

Jan. 20, 1931.

A. B. RUSS ET AL

1,789,775

LOCK

Filed May 8, 1929

2 Sheets-Sheet 1

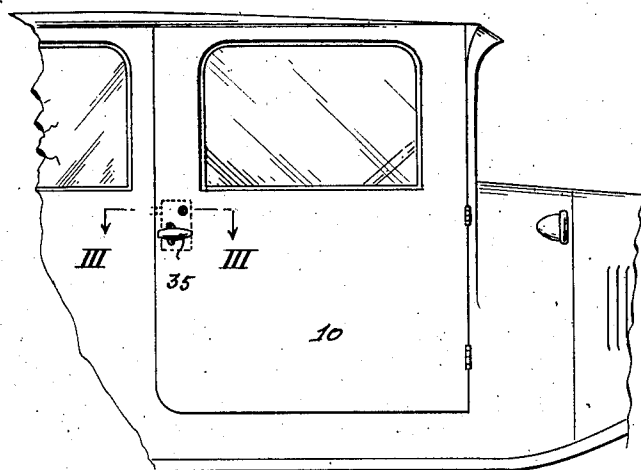


Fig. 1.

Fig. 2.

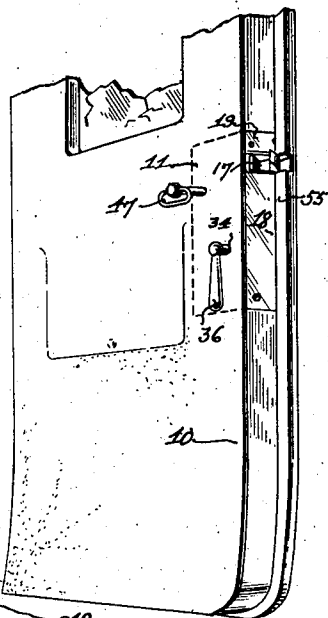


Fig. 3.

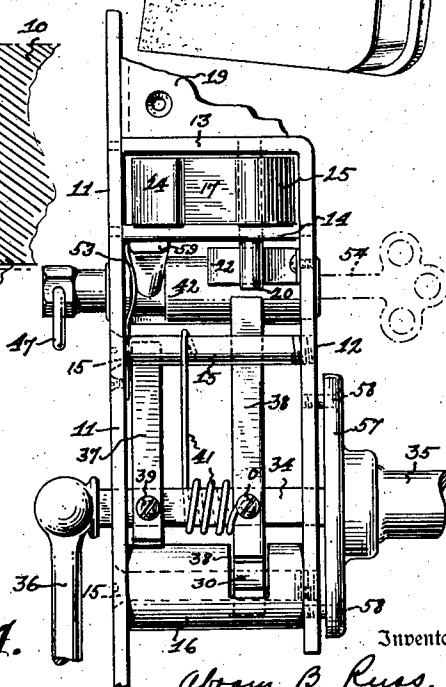
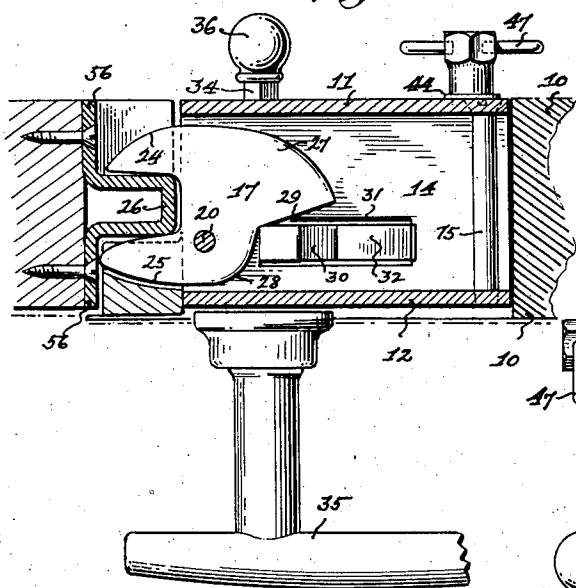


Fig. 4.

