Oct. 3, 1967 R. J. OLANDER 3,345,101

DOOR LOCKING MEANS

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FIG. 1

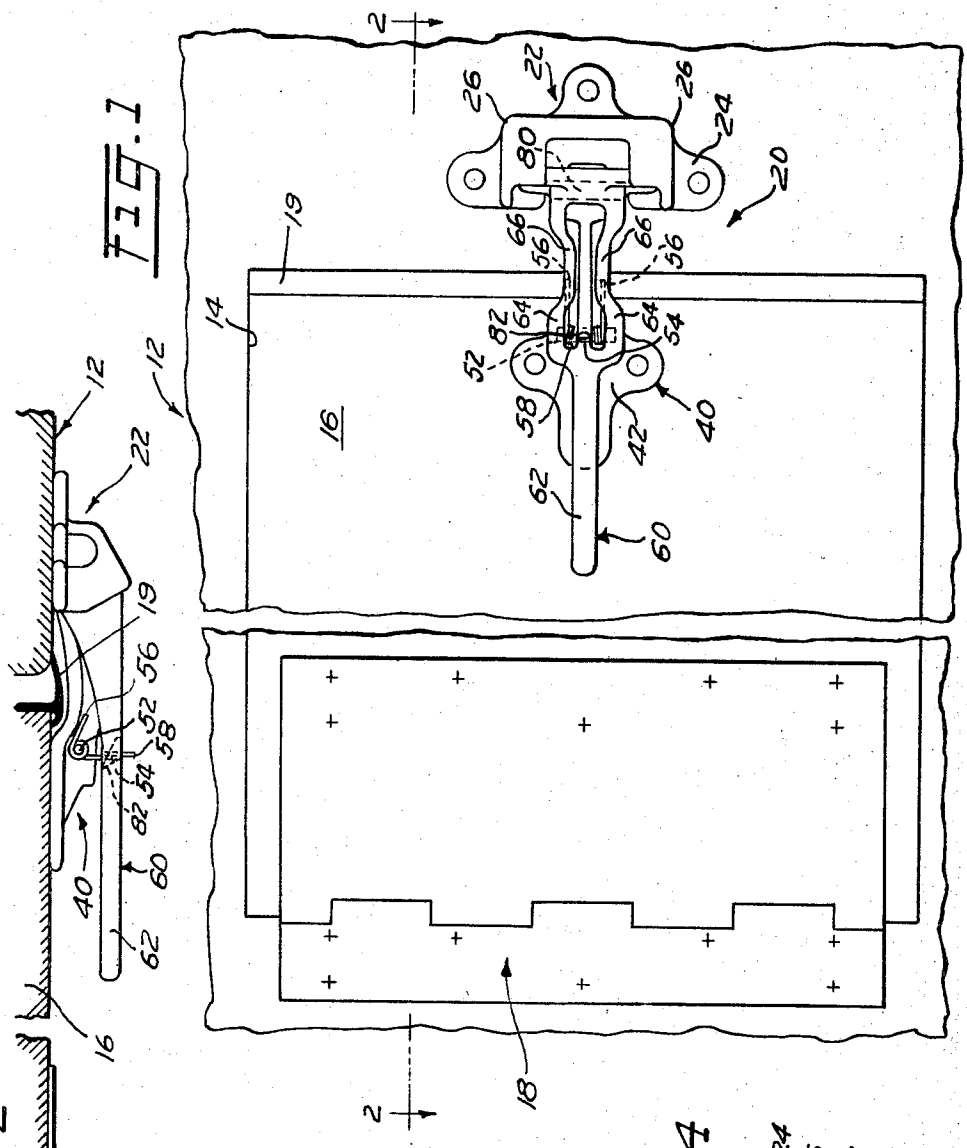


FIG. 2

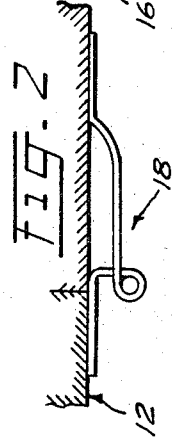


FIG. 3

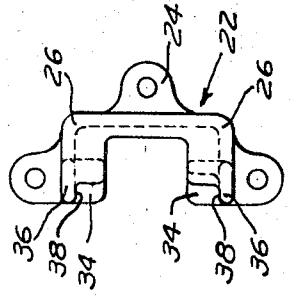
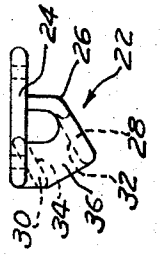


