March 16, 1937. J. H. ROETHEL 2,074,191

LATCH MECHANISM

Filed Aug. 28, 1933 4 Sheets-Sheet 1

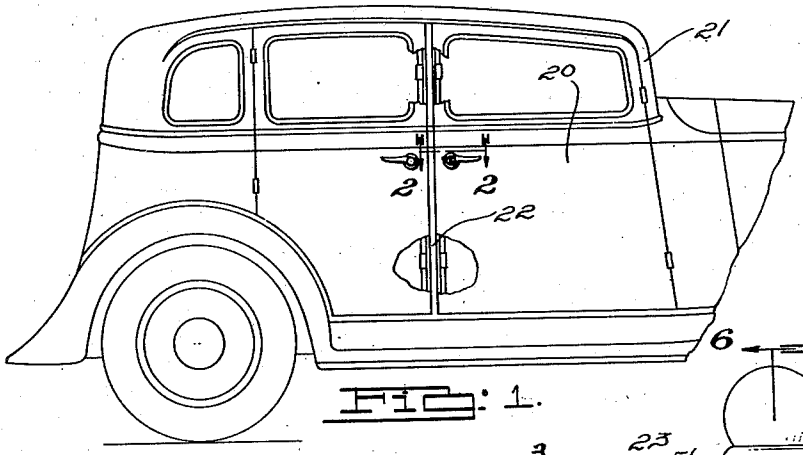


Fig. 1.

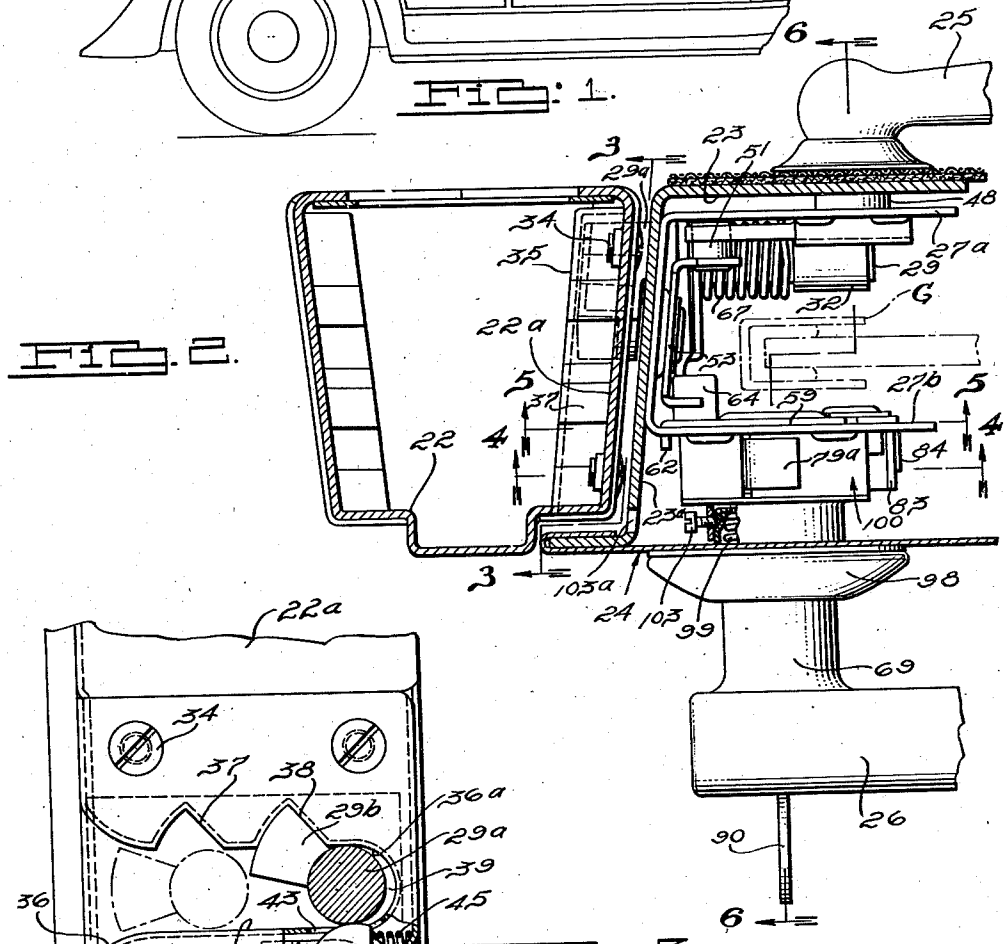


Fig. 2.

Fig. 3.

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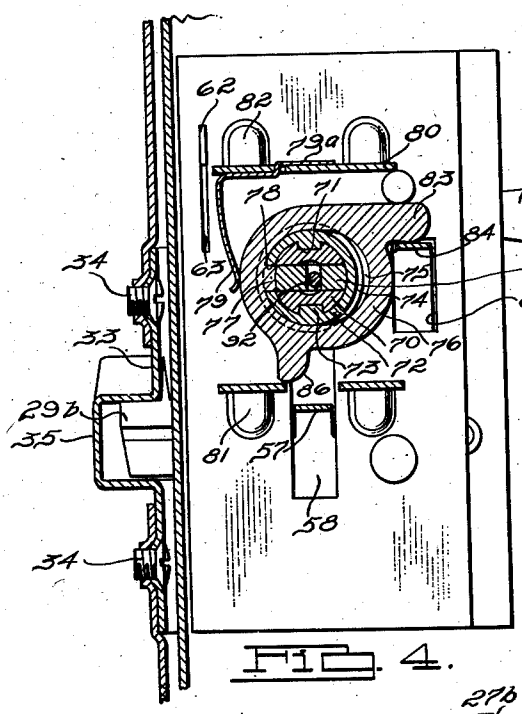


FIG. 4.

