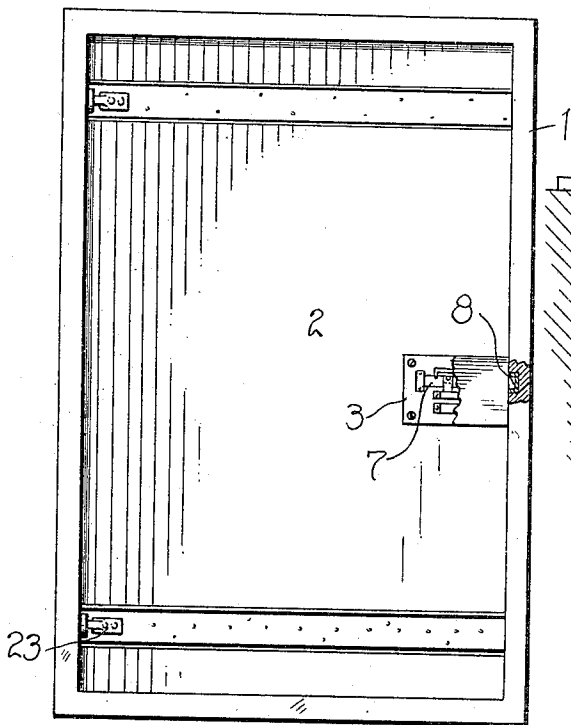
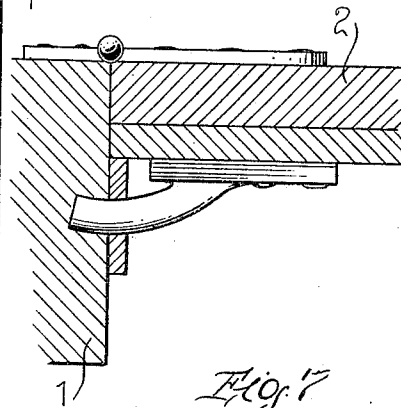
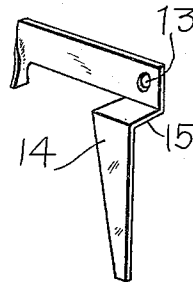
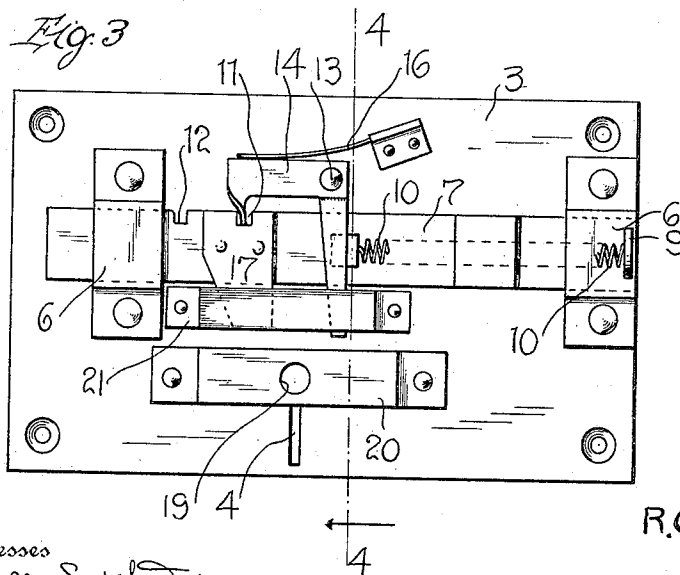


DOOR LOCK.

1,111,135.

Patented Sept. 22, 1914.