FIG. 4



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DOOR LOCKING MEANS

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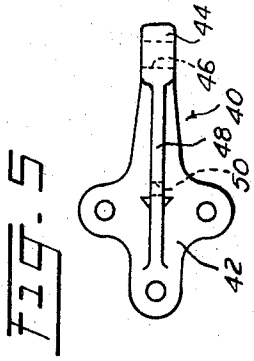


FIG. 5

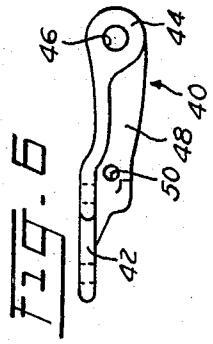


FIG. 6

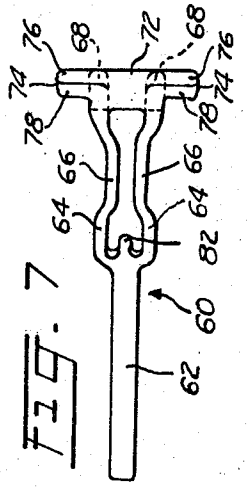


FIG. 7

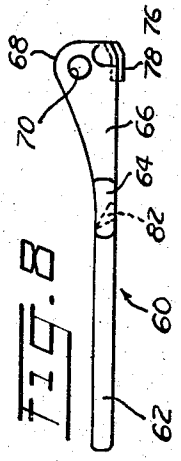


FIG. 8

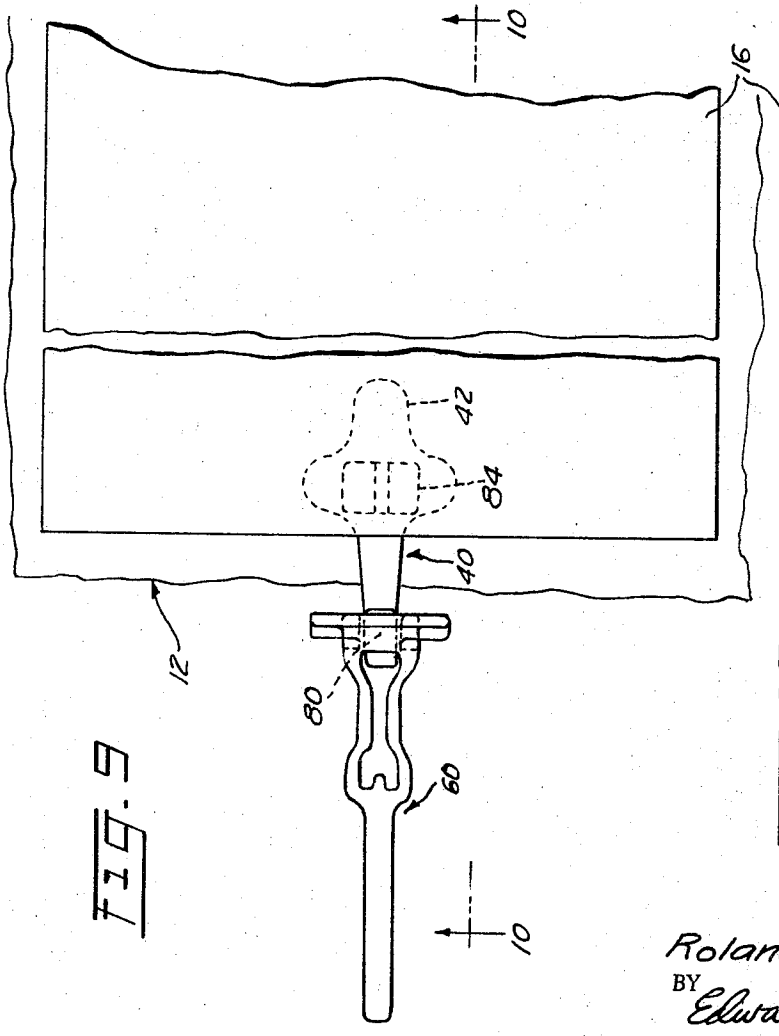


FIG. 9

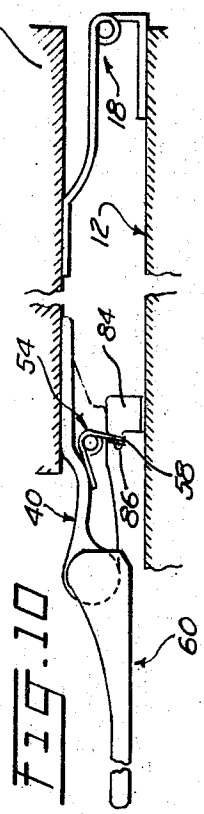


FIG. 10

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United States Patent Office 3,345,101 Patented Oct. 3, 1967

3,345,101

DOOR LOCKING MEANS

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Filed Nov. 2, 1965, Ser. No. 506,099
7 Claims. (Cl. 292—218)

ABSTRACT OF THE DISCLOSURE

A door latch having a handle support member mounted on a door with a portion projecting beyond the door's closing edge and a handle pivotally mounted on the projecting portion and having a pair of cam fingers engageable with a keeper mounted on the door frame.

My present invention relates generally to door locking means and more particularly to cam action door latch fastener means for securing a door within a wall opening.

In brief, the latch fastener of my present invention comprises keeper means having a base portion secured to the wall at one side of a door opening therein and having laterally spaced forwardly extending recessed projections, fulcrum means having a body portion secured to the door, and handle means pivotally mounted to the fulcrum means and having laterally extending cam fingers engageable with the recessed projections of the keeper means for locking the door in the wall opening. Preferable, each of the projections of the keeper means has forward and rearward wall portions defining forward and rearward inner parallel surfaces inclined at an acute angle relative to the plane of the wall. The cam fingers are engageable with the forward inner surfaces for locking the door in the wall opening, and are engageable with the rearward inner surfaces for prying the door out of the opening. Also, the fulcrum means is provided with a forwardly extending longitudinal rib portion, and the handle means is provided with spaced leg portions that are engageable with the fulcrum rib portion for maintaining