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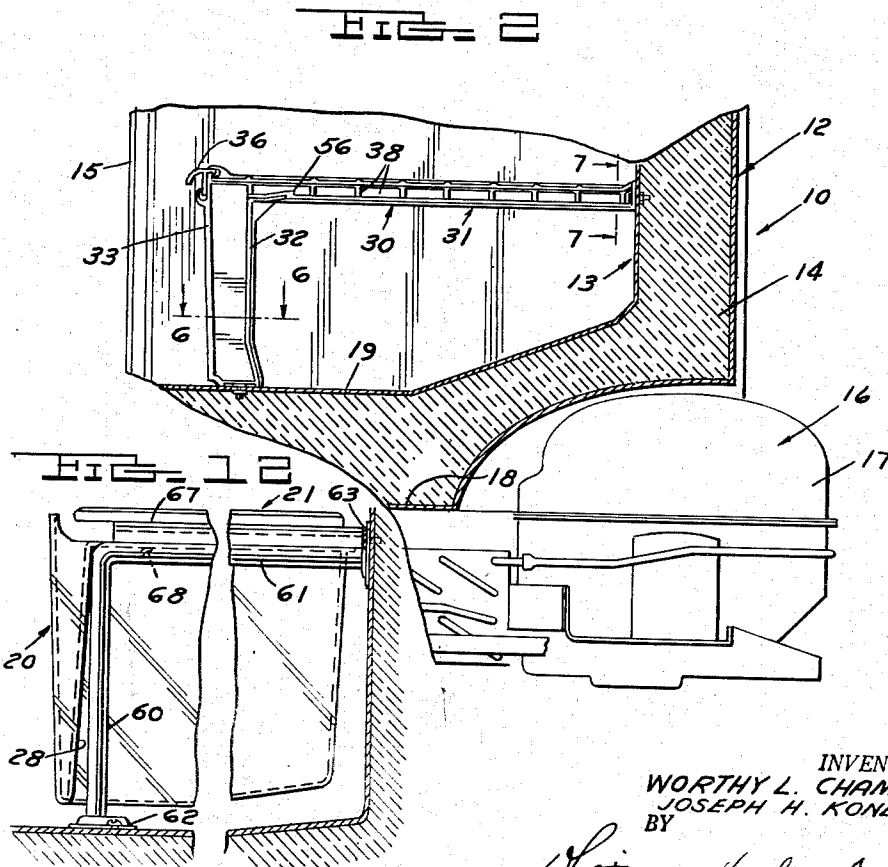
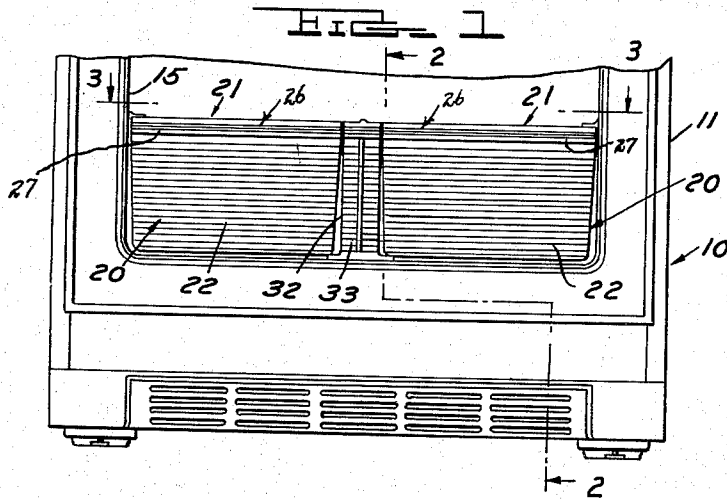
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REFRIGERATOR SHELF MOUNTING STRUCTURE

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REFRIGERATOR SHELF MOUNTING
STRUCTURE

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This invention relates generally to refrigerator structures, and refers more particularly to improvements in mountings for shelves, crisper pans or other containers.

It is one of the objects of this invention to provide a mounting structure composed of a relatively few simple parts capable of being inexpensively manufactured and installed within the storage compartment of a refrigerator cabinet to support shelves and/or containers in a manner such as to enable the latter to be readily removed from and inserted into the storage compartment through the usual access opening.

