

Jan. 27, 1959

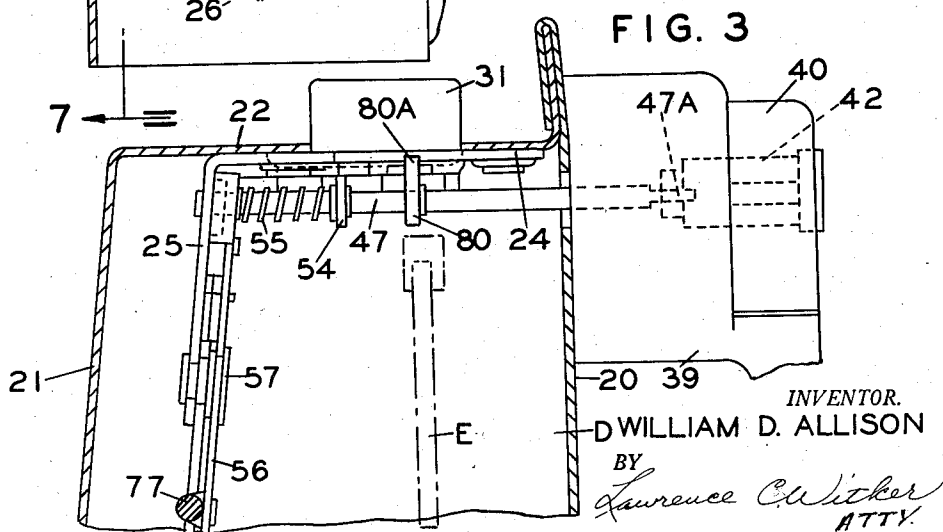
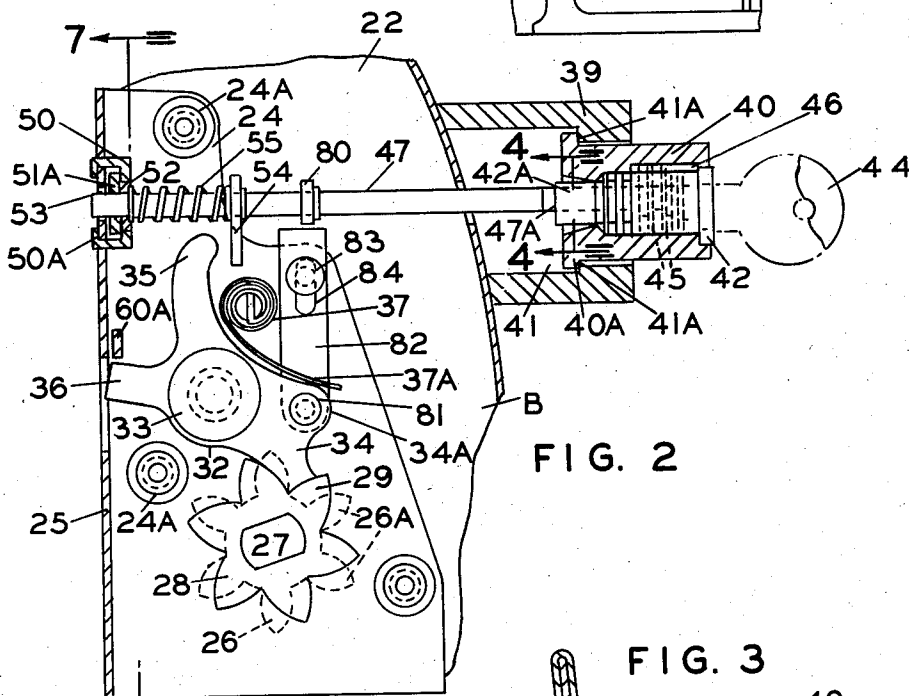
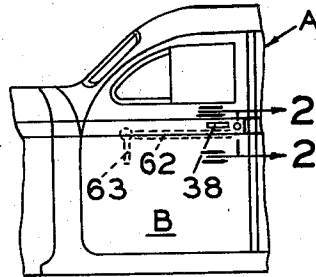
W. D. ALLISON

2,870,620

DOOR LOCK

Filed May 14, 1956

4 Sheets-Sheet 1



INVENTOR.

-D WILLIAM D. ALLISON

BY

Lawrence C. Wither
ATTY.

ATTY.

Jan. 27, 1959

W. D. ALLISON

2,870,620

DOOR LOCK

Filed May 14, 1956

4 Sheets-Sheet 2

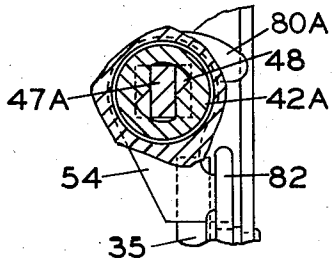


FIG. 4

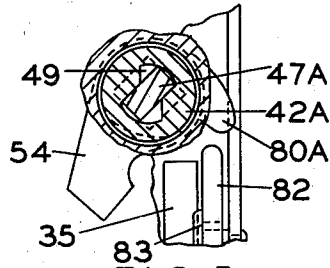


FIG. 5

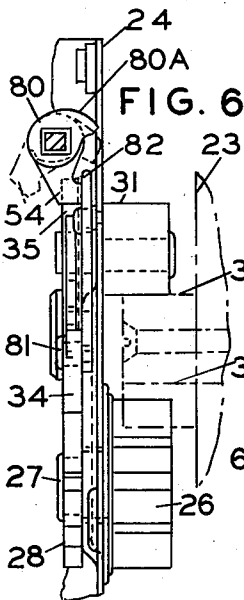


FIG. 6

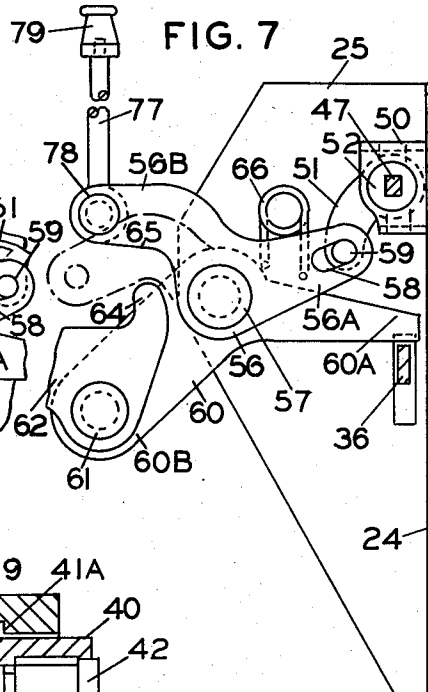


FIG. 7

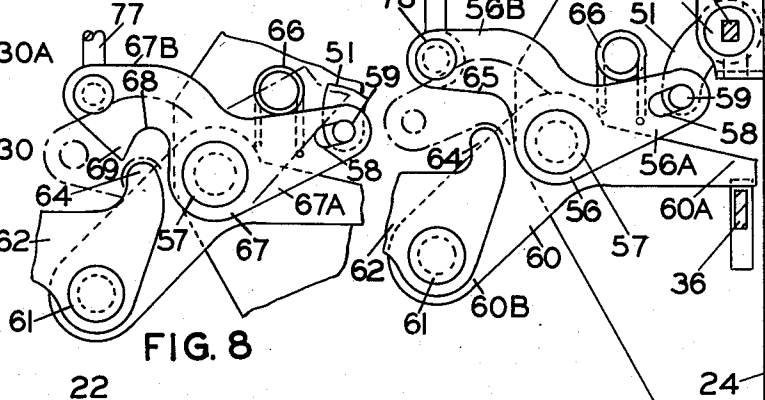


FIG. 8

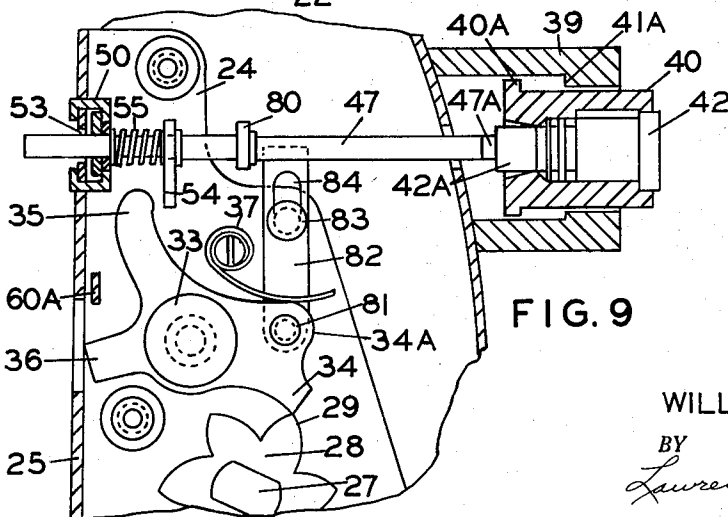


FIG. 9

INVENTOR.
WILLIAM D. ALLISON

BY
Laurence C. Wither
ATTY.

