March 24, 1942. L. W. ATCHISON 2,277,031

REFRIGERATOR

Filed Nov. 1, 1939

Fig. 1.

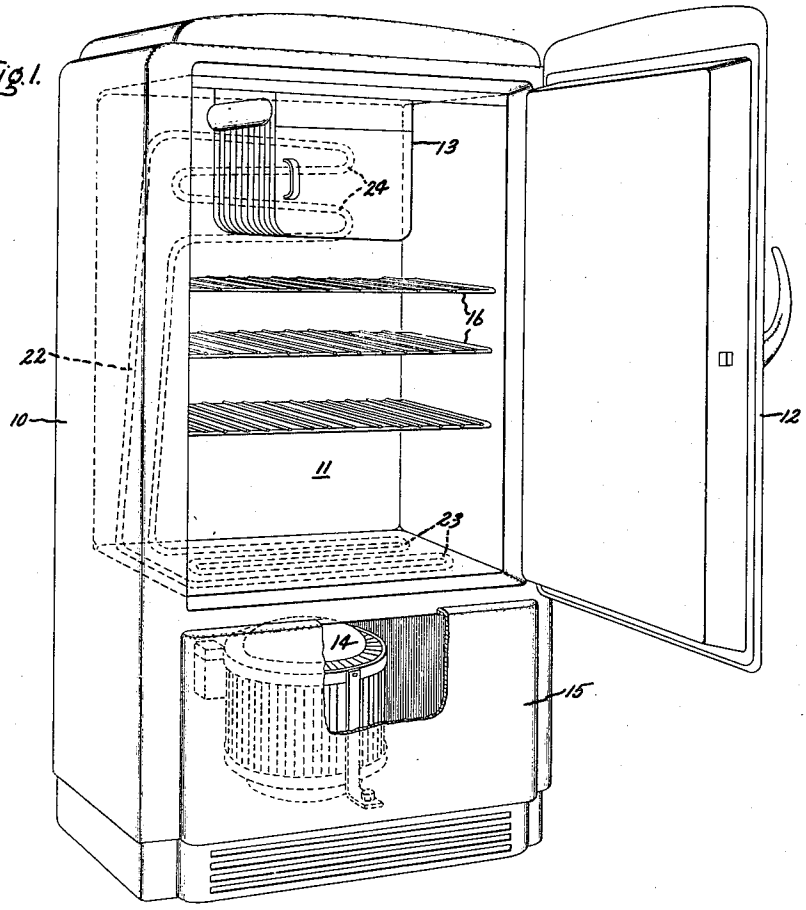


Fig. 2.

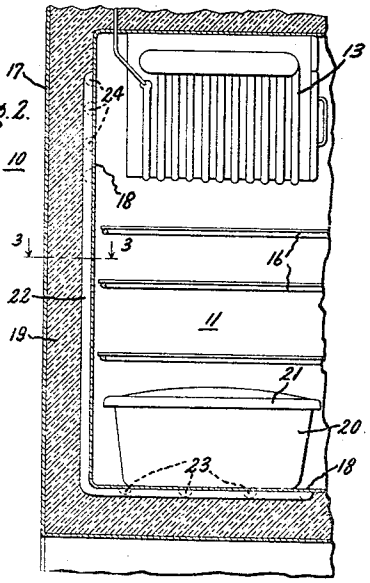
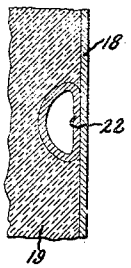


Fig. 3.



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REFRIGERATOR

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Application November 1, 1939, Serial No. 302,388

3 Claims. (Cl. 62—89)

My invention relates to refrigerators, and particularly to refrigerators of the type in which a compartment is cooled by a cooling element arranged in the upper portion thereof in order to produce a natural circulation of air.

It is a common practice to construct household refrigerating machines with food compartments cooled by evaporators arranged in the upper portion of the compartments so that the natural tendency of cold air to circulate downward may be employed to maintain a circulation of air throughout the compartment to be cooled. The arrangement of the cooling unit in the top of the compartment tends to cool the upper portion of the inner cabinet walls or liner near the evaporator and to maintain that portion at a lower temperature than other portions thereof. This is particularly true in mechanical refrigerators provided with motor-compressor units arranged directly below the compartment to be cooled, since a portion of the heat from the refrigerating machine passes upwardly through the insulation in the bottom wall of the cabinet. It sometimes becomes desirable to prevent uneven distribution of temperatures throughout the cabinet liner, and particularly to prevent the passage of heat through the bottom of the cabinet directly to articles placed on the bottom wall of the food compartment formed by the cabinet liner. For example, it is a frequent practice to support containers adapted to hold vegetables and similar foods on the bottom wall of the food compartment. These containers are adapted to prevent any substantial dehydration of the articles contained therein. When such containers are placed on the bottom wall, it may happen that the reduced circulation of air is sufficient to allow a substantial rise in temperature of the bottom wall of the compartment such that the articles in the closed container are not maintained at a sufficiently low temperature. Accordingly, it is an object of my invention to provide a refrigerator including a food compartment and an improved arrangement for substantially equalizing the temperatures of different portions of the inner walls of the compartment.

Further objects and advantages of my invention will become apparent as the following description proceeds, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of my invention, reference may be had to the accompanying drawing in which Fig. 1 is a perspective view of a household refrigerator embodying my invention; Fig. 2 is a sectional side elevation view of a portion of the refrigerator shown in Fig. 1; and Fig. 3 is an enlarged sectional view of a portion of the cabinet wall on the lines 3—3 of Fig. 2.

Referring now to the drawing, in Fig. 1 I have shown a refrigerator having a thermally insulated cabinet 10 and a food compartment 11 to which access may be gained by opening a door 12. The compartment 11 is arranged to be cooled by a cooling element or evaporator 13 which is connected in the refrigerant circuit of a refrigerating machine including a motor-compressor unit 14 arranged in a machinery compartment within the cabinet 10 below the compartment 11. Access to the machinery compartment may be had by removing a panel 15. The refrigerant circuit and connections between the unit 14 and evaporator 13 have been omitted from the drawing for purposes of clarity. A plurality of grille-like shelves 16 are provided in the food compartment to support articles to be cooled while permitting the air to circulate therearound.

During the operation of the refrigerating machine, the air at the top of the compartment 11 is cooled by the evaporator 13 and circulated downwardly, the warmer air in the lower portion of the cabinet rising to take its place, the circulating air absorbing heat from the articles within the cabinet and on the shelves 16.

As shown in Fig. 2, the cabinet 10 includes an outer metal casing 17 and a liner 18 of metal or other suitable material forming the sides and top and bottom walls of the food compartment 11. The space between the casing 17 and liner 18 is filled with heat insulating material 19 to minimize the transfer of heat to the food compartment. Since the evaporator 13 is arranged in close proximity to an upper side wall of the liner 18, it tends to maintain that portion at a lower temperature than the bottom wall. In a household refrigerator, it is frequently desirable to place closed containers on the bottom of the food compartment for maintaining high relative humidity therein to prevent dehydration of certain foods such as vegetables. In Fig. 2, I have shown a container 20 having a lid 21 and provided for this purpose. It is obvious that there is a limited circulation of air around the container 20 and there is, therefore, less cooling capacity available to absorb heat entering the food compartment through the bottom wall thereof. It is, therefore, desirable to provide some arrangement for lowering the temperature of the lower portion of the liner 18. I have found that