

Dec. 24, 1940.

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2,225,656

REFRIGERATED CABINET

Filed Nov. 4, 1938

2 Sheets-Sheet 1

Fig. 1.

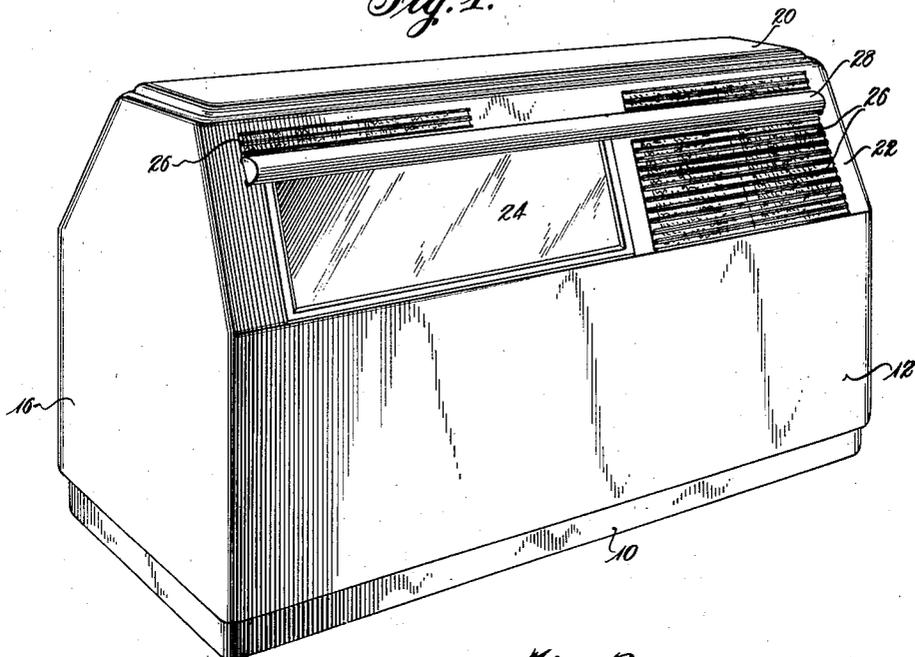
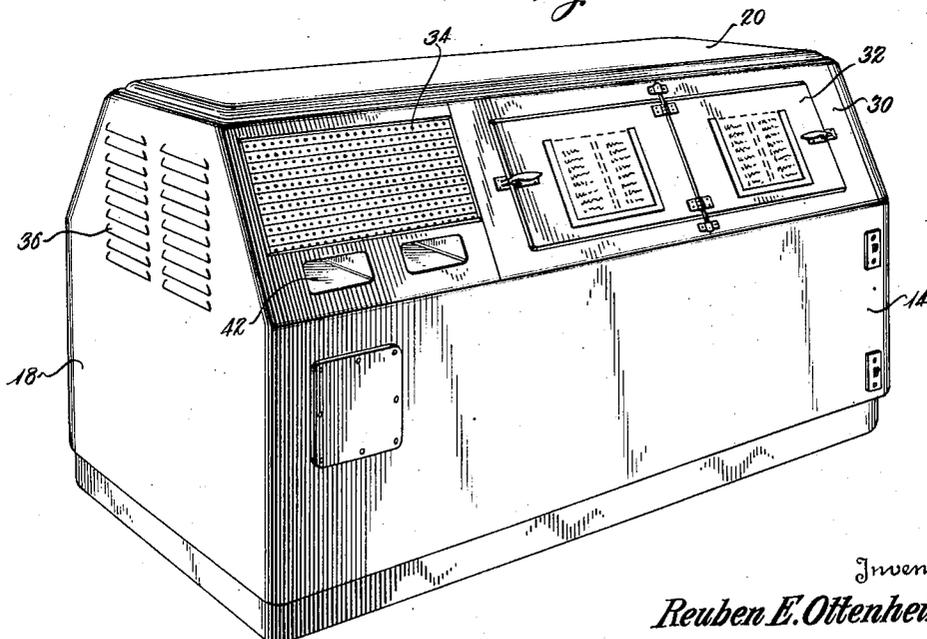


Fig. 2.