the handle mean and fulcrum means in longitudinal alignment as and when the door is locked in closed position. In addition, fastener means, which is carried by the fulcrum means, is releaseably engageable with the handle means intermediate of the leg portions for selectively preventing pivotal movement of the handle means relative to the fulcrum means.

Now in order to acquaint those skilled in the art with the manner of constructing and using door locking means in accordance with the principles of my present invention, I shall describe in connection with the accompanying drawings, a preferred embodiment of my invention.

In the drawings:

FIGURE 1 is a fragmentary and foreshortened elevational view of a wall, a door, and the door locking means of my present invention;

FIGURE 2 is a sectional view, taken substantially along the line 2—2 in FIGURE 1, looking in the direction indicated by the arrows;

FIGURE 3 is a front elevational view of the keeper means incorporated in my door locking means;

FIGURE 4 is a side elevational view of the keeper means of FIGURE 3;

FIGURE 5 is a front elevational view of the fulcrum means incorporated in my door locking means;

FIGURE 6 is a side elevational view of the fulcrum means of FIGURE 5;

FIGURE 7 is a front elevational view of the handle means incorporated in my door locking means;

FIGURE 8 is a side elevational view of the handle means of FIGURE 7;

FIGURE 9 is a fragmentary and foreshortened elevational view of the door in fully open position parrallel to the wall; and

FIGURE 10 is a sectional view, taken substantially along the 10—10 in FIGURE 9, looking in the direction indicated by the arrows.

Referring now to FIGURES 1 and 2, there is indicated generally by the reference numeral 12 a wall having an opening 14 therein. A door 16 is pivotally mounted along its one edge to the wall 12 by means of a hinge assembly 18, and is thus swingable into and out of the opening 14. The door 16 is provided with the usual insulating strip 19 to afford a seal between the door and the wall when the door is closed. The door 16 is adapted to be latched within the opening 14 by means of the door locking means of my present invention which is indicated generally by the reference numeral 20.

