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Bernard

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[54] **RETAINER FOR REFRIGERATOR SHELF**

[75] Inventor: **James A. Bernard**, Dayton, Ohio

[73] Assignee: **General Motors Corporation**, Detroit, Mich.

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[52] **U.S. Cl.** ..... **312/138 A**; 211/74; 211/184

[51] **Int. Cl.²** **A47D 73/00**; **A47F 5/13**

[58] **Field of Search** ..... 312/138 A; 211/74, 184; 248/311

[56] **References Cited**

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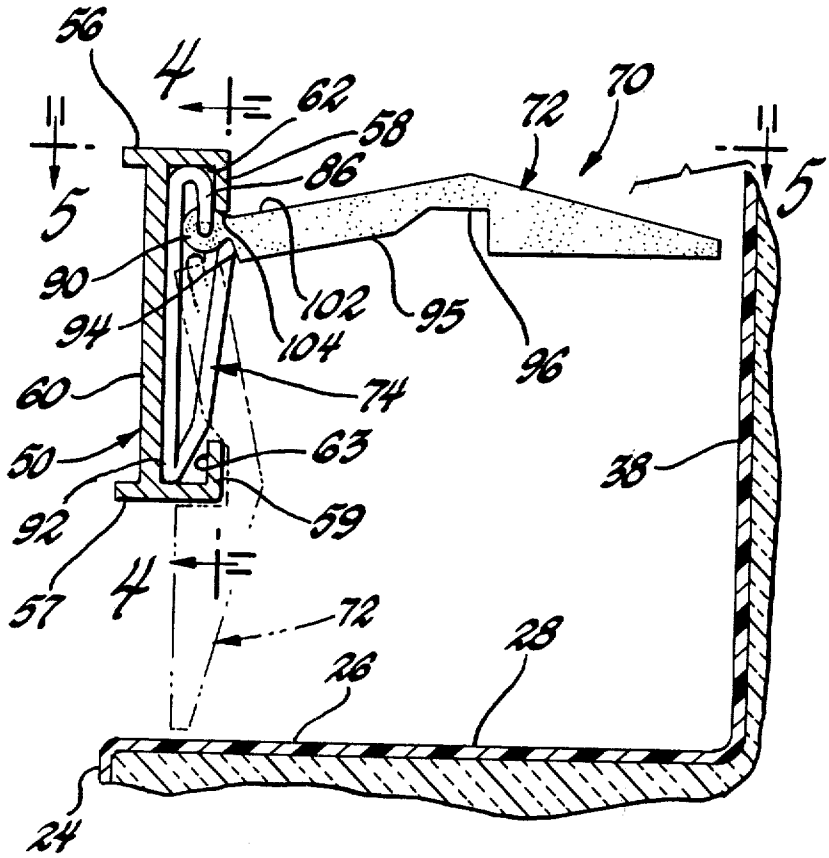
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Primary Examiner—Paul R. Gilliam
Assistant Examiner—Alex Grosz
Attorney, Agent, or Firm—Edward P. Barthel

[57] **ABSTRACT**

A shelf front or guard for a refrigerator has vertically opposed longitudinally extending grooves on the inner face thereof for slidably receiving a torsion overcenter hinge spring of an article retainer assembly. The retainer assembly includes a finger-like member pivotally supported on the torsion spring for movement from a downwardly extending retracted slidable position to a fixed horizontally extending position to prevent tall containers from tipping over when the door is closed.