2 SHEETS—SHEET 1.



Inventor
R.G. CARLSON

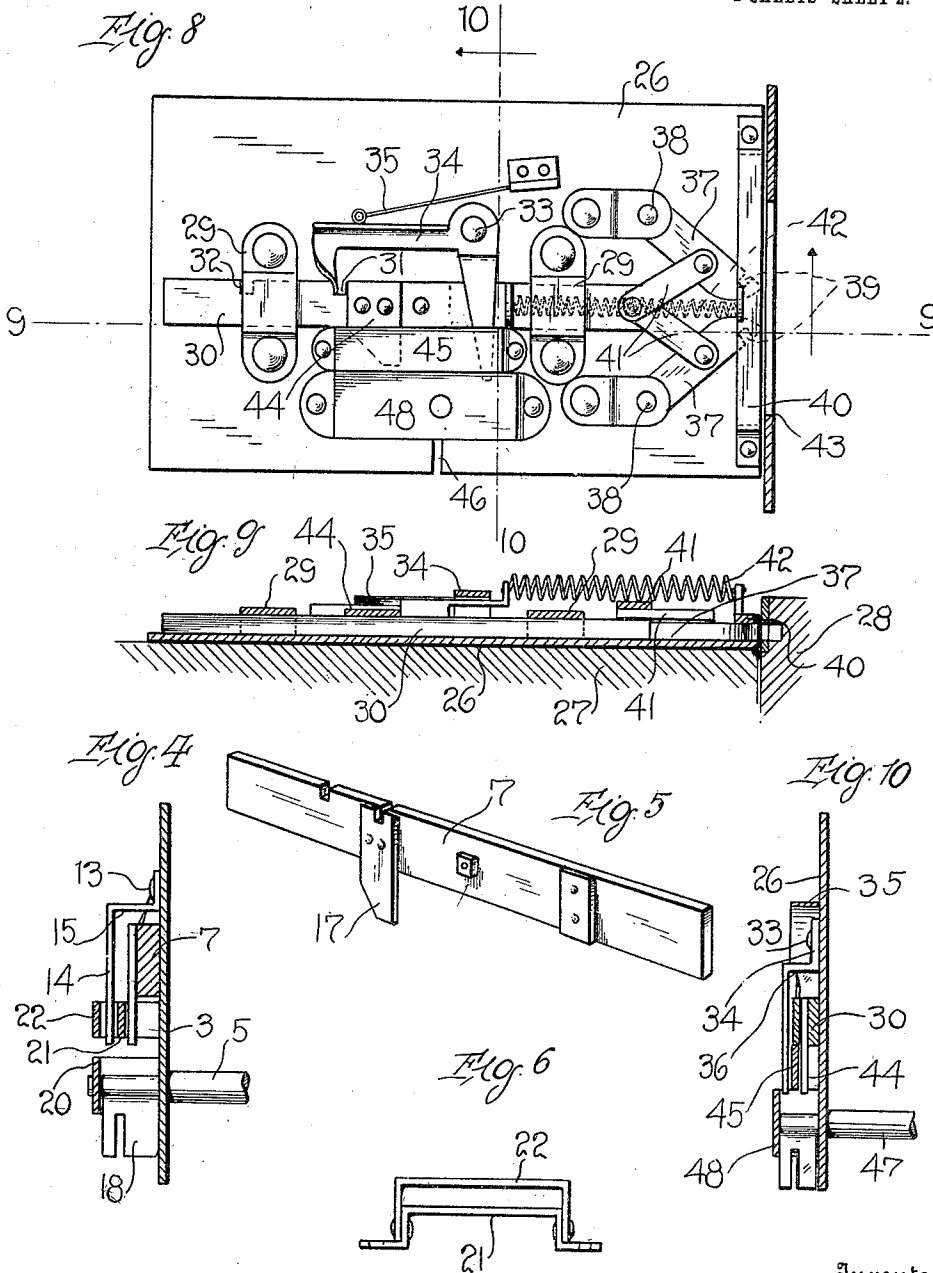
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R. G. CARLSON.
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APPLICATION FILED JAN. 3, 1914.

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2 SHEETS—SHEET 2.



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DOOR-LOCK.

1,111,135.

Specification of Letters Patent.

Patented Sept. 22, 1914.

Application filed January 3, 1914. Serial No. 810,244.

