Dec. 1, 1925. 1,564,030

J. O. SOEMER

DOORLOCK

Filed Jan. 11, 1924 2 Sheets-Sheet 1

Fig. 1.

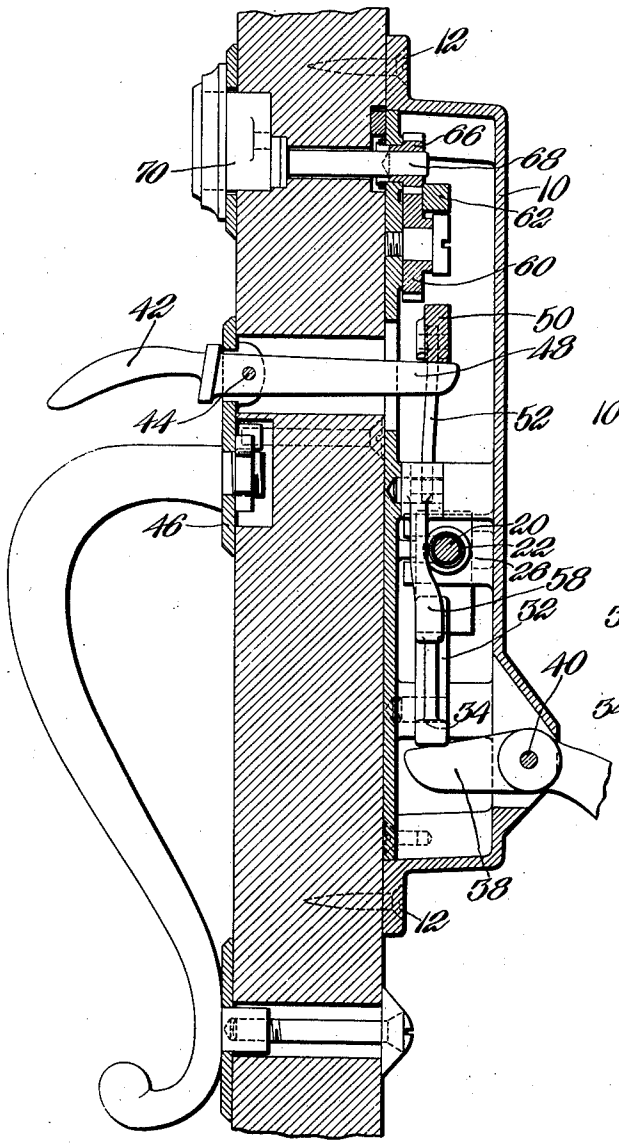
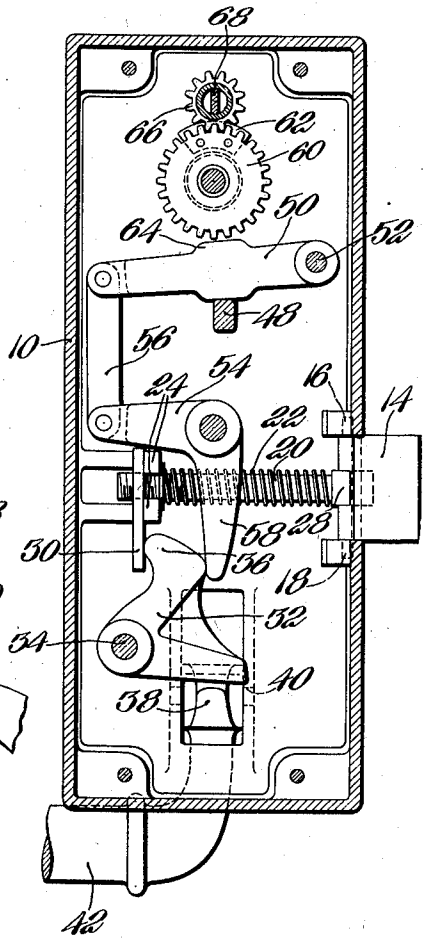


Fig. 2.



Witness:

Alfred H. McGlinchey.

Inventor:

J. Otto Soemer

by his Attorneys

Van Emmon Fish Hildreth & Emery.

Dec. 1, 1925. 1,564,030

J. O. SOEMER

DOORLOCK

Filed Jan. 11, 1924 2 Sheets-Sheet 2

Fig. 3.