Inventors,  
Abram B. Russ,  
Roy W. Hepler,  
by M. J. Schenck, Attorney

**Jan. 20, 1931.**

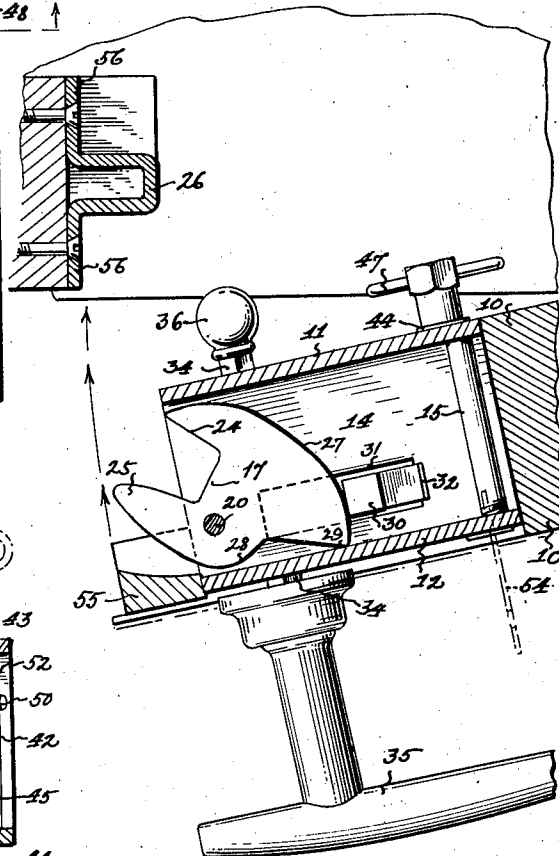
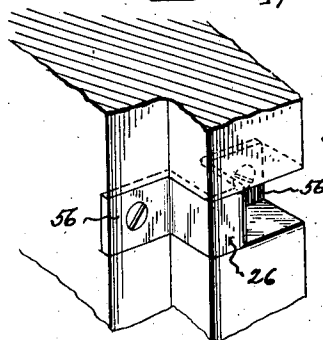
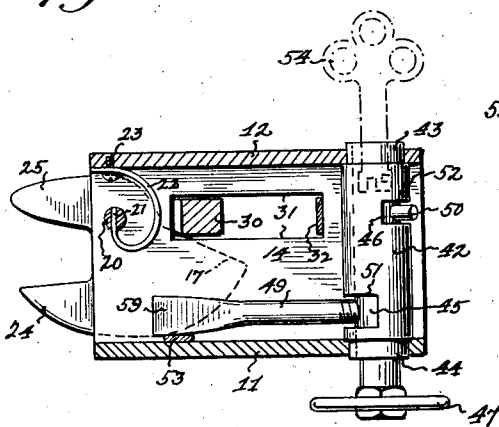
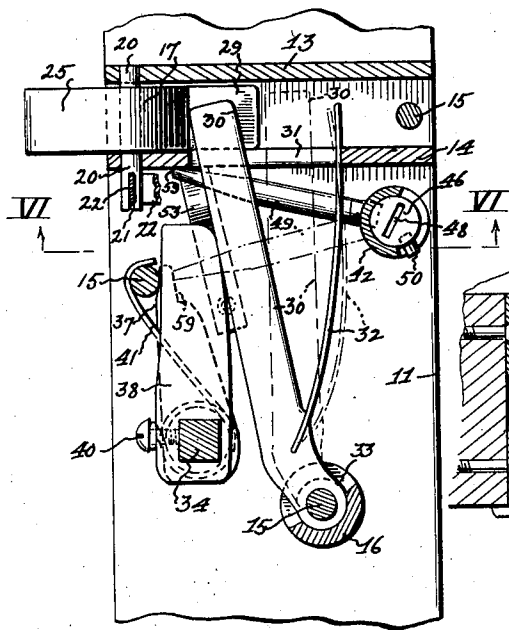
A. B. RUSS ET AL

**1,789,775**

LOCK

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2 Sheets-Sheet 2



Inventors  
 Abram B. Russ,  
 Roy W. Hepler,  
 by *W. J. Johnson*  
 Attorney

## UNITED STATES PATENT OFFICE

ABRAM B. RUSS, OF NEW ORLEANS, LOUISIANA, AND ROY W. HEPLER, OF BILOXI, MISSISSIPPI

## LOCK

Application filed May 8, 1929. Serial No. 361,530.

This invention relates to locks and latches for automobile doors, and especially to that type in which the device can be used as a latch freely operable by a handle or which can be used as a lock requiring a key for its operation.