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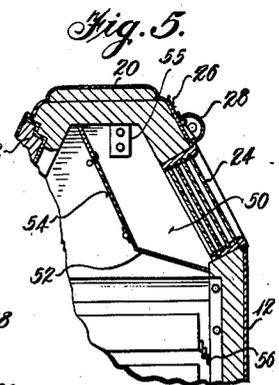
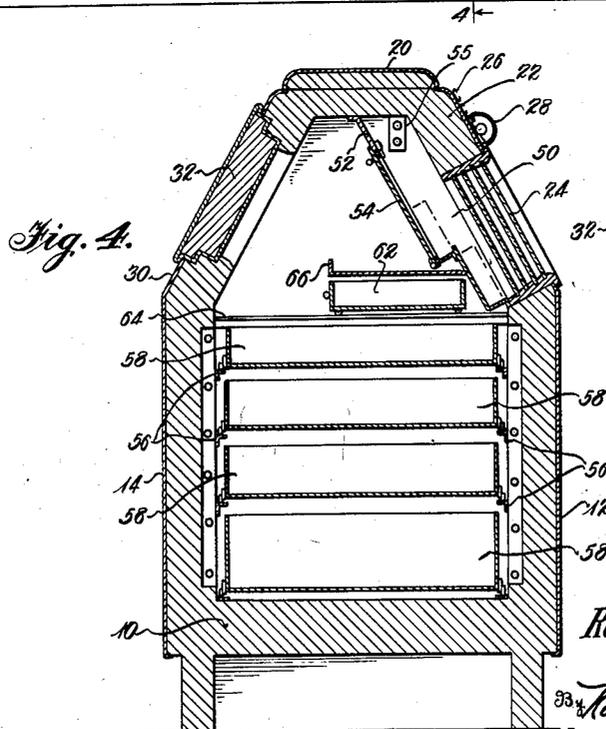
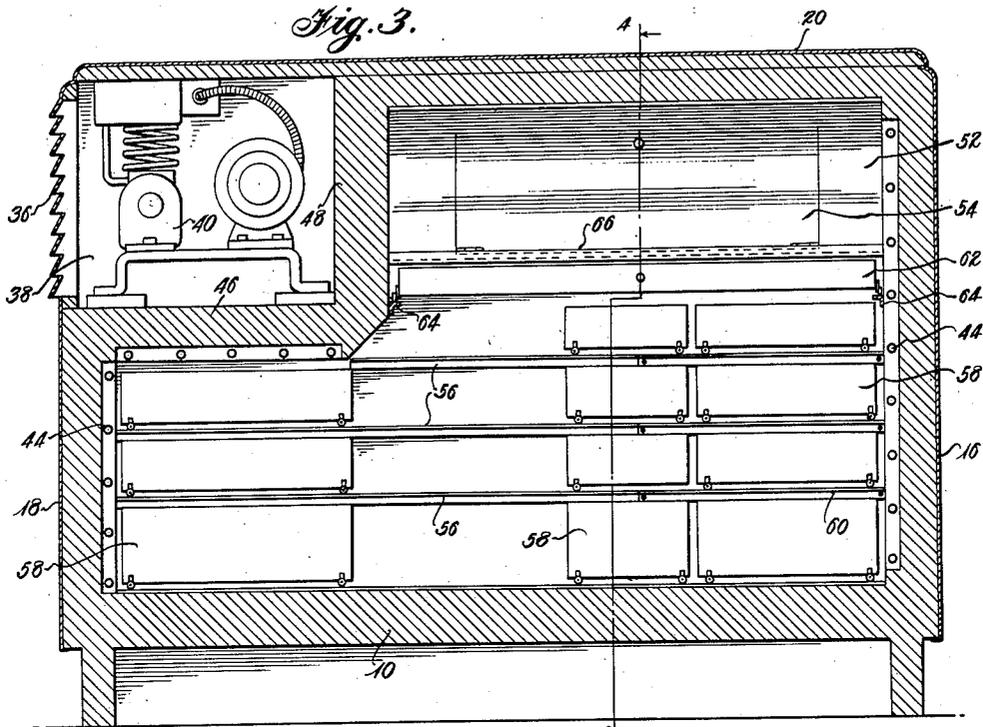
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REFRIGERATED CABINET

Reuben E. Ottenheimer, Baltimore, Md.

Application November 4, 1938, Serial No. 238,862

7 Claims. (Cl. 62—89.5)

This invention relates to a self-contained refrigerated cabinet.

Whereas mechanical refrigeration has been employed in the cooling of various types and designs of commercial cabinets for many years, until the present time no constructions have been proposed which embody a built-in-refrigerating mechanism to define a unitary and portable assembly providing storage space below and longitudinally adjacent the refrigerating mechanism and complete accessibility thereto through a suitably disposed closure or closures.

