March 25, 1947. C. H. NEHLS 2,418,044

NIGHT LATCH

Filed Dec. 26, 1944 2 Sheets-Sheet 1

Fig. 1.

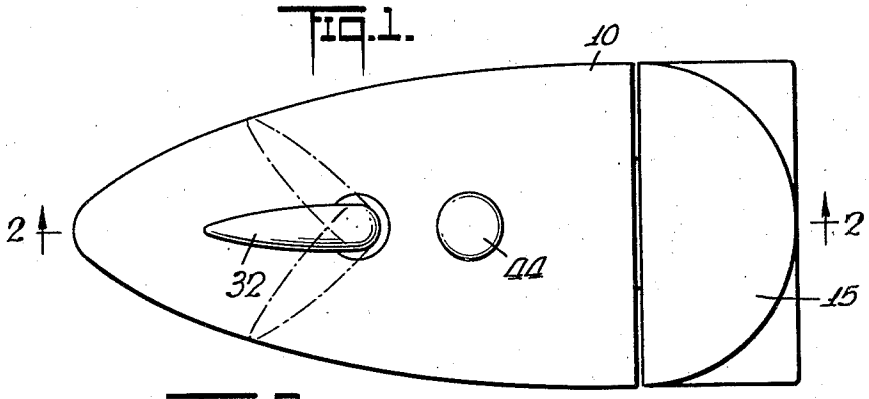


Fig. 2.

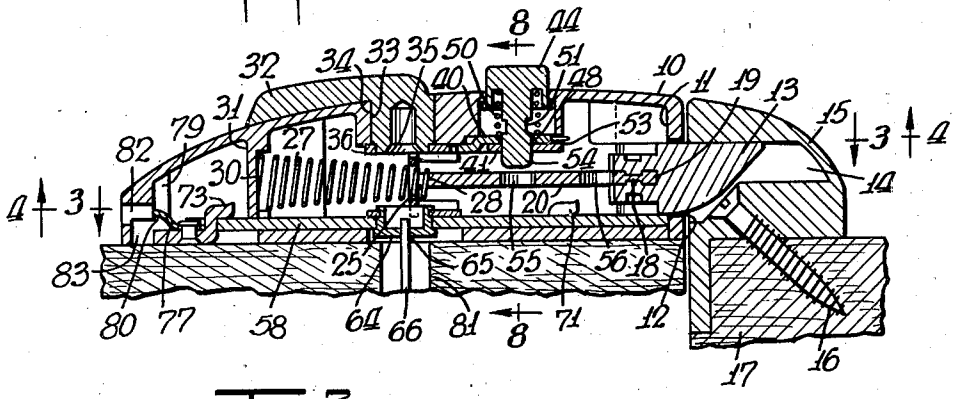
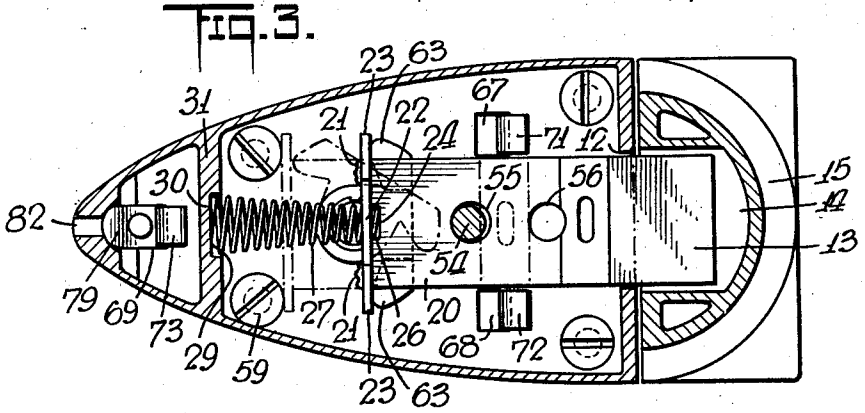


Fig. 3.



INVENTOR
Charles H. Nehls
BY J. F. Busseches
his ATTORNEY

March 25, 1947. C. H. NEHLS 2,418,044

NIGHT LATCH

Filed Dec. 26, 1944 2 Sheets-Sheet 2

Fig. 4.