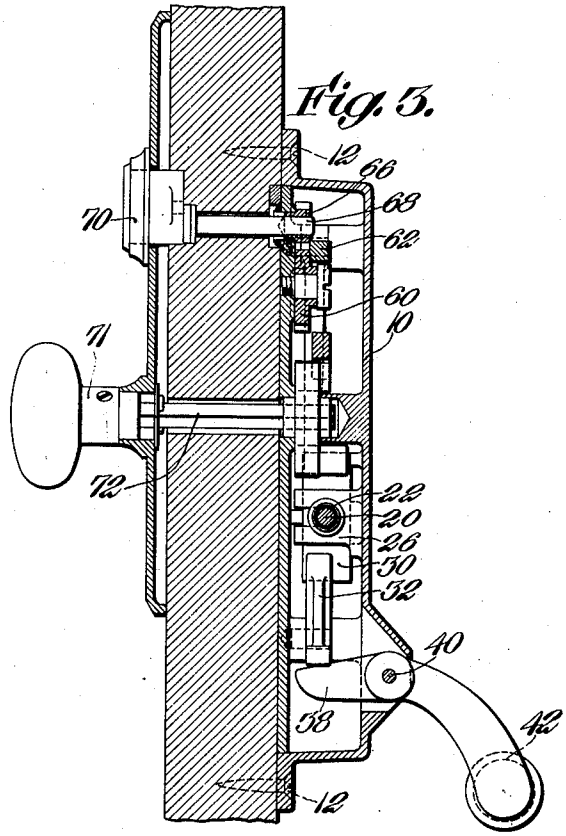


Fig. 4.

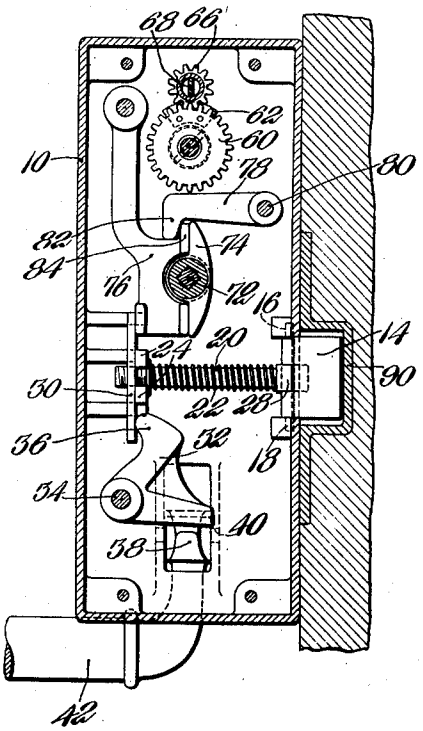


Fig. 5.

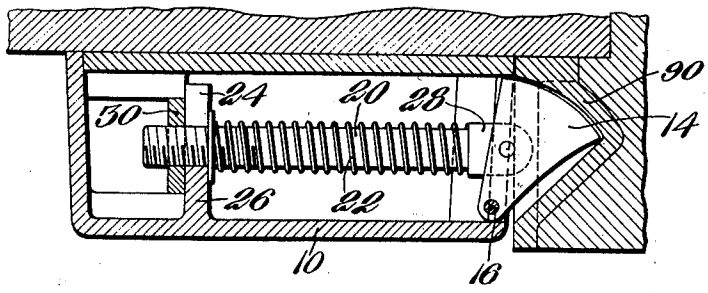
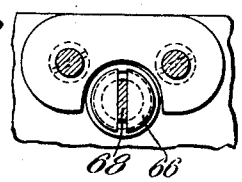


Fig. 6.



Witness:

Alfred H. McGlinchey.

Inventor:

J. Otto Soemer

by his Attorneys

Van Everen Fish Hildreth

& Cary

Patented Dec. 1, 1925. 1,564,030

UNITED STATES PATENT OFFICE.

JOHN OTTO SOEMER, OF NEWARK, NEW JERSEY.

DOORLOCK.

Application filed January 11, 1924. Serial No. 685,542.

To all whom it may concern:

Be it known that I, JOHN OTTO SOEMER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Doorlocks; and I 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.

The present invention relates to locks and more particularly to a type of lock which can be manipulated to prevent opening of a door from the outside but which invariably responds to pressure tending to open the door from the inside, this type of lock being commonly referred to as a panic exit lock.

It is the purpose and object of the present invention to reorganize and improve this general type of lock. Apparatus constructed in accordance with the new improvements may be readily and simply attached to doors not previously equipped with such a lock and provides an efficient form of lock which cannot be tampered with or picked from the outside but which unfailingly releases the door with the exertion of a comparatively light pressure from the inside.

With this and other objects in view, the various features of the invention consist in certain novel features of construction, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art from the following description.

