Oct. 2, 1951 R. J. CARBARY 2,570,097

SHELF SUPPORTING ARRANGEMENT

Filed Oct. 11, 1950

Fig. 1.

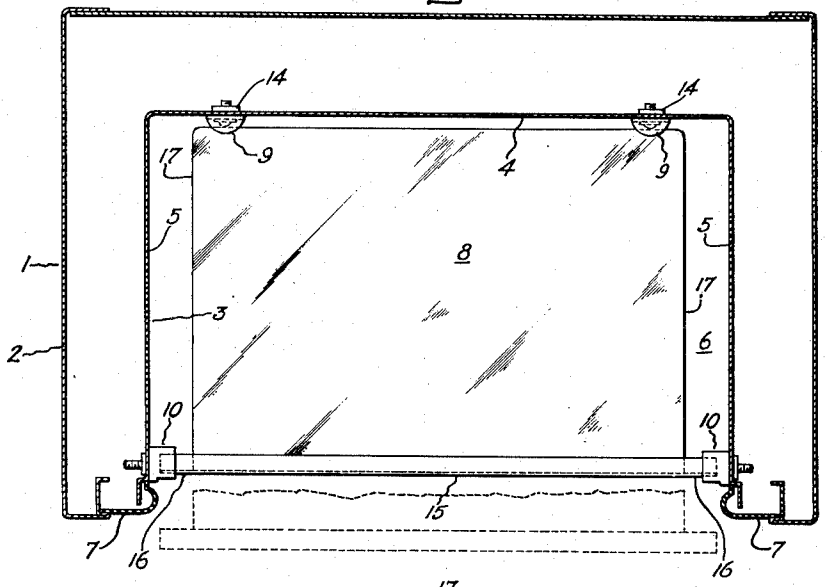


Fig. 2.

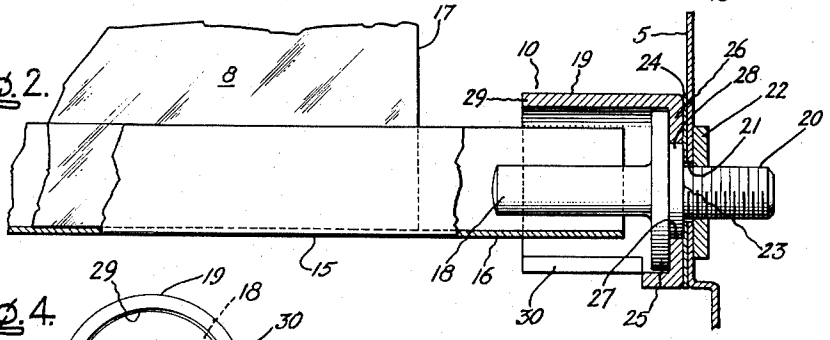


Fig. 4.

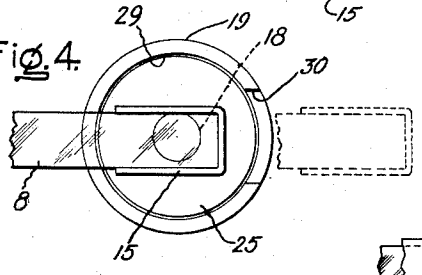


Fig. 3.

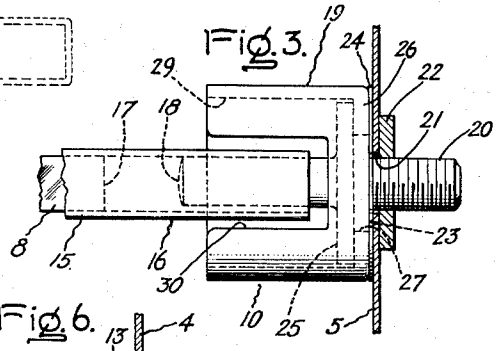


Fig. 5.