It is another object of this invention to provide a retaining rail substantially channel shaped in cross section for receiving a part, such for example as a shelf, to be supported within the storage compartment of a refrigerator, and having means coacting with means on said part to hold the latter against lateral shifting movement relative to the rail.

It is still another object of this invention to provide a pair of rails arranged in superposed seating relationship for independently supporting an open top container and a shelf or closure panel above the open top of the container.

It is a further object of this invention to provide a construction of the above general type wherein the bottom container supporting rail is secured in place by fastener elements and wherein the top shelf retaining rail is positioned in seating engagement with the bottom rail by cooperating engaging means on the rails. Thus the shelf retaining rail is held in place on the container supporting rail without the use of separate fastening means, and may be readily removed by merely lifting the shelf off the container supporting rail.

The foregoing as well as other objects will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a fragmentary front elevational view of a refrigerator cabinet with the door removed and showing containers or crisper pans supported at the bottom of the storage compartment;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a sectional view taken on the line 4—4 of Figure 3;

Figure 5 is an enlarged cross sectional view showing the mounting structure embodying the features of this invention;

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Figure 6 is a sectional view taken on the line 6—6 of Figure 2;

Figure 7 is a sectional view taken on the line 7—7 of Figure 2;

Figure 8 is a perspective view of one of the containers or crisper pans;

Figure 9 is a sectional view taken on the line 9—9 of Figure 4;

Figure 10 is a sectional view taken on the line 10—10 of Figure 4;

Figure 11 is a fragmentary sectional view of a modified form of construction; and

Figure 12 is a side elevational view of the construction shown in Figure 11.

Referring to the embodiment of the invention shown in Figures 1 to 10 inclusive, it will be noted that the numeral 10 designates a refrigerator having a cabinet 11 comprising an outer shell 12, an inner shell 13 and suitable insulating material 14 housed in the space provided between the shells. The inner shell 13 defines a storage compartment and has an opening through the front wall which registers with an opening in the front wall of the outer shell 12 to provide an access opening 15 to the storage compartment. In accordance with conventional practice the access opening 15 is closed by a door (not shown) suitably hinged along one side edge to the adjacent side of the cabinet 11. The storage compartment is refrigerated by the usual apparatus shown in part in Figure 2 of the drawings and designated by the numeral 16. The part 16 of the refrigerating apparatus comprises a motor-compressor unit 17 suitably supported in the rear of the cabinet 11 below the outer shell 12. The bottom wall 18 of the outer shell 12 is bowed upwardly adjacent the rear edge thereof to provide ample clearance for the motor-compressor unit 17 and the bottom wall 19 of the inner shell is inclined in an upward direction to afford ample clearance above the bowed portion for insulation.

Supported in the storage compartment at the bottom of the latter is a pair of containers in the form of crisper pans 20 open at the top. The pans 20 are supported in lateral spaced side by side relationship, and the open top portions thereof are respectively closed by panels 21 independently supported directly above the respective pans 20. The panels 21 also serve as shelves in the storage compartment, and are preferably formed of glass or some equivalent transparent material. The pans 20 are identical in construction and may be formed of any suitable material. In the present instance the pans 20 are shown as formed of a plastic or plastic composition; and each pan has integral front,

rear, side and bottom walls 22, 23, 24 and 25 respectively. The front walls 22 of the pans are ribbed transversely, and are suitably fashioned at the upper edges to accommodate trim moldings 26. The trim moldings 26 are fashioned with forwardly and downwardly curved flanges 27 which serve as handles for the pans.

