May 13, 1924. 1,493,526

J. B. FREYSINGER

LOCK

Filed June 2, 1922 2 Sheets-Sheet 1

Fig. 1.

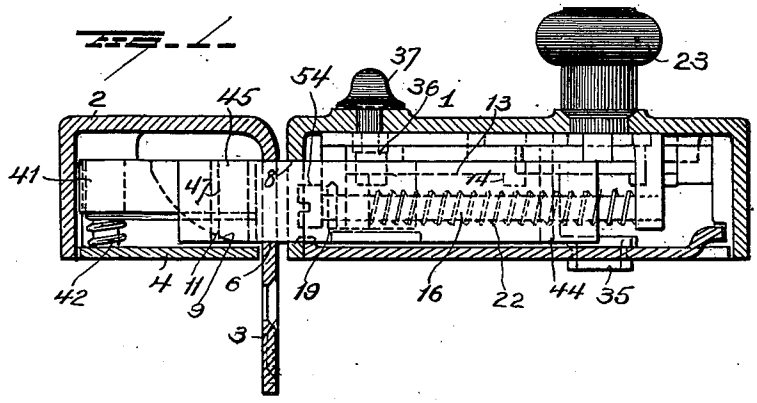


Fig. 2.

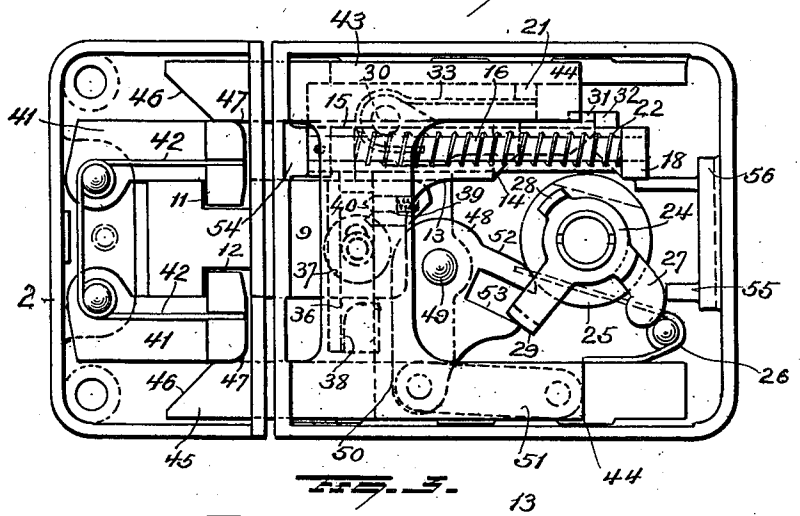


Fig. 3.

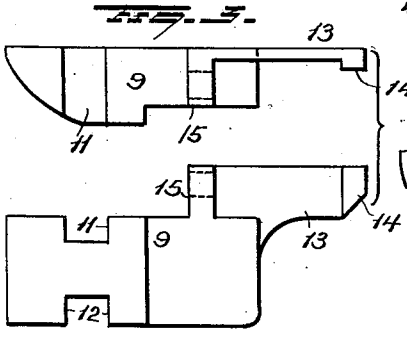


Fig. 4.

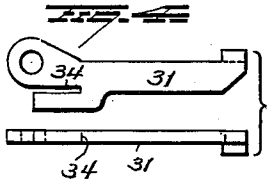


Fig. 5.

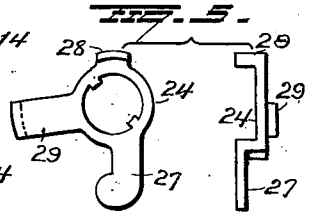


Fig. 6.

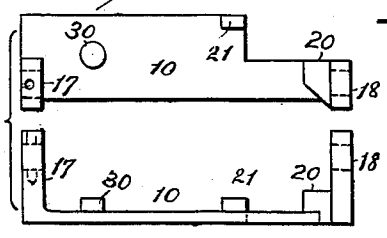
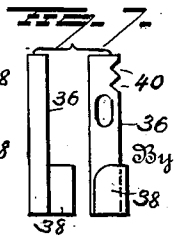


Fig. 7.



Inventor

J. B. Freysinger

By Seymour & Bright

Attorneys

May 13, 1924. 1,493,526

J. B. FREYSINGER

LOCK

Filed June 2, 1922 2 Sheets-Sheet 2

Fig. 8.