To all whom it may concern:

Be it known that I, RUDOLPH G. CARLSON, a citizen of the United States, residing at Huntley, in the county of Harlan and State of Nebraska, have invented certain new and useful Improvements in Door-Locks, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to new and useful improvements in locks and the primary object of the invention is to provide an improved lock which, with slight variations, may be used for sliding or hinged doors.

15 A further object of the invention resides in providing a lock which will eliminate the use of the customary pad-lock for use on hinged or sliding doors.

20 A still further object of the invention resides in providing a device which is simple and durable in construction, inexpensive to manufacture and one which will be very efficient and useful in operation.

25 With these and other objects in view, the invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

30 In the accompanying drawings forming a part of this application, Figure 1 is a front elevation of a hinge door structure having applied thereto a lock constructed in accordance with my invention, parts of the same being broken away and parts being disclosed in section. Fig. 2 is an enlarged section therethrough as seen on line 2—2, Fig. 1. Fig. 3 is a plan view of a lock constructed in accordance with my invention, the outer casing thereof being removed. Fig. 4 is a section therethrough as seen on line 4—4, Fig. 3, looking in the direction of the arrow. Fig. 5 is a perspective view of the sliding locking bolt removed. Fig. 6 is a plan view of the guide or spacing strips used in connection with the device. Fig. 7 is a perspective view of the fulcrum member removed. Fig. 8 is a plan view of a slightly modified form of lock. Fig. 9 is a horizontal section therethrough as seen on line 9—9, Fig. 8; and Fig. 10, is a vertical section as seen on line 10—10, Fig. 8, looking in the direction of the arrow.

55 In describing my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts

throughout the several views and in which 1 indicates a structure having a hinged door 2 thereon, for covering a door-way formed therein and applied in connection with the door and the frame of the door-way, is my improved lock structure.

Removably applied to the inner face of the door 2, is a base plate 3, having a key opening 4 therein, which extends completely through the door for the admission of a key 5 therethrough. Slidably mounted longitudinally of the plate 3, in a pair of keepers 6, is a locking bolt 7, the outer end of which is adapted to be received in a socket or the like 8 formed in one wall of the frame of the door way. Secured to an angular projection 9 on the outer of the keepers 6, is one end of a coil spring 10, the opposite end of said spring being engaged with the sliding bolt 7, intermediate of its ends. The normal tendency of this spring is to draw the bolt outwardly in its extended or locking position and I have provided means for the retention of the bolt in its retracted position. To this end, the upper edge of the locking bolt 7 is provided with a pair of spaced notches 11 and 12 and fulcrumed at a point indicated at 13, on the plate 3, above the sliding bolt, is an angular arm 14. The free end of one projection of this arm is designed for reception in the notch 11 and the opposite projection of this angular arm is offset, as shown at 15, to project over and beyond the sliding bolt 7. This last mentioned arm depends downwardly to a point below the lower edge of the sliding bolt 7, the purpose of which will be hereinafter and more particularly set forth. A leaf spring 16 is secured at a predetermined point on the plate 3, above the locking bolt and is engaged with the first mentioned arm section of the angular arm 14, having a tendency to force this section of the arm downwardly into engagement with the upper edge of the bolt 7. When the bolt is retracted to a predetermined point, this last mentioned arm section of the arm 14 may be engaged with the notch 11 to retain said bolt in its retracted position. A depending projection or arm 17 is carried on the bolt 7 at a predetermined point thereon, the purpose of which will presently appear.

As stated, the key opening 4 is adapted to receive the key 5 therein, which is provided with a slotted nib 18 thereon and the extreme free end of the key is designed to pro-

ject slightly beyond the nib for reception in an opening 19 of a guide or supporting strip 20 suitably secured to the plate 3. This guide or supporting strip is of substantial U-shaped design, the arms of which are secured to the plate, thereby spacing the base portion of the same from the base proper and affording a means for receiving the free projecting end of the shank of the key, as a means to support the latter, when inserted in the door. Secured also to the plate 3, just above the guide or supporting strip 20, is a substantially U-shaped guide strip 21, the arms of which are secured to the plate, so as to space the base portion thereof from the base proper and secured to the arms of this member 21, is an additional strip 22, slightly spaced from the base of the member 21. The space between the strips 21 and 22 receive therethrough the depending angular portion of the angular arm 14 therethrough, while the space between the strip 22 and the plate 3 receives the depending arm or projection 17 on the bolt 7 therethrough. The strip 22 is received in the slot of the nib 18 of the key, when the latter is turned in the lock, so that the two sections of the nib are adapted to engage respectively the one depending projection of the angular arm 14 and the projection 17.