The opposite side walls 24 of each pan are offset laterally inwardly as at 28 to reduce the width of the pans and the offset portions are turned laterally outwardly at the top of the walls 24 to form flanges 29 having a width approximating the extent to which the side walls are offset. The bottom wall 25 of each pan 20 is inclined upwardly from a point intermediate the ends of the pan to afford clearance for the upwardly inclined part of the bottom wall 19 of the inner shell 13. Positioned between adjacent side walls 24 of the crisper pans 20 is a guide 30 which may be formed in any suitable manner from various materials. Particularly satisfactory results have been obtained by forming the guide 30 of molded plastic. In any case the guide 30 comprises a horizontal section 31 and a vertical section or post 32 at one end of the section 31. In assembly the post 32 is positioned between the crisper pans 20 at the front ends of the latter, and is fashioned with a front wall 33 which forms in appearance a continuation of the front walls 22 of the pans 20 when the latter are in their rearwardmost positions in the storage compartment. In this connection it is to be noted that the wall 33 on the post is transversely ribbed to correspond with the ribbing on the front walls 22 of the pans 20. The bottom of the post has attaching lugs 34 which are secured to the bottom wall 19 of the inner shell 13 by suitable fastener elements 35. The upper end of the post 32 is fashioned to accommodate a molding trim strip 36 identical in shape to the molding trim strips 26 provided on the pans 20.

The horizontal section 31 of the guide is provided with vertically spaced supports 37 integrally connected by transverse and longitudinal ribs 38. As shown in Figure 7 of the drawings, the transverse ribs 38 terminate short of the opposite sides of the supports 37, and provide laterally opening channels 39 for respectively slidably receiving the flanges 29 on adjacent side walls 24 of the pans 20. The rear end of the horizontal section 31 has attaching ears 40, and the latter are secured to the rear wall of the inner shell 13 by fastener elements 41. As shown in Figure 4 of the drawings the elevation of the horizontal section 31 is such that the channels 39 cooperate with the flanges 29 on the pans to support the latter with the bottom walls 25 spaced vertically above the bottom wall 19 of the inner shell 13. It will also be noted that the opposite side edges of the top support 37 on the horizontal section 31 provide seats for supporting the adjacent edges of the glass panels or shelves 21.

The outer edges of the glass panels 21 and the corresponding side edges of the pans 20 are respectively supported by rails 42 and 43. As shown in Figure 5 of the drawings, the rails 42 and 43 are channel shaped in cross section, and the top rails 42 are seated on the top surfaces of the guide rails 43. Both rails extend rearwardly from the access opening 15 in the cabinet along the inner surfaces of opposite side walls of the inner shell 13, and are arranged with the channels opening laterally inwardly. The bottom guide rails 43 respectively slidably receive the adjacent flanges 29 on the pans 20, and the base

portions 44 of the guide rails 43 are secured to the adjacent side walls of the inner shell 13 by fastener elements 45. The top rails 42 respectively receive the adjacent marginal edges of the glass panels and serve as retainer strips for the glass panels. It will be noted from Figure 5 of the drawings that suitable lips 46 and 47 extend laterally outwardly from opposite sides of the base portions 44 of the retainer rails 42. The lips 46 respectively intimately engage adjacent side walls of the inner shell 13 to provide a fluid-tight seal, and the lips 47 project into recesses 49. The recesses 49 are fashioned by undercutting the base portions 44 of the bottom rails 43 along the top edges of the base portions, so that when the rails 43 are secured in place by the fastener elements 45, the undercut portions coast with the adjacent walls of the inner shell to provide the recesses 49.

The rails 43 may be formed of any suitable material, such as plastic or plastic compositions and possess the requisite strength to effectively support the pans 20 and shelves 21. The shelf retainer rails 42 are formed of a flexible resilient material, such for example, as extruded plastic and the flanges of the retainer rails yieldably grip the adjacent marginal edges of the shelves 21. The retainer rails 42 are assembled on the outer marginal edges of the shelves 21 before the shelves are installed in the storage compartment, and the bottom flanges of the channel-shaped retainer rails 42 respectively rest on the top flanges of the pan supporting rails 43. As stated above the depending lips 47 on the retainer rails 42 extend into the recesses 49, and the upstanding lips 46 respectively yieldably engage the inner sides of the storage compartment to provide a fluid-tight seal. It will be noted from the above that lateral shifting of the shelves and retainer rails 42 relative to the supporting rails 43 is prevented by engagement of the lips 47 in the recesses 49. However, the shelves 21, together with the retainer rails 42 may be readily removed by merely lifting the shelves off the supporting rails 43. Thus the shelves 21 and crisper pans 20 may be inserted into and removed from the storage chamber independently of one another.