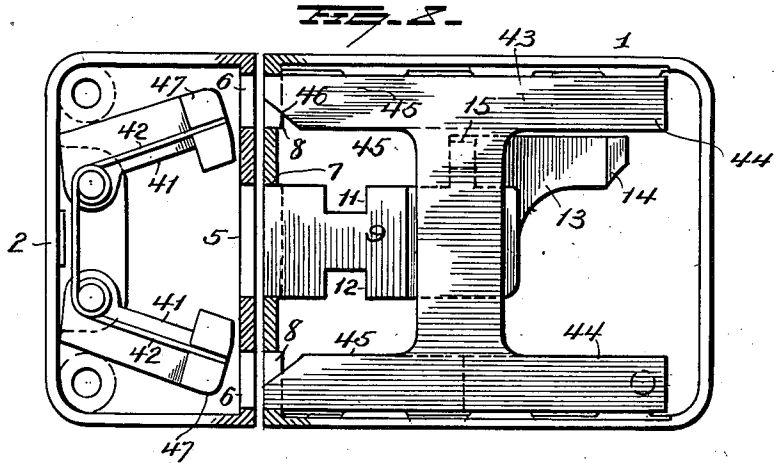


Fig. 9.

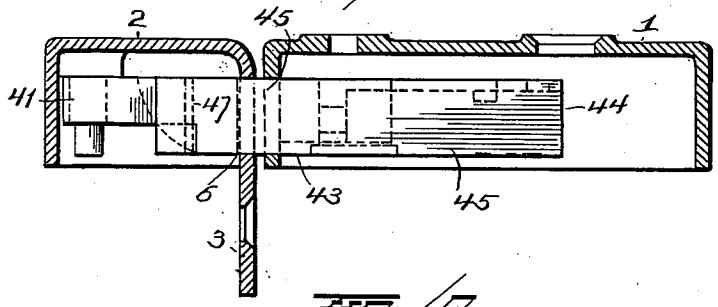
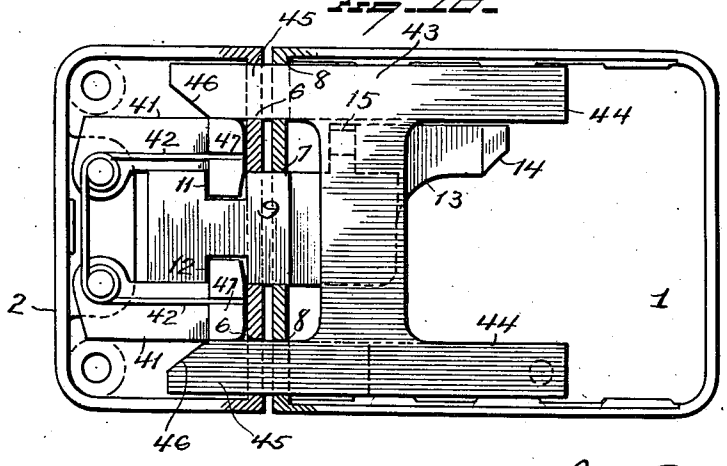


Fig. 10.



Inventor.

J. B. Freysinger

By Seymour & Bright

Attorneys

Patented May 13, 1924. 1,493,526

UNITED STATES PATENT OFFICE.

JOHN B. FREYSINGER, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

LOCK.

Application filed June 2, 1922. Serial No. 565,333.

To all whom it may concern:

Be it known that I, JOHN B. FREYSINGER, a citizen of the United States, and a resident of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in 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.

This invention relates to improvements in locks and more particularly to such as are constructed with special reference to rendering them proof against jimmying,—one object of the invention being to provide in a simple structure, deadlocking means located in the strike and cooperable with a latch bolt in a manner to deadlock the latter against any jimmy force.

A further object is to so construct a jimmy-proof lock, that the latch-bolt shall be operable either independently of the anti-jimmy dead locking means or in cooperation therewith.

With these and other objects in view, the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings; Figure 1 is a sectional view of the lock structure, including the strike or keeper member thereof, showing an embodiment of my invention; Figure 2 is a rear face view with the cover plates removed; Figure 3 shows face and side views of the latch bolt; Figure 4 shows face and edge views of the carrier locking lever; Figure 5 shows face and edge views of the knob cam; Figure 6 represents the latch carrier in front and side elevations; Figure 7 illustrates face and edge views of the latch stop; Figure 8 is a view showing the bolts in retracted or unlocked positions; Figure 9 is a sectional view showing the bolts in dead locked positions, and Figure 10 is a rear face view of the structure shown in Figure 9 with the carriage omitted.

