Sept. 14, 1937. L. M. KEIGHLEY 2,093,277

REFRIGERATING APPARATUS

Filed Oct. 7, 1936 2 Sheets-Sheet 1

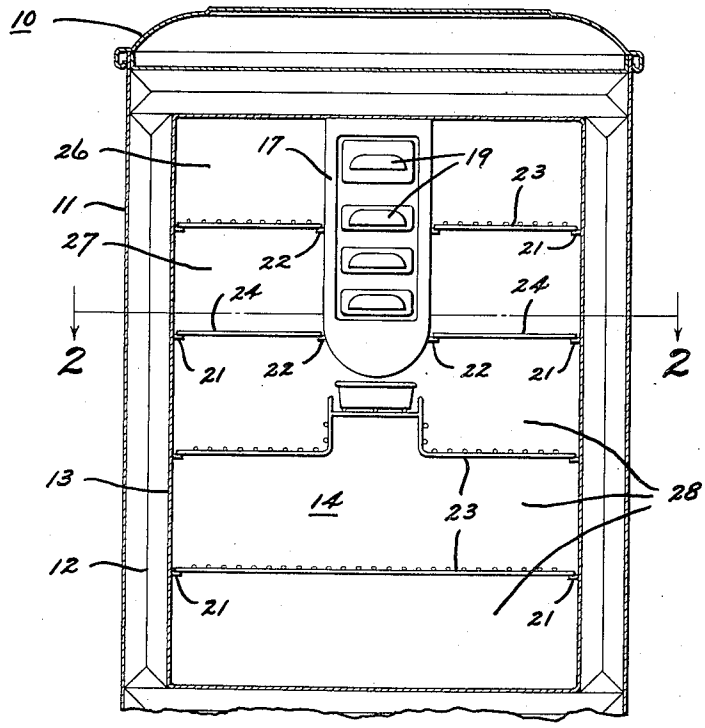


Fig. 1

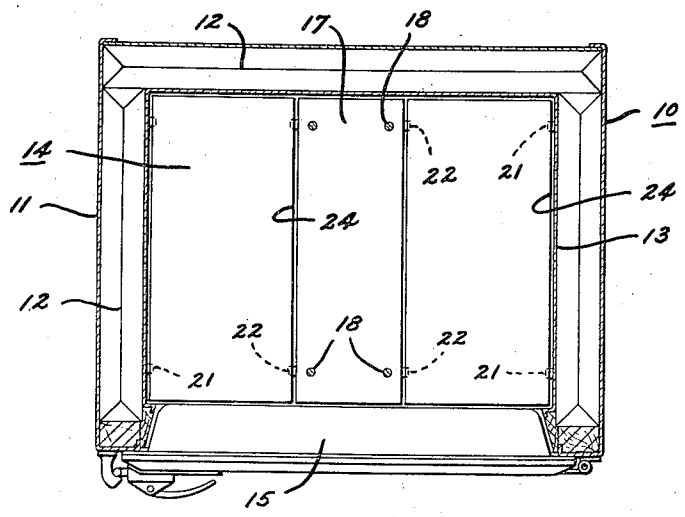


Fig. 2

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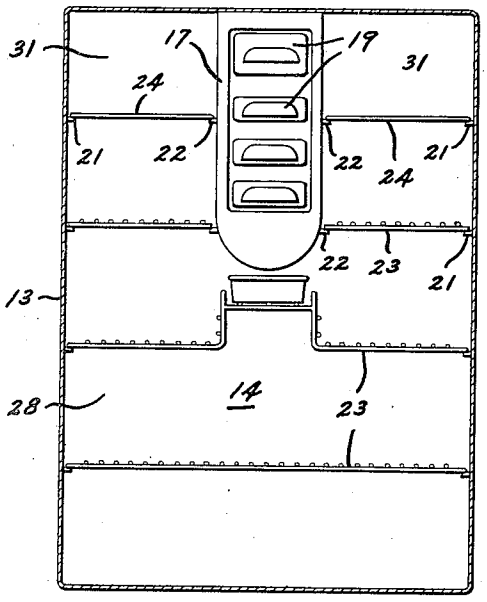


