J. H. SHAW.

NIGHT LATCH.

APPLICATION FILED JAN. 29, 1913.

1,137,800.

Patented May 4, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

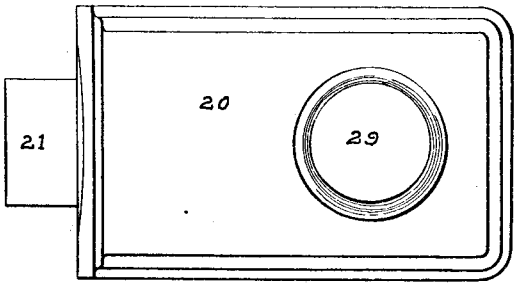


Fig. 3.

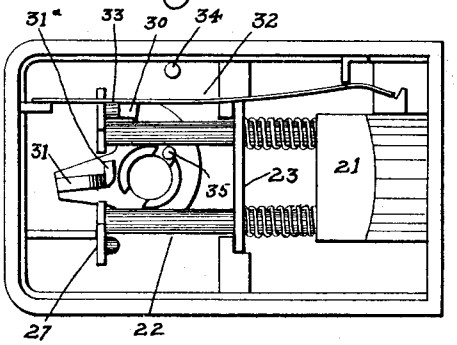


Fig. 2.

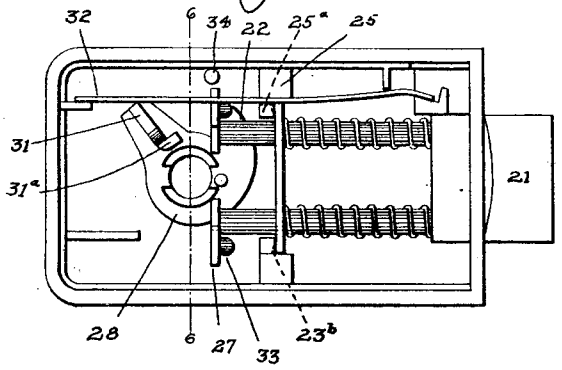


Fig. 6.

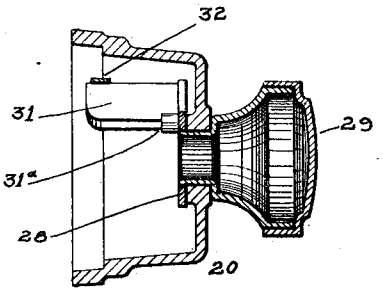


Fig. 9.

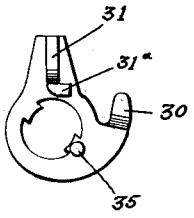


Fig. 10.

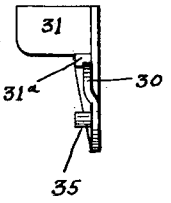
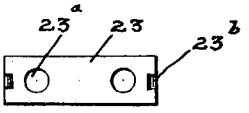


Fig. 11.



WITNESSES:

F. A. Carlson

Mary E. Fuller

INVENTOR:

John H. Shaw,

BY Bacher & Fisher

ATTORNEYS

J. H. SHAW.

NIGHT LATCH.

APPLICATION FILED JAN. 29, 1913.

1,137,800.

Patented May 4, 1915.

2 SHEETS—SHEET 2.

Fig. 4.

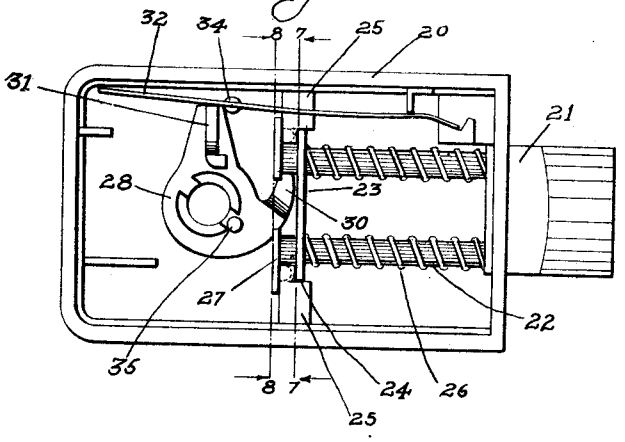


Fig. 7.