In the drawings, I have illustrated my improvements as applied to a lock of the "rim" type, in which 1 represents the lock casing to be secured to a door so that its forward edge shall be flush with the edge of the door, and 2 represents a strike or keeper to be secured to the door jamb or frame so that its front or exposed wall may lie flush with the face of said jamb or frame, and said keeper may be provided with a flange or extension 3 perforated for the accommodation of securing means. The keeper 2 is made as a casing having a cover plate 4 and its exposed wall is provided with openings 5 and 6, 6, for the passage of bolt members mounted in the lock casing,—the front end wall of the latter being provided with similar openings 7 and 8, 8.

Mounted in the lock casing 1, is a latch bolt 9 and for the latter, a movable carrier 10 is provided. The head portion of the latch bolt is made with upper and lower recesses 11, 12, and said latch bolt is provided with a rearwardly projecting, offset arm or extension 13 having at its rear end, a boss 14. The latch bolt is also made on its top, with a perforated lug 15 for the passage of a carrier rod 16. The carrier rod 16 passes through holes in bosses 17 and 18 at respective ends of the carrier and is pinned to the former of these bosses as indicated at 19. The latch bolt carrier 10 is also provided with a boss 20 adjacent to the boss 18 and with a lug 21. A coiled spring 22 is located on the rod 16 and bears at one end against the boss 18 on the carrier, the other end of said spring bearing against the lug 15 on the latch bolt, so that said latch bolt may be pressed back against the resistance of said spring (without moving the carrier), to withdraw said latch bolt from the keeper and release the door.

Normally, the latch bolt will be projected by the action of the spring 22, to what may be termed a "single throw" position. In other words, the head of the latch bolt normally projects approximately five-eighths of an inch from the lock casing 1 and enters the keeper.

The spindle of a knob 23 enters the casing 1 and carries a knob cam 24,—for which latter a washer 25 is provided and a spring 26 is cooperable with said cam to hold it in normal position when the latch bolt is in normal or single throw position. The knob cam is provided with three arms 27, 28 and 29, the functions of which will be hereinafter explained.

The latch bolt carrier has pivotally mounted thereon at 30, a carrier locking lever 31 which is cooperable with a lug 32 on the lock casing, and this lever is normally retained

in and moved to position to cooperate with said lug, by the action of a spring 33, one arm of which enters a slot 34 in said lever and the other arm of said spring engages the lug 21 on the carrier.

Anti-jimmying, dead locking devices are provided as hereinafter described but when these devices are not in locked position and it is desired to operate the latch bolt to withdraw it from its single throw position by operation of the knob and thus release the door, the carrier will be held in locked position by cooperation of the lever 31 with the lug 32, and the operator will turn the knob 23 in a counter-clockwise direction (toward the rear end of the lock) and thus cause counter-clockwise rotation of the knob cam 24. During such turning of the knob cam, its arm 27 will engage the boss 14 on the latch bolt and move the latter backwardly (compressing the spring 22), to retract said bolt five-eighths of an inch, and release the door from the keeper. The rearward movement of the latch bolt will be limited by engagement of the boss 14 thereon with the boss 20 on the carrier 10, and when the knob 23 shall have been released by the operator, the latch bolt will be projected to its normal single throw position by the action of the spring 22.

In order that the latch may be operated by means of a key, a roll back 35 is provided and is cooperable with the arm 28 of the knob cam 28, so that when said roll back is turned counter-clockwise the latch will be withdrawn in the same manner as above described in connection with the operation of the knob. When the roll back shall have been turned approximately fifty-five degrees to retract the latch bolt and then, after opening the door, the operator will turn the roll back clockwise the same distance and withdraw the key. The latch bolt will now be in normal or single throw position.

To hold the latch bolt in retracted or open position, a latch stop 36 is provided. This stop is provided with a thumb or finger knob 37 wherewith to slide it and at one end, said stop is provided with a lug 38 which, when the stop is moved upwardly, will enter the recess 12 in the head of the latch bolt. The latch stop will be retained in the position to which it may be moved by means of the engagement of a spring-pressed pin 39 in one of a pair of notches 40 in said stop.

