

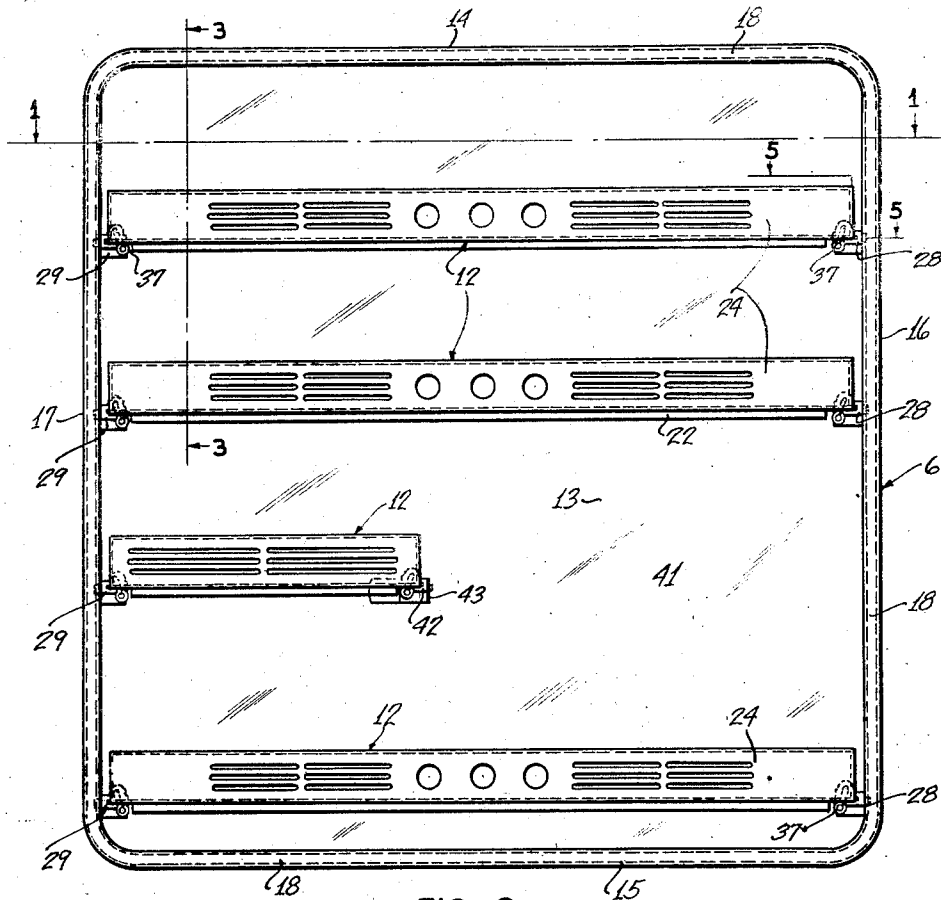
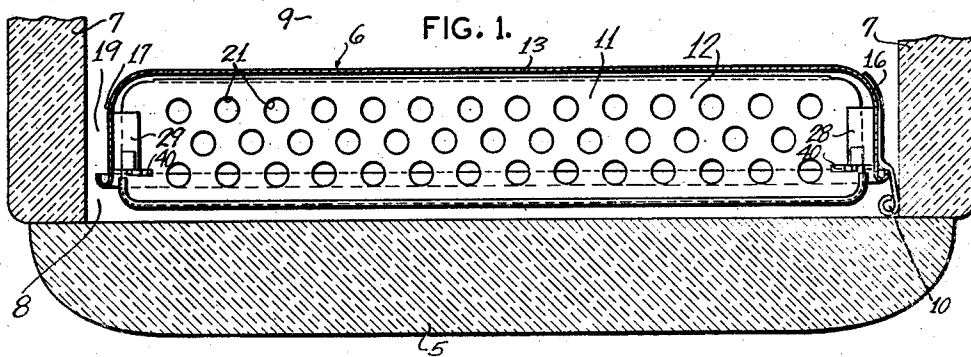
May 14, 1940.

F. D. PELTIER ET AL
SHELF AND SUPPORTS THEREFOR

2,201,114

Filed May 28, 1938

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

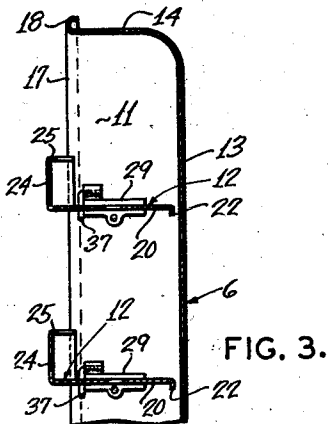


FIG. 3.

