May 5, 1953 J. H. ROETHEL 2,637,583

DOOR LOCK

Filed April 26, 1947 3 Sheets-Sheet 1

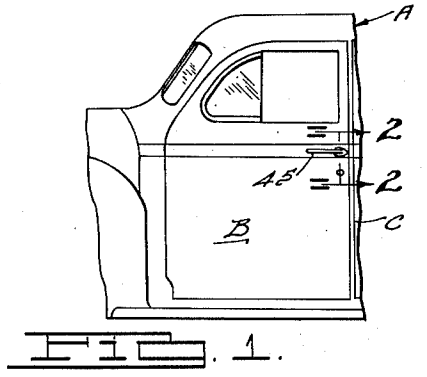

FIG. 1.

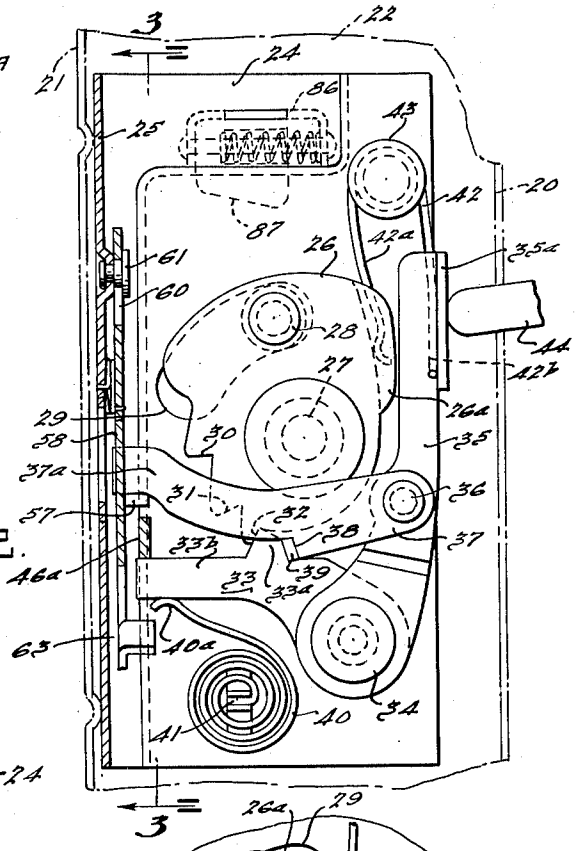

FIG. 2.

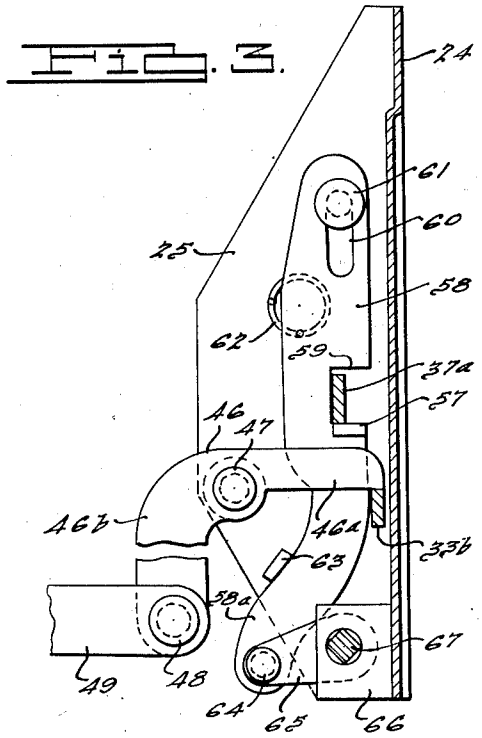

FIG. 3.

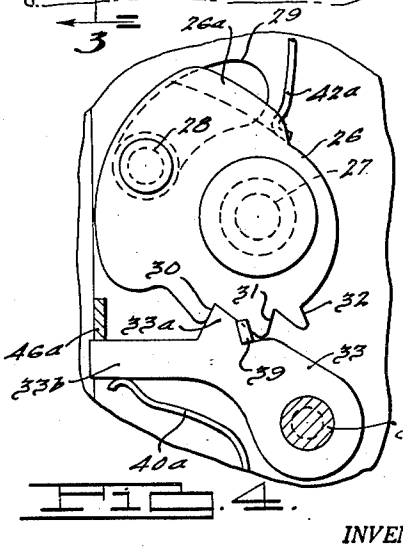

FIG. 4.

