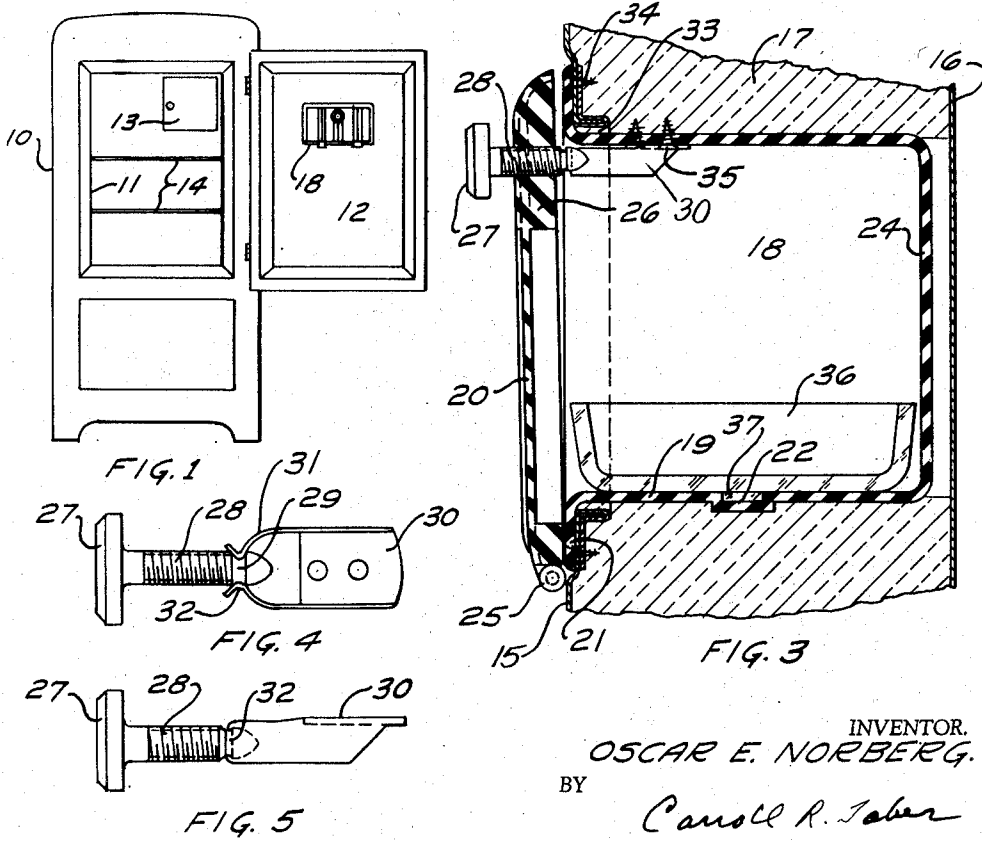
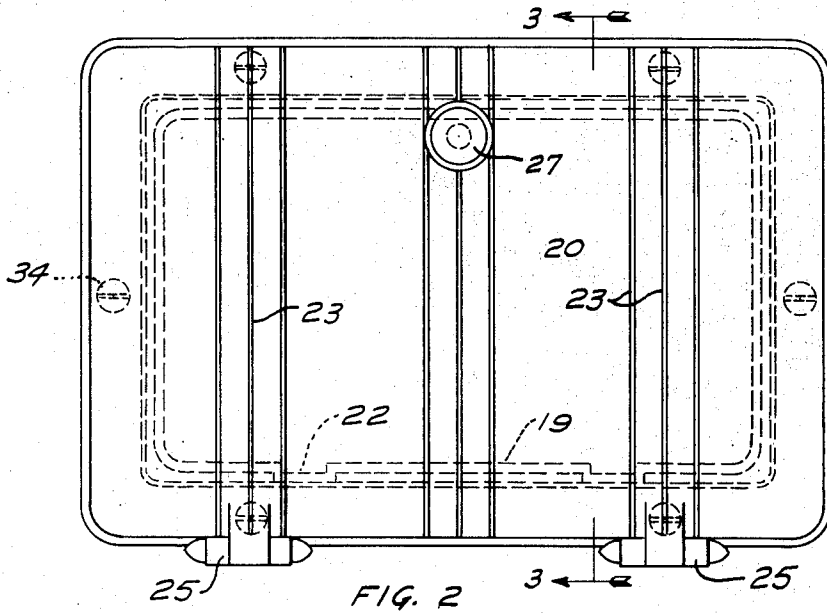


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O. E. NORBERG
REFRIGERATOR CABINET
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REFRIGERATOR CABINET

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This invention relates to refrigerator cabinets, and more particularly to the provision of auxiliary compartments within such cabinets for the storage of butter and similar food stuffs which it is desired to maintain at a higher temperature than the remainder of the articles stored therein.

