July 10, 1934. E. N. JACOBI 1,965,939

COMPARTMENT LOCK

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Fig. 1

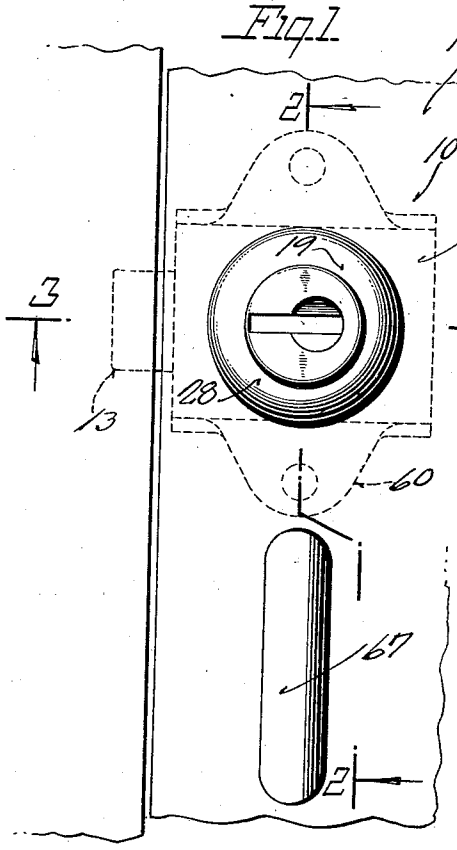


Fig. 2

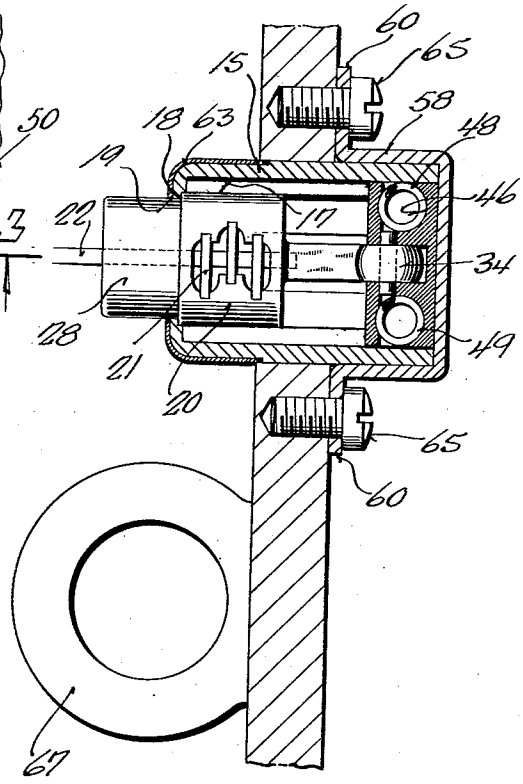


Fig. 3

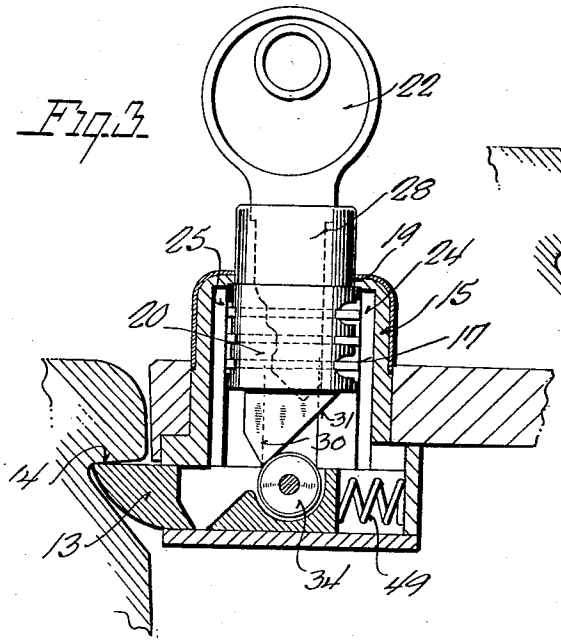
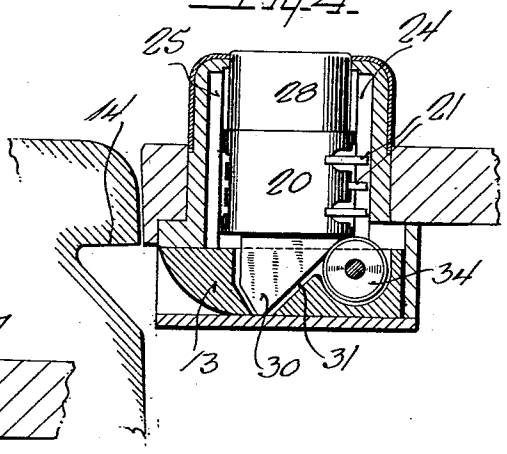