Jan. 27, 1959

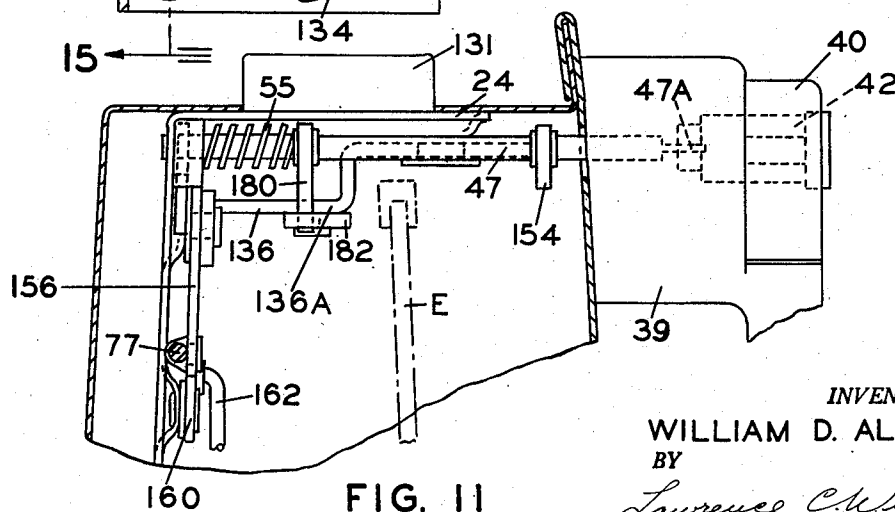
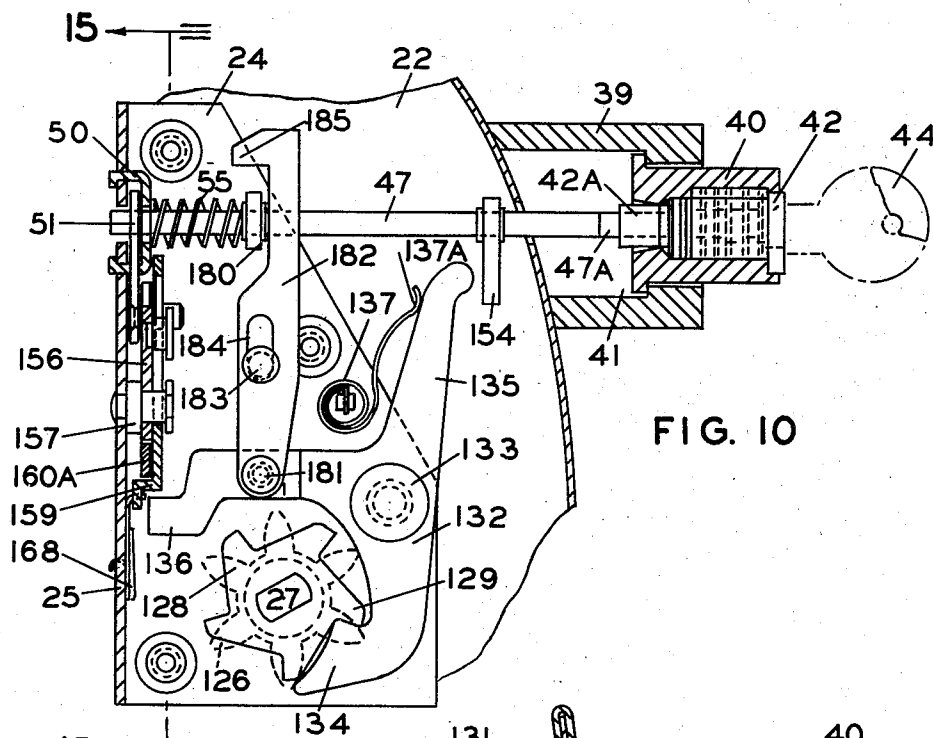
W. D. ALLISON

2,870,620

DOOR LOCK

Filed May 14, 1956

4 Sheets-Sheet 3



INVENTOR.

WILLIAM D. ALLISON

BY

Lawrence C. Wither
ATTY.

ATTY.

Jan. 27, 1959

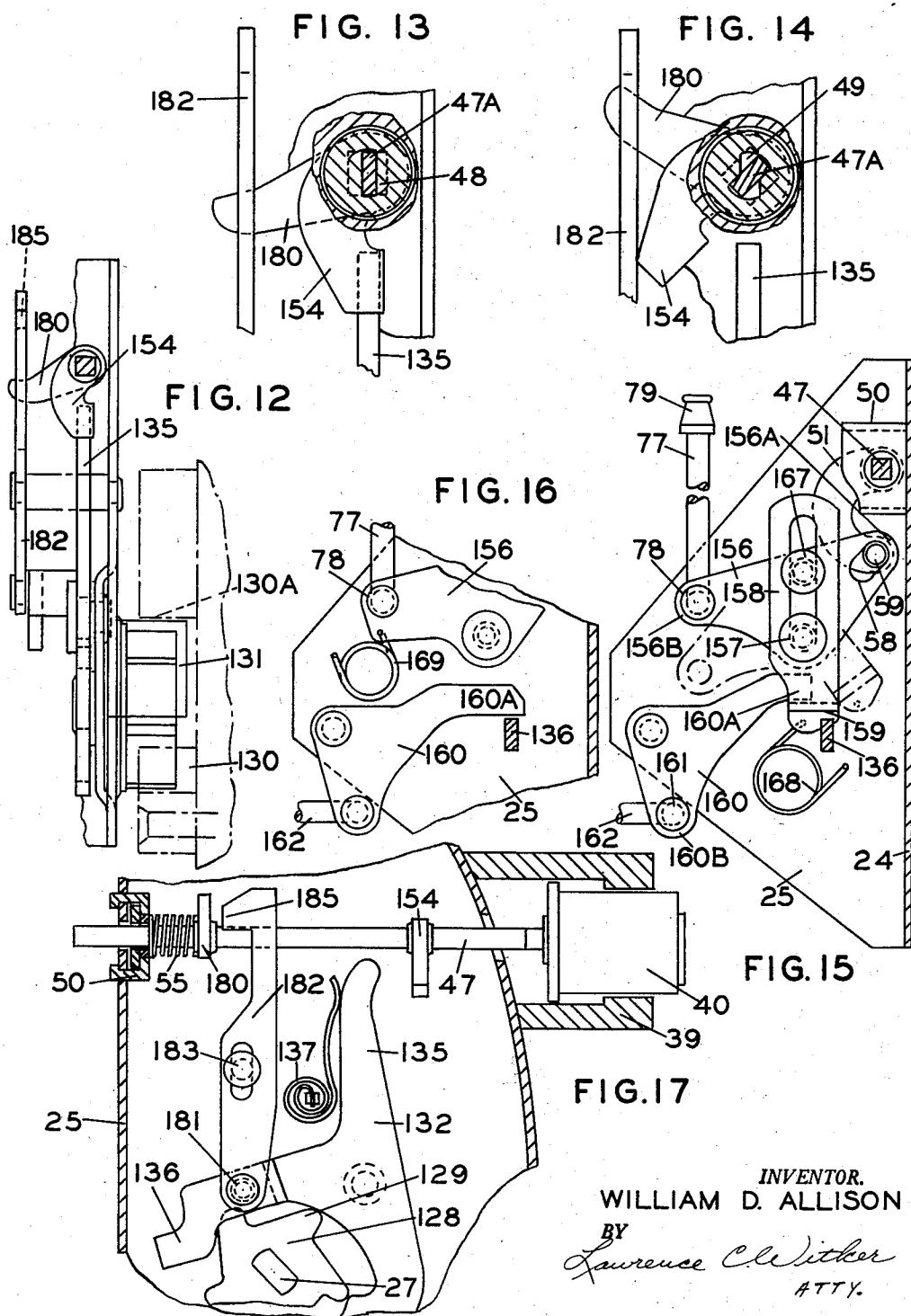
W. D. ALLISON

2,870,620

DOOR LOCK

Filed May 14, 1956

4 Sheets-Sheet 4



INVENTOR.
WILLIAM D. ALLISON
BY
Lawrence C. Wither
ATTY.

