

Sept. 24, 1935.

J. B. WHITTED

2,015,389

REFRIGERATOR SHELF

Filed Dec. 18, 1933

2 Sheets-Sheet 1

Fig. 1.

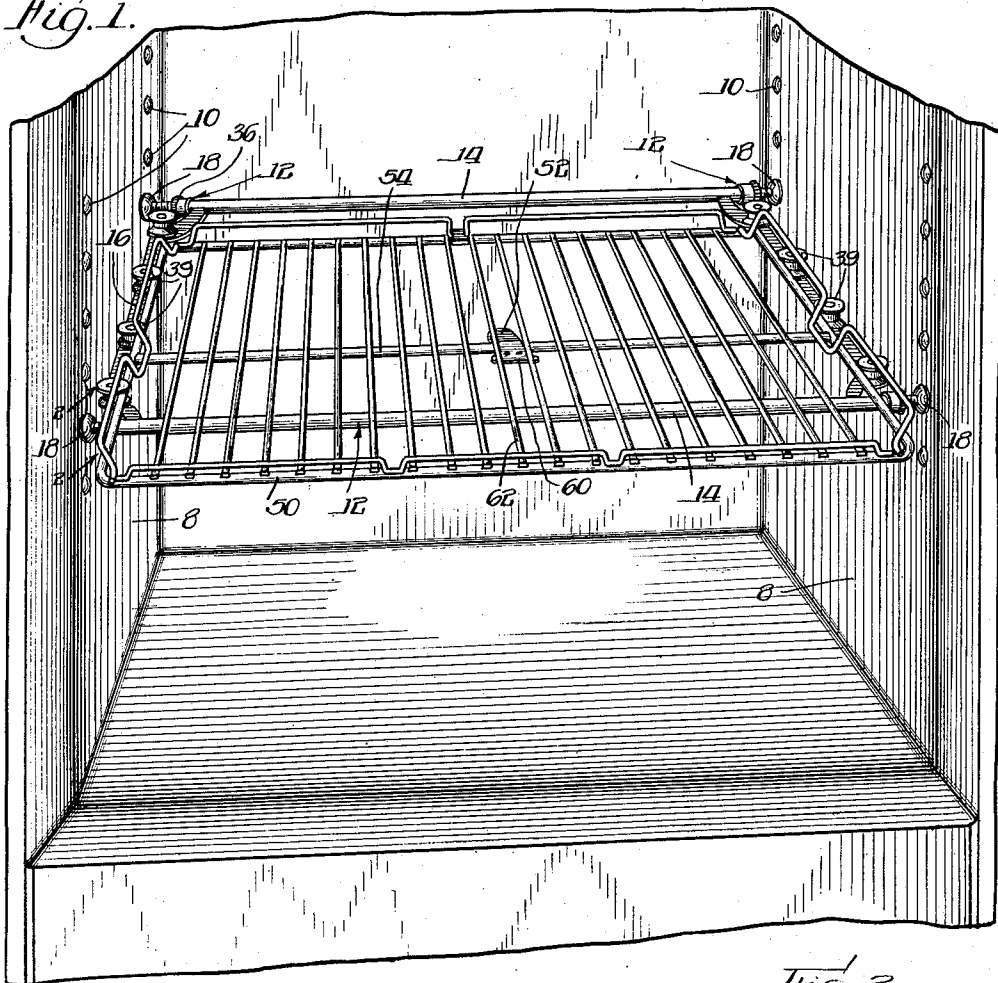
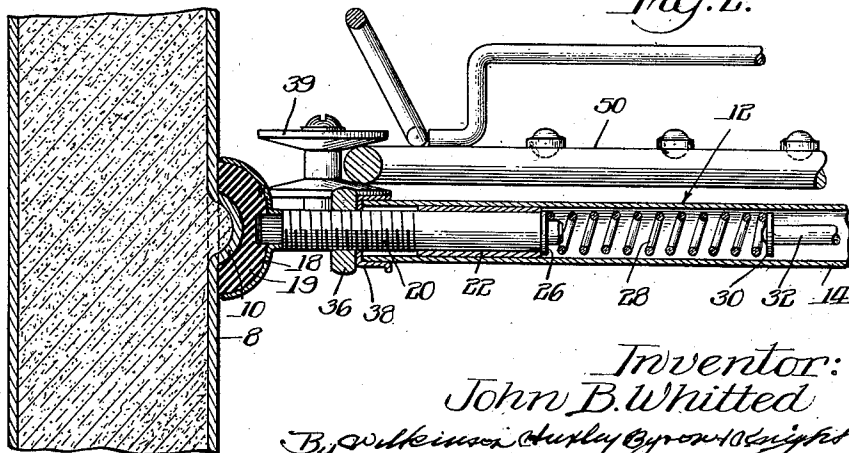


Fig. 2.



