Sept. 23, 1941. H. W. RIGHTMYER 2,256,909

LATCHING DEVICE

Filed Dec. 6, 1938 3 Sheets-Sheet 1

FIG. 1.

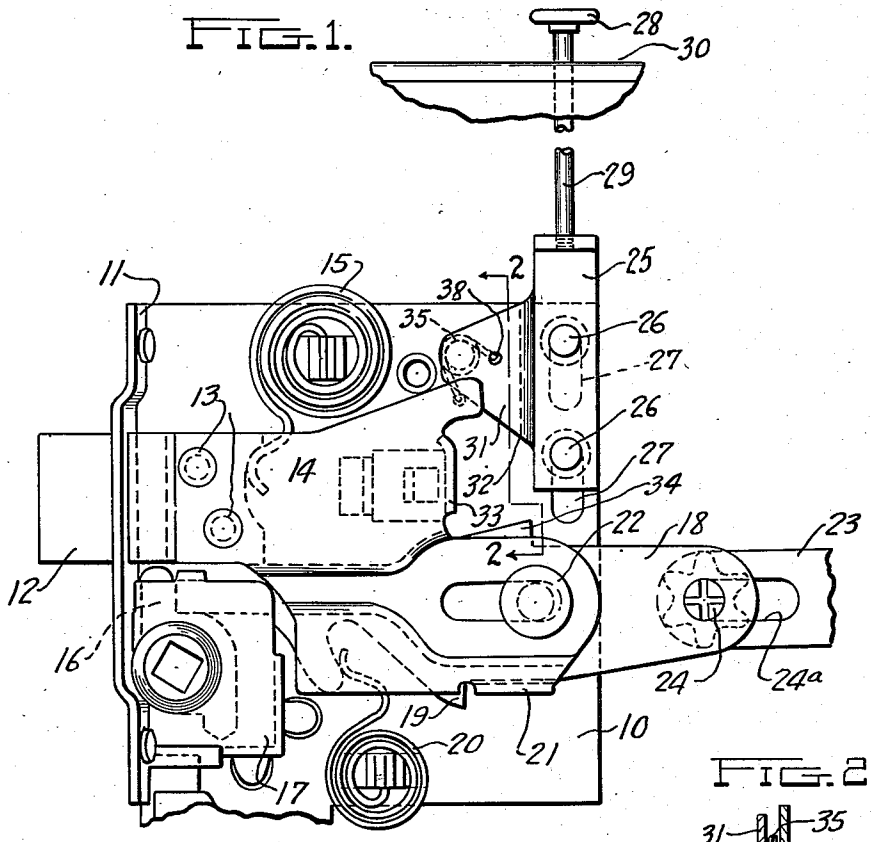


FIG. 2.

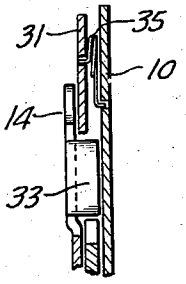


FIG. 3.

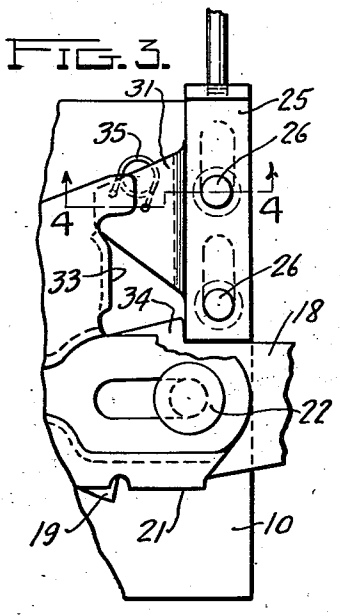
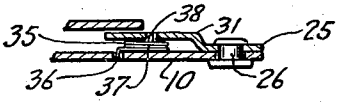


FIG. 4.



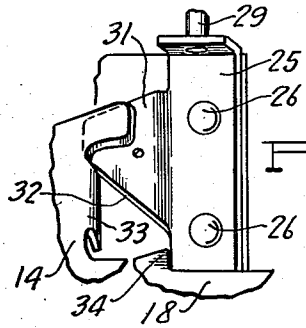


FIG. 5.

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LATCHING DEVICE

Filed Dec. 6, 1938 3 Sheets-Sheet 2

FIG. 7.