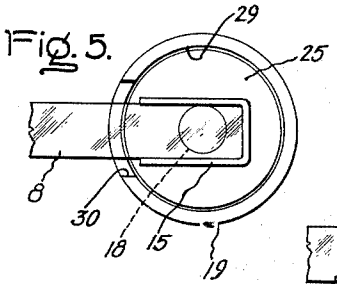
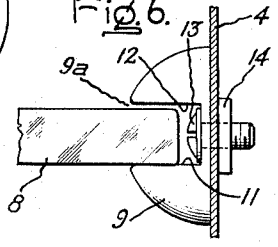


Fig. 6.



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SHELF SUPPORTING ARRANGEMENT

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4 Claims. (Cl. 312—351)

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My invention relates to shelves and more particularly to supporting arrangements therefor.

For some purposes, it is desirable to provide shelves which may be locked in position so as not to be moved inadvertently from their assembled position. At the same time, for cleaning or other purposes, it may be desirable to remove the shelf from time to time. By way of example, a shelf used as a cover for a food storage receptacle in arrangements such as those disclosed in my copending application, Serial No. 182,489, filed August 31, 1950, and assigned to the assignee of the present application, may be considered. Food storage receptacles of the type shown in the above copending application have a tendency to tilt when partially withdrawn from the cabinet, and it is therefore necessary that the covering shelf be locked in position so as not to move upwardly when the receptacles tilt. The arrangement disclosed in the present application is suitable for such use since the shelf may be positively locked in fixed position and at the same time the shelf is made readily removable when such removal is desirable for cleaning or other purposes.

Accordingly, it is an object of my invention to provide an improved arrangement for removably supporting a shelf and for locking the shelf in position.

It is another object of my invention to provide an improved arrangement for positively locking a shelf in assembled position and at the same time permitting easy removability thereof when desired.

Further objects and advantages of my invention will become apparent as the following description proceeds, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

In carrying out the objects of my invention, a channel member is secured to the front edge of the shelf and shelf supporting assemblies are provided on spaced walls at each end of this channel member at the forward portion of the shelf. Each assembly includes a stud projecting into the channel member and supporting the shelf, and a rotatable element adapted to be moved from one position wherein the shelf may be slid out for removal to a second position wherein such sliding movement of the shelf is prevented and the shelf is positively held in assembled position.

For a better understanding of my invention, reference may be had to the accompanying

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drawing in which Fig. 1 is a plan view of a portion of a refrigerator cabinet incorporating an embodiment of my invention; Fig. 2 is an enlarged plan view, partly in section, of a portion of Fig. 1; Fig. 3 is an elevation view corresponding to the plan view of Fig. 2; Fig. 4 is an end view showing the elements in a position wherein removal of the shelf is permitted; Fig. 5 is a view similar to Fig. 4 with the elements in a position wherein removal of the shelf is prevented; and Fig. 6 is a side elevation view of one of the rear supports.

Referring to the drawing, there is shown a refrigerator 1 including an outer wall 2 and a spaced liner 3 which includes a rear wall 4 and two side walls 5 defining a food storage compartment 6. A breaker strip 7 is provided for closing the opening between the outer wall 2 and the liner 3 adjacent the access opening of the refrigerator.

Within the food storage compartment 6, there is positioned a shelf 8. This shelf may be any one of several shelves used with the conventional refrigerator for supporting articles stored in the food storage compartment 6, or it may also act as a cover for food storage receptacles of the type disclosed in my aforementioned copending application, Serial No. 182,489. In the form illustrated, the shelf 8 is made of a sheet of glass or plastic material, but it will be apparent that any other suitable article-supporting material may be employed. The shelf is supported within the food storage compartment 6 by two supports 9 mounted on the rear wall 4 of the liner and two shelf support assemblies 10 each mounted on a corresponding one of the side walls 5 at the forward portion of the compartment 6.