Fig. 4



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Fig. 5

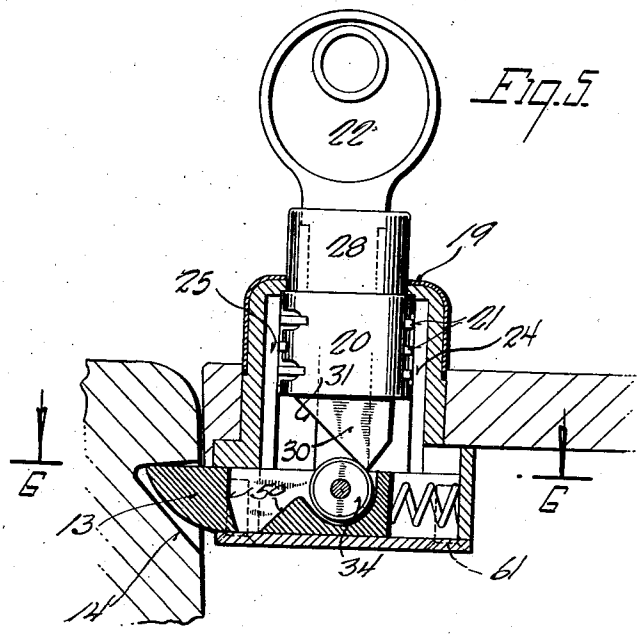


Fig. 6

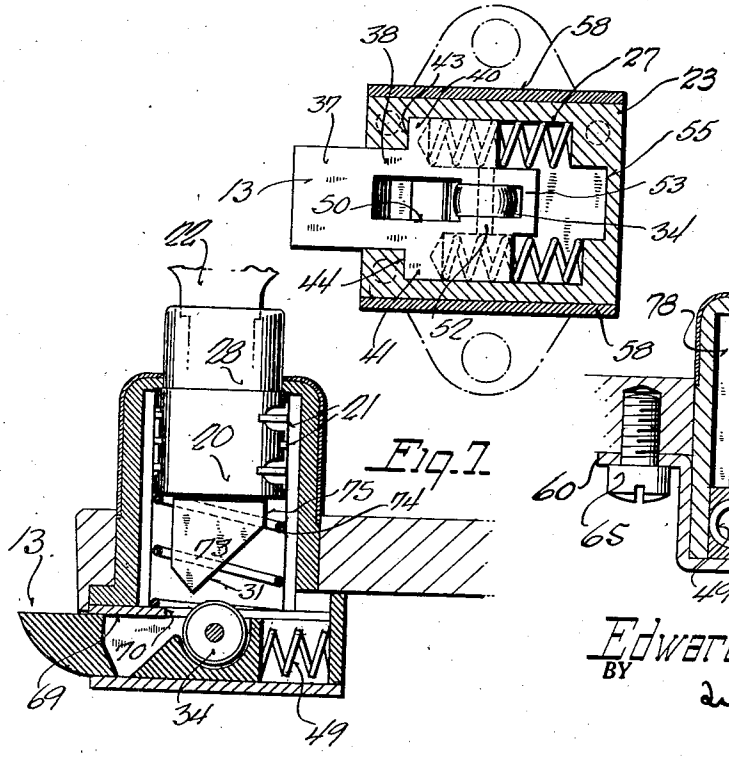


Fig. 7

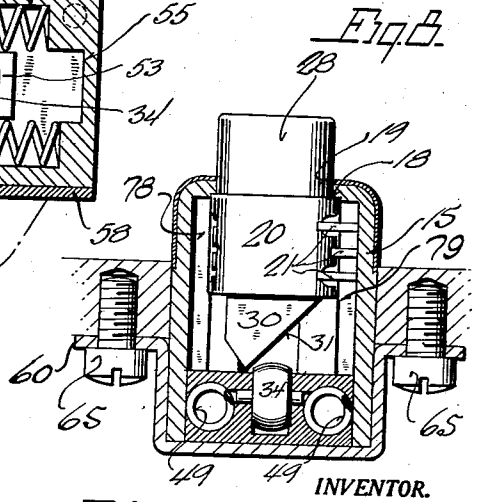


Fig. 8

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UNITED STATES PATENT OFFICE

1,965,939

COMPARTMENT LOCK

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Application November 9, 1931, Serial No. 573,918

7 Claims. (Cl. 70—29)

This invention relates to locks and more particularly to a compartment latch-lock adapted to be left either in locked or unlocked position.

It is an object of the present invention to provide a tumbler lock in which the locking bolt forms a latch and is spring held in place and adapted to be actuated by an axially movable member formed integrally with the lock cylinder.

A further object of the invention is to provide a relatively small, compact latch-lock which can be readily applied to compartments of various types which it may be desired to lock or leave unlocked at will, and other objects of the invention will become apparent as the description proceeds.

Another object of the invention is to provide a lock-latch in which when the locking element is in locked position, a portion of the locking element will hold the latch against disengagement from its keeper.

A structure embodying the invention is illustrated in the accompanying drawings and will be hereinafter fully described, the invention residing in certain novel features which will be particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a plan view showing the lock in place on a door of a panel and showing the ring which may be used to pull the door open;

Figure 2 is a cross section on the line 2—2 of Fig. 1, looking in the direction of the arrows;

Figure 3 is a cross section on the line 3—3 of Fig. 1, looking in the direction of the arrows and showing the latch engaged in the keeper and the key in place in the locking cylinder;

