

Oct. 20, 1942.

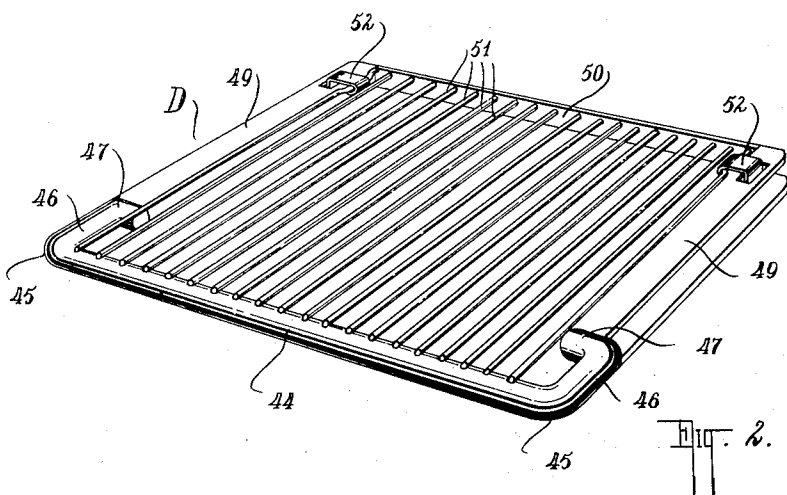
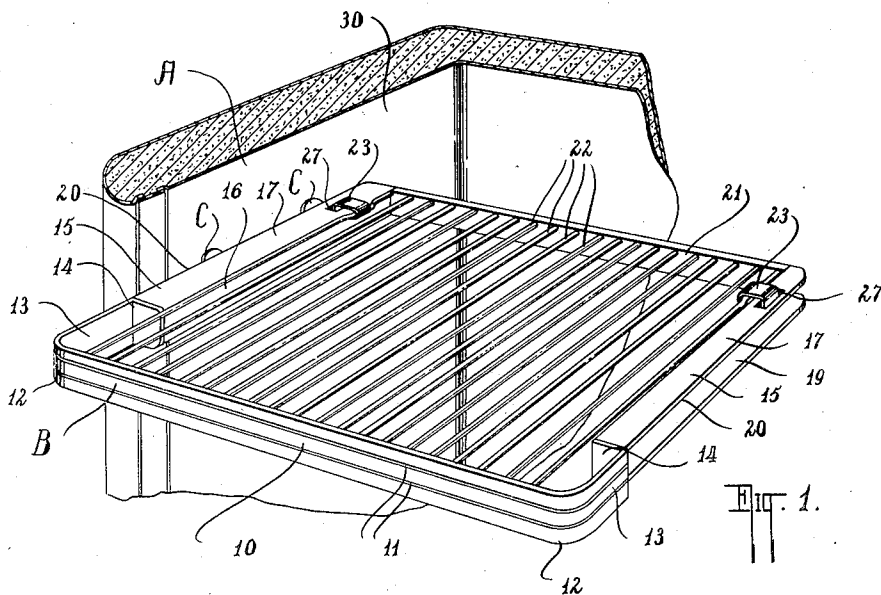
E. SWEDMAN ET AL

2,299,512

REFRIGERATOR SHELF

Filed April 19, 1940

2 Sheets-Sheet 1



Inventor

ENOCH SWEDMAN

HENNING G. BERGMAN

By

Howard F. Fisher
Attorney

Oct. 20, 1942.