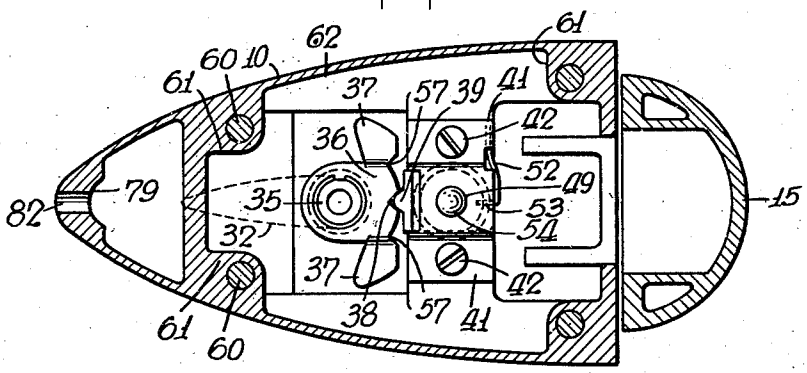


Fig. 5.

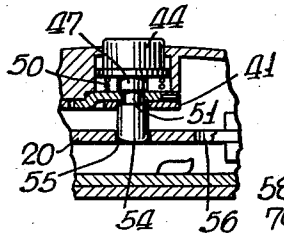


Fig. 6.

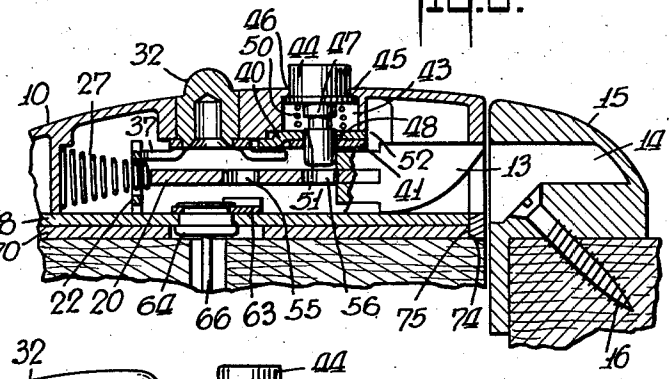


Fig. 7.

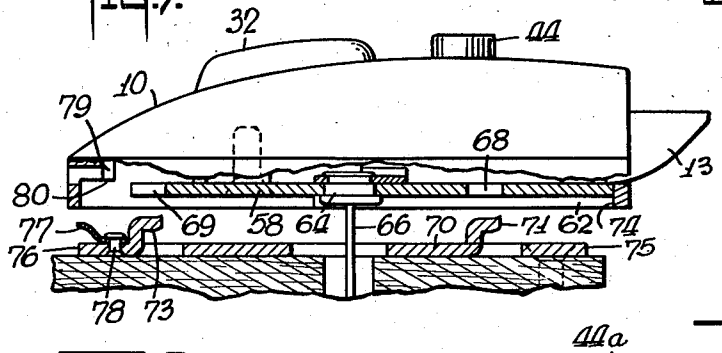


Fig. 8.

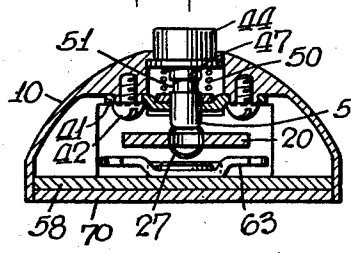


Fig. 10.

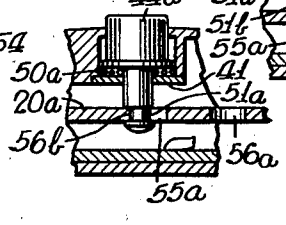
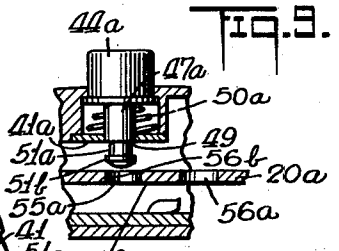


Fig. 9.