Each of the supports 9 is formed with a recess or slot 9a approximately the same size as the thickness of the shelf 8, thereby providing a horizontal ledge or element 11 upon which the shelf 8 rests in its assembled position and a spaced upper horizontal ledge or element 12 which is adapted to overlap the upper surface of the shelf 8 in its assembled position. Thus, when the shelf is in its assembled position, it is retained against both downward and upward movement of the rear edge by the supports 9. Each of the supports 9 is secured to the rear wall 4 of the liner by a screw or other suitable fastening device 13 engaging a nut strip 14 which is welded or otherwise secured to the rear wall 4.

To minimize breakage of the shelf 8 and to provide for mounting the forward portion of the shelf on the shelf support assemblies 10, a chan-

nel member 15 is mounted on the forward edge of the shelf 8. The ends 16 of the channel member 15 extend beyond the sides 17 of the shelf. Each of the shelf support assemblies 10 includes a stud 18 and a surrounding cup-shaped member 19 mounted on the stud 18. The stud 18 includes a threaded end 20 which extends through an opening 21 formed in the side wall 5 of the liner. A nut or other suitable fastening device 22 engages the threaded end 20 of the stud to hold the stud in assembled position on the liner. The stud 18 further includes a shoulder 23 adapted to bear against the interior of the side wall 5, a washer 24 being interposed between the wall and the shoulder, if desired. To provide for rotatably supporting the cup-shaped member 19 in its assembled position, the stud 18 further includes an enlarged portion 25 spaced from the wall 5. The cup-shaped member 19 includes a bottom 26 which is positioned between the wall 5 and the enlarged portion 25 of the stud. The bottom 26 includes an opening 27 of substantially the same diameter as the section 28 of the stud so that the surface of the cup-shaped member 19 adjacent the opening 27 is adapted to rotate on the section 28 as a bearing surface. The cup-shaped member 19 further includes a circumferential wall 29 which extends in spaced relationship to the stud 18 and surrounds both the stud 18 and the end 16 of the channel member 15. To provide for removal of the shelf, the circumferential wall 29 of the cup-shaped member 19 has an opening 30 formed therein. The opening 30 is of sufficient length that it extends beyond the end 16 of the channel member 15 and is of a height greater than the height or thickness of the channel member 15, as clearly shown in Fig. 3.

The operation of the shelf and its associated support assemblies is as follows. In its assembled position, the forward portion of the shelf is supported by the studs 18 of the shelf support assemblies 10, each of the studs 18 being received within a corresponding projecting end of the channel member 15 so that the channel member 15 rests on and is supported by the studs 18. When it is desired to slide the shelf 8 forwardly for removal from the cabinet, the cup-shaped member 19 is rotated to the position shown in Fig. 3. In this position, the opening 30 in the circumferential wall of the cup-shaped member 19 is positioned forwardly of and in alignment with the forward edge of the channel member 15. As can be plainly seen in Figs. 3 and 4, in this position of the elements of the shelf support assemblies, the shelf 8 may be readily slid forward and withdrawn from the food storage compartment 6. When the shelf 8 is returned to its assembled position within the cabinet with the rear edge of the shelf 8 being disposed between the spaced horizontal ledges 11 and 12 of the rear supports 9, the cup-shaped member 19 is then rotated, for example, to the position shown in Fig. 5. In this position, it can be seen that the opening 30 is positioned so that a solid portion of the circumferential wall 29 is disposed forwardly of the front edge of the shelf 8. Accordingly, forward movement of the shelf 8 is limited by engagement of the front edge of the channel member 15 with the circumferential wall 29 of the cup-shaped member 19, and removal of the shelf from the cabinet is prevented. This locking arrangement therefore prevents accidental forward movement of the shelf which might result in its accidentally falling off its supports or, in the case of the application of this shelf to food storage receptacle arrangements of the type disclosed in my aforementioned copending application, Serial No. 182,489, in the upward movement of the shelf with the result that food storage receptacles could inadvertently slide forwardly out of the compartment 6. It will be seen, therefore, that by a simple arrangement including an easily rotatable cup-shaped member 19 the shelf 8 is positively locked in its assembled position and yet it is easily removable from the cabinet when desired. While the cup-shaped member in Fig. 5 has been shown rotated 180° from the position in Figs. 3 and 4, it will be apparent that it need be rotated from the position of Figs. 3 and 4 only by an amount sufficient to move the opening 30 out of alignment with the forward edge of the shelf.