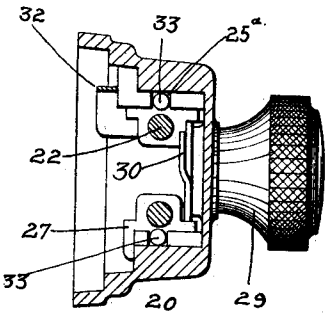


Fig. 5.

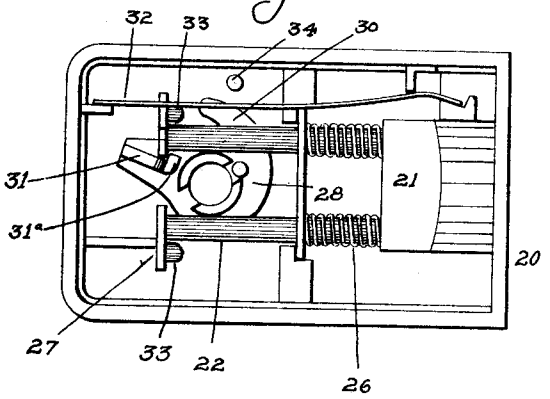


Fig. 8.

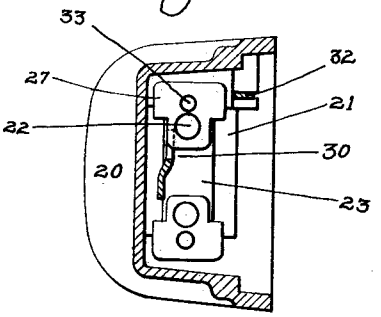
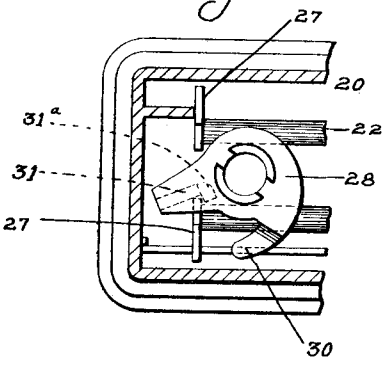


Fig. 5a.



WITNESSES:

T. A. Carlson

Mary E. Fuller

INVENTOR.

John H. Shaw,

BY Bacon & Fisher

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN H. SHAW, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO SARGENT & COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

NIGHT-LATCH.

1,137,800. Specification of Letters Patent. Patented May 4, 1915.

Application filed January 29, 1913. Serial No. 744,930.

To all whom it may concern:

Be it known that I, JOHN H. SHAW, a citizen of the United States, residing in New Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Night-Latches, of which the following is a full, clear, and exact description.

This invention relates to latches and more particularly rim night latches in which the latch bolt is adapted to be projected outwardly beyond the usual latching position and is retractable by a knob rotatable in the front wall of the case.

In night latches of this class as ordinarily constructed, it often happens that when the latch bolt is fully projected the retracting wing on the hub works under its coöperating cross-head on the shank of the bolt and thereby binds or deadlocks the bolt in a position from which it cannot be readily dislodged. This is due to the fact that the shank of the bolt is ineffectively guided in the case as the bolt moves outward to its fully projected position, so that the rear end of the bolt may swing out of the path of the hub, and this is especially apt to occur when the strike plate exerts lateral pressure on the bolt head.

One of the objects of the present invention is to avoid this drawback and to provide means for effectively holding the latch bolt in coöperation with the hub as the bolt moves outward to its fully projected position, and while the bolt is deadlocked in its outermost position to prevent it from being pressed in by an instrument inserted between the strike plate and the face of the case. By the construction hereinafter described, the bolt will be properly guided to its outermost position so that it will not bind or stick, whereby the projection of the bolt to the position indicated may be effected solely by the usual spring or springs which press the bolt outward, suitable means being provided for arresting the bolt in the usual latching position under ordinary circumstances. The bolt while in fully projected position will be held positively from dislocation relatively to the retracting means, so that when the latter is actuated by hand or otherwise, the bolt may be readily withdrawn from the fully projected position to the latching position.

