July 3, 1956 E. G. FORSSELL 2,753,207

KEEPER FOR DOOR FASTENERS

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Fig. 1

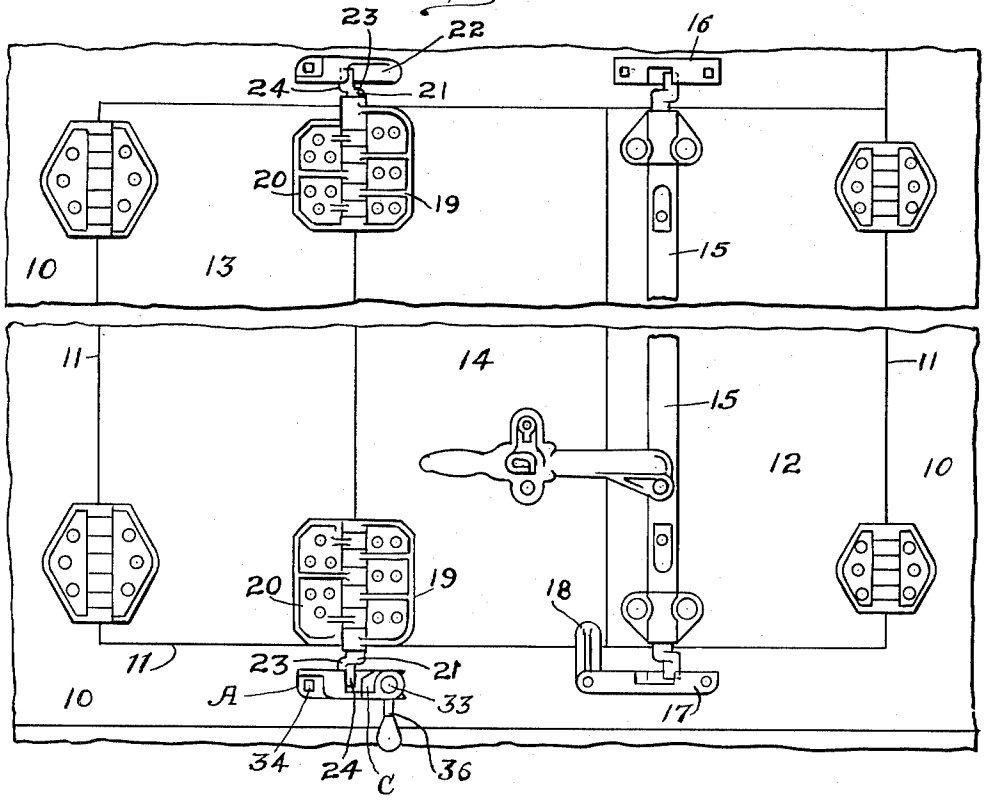
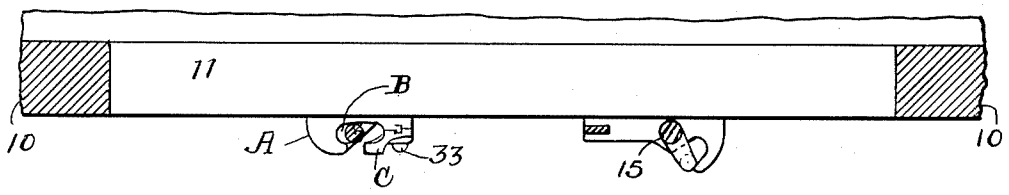


