

July 15, 1930.

J. W. HALL

1,770,751

DOORLOCK

Filed Jan. 18, 1929

Fig. 1.

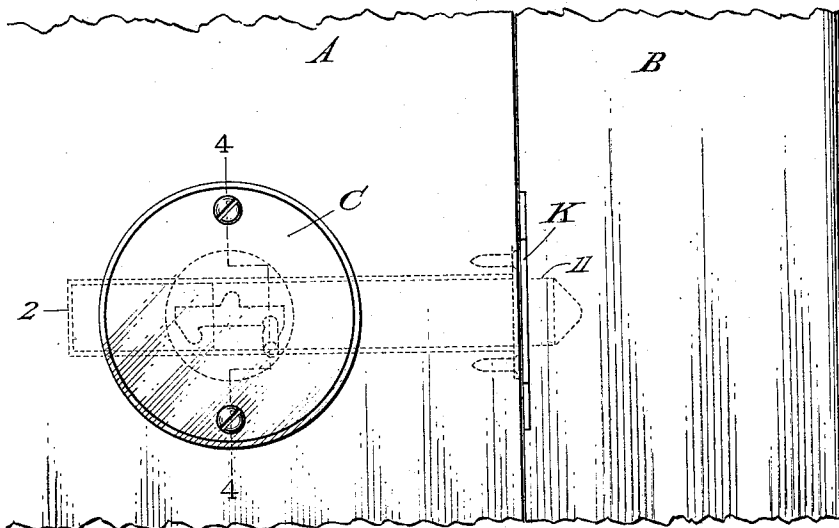


Fig. 2.

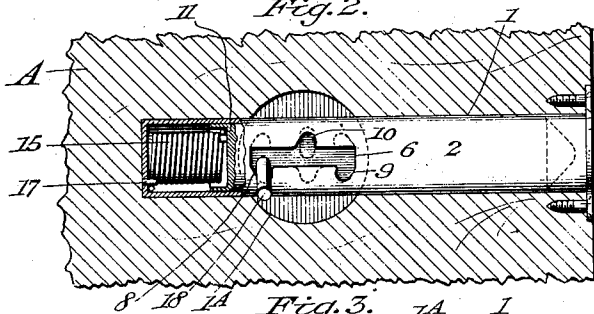


Fig. 3.

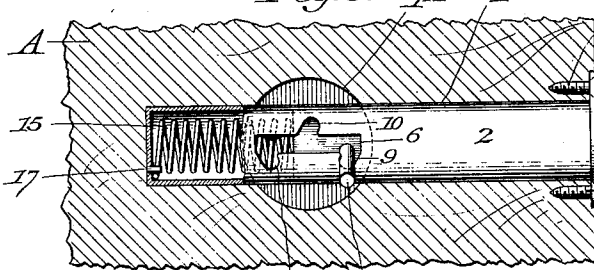


Fig. 4.

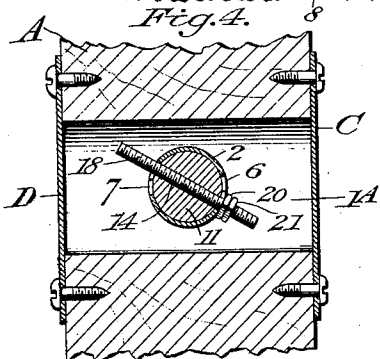


Fig. 5.

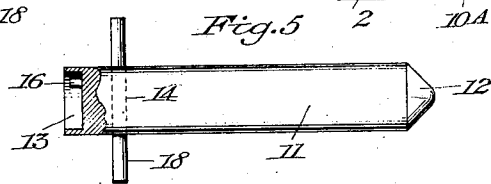


Fig. 6.

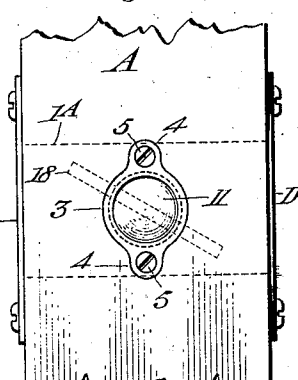
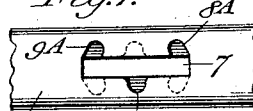


Fig. 7.



Inventor:

Joseph W. Hall

By H. S. Bailey Attorney.

UNITED STATES PATENT OFFICE

JOSEPH W. HALL, OF DENVER, COLORADO

DOOR LOCK

Application filed January 18, 1929. Serial No. 333,345.

My invention relates to improvements in locks or bolts for doors.

The main object of the invention is to provide a lock or bolt for store or office doors which is additional to the usual lock, and is adapted to be operated by a police officer, watchman or detective to lock the door, if on trying the said door, at any time between closing and opening hours, it should be found that the same had been inadvertently left unlocked.

Further, to provide a spring-actuated lock or bolt of this character which is concealed within the door frame and is normally held in an inoperative position, access to the said lock or bolt being had by the removal of a suitable covering plate, whereby the bolt may be released to automatically lock the door when the said door is closed, as will be herein-after fully set forth.