2 Claims, 5 Drawing Figures



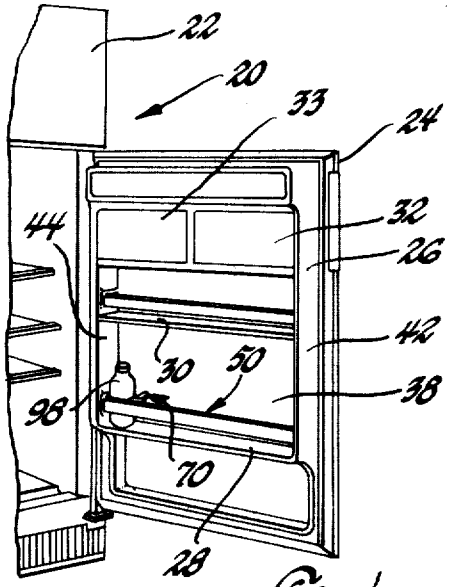


Fig. 1

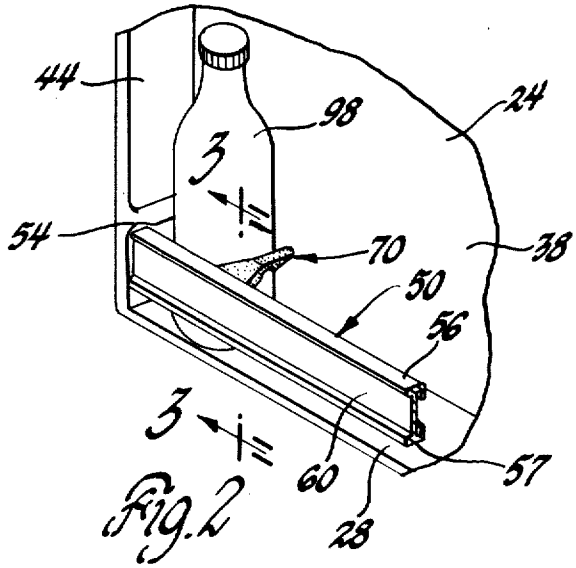


Fig. 2

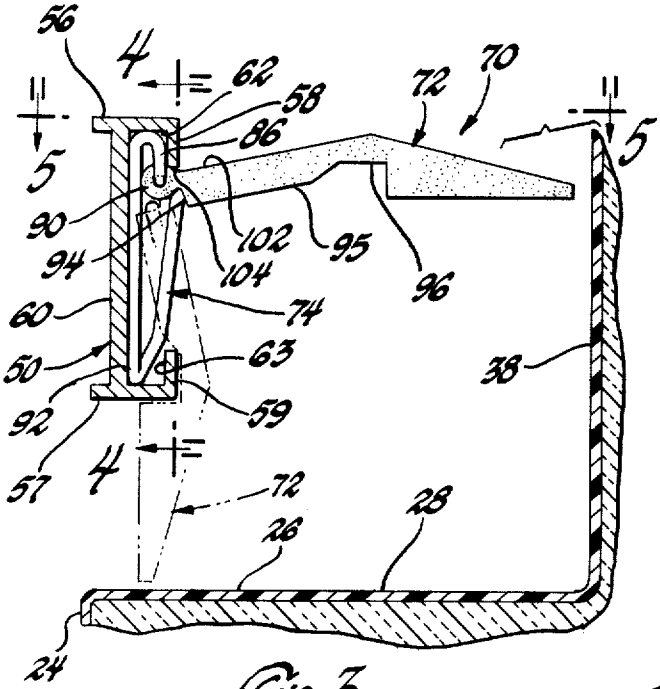


Fig. 3

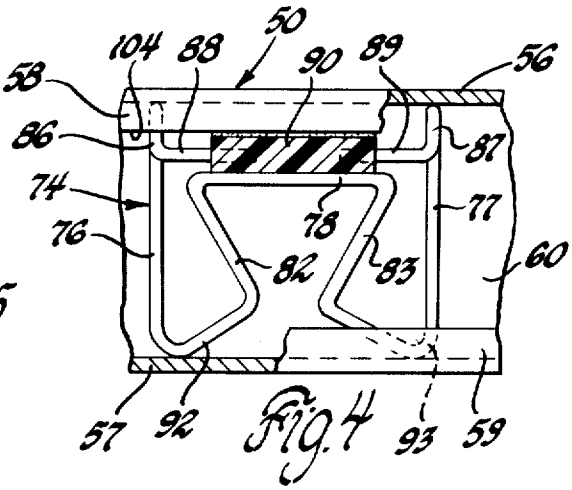


Fig. 4

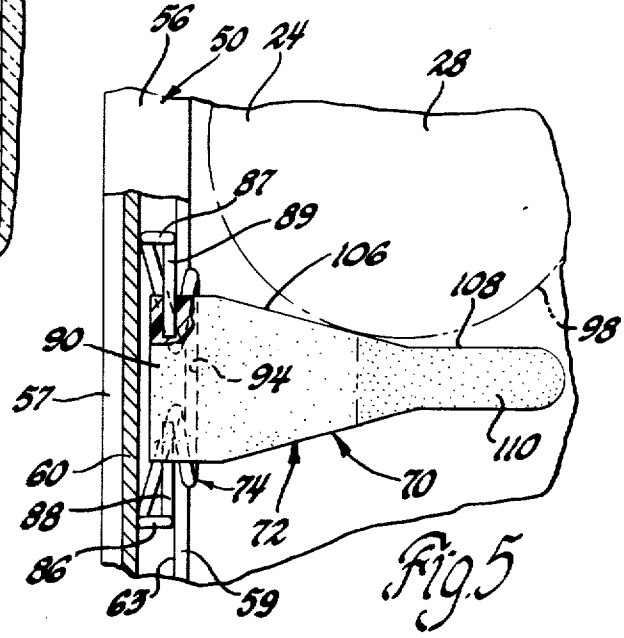


Fig. 5

RETAINER FOR REFRIGERATOR SHELF

The present invention relates to a refrigerator compartment shelf and guard assembly and more particularly to a door shelf construction incorporating a slidable and retractable retainer assembly adapted to be mounted on the shelf guard rail.