The top surfaces of the shelves or glass panels 21 are formed with laterally spaced longitudinally extending ribs 50. The top flanges of the retainer rails 42 are in turn formed with longitudinally extending grooves 51 in the inner surfaces thereof for respectively receiving the adjacent ribs 50 on the glass panels 21. It follows from the above that the glass panels 21 are held against shifting movement laterally with respect to the retainer rails 42 by the interlocking engagement between the ribs 50 and grooves 51.

Upon reference to Figure 10 of the drawings, it will be noted that the glass panels 21 are positioned fore and aft of the retainer rails 42 by projections 53 respectively extending upwardly from the top flanges of the guide rails 43 at opposite ends of the latter. The projections 53 at the front ends of the guide rails 43 are especially important in that they prevent accidental displacement of the glass shelves and retainer rails 42 in an outward direction relative to the supporting rails 43. However, the glass shelves 21 together with the retainer rails 42 may be removed when desired by merely moving the same vertically relative to the supporting rails 43.

In order to prevent accidental disengagement

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of the crisper pans 20 from their respective guides, it will be noted that each crisper pan is fashioned with a stop or projection 54 at opposite sides thereof. The stops 54 project downwardly from the flanges 29 adjacent the rear ends of the crisper pans, and respectively engage stops 55 formed on the bottom flanges of the guide rails 43. Similar stops 56 may be provided on the bottom support 39 of the guide 30, if desired. In this connection attention is again called to Figure 5 of the drawings, wherein it will be noted that the width of the channels formed by the guides 43 is sufficiently greater than the elevation of the stops 55 to enable lifting the pans 20 the required distance to clear the stops 55 when it is desired to completely remove the pans from the storage compartment. A similar distance is provided between the supports 37 of the central guide 30 so that clearance is provided between the stops 54 and the stops 55, 56 when the pans are raised to remove the same from the storage compartment.

In some instances it is desirable to eliminate one of the crisper pans 20 and associated shelf or panel 21 so that a storage space of substantial height may be provided in the storage compartment of the refrigerator cabinet. With this in view reference is made to Figures 11 and 12, wherein it will be noted that provision is made for mounting a single crisper pan in the storage compartment adjacent one side wall of the latter. The outer flange 29 on the crisper pan and the adjacent marginal edge of the associated glass panel or shelf 21 are independently supported in the same manner previously described in connection with Figure 5 of the drawings, and the same reference numerals are used to indicate corresponding parts. The central support for the crisper pan 20 and associated glass panel 21 is somewhat different, however, since it is not necessary to make provision for supporting a second crisper pan thereon.

As shown in Figures 11 and 12 the central support comprises a vertical post 60 and a horizontal section 61 projecting rearwardly from the top of the post. The post 60 is positioned to the rear of the offset portion 28 on the adjacent side of the pan 20 and is secured at the lower end to the bottom wall 19 of the inner shell 13 by a bracket 62. The horizontal section 61 projects rearwardly from the post 60 and is secured to the rear wall of the inner shell by a suitable bracket 63. As shown particularly in Figure 11 of the drawings, the horizontal section has an upwardly extending rib 64 intermediate the opposite side edges thereof, and this rib is turned laterally to form a flange 65. The flange 65 cooperates with the top wall of the horizontal section 61 to form a guide channel 66 into which the adjacent flange 29 on the pan extends. The top of the flange 65 has laterally spaced longitudinally extending ribs 67, which serve as bearing surfaces for supporting the adjacent marginal edge of the glass panel 21. If desired suitable stops 68 may be provided on the horizontal section 61 adjacent the front end of the latter for engagement with the stops 54 on the pan to limit outward movement of the pan.

