United States Patent [19]

Morishita

[11] **3,797,871**

[45] **Mar. 19, 1974**

[54] **DOOR HOLDER**

[75] Inventor: **Masao Morishita**, Kani, Japan

[73] Assignee: **Howa Sangyo Kabushiki Kaisha**, Nagoya-shi, Aichi-ken, Japan

[22] Filed: **Feb. 1, 1972**

[21] Appl. No.: **222,491**

[30] **Foreign Application Priority Data**

July 28, 1971 Japan 46-67579

[52] **U.S. Cl.** **292/209**, 16/147, 292/DIG. 65, 292/87

[51] **Int. Cl.** **E05c 3/04**

[58] **Field of Search** ..... 16/147; 292/81, 87, 202, 292/204, 209, DIG. 65, 304, 238, 136, 19, 17, 76, 103, 259

[56] **References Cited**

UNITED STATES PATENTS

1,718,026	6/1929	Blackman	292/76
1,274,947	8/1918	Seitz	292/76 X
1,083,904	1/1914	Mertsheimer	292/262
2,738,543	3/1956	Van Meter	16/147
3,059,271	10/1962	Erickson	292/304 X
3,654,663	4/1972	Algotsson	16/147
3,621,684	11/1971	Horvay et al.	292/87 X
3,690,708	9/1972	Worley et al.	292/DIG. 65

Primary Examiner—Richard E. Moore

Attorney, Agent, or Firm—Holman & Stern

[57] **ABSTRACT**

For holding the door of a cabinet or the like in a closed position, a bracket is secured to the cabinet adjacent to the openable end of the door. An L-shaped door retaining member is horizontally swingably mounted on the bracket through a stationary piece which has a concavity to receive a corresponding convexity formed on the door retaining member when the latter is in its door holding position. The retaining member is made of resilient material to yield to an excessive load exerted thereto when the door is forced open. The bracket may be one of four similar brackets respectively secured at the corners of the open end of the cabinet with two of the other three brackets pivotally supporting the door therebetween, so that the door is easily modifiable to open at the opposite end thereof.

