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M. BANKE

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COLD CHEST

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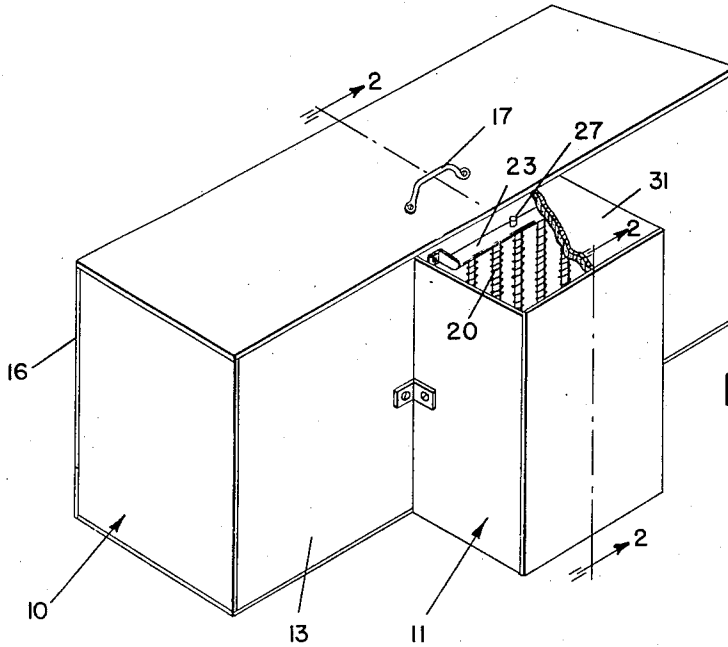


FIG. 1.

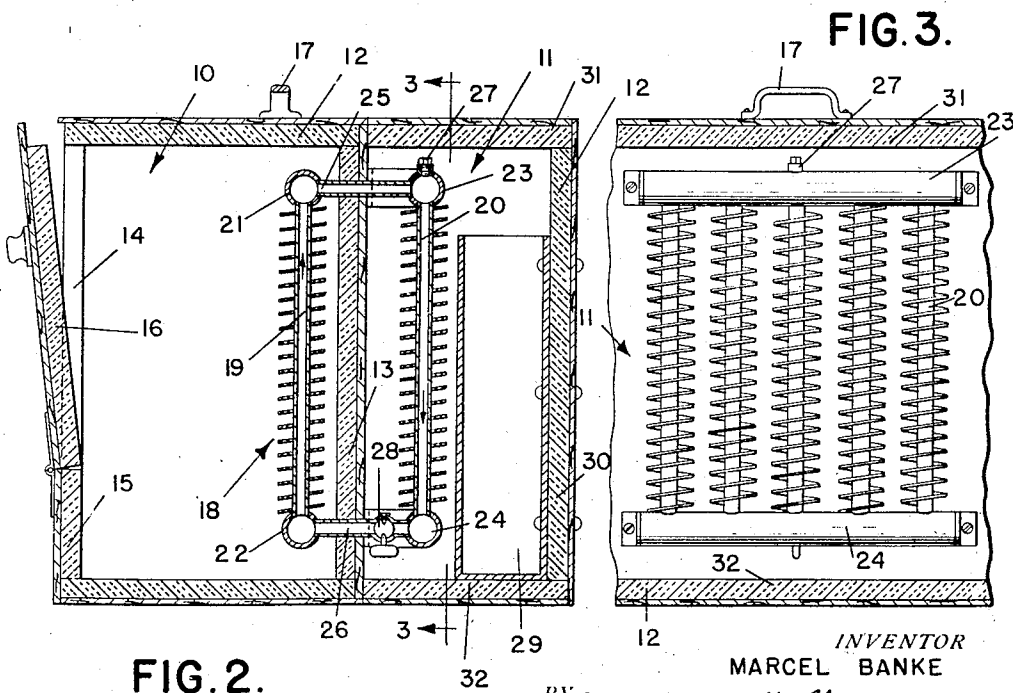


FIG. 2.

FIG. 3.

INVENTOR
MARCEL BANKE

BY *Whittemore Hulbert & Belknap*
ATTORNEYS

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COLD CHEST

Marcel Banke, Detroit, Mich., assignor to Cold Chest Holding Company, Detroit, Mich., a corporation of Michigan

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2 Claims. (Cl. 62-101)

This invention relates generally to refrigerating apparatus and has as one of its principal objects to provide a relatively simple inexpensive cold chest of sufficiently light weight to permit the same to be readily carried from one point to another.

Another advantageous feature of the present invention consists in the provision of a portable cold chest having a food compartment containing a cooling unit and having a refrigerant compartment containing a radiator unit communicating with the cooling unit in such a manner as to provide for circulation of a cooling medium through the cooling units by the thermo-syphon principle.

A further object of this invention resides in the provision of means for controlling the temperature of the food compartment by varying the volume of the cooling medium admitted to the cooling unit from the radiator unit. This feature, as well as the foregoing and other objects, will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein:—

Figure 1 is a perspective view partly in section of a cold chest constructed in accordance with this invention;

Figure 2 is a cross sectional view taken substantially on the plane indicated by the line 2-2 of Figure 1; and

Figure 3 is a sectional view taken substantially on the plane indicated by the line 3-3 of Figure 2.

