Aug. 31, 1937. A. W. ALLEN 2,091,901

REFRIGERATOR

Filed Sept. 15, 1936

Fig. 1.

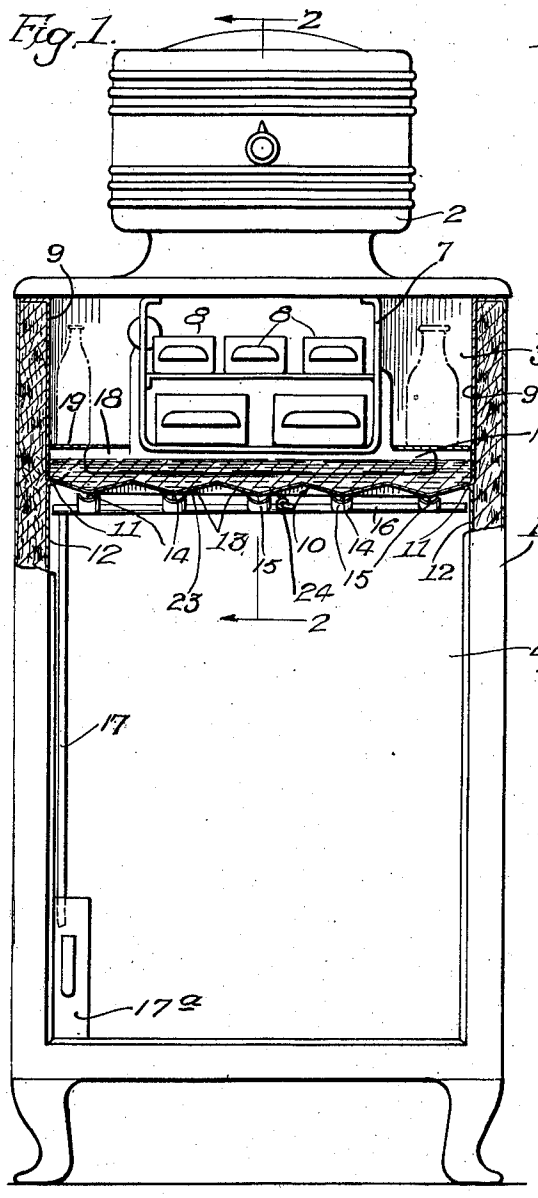
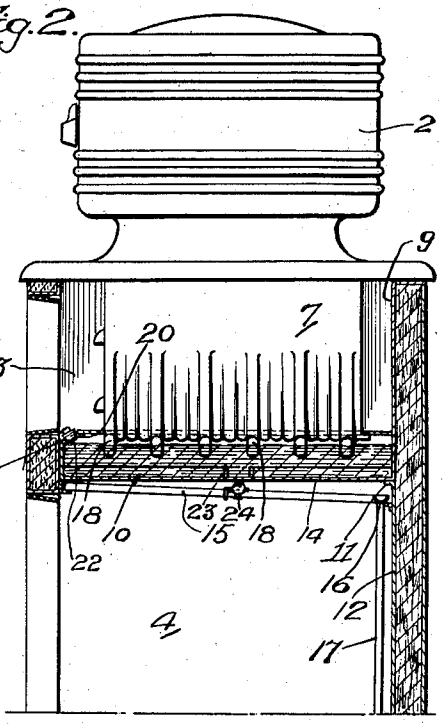


Fig. 2.



Inventor:—
Alfred W. Allen
by his Attorneys
Howson & Howson

Patented Aug. 31, 1937 2,091,901

UNITED STATES PATENT OFFICE

2,091,901

REFRIGERATOR

Alfred W. Allen, Philadelphia, Pa.

Application September 15, 1936, Serial No. 100,937

7 Claims. (Cl. 62—103)

This invention relates to new and useful improvements in refrigerators and more particularly to refrigerators of the electrically or mechanically operated type.

The principal object of the present invention is to provide a refrigerator of the character set forth, having novel means for producing a cake or block of ice which will serve to cool the storage compartment of such refrigerator.

Another object of the invention is to provide a refrigerator of the character stated, which is novelly constructed and arranged to prevent the dehydration of food in the storage compartment thereof and at the same time maintain said storage compartment at a temperature sufficiently low to preserve and keep food stuffs placed therein.