In the accompanying drawings illustrating the preferred form of the invention, Fig. 1 represents a section in elevation of one embodiment of the improved lock attached to a door, this lock being actuated by a pivoted thumb latch; Fig. 2 is a plan view of the construction shown in Fig. 1 with the lock housing shown in section; Fig. 3 is an elevation in section of a slightly different form of lock adapted to be actuated by a rotatable knob; Fig. 4 is a plan of the construction shown in Fig. 3 with the housing shown in section; Fig. 5 is a detail illustrating the pivoted latch and strike with which it cooperates; and Fig. 6 is a detail illustrating the slotted pinion adapted to receive the inner end of the actuating blade connected with the cylinder lock.

The illustrated embodiment of the invention, as shown more particularly in Figs. 1 to 4 of the drawings, comprises generally a lock housing attached to the inner side of the door and having a spring latch cooperating with a strike attached to the door casing. A transversely extending bar or similar construction is connected with the lock in such a manner that pressure exerted downwardly and outwardly upon the bar tends to retract the latch and permit opening of the door. The locking mechanism is provided either with a rotatable knob or pivoted thumb latch projecting through the door to the outside and normally adapted when actuated to retract the latch and permit opening of the door from the outside as well as inside. The door may be locked against opening from the outside through a cylinder lock mounted upon the outer side of the door and connected with the mechanism, as hereinafter described. When the cylinder lock with its operating blade is turned into locking position, retraction of the latch bolt through the outer thumb latch or rotatable knob is prevented. Owing to the design of the lock mechanism, however, retraction of the latch bolt through pressure exerted upon the inside bar or actuating member cannot be prevented, as the operative connections between the outer and inner instrumentalities are separate and independent of one another.

Upon referring to the accompanying drawings, more particularly Figs. 1 and 2, it will be observed that a lock housing indicated generally at 10 is secured to the inside of the door adjacent the rim through fastenings indicated generally at 12. A latch 14 projects through the side of the housing and is pivotally supported at 16 in lugs 18 projecting from the housing. The latch, as will be evident from an inspection of Fig. 5, is connected at one side of the pivot 16 to a sliding bolt 20 surrounded by a coiled spring 22 which normally tends to move the pivoted latch into the locking position shown in Fig. 5. The inner ends of the latch bolt is supported for sliding movement between the opposite legs 24 of an extension 26 and the operating spring 22 is interposed between

the extension 26 and an enlarged head 28 formed upon the bolt. An abutment plate 30 threadedly connected to the inner end of the bolt, as shown in Figs. 2 and 5, serves to permit its retraction against the pressure of the spring 22. In the construction shown in Figs. 1 and 2, the abutment plate 30 is moved to the left to retract the latch 14 through a rocking dog 32 pivoted in the housing at 34 and having an end 36 which engages the lower side of the abutment, as indicated in Fig. 2. The lower end of the rocking dog is engaged by an actuating arm 38 pivoted to the housing at 40 and formed integrally with a transverse bar 42 which may extend across the inner side of the door in a manner which will be obvious to those skilled in the art. The spring 22 is normally sufficient to maintain the latch 14 in locking position against the weight of the bar 42 but a relatively light pressure exerted upon the bar serves to rock it about the pivotal connections 40 and through elevation of the member 38 rocks the dog 32 to withdraw the latch 14. The above described construction forms an exceedingly simple and efficient mechanism for unlatching the door from the inside, which is unfailing in its operation and which cannot be tampered with. In the construction shown in Figs. 1 and 2, the latch is released from the outside through a thumb latch 42 which may be pivoted at 44 to the escutcheon plate 46. This thumb latch is provided with a member 48 extending through the door and projecting at its inner end beneath an arm 50. The arm 50 is rotatably supported at 52 within a lock housing and is connected at its opposite free end with a bell crank lever 54 through a link 56. The bell crank lever 54 is provided with a depending arm 58 which engages with the upper portion of the dog 32, as indicated in Fig. 2. With this construction, a depression of the thumb latch from the outside raises the arm 50 and rocks the bell crank 54, which in turn rocks the dog 32 and retracts the latch 14. This portion of the mechanism, which retracts the latch from the outside, is rendered inoperative through a pinion 60, which is provided at one portion of its periphery with an abutment or block 62, this abutment or block being designed in one position of the pinion to engage with the surface 64 on the arm 50 and prevent elevation of the arm. With the abutment in this position, the arm 50 and bell crank 54 are locked against movement which prevents retraction of the latch from the outside. It will be obvious, however, that the retention of these parts in inoperative position does not interfere with the movement of the dog 32 under the action of the bar 42. The rotation of the pinion from operative to inoperative position and vice versa is accomplished through a small pinion 66 meshing therewith, which is actuated by a blade 68 forming a part of the lock cylinder 70 attached to the outside of the door. It will be evident to those skilled in the art that the lock cylinder may be of any desired form in which the rotation of the blade can only be accomplished by the insertion of a key of particular design. The pinions 60 and 66 are so designed and proportioned that a complete rotation of the cylinder blade 68 is required to move the abutment 62 from operative to inoperative position.

