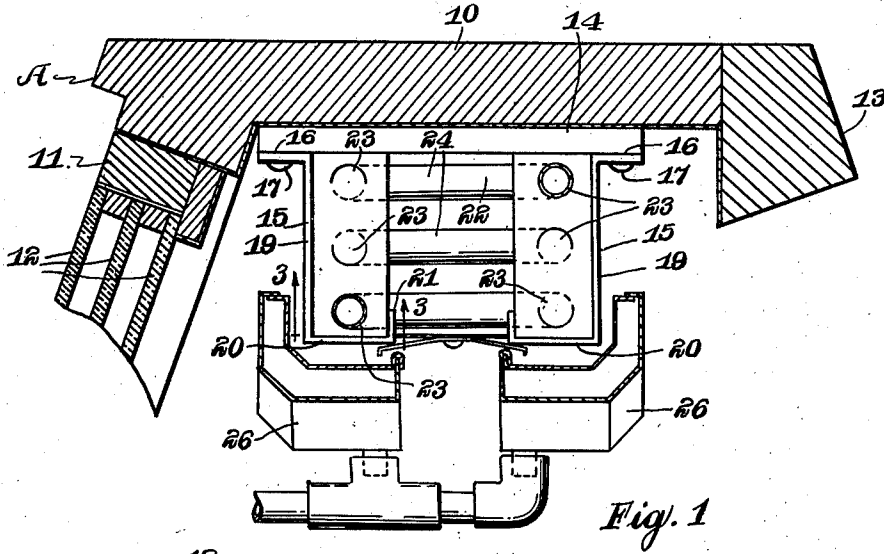
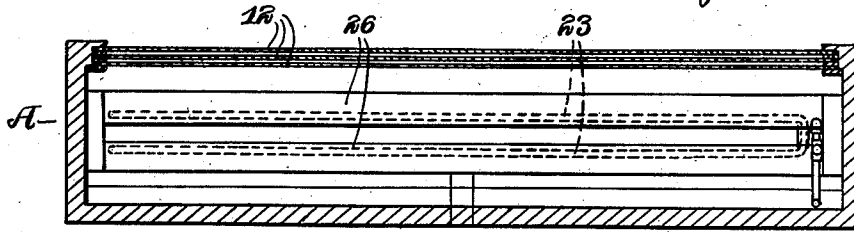
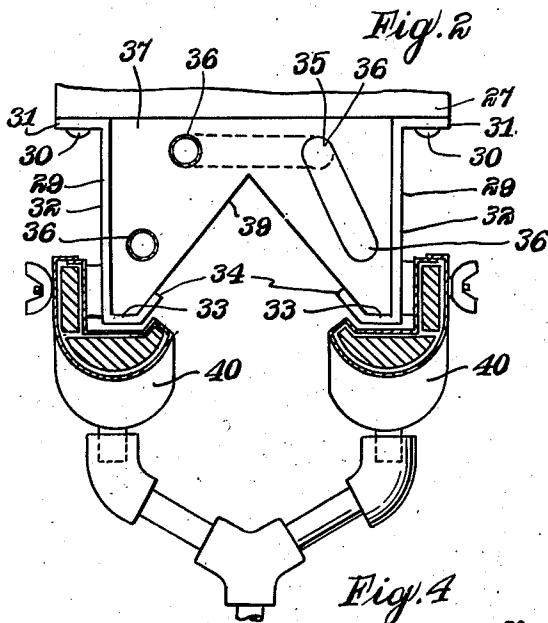
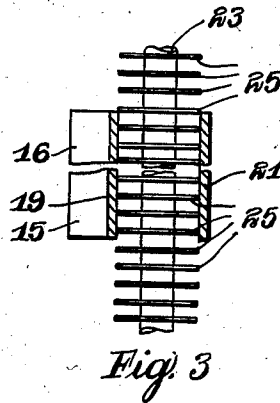


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REFRIGERATOR COIL MOUNTING

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REFRIGERATOR COIL MOUNTING

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No. 164,742. Divided and this application
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5 Claims. (Cl. 62-99)

Our invention relates to an improvement in refrigerator coil mountings wherein it is desired to provide a means of supporting refrigerator coils and a novel arrangement of coils.

5 In the manufacture of refrigerator display cases, it has been common practice to mount refrigerator coils extending along the top of the case to refrigerate the contents of the same. It has been usual practice to mount these coils horizontally aligned, so that air travelling upward along the front and rear sides of the coil will be refrigerated by the coils, creating a downward draft through the coils to cause a flow of refrigerated air downwardly upon the contents of the case. Some efforts have been made to enclose the coils so that the air may only move over the external surface of the enclosed coil or to provide baffles so that air may only enter from the top of the coils and move downwardly through the same. This construction causes a restriction of the air near the top of the case and accordingly, the flow of air through the coils is to some extent impeded.