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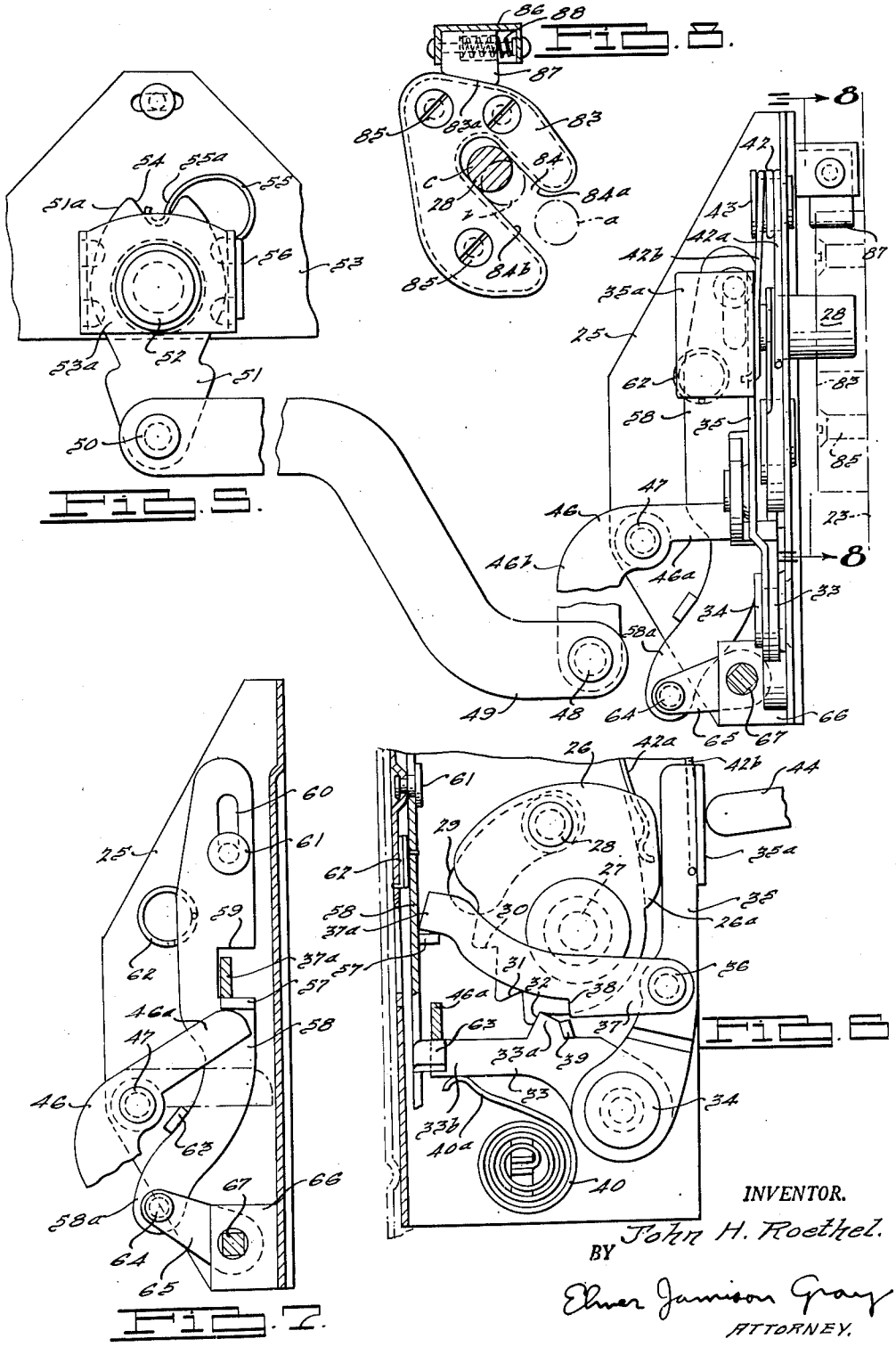

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DOOR LOCK

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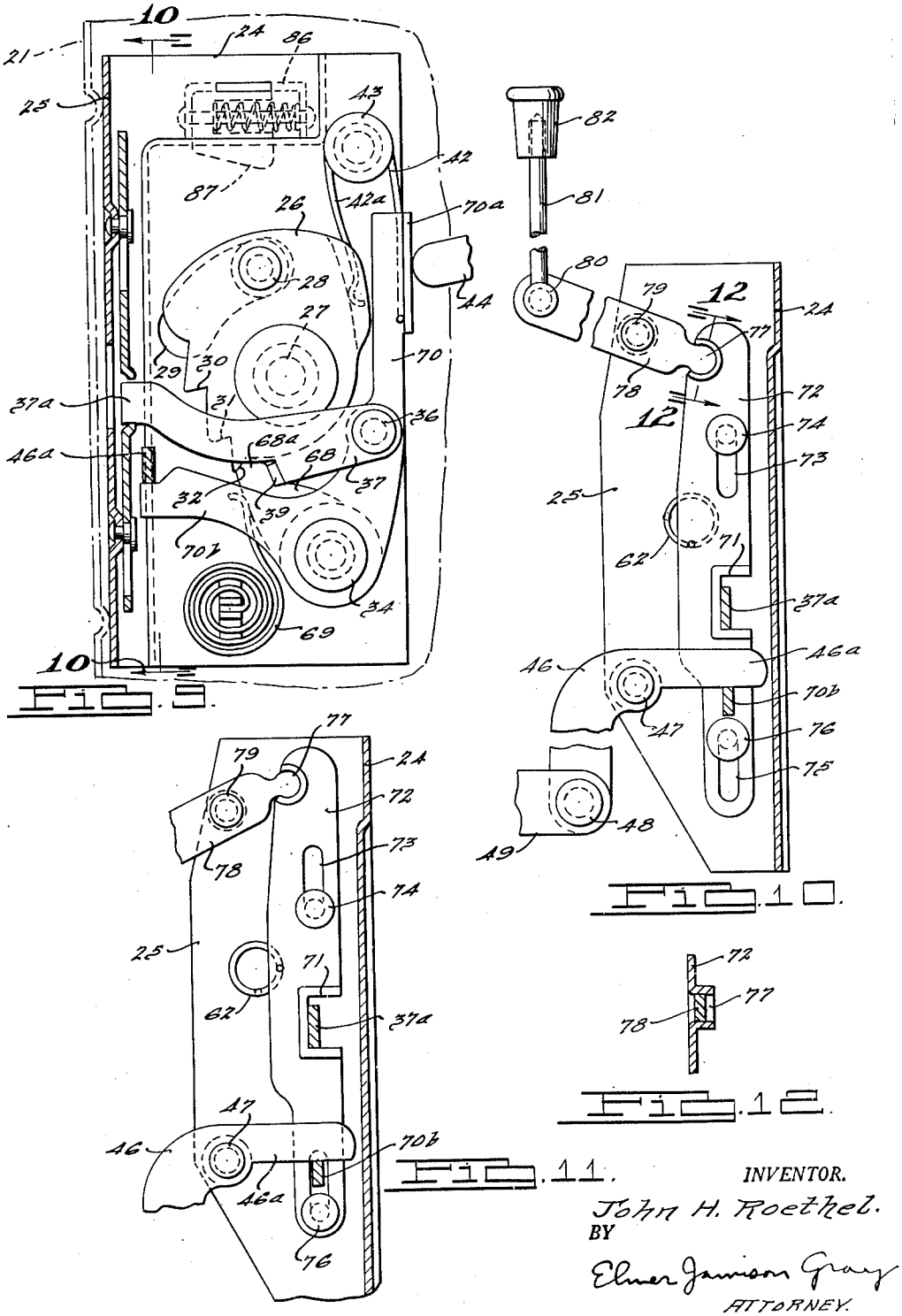

Fig. 5.

