E. ROSE.

RIM NIGHT LATCH.

APPLICATION FILED APR. 8, 1912.

1,040,764.

Patented Oct. 8, 1912.

2 SHEETS—SHEET 1.

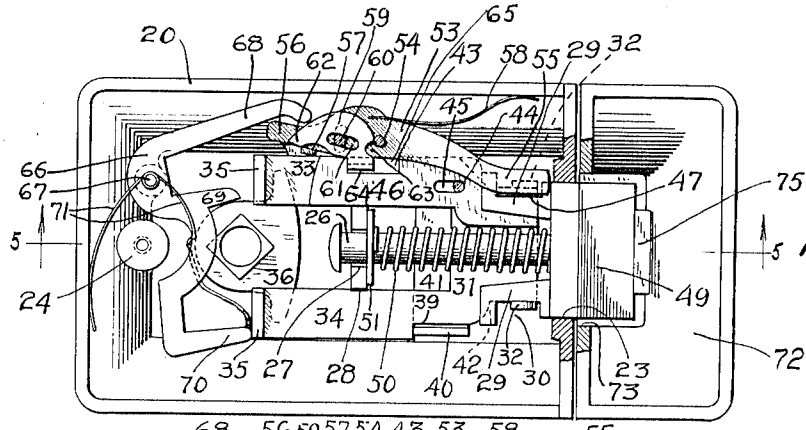

Fig. 1

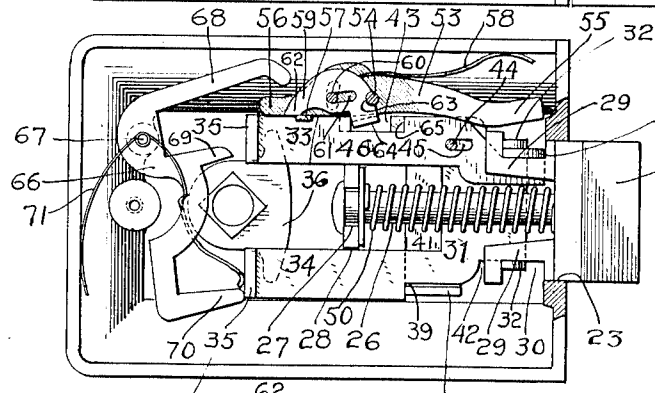

Fig. 2

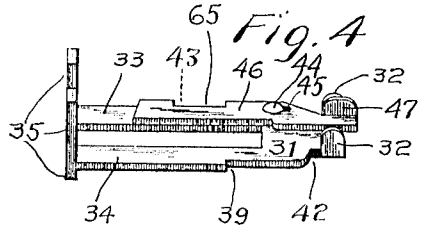

Fig. 4

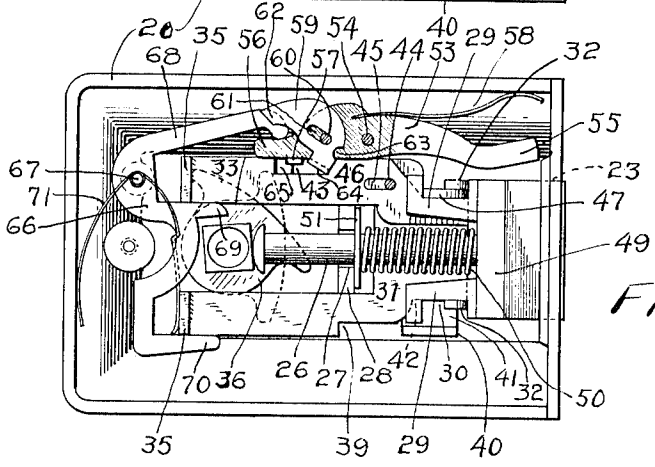

Fig. 3

WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 5

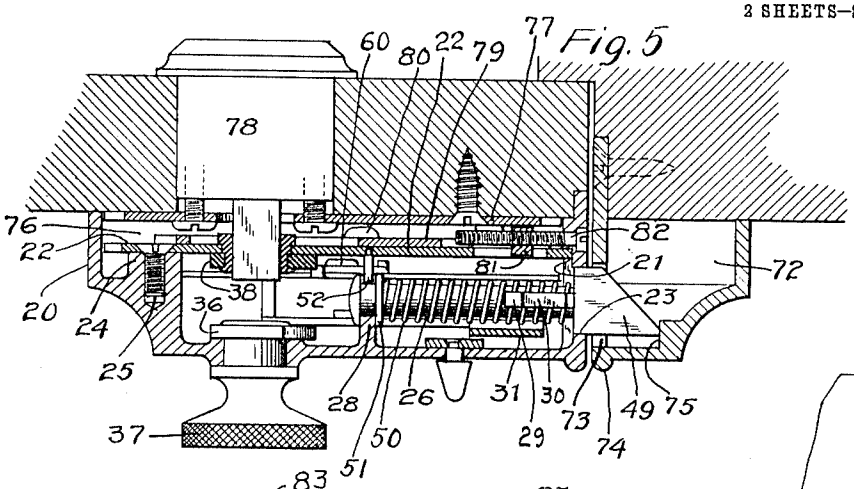
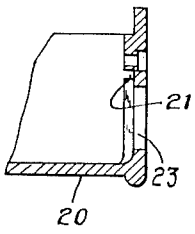


Fig. 10



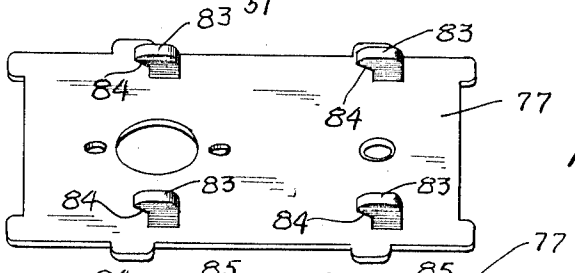


Fig. 6

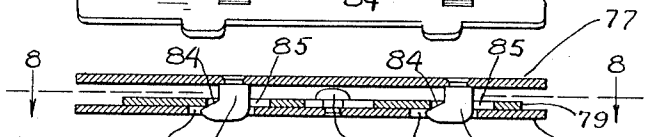


Fig. 7

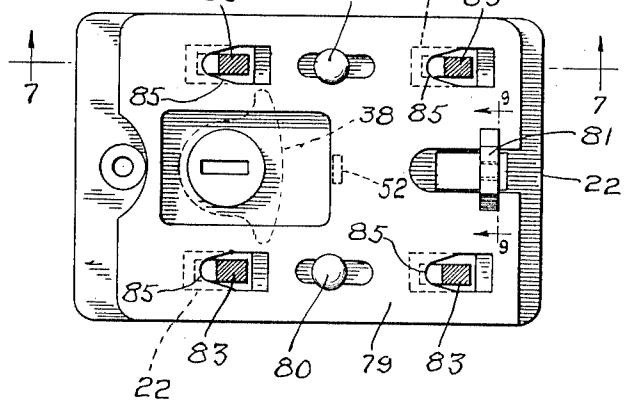


Fig. 8

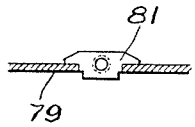


Fig. 9

WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD ROSE, OF MAMARONECK, NEW YORK, ASSIGNOR TO NORWALK LOCK COMPANY, OF SOUTH NORWALK, CONNECTICUT, A CORPORATION OF CONNECTICUT.

RIM NIGHT-LATCH.

1,040,764. Specification of Letters Patent. Patented Oct. 8, 1912.

Application filed April 8, 1912. Serial No. 689,164.

To all whom it may concern:

Be it known that I, EDWARD ROSE, a citizen of the United States, residing at Mamaroneck, county of Westchester, State of New York, have invented an Improvement in Rim Night-Latches, of which the following is a specification.

This invention relates to rim night latches and has for its object to reduce the number of parts and to generally simplify and improve their construction and increase their efficiency in use.

