Nov. 8, 1955 H. A. DOWNING 2,722,807

COMPARTMENTED FREEZER OR REFRIGERATOR

Filed Jan. 31, 1952 2 Sheets-Sheet 1

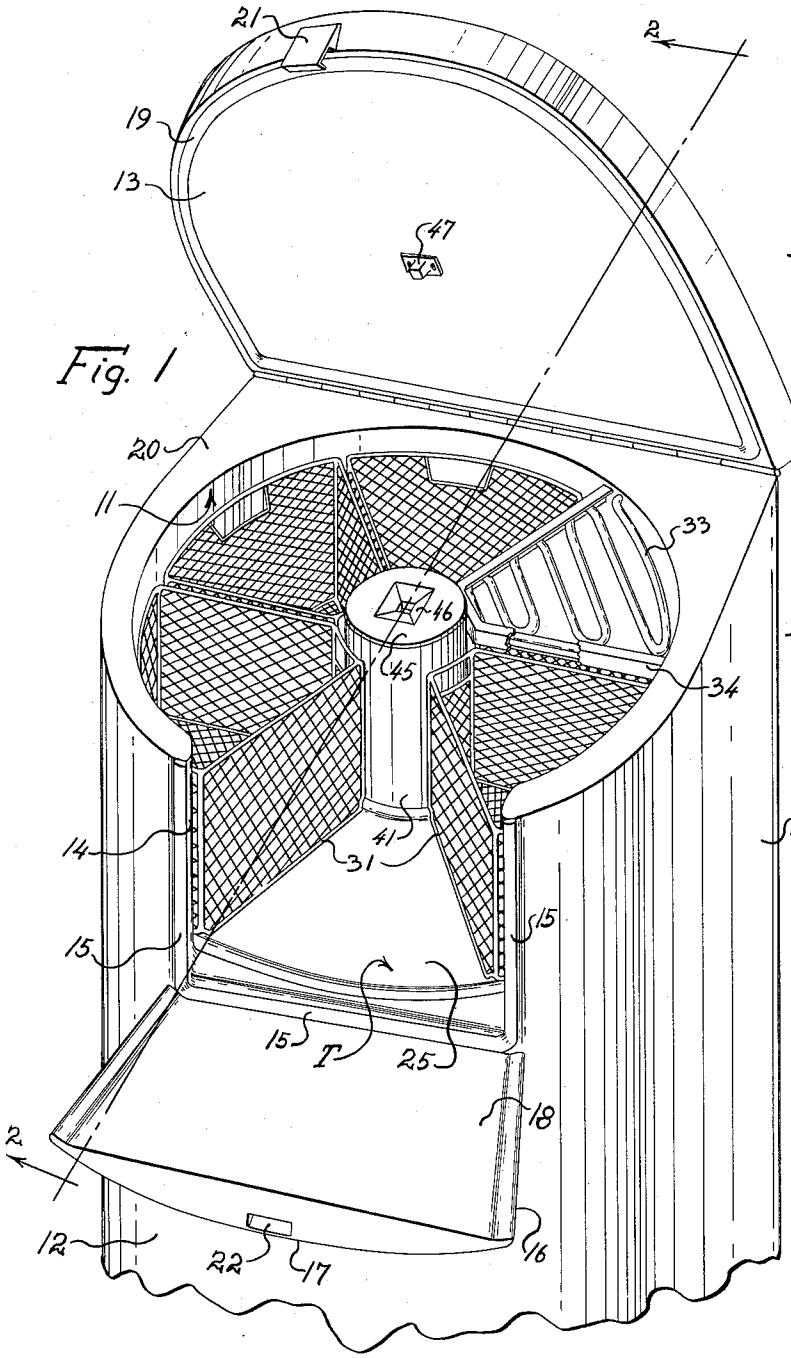


