

July 7, 1959

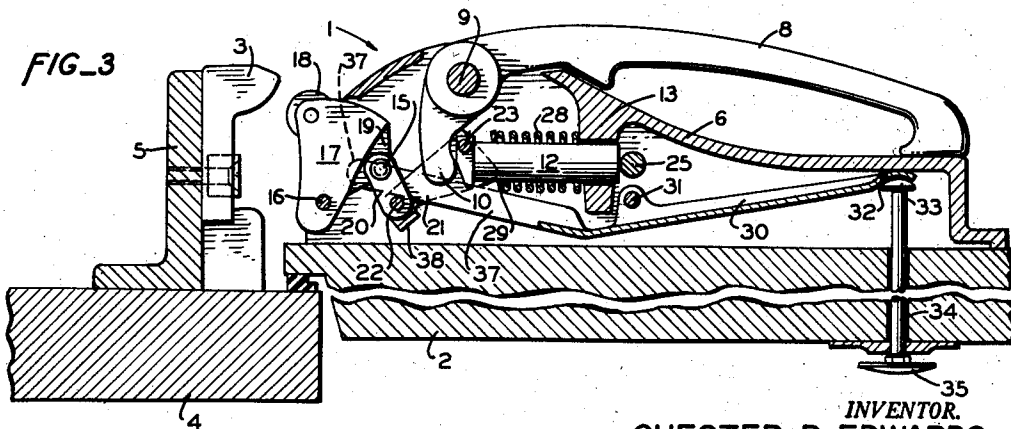
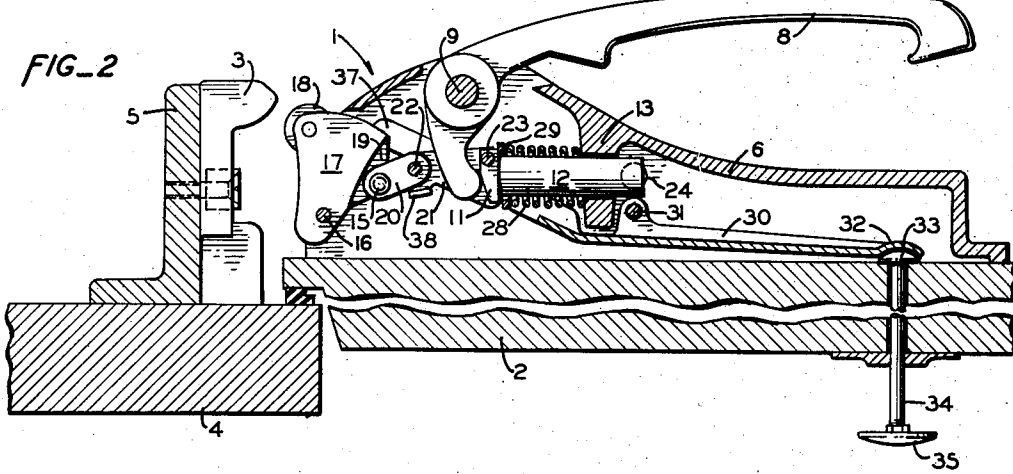
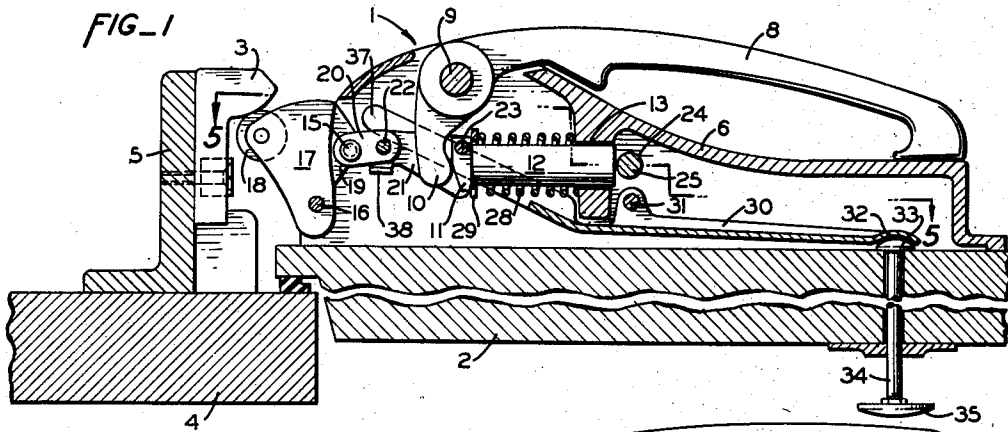
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LOCK FOR REFRIGERATOR DOORS

