

May 15, 1945.

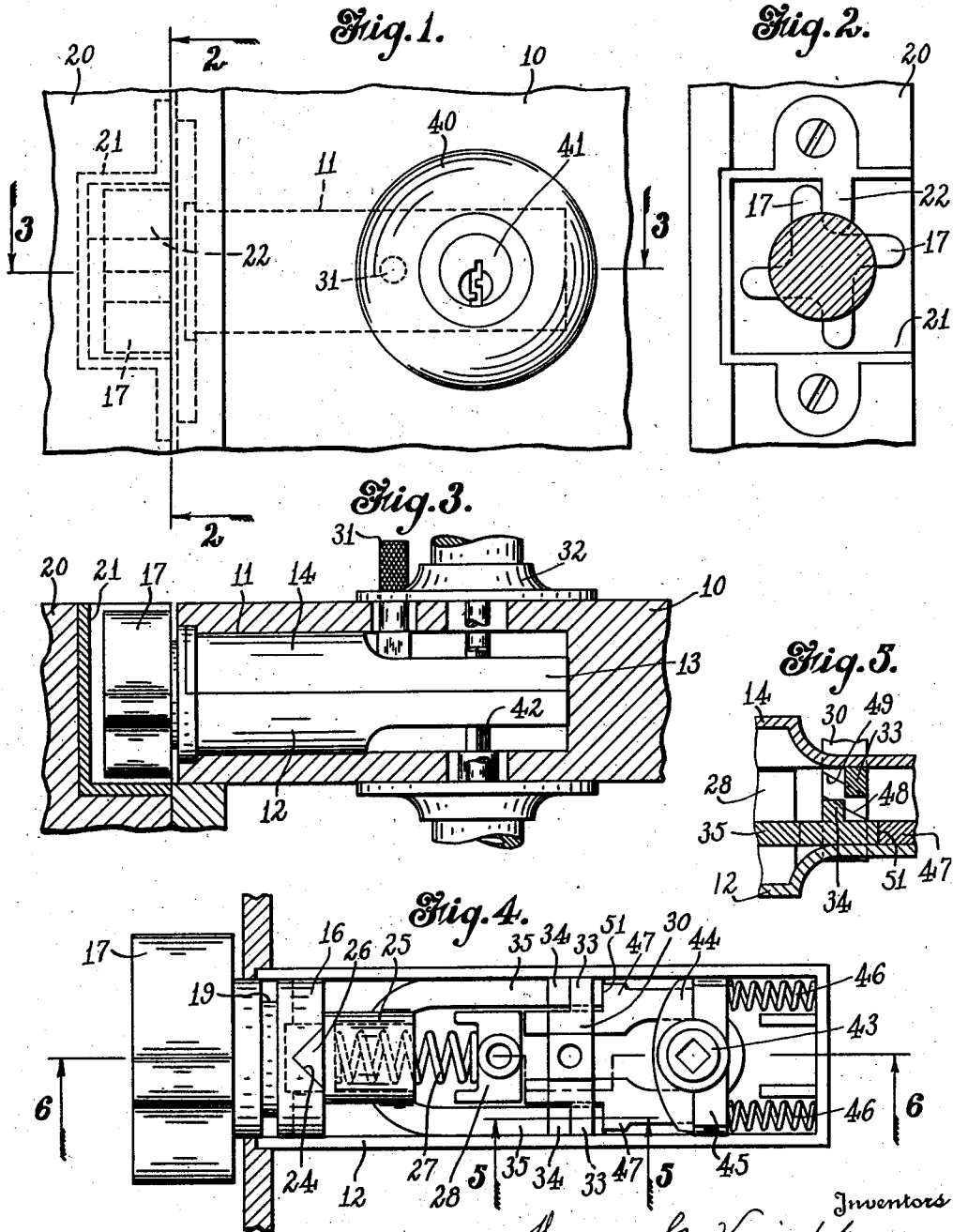
H. G. VOIGHT ET AL

2,376,102

DOOR LOCK

Filed June 23, 1943

2 Sheets-Sheet 1



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2,376,102

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2 Sheets-Sheet 2

Fig. 6.

