Jan. 5, 1932. B. E. TAYLOR 1,840,062

VEHICLE DOOR LATCH

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FIG. 1

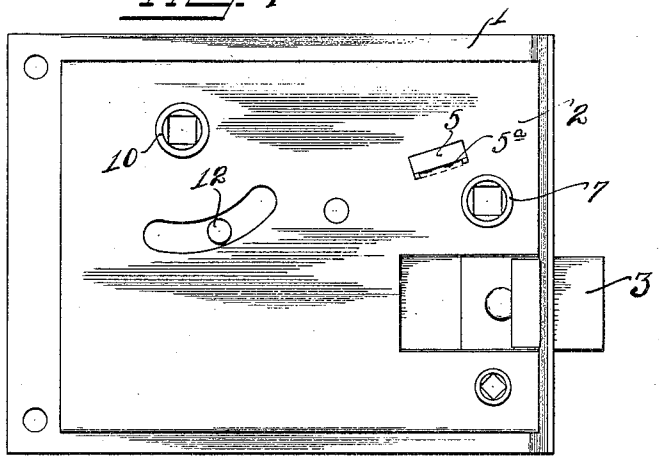


FIG. 3

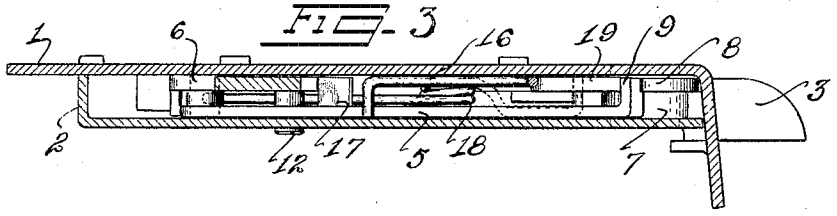
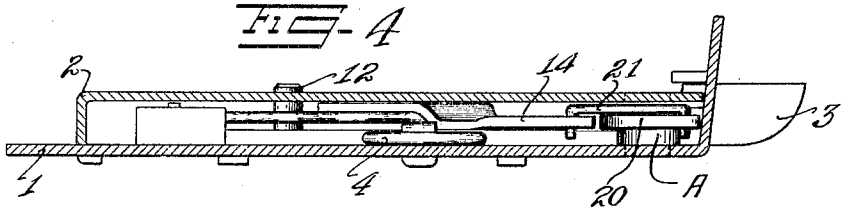


FIG. 4



Inventor

Bayard E. Taylor

By- Charles J. Kell Attys.

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Fig. 2

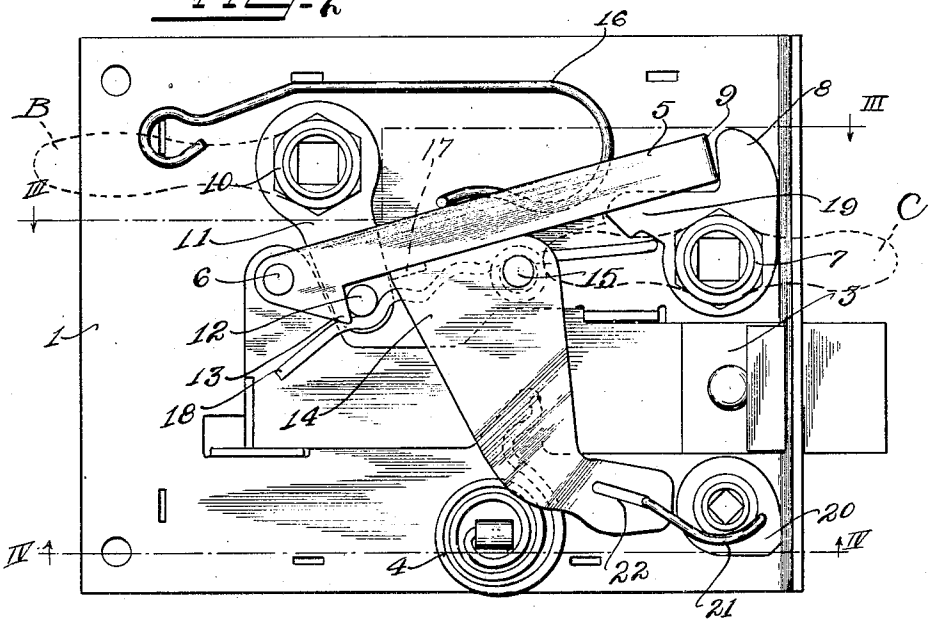
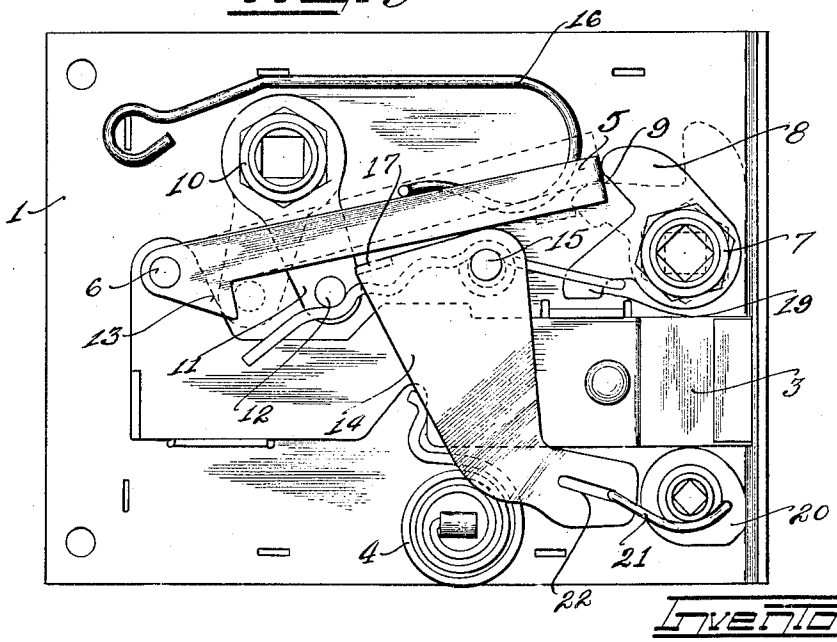