It is well known of course to construct domestic refrigerators with the refrigerating mechanism disposed above or below the storage compartment, but in these cases vertical service doors are usually employed which are not only uneconomical as regards refrigeration losses, but they do not permit ready access to the entire storage compartment, especially where the latter assumes any material depth. Accordingly, such constructions would be unsuited to a blind or display cabinet of the commercial type wherein conservation of floor space is of utmost importance, where operating temperatures are usually lower than those utilized in domestic refrigerators, where appearance and dimensions of the structure are important factors, and where complete and ready accessibility is essential.

There have been other known constructions wherein a refrigerating mechanism has been housed outside of the principal cabinet enclosure as illustrated by the patent of Burrows, 1,757,764, issued May 6, 1930. In accordance with the present invention, storage space is defined not only longitudinally adjacent the refrigerating mechanism, but likewise below the same, thus rendering it feasible to utilize the maximum volume of the cabinet for the preservation of goods.

The disadvantages of these prior art constructions are emphasized where such low temperatures are developed as those required in conjunction with frozen or frosted foods such as vegetables, meats, fruits, sea food, ice cream, etc. It is important not only to conserve the cold air during the opening and closing of such cabinets, but also to prevent binding of the closures due to the freezing of moisture carried by the air. These problems may be solved in conjunction with the present construction by arranging one or more of the door or doors away from the coldest portion of the enclosure and preferably near the top, at such an angle as to provide a balance between accessibility of the contents and conservation of cold air.

As contemplated by the present invention, a display compartment may be incorporated in the cabinet and a sales person may gain access thereto through a door or doors which also serve the storage space. The display compartment of such a cabinet may be illuminated together with suitable sign panels from a common light source in a manner similar to that described in my copending application Serial Number 195,396. The storage space may be fitted with movable containers, constructed and operated in a manner similar to that disclosed in my copending application Serial Number 223,109.

The present construction is essentially characterized by a cabinet having a base, a front wall, a rear wall, end walls, a top wall, and one or more heat exchange units housed by the enclosure defined by these walls. Within the cabinet and adjacent the top wall thereof a compartment is provided for the reception of refrigerating apparatus intended to supply a cooling medium to the heat exchange unit. This position of the apparatus promotes ready dissipation of heat with a minimum loss of refrigeration and at the same time renders available a maximum usable storage volume. The portions of the cabinet located below and adjacent the compartment housing the refrigerating mechanism are utilized for the storage of goods, and one or more closures are provided in the cabinet walls to permit access to this entire storage space.

As one way of achieving ready accessibility, the storage compartment below the refrigerating compartment may be provided with one or more movable containers which can be shifted therefrom to a position within reach of the door or doors to facilitate the insertion or removal of goods. The portion of the storage compartment longitudinally displaced from the compartment housing the refrigerating mechanism may likewise be provided with one or more movable containers capable of being shifted so as to permit complete access thereto, especially where superposed horizontal rows of such receptacles are employed.

The movable receptacles may be of different sizes and/or arranged in horizontal rows of varying lengths and in vertical columns of varying heights in order to take full advantage of the available storage space and at the same time permit some latitude in the sizes of the articles of merchandise to be handled. In most cases, the containers in a particular horizontal row will not consume the entire capacity of the row, thus providing gaps through which the vendor

may reach into the containers of a lower row or rows. If so desired, some of the movable containers may be shiftable longitudinally of the cabinet while others may be movable transversely thereof.

The containers are preferably removable and replaceable, for which purpose, the closures are constructed of sufficient size to permit passage of the containers therethrough. Whereas the number and positions of the closures may be varied, there may conveniently be fewer closures than columns of containers, and the closures may be located in the inclined rear wall of the cabinet, longitudinally displaced from the refrigerating apparatus compartment.

A more complete understanding of the present invention will be had upon reference to a detailed description of the attached drawings wherein:

Fig. 1 is a perspective showing the front and one end of the cabinet;

Fig. 2 is a perspective showing the rear and other end of the cabinet;

Fig. 3 is a sectional elevation looking towards the front of the cabinet;

Fig. 4 is a staggered sectional end elevation along line 4—4 of Fig. 3; and

Fig. 5 is a fragmentary section showing a modification.

Whereas various arrangements and details of construction are contemplated, the following description is given by way of example to illustrate an operative form of construction embodying the present invention.