As shown in FIGURES 1, 3 and 4, the door locking means includes keeper means 22 which is comprised of a base portion 24 suitably secured to the wall 12, and laterally spaced forwardly extending recessed projections 26. Each of the projections 26 has forward and rearward wall portions 28 and 30 which define forward and rearward inner parallel surfaces 32 and 34 inclined at an acute angle relative to the plane of the wall 12. Each of the projections 26 also has a side wall portion 36 with an inner face 38.

The door locking means 20 further includes, as shown in FIGURES 1, 5 and 6, fulcrum means 40. The fulcrum means 40 comprises a body portion 42 which is suitably secured to the door 14, a boss portion 44 at one end of the body portion 42 and having a transverse opening 46 therethrough, and a central forwardly extending longitudinal rib portion 48 having a transverse aperture 50 therethrough. The body portion 42 of the fulcrum means 40 may be mounted flat against the door 16, or offset outwardly as shown to accommodate the insulating strip 19. In addition, a pin member 52 extends through the transverse aperture 50 and serves to support a spring clip fastener 54. The fastener 54 has terminal leg portions 56 which abut the body portion 42 of the fulcrum means 40, and a central outer loop portion 58.

The door locking means 20 still further includes handle means indicated generally by the referee numeral 60. As shown in FIGURES 1, 7 and 8, the handle means 60 comprises a hand grip portion 62 which merges into laterally spaced leg portions 64 having intermediate inwardly offset guide sections 66. Each of the leg portions 64 has a flange 68 with a transverse opening 70 therein. Extending transversely of the leg portions 64 adjacent the flanged ends 68 thereof is a bar portion 72 the ends of which define laterally extending cam fingers 74 having cam surfaces 76 and 78. A wrist pin 80 extends through the openings 70 in the handle flanges 68 and the opening 46 in the fulcrum boss 44 for pivotally mounting the handle means 60 to the fulcrum means 40. The handle means 60 is also provided with an inclined abutment 82 which projects inwardly of the opening intermediate of the leg portions 64 adjacent the hand grip portion 62 and which is engageable by the loop portion 58 of the spring clip fastener 54.

In the above described door locking means 20, the projections 26 of the keeper means 22 are spaced laterally a distance slightly greater than the distance between the outer sides of the handle flanges 68, and the inner faces 38 of the side wall portions 36 of the keeper means 22 are spaced laterally a distance slightly greater than the distance between the outer ends of the cam fingers 74. Also, the boss portion 44 of the fulcrum means 40 is of a width approximately equal to the distance between the

inner sides of the handle flanges **68**, and the rib portion **48** of the fulcrum means **40** is of a width approximately equal to the distance between the inner faces of the handle guide sections **66**. Additionally, as shown in FIGURE 10, a spring catch **84**, having an inclined latching tooth **86**, is secured to the wall **12** on the side of the doop opening **14** opposite the keeper means **22**. The latching tooth **86** is arranged to be engaged by the loop portion **58** of the spring clip fastener **54**.

The door **16** is shown in a locked or closed position in FIGURES 1 and 2. To open the door, the loop portion **58** of the spring clip fastener **54** is first disengaged from the handle abutment **82**, and then the hand grip portion **62** is swung away from the door **16** toward a forwardly extending position. As the handle means **60** is thus pivoted, the cam fingers **74** are engaged with the rearward inner surfaces **34** of the keeper means **20** for initially prying the door out of the wall opening. Thereafter, the cam fingers are fully retracted from the keeper means, and the door **16** may be swung outwardly of the plane of the door opening **14** to an open position permitting access through the door opening. Finally, when the door **16** is swung to the position shown in FIGURES 9 and 10 with the handle means **60** extending parallel to the door, the loop portion **58** of the spring clip fastener **54** automatically rides up and over the latching tooth **86** of the spring catch **84** to hold the open door from swinging.

