

July 30, 1957

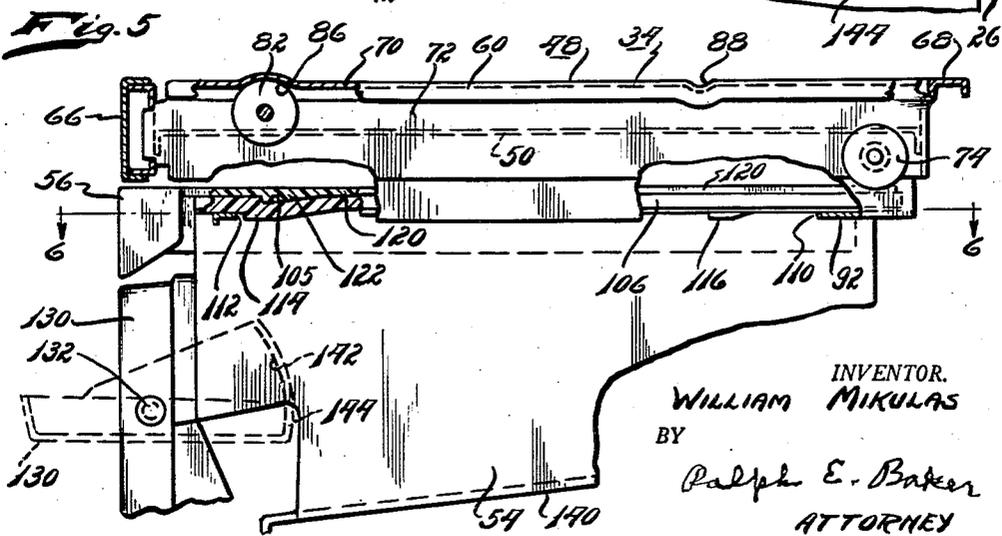
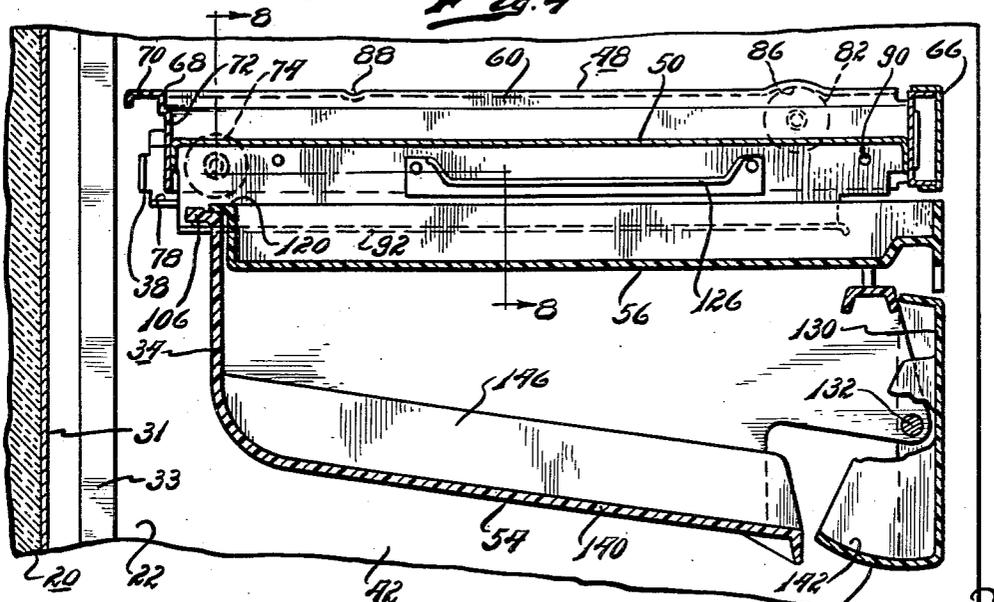
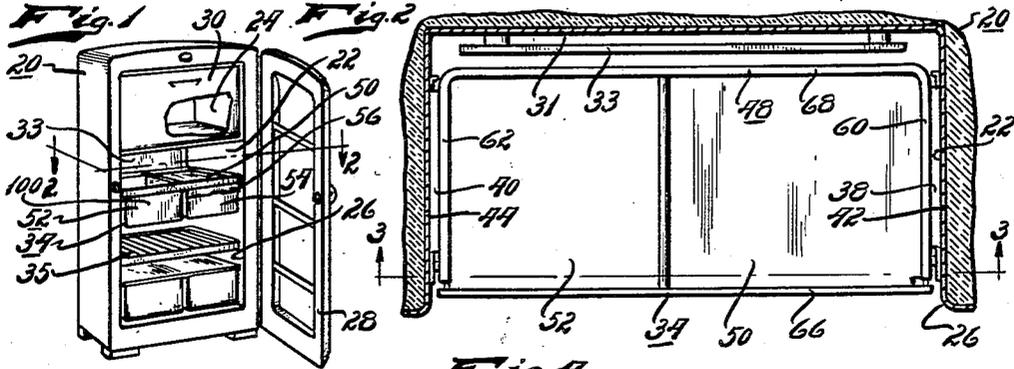
W. MIKULAS

