

Feb. 10, 1953

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2,628,117

LATCH OPERATING MECHANISM

Filed Dec. 22, 1948

2 SHEETS—SHEET 1

Fig. 1

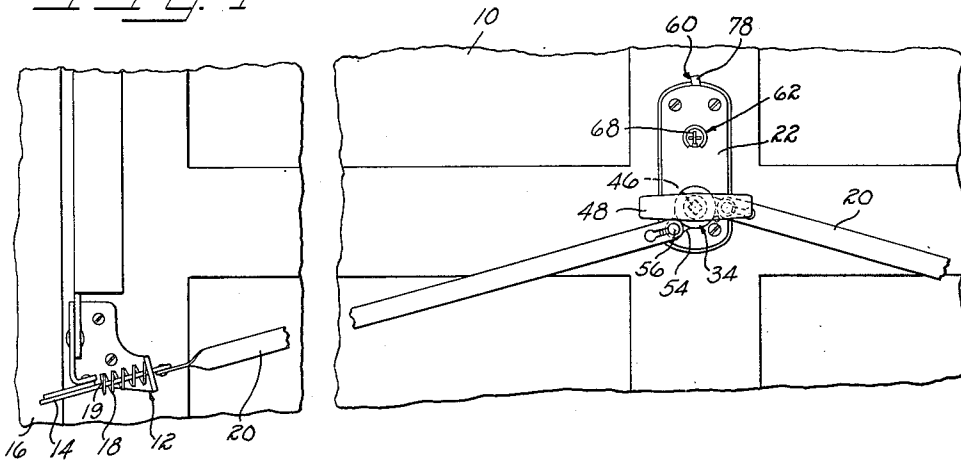


Fig. 2

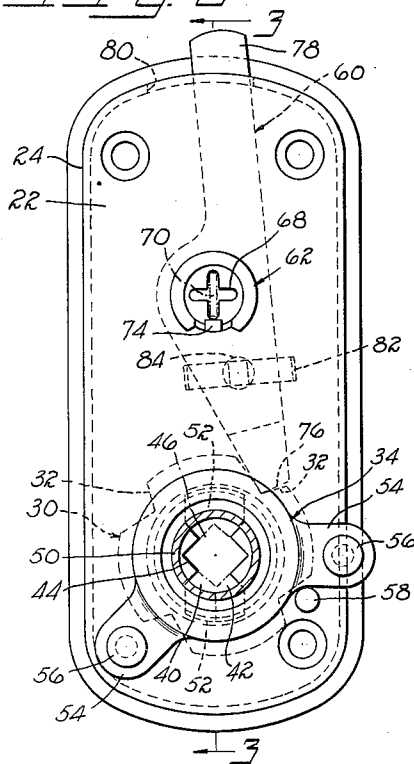
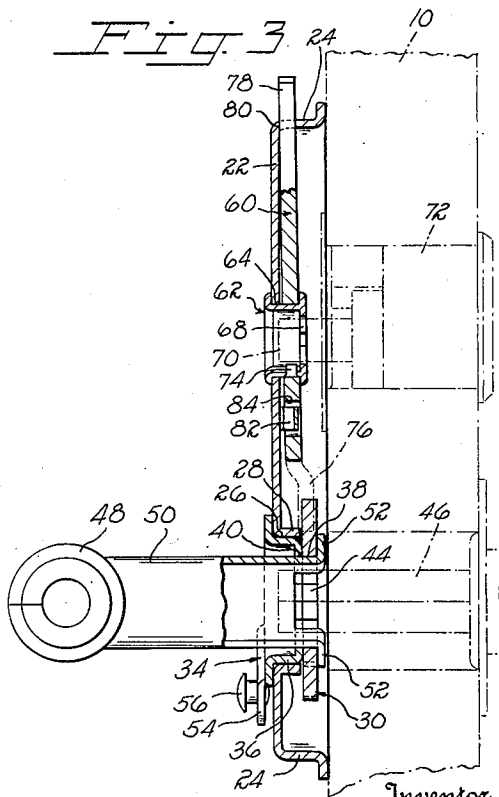


