Oct. 13, 1942. H. M. FREDHOLM 2,298,559

AUTOMOBILE DOOR LOCK

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Fig. 1.

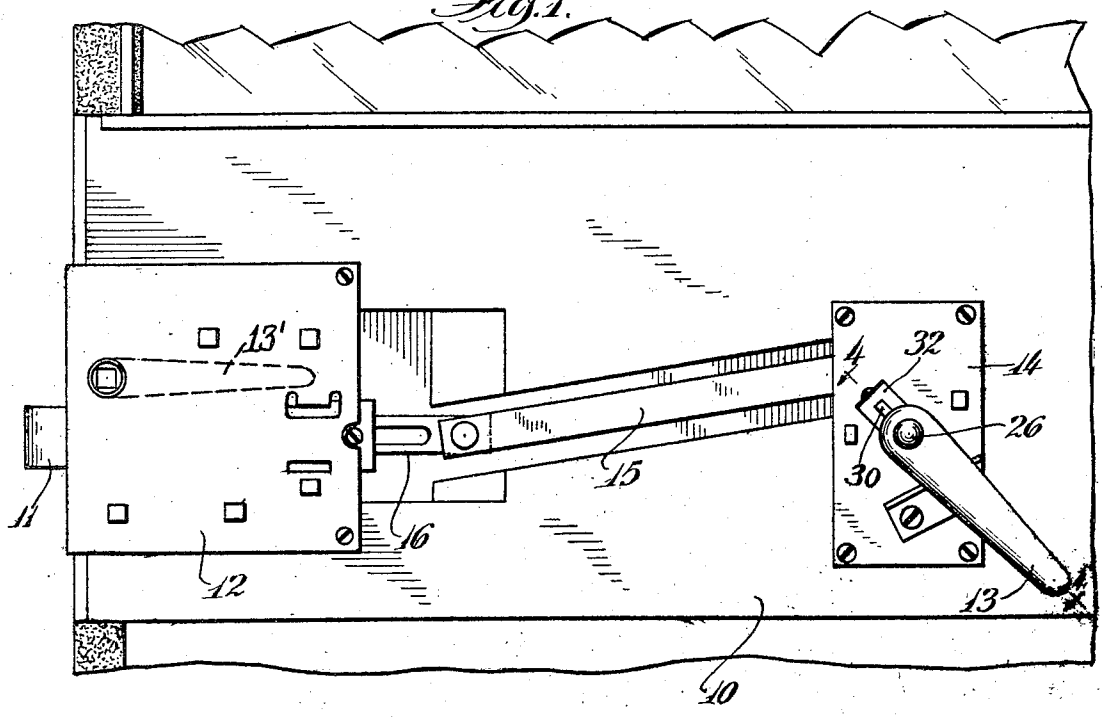
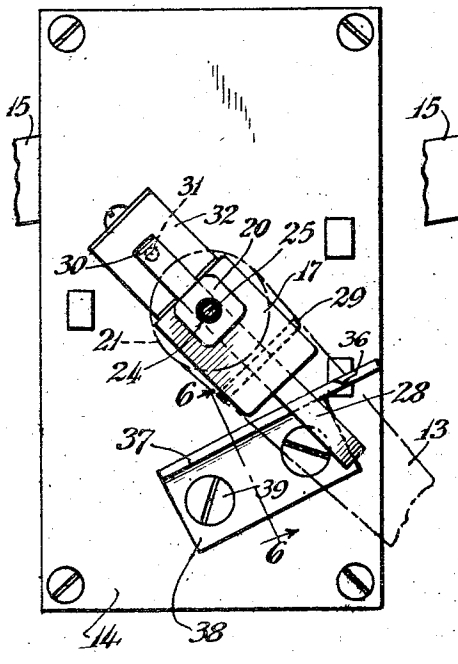


Fig. 2.



