Aug. 3, 1937. N. B. HURD 2,089,146

LOCK

Filed May 26, 1936

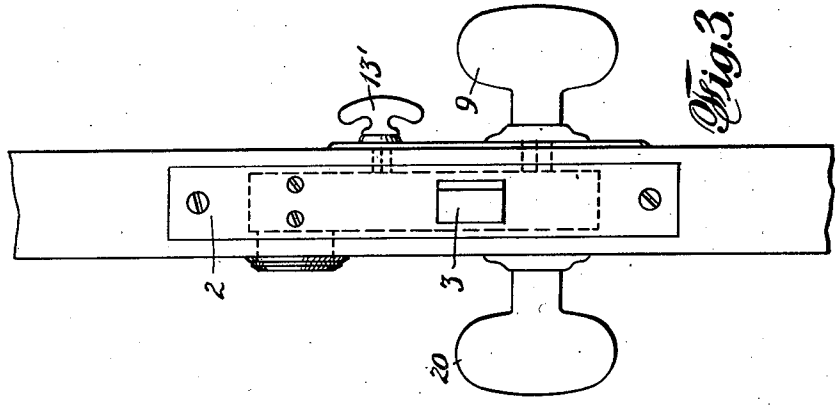


Fig. 3.

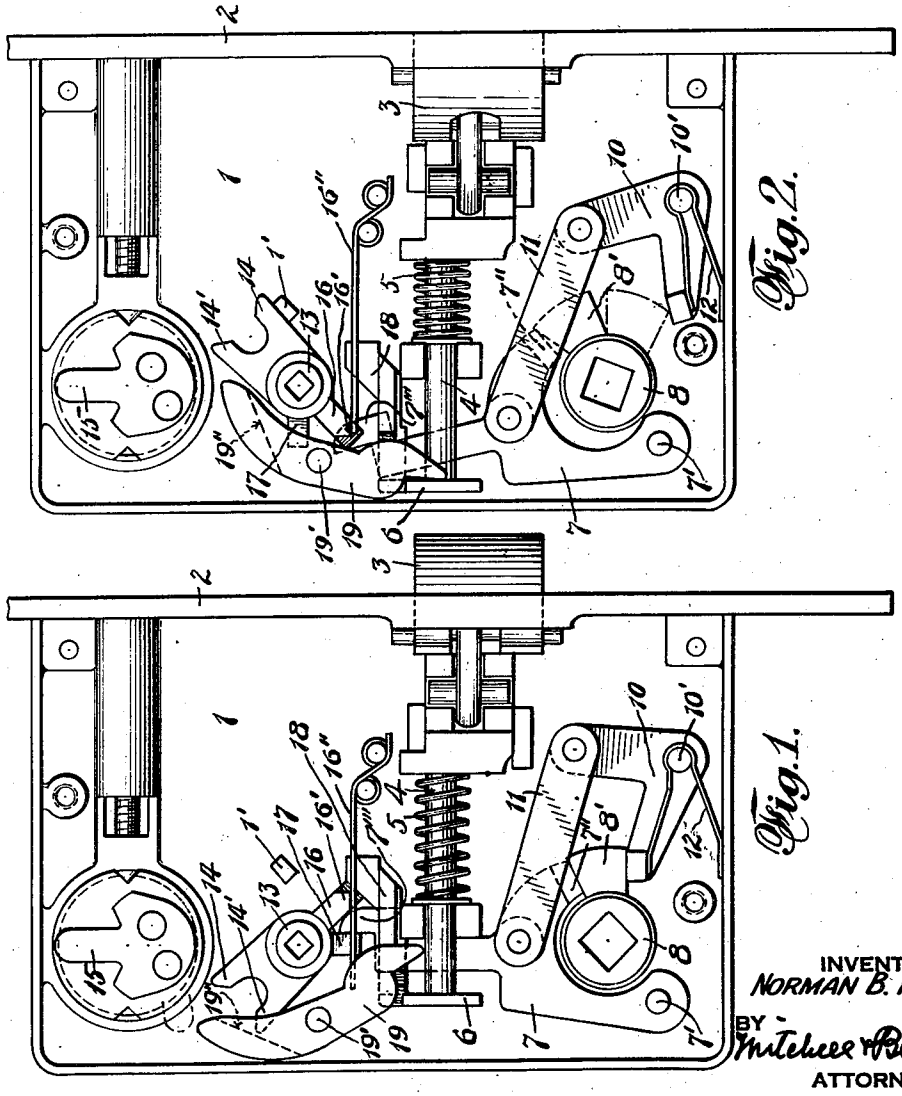


Fig. 2.

Fig. 1.

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Patented Aug. 3, 1937

2,089,146

UNITED STATES PATENT OFFICE

2,089,146

LOCK

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Application May 26, 1936, Serial No. 81,803

6 Claims. (Cl. 70—150)

This invention relates to certain new and useful improvements in door locks for hotel bedrooms, offices or other special instances, such as staterooms or officers' quarters on vessels.