Fig. 10.

Fig. 12.

Fig. 11.

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UNITED STATES PATENT OFFICE

2,637,583

DOOR LOCK

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Application April 26, 1947, Serial No. 744,241

15 Claims. (Cl. 292—229)

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This invention relates to latch mechanism for the swinging doors of various structures. Although especially adapted to be used in connection with the doors of vehicle bodies, such as automobile bodies, the present invention may be applied to various other uses.

An object of the invention is to provide a door latch which combines in relatively simple and compact form such desirable features as quietness of operation when closing the door, simplicity and compactness in construction, operational efficiency and economy in manufacture.

In accordance with the embodiments of the invention herein illustrated by way of example, the latch mechanism comprises a support having a pivoted latch device mounted thereon. There is provided a pivotally mounted detent means for holding the latch device in door latching position. An outer manually operable means for pivotally actuating the detent means to disengage the same from the latch device is also provided, said outer manually operable means including a lever pivotally mounted on the support. The lever, however, does not directly engage the detent means. An important feature of the present invention is the provision of a coupling or link means, preferably pivotally connected to the lever and swingable into and out of operative relation to the detent means. A control means is provided for selectively moving said coupling or link means into and out of operative relation to the detent means. Accordingly, should it be desired to prevent unlatching of the door, it is only necessary to manually manipulate the control means to move the coupling or link means out of operative relation to the detent means. Manipulation of the outer manually operable means is then ineffective to cause disengagement of the detent means from the latch device.

In one embodiment of the invention the detent means comprises a unitary member having a first part extending in one direction into engagement with the latch device to hold the same in door latching position, a second part extending in another direction for operative engagement by a part of said coupling or link means, and a third part extending in another direction for engagement by a part of a manually operable lever for releasing the latch mechanism from the inside of the door. In this embodiment, even if the control means has been previously actuated to shift the coupling means out of operative relationship to the detent means thereby rendering the outer manually operable means ineffective to disengage the detent means from the latch device, the manually operable lever for releasing the latch mechanism from the inside of the door remains engageable with the third part of the detent means and is operative upon pivotal actuation thereof to effect disengagement of the detent means from the latch device and simultaneous shiftable movement of the coupling or link means and control means to restore the coupling or link means in operative relation to the detent means and thereby restore the outer manually operable means to effective condition.

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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 lines 2—2 of Fig. 1 looking in the direction of the arrows, the latch device in this view being shown in its final locking position.

Fig. 3 is a fragmentary section taken substantially through lines 3—3 of Fig. 2 looking in the direction of the arrows.

Fig. 4 is a view, in part similar to Fig. 2, illustrating the latch device in unlatched position.

Fig. 5 is a fragmentary side elevation, in part similar to Fig. 3, illustrating more fully the remote control mechanism.

Fig. 6 is a view in part similar to Fig. 2 but illustrating the detent release lever disconnected from the detent when the latter is in final locking position.

Fig. 7 is a view in part similar to Fig. 3 but illustrating the manner in which the detent release lever is disconnected from the detent by operation of the inner door handle.

Fig. 8 is a section on a reduced scale taken substantially through lines 8—8 of Fig. 5 looking in the direction of the arrows.

Fig. 9 is a view generally similar to Fig. 2 but illustrating a modified construction.

Fig. 10 is a fragmentary section taken substantially through lines 10—10 of Fig. 9 looking in the direction of the arrows.

Fig. 11 is a view in part similar to Fig. 10 but illustrating a different position of certain of the parts.

Fig. 12 is a detail section taken substantially through lines 12—12 of Fig. 10 looking in the direction of the arrows.

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.

In the drawings there are illustrated, by way of example, certain embodiments of the present invention as applied to the doors and door frame structures of an automobile body. As illustrated in Fig. 1, the automobile body, designated generally at A, is provided with a front door B which 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 may also be provided with a rear swinging door C. Each door comprises an outer metal door panel 20 and an inner metal door panel 21, see Fig. 2. The panel 21 terminates in a transverse jamb edge or portion 22 facing the fixed jamb face or edge 23 (Fig. 5) of the door frame post or body pillar.

Adapted to be secured, as by means of screws, to the inner side of the jamb portion 22 of the door is a case plate 24 having a flange 25 engaging the inner door panel 21. Mounted on the case plate 24 is a bolt carrying plate or member 26 which is rotatable upon a pivot or stud 27 in the form of a shoulder rivet secured to the case plate. Rigidly fastened to the bolt plate 26 at a point spaced from the pivotal axis 27 thereof is a longitudinally extending cylindrical latch bolt 28. This bolt projects outwardly in a longitudinal horizontal direction through an arcuate slot 29 in the case plate and also through a similar and registering arcuate slot in the jamb 22 of the door.