The objects of the invention are:

First, to provide a latch offering substantially no resistance to the latching of the door in closing thus avoiding jarring the door parts.

Second, to produce a tight anti-rattling holding of the door in latched position.

Third, to provide a dogging means effective within an appreciable angle of swing of the latch bolt.

Fourth, to provide a latch requiring a very shallow mortise in the edge of the door.

Fifth, to provide such a latch having means for dogging the outside operating means by manually operated means from within the door, said dogging means being operable from without the door by means of a key.

Sixth, such other advantages as will appear from the construction and relation of the several parts comprising the cooperating elements of the latch and lock, as set forth by the following detailed description:

The invention consists of structural characteristics and relative arrangement of elements which will be hereinafter more fully described and particularly pointed out in the appended claims.

In the drawings, in which similar reference characters indicate similar parts in the several figures:

Figure 1 is an elevation of an automobile door with our lock in position thereon;

Figure 2 is a perspective view of a door with the lock in place, as viewed from the inner side and edge of the door;

Figure 3 is a sectional view taken on line III—III of Figure 1;

Figure 4 is an edge view of the lock in elevation with the face or end plate removed;

Figure 5 is a vertical sectional view on a line taken just within the outer side plate shown in Figure 4;

Figure 6 is a horizontal sectional view

taken on line VI—VI of Figure 5, looking in the direction of the arrows;

Figure 7 is a horizontal sectional view of the device showing the door partly open with the latch bolt in released position; and,

Figure 8 is a perspective view of the keeper in position in the jamb.

Referring to Figure 4, it will be seen that the lock casing is formed of two side plates 11 and 12 fastened together by screw bolts 15 and held spaced apart by the bent over end 13 of plate 12 forming the top plate of the casing and at its lower end by the hollow post 16 through which one of the screw bolts extends.

The casing is mounted in a chamfer or mortise in the edge of the door so as to lie flush with the inner surface of the door 10 and with its edge as shown in Figures 2 and 3. The lock casing being open at its edges, excepting the top edge, a separate covering plate 18 is fastened to the door to cover the open end of the lock. The lock casing has a plate 19 rigid therewith for fastening the lock casing to the door by means of screws or other well known fastening means.

Between the top plate 13 and partition plate 14 is journaled the latch bolt 17 mounted for swinging movement by means of a shaft 20 rigid with bolt 17. Shaft 20 has its lower end projecting through partition plate 14 and split as at 21 to tightly receive the end of a torsion spring 22, the other end of which is fastened as at 23 to the casing wall. Spring 22 normally swings bolt 17 into the door releasing or retracted position shown in Figure 7.

The swinging bolts 17 is formed with two teeth or projections 24, 25, tooth 25 continuously projecting from the lock casing into the path of a keeper lug 26, tooth 24 projectable into the path of said lug on the closing of the door so as to confine the keeper lug 26 between teeth 25 and 24, as shown in Figure 3. The side of bolt 17 adjacent tooth 24 is arc shaped at 27 with the axis of shaft 20 as a center, while the side adjacent tooth 25 is shaped as an arc at 28 so as to allow a swinging of the bolt about 20 as a center without contacting with the sides of the lock casing.

At 29 the bolt is formed with a straight side joining the arc shaped sides 27, 28, as shown in Figure 3, and so arranged as to form an acute angle with the path of travel of a latch dogging or locking means 30 when bolt 17 has been swung into the door locking position shown in said figure.

Lever 30 extends through a slot 31 in the partition plate 14 and is normally swung to contact with the periphery of bolt 17 by a leaf spring 32 having one end inserted into a kerf in lever 30 and the other end contacting the end of slot 31, as shown. Lever 30 is pivoted on screw bolt 15 within post 16, said post being slotted through part of its circumference as at 33 to allow swinging of lever 30 through its arc of movement.

34 designates a squared handle spindle extending through the lock casing having an outer handle 35 and an inner handle 36 non-rotatably connected thereto and journaled for rotation in apertures in casing walls 11, 12.

Clamped to spindle 34 by set screws 39, 40 for rotation therewith are two arms 37, 38, said arms being normally held in contact with an abutment in the form of one of the clamping screw bolts 15, shown in Figures 4 and 5, by a coil spring 41 fastened at one end about the neck of set screw 40, the other end contacting the fixed screw bolt 15.

