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A. C. ANDERSEN

2,236,702

DOOR LOCK

Filed June 28, 1938

3 Sheets-Sheet 1

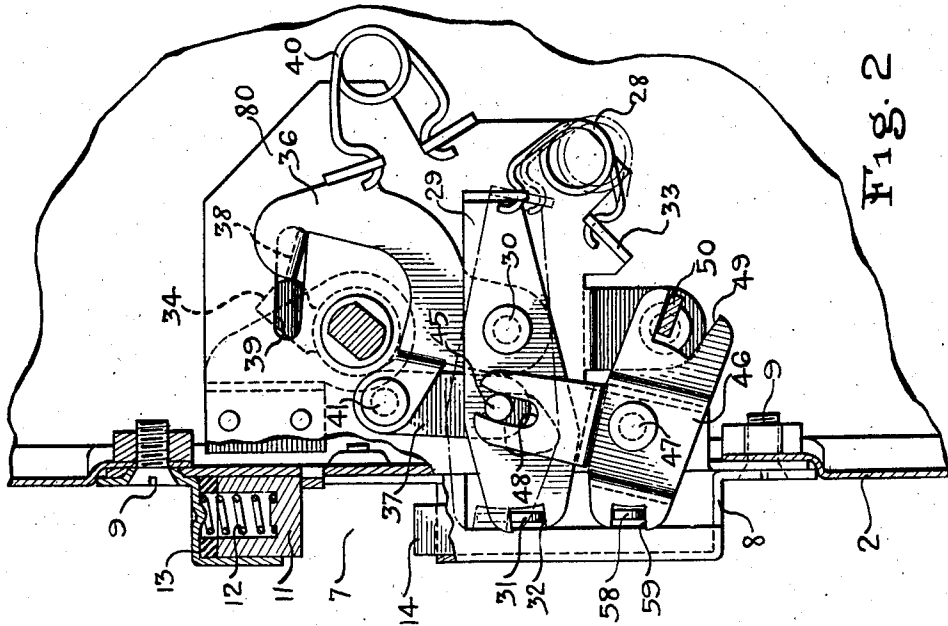


Fig. 2

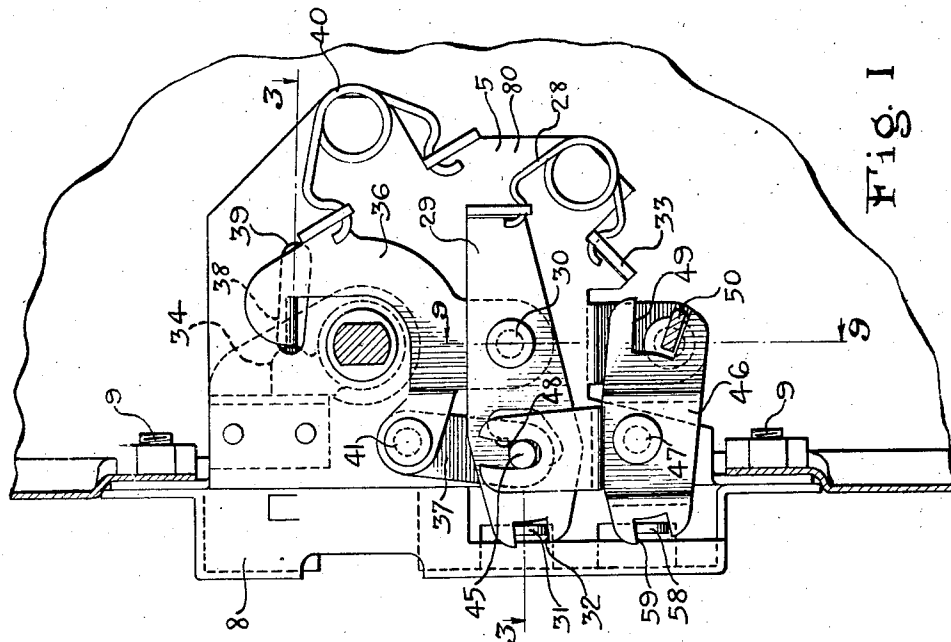


Fig. 1

