May 18, 1926.

M. B. DISKIN

1,585,089

BURGLARPROOF LOCK

Filed March 2, 1925 2 Sheets-Sheet 1

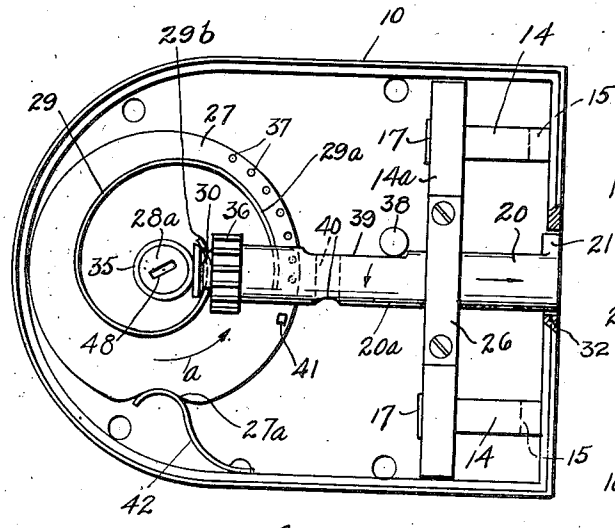


Fig. 1

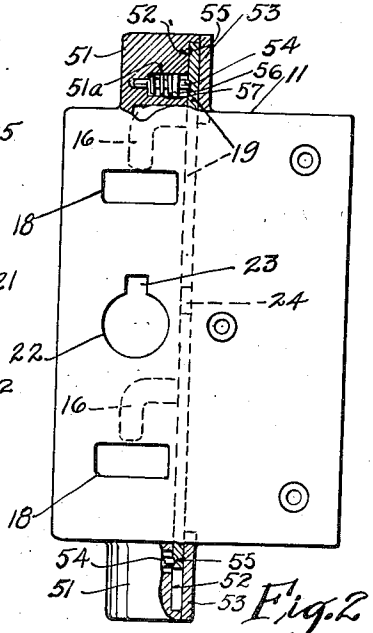


Fig. 2

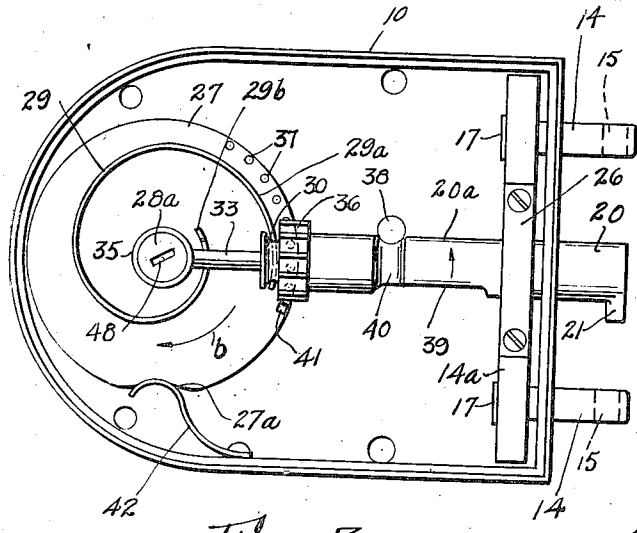


Fig. 3

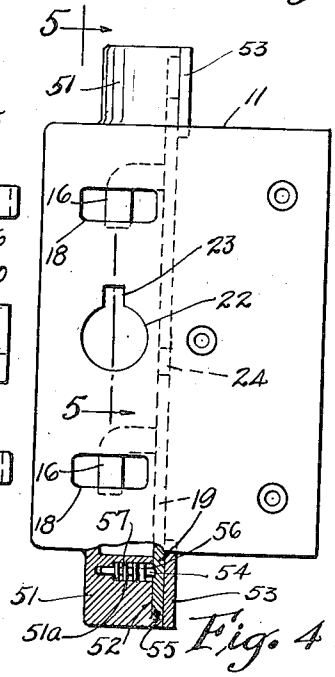


Fig. 4

INVENTOR

M. B. Diskin

BY

Geo. L. Beale

ATTORNEY

May 18, 1926.