Fig. 2



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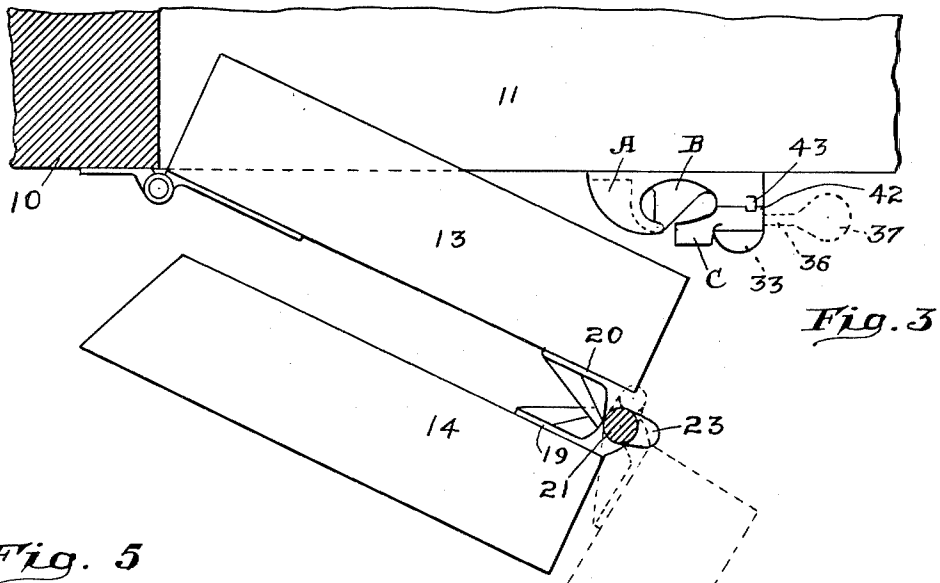
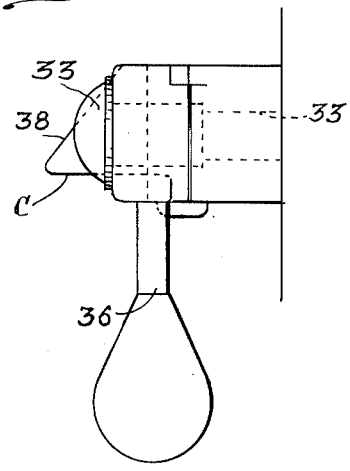


Fig. 3

Fig. 5



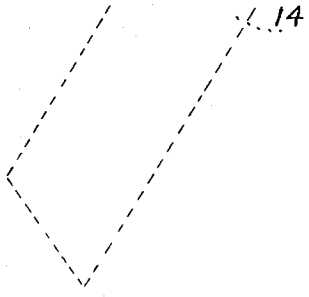
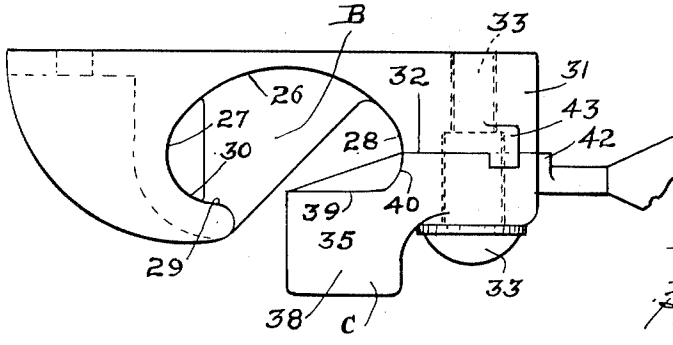