These and other objects of the invention and the features and details of construction thereof are set forth hereinafter and shown in the accompanying drawing in which

Figure 1 is a front elevation view partially in section of a refrigerator made in accordance with this invention illustrating certain of the structural details embodied therein and

Figure 2 is a fragmentary view in section on line 2—2 Figure 1.

Referring now to the drawing reference numeral 1 designates generally a conventional type of refrigerator having the motor, compressor and condenser of the refrigerating apparatus (not shown) positioned within a super structure 2 thereon. The interior of the main body of said refrigerator is subdivided into two separate and distinct compartments 3 and 4 respectively, in a manner that will be described in detail hereinafter, and each of said compartments 3 and 4 is provided with a separate door or other closure means (not shown). An expansion chamber or freezer 7, having the usual ice trays 8 removably located therein, is positioned as shown in the upper compartment 3 and connected with the compressor and condenser (not shown) in the superstructure 2.

In accordance with the present invention the inner lining or side walls 9 of the upper compartment 3 extend continuously across the interior of the refrigerator at the bottom of said compartment to form a tank or receptacle 10 adapted to receive a body of water, said tank or receptacle 10 being disposed immediately below the expansion chamber or freezer 7 and resting upon inwardly turned flanges 11 formed by the upper end edge portions of the inner lining or side walls 12 of the lower cooling chamber 4. As shown the extended portion of the lining or side walls 9 constituting the bottom of the tank 10 is formed as indicated at 13 to include a plurality of alternately arranged angularly disposed surfaces so that condensation, if any, forming on the underside of said tank 10 will flow to the several projecting ridges 14 thus formed and drop or fall into a plurality of rearwardly declining drains 15 suitably located therebelow, the condensate being conveyed or directed by said drains 15 to a common drain 16 at the rear of the refrigerator and discharged therefrom into a removable can or other receptacle 17a through a tube or pipe 17. A trough or gutter 23 is formed transversely at the underside of said tank and communicates with the troughs formed by the angularly disposed surfaces 18, said trough or gutter 23 having a valve 24 in the bottom thereof through which water may be drained from the tank 10. In addition to the foregoing, formation of the several angularly disposed surfaces in the bottom of the tank 10 provides a substantially increased radiation surface at the underside of said tank 10 to aid in cooling the interior of the lower compartment 4. The construction and arrangement of the tank 10 is such as to block or prevent the circulation of air between the upper freezing compartment 3 and the lower food storage compartment 4 of the refrigerator, thus effectively eliminating the dehydration of food products in the latter compartment due to operation of the refrigerating apparatus previously mentioned.

A particular feature of the invention resides in providing the expansion chamber or freezer in the upper compartment 2 with a series of downwardly projecting spaced parallel fin-like portions 18 which extend laterally beyond the main body portion of said expansion chamber or freezer 7 and are constructed and arranged for emersion into the body of water contained in the tank or receptacle 10 to rapidly and effectively freeze said body of water into a solid block or cake of ice which will remain frozen under ordinary conditions of operation and use of the refrigerator and serve to cool the food storage compartment 4 located therebelow and maintain the same at a normal or average temperature sufficiently low to preserve and keep food stuffs stored therein.

For the purpose of entirely enclosing the tank 10 against the entrance of foreign matter and also for the purpose of providing shelf-like surfaces for the storage of food at opposite sides of the expansion chamber 7, a plate or cover 19 is provided and constructed and arranged to overlie the lateral extensions of the fins 18 and surround said chamber 7 extending continuously from the side surfaces of the latter to the side walls of the upper compartment 3 of the refrigerator.

The plate or cover member 19 may comprise one or more pieces or parts and may be secured to the extensions of the fins 18 or not as desired depending upon the construction and arrange-

ment of the particular refrigerator in which employed, and as shown in Fig. 2 of the drawing an inwardly inclining recess 20 is formed in the front wall of the tank 10 and provided with an opening 21 therein through which water may be supplied to said tank 10, said opening 21 being preferably threaded to receive a screw plug or like closure element 22 and arranged to indicate the proper depth of water supplied to the tank as well as limit the maximum depth thereof.

