Jan. 4, 1966 E. H. ROBERTS 3,227,502

SHELF GUARD FOR REFRIGERATOR DOOR SHELVES

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FIG.1

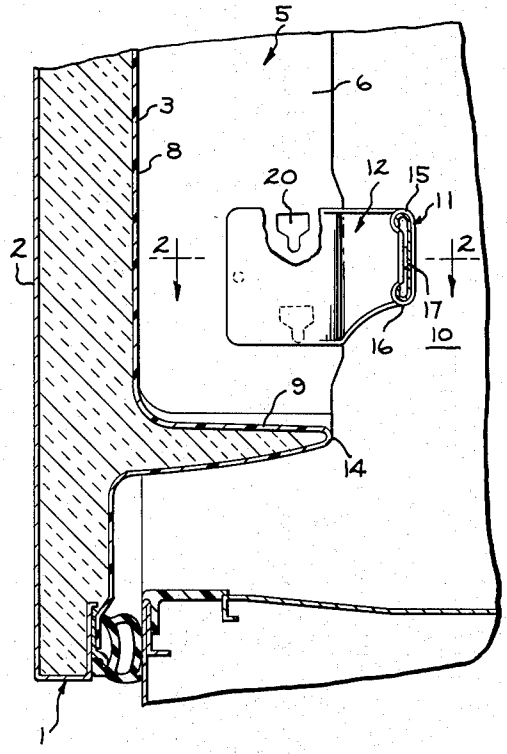
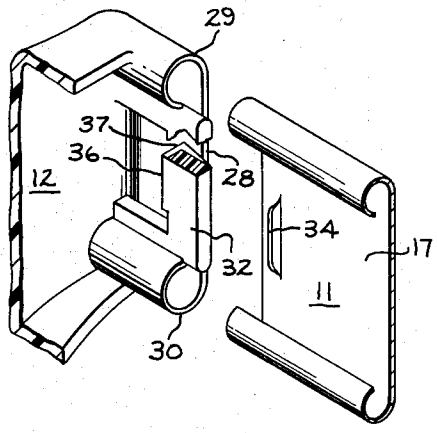


FIG.3



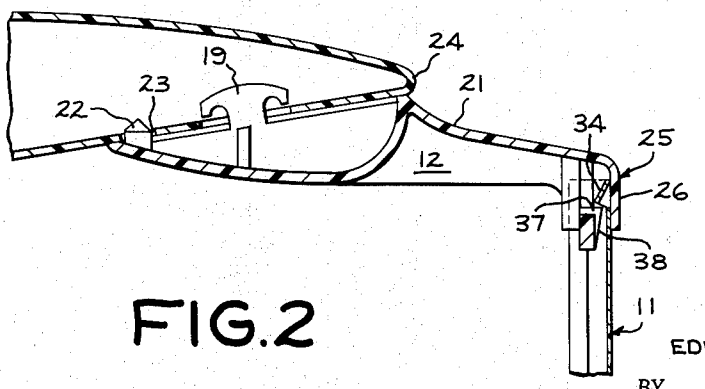


FIG.2

INVENTOR.
EDWARD H. ROBERTS

BY Walter E. Rule

HIS ATTORNEY

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SHELF GUARD FOR REFRIGERATOR DOOR SHELVES

Edward H. Roberts, Jeffersontown, Ky., assignor to General Electric Company, a corporation of New York

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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.

A primary object of the present invention is to provide a new and improved shelf guard which can be easily assembled and mounted on the inner liner of a refrigerator door and which includes a cross member supported forwardly from the edge of the shelf.

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

The shelf 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 each shelf.

In accordance with the present invention a refrigerator door including an inner liner comprising side walls defining a recess and a shelf within said recess extending between said side walls is provided with a shelf guard for bridging the space between the side walls and comprising a cross member of sheet metal, such as aluminum, having symmetrical upper and lower rolled edges joined by a thin intermediate section and horizontally extending end members supporting the cross member on the side walls above and forwardly from the foward edge of the shelf. Each of the end members including a base section adapted to be mounted on and secured to one of the side walls and an inwardly extending end section for receiving and supporting an end of the cross member. The end section of each end member includes a face portion adapted to overlie the front surface of one end of the cross member and upper and lower rearwardly rolled edges defining openings for receiving the upper and lower rolled edges of the cross member. In order to removably anchor the ends of the cross member to the end members, each end member includes a resilient bridge connecting the rolled edge portions and spaced from the face portion of the end member to form a slot for receiving the thin intermediate section of the cross member. Each end of the cross member includes a rearwardly projecting dimple lanced from the intermediate section of the cross member, which dimple is adapted to snap past and engage the bridge for anchoring the cross member to the end members.

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

FIGURE 1 is a vertical section of a portion of a refrigerator cabinet door incorporating the shelf guard of the present invention;

FIGURE 2 is a horizontal section taken generally along line 2—2 of FIGURE 1; and

FIGURE 3 is an enlarge fragmentary perspective view

of portions of the guard structure illustrating certain details of the present invention.

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 vertical side wall **6** (only one of which is shown) and a rear wall **8**. Integrally formed as part of the liner **3** is at least one shelf **9** extending horizontally across the recess **5** between the side wall **6**. The shelf **9** is normally employed 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 extending across the recess **5** between the side walls **6** above and generally slightly forward of the front edge of the shelf **9**.