15 It is a purpose of the present invention to provide a construction wherein the coils are mounted with one coil superimposed above the other in a plurality of rows of coils so that the air entering the coils moves along a horizontal path, and to provide between the coils an opening so that the air may move freely downwardly between the coils. This permits the air to remain in contact with the coils for a substantial length of time and refrigerates the air more thoroughly than would otherwise be possible. The construction also presents a minimum of resistance to the air passing through the coils so that the circulation of air through the case is free and unimpeded.

25 It is also a purpose of our invention to provide a coil having a series of refrigerant carrying tubes superimposed one above another and to connect the superimposed rows of tubes by spaced fins integrally connected to the superimposed tubes so that a large area of cooled metallic surface is presented to the air passing through the coil. By this means the air within the case may be more effectively refrigerated at a lower cost than would otherwise be possible. Tests have shown that in a case situated in a room at high temperature, the case may be more quickly refrigerated and may be maintained at a lower temperature more efficiently than other types of coils which have previously been used.

55 It is a further object of our invention to provide a refrigerator having a coil comprising a series

of tubes arranged one above another, and to provide connecting fins secured to various of the superimposed coils, and to provide a bracket which extends beneath the connecting fins or plates to support the coil. The supporting brackets are thus not directly connected to the coils, and the coils may accordingly be supported in a simple and effective manner.

It is also a feature of our invention that the coils arranged on opposite sides of the center of the case may be connected if desired by spaced fins connecting all of the tubes of the coil on both sides of the center. This feature enables the refrigerating surface on both sides of the coil to remain at practically an even temperature, thus cooling all of the air uniformly. It will be understood that due to the construction of the case or due to air entering one side of the case, for example, when the doors on the rear of the case are open, the air entering one side of the coil will be at a higher temperature than the air on the opposite side. The cooling fins connecting both sides of the coil have a tendency to maintain both sides of the coil at a constant temperature, thus compensating for any inequality in air temperatures entering the coil.

This application is a division of our application, Serial No. 164,742, filed Sept. 20, 1937 from which case, the present drawing has been extracted.

These and other objects and novel features of our invention will be more clearly and fully set forth in the following specification and claims.

In the drawing forming a part of our specification:

Figure 1 is a cross-sectional view through the top portion of our case, illustrating the manner in which the coils are arranged and supported.

Figure 2 is a lateral section through the box looking upwardly toward the bottom of the coils.

Figure 3 is a sectional view taken on the line 3-3 of Figure 1 and showing the bottom of one section of the coil.

Figure 4 is a cross-sectional view through an alternate type of construction showing fins for cooling the air of a different type.

Our refrigerator display case A is of any desired shape and construction, and is shown having a top having an inclined front display face depending therefrom. The front display face includes a series of display windows arranged in spaced relationship and supported in any suitable manner.

The rear wall of the box is also preferably inclined as shown at 13 and doors not shown in the

drawing are usually provided in this rear inclined wall.

An insulating member 14 extends beneath the top 10 and is secured thereto. Depending downwardly from the insulating member 14 we provide opposed pairs of brackets 15 having a horizontally extending top flange 15 for attachment by bolts or other suitable means 17 to the insulating member 14 or to the top 10. Vertically extending side arms 19 extend downwardly from the horizontal flanges 16 to overlie portions of the side walls of the coils and horizontally extending base portions 20 project beneath the coils to engage the bottom of the connecting fins which will be later described in detail. Upwardly extending retaining flanges 21 engage the opposite side of the fins and extend upwardly to hold the coils firmly in position.

The refrigerator coils 22 include a series of horizontally extending tubes 23 which are shown connected at the ends of the coil by cross tubes 24. Obviously the tubes on each side of the center of the coils could be connected together to form a separate coil if desired, and the cross connecting members 24 could be eliminated.

Spaced fins or plates 25 are integrally connected to the horizontally extending tubular members 23 and are cooled by this integral connection with the tubular members. The plates or fins 25 are preferably formed of thin metal so as to be readily cooled by the coils. These fins 25 extend above, below, and to each side of the superimposed tubular members 23 to space the coils from the insulating member 14 and from the brackets 15. The side edges of the fins 25 are supported between the sides 19 and 21 of the brackets 15 and are held in place by these brackets. The bottom edge of the fins 25 rests upon the horizontally extending portion 20 of the brackets, and the coil 22 is supported in this manner.

Beneath each side of the coil 22 we provide an angularly extending baffle 26 which acts as a deflector for air and as a drip pan to catch condensation from the coils in a manner clearly described in our co-pending application previously mentioned. The baffles 26 cause the air to enter the coil from opposite sides of the same and permit the air to pass downwardly freely between the opposite sides of the coil.

