

1,221,932.

J. F. WHITE,  
LATCH.  
APPLICATION FILED JUNE 29, 1916.

Patented Apr. 10, 1917.  
2 SHEETS—SHEET 1.

FIG. 1

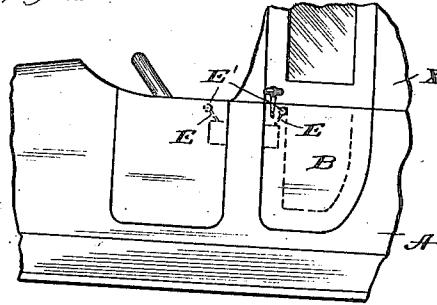


FIG. 4

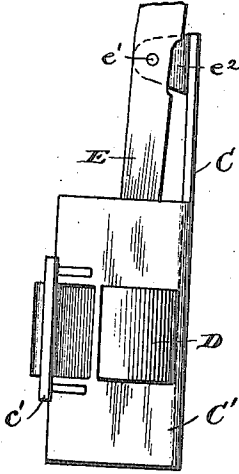


FIG. 5

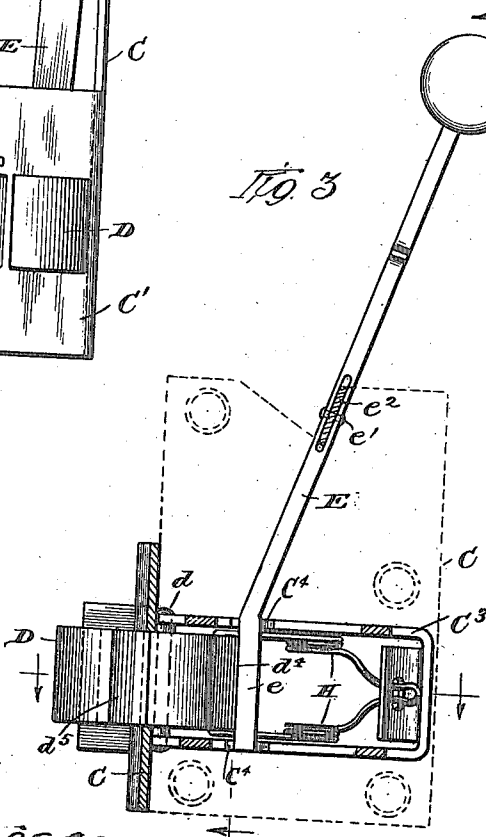
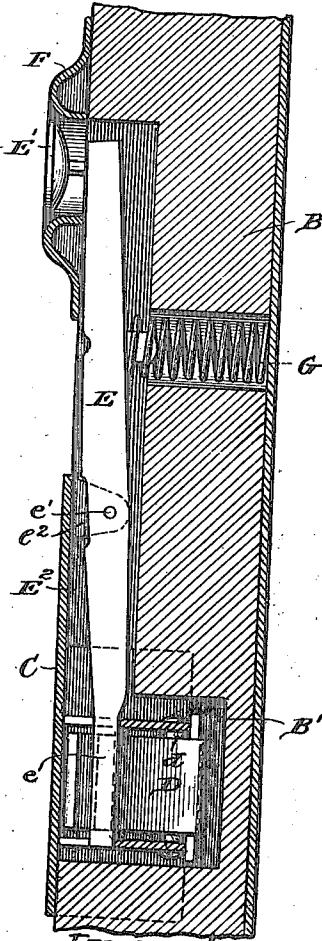


FIG. 2



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By

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John F. White  
By *Blair & Milam, Attys.*