1

2,870,620

DOOR LOCK

William D. Allison, Grosse Pointe Farms, Mich.

Application May 14, 1956, Serial No. 584,842

25-Claims. (Cl. 70—135)

This invention relates to latch mechanism for the swinging doors of various structures and particularly the doors of automobile bodies.

An object of the invention is to provide a door latch mechanism which is relatively small in size, relatively simple and compact in construction, efficient in operation, and capable of being manufactured at comparatively low cost.

A further object of the invention is to provide an improved door lock especially adaptable for use on the doors of automobile bodies, the lock being provided with detent means for holding a rotatable bolt in door locking position and also being provided with improved means under the control of outside and inside manually controlled operators for releasing or disengaging the detent means, and in addition having improved means for rendering the outside operator ineffective to release or disengage the detent means.

In accordance with the present embodiment of the invention the latch mechanism is provided with an outside operator in the form of a push button or plunger type device to which is connected a rotatable shaft, rod or stem extending transversely along the inner side of the supporting latch plate, this shaft or the like being shiftable transversely when the push button is pushed inwardly and carrying an element adapted to abut the detent means and pivotally actuate the same to disengage it from the rotatable toothed detent engaging latch device. The shaft or the like is adapted to be turned or rotated, either by inner manually operable means or a key controlled means, the latter being utilized principally for front door locks, and when so turned will cause said element to be moved to an inoperative position out of the path of the detent means thereby rendering the outside operator ineffective to disengage the detent means. An important feature of the invention resides in the provision of resetting means on the shaft or the like which may be operated by the detent means upon pivotal actuation thereof to turn or rotate the shaft or the like and return it to its normal position thereby restoring or resetting the detent engaging element thereon to its operative position with respect to the detent means. A further important feature resides in the fact that said resetting means may be moved, by holding the push button inwardly, to a position in which the detent means is ineffective to operate the same and restore the detent engaging element to its operative position.

A further object of the invention is to provide a transversely shiftable member controlled as by means of an outside push button for disengaging the detent means of the lock, said member being rotatable into inoperative position by means of a vertically shiftable device at the inside of the door and also being rotatable in like manner by an outside key controlled lock cylinder when used, there being an inside operator, such as a remote controlled mechanism, operative to disengage the detent means and associated with said vertically shiftable device

2

in improved manner. Another object is to provide resetting means on said transversely shiftable member which may be actuated by the detent means for rotating said member into operative position with respect to the detent means.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

Fig. 1 is a fragmentary side elevation of a portion of an automobile body provided with swinging doors upon which latch devices made in accordance with the present invention are installed.

Fig. 2 is an enlarged vertical section taken substantially through line 2—2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a top plan view of the latch device shown in Fig. 2.

Fig. 4 is an enlarged section taken substantially through line 4—4 of Fig. 2 looking in the direction of the arrows.

Fig. 5 is a view similar to Fig. 4 illustrating the position of the parts when the push button operator is disconnected from the detent.

Fig. 6 is an edge view in elevation of the latch device looking toward the left in Fig. 2.

Fig. 7 is a fragmentary vertical section taken substantially through line 7—7 of Fig. 2 looking in the direction of the arrows.

Fig. 8 is a view similar to Fig. 7 illustrating a modification.

Fig. 9 is a view in part similar to Fig. 2 illustrating the position of the resetting means when the push button is held inwardly.

Fig. 10 is a view similar to Fig. 2 illustrating a modified form of the invention.

Fig. 11 is a top plan view of the latch device shown in Fig. 10.

Fig. 12 is an edge view in elevation of the latch device looking toward the left in Fig. 10.

Fig. 13 is an enlarged section taken substantially on a line 13—13 of Fig. 10.

Fig. 14 is a view similar to Fig. 13 showing the parts when the operator is disconnected from the detent.

Fig. 15 is a fragmentary vertical section taken substantially on a line 15—15 of Fig. 10.

Fig. 16 is a view similar to Fig. 15 illustrating a modification.

Fig. 17 is a view similar to Fig. 10 illustrating the position of the resetting means when the push button is held inwardly.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

This application is a continuation in part of my application Serial No. 162,078, filed May 15, 1950, now forfeited, which in turn is a continuation in part of my application Serial No. 75,585, filed February 10, 1949, now abandoned.

In the drawings there are illustrated, by way of example, certain embodiments of the present invention as applied to the swinging doors of an automobile body. As illustrated in Fig. 1 the automobile body, generally designated at A, is provided with a front door B which

3

is hinged at its front edge so as to swing against a door post or body pillar in accordance with conventional practice. The automobile body of the illustrated sedan type is also provided with a rear swinging door. Each door comprises an outer metal door panel 20 and an inner metal door panel 21, see Fig. 3. The panel 21 terminates in a transverse jamb edge or portion 22 facing the fixed jamb face or edge 23 (Fig. 6) of the door frame post or body pillar. The inner and outer metal door panels 20 and 21 are spaced apart in accordance with conventional practice to provide a window well D within which is guided a vertically slidable window glass E.

The support or mounting for the latch device preferably comprises a case plate 24 having screw bosses 24A for the reception of screws by means of which the case plate is secured to the inner side of the door jamb edge 22. The case plate at its inner edge is formed with an angularly extending flange 25 facing the inner door panel 21 and preferably spaced therefrom as shown in Fig. 3.

The present latch device is preferably provided with a rotatable toothed latch or bolt 26 positioned at the outer side of the case plate 24 and formed in the present instance with six equally spaced teeth 26A. The bolt 26 has an integral shaft 27 projecting through the case plate and suitably journaled therein. Riveted to the inner end of the shaft 27 is a ratchet or toothed member 28 having a series of teeth 29 corresponding in number to the teeth 26A of the latch bolt. The latch bolt 26 cooperates, when the door is closed, with a rack type striker or keeper member 30 secured to the pillar jamb 23. This striker member has a plurality of downwardly projecting spaced teeth with which the teeth 26A of the latch bolt mesh to hold the door in either a final or safety locking position, as is customary. The upper surface 30A of the striker member 30 forms an inclined ramp engaged by a dovetail or guide block 31 rigidly secured to the case plate and cooperable with the bolt by engagement with the striker member 30 to hold the door against vertical movement in its fully closed position.

Cooperable with the rotatable latch or detent engaging member 28 is a swinging detent, pawl or dog 32 pivotally mounted upon the shank of a stud or shoulder rivet 33 secured to the case plate 24. The detent or dog 32 is formed integrally with a depending detent or holding arm 34 engageable, as shown in Fig. 2, with any one of the teeth 29 to hold the ratchet member 28 and bolt 26 in locking position. The detent 32 also has an upwardly projecting operating arm or extension 35 and also an inwardly projecting operating arm or extension 36. The detent is yieldingly held in holding position with respect to the ratchet member 28 by means of a coil spring 37 anchored at its inner end to the case plate and having a depending spring arm 37A engageable with the detent holding arm 34.

In the present instance the door is provided with a fixed outside door handle 38 rigidly secured to the outer door panel 20 and terminating in an enlarged handle butt 39 forming a mounting for a push button 40. This push button is non-rotatable and projects through a correspondingly shaped aperture in the handle butt 39 into a chamber 41 within the butt. To prevent withdrawal of the push button the latter may be formed at its inner end with a flange 40A adapted to engage a shoulder 41A when the push button is fully extended as shown in Fig. 2. By applying pressure with the thumb the push button may be shifted inwardly within the chamber 41 a suitable distance to disengage the detent from the ratchet member 28 as hereinafter described.

Inasmuch as a front door lock is shown in Figs. 2 and 3, this lock, as is customary, is provided with key controlled means for locking the door from the outside. Such key controlled means, however, may be omitted where the present lock is used on the rear doors of an automobile

4

body. The key controlled means in the present instance is mounted within the push button 40 and is constructed to move with the push button when the latter is shifted inwardly to disengage the detent 32. The key controlled means comprises a key lock cylinder 42 mounted to turn within a hole in the push button 40 and suitably held therein against withdrawal. This lock cylinder has the usual key slot through which the shank of the key 44 is insertable. This lock cylinder is of conventional type provided with tumblers 45 which are retractable upon inserting the key within the key slot into the cylinder. The locking tumblers of the lock cylinder, when projected upon withdrawal of the key, engage within a lock groove or keyway 46 formed within the bore of the push button 40, and when so projected the lock cylinder 42 will be held against turning within the push button.

