H. R. TOWNE.

NIGHT LOCK.

APPLICATION FILED JUNE 16, 1908.

919,979.

Patented Apr. 27, 1909.

2 SHEETS—SHEET 1.

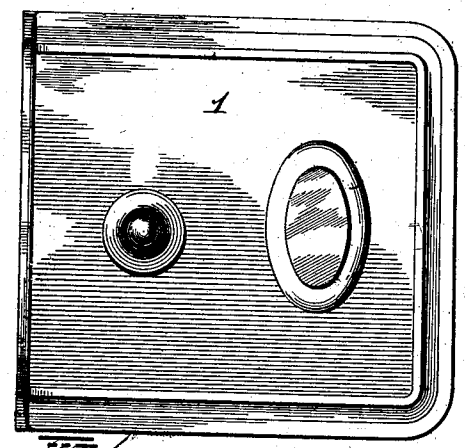


Fig. 1.

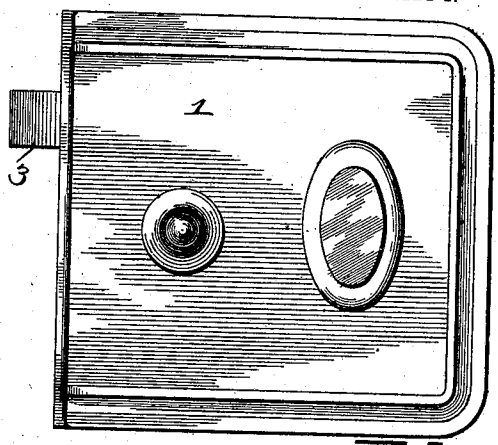


Fig. 2.

Fig. 3.

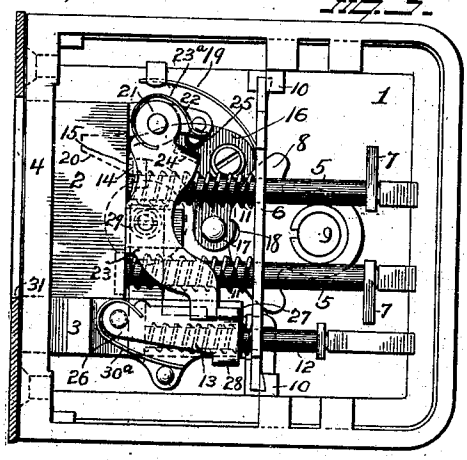


Fig. 4.

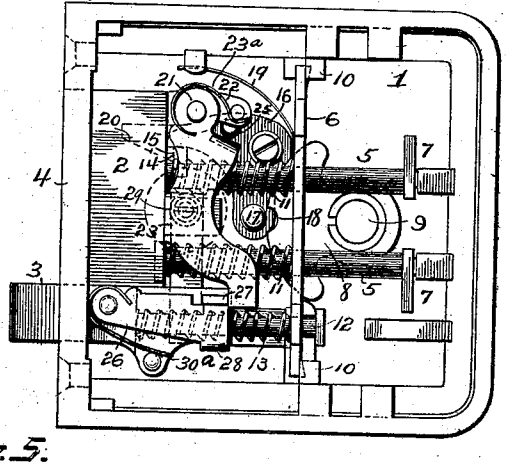
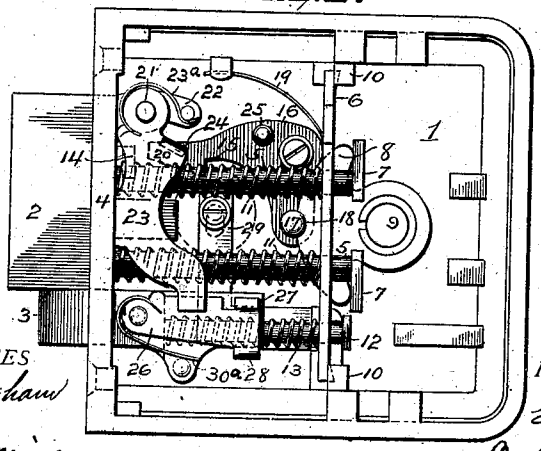


Fig. 5.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 6.