In accordance with the present invention, the shelf guard, generally indicated by the numeral **10**, is of a low cost simple structure and includes a cross member **11** and opposed side members **12** designed to support the cross member **11** on the side walls **6** in a position forward from the front edge **14** of the shelf **9**. The cross member **11** is preferably formed from a strip of sheet metal or the like including rearwardly rolled upper and lower edges **15** and **16** connected by a thin intermediate section **17**.

The opposed end members **12**, composed of metal or plastic material, are suitably secured to the opposed recess wall **6** above the shelf **9**. In the illustrated embodiment of the invention, the end members **12** are supported on the side wall **6** by means of T-shaped projections **19** adapted to be received in and lockingly engaged T-shaped slots **20** provided in the sidewalls **6**. By this arrangement the base portion **21** of each end member are securely anchored to the side walls **20**. If desired a projection **22** on the base member adapted to fit into a suitable opening **23** in the side walls may be provided to removably lock the end members in place.

The base portion **21** of each end member extends beyond the forward edge **14** of the shelf **9** and also beyond the forward edge **24** of each side wall **6** and terminates in an end section **25** extending substantially parallel to the edge **14** of the shelf, that is inwardly, across the face of the recess **5**. Each of these end sections **25** ar, adapted to receive and support one end of the cross member **11**. To this end each end section includes a face portion **26** adapted to overlie the front surface of an end of the cross member **11** with upper and lower edges **29** and **30** of the face portion terminating in rolled edge portions forming openings for receiving the upper and lower rolled edges of the cross member **11**. By this arrangement, and either before or after the end members **12** are assembled on the side walls **6**, the ends of the cross member **11** can be respectively inserted into the end sections **25** rearwardly from the face portion **28**.

For the purpose of normally anchoring the cross member **11** to each of the end members **12**, the end section **25** of each of the end members **12** also includes a bridge **32** connected at its upper and lower ends to the edges **29** and **30** and bridging the space between these edges in spaced relationship with the face portion **28**. The thin intermediate portion **17** of the cross guard is adapted to pass through the space between the face portion **28** and the bridge **32** and is so designed that after insertion of an end of the cross member **17** into this space, an arcuate dimple **34** is lanced out of the intermediate por-

tion of the guard rearwardly, or in other words in the same direction as the rolled edges **15** and **16**, is designed to engage the inner surface **36** of the bridge **32** thereby anchoring an end of the cross member **11** to an end member **12**. Preferably the bridge **32** is composed of a material or is of such dimensions as to be slightly resilient in order to permit the dimple **34** to pass it during the assembly operation. If desired, the bridge **32** may be provided with a thickened central portion **37** having a sloping forward wall **38** which permits the dimple to pass the bridge during assembly but which is engaged by the dimple for anchoring purposes once the assembly is completed. This construction is shown in FIGURE 3 in which the upper portion of bridge **32** is broken away to show more clearly the central portion **37** thereof.

It will be seen that the subject shelf guard is of such construction that any one of the three components thereof can be easily removed or replaced. For example, if the cross member **11** or either of the end members **12** is in any way damaged during use, that member can be separated from the remaining components of the shelf guard or from the door as the case may be after which a new member is substituted therefor. The cross member can be separated from each of the end members **12** merely by flexing the bridge member **32** sufficient to permit the dimple **34** to pass between it and the face portion **28** as the cross member **11** is withdrawn from the end member. Thereafter either a new end member or a new cross member, as the case may be, is substituted for the damaged components.

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 scope of the invention it is therefore intended by the appended claims to cover all such changes and modifications as fall within the true spirit 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 bridging the space between said side walls comprising a cross member having symmetrical upper and lower rolled edges joined by a thin intermediate section and horizontally extending end members supporting said cross member on said side walls,

each of said end members including a base section mounted on one of said side walls and an inwardly extending end section for receiving and supporting an end of said cross member,

said end section comprising a face portion overlying the front surface of said cross member,

the upper and lower edges of said face portion terminating in rolled edge portions for receiving the rolled edges of said cross member,

a resilient bridge connecting said rolled edge portions and forming with said face portion a slot for receiving said intermediate section of said cross member,

each end of said cross member including means adapted to engage said bridge for removably anchoring said cross member to said end members.

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 bridging the space between said side walls comprising a cross member having symmetrical upper and lower rolled edges joined by a thin intermediate section and horizontally extending end members supporting said cross member on said side walls,

each of said end members including a base section mounted on one of said side walls and extending forwardly therefrom and an inwardly extending end section for receiving and supporting an end of said cross member,

said end section comprising a face portion overlying the front surface of said cross member,

the upper and lower edges of said face portion terminating in rolled edge portions forming openings for receiving the rolled edges of said cross member,

a resilient bridge connecting said rolled edge portions and forming with said face portion a slot for receiving said intermediate section of said cross member,

each end of said cross member including a dimple lanced from the intermediate section of said cross member on the same side thereof as said rolled edges and adapted to snap past and engage said bridge for removably anchoring said cross member to said end members.

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CLAUDE A. LEROY, *Primary Examiner.*

CHANCELLOR E. HARRIS, *Examiner.*