May 13, 1941. E. VAN NOTE 2,241,872

AUTOMOBILE DOOR LATCH

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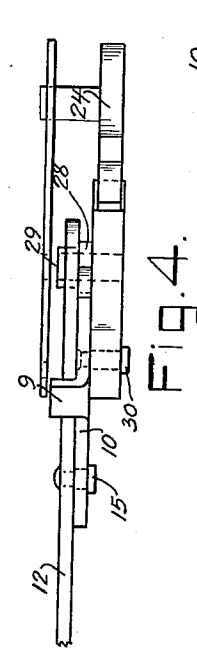


Fig. 4.

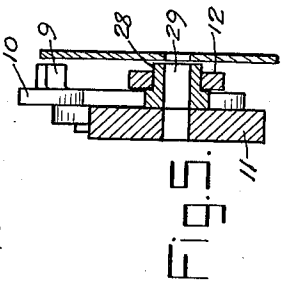


Fig. 5.

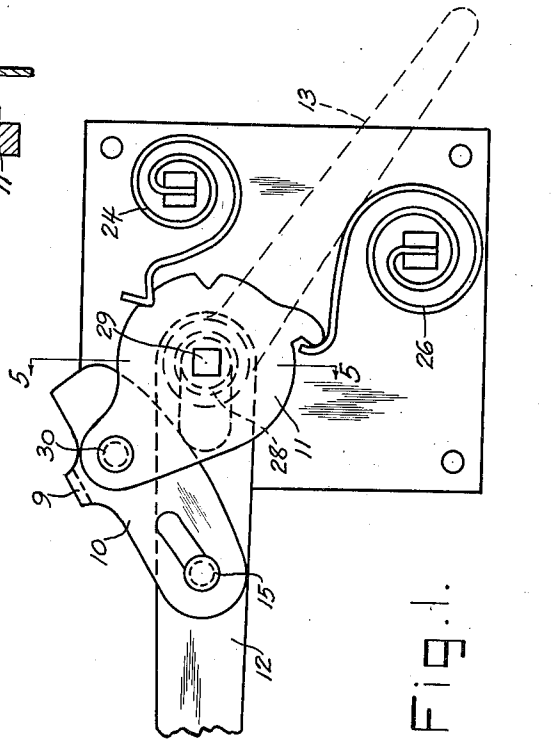


Fig. 1.

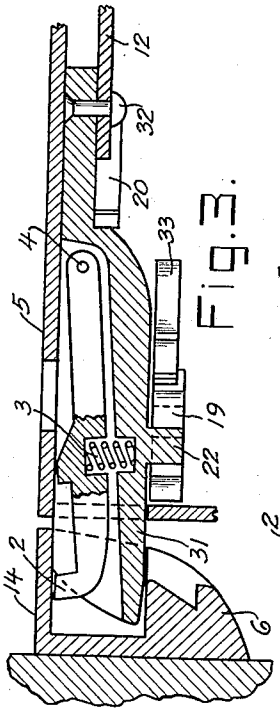


Fig. 3.

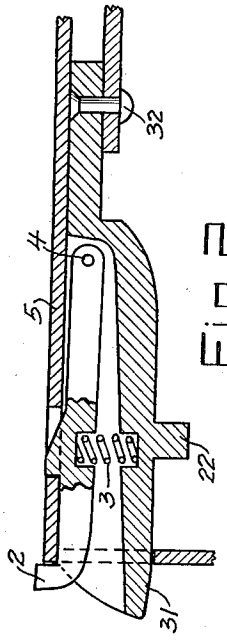
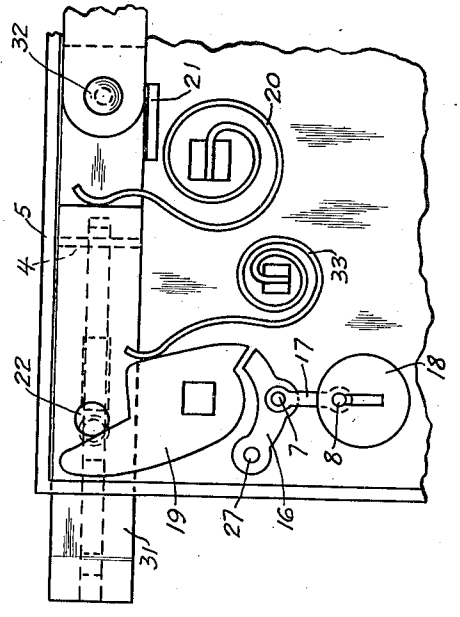


Fig. 2.



