July 16, 1940. J. W. HATCH 2,208,528

REFRIGERATING APPARATUS

Filed Sept. 14, 1937

Fig. 1.

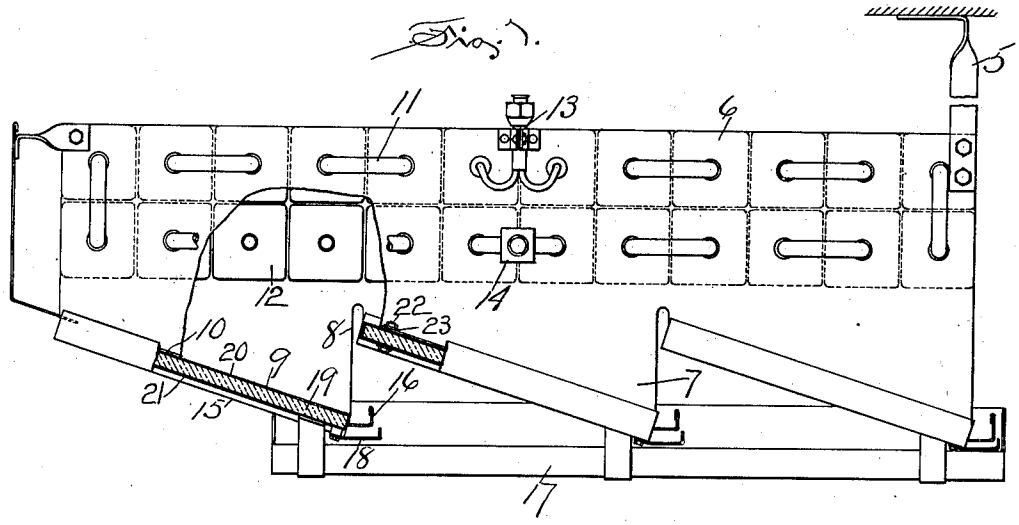


Fig. 2.

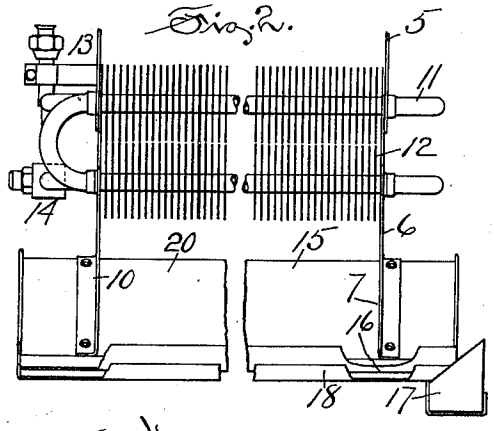


Fig. 3.

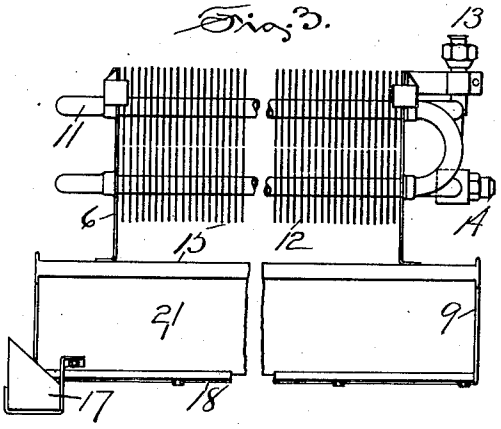
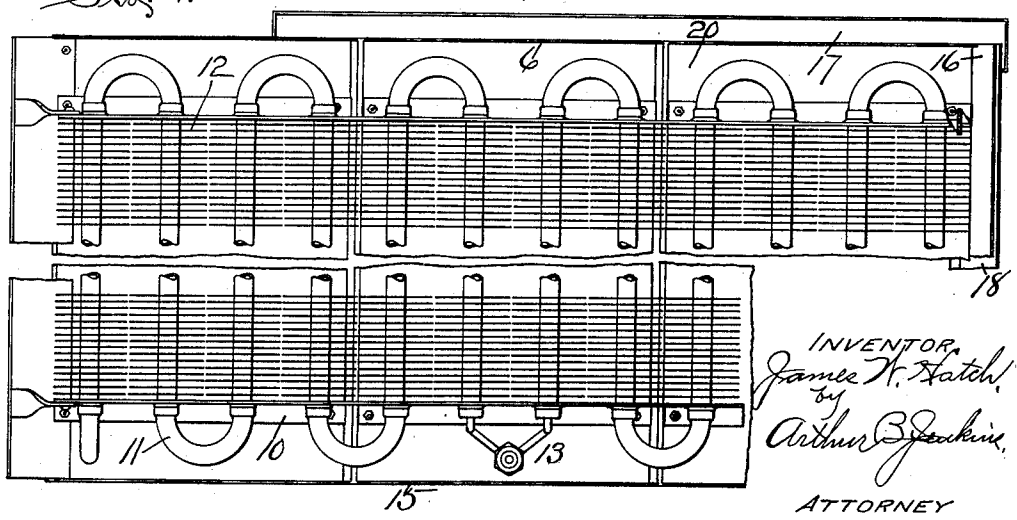