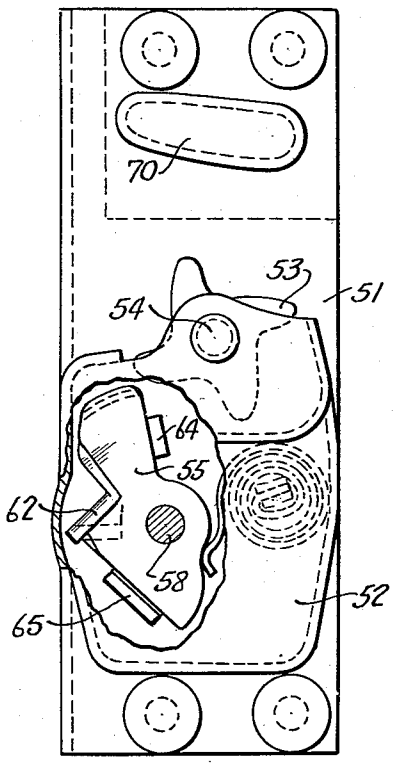
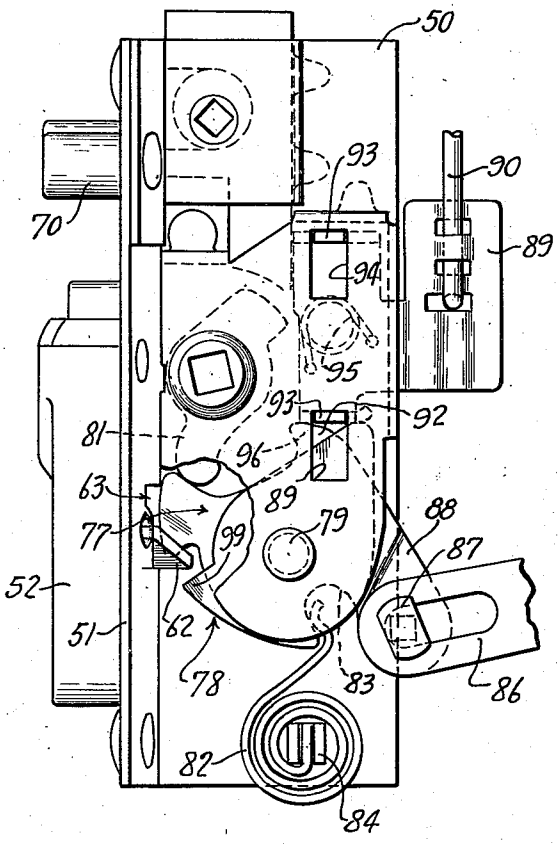


FIG. 6.



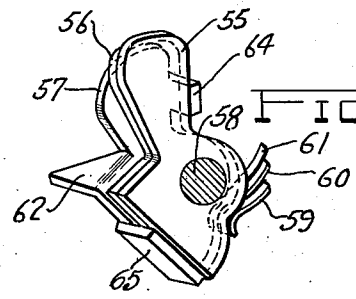


FIG. 8.

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Sept. 23, 1941. H. W. RIGHTMYER 2,256,909

LATCHING DEVICE

Filed Dec. 6, 1938 3 Sheets-Sheet 3

FIG. 10.

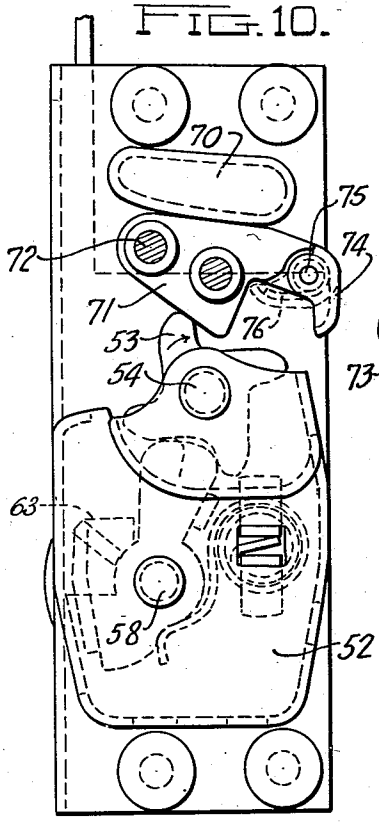


FIG. 9.

