Sept. 28, 1926. 1,601,637

J. M. MEIGS

REFRIGERATOR CONSTRUCTION

Filed Feb. 16, 1926 2 Sheets-Sheet 1

Fig. 1.

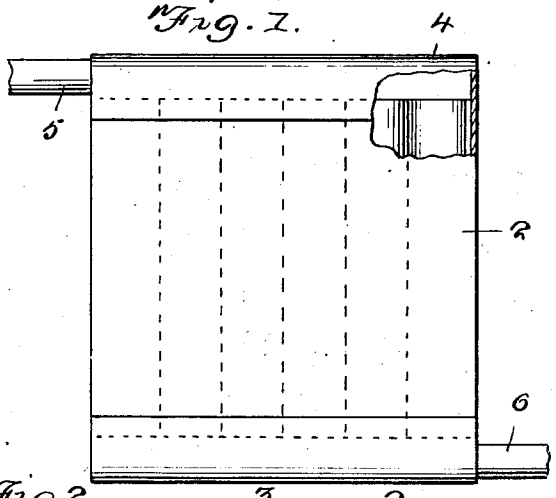


Fig. 3.

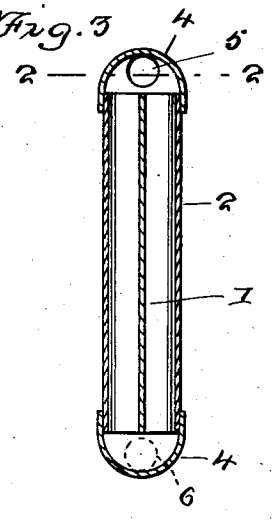


Fig. 2.

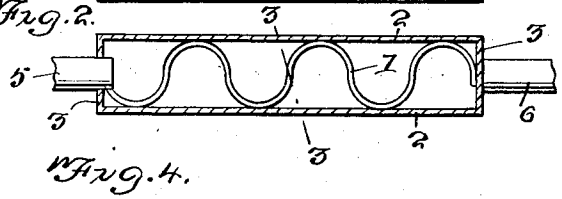


Fig. 4.

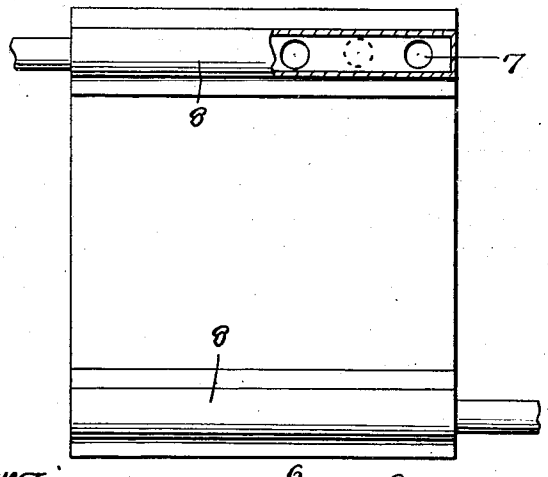


Fig. 6.

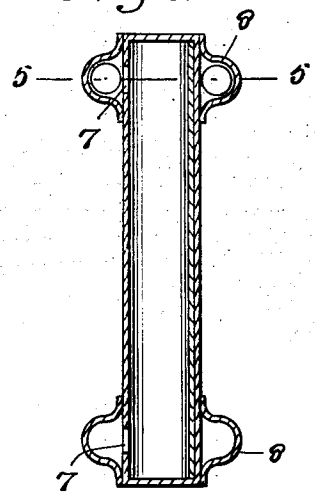
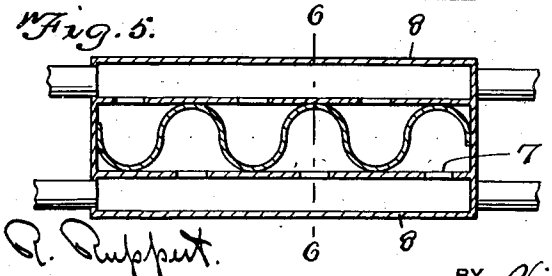


Fig. 5.