1,585,089

M. B. DISKIN

BURGLARPROOF LOCK

Filed March 2, 1925 2 Sheets-Sheet 2

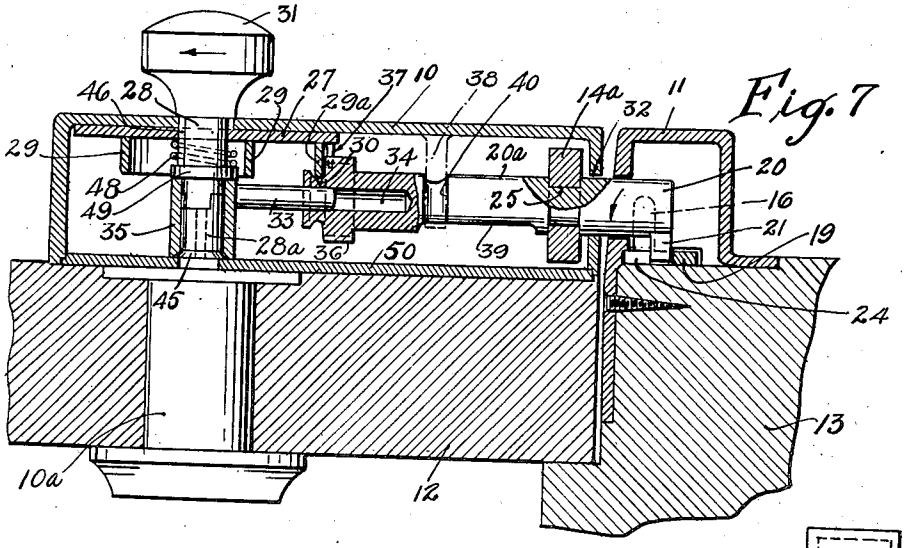


Fig. 7

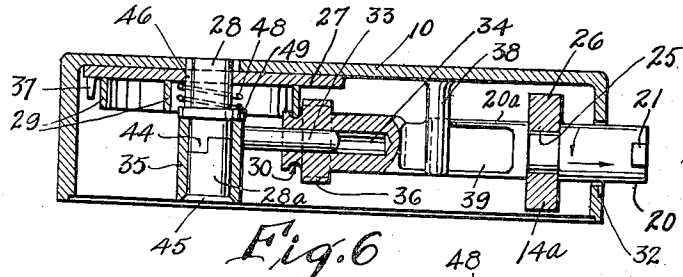


Fig. 6

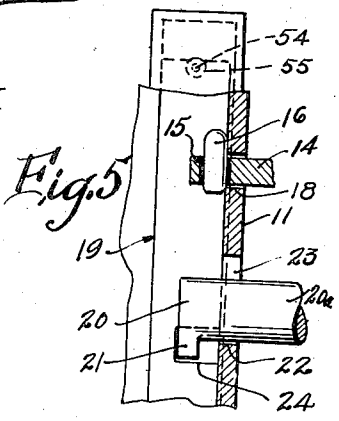


Fig. 5

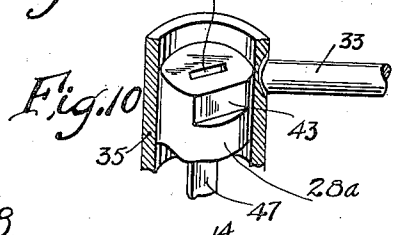


Fig. 10

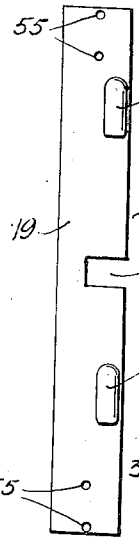


Fig. 8

Fig. 9

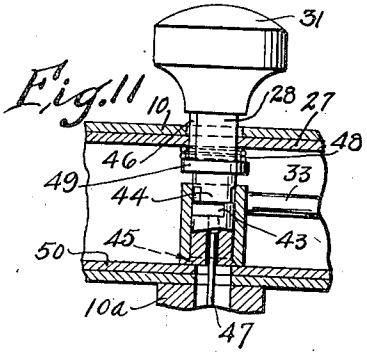


Fig. 11

INVENTOR

M. B. Diskin

BY Geo. F. Beeler

ATTORNEY

Patented May 18, 1926. 1,585,089

UNITED STATES PATENT OFFICE.