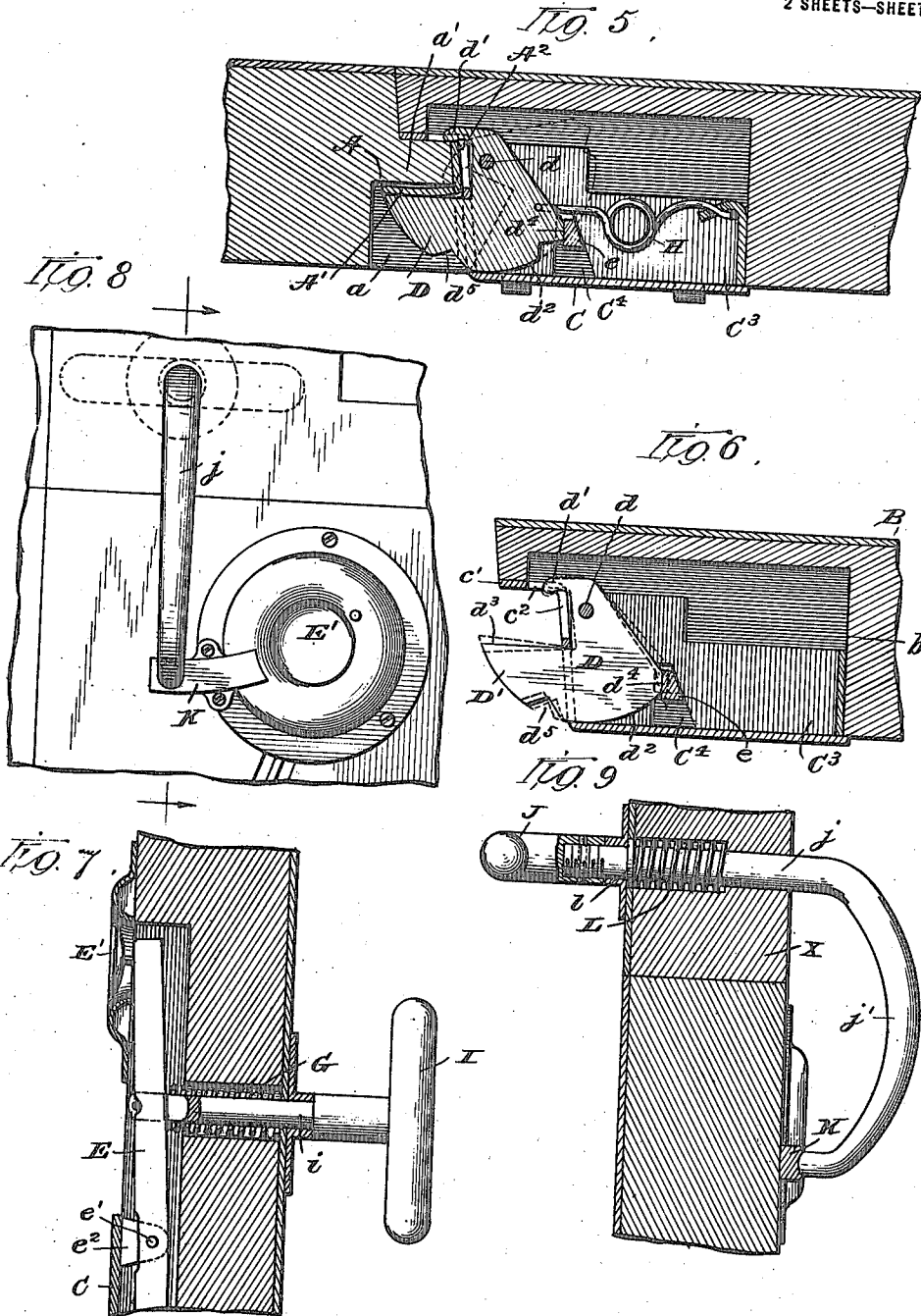
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# UNITED STATES PATENT OFFICE.

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## LATCH.

1,221,932.

Specification of Letters Patent. Patented Apr. 10, 1917.

Application filed June 29, 1916. Serial No. 106,687.

