Nov. 10, 1964 C. J. PADGETT 3,156,509

SHELF GUARD FOR REFRIGERATOR DOOR SHELVES

Filed Dec. 4, 1963

FIG. 1

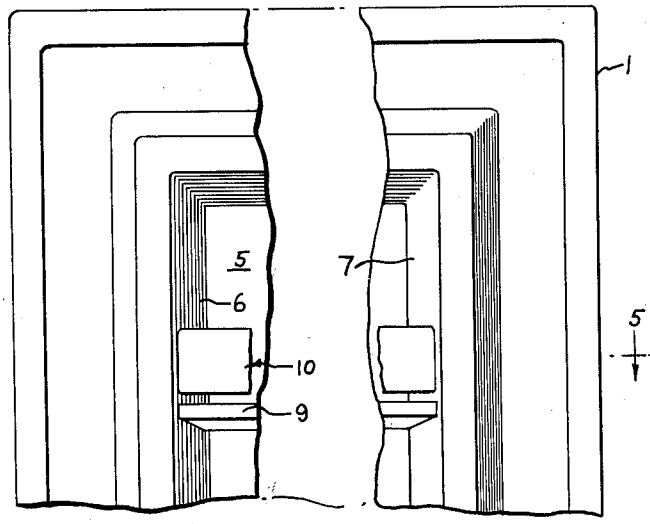


FIG. 2

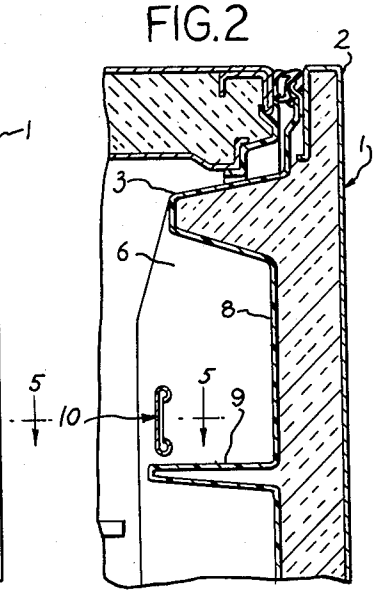


FIG. 3

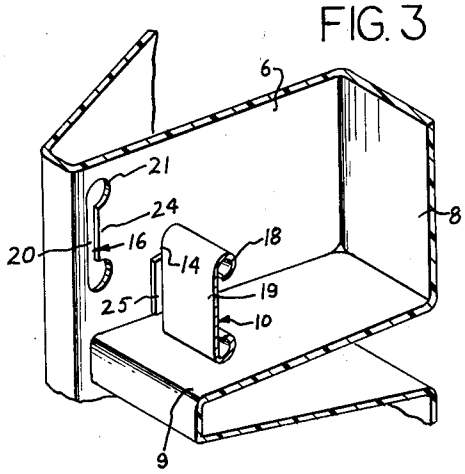


FIG. 4

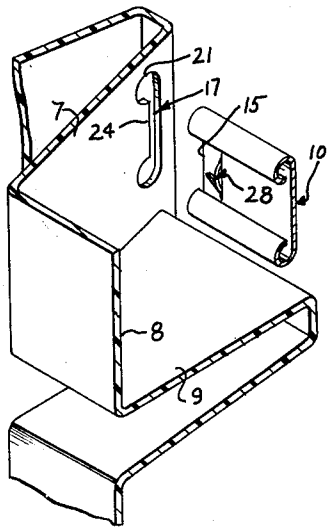
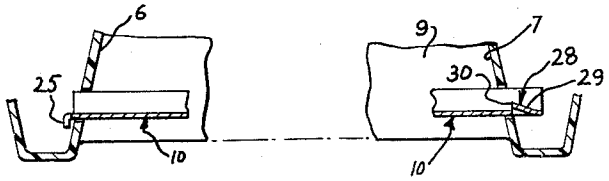


FIG. 5



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SHELF GUARD FOR REFRIGERATOR DOOR SHELVES

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2 Claims. (Cl. 312—214)

The present invention relates to a shelf guard for a refrigerator door shelf and is more particularly concerned with a new and improved means for supporting a shelf guard on the inner liner of a refrigerator door.

One object of the present invention is to provide a new and improved shelf guard which is of simple and low cost construction and which can be easily mounted on the inner liner of a refrigerator door.