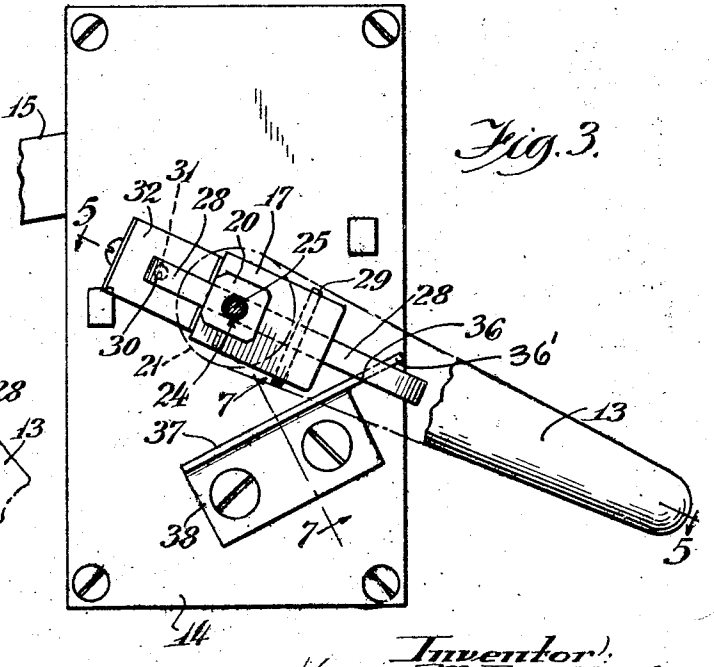


Fig. 3.

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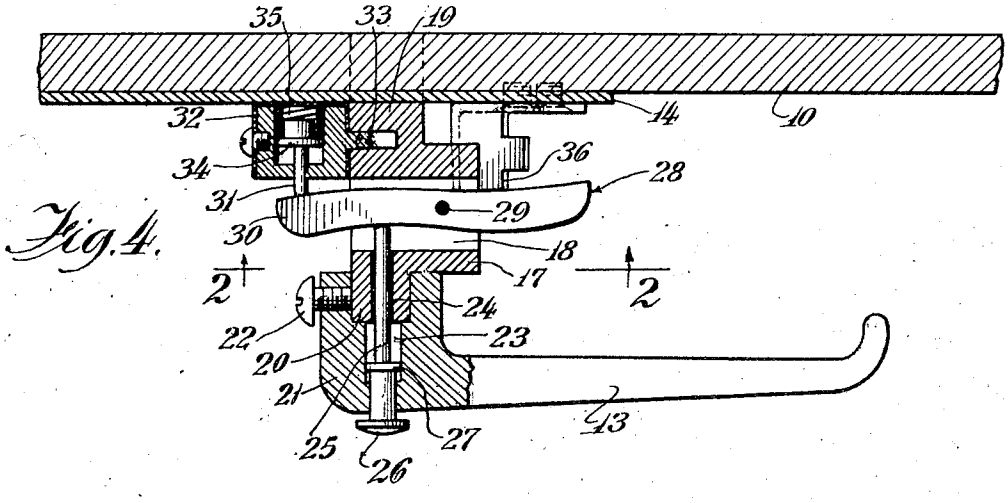


Fig. 4.

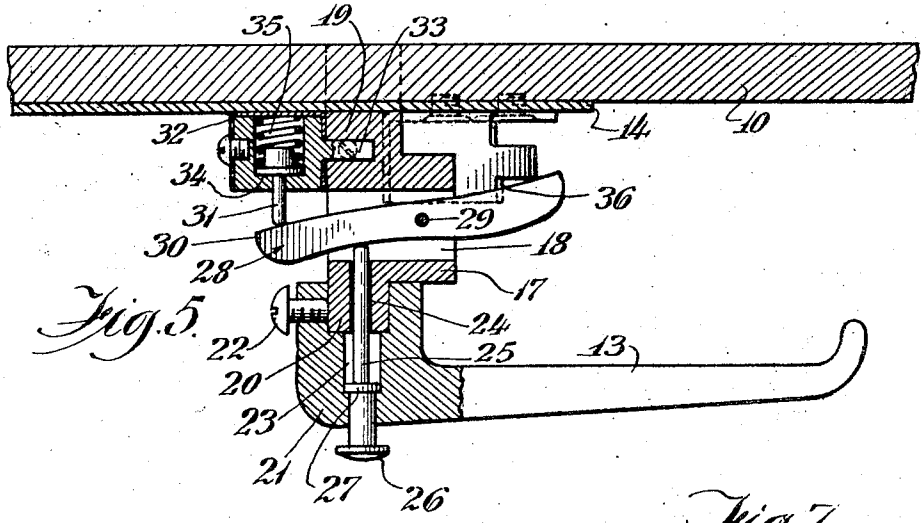


Fig. 5.

Fig. 6.