Fig. 3

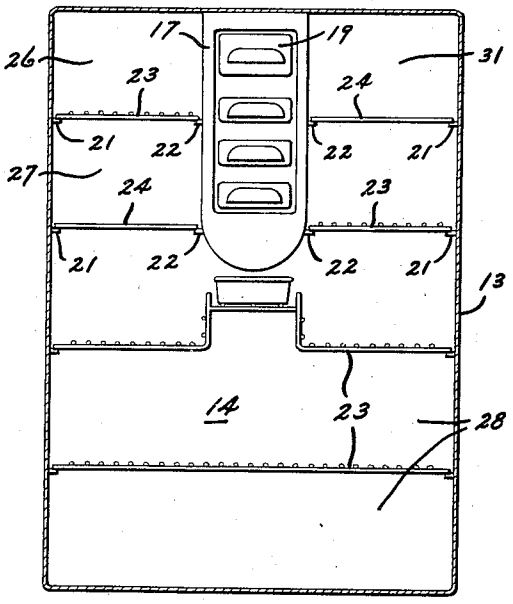


Fig. 4

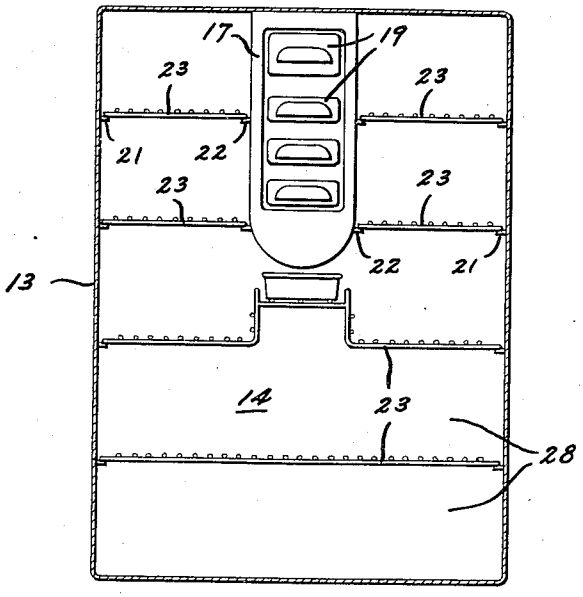


Fig. 5

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UNITED STATES PATENT OFFICE

2,093,277

REFRIGERATING APPARATUS

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Application October 7, 1936, Serial No. 104,493

2 Claims. (Cl. 62—89)

This invention relates to refrigerating apparatus and particularly to refrigerator cabinets.

An object of my invention is to provide an improved refrigerator cabinet having the food storage chamber thereof divided into a plurality of compartments maintained at different temperatures relative to one another.

A further object of my invention is to provide means whereby a food storage chamber of a refrigerator cabinet can be selectively divided into a plurality of compartments of different storage capacity and maintained at different temperatures relative to one another by a single cooling means located in the chamber.

A still further object of my invention is to provide means whereby the foregoing objects can be accomplished in cabinets now in use without materially altering their construction.

In carrying out the foregoing objects it is a still further and more specific object of my invention to provide an improved shelving for the food storage chamber of a refrigerator cabinet a portion of which shelving is constructed and arranged relative to the cooling element in the chamber to provide a plurality of isolated compartments within the chamber of different temperatures relative to one another and which shelving portion can be selectively rearranged to change the capacity of the compartments and the amount of the cooling element exposed to the compartments.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a vertical sectional view of a refrigerator cabinet having my invention embodied therein;

Fig. 2 is a horizontal sectional view of the refrigerator cabinet shown in Fig. 1 and taken on the line 2—2 thereof;

Fig. 3 is a vertical sectional view similar to Fig. 1 and showing the shelves of the refrigerator cabinet rearranged into a different position;

Fig. 4 is a view similar to Fig. 3 showing the shelves of the refrigerator cabinet in another rearranged position to provide a further arrangement thereof; and

Fig. 5 is a view similar to Figs. 3 and 4 showing the shelves arranged in a manner to provide a conventional refrigerator cabinet.

In order to illustrate the invention I have shown in the various figures of the drawings different arrangements of food supporting shelves within a refrigerated chamber of a refrigerator cabinet. The refrigerator cabinet disclosed is of the household type in which the desirability frequently occurs of having a plurality of freezing zones and a plurality of compartments of different size and temperature relative to one another which compartments are substantially isolated from air circulation therebetween. This desirability is occasioned by the necessity of properly storing certain food products such as meats or the like at very low temperatures and other food products separated from the meats and maintained at a relatively higher temperature within the same refrigerator cabinet. Therefore my invention is particularly directed to a method of and apparatus for selectively dividing the interior of a food chamber, normally maintained at a substantially uniform temperature throughout, of a refrigerator cabinet into a plurality of isolated compartments of different size and temperature relative to one another. This is accomplished in the present disclosure by providing for the selective rearranging of continuous or impervious shelves into various positions relative to one another and relative to the cooling element within the food chamber.