An especial object of the invention is to provide means whereby it is rendered impossible for the bolt to be retracted by the insertion of an implement between the door and the jamb.

A further object of the invention is to provide means for attaching the latch to the door, which will render it practically impossible to detach the latch when the door is closed and will enable it to be detached and replaced quickly.

With these and other objects in view, the invention consists in certain constructions and in certain parts, improvements and combinations which will be hereinafter described and then particularly pointed out in the claims hereunto appended.

In the accompanying drawings forming a part of this specification, Figure 1 is an interior view of my novel night latch, the back plate being removed and the parts shown in the locking position; Fig. 2, a similar view with the parts in the unlocked position; Fig. 3, a similar view illustrating the position of the parts when the latch bolt has been forced inward as by the striker or by operation of a roll back; Fig. 4, a perspective of the slide and the secondary slide detached; Fig. 5, a horizontal section on the line 5—5, in Fig. 1, looking in the direction of the arrows; Fig. 6, a perspective of the holding plate detached; Fig. 7, a section on line 7—7 in Fig. 8, looking in the direction of the arrows; Fig. 8, a section on line 8—8 in Fig. 7, looking in the direction of the arrows; Fig. 9, a detail sectional view on line 9—9, in Fig. 8, looking in the direction of the arrows; and Fig. 10 is a detail sectional view of the front end of the case.

20 denotes the case which is provided in its front end with a groove 21 to receive the end of the back plate 22 and with an opening 23 to receive the latch bolt 49 which is beveled in the usual manner. The other end of the back plate rests upon a hub 24 and is retained in place by a screw 25. The bolt is provided with a shank 26, the rear end of which rests in a groove 27 in a block 28 forming part of the case. The bolt is provided on opposite sides of the shank with arms 29 which extend backward and are provided with recesses 30 for a purpose presently to be explained.

50 denotes the operating spring which surrounds the shank and bears against the bolt and against a washer 51 which in turn rests against block 28. The shank is retained in place in groove 27 by means of a lug 52, see Fig. 5, which projects from the back plate. It will be noted that shank 26 and arms 29 extend backward from the mid-width of the latch bolt which permits reversal of the bolt without other changes, thus enabling the latch to be applied to either side of a right or left swinging door.

31 denotes a slide which lies below the shank of the bolt and is provided at its forward end with upwardly extending lugs 32 adapted to engage the recesses 30 in arms 29 of the bolt. The rear end of this slide comprises arms 33 and 34 having at their ends angle arms 35 which extend above and below arms 33 and 34 respectively. The lower ends of said arms are adapted for engagement by a roll back 36 which is operated by a knob 37 and the upper ends of said arms are adapted for engagement by a roll back 38 (see Fig. 5) which is operated by a key applied to a lock 58. Arm 34 of the slide is provided with a recess 39 which receives an upturned lug 40 on a cross slide 41 when the bolt is thrown and with a recess 42 which receives said lug when the bolt is in the retracted position to lock it retracted. The operation of this cross slide is not illustrated in detail as specifically it forms no portion of the present invention. Arm 33 is provided with a recess 43, the purpose of which will presently be explained, and with a headed pin 44 which passes through a slot 45 in a secondary slide 46 superposed and slidable on arm 33. The secondary slide is provided with an upturned lug 47 which lies within the corresponding lug 32 on slide 31, both lugs lying within the recess 30 in the corresponding arm 29 of the bolt, and with a recess 65 which corresponds with recess 43 in arm 33. It will be noted that lug 47 practi-

cally fills the recess 30 in the direction of its length, so that the secondary slide will always move with the bolt.

53 denotes a dogging lever pivoted on a pin 54 projecting from the case and extending above the lever for a purpose presently to be explained. This lever comprises a forwardly extending arm indicated specifically by 55, a rearwardly extending arm indicated by 56 and an upturned lug indicated by 57.

58 denotes a spring secured to the dogging lever and bearing against the case, its normal operation being to swing the forward arm of said lever downward.