Inventor:
John B. Whitted
By *B. J. Keim* Attorney
Attys.

Sept. 24, 1935.

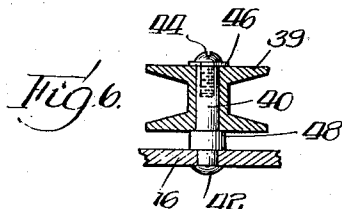
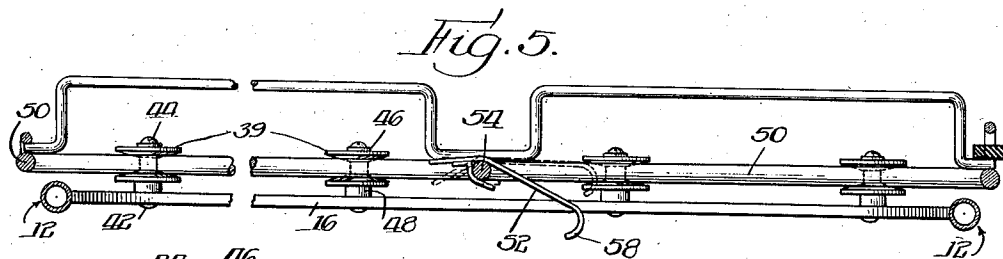
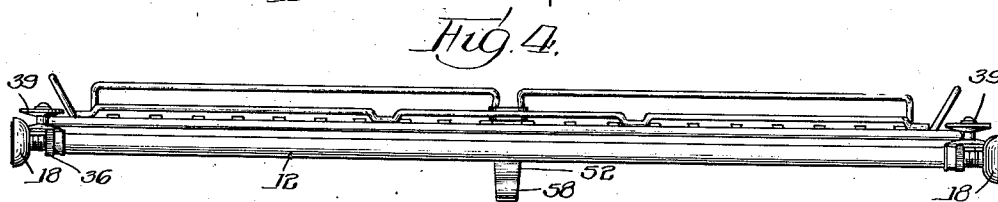
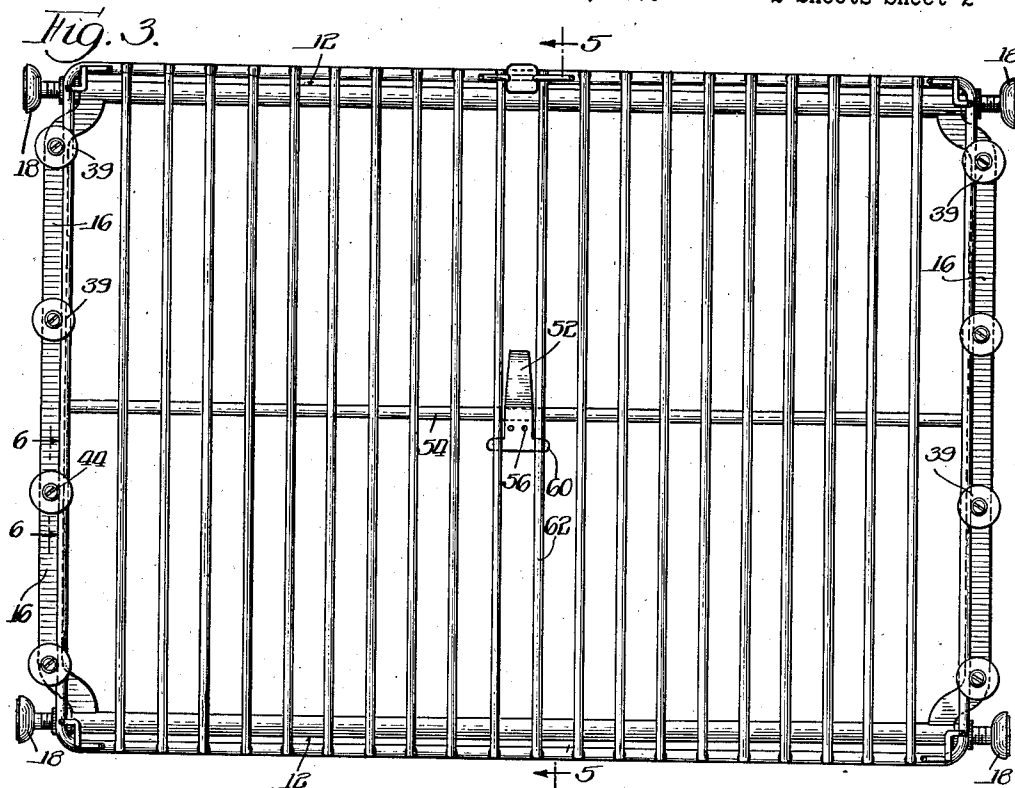
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REFRIGERATOR SHELF

Filed Dec. 18, 1933

2 Sheets-Sheet 2



Inventor:
John B. Whitted
By *William H. Hight* Attorney

UNITED STATES PATENT OFFICE

2,015,389

REFRIGERATOR SHELF

John B. Whitted, Evanston, Ill., assignor to
Stewart-Warner Corporation, Chicago, Ill., a
corporation of Virginia

Application December 18, 1933, Serial No. 702,879

10 Claims. (Cl. 211-153)

My invention relates to a rolling shelf and particularly to a rolling shelf for use in refrigerator cabinets.

