Sept. 15, 1931. L. U. LARKIN 1,823,275

MECHANICAL REFRIGERATION UNIT

Filed March 25, 1929

Fig. 1.

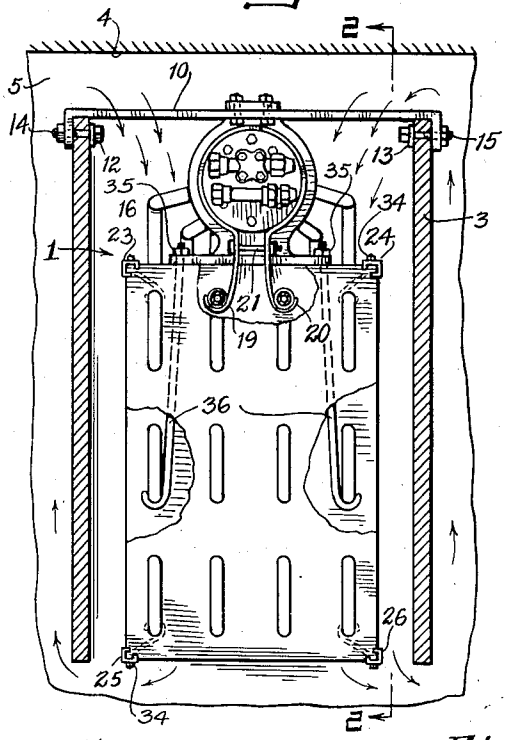


Fig. 2.

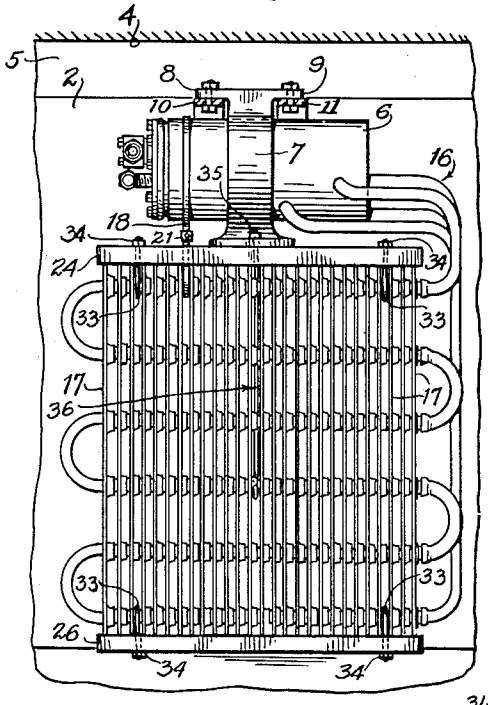


Fig. 3.

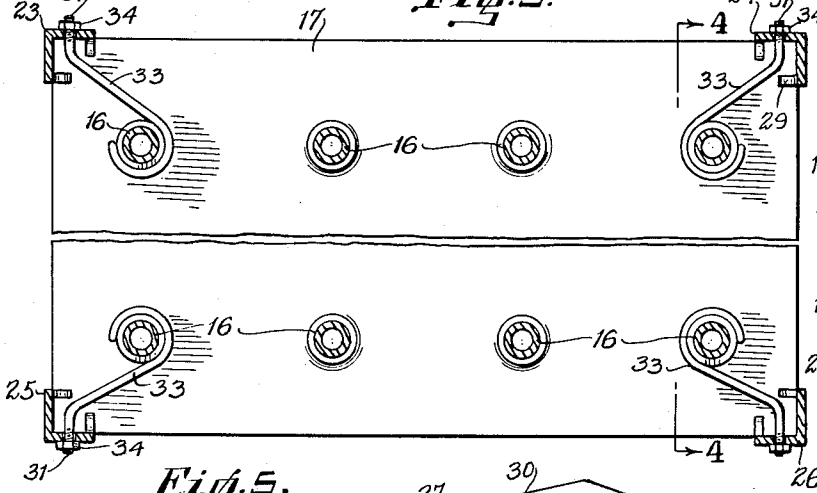


Fig. 4

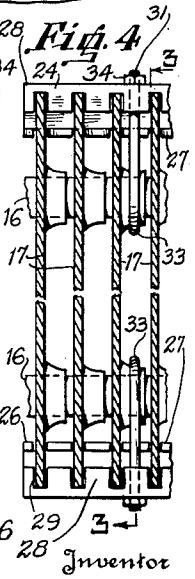
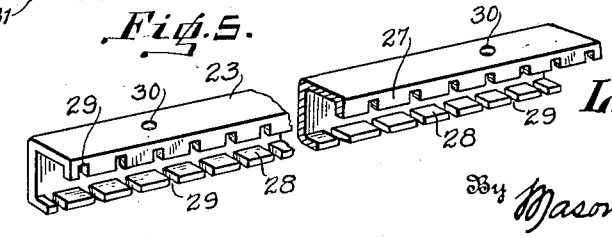


Fig. 5.



