

Sept. 4, 1928.

1,683,518

C. J. BERTHEL

COOLING TANK FOR REFRIGERATORS

Filed Aug. 24, 1927

Fig. 1.

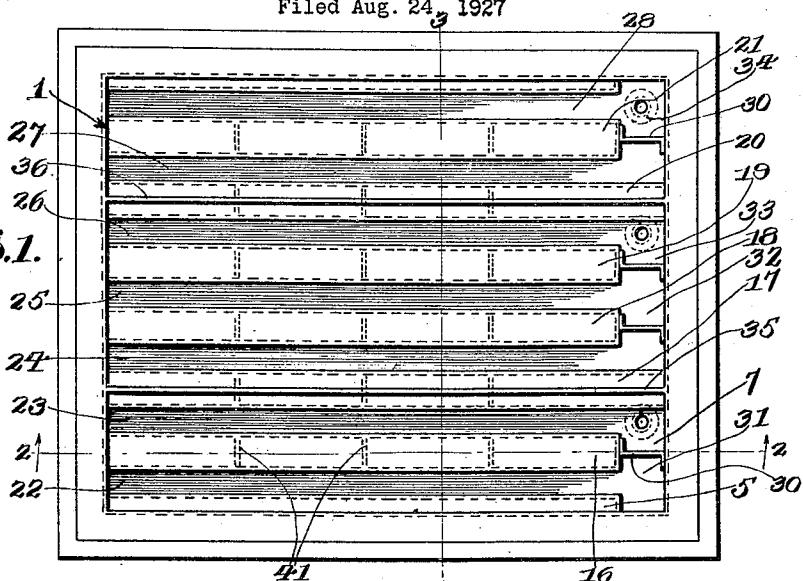


Fig. 2.

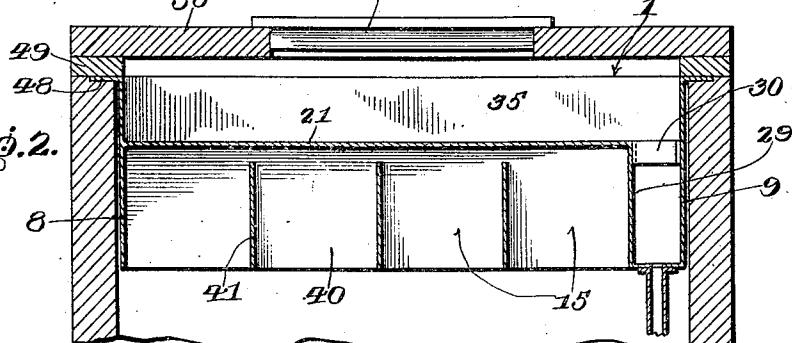
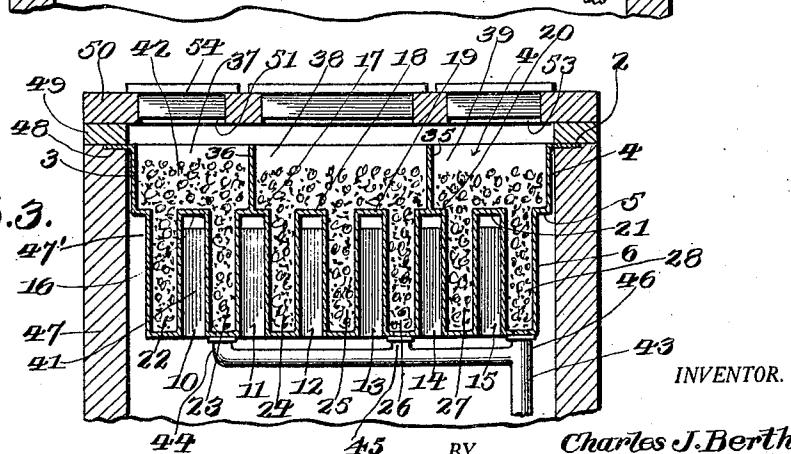


Fig. 3.



Charles J. Berthel,

Geo. F. Kimmel

ATTORNEY.

Patented Sept. 4, 1928.

1,683,518

UNITED STATES PATENT OFFICE.

CHARLES J. BERTHEL, OF WILSON, NORTH CAROLINA, ASSIGNOR TO HACKNEY BROTHERS, INC., OF WILSON, NORTH CAROLINA.

COOLING TANK FOR REFRIGERATORS.

Application filed August 24, 1927. Serial No. 215,173.

This invention relates to a cooling tank for refrigerators, and has for its object to provide, in a manner as hereinafter set forth, a tank of such class constructed with spaced refrigerant receiving compartments whereby the cooling surface of the tank is materially increased without increasing consumption with respect to the refrigerant.

