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VEHICLE DOOR LATCH

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This invention relates to door latches for vehicles such as automobiles and an object is to produce a door latch which is easy acting enabling the door to be slammed shut without excessive force and permitting an easier retraction of the latch bolt.

Another object is to produce a door latch of the above character embodying a sliding latch bolt of the usual type which is urged to projected or latching position by a spring, the pressure of which does not build up so as to make difficult the retraction of the latch bolt but on the contrary enables the bolt to be retracted much more easily and by a force which is comparatively uniform.

Another object is to produce a new and improved mounting for the usual spiral spring which functions to urge the latch bolt to its latching position with the view of enabling the latch bolt to be retracted more easily.

A still further object is to produce a new and improved dogging mechanism for the outside operated retractor or roll back which is movable to operative position by actuation of the inside operated handle in a reverse or non-bolt retracting direction.

Other objects of the invention reside in details of construction, arrangement and operation, and for purposes of illustration, an embodiment of the invention is shown on the accompanying drawing, in which

Figure 1 is a plan view of the door latch, a portion of the remote control strap and remote control mechanism being omitted; and

Fig. 2 is a view similar to Fig. 1 showing the dogging mechanism in its operative position, blocking movement of the outside operated roll back.

The illustrated embodiment of the invention comprises a door latch having a case plate 10 provided with a selvage plate 11 which is apertured to receive a bolt nose 12. The bolt nose 12 is secured to a bolt plate 13 by rivets 14. The bolt plate is guided in its movements to and from latching position by a stud 15, the shank of which is disposed in a horizontal slot 16 formed in the bolt plate 13. The movement of the bolt plate 13 to latching position is cushioned by a rubber bumper 17 which is fixed to an ear 18 integral with the case plate 10, the ear extending into the slot 16. Struck out of the bolt plate 13 is an ear 19 which abuts against the bumper 17.

An important feature of this invention resides in the mounting of a spiral spring 20 which operates to urge the bolt nose 12 into latching or projected position. Heretofore, it has been customary to secure one end of a spiral spring to the case plate and allow the opposite end to engage the rear face of the bolt nose. In retraction of the latch bolt either by slamming of the

door or by turning the inside or outside handle, the pressure exerted by the spring increases as the latch bolt is withdrawn. Consequently, a rather sizable force is necessary to move the bolt away from its keeper sufficiently to open the door. Then, too, in closing the door, it must be slammed with considerable force to allow the bolt to move rearwardly a sufficient distance to pass over and engage the keeper.

According to this invention, the spring is mounted in such a manner that the latch bolt can be retracted more easily, less force being required to retract the bolt, inasmuch as the spring pressure is comparatively uniform throughout the different positions of movement of the latch bolt. Although the spring pressure builds up slightly as the latch bolt is retracted, it does not build up anywhere near as much as the spring mounted in the customary manner as above pointed out. Since there is such a vast difference in spring pressure in accordance with the mounted spring, as will hereinafter be described, and that obtained under the ordinary conditions of mounting, and since there is but a slight differential in pressure in the various positions of the latch bolt, we refer to the spring pressure as being "comparatively uniform".

As shown, the spiral spring 20 has its inner end disposed between lugs 21 at one end portion of a plate 22, the opposite end of the spring fitting into a socket member 23 secured to the forward end of the bolt plate 13. The plate 22 is disposed in parallel relation to and subjacent to an upwardly embossed portion 24 of the bolt plate 13. As shown, the spring is mounted on an enlarged end of the plate 22 which tapers to a smaller end and the smaller end is pivotally mounted on the case plate 10 by a rivet 25. It will be understood that the coil spring 20 has a component of force urging the bolt nose 12 to latching position and as the bolt plate 13 moves to the right of the figure during the retraction of the bolt, the plate 22 moves accordingly and although during such movement the pressure of the spring 20 increases somewhat, the increase is not substantial so that in the various positions of the latch bolt, the spring pressure is comparatively uniform, thereby facilitating slamming of the door and manual retraction of the latch bolt. During retraction of the bolt the spring tension increases but since the angle of the line joining pivot 25 and socket 23 becomes more nearly vertical the pressure of the spring acting to project the bolt is maintained comparatively uniform.

The latch bolt is retracted from the outside of the door by a roll back 26 which engages a flange 27 on the bolt plate 13. The roll back 26 is mounted in a housing 28 which is secured by ears 29 extending through apertures in the case plate 10 and bent over the underside. Formed in the

roll back is a rectangular opening 30 to receive a similarly shaped handle shank, on the outer end of which is mounted a handle (not shown). It will be apparent that by turning the roll back 26, the latch bolt is retracted. In order to eliminate rattles and to hold the roll back in the proper position, a spring 31 has one end anchored to the case plate 10 and has its opposite end engaging an arm 32 integral with the roll back 26, an arcuate slot 33 being formed in the case plate to accommodate the swinging movement of the end of the spring 31 during movement of the arm 32.