Arm 38 swings in the path of movement of lever 30 and on rotation of either handle is capable of moving lever 30 against the pressure of spring 32 so as to move said lever out of contact with the periphery of bolt 17.

A sleeve 42 is clamped between plates 11, 12 of the casing and has reduced ends 43, 44, extending through said wall to secure it against lateral displacement. Within sleeve 42 there are rotatably disposed two cylindrical plugs 45, 46, plug 45 having a thumb piece 47 connected with its projecting end, and plug 46 having its outer end slotted as at 48 for the reception of a key. Plugs 45 and 46 are independently rotatable and are prevented from longitudinal movement by parts 49, 50 rigidly attached to the respective plugs, as shown in Figure 6, but allowing limited rotary movement in slots 51, 52 in sleeve 42.

The part or dogging arm 49 swings in the path of movement of arm 37 on handle spindle 34, its end being formed spatulate so as to be capable of securely seating in a notch 59 provided in the end of arm 37 when said arm is in its normal or inoperative position in contact with screw bolt 15, as shown in Figure 5.

53 designates a leaf spring over which the spatulate part of dogging arm 49 wipes said spring being bowed near its free end so as to frictionally hold arm 49 in inoperative position. The other end of spring 53 is fastened rigidly to casing wall 11, as shown in Figures 4 and 5.

The slot in plug 46 extends entirely through said plug and is continued into the adjacent end of plug 45 so that a key, such as 54, inserted through plug 46 will ultimately enter the slot in plug 45 so as to turn both plugs together and, therefore, operate dogging arm 49 to operative or inoperative position.

As shown in Figure 2, the stop strip 55 of the door may be chamfered at 56 to provide room for tooth 25 to swing to locking position on closing the door, thus allowing a thinner construction of door.

The keeper lug 26 may be provided by bending a strip of metal upon itself, thus providing at the same time attaching ears 56, 56, as shown in Figure 8.

An escutcheon or rose plate 57 may be provided to act as a bearing for the handle 35 and spindle 34, the escutcheon being attached to side plate 12 by screws 58.

It will be seen from an inspection of Figure 3 that latch dogging lever 30 exerts a camming action along the edge 29 of bolt 17 so as to turn said bolt in a direction to tightly press the door into the door opening.

In the operation of the device the door being latched, as shown in Figure 3, a turning of handle 35 or 36 will turn arm 38, which arm will contact and move latch dogging lever 30 against the tension of spring 32 and out of the path of movement of bolt 17, thus releasing said bolt for swinging movement on its pivot 20. Bolt spring 22 will tend to turn bolt 17 so as to swing tooth 24 back into the lock casing and project tooth 25 against the keeper lug so as to open the door. A slight pull on handle 35 or pressure on handle 36 causing the door to open.

When handle 35 or 36 is released latch dogging lever 30 will be thrown in contact with the curved edge 27 of bolt 17, spring 41 returning the handles and arms 37 and 38 to original inoperative position against stop 15.

To latch the door, a simple pushing or pulling of the door to closed position is sufficient. Latch bolt 17 being held by spring 22 in keeper lug receiving position with tooth 24 retracted and tooth 25 projected, is turned on its journals 20 as lug 26 strikes tooth 25 so as to embrace lug 26 between the teeth 24, 25. Latch dogging lever will ride off the curved edge 27 to snap along the straight cam edge 29 and tend to throw bolt 17 still farther about pivot 20 so as to jamb the door tightly into the door frame and prevent rattling.

The angle formed by the straight edge of bolt 17 with the path of movement of dogging lever 30 is of such acuteness that turning force exerted on tooth 24 will not move lever 30 out of bolt dogging position.

The spindle 34 and, hence, the operating handles 35 and 36 can be dogged by turning thumb turn 47 from the inside or key 54 from the outside of the door. Such turning move-

ment will rotate arm 49 into notch 59 of arm 37 rigid with spindle 34.

From the foregoing disclosure of the construction and arrangement of the improvement and mode of applying the same, it will be seen that all the objects and advantages recited have been fully and efficiently carried out, and while we have shown and described our preferred form of lock and latch various changes will readily suggest themselves without in any way departing from the salient features herein disclosed and as embodied in the scope of the claims.