INVENTOR
Charles H. Nehls
BY J. J. Bosseches
his ATTORNEY

Patented Mar. 25, 1947

2,418,044

UNITED STATES PATENT OFFICE

2,418,044

NIGHT LATCH

Charles H. Nehls, Detroit, Mich., assignor to Independent Lock Company, Fitchburg, Mass., a corporation of Massachusetts

Application December 26, 1944, Serial No. 569,688

13 Claims. (Cl. 292—169)

1

This invention relates to night latches; more particularly to night latches having a rapid dead-bolting and releasing action. Still more particularly, my invention relates to a combined night latch and mounting means therefor.

It is an object of my invention to provide a night latch characterized by features wherein a spring projected latch bolt may be dead-bolted in the projected position, or held in the retracted position, in which either of these actions may be quickly accomplished by a plunger or push button type of movement as contrasted with heretofore known methods of dead-bolting or locking of the latch bolt in the retracted position thereof by turn buttons or sliding detents.

Night latches having rotatable or slidable dogging means for the latch bolt meet with objection in that the parts are apt not only to entail considerable friction of the moving parts but the position of the latch bolt actuating mechanism is not readily detectible, so that there is considerable annoyance involved in determining whether the latch bolt is dead-locked, or is in retracted position, apart from the necessity for having to become intimately familiar with the actuating mechanism.

The difficulty of setting latches of the character known to me is frequently a deterrent to taking the necessary precautions in dead-locking the latch bolt, leading to the loss of the protection supplied by this type of locking mechanism.

Still more particularly, night latches as known to me, which include provisions for dead-locking the latch bolt, frequently are left in the dead-locked position or become set in dead-locked position by a slamming of the door, making it impossible to key operate the latch from the exterior side of a door.

It is among the objects of my invention to provide a night latch characterized by the features that the spring projected latch bolt thereof may be actuated to dead-locked position of the latch bolt or hold the latch bolt in the retracted position by a simple operation involving the depressing of a push button or plunger type dogging member which engages the latch bolt shank, to hold it in one or both of the aforementioned positions.

Still more particularly, it is an object of my invention to provide a night latch which may be dead-locked from the interior, while permitting key operation to release the dead-locking mechanism and to retract the latch bolt.

Still more particularly, it is an object of my

2

invention to provide a night latch which is a simple and compact construction, which may be readily and quickly assembled in position or removed for inspection, maintenance and repair.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, I make reference to the accompanying drawing, forming a part hereof, in which—

Figure 1 is a top plan view of my night latch and strike plate;

Figure 2 is a section taken on the line 2—2 of Figure 1;

Figure 3 is a section taken on the line 3—3 of Figure 2;

Figure 4 is a section taken on the line 4—4 of Figure 2;

Figure 5 is a fragmentary sectional view showing the dead-locking mechanism in engaging position;

Figure 6 is a fragmentary sectional view showing the latch bolt in the retracted position;

Figure 7 is a fragmentary sectional view showing the method of mounting the night latch on the mounting plate;

Figure 8 is a section taken on the line 8—8 of Figure 2;

Figure 9 is a fragmentary sectional view of another embodiment of my invention;

Figure 10 is a fragmentary sectional view corresponding to Figure 9, with the dead-bolting mechanism in the locking position.

Making reference to the drawing, I show a night latch casing 10, having an end wall 11 formed with a latch bolt aperture 12, through which a latch bolt 13 may be projected into the orifice 14 of the strike plate 15, held by screws 16 to the door frame 17 or the like. The latch bolt 13 is slotted crosswise at 18 and has therein interfitted, the head 19 of the latch bolt shank 20.

The latch bolt shank 20 is formed with lugs 21, which are upset and riveted to a cross bar 22, leaving ears or extensions 23, 23. A spring end seat 24 is provided through an aperture 25, formed in the cross bar, which is aligned with the slot 26 at the end of the latch bolt shank 20. A coiled spring 27 has its head 28 positioned in the seat 24 and its opposite end 29, engaging the seat 30, formed in the transverse flange 31. A turnbutton or bolt knob 32 has a shank 33 projected through a boring 34 for rotational movement and has its inner end 35 flanged and keyed to a rollback or bolt lever 36, whose camming fingers 37 are offset from the body thereof and arranged to engage the

cross bar 22 against the extension 23 overhanging the inner side of the latch bolt shank.

The rollback or bolt lever 36 is formed with a camming notch 38, into which interfits the nose 39 of the sliding pawl 40, held to the inner face of the casing by the guide plate 41, by means of screws 42 or like fastening elements. The guide plate 41 covers the recess 43, within which is positioned the locking button 44, which projects through the orifice 45 in the casing, and is held against displacement outwardly by the shoulder 46 in one direction.

