Oct. 31, 1939. H. W. RIGHTMYER 2,178,530

LATCH FOR AUTOMOBILE DOORS

Filed Aug. 17, 1938

FIG. 1.

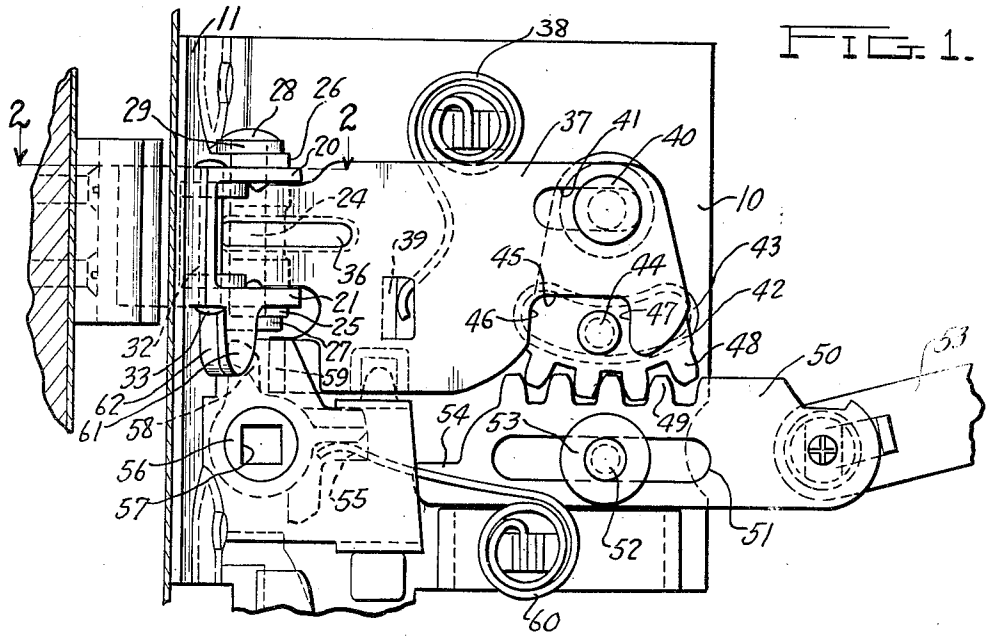


FIG. 3.

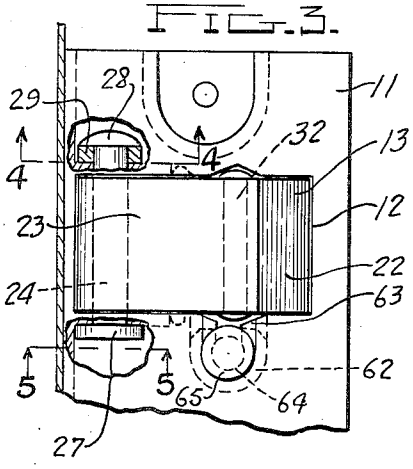


FIG. 2.

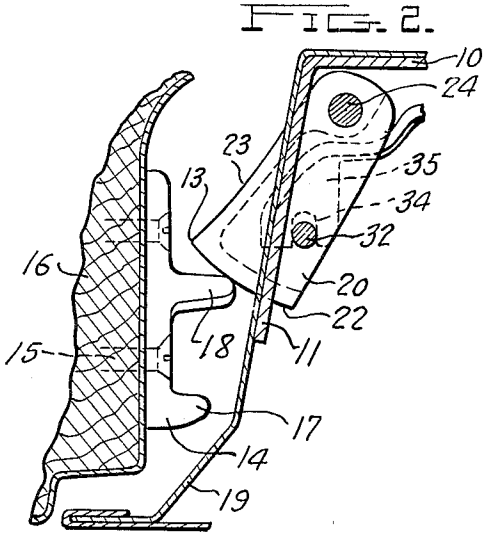


FIG. 4.

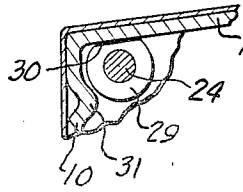
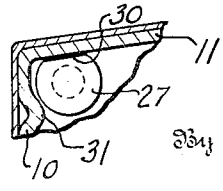


FIG. 5



Inventor
Holden W. Rightmyer

By

Attorney

Patented Oct. 31, 1939

2,178,530

UNITED STATES PATENT OFFICE

2,178,530

LATCH FOR AUTOMOBILE DOORS

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

Application August 17, 1938, Serial No. 225,379

4 Claims. (Cl. 292—220)

This invention relates to door latches particularly designed for use on automobiles and similar vehicles and an object is to produce a simple and efficient door latch having the new and improved features of construction, arrangement and operation hereinafter described.