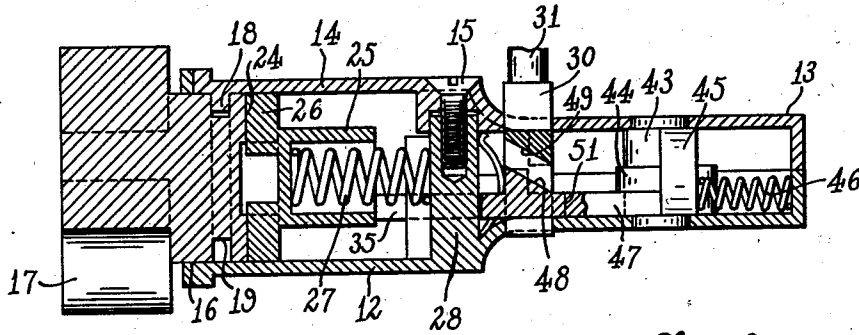


Fig. 7.

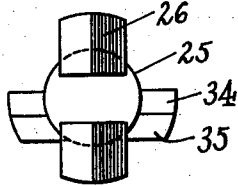


Fig. 8.

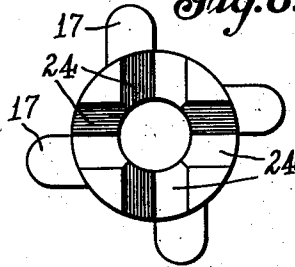


Fig. 9.

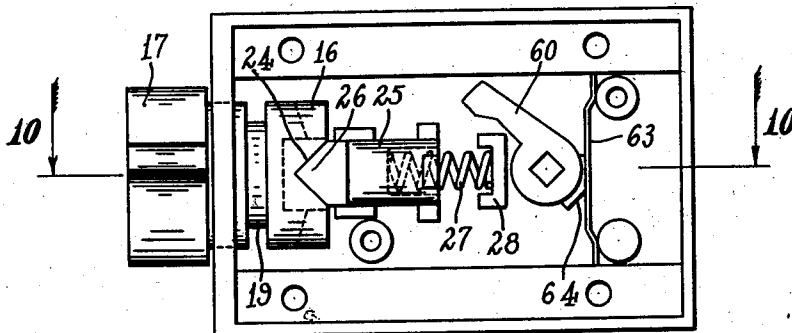
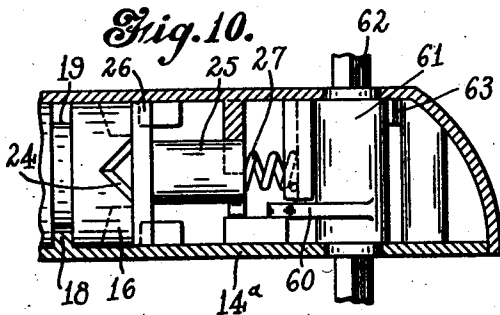


Fig. 10.



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UNITED STATES PATENT OFFICE

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DOOR LOCK

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10 Claims. (Cl. 70-135)

This invention relates to door locks and more particularly to a lock of the type usually referred to as a night latch in that generally in such devices a latch bolt alone is employed, and means are provided for dogging or locking this latch bolt against retraction so that, when dogged, the latch bolt can only be retracted from the outside of the door by means of a key. The device thus serves both as a door latch and as a door lock.

Moreover, the lock shown in the present application comprises a structure of the night-latch type which may be enclosed in a casing generally tubular in form so that it may be inserted through a cylindrical opening or bore made through the edge of the door. Also, the bolt employed in the present lock is a roller bolt or one which makes engagement with a strike member mounted on the door jamb by a rotary movement. Also, in the present instance, this rotary movement takes place about a horizontal axis or an axis at right angles to the edge of the door to which the lock is mounted, which axis substantially coincides with that of the tubular case.

One object of the present invention is the provision of a door lock of the night-latch type, the mechanism of which will be of simple construction.

A still further object of the invention is the provision of a night latch of the character described, which may be mounted in a tubular casing and which will have improved means for dogging the latch bolt against being moved to a position to permit opening of the door.

Still another object of the invention is the provision of a door lock of the night-latch type with a roller bolt, the bolt being engaged with and disengaged from a strike by a rotary motion about an axis at right angles to the edge of the door through which the bolt projects.