In the form of lock shown in Figs. 3 and 4, the transverse bar 42 is pivoted at 40 and actuates the dog 32 through an arm 38. This dog through engagement with the abutment 30 serves to retract the latch bolt 20 and pivoted latch 14. The retraction of the latch from the outside of the door is accomplished by a rotatable knob 71 having a spindle 72 extending through the door and connected at its inner end with a tumbler 74. The tumbler 74 upon rotation of the knob in either direction exerts a lateral pressure upon a depending arm 76 and cams the arm to the left in Fig. 4. This arm, through engagement with the upper side of the abutment 30, retracts the latch in a manner which will be evident. The arm 76 is locked against movement in a direction to retract the latch through a locking arm 78 pivoted in the housing 80 and having a downwardly projecting portion 82 which engages behind a projection 84 upon the arm, as indicated in Fig. 4. Normally the rotation of the knob serves to move the arm 76 to the left, the cam face upon the projection 82 causing it to rise as the arm is moved. Movement of the arm to retract the latch is prevented through the gear 60 with the abutment 62, the latter being moved in one position of the gear into engagement with the upper side of the locking arm 78. With the abutment in this position, elevation of the locking arm is prevented and the knob is locked against rotation in a manner to retract the latch. On the other hand, this construction does not interfere with the retraction of the latch under the action of the transverse bar 42.

It will be evident from an inspection of Figs. 2, 4 and 5 that the pivoted latch 14 engages and cams into a strike 90 fitted in the adjacent portion of the door jamb. The door jamb is recessed in such a manner that when the door is closed and latched access to the latch cannot be gained from the outside. The extension of the sliding bolt 20 beyond the member 26 is such that the end of the bolt will strike the housing before the latch 14 can be forced back into the position in which it may be jammed. Thus a mere closing of the door is sufficient to cause the latch 14 to be invariably engaged within the strike 90. This construction provides a relatively simple and thief

proof lock, which may invariably be opened from the inside by a simple pressure on the operating bar, this pressure also tending to open the door after the latch is released.

While it is preferred to employ the specific construction and arrangement of parts shown and described, it will be understood that this construction and arrangement is not essential except so far as specified in the claims and may be changed or modified without departing from the broader features of the invention.

The invention having been described, what is claimed is:

1. A lock comprising a housing, a sliding latch bolt within the housing, a dog pivoted in the housing below the latch bolt, an arm pivoted in the housing below the dog, an inside release connected to the arm adapted to move the dog in a direction to retract the latch bolt, a swinging arm extending across the housing above the latch bolt, means for operating the arm from without the housing to retract the latch bolt, a rotating abutment for locking the arm against movement, and connections between the arm and latch bolt, permitting the latter to be operated by the pivoted dog independently of the movement of the arm.

2. A lock comprising a relatively shallow housing, a sliding latch bolt supported within the housing, a dog pivoted in the housing below the latch bolt, a bar release pivoted in the housing below the dog adapted to retract the latch bolt through the dog, an arm extending across the housing above the latch bolt, a bell crank pivoted in the housing, a link connecting the arm and bell crank, the bell crank retracting the latch bolt through engagement with the pivoted dog, a rotating abutment for locking the swinging arm against movement in a direction to retract the latch bolt, and means for moving the arm to retract the latch bolt.

3. A lock comprising a housing, a latch pivoted in the housing, a latch bolt connected to the latch, an arm pivoted in the housing and adapted to be moved upon retraction of the latch, a pinion supported above the arm, an abutment carried by the pinion, and means for rotating the pinion to move the abutment into engagement with the arm to lock the latter against movement.

4. A lock comprising a housing, a latch pivoted in the housing, a latch bolt connected to the latch, an arm pivoted in the housing and adapted to be moved upon retraction of the latch, a pinion supported above the arm, an abutment carried by the pinion, and a second pinion mounted above the first mentioned pinion and designed to move the pinion carrying the abutment approximately one-half a revolution during a complete revolution of the second pinion.

J. OTTO SOEMER.