The storage of different sized food containers on shelves within a recess provided in a refrigerator door includes front guards or rails to prevent containers from sliding off the shelves when the door is closed. It is not possible to have the front guard as high above the shelf as necessary to prevent tall containers such as pop bottles, ketchup bottles, etc. from falling sideways on the shelf when the door is closed whereby it is possible for them to impact on other containers, the plastic shelves or the guard rails resulting in breakage or cracking of the same.

It is therefore an object of the present invention to provide an improved shelf and guard rail mounting structure for a refrigerator door shelf with the guard rail having a slidably adjustable finger retainer movable horizontally along the rail to engage a tall or oversized container and maintain it in its upright position upon closing of the refrigerator door.

It is a further object of the present invention to provide an improved shelf and guard rail assembly for a refrigerator door shelf having a horizontally adjustable retainer for contacting and holding a tall container in an upright position adjacent one end of the shelf structure or another container on a refrigerator door, wherein the retainer is pivotally supported by an overcenter torsion hinge spring such that when the finger is in its downward retracted position the torsion spring slides within longitudinally extending grooves on the inner face of the guard rail, and upon upwardly pivoting the retainer to a horizontal position the spring biases the retainer into engagement with the shelf guard preventing the retainer from being moved horizontally.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the Drawings:

FIG. 1 is a perspective view of a portion of a refrigerator with its lower door open showing shelf fronts on the inside of the door;

FIG. 2 is an enlarged fragmentary perspective view of a portion of one shelf of the door illustrating the retainer in its extended position contacting a tall container;

FIG. 3 is an enlarged vertical section taken on the line 3—3 of FIG. 2;

FIG. 4 is a vertical view partly in section taken on the line 4—4 of FIG. 3;

FIG. 5 is a horizontal view partly in section taken on the line 5—5 of FIG. 3.

Referring now to FIG. 1 of the drawing, there is shown a portion of a refrigerator cabinet **20** having an upper freezer door **22** shown in the closed position and a lower fresh food compartment door **24** shown in the open position. The lower door **24** includes an inner door pan or liner **26** molded of suitable sheet plastic which is formed to provide a bottom shelf **28**, a second shelf **30**, and upper compartments **32** and **33** for storage of butter and the like. Between the shelves **28** and **30** there is provided a recess **38** having protruding side walls **42** and **44** along the sides of the recesses.

As seen in FIG. 2, above the first shelf **28** there is provided an ornamental metal shelf front or guard **50**, preferably made of aluminum, extending substantially straight across the recess **38** above the shelf **28**. The ends of the guard **50** are received in right-angled retainer members **54** adapted to have one leg (not shown) telescope in the ends of the guard **50** and their other leg received in an aperture in the side wall **44** to retain the guard in its secured position spaced above the shelf **28**.

As best seen in FIG. 3, the shelf front or guard **50** has a generally I-beam cross-section provided with a horizontal top flange **56**, a bottom flange **57** integral with an intermediate vertical web portion **60**. The top flange **56** has a downwardly extending return flange **58** and the bottom flange has an upwardly extending return flange **59** to provide vertically opposed longitudinally extending upper and lower grooves **62** and **63** respectively, adjacent the inner face of the web **60** for the reception of a retainer assembly generally indicated at **70**.

With reference to FIGS. **3**, **4** and **5**, the retainer assembly is shown including a finger-like retainer member **72** supported on the inner face of shelf guard **50** by an integral hinge and torsion wire clip spring **74**. The hinge spring member **74** comprises a resilient wire having a generally U-shaped configuration to constitute a pair of spaced parallel legs **76** and **77** interconnected by bight or cross bar portion **78** that extends transversely of legs **76** and **77**. The bight portion **78** includes inwardly directed opposed V-shaped portions **82** and **83** extending rearwardly out of the plane of the legs **76**, **77** to the inwardly biased position of the cross bar **78** substantially in the plane of the return flanges **58** and **59**.

The hinge legs **76** and **77** each terminate in generally hairpin or looped portions **86** and **87** slidably disposed in the top groove **62** and with the extremities of the hairpin portions bent inwardly in opposed fashion to provide pintle portions **88** and **89** received within bores at each side face of the finger retainer boss portion **90**. The lower extremities of legs **76**, **77** are bent inwardly to provide knee portions **92** and **93** which are slidably received in the bottom groove **63** in a spring biased manner and are dimensioned to insure a pressure fit of the hinge spring within the guard rail top and bottom grooves.

The cross bar portion of the hinge spring **74** is received in a transverse groove **94** formed on the under surface **95** of the retainer finger **72** while a transverse intermediate notch **96** is located to receive the guard lower flange **57** and return flange **59** when the retainer finger is rotated downwardly to its retracted phantom lined position shown in FIGS. **3**.