A further object of the invention is to provide, in a manner as hereinafter set forth, a tank of the class referred to including spaced refrigerant compartments constructed and arranged whereby the refrigerant will be in constant contact with the walls of the compartments to provide a thoroughly efficient refrigerating action without waste with respect to the refrigerant.

Further objects of the invention are to provide, in a manner as hereinafter set forth, a cooling tank for refrigerators which is simple in its construction and arrangement, strong, durable, compact, thorough efficient in its use, conveniently installed with respect to the refrigerator body, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

Figure 1 is a top plan view of a refrigerator, with the cover thereof removed, showing the adaptation therewith of a cooling tank in accordance with this invention.

Fig. 2 is a section on line 2—2 Figure 1 with the cover of the refrigerator in position.

Figure 3 is a section on line 3—3 Figure 1 with the cover of the refrigerator in position.

A cooling tank, in accordance with this invention, is constructed of sheet steel or galvanized metal, and which may be coated with enamel or porcelain and it consists of an open top body portion 1 provided at its upper end with a right angularly disposed flange 2 which is coextensive with said body portion. Each side of the body portion 1 for the major portion of its length is formed with an

inwardly extending right angularly disposed part merging into an inset vertically disposed part arranged at the lower portion of the sides. The sides of the body portion 1 are indicated at 3, 4, the right angularly disposed inwardly extending part of each side designated at 5 and the lower inset part of each side is designated 6. The bottom of the tank is indicated at 7 and the major portion thereof is of less width than the width of the body portion 1 and the remaining portion of said bottom 7 is of the same width as the width of said body portion. The end walls of the body portion 1 are indicated at 8, 9 and conform in contour to the shape of the side walls 3, 4.

The bottom 7 of the body portion is provided with lengthwise extending openings 10, 11, 12, 13, 14 and 15. The openings 10, 12, 13 and 15 extend from one end of the bottom 7 and terminate adjacent the other end thereof. The openings 11 and 14 are coextensive with the length of the bottom and extend from one end wall to the other end wall of the body portion 1. Secured to the bottom 7 and coextensive with the openings 10 to 15 inclusive are inverted channel shaped members 16, 17, 18, 19, 20 and 21. The channel shaped members are partitions and are of a height to extend to the inwardly projecting parts 5 of the side walls 3, 4. The channel shaped members coact together and also with the bottom 7 and side walls of the body portion 1 to provide refrigerant compartments 22, 23, 24, 25, 26, 27 and 28 and further act to increase the cooling surface of the tank. The inverted channel shaped members 17 and 20 are of greater length than the other of said members and extend from one end wall to the other end wall of the body portion and are closed at their ends by said end walls. The members 16, 18, 19 and 20 extend from one end wall of the body portion and terminate at a point removed from the other end wall thereof. The outer ends of the members 16, 18, 19 and 21 are closed by the end wall 8 and the inner ends of said members are closed by vertically disposed closure strips 29 and said strips are spaced from the end wall 9 and maintained in spaced relation by brace pieces 30.

The compartments 22 to 28 inclusive are arranged in parallelism and the compartment 22 communicates at one end with the compartment 23 as indicated at 31. The com-

partment 23 is separated from the compartment 24 by the inverted channel shaped member 17. The compartment 24 communicates at one end with the compartment 25 as at 32 and the compartment 24 communicates with the compartment 26 at one end as at 33. The compartment 26 is separated from the compartment 27 by the inverted channel shaped member 20 and said compartment 27 communicates with the compartment 28 as at 34.

Formed integral with the members 17 and 20, centrally of the top thereof, and extending from the end wall 8, to the end wall 9, are upstanding partition members 35, 36. The members 35, 36, in connection with the sides and ends of the upper part of the body portion 1 provide a series of upper compartments 37, 38 and 39. The compartment 37, at its bottom opens into the compartments 22, 23. The compartment 38 at its bottom opens into the compartments 24, 25 and 26 and the compartment 39 at its bottom opens into the compartments 27 and 28.

Each of the inverted channel shaped members provide a lengthwise extending air chamber, opening at its bottom, and provided with spaced baffles extending from the lower end of its inverted channel shaped member to a point removed from the top thereof. The air chambers are indicated at 40 and the baffles at 41. The baffles 41 are disposed transversely with respect to the air chambers 40 and provide braces between said members and further provide additional cooling surfaces.

The partition members 35, 36 separate the compartments 37, 38 and 39 from each other and also provide for the arranging of the lower compartment in sets and with the sets separated from each other. This arrangement provides for employing at one time an upper compartment and a set of lower compartments, or two or more upper compartments and two sets of lower compartments, or the several upper compartments and the several sets of lower compartments. As illustrated, the refrigerant employed is in the form of ice and salt, the ice in small particles, as indicated at 42 and which engages throughout the walls of the several compartments.