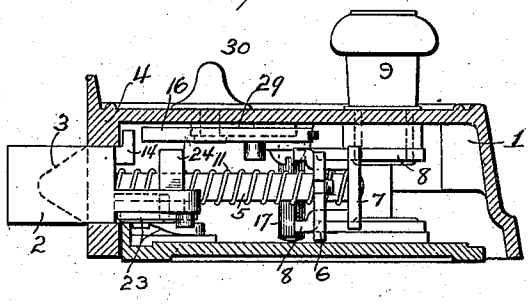


Fig. 7.

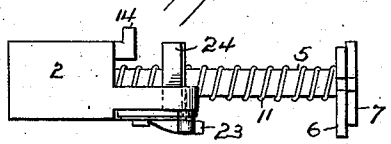


Fig. 8.

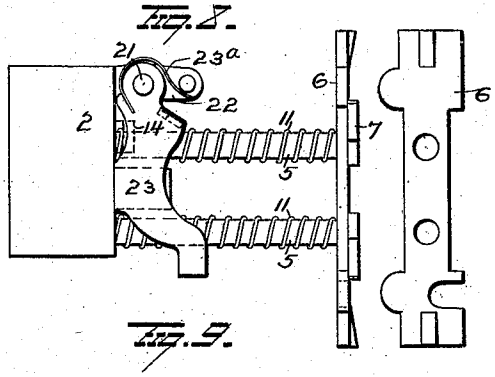


Fig. 9.

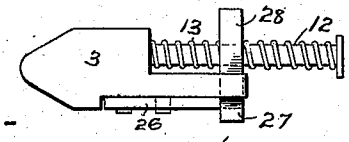


Fig. 11.

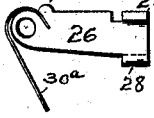


Fig. 12.

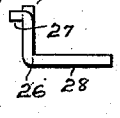


Fig. 10.

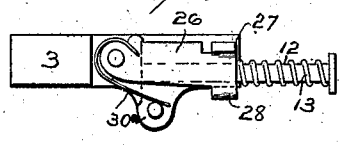


Fig. 13.

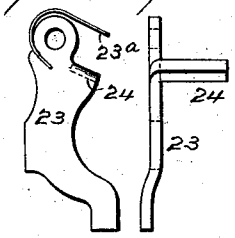
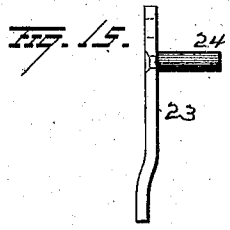


Fig. 14.

Fig. 15.



WITNESSES

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UNITED STATES PATENT OFFICE.

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NIGHT-LOCK.

No. 919,979. Specification of Letters Patent. Patented April 27, 1909.

Application filed June 16, 1908. Serial No. 438,807.

To all whom it may concern:

Be it known that I, HENRY R. TOWNE, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Night-Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in night locks, the object being to provide a lock in which the bolt may be automatically thrown and deadlocked upon the closure of the door.

This lock is designed as an improvement on several types of night latches now used extensively on entrance doors of all kinds and for many other purposes.

Night latches are of two classes as to use, viz: those for use on front doors of houses, flats, etc., where a night latch is in constant use, so as to prevent any one from entering without a proper key, or without assistance from the inside, and second those used on the entrance doors of stores, offices, etc., where, during the day, the latch bolt is usually stopped back and the door held closed by a simple latch which can be actuated from either side by a knob. In this latter type the purpose of the night latch is to secure the door only at night, or when the store or office is unoccupied. In the use of the type first above referred to, the key must be used every time the door is opened, and it would greatly increase the trouble if the key had also to be used each time to lock the door. It is however self locking, and thus minimizes the use of a key for a door which is required to be locked at all times against the outside. In the second use of latch above referred to, the occupant of the store or office stops the latch bolt when he enters in the morning and leaves it so until he closes at night. Practically, therefore, this latter type of lock is operated only twice in twenty four hours, once to unlock and once to lock. This fact makes it obvious that under such conditions a deadlock would be more appropriate than a night latch, and would overcome all objections and the weakness of the latter against attack on its bolt. On the other hand, the public properly has a decided preference for a self-locking lock, the bolt of which is automatically thrown into the locked position without requiring the use of the key, as is the case with the customary form of night latch. A spring bolt of this kind, however, can be retracted by pressure against its end, and, therefore, while more convenient, is less secure than a dead bolt, that is, one which is moved into the locked position by the key, and thus is positively dogged so that it cannot be retracted by pressure against its end.

My improved lock is designed to combine the convenience of a night latch, with its automatically acting bolt, and the safety of a dead lock, with its bolt guarded against retraction by pressure on the end.