While I have shown and described a specific embodiment of my invention, I do not desire my invention to be limited to the particular construction shown and described and I intend, by the appended claims, to cover all modifications within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A shelf and a supporting arrangement therefor including spaced parallel walls, said shelf being adapted to be supported by said walls, a channel member secured to the forward edge of said shelf, a shelf support assembly mounted on each of said walls at each side of the forward edge of said shelf, each of said shelf support assemblies including a stud projecting into its corresponding end of said channel member and a cup-shaped member rotatably mounted on said stud and including a circumferential wall surrounding said stud and said end of said channel member, said cup-shaped member having an opening in said circumferential wall for permitting passage of said channel member, said cup-shaped member being rotatable between one position wherein said opening is positioned forwardly of and aligned with the forward edge of said channel member for permitting removal of said shelf and a second position wherein said opening is positioned out of alignment with said forward edge of said channel member to prevent removal of said shelf.

2. A shelf and a supporting arrangement therefor including spaced parallel walls, said shelf being adapted to be supported by said walls, a shelf support assembly mounted on each of said walls at the forward edge of said shelf, a channel member secured to the forward edge of said shelf with the open face of said channel facing rearwardly, each of said shelf support assemblies including a stud adapted to be received within a corresponding end of said channel member for supporting said shelf, said stud including an enlarged portion spaced from said wall, and a cup-shaped member mounted on said stud and rotatable thereon, said cup-shaped member including a bottom portion retained between said wall and said enlarged portion of said stud, said cup-shaped member further including a circumferential wall surrounding said stud and said end of said channel member, said cup-shaped member having an opening in said circumferential wall for permitting passage of said end of said channel member, said cup-shaped member being rotatable between one position wherein said opening is positioned forwardly of and in alignment with the forward edge of said channel member for permitting removal of said shelf and a second position wherein said opening is positioned

out of alignment with said forward edge of said channel member to prevent removal of said shelf.

3. A shelf and a supporting arrangement therefor including spaced parallel walls, said shelf being adapted to be supported by said walls, a channel member enclosing the forward edge of said shelf and having its ends extending beyond the sides of said shelf, a shelf support assembly mounted on each of said walls at each side of the forward edge of said shelf, each of said shelf support assemblies including a stud projecting into its corresponding end of said channel member and a cup-shaped member rotatably mounted on said stud and including a circumferential wall surrounding said stud and said end of said channel member, said cup-shaped member having an opening in said circumferential wall for permitting passage of said channel member, said cup-shaped member being rotatable between one position wherein said opening is positioned forwardly of and aligned with the forward edge of said channel member for permitting removal of said shelf and a second position wherein said opening is positioned out of alignment with said forward edge of said channel member to prevent removal of said shelf.

4. A refrigerator cabinet or the like including a liner defining a food storage compartment, said liner including a rear wall and two side walls, a shelf adapted to be removably supported in said compartment, a channel member secured to the forward edge of said shelf, and means for supporting said shelf including a support mounted on

said rear wall and two support assemblies each mounted on a corresponding one of said side walls at the forward edge of said shelf, said support including a bracket for engaging the bottom of said shelf and an element engaging the top of said shelf at the rear portion thereof for preventing upward movement of said rear portion of said shelf, each of said shelf support assemblies including a stud projecting into its corresponding end of said channel member and a cup-shaped member rotatably mounted on said stud and including a circumferential wall surrounding said stud and said end of said channel member, said member having an opening in said circumferential wall for permitting passage of said channel member, said cup-shaped member being rotatable between one position wherein said opening is positioned forwardly of and aligned with the forward edge of said channel member for permitting removal of said shelf and a second position wherein said opening is positioned out of alignment with said forward edge of said channel member to prevent removal of said shelf.

RICHARD J. CARBARY.

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The following references are of record in the file of this patent:

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Number	Name	Date
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