By the present invention a novel arrangement is provided for electrically or mechanically operated refrigerators whereby cooling of the food storage compartment is effectively accomplished by means of a relatively thin block or cake of solid ice arranged horizontally within said refrigerator and extending entirely across the upper end of the storage compartment 4 at the bottom of the freezing compartment 3 whereby the storage compartment is maintained at an average temperature sufficiently low to preserve and keep food stuffs therein and at the same time to block or prevent the circulation of air between the freezing and said food storage compartment for the purpose of minimizing the dehydration of food stuffs therein due to evaporation caused by operation of the refrigerating apparatus.

While a specific structural embodiment of the present invention has been set forth for descriptive purposes, it is not intended that said invention shall be precisely limited thereto but that changes and modifications in the construction and arrangement thereof may be incorporated within the scope of the annexed claims.

I claim:

1. In a refrigerating cabinet, a continuous sheet metal lining for the upper portion of the interior of the cabinet including upright wall lining portions terminating at their lower edges in a horizontally extending portion for subdividing said cabinet into upper and lower compartments and providing a water tank in the upper compartment at the bottom thereof, and an expansion element mounted in said upper compartment within said sheet metal lining and above said tank, said expansion element having portions thereof depending therefrom and projecting inwardly of the tank and the body of water therein to freeze the same into a solid cake of ice for cooling the lower compartment.

2. In a refrigerating cabinet, a water tank subdividing the interior of the refrigerating cabinet into upper and lower compartments and arranged to prevent the circulation of air between said compartments, an expansion element in said upper compartment above said tank, said expansion element having portions thereof depending inwardly of the tank and immersed in the body of water therein to freeze the same into a solid cake of ice for cooling the lower compartment, and a cover member extending between said expansion element and the walls of the upper compartment to entirely enclose said tank.

3. In a refrigerating cabinet, a water tank subdividing the interior of said cabinet into upper and lower compartments, an expansion element having portions thereof extending into the body of water in the tank to freeze the same into a solid cake of ice for cooling the lower storage compartment, said tank having its bottom formed to provide a series of alternately arranged angularly disposed surfaces, and means disposed below said tank to receive drippings therefrom.

4. In a refrigerating cabinet, a water tank subdividing the interior of the refrigerating cabinet into an upper freezing and storage compartment and a lower storage compartment and arranged to prevent the circulation of air between said compartments, an expansion element in said upper freezing compartment above said tank, said expansion element having portions thereof depending inwardly of the tank and immersed in the body of water therein to freeze the same into a solid cake of ice for cooling the lower storage compartment, and a cover member extending between said expansion element and the walls of the freezing compartment to entirely enclose said tank and provide a shelf-like structure to support food stuffs, said tank having an opening for supplying water thereto, and means for closing said opening.

5. In a refrigerating cabinet, a water tank subdividing the interior of said cabinet into upper and lower compartments and arranged to prevent the circulation of air between said compartments, said tank having its bottom formed to provide a series of alternately arranged angularly disposed surfaces for the purpose of providing an extended cooling surface at the upper end of said lower compartment and shedding moisture formed on the under side of the tank, and an expansion element having portions thereof extending into the body of water in the tank to freeze the same into a solid cake of ice for cooling the lower compartment.

6. In a refrigerating cabinet, a water tank subdividing the interior of said cabinet into upper and lower compartments and arranged to prevent the circulation of air between said compartments, said tank having its bottom formed to provide a series of alternately arranged angularly disposed surfaces for the purpose of providing an extended cooling surface at the upper end of said lower compartment and shedding moisture formed on the under side of the tank, an expansion element having portions thereof extending into the body of water in the tank to freeze the same into a solid cake of ice for cooling the lower compartment, and means disposed below said tank to receive moisture falling therefrom.

7. In a refrigerating cabinet, a water tank subdividing the interior of said cabinet into upper and lower compartments and arranged to prevent the circulation of air between said compartments, said tank having its bottom formed to provide a series of alternately arranged angularly disposed surfaces for the purpose of providing an extended cooling surface at the upper end of said lower compartment and shedding moisture formed on the under side of the tank, an expansion element having portions thereof extending into the body of water in the tank to freeze the same into a solid cake of ice for cooling the lower compartment, and a cover member extending between said expansion element and the walls of the upper compartment to entirely enclose said tank and provide a shelf-like structure to support food stuffs thereabove, said tank having an opening for supplying water thereto arranged to indicate proper depth of the water supplied to said tank and limit the maximum depth thereof, and means for closing said opening.

ALFRED W. ALLEN.