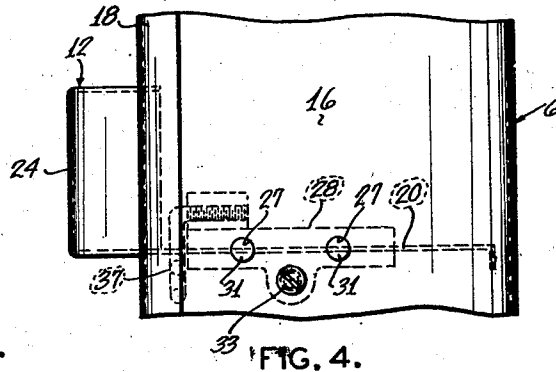


FIG. 4.

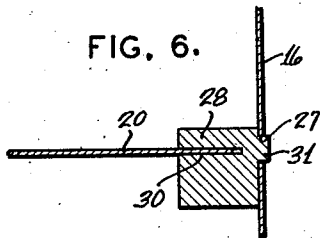


FIG. 6.

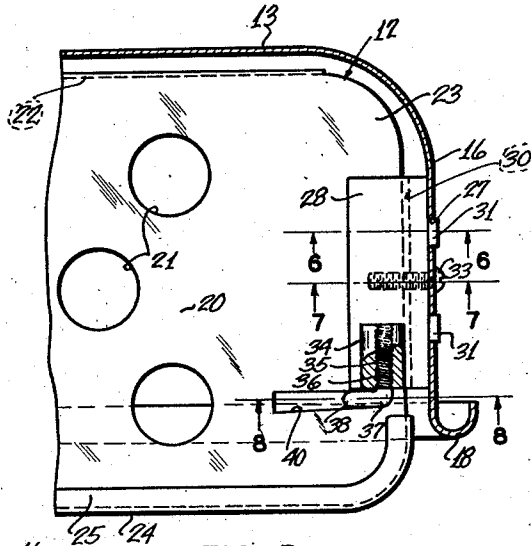


FIG. 5.

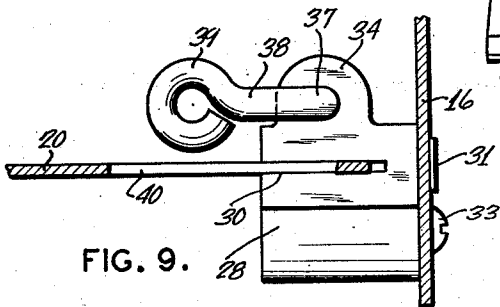


FIG. 9.

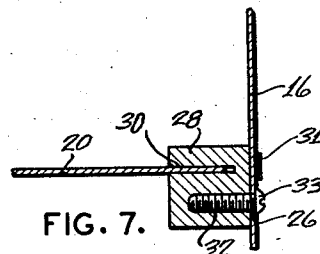


FIG. 7.

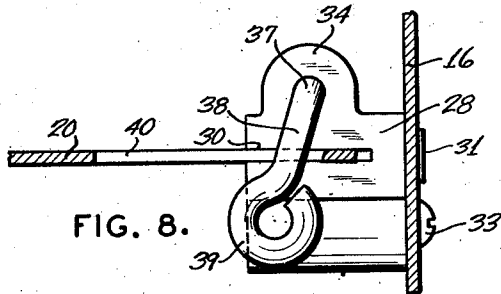


FIG. 8.

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2,201,114

SHELF AND SUPPORTS THEREFOR

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Application May 28, 1938, Serial No. 210,601

6 Claims. (Cl. 211—90)

This invention relates to improvements in shelves and supports therefor, and more particularly to removable shelves and shelf-supports adapted for releasable retention of the shelves in assembly relative to the supports. Although the invention has a wide field of application, it is adaptable in particular to refrigerator assemblies and the like and especially to refrigerators of domestic type.

An object of the invention is to provide as in a refrigerator assembly, one or more shelves and improved supports therefor, the supports including readily releasable interlock means effective to retain the shelf in assembly with the supports, but permitting a release of the shelf for removal or replacement purposes.

Another object is to provide an improved and greatly simplified shelf-support and shelf interlock adapted for supporting and retaining a shelf in assembly relation thereto, the support being adapted for ready mounting on a wall or other portion of a refrigerator or the like, in a greatly simplified but secure manner.