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Patented Sept. 15, 1931

1,823,275

UNITED STATES PATENT OFFICE

LESTER U. LARKIN, OF ATLANTA, GEORGIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE GUARDIAN TRUST COMPANY, OF CLEVELAND, OHIO

MECHANICAL REFRIGERATION UNIT

Application filed March 25, 1929. Serial No. 349,859.

The invention forming the subject matter of this application is an improvement on the refrigeration unit disclosed in my copending applications, Serial No. 243,848, filed December 31, 1927, and Serial No. 288,824, filed June 28, 1928.

As disclosed in my said applications, this general type of invention includes an evaporator head with pipes extending therefrom in parallel branches having a plurality of heat absorbing fins or plates extending perpendicularly to all of said branches. The previous forms of my invention, however, have not been provided with any means for protecting the corners of the fins and holding them properly spaced apart.

The main object of my present invention, therefore, is to provide means which not only stiffens the whole fin construction, but also holds the fins properly spaced apart.

Another object of the invention is to provide a refrigerating unit of this type with means for supporting it securely in a refrigerating chamber, and with the fins thereof in a certain predetermined relation to the direction of air flowing through said chamber.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawings:

Fig. 1 is a fragmentary elevation showing one of my improved units supported in a refrigerating chamber and spaced apart from the walls thereof;

Fig. 2 is a side elevation of the said unit;

Fig. 3 is a vertical section taken on the line 3—3 of Fig. 4;

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 3; and

Fig. 5 is a perspective view of one of the stiffening plates forming part of this invention.

As shown in Figs. 1 and 2, the invention comprises a refrigerating unit, 1, supported between partitions 2 and 3 which form the side walls of a refrigerating chamber designated generally by the reference numeral 4, the back wall of which is designated by the reference numeral 5.

The refrigerating unit comprises a header 6, and braced by a supporting strap 7 having flanges 8 and 9 projecting laterally therefrom. The flanges 8 and 9 are bolted to straps 10 and 11, respectively, which extend across the refrigerating chamber and are supported by the tops of the partitions 2 and 3. Each of the straps 10 and 11 have downturned flanges 12 and 13 which extend downwardly along the outer side of the partitions 2 and 3 and are secured thereto by bolts 14 and 15.

Piping designated generally by the reference numeral 16 extends from the header 6 to form substantially horizontal parallel branches on which are mounted with friction fit the substantially vertical fins 17 which are properly spaced apart to conduct heat from the refrigerating chamber into the cooling fluid circulating through the piping 16. The specific details of the header and piping construction form no part of the present invention as they are claimed in my copending applications above referred to.

The heat absorbing piping and fins are supported by the connection of said piping with the header 6, and by a strap 18 which extends around the front end of the header 6 and extends downwardly between adjacent fins and terminates in hook portions 19 and 20 which are bent around and engage the upper horizontal branches of the piping 16. In order to draw the hook portions 19 and 20 into contact with the said horizontal branches, a bolt 21 passes through these portions immediately below their connections with the header 6. It will be obvious that adjustment of the nut 22 on the bolt 21 will tighten the strap 18 around the header 6 and will also draw the hook ends of said portions 19 and 20 into firm engagement with the horizontal branches of the piping 16.

In order to stiffen the entire unit the corners of the fins 17 seat in angle irons 23, 24, 25 and 26, each of which is structurally identical with all the others. Therefore, it will be sufficient to describe the construction of one in order to disclose the construction of all. As shown in Fig. 5 the angle iron 23 has its edges provided with flanges 27 and 28, each of which is provided with notches 29 extend-

ing to the inner faces of the angle iron. The fins 17 have their corners in contact with the inner faces of said angle iron, and consequently have their sides engaged and positioned by the notches 29.

In order to draw the angle irons firmly into holding contact with the fins 17, each of said irons is provided with a plurality of apertures 30 through which extends the screwthreaded parts 31 of hooks 32, each of which has the hook end thereof extending around the adjacent horizontal branch of the piping 16. As will be obvious from inspection of Fig. 3, the adjustment of the nuts 34 on the screwthreaded parts 31 will draw the angle irons securely down onto the corners of the fins 17, and consequently will cause these irons to hold said fins in rigidly spaced relation to each other.