The cold chest selected herein for the purpose of illustration comprises an elongated food compartment 10 and a refrigerating compartment 11 of relatively small displacement as compared to the food compartment 10. The walls of both of the compartments are lined with a suitable insulating material 12, and the interior of the refrigerating compartment 11 is separated from the interior of the food compartment 10 by means of the rear insulated wall 13 of the latter compartment. Access to the interior of the food compartment may be gained through an opening 14 in the front wall 15 of this compartment and a door 16 is suitably hingedly connected to the front wall 15 to close the opening 14. The actual walls of both compartments are formed of thin gage stock, and the relatively light weight lining of insulating material for these walls is of substantial thickness to effectively insulate the interior of the compartments from the surrounding atmosphere. In other words, the construction is such as to provide a unit of suffi-

ciently light weight to permit the same to be readily carried from one point to the other, and for this purpose a handle 17 may be secured to the top wall of the cabinet in a position where it may be conveniently grasped.

In the present instance, the compartment 10 is cooled by a refrigerating unit 18 comprising cooling tubes 19 and radiator coils 20. The cooling tubes 19 are supported within the food compartment 10 and the opposite ends thereof are connected to suitable headers 21 and 22, respectively. The radiator tubes 20 are supported in the refrigerating compartment 11, and the opposite ends of these tubes are connected with suitable headers 23 and 24, respectively. The upper headers of both tube units communicate with each other through the medium of a passage 25, while the lower headers communicate with each other through the medium of a passage 26. The upper header 23 of the radiator unit is provided with a filler opening 27 through which a suitable refrigerant may be supplied to the unit, and the rate of flow of this refrigerant into the cooling tubes is controlled by means of an adjustable valve 28 located in the passage 26 between the bottom headers of the units. A sufficient quantity of the refrigerant is supplied to the refrigerating unit 18 to sufficiently fill the latter to permit circulation of the refrigerant through the upper passage 25. For the purpose of cooling the refrigerant in the radiator tubes, I provide a container 29 secured to the rear wall 30 of the refrigerating compartment 11 in a position adjacent the radiator tubes. This container may be filled with dry ice, ordinary commercial ice, or any medium capable of cooling the radiator tubes 20.

With the above construction, it will be noted that as heat is absorbed by the refrigerant in the cooling tubes 19, this refrigerant expands and causes a circulation through the unit 18 by the thermo-syphon system. In other words, the refrigerant expanding in the tubes 19 flows into the top header 21 and through the passage 25 to the corresponding header 23 of the radiator unit. As a result, the refrigerant in the radiator unit, cooled by the medium in the container 29, is caused to flow past the valve 28 into the lower ends of the cooling tubes 19 through the bottom header 22 of these coils and absorbs an additional amount of heat from the food compartment 10. In this manner, the interior of the food compartment 10 is maintained at a relatively low temperature and the latter may be controlled by regulating the valve 28 to vary the rate or volume

of refrigerant admitted from the radiator to the cooling tubes.

In localities where the outside temperature is sufficiently low to cool the contents of the compartment 10 without the use of an artificial cooling medium, the cabinet may be suspended in the window casement in such a manner that the refrigerating compartment 11 is positioned at the outer side of the window where it will be subjected to the temperature of the outside air. In this case, the top and bottom walls 31 and 32, respectively, of the refrigerating compartment may be removed so as to permit a circulation of cold air around the radiator tubes. The cold air circulating through the refrigerating compartment 11 around the radiator tubes acts to cause a circulation of the refrigerant in the unit 18 in the same manner previously described in connection with the artificial cooling medium adapted to be located in the container 29.

Thus, from the foregoing, it will be observed that I have provided a relatively simple and inexpensive refrigerating apparatus capable of being readily transported from one point to another. It will also be noted that in certain localities my improved refrigerating apparatus may be efficiently operated without the use of artificial cooling means. In addition, it will be understood that provision is made to control the temperature within the food compartment, irrespective of the nature of the cooling means employed in the refrigerating compartment 11 to cool the radiator unit.

What I claim as my invention is:

1. In refrigerating apparatus, a compartment to be cooled adapted to be installed inside a building having a higher temperature than the outside atmosphere, a plurality of cooling tubes disposed

within said compartment and containing a fluid adapted to expand upon the absorption of heat from said compartment, a pair of headers connecting the upper and lower ends respectively of said cooling tubes, a plurality of radiator tubes disposed upon the exterior of the building in contact with the outside atmosphere and containing a fluid adapted to contract upon the radiation of heat to the adjacent atmosphere, a pair of headers connecting the upper and lower ends respectively of said radiator tubes, means establishing communication between the headers at the lower ends of said cooling and radiator tubes to permit a flow of the contracted fluid in the radiator tubes to the cooling tubes, and means establishing communication between the headers at the upper ends of said cooling and radiator tubes to permit a flow of the expanded fluid in the cooling tubes to the radiator tubes.

2. In refrigerating apparatus, a compartment adapted to be suspended in an opening in the window casement of a building and having one side thereof exposed to the relatively cool outside atmosphere, a cooling tube disposed within said compartment for cooling the contents thereof and containing a fluid adapted to expand upon the absorption of heat from said compartment, a radiator tube disposed upon the exterior of said compartment in contact with the outside atmosphere and containing a fluid adapted to contract upon the radiation of heat to the atmosphere, and a pair of tubes extending through the wall of the compartment and connecting the upper and lower ends respectively of the cooling tube and the radiator tube to effect a circulation of fluid upon the expansion thereof in the cooling tube and the contraction thereof in the radiator tube.

MARCEL BANKE.