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A. R. ADAMS ET AL

2,653,843

LOCK HOUSING

Original Filed April 27, 1948

2 Sheets-Sheet 1

Fig. 1

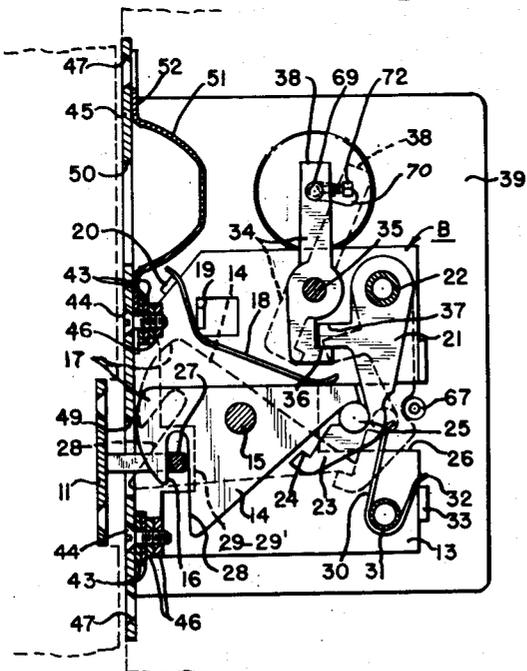
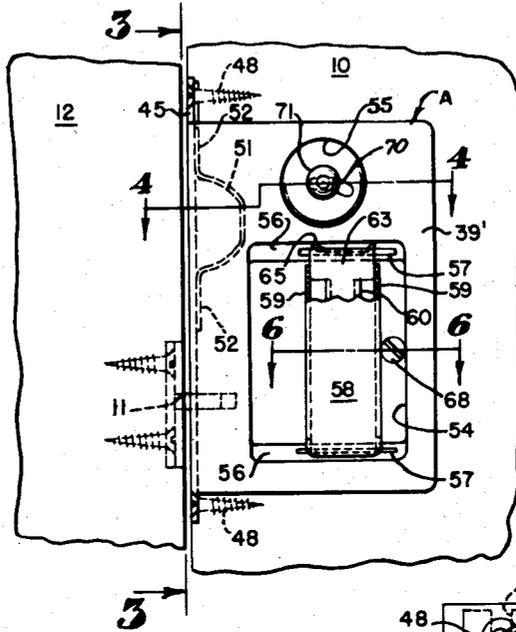


Fig. 2

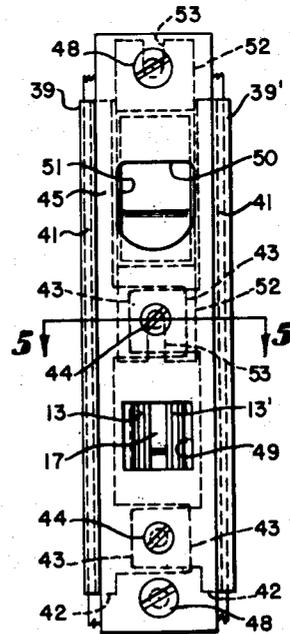


Fig. 3

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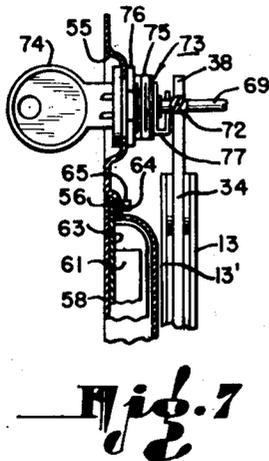
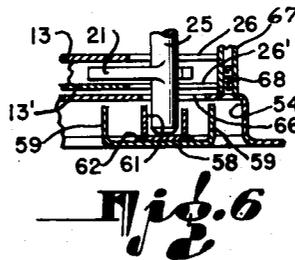
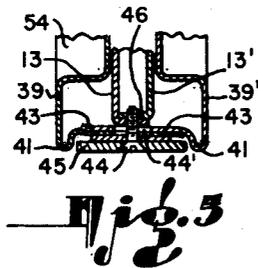
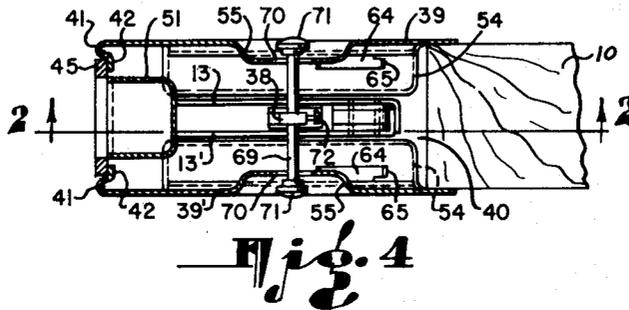
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## UNITED STATES PATENT OFFICE

2,653,843

## LOCK HOUSING

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23,426. Divided and this application June 27,  
1949, Serial No. 101,645

2 Claims. (Cl. 292—337)

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The present invention relates generally to locks for closures; and is more particularly concerned with improvements in the housing or casing for the lock parts.