The locking button 44 is formed with a shank 47, extending through an oval-shaped or elongated aperture 48, formed in the sliding pawl 40 and the guide aperture 49 formed in the guide plate 41. A coiled spring 50 normally holds the locking button 44 and shank 47 in the retracted position.

The locking button shank 47 is formed with an annular slot 51, into which the sliding pawl 40 may enter, when the rim outlining the aperture 48 is aligned with the slot 51, and for this purpose the slot 48 is arranged with its elongated dimension longitudinally of the casing and is normally pressed rearwardly by the leaf spring 52, (see Figure 4) anchored at one end in the plate 41, and with its inwardly directed finger 53 engaging the edge of the sliding pawl 40. Thus, the pawl 40 is urged constantly against the shank 47, likewise to urge the extension 39 into engagement with the camming notch 38.

The shank 47 has its inwardly directed nose 54 rounded so as to be able to enter and locate itself in either one of the locking apertures 55 and 56, formed in the shank 20.

Thus, with the latch bolt 13 spring projected to the limiting position where the cross bar 23 engages the rollback or bolt lever 36, the locking aperture 55 is brought into alignment with the nose 54 of the locking button. In this position, depressing the locking button causes the nose 54 to enter the locking aperture 55 and to be held in this depressed position by the entry of the pawl 40 into the annular slot 51 formed on the shank 47, preventing withdrawal of the nose 54 from the locking aperture 55, as more clearly shown in Figure 5. This serves to dead-lock the latch bolt.

Upon rotation of the turnbutton 32, which movement carries with it the rollback or bolt lever 36, the latch bolt 13 is retracted against the spring tension of the latch bolt projecting spring 27. The same rotary movement of the rollback or bolt lever serves to have the camming notch 38 engage the lug 39 of the sliding pawl 40, to depress the same and move the rim of the aperture 48 from engagement with the annular slot 51. With this movement, the spring 50 serves to withdraw the nose 54 from its engagement with the locking aperture 55, to reposition the locking button to its original position, as shown in Figures 2 and 8. This results in release of the latch bolt so that further continued rotation of the turnbutton 32 retracts the latch bolt from its engagement with the strike plate.

Should it be found desirable to maintain the latch bolt in the fully retracted position, the push button 44 may then again be depressed, when the latch bolt reaches the fully retracted position as shown in Figure 6, thereupon to enter the aperture 56 and to hold the latch bolt in the fully retracted position. The turnbutton 32, under these conditions, in view of its elongated character, will clearly indicate that the latch bolt is in the retracted position.

To reproject the latch bolt, rotation of the turnbutton 32 will serve to bring either one of the peripheral leading edges 57 into engagement with the nose 39, to depress the pawl 40, thereby releasing the nose 54 of the locking button 44 and projecting it to its position shown in Figure 6. (It is to be understood that the camming fingers 37 are offset from the peripheral leading edges 57 so that the nose portion 39 may fall behind the peripheral edges 57 in the fully retracted position of the rollback 36.)

It will be understood that the spring 27 will thereupon project the latch bolt for its latching purposes.

After assembly of the latch bolt mechanism heretofore described in the casing 10, I provide a case plate 58, formed with screw holes 59, aligned with the screw holes 60 formed in bosses 61 of the casing, to leave a rim 62 to house the case plate 58. The case plate is provided with a key operated rollback 63 on a hub 64, in a manner well understood. This hub is formed with the usual slot 65, to slidingly receive the bar 66, connected with and operated by a cylinder lock or the like (not shown) faced in the direction of the exterior of the door. The case plate is provided with attaching apertures 67, 68, 69, for purposes which will appear more clearly as this description proceeds.

With the assembly as described and the case plate 58 in position, I thereupon affix to the door an anchoring plate 70, which is of a form likewise to be received within the confines of the rim 62 of the latch casing 10 but slightly shorter for purposes appearing hereafter.