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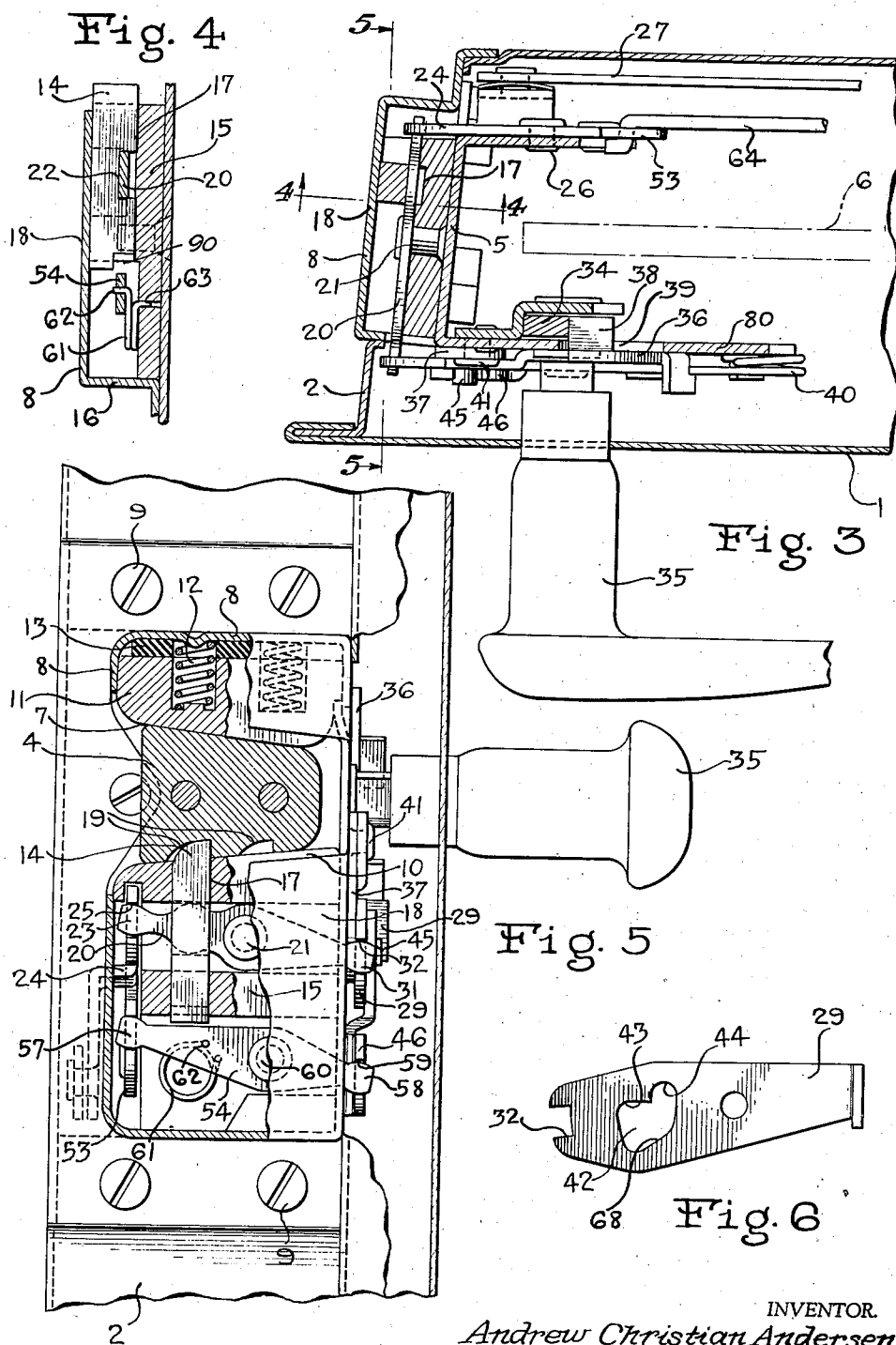
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3 Sheets-Sheet 2



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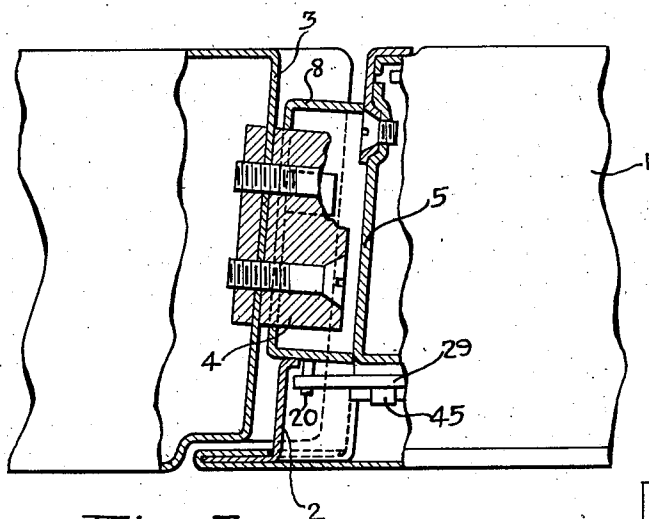