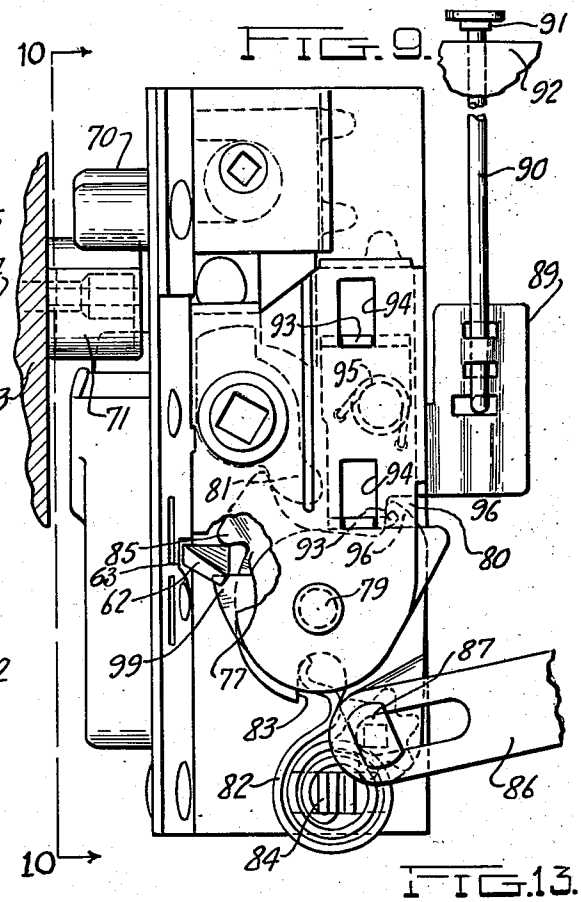


FIG. 13.

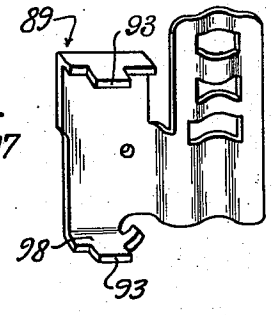


FIG. 11.

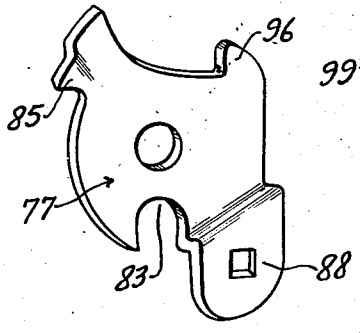
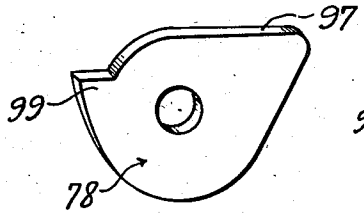


FIG. 12.



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UNITED STATES PATENT OFFICE

2,256,909

LATCHING DEVICE

Holden W. Rightmyer, Toledo, Ohio, assignor to The American Swiss Company, Toledo, Ohio, a corporation of Ohio

Application December 6, 1938, Serial No. 244,189

2 Claims. (Cl. 292—167)

This invention relates to vehicle door latches but more particularly to latches for automobile doors in which the latch bolt may be retracted from the inside or outside of the door at points spaced longitudinally of the automobile.

An object of this invention is to produce a new and improved door latch mechanism in which the inside operated and outside operated bolt retractors may be simultaneously dogged, slam unlocking being provided so that upon slamming of the door, both retractors are concomittantly rendered operative.

Another object of the invention is to produce a simple and efficient door latch mechanism having the new and improved features of construction, arrangement and operation hereinafter described and for purposes of illustration but not of limitation, embodiments of the invention are shown on the accompanying drawings in which

Figure 1 is a side elevation of a door latch mechanism, the inside operated remote control parts being broken away;

Figure 2 is a vertical sectional view on the line 2—2 of Figure 1;

Figure 3 is a fragmentary elevation showing the dogging slide in dogging position;

Figure 4 is a transverse sectional view on the line 4—4 of Figure 3;

Figure 5 is a perspective view of the dogging slide and adjacent portion of the latch bolt, the slide being shown in dogging position;

Figure 6 is an elevational view of another form of door latch, the inside operated remote control being broken away, the bolt being released to rotate freely;

Figure 7 is a face view of the lock shown in Figure 6, a part being broken away to show some of the parts more clearly;

Figure 8 is a perspective view of the bolt engaging levers;

Figure 9 is a view similar to Figure 6 with the addition of the keeper structure showing the parts in dogged position, the inside and outside operated retractors being blocked against retracting movement;

Figure 10 is an elevational view of the face or front end of the latch and constituting a section substantially on the line 10—10 of Figure 9;

Figure 11 is a perspective view of the bolt lever operating plate;

Figure 12 is a perspective view of the dogging plate; and

Figure 13 is a perspective view of the dogging slide.