The plate 70 is formed with forwardly directed offset fingers 71, 72, 73 located in position corresponding to the apertures 67, 68, 69 when the plate 58 and the plate 70 are in position as shown in Figure 7. The heel 76 of the plate 70 is provided with an offset spring finger 77, held thereto by the rivet 78. The spring finger 77 is arranged to enter the recess 79, which is generally conformed to the outline of the end of the spring finger 77, thereby providing a shoulder 80.

For positioning the lock casing, I first nest the spring finger 77 in the recess 79, to engage the shoulder 80. Then the casing is moved forward against the tension of the spring finger 77 until the apertures 67, 68 and 69 are brought into alignment with the locking fingers 71, 72, 73. (See Figure 7.) Thereupon the casing 10 is pressed down to nest the plate 70 within the rim 62 of the casing. In this position, the casing is permitted to slide back under the resilient tension of the spring finger 77, in which condition the spring 77 assumes the position shown in Figure 2, whereupon the fingers 71, 72 and 73 move over the plate 58 into overhanging position until the edge wall 74 of rim 62 moves into abutting position with the edge 75 of the plate 70 as the limiting position. This serves to lock the casing in position, without any further fastening means being required, and aligns the slot 65 adjacent the boring 81, through which the bar 66 may be projected from the key operated device, such as the cylinder lock.

For removal of the casing, the heel of the casing is provided with a boring 82, which makes the spring finger 77 accessible through the use of some sharp pointed instrument, such as a nail or pin. Through the boring 82 the leaf spring 77 may be deflected under pressure to be forced

to expand and to enter the recess 83. This displaced position of the spring or detent 77 will permit the casing 10 to be slid forwardly to an extent corresponding to the difference in length of the casing rim and plate 70 and effect disengagement of the plate 58 from the fingers 71, 72 and 73.

It will be understood that I may thus secure by this assembly, latch bolt retraction, by the turnbutton 32, or by operation of the rollback 63, which may be key operated through the bar 66.

In the device as shown in Figures 1 to 8, with the lock button depressed as shown in Figure 5, to dead-lock the latch bolt, key operation is prevented so that privacy may be assured the occupant of a room equipped with this lock.

Should it be desired to forego this method of operation, extension fingers (not shown) may be provided to supply rotary movement to the rollback 37 by rotation of the rollback 63, so that the first fractional movement of rotation given by the bar 66 to the rollback 63 will likewise serve to impart a fractional rotary movement to the rollback 37, to thereby actuate the pawl plate 40 and release the locking button, to withdraw the locking nose 54 from its engagement with the recess 55 of the latch bolt shank 20. Other means for actuation of the rollback 37 upon initial rotation of the rollback 63 will suggest themselves to the skilled worker in the art.

In another embodiment of my invention where synchronous movement of the rollbacks 37 and 63 is not found desirable, I may accomplish key operation of the latch bolt with the locking button dead-locking the latch bolt. For this purpose I refer to the embodiment disclosed in Figures 9 and 10.

In this construction the locking button 44*a* has its shank 47*a* extended therefrom of a uniform diameter and uninterrupted, and guided through a plate 41*a* which is formed with a guiding aperture 49*a*. As in the previous embodiment, a coiled spring 50*a* serves to retract the locking button 44*a* normally to its limiting position outwardly. In this embodiment, however, a nose portion 54*a* of the shank 47*a* has adjacent to its end an annular latching slot 51*a*, to provide a lip or overhang 51*b*.

In this embodiment the shank 20*a* of the latch bolt is formed with slightly elongated or oval apertures 55*a* and 56*a*. When it is desired to dead-lock the latch bolt carried by the shank 20*a*, the locking button 44*a* is depressed to project the nose 54*a* into the aperture 55*a*. The rounded nose serves to cam the shank 20*a* rearwardly to a small distance against its spring and engage the rim 56*b* of the aperture 55*a*. Continued forward movement of the locking button 44*a* to the point where the lip 51*b* passes the rim 56*b* will serve to drop the rim 56*b* of the shank 20*a* into engagement with the lip 51*b*, holding the locking button 44*a* in the depressed position against the spring tension of the spring 50*a*, as the coiled spring 27 tends to move the shank 20*a* forwardly.