7 Claims, 4 Drawing Figures

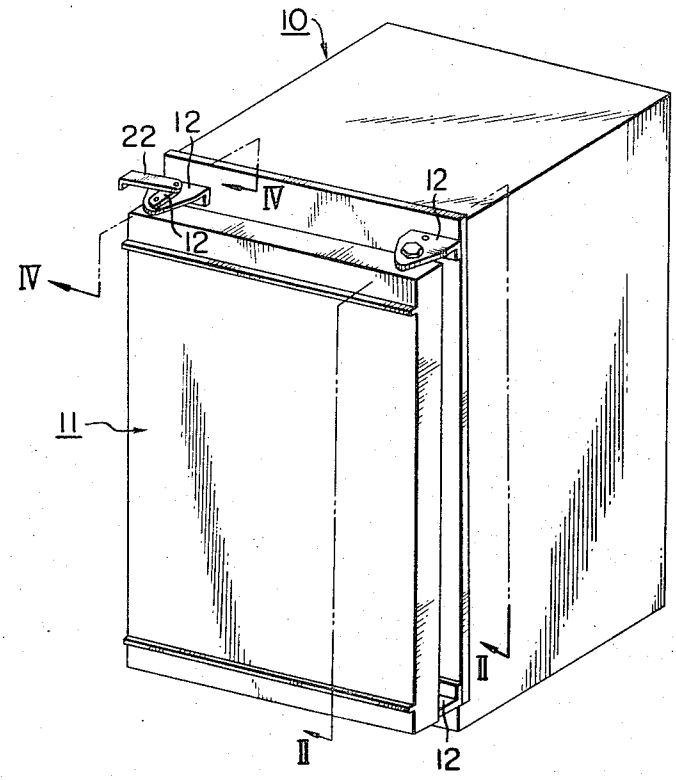


FIG. 1

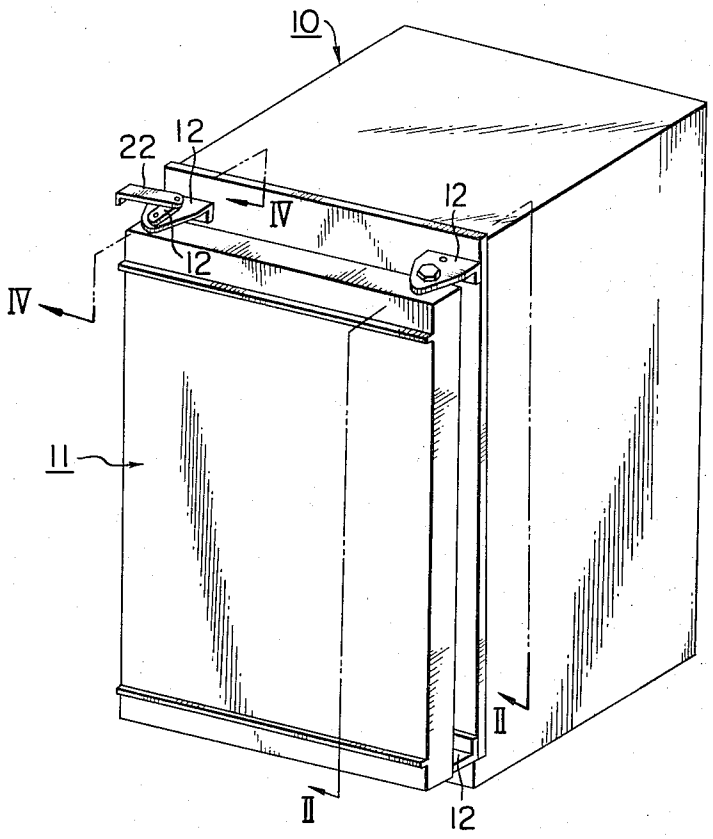


FIG. 2

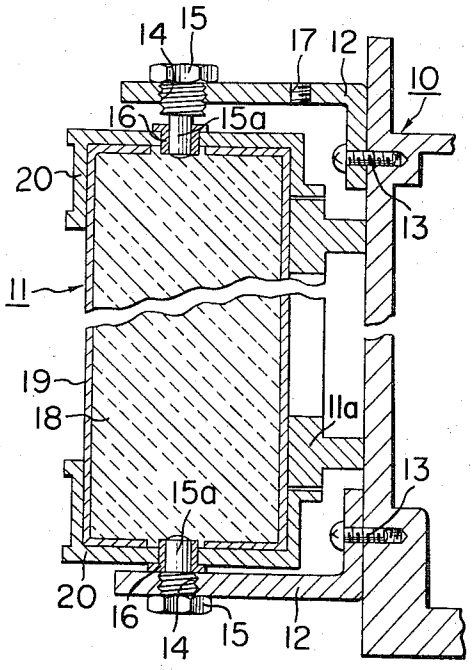


FIG. 3

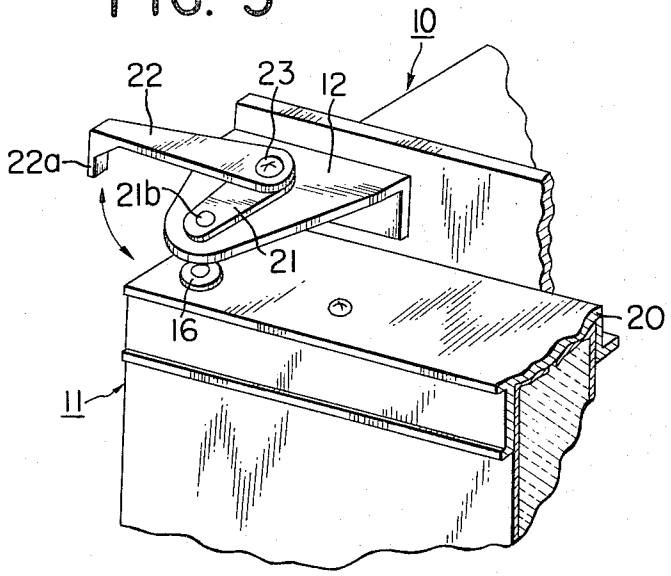
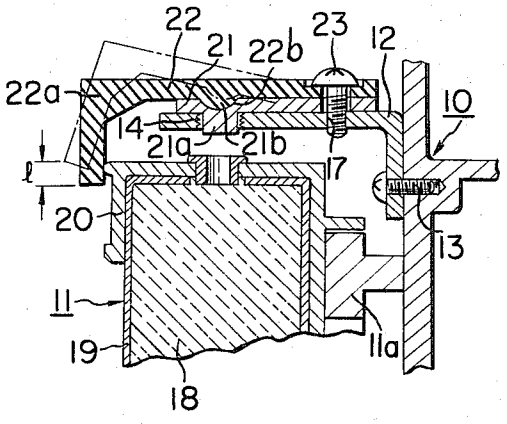

10
22
23
12
22a
21b
21
16
20
11

FIG. 4


22
21
22b
23
12
22a
10
14
21a
21b
17
20
13
11
19
11a
18

DOOR HOLDER

BACKGROUND OF THE INVENTION

The present invention relates to a novel door holding device for use with the doors of cabinets, repositories, and various other covered enclosures. In particular, the invention is directed to a novel device designed to prevent, up to a predetermined load, the accidental opening of the typically pivoted door of a refrigerator or the like.