The object of this invention is to improve door locks of the spring latch-bolt type in which no separate dead-bolt is required, since the latch retracting mechanism itself may be dogged whenever it is desired to prevent the door from being opened from the outside excepting by the use of a suitable key. The improvements are also such that, if the latch-bolt retracting mechanism has been dogged, it may be undogged from the indoor side by merely turning the inside door knob (or equivalent) preparatory to retracting the latch. Another object is to simplify the construction and assembly of the parts necessary to accomplish the desired ends. Other objects will appear to a mechanic skilled in this art from a reading of the following description and an examination of the accompanying drawing, in which I have shown my lock in only one preferred form and in which—

Fig. 1 is a side elevation of the lock with the "cap" removed;

Fig. 2 is a similar view with the parts shown in a different position from that indicated in Fig. 1;

Fig. 3 is an end elevation of the lock as it will appear in place on the door, said view being relatively reduced in size.

Before describing in detail the construction, it may be stated that the lock shown is of the spring latch-bolt type and is equipped with an inside knob, or equivalent manually operable means for retracting the bolt, and it may also be provided with an inside "thumb turn", or equivalent means, for dogging the latch against retraction from the outside excepting by means of a suitable key to first throw off the dog. The construction is also such that when the bolt has been dogged by either means, the dog may be thrown off by a preliminary turn of either the outside key or the inside knob, after which a further turn of either operates to retract the bolt.

Now, as to the construction shown in the drawing, 1 represents a lock case having the usual removable "cap" (not shown) to afford access to the interior mechanism. 2 represents the usual face-plate, 3 a latch-bolt, 4 a latch-bolt tail, 5 a spring for normally projecting the bolt, and 6 a shoe at the rear of the latch-bolt tail 4. 7 is a bolt retracting lever, pivoted at 7', at or near the bottom of the case 1. The upper end of this lever is designed to engage the shoe 6 to retract the bolt. 8 is a roll-back having a single arm 8'. 9 is an indoor knob, or equivalent device, connected by the usual spindle to the roll-back 8. The lever 7 has a laterally projecting portion 7'' engaging one side of the arm 8' so that, when the roll-back 8 is rotated in a counter-clockwise direction, it will swing back the lever 7 and retract the bolt. 10 is a bell crank, pivoted at 10', near the bottom of the case. 11 is a link between one end of the bell crank to the bolt retracting lever 7. The other arm of the bell crank bears against that side of the roll-back arm 8' opposite to the lever extension 7''. Hence, rotation in either direction of the roll-back hub will retract the bolt. It will be observed that by the arrangement shown the component of forces is such that substantially the same leverage is applied by either turning movement in transmitting power from the roll-back 8 to the tail 4 for the purpose of retracting the bolt. It will also be noted that a shorter retracting lever may be used than required for a two-arm roll-back, and hence a smaller and more compact case may be employed. 12 is a spring which functions to urge the bell crank and the lever 7 against opposite sides of the roll-back 8' to establish its normal idle position and to also normally hold the upper end of the lever 7 spaced slightly away from the shoe 6, as shown in Fig. 1, and for the purpose later described. Thus far I have described a mechanism by which the latch may be retracted by means of a knob actuated single arm roll-back.

Now, turning to the means for dogging the bolt from the outside or inside and for undogging and retracting the bolt either by an outside key or an inside knob, 13 represents a bolt dogging hub mounted in the case. 13' represents an indoor "thumb turn", or equivalent device, for the said hub. 1' is a back stop for the dogging hub. On one side of this hub are two spaced talons 14—14'. 15 is a key-controlled roll-back arm, preferably of the "cylinder" type, and by means of which the dogging hub 13 may be shifted to its "on" or "off" position. On the opposite side of hub 13 is a dogging shoulder or arm 16 and also an undogging or reversing shoulder or arm 17. 16' is a nose formed on one side of arm 16 against which nose a spring 16'' bears to hold the dogging hub in its "on" or "off" position. The bolt shoe 6 is of novel construction and comprises a forward extension 18. This extension has an upwardly inclined shoulder which forms a dogging abutment against which the dogging arm 16 engages when the bolt is dogged as shown in Fig. 1. In this position, the bolt cannot be undogged or retracted from the outdoor side, excepting by means of a proper key, and hence no separate dead-bolt is required. By using a key and turning the arm 15 in a counter-clockwise direction, as viewed in Fig. 1, it will pass the end of a second latch retracting lever 19 and engage the talon 14 and swing the hub 13 in a direction to undog the bolt. This rotation of the hub 13 will cause nose 16' of the dogging arm 16 to shift the lever 19

from the position shown in Fig. 1 toward the position shown in Fig. 2 to thereby move the upper end of said lever into the range of the arm 15, whereby another partial revolution of the arm 15 in the same direction will cause it to engage the upper end of lever 19 to swing it to the extreme position shown in Fig. 2 and retract the bolt. This lever 19 is pivoted at 19' intermediate its length and on the rear side is provided with an incline 19'' against which the talon 14' bears when the bolt is dogged, whereby the upper end of the lever 19 will be held out of the range of rotation of the arm 15. Whenever the dogging hub 13 has been swung to the "on" or dogging position shown in Fig. 1, the occupant of the room may still freely open the door by simply turning the knob 9, since the first part of said movement will undog the bolt, this being accomplished by means of an extension 7''' on the upper end of the lever 7 which overlaps an undogging arm 17. There is provided a sufficient degree of lost motion between the lever 7 and the shoe 6, so that the former will not engage the latter to retract the bolt until the latter has been fully undogged, whereupon a continued rotation of the roll-back 8 by the knob 9 will cause the bolt to be retracted.

