E. CROMPTON AND C. L. CROOKS.

LOCK OR LATCH.

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1,434,371. Patented Nov. 7, 1922.

Fig. 1.

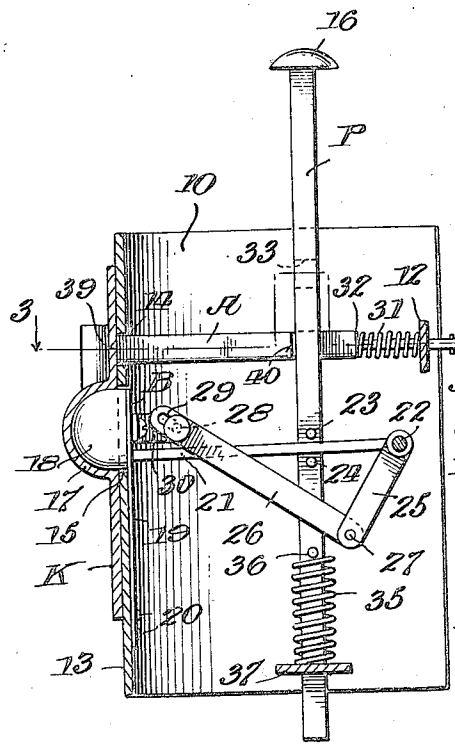
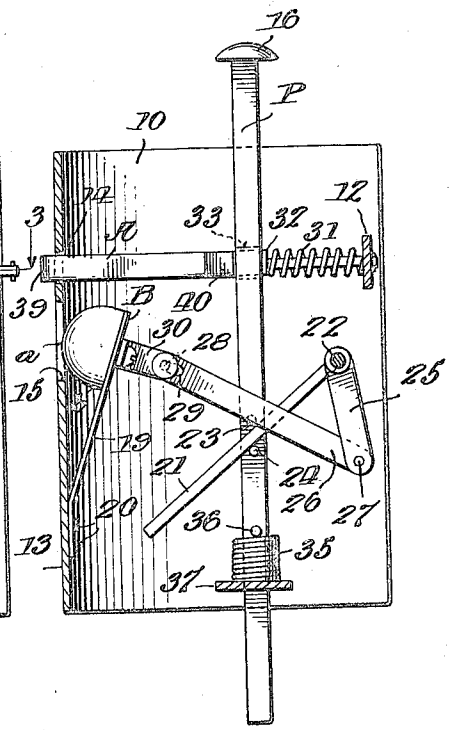


Fig. 2.



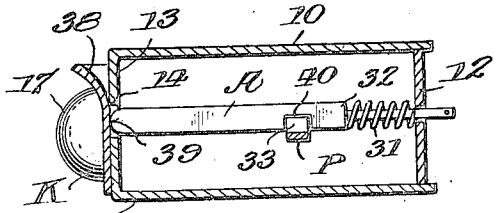


Fig. 3.

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UNITED STATES PATENT OFFICE.

EDWIN CROMPTON AND CHARLES L. CROOKS, OF PUEBLO, COLORADO.

LOCK OR LATCH.

Original application filed August 23, 1919, Serial No. 319,460. Divided and this application filed January 26, 1922. Serial No. 531,904.

To all whom it may concern:

Be it known that we, EDWIN CROMPTON and CHARLES L. CROOKS, citizens of the United States, residing at Pueblo, in the county of Pueblo and State of Colorado, have invented certain new and useful Improvements in Locks or Latches; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to locks or latches and more particularly to combined latch and lock devices especially adapted for use on automobile doors, but it will be understood that the use of the same is not limited to such doors.

The principal object of this invention is to improve the construction of latches or locks of the type disclosed in Patents Nos. 1,281,143 and 1,281,144, granted to Edwin Crompton and Charles L. Crooks, October 8, 1918.