The bolt plate 26 is formed on its periphery below the pivot 27 with a toothed portion forming a series of three spaced abutments or shoulders 30, 31 and 32, all of which forming inclined detent or dog engaging surfaces. Cooperable with the toothed portion of the bolt plate 26 is a swinging detent, pawl or dog 33 pivotally mounted at its outer end upon the shank of a stud or shoulder rivet 34 secured to the case plate 24. The detent or dog 33 is provided with a detent or dogging portion 33*a* engageable successively with the abutments or teeth 30, 31 and 32 of the bolt plate 26. When the detent engages the abutment 30, as in Fig. 4, the bolt 28 is in unlatched position at the lower end of the slot 29. When the detent is in engagement with the abutment 31, the bolt is in the safety locking position, and when the detent is in engagement with the abutment 32, as shown in Fig. 2, the latch bolt is in the final locking position. Associated with the detent arm 33 and the bolt carrying plate 26 is a detent actuating or release lever 35 having its lower end contacting the face of the detent arm and pivotally mounted upon the stud or shoulder rivet 34 so as to swing freely thereon. The detent arm 33 and the detent release lever 35 are, therefore, free to swing upon the pivot or stud 34.

Pivoted at 36 to the side of the detent release lever 35 at an intermediate point thereof is a detent operating link 37. As clearly shown in Figs. 2 and 6, the outer end of this link is pivoted at 36 so as to swing vertically, the link extending transversely across the face of the bolt plate 26. The detent operating link 37 is formed intermediate its ends at the lower edge thereof with an abutment or shoulder 38 adapted to engage a lug or tongue 39 bent inwardly from the outer side edge of the detent portion 33*a*. When the shoulder 38 is in operative engagement with the detent lug 39 the link 37, as shown in Fig. 2, extends transversely across the upper face of the detent portion 33*a*. It will be apparent from the construction thus far described that with the parts shown in the position of Fig. 2 the detent release lever 35 is positively connected to the detent 33 through the medium of the releasable connection 38, 39, and this connection is maintained during all normal operation of the lock.

With the parts in the position shown in Fig. 2 it will be seen that upon swinging the release lever 35 inwardly the detent 33 will be swung downwardly through the positive connection 37 so as to disengage the detent portion 33*a* from any one of the abutments 30—32. The detent 33 is yieldingly urged toward the bolt plate 26 by means of a coil spring 40 having its inner end anchored at 41 between spaced lugs struck out from the case plate 24 and having its outer end 40*a* engaging beneath an extension 33*b* of the detent arm 33.

The bolt carrying plate 26, detent release lever 35, operating link 37, and detent 33 are controlled by means of a common spring 42 which functions to urge the bolt carrying plate constantly toward bolt unlatching position and to urge the detent actuating lever 35 constantly into retracted or inactive position as shown in Fig. 2. The spring 42 also functions to resist disengagement of the detent from any one of the abutments 30—32 of the bolt plate. The spring 42 has one or more intermediate coils wound around a cylindrical portion of a stud 43 riveted to the case plate 24, the spring being held in position by the head of the stud. The spring has an extension or arm 42*a* engageable at its lower end with the outer edge of the bolt plate, the latter being offset to provide a lip 26*a* overlying the lower end of the spring for the purpose of holding it in position. The spring 42 also has a somewhat longer extension or arm 42*b* which engages against a widened flange 35*a* on the release lever 35, the lower end of the spring arm 42*b* having a bent portion anchored in a hole in the lever 35. From this construction it will be seen that the spring extension 42*a* constantly exerts an inward force on the bolt plate 26, urging it towards its unlatching position shown in Fig. 4. Also the spring extension 42*b* exerts an outward force at 35*a* against the detent release lever tending to urge it constantly toward its fully retracted position of Fig. 2. The widened flange portion 35*a* of the detent release lever is engaged by a plunger 44 which may be shifted inwardly to swing the lever by any suitable manually operable means on the outside of the door such, for example, as a pull-out handle 45 or by any other preferred means such as a push button carried by the outside door handle or otherwise mounted on the door.

The latch device constructed in accordance with the embodiment of Figs. 1 to 7 inclusive incorporates a remote control mechanism so constructed as to permit release or disengagement of the detent 33 by operation of the inside door handle independently of the release lever 35 and

regardless of whether the latter is connected to or disconnected from the detent 33 through the medium of the link 37. This remote control mechanism is preferably manually actuated from the inside of the door remote from the case plate 24 by means of a door handle which may be turned or swung in two directions. Referring particularly to Figs. 2 and 5, the remote control mechanism comprises a bell crank or two-arm lever 46 pivoted at 47 through the medium of a shoulder rivet to the case plate flange 25. The bell crank 46 has a longitudinally extending arm 46a overlying at its outer end the extension 33b of the detent arm 33, see Figs. 2, 3 and 4. The bell crank 46 also has a depending lever arm 46b pivotally connected by a pivot stud or rivet 48 to the forward end of a remote control link 49 which at its opposite end is pivoted at 50 to the lower end of a swinging lever 51. This lever is attached to the shank or shaft 52 of the inner door handle, this shaft being journalled in a mounting plate 53 and bracket 53a attached thereto. The upper end 51a of the lever 51 is provided with a generally V-shaped notch 54 within which is received the partially coiled end 55a of a tension spring 55 secured at 56 to the bracket 53a. The construction is such that the inner door handle may be swung from a vertical position either to the left or to the right in order to swing the lever 51 in a corresponding direction. The spring 55 functions to return the inner door handle to its normal vertical position after the door handle has been released.