Another object of the invention is to provide improved detent means for the bolt whereby it may be held in the fully retracted position.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawing, Figure 1 is a front elevation of a night latch embodying my improvements, Fig. 2 is a rear elevation of Fig. 1 with the back plate omitted, Fig. 3 is a view similar to Fig. 2 but showing the latch bolt fully retracted, Fig. 4 is a similar view showing the latch bolt in its fully projected position, Fig. 5 is a similar view showing the latch bolt held in retracted position by the detent means, Fig. 5ª is a reverse inverted view of a portion of Fig. 5, Fig. 6 is a section on line 6—6 of Fig. 2, Fig. 7 is a section on line 7—7 of Fig. 4, Fig. 8 is a section on line 8—8 of Fig. 4, Figs. 9 and 10 are detail views of the hub, and Fig. 11 is a detail view of the guide piece for the bolt shanks.

Referring to the drawings, the usual rim case 20 which is therein illustrated, contains a latch bolt 21 having parallel rearwardly directed shanks or stems 22. These shanks are guided in a guide piece 23 having openings 23ª for the respective shanks and seated at its ends in notches 24 of lugs 25, which are preferably cast integral with the case and extend inward from the front wall thereof. A spring 26 embraces each of the shanks 22 between the guide piece 23 and the latch bolt head, and these springs normally urge the latch bolt into the fully projected position shown in Fig. 4, wherein the head of the bolt is projected outward beyond the usual latching position shown in Figs. 1 and 2. The guide piece 23 is held in place relatively to the lugs 25 by means of small projections 23ᵇ on said guide piece which enter small grooves or notches 25ª located at the inner extremities of the lugs 25 and directed lengthwise of the case. Of course, the springs 26 press the guide member or cross piece 23 into the seats or notches 24 of the guide lugs and thereby hold the small projections 23ᵇ in the grooves 25ª. At the end of each shank or stem 22 is a cross-head 27. The latch bolt 21 is reversible and in its different positions, one or the other of

the cross-heads 27 will be located to coöperate with a hub 28 actuated by a knob 29 rotatable in the front wall of the case. The hub 28 is provided with a wing 30 adapted to contact with the front face of one of the cross-heads 27, so that as the hub is turned in an anti-clockwise direction (Fig. 2) the latch bolt will be retracted (Fig. 3.)

As previously stated, the latch bolt springs 26 tend to hold the latch bolt 21 in an abnormally projected position (Fig. 4) but the effect of the springs in this respect is counteracted to a certain extent by means acting on the hub 28 to normally hold the latch bolt in the usual latching position. In the embodiment shown, the hub 28 is provided with a radial lug 31 engaged by a stiff, flat spring 32 extending lengthwise of the case substantially at a tangent to the hub. The lug 31 normally abuts the spring 32 in the position shown in Fig. 2, the springs 26 being insufficiently strong to turn the hub in opposition to the spring 32. However, as the hub is turned in a clockwise direction (Fig. 2) with sufficient force to move the spring 32 out of the path of the lug 31, the wing 30 of the hub will be moved toward the face of the case to permit the latch bolt to move outward to the fully projected position shown in Fig. 4, under the influence of its springs 26. In order to guide the bolt effectively in this outward movement so as to prevent binding or sticking, and for the purpose of maintaining the retracting wing 30 in coöperative relation with the abnormally projected bolt, I provide each of the cross-heads 27 with a small forwardly projecting guide pin 33 which is finished off to slide easily in the corresponding guide groove 25^a. In this manner the latch bolt will be readily pushed outward into the proper position by its springs, and it will be impossible for the latch bolt to be tilted in the case through lateral strain on the bolt head or any other cause when the bolt is in this fully projected position. The operative cross-head 27 is maintained from lateral dislocation relatively to the wing 30 and hence the latter will always be operative to retract the bolt without liability of working or slipping beneath the cross-head, which has been a disadvantage of prior devices of this class. The guide piece 23, if properly held in place should prevent lateral displacement of the bolt, but in practice it is unsafe to rely on this guiding means alone owing to the somewhat unreliable action of the springs in holding the guide piece seated.