In the accompanying drawings, Figure 1 is a view in elevation of my lock showing the locking bolt and the auxiliary bolt or trigger retracted. Fig. 2 is a similar view showing the locking bolt retracted and the auxiliary bolt or trigger projected. Fig. 3 is a view in rear elevation of the lock with the parts as shown in Fig. 1, the cover plate being removed. Fig. 4 is a similar view of the parts in the position shown in Fig. 2. Fig. 5 is a similar view showing both bolts projected. Fig. 6 is a view in longitudinal section of the lock. Fig. 7 is a view in edge elevation and Fig. 8 an elevation of the locking bolt. Figs. 9 and 10 are similar views of the auxiliary bolt or trigger. Figs. 11 and 12 are views in plan and edge elevation respectively of the releasing lever. Figs. 13 and 14 are views of the tripping lever, and Fig. 15 is a view of a modified form of tripping lever.

While I have shown and will describe the improvement as applied to a rim lock, it should be understood that it is equally applicable to a mortise lock, hence I do not confine the use of the invention to any particular type of lock.

1 represents the lock case, 2 the main bolt having a square end, and 3 the auxiliary bolt or trigger located adjacent to one edge of the main bolt. In the present instance the two bolts 2 and 3 pass through a single opening in the face plate 4 of the lock, and each forms an edge bearing or support for the other, but if desired the face plate may be provided with an opening for each bolt.

The main bolt 2 is provided at its rear or inner end with the two rearwardly projecting rods or shanks 5, passing through the guide plate 6 and provided at their rear ends with the arms 7 which latter are engaged by the

ends of the roll back 8 on the knob spindle 9, and also by a similar roll back on the cover plate of the lock, the latter roll back being actuated by a cylinder lock on the outside of the door in the well known manner. The ends of the guide plate 6 rest against, and are supported by the lugs 10 integral with the lock case 1, and are held in place by the springs 11 embracing the shanks 5, and bearing at their front ends against the rear face of the bolt 2, and at their rear ends against the plate 6. These springs also tend to normally force the bolt to its projected position, and are the only means employed for forcing the bolt 2 outwardly.

The auxiliary bolt or trigger 3 is provided with a single rearwardly projecting shank 12, which passes through a slot in the guide plate 6, and is embraced by a spring 13 which also bears against the plate 6 and bolt 3, and tends to hold the latter in its projected position.

The bolt 2 is provided at its rear end with the laterally projecting lug 14 adapted to be engaged by the toothed end 15 of the bolt holding and deadlocking lever 16. This lever 16, is of the bell crank variety, and is pivoted at its elbow to the lock case and is provided at its front end with the tooth 15 for engaging the lug 14 on the bolt 2, and at its rear end with the stud 17, adapted when the bolt 2 is projected, to rest in the recess 18 of the roll back 8, the spring 19 tending to normally hold the stud 17 in contact with the roll back. The recess 18 in the roll back holds the lever 16 solidly in position with its outer end in rear of the lug 14 on the bolt thus dead locking the latter against retraction by any instrument inserted between the strike plate or keeper and the face plate of the lock.

With the parts in position shown in Fig. 5, by rotating the knob and its spindle 9, or the key mechanism, the roll back 8 will be turned. The initial turning movement forces the stud 17 out of the recess 18 and turns the lever 16 out of the path of the lug 14, thus permitting the continued movement of the roll back to retract the bolt. The initial movement of the roll back simply removes the forward end of lever 16 out of the path of lug 14. As the bolt is retracted by the continued movement of the roll back, the lug 14 on bolt 2, moving in contact with the beveled front end 20 of the lever 16, turns the latter on its pivot until the lug 14 on the bolt 2 passes in rear of the tooth 15. As soon as the lug 14 on bolt 2 passes the tooth 15, the lever 16 is turned by its spring 19 to carry the tooth in front of the lug, thus locking the bolt 2 in its retracted position.

From the foregoing it will be seen that the lever 16 operates to deadlock the bolt when the latter is projected, and as will be now explained holds it when retracted against outward movement, until the auxiliary bolt or trigger 3 has been forced inwardly by contact with the strike plate or keeper.