During normal operation of the door lock with the release lever 35 connected to the detent 33 through the medium of the link 37, as shown in Fig. 2, turning of the inside door handle in one direction to depress the bell crank arm 46a will result in depressing the detent arm 32b and disconnecting the detent from the bolt carrying plate 26, thus permitting the bolt 28 to be shifted to unlatched position upon opening the door. This particular operation is accomplished by turning the inside door handle to swing the lever 51 clockwise as viewed in Fig. 5, thereby shifting the remote control link 49 to the left in this figure, rocking the bell crank lever 46 and swinging the bell crank arm 46a downwardly. Since this arm 46a normally occupies a horizontal position, due to the action of spring 55, it normally remains in engagement with the outer end of the detent arm 33b.

In the present embodiment means is provided under the control of the inside door handle and remote control mechanism for disconnecting the operating link 37 and release lever 35 from the detent 33 and also for effecting the operative connection of these parts. This may be accomplished by turning the inside door handle first in one direction and then in the opposite direction. The operating link 37 has an extension 37a overlying and engaging at its inner end a lug or projecting tongue 57 struck from the metal of a control member 58, the extension 37a projecting into a notch 59 in this member as shown in Figs. 3 and 7, this notch providing clearance and also stock for the lug or tongue 57. The control member 58 lies adjacent the inner face of the case plate flange 25 and is guided thereon in a vertical direction by means of a guide slot 60 in the control member which receives a headed guide stud 61 secured to the case plate. Interposed between the case plate flange and the member 58 and secured thereto is a coiled snap-over spring 62 which tends to hold the control member in either of its positions shown in Figs. 3 and 7. It will be noted from Figs. 2, 3 and 7, that the projecting tongue or lug 57 overhangs and lies in the path of the bell crank arm 46a. Thus, if the inside door handle is turned so as to swing the lever 51 to the right in Fig. 5, thereby shifting the remote control link 49 to the right in this figure, the bell crank 46 will be rocked or turned in a counter-clockwise direction, thereby swinging the arm 46a upwardly into engagement with the lug or tongue 57. When this operation occurs the control member 58 will be shifted upwardly in the manner shown in Fig. 7, thereby swinging the operating link 37 upwardly from the position shown in Fig. 2 to the position shown in Fig. 6. This movement of the operating link 37 will disengage the abutment or shoulder 38 from the lug 39 on the detent and, as a consequence, will disconnect the release lever 35 from the detent. The member 58 is formed with a struck-out tongue 63 positioned below the bell crank arm 46a. When the member 58 is shifted upwardly, as shown in Fig. 7, the lug or projection 63 will be moved to a position in which it will be engaged by the bell crank arm 46a when the latter returns to its normal horizontal position, shown in dotted lines in Fig. 7, upon release of the inside door handle. Accordingly, it will be apparent that by turning the inside door handle in the opposite direction from the direction which produces the disconnection of the link 37 from the detent, resulting in swinging the bell crank arm 46a downwardly from its dotted line position in Fig. 7, this arm by engagement with the lug 63 will shift the member 58 downwardly from its position in Fig. 7 to its normal position in Fig. 3, thus connecting the link 37 with the detent 33 and at the same time disengaging the detent from the bolt plate 26.

The door latch structure illustrated in Figs. 1 to 7 inclusive is particularly, although not exclusively, intended for use on the front door of an automobile body and especially where a key controlled device is incorporated in the lock. Such a device is ordinarily incorporated in one or both of the front door locks but usually omitted in connection with the rear door locks of an automobile. Where a key controlled device is used with the embodiments of Figs. 1 to 7 inclusive, the control member 58 is provided with a depending extension 58a to which is pivoted at 64 the outer end of a swinging crank arm 65 pivoted to a bracket 66 on the case plate and provided with a square opening at the locality of its pivot to receive the square portion 67 of a key actuated shaft. This shaft is connected to the cylinder mechanism of any conventional lock having the usual key control. By turning the key in the lock in the outside of the door the crank arm 64 may be swung to shift the control member 58 vertically in one direction or the other either to shift the detent operating link 37 to its disengaged position shown in Fig. 6 or to its engaged position shown in Fig. 2. It will be noted that vertical motion of the member 58 produced by swinging motion of the key control arm 65 is accompanied by a swinging or pivotal motion of the control member 58 on the stud 61.

The latch device constructed in accordance with the embodiment of Figs. 9 to 12 inclusive is mainly similar to that illustrated in the embodiment of Figs. 1 to 7 inclusive, differing therefrom principally in that the connection between the detent release means and detent may be rendered operative or inoperative by manu-

ally shifting, through the medium of a plunger, a member at the inside of the door, the construction being such that when said connection is rendered inoperative the inside and outside door handles, push buttons or the like may be freely actuated without disengaging the detent from the bolt plate and thereby enabling the door to be opened.

Referring to Figs. 9 to 12 inclusive, the latch device is provided with a detent 68 having a detent portion 68*a*, similar to the detent portion 33*a*, engageable with any one of the abutments 30—32. The detent 68, as in the previous embodiment, is pivoted so as to swing freely upon the stud 34. It is constantly urged into engagement with the bolt plate 26 by means of a coil spring 69, similar to the spring 43. In this embodiment the latch device is also provided with a swinging release lever 70 pivotally mounted upon the stud 34 in the same manner as the release lever 35. As in the previous embodiment, the release lever 70 is provided with a widened flange portion 70*a* engaged by the shiftable plunger 44. In the present embodiment the release lever 70 is provided with an arm extension 70*b* notched at its inner end for engagement by the arm extension 45*a* of the remote control lever 46.