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3 Sheets-Sheet 1



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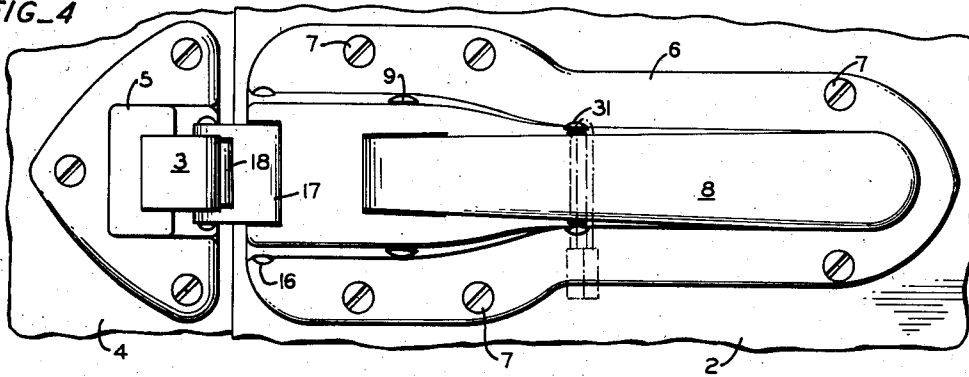
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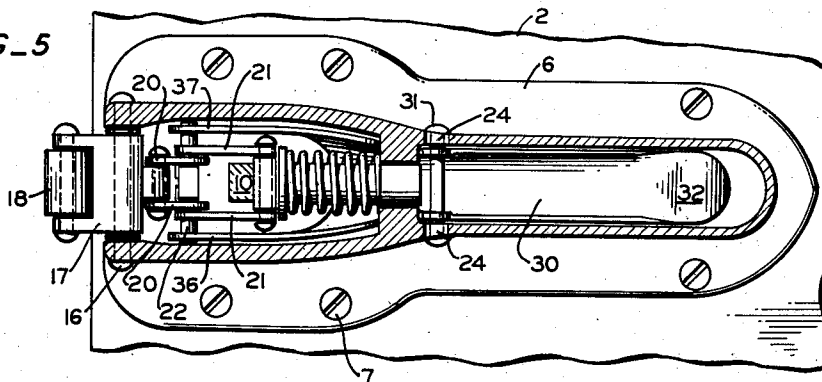
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FIG\_4