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REFRIGERATING APPARATUS

Filed March 15, 1956

2 Sheets-Sheet 1



INVENTOR.  
 WILLIAM MIKULAS  
 BY  
 Ralph E. Baker  
 ATTORNEY

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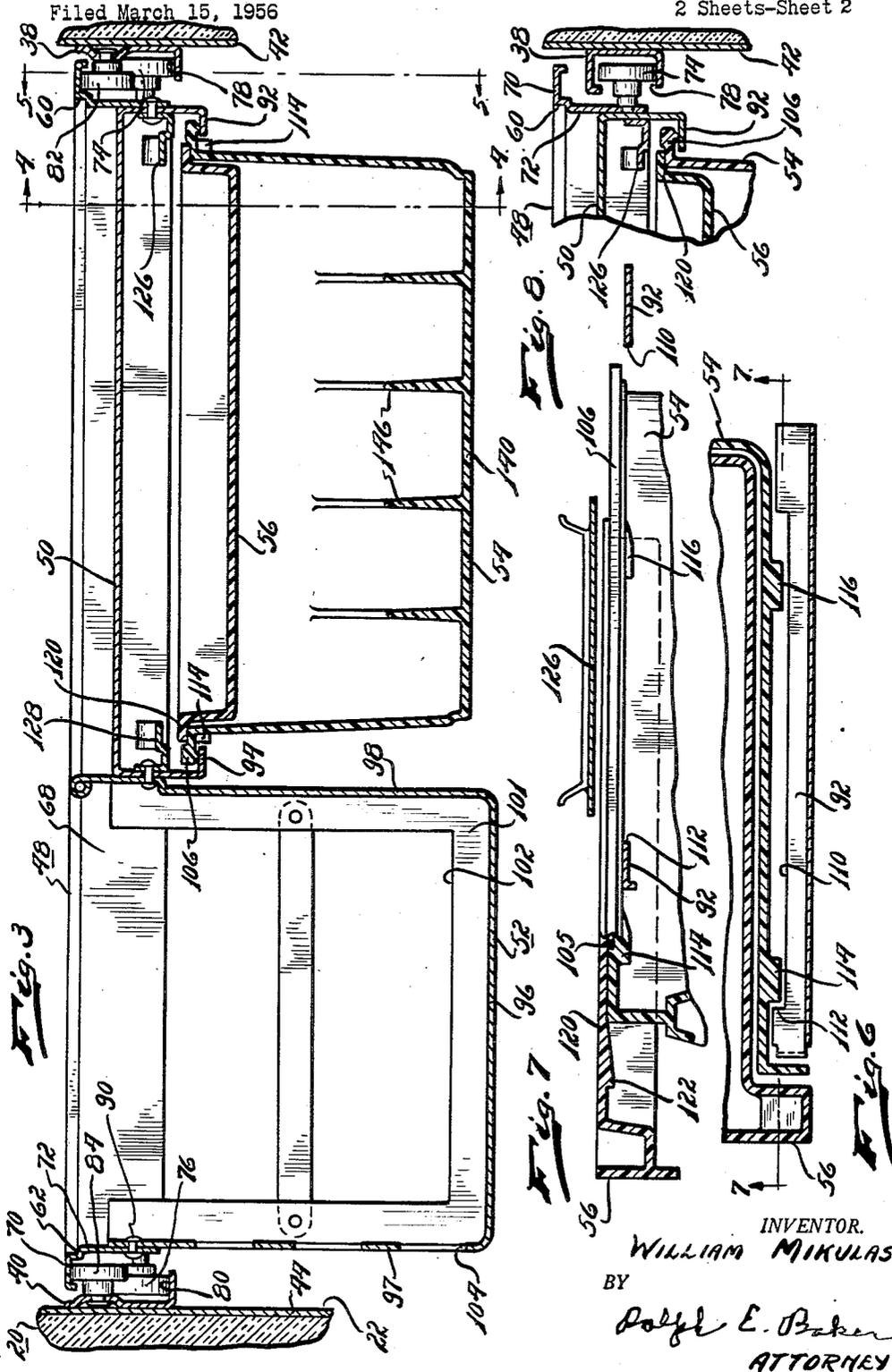
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2 Sheets-Sheet 2