Fig. 1

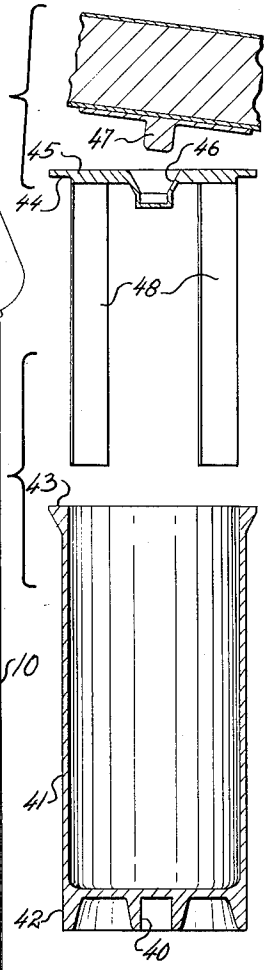


Fig. 4

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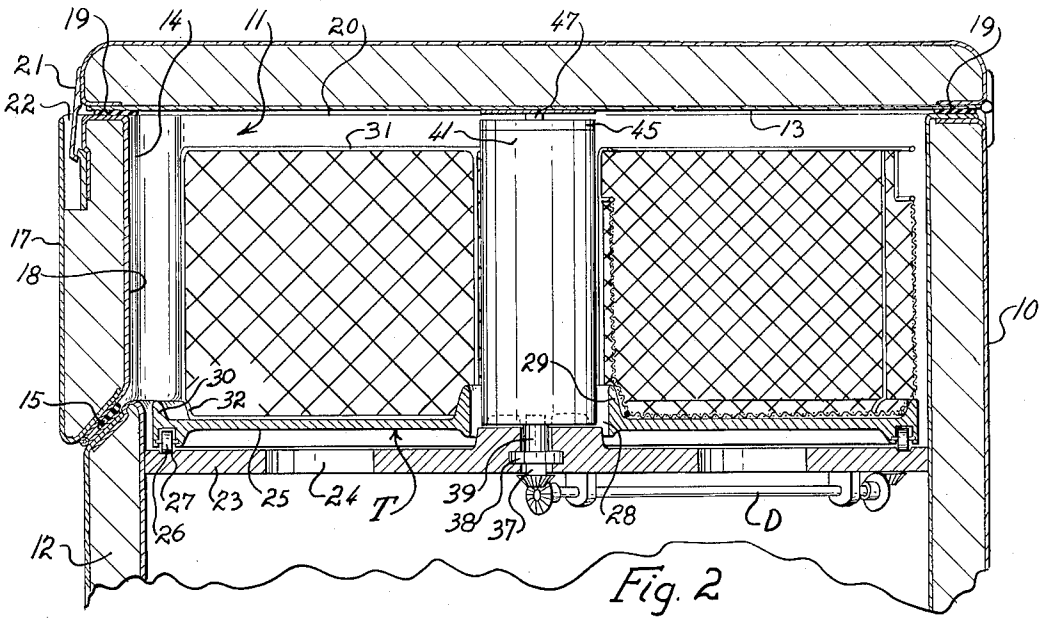