59 denotes a dog pivoted on a headed stud 60 which passes through a clearance slot in the dogging lever and engages the case. The stud passes through a slot 61 in the dog which permits longitudinal movement thereof. The dog is provided with an arm 62 which engages lug 57 on the dogging lever, with a notch 63 which is adapted to engage pin 54 and with a downwardly extending lug 64 which is adapted to be engaged by the end walls of recess 43 in arm 33 of the slide and of recess 65 in the secondary slide.

66 denotes a bell crank lever pivoted on a pin 67 projecting from the case. This lever comprises an arm 68 which is adapted to engage arm 56 of the dogging lever, an arm 69 which is adapted to be engaged by the angle arm upon arm 33 of the slide, and an arm 70 which is adapted to be engaged by the angle arm of arm 34 of the slide.

71 denotes a spring carried by pin 67, one arm of which bears against the case, the other arm bearing against the bell crank lever and extending under said lever and bearing against the angle arm of arm 34 of the slide to normally move said slide forward. The action of this spring on the bell crank lever is to normally retain said lever in the raised position, as in Figs. 1 and 2, that is, with arm 68 out of engagement with arm 56 of the dogging lever.

72 denotes the keeper which is provided with the usual opening 73 to receive the bolt, with an ordinary striker plate 74 and with an abutment 75 (see Fig. 5) which is engaged by the end of the bolt and performs a vitally important function in the locking of the bolt against retraction, as will presently be fully explained.

In order to enable my novel night latch to be used on the outer side of a door if required, and under all circumstances to render it impossible to remove the latch from a door in the locked position, I dispense with the ordinary holding screws which pass through the case and provide means for securing the latch to the door, which are wholly concealed and to which access cannot be had when the door is locked. With this end in view I place the entire operating mechanism considerably below the edge of the case and secure the back plate to the case considerably below the edge thereof, leaving a space 76 within the case outside the back plate.

77 denotes the holding plate which is secured to the door and to which the lock 78 is secured in any ordinary or preferred manner, but a single screw being used in the present instance to attach the holding plate to the door and two screws to attach the lock to the holding plate.

79 denotes a gripping slide which is attached to the outer face of the back plate by headed studs 80 passing through slots in the gripping slide and engaging the back plate. The gripping slide is provided with a boss 81 having a threaded hole to receive a screw 82 which passes inward from the front of the case outside the back plate (see Fig. 5) and with a plurality of openings 85.

The holding plate is provided with a plurality of lugs 83 having inclined undercut faces 84. In attaching the latch, the holding plate is first secured in place, then the latch is placed in position over it, lugs 83 passing through openings 85 and into clearance openings 86 in the back plate. Screw 82 in then passed through the front of the case and turned into the threaded hole in boss 81, the effect of which is to draw the gripping slide forward and cause the rear walls of openings 85 therein to engage the inclined faces 84 of the lugs and draw the case tightly against the door.

The operation is as follows: When the door is open, the parts will be in the position shown in Fig. 2. When the door is closed the bolt will engage the striker plate and be forced back to its inmost position as in Fig. 3. As soon as the bolt comes into alinement with opening 73 in the keeper, spring 50 will throw the bolt which will engage abutment 75 in the keeper, as clearly shown in Fig. 1. Simultaneously with the forward movement of the bolt, spring 71 will move the slide and the bell crank lever from the position shown in Fig. 3 to that in Fig. 1. As soon as arm 56 of the bell crank lever releases the dogging lever, spring 58 will swing the dogging lever to the position shown in Fig. 1 in which arm 55 of the dogging lever lies back of the bolt and dogs it, that is, absolutely blocks its backward movement.