Still another object of the invention is the provision of a roller bolt of the latch construction having improved means for retaining the bolt yieldably against movement and for rotatably retaining the bolt in the case.

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

In the accompanying drawings:

Fig. 1 is a front elevational view of the outside of the portion of a door provided with a lock embodying our improvements;

Fig. 2 is a sectional view on line 2-2 of Fig. 1, showing the strike member mounted upon the door jamb and the engagement of the bolt therewith;

Fig. 3 is a sectional view through the door on line 3-3 of Fig. 1, showing the lock case in top plan view;

Fig. 4 is a front elevational view of the lock case with the cover removed to show the operating parts;

Fig. 5 is a fragmentary sectional view on line 5-5 of Fig. 4;

Fig. 6 is a sectional view through the lock mechanism on line 6-6 of Fig. 4;

Fig. 7 is a front elevational view of the detent member for yieldably holding the bolt against movement;

Fig. 8 is a rear elevational view of the roller bolt;

Fig. 9 is a view of a modified form of our invention with the cover of the case removed showing the operating parts; and

Fig. 10 is a sectional view on line 10-10 of Fig. 9.

To illustrate a preferred embodiment of our invention we have shown in the drawings a portion of a door 10 having mounted in a cylindrical bore 11 therein a lock case 12 of substantially cylindrical form. The rear part of the case 12 may be flattened somewhat as shown at 13, as is more or less usual in practice. The case 12 is provided with a removable portion serving as a cover 14 which may be secured to the part 12 by means of the screw 15 shown in Fig. 6.

The lock bolt is one of the roller type and comprises a cylindrical body or stem portion 16 rotatably mounted in the cylindrical part of the case upon an axis coinciding with that of the case. And upon this stem is the projecting portion of the bolt which comprises several spaced arms 17, four in number in the present instance. The stem or body portion 16 of the bolt is conveniently held in position in the case by means of a lug or tongue 18 formed upon the cover 14 of the lock, which lug enters an annular groove 19 in the body portion 16 of the bolt. It will be apparent that with this construction the parts of the lock may be slipped into the case when the cover is removed and that, thereafter, when the cover is applied, the bolt will be securely and rotatably held in place.

The door may cooperate with a door jamb 20 provided with a recessed portion 21 to receive the bolt members 17, and a strike member 22 is mounted within this recess as shown in Fig. 2, so that, as the door is closed, the engagement of the strike member with the arm 17 will tend to rotate the bolt substantially a one-quarter turn. The closed position of the part is shown in Fig. 2 where

one of the arms 17 is in engagement with the inner face of the strike member 22, and it will be apparent that an opening movement of the door will also tend to rotate the bolt and thus permit it to be released from the strike member.

To yieldably hold the bolt against rotation, we provide, upon the rear face of the stem or body portion 16, V-shaped recesses 24, these recesses being as shown disposed substantially 90° from each other. Slidably mounted in the lock case is a detent member 25 having upon the forward end thereof a pair of V-shaped detents 26 to be received in the recess 24. The members 26 are provided at the opposite sides of the member 25 so that at each position of the bolt they engage in two of the recesses 24. It will also be apparent that the detents, being beveled or V-shaped in form and fitting into similarly-shaped recesses 24, they will act as cam members to yieldably hold the bolt against rotation. The detent member 25 may be urged to its forward or operative position by a spring 27 acting against a post 28 secured to the lock case.

It is desirable in devices of the character of the present one to provide means for dogging the bolt so that the door cannot be opened from the outside except by the use of a key. In the present instance, this is effected by providing a dogging member 30 movably mounted in the walls of the portion 13 of the lock case and provided with an actuating stem 31 extending through the inside knob rose 32 of the door adjacent the inside knob for manual operation. This dogging member 30 is provided with lugs 33 adapted to engage behind lugs 34 on guide legs 35 secured to the detent member 25 and, serving to guide this member in its movements, the legs 35 extend upon each side of the post 28 and are engaged by the lugs 33 rearwardly of this post.

When the stem 31 is in its outer position, the parts are in the position shown in Fig. 5 wherein the lug 34 is free to slide below the dogging lug 33 and the bolt is therefore not dogged. When, however, a person at the inside of the door wishes to dog the bolt, he merely pushes inwardly the member 31, thus moving the dogging lug 33 into the path of the lug 34 and thus preventing movement of the detent member 25, also preventing rotation of the bolt by means of the engagement of the detents 26 in the recess 24.