MOSES B. DISKIN, OF NEW YORK, N. Y.

BURGLARPROOF LOCK.

Application filed March 2, 1925. Serial No. 12,500.

This invention relates to builders' hardware and more particularly to locks of that character commonly designated as jimmy-proof, and adapted for use either as mortise or as rim locks.

Among the objects of this invention is to provide a jimmy-proof lock having novel bolt means including a plurality of co-operating members one of which is arranged to render said bolt means operative for locking or unlocking purposes.

Another object of this invention is to provide a jimmy-proof lock having novel bolt means and novel actuating means co-operating therewith, said bolt means being arranged to provide an operating member for co-operating with said actuating means to render the jamb piece effective for locking purposes.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof, reference is had to the accompanying drawings in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is an inside view of the lock in unlocked position.

Fig. 2 is an elevational view of the jamb member with parts in section, said view being taken with the jamb member mechanism ready to co-operate with the mechanism in Fig. 1, but rotated through an angle of 90°.

Fig. 3 is an inside view of the lock with the bolt projected.

Fig. 4 is a view similar to that of Fig. 2 but with the keeper in locked position.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a cross section of the lock showing an intermediate stage in the operation of the lock.

Fig. 7 is a horizontal cross section of the lock mounted upon a door showing an intermediate stage in the operation of the lock but beyond that shown in Fig. 6.

Fig. 8 is a view of the keeper.

Fig. 9 is a perspective view of the bolt mechanism.

Fig. 10 is a perspective view of a detail of the operating mechanism with parts broken away.

Fig. 11 is a sectional view of a portion of the operating mechanism similar to Fig. 7, but in a different position.

Referring now more particularly to the drawings, 10 represents a lock casing arranged to co-operate with a jamb member 11, the lock structure being arranged to be mounted either as a rim lock upon a door 12 and a jamb 13 as shown or as a mortise lock in a manner well known in the art.

Said lock comprises novel bolt means including a plurality of members one of which is operative by and in co-operation with suitable actuating means to operate the bolt for opening or closing the lock. Preferably said member is arranged for this purpose to operate a keeper as will be disclosed hereinafter. More specifically, said bolt means includes suitable engagement means such as the lugs or extensions 14 which are movable outwardly of the lock and into engagement with the jamb member mechanism. Said extensions have for this purpose preferably openings or holes 15 to engage the pins or detents 16 of the jamb member so as to cause the jamb member and the lock to co-operate with each other in a jimmy-proof manner. The engagement means or extensions 14 are projected outwardly of the lock by a carrier or cross-head 14ª which is operative by such suitable actuating means as may be arranged to secure the objects of this invention. More specifically, said cross-head is movable transversely of the lock so as to project or withdraw both of the engagement members simultaneously, said members being for this purpose secured to the cross-head preferably in a rigid manner as at 17. The jamb member is provided with openings 18 to receive said engagement members, the pins or detents 16 being movable transversely of said openings so as to enter the holes 15 of said engagement members after the same are projected into the jamb member. Said pins are movable for this purpose by suitable actuating means, and preferably by a bar or keeper 19 which is slidable along the jamb member. Said keeper is operative preferably by mechanism within the body of the lock, the bolt means being arranged to actuate the keeper to move said pins as noted for opening or closing the lock. Preferably I provide said bolt means with an individual part or member which is operative in co-operation with the rest of the bolt, and substantially simulta-

neously therewith, said member being movable without the lock and into the jamb member to operate said keeper.