Fig. 2

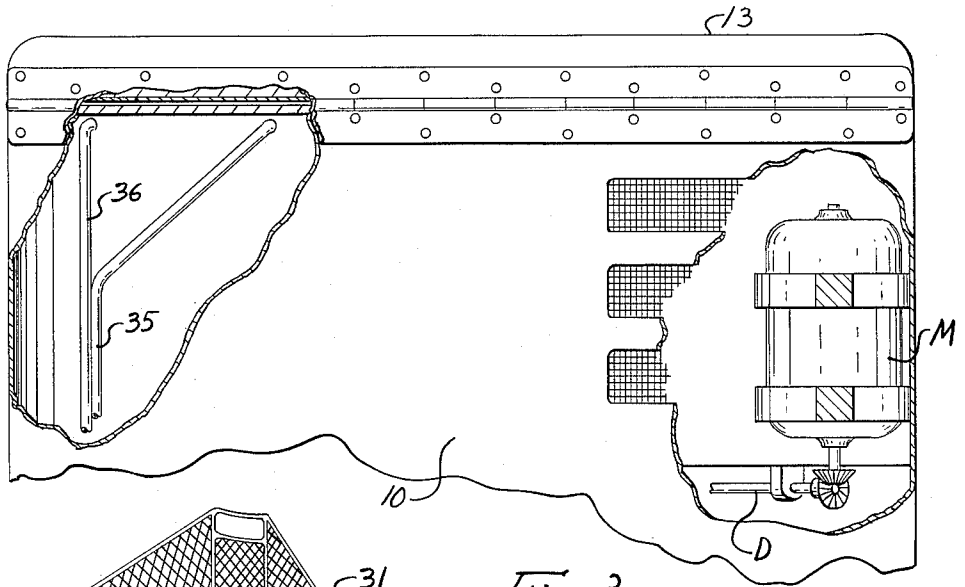


Fig. 3

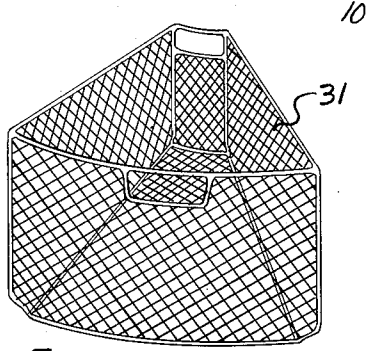


Fig 5

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COMPARTMENTED FREEZER OR REFRIGERATOR

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3 Claims. (Cl. 62—89)

This invention relates to compartmented freezers or refrigerators and more particularly to a type of refrigerator in which a maximum of space may be utilized in food treatment and storage while still preserving easy accessibility to all the food contained therein.

It is a principal object of this invention to provide for a simple and efficient refrigerating apparatus in which food may be selectively positioned for easy removal from a relatively small opening in said apparatus, for sharp cooling in proximity to a cooling element or for less drastic refrigeration remote from said cooling element.

Another object of this invention is to provide for an apparatus of the class described in which compactly arranged containers may be simultaneously shifted within a refrigerator chamber having limited space so that any of the containers may be conveniently removed from a cold-conserving opening without independently handling or removing any of the other containers, and by the same simultaneous shifting movement any one of said containers may be selectively cooled at a sharp rate or at a milder rate depending upon the position chosen.

It is a further object to provide for a removable container in space-conserving relation with other containers in a refrigeration chamber which container is adapted to make and retain frozen desserts independently of the cooling or handling of food within the other containers.

It is a still further object to provide for a unique sharp freezer having a high degree of utility and pleasing appearance which may be independently operable or may be attached for cooperative operation with a refrigerator body of normal purpose.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a perspective view of my sharp freezer device with the top and door in open position and with one of the segmented containers removed therefrom;

Fig. 2 is a cross sectional vertical view of my compartmented sharp freezer taken on the line 2—2 of Fig. 1;

Fig. 3 is a rear view of the upper portion of the sharp freezer apparatus with certain portions of the housing cut away to show internal parts;

Fig. 4 is an exploded view in vertical section of my frozen desert receptacle, the cover therefor and a segment of the freezer top with its cooperating lug in aligned position therewith; and

Fig. 5 is an individual perspective view of one of the food containers removed from the sharp freezer unit.

Referring now to the drawings and more particularly to Fig. 1 my freezing or refrigerating apparatus is surrounded by a vertical housing **10**. This housing may completely surround and define the internal refrigerating chamber **11** or may include another attached refrigeration unit not shown in full but indicated as extending from the broken line portion **12** of the housing **10**. The top of my freezer is an insulated member **13** which may comprise a hinged cover mounted so as to provide

accessibility to the internal refrigerating chamber **11** from the top thereof. Disposed in the side walls of housing **10** is a doorway **14** the peripheral edge of which is preferably furnished with a gasket **15** for cooperation with the edges of door **16** which may be hinged in adjacent relationship. The door **16** has a pleasing contour **17** at the outer surface thereof and is provided with a flat surface **18** which, when the door **16** is opened to a lateral position with respect to housing **10**, will furnish a suitable tray or table to assist in placing on and removing food from the refrigerating chamber. When the top **13** is in closed position the gasket **19** will cooperate with the top edge **20** of the housing **10**. A latch **21** may be positioned on the top **13** so as to cooperatively engage member **22** on the door **16**.