Other objects and advantages will appear as the description proceeds and from the drawings, in which:

Fig. 1 is an enlarged fragmentary horizontal section through a refrigerator of a type including an outer or main door and an inner door, the section being taken from line 1—1 in Fig. 2 and illustrating a shelf secured in assembly to the inner door in the preferred manner forming the subject of the invention; Fig. 2 is a reduced front view of the inner door illustrating a plurality of shelves assembled on the door in the improved manner; Fig. 3 is a fragmentary transverse section of the door as taken along line 3—3 in Fig. 2; Fig. 4 is a greatly enlarged, fragmentary side view of the inner door; Fig. 5 is an enlarged, fragmentary horizontal section of the door as taken along line 5—5 in Fig. 2; Fig. 6 is a fragmentary section as viewed from line 6—6 in Fig. 5; Fig. 7 is a similar fragmentary section as viewed from line 7—7 in Fig. 5; Fig. 8 is an enlarged fragmentary section of the door and shelf assembly, as viewed from line 8—8 in Fig. 5, the view illustrating the improved shelf-lock in position to effectively retain the shelf in assembly with the door, and Fig. 9 is a view similar to that of Fig. 8, but showing the lock in its inoperative position with respect to the shelf.

Referring to the drawings by suitable characters of reference, it is preferred in the present example to illustrate the invention as applied to a refrigerator of domestic type, the structure of

which includes an outer door 5 and an inner door 6, and further in which the subject of the invention is embodied by way of example, in the inner door. The numerals 7 indicate portions of the opposite side walls of the refrigerator cabinet, these walls cooperating in defining the cabinet chamber opening 8 giving access to the main refrigerator chamber 9. The outer door 5 which may be of any suitable construction but preferably of the so-called "flat" type wherein no part of the door projects within the opening 8, is suitably hinged (not shown) to one of the walls 7. Hinged as at 10, to one of the walls 7 is the inner hood 6, this door being comprised of any suitable material, as sheet metal, and being of a hollow or dished form as shown, to provide an open-side chamber 11 in which are suitably located shelves 12 for supporting articles to be stored. These shelves and the mounting means therefor, form the subject of the invention which will be presently described.

The inner door 6 preferably formed of sheet metal as indicated, comprises a back wall 13, top and bottom walls 14 and 15 respectively, and side walls 16 and 17, all of the walls being integrally connected. Formed integrally with the top, bottom and side walls near the outer marginal edges thereof, is a bead 18 which extends peripherally about the door, the bead presenting a rounded surface at the forward edge of the door. As will be noted in Fig. 1, the dimensions of the inner door are such as to leave a space 19 between the door and cabinet walls, so that cooled air within main chamber 9 may circulate freely about the inner door through space 19, and within the door chamber 11 to maintain the foods or other articles stored on the inner door shelves 12, in a cooled state. Moreover, it is noted that the open side of the inner door chamber 11 is adjacent the outer door 5, so that by opening the outer door, access may be had to the articles carried by the inner door while this door is in closed position. In the above instance, the inner door being closed, serves to prevent an inrush of warm air to the main chamber 9. Of course, access may be had to the main chamber merely by opening the inner door while the outer door is open, or by opening both doors in the first instance.

As shown by Fig. 2, a plurality of shelves 12 are carried by inner door 6, but since it is preferred to mount each shelf in the same manner, only one thereof and its mounting means will be described in detail. Referring to the uppermost shelf in Fig. 2, the shelf which may be formed from sheet metal, comprises a plate-like base

preferably perforated throughout as by apertures 21, to permit circulation of air therethrough. Depending from the rear margin of the plate is a strengthening flange 22 which terminates short of either end 23 of the plate so that the shelf may be assembled in a sliding manner to its supports, as will later appear. Located adjacent the forward longitudinal margin of the shelf plate, is an upstanding flange 24 provided with an inturned flange 25 along its upper margin. The corners of plate 20 are rounded as shown, and the ends of the forward flange 24 are by preference extended about the forward rounded corners of the plate (Figs. 1 and 5). In assembly, the shelf is disposed within the inner door chamber 11, and the forward flange 24 thereon cooperates with the portions of the door walls adjacent the shelf in the retention of articles on plate 20.