Fig. 7

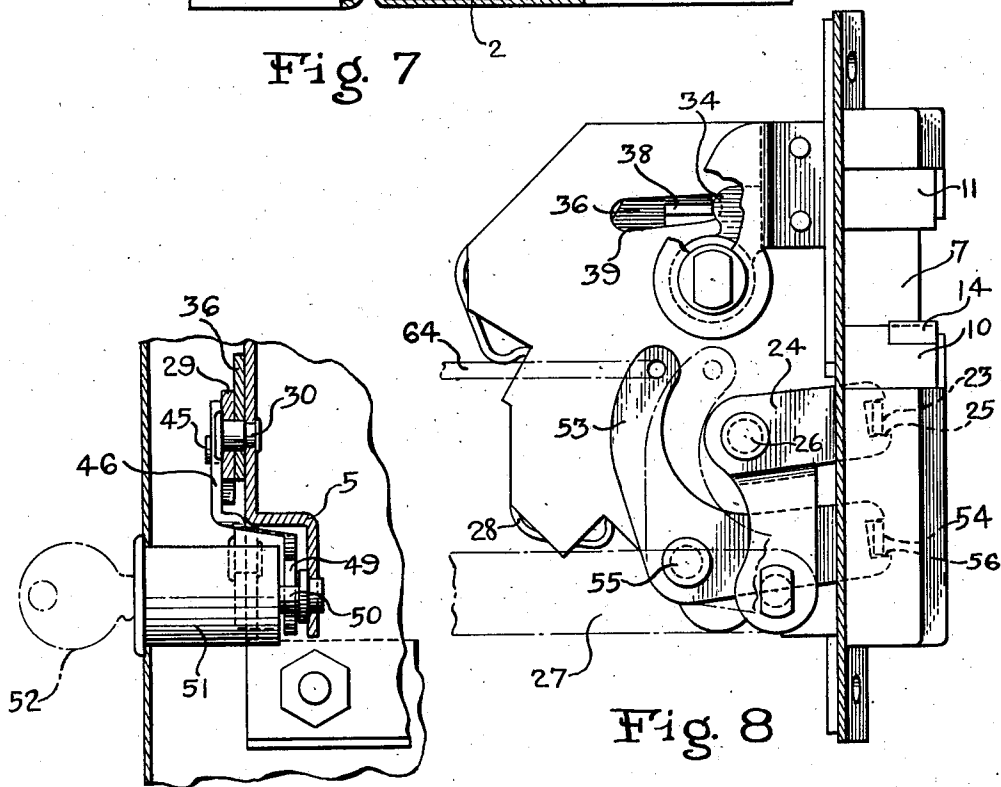


Fig. 8

Fig. 9

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UNITED STATES PATENT OFFICE

2,236,702

DOOR LOCK

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Application June 28, 1938, Serial No. 216,312

7 Claims. (Cl. 70—149)

This invention relates to a door lock and more particularly to a combined door lock and dovetail for an automotive vehicle.

A combination dovetail and door lock is old and well-known. It is the object of this invention to improve upon this form of door lock.

This invention contemplates a combined dovetail and lock which obviates the need for cutting into or recessing the door lock pillar and thus is adapted for use with a narrow door pillar.

It is also the object of this invention to produce a combined dovetail and lock of the narrow pillar type in which the outside door handle can be readily disconnected from the latch bolt.

In the drawings:

Fig. 1 is a vertical section through the door pillar showing the combined dovetail and lock assembled to the door pillar as viewed from outside the door.

Fig. 2 is a view similar to that shown in Fig. 1 with the outside rollback turned to bolt-retracting position but disconnected from the bolt.

Fig. 3 is a section along the line 3—3 of Fig. 1.

Fig. 4 is a section along the line 4—4 of Fig. 3.

Fig. 5 is a section along the line 5—5 of Fig. 3.

Fig. 6 is a detail of one of the levers for operating the bolt.