For purposes of illustration, an embodiment of the invention is shown on the accompanying drawing in which

Figure 1 is a side elevation of a door latch and its keeper, portions of the structure being broken away, such, for example, as the inside operated remote control unit;

Figure 2 is a transverse sectional elevation substantially on the line 2—2 of Figure 1;

Figure 3 is a fragmentary elevation of the outer end of the face plate showing the latch bolt structure, parts being broken away to show the latch supporting pivot pin;

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

Figure 5 is a transverse sectional view on the line 5—5 of Figure 3.

The illustrated embodiment of the invention comprises a latch bolt having a main plate 10 which is mounted in any suitable manner on the door of the vehicle. The main plate has an outwardly inclined face plate 11 formed with an opening 12 to admit a pivoted latch bolt 13 which, as indicated in Figure 2, is adapted to cooperate with a keeper 14 suitably secured by screws 15 to the body structure 16 of the vehicle. The keeper includes an outwardly extending ridge 17 which is adapted to cooperate with the bolt 13 to provide the usual safety catch and spaced laterally from the ridge 17 and projecting a greater distance from the body structure 16 is a ridge 18 with which the latch bolt 13 engages when the door 19 is in its completely closed condition. Only portions of the door 19 and body 16 are illustrated but will be sufficient to illustrate the manner in which the parts are mounted in use.

The latch bolt 13 comprises a pair of side walls 20 and 21, a curved keeper engaging wall 22 and a curved outer wall 23 which initially engages the keeper upon slamming of the door. The bolt 13 is pivotally mounted on a pin 24 which extends through openings in the inner end of the bolt and also through openings formed in laterally spaced ears 25 and 26 which are preferably struck out of the case plate 11. The pin 24 is formed at one end with a head 27 and the opposite end of the pin is upset as indicated at 28, a washer 29 being interposed between the upset end and the adjacent ear 26. As shown particularly in Figures 4 and 5, the washer 29 and head 27 are generally annular in shape but each is formed with a flattened portion 30 which abuts against the face plate 11 for convenience in assembly. Directly in rear of the head 27 and washer 29 and forming a back therefor is an embossed portion 31 extending outwardly from the main plate 10 and positioned to absorb some of the shock imparted to the pin 24 by the latch bolt 13 during slamming of the door or other actuation of the latch bolt.

Spaced outwardly from the pin 24 and extending through the side walls 20 and 21 of the latch bolt is a pin 32 having upset ends 33. The pin 32 engages in a groove 34 of a bolt plate extension 35 which extends inwardly and rearwardly as indicated in Figure 2 and has a strengthening rib 36. The extension 35 is integral with the bolt plate 37 which is mounted for sliding movements over the main plate 10. A spiral spring 38 has one end anchored to the main plate 10 and the opposite end engaging an ear 39 struck out of the bolt plate 37, the spring 38 urging the bolt plate 37 to the left of Figure 1 and yieldingly retaining the latch bolt 13 in its normal or projected latching position. Guiding of the bolt plate 37 is accomplished by a stud 40 which is secured to the main plate and has its shank disposed in a longitudinally elongate slot 41 formed in the bolt plate. The stud 40 cooperates with the slot 41 in limiting the movement of the bolt plate 37.

Disposed between the bolt plate 37 and the main plate 10 is a sector 42 which slidably engages the outwardly embossed portion 43 on the main plate 10. Projecting outwardly from the outer face of the sector 42 is a stud 44 which has limited movement within a cutout 45 of the bolt plate 37 which provides oppositely disposed shoulders 46 and 47. The lower end of the sector 42 is formed with an arcuate series of teeth 48 which mesh with rack teeth 49 formed on a slide plate 50. The slide plate 50 has a longitudinally elongate slot 51 in which the shank of a stud 52 secured to the main plate 10, is disposed, a spring washer 53 being disposed between the head of the stud 52 and the plate 50 for preventing rattling of the parts. Pivotally connected to the outer end of the slide plate 50 is a link 53 which extends to a suitable remote control mechanism (not shown) disposed on the inside of the door and having the usual operating handle for retracting the latch bolt and for actuating the slide 50 to dog or block movement of the outside operated handle as will hereinafter appear.

Formed on the forward end of the slide plate 50 is a finger 54 which is movable into a position beneath an arm 55 of the outside operated roll back 56 which is formed with a squared opening 57 to receive a handle shaft (not shown) equipped with an operating handle arranged on the outside of the door as will be readily understood.