Figure 4 is a view similar to Fig. 3 in which the key has been removed and the latch shown in open position;

Figure 5 is a cross section similar to Fig. 3, showing the relative position of the members in locked position;

Figure 6 is a cross section on the line 6—6 of Fig. 5, looking in the direction of the arrows, showing the details of the latch;

Figure 7 is a view similar to Fig. 3 and showing a modification of the invention in which a spring is used to return the locking cylinder to its outermost position;

Figure 8 is a modification of the device shown in Figs. 1 to 6, inclusive, in which the locked position of the lock cylinder is ninety degrees from the unlocked position.

Referring to the accompanying drawings in which like numerals indicate like parts throughout the several views, the lock generally designated 10, is mounted in a door 11 and has a latch or bolt, generally designated 13, fitting in a latch keeper 14 in the casement of the door.

The lock unit comprises a mounting member 15 provided with internal bore 17 terminating at the outer end in a shoulder 18 and a bore 19 of smaller diameter than the bore 17 and a lock cylinder 20.

The mounting member 15 is formed with an upper cylindrical member which emerges into a rectangular member 23 having a substantially rectangular compartment 27 therein to accommodate the latch bolt.

The locking cylinder 20 has a plurality of tumblers 21 therein which are adapted to be actuated by a key 22 shown in Figs. 3, 5 and 7, the tumblers being adapted to move into one of a pair of axial slots 24 or 25 in the bore 17. The slots 24 and 25 extend throughout the length of the cylindrical portion of the mounting member so that the lock cylinder is free to move axially in the mounting member throughout the length thereof with the tumblers 20 engaged in the slots 24 or 25.

The lock cylinder has a cylindrical extension 28 projecting through the bore 19 in the outer end of the mounting member and providing means whereby the cylinder 20 may be moved axially in the mounting member 17.