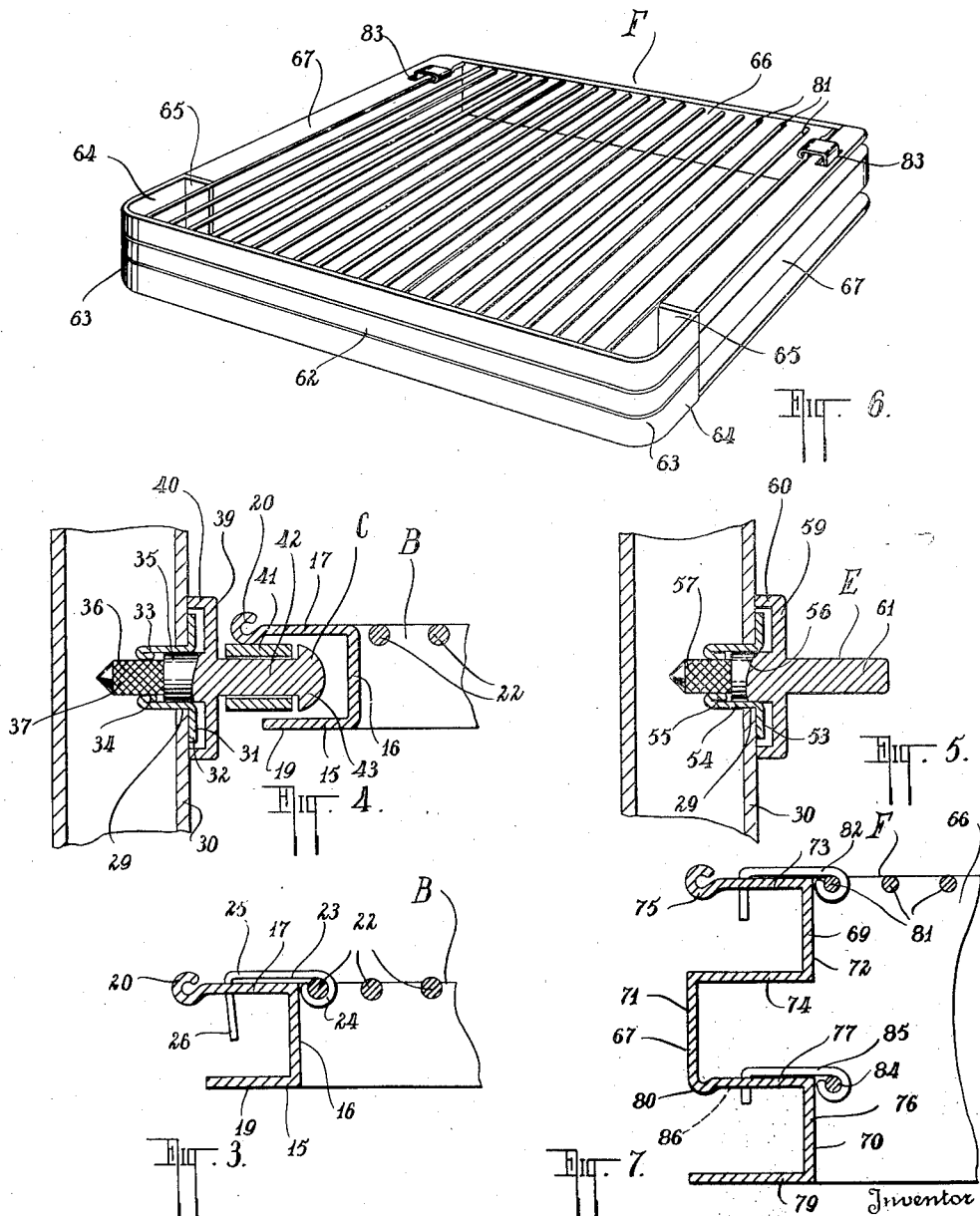
E. SWEDMAN ET AL

2,299,512

REFRIGERATOR SHELF

Filed April 19, 1940

2 Sheets-Sheet 2



ENOCH SWEDMAN

HENNING G. BERGMAN

Donald F. Fische
Attorney

UNITED STATES PATENT OFFICE

2,299,512

REFRIGERATOR SHELF

Enoch Swedman and Henning G. Bergman, St. Paul, Minn., assignors to Seeger Refrigerator Company, St. Paul, Minn., a corporation of Minnesota

Application April 19, 1940; Serial No. 330,522

4 Claims. (Cl. 211-151)

Our invention relates to an improvement in sliding shelves and in means supporting the shelves wherein the shelves may be slidably supported in a refrigerator body and may be removed therefrom when it is so desired.

It has become common practice to slidably mount refrigerator shelves. This is done for ease in removing articles from and inserting articles into the refrigerator and for sanitary reasons. Various means have previously been employed for slidably mounting refrigerator shelves and we do not claim as new the use of such shelves.