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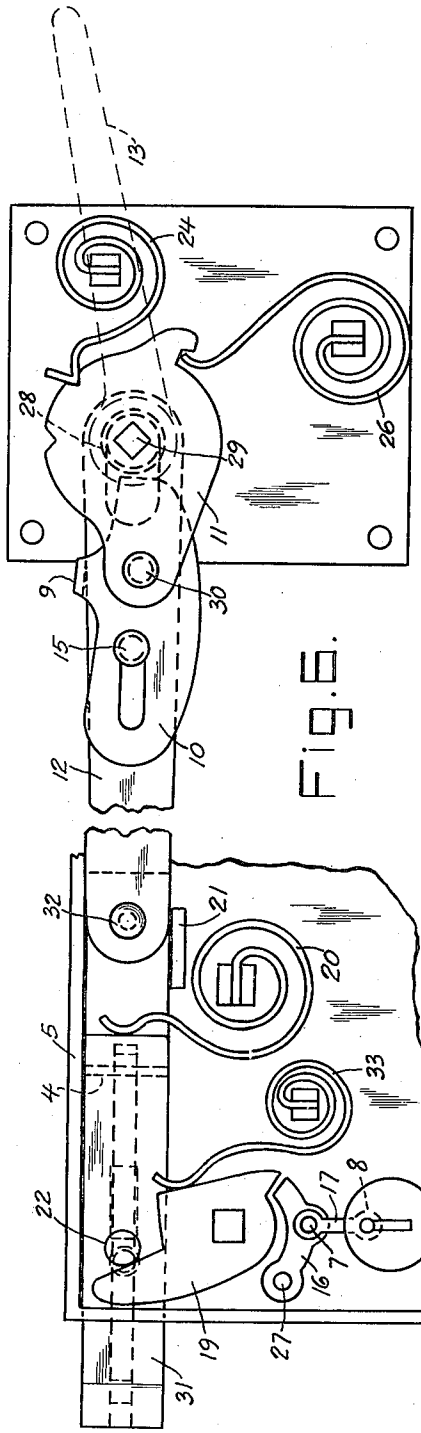


Fig. 6.

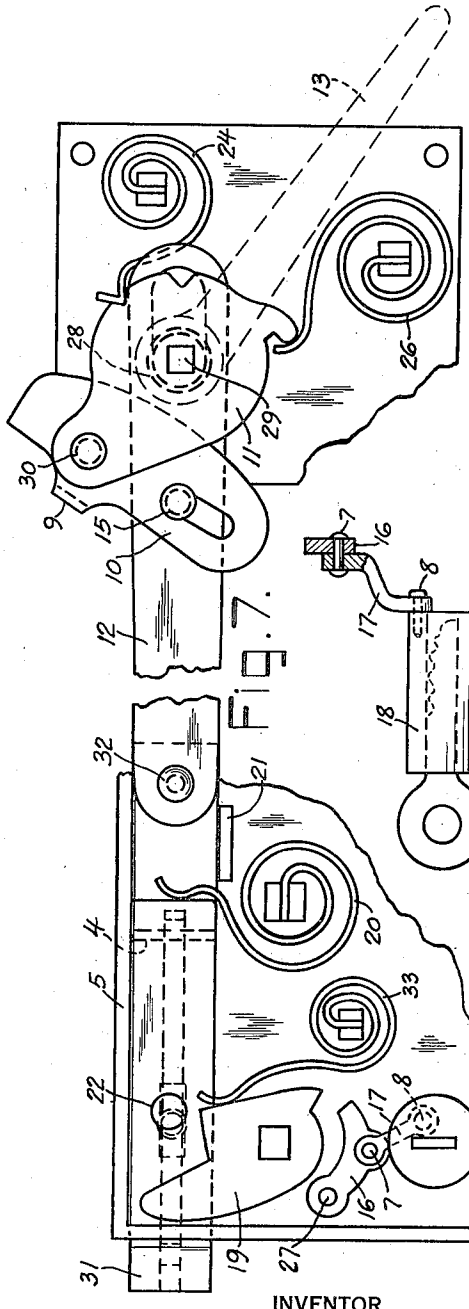


Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE

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AUTOMOBILE DOOR LATCH

Eugene Van Note, Trenton, N. J.

Application June 16, 1939, Serial No. 279,513

5 Claims. (Cl. 70—157)

My invention relates to a door latch, suitable for the door of a motor car. A door latch of simplified construction, to be easily withdrawn, and releasably held in withdrawn position while a door is in open position, to prevent the locking members being moved to locking position until the door is in closed position, said latch to be released from restrained position by the act of closing said door by manual effort.

Another object of my invention is to construct a latch in which the latch bolt is retained in retracted position while the door is open thereby preventing the positioning of a dogging or locking link, accidentally or otherwise, to dog the latch bolt in projected position while the door is open, an improvement attainable and practiceable as disclosed in the drawings.