Connected to the inner end of the lock cylinder 42 is a square shaft or stem 47 which extends inwardly along the inner face of the case plate 24 and terminates adjacent the case plate flange 25. The shaft 47 is formed at its outer end with a flat portion 47A projecting into a cylindrical pilot end 42A of the lock cylinder 42. The flat end 47A of the lock shaft 47 is keyed within the pilot portion 42A of the lock cylinder in the manner shown in Figs. 4 and 5. As illustrated in these views, the pilot portion or cylindrical extension 42A of the lock cylinder is formed with angularly related intersecting slots 48 and 49 shaped to receive the flat end 47A of the lock shaft or stem. By turning the key within the lock cylinder in one direction or the other, the shaft 47 may be turned or rotated into and out of detent releasing position as hereinafter described.

The lock shaft 47 is supported at its inner end through the medium of a stamped metal bracket 50 having tabs 50A projecting through holes in the case plate flange 25 and clinched over to anchor the bracket in position as shown in Fig. 2. Rotatable within this bracket is the round hub 51A of a laterally and downwardly projecting crank arm 51. Attached to the hub 51A is a circular bearing piece 52 which has a bearing within a circular aperture in the bracket 50. The inner square end of the shaft 47 extends through aligned square holes in the parts 52 and 51A. The shaft is thus keyed to these parts but is free to slide in and out relatively thereto. Rigidly attached to the shaft 47 is a depending detent actuating arm 54 which confronts the upper end of the detent operating arm 35, the arm 54 being slightly spaced therefrom in order to provide a desired degree of lost motion when actuating the push button before the detent is disengaged.

It will be seen that when the detent actuating arm 54 is positioned, as shown in Figs. 2, 4 and 6, opposite the upper end of the detent arm 35, the shaft 47 may be shifted inwardly by forcing the push button 40 inwardly, thereby causing the arm 54 to engage the detent arm 35 and rotate the detent 32 sufficiently to disengage the detent 32 from any one of the teeth 29 of the ratchet member 28. When this occurs the ratchet member and the bolt 26 are free to rotate, thus permitting the door to be pulled open by grasping the outside door handle 38. It will be apparent that when the shaft 47 is shifted inwardly to disengage the detent by engagement of the arm 54 with the detent arm 35, the shaft will slide freely through the square holes in the bearing piece 52 and the hub 41A of the lever 51. A hole 53 may be provided in the case plate flange 25 to permit inward movement therethrough of the shaft 47. The shaft as well as the push button may be returned to normal position by means of a return spring 55 coiled around the shaft and interposed between the arm 54 and the bearing piece 52.

In the normal locking position of the key cylinder 42 the key slot extends vertically and only in such position can the key be inserted or withdrawn from the key cylinder. When it is desired to swing the detent release arm 54 laterally out of the path of the detent arm 35 by turning the shaft 47 from the position shown in Fig.

5

4 to the position shown in Fig. 5, the key is inserted into the cylinder 42 and is turned so as to turn the cylinder in a clockwise direction. When the cylinder is thus turned the lower side of the slot 49 within which the flat end 47A of the lock shaft extends will engage and rotate the lock shaft from the position shown in Fig. 4 to the position shown in Fig. 5. The key and the lock cylinder 42 may then be turned in the opposite direction, i. e. counterclockwise, thereby positioning the end 47A of the lock shaft within the slot 48. The key may then be withdrawn and the cylinder 42 through its tumblers 45 will be locked to the push button 40 against rotation. The foregoing operation results in positioning the detent release arm 54 laterally out of the path of the detent arm 35, as shown in Fig. 5 and in broken lines in Fig. 6. Hence, the push button 40 and shaft 47 may be shifted inwardly freely without disengaging the detent arm, since the detent release arm 54 will pass by the detent arm without engagement therewith. In order to return the detent release arm 54 to its operative position shown in Fig. 4 the key may be inserted into the cylinder and the latter turned in a counterclockwise direction, thereby turning the inner end of the lock shaft from the position shown in Fig. 5 to the position shown in Fig. 4. It will be noted that the construction and arrangement of the slots 48 and 49 within the inner end of the lock cylinder permit the shaft 47 to be turned from the inside of the door relatively to the lock cylinder. As will be clear from Figs. 4 and 5, the inner end 47A of the shaft 47 may be turned independently of the lock cylinder from the position shown in Fig. 4 to the position shown in Fig. 5 and vice versa. The purpose of this construction is herein-after described.

Inside manually operable means is provided for turning the shaft 47 and swinging the detent release arm 54 into and out of operative position independently of the lock cylinder 42. This inside manually operable means comprises a lever 56 pivoted to the case plate flange 25 through the medium of a shoulder rivet 57. The lever 56 has a projecting lever arm 56A formed at its end with a slot 58 to receive a pin or stud 59 secured to the lower end of the crank arm 51, see Fig. 7. The lever 56 also has an oppositely extending lever arm 56B offset above the pivot 57. A vertically extending rod 77 is pivoted at its lower end at 78 to the outer end of the lever arm 56B. This rod extends vertically through the garnish molding at the inside of the door and the glass panel E and is provided at its upper end with a button 79 which may be pushed or pulled down or upwardly from the inside of the door in accordance with conventional practice. Upon pushing the button 79 and rod 77 downwardly the lever 56 will be rocked, thereby swinging the crank arm 51 upwardly through the pin and slot connection 59, 58. During this operation the pin 59 will move from one end of the slot 58, as shown in Fig. 7, to the opposite end of the slot. Conversely, when the rod 77 is shifted upwardly, the lever 51 will be swung down to the position shown in Fig. 7. The upper and lower limits of travel of the lever 51 are governed by engagement of the pin 59 in the ends of the slot 58. It will be apparent that upon rocking the lever 56 to swing the arm 51 upwardly the shaft 47 will be turned, thereby swinging the detent release arm 54 from the position shown in Fig. 4 to the position shown in Fig. 5. Reverse movement of the shaft 47 will be accomplished by rocking the lever 56 in the opposite direction to return the crank arm 51 to the position shown in Fig. 7.

Pivotaly mounted on the pivot stud or shoulder rivet 57 is a bell crank lever 60 having a lever arm 60A projecting into position to overlie the detent arm 36, as shown in Figs. 2 and 7. The bell crank 60 also has a lever arm 60B to which is pivoted at 61 a fore and aft shiftable remote control link 62 which is connected in the usual manner at its far end to the inside door handle 63. Upon turning the inside door handle the link 62 will be

6

shifted to the left as viewed in Fig. 7, thereby rocking the bell crank 60 and swinging the lever arm 60A downwardly into engagement with the detent arm 36 thereby swinging the detent so as to disengage it from the ratchet 28. The link 62 is returned to its normal position by the usual spring, not shown, associated with the inside door handle.

In the present instance means is provided for resetting the lever 56 and rod 77 by operation of the inside door handle whenever the lever 56 has been set in its dotted line position in Fig. 7 by pushing the button 79 and rod 77 downwardly from the inside of the automobile body. This is accomplished in the present instance by providing on the end of the remote control link 62 an upwardly extending reset projection 64 having a rounded end adapted to engage within the round corner 65 formed in the angle between the body of the lever 56 and the arm 56B. When the rod 77 is pushed downwardly to turn the lever 56, the rounded corner 65 of the lever will be positioned as shown in dotted lines in Fig. 7, close to the rounded end of the reset projection 64. Hence, when the inside door handle is turned to pull the link 62 to the left in Fig. 7, thereby turning the bell crank 60, the pivot 61 will move upwardly in an arc having its center at the axis of turning of the bell crank 60. This motion will result in moving the projection 64 upwardly in a corresponding arcuate path, thereby causing the projection to return the lever arm 56B to its full line position in Fig. 7.

From the foregoing it will be seen that in the event the shaft 47 has been turned, either by operation of the lock cylinder 42 or by operation of the rod 77, so as to position the detent release arm 54 out of the path of the detent arm 35, as shown in Fig. 5, the following operation will result by turning the inside door handle to disengage the detent 32 by cooperation of the lever arm 60A with the detent arm 36. The reset projection 64 through its engagement with the lever arm 56B will return the shaft 47 to its operative position shown in Fig. 4 by coaction of the lever arm 56A with the crank arm 51 attached to the inner end of the shaft. In this connection it is important to note that regardless of the fact that the lock cylinder 42 is locked to the push button 40 against rotation therein when the key is withdrawn, the shaft 47 may be turned relatively to the lock cylinder by operation of the crank arm 51 keyed to the inner end of the shaft. The shaft 47, therefore, may be rotated between the positions shown in Figs. 4 and 5 independently either by turning the lock cylinder within the push button or by pushing down on the button 79 at the inside of the door.

