

Oct. 27, 1925.

1,559,423

W. H. HARTZLER

LOCK

Filed Oct. 3, 1923

2 Sheets-Sheet 1

Fig. 1.

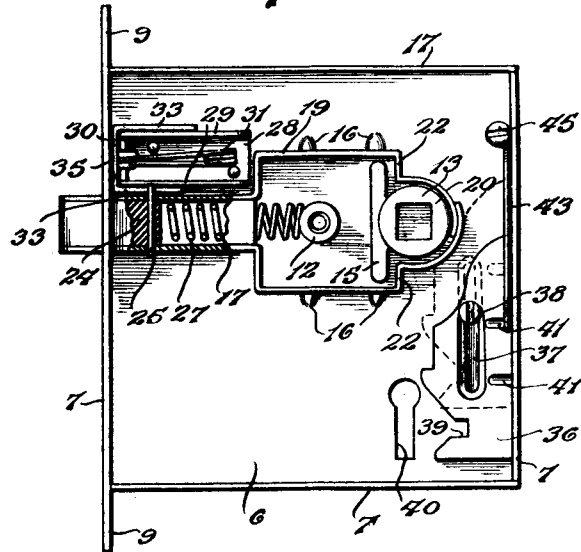
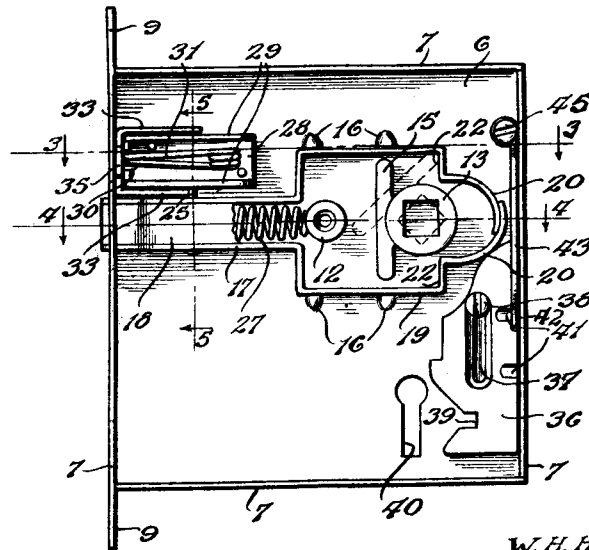


Fig. 2.



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Fig. 3.

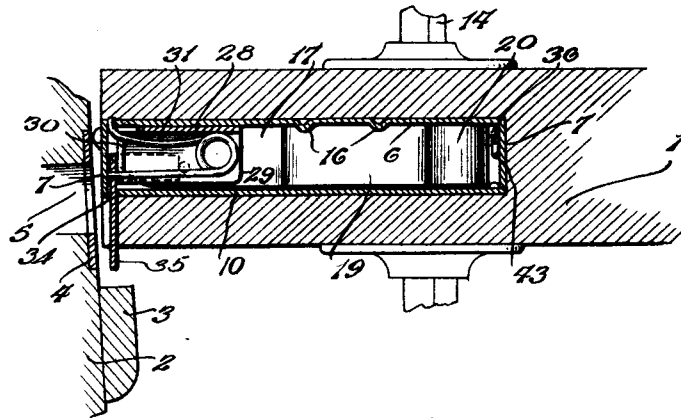


Fig. 4.

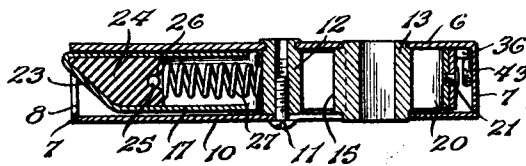


Fig. 5.