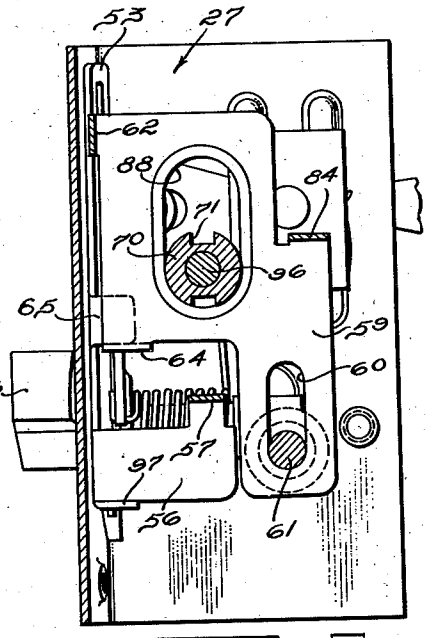


FIG. 5.

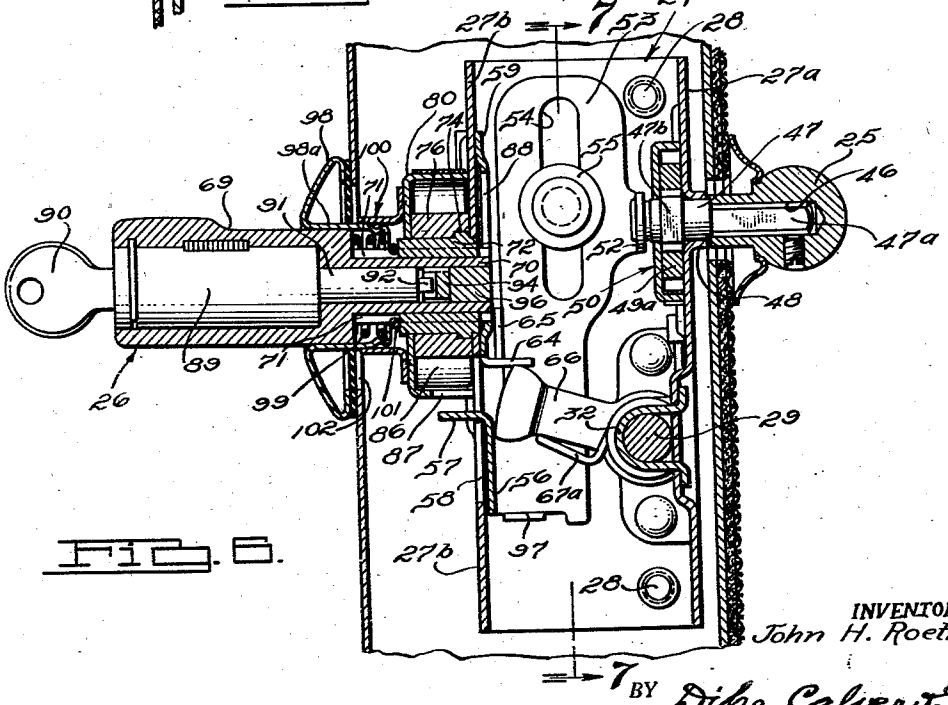


FIG. 6.

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LATCH MECHANISM

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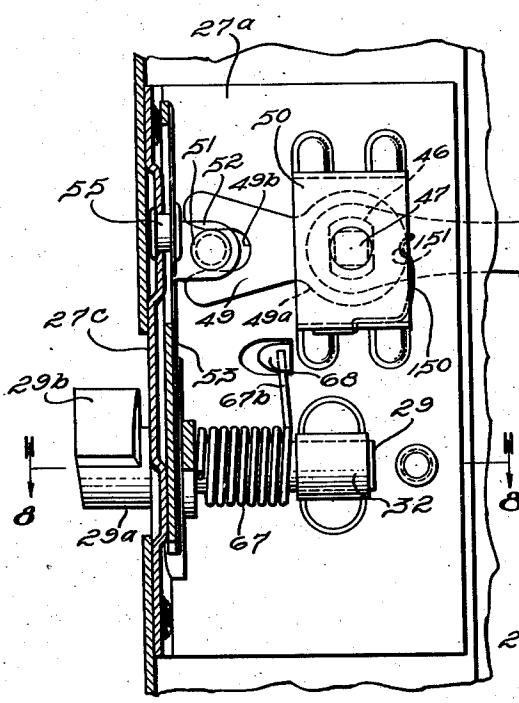


Fig. 7.

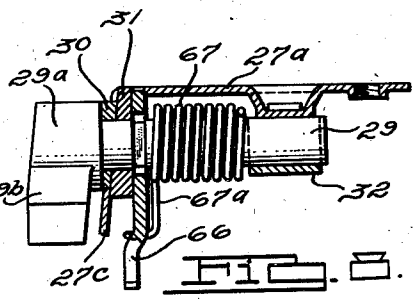


Fig. 8.

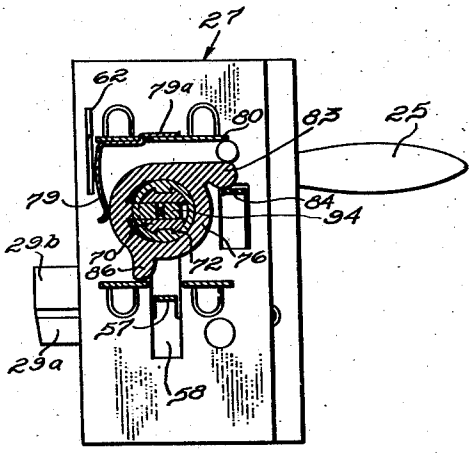


Fig. 9.

