Sept. 17, 1935. W. W. WILLIAMS 2,014,917

DOMESTIC REFRIGERATION

Filed July 15, 1933

FIG. 1.

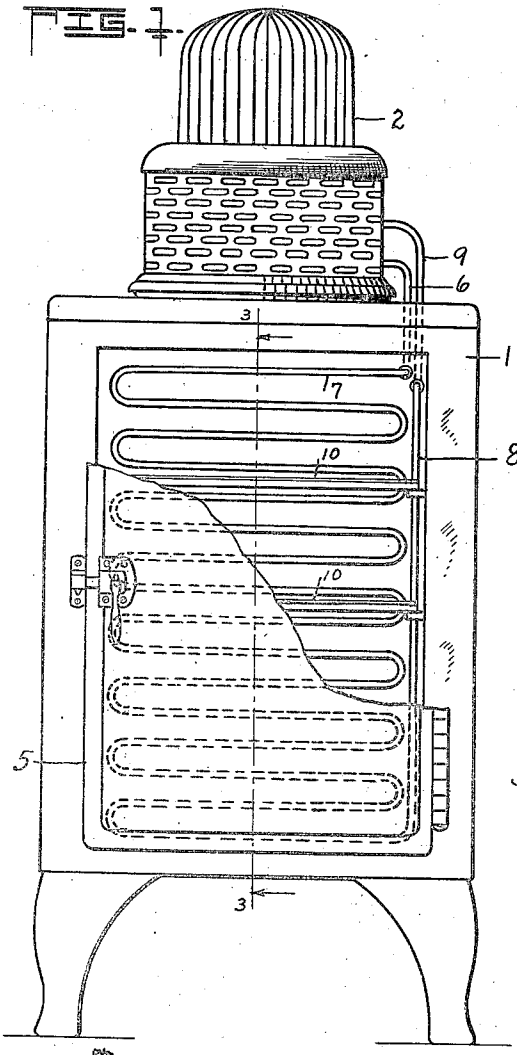
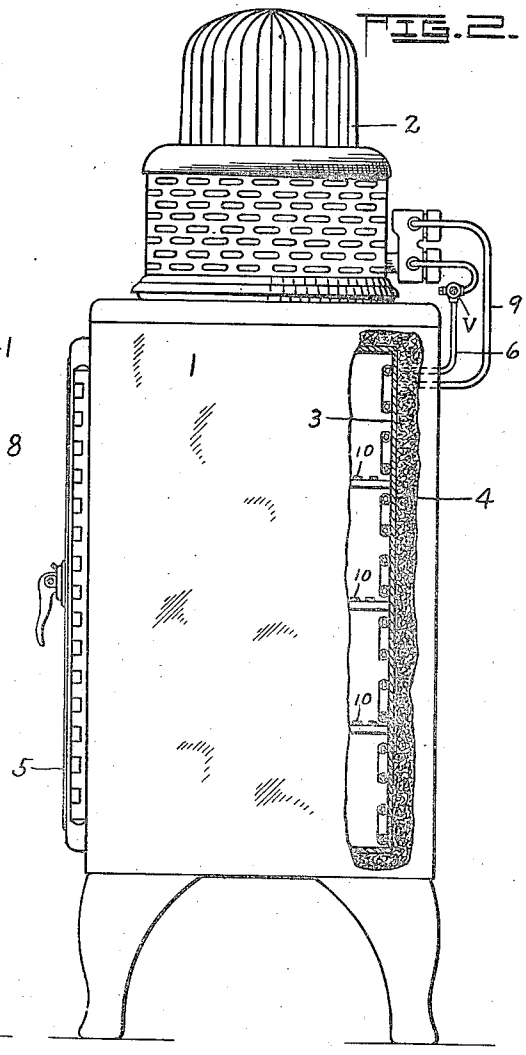


FIG. 2.



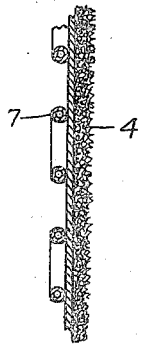


FIG. 3.

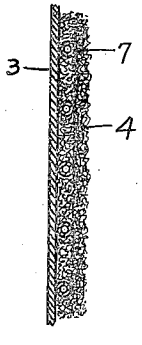


FIG. 4.

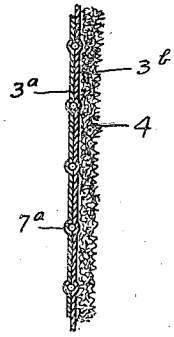


FIG. 5.

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DOMESTIC REFRIGERATION

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Application July 15, 1933, Serial No. 680,535

2 Claims. (Cl. 62—116)

This invention relates to improvements in domestic refrigeration and more particularly to the location and construction of the evaporator within a domestic ice box or cabinet.