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 WILLIAM MIKULAS  
 BY  
 Ralph E. Baker  
 ATTORNEY

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## REFRIGERATING APPARATUS

William Mikulas, Birmingham, Mich., assignor to American Motors Corporation, Detroit, Mich., a corporation of Maryland

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4 Claims. (Cl. 312—301)

This invention relates generally to refrigerating apparatus and more particularly to a shelf supporting arrangement for use in such apparatus.

It is an object of the present invention to provide an improved shelf arrangement for refrigerator cabinets whereby various articles may be segregated from other articles in a convenient manner and to which access may be had without disturbing the arrangement of the other stored articles.

Another object of the present arrangement is to provide a refrigerated compartment with an improved shelf arrangement having a shallow and a deep portion for storage of articles and dependently supported thereby is a pair of nested slideably arranged trays or receptacles whereby one is arranged to receive, store and dispense articles, such as eggs, in an orderly arrangement.

Another object of the present invention is to provide a storage arrangement for a refrigerated compartment having sections which may be individually retracted from the other sections or all of the sections may be locked relative to each other and retracted from the compartment as a unit.

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 perspective illustration of a refrigerator embodying features of my invention;

Fig. 2 is a top plan view of the present invention taken along line 2—2 of Fig. 1;

Fig. 3 is a view in cross section taken along the line 3—3 of Fig. 2;

Fig. 4 is a view in cross section taken along the line 4—4 of Fig. 3;

Fig. 5 is a view in cross section taken along the line 5—5 of Fig. 3 and showing portions broken away;

Fig. 6 is a fragmentary view in cross section taken along the line 6—6 of Fig. 5;

Fig. 7 is a fragmentary view in cross section taken along the line 7—7 of Fig. 6; and

Fig. 8 is a fragmentary view in cross section taken along the line 8—8 of Fig. 4.

Referring to the drawing there is shown a refrigerator cabinet 20 having food storage compartments 22 and 24 to which access is had in a normal manner through an access opening 26 closed by a door 28. An inner door 30 is hingedly mounted to permit access to the compartment 24 which is preferably insulated from the compartment 22. Positioned in the compartment 22, adjacent the rear wall 31, is a flat plate type evaporator 33 for the cooling of the air circulating thereover to maintain the compartment 22 at a temperature several degrees above freezing, and a second evaporator (not shown) is positioned in the compartment 24 to maintain the temperature therein considerably below freezing for the storage of frozen foods and the like. The evaporators are suitably interconnected in any well known manner to a

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refrigerant liquifying unit comprising compressor and condenser (not shown) for the circulation of refrigerant therethrough.

Shown in the compartment 22 is my improved shelf unit arrangement 34 together with other shelves 35 which are supported in the compartment in any suitable manner. The shelf unit 34 is slideably supported on shelf supporting rails 38 and 40 mounted in opposed relation to respective side walls 42 and 44 of the compartment 22. The shelf unit 34 comprises a frame structure 48 supporting a shelf section 50, an adjoining offset shelf section or receptacle 52 and a pair of nested trays or receptacles 54 and 56.

The frame structure 48 is arranged as an open rectangular frame having opposed parallel sides 60 and 62 joined by a front cross member 66 and a rear cross member 68. The rear cross member 68 and the sides 60 and 62 are formed from a single continuous inverted L-shaped member having a top wall section 70 and a depending wall section 72. Rollers 74 and 76 are journaled to each wall section 72 of each side 60 and 62 of the frame adjacent the rear portion thereof and are adapted to engage in respective tracks 78 and 80 formed by the supporting rails 38 and 40 respectively. The tracks 78 and 80 extend forwardly to terminate adjacent rollers 82 and 84 journaled in the respective rails. The top wall section 70 of each side 60 and 62 are adapted to rest and move upon the respective rollers 82 and 84 to support the shelf unit at its forward end and to guide it as it is pulled outwardly of the compartment, whereas the rollers 74 and 76, guided in the tracks 78 and 80, provide support at the rear portion of the shelf unit. To prevent undesirable movement, or roll out of the shelf unit the top wall sections are formed with indentations 86 in which a respective roller 82 and 84 is adapted to rest when the shelf unit is fully retracted into the compartment. Stop indentations 88 are also formed in each top wall section to abut against the rollers 82 and 84 to limit the outward roll-out movement of the shelf unit.