The present application constitutes a division of our application Serial No. 23,426, filed April 27, 1948.

It is one object of the present invention to provide in a lock structure of the character described herein a casing having side plates so arranged that they may be mounted on opposite sides of the door panel to conceal the lock mechanism, these plates being adjustable for mounting upon door panels of varied thickness.

Another object is to provide casing side plates for sliding door locks, which are provided with actuators permanently assembled as a part of the plate assembly, and so arranged that it will make a slip connection with a part of the lock actuating mechanism, so that no tools, screws, or additional parts are necessary for interconnecting the actuator with the lock mechanism. Moreover, the actuator is so arranged that pressure thereon in a direction to open the door will act to release the lock member with respect to a keeper.

A still further object is to provide an improved casing side plate which is readily adapted for the mounting of different types of lock bar actuators. That is, a recess is provided in the side plate in which there may be mounted a finger engageable button by which the lock bar may be shifted to locked and unlocked positions with respect to the latch member, or a key controlled lock actuating mechanism may be mounted in this recess, this mechanism including means for throwing the lock bar to locked and unlocked positions. Thus, a flexibility of mounting is obtained without the necessity of providing different side plates.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing preferred embodiments of the invention without placing limitations on the scope of the invention defined in the appended claims.

Referring to the drawings, which are for illustrative purposes only:

Fig. 1 is a fragmentary view of a sliding door and associated door jamb upon which there is mounted, as shown in elevation, a lock mechanism embodying the features of the present invention;

Fig. 2 is a vertical sectional view through the lock mechanism, taken substantially on line 2—2 of Fig. 4;

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Fig. 3 is an end view of the lock casing as viewed looking toward the jamb engaging edge of the door, as it appears when viewed substantially along the line 3—3 of Fig. 1;

Fig. 4 is a transverse section taken through the lock casing, taken substantially on line 4—4 of Fig. 1;

Fig. 5 is a fragmentary sectional view showing details of supporting the lock mechanism from the lock casing structure, taken substantially on line 5—5 of Fig. 3;

Fig. 6 is a fragmentary sectional view through a casing side plate and actuator, showing the manner in which the lock mechanism is connected to the actuator, taken substantially on line 6—6 of Fig. 1; and

Fig. 7 is a fragmentary sectional view through a casing side plate and adjacent lock mechanism, showing an alternative arrangement, in which the key controlled device is mounted for actuating the lock bar.

Referring more specifically to Figs. 1 and 2 of the drawings, a lock enclosing casing as generally indicated at A is mounted upon a sliding door panel 10, this casing containing a lock mechanism as generally indicated at B in Fig. 2. The casing and associated lock is so mounted on the edge margin of the door panel as to be moved into operative position with a keeper 11 mounted in a projecting position on an associated door jamb 12.

The lock mechanism B will first be described. The parts of this mechanism are mounted and supported in co-operative relationship between a pair of spaced frame plate members 13 and 13'.

More specifically, the lock mechanism comprises a lock member 14 which is pivotally mounted for rotational movement on a pivot member 15, this member being positioned between the ends of the lock member and having its ends supported in the frame plate members 13—13'.

One end of the lock member is provided with an open ended slot 16 which results in the formation of a hook shaped end 17 at this end of the lock member.

The opposite end of the lock member is engaged by one end of a leaf spring 18, which is anchored at its other end by flexing over integrally formed projection lugs 19 and 20 carried by the frame plate member 13. This spring, as viewed in Fig. 2, acts to bias the lock member 14 for rotational movement in a clockwise direction about its pivot 15.

The spring engaged end of the lock member is operatively associated with a latch member 21 which is pivotally supported at one end for ro-

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tational movement about a pivot 22 having its ends supported in the frame plate members 13—13'. The free end of the latch member is formed with an angularly deflected end portion 23 which at its outer end is formed with an abutment shoulder 24 and at its inner end carries a transversely extending actuating bar 25.