In operation, assuming that the door is in its closed position and the lock effectively disposed so that the locking bolt is in its extended position and in engagement with the socket, should it be desired to open the door, the key is first inserted in the key opening so that the free end of said key is properly supported in the guide strip 20. The key is then turned clockwise and the nib 18 will first engage the depending portion of the angular arm 14, in view of the fact that this arm is slightly in advance of the projection 17 and, by a continued clockwise movement of the key, the opposite section of said arm 14 will be forced upwardly, out of its engagement with the notch 12 and against the tension of the leaf spring 16. A further clockwise movement of the key will permit the other section of the notch to engage the section 17 of the bolt 7 and, in continuing the movement of the key, it is obvious that the bolt 7 will be retracted. At a predetermined point in the clockwise movement of the key and the retraction of the bolt, the depending portion of the angular arms 14 will be released of its contact with the nib 18 and the leaf spring 16 forcing downwardly thereon, will force said arm into a position whereby the one arm section thereof will be received in the notch 11 of said arm 7. A further continued rotation of the key in a clockwise movement will release the nib 18 of its engagement with the projection 17, but the bolt 7 will be retained in its retracted position, in view of the engage-

ment of the one end of the angular arm 14 with the notch 11. The door may then be drawn to its open position. Should it be desired to again lock the door in its closed position, the key is inserted in the lock and given a partial rotation in a clockwise direction, which will, obviously, admit the nib 18 to again engage the depending portion of the angular portion 14, and swing the latter on its fulcrum point. As the angular arm 14 is swung on its fulcrum point, the opposite arm section thereof will be released of its engagement with the wall of the notch 11 and, upon the releasing of such engagement, the coil spring 10 which, at such time, is under considerable tension, will draw said locking bolt to its initial or extended position to be engaged with the socket. The door is now locked and in order to withdraw the key, the same is rotated in a counter-clockwise direction until the nib thereof registers with the opening, whereupon the key may be withdrawn.

I have also provided a slightly modified form of lock for application to doors of the sliding type, and I have shown this form in Figs. 8, 9 and 10. In this form of the device, a base plate 26 is applied to the inner face of a door 27, the latter being slidably mounted in the door-way of a structure 28. This plate has a pair of keepers 29 secured to face of a door 27, the latter being slidably mounted a bolt 30, the upper edge of said bolt being provided with a pair of notches 31 and 32 arranged at predetermined points thereon. Fulcrumed at a point indicated at 33, is a right angular lever 34, the one arm portion of which has the free end thereof designed to form a pawl for reception in the notches 31 and 32. When received in the notch 31, the bolt 30 will be retained in its retracted position and a leaf spring 35 is secured to the plate above the locking bolt, so that the free end thereof engages the last mentioned arm section of the angular lever 34 to retain the same in engagement with the upper edge of the bolt 30. The opposite arm section of the lever 34 is offset as shown at 36, to project over and slightly beyond the sliding bolt 30 and the same depends downwardly to a point some distance below said bolt for a purpose to be hereinafter set forth.

