Jan. 5, 1954 J. F. G. CHOBERT 2,664,736

DOOR LOCK

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FIG. 1

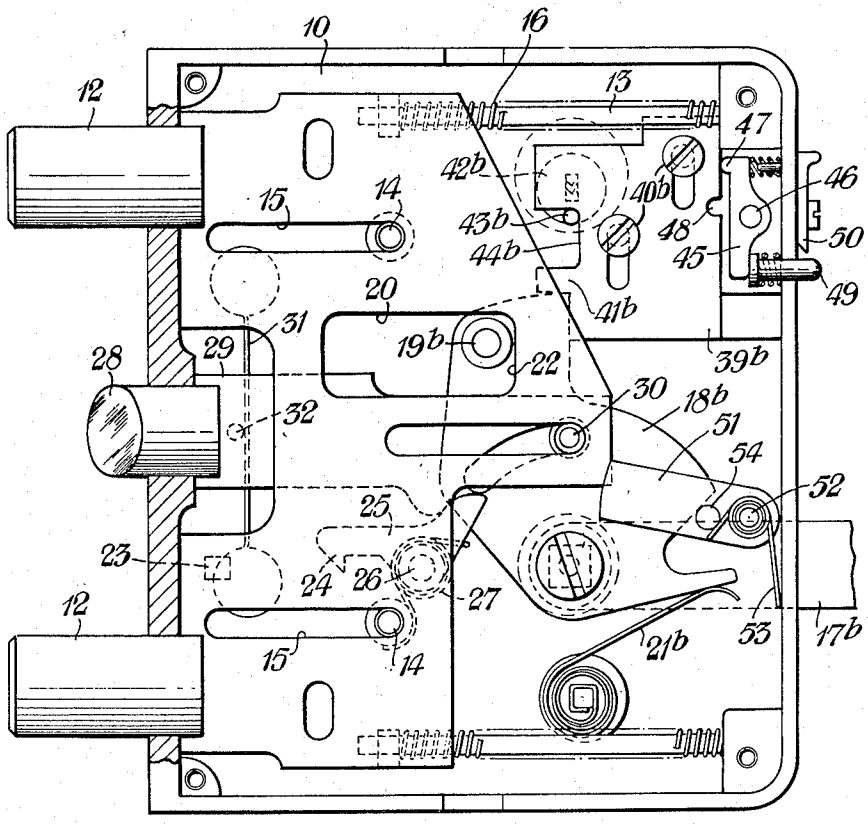
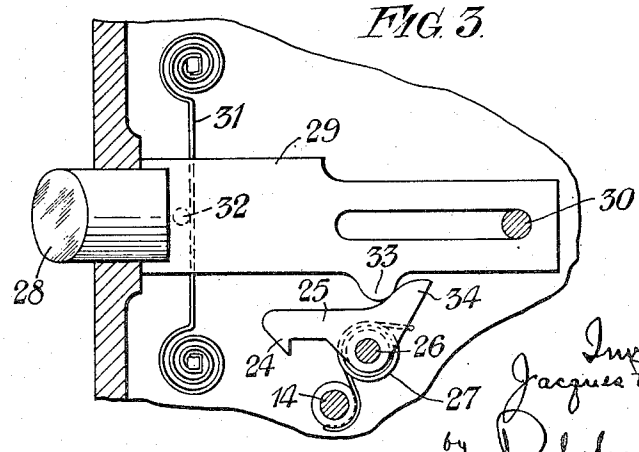