The illustrated embodiment of the invention shown in Figures 1 to 5 comprises a case plate 10 having a selvage plate 11 at one edge suitably apertured to receive the bolt nose 12 which is slidable therethrough to and from latching position. The bolt nose 12 is secured by rivets 13 to a bolt plate 14, a spiral spring 15 anchored at one end to the case plate 10 has its free end bearing against the rear face of the bolt nose 12 for urging the latter to latching position. The latch bolt is retracted from the outside of the door by a roll back arm 16 which is disposed within a cover plate 17 suitably secured to the case plate 10.

A slide 18 is disposed beneath the bolt plate 14, and has its front end yieldingly held against the roll back arm 16 by a spiral spring 20. The slide 18 has a projecting lug 19 which is adapted to engage a downwardly turned flange 21 on the bolt plate 14, so that when the roll back arm is turned, movement will be imparted to retract the bolt nose 12 by means of slide 18, lug 19, flange 21 and bolt plate 14. A rivet 22 is attached to the case plate 10, and passes through suitable slots in the slide 18, and the bolt plate 14, to guide and limit the movement of these members. A remote control link 23 is attached to the slide 18 by means of a rivet 24 extending through a slot 24a in the link and is operable by suitable remote control mechanism (not shown) mounted on the inside of the door.

A dogging slide 25 is also mounted on the case plate 10 by means of rivets 26 which slide in elongate holes 27 in the case plate 10. This slide 25 is operated by a push button 28 mounted on a rod 29 which extends through the window sill 30 and is movable at substantially right angles to the retracting movement of the latch bolt.

The slide 25 is provided with a laterally extending lug 31 which has an inclined edge 32 adapted to engage a downwardly extending lug 33 on the bolt plate 14, when the slide is in dogging position as shown in Figures 3, 4 and 5. As illustrated in Figure 3, the slide 18 is provided with an upwardly extending lug 34 which engages the lower part of the slide 25 where the latter is pushed downwardly into dogging position, thereby blocking retraction of the latch by the outside operated roll back 16 or the inside operated remote control link 23.

A coil spring 35 disposed between the dogging slide 25 and the case plate 10 is provided with out-turned ends 36 and 38 which extend into holes 37 in the case plate 10 and the dogging slide 25 respectively. Owing to the toggle action of this spring 35, the dogging slide 25 can never remain in an intermediate position, but is always urged

to its extreme upper or lower locations as limited by the action of rivets 26 in the slots 27.

When the parts are in the positions as shown in Figures 3 and 5, the roll back arm can not turn because of the blocking of slide 18 by the dogging slide 25. When the door is slammed the bolt nose 12 will be forced in together with the bolt plate 14 and due to the camming action of the lug 33 against the edge 32 of the lug 31, carried by the dogging slide 25, the latter is raised out of engagement with the lug 34 on the slide 18, and is then moved into extreme upper position by the action of the spring 35. The retracting mechanisms of the latch are thereupon rendered operable.

From the above description it will be clear to those skilled in the art that by the operation of push button 28 both the roll back operation and remote control means will be simultaneously dogged, but that slamming the door will free the retracting mechanisms.

In the type of latch as illustrated in Figures 6 to 12 inclusive, a case plate 50 is connected with a selvage plate 51, to which is suitably attached a housing 52 for carrying the bolt mechanisms. A rotatable bolt 53 is mounted on a rivet 54 passing through the selvage plate 51 and the housing 52. A series of bolt engaging levers 55, 56 and 57 are rotatably mounted on a rivet 58, and urged toward the bolt 53 by springs 59, 60 and 61. A lug 62 is carried by the lever 57, and extends through a slot 63 in the selvage plate 51. Lever 57 also has lugs 64 and 65 turned up therefrom so as to engage the levers 55 and 56 to prevent relative movements in either direction.

As shown in Figures 9 and 10, a rubber cushion 70 is attached to the selvage plate 51 and a keeper 71 is attached by screws 72 to the door jamb 73. The keeper 71 has a rotatable nose portion 74 adapted to swing about a rivet 75 against the pressure of a coil spring 76. When the door is closed with insufficient force to effect a complete latching action, the extending arm of the bolt 53 will drop back of the nose portion 74 thus effecting a safety catch. When the bolt engaging levers are in the positions as shown in Figure 10, they form a locking means against counterclockwise rotation of the bolt 53.