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Sept. 28, 1926. 1,601,637

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REFRIGERATOR CONSTRUCTION

Filed Feb. 16, 1926 2 Sheets-Sheet 2

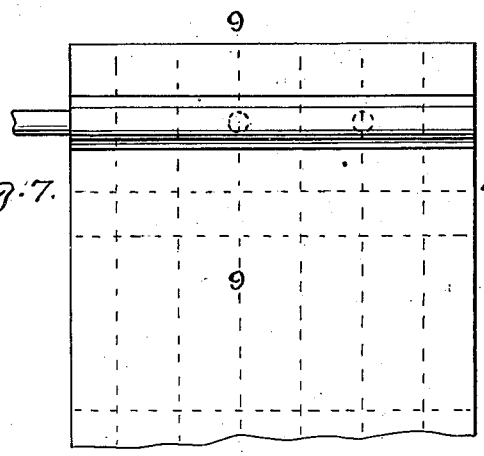


Fig. 7.

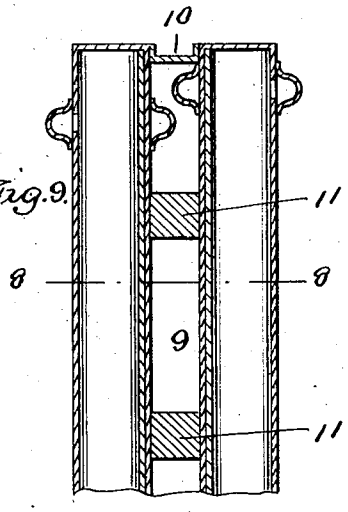
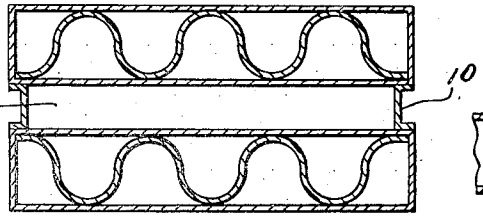


Fig. 9.

Fig. 8.



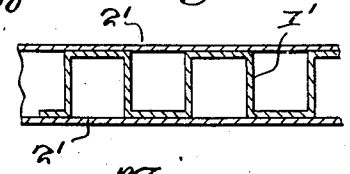


Fig. 12.

Fig. 13.

Fig. 10.

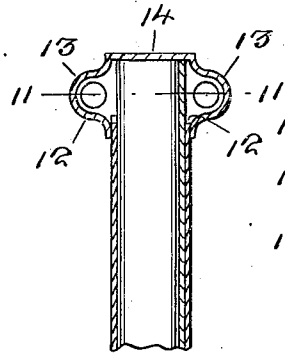
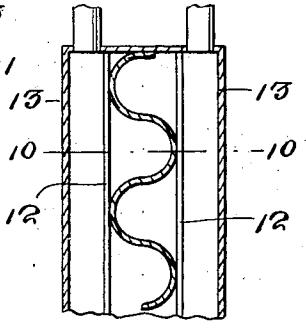


Fig. 11.



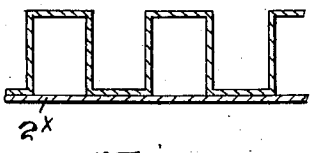


Fig. 14.

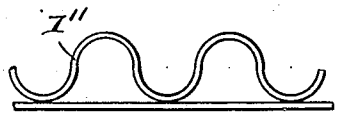


Fig. 15.



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Patented Sept. 28, 1926. 1,601,637

UNITED STATES PATENT OFFICE.

JOHN M. MEIGS, OF YAKIMA, WASHINGTON.

REFRIGERATOR CONSTRUCTION.

Application filed February 16, 1926. Serial No. 88,630.

This invention relates to a wall construction, the general object of the invention being to form a wall with conduits which form passages for fluids by attaching a corrugated sheet to a flat sheet or plate, the space formed by each corrugation and that portion of the flat sheet which extends across the corrugation constituting the conduit.

Another object of the invention is to provide manifolds which are connected to the upper and lower parts of the wall to conduct fluid to the conduits and to receive the fluid from the conduits.

Another object of the invention is to so position a pair of walls that a vacuum chamber may be formed between them, this construction being designed to be used as a combined cooler and condenser.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claim.

In decsribing my invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is an elevation, with parts broken away, showing the simplest form of the invention.

Figure 2 is a section on line 2—2 of Figure 3.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a view similar to Figure 1, but showing a slight modification.