The latch bolt is retracted from the inside of the door by the usual remote control handle (not shown) to which is suitably secured the outer end of a link or strap 34, having a pin and slot connection 35 with the bolt plate 13 affording movement of the strap in a non-bolt retracting direction independent of movement of the bolt plate 13. The strap 34 has a reduced extension 36 which terminates in a notch 37, a lug 38 depending from the rear edge of the notch 37.

It will be understood that when the strap 34 is moved to the right of the figure, the bolt nose 12 is retracted against the force of the spiral spring 20 and when the handle is released, the spring returns the bolt to its normal or latching position, such movement being limited by contact of the car 19 with the rubber bumper 17. When the strap 34 is moved by the remote control mechanism in the opposite or in a non-bolt retracting direction, the lug 38 first engages a finger 40 which extends upwardly and outwardly from the rear end of a dogging arm 41. The dogging arm 41 has an arcuately shaped slot 42 into which a stud 43 projects, the latter being fixed to the case plate 10. Upon movement of the strap 34 in the reverse or non-bolt retracting direction, the lug 38 engaging the projection 40 advances the arm 41 so that the stud 43 is disposed in the lower end of the slot 42 as shown in Fig. 2. Through the aid of a pin 44 projecting outwardly from the forward end of the arm 41 into a horizontally elongate slot 45 in the case plate 10, the arm is moved so that the forward end is disposed beneath the extension arm 32 of the roll back 26. In this position, the finger or projection 40 is disposed within a slot 37 and it will be apparent that clockwise turning movement of the roll back 26 is blocked.

It will be apparent that upon movement of the strap or link 34 in a bolt-retracting direction, the forward edge of the notch 37 will engage the extension 40 and rock or move the arm 41 to its normal inoperative position shown in Figure 1. It is also apparent that when the strap 34 is in its advanced position, as shown in Fig. 2, slamming of the door will operate to move the strap 34 to the right of the figures, thereby drawing the dogging arm 41 away from roll back blocking position. It is thus apparent that slam-unlocking is provided for.

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 we claim is:

1. In a vehicle door latch having a latch bolt, and inside and outside retractors for said latch bolt, a tensioned spring for urging the latch bolt to latching position and a mounting for said

spring separate from and movable with and in the same direction as said bolt upon actuation of the inside or outside retractor whereby a comparatively uniform pressure is exerted by the spring against the bolt in different retracted positions of the latter.

2. In a vehicle door latch having a latch bolt, and inside and outside retractors for said latch bolt, a tensioned spring for urging the latch bolt to latching position, and a pivoted mounting for said spring adapted to pivot upon retraction of said bolt and move said spring in the same direction as said bolt upon actuation of the inside or outside retractor.

3. In a vehicle door latch having a latch bolt, and inside and outside retractors for said latch bolt, a spring for tensioning said latch bolt, and a plate pivotally mounted at one end and on the opposite end of which the spring is mounted, the pivotal axis of said plate being at right angles to the plane of movement of said bolt.

4. In a vehicle door latch having a latch bolt, and inside and outside retractors for said latch bolt, a plate pivotally mounted at one end on an axis at right angles to the plane of movement of said bolt, and a spiral spring having one end anchored to the opposite end of said plate and the opposite end engaging said bolt for urging same toward latching position.

5. In a vehicle door latch having a latch bolt, and inside and outside retractors for said latch bolt, a plate pivotally mounted at one end on an axis at right angles to the plane of movement of said bolt, said plate being disposed parallel and subjacent to said bolt, and a spiral spring having one end anchored to the opposite end of said plate and the opposite end engaging said bolt for urging same toward latching position.

6. A vehicle door latch comprising a case plate, a spring tensioned latch bolt, an outside operated roll back for retracting said latch bolt, inside operated means for retracting said latch bolt including a link having a lost motion connection with said bolt, a dogging arm having an arcuate slot adjacent one end, a pin fixed to said case plate disposed in said slot, a pin and slot connection between the opposite end of said arm and said case plate, said last slot being horizontally disposed, and interengaging means on said link and arm for moving the latter into dogging relation with said roll back upon non-bolt retracting movement of said link.

7. A vehicle door latch comprising a case plate, a spring tensioned latch bolt, an outside operated roll back for retracting said latch bolt, inside operated means for retracting said latch bolt including a link having a lost motion connection with said bolt, a dogging arm having an arcuate slot adjacent one end, a pin fixed to said case plate disposed in said slot, a pin and slot connection between the opposite end of said arm and said case plate, said last slot being horizontally disposed, a notch in the forward end portion of said link, and an extension on said arm adjacent said arcuate slot engageable in said notch upon reverse movement of said link to actuate said arm into roll back blocking relation, said arm being movable out of said notch upon retracting movement of said link.

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