Referring now to Fig. 2 the refrigerating chamber **11** is defined at the bottom thereof by a bottom member **23** which is connected with the housing **10** at the inside walls thereof and may extend thereacross to completely isolate the chamber **11** from the lower walls **12** or may contain openings therethrough as at **24** to allow circulation of refrigerated air between the freezer refrigerating chamber **11** and the chamber below defined by lower walls **12**. Mounted for rotation and cooperatively associated with bottom **23** is a turntable mechanism T which comprises an annular tray member **25** having roller elements **26** for cooperation with grooves or tracks **27** in the bottom member **23**. Centrally thereof is an annular opening **28** which may be surrounded by an upstanding flange portion **29** for preventing accidental contact between certain relatively moving elements as will be presently described. A similar flange **30** may be disposed at the periphery of the turntable **25** for the same reasons. Segmental food holders **31**, shaped in the form of a cylindrical segment as shown in Fig. 5, may be disposed circumferentially upon the turntable **23** as shown in Fig. 1. The food holders **31** are adapted at their bottom portions **32** for engagement against flanges **29** and **30** of the turntable **25** so as to prevent accidental displacement therefrom. Disposed radially of the axis of the cylindrical refrigerating chamber **11**, and occupying a segmental portion thereof, is a cooling element **33** which is preferably positioned so as to immediately underlie the top **13** when in closed position and to overlie the top of one of said segmental food holders when it is rotated into position thereunder. The cooling element **33** may be held in position by bracket **34** which is in turn fixed to the inner wall of housing **10**. The cooling element **33** may be of ordinary tubular construction having a supply inlet **35** and a return **36** connected to a suitable source of cooling agent such as liquid coolant furnished by ordinary refrigerator compressors. The housing **10** may be circular at the fore part of the freezer apparatus and may be provided with a flat and plane back as shown in Figs. 1 and 3. Since the inner wall surface defining the refrigerating chamber **11** may be circular throughout for close clearance with the turntable **25** and the food container **31**, the resulting corner space at the rear of the freezer apparatus may be conveniently utilized for the tubes or pipes **35** and **36** as shown in Fig. 3. The opposite corner space may house a motor M connected to a driving mechanism D which is journaled underneath the bottom structure **23** for driving relation with a stub shaft **37** vertically and axially journaled in the bottom structure **23** in bearing **38**. An upper extension of stub shaft **37** terminates in a squared shank **39**. A corresponding socket **40** is axially formed at the bottom of a frozen food receptacle **41** which is preferably of cylindrical shape as shown in Figs. 1 and 4. A depending annular flange **42** may be formed at the bottom of receptacle **41** so as to make for stability when the receptacle is removed from squared shank **39** and placed

upon a flat surface outside of and independent of the freezer apparatus. The top of receptacle **41** is provided with an annular bearing surface **43** adapted to cooperate with a bearing surface **44** at the peripheral underside of receptacle cover **45**. Depending from the underside of the cover **45** are blades **48** which are adapted to scrape and agitate foods placed within receptacle **41**. Axially of the cover **45** is a socket **46** which is adapted to be held against rotation by the squared lug **47**. The side walls of the socket **46** are tapered so as to allow entrance of the lug **47** in its radial movement when the top **13** is closed upon the upper surface **20** of the housing **10**.