Although given as a mere example of numerous applications of the door holding device of this invention, the refrigerator may be perhaps in the greatest need of the device, especially when it is installed with other kitchen facilities in a piggyback camping unit on a truck. The door of the refrigerator must then be held securely against the jolts of the truck. The door holding device for the refrigerator and some other cabinets or repositories, however, is desired to be such that while firmly holding the door under no extraordinary conditions, it yields to excessive loads applied thereto when, for example, the door is pressed from the inside of the refrigerator and so forth by a child entrapped therein.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a novel door holding device designed to prevent the accidental opening of the door of a cabinet or the like which is usually left unlocked.

Another object of the invention is to provide a door holding device of simple and inexpensive construction, to be attached to various doored cabinets or the like without substantially increasing the overall costs thereof.

Another object of the invention is to provide a door holding device wherein a door retaining member swingably supported on a bracket secured to a cabinet or the like adjacent to the openable end of its door is made of suitably resilient material, so that whenever required, the door can be forced open with the retaining member kept in its door holding position, without damaging either the door or the retaining member itself.

Still another object of the invention is to provide a door holding device for particular use with a doored cabinet or the like wherein the door is pivotally supported between two adjoining ones of four substantially identical brackets secured at the corners of the open end of the cabinet in order that the door may be easily modified to open from one or the opposite end thereof. In this manner, the door holding device can be formed in part by one of whichever two adjoining brackets is not supporting the door.

These and other objects of the invention, as well as advantages and characteristic features thereof, will be made apparent as the description proceeds hereinbelow.

According to the present invention, briefly summarized in its perhaps broadest aspects, there is provided a device for holding a door of a cabinet or the like in a closed position, comprising a bracket fixedly mounted on the cabinet or the like adjacent to the openable end of the door, and a door retaining member of resilient material swingably supported on the bracket, with the free end of the retaining member being bent downwardly to engage the openable end of the door when the same is closed.

The door holding device of this invention will be described more specifically in terms of a preferred embodiment thereof illustrated in the appended drawings throughout which like reference characters designate like parts.

BRIEF DESCRIPTION OF DRAWINGS

In the drawings:

FIG. 1 is a perspective view of a refrigerator equipped with a door holding device in accordance with the concepts of the present invention;

FIG. 2 is a partial vertical sectional view taken along the plane of line II—II in FIG. 1;

FIG. 3 is a fragmentary perspective view, showing the door holding device of the refrigerator of FIG. 1; and

FIG. 4 is a fragmentary vertical sectional view taken along the plane of line IV—IV in FIG. 1.

DETAILED DESCRIPTION

Referring now to the drawings, and first of all to FIG. 1 thereof illustrating the door holding device of the invention as adapted for the door of a refrigerator by way of example, in which the refrigerator comprises a cabinet **10** and a door **11**, with a door gasket **11***a* (FIG. 2) being mounted on the door **11**. Four brackets **12** are fixedly mounted at the corners of the open end of the cabinet, although the one at the bottom left is not seen in the drawing. In this manner the door **11** is easily modifiable so as to open either from the left, as does the illustrated example, or from the right to suit the requirements of use. The bracket at the top left in the drawing constitutes a part of the door holding device of the invention hereinafter to be described, while the two brackets seen on the right pivotally support the door **11** therebetween, as illustrated in greater detail in FIG. **2**.

The brackets **12** are each screw-mounted at **13** on the cabinet **10** and are each formed with a tapped hole **14** into which a screw **15** is inserted. Unthreaded portions 15_a of the shanks of the screws **15** are slidably received in flanged bushings **16** which are buried in the upper and the lower ends, respectively of the door **11**. An additional tapped hole **17** extending vertically through the upper bracket **12** of FIG. **2** will be referred to later in this specification. It should be noted that the other two brackets not shown in this figure are formed exactly like their respective counterparts described in this paragraph, being both complete with the tapped holes **14** and similarly screw-mounted on the front face of the cabinet **10**, with the additional tapped hole **17** formed only in the upper one of the other two brackets. Although not essential for the makeup and operation of the door holding device of this invention, the door **11** may contain a suitable heat insulating material **18** packed in an enclosure **19** having upper and lower reinforcing channel members **20**. It will be noted that the door **11** is thus pivotable about the common axis of the screws **15**.

Referring now to both FIGS. **3** and **4**, a flat stationary piece **21** is mounted on the bracket **12** as seen on the top left in FIG. **1**, with the piece **21** having on the lower surface thereof a projection 21_a inserted into the tapped hole **14** to close the same and also to make itself immovable. A substantially L-shaped door retaining member **22** of suitably resilient material such as plastic is horizontally swingably supported at one end by a

screw 23 inserted through the stationary piece 21 into the tapped hole 17 of the bracket 12. The member 22 has a downwardly depending arm 22*a*. A concavity 21_b is formed in the upper surface of the stationary piece 21, preferably in alignment with the projection 21_a, while a corresponding convexity 22*b* is formed on the lower surface of the retaining member 22. A flanged bushing 16 and another, not shown, at the lower end of the door 11 are provided to receive the screws 15, FIG. 2, when the door is modified to open at its opposite side as above described.