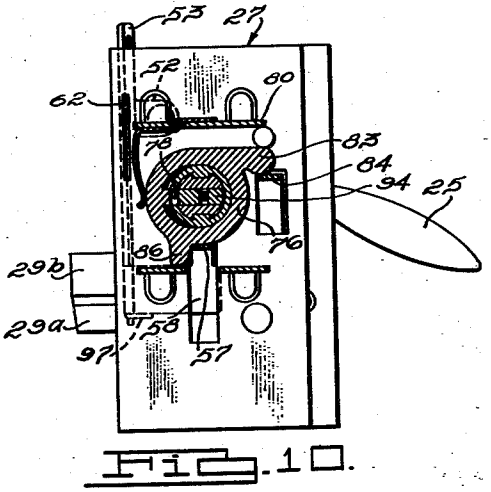


Fig. 10.

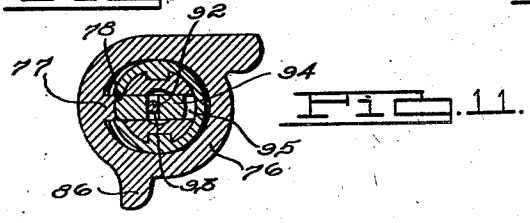


Fig. 11.

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LATCH MECHANISM

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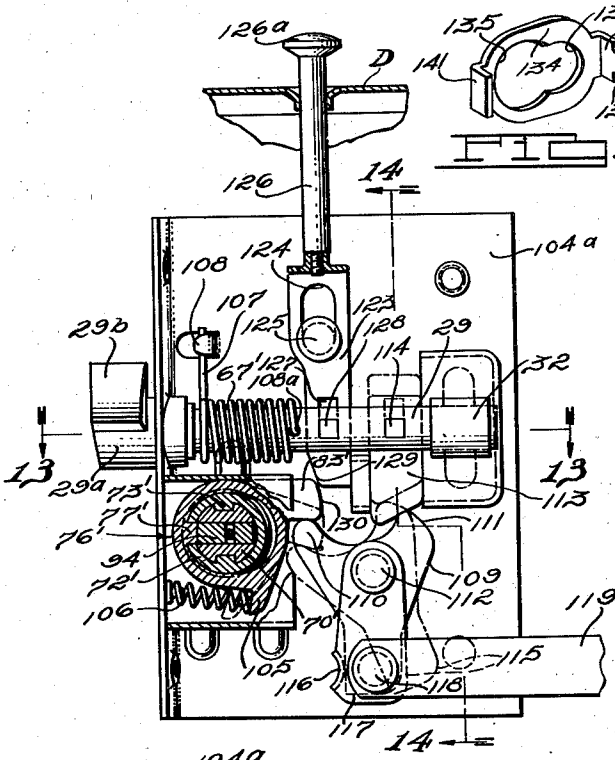


Fig. 13.

Fig. 16.

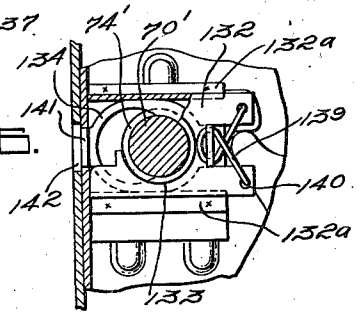
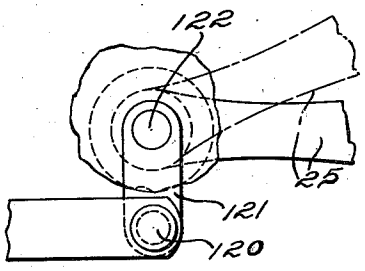
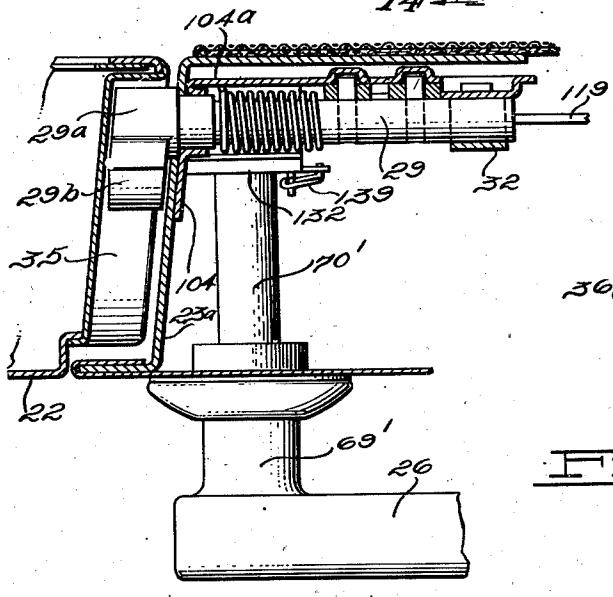


Fig. 15.

Fig. 12.





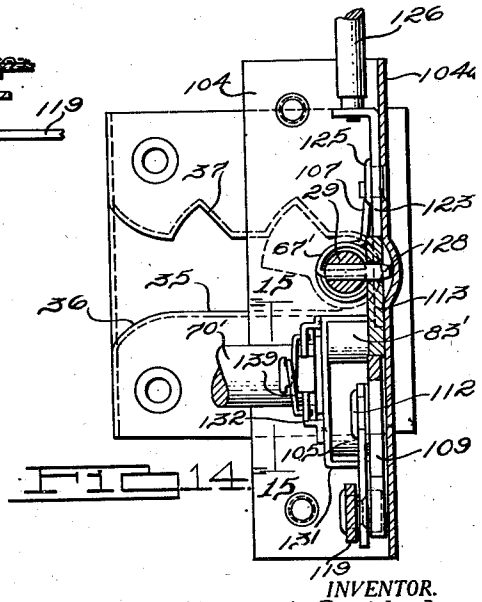


Fig. 14.