It should be understood that the dogging action of the dogging lever is made possible by the engagement of the bolt with the abutment in the keeper, that is to say, the bolt is stopped by the abutment before reaching the extreme of its throw. The withdrawal of the bolt from the keeper to open the door may be effected by either of the roll backs, that is, from the inside by means of the knob and from the outside by means of a key

applied to the lock, both of the roll backs as already explained, engaging angle arms 35 of the slide. When the slide commences to move backward the first effect will be the engagement of angle arms 35 with arms 70 and 69 of the bell crank lever which will be swung on its pivot and arm 68 of said lever, through its engagement with arm 56 of the dogging lever, will swing the forward end (arm 55) of said lever upward and retain it in the raised position which will release the bolt. An instant later lugs 32 upon the slide will engage the rear walls of recesses 30 in arms 29 of the bolt and will draw the bolt backward under the dogging lever. As soon as the roll back is released, whether operated by key or knob, the operating spring will throw the bolt to the extreme of its movement, it being understood of course, that the door to which the latch is applied is in an open position. As soon as angle arms 35 pass out of engagement with arms 70 and 69 of the bell crank lever, said lever will be tilted as before by spring 71 which will release the dogging lever. An instant later, however, downwardly turned lug 64 upon dog 59 will be engaged by the rear wall of recess 65 in the secondary slide which always moves with the bolt. The secondary slide, as it moves forward, will tilt the dog on its pivot and arm 62 of the dog will engage upturned lug 57 on the dogging lever and retain the forward end of said lever in the raised position against the power of spring 58. The dog, at the beginning of the movement just described, will be in substantially the position shown in Fig. 3. At the end of the movement it will be in the position shown in Fig. 2, notch 63 in the dog being in engagement with pin 54 whereby the dog and the dogging lever are locked in the position shown. The necessary movements of the dog are permitted by slot 61 therein, and the parts are retained in the locked position through the co-action of spring 58, lug 57 on the dogging lever and arm 62 of the dog. It will be understood, therefore, that when the forward movement of the bolt is limited by its engagement with the abutment in the keeper it is locked in this position by the dogging lever, but if the bolt is thrown to the extreme of its movement, which is one-eighth of an inch more or less, greater than its movement when stopped by the abutment, the dogging lever is retained out of operative position in the manner just described and locked there, and the latch bolt may be readily moved inward.

In the fully thrown position of the latch bolt just described, the locking dog is locked out of operative position. The manner of its release is as follows: The backward movement of the latch bolt caused by its engagement by the striker plate moves the secondary slide backward and an instant later picks up slide 31 and carries that backward also. The movement of the secondary slide causes the front wall of recess 65 therein to engage downwardly turned lug 64 of the dog and move said dog backward disengaging the notch therein from pin 54 and leaving the dogging lever unlocked. The angle arms of the slide now engage arms 70 and 69 of the bell crank lever, tilt said lever and cause arm 68 thereof to engage arm 56 of the dogging lever and lock said lever in the raised position, as in Fig. 3, against the power of spring 58, this engagement of arm 68 of the bell crank lever with arm 56 of the dogging lever being simultaneous with the release of the dogging lever by the dog. The parts are now in the position shown in Fig. 3. The operation of the parts would have been substantially the same had the bolt been retracted by the knob, as for example should it be required to lock the bolt in the retracted position by the cross slide.

Suppose now, with the parts in the position shown in Fig. 3, that the bolt is released. If in alinement with the keeper, the bolt will engage the abutment and the parts will assume the position shown in Fig. 1, the dogging lever engaging the head of the bolt and locking it against retraction. Should the bolt not be in alinement with the keeper, the parts will assume the position shown in Fig. 2, the dogging lever being locked out of operative position by the dog. When the parts are in the position shown in Fig. 1, the only possible way of retracting the bolt is by operation of either the knob roll back or the lock roll back. The first operation of either of these roll backs is to retract the slide and tilt the bell crank lever which swings the dogging lever out of operative position and leaves the bolt free to be moved backward by continued movement of the slide.

Having thus described my invention, I claim:

1. In a night latch the combination with a spring controlled bolt and a keeper having an abutment adapted to be engaged by the bolt to limit its throw, of a dogging lever and means for moving said lever into position to lock the bolt against retraction when its forward movement is limited by engagement with the abutment.