The cabinet of the present illustration comprises a base 10, a front wall 12, a rear wall 14, end walls 16 and 18, and a top wall 20 defining an enclosure. As shown, the lower portion of the front wall 12 is vertical whereas the upper portion defines a rearwardly inclined panel 22 which may contain a multi-glazed display window 24, adjacent which are arranged, a plurality of replaceable display signs or cards 26, received in suitable holders shown in broken lines. A lamp housing 28 may be provided for simultaneously illuminating the contents of the display compartment and the cards.

The lower portion of the rear wall 14 is likewise shown as vertical and the upper portion thereof defines a forwardly inclined frame 30 provided with a suitable number of hinged closures 32 for obtaining access to the interior of the cabinet. One end of the rear wall is provided with a grating or screen 34 and the adjacent end wall with louvers 36 for ventilation of the compartment 38 which houses suitable refrigerating apparatus generally designated by the numeral 40. Depending upon the particular shape of the refrigerating apparatus, there may be provided one or more compartments 42 for holding wrapping materials, literature or the like.

One or more heat exchange units or coils 44 are suitably arranged within the cabinet to receive cooling medium from the refrigerating apparatus 40 housed adjacent the top of the cabinet and separated from the storage portion of the cabinet by a substantially horizontal wall 46 and a substantially vertical wall 48. The compartment 38 is thus spaced from one end of the cabinet, extends from the front wall to the rear wall thereof, and consumes only a fraction of its height and a fraction of its length. Constructed and arranged in this manner, the cabinet is entirely self contained and portable, possesses pleasing lines and regularity, and requires mere connec-

tion to an electrical outlet to place it in operation.

Behind the multi-glazed window 24, a display compartment 50 may be provided, separated from the other storage space of the cabinet by a partition 52 containing a door 54. The display compartment may be provided with a cooling plate 55 constituting a portion of the heat exchange unit. In Fig. 4 the display compartment is shown as having a stepped construction for the reception of a plurality of rows of goods on display, while in Fig. 5 a slightly modified form of display compartment has been depicted wherein the floor is inclined. In either case, access to the display compartment will be had through the door 54 formed in the partition and through the closure or closures 32 which likewise serve the storage compartment.

The lower portion of the storage compartment is provided with a plurality of pairs of tracks 56 mounted on the front and rear walls for supporting movable containers 58 arranged in a plurality of horizontal rows, and in the positions shown in Fig. 3 of the drawings, defining a plurality of vertical columns. As illustrated, these containers may be of varying height, and the horizontal and vertical rows may contain varying numbers of such containers. The containers in a horizontal row will not entirely consume its capacity in order that the containers may be shifted and the vendor gain access through the door 32 to any of the containers desired. The tracks may be provided with removable sections 60 in order that the containers may be inserted or removed from the cabinet, for which purpose, the door or doors 32 will be so proportioned so as to pass the largest container contemplated.

As shown in Figs. 3 and 4 of the drawings, a transversely movable container 62 may be arranged on tracks 64 mounted on one end wall 16 of the cabinet and on the substantially vertical partition 48 separating the storage compartment from the refrigerating apparatus compartment. A shelf 66 may be provided in the upper portion of the storage compartment to support goods for which there may be a great demand, thus rendering such goods more readily accessible upon opening of the door or doors 32 of the cabinet.

The present construction is adapted to cabinets of the blind type as well as those containing display compartments. Whereas it is applicable to varied uses, it is particularly adapted to the preservation and sale of frosted or frozen foods which require low temperature storage. The movable containers rendering the entire storage space readily accessible, is especially suited for use with such frosted foods, since it is ordinarily necessary to maintain a widely assorted stock of such goods in a limited space. Among the specific foods to which this construction is readily adaptable are vegetables, fruits, meats, sea food, ice cream and ices.

In use, it is merely necessary to connect the refrigerating apparatus to a source of current or fuel, whereupon its operation will proceed. The portable, self-contained nature of the construction adapts it to immediate installation wherever desired without necessitating laborious and expensive piping, wiring or other extraneous construction.

Whereas the foregoing description has related to a specific embodiment of the present invention, variations in construction will suggest themselves to those skilled in the art and such

variations are contemplated as within the scope of the appended claims.