Fig. 7 is a horizontal section through adjacent door and body pillars with the door closed and latched.

Fig. 8 is an inside elevation of the lock showing in particular the inside lever for retracting the bolt and the inside control for disconnecting the outside door handle from the bolt.

Fig. 9 is a detail view of the key operated cylinder lock and connections for locking and unlocking the lock from without the door.

Referring more particularly to the drawings there is shown an automobile door 1 and a body jamb pillar 3. The door lock pillar is referenced 2. The wedge member 4 of the dovetail is secured by bolts to the body pillar 3.

The lock which is fixed to the door pillar 2 comprises a frame 5 of horizontal U-section which circumvents the side vertical edge of the window glass panel 6. When the door 1 is closed, the wedge member 4 of the dovetail member is received in the dovetail socket generally designated 7.

The dovetail socket comprises a housing in the form of a stamping 8 which is secured by bolts 9 to the outside face of the door pillar 2. The upper face of the dovetail is provided with a yieldable shoe 11 carried within the housing 8 and

backed up by a pair of coil springs 12 and a block of rubber 13.

Since the lock bolt 14 is vertically reciprocable, to this end the housing 8 is provided with an insert 15. This insert is provided with a groove 17 which cooperates with the outer wall 18 of the housing to form a guideway for the bolt 14. The lower inclined face 10 of the socket member is provided with an opening through which the bolt 14 projects for interengagement with the wedge member 4. The wedge member 4 is provided with a pair of notches 19 in which the bolt 14 interengages the wedge member 4. Thus the wedge member 4 serves not only as the wedge member of the dovetail but also as a keeper for the latch bolt.

The latch bolt 14 is retracted and projected by means of a lever 20 which is pivotally mounted on the insert 15 by the pin 21. The lever 20 engages the bolt in the notch 22. The inner end 23 of the lever 20 pivotally engages a bell crank lever 24 in the notch 25. The bell crank lever 24 is pivoted on the latch frame 5 by the pin 26 and is pivotally connected to a draft link 27. When the draft link 27 is drawn to the left, Fig. 8, the bell crank 24 rotates clockwise and thus swings the lever 20 counterclockwise, as viewed in Fig. 5, and retracts the bolt 14 into the housing 8 to disengage the bolt from the keeper 4.

When the draft link 27 is released, the bolt is projected by the spring 28 acting through levers 29 and 20. The lever 29 is pivoted to the outer flange 30 of the latch frame 5 by pin 30 and engages the outer end 31 of the lever 20 in the notch 32. One end of the spring 28 is connected to the lever 29 and tends to rotate the same counterclockwise, Fig. 1, and the other end of the spring 28 is secured to a lug 33 on the latch frame 5.

The outside rollback 34 is rotatably mounted upon the latch frame 5. The inner end of the spindle of the outside door handle 35 is secured in the rollback 34. When the outside handle 35 is turned the rollback 34 acts through lever 36, link 37, and levers 29 and 20 to retract the latch bolt 14. The lever 36 is also pivotally mounted on the outer flange 30 of the latch frame by pin 30 and has a lug 38 which passes through a slot 39 in the outer flange of the frame 5 and engages the rollback 34. The lever 36 is held against the rollback 34 by the spring 40, one end of which is secured to the latch frame 5 and the other end is secured to the lever 36. The lever 36 also carries the link 37 which is pivotally connected to the lever 36 by pin 41.

The lever 29 is provided with an opening or slot

42 which forms notches 43 and 44 in the lever 29. The link 37 is provided with a pin 45 which engages the lever 29 in the opening or slot 42. When the link 37 is shifted to the position shown in Fig. 1 so that pin 45 interengages the lever 29 in notch 43, then clockwise rotation of the lever 36 raises the link 37, Fig. 1, which acts through pin 45 in notch 43 to swing the lever 29 clockwise, which in turn swings lever 20 counterclockwise, Fig. 5, and retracts the latch bolt.

When it is desired to disconnect the outside handle 35 from the bolt so that turning of the outside handle 35 is ineffective to retract the bolt 14, then the link 37 is shifted to the right, Fig. 1, so that pin 45 is disengaged from notch 43 and free to swing into notch 44. At this time if the outside handle is turned to swing the lever 36 clockwise, Fig. 1, to raise the link 37, the pin 45 merely idles in opening 42, i. e., travels upwardly into notch 44 without swinging the lever 29. The swinging clockwise rotation of the lever 36 is limited by the lug 38 engaging the right-hand end of the opening 39 in the latch frame 5, see Fig. 2, so that when the pin 45 is disengaged from notch 43 the swinging of the lever 36 within the limits permitted by slot 39 causes pin 45 to idle or travel in the opening 42 into and out of notch 44 without swinging lever 29.