In order to properly preserve food products stored therein, the main refrigerated food storage compartment of the refrigerator is maintained at a temperature so low that butter at that temperature will not spread easily. Therefore, it is desirable to provide in the cabinet an auxiliary compartment which can be maintained at a temperature higher than that of the main compartment, yet sufficiently low to properly preserve butter and similar products. Furthermore, it is desirable to be able to vary the temperature within the auxiliary compartment within reasonable limits.

Accordingly, the principal object of this invention is to provide in a refrigerator cabinet an auxiliary compartment constructed and arranged to produce the aforementioned desirable results.

These objects are attained by providing a suitably insulated auxiliary compartment in a refrigerator cabinet, a portion of which is constructed and arranged to receive heat from the air surrounding the cabinet whereby to permit a small amount of heat leakage from the exterior of the cabinet into the auxiliary compartment; providing an access opening in another portion of the auxiliary compartment which communicates with the main storage compartment; and by providing a closure for such opening which may be moved to vary the size of the opening between the compartments whereby to regulate the rate of heat transfer from the auxiliary compartment to the main compartment.

These objects and others ancillary thereto will become more fully apparent in the following specification when read in connection with the accompanying drawing, wherein—

Figure 1 is a front elevational view of a refrigerator cabinet with the door open, in which the invention is embodied;

Figure 2 is a front elevational view on an enlarged scale of the closure for the auxiliary storage compartment;

Figure 3 is a fragmentary cross-sectional view taken on substantially the line 3—3 of Figure 2;

Figure 4 is a bottom plan view of the latch

for the closure of the auxiliary compartment; and

Figure 5 is a side elevational view of the structure shown in Figure 4.

The invention is shown as embodied in a conventional household refrigerator which comprises an outer casing 10, an inner lining 11 spaced therefrom and defining a main refrigerated food storage compartment, and a door 12 for the latter compartment. The main food storage compartment is refrigerated by a conventional evaporator 13. Shelves 14 for the storage of food are provided also.

The door 12 comprises spaced apart inner and outer metal panels 15 and 16 respectively, with insulating material 17 packed between them. Substantially entirely enclosed within the door 12 is an auxiliary compartment, designated generally by the numeral 18, for the storage of butter and the like. As shown in Figure 1 the auxiliary compartment 18 is so located on the door 12 as to position the compartment 18 in close proximity to the evaporator 13 when the door 12 is in its closed position. The auxiliary compartment 18 comprises a shell 19 having an open side to provide access to the interior thereof, and a closure 20 for the said open side. Preferably the shell 19 is formed in one piece from a material, such as a plastic, having a coefficient of heat conductivity lower than that of the various metals, but higher than the conductivity of what are commonly termed insulating materials. The shell 19 is provided about the periphery of its open side with a flange 21. In the bottom wall of the shell 19 are two recesses 22 for a purpose which will appear presently. The back or outer wall of the shell is indicated by the numeral 24.

The closure 20 preferably is fashioned from the same material that composes the shell 19. The closure is relatively thin and is provided with ornamental stiffening ribs 23 on its exterior surface. The closure 20 has a peripheral flange which is adapted to engage the flange 21 of the shell 19 throughout substantially its entire circumferential extent. The closure 20 is hinged at its lower edge to the lower edge of the flange 21 by hinges 25 to permit it to swing downwardly when it is opened.

Centrally of the upper part of the closure 20 is a boss 26 through which a threaded aperture extends. Received in the aperture is a latch bolt having a knob 27 and a threaded shank 28 which cooperate with the threads in the aperture to provide for inward and outward adjust-

ment of the latch bolt relative to the closure. The end of the latch bolt opposite the knob 27 is pointed, and an annular groove 29 is formed in the bolt a slight distance from the pointed end.