The projection of the shank 47*a* through the locking aperture 55*a* effectively dead-locks the latch bolt against any forceful "jimmying" action applied to the latch bolt 13. Any movement, in fact, will serve to drive the rim of the locking aperture 55*a* into engagement with the forward overhang or the lip of the shank 47*a*. However, in movements accomplished by key operation through the bar 66 or turnbutton operation, retraction of the shank 20*a* by either of the rollbacks 37 or 63 will serve to withdraw the rim 56*b*

from engagement with the lip 51*b*, due to the tolerance provided by the elongated contour of the locking apertures 55*a* and 56*a*. The resultant movement serves to release the shank 47*a* from its position within the locking aperture 55*a*, by the spring retracting action of the spring 50*a*. Further key operation or turnbutton operation will serve to retract the latch bolt 13 from its engagement with the strike plate.

Thus, by the construction described, it will be observed that I may secure locking of the latch bolt either in the dead-locked position or in the fully retracted position simply by depressing the locking button 40 in either of the positions of the latch bolt. It will also be observed that turnbutton operation of the rollback 37 will simultaneously serve to disengage the locking button from its engaging position with the latch bolt shank, without any further attention to performing the operation of releasing the dead-locking being necessary. Thus, manipulation of the turnbutton 32 by the occupant of a room equipped with this lock is all that is necessary to simultaneously release the latch bolt from the dead-locked position and retract the same. Also, where the turn button holds the latch bolt in the fully retracted position as shown in Figure 6, and with the locking button depressed, all that is necessary is to turn the turnbutton to the neutral position, which releases the locking button by the operation previously described, to project the latch bolt.

It will be understood that while I prefer to include the entire assembly in a lock in accordance with my construction, segregated portions thereof may have utility as outlined by the appended claims.

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

1. In a latch having a casing including a spring projected latch bolt which may be dead-latched or held in retracted position; having a shank portion guided therein, the combination therewith comprising a rollback for said latch bolt shank, a dogging member for the latch bolt guided through the casing transversely to the direction of movement of said latch bolt shank, including spring means to normally retract the same, said dogging means being depressible against said spring means to engage means on said shank, means for latching said dogging means in dogging engagement with said shank and releasable to retract the dogging means upon actuation of said rollback, the dogging member serving either as a means to hold the bolt in retracted position or to dead-latch the same in either of the positions of the latch bolt.

2. In a latch having a casing including a spring projected latch bolt which may be dead-latched or held in retracted position; and a shank guided in the casing, the combination therewith comprising a normally spring retracted dogging element guided transversely to the direction of movement of said latch bolt shank, spring means for retracting said dogging means, means formed on said shank engageable by said dogging member to dead-bolt said latch bolt, latching means for said dogging element to hold said dogging element in latch bolt shank engaging position against the tension of its spring means, rollback means for said latch bolt having a connection to release said latching means for said dogging means upon actuation of said rollback, the dogging element serving either as a means to hold

the bolt in retracted position or to dead-latch the same in either of the positions of the latch bolt.

3. In a latch having a casing including a spring projected latch bolt which may be dead-latched or held in retracted position; and a shank for the latch bolt guided in the casing, the combination therewith comprising a plunger and means on said shank engageable by said plunger to dead-latch said latch bolt shank, spring means to retract said plunger, a pawl for holding said plunger in latch bolt shank engaging position when depressed manually, a rollback for the said latch bolt and means having a connection between said rollback and said pawl to release said pawl from engagement with the shank upon actuation of said rollback, the plunger serving either as a means to hold the bolt in retracted position or to dead-latch the same in either of the positions of the latch bolt.

4. In a latch having a casing including a spring projected latch bolt which may be dead-latched or held in retracted position; and a shank for said latch bolt guided in the casing, the combination therewith comprising rollback means for retracting said latch bolt, a plunger type dogging element and spring means for normally retracting said dogging element, means on said shank of said bolt to receive said dogging element when depressed to dog said latch bolt, a pawl for holding said dogging member in depressed position, means on said pawl having a connection with the rollback to release said dogging element upon actuation of said rollback, the dogging element serving either as a means to hold the bolt in retracted position or to dead-latch the same in either of the positions of the latch bolt.

5. In a latch having a casing including a spring projected latch bolt mounted upon a shank guided in the casing, the combination therewith comprising a dogging element guided through said casing arranged to engage locking apertures on said shank, spring means for normally retracting said dogging means, pawl means for latching said dogging means in engaging position with respect to said locking apertures, and a rollback for said latch bolt having camming means for said pawl.