The shelf section 50 and the adjoining off-set shelf section 52 are secured together along their adjoining sides and the other sides of the shelves are secured to the frame structure 48 preferably by rivets 90 to the depending wall section 72. The shelf section 50 is formed of an imperforate sheet having two of its opposed sides bent to extend downwardly a distance and then bent inwardly to extend towards each other to form guide rails 92 and 94. The off-set shelf section 52 is formed as a receptacle having bottom wall 96 and opposed side walls 97 and 98 a front wall 100, and a rear wall 101. The walls 97, 100 and 101 extend upwardly to be secured to the frame structure while the side wall 98 extends upwardly to be secured to the shelf section. The rear wall 101 is formed with an enlarged opening 102 to permit air cooled by the evaporator 33 to enter and cool the articles stored therein. Cooled air may also circulate through openings 104 formed in the side wall 97.

The tray or receptacle 54 is formed with an open top around which extends an outwardly extended flange 106 adapted to rest upon the guide rails 92 and 94 for dependently supporting the receptacle beneath the shelf section 50. The receptacle 54 is arranged to slide outwardly on the guide rails and to prevent undesirable forward sliding or movement thereof each rail 92 and 94 is formed with a cut out or recess section 110 forming an abutment edge 112 against which is adapted to engage a respective projection 114. The projections 114 are formed integrally with the flange 106 and extend downwardly therefrom to be received in the recesses 110 and aligned to abut against the edge 112. The projections 114 project slightly below the guide rails so as to permit the receptacle to be lifted allowing the bottom edge of the projec-

tion to rest and ride upon the surface of the guide rail permitting the receptacle to be drawn outwardly of the compartment. A second projection 116 placed rearwardly of projection 114 beneath the flange 106 serves to limit the outward sliding movement of the receptacle by its engagement with the abutment edge 112. Lifting the receptacle to disengage projection 114 from edge 112 permits the full removal of the receptacle from the compartment 22.

The tray is formed with a peripherally extended outwardly formed flange 120 adapted to rest upon the top surface of the flange 106 for dependingly supporting the tray 56 in a nested relation within the receptacle 54. The tray 56 is of shallower depth than the receptacle 54 and is slideable on its flange 120 outwardly from the receptacle 54. To prevent undesirable sliding or movement of the tray 56 there is provided a notch 105 recessed in the top surface of the flange 106 adapted to receive a projection 122 carried on the underside of the flange 120. A lifting of the tray 56 will disengage the projection 122 from the notch to permit an outward sliding movement of the tray.

To prevent undue forward tilting action of the tray 56 and receptacle 54, as they are independently or as a unit slid outwardly on their guides, there is provided guard rails 126 and 128 secured spatially above the guide rails 92 and 94 against which frictionally engage the rear portion of the tray and receptacle limiting its upward tilting action.

The receptacle 54 is formed with an open front end provided with a swingable closure member 130 pivotally mounted by pins 132 journaled in lugs extending forwardly from the side walls of the receptacle. The closure member 130 extends from adjacent the bottom wall of the receptacle upwardly to adjacent the bottom edge of the front wall of the nested tray 56, and extends the full width of the receptacle's open front. The closure member 130 is provided with a dispensing arrangement for dispensing one or more articles simultaneously that are stored in the receptacle 54. The bottom wall 140 of the receptacle is inclined downwardly towards its forward edge to permit delivery of articles therein by gravity to a cup shaped section 142 formed on the rear side of the closure member. When the closure member is pivoted it will swing the cup section 142 upwardly giving ready access to the carried article or articles for ready removal therefrom. The bottom wall 144 of the closure member serves as a gate when the closure member is swung to horizontal position to control feeding of the articles thereto. Vertical positioned walls 146 extend upwardly from the bottom wall 140 to segregate and provide individual guideways for the articles.

While the receptacle 54 is shown and described having a dispensing arrangement it may, if desired, be a receptacle with a horizontally level bottom having a swinging closure member swingable either upwardly or downwardly without the cup shaped section.