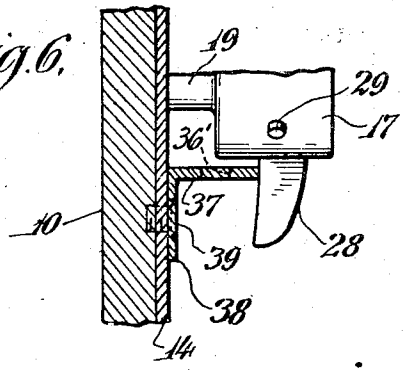
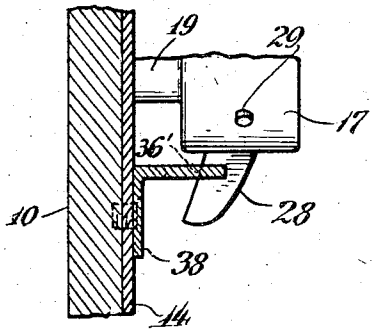


Fig. 7.



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Fig. 8.

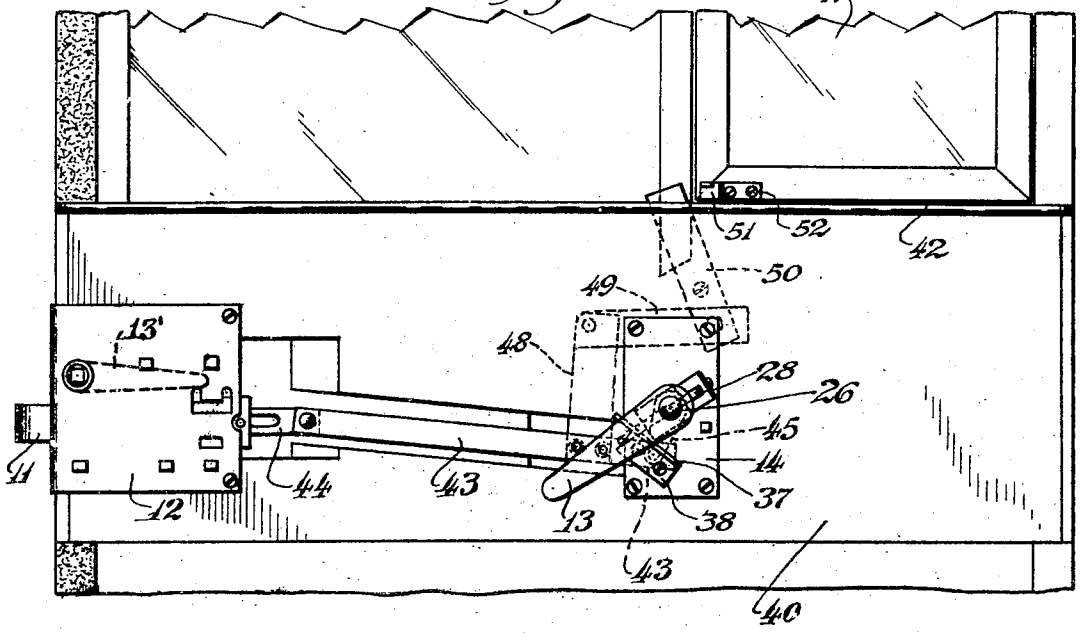


Fig. 9.

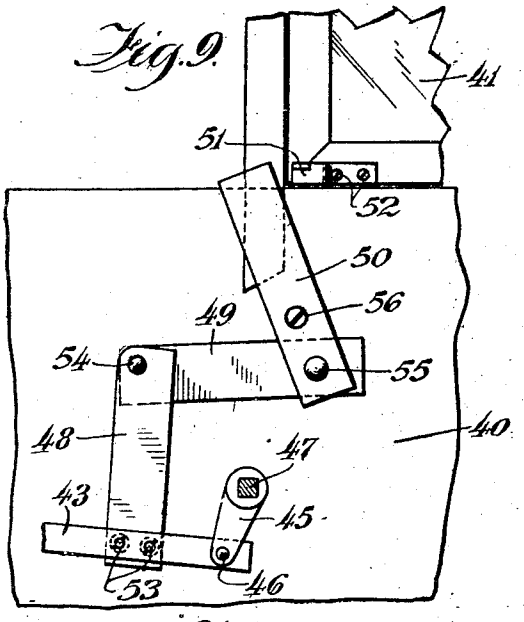


Fig. 10.