In the operation and use of my freezer apparatus I may place within individual food holders **31** a variety of foods requiring different refrigeration treatment and the turntable **25** may be manually rotated for the circumferential arrangement of the segmented holders. For example, the position of the turntable as shown in Fig. 1 is such that a food holder **31** may be placed upon the tray portion **18** of door **16** and conveniently slid into position to complete the circumferential arrangement of all the food holders. It is understood, of course, that in normal operation the large top **13** will remain in closed position so as to minimize transfer of heat into compartment **11** and to conserve upon the energy required during operation of the heat exchange device. When all the food holders **31** are in position upon the turntable **25**, the entire assembly may be rotated so as to bring one of the trays **31** under the cooling element **33** for sharp cooling of the contents of that particular food holder. The food in the immediately adjoining food holders will be cooled at a less sharp rate and those holders remote from the cooling element **33** will have the lowest rate of cooling. When it is desired to make a frozen food product such as ice cream, the prepared materials are placed within the receptacle **41** which is then in turn positioned centrally and in clearance with the turntable **25** so that squared socket **40** will engage the squared shank **39** of rotatable shaft **37**. Cover **45** with the blades **48** extending into the receptacle **41** is then brought into sliding and frictional engagement with the bearing surface **43** on receptacle **41**. Upon closing the cover **13** the lug **47** will retain the cover **45** against rotation. When the motor M is energized the shaft **37** will rotate together with the receptacle **41** while the blades **48** are maintained in a stationary position. As the food product is frozen the blades **48** prevent the formation of ice crystals and further serve to stir and mix the product as it is frozen. Upon completion of the manufacture of the frozen food product the container or receptacle **41** may be removed from the freezer apparatus and the frozen food product removed therefrom.

It may thus be seen that I have devised a novel and efficient refrigerating apparatus which utilizes the refrigerating space to an extremely high degree. At the same time I have not sacrificed accessibility but, on the contrary, have so improved the efficiency thereof that any of a number of food holders may be selected and completely removed from the chamber at will. By the same turning movement I may selectively apply a sharp cooling action to any of the food holders or may apply a lesser cooling effect. In addition to all this I may simultaneously manufacture a frozen product or store and retain such product in frozen condition without interfering with the rotation of my turntable but utilizing the last bit of available space within the refrigerating chamber.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of my invention.

What I claim is:

1. In compartmented freezer or refrigerating apparatus, an upstanding insulated housing defining a generally cylindrical refrigerating chamber, a cooling element within said chamber, said housing having a doorway extending through a relatively small portion of the periphery thereof, a door in said doorway, a turntable mechanism mounted substantially axially of said chamber and furnishing a supporting medium for a plurality of individual food holders, a central, substantially cylindrical food freezing receptacle removably mounted at the bottom of said cylindrical refrigerating chamber and disposed substantially coaxially thereof and a plurality of food holding receptacles of segmental shape and having a maximum width less than the width of said doorway, said segmental shaped receptacles being supportable upon said turntable mechanism in a nested relation to occupy the greater part of said chamber between said housing and said central, cylindrical receptacle and being independently and selectively removable through said doorway by appropriately swinging said turntable mechanism for alignment of a desired segmental receptacle with said doorway.

2. In freezing or refrigerating apparatus, an insulated, upstanding housing defining an enclosed refrigerating chamber and having a door for giving access to said chamber, a cooling element mounted in said chamber, said housing having a lower, fixed supporting structure, a rotary driving element extending upwardly through the medial portion of said supporting structure, a food freezing receptacle adapted to be supported from said fixed supporting structure and having an axial element at the bottom thereof for driving engagement with said rotary driving element, said freezing receptacle occupying the medial portion of said refrigerating chamber and leaving between itself and said housing a space for the support of a plurality of independent food items, said receptacle having a removable lid provided with circumferentially spaced, depending blades disposed within said receptacle and means for retaining said lid against rotative movement during the driving of said receptacle.

3. In compartmented freezing or refrigerating apparatus, an upstanding insulating housing defining a generally cylindrical refrigerating chamber, said housing having a doorway extending through a relatively small portion of the periphery thereof, a door in said doorway, a cooling element within said chamber, a fixed supporting structure at the bottom of said refrigerating chamber, a turntable mechanism mounted in rotatable contact with said fixed supporting structure and substantially axially of said chamber said mechanism furnishing a supporting medium for a plurality of individual food holders, a central, substantially cylindrical food freezing receptacle removably mounted on said fixed supporting structure and disposed substantially coaxially thereof and a plurality of food receptacles of segmental shape and having maximum width less than the width of said doorway, said segmental shaped receptacles being supportable upon said turntable mechanism in a nested relation to occupy the greater part of said chamber between said housing and said central cylindrical receptacle and being independently and selectively removable through said doorway by appropriately swinging said turntable mechanism for alignment of a desired segmental receptacle with said doorway.

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