The outside door knob shown at 40 is provided with a key-operated lock 41 having a stem 42 engaging in a non-circular opening in a hub 43 of a rollback 44, which rollback is designed to bear against and actuate a slide 45 against the actions of springs 46 which bear against this slide and against the rear of the case to normally urge the slide forwardly. This slide is provided with a pair of forwardly extending legs 47 each having its forward portion below the dogging member 30 and a beveled surface 48 designed to cooperate with an oppositely beveled surface 49 provided upon the dogging member 30. It will be obvious that, when the key plug of the lock is rotated and the hub 43 likewise rotated, the legs 47 of the slide 45 will be drawn rearwardly.

As may be seen from Fig. 5 and Fig. 6, if the dogging member 30 is pressed inwardly to its operative position, the beveled surface 49 will be moved into contact with the beveled surface 48 when the dogging lug 33 stands behind the lug 34 to dog the detent member 25 against movement. If it is desired to open the door from the outside, proper key is inserted in the lock and the key plug 41 turned. The slide 45, including the legs

47, will be moved rearwardly and the camming action of the beveled surfaces 48 on the beveled surfaces 49 will force the dogging member 30 outwardly to its inoperative position. The door may now be moved to open position by an outward pull upon the same. It will be understood that, in the present instance, neither of the door knobs is intended to be rotatable, the door being both opened and closed by pressure applied thereto, no provision being made for rotation of the bolt except by engagement with the strike member 22.

It will also be seen from Fig. 4 that the legs 47 of the slide 45 are provided with shoulders 51 which lie rearwardly of the guiding legs 35 of the detent member 25. With this construction, it will be seen that the springs 46 also urge the detent member forwardly into engagement with the bolt and, if desired, the spring 27 may be omitted and the springs 46 may be of sufficient strength to move the detent member 25 forwardly as well as the slide 45.

In Figs. 9 and 10 of the drawings, we have shown a night latch of similar construction housed in a rim lock case to be applied to the surface of the door rather than adapted for mortising in a door. In this case, the bolt portions 16 and 17, the detent member 25, and spring 27 are the same as previously described in connection with the form shown in Figs. 1 to 8 of the drawings. In this case, the bolt is dead-locked by means of a dog 60 carried by a hub 61 rotatably mounted in the lock case, which hub is adapted to be turned by a stem 62. To the stem 62 may be connected a thumb turn (not shown) at the inside of the door, and, at the outside of the door, the stem may be connected to a key-operated lock (not shown).

In this case, the bolt is held in position in the manner previously described, namely, by means of a lug 18 provided on cover 14a of the case, this lug entering an annular recess 19 in the stem portion of the bolt. In order to hold the hub 61 yieldingly in its operative or inoperative position, a flat spring 63 is mounted in the case and adapted to engage a flatsided member 64 with sufficient force merely to prevent the hub 61 from accidentally swinging from one position to another.

It will be seen that, in both forms of our invention, we have provided a night latch structure of simple and inexpensive construction and, at the same time, one which will be positive in operation and which may be mounted on the door either as a mortise lock or a rim lock with a minimum of effort.

While we have shown and described some preferred embodiments of our invention, it will be understood that it is not to be limited to all of the details shown but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What we claim is:

1. A night latch comprising a casing of generally tubular shape, a bolt mounted in the casing and having a portion projecting therefrom for engagement with a strike member by a rotary movement, means mounting said bolt in the casing for rotation about an axis parallel with the longitudinal axis of the casing, and means movable axially of the casing for yieldingly holding said bolt against rotation.

2. A night latch comprising a casing of generally tubular shape, a bolt mounted in the casing and having a portion projecting therefrom for engagement with a strike member by a rotary movement, means mounting said bolt in the cas-

ing for rotation about an axis parallel with the longitudinal axis of the casing and securing it against longitudinal movement, means for yieldingly holding said bolt against rotation, said means comprising a spring-pressed detent member adapted to engage the rear face of the bolt, and means to dog said detent member to lock the bolt against movement.