The roll back 56 has a retracting arm 58 which is engageable with a flange 59 on the bolt plate 37 so that upon clockwise rotation (Figure 1) of the roll back, the bolt plate 37 is moved to the right of the figure thereby retracting the pivoted latch bolt 13 as will be readily understood. The detail construction of the roll back 56 is well-known to those skilled in this art and since it forms no part of the present invention, detail description and illustration is not considered necessary. A spiral spring 60 mounted on the main plate 10 engages the roll back for holding the parts thereof in the desired position and eliminating rattles.

In order to cushion the movement of the latch bolt 13 to latching position, a flange 61 projects laterally from the side wall 21 of the latch bolt. The inner face of the flange 61 is adapted to engage a rubber bumper 62 which is mounted on the face plate 11. As shown on Figure 3, a notch 63 projects from the opening 12 in the face plate 11 to enable mounting of the bumper which is made up of the body portion 62, reduced neck 64 and an outer annular head 65. In mounting the bumper, the neck 64 is forced into the notch 63, the head 65 being disposed on the outer side of the face plate and the main cushioning body 62 on the inside of the face plate.

In the operation of the above described latch, it will be apparent that the latch bolt can be retracted from the outside of the door by operation of the roll back 56 by rotating the latter so that the arm 58 engaging against the shoulder or flange 59 forces the bolt plate 37 to the right of Figure 1 against the force of the spring 38 and thereby causing the latch bolt 13 to rock upon its pivot pin 24 through the connections described. In order to retract the latch bolt from the inside of the door, the link 53 is moved to the right of Figure 1 thereby causing the slide 50 to rock the sector 42 in a counterclockwise direction, the stud 44 engaging the shoulder 47 of the bolt plate 37 and thereby retracting the bolt.

When it is desired to dog the outside operated roll back 56, the link 53 is moved in a non-bolt retracting direction or to the left of Figure 1 thereby moving the finger 54 beneath the arm 55 of the roll back and accordingly blocking movement of the latter. When the roll back is dogged, the stud 44 is disposed in abutting relation to the shoulder 46 in the bolt plate so that upon slamming of the door, the shoulder 46 moving with the bolt plate 37 to the right of Figure 1, rocks the sector 42 in a counterclockwise direction thereby moving the slide plate 50 to the right of the figure and accordingly moving the finger 54 away from the roll back. It will thus be apparent that slam unlocking is obtained.

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

What I claim is:

1. A vehicle door latch comprising a spring tensioned latch bolt, an outside operated retractor for said bolt, and an inside operated retractor for said bolt including an arm pivoted at one end, a longitudinally slidable plate, means on said plate for dogging said outside retractor upon movement in one direction, gear teeth providing a connection between the other end of said arm and plate causing conjoint movement thereof, and a lateral projection on said arm engageable with the bolt to retract same and disposable in the path of movement of the bolt when in dogging position, thereby to provide for slam undogging.

2. A vehicle door latch comprising a spring tensioned latch bolt, an outside operated reractor for said bolt, and an inside operated retractor for said bolt including an arm pivoted at one end, a stud providing the pivot for said arm also serving as a guide for said latch bolt, a longitudinally slidable plate, means on said plate for dogging said outside retractor upon movement in one direction, a positive connection between the other end of said arm and plate causing conjoint movement thereof, and a lateral projection on said arm engageable with the bolt to retract same and movable into the path of movement of the bolt when in dogging position, thereby to provide for slam undogging.

3. A vehicle door latch comprising a spring tensioned latch bolt, said latch bolt including a slidable bolt plate and a pivoted bolt nose actuated in response to sliding movement of said plate, an outside operated retractor for said bolt, and an inside operated retractor for said bolt including an arm pivoted at one end, a longitudinally slidable plate, means on said plate for dogging said outside retractor upon movement in one direction, a positive connection between the other end of said arm and plate causing conjoint movement thereof, and a lateral projection on said arm engageable with the bolt to retract same and movable into the path of movement of the bolt when in dogging position, thereby to provide for slam undogging.

4. A vehicle door latch comprising a spring tensioned latch bolt, an outside operated retractor for said bolt, and an inside operated retractor for said bolt including an arm pivoted at one end, a stud providing the pivot for said arm also serving as a guide for said latch bolt, said bolt having a cut out portion providing opposed shoulders, a longitudinally slidable plate, means on said plate for dogging said outside retractor upon movement in one direction, gear teeth on said arm and plate respectively and in mesh with each other for causing conjoint movement thereof, and a pin on said arm extending into said cut out portion to cooperate with said shoulders, whereby upon movement of said plate to dogging position said pin is disposed adjacent one shoulder for cooperation therewith to effect slam undogging when the latch bolt is retracted and said pin cooperates with the other shoulder for retracting the bolt by movement of said plate away from dogging position.

HOLDEN W. RIGHTMYER.