As shown in Figure 8, the top surfaces of levers 55, 56, and 57 are at different radial distances from the center of the rivet 58. This construction permits the levers 55, 56 and 57 to successively fall into position under the arms of the rotatable bolt 53, being individually urged by springs 59, 60 and 61. The shortest lever 57 will, of course, slide under the bolt arm first and will tend to force it upward, thus by rotation simultaneously forcing the upwardly extending arm against the surface of the keeper 71. In a similar manner the next longest lever 56 will be gradually forced into position, followed by the longest lever 55; each successive lever causing a progressive camming action against the arm of the rotatable bolt 53, and causing the arm of this bolt which contacts the keeper 71 to exert increasing pressure thereagainst to the end that the vehicle door is kept firmly closed at all times, and looseness or rattle is eliminated. All of the levers 55, 56 and 57 are capable of being rotated simultaneously out of engagement with the bolt 53 by means of the lug 62 which extends through the selvage plate 51.

Mounted on the case plate 50 is a bolt lever operating plate 77 and a dogging plate 78. Both of these plates are rotatable about a rivet 79 attached to the case plate 50 and passing through a cover plate 80, which is suitably fastened to the case plate 50. The bolt lever operating plate 77 is urged against the roll back arm 81 by a spring 82 which engages a notch 83 in the bolt lever operating plate and is attached as at 84 to the case plate 50. A nose portion 85 on the bolt lever operating plate 77 is adapted to engage the lug 62 on the lever 57, which through the pressure of lug 64 against levers 55 and 56 is capable of moving all three levers simultaneously out of engagement with the bolt 53, which is then free to rotate.

A remote control link 86 is attached by a rivet 87 to a lug 88 on the bolt lever operating plate 77 and acts to cause rotation in the same direction as that caused by the pressure of roll back arm 81. A dogging slide 89 is slidably disposed below the cover plate 80 and is operable by means of a rod 90 and a push button 91 which projects above the sill 92.

This slide has projecting tongues 93 extending through slots 94 in the cover plate 80 and is forced into extreme up and down positions by means of a toggle spring 95. The bolt lever operating plate 77 has a projecting lug 96 and the dogging plate 78 has an upper surface 97 both of which are in contact with a turned up portion 98 on the dogging slide 89 when in dogging position, the lug 96 providing a positive lock against rotation of the bolt lever operating plate 77.

The dogging plate 78 has a lug 99 which is normally positioned just below the lug 62 on the camming lever 57. When the door is slammed a clockwise rotation of the bolt 53 takes place and by means of the downwardly extending arm on the bolt 53, the levers 55, 56 and 57 are rotated in a counterclockwise direction around the rivet 58. As the lug 62 moves downward from the position shown in Figure 9, pressure is exerted against the lug 99 on the dogging plate 78 which pressure rotates that plate about the rivet 79 and by the action of the surface 97 against the turned up portion 98 on the dogging slide 89, moves the latter upwardly till it is out of engagement with the lug 96 on the bolt lever operating plate 77, which is thus free to rotate, this action being clearly illustrated in Figure 6.

From the above description it will be seen that both the roll back and the remote control can be simultaneously dogged by means of the push button 91, dogging slide 89 and associated parts, but that upon slamming of the door the retractors are again rendered operative.

It is to be understood that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claims.

What I claim is:

1. In an automobile door latch, a bolt member, inside and outside operators including an inside reciprocating link and an outside roll back arm, a movable device adapted to be actuated to render said bolt member ineffective to restrain the door, means for operatively connecting said inside link and said outside roll back arm to said movable device to enable said operators to so actuate the movable device, a single control device normally in a position where it is disconnected from said movable device but adapted to be moved through a path arranged at right angles to the roll back axis into a position where it will operate to prevent movement of the movable device and also prevent to inside link and the out-

side roll back from actuating said movable device, a single spring for holding the control device in both of said positions, and means operated by slamming of the door to move the single control device into its normal position where it is disconnected from said movable device.

2. In an automobile door latch, a rectilinearly slidable bolt member, inside and outside operators including an inside reciprocating link and an outside roll back arm, a slidable plate adapted to be actuated to render said bolt member ineffective to restrain the door, means for operatively connecting said inside link and said outside roll back arm to said slidable plate to enable said operators to so actuate the slidable plate, a slide normally in a position where it is disconnected from said plate but adapted to be moved through a path arranged at right angles to the roll back axis into a position where it will operate to prevent movement of said plate and also prevent the inside link and the outside roll back from actuating said plate, a single spring for holding the slide in both of said positions, and means operated by slamming of the door to move the slide into its normal position where it is disconnected from said slidable plate.

HOLDEN W. RIGHTMYER.