The reference character 43 indicates a discharge pipe provided with spaced outlet nipples for drainage of the several compartments. The nipples are indicated at 44, 45 and 46. The nipple 44 is common to the compartments 22, 23 and 37. The nipple 45 is common to the compartments 24, 25, 26 and 38. The nipple 46 is common to the compartments 27, 28 and 39. The nipple 44 opens into the compartment 23. The nipple 45 opens into the compartment 26 and the nipple 46 opens into the compartment 28.

The length of the body portion 1 is slightly less than the body 47 of the refrigerator

and the width of the upper part of the body portion 1 is also slightly less than the width of the body of the refrigerator whereby the upper part of the body portion 1 will be spaced from the inner face of the body 47. The lower part of the body portion 1 is spaced from the inner face of the body 47, due to the fact that said lower part is inset.

By constructing the body portion 1 in the manner as referred to an air space is arranged therebetween and the body portion 47 of the refrigerator and said space is indicated at 47'. The lower part of said space is of greater width than the upper part thereof and under such conditions the cooling surface of the tank is increased. The flange 2 is seated in a mortise 48 and retained in position by a frame 49 and to the latter is secured the top 50 of the refrigerator. Filling openings 51, 52 and 53 are arranged in the top 50 and which are closed by removable lids or covers 54. The filling openings 51, 52 and 53 are provided respectively for the compartments 37, 38 and 39 and by this arrangement only one of the lids or covers 54 need to be removed when a compartment 37 or 38 or 39 is to be filled with the refrigerant. The opening 52 is of greater area than the openings 51 or 53. The covers 54 are of a size to snugly fit the walls of the filling openings.

The compartments 22 to 28 inclusive, are what may be termed rectangular troughs for the reception of the refrigerant and their arrangement will materially increase the cooling surface of the tank. The troughs are supplied with the refrigerant from the compartments 37, 38 and 39. As the ice melts it will feed by gravity from the compartments 37, 38 and 39 to the troughs. The construction and arrangement of the tank is such as to provide for the circulation of cool air freely over the baffles or fins. The baffles or fins not only increase the cooling surface of the tank, but also act as means for stiffening or bracing the inverted channel shaped members.

It is thought the many advantages of a cooling tank, in accordance with this invention, can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which fall within the scope of the invention as claimed.

What I claim is:—

1. A cooling tank for refrigerators comprising a one-piece body portion having spaced means arranged therein to provide the upper part thereof with a plurality of independent, upper refrigerant receiving compartments and its lower part with sets of spaced refrigerant receiving troughs, said sets being spaced from each other by air chambers and with each set opening into the bottom of an upper compartment, said

troughs forming air chambers therebetween, said chambers opening at the bottoms thereof, said body portion having the lower portion of each side thereof inset with respect to 5 the upper portion thereof whereby the combined width of said trough will be less than the combined width of said compartment, said troughs being rectangular in cross section, said body portion being open at its top 10 and provided at its upper end with an outwardly disposed right angularly extending flange coextensive therewith.

2. A cooling tank for refrigerators comprising a body portion having arranged 15 therein spaced means to provide the upper part thereof with a plurality of independent, upper refrigerant receiving compartments and its lower part with sets of spaced refrigerant receiving troughs, said sets being spaced 20 from each other by air chambers and with each set opening at the top thereof into the bottom of an upper compartment, said troughs forming air chambers therebetween of less length than the length of the compartments, said chambers opening solely at 25 the bottoms thereof, certain of said troughs having drainage openings at the bottoms thereof, and a drainage pipe common to said openings.

3. A cooling tank for refrigerators comprising a body portion having arranged 30 therein spaced means to provide the upper part thereof with a plurality of independent, upper refrigerant receiving compartments and its lower part with sets of spaced refriger- 35

erant receiving troughs, said sets being spaced from each other by air chambers and with each set opening at the top thereof into the bottom of an upper compartment, said troughs forming air chambers therebetween 40 of less length than the length of the compartments, said chambers opening solely at the bottoms thereof, certain of said troughs having drainage openings at the bottoms thereof, a drainage pipe common to said 45 openings, and transversely extending, spaced baffles within each of said chambers and spacing said troughs.

4. A cooling tank for refrigerators comprising a body portion having arranged 50 therein spaced means to provide the upper part thereof with a plurality of independent, upper refrigerant receiving compartments and its lower part with sets of spaced refrigerant receiving troughs, said sets being spaced 55 from each other by air chambers and with each set opening at the top thereof into the bottom of an upper compartment, said troughs forming air chambers therebetween of less length than the length of the compartments, said chambers opening solely at 60 the bottoms thereof, certain of said troughs having drainage openings at the bottoms thereof, a drainage pipe common to said openings, and the troughs of each set communicating with each other at one end thereof.

In testimony whereof, I affix my signature hereto.

CHARLES J. BERTHEL.