Fig. 3



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2 SHEETS—SHEET 2

Fig. 4

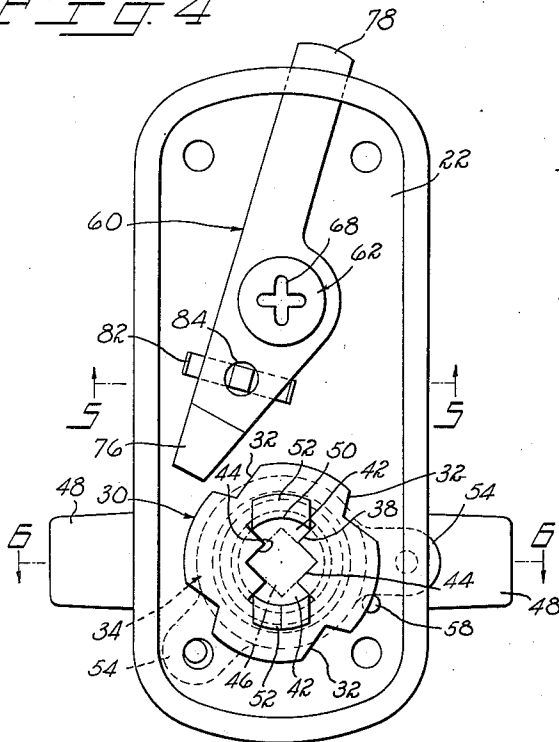


Fig. 5

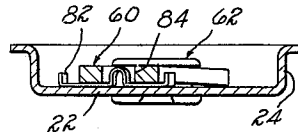


Fig. 6

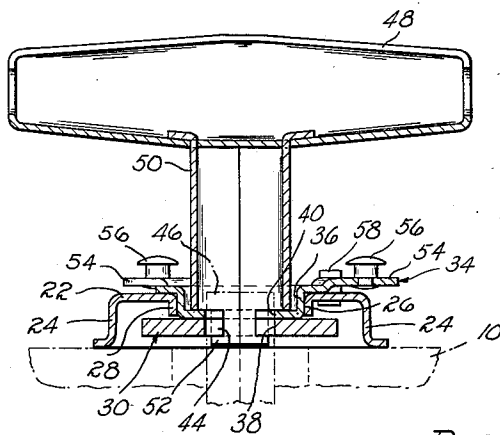
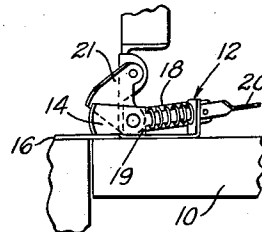


Fig. 7



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LATCH OPERATING MECHANISM

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This invention relates to improvements in latch operating mechanisms and particularly, but without restriction thereto, to latches and locks for securing vertically movable doors such as overhead garage doors against movement.

The latch operating mechanism is primarily for controlling remotely located latch mechanisms which secure the door against opening. Usually latch operating mechanisms of this type are provided with an inside handle by which the latches or locks may be manually operated from the inside of a garage, for example, and such operating mechanisms also have an outside handle by which the latches or locks may be manipulated from outside the garage after a key operated lock has released the latch operating mechanism for manipulation.

It is an object of the present invention to provide simplified means for mounting and connecting the control and latch operating members of a latch operating mechanism of this type.

It is another object of the invention to provide improved means for connecting the shank of an outside operating handle to the control and operating members of the latch operating mechanism, said outside operating handle being connected to the control and operating mechanism in a manner to prevent relative rotation therebetween.

Details of these objects and of the invention as well as other objects thereof, will be apparent from the following specifications and the accompanying drawings forming a part thereof.

In the drawings:

Fig. 1 is a vertical elevation of a fragmentary portion of an overhead door having mounted thereon a latch and latch operating means embodying the principles of the present invention.

Fig. 2 is an enlarged view of the latch operating mechanism illustrated in Fig. 1.

Fig. 3 is a vertical sectional view of the mechanism taken on the line 3—3 of Fig. 2.

Fig. 4 is a view similar to Fig. 2 but showing the reverse side of the latch operating mechanism.

Fig. 5 is a detailed sectional view taken on the line 5—5 of the Fig. 4.

Fig. 6 is a sectional detail view taken on the line 6—6 of Fig. 4.

Fig. 7 is an enlarged bottom plan view of the latch and showing fragments of the door and door jamb.

Referring to the figures of the drawings and particularly Fig. 1, an overhead door 10, has been selected as one example of door to which the latch operating mechanism comprising the present invention may be applied. The inside sur-

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face of the door is shown in said figure. Adjacent one side edge of the door, a latch or lock 12 is secured, the bolt 14 of said lock being engageable with one of the door jambs 16. Preferably, another lock similar to 12 is mounted adjacent the other side edge of the door so as to engage the other door jamb. It is to be understood however, that the present latch operating mechanism, to be described, may be utilized where a single latch or lock is used on a door, the bolt of said lock being engageable with the sill, the top of the door frame, or one of the side door jambs.