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Patented Mar. 16, 1937 2,074,191

UNITED STATES PATENT OFFICE

2,074,191

LATCH MECHANISM

John H. Roethel, Detroit, Mich., assignor to Ferro Stamping and Manufacturing Company, Detroit, Mich., a corporation of Michigan

Application August 28, 1933, Serial No. 687,100

6 Claims. (Cl. 70—149)

This invention relates to latch mechanism for doors and is particularly, although not exclusively, adaptable for use with the doors of closed automobiles and other vehicles.

An object of the invention is to provide a latch mechanism of improved construction selectively operable by outside and inside handles on the door and wherein means is provided at the inner side of the door whereby the outside handle may be disconnected from the latch bolt so as to turn freely, thereby rendering it inoperative to unlatch the door.

Another object of the invention is to provide a latch bolt mechanism having improved means controlled by the inner handle or other suitable means for rendering the outer handle inoperative, and wherein, in the case of a key-controlled latch the construction may be such that any independent actuation of the latch bolt, as by closing the door, will place the outer handle in operative position.

A further object of the invention is to provide an improved key-controlled locking means, carried by the outer handle for disconnecting the same from the latch bolt mechanism so that the outer handle, when locked by the key, will turn freely.

A further object is to provide an improved latch bolt structure having a latch bolt preferably oscillatable on a horizontal axis and having mechanism for selectively oscillating the same upon turning the outer and inner handles, and also preferably having means including a roll-back or cam capable of being connected to or disconnected from the outer handle shaft by means of mechanism at the inner side of the door.

A further object of the invention is to provide an improved latch bolt and keeper mechanism, the latch bolt being mounted to rock or oscillate on a horizontal axis and wherein adjustable means, associated with the keeper mechanism, is adapted to cooperate with the latch bolt when moved into closed position so as to hold the door in rigid position with respect to the body pillar against vertical vibratory movement.

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 illustrating an automobile body having a latch mechanism embodying the present invention installed on the door thereof.

Fig. 2 is a horizontal section taken through line 2—2 of Fig. 1 in the direction of the arrows.

Fig. 3 is a fragmentary vertical section taken through line 3—3 of Fig. 2 in the direction of the arrows.

Fig. 4 is a vertical section taken through line 4—4 of Fig. 2 in the direction of the arrows.

Fig. 5 is a vertical section taken through line 5—5 of Fig. 2 in the direction of the arrows.

Fig. 6 is a transverse vertical section taken through line 6—6 of Fig. 2 in the direction of the arrows.

Fig. 7 is a section taken through line 7—7 of Fig. 6 in the direction of the arrows.

Fig. 8 is a section taken through line 8—8 of Fig. 7 in the direction of the arrows.

Fig. 9 is a detail sectional view illustrating the roll-back and outer handle shaft mechanism in a position where the outer handle is locked by the key-controlled means.

Fig. 10 is a similar view illustrating the mechanism in position when the outer handle is locked by manipulation of the inner handle.

Fig. 11 is an enlarged detail section of a roll-back and outer handle shaft showing the position of the parts when the outer handle is locked and in free turning position.

Fig. 12 is a vertical section illustrating another embodiment of the invention.

Fig. 13 is a horizontal section taken through line 13—13 of Fig. 12 in the direction of the arrows.

Fig. 14 is a section taken through line 14—14 of Fig. 12 in the direction of the arrows.

Fig. 15 is a detail section taken through line 15—15 of Fig. 14 in the direction of the arrows.

Fig. 16 is a detail perspective view of the spring controlled coupling member for the outer handle shaft.

Before explaning 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, and it is not intended to limit the invention claimed herein beyond the requirements of the prior art.

The latch mechanism of the present invention is herein shown, by way of example, as applied to a door 20 of a four door type automobile body 21. This body is provided with the usual center pillar 22 having a jamb rail 22a which carries the latch bolt keeper. The door 20 is provided with the usual metal door pillar 23 having a jamb rail 23a, the outer panel of the door being illustrated at 24. The door has an inside handle 25 and an outside handle 26 for selectively actuating the latch bolt mechanism. In the present instance the latch bolt mechanism is carried by a channel shaped case plate 27 having an inner side or flange 27a, an outer side or flange 27b and

a central web 27c which is secured at 28 to the inner face of the jamb 23a of the pillar.

In the present instance the latch bolt is of the oscillatable type and in accordance with the embodiment herein illustrated is preferably mounted to oscillate or rock on a horizontal axis. The latch comprises a shaft 29, the front end of which is journaled in bearing pieces 30 and 31 secured within a cut-away portion of the case plate 27c (see Figs. 7 and 8). The rear end of the latch bolt shaft 29 is journaled in a U-shaped strap 32 the ends of which, as shown in Fig. 6, extend through slits in the flange 27a and are clinched over the edges thereof. The shaft 29 terminates at its forward end in a latch bolt proper comprising a cylindrical portion 29a and a wedge shaped latch portion 29b.

Referring to Figs. 3 and 4 the latch bolt keeper comprises a stamped metal plate 33 which is attached by screws 34 to an offset portion of the jamb member 22a of the body pillar so as to lie flush with the face thereof. The keeper plate 33 is pressed to provide a substantially horizontal open ended guideway or slot 35 for the travel of the latch portions 29a and 29b into and out of latching position. This guideway at its entrance end is flared as shown at 36 and is provided at its upper side with successive wedge shaped recesses 37 and 38 shaped to conform to the upper angular sides of the latch projection 29b. The rear end of the guideway is formed with a semicircular recess or socket 39 shaped to receive the cylindrical portion 29a of the latch bolt.