Mounting and securement of the shelf in assembly with the door is effected by an improved and greatly simplified means now to be described. Formed in each of the door side walls 16 and 17 is a screw-receiving aperture 26 (Fig. 7), while slightly above each aperture and in horizontally spaced relation are additional apertures 27 (Figs. 4 and 5). Engaging wall 16 at the zone of the apertures therein is a shelf-support member 28, while similarly located on the opposite wall 17 is a like member 29, each member having a slot 30 therein for the reception of an end portion 23 of shelf plate 20 (Fig. 6). Since the supports 28 and 29 are, by preference, similar in form but have their securing elements relatively reversed to provide right and left hand members for an obvious reason, only one thereof, as member 28, will be described in detail.

Referring to Figs. 5 through 9, member 28, which may be formed of any suitable material, is provided with laterally directed integral projections 31 spaced so that in the assembly of the member to door wall 16, the projections will closely seat in and project through the wall apertures 27 (Fig. 5). Moreover, the member is provided with a threaded aperture 32 which in the assembly relation of the member to wall 16, registers with the wall aperture 26. A securing screw 33 is inserted through aperture 26 and threadedly seated in the aperture 32, the screw when drawn up, serving to clamp the member 28 to the wall 16. The projections 31 cooperate with the screw in effectively retaining the shelf-supporting member on the wall, and by reason of the arrangement and relative spacing of the projections and screw, movement or other unwanted displacement of the member is prevented. Further, by reason of the location of the projections above the screw 33 and their close fit in wall apertures 27, they serve effectively to bear through member 28, a major part of the weight imposed on the shelf by the articles stored thereon. Thus little weight is borne by the screw 33, so that its principal function becomes one of securely clamping the member 28 to the wall 16.

As before indicated, the member 28 is provided with a slot 30 for the reception of an end 23 of shelf-plate 20. The slot is horizontal when the member is assembled to the wall of the door, so as to effect a horizontal position of the shelf, and further, the size of the slot is such as to provide for a relatively close fit of the shelf end therein, whereby to prevent either end-wise or vertical displacement of the shelf relative to the support member 28.

The shelf is effectively retained in assembly with the support 28 and hence, with the door 6,

by an improved and preferred form of latch of a type which is readily releasable to permit removal of the shelf from its support. Formed by preference as an integral part of the member 28 and located near the forward end thereof, is an upstanding element or boss 34 provided with a central, tapped bore 35 extending horizontally therethrough and directed longitudinally of the member 28 (Fig. 5). Operatively seated in the bore is the threaded end 36 of a substantially L-shaped member or latch 37, the arm 38 of which is formed, by preference, to provide a looped portion 39 near its free end, serving as a handle for facilitating manual manipulation of the latch. Formed in the forward portion of shelf end 23 for cooperation with latch arm 38 is a wedge-shaped slot 40, the smaller end of which is adjacent the lateral margin of the shelf end. The longitudinal extent of the slot 40 is such that in the assembly of the shelf to its supports, the latch arm 38 may be rotated downwardly through the slot (Fig. 8) from its unlatching position shown in Fig. 9, until the arm becomes wedged in the slot. Thus the shelf becomes latched in assembly to the support 28. It is to be noted that by reason of the threaded mounting of the latch, turning or rotary movement thereof in effecting shelf-securement, as described, will result in displacement of the latch toward the boss 34, and this will serve through the arm seated in shelf slot 40, to draw the shelf inwardly of the hollow door 6, into proper assembly position therein. Conversely, reverse rotation of the latch as for releasing the shelf, will effect a forward or outward displacement of the shelf. Thus in the latter instance, if the shelf end 23 has become wedged in the slot 30 of member 28, shelf-releasing movement of the latch will effectively break such wedged condition, so that the shelf may be easily removed.

In the assembly of the shelf to the door and to its supports 28 and 29, the shelf ends 23 are inserted in the slots 30 as by sliding the shelf ends therethrough, until the shelf slots 40 are in substantial register with the latches 38. Thereafter, the latches may be rotated into wedged engagement in slots 40, this action drawing the shelf into proper assembly position as before described. The shelf is now locked in place against lateral movement by reason of the latches, and against endwise and vertical movement by reason of the shelf-ends seating in the slots 30 in supports 28 and 29. It is to be noted that the latches wedgingly engage the shelf slots 40 in an opposed manner which results in a longitudinal tensioning of the shelf. Thus by this and also generally by reason of the improved manner of mounting the shelf, vibratory movement of the shelf is substantially prevented.