FIG. 3



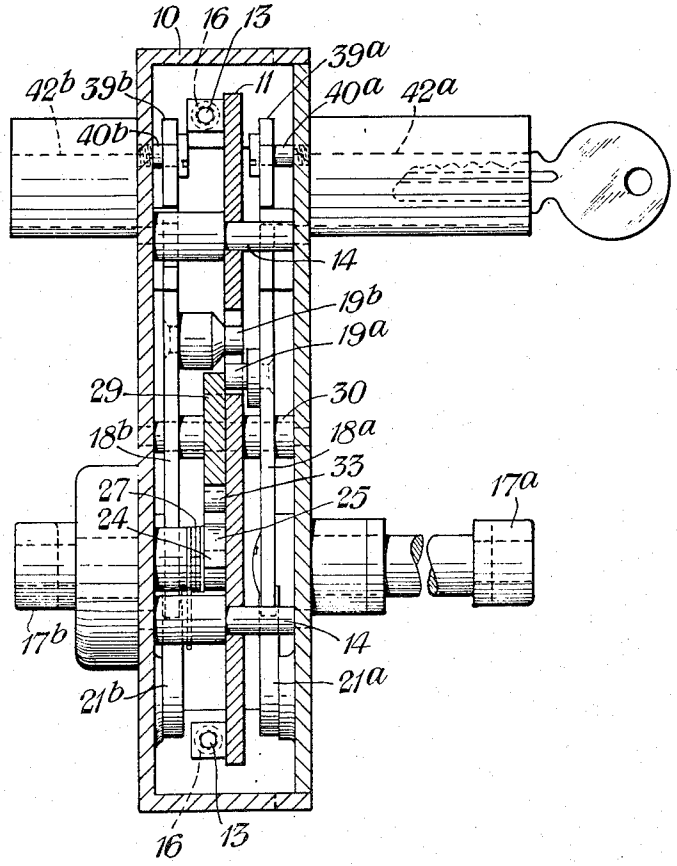
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FIG. 2.



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FIG. 5.

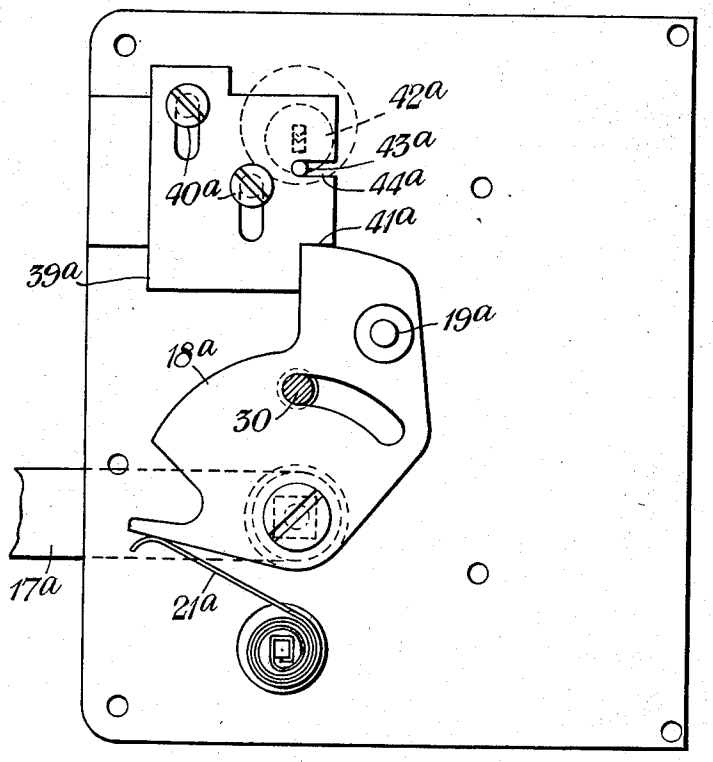
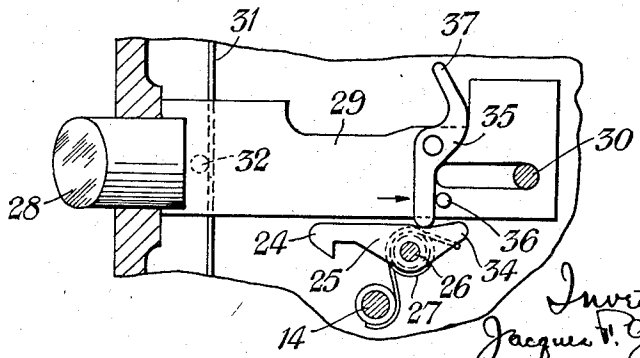


FIG. 4.