A keeper 30 which cooperates with the latch bolt to hold the closure in its latched position, is attached to the top wall of the shell 19. The keeper 30 is channel shaped in cross-section. The web of the channel is provided with holes for the reception of attaching screws 35. The side walls of the channel are extended outwardly beyond the web thereof whereby to provide a pair of resilient fingers 31. The ends of the resilient fingers 31 are re-bent at 32 to provide projections which cooperate with the groove 29 in the latch bolt to releasably hold the latch bolt when the latter is engaged by the fingers 31. When the latch bolt is withdrawn from the keeper the projections 32 are spaced apart a distance less than the diameter of the base of the groove 29, but the fingers can spring apart to permit engagement or release of the latch bolt when the closure is latched or unlatched.

Preferably, although it is not essential, a butter dish 36 is provided as a complementary part of the auxiliary compartment. The butter dish has a pair of bosses 37 on its lower wall which cooperate with the recesses 22 on the bottom of the shell 19 to prevent accidental dislodgment of the butter dish from the compartment 18.

The auxiliary compartment 18 is inserted as a unit into the door 12 through an opening 33 provided for the purpose in the inner panel 15 of the door. The flange 21 of the shell 19 is secured to the panel 15 by screws 34. It will be noted that when the auxiliary compartment is inserted into the door the top and bottom and the vertical side walls of the shell 19 are entirely enclosed within the insulation 17. Care is taken, however, to see that there is no insulation between the outer wall 24 of the shell and the panel 16. The outer wall 24 of the shell and the panel 16 may be in contact, although preferably a small space is provided to reduce the rate of heat transfer from the panel 16 to the shell 19.

Since the main compartment 11 is refrigerated by the evaporator 13, its normal temperature will be considerably below that of the air without the cabinet, and heat will tend to flow from the warm exterior to the cold interior of the cabinet. Thus, heat will flow from the outer panel 16 to the wall 24 of the auxiliary compartment and thence through the outer walls of the shell 19 and the closure 20 into the main compartment 11. As previously mentioned, the material from which the shell 19 and closure 20 are made does not have a high rate of heat conduction. This material acts to a certain extent as an insulator, preventing too rapid heat absorption from the exterior of the cabinet, as well as too rapid heat loss to the interior of the main compartment. Consequently, the temperature within the auxiliary compartment will be higher than that of the main compartment, but lower than that of the outside air.

The temperature within the auxiliary compartment 18 may be regulated to a limited extent by rotating the knob 27 of the latch bolt. This moves the grooved end of the latch bolt toward or away from the closure 20 so that the closure

when in its latched position may be left slightly open, as shown in Figure 3, or closed tightly against the flange 21. Obviously, when the closure is slightly open, heat from the auxiliary compartment will escape therefrom more rapidly due to the circulation of air between the two compartments, and the temperature of the auxiliary compartment will be lower than when the closure is tightly closed. This permits of a variation of the temperature at which butter or other foodstuffs are stored, in order to suit individual preferences as to hardness, as well as to compensate for differences in the rate of heat leakage to the shell 19 arising from variations in the temperature of air outside of the cabinet.

It is preferred to locate the auxiliary compartment 18 in the refrigerator door because of its ready accessibility. It will be obvious, however, that it may be located in any of the other walls of the refrigerator cabinet since the principles of construction and operation are the same in each case.

From the foregoing it will be seen that this invention provides an effective arrangement for storing and preserving butter and like foodstuffs at temperatures higher than those in the main food storage compartment. It also provides for convenient regulation of the temperature within the auxiliary compartment. Furthermore, the auxiliary compartment is a simple structure, easily fabricated and assembled in the refrigerator cabinet.

The scope of the invention is indicated in the appended claims.

I claim:

1. A refrigerator cabinet comprising a main refrigerated food storage compartment, an auxiliary compartment in said cabinet arranged to receive heat from without the cabinet whereby to maintain the auxiliary compartment at a temperature above that of the main compartment, said auxiliary compartment comprising a shell having an access opening communicating with the main compartment, a closure hingedly mounted in said cabinet and adapted when in one position to close said opening, and latch mechanism associated with said closure for releasably latching the closure in a predetermined position relative to the shell, said latch mechanism being adjustable whereby the position of the closure determined by said latch mechanism may be varied between a fully closed position and a partially opened position to vary the temperature within the auxiliary compartment.

2. A refrigerator cabinet comprising a main refrigerated food storage compartment, an auxiliary compartment in said cabinet constructed and arranged to receive heat from without said cabinet to maintain the auxiliary compartment at a temperature above that of the main compartment, said auxiliary compartment comprising a shell having an access opening, a closure for said access opening hingedly connected to said shell for movement between opened and closed positions, and means associated with said shell and closure for holding the closure in any one of a plurality of positions between a fully closed position and a partially open position whereby to permit regulation of the rate of interchange of heat between the auxiliary compartment and the main compartment.