2. In a night latch the combination with a spring controlled bolt and a keeper having an abutment adapted to be engaged by the bolt to limit its throw, of a dogging lever, means for moving said lever into position to lock the bolt against retraction when the bolt is in engagement with the abutment and means for swinging said lever out of operative position when the bolt is drawn backward.

3. In a night latch the combination with a spring controlled bolt and a keeper having

an abutment adapted to be engaged by the bolt to limit its throw, of a slide engaging the bolt, a dogging lever adapted to engage the bolt when the latter is in engagement with the abutment and a bell crank lever engaging the slide and adapted to swing the dogging lever out of operative position when the slide is drawn backward.

4. In a night latch, the combination with a spring controlled bolt and a dogging lever, for the purpose set forth, of a slide engaging the bolt, a secondary slide also engaging the bolt, a bell crank lever engaging the slide and adapted to swing the dogging lever out of operative position and a dog actuated by the secondary slide to lock the dogging lever out of operative position.

5. In a night latch, the combination with a spring controlled bolt and a keeper having an abutment adapted to be engaged by the bolt to limit its throw, of a slide loosely engaging the bolt, a secondary slide also engaging the bolt, a dogging lever adapted to engage the bolt when the latter is in engagement with the abutment, a bell crank lever engaging the slide and adapted to engage the dogging lever, for the purpose set forth, and a dog engaged by the slide and the secondary slide and adapted to retain the dogging lever out of operative position.

6. In a night latch, the combination with a spring controlled bolt and a keeper having an abutment adapted to be engaged by the bolt to limit its throw, of a slide loosely engaging the bolt, a secondary slide also engaging the bolt, a dogging lever, for the purpose set forth, a spring controlled bell crank lever engaging the slide and adapted to engage the dogging lever and a longitudinally movable dog having an arm adapted to engage the dogging lever and a notch and a pin adapted to engage the notch, whereby the dogging lever is retained out of operative position.

7. In a night latch, the combination with a spring controlled bolt and a dogging lever, for the purpose set forth, of a slide engaging the bolt, a spring controlled bell crank lever engaging the slide and adapted to engage the dogging lever, and a longitudinally movable dog having an arm adapted to engage the dogging lever and a notch, and a pin adapted to engage the notch, whereby the dogging lever is retained out of operative position.

8. In a night latch, the combination with a spring controlled bolt having rearwardly extending arms provided with recesses and a keeper having an abutment adapted to be engaged by the bolt, for the purpose set forth, of a slide having lugs loosely engaging the recesses in the arms, a dogging lever for the purpose set forth, a spring controlled bell crank lever engaging the slide and adapted to engage the dogging lever and a dog adapted to retain the dogging lever out of operative position.

9. In a night latch, the combination with a spring controlled bolt having rearwardly extending arms provided with recesses, and a dogging lever, for the purpose set forth, of a slide having lugs loosely engaging the recesses upon the arm, a bell crank lever engaging the slide and adapted to engage the dogging lever, and a longitudinally movable dog having an arm adapted to engage the dogging lever and a notch adapted to receive a pin to retain the dogging lever out of operative position.

10. In a night latch, the combination with a spring controlled bolt having a shank and recessed arms extending backward from its midwidth whereby the bolt is made reversible and a keeper having an abutment, for the purpose set forth, of a dogging lever, means for moving said lever into position to lock the bolt against retraction when in engagement with the abutment and means for swinging said lever out of operative position when the bolt is swung backward.

11. In a night latch, the combination with a spring controlled bolt and a keeper having an abutment adapted to be engaged by the bolt to limit its throw, of a spring controlled dogging lever pivoted on a pin, a slide loosely engaging the bolt, a secondary slide also engaging the bolt, a bell crank lever engaging the slide and adapted to engage the dogging lever, and a longitudinally movable dog which is controlled by the slides, is adapted to engage the dogging lever and is provided with a notch which receives the pin to lock the dogging lever out of operative position.