Fig. 5



Inventor

Bayard E. Taylor

by Charles B. Hill Atty

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FIG. 6

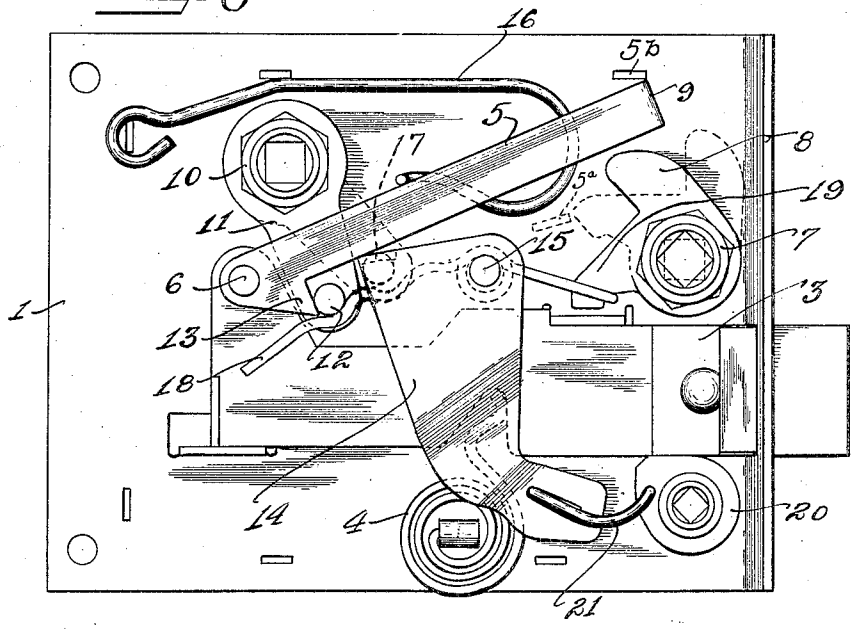
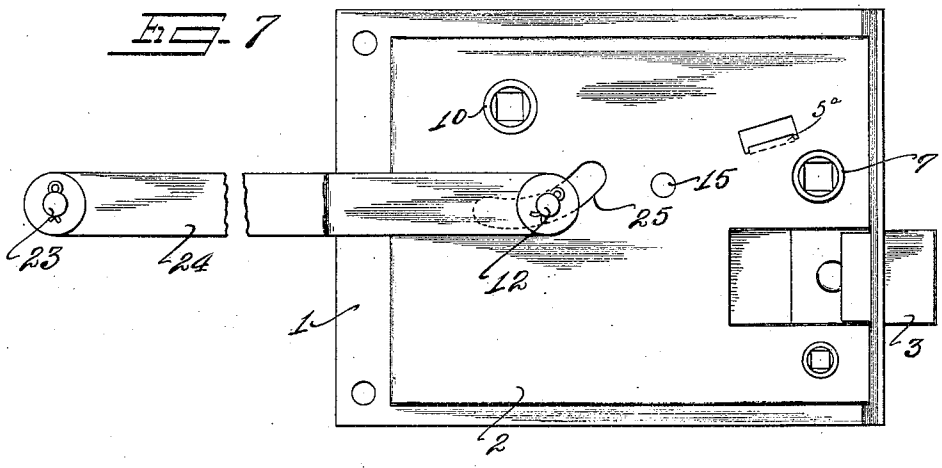