The release lever 70 in the embodiment of Figs. 9 to 12 inclusive is also adapted to be positively connected to the detent 68 through the medium of the connecting link 37 in the same manner as the previous embodiment. The extension 37*a* of this connecting link projects into a notch 71 in a vertically shiftable member 72, the inner end of the link extension 37*a* overlying the lower edge of this notch and also underlying the upper edge thereof. The member 72 is guided for up and down movement upon the case plate flange 25 by means of headed studs 74 and 75 engageable respectively within vertically spaced guide slots 73 and 75 in the member. The member 72 may be shifted up or down from the inside of the door by means of a rock arm or lever 78 having an articulated ball and socket connection at 77 with the control member. The lever 78 is fulcrumed intermediate its ends on the case plate by means of a pivot stud or rivet 79 and is pivotally connected at its inner end at 80 to a vertically shiftable rod or plunger 81 which extends upwardly through the garnish molding at the inner side of the glass panel of the door. The rod or plunger 81 carries at its upper end a knob 82 which may be grasped to shift the plunger vertically in either direction. From the foregoing construction it will be seen that by pressing the button or knob 82 downwardly the lever 78 will be rocked, thereby raising the member 72 and swinging the latch connection 37 upwardly so as to disengage it from the detent 68 in the same manner as is shown in Fig. 6 of the previous embodiment. When this operation occurs the release lever 70 will be disengaged or disconnected from the detent 68 and, as a consequence, the plunger 44 may be shifted inwardly or the remote control crank arm 45*a* may be swung downwardly by operation of the inside door handle without disturbing the detent 68 or disengaging it from the bolt plate 26.

It is important to note, therefore, that when the slide 72 is shifted upwardly by pressing the button 82 and plunger 81 downwardly, thereby disconnecting the link 37 from the detent 68 (in the manner shown in Fig. 6), the outside and inside door handles, push buttons or the like are freely operable together with the release lever 70 without disturbing the detent 68 and causing the door to be unlocked.

It will be seen that the latch bolt 28 in each of the embodiments is movable between unlatching and latching positions in an arcuate path as defined by the arcuate slot 28. The bolt is actuated when the door is closed by means of a striker or keeper device which is rigidly mounted on the jamb face 23 of the body pillar or fixed upright member of the door frame. In the present instance the striker device comprises a stamped metal piece 83 having opposed lateral flanges positioned against the face of the jamb 23 and also having an intermediate outwardly embossed portion formed with an inwardly and upwardly extending slot or guideway 84 which has straight upper and lower parallel sides sufficiently wide to afford ample bearing engagement with the bolt 28. The striker is secured to the pillar or door frame by screws 85. The width of the guideway 84 approximates closely the diameter of the bolt 28 and the lower side 84*b* of the guideway projects a substantial distance below the lower end of the upper side 84*a* of the guideway so as to permit the bolt to pass beneath the latter, as shown at *a* in Fig. 8, into engagement with the inclined side 84*b* of the guideway when closing the door. As the door continues its closing movement after initial contact of the bolt with the inclined side 84*b*, the bolt rides upon this side wall and assumes successive latched positions within the guideway 84 such as shown at *b* and *c* in Fig. 8, position *b* representing the safety latching position and position *c* in full lines representing the final latching position of the bolt.

In the present embodiment I provide yieldable wedging means cooperable with the striker casing 83 and also with the bolt 28 to hold the door rigidly against vertical vibratory motion or displacement during operation of the vehicle. As shown in Fig. 8, the wedging means in the present instance comprises a stamped hollow casing 86 of generally rectangular shape and open at the bottom and rigidly secured to the case plate but projecting at the outer side of the door jamb. Slidingly mounted within this casing is a wedge block 87 controlled by means of a compression spring 88. This spring is mounted under initial lead and constantly urges the wedge block toward the left in Fig. 8. During closing movement of the door the wedge block engages the top inclined surface 83*a* of the striker casing and, due to frictional contact, will be forced back to some extent against the action of spring 88. Due to the action of this spring the wedge block will constantly tend to tighten itself against the surface 83*a* and, hence, tends to maintain the bolt 28 firmly in engagement with the upper inclined wall 34*a* of the guideway.

Although the latch device shown in Figs. 1 to 7 inclusive is preferably employed for the front door of an automobile, and the latch device in the embodiment of Figs. 9 to 12 inclusive is preferably used on the rear door, it will be understood that either device, with or without the key control mechanism, may be used on any of the doors of the vehicle. It will be noted that the latch device in each embodiment is so constructed as to permit the link 37 to be disengaged from the detent, while the door is open, after which it is possible to close the door from the outside and automatically retain the door locked through disengagement of link 37. This operation, which avoids the necessity of using the

key to lock the front door, is possible since the detent 33 or 68 is free to swing relatively to the bolt plate 26 and release lever 35 or 70 regardless of the position of link 37.

I claim:

1. In a latch mechanism for a swinging door, a support having a plate portion adapted to face the jamb of the door and provided at its inner edge with a flange portion, a latch device pivotally mounted on said plate portion, detent means pivotally mounted on said plate portion for holding said latch device in door latching position, a lever pivotally mounted on said plate portion and having a part swingable toward said flange portion, outer manually operable means for swinging said lever, link means mounted for swinging movement, operable by said lever and normally operatively coupled to said detent means, and inner manually operable means on said flange portion for swinging said link means into and out of coupled relation with said detent means.

2. In a latch mechanism for a swinging door, a support having a plate portion adapted to face the jamb of the door and provided at its inner edge with a flange portion, a latch device pivotally mounted on said plate portion, detent means pivotally mounted on said plate portion for holding said latch device in door latching position, a lever pivotally mounted on said plate portion and having a part swingable toward said flange portion, outer manually operable means for swinging said lever, link means mounted for swinging movement, operable by said lever and normally operatively coupled to said detent means and shiftable transversely of the door upon swinging said lever, and inner manually operable means on said flange portion for swinging said link means into and out of coupled relation with said detent means.