The inside control lever 56 may be yieldingly held in either its full line position or its dotted line position shown in Fig. 7 by means of a snap-over spring 66. This spring has an intermediate coil portion and one end connected to the lever arm 56A and the other end connected to the case plate flange 25. These connections are such that the end of the spring attached to the lever arm 56A will move up or down past dead center so as to yieldingly hold the lever in either of its positions.

In the embodiment illustrated in Fig. 8 the construction is the same as in the previous embodiment with the exception that means is provided for blocking or preventing turning of the inside door handle and movement of the remote control link 62 when the shaft 47 has been turned to inoperative position with respect to the detent arm 35 by pushing down on the inside control button 79 to rock the lever 56 and thereby swing the crank arm 51. Such construction is preferably used in connection with the rear door locks where it is desired to prevent accidental turning of the inside door handle when the button 79 and rod 77 have been pushed down. However, this construction may also be used in connection with the front door locks and may be utilized

with or without the key lock cylinder 42. When the latter is omitted the outer end of the shaft 47 may be keyed into a rotatable bearing mounted within the inner end of the push button 40 so as to permit the shaft 47 to turn relatively to the push button but at the same time to be shiftable inwardly and outwardly upon operation of the push button.

In the embodiment illustrated in Fig. 8 a lever 67 is substituted for the lever 56 of the previous embodiment. This lever 67 is pivoted on the stud or shoulder rivet 57 and has a lever arm 67A corresponding to the lever arm 56A provided with a similar slot 58 to receive the pin 59 on the lower end of the crank arm 51. The lever 67 has a lever arm 67B offset above the pivot 57, similarly to the lever arm 56B, and connected to the lower end of the rod or plunger 77. In this embodiment, however, the lever arm 67B is formed with a curved notch or recess 68 terminating in a hook-like portion 69. When the lever arm 67B is swung downwardly by shifting the rod 77 in a downward direction, the projection 64 on the remote control link 62 will be disposed within the notch or recess 68 in abutting relation to the hook portion 69. Since the abutting edges of the projection 64 and hook-like portion 69 are preferably curved correspondingly with their centers of curvature at the center of the pivot stud 57, any attempt to turn the inside door handle to shift the remote control link to the left will be blocked by engagement of the projection 64 with the hook-like projection 69 on the lever 67. Thus, in order to permit the door to be unlocked from the inside by turning the inside door handle, it is necessary in this embodiment to pull the button 79 upwardly in order to move the lever arm 67B upwardly and away from the projection 64 so as to move the hook portion 69 out of the path of the projection 64. This operation at the same time will turn the shaft 47 and move the detent release arm 54 into operative position with respect to the detent arm 35. The detent may then be disengaged from the ratchet member 28 either by operation of the inside door handle or by pushing the push button 40 inwardly to cause the arm 54 on the shaft 47 to engage the detent arm 35 and swing the detent out of holding position with respect to the ratchet member 28.

In accordance with the present embodiment of the invention there is provided a simple, efficient and inexpensive means controlled by the pivotal movement of the detent 32 for restoring or resetting the detent release arm or element 54 to its operative position with respect to the detent, as in Fig. 4, whenever the automobile door is closed with the release arm 54 set in its inoperative position shown in Fig. 5 and with the push button 40 in its normal extended position shown in Fig. 2. However, as hereinafter described, the construction is such that the means for resetting the detent release arm may be rendered ineffective by holding the push button pressed in as the door is being closed.

Rigidly secured to the shaft 47 is a member 80 having a projecting crank arm 80A. This member, as shown in Fig. 2, is spaced outwardly of the detent release arm 54 so as normally to overlie the arm 34 of the detent 32. The detent is preferably formed as a multi-arm unitary member from a piece of flat stock and its arm 34 has an extension 34A to which is pivoted at 81 a link or bar 82 extending upwardly in the direction of the shaft or stem 47. This link is guided on the case plate 24 by means of a headed stud or pin 83 secured to the case plate and extending freely through a guide slot 84 in the link. The upper end of the link 82, as shown in Figs. 4, 5 and 6, terminates below and in operative relation to the crank arm 80A. It will be apparent that pivotal motion of the detent 32 consequent to rotation of the toothed member 28 when the door is closed will result in the link 82 being shifted upwardly by the detent arm 34. This motion of the detent and

the link 82 is illustrated in Fig. 9 and is produced by coaction of the toothed bolt 26 with its striker or keeper.

Assuming that the door is open and the knob 79 is pushed down to swing the release member 54 from its position of Fig. 4 to its position shown in Fig. 5 wherein it is out of operative relation to the detent arm 35, closing of the door will result in rotation of the toothed member 28 and pivotal actuation of the detent. The detent arm 34 will rise as it passes over a tooth 29 of the member 28, thereby shifting the link 82 upwardly. The upper end of the link will then engage the crank arm 80A and rotate the shaft 47 so as to swing the detent release arm from its inoperative position of Fig. 5 to its position in Fig. 4 in which it is disposed opposite the detent arm 35. Thus, under normal conditions when the push button 40 is in its outward extended position, as in Fig. 2, the crank arm 80A will be moved downwardly to a position directly above and proximate to the upper end of the link 82 whenever the shaft 47 is turned by pushing the knob 79 down so as to swing the detent release arm 54 out of operative relation to the detent arm 35. As a consequence, upward travel of the link 82, produced by pivotal motion of the detent, will cause the link by engagement with crank arm 80A to restore the arm 54 to its operative position.

The crank arm 80A, which serves in cooperation with link 82 to turn the shaft 47 and restore or reset the detent release arm 54 to its operative position, may however be moved to a position in which it is ineffective to reset the release arm 54. Assuming that the door is open and the knob 79 is pushed down to swing the release arm 54 to its inoperative position shown in Fig. 5, the push button 40 may be shifted inwardly in the manner shown in Fig. 9, thereby shifting the shaft or stem 47 inwardly and moving the crank arm 80A out of the path of the link 82. If the door is then closed with the push button held in and the parts in this relation the link 82, when shifted upwardly by pivotal actuation of the detent, will not engage the crank arm 80A and, hence, will not restore the detent release arm to its operative position. Hence, after the door is closed and latched and the push button 40 released the arm 54 will remain in its position shown in Fig. 5 and the push button will not be operable to unlatch the door.

In Figs. 10 to 15 inclusive there is illustrated a second embodiment of the invention. In this embodiment, the supporting structure for the latch device may be similar to that shown in the previous embodiment and like parts have been given the same numerals. This latch device is provided with a rotatable toothed latch or bolt 126 positioned at the outer side of the case plate 24 and formed with six equally spaced teeth. The bolt 126 has an integral shaft 27 projecting through the case plate and suitably journaled therein. Riveted to the inner end of the shaft 27 is a ratchet or toothed member 128 of modified form having a series of teeth 129 corresponding in number to the teeth of the latch bolt. The latch bolt 126 cooperates, when the door is closed, with a striker or keeper member 130, also of modified form, secured to the pillar jamb 23. This striker member has a plurality of upwardly projecting spaced teeth with which the teeth of the latch bolt 126 mesh to hold the door in either a final or safety locking position. The striker member 130 is provided with a ramp portion 130A engaged by a dovetail or guide block 131 rigidly secured to the case plate and cooperable with the bolt by engagement with the striker member 130 to hold the door against vertical movement in its fully closed position.

Cooperable with the rotatable latch or detent engaging member 128 is a swinging detent, pawl or dog 132 pivotally mounted upon the shank of a stud or shoulder rivet 133 secured to the case plate 24. The detent or dog 132 is formed integrally with a depending detent or holding arm 134 engageable, as shown in Fig. 10, with

any one of the teeth 129 to hold the ratchet member 128 and bolt 126 in locking position. The detent 132 also has an upwardly projecting operating arm or extension 135 and also an inwardly projecting operating arm or extension 136. The detent is yieldingly held in holding position with respect to the ratchet member 128 by means of a coil spring 137 anchored at its inner end to the case plate and having an upstanding spring arm 137A engageable with the operating arm 135.