Projecting inwardly from the rear end of the bolt 2 is the shoulder 22, having a stud 21, on which the bolt releasing lever 23 is pivoted. This lever extends transversely of the bolt 2, and is provided with a spring 23^a, which tends to normally hold the lever in contact with the rear face of the head of the bolt. This lever 23 is provided near its pivotal end with an arm 24, which may be in the form of a pin secured to the lever, or it may be formed integral with the lever. This arm extends toward lever 16, and when the bolt is retracted, as in Fig. 3, the arm 24 rests immediately in front of the inclined shoulder 25 on said lever 16, so that, a rearward movement of the lever 23 will cause its arm 24 to engage the shoulder 25, and move the lever 16 laterally in a direction to disengage tooth 15 from lug 14, thus releasing the bolt 2 and permitting it to move to its locking position.

The lever 23 is actuated by the tripping lever 26 pivotally mounted on the auxiliary bolt or trigger 3. This lever 26 is provided with an upwardly projecting lug 27 and a downwardly projecting lug 28, the former adapted to coöperate with the free end of lever 23 on bolt 2, and the lug 28, adapted to be engaged by the stop slide 29. The lever is yieldingly held in position with its lug 27 in line with the free end of lever 23 by the spring 30^a. When the bolt is retracted from the outside by a key, or from the inside by knob and spindle, as previously explained, the releasing lever 23 will be moved backwardly with the bolt 2 until its free end rests in front of the lug 27 on the tripping lever carried by the auxiliary bolt, thus holding the latter in its retracted position. The stop slide is simply a spring actuated sliding plate 29 resting in the path of the lug 28 of the lever 26, and provided with a button or knob by which it is actuated from the inside of the door. When the plate 29 is moved, it engages lug 28 on lever 26, thus moving the latter and carrying its lug 27 out of the path of the end of lever 23.

Assuming the door is to be locked, the effect of the key in unlocking is to fully retract both bolts 2 and 3, whereupon they are both automatically retained in their retracted positions. With both bolts retracted, the lock is out of commission, and may be so left until it is desired to againt put into service. When this is desired, it is simply necessary to shift the stop slide 29 (on the inside) thereby releasing the auxiliary bolt 3, so that it stands in its projected position. If the door be now closed, the auxiliary bolt 3, impinging the strike plate 31, will be pushed back into the lock case, and in moving back, release the main bolt 2 from the bolt holding lever 16, through the intervention of the

tripping lever 26 and the bolt releasing lever 23 as previously explained. The act of unlocking, performed by the key or knob in the usual manner, not only retracts the two bolts, but puts the lock out of commission. When it is desired to restore the lock to service, all that is needed is to move the stop slide 29 and then close the door. Hence it will be seen that the key is only used to retract the bolts, and after the latter have been retracted, the lock may be set for automatic operation by moving the stop slide 29, in a direction to release the auxiliary bolt thus permitting the latter to be projected by its spring, and rest in a position to be engaged by the strike plate or keeper, as the door is closed.

The strike plate or keeper 31 is provided with a throat or opening to receive the end of main bolt 2, and with a closed face or projection against which the auxiliary bolt of trigger 3 impinges as the door is closed and which, while the door is closed, holds the bolt or trigger 3 wholly or partly retracted.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of my invention hence I would have it understood that I do not wish to confine myself to the exact construction of parts shown and described, but,

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

1. In a lock, the combination with a main bolt, and means for retracting same, of an auxiliary bolt adapted to be moved coincidently with the main bolt when the latter is retracted and normally held in such retracted position when the main bolt is so held, means for releasing the auxiliary bolt and a spring projecting the latter independently of the main bolt.

2. In a lock, the combination with a main bolt, means for retracting same, an auxiliary bolt adapted to be moved coincidently with the main bolt as the latter is retracted, means for holding said auxiliary bolt in its retracted position, and means for releasing same to allow it to be projected, of a lever for deadlocking the main bolt when the latter is in its locking position, and for holding said main bolt in its retracted position, the said lever being actuated by the auxiliary bolt to release the retracted main bolt.

3. In a lock, the combination with a main bolt, a spring tending to normally hold same in locking position, an auxiliary bolt, means connecting the two bolts whereby the auxiliary bolt will be moved inwardly with the main bolt, and means for releasing the auxiliary bolt from the main bolt to allow it to be projected independently of the latter, of a single means for deadlocking the main bolt when the latter is projected and for holding it in its retracted position, the said means being actuated by the auxiliary bolt to release the main bolt from the holding means.