Pin 45 can be shifted in the opening 42 into and out of notch 43 from the outside by the bell crank lever 46. The bell crank lever 46 is pivoted to the latch frame by pin 47. One arm of the lever 46 is provided with a notch 48 which receives the pin 45. The other arm of the lever is notched as at 49 for receiving the eccentric lug 50 carried by a conventional cylinder lock 51. When the key 52 in the cylinder lock is turned, the eccentric lug 50 acts through the lever 46 to swing the pin 45 into or out of the notch 43. The lever 46 can be operated from within the vehicle by bell crank 53 acting through lever 54. Bell crank 53 is pivotally mounted on the inside flange of the lock frame 5 by the pin 55 and is provided with a notch 56 for the inner end 57 of lever 54. The outer end 58 of lever 54 is received in notch 59 in the lever 46. The lever 54 is pivoted to the insert 15 by pin 60. Over center spring 61 has one end 62 fixed to the lever 54 and the other end 63 fixed in the insert 15 so that the over center spring 61 tends to hold the lever 54 at all times to one or the other side of its pivot 60. In other words, when the draft link 64 is pushed to the right (Fig. 8, dotted line showing) to swing the bell crank 53 clockwise, the lever 54 is swung counterclockwise, Fig. 5, which swings lever 46 clockwise, Fig. 1, to disengage pin 45 from notch 43. This makes the outside handle ineffective to retract the latch bolt.

Whenever the door is swung shut the latch bolt 14 is retracted by the keeper 4 before it is projected into the keeper openings 19. If the lever 46 has been swung either from the outside or the inside of the door to disengage pin 45 from notch 43, closing of the door will automatically reconnect the outside door handle with the latch bolt. This automatic reconnecting of the outside door handle with the latch bolt is accomplished by the cam edge 68 of the opening 42 in lever 29. If pin 45 is shifted to the right or idle position from the position shown in Fig. 1, while the door is open, then upon closing the door retraction of bolt 14 by keeper member 4 acts through lever 20 to swing lever 29 clockwise, Fig. 1. As lever 29 swings clockwise, cam face 68 engages pin

45 and cams it back to the position shown in Fig. 1, that is, in engagement with notch 43.

However, the door can be locked without use of the key 52 as follows: While the door is open, lever 53 can be swung clockwise to the dotted line position of Fig. 8 which acts through levers 54 and 46 to shift the pin 45 to the full line position shown in Fig. 2, that is, out of engagement with notch 43. The outside handle is now disconnected from the latch bolt, that is, the outside handle is ineffective to retract the bolt. While the door is still open, the outside handle can be turned to bolt retracting position which, as shown in Fig. 2, swings lever 36 clockwise and raises link 37 so that pin 45 is drawn into notch 44. While still holding the outside handle in bolt retracting position, the door is closed. In the closing of the door, the keeper retracts bolt 14 which through lever 20 raises lever 29 to the dotted line position shown in Fig. 2, but since pin 45 is raised into notch 44 the cam edge 68 does not reach pin 45 and thus pin 45 remains in notch 44 and is not shifted to the left. After the door is closed, the handle is released and pin 45 swings downwardly out of notch 44 but to the right of notch 43. Thus, the outside handle remains disconnected from, and ineffective to retract, the latch bolt.

From the above it is seen that when the door is closed the outside handle can be disconnected from the latch bolt either from the outside of the door by turning the key 52 or from the inside of the door by swinging of lever 53. The door can also be locked from without without the use of the key as above described. Unlocking of the door can be accomplished from without only by means of the key 52 and from within by swinging of lever 53 from the dotted to the full line position, Fig. 8. The lower end of the bolt 14 is notched out as at 66 to provide a clearance for the lever 54 when the bolt is retracted.