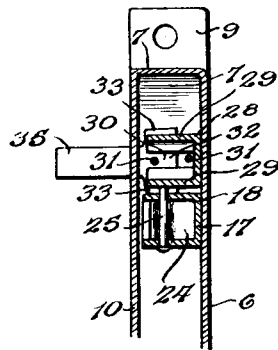
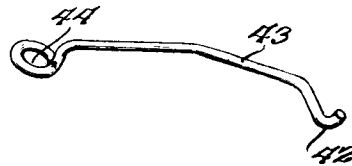


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM H. HARTZLER, OF PLEASANT HILL, MISSOURI.

LOCK.

Application filed October 3, 1923. Serial No. 666,357.

To all whom it may concern:

Be it known that I, WILLIAM H. HARTZLER, a citizen of the United States, residing at Pleasant Hill, in the county of Cass and State of Missouri, have invented certain new and useful Improvements in Locks, of which the following is a specification.

The primary object of the present invention is to provide a novel construction whereby the bolt of a door lock will be automatically held in its retracted position and will be automatically projected when the door upon which the lock is mounted is closed. The invention also seeks to provide a lock having the stated characteristics which will be of simple and inexpensive construction and in which the working parts may be readily reversed so as to adapt the lock to a right or left-handed door. A further object of the invention is to provide a novel means for locking the bolt against accidental withdrawal. Other incidental objects of the invention will appear in the course of the following description.

In the accompanying drawings:

Figure 1 is an elevation of my improved lock with the face plate of the casing removed and showing the bolt partly in section and in projected position;

Fig. 2 is a similar view showing the bolt retracted;

Fig. 3 is a horizontal section on the line 3-3 of Fig. 2;

Fig. 4 is a detail horizontal section on the line 4-4 of Fig. 2;

Fig. 5 is a transverse section on the line 5-5 of Fig. 2, and

Fig. 6 is a detail.

In the drawings, the invention is shown embodied in a mortise lock, but it is to be understood that it is applicable to a rim lock. In the drawings, the reference numeral 1 indicates a portion of a door and 2 indicates a portion of a door jamb which is shown as constructed with a bead or molding strip 3 and in which a keeper or strike plate is secured, the opening through the strike plate being in alinement with a recess 5 in the jamb. The strike plate may be constructed with a projecting lip or flange when the door jamb is not provided with the bead or shoulder shown in the drawings. The lock case may conveniently be constructed of sheet metal and comprises a back plate 6 having flanges 7 extending around all its edges, the flange at

the front or free edge of the case being provided with a bolt opening 8 and having its ends projected above and below the case, as indicated at 9, to provide attaching ears through which screws or other fastening devices may be inserted to secure the lock case in the door. The front plate 10 of the case fits against the edges of the flanges 7 and is secured against the same by a screw or bolt 11 inserted through the front plate and engaged in a post 12 carried by and projecting from the back plate, as shown most clearly in Fig. 4. The back plate and front plate are both provided with suitable openings to rotatably support the barrel 13 in which the knob spindle, indicated at 14, may be fitted in the usual manner, and the said barrel 13 is provided with a roll-back arm 15 which is adapted to retract the bolt when the knob spindle is rotated as is usual in this class of devices. The back plate of the lock case is further provided with guide lugs 16 struck up therefrom and the bolt is slidably engaged between the said lugs, the width of the bolt being such that it will be held against side movement by the front and back plates of the lock case. The bolt is indicated by the reference numeral 17 and is preferably stamped from a plate of sheet metal and shaped to provide the relatively narrow tongue or jamb-engaging portion 18 and the relatively wide roll-back portion 19 which fits between the guide lugs 16, as shown clearly in Figs. 1 and 2. The roll-back portion 19 is preferably rectangular and is provided at its inner end or side with the arcuate extensions 20, the ends of which overlap and may be riveted together, as indicated at 21 in Fig. 4. These arcuate extensions 20 form a substantially semi-circular stop member which accommodates the barrel 13 and by contact therewith limits the projecting movement of the bolt. At the same time the inner or rear side of the roll-back portion 19 of the bolt presents vertical shoulders 22, either of which may be engaged by the end of the roll-back arm 15, as indicated by the dotted lines in Fig. 2. The forward or working end of the bolt has a beveled side 23 which is adapted to ride upon the edge of the bolt receiving socket 5 and the opening through the strike plate 4, and this working end of the bolt is preferably reinforced by a filling block 24 which may be of any preferred mate-