In closing the door **16**, the loop portion **58** of the spring slip fastener **54** is first disengaged from the latching tooth **86** of the spring catch **84**, and then the door **16** is swung to a position closely adjacent the door opening **14**. Simultaneously, the handle means **60** is pivoted to cause the cam fingers **74** to enter the keeper means **22**. Initially, the cam surfaces **78** move along the forward inner surfaces **32** of the keeper means **22**, and then the cam surfaces **76** engage the forward inner surfaces **32**. By reason of this arrangement, a self-locking camming action is provided which serves to force the door **16** within the door opening **14**. During inward movement of the handle means toward the door **16**, the inner faces of the guide sections **66** of the handle means **60** engage the opposite sides of the rib portion **48** of the fulcrum means **40** whereby to maintain the handle means and the fulcrum means in proper longitudinal alignment for insuring that the door **16** is maintained in alignment with the door opening **14**. When the handle means **60** is in the position shown in FIGURE 1, the cam surfaces **76** are in full engagement with the forward inner surfaces **32** of the keeper means **22**, and the door **16** is thereby firmly locked to the wall **12** within the door opening **14**. Also, during final movement of the handle means **60** to locked position, the loop portion **58** of the spring clip fastener **54** automatically rides up and over the handle abutment **82** thus serving to hold the handle means **60** against outward pivotal movement relative to the fulcrum means.

While I have shown and described what I believe to be a preferred embodiment of my present invention, it will be understood by those skilled in the art that various rearrangements and modifications may be made therein without departing from the spirit and scope of my invention.

I claim:

1. For use with a wall having an opening therein and a door swingable into and out of the opening, the combination of keeper means having a base portion adapted to be secured to the wall at one side of the opening therein and having laterally spaced forwardly extending recessed projections, fulcrum means having a body portion adapted to be secured to the door, a boss portion with a transverse opening therethrough, and a central forwardly extending longitudinal rib portion, handle means having a hand grip portion merging into laterally spaced leg portions each of which has a flange with a transverse opening therethrough, a wrist pin extending through said openings in said handle flanges and said fulcrum boss for pivotally mounting said handle means to said fulcrum means, and laterally extending cam fingers associated with said laterally spaced leg portions of said handle means and being engageable with said recessed projections of said keeper means for locking the door in the wall opening, said fulcrum rib portion being receivable between said handle leg portions.

2. The combination of claim **1** wherein said handle leg portions have intermediate inwardly offset guide sections with inner faces that are engageable with opposite sides of said fulcrum rib portion.

3. The combination of claim **1** wherein said projections of said keeper means are spaced laterally a distance slightly greater than the distance between the outer sides of said handle flanges, wherein each of said projections of said keeper means has a side wall portion with an inner face, and wherein the inner faces of said side wall portions are spaced laterally a distance slightly greater than the distance between the outer ends of said cam fingers.

4. The combination of claim **2** wherein said fulcrum boss portion has a width approximately equal to the distance between the inner sides of said handle flanges, and wherein said fulcrum rib portion has a width approximately equal to the distance between the inner faces of said handle guide sections.

5. The combination of claim **1** wherein said fulcrum body portion is offset outwardly to accommodate a door seal strip.

6. The combination of claim **1** including a fastener carried by said fulcrum means and releasably engageable with said handle means intermediate of said leg portions for selectively preventing pivotal movement of said handle means relative to said fulcrum means.

7. For use with a wall having an opening therein and a door swingable into and out of the opening, the combination of: keeper means comprised of a base portion adapted to be secured to the wall at one side of the opening therein, laterally spaced forwardly extending projections, and each of said projections having forward and rearward wall portions defining forward and rearward inner parallel surfaces inclined at an acute angle relative to the plane of the wall to which said keeper means is intended to be secured; fulcrum means comprised of a body portion adapted to be secured to the door, a boss portion having a transverse opening therethrough, and a central forwardly extending longitudinal rib portion; handle means comprised of a hand grip portion merging into laterally spaced leg portions having intermediate inward offset guide sections with inner faces, and each of said leg portions having a flange with a transverse opening therethrough and having laterally extending cam fingers; a wrist pin extending through said openings in said handle flanges and said fulcrum boss for pivotally mounting said handle means to said fulcrum means; said cam fingers being engageable with said forward inner surfaces of said keeper means for locking the door in the wall opening, and said cam fingers being engageable with said rearward inner surfaces for initially prying the door out of the wall opening; said projections of said keeper means being spaced laterally a distance slightly greater than the distance between the outer sides of said handle flanges; each of said projections of said keeper means having a side wall portion with an inner face, and the inner faces of said side wall portions being spaced laterally a distance slightly greater than the distance between the outer ends of said cam fingers; said fulcrum boss portion having a width approximately equal to the distance between the inner sides of said handle flanges; and said fulcrum rib portion having a width approximately equal to the distance between the inner faces of said handle guide sections.

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