These and other objects are accomplished by the device illustrated in the accompanying drawings in which

Fig. 1 is a front view of a portion of a door frame and casing, illustrating the arrangement of the improved lock or bolt and the covering plate which normally closes access to the bolt, the bolt being shown in dotted lines.

Fig. 2 is a sectional view through a portion of a door frame showing the shell or tube which incloses the bolt, and the spring actuated bolt therein, which is normally held in retracted or inoperative position, the tube being partly in section.

Fig. 3 is a sectional view similar to Figure 2 showing the bolt thrown to locking position.

Fig. 4 is a sectional view on the line 4-4 of Fig. 1, the pin by which the bolt is detached from its retaining notch being shown clamped against movement by lock nuts, to prevent unauthorized movement of the same from the outside of the door.

Fig. 5 is a side view of the bolt, the rear end portion of which is in section.

Fig. 6 is an edge view of the door, showing the manner of securing the shell or tube therein, and

Fig. 7 is a side view of a portion of the shell

or tube, looking at the opposite side from that shown in Figures 2 and 3.

Referring to the accompanying drawings, the letter A designates a portion of a door frame, and B the jamb or side member of the door casing. Into the edge of the door, and preferably above the usual lock is bored a horizontally disposed hole 1, which is preferably three and one half inches deep and about nine sixteenths of an inch in diameter, and a hole 1A preferably about one inch in diameter, is bored entirely through the door, so as to intersect the hole 1 at a point about one third of the length of the hole 1 from its inner end. Into the hole 1, is inserted a tube or shell 2 which is closed at its inner end and has a narrow flange 3 on its outer end which fits in a corresponding recess in the edge of the door so as to lie flush with the said edge, the flange including apertured ears 4 for retaining screws 5 which are screwed into the edge of the door, thus securing the shell 2 within the door and so as to prevent a turning movement of the same. Opposite longitudinal slots 6 and 7 are cut through the wall of the shell, and these slots are approximately one fourth of the length of the shell, and about one eighth of an inch wide, and the inner ends of these slots terminate at about the center of the length of the shell. The slot 6 lies next to the inner side of the door, and the lower edge of this slot has notches 8 and 9 cut in its opposite ends, the inner edges of which are undercut, as clearly shown in Figures 2 and 3. The upper edge of this slot is also provided with a notch 10, centrally of its length, and the edge of this notch nearest the open end of the shell is undercut, as shown.

The upper edge of the slot 7 is provided at its ends with undercut notches 8A and 9A corresponding to the notches 8 and 9 in the lower edge of the slot 6, and the under edge of the said slot 7 is provided with a notch 10A corresponding to the notch 10 in the upper edge of the slot 6, as clearly shown in Fig. 7.

Within the shell 2 is inserted a lock bolt 11 which is somewhat shorter than the shell. The outer end of this bolt terminates in a blunt conical point 12 while its inner end is

recessed as shown at 13, and a hole 14 is drilled through the bolt near its rear end. A coil spring 15 is interposed between the inner end of the bolt and the inner end of the shell, and one end of this spring enters the recess 13 in the end of the bolt and is engaged by a lug or pin 16 in the wall of the recess, while the opposite end of the said spring bears against the end of the shell and is engaged by a pin 17 in the said end. The bolt is then given a number of right hand turns, by any suitable means, and as the ends of the spring are engaged by the lugs or pins 16 and 17 respectively, the spring will thereby be wound or twisted upon itself so as to be under torsional tension. While the spring is under this tension, the bolt 2 is pushed into the shell until the hole 14 in the bolt registers with the notches 8 and 8A in the edges of the slots 6 and 7 of the shell, and the spring is thereby compressed. A pin 18 is then passed into the hole 1A and driven through the hole 14 in the bolt and is of a length to extend a short distance beyond each side of the bolt. When the twisting action on the bolt is released, the torsional force of the spring 15 will turn the bolt in the opposite direction whereby one end of the pin 18 will engage the notch 8 and the other end thereof will engage the notch 8A and the undercut edges of these notches will engage the pin and thus hold the bolt in a retracted or inoperative position, as will be understood, the spring 15 being under both torsional and expansion tension. After securing the bolt 11 within the shell, in the manner above described, the opposite ends of the hole 1A are closed by metal disks or plates C and D which are secured to the door by screws as shown. The torsional force of the spring 15 will hold the pin 18 in engagement with the notches 8 and 8A thus preventing the bolt from being accidentally or unintentionally thrown or shut to locking position.

The improved locking bolt is in addition to the regular locking means with which the door is supplied, and is never used excepting in cases where the door has been inadvertently left unlocked at the close of the day, and then it is utilized as will presently be explained.