Pivotally mounted within the strike or keeper are two dead-locking dogs 41 so disposed that they may enter the recesses 11 and 12 respectively in the head of the latch bolt 9 when the latter is sufficiently projected into the keeper, thus dead-locking the latch bolt to the keeper and effectually preventing jimmying. When the parts are in unlocked positions or when the latch bolt is in its normal single throw position, the dead-locking dogs will be caused, by the action of spring arms 42, to assume the retracted positions shown in Figure 8.

A U-bolt 43 is mounted in the lock casing and provided with rearwardly projecting arms 44 and the forwardly projecting arms 45 of said U-bolt are beveled as at 46 to engage rounded end portions 47 of the dead-locking dogs 41 when said U-bolt is projected. A bell-crank-lever 48 is pivotally mounted on a pin or post 49 rigid with the casing 1 and the arm 50 of this bell-crank-lever is connected by a link 51 with one of the rearwardly projecting arms 44 of the U-bolt 43. The other arm, 52, of the bell-crank lever is provided with an open slot 53 to permit cooperation of the arm 29 of the knob cam 24, with said bell-crank-lever.

When the latch bolt is in single throw position and it is desired to dead-lock the latch bolt in the keeper, the operator will turn the knob 23 toward the front of the lock. The arm 29 of the cam 24 will engage the lever 31 and raise the same out of engagement with the lug 32 on the casing thus releasing the latch carrier 10. The cam arm 29 will next engage the boss 14 on the arm 13 of the latch bolt 9, forcing the latter and the carrier 10 forwardly three-eighths of an inch. The boss 17 at the forward end of the carrier 10 will stop against a lug 54 at the forward end of the lock casing and the full throw of the latch bolt will be one inch, with the recesses in position to receive the dead-locking dogs 41. After the cam arm 29 leaves the latch bolt, the spring 33 will force the lever 31 down in front of the boss 32 on the casing, thus locking the carrier 10 in the position to which it has been moved. During further travel of the cam arm 29, it will enter the slot 53 of the bell crank, causing the same to turn on its pivotal mounting and transmit motion, through the link 51 to the U-bolt 43, to move the latter forwardly. Turning of the cam 24 will be limited by engagement of the cam arm 27 with a boss 55 rigid with the casing 1 and the cam 24 will be held in position by the action of the spring 26. When the cam 24 is in the position above described, with the arm 27 bearing against the boss 55, it acts to dead lock the U-bolt 43,—the cam arm 29 preventing the bell-crank 48 from rotating. When the U-bolt moves forwardly as above described, it will engage the dead-locking dogs 41 and move them (against the resistance of the spring arms or members 42) so that their hook-shaped end portions will enter the recesses 11, 12 in the latch bolt and thus dead-lock the latter in the strike of keeper 2.

To perform the dead-locking operations above described, with the use of a key, the

operator will turn the key through one-hundred and eighty degrees, and then turn the key back the same distance and withdraw it. The arm of the roll back cam will cooperate with the arm 28 of the cam 24 and the mechanism will be operated the same with the knob as above described.

In operating the lock to move the parts from completely locked position, as shown in Figures 1 and 2, to normal position with the latch bolt projecting five-eighths of an inch casing 1, the operator will turn the knob 23 in counter-clockwise direction or toward the back of the lock. The cam arm 29 will enter the slot of the bell-crank 48 and cause the latter to turn and the U-bolt 43 to be withdrawn from the strike or keeper and thus permitting the spring members 42 to force the dead locking dogs 41 apart and out of dead-locking relation to the latch bolt. The cam arm 29, after leaving the bell-crank, will engage the lever 31 and raise the same clear of the lug 32 and compress the spring 33 and releasing the latch bolt carrier 10. The cam arm 29 will next engage the front of the boss 20 on the carrier 10, forcing the latter, with the latch bolt 9 backwardly. The boss 18 on the carrier will stop against a boss 56 on the casing 1. After the cam arm 29 leaves the carrier, the spring 33 will force the lever 31 down in back of the lug 32 on the casing 1 and lock the carrier 10 in position. The knob 23 has now been moved through one-hundred-and-eighty degrees and if released, will be held in this position by the action of the spring 26. The lock is now in normal position.