A cam 30 having a sloping face 31 is formed integrally with the lower end of the locking cylinder 20 and presses on a cam follower 34 mounted on the latch bolt 13 to actuate the latch bolt. The latch bolt 13 is provided with an aperture 50 therein which is shaped to fit the cam 30 in its lowermost position, the aperture 50 having an extension in which the cam follower 34 is rotatably mounted through a pin 52 in the latch bolt 13.

The follower 34 projects above the lower tip of the cam 30 and is formed with a rounded surface which permits the cam to be pivoted around the axis of the cylinder 20 to a position in which the tumblers 21 occupy the groove 25. In this position, the cam 30 contacts the opposite side of the follower 34 and upon pressure being exerted on the extension 28 tends to force the latch bolt 13 further into the keeper. Having the tip of the cam 30 project beyond the top of the inner edge of the follower likewise forms a lock which positively precludes moving the tongue of the latch bolt back into the housing 23, and discourages tampering with the lock.

If it is desired, the grooves 24 and 25 may be placed at right angles to each other so that the lock is in locked position or in a position ninety degrees from the position shown in Fig. 3. In this position, the cam would occupy a position adjacent the side of the follower 34 and the door could be snapped closed with the key removed but not opened. Other means to accomplish this same result are obvious and no further description is thought to be necessary on this point.

The latch bolt is formed in substantially the shape of a cross having a tongue 37 projecting out of the casing and engaging the keeper 14 in

the casement of the door. The body portion 38 of the latch has wings 40 and 41 projecting from the sides thereof which abut corresponding shoulders 43 and 44 respectively in the recess 27 to retain the latch bolt within the casing.

The wings 40 and 41 are bored longitudinally as shown at 46 to accommodate a pair of springs 48 and 49. The springs abut the latch bolt 13 within the bores 46 at one end and the end of the casing opposite the tongue 37 at the other end to constantly urge the latch bolt 13 into its locking position.

The provision of the follower 34 necessitates a slight extension 53 to the latch bolt 13, the extension 53 fitting into a corresponding notch 55 in the rectangular member 23.

A substantially channel shaped member 58 having a pair of outstanding ears 60 is fitted over the bottom of the rectangular compartment 27 and fastened thereto by suitable means 61, the bottom of the channel member 58 forming a bottom for the compartment and the ears 60 forming means by which the lock may be fastened to the inside of the compartment to be locked.

A cover or cap 63 may be made of chromium or other suitable material having a high polish and sweated onto the outside of the mounting member 15 to add to the appearance of the lock.

It will be noted that the lock is adapted to be fastened to the inside of the door by bolts 65 passing through the ears 60 and that the cylindrical portion of the mounting member 15 projects through the door with only the cap 63 projecting beyond the outer surface of the door.

In operation, if the lock is in unlocked position with the tumblers 21 in the groove 24, the door may be opened by gripping a finger ring 67 fastened to the door and pressing inwardly on the extension 28 on the locking cylinder. Depressing the member 28 actuates the cam 30 against the roller 34 causing the latch bolt 13 to be drawn inwardly into the rectangular compartment 27 against the action of the springs 49 to permit the door to be opened.

In the form shown in Figs. 1 to 6, inclusive, upon removing the finger from the extension 28, the springs 49 take effect to shove the latch bolt outwardly into locking position. In shoving the latch bolt out, the springs 49 automatically lift the extension 28 out of its innermost position and force it to its outermost position.

To lock the door in closed position, the door is closed, the key 22 is inserted, and the lock cylinder revolved through an angle of 180 degrees to bring the tumblers 21 into engagement with the diagonally opposite slot 25. At this point, the cam member has also revolved through 180 degrees and occupies the position shown in Fig. 5, with the cam surfaces 31 on the opposite side of the follower from that shown in Figs. 3 and 4.

Any attempt to depress the extension 28 while the lock is in this position has a tendency to drive the wings 40 and 41 more firmly against the shoulders 43 and 44 and has no tendency to draw back the bolt 13. In the locked position of the latch-lock shown in Fig. 5, the tip of the cam 30 lies below the top of the follower 34 in such a manner as to prevent the withdrawal of the latch bolt 13 from the keeper 14, and thus provide a positive lock for the compartment.