FIG\_5



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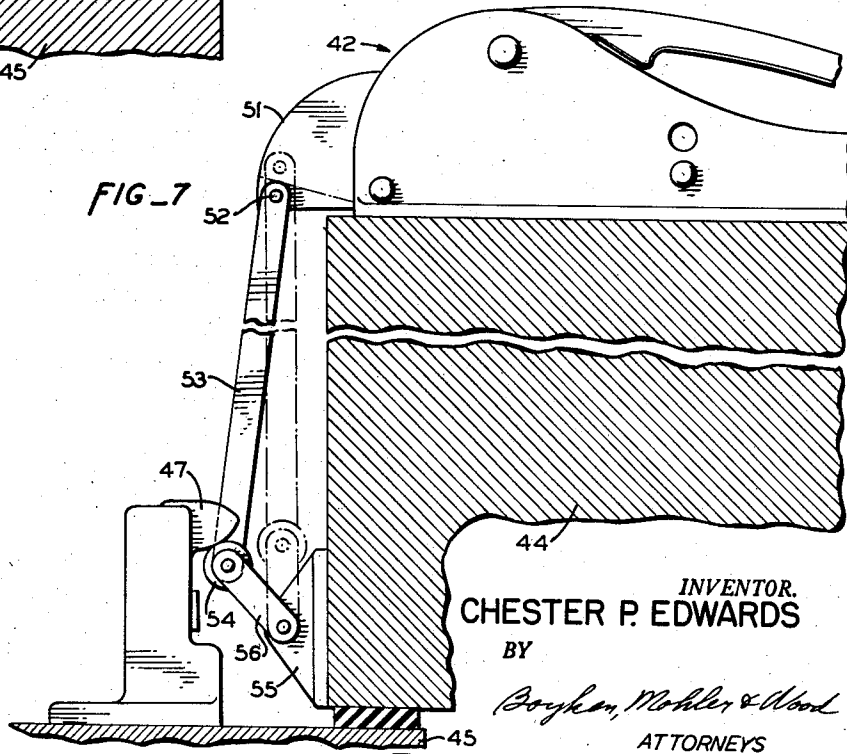
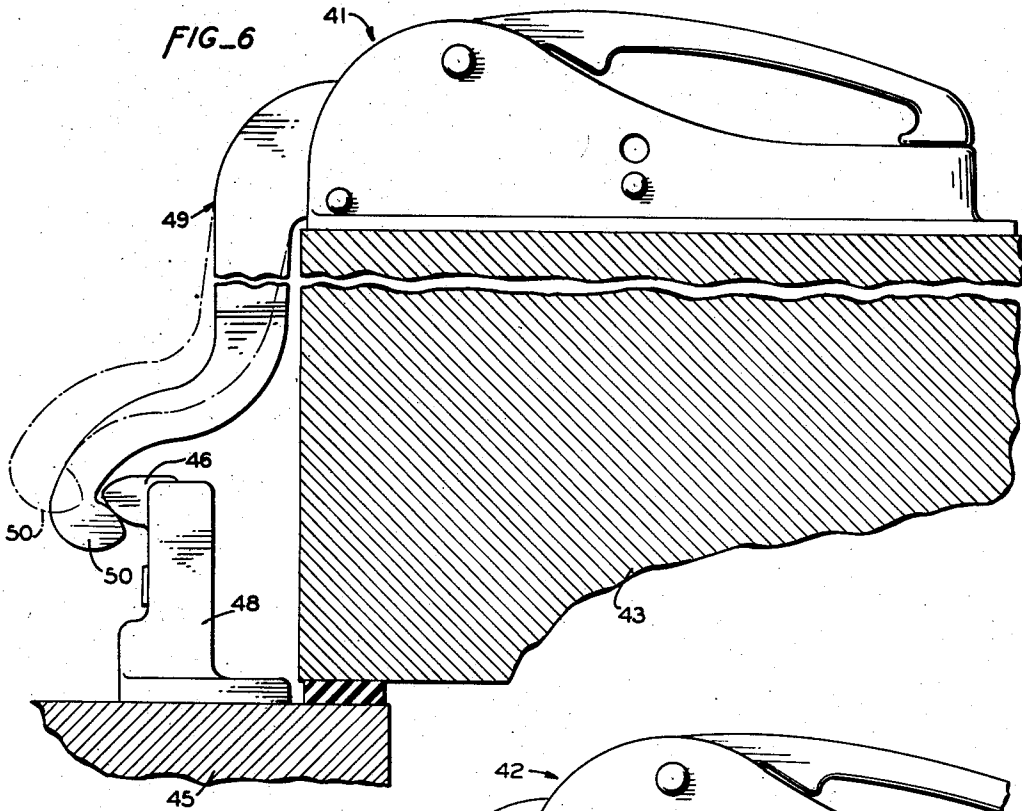
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## LOCK FOR REFRIGERATOR DOORS

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5 Claims. (Cl. 292—223)

This invention relates to door locks for refrigerators and the like and more particularly to a type of door lock which may be opened from inside the door while locked on the outside.

This invention is directed toward locks of the type wherein a spring projected latch on the door engages a keeper on the door frame. Various mechanisms have heretofore been provided for door locks for walk-in refrigerators, freezers, and the like to enable such locks to be released from inside the door in the event a person is shut in. Most of such locks also have provisions for preventing movement of the outside handle by a padlock or the like for locking the door when the refrigerator is not in use.

In many cases, such locking also prevents operation of the inside release mechanism so that a person may accidentally be locked in the refrigerator and unable to extricate himself. Most of the previous attempts to solve this problem have resulted in complicated mechanisms requiring difficult manipulations by the person inside the refrigerator or have impaired the utility of the lock.