3. In a latch mechanism for a swinging door, a support having a plate portion adapted to face the jamb of the door and provided at its inner edge with a flange portion, a latch device pivotally mounted on said plate portion, detent means pivotally mounted on said plate portion for holding said latch device in door latching position, a lever pivotally mounted on said plate portion and having a part swingable toward said flange portion upon actuation of said lever from the outside of the door, link means pivoted to said lever and having a part normally arranged in opposing relation to a part of said detent means and being shiftable upon swinging said lever to cause said parts to abut and disengage the detent means from said latch device, and inner manually operable means for pivotally moving said link means in a generally vertical direction to move said parts out of said opposing relation.

4. In a latch mechanism for a swinging door, a support having a plate portion adapted to face the jamb of the door and provided at its inner edge with a flange portion, a latch device pivotally mounted on said plate portion, detent means pivotally mounted on said plate portion for holding said latch device in door latching position, a lever pivotally mounted on said plate portion and having a part swingable toward said flange portion upon actuation of said lever from the outside of the door, link means pivoted to said lever and having a part for abutting engagement with a part of said detent means, and said link means being shiftable upon swinging said lever to cause said parts to disengage the detent means from said latch device, and a vertically shiftable slide on said flange portion for pivotally moving said link means into a position in which it is ineffective to disengage said detent means from said latch device.

5. In a latch mechanism for a swinging door, a support having a plate portion adapted to face the jamb of the door and provided at its inner edge with a flange portion, a latch device pivotally mounted on said plate portion, detent means pivotally mounted on said plate portion for holding said latch device in door latching position, a lever pivotally mounted on said plate portion and having a part swingable toward said flange portion, means for swinging said lever, a vertically shiftable slide on said flange portion, means for shifting said slide, and coupling means operatively connecting said lever, detent means and slide and adapted to be uncoupled from the detent means upon shifting the slide in one direction.

6. In a latch mechanism for a swinging door, a support having a plate portion adapted to face the jamb of the door and provided at its inner edge with a flange portion, a latch device pivotally mounted on said plate portion, detent means pivotally mounted on said plate portion for holding said latch device in door latching position, a lever pivotally mounted on said plate portion and having a part swingable toward said flange portion, means for swinging said lever, a vertically shiftable slide on said flange portion, and a vertically swingable link operatively connecting said lever and said slide and adapted, upon shifting the slide, to be swung out of and into operative position with respect to said detent means.

7. In a latch mechanism for a swinging door, a support having a main portion for disposition at the door jamb and having a flange extending from the inner edge of said main portion, a latch device pivotally mounted on said main portion, detent means mounted on said main portion for engagement with said latch device, an outer manually operable lever pivotally mounted on said main portion, swingable link means operable by said lever and movable out of and into a position in which disengaging operation of said detent means with respect to said latch device can be effected by said link means, a lever pivotally mounted on said flange and having an arm underlying a part of said link means and overlying a part of said detent means, and means for swinging said arm upwardly to move said link means out of its aforesaid position and for swinging said arm downwardly to engage said part of the detent means and thereby disengage said detent means from the latch device.

8. In a latch mechanism for a swinging door, a support having a main portion for disposition at the jamb of the door and provided at its inner edge with a flange, a latch device pivotally mounted on the main portion, detent means pivotally mounted on the main portion for holding the latch device in door latching position, outer manually operable means mounted on said main portion and having a part swingable toward said flange, vertically swingable link means operatively associated with said outer manually operable means and said detent means, said link means being shiftable transversely of the door through an aperture in said flange upon actuating said outer operable means to swing its said part toward said flange, and inner manually operable means mounted on said flange and effective to swing said link means vertically into a position

whereby the link means is ineffective to disengage said detent means from said latch device.

9. In a latch mechanism for a swinging door, a support having a main portion for disposition at the jamb of the door and provided at its inner edge with a flange, a latch device pivotally mounted on the main portion, detent means pivotally mounted on said main portion for holding the latch device in door latching position, outer manually operable means mounted on said main portion and having a part swingable toward said flange, swingable link means operatively associated with said outer manually operable means and said detent means, and a vertically shiftable slide mounted on the inner side of said flange, a slidable connection between said link means and said slide, said link means being mounted so as normally to be shifted by said outer manually operable means transversely of the door and generally horizontally in the direction of said flange relative to said slide to effect disengagement of said detent means, and means for shifting said slide vertically to pivotally move said link means vertically into a position in which it is ineffective to disengage said detent means from said latch device.

10. In a latch mechanism for a swinging door, a support having a main portion for disposition at the jamb face of the door and also having a flange portion at the inner edge of said main portion, a rotatable latch device mounted on said main portion, a detent pivotally mounted on said main portion and having one part engageable with said latch device for holding it in door latching position and having another part extending toward said flange, a lever pivoted on said main portion for swinging movement toward and from said flange, a link pivotally connected at its outer end to said lever above the lever pivot and extending transversely of said main portion toward said flange, an abutment on said link inwardly of its pivotal connection for engagement with said detent, said lever being manually operable from outside the door to bodily shift said link toward the flange in a generally horizontal direction to cause the link abutment to disengage the detent from the latch device by engagement of said abutment with said detent, a vertically shiftable slide mounted on said flange portion and coupled to the inner end of the link, and pivotally mounted manually operable means for shifting said slide upwardly to swing the link upwardly to a position in which the link abutment is ineffective to disengage the detent from the latch device and also for shifting said slide downwardly to swing the link downwardly toward a position in which the link abutment is effective, upon operation of said lever, to disengage the detent from the latch device.