More specifically, the member for operating said keeper is in the form of a rotatable or bolt member 20 which is arranged to be projected into the jamb member simultaneously with the projection of engagement members 14, and to engage said keeper by the rotation thereof to move the keeper along the jamb piece so as to cause said pins to function. The rotatable member may for this purpose be provided with actuating means at the end thereof such as a bit 21 which is preferably arranged in the manner of a key. Said rotatable or key member enters the jamb piece through an opening 22, which is provided with a notch or recess 23 to permit the passage of said bit, while the keeper is provided with an opening or slot 24 into which said bit is arranged to enter, so that when said key member is rotated, the bit will operate as a crank to move the keeper. The angular rotation of said key member is such as is suited to the particular design of lock but as shown equals substantially 180°, while the form and specific arrangement thereof is as shown preferably of round cross section and located between said engagement members and in spaced relation thereto. Moreover, said key member may be made sufficiently rigid and strong to serve the function of providing a separate bolt member to increase the strength of the lock, thus constituting the bolt means in effect a two-stage compound bolt.

The members of the two-stage bolt are preferably operative as a unit by a central or unitary actuating mechanism, since said bolt is projected as a unit, the rotation of the key member occurring after such projection. For this purpose and as a preferred way of securing such unitary action, I provide said key member with an elongated shank 20^a, the cross head 16 having engagement with said shank, said shank having cooperation with the actuating mechanism of the lock so that it may be moved outwardly or inwardly, whereby said cross-head is moved in turn to project or retract the engagement members 14 carried thereby simultaneously with the movement of said key member, and in the same direction. Thus said shank has a bearing neck 25 to engage said cross-head, said cross-head being arranged at this point in the form of a collar to be carried by said shank while permitting free rotational movement of said shank therein. A bearing plate or bar 26 is secured to said carrier as by means of screws to permit of the easy assemblage of said shank within the carrier.

To move said shank along the lock for projecting or retracting the bolt means, suitable means in the form of a crank mechanism or the like is provided, through the rotation whereof a translatory motion is imparted to said shank. Thus I provide a member such as a disk 27 rotatable about a stem 28 and carrying means for reciprocating said shank back and forth along the lock such as a spiral cam member 29 which engages said shank within a peripheral groove or recess 30. Thus when said cam member is rotated about its axis, then, since the shank has continuous engagement therewith, it is reciprocated back or forth according to the direction of rotation of said cam member. Said cam member may extend in its spiral form through any angle that is desirable to impart the necessary force when the disk 27 is rotated by the stem 28 as by actuation of the knob 31, and to insure a smooth operation of the lock mechanism. Said cam member extends for this purpose preferably through an angle of approximately 360°, a portion 29^a thereof being concentric with the axis of the disk 27, so as to impart no translatory movement to said shank member through a turn of said disk of approximately 90° for a purpose to be disclosed hereinafter. The shank 20^a is mounted for suitable sliding movement along the lock as within the opening 32 in the lock at one end thereof and by means of mechanism within the lock suitably arranged for this purpose such as a stem 33 which is mounted co-axially with said shank and in telescopic manner therewith so as to enter the bore 34 thereof to support said shank and retain the same in slidable relation along a definite axis. The stem 33 is preferably mounted upon a sleeve 35 which is mounted upon the stem 28 so as to permit of a free rotation of said stem within said sleeve as for the purpose indicated above of actuating the disk 27.

To secure the requisite rotation of said shank and consequently of the bolt or key member 20, a pinion 36 is provided upon the shank, said pinion being co-operative with a plurality of spaced teeth 37 borne by the disk 27 and arranged to cause rotation of said pinion through an angle of approximately 180° which is the angular throw of the member 20 necessary to close or open the lock. Said teeth are positioned preferably adjacent to the periphery of said disk and without the cam member, and thus engage said pinion only when said key member is projected into its farthest position outwardly of the lock, while when said key member is wholly or partially within the lock, said teeth are spaced from said pinion axially of the lock so as not to mesh with said pinion but to be free to pass beneath the shank 20^a which is of smaller diameter than the pinion.