For purposes of illustration, latch 12 is the type in which the bolt 14 is spring pressed outwardly for locking engagement by means of a coil spring 18 which engages at one end an abutment 19 on bolt 14 and which at the other end engages a flange on the supporting bracket of latch 12. The bolt 14 is swingably mounted on the latch 12 for generally rectilinear movement inwardly and outwardly and the bolt 14 is guided for such movement by a link 21 which is pivotally secured to the supporting bracket of latch 12 and to the bolt 14. The bolt 14 is retracted from engagement with the door jamb 16 by means of a longitudinal strap 20 which is actuated by latch operating mechanism comprising the present invention and which will now be described.

The latch operating mechanism comprises a face plate 22 which has a relatively short skirt 24 extending from one side of said plate around the entire periphery thereof. The edge of said skirt is placed adjacent the inside surface of the door 10 as is clearly illustrated in Figs. 3 and 6. The plate 22 is provided with an aperture 26 from the periphery of which an annular collar 28 preferably projects inward toward the door 10.

A preferably metallic control member 30 is mounted adjacent the inner surface of plate 22, one surface of said control member preferably engaging the rim of the collar 28. Control member 30 is provided with a plurality of radial notches 32 for purposes to be described.

Mounted adjacent the opposite or outer surface of plate 22 is a latch operating member 34 which is preferably formed from sheet metal. The central portion of said operating member is formed so as to provide a bearing boss 36 centrally thereof. Said boss projects through the aperture 26 sufficiently to be rotatable therein and engage the inner surface of the control member 30.

The control member 30 and latch operating member 34 are provided centrally of each other with similar axially aligned openings 38 and 40. Said openings are clearly shown in plan view in

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Figs. 2 and 4. It will be noted that these openings are shaped so as to have a pair of opposed recesses 42 as well as a plurality of opposed keying surfaces 44. The keying surfaces, particularly, jointly define a geometric configuration complementary to that of a shank 46 of an exterior operating handle, not shown in the drawings. It will thus be seen that said shank will be non-rotatable relative to the control and operating members.

An interior handle 48 is provided with a shank 50 which is preferably formed from sheet metal so as to be tubular. The end of said shank remote from the handle 48 is provided with a plurality of spaced ears 52 which extend into the spaced recesses 42 which comprise part of the openings 38 and 40 of the control and operating members. It will be noted that the recesses 42 have arcuate surfaces which are complementary to the configuration of the longitudinal portions of ears 52. After said ears have been disposed within the recess 42, the outer ends thereof are bent over at right angles, as shown particularly in Figs. 3 and 4, to secure the control and operating members together and with the handle to form a unit. The shank 50, being tubular, is readily adapted to receive the end of the shank 46 of the exterior handle referred to above. The control member 30 and the latch operating member 34 both overlie the aperture 26 and, when secured together as described by the ears 52, the unit comprising said members and the handle is rotatably but irremovably secured to the face plate 22.

Latch operating member 34 is provided with a plurality of radially projecting ears 54 which are circumferentially spaced apart by a relatively wide angle. Suitable headed pins 56 are secured to each of said ears 54 to provide means by which one end of straps 20 may be readily secured thereto. It will thus be seen that when the handle 48 is rotated counterclockwise, as viewed in Fig. 1, the straps 20 will be moved in opposite directions toward the center of the door and retract the bolt 14 of the latches from jamb engaging positions.

Fixed to face plate 22, within the path described by the movement of ears 54, is a stop pin 58. Said pin is engageable by said ears 54 to limit the rotatable movement of the handle and member assembly or unit.

To prevent the rotation of the control member 30 when it is desired to maintain the latches 12 in locked position, a lever-like locking dog 60 is provided which is pivoted to the inside of face plate 22 by means of a cup shaped member 62 which is disposed within an aperture 64 formed in the face plate 22. Said cup shaped member is headed and is also flanged over at the open end, as shown in Fig. 3, to rotatably secure the locking dog to the face plate.