My shelf is an improvement over prior shelf structures of the general type shown in the patent to O. M. Otte, No. 1,828,435. There are several difficulties in the practical use of the prior structures and it is an object of my invention to overcome these difficulties. In the first place, while prior structures include a shelf which is slidable in a frame, as a practical matter it is somewhat difficult to manipulate this shelf so that it will slide smoothly, and for use in a refrigerator it is necessary that the shelf move without jerking in order to avoid the spilling of foods which may have been placed upon the shelf.

Another difficulty with prior structures of this type is that the means for gripping the nubs or depressions on the sides of the refrigerator cabinet are operated entirely by a screw thread means. It is very difficult to hold the shelf in its proper position while these screw thread means are being tightened and it will sometimes happen that the tightening on the four corners will be uneven and will set up stresses in the shelf framework, distorting it so that the shelf will not slide smoothly and easily.

To carry out the objects of my invention, I provide rollers constituting the guiding means. These rollers I provide in the form of spools rotating in a vertical axis. I consider this one of the important features of my invention because by this means I avoid the necessity of placing auxiliary rollers or other guides above the framework of the shelf proper. In prior structures this has been necessary in order to prevent the tilting upward of the inner end of the shelf as the shelf is moved toward its outer extremity. This tilting is likely to occur even when a shelf is restricted to an outward movement less than one half the length of the shelf because of the fact that heavy objects may have been placed near the front end of the shelf in such a way as to overbalance it.

To overcome the difficulty with the tightening of the screw threaded gripping portions against the nubs or depressions in the refrigerator wall, I have provided spring means to urge the gripping portions outwardly with a pressure sufficient to hold the shelf in place until the screw thread means may be tightened by hand.

A further object of my improvements is to disclose a refrigerator shelf that may be removed entirely from the refrigerator and used as a tray, and, in particular, the structure described herein permits removal of the shelf for use as a tray

without tilting or lifting the shelf in order to remove it from the refrigerator, instead it is only necessary to push a stop member to disengaged position or the stop member may be entirely dispensed with.

A more thorough understanding of my invention may be had by reference to the accompanying drawings, in which

Figure 1 is a perspective view of the interior of a refrigerator showing the shelf structure in position;

Figure 2 is a detail section on the plane indicated 2-2 in Figure 1;

Figure 3 is a plan view of the shelf structure;

Figure 4 is a front elevation of the shelf;

Figure 5 is a cross section on the plane indicated 5-5 in Figure 3, and

Figure 6 is a detail section on the plane indicated 6-6 in Figure 3.

Referring now to Figure 1, the side walls 8 of the refrigerator are provided with up-raised portions 10, similar to those disclosed in the patent to Otte No. 1,828,435. A frame-work 12, formed of tubular members 14 and flat end members 16, is provided with extensible cup-shaped members 18 for engagement with the struck-up portions 10. Instead of the portions 10 being up-raised, they may be depressed and instead of cup-shaped members 18, convex members suitable for engagement with the depressed portions may be provided.

The cup-shaped members 18 are fitted by staking or otherwise to screw-threaded members 20, which extend slidably within bushings 22 inserted tightly in the ends of the tubular members 14. At their inner ends, the screw-threaded members 20 are provided with shoulders 26, against which coiled compression springs 28 react. These springs are supported at their inner ends by heads 30 on the ends of spacer bars 32. The threaded members 20 are held against excessive outward movement by the abutment of shoulders 26 against the bushings 22, which are of smaller diameter than the shoulders 26 and knurled thumb nuts 36 are provided by which the screw threaded members 20 may be forced outwardly for firm engagement with the up-raised portions 10 of the refrigerator. Cylindrical caps 38 of hard metal are placed over the ends of the tubular members 14 to serve as an abutment or bearing for the knurled thumb nuts 36. Within the cup-shaped members 18 rubber inserts 40 are placed for more firm engagement with the up-raised portions.

To assemble this mechanism I first place the 55

screw-threaded member 20 within the bushing 22. It should be understood that at this time the cup-shaped member has not as yet been fastened to the screw-threaded member. Next I insert within the tubular member the spacer bar 32 and a compression spring 28. I then force the pushing 22, together with the screw-threaded member 20, into the end of the tubular member. Then in turn I press in the cylindrical cap 38 and screw the knurled thumb nut 36, over the screw-threaded member. After this I attach the cup-shaped member 18 to the screw-threaded member 20.