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DOOR LOCK

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2 Claims. (Cl. 70—150)

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This invention relates to door locks of the type that are mounted on the shutting edge of the door and are provided with a latch bolt or bolts which are normally held retracted in the lock housing when the door is open but are automatically shot into a strike box or keeper when the door is slammed or pushed shut.

This "slam action" as it is often called is usually operated by means of a small beveled spring bolt which protrudes from the lock housing when the door is open. This small bevelled spring-bolt is linked with the mechanism operating the latch bolt in such a way that when the door is slammed or pushed shut, the bevelled spring-bolt strikes the keeper or strike box and is forced into the lock housing releasing the latch bolt or bolts so that they are urged, usually by means of a spring, into the keeper or strike box thus securing the door.

The latch bolt or bolts are, in most such locks, retracted by means of a key on the outer side of the door and a handle on the inner side of the door.

Such a lock suffers from the disadvantage that it can be forced either by end pressure applied to the protruding latch bolt or bolts, or by breaking a panel of the door and retracting the bolts by means of the inner handle.

It is one object of the present invention to provide a door lock which, by the single act of slamming the door secures the door against forcing, either by application of end pressure to the latch bolt, or by retraction of the latch bolt by means of the inner handle.

In the accompanying diagrammatic drawings, which illustrate a preferred embodiment of the invention

Figure 1 is a side elevation of a lock, a face plate of which has been removed,

Figure 2 is an end elevation with parts removed and parts shown in section of the same lock of which an end plate has been removed,

Figures 3 and 4 are details illustrating alternative catch devices associated with the lock, and

Figure 5 is an elevation of part of the mechanism for retracting the bolts of the lock.

Referring to the drawings, a lock adapted to be mounted on the vertical shutting edge of a door comprises a housing 10 in which a bolt plate 11, having lock bolts 12 integral with it, is mounted to slide on guide rods 13 and also on studs 14 on the back plate of the housing and engaged in slots 15 in the bolt plate. The guide rods 13 are surrounded by coil springs 16 which urge the bolt plate 11 outwardly (i. e. to the left

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with respect to Figure 1) towards the vertical shutting edge of the door (not shown) so that the lock bolts 12 can protrude from the housing into a locking position in engagement with a strike box or plate (not shown) mounted on a door jamb.

The bolt plate 11 is movable to retract the bolts 12 by rotation of either of two handles 17*a* and 17*b* which are mounted respectively on the outside and inside faces of the door. Each of these handles can act independently on the plate 11 through coupling members 18*a* (Figure 5) and 18*b* (Figures 1 and 2) respectively which are arranged one on each side of the plate. These coupling members are provided with studs or pins 19*a* and 19*b* located within a slot 20 in the plate so that when the respective handle 17*a* or 17*b* is rotated against the action of spiral springs 21*a* or 21*b* (Figures 1 and 5 respectively) bearing against the respective coupling members, the associated stud 19*a* or 19*b* engages the rear face 22 of the slot 20 to thrust the plate 11 backwards and retract the bolts 12.

When the plate 11 arrives at its fully retracted position, a stud or boss 23 thereon is engaged by a catch 24 on one arm of a lever 25 mounted on a pivot 26. This catch is urged into its engaged position by a spiral spring 27 and is released to allow the bolts 12 to spring into their locking position by inward displacement of an actuator bolt 28 which has a bevelled end face, always protrudes from the housing 10 and is inwardly displaceable by engagement of the bevelled face with the strike box or plate as the door is closed.

As shown in Figure 3, the actuator bolt 28 is integral with an actuator plate 29 slidably secured in the housing by means of a pin-and-slot connection 30, movement of the bolt into the housing 10 being resisted by a spring 31 acting on a stud 32 on one side of the actuator plate. When this actuator plate has been displaced a predetermined amount, a cam 33 on its lower edge engages an arm 34 on the pivoted lever 25 which is thereupon rocked to release the catch.