### To all whom it may concern:

Be it known that I, JOHN F. WHITE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Latches, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an improvement in a lock or fastener designed more particularly for use in connection with securing the doors of automobiles or carriages in their closed position.

An object of the invention is to provide primarily a lock which will automatically fasten the door closed but which can upon slight pressure be released to permit the door to be opened.

A further object is that of providing a lock of the character designated as an anti-rattler, that is to say a lock which will securely fasten the door closed and will prevent the door as well as the lock bolt from vibrating when in locked or locking position.

Heretofore it has been suggested to provide a pivoted bolt member having a tail piece or projection normally positioned to be engaged by the stationary part of the door frame upon the closing of the door, thus rocking the bolt into the hasp or keeper on the frame.

It has also been suggested heretofore to provide a trigger mechanism or device adapted to engage a shoulder on the rocking bolt when the latter was in its locking position and for retaining the bolt in its locked position.

In such structures it is found, however, that there was necessitated a certain amount of play between the trigger mechanism and the rocking bolt so that the door would have more or less freedom of movement and thereby create an objectionable rattle. It is to overcome the objections found to exist in structures heretofore suggested that the present invention is designed.

A further object of the invention is that of the provision of means for operating the lock from the outside of the car when the car is provided with a closed-in top portion or a removable limousine top.

A further object of the invention is the provision of a trigger or lock fastening means with a spring member having the requisite strength to forcibly hold the rock-

ing bolt in close contact with the wall of the hasp member of the door frame, thereby permitting the use of a very light spring for the rocking bolt.

A still further object of the invention is that of providing a locking mechanism for automobile doors having a concealed or protected actuating or releasing member, thus overcoming the objections existing in the present art to projecting handles or heads.

In the drawing there is shown a construction involving the invention presently to be described and certain modifications of operating handles, but it is to be understood that the hereinafter referred to wedging member, as well as various details of construction can be modified and changed without departing from the nature and principle of the invention.

Figure 1 is a fragmentary view of the side of an automobile;

Fig. 2 is an enlarged vertical section through an automobile door showing the chambered part thereof and the lock mechanism in its operative position;

Fig. 3 is an elevation of the construction shown in Fig. 2 showing the front plate in dotted lines;

Fig. 4 is an edge view of the lock;

Fig. 5 is a section through the line 5-5 of Fig. 3, but showing the keeper on the door frame;

Fig. 6 is a view similar to Fig. 5 illustrating the wedging effect on the rocking bolt;

Fig. 7 is a detail section of an outside means operating the trigger mechanism or bolt lock in addition to the regular inside thumb piece;

Fig. 8 is an elevation of an inside portion of the door showing an outside operating mechanism employed when a detachable limousine part is added to the machine, and,

Fig. 9 is a section through the body and door of the construction illustrated in Fig. 8.

The type of lock or securing device presently to be described is one wherein a pivoted latch or bolt member is provided with a tail-piece arranged to operate the bolt from open to closed position when the bolt is closed. In the drawing, especially in Fig. 6, there is shown such a type of lock wherein B represents the door of an automobile or other vehicle, (as shown in elevation Fig. 1), and A represents the body or frame of the car. The door is mortised out, as shown at b, the mortise being closed by the lock