It is a primary object of this invention to provide a simplified door lock which may be easily opened from inside the door while locked from the outside.

Another object of this invention is the provision of a door lock mechanism adapted for use with doors of different thicknesses.

Still another object of this invention is the provision of a rugged and easily manufactured, yet efficient, lock mechanism for refrigerator doors and the like.

It is yet another object of this invention to provide a door lock mechanism which may be securely locked against outside handle movement and latch jimmying but which is easily opened from inside the door even when so locked.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a horizontal, cross-sectional view through a refrigerator door and the central portion of the lock of this invention showing said lock in the locked position;

Fig. 2 is a cross-sectional view, similar to Fig. 1, but showing the lock in the unlocked position and being opened by the outside handle;

Fig. 3 is a cross-sectional view similar to Fig. 1 but showing the lock in the locked position and being opened by the inside release mechanism;

Fig. 4 is a front elevational view of the door lock of Fig. 1 as seen from outside the door;

Fig. 5 is a cross-sectional view taken along line 5—5 of Fig. 1.

Fig. 6 is a horizontal, cross-sectional view through a freezer door looking down on a lock that is modified from that of Fig. 1 to accommodate the thicker door;

Fig. 7 is a cross-sectional view similar to that of Fig. 6, but showing another modification of the door lock of Fig. 1.

In detail, the lock of this invention generally comprises

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a latch assembly 1 secured to the door 2 of a refrigerator or the like, and a keeper 3 adjustably secured to the jam 4 as by bracket 5. Latch assembly 1 comprises an elongated, hollow housing 6 secured to door 2 by means of screws 7 (Figs. 4, 5).

Outside handle 8 is swingably connected to housing 6 by means of pivot 9 and has finger 10 extending inwardly of such housing into engagement with the head 11 of a rod 12 which is reciprocally mounted longitudinally of said housing in boss 13.

Pivoted to the forward end of housing 6 as by a pin 16 is a latch or tongue 17 having a roller 18 at its outer end in engagement with keeper 3. It will be noted that rotation of latch 17 about pivot 16 causes roller 18 to become disengaged from keeper 3 (Fig. 2). In order to provide for such rotation of the latch 17 it is formed with a rearwardly extending ear 19 pivoted at 15 to one end of a pair of short, parallel links 20 (Figs. 1, 5), the other ends of which are pivoted to one end of a pair of slightly longer, parallel links 21 by means of free pivot 22. The other end of links 21 are pivoted by a pin 23 to head 11 of rod 12. Links 20, 21 form a toggle linkage having a knee at pivot 22.

By this construction, when handle 8 is swung outwardly from housing 6 about pivot 9 (Fig. 2) finger 10 moves rod 12 rearwardly. Said rod pulls with it links 21, 20 thereby rotating latch 17 into said housing and free from keeper 3. Handle 8 and rod 12 thereby act as a retractor for latch 17.

Housing 6 is further provided with openings 24 directly behind the rear end of rod 12 when such rod is in the forward position. Upon insertion of a bar 25 or the hasp of a padlock (Fig. 4) through openings 24 the rearward movement of rod 12 is prevented by openings 24 acting as abutting shoulders or stops. Bar 25 in combination with openings 24 provides effective stop means for preventing the retraction of latch 17 by handle 8 and thereby effectively locks the door lock from outside operation.

A helical coil compression spring 28 surrounds rod 12 and abuts boss 13 and a washer 29, adjacent head 11, tending to extend rod 12. It will be noted that links 21 are generally triangular in shape and are pivoted to head 11 near one rear apex of the triangle. The other rear apex of such triangle abuts washer 29 on either side of head 11, and spring 28 thereby urges links 20, 21 to a generally straight line position longitudinally of rod 12 and housing 6. Hence, spring 28 yieldably urges latch 17 to the projected position, and handle 8 to a position adjacent housing 6 as shown in Fig. 1.

In order that a latch 17 may be retracted by someone inside the door a bifurcated lever 30 is pivoted centrally thereof at 31 to housing 6. The rearward end of lever 30 is formed with dished portion 32 which is engageable by the button head 33 of push rod 34 which extends through and is reciprocable in door 2. The inner end of push rod 34 may have knob 35 thereon to accommodate the palm of the hand of an operator.