rial. A pin 25 is inserted through the upper and lower sides of the bolt and passes through a recess or notch 26 in the inner or rear end of the filler head 24, as shown clearly in Fig. 4, the end of the pin projecting above the bolt, as shown clearly in Figs. 2 and 5, whereby it constitutes a stop lug to cooperate with a detent which will be presently fully described. A coiled spring 27 is housed within the bolt and has its ends bearing against the post 12 and the filler block 24 respectively, as clearly shown in the drawings, so that the spring tends constantly to project the bolt.

Secured upon the back plate of the lock case, above the bolt and at the forward or outer end of the lock case, is a bracket or housing 28 which presents flanges or rails 29 which extend across the lock case and longitudinally of the same, as clearly shown. The forward end of this bracket is slotted transversely, as shown at 30, and a bowed spring 31 is housed within the bracket and has its terminals extending through the said slot. One terminal of the spring is engaged in an opening provided therefor in the back plate of the lock case and the other terminal is fitted in a detent 32. The said detent is slidably mounted in the lock case between the end of the same and the end of the bracket or housing 28 and it is provided with the upper and lower rearwardly projecting arms 33, the upper one of which rests upon the upper flange 29, while the lower one fits between the lower flange 29 and the upper side of the bolt. These guide arms are approximately equal in width to one-half the width of the lock case so that, when the bolt is projected, the lower guide arm may lie between the back plate of the lock case and the upper end of the stop pin 25, the spring 31 in such position of the parts being under tension. When the bolt is retracted, the spring 31 will expand and the detent will be thereby moved outwardly so that the end of the lower arm 33 will assume a position in front of the stop pin 25 and thereby hold the bolt in its retracted position, as will be readily understood upon reference to Fig. 2. The front plate of the lock case is provided with a notch, indicated at 34, through which a lateral tongue 35 on the detent may project, the said tongue being of such length that it will project beyond the inner side of the door carrying the lock in position to impinge against the flange of the strike plate or against the bead 3 of the door jamb when the door is closed.

In order that the bolt may be locked in its projected position so as to hold the door against accidental opening and prevent retraction of the bolt by merely turning the knob spindle, I provide a dead latch plate 36 which is slidably supported upon the back plate of the lock case adjacent the

inner rear end of the same. This latch plate may be of any desired thickness and its upper end is beveled or tapered so that it will enter readily between the inner end flange of the lock case and the extensions 20 of the bolt so that, if the latch plate be moved upwardly after the bolt is projected, as indicated by the dotted lines in Fig. 1, the upper end edge of the latch plate will abut the rear surface of the extensions 20 and will thereby positively prevent accidental withdrawal of the bolt. The latch plate is provided with a vertical slot 37 through which a securing screw 38 is inserted into the back plate of the lock case and the rear edge of the latch plate abuts the rear or inner end flange of the case so that the plate will be held to a rectilinear path in its movements. Upon its forward edge, the latch plate is provided with a notch 39 adapted to be engaged by a suitable key inserted through the keyhole 40 in the lock case, and upon its side at or adjacent its rear edge it is provided with spaced seats or recesses 41 which are adapted to receive the end 42 of a spring 43 which is provided within the lock case at the rear end thereof and has its upper end provided with an eye 44 through which a fastening screw 45 is inserted into the back plate of the lock case to secure the spring in position. It will be readily understood that, when the latch plate is engaged by a key and the key turned, the plate will ride easily under the free end of the spring but when the key is withdrawn the lower free end of the spring will engage one or the other recess 41 and thereby hold the latch plate in the position in which it may be set until it is again engaged by the key. The engagement of the free end of the spring 43 with either seat 41 will produce a slight clicking sound which will advise the user that the plate has been shifted to the limit of its movement and excess movement of the plate will be prevented by the engagement of the ends of the slot 37 with the fastening screw 38, as will be readily understood.