plate C which consists primarily of the attaching plate part and the keeper or edge part C', the latter being suitably apertured to receive the locking bolt, presently to be described.  $c'$  represents an extension of the keeper plate C' and through the edge of the keeper plate and extension there is formed an opening  $c^2$  through which the tail-piece of the bolt is adapted to pass. Mounted on the plate C, and securely secured by suitable mortised projections through the keeper plate C' is a metallic lock frame C<sup>3</sup>, conveniently of U-shaped formation and projected into the mortise of the door. In the opposite side bars of the frame C<sup>3</sup> there is pivoted the locking bolt D through the pivot  $d$ , the locking bolt being provided on one side of the pivot with a tail-piece  $d'$  operating through the opening  $c^2$  of the keeper plate of the lock. The bolt D is provided with a curved facing  $d^2$  which is formed on an arc, the center of which is the pivot  $d$ . The locking portion or fastening part D' is formed with a straight locking face  $d^3$  and positioned substantially opposite to said locking face is a straight shouldered part,  $d^4$ . Intermediate the shouldered part and the locking face there is formed a notch  $d^5$  in the edge of the bolt D, and this notch is formed of substantially V-shape for purposes presently to be described. The locking part of the bolt is designed to move through the bolt opening of the keeper plate C' into the position shown in full lines in Fig. 6. The side bars of the frame or housing C<sup>3</sup> are each formed with openings or guideways C<sup>4</sup>, the rear walls of which are inclined or obliquely fashioned with relation to the front walls, as clearly shown in Figs. 5 and 6. The openings C<sup>4</sup> are positioned with relation to the bolt D so that the straight shouldered part  $d^4$  when the bolt is projected outward will extend over the openings or beyond the plane of the straight edges thereof. To secure the bolt in its operative position, and also to insure of its full retraction and a maintenance of the bolt in its retracted position as well as to provide means for locking the bolt in a progressive manner, it has been found convenient to employ an operating trigger lever E, the same comprising an end piece  $e$  having its rear face inclined to correspond with the inclination of the rear walls of the opening C<sup>4</sup> of the frame C<sup>3</sup>. The lever E is pivoted intermediate its ends, as at  $e'$ , to a lug  $e^2$ , bent inwardly from the plate C. The upper end of the rocking bar carries a thumb piece E' surrounded by a protecting thimble F, secured to the inner face of the door. The rocking bar is conveniently positioned in a groove E<sup>2</sup> cut in the doorway, the lower end leading into the lock mortise of the door. With a view of positioning the operating thumb piece somewhat back from the edge of the door, the bar E is

bent or offset, as shown in Fig. 3 of the drawings, although this particular arrangement is not essential.

On the edge of the frame A, representing the door jamb, there is formed the recess for the locking portion of the bolt, as at  $a$ . The rear part of this opening, as at  $a'$  is provided with a curved plate A' formed as a tongue or extension of the face plate A<sup>2</sup> on the door jamb. This curved part A' is intended to be engaged by the locking part of the bolt, as shown in Fig. 5 when the door is closed.

With the parts of the lock or bolt retracted to a position shown in dotted lines, Fig. 5, the door upon being closed carries the tail-piece  $d'$  of the locking bolt into engagement with the edge plate A<sup>2</sup> of the door jamb, rocks the bolt into the position shown in full lines, Fig. 5 back of the curved plate  $a'$ . During this movement the trigger lever E with its extended bolt securing end working in the slots C<sup>4</sup> is moved inward back of the straight shouldered part  $d^4$  of the lock bolt, as shown in Figs. 5 and 6. This shoulder  $d^4$  is eccentric to the pivot of the bolt, and the pressure of the trigger end of the lever normally tends to force the bolt outward owing to the engaging inclined surfaces above referred to. The pressure or force creating this action is conveniently attained through the medium of a coiled spring G mounted in the door frame and engaging over a suitable projection at the rear of the upper leg of the tripping lever E, as shown in Fig. 2. The strength of the spring G is sufficient to carry the lower end of the tripping lever well inward and as soon as the shoulder  $d^4$  is projected over or beyond the plane of the front wall of the recesses C<sup>4</sup> there is an engagement thereof by the lower end  $e$  of the tripping lever, and inasmuch as the recess C<sup>4</sup> is of sufficient length to permit a continued movement of the end  $e$  as well as an inclined movement of the locking part D' the bolt will be forced forward until it meets with a firm and unyielding resistance, as shown in dotted lines in Fig. 6. The tongue A' of the jamb plate is conveniently curved so that the end of the part D' of the bolt will project slightly beyond the curved center of the part A', thereby effecting an interlock between the point of the bolt and the crown of the part A'. In other words, a substantially dovetail recess is formed between the straight face of the locking bolt and the extended part of the plate  $c'$ . As above stated, this effect is secured through the movement of the part  $e$  of the trip lever which is held in engagement with the inclined edge wall of the groove C<sup>4</sup>.