In order to secure the header 6 firmly to the fin structure, and relieve the piping 16 of the weight of this structure, the strap 7 terminates in a base plate which rests on the top of the bank of fins and is securely bolted thereto by the nuts 35 screwthreaded onto the hook bolts 36 which extend between adjacent fins and have their lower ends hooked around parts of the piping 16.

It will be obvious from the drawings that the angle iron and the strap construction between the header and piping will form a very rigid structure which can be handled freely without danger of turning over the ends of the fins and disturbing the spacing thereof.

In the operation of this invention, it is essential that the unit be placed so that the air circulating through the refrigerator will flow in the same direction as the fins 17 are arranged in the refrigerating chamber. While, of course, the unit will operate in any position it is preferable that it be so arranged that the air can circulate as freely as possible through the fins and over the piping passing therethrough.

What I claim is:

1. A refrigerating unit including a plurality of pipes spaced apart and in parallel relation to each other, a plurality of rectangular heat absorbing fins, each of which is in frictional engagement with all of said pipes and extends perpendicularly thereto, angle irons seated on each corner of said fins, and means for securing said angle irons in fixed position on said fins.

2. A refrigerating unit including a plurality of pipes spaced apart and in parallel relation to each other, a plurality of rectangular heat absorbing fins, each of which is in frictional engagement with all of said pipes and extends perpendicularly thereto, and means for protecting the corners of all of said fins and for holding them in spaced relation to each other.

3. A refrigerating unit including a plurality of pipes spaced apart and in parallel relation to each other, a plurality of rectangular heat absorbing fins, each of which is in frictional engagement with all of said pipes and extends perpendicularly thereto, angle irons seated on the corners of each of said fins and having flanges extending between the sides of said fins, and means for fixing said angle irons to said fins.

4. A refrigerating unit including a header, a bank of pipes parallel to each other, means for supporting said bank of pipes from said header, said supporting means including a plurality of fins, each of which is in heat absorbing contact with all of said pipes, and means supported by said fins and inter-leaving with the edges thereof for securing said fins in spaced apart relationship to each other on said pipes.

5. A refrigerating unit including a header, a bank of pipes parallel to each other and connected to said header, a plurality of rectangular fins, each of which is in heat absorbing contact with all of said pipes, means engaging the corners of said fins to hold them in spaced apart relationship to each other, and bolts extending around some of said pipes and connected to said means to lock said fins in fixed position on said pipes.

6. A refrigerating unit including a header, a bank of pipes parallel to each other and connected to said header, a plurality of rectangular fins, each of which is in heat absorbing contact with all of said pipes, a strap extending around said header and having a base plate resting on said fins, and means adjustably secured to said base plate and engaging certain of said pipes to secure the header to said fins and pipes.

7. A refrigerating unit including a header, a bank of pipes parallel to each other and connected to said header, a plurality of rectangular fins, each of which is in heat absorbing contact with all of said pipes, a strap extending around said header and having a base plate resting on said fins, adjustable means connecting said base plate to some of said pipes for securing said pipes and fins to said header, and means engaging the corners of said fins for holding the latter in spaced relationship to each other.

8. A refrigerating unit including a header, a bank of pipes parallel to each other and connected to said header, a plurality of rectangular fins, each of which is in heat absorbing contact with all of said pipes, a strap extending around said header and having a base plate resting on said fins, adjustable means connecting said base plate to some of said pipes for securing said pipes and fins to said header, means for protecting the corners of all of said fins, and means for securing the last named means to said piping.

9. A refrigerating unit including a header, a bank of pipes parallel to each other and

connected to said header, a plurality of rectangular fins, each of which is in heat absorbing contact with all of said pipes, a strap extending around said header and having a base plate resting on said fins, adjustable means connecting said base plate to some of said pipes for securing said pipes and fins to said header, angle irons seated on the corners of all of said fins, and means for securing said angle irons to some of said pipes.

10. A refrigerating unit including a plurality of pipes spaced apart from each other and parallel to each other, a bank of heat absorbing rectangular fins, each of which engages all of said pipes perpendicularly thereto, angle irons seated on the corners of all of said fins, flanges extending from the edges of said angle irons and provided with notches in which the edges of said fins are seated, and means engaging some of said pipes for locking said angle irons to said fins.

11. A refrigerating unit including a bank of pipes having a plurality of rectangular heat absorbing fins perpendicular to each of said pipes, and means secured to some of said pipes for protecting the corners of said fins and for holding said fins spaced apart from each other.

In testimony whereof I affix my signature.

LESTER U. LARKIN.