The actuating bar 25 projects on both sides of the latch member 21 and has its ends extended through notched openings 26 and 26' in the frame plate members 13 and 13', respectively. The actuating bar also forms an abutment shoulder which, together with abutment shoulder 24, is movable into the path of movement of the adjacent end of the lock member 14 for limiting rotational movement of the lock member at two positions, namely, a full line position, as shown in Fig. 2, and the dotted line position as shown therein. It will be observed that in the dotted line position of the lock member 14, the entrance opening of the slot 16 is positioned in a keeper receiving position in which a U-shaped portion 27 thereof may enter the slot and engage against a wall 28 thereof. This wall 28 is initially inclined and when engaged by the keeper portion 27, results in rotative movement of the lock member to full line position wherein the hook 17 locks the keeper against removal from the slot 16, and the other end of the lock member will be latched by engagement with the abutment shoulder formed by the actuating bar 25. It will be noted that the frame plate members 13 and 13' are provided with edge notches 29 and 29' respectively to receive the keeper portion 27.

The latch member is normally biased toward latching position by a leaf spring 30 having a free end bearing against the latch member. This spring is anchored by flexing the other end portion around a spacer 31 between the frame plate members 13—13' and engaging the end portion 32 back of a plate lug 33.

As viewed in Fig. 2, it will be observed that with the latch member in the full line position as shown, the lock member 14 will be locked so as to prevent disengagement of the keeper 11, but that by moving the latch member to the dotted line position, the lock member is free to move under the action of spring 18 to its dotted line position in which the keeper may be withdrawn or the sliding door panel moved to open position.

As an additional feature, the lock mechanism further includes a locking bar 34 which is pivoted intermediate its ends on a pivot 35 for swinging movement. This locking bar has one end deformed to present a right angled shoulder 36 which in the full line position of the locking bar coacts with a projecting arm 37 to lock the latch member 21 against movement to its unlatched position. However, it will be evident that if the locking bar 34 is moved to its dotted line position by applying pressure to its end 38 in a clockwise direction, as shown in Fig. 2, the shoulder 36 will be removed from restraining position with respect to the arm 37 so as to then permit manual movement of the latch member to released position with respect to the lock member 14 and also serve as an indicator of locked-unlocked condition of the lock.

The enclosing casing A will now be described. This casing includes a pair of side plates 39 and 39', adapted to cooperatively cover the surface openings of a cut-out 40 in the jamb engaging edge portion of a sliding door panel 10, as shown in Fig. 4.

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One feature of the casing described herein resides in its being adjustable for variable thicknesses of panel closures, so that the same side plate may be utilized for door panels of different thicknesses, without the necessity of providing a plurality of interconnected side plates for accommodating various thicknesses of closure panels. This adjustability is accomplished by providing along the inner end marginal portions of the side plate, a rolled or turned over edge 41 in each case which terminates in an edge flange 42. These edge flanges are respectively provided with projecting wings 43—43 containing slotted openings 44'. By disposing the wings 43—43 of the plate 39 and plate 39' respectively in position with the slotted openings in registration, movements of adjustment of the side plates toward and away from each other may be obtained.

The side plates are held in adjusted position by screws 44 which extend through an end plate 45 having its lateral margin seated on the flanges 42—42 of the plates. These screws are threaded into overlapping lugs 46—46, carried by the frame plate members 13—13', so that by this arrangement, the lock mechanism is supported between the side plates from the end plate 45. The ends of the plate 45 contain apertures 47 for receiving securing screws for holding the end plate, these screws being indicated by the numeral 48 in Fig. 1.

The end plate 45 is provided with an opening 49 for receiving the keeper therethrough, when the door is in closed position, and an opening 50 in which a finger may be inserted for pulling the door toward closed position. In order to limit the amount of insertion of a finger into the opening 50, and in order to protect it from contact with other portions of the lock mechanism, there is provided a cup-shaped shielding member 51 having upper and lower projecting wing portions 52—52, each of which contains a slot 53 for receiving a mounting screw. In the present instance, the cup-shaped member 51 is mounted by inserting the lowermost wing portion so that it will be held by one of the screws 44, and the other wing portions so that it will be retained in position by a screw 48.

Referring to Figs. 1, 4 and 6, each side plate is substantially of rectangular shape and contains in this instance a rectangular recessed portion 54 and a substantially circular recessed portion 55. On opposite sides of the recessed portion 54 the material is formed to provide parallel grooves or ledges 56—56 having in each case an elongate slot 57 formed therein.