It is the object of our invention to provide a refrigerator shelf which is extremely attractive to the eye, which is inexpensive to manufacture, and which is simple to operate. We provide a frame member extending about the front edge of a refrigerator shelf to provide a firm support for the front of the shelf. The ends of this frame are preferably bent rearwardly to form the front portion of the frame sides and are then bent inwardly to form a support for the front end of a channel which slidably engages supporting studs or pins on the refrigerator wall.

It is a feature of our invention that the slide channel in which the supporting pins or studs are engaged is concealed from front view by the forward portion of the shelf frame. Through this construction not only does the forward portion of the shelf frame form a stop to limit the sliding movement of the shelf into the refrigerator, but also acts as a closure for the forward end of the channel.

It is a feature of our invention to provide a refrigerator shelf provided with opposed channels in which may extend supporting pins or studs mounted upon the refrigerator wall. Outward movement of the shelf with respect to the refrigerator is limited by suitable movably mounted stops extending into the channel and engaging the supporting pins or studs to limit this outward movement.

It is a feature of our invention to provide supporting pins or studs which may be attached to the inner surface of a refrigerator wall without the necessity of having access to the end of the studs projecting through the wall. Thus after the refrigerator body has been formed and the space between the inner and outer refrigerator coverings filled with a suitable insulation, the position of the shelves to suit a particular customer may be located and the supporting pins installed from the interior of the refrigerator. This is important as it permits individual selection of shelf positions to suit any customer if it is so desired.

It is a further feature of our invention that we may, if it is so desired, provide a double channel along each of two opposed walls of a refrigerator shelf so that the height of the shelf within the refrigerator may be varied. The supporting pins may be inserted in either of the two channels selectively to hold the shelf in a raised or lowered position.

These and other objects and novel features of our invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of our specification:

Figure 1 is a perspective view of a shelf embodying our invention, this shelf being illustrated in a refrigerator body, a portion of the refrigerator body being cut away to illustrate the shelf more clearly.

Figure 2 is a perspective view of a modified form of refrigerator shelf.

Figure 3 is a sectional view through the shelf construction illustrated in Figure 1 or 2, only a portion of the shelf being disclosed in this figure.

Figure 4 is a sectional view through a refrigerator wall illustrating the construction of a shelf supporting stud which may be used in connection with the shelf disclosed.

Figure 5 is a view similar to Figure 4, illustrating a modified form of supporting stud construction.

Figure 6 is a perspective view of a modified form of shelf.

Figure 7 is a sectional view through the supporting channel portion of the shelf illustrated in Figure 6 of the drawings.

The refrigerator A is designed to support a shelf B slidably mounted therein. The shelf B comprises a decorative front frame strip 10 which may be provided with trim strips 11 running lengthwise of the same. The frame strip 10 is bent rearwardly at the front corners 12 to provide rearwardly extending frame portions 13 which are short relative to the depth of the shelf B. At their rear extremities the rearwardly extending side portions 13 are provided with inwardly extending flanged ends 14 to which the ends of the opposed channels 15 are secured.

The channels 15 include a base 16 and upper and lower parallel side flanges 17 and 19, respectively. The upper opposed sides 17 of the channels 15 are preferably provided with a rounded edge 20 for a purpose which will later be more clearly described. The rear extremities of the channels 15 are connected by a transverse frame

strip 21 and a series of parallel rods 22 extend in spaced relationship between the front frame member 10 and the rear frame strip 21. The rods 22 are for the purpose of supporting articles placed upon the shelf. If it is desired, a suitable screen or solid platform may be substituted for the parallel rods 22.

In order to provide a stop for limiting the outward movement of the shelf B from the refrigerator A, we provide pivoted stops 23 of the type best illustrated in Figure 3 of the drawings. As shown in this figure, the stops 23 comprise a journal portion 24 bent to encircle one of the rods 22 adjacent the channel 15, a transverse portion 25 overlying a portion of the top 17 of the channel 15, and a stop shoulder 26 extending downwardly from the overlying portion 25 through a suitable aperture 27 in the top 17 of the channel 15. The stop shoulder 26 is in the path of the supporting studs or pins and limits the outward movement of the shelf. When it is desired to entirely remove the shelf B from the refrigerator, the stops 23 may be pivoted upwardly, withdrawing the stop shoulders 26 from the channels 15 so that the supporting pins may slide past these stops.