The resiliency of the retaining member 22 and the length *l* of the end portion of the arm 22*a* which extends below the uppermost edge of the door 11 when the member 22 is in its working position shown in FIG. 4 may be determined interrelatedly, in consideration of the possible load to which the member 22 is subjected when the door is forced open.

In the above described construction of the door holding device of this invention, the door retaining member 22, which is horizontally swingable as indicated by the double-headed arrow in FIG. 3, is manually turned to the position clear of the door 11, as illustrated in the figure, in order to open the door 11. After closing the door, the door retaining member may be turned in the opposite direction until its convexity 22*b* is firmly received in the corresponding concavity 21_b in the stationary piece 21, as illustrated in FIG. 4, in which condition, the retaining member holds the door in position by means of its arm 22_a.

When excessive force has been applied in the opening direction of the door, however, as by an unknowing user or by a child entrapped within the cabinet 10, the member 22 will be overloaded and flex upwardly, as shown by the dot-and dash line in FIG. 4, thereby permitting the door to be opened without any damage either to the door or to the retaining member itself.

As may be already apparent, when the door 11 is modified to open at the right-hand end thereof as viewed in FIG. 1, the screws 15 of FIG. 2 are respectively inserted into the tapped holes 14 of the two brackets 12 seen on the left in FIG. 1 and further into the flanged bushings 16 of the door 11 to pivotally support the same therebetween. The stationary piece 21 and the retaining member 22 of FIG. 3 are then mounted on the upper bracket 12 of FIG. 2, with the screw 25 inserted therethrough into the additional tapped hole 17 of the bracket. The tapped hole 14 of the same bracket is, of course, closed with the projection 21_a of the stationary piece 21.

I claim:

1. A device for holding a door of a cabinet or the like in a closed position, comprising a bracket fixedly mounted on said cabinet adjacent to the openable end of the door, and a door retaining member of resilient material swingably supported on said bracket, the face end of said retaining member being bent downwardly to engage said openable end of said door when the same is closed, said bracket being one of four substantially identical brackets respectively secured at the corners of the open end of said cabinet, two vertically adjoining ones of the other three brackets pivotally supporting said door therebetween by screw-threaded members inserted into tapped holes formed therethrough, the other two adjoining ones which include the first recited bracket being also formed with tapped holes, whereby said door is easily modifiable to open from the opposite end thereof.

2. The device according to claim 1, wherein said tapped hole of the first recited bracket is closed with a projection formed on one surface of a stationary piece mounted between the bracket and said door retaining member, said stationary piece having a concavity formed in the opposite surface thereof to receive a corresponding convexity formed on said retaining member when the latter is in its door holding position.

3. The device according to claim 2, wherein said projection and said concavity of said stationary piece are aligned with each other.

4. The device according to claim 2, wherein said door retaining member is supported by a pin at one end thereof, said pin including a shank at least partly screw-threaded to be received in a second tapped hole of the first recited bracket through said stationary piece.

5. The device according to claim 4, wherein at least one of said two adjoining brackets which pivotally support said door therebetween is similarly formed with a second tapped hole therethrough, whereby when said door has been modified to open at the opposite end thereof, said retaining member and said stationary piece can be easily mounted on said at least one bracket having said second tapped hole.

6. A device for holding a door of a cabinet or the like in a closed position, comprising a planar bracket fixedly mounted on the cabinet adjacent to the openable end of the door and extending in a direction perpendicular to the plane of the face of the door, a generally flat stationary piece secured on said bracket and having profiled engaging means on the surface thereof, and a door retaining member of resilient material pivotally mounted at its proximal end on said bracket so as to be rockable in a plane parallel to said bracket in sliding contact with the surface of said stationary piece, said retaining member having on its distal end a door holding arm angularly bent toward said door in a direction parallel to the plane of the front face of said door in a closed position and also having other profiled engaging means, complementary to and engageable with the first mentioned profiled engaging means, said retaining member being rockable between a first position in which the arm of the retaining member is clear of the door and a second position in which the arm of the retaining member engages the front face of the door for preventing the door from opening, and said second mentioned profiled engaging means on the retaining member being in engagement with the first mentioned profiled engaging means for preventing unintentional rocking movement of the retaining member relative to said stationary piece and hence said bracket.

7. The device according to claim 6 in which said first mentioned profiled engaging means is a concavity and said other profiled engaging means is a convexity, said bracket having a screw-threaded hole, and a projection on the stationary piece received in said screw-threaded hole.

* * * * *