I claim:

1. The combination with a display cabinet of refrigerating apparatus; said apparatus including a refrigerant liquefying unit adjacent the upper wall of said cabinet, wall structure defining a compartment for said unit insulating it from the remainder of said cabinet, said wall structure also providing a food storage compartment occupying the remainder of the space within said cabinet a portion of which underlies the first mentioned compartment, an evaporator arranged in said storage compartment and connected with said unit, a receptacle slidable within said storage space to and from a position underlying said unit, a closure provided in the upper portion of the cabinet wall structure to provide access to said food storage compartment and receptacle, and a display window arranged in the front part of said wall structure for exposing a portion of said storage space.

2. The combination with a display cabinet of refrigerating apparatus; said apparatus including a refrigerant liquefying unit adjacent the upper wall of said cabinet, wall structure defining a compartment for said unit insulating it from the remainder of said cabinet, said wall structure also providing a food storage compartment occupying the remainder of the space within said cabinet a portion of which underlies the first mentioned compartment, an evaporator arranged in said storage compartment and connected with said unit, a closure provided in the upper portion of the cabinet wall structure to provide access to said food storage compartment, and a display window arranged in the front part of said wall structure for exposing a portion of said storage space.

3. The combination with a display cabinet of refrigerating apparatus; said apparatus including a refrigerant liquefying unit adjacent the upper wall of said cabinet, wall structure defining a compartment for said unit insulating it from the remainder of said cabinet, said wall structure also providing a food storage compartment occupying the remainder of the space within said cabinet a portion of which underlies the first mentioned compartment, an evaporator arranged in said storage compartment and connected with said unit, a receptacle slidable within said storage space to and from a position underlying said unit, a closure provided in the upper portion of the cabinet wall structure to provide access to said food storage compartment and receptacle, and a display window arranged in the front part of said wall structure in the portion of said cabinet extending longitudinally from said unit and at substantially the same height as said unit for exposing a portion of said storage space.

4. The combination with a display cabinet of refrigerating apparatus; said apparatus including a refrigerant liquefying unit adjacent the upper wall of said cabinet, wall structure defining a compartment for said unit insulating it from the remainder of said cabinet, said wall structure also providing a food storage compartment occupying the remainder of the space within said cabinet a portion of which underlies the first mentioned compartment, an evaporator arranged

in said storage compartment and connected with said unit, a closure provided in the upper portion of the cabinet wall structure to provide access to said food storage compartment, a display window arranged in the front part of said wall structure in the portion of said cabinet extending longitudinally from said unit and at substantially the same height as said unit for exposing a portion of said storage space, and the portion of the front part of said wall structure forming the front of the first said compartment and adjacent said display window being opaque and affording a support for matter descriptive of the goods in said display space.

5. The combination with a display cabinet of refrigerating apparatus; said apparatus including a refrigerant liquefying unit adjacent an end of said cabinet, wall structure defining a compartment for said unit insulating it from the remainder of said cabinet, said wall structure also providing a food storage compartment including a display compartment occupying the remainder of the space within said cabinet, an evaporator arranged in said storage compartment and connected with said unit, a closure provided in the upper portion of the cabinet wall structure to provide access to said food storage compartment and display compartment, a display window arranged in the front part of said wall structure for exposing said display compartment, the portion of said front wall structure forming the front of the first said compartment and adjacent said display window being opaque and retainers for removable display elements arranged on said opaque portion.

6. The combination with a refrigerated cabinet of refrigerating apparatus; said apparatus including a refrigerant liquefying unit adjacent the upper wall of said cabinet, wall structure defining a compartment for said unit insulating it from the remainder of said cabinet, said wall structure also providing a food storage compartment occupying the remainder of the space within said cabinet a portion of which underlies the first mentioned compartment, an evaporator arranged in said storage compartment and connected with said unit, a receptacle slidable within said storage space to and from a position underlying said unit, and a closure inclined with respect to the vertical walls of said cabinet provided in the upper portion of the cabinet wall structure to provide access to said food storage compartment and receptacle.

7. The combination with a refrigerated cabinet of refrigerating apparatus; said apparatus including a refrigerant liquefying unit adjacent the upper wall of said cabinet, wall structure defining a compartment for said unit insulating it from the remainder of said cabinet, said wall structure also providing a food storage compartment occupying the remainder of the space within said cabinet a portion of which underlies the first mentioned compartment, an evaporator arranged in said storage compartment and connected with said unit and a closure inclined with respect to the vertical walls of said cabinet provided in the upper portion of the cabinet wall structure to provide access to said food storage compartment.

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70