Referring to Fig. 1 of the drawings, the numeral 10 designates a refrigerator cabinet of the household type having an outer shell 11 which may form a support for the insulating material 12 surrounding a metal liner 13 defining a plurality of walls of a chamber 14. The liner 13 is provided with an open side which forms an access opening to chamber 14 and which access opening is normally closed by a door 15 (see Fig. 2). A cooling element or evaporator 17 of any suitable or conventional construction is mounted in the upper part of chamber 14 and supported from the top wall of liner 13 by bolts or the like 18. The evaporator 17 is adapted to be connected to a refrigerant liquefying and circulating unit (not shown) in the well-known manner so as to produce a refrigerating effect for causing cooling and circulation of air within chamber 14. Evaporator 17 is provided with a plurality of freezing zones or compartments for the reception of trays 19 adapted to contain substances to be congealed or frozen. A plurality of pegs or shelf supporting members 21 are secured to the side walls of liner 13 and similar pegs 22 are attached to the evaporator 17 so as to be in horizontal alignment with certain of the pegs 21. These pegs 21 and 22 support a plurality of shelves 23 and 24. Shelves 23 are of the con-

ventional perforated or open wire type while shelves 24 are of continuous material (see Fig. 2) so as to be impervious to air circulation therethrough. The shelves 23 and 24 divide or partition the interior of chamber 14 into a plurality of superimposed food storage compartments. It will be noted that the upper shelves 23 are of the same size and contour as shelves 24 and divide the upper part of chamber 14 adjacent evaporator 17 into small superimposed compartments 26 and 27. The lower shelves 23 divide chamber 14 into the relatively wide superimposed compartments 28. Obviously air upon being cooled by the refrigerating effect produced by evaporator 17 is permitted to circulate freely through shelves 23 into the compartments on each side thereof. However, air is blocked, or the free circulation thereof is prevented, between the compartments on each side of shelves or partitions 24 due to the partitions 24 and the evaporator 17 extending continuously from a point adjacent the inner surface of cabinet door 15 to a point closely adjacent the upright walls of liner 13 as shown in Fig. 2. The evaporator 17 has a portion thereof exposed to compartments 26, 27 and 28 at all times so as to maintain a substantially predetermined temperature in the various compartments. The temperature to be maintained within the various compartments is dependent upon the location of shelves or partitions 24 relative to the cooling element or evaporator 17. A rearrangement of partitions 24 will expose more or less of the cooling surface of evaporator 17 to certain of the compartments to thereby decrease or increase the temperature thereof. The amount of exposure of evaporator 17 to the compartments on each side of the partitions 24 is predetermined to provide a temperature difference between the compartments.

Since the uppermost shelves 23 and shelves 24 are constructed so as to be interchangeable various isolated compartments of different size and temperature relative to one another can be selectively obtained. It will be noted that with the partitions 24 in the position, supported on the lower pegs 21 and 22 adjacent the cooling element 17, as shown in Fig. 1 of the drawings, there is provided within chamber 14 a storage space on each side of evaporator 17 which is isolated from air circulating within the compartments 28. The spaces on each side of the evaporator 17, which are divided into compartments 26 and 27 by the small shelves 23 to provide increased food supporting areas therein, are directly exposed to the cooling effect produced by the evaporator. These storage spaces are of considerably less capacity than the space formed by compartments 28 and have a greater amount of the cooling surface of evaporator 17 exposed thereto to thus maintain the compartments 26 and 27 above partition 24 at a much lower temperature than the temperature within compartments 28. By dividing chamber 14 with the partitions or shelves 24 compartments 26 and 27 are therefore maintained at a predetermined low temperature suitable for the proper storage and preservation of meats, fish, etc., which are more easily perishable than certain other food products ordinarily stored in a refrigerator cabinet. These certain other food products may be stored in compartments 28 which are, due to the isolation thereof from compartments 26 and 27 by partitions 24, maintained at a relatively higher temperature than compartments 26 and 27 by the small amount of exposure of evaporator 17 thereto. The refrigerator chamber 14 contains the usual or normal predetermined amount of food supporting shelf area found in conventional refrigerator cabinets while at the same time being divided into a plurality of isolated compartments of different temperatures relative to one another. The primary feature of my invention is the selective positioning of partitions 24 on either the lower or upper set of supporting pegs in a horizontal plane at the side of evaporator 17 and the use of the small wire shelves 23 is therefore optional.