4. In a lock, the combination with a main bolt, a spring tending to normally hold same in its locking position, means for retracting it and means for holding it in its retracted position, of an auxiliary bolt, connections between the two bolts whereby the auxiliary bolt will be moved inwardly by the inward movement of the main bolt, means for releasing the auxiliary bolt so that it may be projected independently of the main bolt, and means whereby when the auxiliary bolt is forced inwardly by the strike plate, the holding means for the main bolt will be disengaged therefrom thus permitting the main bolt to be projected.

5. In a lock, the combination with a main bolt, a spring for forcing same outwardly, means for retracting the bolt and means for holding the latter in its retracted position and also for deadlocking it when projected, of an auxiliary bolt, a connection between the main and auxiliary bolts whereby the latter will be moved inwardly with the main bolt, means for disconnecting the auxiliary bolt from the main bolt to allow it to be projected independently of the latter, and means actuated by inward movement of the auxiliary bolt for releasing the main bolt from its holding means.

6. In a lock, the combination with a main bolt, an auxiliary bolt, means connecting the two bolts whereby the auxiliary bolt will be moved inwardly by the inward movement of the main bolt, and a spring for normally holding the main bolt projected, of means for deadlocking the main bolt when projected and for holding it in its retracted position, and means actuated by the auxiliary bolt for disconnecting the holding means and main bolt.

7. In a lock the combination with a main bolt, and means for retracting same, of an auxiliary bolt adapted to be moved coincidently with the main bolt when the latter is retracted and normally held in such retracted position when the main bolt is so held, means operable from the inside of the door for releasing the auxiliary bolt and a spring projecting the latter independently of the main bolt.

8. In a lock the combination with a main bolt, means for retracting same, an auxiliary bolt adapted to be moved coincidently with the main bolt when the latter is retracted, and normally held in such retracted position when the main bolt is so held, means for releasing the auxiliary bolt and a spring for projecting the latter independently of the main bolt, of a strike plate having an opening to receive the main bolt and having a closed part or projection against which the auxiliary bolt impinges when the door is closed,

and which when the door is closed, holds the auxiliary bolt wholly or partly retracted.

9. In a lock the combination with a main bolt, means for retracting same, and a spring for forcing it outwardly, of a means for holding the main bolt retracted, an auxiliary bolt, means carried by the main bolt for disengaging the main bolt holding means from the main bolt, and means carried by the auxiliary bolt for actuating the said disengaging means.

10. In a lock, the combination with a main bolt, means for retracting same, and a spring for forcing it outwardly, of a lever for holding the main bolt retracted, a releasing means carried by the main bolt engaging the holding lever and adapted to move same in a direction to release the main bolt, an auxiliary bolt and a tripping lever carried thereby for actuating the releasing means on the main bolt.

11. In a lock, the combination with a main bolt, means for retracting same and a spring for forcing it outwardly, of means for holding the main bolt retracted, a releasing lever carried by the main bolt and engaging the holding means and adapted to move same in a direction to release the main bolt, an auxiliary bolt, a tripping lever carried by same for actuating the releasing lever, and a stop slide adapted to move the tripping lever and release the auxiliary bolt when both bolts are in their retracted positions.

12. In a lock, the combination with a main bolt and an auxiliary bolt, of a holding lever for holding the main bolt retracted, a spring controlled releasing lever carried by the main bolt and engaging the holding lever, and a spring controlled tripping lever carried by the auxiliary bolt and having a projection resting in the path of a portion of the releasing lever, whereby when the main bolt is retracted, the auxiliary bolt will also be retracted.

13. In a lock, the combination with a main bolt and an auxiliary bolt, of a holding lever for holding the main bolt retracted, a spring controlled releasing lever carried by the main bolt and engaging the holding lever, a spring controlled tripping lever carried by the auxiliary bolt and having a projection resting in the path of a portion of the releasing lever, whereby when the main bolt is retracted, the auxiliary bolt will also be retracted, and means whereby the tripping lever can be moved to disengage it from the releasing lever thus permitting the auxiliary bolt to be forced outwardly.

14. In a lock the combination with a main bolt, means for holding the same retracted and releasing means carried by said bolt and engaging the holding means, of an auxiliary bolt, and a spring controlled tripping lever thereon, the said latter lever having a member resting in the path of the releasing means, whereby when the auxiliary bolt is forced inwardly by contact with the strike plate of the lock the releasing means will be actuated to disengage the main bolt holding means.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

HENRY R. TOWNE.

Witnesses:
F. C. SQUIRES,
W. A. LOCKWOOD.