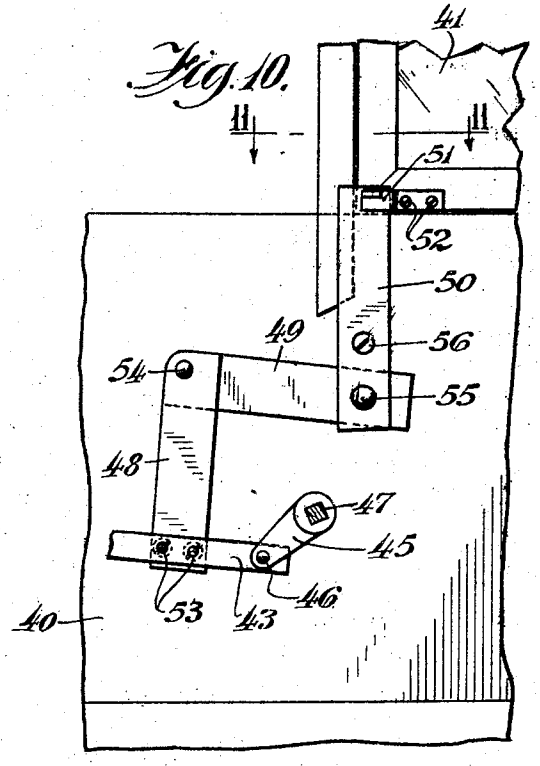
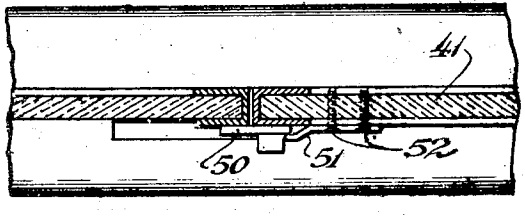


Fig. 11.



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UNITED STATES PATENT OFFICE

2,298,559

AUTOMOBILE DOOR LOCK

Henry M. Fredholm, Midlothian, Ill.

Application August 12, 1939, Serial No. 289,743

7 Claims. (Cl. 292—5)

This invention relates to automobile door locks and particularly to means for preventing unauthorized manipulation of the lock.

Automobile doors heretofore have been provided with locking bolts actuated by handles on the inside and outside of the door, such bolts being retracted by pressing downwardly on either handle. By raising the handle on the inside of the inside of the door when closed, the handle on the outer side of the door is rendered immovable and the locking bolt is held in locking position. It has been found, however, that unauthorized persons have been able to open such locked doors by inserting a wire or other device through a small crack between a window and frame and pressing downwardly on the handle on the inside of the door.

The object of my invention is to prevent such unauthorized manipulation of the lock and to provide locking means for retaining the handle on the inside of the door in bolt locking position, which means require an operator to exert pressure on said means in directions at right angles to each other in order to actuate said locking means to release the bolt. The construction is such that it is impossible for a person outside of the car to manipulate the locking means and move the handle on the inside of the door.

Another object is to provide means, operated by the door locking mechanism, for locking the pivotally mounted wing windows now used in automobile doors. Most unauthorized manipulation of door locking means by persons outside of the car is accomplished by entry through the wing windows, and therefore the locking of said windows by the means herein described is an important feature.

In the drawings:

Fig. 1 is an elevational view of door locking means embodying my invention as viewed from the inside of the car, with the door upholstery removed.

Fig. 2 is an elevational view, partly in section, of that part of the locking means of Fig. 1 which embodies the invention, taken in the plane of the line 2—2 of Fig. 4.

Fig. 3 is a view similar to Fig. 2, showing the handle in raised or locked position.

Fig. 4 is a transverse sectional view, taken in the plane of the line 4—4 of Fig. 1, on an enlarged scale.

Fig. 5 is a transverse sectional view, taken in the plane of the line 5—5 of Fig. 3.

Figs. 6 and 7 are enlarged sectional views taken in the planes of the lines 6—6 and 7—7 of Figs. 2 and 3, respectively.

Fig. 8 is an elevational view of door and window locking means embodying my invention, as viewed from the inside of the car, with the door upholstery removed.

Fig. 9 is an elevational view of part of the mechanism shown in Fig. 8, with the door handle and connected locking means removed to disclose the window locking means.

Fig. 10 is a view similar to Fig. 9, showing the window locking means in locking position.

Fig. 11 is an enlarged horizontal sectional view, taken in the plane of the line 11—11 of Fig. 10.