The brackets 15 are of any desired width to properly support the coils, but enclose a relatively small area of the coils so that the major portion of the same is open on the side so that air may freely enter the sides of the coil. The air cooled by the passage between the fins 25 and about the tubular members 23 containing refrigerant naturally moves downwardly to pass between the baffles 26 into the body of the case.

In Figure 4 of the drawing we disclose an arrangement similar to that previously defined, but show a slightly different arrangement of the tubular members and a different construction of fin supporting the coil. In this construction, an insulating member 27 is provided attached to the top of the case similar to the insulating member 14 shown in Figure 1. Brackets 29 are attached to the insulating member 27 or to the top 10 of the case by bolts or screws 30. The brackets 29 comprise a laterally extending flange 31 through which the fastening means 30 extends and a downwardly extending arm 32 engageable with the side of the coil supporting fins. A horizontally extending portion 33 extends beneath the fins and an upwardly inclined end flange 34 engages the inside or lower surface of the fins to hold the fins firmly from displacement.

The coil 35 includes a series of laterally extending tubular members 36 which may be vertically aligned as in Figure 1 of the drawing, or which may be offset as illustrated in Figure 4. The fins 37 supporting the coil 35 are integrally connected to all of the tubular members 36 and are cut away providing a central notch 39 so that the fins do not extend to too great a distance from the tubular members 36. The opposite sides of the fins 37 engage against the supporting brackets 29 contacting the vertically extending portion 32 of the same, and the lower edge of these fins engage the horizontally extending portion 33 of the brackets. The flanges 34 engage in the notch 39 to more rigidly hold the fins 37 from displacement within the refrigerator.

Baffles 40 of angular shape extend along the outer side and beneath the brackets 29 and act to deflect air and to catch condensation from the tubular members 36. The air deflected by the baffles 40 is caused to enter the coil 36 from the side, passing between the fins 37 which cools the air and causes the same to move downwardly between the baffles 40.

The brackets 39 are of sufficient width to properly support the coils and any number of these brackets may be used to effectively support the coils. The major area of the coils, however, is open at the sides so that air may freely enter between the fins 37 to be cooled by passage therebetween.

In operation, it will be noted that the coil is divided into two sides which may or may not be separate and distinct one from another. In the preferred form illustrated, the coils are shown connected at the ends to form a single double coil. The air moves upwardly on either side of the coil and moves transversely through the coil and being cooled thereby, moves downwardly between the baffles suspended beneath the coil. This transverse movement of the air through the coil permits the air to remain in contact with the coil and the fins connected thereto for a long period of time, thus more effectively cooling the air than would otherwise be possible.

The brackets supporting the coil engage the fins connected to the tubular members of the coil, thus effectively supporting the coil without actual contact therewith. The coil may thus be easily removed by merely removing the supporting brackets from engagement with the fins.

In accordance with the patent statutes, we have described the principles of construction and operation of our refrigerator coil, and while we have endeavored to set forth the best embodiment thereof, we desire to have it understood that this is only illustrative of a means of carrying out our invention, and that obvious changes may be made within the scope of the following claims without departing from the spirit of our invention.

We claim:

1. A refrigerator including a top, a coil including two sets of tubular members in substantially parallel relationship, each set of tubular members being arranged with one tubular member above the level of another, fins connecting the tubular members of said coil, said fins having a central notch in the lower edge thereof extending most of the width of the fins, and brackets secured to said top for engaging said fins for supporting said coil.

2. A refrigerator comprising a top, a coil, said coil including a series of laterally extending tubular members, spaced fins connecting said tubular members to hold the same in spaced

relationship, and bracket means secured to said top extending beneath said fins and engaging the same in spaced relation to said coil to support said coil, said bracket means extending
5 along one side surface of the fins, beneath said fins, and including hook means extending on the opposite side of said fins to lock the coils from side movement.

10 3. A refrigerator including a series of plurality of parallel cooling coils divided into two groups, the coils of each group being connected by parallel spaced fins having aligned outer and inner side edges and aligned bottom edges, and means supporting said coils from the top of the re-
15 frigerator including pairs of spaced opposed brackets, each said bracket comprising a horizontal attaching flange, a vertical side designed to extend along and to contact the outer side edges of certain of said fins, a bottom portion designed
20 to extend beneath the bottom edges of said certain fins, and an upwardly projecting flange

of relatively short length designed to engage the inner side edges of said fins.

4. A refrigerator including a top, a plurality of parallel cooling tubes, spaced parallel fins connecting the tubes, said fins each having a
5 central notch in the lower edge thereof extending most of the width of the fins, and brackets secured to said top for engaging said fins for supporting said coil.

5. A refrigerator including a top, a plurality 10 of parallel cooling tubes arranged in two groups, spaced parallel fins connecting all of said cooling tubes, said fins each having a central notch in the lower edge thereof between said groups
15 of tubes, said notch extending most of the width of said fins, and means supporting said tubes beneath said top.

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