12. In a night latch, the combination with a spring controlled bolt and a keeper having an abutment adapted to be engaged by the bolt to limit its throw, of a spring controlled dogging lever pivoted on a pin and having an upwardly extending lug, a slide loosely engaging the bolt, a secondary slide also engaging the bolt, said slides being provided with recesses, a bell crank lever engaging the slide and adapted to engage the dogging lever and a longitudinally movable dog having a downwardly extending lug adapted to be engaged by the end walls of the recesses in the slides, an arm adapted to engage the lug on the dogging lever and a notch adapted to receive the pin to lock the dogging lever out of operative position.

13. In a night latch, the combination with a spring controlled bolt and a keeper having an abutment adapted to be engaged by the bolt to limit its throw, of a slide loosely engaging the bolt and comprising arms having angle arms at their rear ends, a secondary slide also engaging the bolt, a dogging lever, for the purpose set forth, a

spring controlled bell crank lever having an arm adapted to engage the dogging lever and other arms adapted to be engaged by the angle arms of the slide, whereby the bell crank lever is caused to raise the operative end of the dogging lever, and means for locking the dogging lever in the raised position.

14. In a night latch, the combination with a spring controlled bolt and a keeper having an abutment adapted to be engaged by the bolt to limit its throw, of a slide loosely engaging the bolt and comprising arms having angle arms at their rear ends, a secondary slide moved by the bolt, a dogging lever pivoted on a pin and having an upwardly extending lug, a bell crank lever having an arm adapted to engage the dogging lever and other arms adapted to be engaged by the angle arms of the slide whereby the bell crank lever is caused to raise the operative end of the dogging lever, and a longitudinally movable dog having a lug adapted to be engaged by the slides, for the purpose set forth, an arm adapted to engage the lug on the dogging lever and a notch adapted to receive the pin to lock the dogging lever out of operative position.

15. In a night latch, the combination with a keeper having an abutment and a bolt whose throw is limited by engagement with the abutment, of a dogging lever adapted to lock the bolt in thrown position and means actuated by retraction of the bolt for swinging the dogging lever out of operative position.

16. In a night latch, the combination with a keeper having an abutment and a bolt whose throw is limited by engagement with the abutment, of a slide by which the bolt is retracted, a dogging lever adapted to lock the bolt in the thrown position, and means acting when the bolt is retracted by the slide for swinging the dogging lever out of operative position.

17. In a night latch, the combination with a keeper having an abutment and a bolt whose throw is limited by engagement with the abutment, of a slide by which the bolt is retracted, a dogging lever adapted to lock the bolt in the thrown position, a bell crank lever engaged by the slide and adapted to swing the dogging lever out of operative position, and means for retaining the dogging lever out of operative position.

18. In a night latch, the combination with a keeper having an abutment and a bolt whose throw is limited by engagement with the abutment, of a slide by which the bolt is retracted, a secondary slide moved by the bolt, a dogging lever adapted to lock the bolt in the thrown position, a bell crank lever engaged by the slide and adapted to swing the dogging lever out of operative position, and a longitudinally movable dog engaged by the slide and acting to retain the dogging lever out of operative position.

19. In a night latch, the combination with a keeper having an abutment and a bolt whose throw is limited by engagement with the abutment, of a slide by which the bolt is retracted, a secondary slide moved by the bolt, said slide being provided with recesses, a dogging lever pivoted on a pin and adapted to lock the bolt in the thrown position and provided with an upturned lug, a bell crank lever engaged by the slide and adapted to swing the dogging lever out of operative position, and a longitudinally movable dog having a lug adapted to be engaged by the walls of the recesses in the slides, an arm adapted to engage the lug on the dogging lever and a notch adapted to receive the pin, whereby the dogging lever is locked out of operative position.

20. In a night latch, the combination with a keeper having an abutment and a bolt whose throw is limited by engagement with the abutment, of a dogging lever within the case which acts to prevent retraction of the bolt.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD ROSE.

Witnesses:
HENRY HOFFMAN,
MORTON R. MCCAUSLAND.