In the latches and locks disclosed in these patents, the movable latching or locking element comprises a substantially semi-spherical knob or head that is resiliently projected from the latch casing and is adapted to enter a socket or recess in a cooperating keeper device. In this form of latch or lock, the locking or latching knob is depressed or forced back into the lock or latch casing by a part of the cooperating keeper, both in opening and closing the door. Although this type of lock or latch operates very satisfactorily, it is necessary, in order that the parts shall function properly, that the knob in such locks or latches as constructed prior to our present invention be made comparatively short or shallow to permit it to be readily pushed back by the keeper when the door is being opened or closed. A longer or deeper knob would be more effective in securing increased positive locking or latching action. However, in order that a knob of substantially greater locking or latching depth may be employed, it is practically necessary to provide auxiliary means for positively moving the knob out of locking or latching engagement with the keeper when the door is to be opened, instead of depending merely on the keeper to depress the knob.

Accordingly, this invention aims to provide a lock or latch structure in which the locking or latching knob may be of a maximum operative length or locking and latching depth and is moved to and from its locking or latching position by positive and manually operable means located most desirably in the lock or latch casing and operatively associated with the knob in such manner as to be capable of actuating the same in the desired way.

Another object of this invention is to provide a lock or latch structure in which the mechanism will be held in unlocked or unlatched position while the door is open, but which will be automatically moved to locked or latched position when the door carrying the lock or latch is closed.

The above and other objects and novel features of the invention will be apparent from the following description taken in connection with the accompanying drawings which illustrate one embodiment of our invention.

This application is a division of our pending application filed August 23, 1919, Serial No. 319,460, in which the invention disclosed in this application is broadly claimed.

In the drawings,

Fig. 1 is a view of a combined lock or latch embodying our invention showing the same in locked or latched position, parts being shown in section and other parts being shown in side elevation;

Fig. 2 is another view of the same, in which the lock or latch mechanism is shown in unlocked or unlatched position; and

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1.

Referring to the drawings, the lock or latch casing as shown in transverse section in Fig. 3 is a metal structure substantially rectangular in outline and comprising side walls 10 and 11, a rear bracing member 12 secured to such side walls, and a front wall or face plate 13, the latter being provided with openings 14 and 15 in vertical alignment. The casing is usually mounted in a mortise within the vertical edge of an automobile door and also near the top edge of the door so that the operating plunger P shall extend through the upper end of the casing to a point adjacent the upper edge of the door where the knob 16 on the plunger P is conveniently accessible for manual operation. The plunger or operator member P

may be an elongated bar or rod provided with a suitable handle at or near its upper end outside the latch casing and operatively connected at its inner end to the mechanism inside the casing.

A keeper member K of metal is secured in the proper position on the jamb of the door opening and has a socket 17 therein to receive the head or knob 18 of the locking or latching element B which is resiliently projected through the opening 15 in the lock or latch casing by a leaf spring 19 having its upper end secured to the knob and its lower end riveted at 20 to the inner wall of the face plate 13. A locking finger or bar 21, pivotally supported by a pin 22 mounted between the walls of the lock or latch casing, is arranged to engage the rear face of the knob 18 and lock it in its projected position. The locking finger or dog 21 may be engaged and operated by the plunger P in any suitable manner to move the finger into and out of its locking position. As here shown, the finger 21 passes freely between two pins 23 and 24 carried by the plunger and when the latter is reciprocated in either direction these pins engage the finger or dog 21 and oscillate it vertically about the pivot 22 into and out of locking or dogging engagement with the knob 18.

The knob 18 comprises a rounded or semi-spherical portion *a* carried by or preferably formed integral with the outer end of a substantially cylindrical and relatively long body portion *b*. The knob members of the locks or latches shown in the patents heretofore referred to are substantially semi-spherical and are therefore comparatively short and may not always securely lock or latch the door, especially where the keeper and the lock or latch are spaced too far apart on account of an inaccurate door structure. A longer knob is therefore highly desirable, but in order that the same shall operate easily and not bind, mechanism is provided, within the casing in this instance, that positively withdraws the locking or latching element or knob from its locking or latching position when the door is open and also positively forces the knob to its projected or locking or latching position after the door has been closed.