What we claim is:

1. In a combined lock and latch, a pivoted latch bolt, spring means for normally moving and holding said bolt in inoperative position, keeper means for moving said bolt to operative position on closing the door, a spring pressed means for automatically dogging said bolt when moved to operative position, a rotary handle spindle extending through the closure and having a handle rigidly attached at each end and an arm rigidly mounted on said spindle and moving in the path of said dogging lever to move said lever out of bolt dogging position.

2. In a combined lock and latch, a pivoted latch bolt, spring means for normally moving and holding said bolt in inoperative position, keeper means for moving said bolt to operative position on closing the door, a spring pressed lever for automatically dogging said bolt when moved to operative position, a rotary handle spindle extending through the closure and having a handle rigidly attached at each end and an arm rigidly mounted on said spindle and moving in the path of said dogging lever to move said lever out of bolt dogging position.

3. In a combined lock and latch for closures, a lock casing, a pivoted latch bolt mounted in said casing, spring means for normally moving said bolt to inoperative position, keeper means for moving said bolt to operative or latching position by the closing movement of the closure, a spring pressed dogging lever for automatically dogging said bolt when said bolt has been moved to operative position, a rotary knob spindle journaled in said casing for moving said dogging lever to bolt releasing position, and key operated means in said casing for locking said knob spindle against movement.

4. In a combined lock and latch for closures, a lock casing, a pivoted latch bolt mounted in said casing, spring means for normally moving said bolt to inoperative position, means for moving said bolt to operative position by the closing movement of the closure, a spring pressed lever for automatically dogging said bolt in its operative position, knob spindle means for moving said lever to inoperative position, a dogging means for said knob spindle journaled in

said casing, and means for manually operating said dogging means from inside the closure and by key from the outside.

5. In a device as described, the combination of a casing comprising side plates, an end or face plate, and a top plate, a partition plate in proximity to the top plate for dividing the casing into two chambers, means to clamp the plates together with the side plates in spaced parallel relation to each other, and a swinging bolt journaled in one chamber between the top plate and partition plate, and operating means for said bolt journaled in the other chamber between said side plates.

6. In a device as described, the combination of a latch housing having two chambers separated by a slotted partition plate, and a latch bolt mounted for swinging movement in one of said chambers, a spring for normally swinging said bolt to inoperative position, means on said bolt for swinging said bolt to operative position by the closing movement of the closure on which it is mounted, a dogging lever pivoted in the other of said chambers for automatically dogging said bolt in operative position and extending through said slot in the partition plate into the path of movement of said bolt, and manually operable means journaled in said second mentioned chamber for releasing said bolt dogging means.

7. In a combined lock and latch for closures, a pivoted latch bolt having an inclined surface, means for moving said bolt to inoperative position on opening movement of the closure, cooperating means on the keeper and bolt for moving the bolt to operative position by the closing movement of the closure, and means moving in a plane at right angles to that of the bolt movement and having the combined function for dogging said bolt from movement when moved to its operative position and cooperating with said inclined surface for camming said bolt against the keeper and prevent rattling.

8. In a combined lock and latch for closures, a pivoted latch bolt having an inclined surface, spring means for moving said bolt to inoperative position on opening said closure, cooperating means on the keeper and bolt for moving the bolt to operative position by the closing movement of the closure, and a spring pressed means moving in a plane at right angles to that of the bolt movement and having the combined function for dogging said bolt from movement when in its operative position and cooperating with said inclined surface for camming said bolt against the keeper and prevent rattling.

9. In a combined lock and latch for closures, a pivoted latch bolt having an inclined surface, means for moving said bolt to inoperative position on opening movement of the closure, cooperating means on the keeper and bolt for moving the bolt to operative posi-

tion by the closing movement of the closure, and means moving in a plane at right angles to that of the bolt movement and having the combined function for automatically dogging  
5 said bolt from movement when moved to its operative position and cooperating with said inclined surface for camming said bolt against the keeper and prevent rattling.

- 10 10. In a combined lock and latch for closures, a pivoted latch bolt having an inclined surface, spring means for moving said bolt to inoperative position on opening said closure, cooperating means on the keeper and  
15 bolt for moving the bolt to operative position by the closing movement of the closure, and a spring pressed lever moving in a plane at right angles to that of the bolt movement and having the combined function for dog-  
20 ging said bolt from movement when in its operative position and cooperating with said inclined surface for camming said bolt against the keeper and prevent rattling.

In testimony whereof we hereunto affix our signatures.

25 ABRAM B. RUSS.  
ROY W. HEPLER.

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