In utilizing the retainer **70** a tall container such as bottle **98** is first placed on the shelf **28** behind guard **50** at one end portion thereof juxtaposed to a side wall, such as well **44** in FIG. **2**, which serves as one side support for the bottle. The retracted retainer assembly **70** is then pushed sidewardly in its opposed grooves **62**, **63** toward the left until it is adjacent the bottle **98** whereupon the retainer finger **72** is pivoted upwardly through an arc of about 90°. This allows the cross bar **78** to move or snap to its first overcenter position outward from the inner face of the guard rail, as shown in FIG.

3 as substantially in the plane of return flanges **58** and **59**, causing the upper surface **102** of the retainer to contact the lower edge **104** of return flange **58** thereby preventing unwanted movement of the retainer assembly. It will be seen that the retainer inwardly canted edge **106** allows the retainer finger **72** to engage and retain various diameter bottles either alone or in conjunction with the normal edge portion **108** of the extended finger portion **110** of the retainer. The retainer, of course, could be used to hold bottles upright adjacent the opposite wall **42** or against intermediate containers on the shelf **28**.

It will be noted that upon the finger member being pivoted to its retracted position, shown in phantom in FIG. **3**, the cross bar or bight **78** is snapped to a second overcenter position adjacent the inner face of guard rail web **60**. In this position the U-shaped hinge and wire spring **74** is freely slidable in the opposed upper and lower grooves **62** and **63** allowing the retainer finger to be easily positioned by the housewife to any desired location along the guard rail.

While the embodiment of the present invention constitutes a preferred form, it is to be understood that other forms might be adopted.

I claim:

1. In a refrigerator door of the type having a recess therein for the storage of foodstuffs, a shelf construction comprising a horizontal surface for supporting objects, a shelf guard extending across the recess above the shelf surface; said shelf guard having vertically opposed longitudinally extending upper and lower grooves on the inner surface thereof facing said recess, a retainer assembly mounted on said guard, said assembly including a finger member and an integral wire hinge and torsion spring having a generally inverted U-shaped configuration, said spring having its lower portion disposed in said bottom groove and its upper portion disposed in said upper groove, said spring including a cross bar resiliently biased to a first overcenter position outward from the inner face of said guard, the upper portion of said U-shaped spring bent inwardly to provide axially aligned opposed pintles, said finger member having aligned bores in one end receiving respective pintles so as to rotatably support said finger member for substantially right-angled pivotal movement about a horizontal axis from a downwardly extending vertical retracted position to a horizontal position extending normally from the rear face of said shelf guard, said finger member having a transverse groove formed in the under surface thereof receiving said cross bar, whereby said U-shaped retainer assembly being slidably movable in said grooves when said retainer is in its retracted position snapping said cross bar to a second overcenter position adjacent the guard inner face, and whereupon said finger member being rotated to its horizontal position said cross bar is snapped to its first overcenter position biasing said finger member into contact with said upper return flange such that said finger member is retained in its horizontally extending position adjacent a tall container to prevent same from tipping over when the door is closed.

2. In a refrigerator door of the type having a recess therein for the storage of foodstuffs, a shelf construction comprising a horizontal surface for supporting objects, a shelf guard extending across the recess above the shelf surface; said shelf guard having a generally I-beam cross-section provided with horizontal top and bottom flanges integral with a vertical web, said top flange having a downwardly extending return flange and said bottom flange having an upward extending return flange to provide vertically opposed longitudinally extending upper and lower grooves along the inner face of the vertical web, wherein the improvement comprising a retainer assembly including a finger member and an integral wire hinge and torsion spring having a generally U-shaped configuration providing a pair of vertically extending spaced parallel legs, with the lower extremity of each such leg having a curved knee portion disposed in said bottom groove, said knee portions having their other ends terminating in a pair of opposed V-shaped portions having respective upper ends, interconnected by a cross bar resiliently biased to a first overcenter position substantially in the plane of said return flanges, the respective upper ends of said legs terminating in respective U-shaped hairpin portions disposed in said top groove, the extremities of the hairpin portions bent inwardly to provide axially aligned opposed pintles, said finger member having aligned bores in one end receiving respective pintles so as to rotatably support said finger member for substantially right-angled pivotal movement about a horizontal axis from a downward vertical retracted position to a horizontal position extending normally from the rear face of said shelf guard, said finger member having a transverse groove formed in the under surface thereof receiving said cross bar, whereby said retainer assembly may be slidably moved in said grooves when said retainer is in its retracted position snapping said cross bar to a second overcenter position adjacent the guard inner face, and whereupon said finger being rotated to its horizontal position said cross bar is snapped to its first overcenter position with said retainer member in a horizontally extending position adjacent a tall container to prevent same from tipping over when the door is closed.

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