When the hub 13 stands in an "off" position as shown in Fig. 2 and it is desired to dog the bolt by using an outside key, the arm 15 may be turned in a clockwise direction to engage talon 14' and swing the hub to the "on" position indicated in Fig. 1. On this movement the talon 14' engages incline 19'' and cams the lever 19 into the extreme "off" position shown in said figure so that the end of the arm 15 may freely pass said lever when turned in counter-clockwise direction to undog the bolt by roll back 15.

I use the word "knob" herein in a general sense to include any well known equivalent means for actuating the roll-back.

I claim:

1. In a door lock, a case, a latch-bolt, adapted to be retracted by an inside controlled roll-back and a latch-bolt retracting lever, a bolt dogging hub having a dogging arm and a reversing arm at one side with two spaced talons at the opposite side, a key rotatable arm coacting with said talons to shift said hub to "on" and "off" positions, a key actuated bolt retracting lever pivoted intermediate its length and positioned to be rocked by said key rotatable arm to retract said bolt when the dogging hub is "off" and positioned to be out of range of said key rotatable arm when said dogging hub is "on", said key rotatable arm being operable by a key at the outdoor side of said lock, said latch-bolt retracting lever coacting with said reversing arm to undog said bolt when said lever is retracted to retract said bolt.

2. In a door lock, a case, a latch-bolt, adapted to be operated by a main bolt retracting lever and a roll-back operable by a knob from the indoor side of the lock to swing said lever to retract the bolt, a bolt dogging hub adapted to be operated by means at the inside of the door and having a bolt dogging arm and a reversing arm at one side with two spaced talons at the opposite side, a key rotatable arm coacting with said talons to shift said hub to "on" and "off" positions, a key actuated bolt retracting lever pivoted intermediate its length and positioned to be rocked by said key rotatable arm to retract said bolt when the dogging hub is "off" and positioned to be out of range of said key rotatable arm when said dogging hub is "on", said key rotatable arm being operable by a key at the outdoor side of said lock, and means at the indoor side of said lock for operating said dogging hub independently of said indoor knob.

3. In a door lock, a case, a latch-bolt adapted to be operated by a main bolt retracting lever and a roll-back operable by a knob from the indoor side of the lock to swing said lever to retract the bolt, a bolt dogging hub having a dogging arm and a reversing arm at one side with two spaced talons at the opposite side, a key rotatable arm coacting with said talons to shift said hub to "on" and "off" positions, a key actuated bolt retracting lever pivoted intermediate its length and positioned to be rocked by said key rotatable arm to retract said bolt when the dogging hub is "off" and positioned to be out of range of said key rotatable arm when said dogging hub is "on", said key rotatable arm being operable by a key at the outdoor side of said lock, and a connection between the knob actuated roll-back and the reversing arm on the dogging hub to move said hub to the "off" position upon the first turning movement of said roll-back preliminary to retracting said bolt, and to thereafter retract said latch when said dogging hub is in its "off" position by a further turning movement of said roll back in the same direction.

4. In a door lock, a case, a latch-bolt, means positively operable from the indoor and outdoor sides of the lock for positively dogging the bolt against retraction from the outside excepting by means of a key, and independently operable means at the indoor side for both undogging and retracting said bolt.

5. In a door lock, a case, a latch-bolt, a bolt dogging hub to positively hold said bolt projected when said hub is in its "on" position and to free said bolt for retraction when in its "off" position, means to shift said hub to its "off" position and then retract the bolt by an indoor knob, means at the outdoor side to positively shift said dogging hub to each of said positions, said means being operable by a key from the outside of said door for also retracting said bolt.

6. In a door lock, a case, a latch-bolt adapted to be retracted by an inside controlled roll-back and a main latch-bolt retracting lever, a bolt dogging hub having a dogging arm and a reversing arm at one side with two spaced talons at the opposite side, a key rotatable arm coacting with said talons to shift said hub to "on" and "off" positions, a key actuated bolt retracting lever pivoted intermediate its length and positioned to be rocked by said key rotatable arm to retract said bolt when the dogging hub is "off" and positioned to be out of range of said key rotatable arm when said dogging hub is "on", said key rotatable arm being operable by a key at the outdoor side of said lock, and a connection between said main latch-bolt retracting lever and said reversing arm to move said dogging hub from the "on" to the "off" position upon the first turning movement of said inside controlled roll-back preliminary to retracting said bolt thereby.

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