It is the duty of police officers, private detectives or night watchmen to try all doors in business districts, as they go their rounds, and if a door is found unlocked, the person concerned is notified, in order that he may appear and lock the said door. With the employment of the improved lock, however, the officer may lock the door without the necessity of calling up the person concerned, and this is accomplished in the following manner: If the door is found to be unlocked, the officer enters the store or office, as the case may be, and removes one of the screws from the plate C on the inside of the door, which permits

the plate to swing around and uncover the hole 1A which affords access to the pin 18 which holds the bolt in retracted position. He then lifts the pin 18 out of the notch 8 and permits the bolt to be moved forward by the spring 15 until the pin registers with the notch 10; he then presses the pin up into the said notch 10, and the pressure of the spring will force the pin against the undercut edge of the notch by which it will be held against the torsional force of the said spring. In this position of the bolt, its outer conical end will project a slight distance beyond the edge of the door, as shown by the dotted line X in Figure 2. The officer then steps outside and closes the door and as the door closes, the conical end of the bolt engages the usual keeper K on the stile B, and the bolt will be pushed back far enough to permit the pin to pass out of the notch 10, but not far enough to permit the pin to enter the notches 8 and 8A, as the backward movement of the bolt is less than the distance between the notch 10 and the notches 8 and 8A; and when the end of the bolt registers with the usual opening in the keeper K the bolt will be thrown by the spring 15 until the pin engages the ends of the slots 6 and 7, when the torsional force of the spring will turn the bolt so that the pin will enter the notches 9 and 9A and thus hold the bolt in locked position.

When the proprietor of the store or office arrives in the morning, he finds that he had left the door unlocked the night before, but that the door has been fastened by the special lock. He therefore removes one of the screws from the outside plate D and turns the same to uncover the hole 1A; he then pushes the pin 18 down, which turns the bolt and releases the pin from the notches 9 and 9A, and then pushes the bolt back until the pin engages the inner ends of the slots 6 and 7, when the torsional force of the spring will turn the bolt and cause the pin to engage the notches 8 and 8A, and the bolt will then be held in its retracted or inoperative position.

In Figure 4 the pin 18 is threaded and a nut 20 is screwed upon its inner end and against the shell 2, and a lock nut 21 is screwed against the nut 20. By this means the pin 18 is held against movement and the bolt is thus prevented from being locked by a person on the outside desiring to play a practical joke.

Having described my invention what I claim as new and desire to secure by Letters Patent, is:

1. In a lock of the character described, the combination with a door having a hole extending into it from its outer edge, and a second hole which intersects the first hole and extends entirely through the door; of a tubular shell secured in the first hole having longitudinal slots which register with the said second hole the edges of which are

notched at their opposite ends; a bolt in said shell having a pin extending therethrough and through said slots and into the second hole, and in normal engagement with the notches at the rear ends of the slots thereby to hold the bolt in retracted position, a normally compressed coil spring between the rear end of the bolt and the adjacent end of the shell and connected to the bolt and shell, said spring being under torsional tension thereby to hold said pin in said notches, said pin being adapted to be manually tripped to release the bolt to permit the same to be thrown to locking position, the torsional force of said spring causing said pin to enter the notches at the front ends of the slots, whereby the bolt is locked against accidental backward movement, and plates for normally covering the ends of the second hole.

In testimony whereof, I affix my signature.

JOSEPH W. HALL.

5 to hold the bolt in retracted position, a normally compressed coil spring between the rear end of the bolt and the adjacent end of the shell and connected to the bolt and shell, said spring being under torsional tension thereby to hold said pin in said notches, said pin being adapted to be manually tripped to release the bolt to permit the same to be thrown to locking position, the torsional force of said spring causing said pin to enter the notches at the front ends of the slots, whereby the bolt is locked against accidental backward movement, and plates for normally covering the ends of the second hole.

10 2. In a lock of the character described, the combination with a door and jamb, said jamb having a keeper; said door having a hole extending into the same from its front edge and a second hole which intersects the first hole and extends thru the door; of a tubular shell in the first hole having longitudinal slots which register with the second hole, the edges of said slots being notched at their ends and midway of their lengths; a bolt in the shell

15 having a pin extending therethrough and through said slots and into said second hole and in normal engagement with the notches at the rear ends of the slots thereby to hold the bolt retracted, a normally compressed coil spring between the rear end of the bolt and the adjacent end of the shell and connected to bolt and shell, said spring being under torsional tension to hold said pin in said notches, said pin being adapted to be manually disconnected from the rear notches and secured in the middle notches and held therein against the torsional force of the spring, whereby when the door is partially closed the bolt is released from said notches by the initial engagement of the projecting end of the bolt with the keeper, and thrown to locking engagement with the said keeper when the door is fully closed; and plates for normally closing the said second hole.

20 3. A lock of the character described comprising a tubular shell open at one end and provided with opposite longitudinal slots the edges of which are notched at their opposite ends and centrally of their lengths, the end notches being in the lower edge of one slot and in the upper edge of the other slot, the middle notches being in the edges not having the end notches; a bolt in said shell having a blunt conical front end, a pin extending through said bolt and through the slots and in normal engagement with the rear end notches, a normally compressed spring between the rear end of the bolt and the adjacent end of the shell and connected to the bolt