As shown, this retracting and projecting mechanism comprises a lever arm 25 pivotally supported at 22 and connected to the pivoted locking finger or dog 21 so as to move with the said finger when the latter is operated by the plunger P. A link 26 is pivotally connected as at 27, to the lever 25 and has a lost-motion connection with a bracket 30 that is secured to the rear end of the knob 18, such connection consisting of a pin 28 on the bracket engaging in a slot 29 in the link. The movement of the arm 25 is transmitted to the knob 18 through the link 26 and bracket 30, the arrangement being such that when the plunger P is depressed, the finger 21 will first be withdrawn from locking or dogging engagement with the knob 18, the lost-motion connection between the link 26 and the bracket 30 being simultaneously taken up, so that further movement of the plunger causes the knob 18 to be pulled rearwardly into the casing against the tension of the spring 19, and into the unlocked or unlatched position as indicated in Fig. 2. If desired, the extent of this retracting action may be only such as will permit the keeper to complete the full throw of the latching or locking head or knob by the swing of the door.

In order to hold the mechanism in unlocked or unlatched position while the door is open, a bolt A is provided, the forward end of which is projected outwardly through the opening 14 in the face plate 13 by a spring 31 that bears against the brace 12 and against an abutment, such as the shoulder 32, on the bolt. When the plunger is depressed, a notch 33 therein is brought into alinement with the bolt A and when the door has been opened, the spring 31, which is compressed is released and throws a part of the bolt A into the notch 33, locking the plunger in its depressed or unlocked position. Depressing the plunger P, compresses a spring 35 that bears against a pin 36 on the plunger and against a cross brace 37 secured to the sides of the casing.

When the door carrying the lock or latch is swung to close it, a cam face 38 on the keeper engages the curved end 39 of the bolt A and depresses the latter against the spring 31, and through the notch 33 until a notch 40 in said bolt registers with the plunger P, whereupon the compressed spring 35 is released and shoots the plunger P upwardly. The opening 15 in the face plate of the lock or latch casing, having in the meantime moved into registry with the socket 17 of the keeper, the parts connected to the release plunger are moved into locking or latching position (Fig. 1).

When the plunger P has been released by the bolt A, the leaf spring 19 as well as the helical spring 35 act jointly to move the parts into locking or latching position. The leaf spring 19 tends to project the knob 18 outwardly through the opening 15 and the link mechanism comprising the arm 25, link 26 and bracket 30 are operated by the spring 35 to assist to positively force the knob 18 to its extreme projected position where the finger 21 can move behind the knob and lock or dog it.

It will be seen that with suitable mechanish for positively retracting and projecting the knob, such as that described or equivalents thereof, it is possible to use a much longer knob than in prior locks and latches

of this type. Furthermore, the working action of the parts is smoother and much more reliable, thus providing a simple and efficient device that will lock or latch with one movement.

While the improved lock or latch structure has been described in detail, it is to be understood that various changes may be made therein without departing from the spirit of the invention and therefore we do not wish to be limited to the exact arrangement shown and described.

What we claim is:

1. In a lock or latch, the combination with a casing and a locking element normally projecting therefrom, of means for retaining said locking element in its projected position, means for moving said element from its projected position, and common means engaging such retaining means for operating such retaining means and such moving means, such operating means having a portion disposed outside said casing and constituting a handle.

2. In a lock or latch, the combination with a bolt, of means swingable on a fixed pivot for retaining said bolt in its latching position, means for retracting said bolt from such position, reciprocable means for operating such retaining means and such retracting means, such operating means having a handle at one end thereof, and resilient means for assisting or opposing the operation of such operating means.

3. In a lock or latch, the combination with a locking or latching element, of means for supporting said element in its locking or latching position comprising a leaf spring carrying said element, means for retaining said element in its locking or latching position, means for retracting said locking element from its locking position against the pressure of said leaf spring, and means for operating such retaining means and such retracting means.

4. In a lock or latch, the combination with a locking or latching element, of means for retaining said element in its locking or latching position, means for retracting said element from its locking or latching position, means comprising a reciprocable member for operating such retaining means and such retracting means, and means for controlling the operation of said reciprocable member.

5. In a lock or latch, the combination with a locking or latching element, of pivoted means for dogging said element in its locking or latching position, means for retracting said element from its locking or latching position, and means for operating said pivoted means and such retracting means, said operating means comprising a handle adjacent one end thereof.