The construction of the supporting pins or studs C is best illustrated in Figure 4 of the drawings. A hole 29 is drilled through the entire lining 30 of the refrigerator A at the point where the supporting stud or pin is desired. An eyelet or grommet 31 having an outwardly extending flange 32, a hollow cylindrical shank 33, and an intumed marginal edge 34 thereupon is extended through the opening 29. The supporting pin or stud C is then forced through the grommet 31. The supporting stud or pin C includes a larger diameter shank portion 35 of a diameter to fit tightly within the hollow cylindrical portion 33 of the grommet 31. A smaller diameter shank portion 36 concentric with the enlarged diameter portion 35 projects forwardly from the shank portion 35. This end portion 36 is knurled as indicated at 37 and acts to fit closely within the intumed marginal edge 34 spreading the internal end of the grommet and providing a tight frictional fit between the intumed flange 34 and the knurled portion 36 of the stud. The tight frictional fit and the knurling upon the end of the stud hold this stud in position within the grommet 31. The spreading of the inner end of the grommet 31 by the stud prevents the grommet from pulling out of the hole 29. Thus when the stud C has been forced into the grommet 31, both of these elements are securely attached to the inner lining 30.

The stud C is provided with a circular flange 39 having a cylindrical marginal edge 40 designed to contact the surface of the inner lining 30 externally of the grommet 31 to entirely conceal the eyelet or grommet 31. A rotatable sleeve 41 encircles the outwardly extending shank 42 of the stud C and is held in place by the enlarged head 43 formed by riveting-over or upsetting the end of the stud.

When the shelf B is in place upon the supporting studs C it will be noted that the rolled edge 29 engages the rotatable sleeve 41, permitting the shelf to be slidably moved between its limits with little friction. Food or articles placed near the rear of the shelf B may be more easily reached by pulling the shelf partially out of the refrigerator upon its supporting pins C. The pins C are spaced in such a manner that the shelf is permitted to slide outwardly a considerable amount

as illustrated in Figure 1 of the drawings, before the rear stud C engages the stop 23.

In Figure 2 of the drawings we disclose a shelf D which is identical with the shelf B with the exception that the front frame member 44 is circular in cross-section rather than in strip form as illustrated in Figure 1. The frame member 44 extends transversely across the front of the shelf D and is bent at the corners 45 to form rearwardly extending side portions 46 terminating in stop shoulders 47. Channels 49 are secured to the stop shoulders 47 and extend rearwardly from the stop shoulders to the rear end of the shelf. The rear extremities of the channels 49 are connected by a rear frame strip 50. Bars 51 connect the front frame member 44 with the rear frame strip 50 to form a support for food or other articles placed upon the shelf.

The shelf D is supported similarly to the shelf B and is provided with pivoted stops 52 identical to the stops 23 illustrated in Figure 1. The shelf D is supported upon the studs or pins C in the manner illustrated in Figures 1 and 4 of the drawings.

In Figure 5 of the drawings we disclose a modified form of supporting pin in which the roller sleeve 41 is eliminated. In this form of construction the inner refrigerator wall 30 is provided with the opening 29 therethrough. An eyelet or grommet 53 identical to the grommet 31 extends through the hole 29 and is provided with a hollow cylindrical shank 54 having an intumed marginal sleeve 55 thereupon. The stud E includes a shank portion 56 of enlarged diameter to frictionally fit within the hollow cylindrical shank 54 of the grommet 53 and is also provided with an end portion 57 of reduced diameter to fit within the flange or sleeve 55. The smaller diameter portion 57 is knurled as illustrated in Figure 5 and spreads the cylindrical shank 54 sufficiently to prevent the withdrawal of this grommet 53 from the hole 29. The tight frictional engagement between the shank portions 56 and 57 with the hollow shank 54 and sleeve 55 of the grommet 53 prevent the removal of the stud E from engagement with the inner wall 30 of the refrigerator.