I claim:

1. A door lock comprising a retractable bolt adapted to be retracted by a keeper in the closing of the door, outside retracting mechanism for said bolt including a pair of relatively shiftable members, one of said members having a pin and the other a slot for said pin, the said slot having an irregular contour such that in one of its relatively shiftable positions the pin interengages an edge of the slot to interconnect the relatively shiftable members whereby actuation of the said retracting mechanism is effective to retract the bolt and in the other of its relatively shiftable positions the said pin is disengaged from the said member whereby upon actuation of the retracting mechanism the pin idles in the slot and the retracting mechanism is ineffective to retract the bolt, and cam means actuated by retraction of the bolt as in the closing of the door, when said members are disconnected, for camming the said pin back to its first position to restore the connection between the outside retracting mechanism and the bolt.

2. A door lock comprising a retractable bolt, retracting mechanism for said bolt including a pair of pivoted members which are swingable one relative to the other, one of said members having a pin and the other a slot for said pin, the said slot having an irregular contour such that in one of its positions the pin interengages an edge of the slot to interconnect the relatively swingable members whereby actuation of said retracting mechanism is effective to retract the bolt and in another of its positions the said pin is disen-

gaged from the said member whereby upon actuation of the retracting mechanism the pin idles in the slot and the retracting mechanism is ineffective to retract the bolt, a cam on the said slotted pivoted member, a connection between the bolt and the said slotted pivoted member whereby retraction of the bolt swings the said slotted pivoted member and causes the cam, when the said members are disconnected, to cam the pin back to its initial position and thus restore the connection between the outside retracting mechanism and the bolt.

3. A door lock comprising a frame, a retractable bolt adapted to be retracted from within the door or by the keeper in the closing of the door, an outside rollback mounted on the frame, a lever pivoted on the frame, a connection between the bolt and the lever whereby swinging of the lever retracts or projects the bolt, the said lever having a slot of irregular contour, means operatively associated with the rollback and the lever including a shiftable link, a pin mounted on the link and projecting into the slot in the said lever, the said pin in one position contacting an edge of the slot to interconnect the said lever and link whereby turning of the outside rollback retracts the bolt and in another of its positions the pin idles in the said slot whereby the link and lever are disconnected and the outside rollback is ineffective to retract the bolt, the said slot in the lever including a cam edge which, when the link and lever are disconnected and the lever is swung by retraction of the bolt as occurs in the closing of the door, cams the pin back to its initial position to restore the connection between the said lever and link.

4. A narrow pillar lock having in combination a bolt arranged to function entirely at the end of the window well, oscillatable bolt actuating means at the end of the window well, inside operating connections located to the inside of the window well for operating the bolt actuating means and outside operating connections located to the outside of the window well for also operating the bolt actuating means, the said outside operating connections having a pin and a member with a notched slot for receiving the pin which permits disconnection between the actuating end and the bolt end so that actuation will not operate the bolt when the disconnection is made.

5. A narrow pillar lock having in combination a bolt arranged to function entirely at the end of the window well, oscillatable bolt actuating means at the end of the window well, inside operating connections located to the inside of the

window well for operating the bolt actuating means and outside operating connections located to the outside of the window well for also operating the bolt actuating means, the said outside operating connections having a pin and a member with a notched slot for receiving the pin which permits disconnection between the actuating end and the bolt end so that actuation will not operate the bolt when the disconnection is made, the said member being actuatable by movement of the bolt each time it is retracted to cam the pin back into the notch and reestablish the connection.

6. A narrow pillar lock having in combination a bolt arranged to function entirely at the end of the window well, oscillatable bolt actuating means located at the end of the window well, inside operating connections located to the inside of the window well for operating the bolt actuating means, outside operating connections located to the outside of the window well for also operating the bolt actuating means, the said outside operating connections having a pin and a member with a notched slot for receiving the pin and which permits disconnection between the actuating end and the bolt end so that actuation will not operate the bolt when the disconnection is made, and means extending around the end of the window well actuatable both from the inside and the outside of the door for locating the pin in or out of the notch in the slot to control the connection and disconnection.

7. A narrow pillar lock having in combination a bolt arranged to function entirely at the end of the window well, oscillatable bolt actuating means located at the end of the window well, inside operating connections located to the inside of the window well for operating the bolt actuating means, outside operating connections located to the outside of the window well for also operating the bolt actuating means, the said outside operating connections having a pin and a member with a notched slot for receiving the pin and which permits disconnection between the actuating end and the bolt end so that actuation will not operate the bolt when the disconnection is made, means extending around the end of the window well actuatable both from the inside and the outside of the door for locating the pin in or out of the notch in the slot to control the connection and disconnection and key operated means on the outside of the window well for operating said means and manually operatable means on the inside for operating said means.

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