6. In a lock or latch, the combination with a locking or latching element, a leaf spring supporting said element means for retaining the same in a locking or latching position, and means for positively retracting said element from its locking or latching position against the pressure of said spring, and means for operating such retracting means.

7. In a lock or latch, the combination with a casing, a bolt normally projecting therefrom, of pivoted dogging means in said casing for retaining said bolt in its projected position, and a reciprocable operating member having a portion that projects outside said casing and a portion within the casing operatively connected to said dogging means and to said bolt and adapted and arranged to swing said dogging means on its pivot to release said bolt and to retract the latter into the casing.

8. In a lock or latch, the combination with a locking or latching element, of means for retaining said element in its locking or latching position, means for retracting said element from its locking or latching position, means for operating such retaining means and such retracting means, and keeper-operable means for controlling the operation of such operating means.

9. In a lock or latch for doors, the combination with a casing, of a locking or latching element, means for resiliently projecting said element from said casing, means in said casing for retaining said element in its locking or latching position and for moving said element from its locking or latching position, means for operating such retaining and moving means, and means cooperating with such operating means for retaining said element in its retracted position when the door is open and for releasing said element to permit the projection of the same into its locking or latching position when the door is closed.

10. In a lock or latch, the combination with a casing, of a locking or latching element, means for resiliently projecting said element from an opening in said casing, a locking bar in said casing for retaining said element in its projected position, means in said casing for retracting said element, a member extending into said casing and accessible from the exterior thereof for operating said locking bar and retracting means, and keeper-operable means cooperating with such operating member to retain said element in retracted position when the door is open, and arranged to release such operating member to permit the projection of said element to its locking position when the door is closed.

11. In a lock or latch, the combination with a locking or latching element, of means for retaining said element in its locking or latching position, a link mechanism having a lost motion connection with said element and adapted to retract said element from its

locking or latching position, and means for operating such retaining means and said link mechanism.

12. In a lock or latch, the combination with a casing, of a locking or latching element resiliently projected therefrom, an oscillating finger adapted to engage and lock said element in projected position, a retracting member connected to said element to withdraw the same from its projected position, a device for moving said finger from the path of said element and for operating said retracting member to retract said element, a spring tending to resist such action, and spring-pressed means adapted to engage said device to retain said finger and element in inoperative position.

13. In a lock or latch, the combination with a bolt, of a device for dogging said bolt in its latching or locking position, and a reciprocable member for such bolt and operating such dogging device, said operating member having a part intermediate its ends adapted and arranged to engage and operate such dogging device to release said bolt.

14. In a lock or latch, the combination with a bolt, of a pivoted device for dogging said bolt in its locking or latching position, and an operating member for such bolt and such dogging device, said operating member carrying a handle at one end and a laterally projecting part intermediate its ends adapted and arranged to engage such dogging device and swing the same on its pivot to release said holt for operation by said member.

15. In a lock or latch, the combination with a strike plate comprising a bolt-receiving recess and cam means, of a bolt adapted to engage in said recess, means for dogging said bolt in said recess, operating means for releasing said dog and for retracting said bolt, and means cooperating with said cam means for controlling the operation of such operating means.

16. In a lock or latch, the combination of a bolt, a pivoted device for retaining said bolt in its latching or locking position and an operating member for swinging said device on its pivot and for retracting said bolt from its latching or locking position, said operating member having projections disposed on opposite sides of said device and adapted to engage and operate the latter.

17. In a lock or latch, the combination of a casing, a bolt having a part normally projecting from said casing, a pivoted dog for retaining said bolt in its projecting position, an operating member for swinging said bolt and for retracting said bolt into said casing, said operating member having a handle adjacent its upper end and also having spaced lateral projections disposed on opposite sides of said dog and adapted to engage and swing the latter, and spring means opposing the operation of said operating member and adapted to return said member and the parts operable by it to their normal position.

In testimony whereof we hereunto affix our signatures.

EDWIN CROMPTON.
CHARLES L. CROOKS.