Referring to Fig. 3 it will be seen that the base of the guideway 35 is slotted at 43 and through this slot projects a portion of an eccentric disk or roller 42 pivoted on a stud 41 carried by an offset portion 40a of a bracket 40 which is spot welded to the inner face of the plate 33. The eccentric 42 is notched out at 44 to provide a seat for one end of a coiled spring 45 the opposite end of the spring being seated against the rear flange of the case plate and the ends of the spring being fastened in any suitable manner to the seats. By means of this construction, when the latch bolt is forced home into the cylindrical seat 39, the portion 29a of the bolt will ride over the upper curved surface of the roller 42 resulting in wedging the bolt portion 29a between the upper face 36a of the recess 39 and the upper face of the roller. Hence the bolt will act as a means for rigidly clamping the door to the body pillar 22 against any possibility of vibratory movement of the door while the vehicle is in motion. With the parts 29a and 29b in the position shown in full lines in Fig. 3 it will be impossible for the door to have any independent movement with respect to the pillar 22. Since the roller 42 is mounted to turn on its pivot 41 there will be no frictional resistance when the latch bolt is rotated to unlatch the door, and since the spring 45 is under compression when the latch bolt is in closed position, this spring acting on the roller 42 will assist in freeing the part 29a when the door is opened and will assist in starting it out of the recess or socket 39. Hence the spring controlled roller 42 performs two important functions. It takes the place of the usual dovetail in holding the door in solid position with respect to the pillar and it assists in ejecting the bolt from its socket 39 when the latch bolt shaft 29 is oscillated to unlatch the door.

As illustrated in Fig. 6 the inside handle 25 of the door is provided with a square bore 46 to receive the square shank 47a of a shaft 47 journaled in a flanged opening 48 formed in the case plate. The handle shaft 47 has a square portion 47b fitting into a square opening in the hub 49a of a rock arm 49, see Fig. 7. The inner end of the handle shaft and the hub of the arm 49 are enclosed within a housing 50 which has an opening forming a bearing for the inner end of the shaft 47. The arm 49 is normally held in neutral position as shown in full lines in Fig. 7 by means of a leaf spring 150, the lower end of which is fastened to the plate 50 as illustrated and the upper end 151 is normally lodged within a notch in the periphery of the hub 49a.

The rock arm 49 is bifurcated or slotted at 49b to receive a stud 51 carried by a tongue or projection 52 extending from the edge of a slide plate 53. This plate is mounted against the inner face of the front side of the case plate 27 and is guided for vertical sliding movement by means of a guide slot 54 and a stud 55 carried by the case plate. The slide 53 at its lower end is provided with a rearwardly extending flange 56 engaging the inner face of the flange 27b of the case plate, and the upper end of the flange 56 is bent laterally to provide a tongue or lug 57 which travels within a vertical slot 58 in the case plate, see Figs. 4, 5, and 6.

Mounted against the inner face of the flange 27b of the case is a second slide plate 59, see Figs. 5 and 6. This plate is provided with a guide slot 60 into which extends a guide stud 61 carried by the case flange 27b. The slide 59 also has a projecting guide tongue 62 which travels within a slot 63 in the case plate, see Figs. 4 and 5. A lug or tongue 64 is pressed inwardly from an edge of the slide plate 59, and overlying this lug is a lug or tongue 65 formed from the edge of the slide plate 53, the tongues or lugs 64 and 65 normally being in engagement as illustrated in Figs. 5 and 6. The lug 64 normally overlies the outer end of an arm 66 and in engagement therewith, this arm being fixed at its inner end to the latch bolt shaft 29 as by means of a square opening in the arm 66 to receive a square portion of the shaft, see Fig. 8. A coiled return spring 67 is mounted on the latch bolt shaft 29, the outer end 67a of the spring engaging beneath the arm 66 and normally holding it and the latch bolt in latching position. The opposite end 67b of the spring is anchored to the case plate at 68, see Fig. 7.

The outer handle 26 is provided with a shaft 69 reduced in diameter at its inner end to provide a shank 70. This shank is machined to provide diametrically opposed longitudinal key-ways 71. Fitted over the inner end of the shank 70 is a sleeve 72 provided with longitudinal keys 73 extending into the key-ways 71. The sleeve 72 is formed with a collar 74, and the sleeve 72 is received within an oval bore 75 of a roll-back 76. It will be noted that the bore 75 in the roll-back is non-circular and has two diameters. Its vertical diameter corresponds to the diameter of the sleeve 72, whereas its horizontal diameter along its major axis is substantially greater than the sleeve diameter, as shown in Figs. 4 and 9 to 11 inclusive. The roll-back, as shown in Fig. 6, is counterbored to receive the collar 74 of the sleeve and the construction is such that the roll-back may be shifted laterally along its horizontal or major axis relatively to the sleeve 72 and shank 70 of the handle shaft. Relative vertical movement of these parts is prevented because of the equal vertical diameters of the sleeve 72 and the bore 75.

The roll-back 76 is provided at one side on its

major axis with an inwardly projecting lug or dog 77, which may be shifted into and out of a slot 78 cut through the wall of the sleeve 72. The lug 77 and slot or recess 78 provide a coupling for connecting and disconnecting the roll-back with the sleeve 72 and hence with the shaft 70. Lateral sliding movement of the roll-back along its major axis is resisted by means of a leaf spring 79, the end 79a of which is anchored in the upper wall of a housing 80, see Figs. 4 and 6. The housing or casing 80 encloses the roll-back mechanism and is attached to the side 27b of the main case plate by means of tongues which are projected through slits in the side 27b and are clinched over into embossed recesses 81 and 82.

