No. 666,489. Patented Jan. 22, 1901.

C. M. BURNS & F. T. MERCER.

LOCK.

(No Model.) (Application filed Mar. 20, 1900.)

2 Sheets—Sheet 1.

Fig. 1.

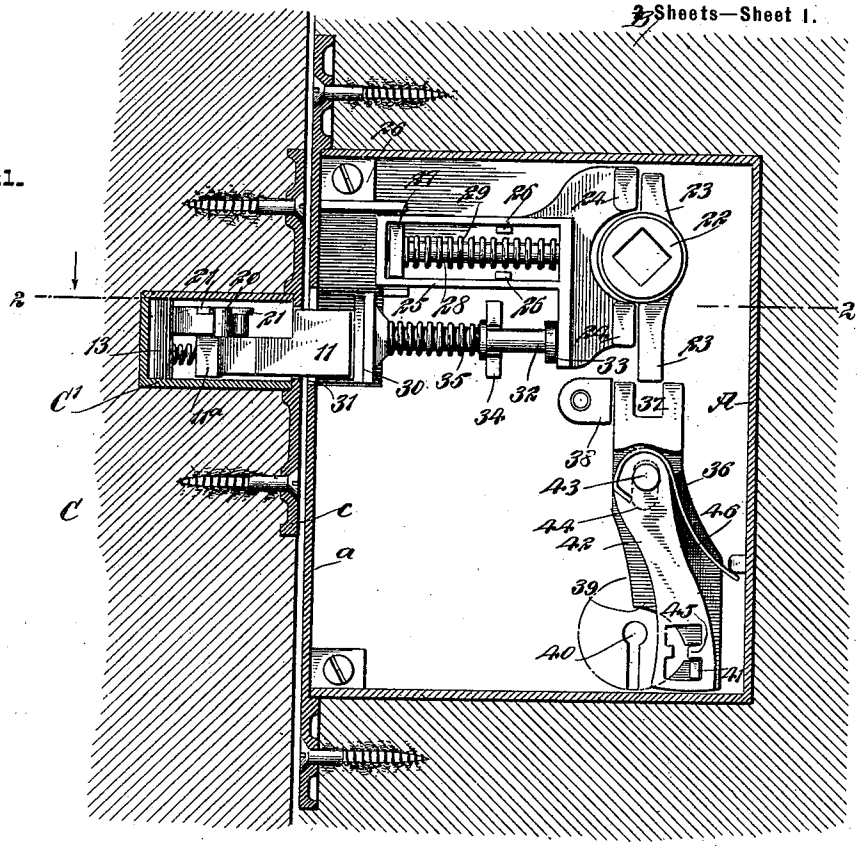

Fig. 2.

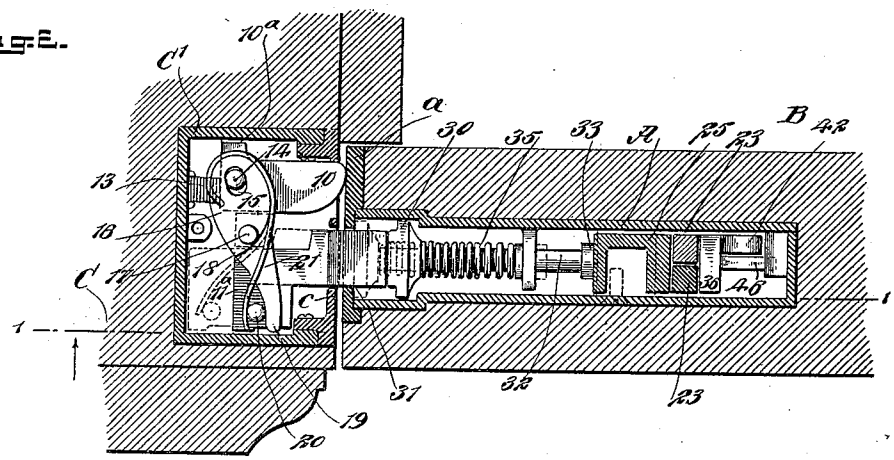

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Fig. 3

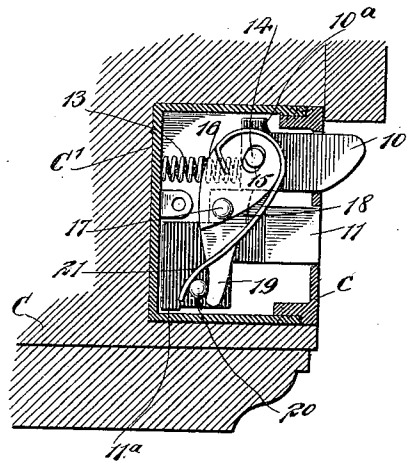
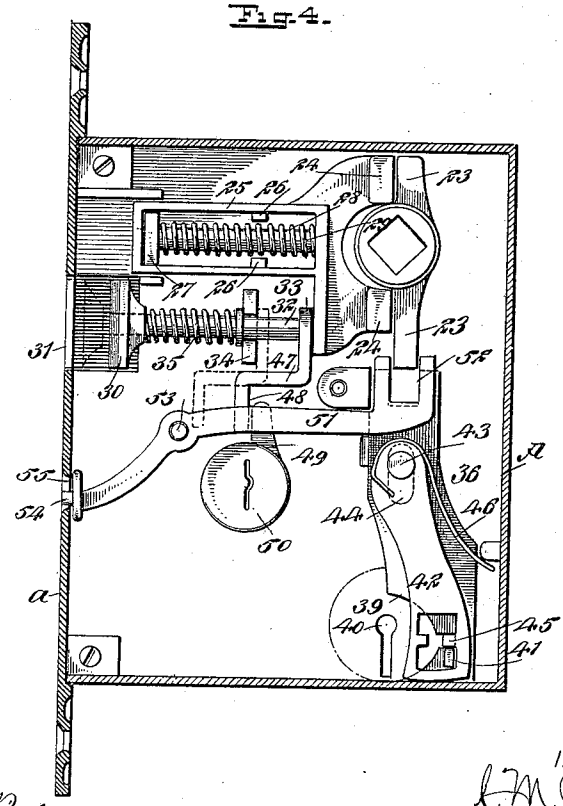


Fig. 4.