To perform the same unlocking operation as last above described, with the use of a key, the operator will turn the key clockwise through approximately two-hundred-and-thirty-five degrees, when the door may be opened, and then the key will be turned counter-clockwise the same distance and withdrawn, and the latch bolt will be in single throw position. In operating the key, the arm of the roll-back will engage the arm 28 of the cam 24 and the parts will be operated the same as when operated by the knob, as above described.

Various changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope and hence I do not wish to restrict myself to the precise details herein set forth.

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

1. The combination with a lock casing and a keeper, of a latch bolt mounted in the lock casing, dead locking dogs mounted in the keeper to receive the latch bolt between them, and a locking bolt to enter the keeper and move said dead locking dogs toward each other and into dead locking cooperation with said latch bolt.

2. The combination with a lock casing and a keeper, of a latch bolt to enter the keeper and having recesses in opposite faces, spring-retracted dead-locking dogs pivotally mounted in the keeper and positioned to receive the latch bolt between them, and a locking bolt having two members cooperable respectively with the respective dead-locking dogs to force them into dead locking relation to the recessed latch bolt.

3. The combination with a lock casing and a keeper, of a latch bolt to enter the keeper and having recesses in opposite faces, spring-retracted dead-locking dogs pivotally mounted in the keeper and positioned to receive the latch bolt between them, a locking bolt having two members cooperable respectively with the respective dead locking dogs to force them into dead locking relation to the recessed latch bolt, and means whereby the locking bolt may be locked with the dead-locking dogs in dead locked relation to the latch bolt.

4. The combination with a lock casing and a keeper, of a latch bolt, a movable carrier therefor, dead-locking dogs mounted in the keeper and cooperable with the latch bolt to dead lock the same, means for moving said carrier to move the latch bolt to position for cooperation with the dead-locking dogs in the keeper, and means mounted in the lock casing for moving the dead-locking dogs into dead-locking relation to the latch bolt.

5. The combination with a lock casing and a keeper, of a latch bolt, a movable carrier therefor, said latch bolt adapted for movement independently of the carrier, dead-locking dogs mounted in the keeper and cooperable with the latch bolt to dead lock the same, means for moving said carrier to move the latch bolt to position for cooperation with the dead locking dogs in the keeper, and means mounted in the lock casing for moving the dead locking dogs into dead locking relation to the latch bolt.

6. The combination with a lock casing and a keeper, of a movable carrier in said casing, a spring pressed latch bolt associated with said carrier and movable therewith, means for locking said carrier, dead locking dogs in the keeper, means mounted in the lock casing for moving said dogs into dead locked relation to the latch bolt, means for unlocking the carrier and for moving the same and the latch bolt, and means whereby the latch bolt may be operated independently of the dead-locking means.

7. The combination with a lock casing and a keeper, of spring-retracted dead locking dogs mounted in the keeper, a latch mounted in the lock casing and having recesses to receive the dead-locking dogs in

the keeper when said dogs move toward each other, manually operable means for projecting said latch to position to receive the dead locking dogs in the recesses thereof, a bolt having members to enter the keeper and force said dogs toward each other into the recesses of the latch, and means controlled by said manually operable means for operating said bolt.

8. The combination with a lock casing and a keeper, of spring retracted dead-locking dogs in said keeper, a spring pressed latch, a movable carrier therefor, a fixed lug in the casing, a spring-pressed lever carried by the carrier and cooperable with said fixed lug to lock the carrier, a bolt to enter the keeper, said bolt being operable to force the dead locking dogs into dead locked relation to the latch, a cam having an arm cooperable with the latch to retract the same, said cam having another arm cooperable with said carrier to move the same and the latch, and means operable by said last-mentioned cam arm to move said bolt.

9. The combination with a lock casing and a keeper, of spring-retracted dead-locking dogs mounted in the keeper, a latch mounted in the lock casing, manually operable means for moving said latch to position between the dead locking dogs in the keeper, a bolt having two arms to enter the keeper, said bolt arms being cooperable with the dead locking dogs to move them into dead locking relation to the latch, a bell-crank mounted in the lock casing, and a link connecting one arm of said bell crank with said bolt, the other arm of said bell crank being cooperable with said manually operable means whereby movement of the latter will operate through said bell-crank and link to project or withdraw said bolt.

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

JOHN B. FREYSINGER.

Witnesses:
FRED K. HEYER,
CHARLES A. BERRY.