The roll-back 76 is formed with a projecting lug or cam 83 which overlies a tongue or lug 84 struck out from an edge of the slide plate 59, see Figs. 4 and 5. This tongue 84 is guided vertically within a slot 85 punched out of the metal of the side flange 27b. The roll-back at its lower side also has a projecting lug or cam 86, which extends into the path of the projecting tongue or lug 57 on the slide plate 53, the lower wall of the housing 80 being slotted or cut away at 87, see Fig. 6, to permit upward travel of the tongue 57 into engagement with the cam 86 within the housing. It will be noted that the slide plate 59, see Fig. 5, is provided with a guide slot 88 embracing the inner extreme end of the shank 70, so that the plate 59 is free to slide vertically relatively to the handle shaft.

In the present illustration of the invention, the outer handle is shown as of the key-controlled type. Accordingly the outer handle shaft 69 is bored to receive a cylindrical lock casing 89 for a pin tumbler lock or any other conventional kind. The lock mechanism 89 is controlled by a key 90 and includes a rotatable stem 91 which is oscillated or turned in opposite directions by turning the key 90. The stem 91 projects into a bore in the shank 70 of the handle shaft and terminates in an eccentrically located pin 92. This pin, as shown in Figs. 4 and 9 to 11 inclusive, lies off center with respect to the common axis of the stem 91 and the shank 70, and is lodged within a vertical groove or slot 93 in a slide piece 94, which is transversely slidable within a transverse hole 95 formed in the shank 70. The slot 95 is in line with the hole 78 and the lug 77 so that by shifting the slide 94 toward the left in Fig. 4 the roll-back 76 may be moved laterally by forcing the lug 77 out of the recess or slot 78, thereby disconnecting the roll-back from the sleeve 72. It will be readily seen that the slide piece 94 may be shifted in either direction within the slot 95 simply by turning the key 90, rotating the stem 91 and thereby causing the eccentric pin 92 to shift the slide.

It will be understood that where the door is not provided with a key controlled locking means for the outer handle, the lock mechanism, above described, including the slide piece 94 and the eccentric operating pin 92 will be dispensed with. In such instance the longitudinal bore through the shank 70 may also be dispensed with. In the present instance the inner end of this bore is closed by means of a plug 96 which has a press fit in the bore, this plug acting as a means for holding the slide piece 94 in position with respect to the eccentric pin 92.

The lower end of the main slide 53 is provided with a projecting tongue or lug 97, see Fig. 6, which moves upwardly into position to be engaged by the arm 66 when the slide 53 is shifted vertically, the purpose of the piece 97 being hereinafter described.

The outer handle shaft 69 may be readily assembled with the roll back mechanism through an opening 102 in the outer body panel 24, this opening being covered by a cap 98 provided with an inwardly extending cylindrical flange portion 98a flanged at its inner edge to receive an anti-rattle spring 99. The tubular flange 98a of the cap has a bearing within a tubular flange portion of a casing member 100 which is spot welded to the face of the housing 80, see Fig. 6. The shank 70 is releasably locked with respect to the cap 98 by means of a snap ring 101 fitting into a groove in the shank 70, and the cap is locked within the casing 100 by means of a set screw 103, see Fig. 2, this set screw being accessible from the jamb face of the door through an opening or aperture 103a.

In the operation of this embodiment of the invention it will be seen that by turning the inner handle 25 to the upper dotted line position shown in Fig. 7, the arm 49 is swung downwardly thereby shifting the slide 53 downwardly. The lug 65 will contact with the lug 64 on the slide plate 59 forcing the latter in a downward direction and thereby oscillating the crank arm 66. This operation will oscillate the latch bolt shaft 29 and move the latch member 29b out of the keeper recess 38 into alinement with the guideway 35 thus permitting the door to be opened. When the inner handle 25 is shifted to its lower dotted line position shown in Fig. 7 the slide 53 will be moved in an upward direction positioning the contact piece 97 immediately beneath the outer end of the latch bolt crank arm 66, see Fig. 6. This same operation will move the actuating piece 57 upwardly in the slot 58 into engagement with the curved surface of cam projection 86 on the roll back 76 thereby shifting the roll back laterally, see Fig. 10. This movement of the roll back will force the coupling member 77 substantially out of the slot or aperture 78 in the sleeve 72, thus disconnecting the roll back from the sleeve and from the outer handle shaft 69. With the roll back in the position shown in Fig. 10 the outer handle is in free turning position so that when the outer handle is turned it, together with its shank 70 and sleeve 72, will turn freely within the roll back. Thus, the inner handle may be manipulated to disconnect the roll back and latch operating mechanism from the outer handle rendering the same inoperative.

With the parts in the position shown in Fig. 4 where the roll back is coupled to the sleeve 72, the outer handle 27 may be turned so as to rock the roll back 76. This operation causes the cam 83 in engagement with contact piece 84 to shift the slide 59 downwardly. This movement of the slide will be transmitted to the crank arm 66 through the actuating piece 64 on the lower end of the slide 59. This actuation of the latch bolt to open the door by manipulation of the outer handle is entirely independent of the inner handle since the slide 59 is capable of vertical movement independently of the slide 53 when the outer handle is manipulated.