In positioning the lever E it is conveniently set so that while its lower end has an outward movement it is by virtue of the

spring of the part  $e^2$  carried slightly toward the right hand, viewed from Figs. 5 and 6, and thereby caused to follow the inclination of the edge of the slot  $C^4$ . When the bolt D is to be thrown back it is only necessary to press on the thumb piece  $E'$ , which, owing to the long leverage, requires but slight pressure to compress the spring G, thus carrying the securing end  $e$  of the lever out of range of the bolt. The door is then thrown open and by its movement rocks the bolt back into the housing by which time pressure is removed from the thumb piece  $E'$ , allowing the spring G to force the end  $e$  of the trip lever inward and to engage the right hand bottom wall of the notch  $d^5$  of the bolt. This will tend to impart to the bolt a final movement carrying, through the instrumentality of the single spring G, the extreme end of the locking part  $D'$  of the bolt into the housing and to there retain it against accidental outward movement. It will be seen that the device, as above described, is one wherein a single spring is needed and that spring is so located that it can be readily replaced should it become broken, and so without disassembling the parts of the lock.

In some instances it may be found convenient to employ a light spring, as H, for carrying the bolt full back into the housing. Such a spring is shown in Figs. 3 and 5 and takes the form of a coiled spring of U-shaped formation, having its ends pivoted in the tail of the bolt, while its innermost end is properly secured in the tang or overhanging part of the U-shaped lock supporting part. A spring, however, is not needed when the bolt is provided with the trip engaging notch portion which serves the purposes of finally setting and holding the bolt in open position.

It is now well known that the ordinary touring body of an automobile is in many cases built to receive a limousine top, and inasmuch as the thumb piece  $E'$  is located on the inside of the door it is desirable to have some means for enabling the operation of the trip arm or lever E from the outside.

A convenient form is shown in Fig. 7 wherein a handle part I is provided with a stem  $i$  passing through the front plate of the door through the spring G, and is pivotally connected to the upper end of the lever E. By pulling outward on the part I, the lever E is locked. Should it be desired to provide a turning handle, as distinguished from an outwardly moving handle, and to have the turning handle on the removable part of the frame, it is only necessary to provide a handle part J, as shown in Fig. 9, in the removable part X of the body of the car, and to provide an extension  $j$  passing through the part X and curved to form a finger part  $J'$ . A guide plate K is formed

on the inside of the door, curved and inclined to receive the finger part  $J'$  as the latter is moved in an arc of a circle through the handle J. The finger  $J'$  is thereby carried over and onto the finger piece  $E'$ , and by virtue of a spring L located in a recess in the part X abutting a shoulder  $l$  on the stem  $j$ , the part  $J'$  is moved with sufficient force onto the finger piece so as to trip the lever. In Fig. 9 the parts are shown in the position where the spring L is under compression, and as soon as the point or finger  $J'$  engages the part  $E'$  the lever E will be operated. Other arrangements may obviously be provided for enabling the user to operate the release catch from the outside.

There are many advantages to be derived from the construction above described, among which may be mentioned that of extreme simplicity, a minimum number of parts are employed, and a lock is provided which is operable without the usual springs located in or adjacent to the locking members. The lock is so formed that a perfect anti-rattler is provided and also when the parts are fully set, as shown in dotted lines Fig. 6 of the drawings, there is a union formed between the door and the jamb which prevents or at least resists in a measure any objectionable relative movement between the two parts owing to the overhang or interlock. It will further be noted that any slight variations or vibrating tendencies of the parts are resisted by the wedging action of the interengaging parts of the mechanism. It will also be noted that by the inclined movement of the trip or part  $e$  a wedging action is produced which at all times tends to take up any lost motion that may exist between the bolt and the hasp.