Another object of my invention is to provide a simple and efficient means for dogging the latch bolt in projected position from the interior of the car against operation by the outer handle which is accomplished by manipulating the interior handle to position a dogging link of the remote control in a dead center position relatively to the line of movement of the bolt when the interior handle is pushed downward, and which changes from a pulling to a pushing link action when the interior handle is pushed upward, to horizontalise said locking link, paralleling said link with the remote control member, to lock the latch bolt and prevent withdrawal of the latch bolt out of engagement with its keeper, by turning the exterior handle to open the door.

Another object of my invention is to have each working part perform as many functions as possible. The link referred to above functions in three different ways by cooperating with the crank on the interior handle shaft and the end of the remote control member to which said link is connected by means of a shouldered pin and slot connection to the remote control member

Firstly the link functions to withdraw the latch bolt. Secondly to block the movement of the interior handle. Thirdly to dog the latch bolt and hold said latch bolt securely in projected position. Its second function does not hamper or interfere in any way with the remote control with respect to the exterior handle, as said exterior handle is operable while locking link is in nullifying position, as the latch bolt is free to move backward and forward without actuating exterior handle when interior handle is manipulated. Function two does not admit of the locking member being moved to dogging position while the remote control member is in backward position and the latch bolt in retracted position, a door in open position.

Another object of my invention is to provide a simplified and efficient means of holding the latch in retraction to nullify the locking means while said latch is in withdrawn position, which is accomplished by nesting the restraining member in a groove in the service end of the latch bolt, out of harm's way, so it cannot be fouled, or get out of adjustment, and to be so arranged as to admit of said member moving back in its groove to clear the strike plate, in event of some curious person releasing the latch by manual effort, to have it move forward to be forced back to retracted position, by impact with the strike plate, the conventional method, a function provided in my construction to cope with a tempering hand.

Another object of my invention is to construct a latch with operating handles having the feature of being independent of the movement of rollback and of remote control; to remain at rest until manipulated, thus obviating friction and noise, while a door is closing, as disclosed in the drawings.

It is further proposed to provide a remote control, comprising in combination, handle shaft, crank, link and shouldered pin members, to cooperate with interior handle, to horizontalise locking link to dogging position, parallel with the remote control member to lock the latch bolt within its keeper.

Another object of my invention is to construct a latch mechanism for automobile doors so that inadvertent manipulation of the interior handle while the door is in open position will be incapable of setting the latch bolt so as to lock out a person closing the car door and leaving the vehicle.

The retracted latch feature is desirable, as it cooperates with the remote control member to nullify the locking means while the latch bolt is in retracted position, thus preventing the locking mechanism being changed to locking position until the door is in closed position, preventing change of adjustment, precluding car lock out.

Figure 1 is a front elevation of a latch of a door, showing interior handle, crank and link in neutral position, and the latch bolt in projected position.

Figure 2 is a fragmentary longitudinal sectional view of a slidable latch bolt, showing the

restraining member in a groove of the service end of said bolt, flush with said bolt.

Figure 3 is a longitudinal sectional view of the latch bolt and its keeper, showing the latch bolt in forward position, within its keeper, and the restraining member in undogged position.

Figure 4 is a fragmentary section of the remote control member showing sleeve for providing space for remote control member.

Figure 5 is a vertical sectional view, through line 5—5 of remote control member.

Figure 6 is an elevation similar to Figure 1, portraying locking link horizontalised to locking position, parallel with the remote control member.

Figure 7 is also an elevation similar to Figure 1, only varying with respect to the position of the latch bolt which is in withdrawn position, and the locking link in nullifying position to block manipulation of the interior handle.

Figure 8 is a fragmentary side view of lock cylinder and its connecting link. Latch construction portrayed by Figure 7, precludes car-lock-out, as three doors must be locked from the interior of the car, and the fourth door of a four door body, must be locked by means of a key.