The cup shaped member 62 is also provided in its so-called bottom with a cross-shaped opening 68 for purposes of receiving within one of the cross slots of said opening a flat stem 70 extending rearwardly from lock 72. Said stem is rotatable about its longitudinal axis, such rotation being controlled and preferably effected by suitable means such as the conventional rotatable bolt of said cylinder lock 72 which is mounted within the door.

Locking dog 60 is also provided with a tongue 74 which extends onto a suitable slot or opening formed in the cup shaped member 62 so as to key said member to said dog. Thus, when the

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stem 70 is rotated by manipulating a conventional key in the lock 72, the locking dog 60 will also be rotated to move it between two positions. One of these is illustrated in Fig. 2, and the other in Fig. 4. In the position shown in Fig. 2, the lower end 76 of the dog 60 will engage a surface of one of the radial notches 32 so as to hold the control member 30 and latch operating member 34 against rotation in a direction which will effect a retraction of the latch bolts 14.

When the dog 60 is pivotally moved into the position shown in Fig. 4, the handle 48 and the members 30 and 34 secured thereto may be rotated in a direction to effect retraction of the latch bolts from locking position. Movement of the dog 60 from the position shown in Fig. 2 to that shown in Fig. 4 may be effected by rotating the stem 70 if the operator is on the outside of the door and operates the lock 70 by means of a key. After the dog 60 has been moved in this manner to its unlatched position shown in Fig. 4, the exterior handle which is secured to the shank 46 may be manipulated to rotate the operating member 34 to retract the bolts 14.

If the operator is on the inside of the door, the upper end 78 of the dog 60 may be manipulated to move the dog into the position shown in Fig. 4 since said upper end 78 extends through a suitable opening 80 in the skirt 24 so as to be readily accessible.

Friction means, comprising a spring 82, is disposed between the inner surface of face plate 22 and the dog 60. Though the spring may have any appropriate cross-sectional shape, in the drawings, the spring is shown formed from narrow, flat stock, and is provided intermediate its ends with a hump which extends through an opening 84 provided in the dog. The outer ends of the spring are also bent away from the plate 22 and said ends assist in maintaining the position of the spring 82 relative to the dog 60 as is shown in Fig. 4. Such friction means serves to maintain the dog 60 in any desired position.

It will be seen from the foregoing that very simplified means have been provided for securing together the control and operating members as well as providing an inexpensive and durable pivotal support for the same relative to face plate 22. Also, simple but effective means have been arranged for controlling the pivotal movement of the assembled handle, control and operating members by disposing the ears 54 on the operating member so that they engage a stop pin 58. The skirt 24 also affords an inexpensive but effective means for enclosing the control member 30 and locking dog 60 so that these members are not exposed to the atmosphere and are therefore not subject to the collection of extraneous matter which would impede the proper functioning of these members.

Thus, while the invention has been generally illustrated and described in its preferred embodiments and has included certain details, it should be understood that the invention is not to be limited to the precise details herein illustrated and described since the same may be carried out in other ways, falling within the scope of the invention as claimed.

I claim as my invention:

1. A latch operating mechanism comprising in combination, a face plate provided with an aperture, a radially notched control member disposed on one side of said plate, a locking dog pivoted to said plate for movement between two posi-

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tions and engageable when in one of said positions with the notch of said control member, a friction spring engaging said face plate and movable with said locking dog to retain the same in either of said positions, a latch operating member disposed on the other side of said plate, said members both overlying said aperture and one of said members having a bearing boss extending through said aperture into engagement with the other member, the boss of said one member and the other member also having similar axially aligned apertures shaped to provide recesses and opposed keying surfaces, and a handle having a portion extending into said recesses to secure said handle and members together as a unit, the opposed keying surfaces of said apertures being adapted to receive a shank of another handle to key the same against rotation relative to said unit.

2. A latch operating mechanism comprising a face plate having a flanged aperture therein, a latch operating plate disposed on one side of said face plate and having a circular indentation rotatably received in said aperture, a control disk disposed on the other side of said face plate and in engagement with the indentation of said operating plate, said operating plate and said control disk having registering diametrically opposed arcuate slots and diametrically opposed notches communicating with the face plate aperture, a first handle having a tubular shank, a pair of

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diametrically opposed extensions on said shank permanently secured within said arcuate slots, said opposed notches being arranged to receive the shank of a second handle to key the same against rotation relative to said actuating plate and said control disk whereby either of the handles will operate to rotate said actuating plate and said control disk as a unit, and locking means movably mounted on said face plate having two operative positions in one of which it engages said control disk to lock the same against rotation.

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