An actuator 58 is slidably mounted for lateral movements within the recess 54, this actuator having end margins extending over the ledges 56, and right angled side margins 59 extending into the recess 54. This actuator may be variously constructed and connected in different ways, but for illustrative purposes has been shown as being secured to a carriage member 60 of substantially I-shape with its intermediate portion of channel shape as shown by the numeral 61 in Fig. 6, this portion being secured as by soldering or brazing 62 to the bottom surface of the actuator 58. The end portions 63 are flat and are each deflected at their end margins to form a right angled flange 64, which extends through a slot 57 and has outwardly turned ends 65, by means of which it is held against removal from the slot, as shown in Figs. 1 and 7. The slot 57 thus limits the lateral movement of the actuator, and the channel portion 61 forms a slip joint connection for receiving an end of the actuating bar 25 therein, the

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bottom of the recessed portion 54 being provided with an aperture 66 through which the end of the actuator bar projects. A spacer 67, as shown in Fig. 6, interconnects the recessed portion 54 of the plates 39 and 39', this spacer being connected at its ends by a screw 68 in each case to the bottom of the adjacent recessed portion. The foregoing provides a unique method of connecting the actuator as a permanent part of the flush plate assembly and utilizes a slip connection with a portion of the locking mechanism, of such nature that no tools are required to make the connection.

Various arrangements are possible for accomplishing actuation of the locking bar 34 manually from one or both sides of the door, or through the agency of a key controlled means. As shown in Figs. 1, 2, and 4, a pin 69 is mounted in the end 38 of the locking bar, this pin extending transversely of the bar and having its ends extending through an arcuate slot 70 in each case into the recessed portion 55 of the side plates. The ends of the pin are provided with finger engageable buttons 71 which are substantially flush with the main surface of the side plates. The pin 69 is retained against shifting movement by a screw 72 or other suitable means. With this arrangement, the locking bar may be actuated to locked and unlocked positions from either side of the door panel merely by manually shifting the buttons 71.

If desired, arrangements may be made to actuate the locking bar from only one side of the door, simply by not projecting the pin 69 through the slot 70 on that side from which it is desired not to operate the locking bar. However, for emergency operation from this side, it is the usual practice to indent the end of the pin 69 on this side, so that it may be shifted by the insertion of a pointed instrument through the associated slot 70 into the indented end of the pin, and thus in emergency shift the locking bar.

Moreover, the unique construction of the side plates with the circular recessed portion 55 as illustrated permits use of a key cylinder controlled actuating means, as generally indicated by the numeral 73 in Fig. 7. Such means is of conventional construction containing a cylinder actuable by a key 74, the key means including suitable mounting means which may comprise, as shown, a threaded outer sleeve 75 with which a mounting nut 76 is operatively associated to mount and secure the key means with its key end mounted in the recessed portion 55 so as not to project beyond the surface of the associated flush plate. The key means contains a cam arm 77 for engaging the pin 69 and thus shift the locking bar to locked and unlocked position, as desired.

From the foregoing description, it will be apparent that the present invention provides a unique and improved lock and casing assembly which is so constructed as to make it easily adapt-

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able for variations in mounting positions, and particularly adapted for use with sliding doors.

We claim as our invention:

1. In a door lock casing for use with a door having a closure edge: front and back plates respectively mountable on opposite sides of the door; edge portions respectively carried by said plates adapted to extend over the closure edge of the door in overlapped adjustable relation for varying the spacing between said plates; a closure plate overlapping said portions having a finger receiving opening therein; first means for securing said closure plate and said portions in adjusted overlapped relation; second means for securing said closure plate to the adjacent door edge; and a cup-shaped member engaging said edge portions of said front and back plates and said closure plate so as to be supported on the inside of said closure plate over said finger receiving opening.

2. In a door lock structure for use with a door having a closure edge, front and back faces extending to said closure edge, and a lock receiving opening extending inwardly from said closure edge: a lock mechanism arranged to be extended into said opening, said lock mechanism having a front edge arranged to be positioned contiguous to said closure edge of said door; a closure plate for covering said opening; front and back plates adapted to be mounted respectively on said front and back faces of said door, said plates having edge portions extending inwardly from the front edges thereof and between the front edge of said lock mechanism and said closure plate, said edge portion of said side plates overlapping each other and having matched openings therein; and screw means extended between said closure plate and said front edge of said lock mechanism and extending through said openings of said edge portions, to clamp said edge portions between said closure plate and said front edge of said lock mechanism, said openings in said edge portions being larger than said screw means in lateral direction so that said side plates may be adjusted in lateral spacing to correspond to different thicknesses of doors.

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