FIG. 7



Inventor

Bayard E. Taylor

by Charles A. Wills Atty

Patented Jan. 5, 1932

1,840,062

UNITED STATES PATENT OFFICE

BAYARD E. TAYLOR, OF OAK PARK, ILLINOIS

VEHICLE DOOR LATCH

Application filed March 7, 1929. Serial No. 345,002.

This invention relates more particularly to vehicle door latches or locks adapted to be locked and unlocked from the interior of the vehicle without the use of a key by merely operating the inner handle of the door lock, thereby providing a door lock with which all but one of the doors of a closed vehicle may be equipped to permit said doors to be locked only from the interior of the vehicle, while the remaining door may be equipped with a door lock of a type similar to the other door locks with the exception that said last mentioned door is provided with an externally accessible key lock mechanism to permit the last door to be locked and unlocked from the exterior of the vehicle. Alternately all the doors may be arranged so that they may be locked from either the inside or the outside.

The object of this invention is to improve, simplify and cheapen door latches or locks of the foregoing type.

Other and further important objects of this invention will be apparent from the disclosures in the accompanying drawings and the following specification.

The invention (in a preferred form) is illustrated on the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a side elevation of the door latch mechanism as a whole.

Figure 2 is a view similar to Figure 1 with the casing removed.

Figure 3 is a section on the line III—III of Figure 2.

Figure 4 is a section on the line IV—IV of Figure 2.

Figure 5 is a view similar to Figure 2 showing in full lines the latch bolt retracted by operation of the outer handle and in dotted lines the position of the parts when the latch bolt is retracted by the inner handle.

Figure 6 is a view similar to Figure 2 showing the parts in locked position, or in position to render operation of the outer handle ineffective to retract the latch bolt.

Figure 7 is a side elevation of a modified form of construction.

As shown on the drawings:

The latch mechanism is the same for all four doors except that on one door there is provided a key operated lock A for locking from the outside. For convenience, therefore, the latch mechanism for the fourth door will be described and its operation explained and then the operation for latch mechanism of the other doors from which mechanism the outside lock has been removed will be set forth.

The latch mechanism is mounted on a base plate 1 and is enclosed by a casing 2. The latch bolt 3 is mounted for slidable movement relatively to the base plate and is yieldingly held in extended position by a spring 4. To retract the latch bolt against the pressure of the spring 4, a link 5 is pivotally connected at 6 to the rear end of the latch bolt for the transmission to the latter of the movement of the inner and outer handles B and C respectively. The outer handle C is nonrotatably secured to the boss 7 rotatably mounted on the base plate. This boss carries a roll back 8 adapted to engage the inturned end 9 of the link 5 to exert endwise pressure on the latter and thereby retract the latch bolt.

The inner handle B is non-rotatably secured to a boss 10 provided with an arm 11 which carries a pin 12. One function of this pin is to engage a projection or lug 13 on the link 5 to exert endwise pressure upon the latter and thereby retract the latch bolt.

It is evident that if the link is swung about its pivot 6 into the position shown in Figure 6, the inturned end 9 of the link will be moved out of the path of movement of the outer handle roll-back 8. The position of the link 5 is controlled by a cam plate 14 pivotally mounted on the base plate at 15. The link 5 is yieldingly held in contact with the upper edge of this cam plate by a spring 16. Normally the link and cam plate are in the position shown in Figure 2 but by turning the cam plate about its pivot into the position shown in Figure 6 the link is elevated so that its inturned end 9 is clear of the outer handle roll-back 8. To turn this cam plate an inwardly extending projection 17 is formed thereon adapted to be engaged and lifted by the pin 12 when the latter and its