All of the shelves employed on the inner door 6 may be mounted in a similar manner, the desired vertical spacing of the shelves being attained by suitably locating the cooperating supports for each shelf relative to the door walls 16 and 17. Moreover, as illustrated in Fig. 2, one of the shelves 12 extends only part way between the door side walls, leaving a space 41 to accommodate relatively tall objects such as milk bottles and the like, stored on the shelf therebelow. As appears in the figure, the left end of the short shelf is supported on the wall 17 in the manner similar to the others, while the right end is supported by a member 42 similar in all respects to the member 28 heretofore described. However, in this instance member 42 is secured to a

bracket 43 which in turn is secured by any suitable means (not shown) to the back wall 13 of the door 6.

It will now appear that by this invention there is provided an improved shelf and shelf-supports therefor which may be applied as in the present example, to the inner door 6 of a refrigerator, or to the interior of the cabinet, as between the walls 7 thereof. Moreover, application of the shelf and its supports to other than refrigerator assemblies become readily apparent. The shelf supports and interlocks are effective while comprised of but few parts, only one securing screw being required for each support. The interlocks provide for effective securement of the shelf in assembly, yet permit a ready release thereof for removal purposes. It is to be noted here that while it is preferred to form the projections 31 integral with each supporting member as a means for reducing the number of separate elements, these may be pegs or similar elements suitably secured to the member, or if desired, a single rib (not shown) may be substituted for the projections on each support, in which case the projection-receiving openings 27 in the door side walls will be replaced by a single slot (not shown) of a size closely to receive the rib.

It is to be understood that the structure and arrangement of the parts forming the subject of this invention as illustrated and described herein by way of a preferred example thereof, may be altered or modified within the spirit and intended scope of the invention, as defined by the claims appended thereto.

We claim.

1. Removable shelving for refrigerators and the like comprising a shelf provided with slots therein, shelf-supports adapted for a slidably receiving said shelf, and releasable interlock elements operatively carried by said supports adapted for seating in said shelf slots in a manner to position and lock said shelf in assembly relative to said supports, said interlock elements being structurally related to said supports in a manner such that in the release thereof from locking relation to the shelf, the elements effect a displacement of the shelf out of its interlocked position of assembly relative to the supports.

2. Removable shelving for refrigerators, comprising a shelf provided with wedge-shaped slots therein, shelf-supports adapted for slidably receiving said shelf, and elements operatively carried by said supports, adapted for wedged seating in said slots to lock said shelf to the supports, said elements in effecting a locked condition of said shelf, serving also to effect a predetermined positionment of the shelf relative to the supports.

3. Removable shelving for a refrigerator assembly, including a shelf structure having slots therein, shelf-supports therefor secured to portions of the refrigerator assembly and adapted for slidably receiving said shelf, and releasable interlock means on said supports adapted for seating in said slots to lock the shelf to its supports, said interlock means comprising elements threadedly engaging the shelf supports, and adapted in effecting a locked condition of the shelf, to displace the shelf toward and into a predetermined position of assembly relative to its supports.

4. Removable shelving for refrigerators, comprising a shelf structure provided with wedge-shaped slots therein, shelf-supports secured to portions of a refrigerator and adapted for slidably receiving said shelf, and elements carried by said supports, arranged for both rotary and displacement movements relative to the supports, said elements being adapted for wedged seating in said shelf slots to effect positioning and locking of the shelf relative to the supports.

5. In combination, a shelf, spaced shelf supports adapted for slidably receiving the shelf, said shelf being provided with tapered slots directed longitudinally thereof and located in the zones of shelf-engagement with said supports, and interlock means operatively associated with said supports, said means being adapted for wedged seating in said tapered shelf-slots to lock the shelf to its supports and in so locking the shelf, to tension the shelf longitudinally thereof.

6. In combination, a shelf, spaced shelf supports adapted for slidably receiving the shelf, said shelf being provided with tapered slots directed longitudinally thereof and located in the zones of shelf-engagement with said supports, and interlock means on said supports, capable of rotary and displacement movements relative to the supports, said means being adapted for wedged seating in said tapered shelf-slots upon rotation of the means through said slots, in a manner to lock the shelf to its supports, the interlock means in effecting a locked condition of the shelf, serving also to tension the shelf longitudinally thereof, and further, said means being adapted when rotated to effect a self-locking condition as aforesaid, to be displaced relative to said supports, in a manner to effect a predetermined position of the shelf relative to its supports.

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