While I am aware that it is old to form rocking locking bolts with tail pieces designed to operate the bolt into a closed position and also to provide suitable latch mechanism for securing the bolt in its locked position, I am not aware that heretofore it had ever been suggested to provide a means for adding progressively a securing device to the locking bolt with a view of properly holding the same in its closed non-rattling position. I am also not aware of it having heretofore been suggested to provide a single spring member for operating the bolt lock or catch which also adds the final or full retracting movement to the bolt. I therefore wish it understood that the terms employed in the appended claims are not to be construed as limiting the invention to the exact construction shown and described.

Having thus described the invention what is new and desired to be secured by Letters Patent is:

1. In a lock for vehicle doors and the like, the combination with a pivoted locking bolt, of a fixed bearing member, and a movable

- member adapted to be moved toward the bolt through its engagement with the said fixed member and be wedged between the said fixed member and the bolt to lock the bolt in any locking position. 50
2. In a lock for vehicle doors and the like, the combination with a carrying part, of a pivoted locking bolt thereon, and means for locking the bolt against backward movement comprising a surface inclined toward the bolt, and a movable member interposed between said surface and the bolt. 55
3. In a lock for vehicle doors and the like, the combination with a frame, of a rocking bolt pivoted therein, and means for locking the bolt in any locking position that it may assume, comprising a member movable toward the bolt and a fixed member with which said movable member engages for positively causing the movable member to advance toward the bolt and to retain the bolt in its forward locking position. 60
4. In a door lock the combination with a frame, of a rocking bolt therein, and a trip member for securing the bolt in locked position, a spring for operating the trip in one direction, and a wedging surface for moving the trip toward the bolt. 65
5. In a door lock the combination with a frame and a rocking bolt therein, of means for locking the bolt in its extreme locking position and means cooperating with said first mentioned means for causing the bolt to move inward when in an unlocked position. 70
6. In a door lock the combination with a frame member, of a rocking bolt therein, a hasp member having a curved surface with which the locking face of the bolt engages, and spring actuated locking means for causing the end of the locking face of the bolt to project inward beyond the crown of the curved part of the hasp member. 75
7. In a door lock the combination with a frame member, of a rocking bolt therein, a hasp member having a curved surface with which the locking face of the bolt engages, and spring actuated means for causing the end of the locking face of the bolt to project inward beyond the crown of the curved part of the hasp member and for locking the same in such position. 80
8. In a door lock the combination with a door having a mortise therein, of a lock frame secured in the mortise, of a rocking bolt secured in the frame, a trip lever for securing the bolt in locked position, a spring engaging the trip lever, a thumb piece for operating the lever located on the inner face of the door, and a guard for the thumb piece. 85
9. In a door lock the combination with a lock frame having side bars, of an inclined part, a locking bolt pivoted in the frame, and a spring actuated trip for locking the bolt having one face thereof arranged to engage the said inclined part. 90
10. In a door lock the combination with a lock frame having a grooved side bar, one wall of the bar being inclined toward the forward edge of the lock, a rocking bolt pivoted in the frame, and a spring actuated catch lever having its end part arranged to engage said inclined portion and to be forced into holding engagement with the said locking bolt, substantially as described. 95
11. In a door lock, a rotatably mounted bolt adapted to be operated manually for locking and unlocking movements, and a spring actuated trip member for locking the bolt in locked position and an inclined surface for causing the trip to engage the bolt. 100
12. A lock including a rotatably mounted bolt member operable manually for locking and unlocking, means for holding the bolt in locked position comprising an element for causing the said means to positively advance toward the bolt, and a spring associated with said means for moving the same into an operative position. 105
- In testimony whereof I hereunto affix my signature in the presence of two witnesses. 90
- JOHN F. WHITE.
- Witnesses:  
A. B. FALCH,  
JAMES E. GALLAGHER.