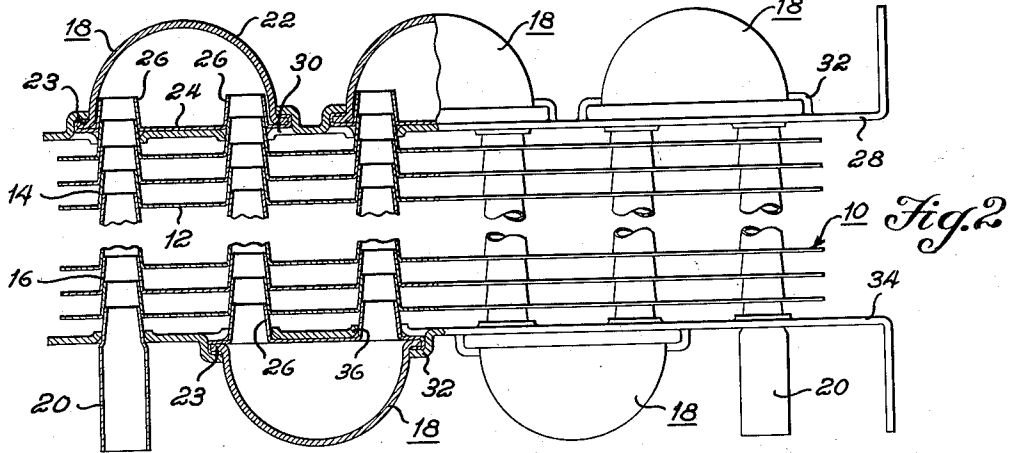
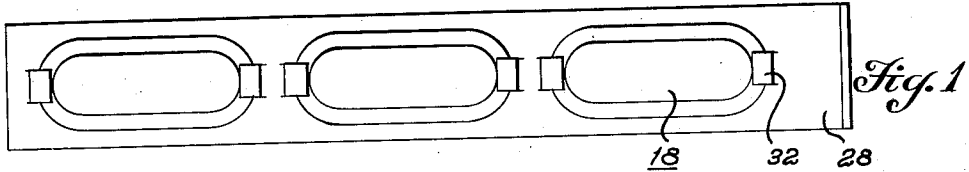
Jan. 21, 1936.

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2,028,457

REFRIGERATING APPARATUS

Filed May 7, 1935



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UNITED STATES PATENT OFFICE

2,028,457

REFRIGERATING APPARATUS

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Application May 7, 1935, Serial No. 20,203

4 Claims. (Cl. 257—255)

This invention relates to refrigerating apparatus and more particularly to a novel heat exchange structure for use in refrigerating apparatus, as well as for other uses.

It is an object of the invention to provide a heat exchange device of the fin and tube type having a simple and reliable mounting frame therefor, by which the somewhat fragile fin and tube core of the device may be suitably supported.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred form of the invention is clearly shown.

In the drawing:

Fig. 1 is an end view of a heat exchange device embodying one form of the present invention;

Fig. 2 is a side view of the structure illustrated in Fig. 1;

Fig. 3 is an end view of a heat exchange device embodying a second form of the invention; and

Fig. 4 is a side view of the structure illustrated in Fig. 3.

Referring now to the form of the invention illustrated in Figs. 1 and 2, there is provided a fin and tube core 10 which may be constructed in any suitable manner. The core 10 is illustrated as being formed in a manner similar to that shown in the patent to Karmazin 1,591,323, issued July 6, 1926. This form of core comprises a plurality of flat fins 12 having integral tapered tubular projections 14 formed thereon, the projections of each fin being telescoped into corresponding projections on adjacent fins to provide continuous tubes 16. Suitable return bends 18 are provided connecting the ends of adjacent tubes in a series flow circuit. Inlet and outlet connections 20 are likewise provided at either end of the core. The return bends 18 are preferably formed of a troughlike stamping 22 having a flange 23 on its periphery, together with a stamped closure plate 24 which has formed therein a pair of tapered tubular projections 26 adapted to be telescoped with corresponding projections on the end fins 14. After the core structure is assembled together, a mounting plate 28 having openings 30 registering with the tubular projections 14 of the fins 12 is slipped over the protruding projections on the end fin. The plate 28 has formed therein upstanding lugs 32 which when the plate 28 is assembled to the core 10, project perpendicularly to the plate 28. The return bends 18 are then assembled to the core

10 and the plate 28, with the tubular projections 26 telescoped over the tubular projections 14 of the outermost fin 12. The lugs 32 are then deformed downwardly as shown in the drawing to tightly clamp the plate 28 to the flanges 23 of the return bends 18. At the opposite side of the core, a mounting plate 34 is provided having openings 36 formed therein to register with the tubes 16. The return bends 18 at this side of the core 10 have their tubular projections 26 facing toward the core 10. The return bends are then assembled to the plate 34 and the lugs 32 are bent downwardly upon the flanges 23 of the return bends. The inlet and outlet connections 20 are inserted into the openings 36 at either end of the plate 34, and the plate together with the connections 20 and the return bends 18 is assembled to the adjacent fin 12 in the manner shown in Fig. 2. The entire structure may then be bonded together by a suitable bonding process, for example, soldering or copper-hydrogen welding to provide a fluid tight heat exchange structure and to give mechanical strength to the device.

In the form of the invention illustrated in Figs. 3 and 4, the core 10 and the return bends 18 and connections 20 are formed similarly to the corresponding parts illustrated in Figs. 1 and 2. The mounting plates 40, however, are formed with large flanged openings 42 therein through which a substantial part of the body of the return bends 18 may be inserted. Openings 44 are also provided in one of the plates 40 through which the connections 20 may be inserted. In this form of the invention, the return bends 18 and connections 20 may be assembled to the core before end plate 40 is assembled thereto. The plates 40 are then slipped over the ends of the return bends and connections 20 to take the position illustrated in Fig. 4. The entire assembly may then be suitably bonded to provide a fluid tight seal for the heat exchange device and to securely bond the plates 40 to the return bends 18 and the connections 20.

While the form of embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A heat exchange structure comprising in combination means forming a plurality of parallel tubes and transverse fins, return bends connecting the ends of adjacent tubes, said return bends including a hollow member in the general

form of a half cylinder, and a mounting frame for said structure comprising a plate extending adjacent said return bends and means formed in said plate engaging the walls of said return bends.

5 2. A heat exchange structure comprising in combination means forming a plurality of parallel tubes and transverse fins, return bends connecting the ends of adjacent tubes, said return
10 bends including a hollow member in the general form of a half cylinder, and a mounting frame for said structure comprising a plate extending adjacent said return bends and means formed in said plate engaging the walls of said
15 return bends, said frame being secured to said return bends by welding.

3. A heat exchange structure comprising in combination means forming a plurality of parallel tubes and transverse fins, return bends
20 connecting the ends of adjacent tubes, said re-

turn bends including a hollow member in the general form of a half cylinder, and a mounting frame for said structure comprising a plate extending adjacent said return bends and flanged openings formed in said plate engaging the walls
5 of said return bends.

4. A heat exchange structure comprising in combination means forming a plurality of parallel tubes and transverse fins, return bends connecting the ends of adjacent tubes, said re-
10 turn bends including a hollow member in the general form of a half cylinder, and a mounting frame for said structure comprising a plate extending adjacent said return bends and openings formed in said plate engaging the walls of
15 said return bends, said plate having lugs formed therein adjacent said openings, said lugs being bent to engage said return bends and clamp the return bends between the lugs and the plate.

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