It will be noted that by the construction described, the grooves 25^a of the lugs 25 are utilized for two purposes: First, preventing dislocation of the guide piece 23, and second, guiding the cross-heads of the latch bolt shanks in a forward and rearward direction. In order to hold the bolt in fully retracted position, the lug 31 is provided at its inner end with a substantially tangential lip 31^a. When the bolt has been fully retracted, as shown in Fig. 3, it may be held in that position by pressure on the head thereof while the hub 28 is moved in a clockwise direction to engage the lip 31^a beneath the adjacent edge of the cross-head 27, as shown in Fig. 5. As the detent lip 31^a extends upward in front of the lower edge of the cross-head, the latch will be effectively held in retracted position. When it is desired to restore it to the usual latching position, the hub will be moved in an anti-clockwise direction to disengage the lip 31^a from the cross-head and the bolt will thereupon spring outward causing said cross-head to abut the wing 30 and thereby carrying the hub around to the position in which the lug 31 abuts the spring 32. As the springs 26 are quite weak in comparison to the spring 32, this outward movement of the bolt does not move the spring 32 out of the path of the lug 31, and hence the latch bolt is stopped in the usual latching position.

When the latch bolt is moved into the fully projected position shown in Fig. 4, the hub 28 will be arrested by means of a stop pin 34 and in this position the latch bolt will be deadlocked by means of a laterally projecting pin 35 on the hub, which is located in the path of the lower cross-head 27. In the embodiment shown, the pin 35 is spaced from the coöperating cross-head 27 to such an extent that the bolt might be pushed inward from the fully projected position into practically the latching position, but further inward movement of the bolt would be prevented by the contact of the cross-head with the stop pin.

Of course, certain features of my invention may be used to advantage in mortise locks or latches, as well as in rim locks or latches. Moreover, I do not limit myself to the actuation of the hub by means of a manually operative knob. Various changes in these and other respects may be adopted within the scope of my invention as defined in the claims.

What I claim is:

1. In a lock, the combination of a case, a latch bolt therein having a shank, a head on said shank, a hub coöperating with said head, a guide pin on said head, and a grooved lug on the case coöperating with said guide pin; substantially as described.

2. In a lock, the combination of a case, a reversible latch bolt therein having rearwardly directed shanks, heads on said shanks, a hub to coöperate with either of said heads depending on the adjustment of said bolt, guide pins on both heads, and guide lugs on the case having grooves receiving the respective pins; substantially as described.

3. In a lock, the combination of a case, a latcth bolt therein having rearwardly directed shanks, heads on said shanks, a retracting hub, said bolt being reversible so that either head may coöperate with said hub and being movable from the usual latching position to an abnormally projected portion, and means for guiding said heads as the bolt moves into the latter position; substantially as described.

4. The combination with a case having oppositely located lugs, a latch bolt in said case having rearwardly directed shanks, a guide piece for said shanks abutting said lugs and having projections engaged with grooves of the latter, heads on said shanks guided in said grooves, and a retracting hub to coöperate with one of said heads; substantially as described.

5. In a lock, the combination of a latch bolt having a cross-head, a hub having wings located respectively on opposite sides of the cross-head, one of said wings being adapted to retract the latch bolt, and a substantially radial lug on the other wing having a tangential lip for holding the latch bolt retracted; substantially as described

6. In a lock, the combination of a latch bolt, a hub engaged therewith and having a radial lug, a spring pressing on said lug to hold the bolt in a definite position, and a detent lip for the latch bolt projecting from the inner end of said lug; substantially as described.

7. In a lock, the combination of a latch bolt having a shank, a cross-head on said shank, a hub having a retracting wing engaging said cross-head, a spring for said bolt, a radial lug on said hub, a spring engaging said lug to counteract the effect of said first named spring, and a detent lip projecting from the inner end of said lug and adapted to engage the edge of the cross-head to hold the latch bolt retracted; substantially as described.

In witness whereof, I have hereunto set my hand on the 27th day of January, 1913.

JOHN H. SHAW.

Witnesses:
CURTIS P. WILLIAMS,
HELEN ELDER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."