arm 11 are swung by operation of the inner handle into the position shown in dotted lines in Figure 6. The pin 12 is engaged by a spring 18 which is formed with two depressions corresponding to the full and dotted line positions of the pin 12. These depressions serve releasably to retain the pin 12, arm 11 and the inner handle which operates these parts in either of these two positions of adjustment when the cam plate is removed (for three of the doors) and for the unlocked position only when the cam plate is present. This difference in action is due to the fact that the projection 17 of the cam plate prevents the pin 12 assuming the dotted line position shown in Figure 6. This spring 18 is wound around the pivot pin 15 of the cam plate and at its other end bears against the underside of an arm 19 formed integrally with the outer handle roll-back 8 so as normally to hold the latter in latch bolt extended position as shown in Figure 2.

For operating the cam plate an externally accessible key lock mechanism A is provided whereby the link 5 is brought in and out of operative relation with the outer handle roll-back. Conveniently this lock mechanism A may be of the usual Yale barrel type carrying a plate 20 at its inner end to which a link 21 is pivotally connected. The other end of this link slidably engages a slot 22 in the lower part of the cam plate. In the unlocked position the parts are in the position shown in Figure 2 and in the locked position they are in the position shown in Figure 6. It will be noted that in the latter position the link 21 engages the end of the slot 22 and turns the cam plate 14 about its pivot to raise the link 5 clear of the outer handle roll-back 8. The link 21 is so arranged that when in locking position the thrust produced on the link 21 by the spring 16 through the link 5 and cam plate 14 is above the axis of the lock barrel and hence tends to hold the lock in its locked position.

The operation of the latch is as follows: The parts in normal position with the latch extended and the door unlocked is shown in Figure 2.

By turning the outer handle the roll-back 8 is moved into the position shown in full lines in Figure 5, thereby pushing the link 5 rearwardly and with it the latch bolt 3 against the pressure of the spring 4.

Substantially the same movement of the link 5 and latch bolt 3 is brought about by moving the arm 11 connected to the inner handle from the position shown in full lines to that shown in dotted lines in Figure 5.

To lock the door by the externally accessible key mechanism A the lock barrel is turned by the key from the position shown in Figure 2 to that of Figure 6. This causes the link 21 to turn the cam plate into the position shown in Figure 6 thereby moving the link 5 out of operative engagement with the outer handle roll-back 8.

To unlock the door it is merely necessary to turn the lock to bring the parts back into the position shown in Figure 2 when the link 5 automatically drops, under the pressure of the spring 16, into position to be engaged by the outer handle roll-back.

The modification shown in Figure 7 differs from that of Figures 1 to 6, inclusive, only in the location of the inner handle. In Figure 7 the inner handle is pivotally connected at 23 by an arm not shown, to a link 24 pivotally connected to the pin 12 which extends through a slot 25 in the casing 2. This construction enables the door to be opened or locked and unlocked by a handle located at a distance away from the latch.

When the key lock and cam plate are removed for the mechanism to be used on the three doors to be locked and unlocked from the outside, the stops 5*a* and 5*b* come into operation. The first of these limits downward movement of the link 5 and the second upward movement. It will be noted that when the cam plate is removed the pin 12 is free to move into the position shown in dotted lines in Figure 6 which is opposite to the second depression in the spring 18 so that the latter yieldingly and releasably holds the pin 12 and thereby the link 5 in elevated or door locking position.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. In a door lock the combination with an outer handle, of a latch bolt member, a roll-back member connected to the handle, a link pivoted at one end to one of said members for engagement with the other member to retract the latch bolt member, a pivotally mounted slotted cam, a spring adapted to hold said link in contact with said cam, a second link slidably engaged with said slotted cam and key operated mechanism connected with said second link and adapted to turn said cam and thereby move said first link out of engagement with said other member.

2. In a door lock the combination with inner and outer handles, of a spring impelled latch bolt, a roll-back connected to the outer handle, a link pivotally connected to the rear end of the latch bolt with its free end normally in position to be engaged by said roll-back to retract the latch bolt, an arm connected to the inner handle, a projection on said link adjacent its point of connection to

the latch bolt, a pin on said arm adapted to engage said projection to retract said latch bolt, a pivotally mounted cam, a spring for holding said link in contact with the edge of said cam, a projection on said cam adapted to be engaged by said pin whereby the cam is turned to elevate the free end of the link from engagement with said roll-back, and spring means for yieldingly holding said arm in either neutral or cam engaging positions.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

BAYARD E. TAYLOR.