6. In a latch having a casing including a spring projected latch bolt mounted upon a shank guided in the casing, the combination therewith comprising a dogging element guided through said casing arranged to engage locking apertures on said shank, spring means for normally retracting said dogging means, pawl means for latching said dogging means in engaging position with respect to said locking apertures, and a rollback for said latch bolt having camming means for said pawl in one position to release said pawl to retract said dogging element from dead-locking position and having another camming portion to release said pawl to project said latch bolt from the fully retracted position.

7. In a latch having a casing including a spring projected latch bolt and a shank guided in the casing, a rollback for the latch bolt, the combination therewith comprising a spring retractible locking button having a shank, locking apertures on the latch bolt shank engageable by the locking button shank for dogging the latch bolt, means for latching the locking button shank in dogging position with the latch bolt shank and means connected with the operation of the rollback for releasing the locking button shank from the latching position.

8. In a latch having a casing including a spring projected latch bolt mounted upon a shank guided in the casing and rollback means for said latch bolt, the combination therewith comprising a spring retracted locking button having a dogging shank depressible into engagement with means on the latch bolt shank to dead-latch the bolt or hold the same in retracted position, means for latching the dogging shank in engagement with the means on the latch bolt shank and camming means connected with the operation of said rollback to unlatch said dogging shank from engagement with the means on the latch bolt shank and thereby release the locking device from dogging position with respect to the latch bolt shank.

9. In a latch having a spring projected latch bolt and a shank guided in the casing, and rollback means for retracting the latch bolt, locking apertures on said latch bolt shank, a locking button having a dogging shank normally spring retracted but projectible into engagement with said locking apertures of said latch bolt shank, pawl means to hold said dogging shank in engaging position with one of said apertures and camming means effective upon actuation of the rollback to disengage said pawl means to spring retract the locking button and dogging shank.

10. In a latch having a casing including a spring projected latch bolt and shank therefor guided in the casing, rollback means for retracting the latch bolt, the combination therewith comprising a pushbutton type locking button including a dogging shank, locking apertures on said latch bolt shank engageable by said first shank, pawl means to latch said dogging shank in latch bolt shank engaging position and camming means on said rollback for engaging said pawl means to unlatch the same and permit retraction of said dogging shank upon actuation of said latch bolt to retract the latch bolt.

11. In a latch having a casing, a spring projected latch bolt and a shank affixed to the latch bolt and guided in the casing, with rollback means connected with the shank for retracting the latch bolt, the combination therewith comprising a spring retracted locking button having a shank including a dogging nose arranged to engage means on the latch bolt shank to hold the latch bolt in a retracted position or to dead-latch the same against end pressure, means engaging the shank of said locking button to hold the dogging nose in projected position against its spring retracting means, and rollback operated means to release the dogging nose from engagement with the shank of said latch bolt in the retracted or dead-latched position of the latch bolt.

12. In a latch having a casing including a spring projected latch bolt mounted upon a shank guided in the casing, and roll back means for said latch bolt, the combination therewith comprising a spring retracted locking button having a dogging shank depressible into engagement with means on the latch bolt shank to hold it from sliding, means for latching the dogging shank in engagement with means on the latch bolt shank, and camming means connected with the operation of said roll back means to unlatch said dogging shank from engagement with the means on the latch bolt shank, and thereby release the device from dogging position with respect to the latch bolt shank.

13. A latch having a casing, a spring projected latch bolt and a shank affixed to the latch bolt

and guided in the casing, with roll back means connected with the shank for retracting the latch bolt, the combination therewith comprising a spring retracted locking button having a shank including a dogging nose arranged to engage the wall of locking means on the latch bolt shank, to hold the latch bolt shank against movement, means engaging the shank of said locking button to hold the dogging nose in projected position against its spring retracting means, and roll back operated means to release the dogging nose from engagement with the shank of said latch bolt.

CHARLES H. NEHLS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,816,259	Lande	July 28, 1931
2,220,591	Voight et al.	Nov. 5, 1940
2,232,937	Brauning et al.	Feb. 25, 1941
2,223,765	Komenak	Dec. 3, 1940
2,268,743	Falk	Jan. 6, 1942
2,038,907	Schlage	Apr. 28, 1936