The forward end of lever 30 is formed with a pair of forks 36, 37 which are directed slantingly outwardly of the door 2 and are engageable with the opposite side of pivot pin 22 from said door on either side of links 21. Links 21 are provided with dogs 38 extending under and in engagement with the inwardly directed edges of links 20 so as to prevent relative rotation between links 20, 21, or movement of pin 22, outwardly of door 2.

Upon rotation of lever 30 by the outward movement of push rod 34, forks 36, 37 force pivot pin 22 inwardly toward door 2 thereby relatively rotating links 20, 21 out of their position extending generally longitudinally of housing 6. This rotation of links 20, 21 shortens the distance between pivots 15 and 23 thereby rotating latch

17 to the retracted position (Fig. 3). It will be noted that this retraction of latch 17 from inside the door by push rod 34 is accomplished without moving rod 12 or handle 8 which may continue to be locked by bar 25. Spring 28 acting through washer 29 on the lower, rear apex of links 21 again yieldably urges latch 17 to the projected position.

Dogs 38 along with forks 36, 37 prevent the rotation of links 20, 21 outwardly from door 2 so that when bar 25 is inserted in openings 24, the door is completely locked from the outside. Nor can latch 17 be pried inwardly by a jimmy or the like since pivot pin 22 lies slightly outwardly of a straight line between pins 15, 23. Hence any force applied to latch 17 tending to retract it from the position shown in Fig. 1 either tends to rotate links 20, 21 outwardly of door 2 or to depress the rod 12. Such rotation and such depression are prevented as previously described.

However, retraction of latch 17 is always positively accomplished by rotation of lever 30 which may be done only from inside the door by push rod 34. Hence, there is no danger that anyone can become locked in a refrigerator or the like having a door lock constructed in accordance with the principles of this invention. One can never be locked inside such a refrigerator and yet a door with the lock of this invention may be securely locked from any type of outside manipulation.

Because of the greater thickness of insulation necessary in freezer doors because of the much lower temperatures employed than in refrigerators, the modifications of Figs. 6 and 7 have been provided. The inside mechanisms of door locks 41, 42 of Figs. 6, 7, respectively, are substantially similar to those of door lock 1 of Figs. 1 through 5. Freezer doors 43, 44 are not only thicker than door 2 but completely overlap jam 45 providing a distance in the neighborhood of eight inches between door locks 41, 42 and keepers 46, 47.

Keeper 46 (Fig. 6) is secured to jam 45 by bracket 48 and is similar to keeper 3 except that it is reversed and it is directed outwardly of the edge of door 43. Latch 49 of door lock 41 is constructed the same as latch 17 internally of the housing of such door lock but externally of said housing said latch is provided with a hook 50 which extends around and into contact with the underside of keeper 46. Rotation of latch 49 by either of the previously described manipulations causes hook 50 to move to the dot-dash line position of Fig. 6 and thereby become disengaged from keeper 46.

Latch 51 of lock 42 (Fig. 7) is provided at its outer end with pivot pin 52 which rotatably secures one end of link 53 thereto. At its other end link 53 is provided with a roller 54 in engagement with the underside of keeper 47, similar to roller 18 and keeper 3. Bracket 55 is provided on door 44 adjacent to jam 45 and link 56 is pivoted to said bracket and to roller 54.

Upon actuation of the mechanism of lock 42 either from inside or outside the door, rotation of latch 51 relatively rotates links 53, 56 to the dot-dash line position of Fig. 7, thereby disengaging roller 54 from keeper 47 and allowing door 44 to be opened.

In each of the modifications shown, when a door is open, latches 17, 49 and 51 are in the projected position and upon slamming doors 2, 43, or 44 said latches will be cammed over keepers 3, 46, 47 respectively, against the urging of spring 28.

Although the invention has been described and illustrated in detail, such is not to be taken as restrictive thereof since it is obvious that minor modifications could be made therein without departing from the spirit and scope of the inventions.