Rigidly attached to the shaft 47 is a depending detent activating arm 154 which confronts the upper end of the detent operating arm 135, the arm 154 being slightly spaced therefrom in order to provide a desired degree of lost motion when actuating the push button before the detent is disengaged.

When the detent actuating arm 154 is positioned, as shown in Figs. 10, 12 and 13, opposite the upper end of the detent arm 135, the shaft 47 may be shifted inwardly by forcing the push button 40 inwardly, thereby causing the arm 154 to engage the detent arm 135 and rotate the member 132 sufficiently to disengage the detent 134 from any one of the teeth 129 of the ratchet member 128. When this occurs the ratchet member and the bolt 126 are free to rotate, thus permitting the door to be pulled open by grasping the outside door handle 38. It will be apparent that when the shaft 47 is shifted inwardly to disengage the detent by engagement of the arm 154 with the detent arm 135, the shaft will slide freely through the square holes in the bracket 50 and case plate flange 25. The shaft 47 as well as the push button 40 may be returned to normal position by means of a return spring 55 coiled around the shaft.

When it is desired to lock the above mechanism from the outside, the key is inserted into the cylinder 42 and is turned so as to turn the cylinder in a clockwise direction. When the cylinder is thus turned, the lock shaft is rotated from the position shown in Fig. 13 to the position shown in Fig. 14. The key and the lock cylinder 42 may then be turned in the opposite direction, i. e. counterclockwise, permitting the key to be withdrawn and the cylinder 42 through its tumblers will be locked to the push button 40 against rotation. The foregoing operation results in positioning the detent release arm 154 laterally out of the path of the detent arm 135, as shown in Fig. 14. Hence, the push button 40 and shaft 47 may be shifted inwardly freely without disengaging the detent arm, since the detent release arm 154 will pass by the detent arm without engagement therewith. In order to return the detent release arm 154 to its operative position shown in Fig. 13, the key may be inserted into the cylinder and the latter turned in a counterclockwise direction, thereby turning the inner end of the lock shaft from the position shown in Fig. 14 to the position shown in Fig. 13.

Inside manually operable means is provided for turning the shaft 47 and swinging the detent release arm 154 into the out of operative position independently of the lock cylinder 42. This inside manually operable means comprises a lever 156 pivoted to the case plate flange 25 through the medium of a shoulder rivet 157. The lever 156 has a projecting lever arm 156A formed at its end with a slot 58 to receive a pin or stud 59 secured to the lower end of the crank arm 51, see Fig. 15. The lever 156 also has an oppositely extending lever arm 156B offset above the pivot 157. A vertically extending rod 77 is pivoted at its lower end at 78 to the outer end of the lever arm 156B. This rod extends vertically through the garnish molding at the inside of the door and is provided at its upper end with a button 79 which may be pushed or pulled down or upwardly from the inside of the door. Upon pushing the button 79 and rod 77 downwardly the lever 156 will be rocked, thereby swinging the crank arm 51 upwardly through the pin and slot connection 59, 58. During this operation the pin 59 will move from one end of the slot 58, as shown in Fig. 15, to the opposite end

of the slot. Conversely, when the rod 77 is shifted upwardly, the lever 51 will be swung down to the position shown in Fig. 15. The upper and lower limits of travel of the lever 51 are governed by engagement of the pin 59 in the ends of the slot 58. It will be apparent that upon rocking the lever 156 to swing the arm 51 upwardly the shaft 47 will be turned, thereby swinging the detent release arm 154 from the position shown in Fig. 13 to the position shown in Fig. 14. Reverse movement of the shaft 47 will be accomplished by rocking the lever 156 in the opposite direction to return the crank arm 51 to the position shown in Fig. 15.

From the foregoing it will be seen that in the event the shaft 47 has been turned, either by operation of the lock cylinder 42 or by operation of the rod 77, so as to position the detent release arm 154 out of the path of the detent arm 135, as shown in Fig. 14, the door cannot be opened without resetting the release arm 154. This is accomplished by use of the key from the outside and by shifting the rod 77 upwardly from the inside.

Mounted for pivotal movement with the lever 156 on the pivot stud 157 is a slotted bar or arm 158 having a shoulder 159 projecting into position to overlie the detent arm 136, as shown in Figs. 10 and 15. A second shoulder rivet 167 carried by the lever 156 and spaced above the stud 157 ensures rocking movement of arm 158 and also guides the arm for generally vertical movement. A bell crank 160 is mounted on flange 25 by a suitable rivet and has a lever arm 160A extending above and terminating short of detent arm 136, and a lever arm 160B to which is pivoted at 161 a fore and aft shiftable remote control rod 162 which is connected in the usual manner at its far end to the inside door handle. Upon turning the inside door handle the rod 162 will be shifted to the left as viewed in Fig. 15, thereby rocking the bell crank 160 and swinging the lever arm 160A downwardly into engagement with the shoulder 159 thereby urging the shoulder downwardly into engagement with the arm 136 so as to disengage it from the ratchet 128. The bar 158 is urged upwardly so that the stud is in the lower end of the slot by means of a spring 168 having an intermediate coil portion and one end connected to the bar 158 and the other end connected to the case plate flange 25. The rod 162 is returned to its normal position by the usual spring, not shown, associated with the inside door handle.

Thus, as particularly illustrated in Fig. 15, means is provided for preventing actuation of detent 132 by turning of the inside door handle and movement of the remote control rod 162 when the shaft 47 has been turned to inoperative position with respect to the detent arm 135 by pushing down on the inside control button 79 to rock the lever 156 and thereby swing the crank arm 51. This rocking movement of lever 156 also swings the arm 158 to the dotted line position so that the shoulder 159 does not bridge the space between the lever arm 160A and the detent arm 136. Such construction is preferably used in connection with the rear door locks where it is desired to prevent accidental turning of the inside door handle when the button 79 and rod 77 have been pushed down. However, this construction may also be used in connection with the front door locks and may be used with or without the key lock cylinder 42 as described in connection with Fig. 8.

A simplified structure more particularly adapted for front door locks is shown in Fig. 16, where it will be seen that the arm 158 is omitted from the assembly and the lever arm 160A extended to overlie the detent arm 136. In the operation of this embodiment it will be clear that turning of the inside door handle and movement of the remote control rod 162 will directly actuate the detent 132 through the detent actuating arm 136 upon downward movement of the lever arm 160A. A snap over spring 169 is arranged between the lever 156 and the case plate flange to yieldingly hold the lever in either of its positions upon actuation by the rod 77.

11

Rigidly secured to the shaft 47 is a member 180 having a projecting crank arm. This member, as shown in Fig. 10 is spaced inwardly of the detent release arm 154 so as normally to overlie the arm 136 of the detent 132. The detent is preferably formed as a multi-arm unitary member from a piece of flat stock and its arm 136 has an offset 136A to which is pivoted at 181 a link or bar 182 extending upwardly in the direction of the shaft or stem 47. This link is guided on the case plate 24 by means of a headed stud or pin 183 secured to the case plate and extending freely through a guide slot 184 in the link. The hook-like end 185 of the link 182, as shown in Figs. 12, 13 and 14, is above and in operative relation to the crank arm 180. It will be apparent that pivotal motion of the detent 132 consequent to rotation of the toothed member 128 when the door is closed will result in the link 182 being shifted downwardly by the detent arm 136. This motion of the detent arm and the link 182 is illustrated in Fig. 17 and is produced by coaction of the toothed bolt 126 with its striker or keeper.

Assuming that the door is open and the knob 79 is pushed down to swing the release member 154 from its position of Fig. 13 to its position shown in Fig. 14 wherein it is out of operative relation to the detent arm 135, closing of the door will result in rotation of the toothed member 128 and pivotal actuation of the detent. The detent arm 134 will lower as it passes over a tooth 129 of the member 128, thereby shifting the link 182 downwardly. The hook end 185 of the link will then engage the crank arm 180 and rotate the shaft 47 so as to swing the detent release arm from its inoperative position of Fig. 14 to its position in Fig. 13 in which it is disposed opposite the detent arm 135. Thus, under normal conditions when the push button 40 is in its outward extended position, as in Fig. 10, the crank arm 180 will be moved upwardly to a position directly below and proximate to the hook end of the link 182 whenever the shaft 47 is turned by pushing the knob 79 down so as to swing the detent release arm 154 out of operative relation to the detent arm 135. As a consequence, downward travel of the link 182, produced by pivotal motion of the detent, will cause the link by engagement with crank arm 180 to restore the arm 154 to its operative position.