Figure 5 is a section on line 5—5 of Figure 6.

Figure 6 is a section on line 6—6 of Figure 5.

Figure 7 is an elevation of another modification.

Figure 8 is a section on line 8—8 of Figure 9.

Figure 9 is a section on line 9—9 of Figure 7.

Figure 10 is a section on line 10—10 of Figure 11, showing another modification.

Figure 11 is a section on line 11—11 of Figure 10.

Figures 12, 13, 14 and 15 are sectional views showing further modifications.

As shown in these views, I fasten the outer portions of a corrugated sheet 1 to the flat sheets 2 so that the spaces between the sheets form a plurality of conduits. In most of the figures, the outer sheets have their side edges connected together by end pieces 3 so that a casing is formed which contains the corrugated sheet. In Figures 1, 2 and 3, a hood 4 is placed at each end of the casing, these hoods forming inlet and outlet manifolds and fluid is conducted to the inlet manifold through the conductor pipe 5 and after flowing through the conduits, it passes into the outlet manifold and escapes through the exhaust pipe 6.

In Figures 4, 5 and 6, holes 7 are formed in the sides of the casing, adjacent the top and bottom thereof and these holes communicate with the conduits and in this case the manifolds 8 are fastened to the sides of the casing and cover the holes so that fluid will pass from the inlet manifolds through the holes 7 into the conduits and will flow from the conduits through the holes 7 at the other end of the device into the discharge manifolds.

Figures 7, 8 and 9 show a pair of devices, such as shown in Figures 4, 5 and 6, arranged in spaced relation to form a central chamber 9 which is closed by the strips 10 which is connected with the edges of the devices, as shown in Figures 8 and 9. Spacing members 11 may be placed in the chamber between the two devices, as shown in Figure 9.

Figures 10 and 11 show the openings leading to and from the conduits as formed by cutting away the ends of the straight plates, as shown at 12, and covering these parts by the manifold forming extensions 13 of the caps 14 which form the ends of the casing. By cutting away the straight plates, the ends of the conduits formed by the corrugated plate and the straight plates are exposed, so that fluid entering the manifolds 13 will flow into the conduits. The discharge end of the device is similarly formed so that the fluid will flow from the conduits into the discharge manifolds.

Figures 12 and 13 show the corrugated member 1′ as made with rectangular corrugations, Figure 12 showing a pair of flat

plates 2′, while Figure 13 shows but a single flat plate 2ˣ. Figure 14 is a view similar to Figure 13, but showing the corrugated plate 1″ provided with rounded corrugations instead of rectangular ones.

Figure 15 is a view showing a casing formed as in the first modification, but with the corrugated member 1ˣ provided with V-shaped corrugations.

From the foregoing it will be seen that I have provided means for forming conduits in a wall or casing so that the structure can be manufactured very cheaply, and the structure is mainly designed for use in refrigerating systems, the conduits being used for the refrigerating or other fluids. Some of the conduits can be used for the refrigerating fluid and others for the fluid to be cooled. Of course, the structure could be used with a heating fluid or as a heat exchanger. Where two different fluids are used, the structure must be used which is provided with a pair of inlet manifolds and a pair of outlet manifolds.

For application to ice boxes, ice cream containers, transformers, or other places where heat is to be exchanged between the outside and inside of a vessel, room or cabinet for heating or cooling, the structure can be made to form the container itself and the insulation.

In the form shown in Figures 7, 8 and 9, the structure can be used as a cooler and condenser with the central chamber forming a vacuum chamber. If desired, the vacuum chamber can be formed between one of the devices and a wall, such for instance as that shown in Figures 13, 14 and 15. The members 11 should be placed at right angles to the conduits and should be formed of low heat conducting material. These members separate the elements and form the vacuum spaces and these members and the corrugated construction will support the parts of the device against atmospheric pressure. By polishing the inside surfaces and using the vacuum, a high heat insulation will be secured.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claim.

What I claim is:—

The herein described structure, comprising a casing, a corrugated sheet therein having its outer portions connected with the walls of the casing to form two sets of conduits, the said casing having openings in its side walls adjacent the top and bottom thereof which communicate with the conduits and fluid inlet and discharge manifolds covering the openings.

In testimony whereof I affix my signature.

JOHN M. MEIGS.