Fig. 4



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Fig. 6

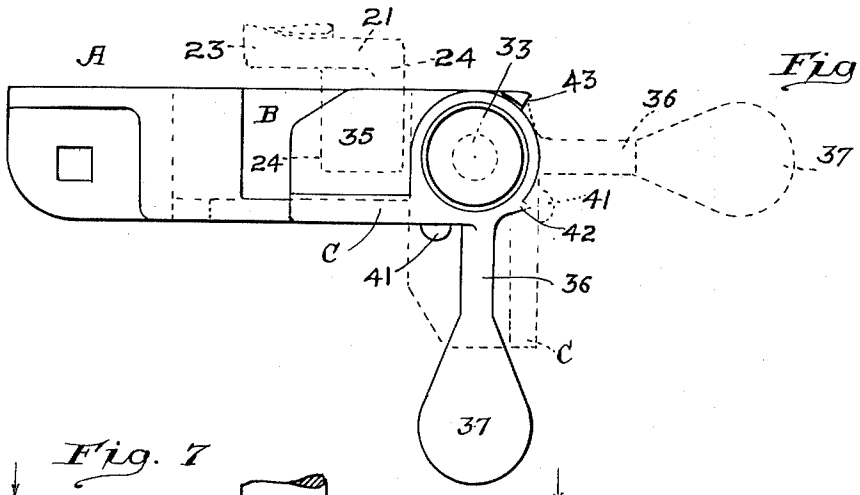


Fig. 7

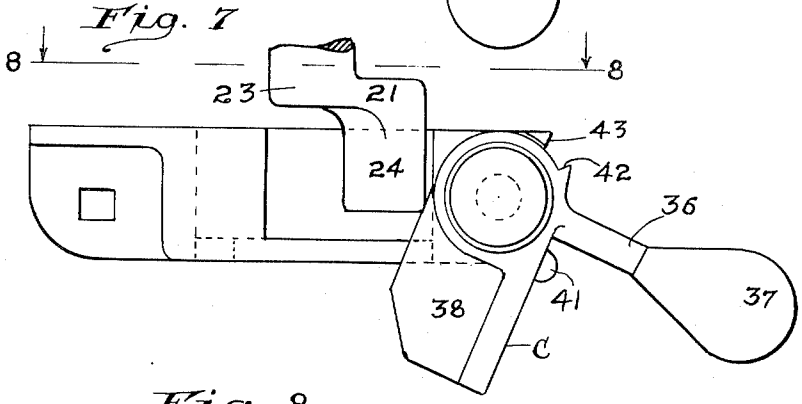
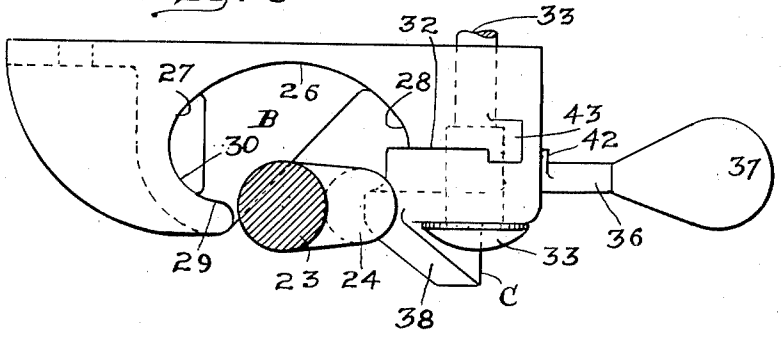


Fig. 8



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KEEPER FOR DOOR FASTENERS

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Application August 24, 1953, Serial No. 376,027

5 Claims. (Cl. 292—341.17)

This invention relates to improvements in keeper for door fasteners.

One object of the invention is to provide a keeper for a door fastener having a pocket within which the rotary keeper engaging member of the door fastener is engageable to force the door open or lock it in closed position, the pocket having an entrance opening for the keeper engaging member, and a hinged wall partially blocking the entrance to said pocket to prevent accidental disengagement of the keeper engaging member from said keeper, the hinged wall being swingable to an out of the way position to permit the keeper engaging member to be moved into and out of said pocket when desired.

Another object of the invention is to provide a keeper as set forth in the preceding paragraph wherein the hinged wall is automatically swung to out of the way position to clear the entrance opening of the pocket of the keeper and permit the keeper engaging member to enter said opening, by camming engagement of said keeper engaging member with said wall as the keeper engaging member is swung toward said keeper.

A more specific object of the invention is to provide in a door fastener keeper having a cam pocket adapted to accommodate the keeper engaging cam member of a door fastener, a gravity controlled retractable hinged wall member for blocking the entrance to said pocket to prevent accidental disengagement of said keeper engaging member of the door fastener, wherein said wall member may be swung out of the blocking position, either manually to permit the keeper engaging member to be disengaged from the keeper or by camming engagement of the keeper engaging member therewith to permit the latter to be engaged with said pocket.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the accompanying drawings forming a part of this specification, Figure 1 is an elevational view, partly broken away, of the side wall of a refrigerator car having a door opening closed by a door structure comprising a plurality of hinged members provided with fastener means, illustrating my improved keeper in connection therewith.

Figure 2 is a horizontal sectional view, corresponding substantially to the line 2—2 of Figure 1.

Figure 3 is a broken view, on an enlarged scale, similar to Figure 2, but showing the door members in top plan, folded against each other, in full lines, and the outer door member, shown in dotted lines, moved to a position substantially at right angles to the inner door member.

Figure 4 is a top plan view of the keeper shown in Figure 3 on a still further enlarged scale.

Figure 5 is an elevational view of Figure 4, looking toward the left.

Figure 6 is a front elevational view of Figure 4, showing the hinged wall member in full lines in position to block the opening of the keeper pocket, and in dotted lines moved to clear said opening, the keeper engaging member being indicated in dotted lines.

Figure 7 is a view similar to Figure 6, showing the lower end of the keeper engaging member in full lines, and the hinged wall member shown swung to out of the way position clear of the opening of the cam pocket of the keeper.

Figure 8 is a horizontal sectional view, corresponding substantially to the line 8—8 of Figure 7.

In said drawings, 10 designates the side wall of a refrigerator car provided with a door opening 11, closed by a hinged door member 12, and inner and outer, articulated door members 13 and 14, the door member 12 being swingingly supported, as seen in Figure 1, at its right hand or outer end on the wall of the car by the usual hinges and having a rotary fastener bar 15 at the left hand or inner end cooperating with the usual top and bottom keepers 16 and 17, and the door member 13 of the articulated members 13 and 14 being swingingly supported at its left hand or outer end by the usual hinges. The keeper 17 carries a pivoted latch plate 18, which is engageable over the lower right hand corner of the adjacent door member 14 to lock the latter in closed position.