From the foregoing it will now be understood that there is provided a shelf arrangement wherein the entire unit may be rolled outwardly of the cabinet to permit ready access thereto, or the tray 56 and the receptacle 54 may be individually or as a unit withdrawn. Further the nested tray 56 serves as a cover for the receptacle 54 and the shelf section 50 serves as a cover for the nested tray 56. The receptacle 54 is ideal for the storage of fragile articles of food, such as eggs, whereas the shallow tray 56 becomes ideal for meats, such as bacon and the like. The shelf section 50 is arranged for general storage while the adjacent offset section 52 is formed as a receptacle for tall bottles to prevent their toppling over and falling off as the shelf unit is rolled inwardly or outwardly of the compartment.

Although only a preferred form of the invention has been illustrated, and that form described in detail, it will be apparent to those skilled in the art that various modifications may be made therein without departing from the

spirit of the invention or from the scope of the appended claims.

I claim:

1. A refrigerator comprising in combination, a cabinet having a plurality of walls defining a food storage compartment therein, a shelf supporting rail carried by each opposed upright side wall of said compartment, a shelf unit extending between said supporting rails for slidably support thereby, said shelf unit comprising a flat imperforate member and an adjoining receptacle joined therewith, guide rails in opposed relation carried on the underside of said flat member, a tray slidably supported on said guide rails, an additional tray of lesser depth than said first tray nested on said first tray, said first tray being provided with an open end for removal therethrough of said additional nested tray, a closure means for said opening swingably mounted to said first tray for access to said tray, a frame member extending peripherally about said joined imperforate flat member and receptacle and secured therewith, and said frame member having opposed sides adapted to be slideably supported by said shelf supporting rails.

2. A refrigerator comprising in combination, a cabinet having a plurality of walls defining a food storage compartment therein, a shelf supporting rail carried by each opposed upright side wall of said compartment, a shelf unit extending between said shelf supporting rails and slideably supported thereby, said shelf unit comprising a flat imperforate member and an adjoining receptacle secured therewith, a pair of guide rails in opposed relation secured to the underside of the flat imperforate member, a tray slideably supported on said guide rails, a recess formed in each of said guide rails, a locking means formed on said tray adapted to engage in said recess to prevent sliding of said tray on said guide rails until disengaged therefrom, said tray having an open end, an additional tray nested on said first tray and adapted for insertion and withdrawal therefrom through said opening, a closure means carried by said tray cooperating with a closure means carried by said first tray for closing said open end, said second mentioned closure means pivotally mounted to said first tray, a frame member extending peripherally about said joined imperforate member and receptacle and secured therewith, and said frame member having opposed sides adapted to be slidably supported by said shelf supporting rails.

3. A refrigerator comprising in combination, a cabinet having a plurality of walls defining a food storage compartment therein, a shelf supporting rail carried by each opposed upright wall of said compartment in spaced relation from the bottom wall, a frame member having opposed parallel sides adapted to cooperatively engage with said shelf supporting means, a shelf unit carried by said frame member, said shelf unit comprising an imperforate member having an upper horizontally extended main body portion and a lower offset parallel portion adjacent thereto and joined therewith by a vertically extended wall portion, a pair of guide rails in opposed relation carried by and below said main body portion a spatial distance therefrom, recesses formed in said guide rails, a receptacle dependingly supported from said guide rails, projections formed on said receptacle adapted to engage in said recesses to limit movement of said receptacle on said guide rails, said projections disengageable from said recess upon an upward lifting action of said receptacle, said receptacle having an open end, a tray adapted to nest upon said receptacle, means for interlocking said tray and said receptacle, and a closure means for said open end pivotally mounted to said receptacle.

4. A refrigerator comprising in combination, a cabinet having a plurality of walls defining a food storage compartment therein, a shelf supporting rail carried by each opposed upright wall of said compartment in spaced

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relation from the bottom wall, a frame member having opposed parallel sides adapted to cooperatively engage with said shelf supporting means, a shelf unit carried by said frame member, said shelf unit comprising an imperforate member having an upper horizontally extended main body portion and a lower offset parallel portion adjacent thereto and joined therewith by a vertically extended wall portion, a pair of guide rails in opposed relation carried by and below said main body portion a spatial distance therefrom, recesses formed in said guide rails, a receptacle dependently supported from said guide rails, projections formed on said receptacle adapted to engage in said recesses to limit movement of said receptacle on said guide rails, said projections disengageable from said recess upon an upward lifting action of

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said receptacle, said receptacle having an open end, a tray adapted to rest upon said receptacle, means for interlocking said tray and said receptacle, said means disengageable by a slight lifting movement of said tray, said tray withdrawable from said receptacle through said opening, a closure means for closing said opening excluding the portion occupied by said tray, and said closure means pivotally mounted to said receptacle.

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