The stud E includes a circular flange 59 bearing a marginal cylindrical flange 60 designed to engage the inner wall 30 of the refrigerator and to entirely inclose and conceal the grommet 53. An outwardly projecting pin or stud 61 forms a support designed to extend into the channel on the frame B or D to support this shelf at a desired height within the refrigerator.

In Figures 6 and 7 of the drawings, we disclose a shelf F which forms a modified construction from that illustrated in Figures 1 and 2. The shelf F comprises a front frame strip 62 extending transversely of the frame from one side to the other and which is bent at the corners 63 to provide rearwardly extending portions 64 terminating in intumed flanges 65. A frame strip 66 forms the back or rear end of the shelf F, connecting the front frame strip 62 with the rear frame strip 66, and extending between the intumed flanges 65 and the ends of the frame strip 66 we provide a double channel 67 illustrated in detail in Figure 7 of the drawings.

The double channel 67 is provided with an upper channel 69 and a lower channel 70 connected by an integral intermediate connecting strip 71. The upper channel 69 includes a base 72 and upper and lower horizontal parallel channel sides 73 and 74. The upper channel side 73

is preferably provided with a rolled edge 75 engageable with the supporting studs C. The lower channel 70 includes a base 76 and an upper side 77 and lower side 79 in opposed relationship. The upper side 77 is preferably provided with a rounded rib 80 thereupon to engage the supporting studs C.

Rods 81 extend between the frame strip 62 and the frame strip 66 to form a support for food or articles placed upon the shelf F. A pivoted stop 82 is pivotally secured to one of the rods 81 adjacent each double channel 67 and is designed to extend through an aperture 83 in the upper side 73 of the upper channel 69. A rod 84 extends from the front frame strip 62 to the rear frame strip 66 adjacent the lower channel 70 and a pivoted stop 85 pivotally engages this rod 84 and extends through a suitable aperture 86 in the upper side 77 of the lower channel 70. The stops 82 and 85 are identical to the stops 23 and 53 and are designed to engage the supporting studs C to limit the outward movement of the shelf F.

As will be understood from an examination of the drawings the shelf F is provided with the two channels 69 and 70 so that the shelf may be positioned at different heights with respect to the refrigerator body. In other words, the shelf F may be supported with the supporting studs or pins C engaged in either the channel 69 or the channel 70. Obviously, when the pins C are engaged in the channel 69 the shelf F is supported at a lower level than when the pins or studs C extend in the lower channels 70.

In accordance with the patent statutes we have described the principles of construction and operation of our refrigerator shelf and supporting means therefor, and while we have endeavored to set forth the best embodiments thereof, we desire to have it understood that these are only illustrative of a means of carrying out our invention and that obvious changes may be made within the scope of the following

claims without departing from the spirit of our invention.

We claim:

1. A refrigerator shelf comprising a front frame strip, rearwardly extending side portions on said front frame strip, a transversely extending rear frame strip, supporting means connecting said front and rear frame strips, and opposed channels extending between the rearwardly extending side portions of said front frame strip and the ends of said rear frame strip.

2. A refrigerator shelf comprising a front frame member, rearwardly extending portions on the ends of said front frame member, a rear frame member substantially parallel said front frame member, supporting means connecting said front and rear frame members, and a pair of oppositely disposed parallel channels connecting said rearwardly extending portions of said front frame member and said rear frame member.

3. A refrigerator shelf comprising a front frame member, rearwardly extending end portions on said front frame member, intumed flanges on said rearwardly extending end portions, a rear frame member substantially parallel said front frame member, supporting means connecting said front and rear frame members, and a pair of spaced parallel channels secured between said intumed flanges and the ends of said rear frame member.

4. A refrigerator shelf comprising a front frame member, rearwardly extending portions on the ends of said front frame member, a rear frame member parallel to said front frame member, rod shelf means connecting said front and rear members, a pair of double decker channels connecting said front and rear members, and stops pivoted to said rod means connecting said front and rear members, said stops having their free ends projecting through and into said channels.

ENOCH SWEDMAN.
HENNING G. BERGMAN.