In Fig. 1, a conventional automobile door 10 is provided with a locking bolt 11, bolt housing 12, operating handle 13 mounted on the inner side of the door on a plate 14, and operative connections between the inner handle 13 and bolt 11, including the links 15 and 16. These are conventional lock parts, in which downward pressure on the handle 13 retracts the bolt 11, and raising of the handle 13 above the position shown in Fig. 1 prevents movement of the outer handle 13' (shown in dotted lines) on the outside of the door.

My invention comprises certain cooperating parts which are mounted between the handle 13 and the plate 14. Said parts include a block 17 bored at 18, having pivot extensions 19 and 20 at opposite sides. The hub 21 of the handle 13 is recessed to fit on the pivot extension 20 of the block 17 and is secured to the part 20 by a set screw 22. The hub 21 is provided with a recess 23 and the extension 20 is bored at 24 to receive a plunger 25 having a presser button 26 on its outer end, externally of the handle 13. The plunger is retained in the recess 23 by a collar 27 bearing against the end wall of the recess 23.

A lever 28 extends through the bore 18 in the block 17 and is mounted on a pivot pin 29 fixed in the walls of the block 17. The end 30 of said lever is adapted to bear on a pin 31 mounted in a housing 32 fixedly secured at 33 to the part 19 of the block 17. The pin 31 has a flange 34 spring pressed by a coiled spring 35 normally to cause the pin to project from the housing 32, as will be explained.

The opposite end of the lever 28 is adapted to engage and disengage a stop shoulder 36, 36', formed in the wall 37 of an angle plate 38 fixed to the plate 14 by screws 39.

When it is desired to lock the door 10, the door is closed and the handle 13 is raised from the position shown in Figs. 1, 2 and 4 to the position

of Figs. 3 and 5. Raising of the handle 13 causes the block 17, lever 28 and housing 32 to move with the handle about the pivotal center of the handle hub 21 and the pivotal extension 19 mounted in said plate 14. While the handle 13 is being raised, the lever 28 slides on the outer edge of the flange 37 of the angle plate 38, as shown in Figs. 2 and 6, and when it has been raised to the limit of its movement, the lever 28 comes opposite the shoulder 36 and engages the shoulder as shown in Figs. 3 and 7. The shoulder is formed by cutting away part of the end of the flange 37 of the angle plate 38 on a diagonal line 36, and on the line 36', as best shown in Fig. 3. The lever 28 is held in shoulder engaging position by reason of the expansive tendency of the spring 35, causing the pin 31 to project and to bear against the end 30 of the lever 28, as shown in Fig. 5. Thus the handle 13 is locked in its raised position by the engagement between the lever 28 and the fixed shouldered angle plate 37—38.

To release the handle 13 from locked position, it is necessary to press on the button 26, causing the plunger 25 to move the lever 28 on its pivot 29, against the pressure of the spring pressed pin 31, and while pressing inwardly on the button 26, to bear down on the handle 13 to move it downwardly about its pivotal connection to the door. It is necessary for the operator simultaneously to exert pressure in two directions, at right angles to each other, a feat impossible to accomplish from outside of the closed door.

It will be understood that the parts located between the handle and the fixed plate 14 may be housed in a depression in the door 10 and concealed by upholstery, not shown.

In Figs. 8 to 11, inclusive, the door locking means heretofore described has been applied to a door 40 having a window 41, pivotally mounted at 42. The bolt 11, housing 12, handle 13, plate 14, and parts between the handle 13 and plate 14 are constructed as heretofore described, and the operative connections or links 43 and 44 correspond with the links 15 and 16, but the link 43 is disposed at a different angle and is connected to the handle 13 by a lever 45 pivotally connected at 46 to the link 43 and fixedly mounted at its other end on the square end 47 of the handle pivot. The handle 13 operates, as heretofore described, to actuate the bolt 11, and the latching lever 28 and shouldered angle plate 37—38 serve to lock the handle, as described.

To prevent opening of the window 41 from the outside of the car, I provide as a part of the operative connection 43 levers 48, 49 and pivotally mounted bolt or lever 50, the latter engaging a keeper plate 51 fixedly mounted on the window 41 by screws 52.

The lever 48 is rigidly connected by rivets 53 to the link 43. The levers 48 and 49 are pivotally connected at 54, and the levers 49 and 50 are pivotally connected at 55. The bolt or lever 50 is pivotally connected to the door 40 by a headed pin or screw 56.