Fig. 4.



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REFRIGERATING APPARATUS

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Application September 14, 1937, Serial No. 163,767

5 Claims. (Cl. 62—103)

My invention relates to the class of apparatus that is employed for producing temperatures of predetermined degrees, and an object of my invention, among others, is the production of an apparatus of this class in the use of which certain objectionable features present in prior devices shall be eliminated.

One form of a device embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained is illustrated in the accompanying drawing in which

Figure 1 is a view in side elevation of my improved refrigerating apparatus with parts broken away to show construction.

Figure 2 is an end view looking from the right as viewed in Figure 1 with parts broken away to show construction.

Figure 3 is a similar view but looking in the opposite direction.

Figure 4 is a top plan view.

It is a purpose of my invention to avoid the objectionable features incident to the dripping of moisture from the refrigerating structure, this being particularly objectionable when such structure is employed in an elevated position, as it frequently is, with goods which are subjected to the conditions created by the apparatus located underneath such apparatus, such objectionable results being avoided in the apparatus illustrated herein in which the numeral 5 denotes one of a number of hangers adapted to be secured to the wall, as the ceiling, of a refrigerating compartment, such walls not being illustrated herein, but as will be well understood, the apparatus as herein illustrated being located at the top of the compartment.

The apparatus as herein shown comprises a frame including side plates 6 that are serrated creating saw-tooth formations on their bottom edges, creating projections 7 and indentations 8 which provide straight vertical edges and inclined bottom edges 9 as shown in Fig. 1. Flanges 10 are outturned from the inclined edges at the bottoms of the inclinations 9 for a purpose to be hereinafter described.

Sections of coils 11 extend back and forth between the sides, in the structure herein shown there being two sections of such coils arranged one on each side of a vertical plane extending centrally crosswise of the apparatus. These coils extend through the sides for support thereby, and radiating fins 12 are mounted on the coils, said coils and fins being of any well known construction and arrangement and a further and detailed description is therefore omitted herein. Each section of the coils is supplied with a refrigrant flowing in opposite directions through the coils from any suitable source, as through a distributor valve 13 or other device, and is returned to the compressing apparatus, flowing in opposite directions through the coils, as through an outlet 14 from the coils.

The apparatus is so arranged that the main currents of warmer air pass upwardly at the ends and at the sides of the compartment containing the coils, and consequently at the ends and sides of said coils, the colder air currents passing downwardly through the frame between said coils. In order to prevent moisture of condensation on the coils, caused by the warmer air underneath, from dripping from said coils, drip boards 15 are arranged in inclined positions underneath the coils to receive such dripping, and troughs 16 are placed at the lower ends of the drip boards to receive the water therefrom. These troughs are arranged in inclined positions extending laterally of the drip boards to drain the water to one side and into troughs 17 extending lengthwise of the drip frame which includes the drip boards and side parts therefor, said troughs 17 leading to any suitable drain for disposition of the water. In the preferred arrangement and as shown herein there is a drip board appurtenant to each of the two sections of coils and a drip board located underneath the space between said sections, the latter drip board extending partially under each of the two sections, as shown in Figure 1 the inlet and outlet conduits to the sections being located opposite said space.