It will be understood that variations from this method of assembly are permissible. I have indicated this one method in order to clarify the structure of my invention.

In the particular embodiment of my invention shown in this specification, I have provided on each end member 14 rotatable spools 39. These are journaled on pins 40 attached to the end members 16 by riveted-over ends 42. These spools are held in place by screws 44 and washers 46 and abut shoulders 48 formed integrally with the pins 40.

The shelf structure 50 of any conventional design is received between the spools at opposite ends of the frame 12 and it will be seen that the shelf may be inserted or withdrawn with only a minimum application of force because of the provision of the rolling spools.

To prevent complete withdrawal of the shelf structure 50, I have provided a stop member 52 which is clipped over a central bar 54 of the shelf structure 50, as shown in Figure 5. This stop member 52 is formed of two sheet metal portions attached together by rivets 56. The extremity of the stop member 52 bears a hook like portion 58 which engages the front bar of the shelf framework 12. To prevent the turning of the stop member 52 about the central bar, 54, extensions 60 are provided which engage strips 62 of the shelf structure 50. It will be seen that the stop member 52 may be manually turned into position to engage or not to engage a front bar of the shelf framework. In this way the sliding of the shelf may be stopped or the shelf may be withdrawn completely from the cabinet as desired.

Thus the shelf may be entirely removed from the refrigerator without tilting or lifting and used as a tray to carry articles from the refrigerator. It will be understood that if it is desired to use one shelf very often as a tray, that the stop member 52 may be entirely dispensed with.

While I have thus described a preferred embodiment of my invention, other forms will of course suggest themselves without departing from the spirit of my invention. I do not intend to limit myself to this specific embodiment I describe.

I claim:

1. In a refrigerator, a shelf support comprising a frame, thrust means at each side of said frame resiliently urged outwardly with respect to said frame for engagement with the side walls of the refrigerator and adjustable means for limiting the inward movement of said means with respect to said frame for locking said shelf support in position within said refrigerator.
2. In a refrigerator, a shelf support comprising a frame, thrust members resiliently urged outwardly with respect to said frame and adapted to engage the side walls of the refrigerator and means for locking said thrust members in posi-

tion to hold said frame in place within said refrigerator.

3. In a refrigerator shelf support, a pair of thrust members adapted to engage the side walls of the refrigerator, resilient means normally urging said thrust members outwardly to engage the refrigerator side walls, and locking means adjustably secured to said thrust members for preventing relative inward movement of said thrust members in order to hold said shelf support against displacement.

4. In a refrigerator shelf support, a frame, spring-pressed plungers at each side of said frame urged outwardly to engage the side walls of a refrigerator and abutment members associated with each of said plungers and cooperating with said frame adapted to be adjusted after the shelf support has been initially positioned to prevent displacement of said shelf support by inward movement of said plungers.

5. In a refrigerator, a shelf support removably positioned within said refrigerator, spool-shaped rollers carried for rotation on vertical axes by said shelf support at each side thereof and a removable shelf slidably mounted within said refrigerator by said rollers.

6. In a refrigerator, a shelf support therein, a shelf carried by and slidable with respect to said support and rollers rotatable on vertical axes for mounting said shelf on said shelf support, said rollers having means to prevent vertical displacement of said shelf with respect to said shelf support.

7. In a refrigerator having up-raised portions upon imperforate side walls of a food containing compartment, a shelf support therein having extensible cup-shaped members suitable for engagement with said up-raised portions, a shelf carried by and slidable with respect to said support and rollers rotatable on vertical axes for mounting said shelf on said shelf support, said rollers having means to prevent vertical displacement of said shelf with respect to said shelf support.

8. In a refrigerator having indented portions upon imperforate side walls of a food containing compartment, a shelf support therein having extensible convex members suitable for engagement with said indented portions, a shelf carried by and slidable with respect to said support and rollers rotatable on vertical axes for mounting said shelf on said shelf support, said rollers having means to prevent vertical displacement of said shelf with respect to said shelf support.

9. In a refrigerator food compartment, a series of spool-shaped rollers mounted in said compartment and at each side thereof for rotation on vertical axes, a shelf slidably mounted in said compartment between the flanges of the rollers at each side of said compartment, whereby said shelf is supported by the lower flanges of said rollers and is held against tipping by the upper flanges of said rollers.

10. In a refrigerator food compartment, a shelf support removably supported in said compartment by engagement with the side walls thereof, a series of spool-shaped rollers mounted on and at each side of said shelf support for rotation on vertical axes, a shelf slidably mounted with respect to said shelf support between the flanges of the rollers at each side of said shelf support, whereby said shelf is supported by the lower flanges of said rollers and is held against tipping by the upper flanges of said rollers.

JOHN B. WHITED.