The articulated door members 13 and 14 are connected to each other by hinges 19—19. Each hinge 19 comprises a pair of hinge leaves 20—20 fixed, respectively, to the door members 13 and 14. The leaf 20 of each hinge, which is connected to the door member 14 is provided with an integral keeper engaging cam member 21, the cam member 21 of the bottom hinge member depending therefrom and that of the top hinge member upstanding from the same and being engageable with a top keeper 22 secured to the wall of the car, above the door member. Each keeper engaging cam member 21 includes a horizontally extending, radial arm 23, having a crank pin 24 at its outer end, the crank pin of the bottom keeper engaging member depending from the arm 23 and that of the top keeper being upstanding therefrom.

In carrying out my invention, I provide a bottom keeper A, which is in the form of an elongated block having a cam pocket B, and a hinged front wall section C.

The keeper A is mounted on the car wall 10 below the door members 13 and 14 at the point of pivotal connection between said members. The keeper A has a cam pocket B defined by a concavely curved back wall 26, merging with concave side walls 27 and 28 at the left and right hand sides of the pocket and an offset front wall 29 at the left hand side, which is in the form of an inturned flange presenting a curved inner cam face 30. To the right of the pocket B, the block-like keeper A is reduced in thickness, as indicated at 31, and this portion 31 of the block presents a vertically disposed flat front face, which forms a bearing surface 32. The hinged front wall section C is rotatably carried by the keeper at the front side of the reduced portion 31 thereof, being supported for swinging movement about a horizontal axis by a headed bolt 33 on which it is journaled, the bolt 33 extending through the portion 31 of the keeper. The bolt 33 also serves as a means for securing the keeper A to the car wall 10 within which it is embedded. A second bolt 34 for securing the keeper to the wall 10 extends through the opposite end of the keeper, as shown in Figure 1. The hinged front wall section C abuts the bearing surface 32 of the reduced portion 31 of the keeper, being held in position by the head of the bolt 33. As shown most clearly in Figures 1 and 6, the wall section C includes a horizontally extending arm 35 and a pendant operating handle 36, having an enlarged bulb-shaped weighted grip portion 37. The operating handle 36 is radial to the axis of rotation of the section C and extends at approximately right angles to the arm 35. In the position shown in Figures 1 and 6 the arm 35 projects over the left hand portion of the mouth of the pocket B of the keeper A, blocking the same to prevent disengagement of the crank pin 24

of the keeper engaging cam member **21** therefrom. The arm **35** is relatively thick, as shown in Figures 3 to 8, inclusive, and has the front side thereof provided with an inclined cam face **38**, which is engageable by the crank pin **24** of the member **21**, when moved in direction toward the mouth of said keeper to cam the wall section C downwardly out of the way and permit the keeper engaging cam member **21** to ride thereover into said pocket. As shown in Figure 4, the inner side of the arm **35** presents a vertically disposed, lengthwise extending, substantially flat stop face **39** and a short curved face portion **40** to the right of said stop face and continuous with said face **39** and leading to the curved wall **28** of the pocket.

To limit swinging movement of the arm **35** of the wall section C upwardly beyond the horizontal position, it is provided with a stop lug **41**, which engages the underneath side of the keeper, as shown in Figure 6 in full lines. To limit overthrow of the arm **35** in a reverse direction, cooperating interengaging stop lugs **42** and **43** are provided, respectively, on the wall section C and the keeper A.

The wall section C is normally maintained in the horizontal position shown in Figures 1, 5, and 6 by the action of gravity on the weighted handle **36**, blocking the mouth of the cam pocket as further shown in Figures 2, 3, and 4, to prevent disengagement of the crank pin **24** of the keeper engaging cam member **21**, as seen in Figures 1 and 6. In this connection it is pointed out that the arm **35** is spaced such a distance forwardly from the back wall **26** of the keeper pocket that, while it blocks the mouth of the pocket when in horizontal position to prevent disengagement of the crank pin **24** from the keeper, it also allows movement, without interference, of the crank pin to swing through an arc of 180 degrees while being confined within the keeper A. With the crank pin thus confined, opening of the door member **13** is prevented and the door member **14** may be swung to fully open position on the member **13** independently of the latter.