When the handle 13 has been moved to raised position as heretofore explained, the bolt or lever 50 will engage the plate 51 and prevent opening of the window 41.

Changes may be made in details of construction without departing from the scope of my invention.

I claim:

1. An automobile door lock comprising a locking bolt, a handle pivotally mounted on the inside and another handle on the outside of the automobile door for independent operation of said bolt, operative connections between the inner handle and the bolt for retracting the bolt upon swinging movement of the handle in one direction, said connections being operative when said inner handle is swung in the opposite direction to prevent operation of the bolt and said outer handle, said inner handle having a hub portion, a rockable latching lever pivotally mounted in said hub portion, said lever extending transversely through the hub portion and being movable with the handle, a lever-engaging member fixedly mounted on the door between said lever and the door, means on the handle hub bearing on said lever for moving the lever into engagement with the lever-engaging member when the handle is swung in said opposite direction, and a manually operable plunger axially mounted in the handle for actuating the latching lever and releasing it from said lever-engaging member to permit movement of the handle.

2. Locking means for simultaneously locking an automobile door and pivotally mounted window pane in said door, comprising a locking bolt in the door, a handle on the outer side of said door for operation of said bolt, a handle pivotally mounted on the inside of the automobile door and swingable in opposite directions from a normally inoperative position, operative connections between the inner handle and the bolt for retracting the bolt when said inner handle is swung in one direction and to dog the outer handle when swung in the opposite direction, said inner handle having a hub portion, a latching lever pivotally mounted in said hub portion, a lever-engaging member fixedly mounted on the door between said lever and the door, means on the handle hub bearing on said lever for moving the lever into latching engagement with the lever-engaging member when the inner handle is swung in said opposite direction, a manually operable plunger movably mounted in the handle for actuating the latching lever and releasing it from said lever-engaging member to permit movement of the handle, a keeper plate connected to the window pane, and said operative connections between the handle and locking bolt, including a series of levers and a bolt for engaging the keeper plate on the window pane to prevent pivotal movement of the pane when the handle is in position to dog said outer handle.

3. Locking means for simultaneously locking an automobile door and pivotally mounted window pane in said door, comprising a locking bolt in the door, a handle pivotally mounted on the inside of the automobile door for swinging movement in opposite directions from a normally inoperative position, operative connections between the handle and the bolt for actuating and controlling the actuation of the bolt, a keeper plate connected to and spaced from the window pane on the inside of the automobile, and said operative connections between the handle and locking bolt including a series of levers one of which is mounted to engage said keeper plate on the window pane to prevent pivotal movement of the pane when the handle is swung to control the actuation of the first mentioned bolt.

4. An automobile door lock comprising a locking bolt, inner and outer door handles pivotally mounted on opposite sides of the door for independent operation of said bolt, means providing an operative connection between the inner handle and said bolt when said inner handle is swung on

its pivotal mounting in one direction to retract the bolt, said means being operative when said inner handle is swung in the opposite direction to prevent operation of said bolt by said outer handle, and manually releasable interlocking means on said door and inner handle and engageable upon movement of the inner handle into said last named position to secure the inner door handle against movement in a direction to release the outer handle.

5. In a lock for an automobile door having a swingably mounted ventilating sash, means for securing said door and its sash, operating means for controlling said means including a pivotally mounted handle and a connecting member operable on swinging movement of said handle in a direction to prevent operation of said bolt to lock said sash against unauthorized movement and a latching means engageable with said operating means upon movement of same into said last named position.

6. An automobile door and window lock comprising two relatively movable bolts, inner and outer handles pivotally mounted on opposite sides of said door for independent operation of said bolts, means providing an operative connection between one handle and one bolt to retract said one bolt when said one handle is swung on its mounting in one direction, said means being operative when said one handle is swung in the opposite direction to move the other bolt to locking position and to prevent operation of either of said bolts by the other handle, and interlocking means on said one handle and door engageable upon movement of said one handle into said last named position to secure said one handle against movement to release said other handle.

7. In a lock for an automobile door having a relatively movable sash, bolt means for securing both said door and said sash in closed positions, handles pivotally mounted on opposite sides of said door, the outer handle having a connection with said bolt means for normally releasing said door, said bolt means including a connection with the inner handle for operation thereby to also release the door upon swinging movement of said inner handle in one direction, said last mentioned connection being operative upon swinging movement of said inner handle in the opposite direction to move said bolt means to lock said sash and prevent further operation of said means by the outer handle.

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