Where the outer handle is provided with a key lock for locking the door on the outside, as illustrated in this embodiment, the roll back 76 may be uncoupled from the sleeve 72 by turning the key 90 so as to rotate the eccentric pin 92. This movement of the eccentric pin within the hole 93 will shift the slide piece 94 laterally

against the lug 77 thereby forcing the roll back laterally and the lug 77 out of the slot 78, see especially Figs. 9 and 11. Thus, by locking the door in this manner the outer handle 26 will be disengaged from the roll back and latch bolt mechanism, permitting the handle to turn freely. It will be understood that when the key 90 is turned in the opposite direction to unlock the door by shifting the slide piece 94 to the normal position shown in Fig. 4, or when the inner handle 25 is moved upwardly to its normal full line position of Fig. 7 thereby returning the actuating piece 57 to its normal position shown in Figs. 4 and 6, the roll back will be returned into coupled engagement with the sleeve 72 by the return spring 79.

Where the door is provided with an outside key controlled lock, as in the case of one of the front doors of closed automobiles, means is provided in the present instance for preventing the passenger from locking himself out in the event the door is closed at a time when the inner handle is in depressed position. When the outer handle is in free turning position and the inner handle is in its depressed position shown in Fig. 10 it will be noted that the slide 53 is in elevated position at which time the contact piece 97 underlies the latch bolt actuating arm 66. Should the door be closed with the parts in this position, the latch bolt shaft 29 will be rocked thus swinging the arm 66 downwardly, and this movement of the arm will be transmitted to the slide 53 through the contact piece 97 thus forcing the lug or tongue 57 downwardly out of engagement with the roll back cam 86. Hence, any independent actuation of the latch bolt mechanism, as by closing the door when the outer handle is in free turning position resulting from the manipulation of the inner handle, the latter will be returned to its normal position and the roll back will be coupled with the outer handle shaft.

When the outer handle is in free turning position it is preferred that the coupling lug 77 of the roll back be engaged slightly within the slot 78 of the sleeve 72, as illustrated in Fig. 11. Accordingly the inner end of the lug 77 is beveled to provide a tapered cam surface projecting within the slot 78 and held against the edge of the slot by the force of the spring 79. By this construction the outer handle, in free turning position, will not be loose so as to turn of its own accord. When, however, pressure is applied to the handle to turn it, the inner cam end of the lug 77 will cam itself out of the slot in the sleeve thus disconnecting the parts. A complete turn of the handle will bring the lug opposite the slot 78 again at which time it will be partially forced into the slot thereby holding the handle in its normal horizontal position.

It will be understood that where the key controlled locking means 89–91 is omitted, the contact piece 97 will ordinarily be omitted from the slide 53, permitting the door, when locked by the inner handle, to be closed without unlocking the outer handle. The foregoing embodiment of the invention is particularly adaptable for use in connection with automobile doors where it is desired to arrange the latch mechanism so as to straddle the glass runway G, see Fig. 2. In constructions of this type the inner and outer handles lie at opposite sides of the glass and glass runway of the door and it is desirable that the operating mechanism for the latch bolt, controlled by each of the handles, be constructed so as to extend around the runway. The present invention thus provides a latch bolt operating mechanism of improved construction which is adapted to straddle the glass runway to permit operation of the mechanism from the inside and outside of the door without interference with the runway.

Referring to the embodiment illustrated in Figs. 12 to 16 inclusive, in this instance the inner handle 25 is remotely located with respect to the latch mechanism and the outer handle 26 has its shaft 69' reduced to provide a shank 70' extending transversely of the door pillar, as illustrated in Fig. 13. The latch mechanism in this instance is carried by a case plate 104 secured to the inner side of the door pillar 23a and having a flanged side 104a at the inner side of the pillar. The latch bolt including its shaft 29 is constructed in the same manner as previously described, and as in the previous embodiment the inner end of the shaft shank 70' is provided with longitudinal key ways into which fit the keys 73' of the sleeve 72'. The roll back 76' is also substantially similar in construction and mode of operation to the roll back 76 in the previous embodiment and is provided with a coupling lug 77' shiftable into and out of a slot or opening in the sleeve 72'. The roll back is also provided with an actuating cam 83' and has a projection 105 forming a seat for a return spring 106, this spring functioning in the same manner as the spring 79 in the previous embodiment. The latch bolt is normally held in latching position by means of a coil spring 67' one end of which is anchored to the case plate at 108 and the other end anchored in a hole 108a in the shaft.

The latch bolt is rotated from the inner and outer handles by means of a three-arm lever 109, one arm 110 of which engages beneath the cam 83', and another arm 111 of which is engaged by the lower cam-shaped end of a member 113 engaging a crank pin 114 fixed to the shaft 29. The lever 109 is pivoted to the case plate on a stud 112 and has a depending arm 115 normally engaged at its front edge by a projection or abutment 116 formed in the forward edge of a hanger link 117 pivoted on the stud 112. Pivoted at 118 to the lower end of this link is a link 119 extending longitudinally of the door and pivoted at its end 120 to the lower end of a lever 121. The upper end of this lever is fixed to a shaft 122 extending through the inner panel of the door. The handle 25 is fastened to the outer end of this shaft.

The roll back 76' may be shifted laterally to disconnect it from the outer handle shaft 70' by means of a cam slide 123. This slide has a guide slot 124 cooperating with a guide stud 125 secured to the case plate. An actuating rod 126 is threaded into the upper flanged end of the slide 123 and projects through the flanged opening in the inside window sill D of the door, the upper end of the rod having a nob 126a which may be readily grasped for shifting the slide upwardly or downwardly. The slide 123 has a lost motion slot 127 into which projects a crank pin 128 fixed into the shaft 29. The lower end of the slide 123 has a cam face 129 adapted to coact with the cam face 130 on the roll back cam 83'.