Another object of the invention is to provide a shelf guard for a refrigerator door shelf including means for firmly anchoring the guard on the inner liner.

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

The guard structure of the present invention is specifically adapted for use in connection with a refrigerator door of the type including an inner liner having side walls defining a storage recess on the inner face of the door. Such inner doors are normally made by forming a plastic sheet material to define the entire inner liner including the side walls of the recess and one or more shelves bridging the space between the side walls. In order to prevent stored articles from falling from the shelves during closing of the door, a shelf guard is normally provided between the side walls above the shelf.

In accordance with a preferred embodiment of the present invention there is provided a shelf guard arrangement including a guard formed from a piece of sheet material, such as aluminum, to include upper and lower rolled edges connected by a thin intermediate section. The recess side walls are provided with horizontally aligned vertical openings above the door shelf for receiving the opposite ends of the guard. Each of these openings is of the general shape of the cross-section of the guard and includes a slot portion for receiving the intermediate section of the guard and enlarged end portions for receiving the rolled edges of the guard. These enlarged end portions are generally rearward of the slot portion and together with the slot portion form a somewhat flexible tab in forming one vertical side wall of the opening. The shelf guard is adapted to be inserted into these openings and to be securely anchored in the openings once the guard is mounted on the liner. Specifically, one end of the guard includes a forwardly extending flange which is adapted to be received in one of the openings when the shelf guard is held at a horizontal angle with the liner and is adapted to engage the rear surface of the side wall after the guard has passed through the opening. The other end of the guard includes a dimple lanced from the intermediate section of the guard. The dimensions of the dimple are such that, due to the resiliency of the tab adjacent the opening in the liner side wall, the dimple can be passed through the opening during insertion of the guard end into the opening while an edge portion of the dimple extending rearwardly from the intermediate section of the guard is adapted to engage the rear surface of the tab and to anchor that end of the guard after insertion thereof through the opening.

For a better understanding of the invention reference may be had to the following description taken in conjunciton with the accompanying drawings, in which:

FIGURE 1 is a fragmentary view of a refrigerator cabinet door incorporating the present invention;

FIGURE 2 is a vertical section of the door taken generally along line 2—2 of FIGURE 1;

FIGURE 3 is an enlarged fragmentary perspective view of one side wall portion of the door illustrating certain details of the present invention;

FIGURE 4 is an enlarged fragmentary perspective view of the opposite side wall portion of the door illustrating additional details of the present invention; and

FIGURE 5 is a sectional view taken generally along line 5—5 of FIGURE 2.

Referring now to FIGURES 1 and 2 of the drawing, there is illustrated a refrigerator door 1 for closing the access opening to the storage compartment of a refrigerator cabinet, the door being of the type having an outer panel 2 and an inner wall or liner 3. The liner 3 is preferably formed from a sheet of heat insulating thermoplastic material and is of a one-piece construction formed to include a relatively large central recess 5 defined in part by opposed side walls 6 and 7 and a rear wall 8. Integrally formed as part of the liner 3 are one or more shelves 9 extending across the recess 5 between the side walls 6 and 7. The shelf or shelves 9 are employd for storing the usual small food articles on the door of the refrigerator and to prevent these articles from falling off of the shelf during opening and closing movement of the door, there is provided a shelf guard 10 extending across the recess 5 between the side walls 6 and 7 above and generally slightly forward of the front edge of the shelf or shelves 9.

In accordance with the present invention, the shelf guard 10 is a low cost, simple structure particularly adapted to be front mounted on the liner 3 after the liner 3 has been assembled to the outer panel 2. To this end the guard 10 is formed from a strip of sheet metal or the like of a length somewhat greater than the distance between the opposed side walls 6 and 7 so that the opposite ends 14 and 15 thereof pass through openings 16 and 17 provided respectively in the side walls 6 and 7. For strengthening and decorative purposes the guard 10 includes rearwardly rolled upper and lower edges 18 which are connected by the thin intermediate section 19 and each of the openings 16 and 17 comprise a relatively narrow slot intermediate portion 20 for receiving the intermediate section 19 of the guard 10 and enlarged end portions 21 for receiving the rolled edges 18 of the shelf guard 10. This shape of the openings 16 and 17 in which the enlarged end portions 21 extend rearwardly from the slot 20 define somewhat flexible tabs 24 form one vertical wall of the openings 16 and 17, the purpose of which will be described more fully hereinafter.