What we claim as our invention is:

1. In a refrigerator, a cabinet having a storage compartment and having an access opening registering with the storage compartment, a panel member extending transversely of the storage compartment, a retainer rail member carried by the panel member and extending along one mar-

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ginal edge of the panel member, said retainer rail member having vertically spaced resilient flanges respectively engaging opposite sides of the panel member adjacent said marginal edge and frictionally gripping the panel member to secure the retainer rail member in assembled relationship with the panel member, a rib on one of the members extending in the direction of length of the retainer rail member and engageable in a groove in the other of said members to hold the latter against relative lateral shifting movement, a container guide rail forming a seat for the retainer rail and secured to the adjacent wall of the cabinet beneath the retainer rail, and cooperating interengaging means on the rails releasable upon lifting the panel together with the retainer rail relative to the guide rail.

2. In a refrigerator, a cabinet having a storage compartment and having an access opening registering with the storage compartment, a panel extending transversely of the storage compartment, a retainer rail carried by the panel and respectively extending along one side edge of the panel, said retainer rail having vertically spaced resilient flanges respectively engaging opposite sides of the panel and frictionally gripping the panel therebetween to secure the retainer rail in assembled relationship with the panel, a rib projecting from one side of the panel in a position to engage in a groove in the adjacent flange of the retainer rail to hold the latter and panel against lateral shifting movement, and a supporting rail secured to the inner side of the cabinet in a position below the retainer rail for engagement by the retainer rail to support the latter and adjacent edge of the panel within the cabinet.

3. The structure defined in claim 2 wherein the supporting rail has a vertical shoulder cooperating with the adjacent side of the cabinet to provide an upwardly opening groove and wherein the retainer rail has a depending lip engageable in said groove to hold the retainer rail in assembled relationship with the supporting rail.

4. The structure defined in claim 3 wherein the retainer rail has a resilient lip engageable with adjacent side of the cabinet for urging the depending lip on said retainer rail laterally inwardly into frictional contact with said shoulder.

5. In a refrigerator, a cabinet having a refrigerated storage compartment and having an access opening in the front wall registering with the storage compartment, a guide rail in the storage compartment extending rearwardly from the access opening and secured to the adjacent side wall of the compartment, said guide rail having vertically spaced flanges projecting inwardly from said adjacent wall and extending lengthwise of the guide rail, a shelf in the storage compartment above the guide rail, a retainer rail extending along the marginal edge of the shelf adjacent the guide rail and having vertically spaced resilient flanges cooperating with one another to grip the shelf therebetween, the bottom flange on the retainer rail having a seating engagement with the top flange on the guide rail, and cooperating interengaging means on said rails preventing relative lateral shifting movement of the rails and disengageable upon raising the shelf together with the retainer rail upwardly relative to the guide rail.

6. The structure defined in claim 5 wherein the cooperating interengaging means comprises a lip depending from the retainer rail and a vertical

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shoulder on the guide rail engaged by the inner side of said lip.

7. The structure defined in claim 6 wherein the retainer rail has an upwardly projecting resilient lip yieldably engageable with the adjacent side of the storage compartment and cooperating with said side to urge the depending lip on the retainer rail inwardly into frictional contact with said shoulder on the guide rail.

8. The structure defined in claim 7 wherein the upwardly projecting lip on the retainer rail extends for substantially the full length of the retainer rail and forms a seal between the shelf and adjacent side of the storage compartment, and wherein the lip on the retainer rail is disengageable from the shoulder on the guide rail upon lifting the shelf together with the retainer rail relative to the guide rail.

9. In a refrigerator, a cabinet having a refrigerated storage compartment and having an access opening in the front wall registering with the storage compartment, a guide rail in the storage compartment extending rearwardly from the access opening and secured to the adjacent side wall of the compartment, said guide rail having vertically spaced flanges projecting inwardly from said adjacent wall and extending lengthwise of the guide rail, a shelf in the storage compartment above the guide rail, a retainer

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5 rail extending along the marginal edge of the shelf adjacent the guide rail and having vertically spaced resilient flanges cooperating with one another to grip the shelf therebetween, the bottom flange on the retainer rail having a seating engagement with the top flange on the guide rail, means at the top of the guide rail cooperating with the adjacent side of the storage compartment to form an upwardly opening groove extending lengthwise of the guide rail, and a lip depending from the retainer rail into the groove and releasable from said groove upon lifting the shelf together with the retainer rail relative to the guide rail.

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