In the present day commercial electrically operated refrigerating units for domestic purposes, it is customary to arrange the evaporator within the ice box or cabinet in such a manner that the coils of the evaporator form a container which supports pans for freezing cubes of ice. Such an arrangement usually consumes considerable space which could otherwise be used for the storage of such perishable goods as are usually placed in ice boxes. Furthermore, in order to freeze cubes of ice in the ice pans it is necessary that the temperature of the evaporator coils be much lower than that necessary to keep the perishable goods contained in the box from spoiling with the result that the moisture from the goods condenses upon the evaporator and then freezes to such an extent that it is necessary to defrost the evaporator periodically.

It is an object of this invention to provide a domestic ice box with a domestic refrigerating unit and arrange the evaporator coil therein to allow the greatest space possible for the storage of perishable goods and by continuing the coil from top to bottom of the interior of the cabinet to provide an even temperature throughout the cabinet suffcient to prevent spoiling of the contained goods without causing excessive condensation freezing upon the coils and thereby obviate the necessity of defrosting.

A preferred form of this invention is illustrated upon the accompanying sheet of drawing with the understanding that minor detailed changes may be made therein without departing from the scope thereof.

In the drawing:

Figure 1 is a view in front elevation of a preferred embodiment of this invention with parts broken away.

Figure 2 is a view in end elevation of Figure 1 with parts broken away and partly in vertical section.

Figure 3 is an enlarged fragmentary detailed view in elevation taken on the line 3—3 of Figure 1.

Figure 4 is a view similar to Figure 3 of a modified form.

Figure 5 is a view similar to Figure 3 of another modified form.

In the embodiment illustrated, a commercial ice box or cabinet 1 is provided with a domestic refrigerating unit 2 placed on the top thereof. The interior of the box is formed of metal plates 3 spaced apart from the outer walls of the cabinet or box with the space therebetween filled with any desired insulating material 4 such as rock wool. The front of the box is closed by an air tight door 5 in the usual manner so that when the door is closed and latched the compartment within the cabinet or box is substantially air tight.

The refrigerant is circulated from the refrigerating unit through a pipe 6, expansion valve V and through the outer and inner walls of the cabinet to the evaporator coil 7. In the type shown in Figures 1, 2 and 3, the evaporator coil 7 passes back and forth in tortuous path from top to bottom across the width of the back plate 3 forming equi-distant parallel continuous convolutions, the bottom convolution of which is connected to pipe 8 which passes upward at one side and passes through the spaced apart walls of the cabinet and joins pipe 9 which returns the refrigerant to the suction side of the refrigerating unit. In this form the evaporator coils are spot-welded or otherwise secured to the back plate 3 and the coils passed back and forth within the cooling space of the cabinet or ice box, without interfering with the customary trays for the support of perishable goods. In this manner the evaporator which absorbs the heat from within the cabinet extends across the entire back of the cabinet so that an even temperature is produced in all parts of the cabinet and at the same time occupies but little space within the cabinet.

If desired, the evaporator coils 7 may be secured to plate 3 on that side adjacent to spaced apart outer wall, as shown in Figure 4. In this case the outer and inner walls of the cabinet, containing between them the insulating packing 4, are air tight. The temperature of the plate 3 is reduced but no condensation can collect upon the evaporator coils within the air tight space between walls. This arrangement provides an even greater space for storage of goods in the cabinet or box.

If desired, the wall mounting the evaporator coils may be formed of two thin sheets of metal 3—A and 3—B. Complementary spaces are embossed and the plates welded together to form the evaporator coil 7—A. As above stated in this form the evaporator coils are formed in the wall of the cooling compartment of the box and condensation will only form upon plate 3—A.

By forming an evaporator which extends throughout a wall of the cabinet the temperature is reduced equally throughout the interior of the

cooling space and such moisture as may condense and freeze upon the evaporator or plate will readily melt and drain off during the periods the unit is not in operation.

It is understood that this invention is not restricted to the type of box and refrigerating unit illustrated. The unit illustrated is of a commercial form such as disclosed in this applicant's prior patent, No. 1,838,063 of December 22, 1931 and may be of any other recognized commercial type, employing an expansion type of evaporator and may be placed upon the exterior of the cabinet as shown or placed within a special section of the cabinet if desired.

The operation of the refrigerating unit is controlled by a thermostat to automatically regulate and maintain an even predetermined temperature within the box, as is customary in such cases. This may be accomplished by any of the recognized means in use today and forms no part of this invention.

What I claim is:—

1. In a domestic refrigerator box having an insulated cooling compartment surrounded by spaced apart insulated walls, the combination of a refrigerating unit arranged exteriorly of said compartment with the evaporator coil thereof arranged with its convolutions in the same plane welded upon a wall of said cooling compartment to be contained between said spaced apart walls.

2. In a domestic refrigerating box having an insulated cooling compartment surrounded by spaced apart insulated walls, the combination of a refrigerating unit arranged exteriorly of said compartment with the evaporator coil thereof arranged with its convolutions in the same plane within the spaced-apart walls and in contact with a wall and welded thereto of said cooling compartment and surrounded by insulation except at the point of contact.

WALTER W. WILLIAMS.