I claim:

1. A lock for refrigerator doors and the like, comprising an elongated lock housing adapted to be fixed to the outside of a door, an elongated handle, pivoted at one end to said housing, swingable outwardly of said hous-

ing, and having a finger directed inwardly from said one end, a rod reciprocable longitudinally of said housing and having one end in engagement with said finger, a latch pivoted at a point to said housing, a pair of pivotally connected, generally longitudinally extending links, one of which is pivoted to said latch at other than said point and the other of which is pivoted to said one end of said rod, whereby when said handle is swung outwardly from said housing said finger moves said rod rearwardly and thereby rotates and retracts said latch, a lever pivoted to said housing and having one end in engagement with the pivot between said links for moving said pivot inwardly upon rotation of said lever and thereby retracting said latch independently of said handle and said rod.

2. A lock for refrigerator doors and the like comprising an elongated lock housing adapted to be fixed to the outside of a door, an elongated handle, pivoted at one end to said housing, swingable outwardly of said housing, and having a finger directed inwardly from said one end, a rod reciprocable longitudinally of said housing and having one end in engagement with said finger, a latch pivoted at a point to said housing, a pair of links pivotable in one direction only from a generally longitudinal position, one of which is pivoted to said latch at other than said point and the other of which is pivoted to said one end of said rod, whereby when said handle is swung outwardly from said housing, said finger moves said rod rearwardly and thereby rotates and retracts said latch, a lever pivoted to said housing and having one end in engagement with the pivot between said links for moving said pivot inwardly upon rotation of said lever and thereby retracting said latch independently of said handle and said rod.

3. A lock for refrigerator doors and the like comprising an elongated lock housing adapted to be fixed to the outside of a door, an elongated handle, pivoted at one end to said housing, swingable outwardly of said housing, and having a finger directed inwardly from said one end, a rod reciprocable longitudinally of said housing and having one end in engagement with said finger, a latch pivoted at a point to said housing, a pair of links pivotable in one direction only from a generally longitudinal position, one of which is pivoted to said latch at other than said point and the other of which is pivoted to said one end of said rod, whereby when said handle is swung outwardly from said housing, said finger moves said rod rearwardly and thereby rotates and retracts said latch, a lever pivoted to said housing and having one end in engagement with the pivot between said links for moving said pivot inwardly upon rotation of said lever and thereby retracting said latch independently of said handle and said rod, and a coil spring associated with said links for moving the same forwardly and to said generally longitudinal position.

4. A lock for refrigerator doors and the like comprising an elongated lock housing adapted to be fixed to the outside of a door, an elongated handle, pivoted at one end to said housing, swingable outwardly of said housing, and having a finger directed inwardly from said one end, a rod reciprocable longitudinally of said housing and having one end in engagement with said finger, a latch pivoted at a point to said housing, a pair of links pivotable in one direction only from a generally longitudinal position, one of which is pivoted to said latch at other than said point and the other of which is pivoted to said one end of said rod, whereby when said handle is swung outwardly from said housing, said finger moves said rod rearwardly and thereby rotates and retracts said latch, a lever pivoted to said housing and having one end in engagement with the pivot between said links for moving said pivot inwardly upon rotation of said lever and thereby retracting said latch independently of said handle and said rod, and a coil spring associated with said links for moving the same forwardly and to said generally longitudinal position, and openings provided in opposite sides of said housing

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adjacent the other end of said rod for preventing rearward movement of said rod upon insertion of a bolt in said openings.

5. A lock for refrigerator doors and the like comprising an elongated lock housing adapted to be fixed to the outside of a door, an elongated handle, pivoted at one end to said housing, swingable outwardly of said housing, and having a finger directed inwardly from said one end, a rod reciprocable longitudinally of said housing and having one end in engagement with said finger, a latch pivoted at a point to said housing, a pair of links pivotable in one direction only from a generally longitudinal position, one of which is pivoted to said latch at other than said point and the other of which is pivoted to said one end of said rod, whereby when said handle is swung outwardly from said housing, said finger moves said rod rearwardly and thereby rotates and retracts said latch, a lever pivoted to said housing and having one end in engagement with the pivot between said links for moving said pivot inwardly upon rotation of said lever and thereby retracting said latch independently of said handle and said rod, and a coil spring associated with said links for moving the same forwardly and to said generally longitudinal position, and

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openings provided in opposite sides of said housing adjacent the other end of said rod for preventing rearward movement of said rod upon insertion of a bolt in said openings, and a push rod adapted to extend through a door and having one end in engagement with the other end of said lever for rotating said lever from inside of the door upon pushing said push rod.

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