Assuming the door to be open and the bolt retracted, the detent will have been moved to such position under the influence of the spring 31 that the inner end of the lower guiding and holding arm 33 will abut the stop pin 25, as shown in Fig. 2 and by dotted lines in Fig. 3. The bolt will be thereby held in its retracted position with the spring 27 compressed and the knob spindle may be released or partly turned so that the roll-back arm 15 will assume its normal vertical position. The end of the tongue 35 will be beyond the inner side of the door, as shown in Fig. 3, so that, if the door be closed, the tongue will impinge against the strike plate or the bead or flange upon the door jamb and will be thereby

moved inwardly against the tension of the
 spring 31 so that the arm 33 will be released
 from the stop pin 25, whereupon the spring
 27 will at once expand and project the bolt
 5 into engagement with the keeper socket 5.
 When the door is to be again opened, it will
 be necessary, of course, to rock the knob
 spindle so that the roll-back arm 15 will
 engage one or the other shoulder 22 and re-
 10 tract the bolt. As the bolt is retracted, the
 stop pin 25 will be carried beyond the inner
 end of the lower arm 33, whereupon the
 spring 31 will at once project the detent and
 cause said arm to assume its normal posi-
 15 tion in advance of the stop pin to hold the
 bolt retracted. It will thus be seen that I
 have provided a very simple and inexpen-
 sive lock by the use of which a door will be
 firmly locked in closed position without
 20 slamming and will be held so completely
 closed that weather stripping will ordinarily
 be unnecessary. It is to be noted that the
 detent and the bolt are symmetrical in their
 25 configuration so that the lock may be easily
 applied to either a right or a left-handed
 door, it being necessary only to remove the
 face plate of the lock case and then reverse
 the detent and the bolt, the spring 31 being,
 of course, reversed with the detent. When
 30 the detent is reversed, the tongue 35 thereof
 will project through the slot or opening
 34 previously engaged by one terminal of
 the spring 31 and, when the bolt is reversed,
 it will occupy the same position as before,
 35 except that the beveled surface 23 at its
 working end will extend in the opposite
 direction to that previously occupied. Re-
 versal or rearrangement of the latch plate
 36 is unnecessary. It is also to be noted that
 40 the construction of the parts is such that

the bracket or housing 29, the detent and
 the bolt may all be struck from sheet metal
 in a stamping machine and the cost of man-
 ufacture thereby minimized. The several
 parts are simple in construction and are 45
 compactly arranged and the lock will op-
 erate efficiently and with certainty and is
 not apt to get out of order.

When a door equipped with my improved
 lock is closed, it is forced against the door 50
 jamb so snugly that weather stripping is
 unnecessary. The strike plate has a lip
 pressed back diagonally so that, when the
 bolt enters the opening in the strike plate,
 it impinges against the lip and the door is 55
 forced over firmly against the jamb.

Having thus described the invention, what
 is claimed as new is:

In a lock, the combination with a lock
 case, of a bolt slidably mounted therein, 60
 means whereby the bolt may be projected
 or retracted, a stop member on the bolt, a
 bracket secured within the lock case imme-
 diately adjacent the bolt, a detent slidably
 supported by said bracket for movement 65
 transversely of the bolt, an arm on the de-
 tent disposed longitudinally of the bolt be-
 tween the bolt and the bracket to be guided
 thereby and adapted to lie at the side of
 the stop element on the bolt between the 70
 same and the side of the lock case or engage
 in front of the stop element, a tongue pro-
 jecting laterally from the detent through the
 side of the lock case, and a spring housed
 within the bracket and acting upon the de- 75
 tent tending constantly to project the arm
 thereon into the path of the stop member on
 the bolt.

In testimony whereof I affix my signature.
 WILLIAM H. HARTZLER. [L. s.]