For the purpose of normally anchoring the guard 10 in the openings 16 and 17, one end 14 of the guard is provided with a forwardly extending flange 25 of a dimension such that with the guard positioned at an angle to the liner 3, the flange can be passed through the opening after which the guard can be moved to substantially its normal position parallel to the rear wall 8 of the recess in which position the end 14 of the guard readily passes into the opening 16. After insertion into the opening 16, the flange 25 contacts the rear surface of the wall 6 for anchoring the end 14 of the guard 10 in the opening 16.

The opposite end 15 of the guard 10 is adapted to slide into the opening 17 after insertion of the end 14 in opening 16. For the purpose of anchoring the guard in opening 17, the end 15 of the guard is provided with a dimple 28 of generally arcuate vertical section, which dimple is lanced out of the intermediate portion 19 of the guard in the same direction as the rolled edges 18. As is shown more clearly in FIGURE 5 of the drawing, this dimple

includes a sloping surface **29** which engages and flexes the tab **24** during insertion of the end **15** in the opening **17**. The dimple is of a dimension such that while the tab **24** can flex sufficiently to permit the dimple **28** to pass through the opening **17**, after insertion of the guard into the opening **17** the cut edge **30** of the dimple will engage the rear surface of the wall **7** or more specifically the rear surface of the tab **24** thereby anchoring the end **15** of the guard **10**.

A particular advantage of the shelf guard of the present invention while it is firmly anchored on the liner, it can be removed or replaced without disassembling the door **1**. For example, if the guard **10** is in any way damaged during use, it can be removed by forcing the guard horizontally to pull the dimple **28** through the opening **17**. Even if the tab **24** becomes chipped by the dimple edge **30**, a replacement guard **10** can be anchored on the liner **3** merely by reversing the ends thereof so that the flange **25** is passed into the opening **17** while the end **15** is passed into the opening **16** for engagement with the undamaged tab defined by that opening.

While there has been shown and described a preferred embodiment of the present invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and it is therefore intended by the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

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

1. In a refrigerator door including an inner liner comprising side walls defining a recess and a shelf within said recess extending between said side walls, a shelf guard adapted to bridge the space between said side walls and comprising a member having symmetrical upper and lower rolled edges joined by a thin intermediate section, a vertical opening in each of said side walls above said shelf for respectively receiving the opposite ends of said guard, each of said openings including a slot portion for receiving said intermediate section of said guard and enlarged end portions at the upper and lower ends of said slot portion for receiving said rolled edges, said end portions and the inner edge of said slot portion defining a resilient tab, a forwardly extending flange on one end of said guard adapted to pass through one of said openings when said guard is positioned at an angle to said inner liner and to engage the rear surface of the side wall adjacent said one opening when said guard is moved to a position adjacent said shelf, the other end of said guard comprising an arcuate dimple lanced from the intermediate section of said guard on the same side thereof as said rolled edges and adapted to snap past said tab portion of the other of said openings and having an edge portion offset from said intermediate section of said guard for engaging the rear surface of said tab.

2. In a refrigerator door including an inner liner comprising side walls defining a recess and a shelf within said recess extending between said side walls, a shelf guard adapted to bridge the space between said side walls and comprising a sheet metal member having symmetrical upper and lower rearwardly rolled edges joined by a thin intermediate section, a vertical opening in each of said side walls above said shelf for respectively receiving the opposite ends of said guard, each of said openings including a slot portion for receiving said intermediate section of said guard and enlarged end portions at the upper and lower ends and rearwardly of said slot portion for receiving said rolled edges, said end portions and the inner edge of said slot portion defining a resilient tab, a forwardly extending flange on one end of said guard adapted to pass through one of said openings when said guard is positioned at an angle to said inner liner and to engage the rear surface of the side wall adjacent said one opening when said guard is moved to a position above said shelf, the other end of said guard comprising a rearwardly extending arcuate dimple lanced from the intermediate section of said guard and adapted to snap past said tab portion of the other of said openings and having an edge portion offset from said intermediate section of said guard for engaging the rear surface of said tab.

References Cited in the file of this patent

UNITED STATES PATENTS

2,216,621	Mackinga	Oct. 1, 1940
2,746,828	Amore	May 22, 1956
2,784,044	Kurowski	Mar. 5, 1957