The device presented comprises a latch bolt 31 projectable by a spiral spring 20 into a keeper 14, Fig. 3. A restraining member 2 is pivoted at 4 in a groove in the bolt 31 and has a projecting nose in engagement with its keeper, in which position, member 12 has traversed its full field of travel, the end of its slot, in its relationship to interior handle shaft 29, its bearing support, at which juncture said interior handle shaft acts as a stop, to prevent further forward movement of the latch bolt within its keeper. Interior handle shaft 29, also limits the backward movement of the remote control member 12, in retracting the latch bolt. The remote control member 12, is shown as far forward as it can go, so held by the interior handle shaft 29. Now, it will be seen that by turning the exterior handle by manual effort, rollback 19 and boss 22 will force the remote control member 12 backward to retract the latch, to withdraw the latch bolt. Obviously, the backward movement of the remote control member will change the relative position of link 10. As shouldered pin 15 moves in its slot, link 10 will assume a different angle, as pivoted end 30 of the link and the crank disk 11 will cause the slotted end of link 10 to describe a circular movement in its backward course, until shouldered pin 15 impinges the upper end of the slot of link 10, thus preventing any upward movement of the interior handle 13 to horizontalize said link 10, to locking position. Interior handle 13 cannot be moved upward while link 10 is in that angular position, as the latch bolt must be released from restraint, to admit of forward movement of said latch bolt to its keeper, before interior handle 13 can be moved upward from neutral position.

A continuous downward movement of the interior handle 13 unlocks said latch bolt, said latch bolt thus unlocked, will remain in unlocked position until changed by manual effort, as desired, as control member 12 does not move either backward or forward, upward or downward, during the process of locking or unlocking the latch bolt, as said remote control member maintains a straight line, moving only with the latch bolt as it enters its keeper or is withdrawn therefrom.

Figure 3 portrays restraining member 2, nested in a groove of the service end of the latch bolt 31, journaled to ride therewith, spring impelled to move laterally, to engage and to disengage a retaining stop, pierced in the housing plate, to hold said latch in restrained position, to nullify the locking means, to block attempt to lock the latch by horizontalizing the said locking link 10 until said restraining member 2 is released by contacting stop 14 of keeper plate 6 as shown in Figure 3, which portrays latch bolt 31 and restraining member 2, in released position, forward within their keeper.

The remote control means is constructed to require no extra part to be moved to nullify the locking means or dogging mechanism of the latch bolt, as the nullifying means resides in link 10, shouldered pin 15 and crank 11, as these function normally in withdrawing the latch bolt. The withdrawal of the latch bolt, positions link 10, to nullifying position, which is accomplished by a continuous downward push of the interior handle to withdraw the latch bolt.

I claim:

1. In an automobile door latch, a slidable spring projected latch bolt, provided with a bolt restraining member to automatically hold said bolt in retracted position on retraction of said latch bolt, said restraining member cooperating with the keeper on closing of the door to move said restraining member to bolt releasing position, an inside handle mechanism for retracting said latch bolt comprising a remote control member connected at one end with said bolt, a locking link, a slot and pin connection between one end of the locking link and the remote control member to allow a pivotal and sliding movement of said locking link relatively to said control member, a pivotal connection between the other end of said locking link and said inside handle, comprising a crank disk rigid with said handle and pivotally connected with said other end of said locking link, a stop means on the outer edge of said locking link for contacting one edge of said remote control member when the latch bolt is in projected position to hold said locking link substantially parallel to said remote control member and said pivotal points in bolt dogging position.

2. A latch mechanism as set forth in claim 1 including a sleeve through which the handle shaft extends and a slot in the remote control member through which said sleeve extends for guiding said remote control member in its reciprocating movement.

3. The structure defined in claim 1 including a sleeve through which said handle shaft extends, the free end of said locking link having an extension for abutting said sleeve when said locking link is in parallel position to said remote control member.

4. A latch mechanism comprising a latch casing, a spring projected slidable latch bolt in said casing, a remote control mechanism for retracting said bolt comprising an inside rotatable handle shaft and a remote control member connected to the shaft at one end, a locking link, a slot and pin connection between one end of said link and the remote control member, a crank disk fixedly mounted on said handle shaft to rotate therewith, said disk having a pivotal connection with the other end of said locking link and having means for yieldably holding said disk in a normal position with the locking link extending at an angle to the remote control member said crank disk being movable to swing said locking link into a position substantially parallel to said remote

control member to dog said bolt in projected position, a restraining member for holding said latch bolt automatically in retracted position on retraction of said bolt by said remote control means, a spring for automatically retaining said crank disk in normal position after retraction of said bolt by said crank disk, said restraining member holding said bolt in retracted position to prevent movement of said interior handle to position said locking link in bolt dogging position while a car door is in open position.

5. A latch mechanism comprising a latch casing, a slidable latch bolt, a remote control mechanism for retracting said latch bolt comprising an inside rotatable handle shaft, a remote control member connected to said handle shaft at one end comprising a locking link slotted at one end, a crank disk fixedly mounted on said handle shaft to which said locking link is pivotally connected, said pivotal point being between the ends of said locking link to enable said locking link to swing by means of a pin connecting said slotted end of said slotted link with the remote control member to cooperate with said remote control member and its reciprocating movement in projecting and withdrawing the latch bolt.

EUGENE VAN NOTE.