Fulcrumed on the plate 26, above and below the bolt 30, are the locking arms 37, the same being fulcrumed at one of their ends, as indicated at 38, and the outer or free ends of the same are notched, as shown at 39, for locking purposes. These arms 37 are guided through a guide keeper 40, at the one end of the plate 26 and linking members 41 are pivoted to said arms and also pivoted together to the outer end of the bolt 30. Thus, when the bolt is moved in one direction, it will be seen that said locking arms 37 are moved to-

ward one another and when said bolt is moved in the opposite direction, said arms are moved away from one another to a locking position. A coil spring 42 is engaged at its one end with a keeper 40 and at its other end with a portion of the bolt 30, the normal tendency of said spring being to force said bolt to its extended position, whereby to dispose said locking arms 37 to their separated and locking positions. A socket 43 is provided in the one side of the frame of the door-way for locking engagement with the locking arms 37, whereby to retain the lock in its effective locking position and correspondingly retain the door closed, when the parts of the lock are moved to their locking positions.

A projection 44 is carried on the bolt 30 and depends therefrom and a dividing or spacing strip 45 is secured to the plate 26 to extend between the plane of the projection 44 and the depending arm of the angular lever 34. The purpose of this strip will presently appear.

A key opening 46 is provided in the plate, which extends completely through the door-way to receive therein a key 47 which is similar in design to the key described in connection with the first mentioned form of the device. A guide or supporting strip 48 is also secured to the base of the plate 26, below the strip 45 and is provided with an opening to receive therein the projecting portion of the key and support the latter when the key is properly inserted in the lock.

In the description of the operation of this form of the device, it will be seen that the lock is disposed to its effective locking position and in this position of the device, it will be seen that the bolt 30 is in its extended position, with the one angular portion of the lever 34 locked into engagement with the notch 32 of said bolt 30. In this position of the bolt, the locking arms 37 are in their separated positions, with respect to one another and engaged with the socket in the frame of the door-way. When it is desired to open the door, the key is inserted in the proper opening and turned clockwise.

Upon the turning of the key clockwise, a portion of the nib thereof will then engage the depending portion of the angular lever 34 and swing the latter on its fulcrum point, which will cause the one arm thereof to be released from its engagement with the notch 32 in the bolt 30. A continued clockwise movement of the key will permit the other portion of the slotted nib thereof to engage the depending projection 34 on the bolt 30 and with a continued rotation of the key, it will be seen that the bolt 30 will be retracted, causing the locking arms 37 to be drawn inwardly, toward one another, in view of the linking connection between the same and said bolt 30. At predetermined

points in the clockwise movement of the key and the retraction of the bolt 30, the depending portion of the lever 34 will be released from its engagement with the nib of the key and said lever will be returned to its initial position, under tension of the leaf spring 35 and, at such time, the notch 31 will be in position to receive the one end of the arm of the lever 34. The rotation of the key may be continued and as the nib is released from the depending projection 44, the bolt 30, it will be seen, will be retained in its retracted position in view of the engagement of the one arm of the angular lever 34 with the notch 31. The key may be returned to its position in registration with the key opening and removed, if desired, and the door may then be opened, inasmuch as the locking arms 37 are in their disengaged or unlocked positions. When it is desired to again lock the door, it is only necessary to slide the same to its closed position and turn the key clockwise, which operation will permit the nib of the key to be engaged with the depending portion of the angular lever 34. The engagement of this portion of the lever 34 will swing the latter on its fulcrum point and cause the one arm thereof to be disengaged from the notch 31 of the bolt 30 and immediately upon the release of the angular lever 34 from its engagement with the bolt 30, the coil spring 42 which, at this time, is under great tension, will draw upon said bolt 30, to dispose the same again to its extended position and thus force the locking arms 37 outwardly with respect to one another into their effective locking positions. The key may then be turned counter-clockwise until the nib thereof properly registers with the key opening whereupon said key may be removed and, at the time the bolt 30 is disposed to its extended position, the angular lever 34, being returned to its initial position, will engage the notch 32 in the bolt 30, retaining the latter in its locked position until such time as the key is again inserted and actuated to retract said bolt and the parts connected thereby.

From the foregoing it will be seen that I have provided a device which is simple and durable in construction, inexpensive to manufacture and one which will be very efficient and useful in operation, and while I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described this invention, what I claim is:—

1. In a lock of the class described, a base plate having a key opening therein, a bolt slidably mounted thereon having a notch in

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S256Q MIP 2011
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