3. A door latch comprising a casing, a bolt rotatably carried by the casing and projecting therefrom and adapted to be engaged with a strike by a rotary movement, means mounting said bolt in the casing for rotation about a horizontal axis perpendicular to the plane of the edge of the door from which it projects but securing it against movement longitudinally of the casing, and means engaging the rear face of the bolt for yieldingly holding said bolt in a predetermined position of rotation.

4. A door latch comprising a casing, a bolt rotatably carried by the casing and projecting therefrom to be engaged with a strike by a rotary movement, means mounting said bolt in the casing for rotation about a horizontal axis perpendicular to the plane of the edge of the door from which it projects but securing it against longitudinal movement, and means for yieldingly holding said bolt in a predetermined position of rotation, said means comprising a detent member reciprocally mounted in the casing rearwardly of the bolt and spring-pressed into engagement with the rear face of the bolt.

5. A door latch comprising a casing, a bolt rotatably carried by the casing and projecting therefrom to be engaged with a strike by a rotary movement, means mounting said bolt in the casing for rotation about a horizontal axis perpendicular to the plane of the edge of the door from which it projects but securing it against longitudinal movement, and means for yieldingly holding said bolt in a predetermined position of rotation, said means comprising a detent member reciprocally mounted in the casing rearwardly of the bolt for movement longitudinally of the axis of rotation of the bolt, and the rear face of the bolt having a recess therein to receive a part of said detent member.

6. A door latch comprising a casing, a bolt rotatably carried by the casing and projecting therefrom to be engaged with a strike by a rotary movement, means mounting said bolt in the casing for rotation about a horizontal axis perpendicular to the plane of the edge of the door from which it projects but securing it against longitudinal movement, means for yieldingly holding said bolt in a predetermined position of rotation, said means comprising a spring-pressed detent member mounted in the casing rearwardly of the bolt and having a cam shaped detent thereon, said bolt having a recess to receive said detent.

7. A door latch comprising a casing, a bolt rotatably carried by the casing and projecting therefrom to be engaged with a strike by a rotary movement, means mounting said bolt in the casing for rotation about a horizontal axis perpen-

dicular to the plane of the edge of the door from which it projects but securing it against longitudinal movement, means for yieldingly holding said bolt in a predetermined position of rotation, said means comprising a spring-pressed detent member mounted in the casing adjacent the rear end of the bolt and having a V-shaped detent at each of two opposite sides thereof adjacent the rear end of the bolt, and the rear face of the bolt having complementary-shaped recesses to receive said detent.

8. A door latch comprising a casing, a bolt rotatably carried by the casing and projecting therefrom to be engaged with a strike by a rotary movement, means mounting said bolt in the casing for rotation about a horizontal axis perpendicular to the plane of the edge of the door from which it projects but securing it against longitudinal movement, means for yieldingly holding said bolt in a predetermined position of rotation, said means comprising a spring-pressed detent member mounted in the casing rearwardly of the bolt, the rear face of the bolt having a recess therein to receive a part of the detent member, and a manually operable member accessible at the inside of the door to dog said detent member and lock the bolt against rotation.

9. A door latch comprising a casing, a bolt rotatably carried by the casing and projecting therefrom to be engaged with a strike by a rotary movement, means mounting said bolt in the casing for rotation about a horizontal axis perpendicular to the plane of the edge of the door from which it projects but securing it against longitudinal movement, means for yieldingly holding said bolt in a predetermined position of rotation, said means comprising a detent member mounted in the casing rearwardly of the bolt and spring-pressed into engagement with the bolt, and a manually operable member reciprocally mounted in the casing, said member being movable to position to dog said detent member against movement.

10. A door latch comprising a casing, a bolt rotatably carried by the casing and projecting therefrom to be engaged with a strike by a rotary movement, means mounting said bolt in the casing for rotation about a horizontal axis perpendicular to the plane of the edge of the door from which it projects but securing it against longitudinal movement, means for yieldingly holding said bolt in a predetermined position of rotation, said means comprising a spring-pressed detent member mounted in the casing rearwardly of the bolt, the rear face of the bolt having a recess therein to receive a part of said detent member, a manually operable member accessible at the inside of the door to dog said detent member and lock the bolt against rotation, and key-operated means at the outside of the door to move said member to its inoperative position and permit movement of the bolt.

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