The crank arm 180, which serves in cooperation with link 182 to turn the shaft 47 and restore or reset the detent release arm 154 to its operative position, may however be moved to a position in which it is ineffective to reset the release arm 154. Assuming that the door is open and the knob 79 is pushed down to swing the release arm 154 to its inoperative position shown in Fig. 14, the push button 40 may be shifted inwardly in the manner shown in Fig. 17, thereby shifting the shaft or stem 47 inwardly and moving the crank arm 180 out of the path of the link 182. If the door is then closed with the push button held in and the parts in this relation the link 182, when shifted downwardly by pivotal actuation of the detent, will not engage the crank arm 180 and, hence, will not restore the detent release arm to its operative position. Hence, after the door is closed and latched and the push button 40 released the arm 154 will remain in its position shown in Fig. 14 and the push button will not be operable to unlatch the door.

I claim:

1. In a door lock mechanism, a support comprising a plate portion for disposition at the door jamb, a rotatable latch device mounted on said plate portion, detent means pivotally mounted on said plate portion and engageable with said latch device for holding the same in latching position, said detent means having a projecting arm, a member extending generally horizontally along the inner side of said plate portion for transverse shiftable movement relative thereto, a detent release element on said member and normally confronting said pro-

12

jecting detent arm in operative relation thereto and engageable therewith upon shifting said member in a generally horizontal direction inwardly to pivotally actuate the detent means to disengage the same from said latch device, means for supporting said member for shiftable movement in said direction and also for turning about an axis extending in said direction, means for turning said member to dispose said element out of operative relation to said detent arm, outer manually operable means for shifting said member in said direction, and means operated by said detent means upon pivotal actuation thereof for turning said member to reset said element in operative relation to said detent arm.

2. In a door lock mechanism, a support comprising a plate portion for disposition at the door jamb, a rotatable latch device mounted on said plate portion, detent means pivotally mounted on said plate portion and engageable with said latch device for holding the same in latching position, said detent means having a projecting arm, a member extending along the inner side of said plate portion for transverse shiftable movement relative thereto, a detent release element on said member and normally confronting said projecting detent arm in operative relation thereto and engageable therewith upon shifting said member inwardly in a generally horizontal direction to pivotally actuate the detent means to disengage the same from said latch device, means for supporting said member for shiftable movement in said direction and also for turning about an axis extending in said direction, means for turning said member to dispose said element out of operative relation to said detent arm, resetting means on said member, and actuating means operated by said detent means upon pivotal actuation thereof and engageable with said resetting means for turning said member to reset said element in operative relation to said detent arm.

3. In a door lock mechanism, a support comprising a plate portion for disposition at the door jamb, a rotatable latch device mounted on said plate portion, detent means pivotally mounted on said plate portion and engageable with said latch device for holding the same in latching position, said detent means having a projecting arm, a member extending along the inner side of said plate portion for transverse shiftable movement relative thereto, a detent release element secured to said member and normally confronting said projecting detent arm in operative relation thereto and engageable therewith upon shifting said member inwardly in a generally horizontal direction to pivotally actuate the detent means to disengage the same from said latch device, means for supporting said members for shiftable movement in said direction and also for turning about an axis extending in said direction, means for turning said member to dispose said element out of operative relation to said detent arm, resetting means on said member, actuating means operated by said detent means upon pivotal actuation thereof and engageable with said resetting means for turning said member to reset said element in operative relation to said detent arm, and outer manually operable means for shifting said member inwardly in said direction to shift said resetting means out of position in which it is engageable by said actuating means.

4. In a door lock mechanism, a support comprising a plate portion for disposition at the door jamb, a rotatable latch device mounted on said plate portion, detent means pivotally mounted on said plate portion and engageable with said latch device for holding the same in latching position, said detent means having a projecting arm, a member extending along the inner side of said plate portion and mounted on said support for shiftable movement in a generally horizontal direction, a detent release element secured to said member and normally confronting said projecting detent arm in operative relation thereto and engageable therewith upon shifting said member inwardly in said direction to piv-

13

otally actuate the detent means to disengage the same from said latch device, means for turning said member about an axis extending in said direction to dispose said element out of operative relation to said detent arm, resetting means operated by said detent means upon pivotal actuation thereof for turning said member to reset said element in operative relation to said detent arm, and outer manually operable means for shifting said member inwardly in said direction to render said resetting means ineffective to turn said member upon pivotal actuation of the detent means.

5. In a door lock mechanism, a support comprising a plate portion for disposition at the door jamb, a rotatable latch device mounted on said plate portion, detent means pivotally mounted on said plate portion and engageable with said latch device for holding the same in latching position, said detent means having a projecting arm, a member mounted on the support for transverse shiftable movement relative thereto and extending along the inner side of said plate portion, means for supporting said member for turning, a detent release element secured to said member and normally confronting said projecting detent arm in operative relation thereto and engageable therewith upon shifting said member inwardly to pivotally actuate the detent means to disengage the same from said latch device, means for turning said member to dispose said element out of operative relation to said detent arm, resetting means including a part on said member engaged by a part on said detent means for turning said member to reset said element in operative relation to said detent means, and means for shifting said member to position said parts out of engaging relation.

6. In a lock mechanism for a swinging door, a support for disposition at the door jamb, a rotatable latch device mounted on said support, detent means pivotally mounted on said support and engageable with said latch device for holding the same in latching position, a shiftable member mounted on said support to extend in a direction along the inner side of said support and to turn about an axis extending in said direction, an element on said member normally projecting into operative position confronting a portion of said detent means and engageable therewith upon shifting said member inwardly in said direction to pivotally actuate said detent means to disengage the same from said latch device, means for turning said member to dispose said element out of operative position with respect to said detent portion, and resetting means operated by said detent means upon pivotal actuation thereof for turning said member to dispose said element in operative position with respect to said detent portion.

7. In a lock mechanism for a swinging door, a support for disposition at the door jamb, a rotatable latch device mounted on said support, detent means pivotally mounted on said support and engageable with said latch device for holding the same in latching position, a shiftable member mounted on said support to extend in a direction generally horizontally along the inner side of said support and to turn about an axis extending in said direction, an element on said member normally projecting into operative position confronting a portion of said detent means and engageable therewith upon shifting said member inwardly in said direction to pivotally actuate said detent means to disengage the same from said latch device, means for turning said member to dispose said element out of operative position with respect to said detent portion, resetting means operated by said detent means upon pivotal actuation thereof for turning said member to dispose said element in operative position with respect to said detent portion, and outer manually operable means for shifting said member in said direction to a position in which said resetting means is ineffective to turn said member upon pivotal actuation of the detent means.

14

8. In a lock mechanism for a swinging door, a support for disposition at the door jamb, a rotatable latch device mounted on said support, detent means pivotally mounted on said support and engageable with said latch device for holding the same in latching position, a shiftable member mounted on the support to extend in a direction generally horizontally along the inner side of said support and to turn about an axis extending in said direction, an element on said member normally projecting into operative position confronting a portion of said detent means and engageable therewith upon shifting said member inwardly in said direction to pivotally actuate said detent means to disengage the same from said latch device, means for turning said member to dispose said element out of operative position with respect to said detent portion, and resetting means operated by said detent means upon pivotal actuation thereof for turning said member to dispose said element in operative position with respect to said detent portion, said resetting means comprising a part on said member and up and down movable means actuated by said detent means and acting on said part upon pivotal actuation of the detent means.

9. In a lock mechanism for a swinging door, a support for disposition at the door jamb, a rotatable latch device mounted on said support, detent means pivotally mounted on said support and engageable with said latch device for holding the same in latching position, a shiftable member mounted on the support to extend in a direction generally horizontally along the inner side of said support and to turn about an axis in said direction, an element on said member normally projecting into operative position confronting a portion of said detent means and engageable therewith upon shifting said member inwardly in a generally horizontal direction to pivotally actuate said detent means to disengage the same from said latch device, means for turning said member to dispose said element out of operative position with respect to said detent portion, resetting means operated by said detent means upon pivotal actuation thereof for turning said member to dispose said element in operative position with respect to said detent portion, said resetting means comprising a part on said member and shiftable means actuated by said detent means and acting on said part upon pivotal actuation of the detent means, and means for shifting said first named member in said direction to position said part out of operative relation to said shiftable means.