Should it be desirable to increase the capacity of the storage space below the partitions 24, so as to provide more space for the storage of food products other than those requiring storage in very low temperatures, and to reduce the size of the low temperature storage space in chamber 14, the small upper shelves 23 and partitions 24 may be rearranged within cabinet 10. By referring to Fig. 3 of the drawings it will be noted that both of the partitions 24 have been moved up and the small shelves 23 moved down. In this rearranged form of the shelving there is provided relatively small very cold storage compartments 31 at the upper portion of chamber 14 on each side of evaporator 17. The air in compartments 31 is isolated from the air which circulates through shelves 23, disposed below the partitions 24, and throughout the compartments 28 formed thereby. In this modified arrangement compartments 31 are maintained at a slightly higher temperature than the cold compartments 26 and 27 of the arrangement shown in Fig. 1 and the storage space below partitions 24 is maintained at a lower temperature due to the decrease and increase respectively of exposure of evaporator 17 to these storage spaces. The modified arrangement of the shelves, for changing the size and temperature of the isolated storage compartments within chamber 14, as shown in Fig. 3 presents certain advantages and may be preferred at one time or another in the use of the refrigerator.

By referring now to Fig. 4 of the drawings it will be noted that I have disclosed a further rearrangement of the small shelves 23 and partitions 24 within chamber 14 of cabinet 10. In this form of arrangement the one partition 24 defines a relatively tall isolated storage space on one side of the evaporator 17 which is divided by shelf 23 into the compartments 26 and 27 similar to that shown in Fig. 1. The other partition or shelf 24 defines on the other side of evaporator 17 a small cold storage compartment 31 similar to the arrangement disclosed in Fig. 3. This modified arrangement provides a small and a relatively larger very cold isolated compartment on each side of the evaporator 17 and a comparatively warmer general food storage space which is slightly larger than the general storage space disclosed in Fig. 1 and slightly smaller than the general storage space disclosed in Fig. 3. The arrangement disclosed in Fig. 4 also presents certain advantages and may be preferable at one time or another in the storing of food products in the refrigerator.

In Fig. 5 of the drawings I have disclosed an arrangement wherein the partitions 24 have been omitted from chamber 14 and additional small wire shelves 23 substituted therefor to provide a shelving arrangement of the type ordinarily present in conventional refrigerator cabinets. This disclosure is for the purpose of clearly illustrating that my invention may be readily and

quickly applied to conventional refrigerators with a minimum of expense.

From the foregoing it will be seen that I have provided an improved refrigerating apparatus including a cabinet and provisions whereby the shelving within the food storage chamber thereof can be rearranged at will to selectively provide a plurality of substantially isolated compartments of different size and temperature relative to one another so that a large variety of food products may be stored in the cabinet and cooled by the single evaporator to their respective proper preserving temperatures. Certain foods which absorb odors and flavors of other foods can, by my invention, be segregated from the other foods so as to permit same to retain their original odor and taste. My invention provides for the selective altering of a food storage chamber to form a multi-temperatured refrigerator cabinet at a minimum of cost. The interchangeability of the shelves of my arrangement and the disposition of the partitioning shelf relative to the evaporator to obtain different temperatures in certain food storage compartments can be quickly and readily carried out.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. Refrigerating apparatus comprising in combination, a cabinet having an insulated chamber therein, a cooling element of a closed refrigerant circulating system mounted in said chamber for chilling and causing circulation of air therein, a partition and means for supporting said partition in any one of a plurality of spaced apart positions within said chamber to divide same into a plurality of food storage compartments, said partition being imperforate and having edges shaped to cooperate with an exposed face of said cooling element and the walls of said chamber to substantially prevent passage of air from one compartment to the other, said element being so constructed that the exposed face thereof provides refrigeration for each of said compartments, and the amount of refrigeration for said compartments being determined by the selected position of support of said partition by said means within said chamber.

2. Refrigerating apparatus comprising in combination, a cabinet having an insulated chamber therein, a cooling element of a closed refrigerant circulating system mounted in said chamber for chilling and causing circulation of air therein, a partition and means for supporting said partition in any one of a plurality of vertically spaced apart positions at the side of said cooling element to divide said chamber into a plurality of superimposed food storage compartments, said partition being imperforate and having edges shaped to cooperate with an exposed side wall of said element and the side walls of said chamber to substantially prevent the passage of air from one compartment to the other, said element having said exposed side wall thereof constructed to provide an amount of refrigeration for each of said superimposed compartments, and the amount of refrigeration for said compartments being determined by the selected position of support of said partition adjacent said element on said means within said chamber.

LLOYD M. KEIGHLEY.