Assuming that the roll back is coupled to the shank 70' of the outer handle shaft, it will be seen that by turning the outer handle the cam 83' will depress the arm 110 of lever 109 whereby upward movement of the arm 111 against the cam 113 will rock the latch bolt shaft through the crank pin connection 114, thus unlatching the bolt. When the inner handle 25 is moved to the dotted line position the lever 109 will be shifted in the same

manner to unlatch the bolt by virtue of the engagement of abutment 116 with the arm 115 of the lever. As a result of this construction either handle may be turned to operate the latch bolt independently of the other handle. When it is desired to render the outer handle inoperative the plunger 126 may be pushed downwardly whereby engagement of the cam faces 129 and 130 will shift the roll back laterally so as to disconnect the dog 77' from the slot in the sleeve 72', as in the manner previously described. The lost motion slot 127 permits downward movement of slide 123 relatively to the shaft 29. However, with the slide in its lowermost position, independent oscillation of the latch bolt as by closing the door will cause the crank pin 128, acting against the upper edge of slot 127 to shift the slide vertically into the position shown in Fig. 12 at which time the roll back will be coupled to the outer handle shaft. Where the outer handle 26 is not provided with a key lock the pin 128 for returning the roll back to normal position may be omitted, this pin functioning the same as the part 97 in the previous embodiment. In this instance the outer handle is provided with a key lock constructed the same as in the previous embodiment and operable, when the key is turned, to shift the slide piece 94 so as to disengage the roll back.

The roll back mechanism is mounted within a casing 131 secured to the side 104a of the case plate. Mounted on the face of the casing 131 is a housing plate 132 provided with flanges 132a spot welded to the side of the casing 131. This housing has a circular opening 133 of a diameter to receive the handle shank 70' and the collar 74' thereon, this collar corresponding to the collar 74 in the previous embodiment. Within the housing plate 132 is located a slidable coupling member 134. This member has an opening 135 corresponding to the diameter of the collar 74' of the shank and a smaller opening 136 corresponding to the diameter of the shank 70'. The member 134 terminates in an angular extension 137 notched at 138 to receive a spring 139, the ends of the spring being anchored at 140 to the slotted end of the plate 132. The extension piece 137 is guided in this slot and the member 134 may be shifted inwardly against the spring by inserting an implement through the opening 142 in the door jamb into engagement with a bent tongue 141 in alinement with this opening and normally positioned within a corresponding opening in the case plate 104. It will be readily seen that by shifting the coupling slide 134 inwardly so as to aline the large opening 135 with the collar 74', the outer handle may be grasped and the shaft entirely withdrawn from the door. Hence, the shaft may be readily assembled by sliding it into the sleeve 72' into engagement with the keys 73', whereupon the member 134 is released so that the opening 136 will embrace the shaft in advance of the collar 74', thus locking the parts together.

I claim:

1. A door latch mechanism comprising a latch bolt oscillatable on a horizontal axis, an oscillatable handle shaft, a roll back connected to said shaft, means including a crank connected to said bolt for oscillating the latter from said handle shaft, and means operable to shift said roll back transversely with relation to the axis of said shaft for disconnecting said roll back from said handle shaft.

2. In a latch mechanism for a door, a latch bolt shaft oscillatable on a horizontal axis, a handle having a rotatable shaft extending at right angles to said latch bolt shaft, a crank on said latch bolt shaft for oscillating the latter, means on said handle shaft for operating said crank, and means operable to shift the first named means transversely with relation to the axis of said handle shaft for disconnecting said first means from the handle shaft.

3. In a latch mechanism for a door and stationary jamb, a keeper plate carried by said jamb and having a horizontal channel way extending transversely of the door, said channel way having a pair of similar latch receiving recesses at one longitudinal side thereof and terminating at its inner end in a socket in rear of said recesses, a cylindrical horizontal latch bolt rotatable on its axis, the end of said bolt being slidable through said channel way and having an angularly extending latching member shiftable into and out of said recesses, and movable means rigidly supported on said jamb and cooperating with the end of said bolt for maintaining the same in fixed position within said socket.

4. In a latch mechanism for a door and stationary jamb, a keeper plate carried by said jamb and having a horizontal channel way extending transversely of the door, said channel way having a pair of wedge shaped latch receiving recesses at one longitudinal side thereof and terminating at its inner end in a socket in rear of said recesses, a cylindrical horizontal latch bolt rotatable on its axis, the end of said bolt being slidable through said channel way and having an angularly extending latching member shiftable into and out of said recesses, and an eccentric roll mounted on the jamb and having a part projecting into said channel way in the path of the end of said bolt for rigidly supporting the same within said socket.

5. A latch bolt mechanism for a door in which the latch bolt is rotatable on a horizontal axis extending longitudinally of the door and including outer and inner shafts and handles for operating said shafts; a roll back mounted on said outer shaft and shiftable transversely of the axis thereof, a shiftable member adapted to be operated selectively by said roll back and by the inner shaft, a crank arm fixed to said bolt and operated by said member for rotating said bolt, and means for shifting said roll back relatively to the outer shaft for disconnecting the roll back from said shaft to permit free turning of said outer shaft.

6. A latch bolt mechanism for a door in which the latch bolt is rotatable on a horizontal axis extending longitudinally of the door and including an outer handle having a shaft and an inner handle having a shaft; a roll back on the outer shaft and shiftable transversely of the axis thereof, a shiftable member adapted to be operated selectively by said roll back and by the inner shaft, a crank arm fixed to the latch bolt and operated by said shiftable member for rotating said bolt, means movable in one direction for shifting said roll back relatively to the outer shaft to disengage the roll back from said shaft and permit free turning of the outer shaft, a spring for returning said roll back, and means operated upon independent movement of said bolt for moving said first means in the opposite direction thereby permitting the spring to return the roll back into engagement with the outer shaft.

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