In the form shown in Fig. 7, positive means are shown to return the locking cylinder to its outermost position. This construction enables the use of the cam terminating entirely above the follower 34 so that the door may be slammed shut with the lock in locked position. To accomplish this purpose, a plate 69 is interposed between the top of the rectangular compartment 27 and the bolt 13. The plate 69 has an aperture therethrough of smaller diameter than the bore 17 which is of sufficient size to accommodate a cam member which has been designated 73.

It will be noted that the lower tip of the cam 73 is positioned entirely above the upper point of the follower 34 so that the lock 20 may be turned to its locked position and the latch bolt 13 actuated to permit the door to close by contact with its keeper. In locked position, therefore, a depression of the cylindrical extension 28 presses the tip of the cam 73 against the back of the follower 30 and does not actuate the latch.

A coil spring 74 is mounted on the member 69 and presses upwardly against the lower side of the lock cylinder 20 to constantly urge the lock cylinder outwardly. The cam member 73 differs from the cam member 30 not only in having the lower tip thereof terminate above the top of the follower 34, but in having a rectangular portion 75 between the cam surface 31 and the lock cylinder 20 to allow for the space occupied by the spring 74. In all other respects, the lock shown in Fig. 7 is identical to that shown in Figs. 1 to 6 inclusive and like numerals in Fig. 7 apply to corresponding parts in Figs. 1 to 6.

The modification shown in Fig. 8 discloses the lock which is adapted to occupy an unlocked position similar to the lock shown in Figs. 1 to 6 inclusive and is provided with grooves 78 and 79 at right angles to the grooves 24 and 25 which permit the lock to be fastened in a locked position at right angles to that shown in Fig. 1, whereby the latch bolt may be actuated freely to close the door while the lock is in locked position. In other respects the device shown in Fig. 8 is identical to that shown in Figs. 1 to 6, inclusive, and like numerals are used to indicate like parts in all views.

Having thus described the invention, it is realized that it is susceptible to various changes and modifications coming well within the scope of one skilled in the art, and it is not, therefore, desired to limit the invention to the precise form herein shown and described, but only by the scope of the appended claims.

What is claimed as new and desired to secure by Letters Patent is:

1. A device of the character described, comprising a bored mounting member, a lock cylinder mounted in the mounting member bore for rotary movement between locked and unlocked positions and for limited axial movement, key retractable tumblers to retain the cylinder in either locked or unlocked position and to guide the cylinder for non-rotary axial movement in an unlocked position, a latch bolt carried by the mounting member and freely movable transversely of the longitudinal axis of the lock cylinder, actuating means carried by said lock cylinder and cooperable with means on said latch bolt to actuate said latch bolt upon longitudinal shifting of the lock cylinder while in unlocked position, and means to hold said actuating means free of the cooperating means on said latch bolt whereby said latch bolt is free to move independently of the position of said lock cylinder.

2. A latch-lock of the character described, comprising a hollow cylindrical casing, a cylindrical plug mounted in the hollow cylindrical casing for rotary motion between locked and unlocked positions and for limited axial motion, key retract-

able tumblers mounted transversely in said plug and normally engaging the hollow casing to secure the plug against rotation in either locked or unlocked position and guiding the plug for non-rotary axial motion in unlocked position, retraction of said tumblers by a proper key freeing the plug for rotation from one position to the other, a latch bolt slidably mounted across the inner end of the hollow cylindrical casing and provided with a cam surface facing the hollow cylindrical casing, and a cam projected from the inner end of the cylindrical plug as an integral part thereof, said cam being out of proper alignment with the cam surface on the latch bolt when the plug is secured against rotation in locked position by its key retractable tumblers engaging the casing and being properly aligned with the cam surface upon rotation of the plug to unlocked position to cooperate with the cam surface upon inward non-rotary axial movement of the plug to shift the latch bolt in a predetermined direction.