10. In a lock mechanism for a swinging door, a support for disposition at the door jamb, a rotatable latch device mounted on said support, detent means pivotally mounted on said support and engageable with said latch device for holding the same in latching position, a shiftable member mounted on the support to extend in a direction along the inner side of said support to turn about an axis extending in said direction, an element on said member normally projecting into operative position confronting a portion of said detent means and engageable therewith upon shifting said member inwardly in said direction to pivotally actuate said detent means to disengage the same from said latch device, means for turning said member to dispose said element out of operative position with respect to said detent portion, an outer push-type operator to which said member is rotatably connected and being operative to shift said member in said direction, and resetting means operated by said detent means upon pivotal actuation thereof for turning said member relative to said operator to dispose said element in operative position with respect to said detent portion.

11. In a lock mechanism for a swinging door, a support for disposition at the door jamb, a rotatable latch device mounted on said support, detent means pivotally mounted on said support and engageable with said latch device for holding the same in latching position, a shiftable member mounted on the support to extend in a direction along the inner side of said support and to turn about

15

an axis extending in said direction, an element on said member normally projecting into operative position confronting a portion of said detent means and engageable therewith upon shifting said member inwardly in said direction to pivotally actuate said detent means to disengage the same from said latch device, means for turning said member to dispose said element out of operative position with respect to said detent portion, an outer push-type operator to which said member is rotatably connected and being operative to shift said member in said direction, and resetting means operated by said detent means upon pivotal actuation thereof for turning said member relative to said operator to dispose said element in operative position with respect to said detent portion, said operator being shiftable to shift said member to a position in which said resetting means is ineffective to turn said member upon pivotal actuation of the detent means.

12. In a lock mechanism for a swinging door, a support for disposition at the door jamb, a rotatable latch device mounted on said support, detent means pivotally mounted on said support and engageable with said latch device for holding the same in latching position, a shiftable member mounted on the support to extend in a direction along the inner side of said support and to turn about an axis extending in said direction, an element on said member normally projecting into operative position confronting a portion of said detent means and engageable therewith upon shifting said member inwardly in said direction to pivotally actuate said detent means to disengage the same from said latch device, means for shifting said member in said direction, means for turning said member to dispose said element out of operative position with respect to said detent portion, resetting means operated by said detent means upon pivotal actuation thereof for turning said member to dispose said element in operative position with respect to said detent portion, and inner manually operable means for pivotally actuating said detent means to cause the detent means to operate said resetting means.

13. In a lock mechanism for a swinging door, a support comprising a plate portion for disposition at the door jamb and provided with an inner flange, a latch device pivotally mounted on said plate portion to rotate in a plane substantially parallel to said plate portion, detent means pivotally mounted on said plate portion to pivot in a plane substantially parallel to said plate portion and engageable with said latch device for holding the same in latching position, said detent means having an arm rigid therewith, a shiftable member mounted on the support to extend in a direction along the inner side of said plate portion and to turn about an axis extending in said direction, an element on said member normally projecting into operative position confronting said detent means arm and engageable therewith upon shifting said member in the direction of said flange to pivotally actuate the detent means to disengage the same from said latch device, means for shifting said member in said direction, and means on said flange and connected to said member for turning the same to dispose said element in an inoperative position with respect to said arm.

14. A lock mechanism according to claim 13 in which the pivotal mounting of said detent means is at a locality further from the inner flange of the support than the pivotal mounting of said latch device.

15. In a lock mechanism for a swinging door, a support comprising a plate portion for disposition at the door jamb and provided with an inner flange, a latch device pivotally mounted on said plate portion to rotate in a plane substantially parallel to said plate portion, detent means pivotally mounted on said plate portion to pivot in a plane substantially parallel to said plate portion and engageable with said latch device for holding the same in latching position, said detent means having an arm, a shiftable member mounted on the support to extend in

16

a direction along the inner side of said plate portion and to turn about an axis extending in said direction, an element on said member normally projecting into operative position confronting said detent means arm and engageable therewith upon shifting said member in the direction of said flange to pivotally actuate the detent means to disengage the same from said latch device, means for shifting said member in said direction, means on said flange for turning said member to dispose said element in an inoperative position with respect to said arm, and resetting means operable upon pivotal actuation of said latch device and detent means for turning said member to restore said element to its said operative position.

16. A lock mechanism according to claim 15 in which said detent means is engageable with said latch means below the pivotal axis of said latch means.

17. In a lock mechanism for a swinging door, a support comprising a plate portion for disposition at the door jamb and provided with an inner flange, a latch device pivotally mounted on said plate portion to rotate in a plane substantially parallel to said plate portion, detent means pivotally mounted on said plate portion to pivot in a plane substantially parallel to said plate portion and engageable with said latch device for holding the same in latching position, said detent means having an upwardly extending arm rigid therewith, a shiftable member mounted on the support to extend along the inner side of said plate portion and to turn, an element on said member normally projecting into operative position confronting said detent means arm and engageable therewith upon shifting said member in the direction of said flange to pivotally actuate the detent means to disengage the same from said latch device, means for shifting said member in said direction, an outer push-type operator pivotally connected to said member, means carried by said operator for turning said member to dispose said element in inoperative position with respect to said arm, and means on said flange and connected to said member for turning the same into and out of said operative position.

18. In a door lock, a support, a latch device mounted on the support, movable holding means for releasably holding said latch device in door latching position, an outside manual operator including an inwardly shiftable non-rotatable member, means on said support actuated by said member for moving said holding means to release said latch device, a key controlled device shiftable with said non-rotatable member and mounted to be turned relative thereto upon release by a key to turn said second named means and render the same ineffective to move second named means relative to said non-rotatable member inwardly, inner manually operable means movable from a first position to a second position for turning said second named means relative to said non-rotatable member and render said second named means ineffective to move said holding means and operative independently of said key controlled device, an inside manual operator for moving said holding means, and means controlled by said inside manual operator for moving said inner manually operable means from said second position toward said first position and in which position said second named means is effective to move said holding means.

19. In a door lock, a support for disposition at the door jamb, a latch device rotatably mounted on said support, detent means pivotally mounted on said support for releasably holding said latch device in door latching position, outer operating means including a member shiftable relatively to the support in a direction transversely of the door, detent release means mounted to turn about an axis extending in said direction, said member having a part shiftable to engage said detent release means and shift the same endwise in said direction for pivotally actuating said detent means to release said latch device, inner manually operable means shiftable in one direction for turning said detent release means into position to render the same in-

17

effective to pivotally actuate said detent means, inner operating means for pivotally actuating said detent means, and means controlled by said inner manually operable means when shifted in said one direction for blocking operation of said inner operating means.

20. In a lock mechanism for a swinging door, a support comprising a plate portion for disposition at the door jamb and provided with an inner flange, a latch device pivotally mounted on said plate portion to rotate in a plane substantially parallel to said plate portion, detent means pivotally mounted on said plate portion to pivot in a plane substantially parallel to said plate portion and engageable with said latch device for holding the same in latching position, a lever arm operatively associated with said detent means, a shiftable member mounted on the support to extend in a direction along the inner side of said plate portion and to turn about an axis extending in said direction, an element on said member normally projecting into operative position confronting said lever arm and engageable therewith upon shifting said member in the direction of said flange to pivotally actuate the detent means to disengage the same from said latch device, means for shifting said member in said direction, and means on said flange and connected to said member for turning the same to dispose said element in an inoperative position with respect to said arm.

21. In a lock mechanism for a swinging door, a support, a rotatable latch device mounted on said support, detent means pivotally mounted on said support and engageable with said latch device for holding the same in

18

latching position, a shiftable member mounted on the support to turn about a generally horizontal axis, an outer non-rotatable element shiftable in a generally horizontal direction inwardly to shift said member endwise in the direction of said axis and cause a part thereon to pivotally actuate said detent means and thereby disengage the same from said latch device, means for turning said member relative to said element to dispose said part out of operative position with respect to said detent means, and means operated by said detent means for turning said member to restore said part to its operative position.

22. A lock mechanism according to claim 21 in which said means operated by said detent means includes a hook-like member engageable with a second part on said shiftable member.

23. A lock mechanism according to claim 21 in which said restoring means includes a hook-like member engageable with a second part on said shiftable member.

24. A lock mechanism according to claim 21 in which said detent means is engageable with said latch means below the pivotal axis of said latch means.

25. A lock mechanism according to claim 21 in which the pivotal mounting of said detent means on said support is disposed outwardly of the mounting of said latch device on the support.

References Cited in the file of this patent

UNITED STATES PATENTS

2,468,644

Springer

Apr. 26, 1949