3. A refrigerator cabinet comprising spaced apart inner and outer walls with insulation therebetween, said inner wall defining a portion

of a main refrigerated food storage compartment, an auxiliary compartment comprising a shell located substantially wholly between said walls and having an access opening communicating with the main compartment, said shell also comprising a wall in juxtaposed relation to the outer wall of the cabinet, a closure for said opening hinged to said shell, and adjustable means associated with said shell and closure for holding said closure in any one of a plurality of positions between a fully closed position and a partially open position whereby to permit regulation of the rate of interchange of heat between the auxiliary compartment and the main compartment.

4. A refrigerator cabinet comprising spaced apart inner and outer walls with insulation therebetween, said inner wall defining a portion of a main refrigerated food storage compartment, an auxiliary compartment comprising a shell having an access opening, said shell being positioned substantially wholly between said walls and having said opening communicating with the main compartment, said auxiliary compartment having a wall juxtaposed to said outer wall whereby to receive heat therefrom, a closure for said opening hinged to said shell for movement between open and closed positions, and latch means associated with said shell and said closure for holding the closure in any one of a plurality of predetermined partially opened positions relative to said shell, said latch means being adjustable relative to said closure to permit selection of said predetermined positions.

5. In a refrigerator cabinet including a main refrigerated compartment, an auxiliary compartment within said cabinet, said auxiliary compartment comprising a shell having an access opening, a closure for said opening hinged to said shell for movement between open and closed positions, and latch means comprising a latch bolt attached to said closure and a resilient keeper secured to said shell, said latch bolt being threaded into said closure for adjustment relative thereto and cooperating with said keeper to hold the closure in latched position.

6. A refrigerator cabinet comprising a main refrigerated compartment and a separate auxiliary compartment partially insulated therefrom, said auxiliary compartment being arranged to receive heat from without the cabinet and having an access opening communicating with the main compartment, a movable closure for said opening, and adjustable means associated with said closure for holding the latter in a closed position or in any one of a plurality of predetermined partially opened positions.

7. A refrigerator cabinet comprising an outer wall, a main refrigerated compartment and a separate auxiliary compartment partially insulated therefrom, said auxiliary compartment having a wall thereof juxtaposed to said outer wall to receive heat therefrom, and an access opening communicating with the main compartment

and a hinged closure for said opening, said closure being adapted to be moved between opened and closed positions, and adjustable means associated with said closure for holding the latter in closed position or in any one of a plurality of predetermined partially opened positions.

8. A refrigerator cabinet comprising a main refrigerated food storage compartment having a wall composed of spaced apart inner and outer panels, an auxiliary compartment in the space between said panels, said auxiliary compartment having an access opening communicating with the main compartment and a wall in close proximity to said outer panel, and insulating material in the space between said panels partially surrounding said auxiliary compartment but leaving the space between said outer panel and the adjacent wall of the compartment free and unobstructed.

9. In a refrigerator cabinet comprising a main refrigerated food storage compartment, an auxiliary compartment in said cabinet and having a bottom wall, a receptacle in said auxiliary compartment, said receptacle having a bottom wall, one of said bottom walls having a recess therein and the other wall having a complementary projection removably received in said recess, the horizontal areas of the recess and projection being substantially less than the areas of either of said walls.

10. In refrigeration apparatus, the combination of a refrigerator cabinet comprising a plurality of walls defining a food storage compartment, said walls including a door affording access to the compartment, said walls comprising spaced apart inner and outer panels with insulation therebetween, said outer panels being exposed to the ambient atmosphere surrounding the cabinet, a cooling element disposed within the cabinet adjacent the inner panel of one of said walls, and a butter container disposed in the heat insulation of said one wall and arranged to provide a space in close proximity to said cooling element.

11. A refrigerator including in combination a plurality of walls defining a main food storage compartment, said walls including a door affording access to the compartment, said walls comprising inner and outer panels with insulation therebetween, said outer panels being exposed to the ambient atmosphere surrounding the refrigerator, a cooling element disposed within the food storage compartment adjacent the inner panel of one of said walls, and a container disposed within the insulation between the inner and outer panels of said one wall in relatively close proximity to the cooling element, said container forming an auxiliary food storage compartment and arranged to provide a space having at least a portion thereof located within the perpendicular projection of one face of the cooling element.

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