In Figure 4, is illustrated an alternative arrangement in which the pivoted catch lever 25 is associated with a second lever 35 which is pivotally mounted on the actuator plate 29 and is urged by a spring (not shown) to pivot in an anticlockwise direction, movement being limited by a pin 36 on the plate 29. The coupling members 18*a* and 18*b*, when rotated by their respective handles to retract the bolts 12, engage an arm 37 of the lever 35 to rock it away from the catch lever 25 and permit the catch to engage the stud

23 on the plate 11. The spring is sufficiently strong to prevent the lever 35 from rotating when it engages the arm 34 of the catch lever 25 as the bolt 28 is displaced into the housing so that the catch lever is rocked and the bolt plate 11 released.

Latch plates 39a and 39b (Figures 1 and 5 respectively) are mounted on the outside and inside face plates respectively of the housing 10 in order to prevent retraction of the lock bolts 12 until released by a key. Each of these latch plates is vertically slidable on guide pins 40a and 40b and can drop downwards under its own weight to permit a projecting shoulder 41a, 41b to engage an angular portion of the associated coupling member 18a or 18b when the lock bolts 12 are fully extended into the locking position. The members 18a, 18b cannot then be moved to retract the bolt until the appropriate latch plate has been lifted out of engagement therewith. This is effected by rotation of a key barrel 42a, 42b on which a crank pin 43a, 43b is mounted to engage a slot 44a, 44b in the latch plate 39a or 39b, it being possible to rotate the key barrels only when an appropriate key has been inserted therein. The barrels can, of course, be freed to rotate by actuation of a permutation device and the word "key" as used herein is to be understood as including such a device.

In order that the lock can be opened from the inside without the use of a key, the inner latch plate 39b is provided with a mechanism for holding the plate in its raised position when desired. This mechanism, which is of course only operable from inside the door when closed, comprises a lever 45 which is pivoted at 46 and is provided with a nose 47 spring urged towards the edge of the latch plate 39b. When the latch plate is in its uppermost position, a slot 48 is engaged by this nose to prevent the latch plate from descending until the nose is forced out of the slot by pressure on a pin 49 which protrudes from the edge of the housing and can be held depressed by a slide 50.

Retraction of the bolt plate 11 can also be prevented by a lever 51 mounted on a pivot 52 and urged by a feather spring 53 to engage behind the plate when it is fully extended in its locking position. As the coupling members 18a or 18b are rotated to retract the bolts, they thrust against a pin 54 extending out of both sides of the lever 51 and rock it out of engagement with the bolt plate 11.

I claim:

1. A door lock for cooperation with a strike box, comprising a housing, a spring-biased bolt plate slidable in the housing, a latch bolt mounted on the bolt plate for movement between a projected and retracted position, inside and outside operated handles pivotally mounted on the housing, a coupling member operatively connected to each handle, a lost motion connection between each coupling member and bolt plate enabling independent operation of said members, a spring-tensioned catch engageable with the bolt plate for retaining same in the retracted position, a latch plate associated with each coupling member for blocking movement of same, key-operated means for each latch plate to move same out of blocking position, the latch plate returning to its blocking position by gravity as soon as the key is withdrawn from the lock, a spring-projected actuator bolt, a cam-like nose on the actuator bolt for retracting same upon striking the striking box, means on the actuator bolt for engaging the catch upon retracting movement thereof to release same so that the latch bolt may be shot into the strike box, a spring-actuated blocking pawl adapted to abut against said bolt plate for blocking retraction of the bolt plate, and means on said blocking pawl engageable by either of said coupling members for moving same out of blocking position upon bolt-retracting movement of such coupling member.

2. A door lock as claimed in claim 1, comprising a manually controllable member shiftable to and from positive engagement with one of the latch plates so as to hold that latch plate out of operation.

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