11. In a latch mechanism for a swinging door, a support having a main portion for disposition at the door jamb and having a flange extending from the inner edge of said main portion, a latch device pivotally mounted on said main portion, detent means mounted on said main portion for engagement with said latch device, an outer manually operable lever pivotally mounted on said main portion, swingable link means operable by said lever and movable out of and into a position in which disengaging operation of said detent means with respect to said latch device can be effected by said link means, a lever pivotally mounted on said flange and having an arm, a vertically movable member connected to said link means and having one part overlying said arm and a second part underlying said arm, said arm also overlying a part of said detent means, and means for swinging said arm upwardly to engage said one part and cause said vertically movable member to move said link means out of its aforesaid position and for swinging said arm downwardly to engage said second part and cause said vertically movable member to restore said link means to its said position and also to engage said part of said detent means and thereby disengage the detent means from said latch device.

12. In a latch mechanism for a swinging door, a support having a plate portion for disposition at the door jamb and having a flange extending from the inner edge of said plate portion, a rotatable latch device mounted on said plate portion, a lever pivotally mounted on said plate portion, an arm on said lever, means manually operable from the outside of the door for swinging said lever and bodily moving said arm in a generally horizontal direction toward said flange, detent means pivotally mounted on said plate portion to swing independently of said arm about an axis fixed with relation to said plate portion and engageable with said latch device for holding it in door latching position, said arm having a part arranged in opposing relation to a part of said detent means to abut the same upon movement of said lever arm toward said flange thereby to pivotally move said detent means out of holding position with respect to said latch device, a vertically shiftable slide mounted on said flange and positioned opposite said lever and having means for cooperation with said arm, and means manually operable from the inside of the door for shifting said slide vertically into a position to render said arm ineffective to move said detent means out of holding position with respect to said latch device.

13. In a latch mechanism for a swinging door, a support, a latch device pivotally mounted on said support, a detent comprising a unitary member pivotally mounted on said support, said detent having a first part extending in a direction in which it is engageable with said latch device for holding the same in door latching position, a second part extending in another direction, and a third part extending in a third direction, outer manually operable means for pivotally actuating said detent and including a pivotally mounted lever on said support, link means pivotally connected to said lever and having a part normally arranged in operative relation to said second detent part and being shiftable upon swinging said lever to cause said parts to abut and shift the detent thereby to disengage the detent from said latch device, control means swingably mounted on said support and engageable with said link means, manually operable means for moving said control means to shift said link means to position its said part out of operative relation to said second part of the detent, and a manually operable lever pivotally mounted on said support and engageable with said third detent part and operative upon pivotal actuation thereof to effect disengagement of said detent from said latch device and simultaneous shiftable movement of said link means and control means to restore said link means part and said second part of the detent in operative relation.

14. In a latch mechanism for a swinging door, a support, a latch device pivotally mounted on said support, a detent comprising a unitary member pivotally mounted on said support, said detent having a first part extending in a direction

in which it is engageable with said latch device for holding the same in door latching position, a second part extending in another direction, and a third part extending in a third direction, outer manually operable means for pivotally actuating said detent and including a pivotally mounted lever on said support, link means pivotally connected to said lever and having a part normally arranged in operative relation to said second detent part and being shiftable upon swinging said lever to cause said parts to abut and shift the detent thereby to disengage the detent from said latch device, control means swingably mounted on said support and having a substantially up and down movable interlocking connection with one end of said link means, manually operable means for moving said control means to shift said link means to position its said part out of operative relation to said second part of the detent, and a manually operable lever pivotally mounted on said support and engageable with said third detent part and operative upon pivotal actuation thereof to effect disengagement of said detent from said latch device and simultaneous shiftable movement of said link means and control means to restore said link means part and said second part of the detent in operative relation.

15. In a latch mechanism for a swinging door, a support for disposition at the door jamb and having a plate portion and a flange extending angularly from said plate portion, a latch device pivotally mounted on said plate portion, a detent comprising a unitary member pivotally mounted on said plate portion, said detent having a first part extending in a direction in which it is engageable with said latch device for holding the same in door latching position, a second part extending in another direction, and a third part extending in a third direction, outer manually operable means pivotally actuating said detent and including a pivotally mounted lever on said support, link means pivotally connected to said lever and having a part normally arranged in operative relation to said second detent part and being shiftable upon swinging said lever to cause

said parts to abut and shift the detent thereby to disengage the detent from said latch device, control means swingably mounted on said support and engageable with said link means, manually operable means for moving said control means to shift said link means to position its said part out of operative relation to said second part of the detent, and a manually operable lever pivotally mounted on said support and engageable with said third detent part and operative upon pivotal actuation thereof to effect disengagement of said detent from said latch device and simultaneous shiftable movement of said link means and control means to restore said link means part and said second part of the detent in operative relation.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,368,573	Reil	Feb. 15, 1921
1,389,339	Anderson	Aug. 30, 1921
1,544,960	Watts	July 7, 1925
1,738,338	Wells	Dec. 3, 1929
1,865,581	Miller	July 5, 1932
1,923,688	Rightmyer	Aug. 22, 1933
2,012,732	Schmidgall	Aug. 27, 1935
2,013,285	Mooney	Sept. 3, 1935
2,072,317	Simpson	Mar. 2, 1937
2,094,413	Schonitzer	Sept. 28, 1937
2,144,672	Andersen	Jan. 24, 1939
2,195,179	Marple	Mar. 26, 1940
2,198,548	Marple	Apr. 23, 1940
2,221,131	Dall	Nov. 12, 1940
2,231,075	Lakin	Feb. 11, 1941
2,234,810	Simpson	Mar. 11, 1941
2,235,117	Rightmyer	Mar. 18, 1941
2,249,018	Marple	July 15, 1941
2,270,559	Rolph	Jan. 20, 1942
2,272,167	Cloutier	Feb. 10, 1942
2 301,221	Marple	Nov. 10, 1942
2,301,560	Marple	Nov. 10, 1942
2,378,500	Rappl	June 19, 1945
2,394,646	Wagner	Feb. 12, 1946