When both door members **13** and **14** are to be opened, the wall section C is manually actuated by the handle **36** to clear the mouth of the keeper pocket B, the same being swung from the full line position shown in Figure 6 through the position shown in Figure 7, toward the dotted line position shown in Figure 6. When the mouth of the keeper pocket has been thus completely opened, the crank pin **24** of the keeper engaging cam member **21** is free to leave the pocket B, as indicated in Figure 8, and the door member **13** may be swung open with the door member **14**, as shown in Figure 3.

In closing the door members **13** and **14**, the same are swung inwardly toward the door opening, either while folded, as shown in full lines in Figure 3, or with the door member **14** at an angle to the member **13**, which is not greater than a right angle, as shown in dotted lines. While in any of these mentioned positions, as the door members **13** and **14** are swung inwardly, the crank pin **24** of the keeper engaging cam member **21** will cam over the arm **35**, depressing the same, and will pass into the pocket B. After this has been accomplished, the door member **14** is swung inwardly toward the door opening on the member **13**, thereby camming the latter tightly closed by camming action of the crank pin **24** on the wall **28** and the cam face **30** of the front wall **29** of the keeper pocket.

I claim:

1. In a keeper for a rotary keeper engaging crank pin carried on and actuated by the first door member of a pair of hingedly supported, articulated, first and second door members, said keeper having a cam pocket to accommodate said crank pin, said pocket having a mouth through which the crank pin may pass into and out of said pocket, and a gravity influenced pivoted arm swingable across said mouth of said pocket for blocking the same to prevent disengagement of the crank pin from said pocket, thereby to hold the second door closed while said first door is moved from closed to open position.

2. In a keeper for a rotary keeper engaging crank pin carried on and actuated by the first door member of a pair of hingedly supported, articulated, first and second door members, said keeper having a cam pocket to accommodate said crank pin, said pocket having a mouth through which the crank pin may pass into and out of said pocket, and a gravity influenced pivoted arm swingable across said mouth of said pocket for blocking the same to prevent disengagement of the crank pin from said pocket, thereby to hold the second door closed while said first door is moved from closed to open position, said arm having an inclined cam face thereon over which said crank pin rides to swing said arm clear of the mouth of said pocket when said crank pin is moved inwardly toward said pocket.

3. In a keeper for a rotary keeper engaging crank pin carried on and actuated by the first door member of a pair of hingedly supported, articulated, first and second door members, said keeper having a cam pocket within which said crank pin is engageable, said pocket having a laterally opening mouth through which the crank pin may pass into and out of said pocket, an arm pivoted on said keeper for swinging movement to horizontal position across a portion of said mouth for blocking the same to prevent disengagement of said crank pin from said pocket, thereby to hold the second door closed while said first door is moved from closed to open position, and a depending operating handle on said arm, said handle being weighted to swing said arm to said horizontal position.

4. A keeper for a rotary keeper engaging pin of a crank member carried on and actuated by the outer door member of a pair of hingedly supported, articulated, inner and outer door members, said keeper having a cam pocket within which said crank pin is engageable, said pocket having a back wall presenting an interior, forwardly facing, concave cam surface with which said crank pin is engageable to force said inner door member open, a relatively short front wall at one side of said keeper, outwardly offset from said back wall, with which said crank pin is engageable to force said inner door member inwardly to closed position, and a relatively short front wall at the side of the keeper opposite to said first named front wall, said second named front wall being outwardly offset from said back wall, said second named front wall blocking the entrance to said pocket to prevent disengagement of the crank pin from said pocket, thereby to keep the inner door closed while the outer door is moved from closed to open position, said second named wall being pivotally mounted on said keeper to swing in a vertical plane and move away from said entrance to clear the same for passage of the crank pin.

5. A keeper for a rotary keeper engaging pin of a crank member carried on and actuated by the outer door member of a pair of hingedly supported, articulated, inner and outer door members, said keeper having a cam pocket within which said crank pin is engageable, said pocket having a back wall presenting an interior, forwardly facing, concave cam surface with which said crank pin is engageable to force said inner door member open, a relatively short front wall at one side of said keeper, outwardly offset from said back wall, with which said crank pin is engageable to force said inner door member inwardly to closed position, and a relatively short front wall at the side of the keeper opposite to said first named front wall, said second named front wall being outwardly offset from said back wall, said second named front wall blocking the entrance to said pocket to prevent disengagement of the crank pin from said pocket, thereby to keep the inner door closed while the outer door is moved from closed to open position, said second named wall being pivotally mounted on said keeper to swing in a vertical plane and

move away from said entrance to clear the same for passage of the crank pin, said second named front wall having an upwardly inclined cam face thereon over which the crank pin rides when the latter is moved toward the keeper to swing said second named front wall away from said entrance to the keeper pocket.

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