The operation of the lock as thus far dis-

closed is as follows: With the lock in open position as shown in Fig. 1, in order to close the lock, the disk member is rotated in the direction of arrow *a*. The cam member will project said key member outwardly of the lock, but no rotation will occur since the teeth and pinion do not mesh. Indeed rotation is preferably prevented in the construction shown until said key member has reached the limit of its outward position. To insure against accidental rotation therefore, a guide 38 is arranged to cooperate with the shank in a suitable manner as by means of a track or non-circular surface 39 provided along said shank. However, when the cam member has projected said key member the desired distance, the teeth 37 come into meshing engagement with said pinion, as shown in Fig. 7, and cause said key member to rotate and operate the jamb piece mechanism as disclosed hereinbefore. To permit of the rotation of said shank, the flat surface 39 terminates in an annular groove 40 so that when the bolt has reached its limit of throw, said groove will coincide with the guide 38 to receive the same and permit rotation as aforesaid. Further rotation may be prevented by any suitable construction as a stop 41, while the spring 42 serves to engage said disk as within a notch 27^a and resiliently grip the same at its limits of motion. The portion 29^a of the cam member continues to engage the shank while rotation thereof occurs, and translatory movement is stopped, thus providing for a smoother operation between these parts and better structural co-operation.

To open the lock, said disk member is rotated in the direction of arrow *b*, so that while rotation occurs immediately, no translatory motion will take place until the rotary movement is first completed. When rotary movement is completed, the guide 38 is in a position to be received by the flat cut-out or facet 39 while the spiral portion of the cam member is ready to retract the bolt. The limit of movement inwardly of the lock is reached when the end of the bolt strikes the sleeve 35 and the inner end of the spiral may have a lug 29^b to limit the movement in this direction.

My invention is not to be understood as being confined to the particular operating arrangement disclosed, nor to the particular motions and combination of motions disclosed, but contemplates rather as stated within the objects of this invention such movement of the key member and its co-operating parts as will cause reciprocatory and rotary motions of one or more of the members of a compound bolt structure.

I prefer to arrange a cylinder 10^a in co-axial and co-operative relation to the stem 28 so that when said cylinder is operated in the usual manner for opening the lock, a rotational force will be transmitted directly to the disk member through the medium of said stem. However, since the cylinder is not operative by turning the knob 31, the nature of the co-operating parts is modified to permit of the disk 27 being rotated without rotating or operating the cylinder. For this purpose, I sever said stem to provide a portion 28^a which is arranged to engage the portion 28 as desired, and having for this purpose a notch or cut-out 43 to receive a corresponding extension or lug 44 in the portion 28. The portion 28^a is provided with a head 45 received within a countersink of the sleeve 35 to prevent the movement of said portion inwardly of the lock. The member 28, however, is movable relatively to said sleeve, as when the knob 31 is pulled in an outward direction. The engagement between 28 and 28^a is then broken, and the knob may be rotated to turn the disk member as by means of a spline 46. In the meantime the portion 28^a is held from rotation as by meansof the tongue 47 which engages the same in a usual manner as within an opening 48 thereof. When a rotation of the disk member through a suitable angle has been completed, the portions of the stem re-engage automatically through the force of a spring 48 which tends to press the member 28 inwardly as by abutment between the disk 27 on the one hand and the collar 49 provided upon said member 28 on the other. Said spring thus operates also to retain said disk member in its proper position, while the sleeve 35 serves to retain the portions of the stem in the necessary reliable relation to each other, said sleeve being retained in position as by means of the cover plate 50 and the oppositely located cam member acting through the stem 33.

To properly carry the keeper 19 within the jamb member, extensions 51 are provided at the ends of said jamb member, said extensions having guideways 52 to slidably receive the end portions of said keeper, plates 53 being secured to the jamb member to retain said carrier therein. To insure that said keeper will remain in open or closed position, means are provided engaging the same, as for instance the detents 54 arranged to seat in the recesses 55 of the keeper. Since a detent is provided at both the upper and lower ends of the jamb piece, a sure and reliable interlock and engagement is provided for said keeper. The detents are arranged to be spring pressed for automatic operation and are positioned preferably within the bores 51^a provided in said extensions for this purpose. Each bore has an enlarged portion to receive a flange 56 borne by said detent, and a spring 57 mounted about said detent and pressing against said flange to force the detent outwardly into co-operation with said keeper to retain the

same against unintended movement whether the lock is open or closed, except in the manner provided for in this invention by the operation of the bolt means.