Under some conditions the warm air underneath the troughs 16 containing cold water from the drip boards will cause condensation on the under side of said troughs 16, and to avoid dripping from this source supplemental troughs 18 are provided located underneath the troughs 16 to receive any drip therefrom and conduct the water of such drip to the troughs 17, as shown in Figure 1 of the drawings.

The arrangement of the drip boards in inclined positions causes downward movement of the air currents through the frame between the coils, the greater quantity of warmer air from the bottom of the compartment being diverted to the sides and ends of the frame where such warmer currents pass upwardly.

The presence of some warmer air underneath the drip boards has a tendency to cause condensation on the under side of said drip boards

by reason of the colder air on the opposite side thereof and to avoid such a condition the drip boards are made of considerable thickness and are composed of an insulating material 19 enclosed between top and bottom plates 20 and 21 held together as by means of bolts 22 and nuts thereon, these bolts being supplied with fiber washers 23 to preserve the insulating features as between the plates 20 and 21.

By means of this construction of the drip boards it has been found that condensation of the moisture on the under side of the boards is prevented to such extend that no dripping takes place from such boards and the arrangement has therefore proved very satisfactory.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim:

1. A refrigerating apparatus including circulating coils adapted to receive a refrigerant, a drain board arranged in an inclined position underneath said coils, said board having its top and bottom surfaces each composed of a single sheet of metal having a single sheet of an insulating material interposed and filling the space between its top and bottom surfaces to prevent conductance of warmer temperatures from the top to the bottom of said board, a trough arranged at the bottom edge of said board and extending from side to side thereof to receive moisture drained from its top, and a second trough located underneath the first mentioned trough and extending from end to end thereof to receive moisture of condensation collected on the bottom of the first mentioned trough.

2. A refrigerating apparatus comprising a frame including side plates formed with projections from the lower edges thereof, said projections each having a vertical and an inclined edge, flanges projecting laterally from the inclined lower edges of said projections, refrigerating coils supported between said plates and adapted to receive a refrigerant, drain boards secured to said flanges and supported thereby, said vertical edges defining the spaces between the adjacent edges of the drain boards, said boards having insulating material between their top and bottom surfaces to prevent conductance of colder temperatures from the top to the bottom of the boards, and means to remove moisture drained from the top of the boards.

3. A refrigerating apparatus comprising a frame including side plates formed with projections from the lower edges thereof, said projections each having a vertical edge and an inclined edge extending from the bottom of one vertical edge to the top of the next vertical edge, flanges projecting laterally from the inclined lower edges of said projections, refrigerating coils supported between said plates and adapted to receive a refrigerant, drain boards secured to said flanges and supported thereby and having insulating material interposed between their top and bottom surfaces to prevent conductance of colder temperatures from the top to the bottom of the boards, and means to remove moisture drained from the top of the boards.

4. A refrigerating apparatus comprising a frame including side plates having lower edges of saw-tooth formation each tooth comprising an inclined edge and a vertical edge meeting the inclined edge of the adjacent tooth at an angle, refrigerating coils supported by said plates, drain boards supported by the inclined edges of said plates and arranged in inclined positions underneath said coils, said boards comprising top and bottom plates each of which constitutes the entire flat surface of the drain board, a single sheet of insulating material interposed between the top and bottom plates to fill the space therebetween, and means to receive moisture drained from the top of said boards.

5. A refrigerating apparatus comprising a frame including side plates formed with projections from the lower edges thereof, said projections each having a vertical and an inclined edge, flanges projecting laterally from the inclined lower edges of said projections, refrigerating coils supported between said plates and adapted to receive a refrigerant, drain boards secured to said flanges and supported thereby said boards each comprising a top and bottom plate constituting the entire top and bottom surfaces of the drain board, a single sheet of insulating material placed between said top and bottom plates to fill the entire space therebetween, and means to remove moisture drained from the top of said drain boards.

JAMES W. HATCH.