3. In a latch-lock of the character described, a bored casing, a lock cylinder axially and rotatably movable in the casing bore, key operable tumblers carried by the lock cylinder and engageable with the casing to hold the lock cylinder against rotation from a locked position and to guide it for non-rotary axial movement in an unlocked position, said tumblers being retractable by a proper key to free the lock cylinder for rotation from one position to the other, a latch bolt extending transversely across the inner end of the mounting member bore and being shiftable in a direction perpendicular to the axis of the lock cylinder to and from an operative position, cam means carried by the latch bolt, and a cam formed integrally on the inner end of the lock cylinder, said cam having an inclined surface with the apex thereof at the extreme end of the cam, said inclined surface being out of proper operative alignment with the cam means on the latch bolt when the lock cylinder is in its locked position of rotation with the apex of the cam positioned over a part of the latch bolt so as to engage the same and positively preclude inward axial movement of the lock cylinder, and said inclined surface of the cam cooperating with the cam means on the latch bolt when the lock cylinder is in its unlocked position at which the inclined surface is properly aligned with the cam means to shift the latch bolt in a predetermined direction and which unlocked position is maintained by the guiding action of the engagement of the tumblers with the bored casing.

4. In a latch lock of the character described, a fixed mounting member having a bore, a lock cylinder rotatably and axially movable within said bore, key operable locking tumblers carried by the cylinder and engageable with the mounting member to secure the cylinder against rotation in either of two positions and to guide it for non-rotary axial movement in said positions, a latch bolt carried by the mounting member and slidable transversely of the longitudinal axis of the lock cylinder, cooperating means carried by said latch bolt and the lock cylinder adapted to retract the latch bolt upon inward non-rotary axial movement of the lock cylinder when the cylinder is in one of its predetermined positions of rotation but being ineffective to retract the latch bolt when the cylinder is in the other of its predetermined positions of rotation.

5. A latch lock comprising a fixed mounting member having a bore and a bolt chamber communicating with the inner end of the bore and disposed transversely with respect thereto, a latch bolt slidable in said chamber to and from an operative position, means to yieldably urge the latch bolt to its operative position, a lock cylinder movable axially and rotatably within the bore, a cam on the inner end of the lock cylinder operable to retract the latch bolt upon inward axial shifting of the lock cylinder when the lock cylinder is in a predetermined position of rotation, and key operable locking tumblers carried by the lock cylinder and engageable in a longitudinal groove communicating with the bore to guide the lock cylinder for non-rotary axial motion in said predetermined position of rotation at which axial shifting is effective to retract the latch bolt and engageable in another longitudinal groove communicating with the bore to secure the lock cylinder in a second position of rotation at which shifting of the lock cylinder is ineffective to retract the latch bolt.

6. A latch lock of the character described comprising a mounting member having a bore and a bolt chamber communicating with the inner end of the bore and extending transversely with respect thereto, a latch bolt slidably mounted in said chamber and yieldably projected to an operative position, a lock cylinder mounted in said bore with its outer end projecting therefrom to form a push button, said lock cylinder being rotatable and axially shiftable in the bore, cooperating means carried by the lock cylinder and the latch bolt and operable upon axial depression of the lock cylinder as a push button with the lock cylinder in a predetermined position of rotation to retract the latch bolt, and key operable locking tumblers carried by the lock cylinder and projectable into a longitudinal groove communicating with the bore to guide the lock cylinder for non-rotary axial motion in said predetermined position of rotation and projectable into another longitudinal groove communicating with the bore to secure the lock cylinder in another position of rotation at which axial depression of the lock cylinder is ineffective to retract the latch bolt.

7. A latch lock of the character described comprising, a fixed mounting member having a bore, a lock cylinder rotatably and axially movable within said mounting member bore, a latch bolt carried by the mounting member and slidable transversely of the longitudinal axis of the lock cylinder, said latch bolt preventing longitudinal shifting of the lock cylinder in all positions of rotation of the lock cylinder but one, key retractable tumblers carried by the lock cylinder normally projected into a groove in the mounting member to hold the lock cylinder against rotary movement to said position of rotation at which longitudinal shifting of the lock cylinder is possible and engaging another groove in the mounting member to guide the lock cylinder for non-rotary longitudinal shifting in said position of rotation at which longitudinal shifting is possible, and cooperating means carried by the lock cylinder and the latch bolt and operable upon the longitudinal shifting of the lock cylinder when in said one position of rotation to move the latch bolt.

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