I claim:

1. In a door lock, the combination with a door member and a jamb member, of a bolt projectable from one member into the other member, a keeper movable in the latter mentioned member for interlocking with the bolt when so projected, and a key member movable in the direction of the bolt to actuate the same and rotatable to actuate the keeper.

2. In a door lock, the combination with a door member, and a jamb member, of a bolt mounted in one of said members and projectable therefrom into the other member, a keeper movable in the latter mentioned member for interlocking with the bolt when so projected, a rotary member associated with said bolt member, said keeper being operative by said rotary member to cause the aforesaid interlocking action, and manual means to project said bolt and to cause the rotary member to actuate said keeper.

3. In a lock, the combination with a jamb member having a movable keeper, of a bolt having a plurality of locking members, and actuating means to operate one of said locking members angularly of the other member to move said keeper into engagement with the other bolt member.

4. In a lock, the combination with a jamb member having a movable keeper, of a bolt having a plurality of locking members projectable into said jamb member and into proximity to said keeper, one of said bolt members being movable for moving said keeper into position to interlock with the other bolt member after the bolt members have been wholly projected into the jamb member.

5. In a lock, the combination with a jamb member having a movable keeper, a casing and actuating means within the casing, of bolt means comprising a plurality of bolt members arranged to be projected simultaneously into said jamb member by said actuating means, one of said bolt members being rotatable and having engagement with said keeper to move the same and cause said keeper to engage the other bolt member.

6. In a lock, the combination with a jamb member, a casing, and actuating means therein, of bolt means operative by said actuating means and comprising a plurality of bolt members, one of which is rotatable and is provided with a tongue, said bolt means being engageable with said jamb member, and means carried by said jamb member and engageable with said tongue to render effective the engagement with the other member.

7. In a lock, the combination with a plurality of parts, of a bolt extending therebetween to lock the parts together, said bolt comprising a plurality of bolt members arranged for movement between said parts, one of said bolt members having a compound motion, and means operative by the same for rendering effective the interlock between said parts.

8. In a lock, the combination with a lock member and a jamb member, of bolt means projectable from said lock into said jamb member, said jamb member having a keeper movable therein, said bolt means comprising a member arranged for rotation so as to cause said keeper to move as aforesaid.

9. The combination as in claim 8 wherein a cross-head is provided to permit the last mentioned bolt member to be carried by said rotatable bolt member so as to be projectable outward thereby, said cross-head being journaled upon said rotatable bolt member.

10. In a lock, the combination with means arranged for reciprocation along the lock, of a rotatable spiral cam member, said means being arranged to engage said spiral cam member and to be reciprocated thereby when the same is rotated back and forth, means including a stem being provided to support said cam member, a sleeve being journaled upon said stem, said sleeve having means engaging the reciprocatory means to guide the movement thereof along the lock.

11. In a lock, the combination with a cylinder and means arranged for reciprocation along the lock, of actuating means for causing the reciprocation aforesaid, said means including a rotatable stem consisting of a plurality of engaging portions, one of said portions having direct co-operation with said cylinder, another of said portions having co-operation with said actuating means, said portions being normally in engagement with each other whereby a force operating said cylinder is transmitted to said actuating means, but said portions being disengageable to permit said actuating means to be operated independently of said cylinder.

12. The combination as in claim 11 wherein the portions of said stem are co-axial, a sleeve being provided to retain said portions in alinement.

13. In a lock, the combination with means arranged for reciprocation along the lock, and actuating means for causing the reciprocation aforesaid, of means including a stem co-operating with said actuating means and arranged to support the same, and a sleeve journaled upon said stem, said sleeve having means engaging the reciprocatory means to guide the movement thereof along the lock.

In testimony whereof I affix my signature.

MOSES B. DISKIN.