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CHARLES MARQUEDENT BURNS AND FREDERICK T. MERCER, OF PHILADELPHIA, PENNSYLVANIA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 666,489, dated January 22, 1901.

Application filed March 20, 1900. Serial No. 9,413. (No model.)

To all whom it may concern:

Be it known that we, CHARLES MARQUEDENT BURNS and FREDERICK T. MERCER, citizens of the United States, and residents of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Locks, of which the following is a full, clear, and exact description.

One purpose of the invention is to provide a simple and durable form of lock which may be operated by a knob or by a key, or by both, and which may also be provided with an extra key-operated latch adapted, when desired, to prevent the knobs from turning, while the door may be readily opened through the medium of a key.

Another purpose of the invention is to so locate the extra latch that it can be set or released only when the door is opened.

Another purpose of the invention is to so construct the lock that the bolt from the keeper-section of the lock will be automatically made to enter the body of the lock the moment the door is closed and so that a spring latch or bolt is not required in the body of the lock, enabling the face-plate of the body of the lock and the surface of the door receiving said plate to be perfectly smooth and without openings appearing when the door is opened, there being no projections from the face-plate of the body of the lock at any time.

Another purpose of the invention is to construct the lock in a durable and economic manner and so that it may be used as an outside or a mortise lock and also so that no opening will appear in the door-jamb or in the keeper carried by the jamb when the door is opened.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section through the improved lock and its keeper, the two parts being shown in locking engagement and the section being taken practically on the line 1 1 of Fig. 2. Fig. 2 is a horizontal section taken through the body of the lock and keeper practically on the line 2 2 of Fig. 1. Fig. 3 is a horizontal section through the keeper-section of the lock, the bolt being in its normal position—that is, within the keeper—and the latch extending out beyond the face-plate of the keeper; and Fig. 4 is a vertical section through the body of the lock, showing the night-latch attachment to the same.

A represents a body-casing which is usually mortised in a door B, the casing having the usual face-plate *a*, which appears at the free vertical edge of the door, and C′ represents a keeper-casing which is usually mortised in the jamb C of the door, and this casing for the keeper is likewise provided with a suitable face-plate *c*. The casing C′ for the keeper carries a latch 10 and a bolt 11, the bolt and latch corresponding to the bolt and latch usually employed in connection with the body portion of a lock. The latch 10 is adapted to slide out through a suitable opening in the face-plate of the casing of the keeper, as is also the bolt 11; but the bolt is forced outward through the inward movement of the latch 10; but the latch may move inwardly without it being absolutely necessary that the bolt shall move in an outward direction. The latch is provided with a suitable interior projection 10^a, which prevents it from passing entirely out through the opening in the face-plate *c*, and the bolt 11 is provided with a similar, but usually larger, extension 11^a, serving the same purpose and likewise serving an additional purpose to be hereinafter described. A spring 13 is suitably placed in the casing C′ of the keeper, and this spring tends to normally hold the beveled or inclined edge of the latch 10 beyond the outer surface of the face-plate *c*. A pin 14 is secured upon the upper face of the latch 10 at its inner portion, and this pin is passed through an elongated opening 15, made in a lever 16. This lever is fulcrumed by a suitable pin 17 at or near its center, the pin passing into a fixed support in the keeper. That portion of the lever 16 in which the pivot-pin 17 and the latch-pin 14 are located is larger than the remaining portion 19 and is of greater thickness, whereby a shoulder 18 is formed upon

the upper face of the lever, as shown in Figs. 2 and 3. This shoulder is inclined in direction of the rear of the keeper-casing and is more or less diagonally located on the lever. The smaller end of the lever 19 extends over the extension 11^a of the bolt 11 and engages with the forward face of a pin 20, secured in said extension 11^a, and a spring 21 is secured to the opposite end of the lever 16, and this spring is made to follow the marginal contour of the wider portion of the lever to the front edge of the same, where the spring is carried in front of the shoulder 18 and to an engagement with the rear of the pin 20, carried by the bolt 11. Thus it will be observed that when the latch 10 is forced inward it will so act upon the lever 16 as to cause said lever, through the spring 21, to immediately force the bolt 11 out from the keeper, provided said bolt meets with no outer obstruction; but should the bolt meet with such obstruction and the latch 10 is still pressed inward the smaller end of the lever 16 will move in an outward direction, placing the spring 21 under tension; but the bolt 11 will remain stationary, and the moment the obstruction is passed the spring 21 will act to force the bolt 11 outward from the keeper.

A sleeve 22 is mounted in the casing A of the body of the lock, which sleeve is of that type adapted to receive and to be turned by a knob-spindle, and the sleeve 22 is provided with oppositely-extending arms 23, which arms are arranged for engagement with the upper and lower portions 24 of the wide inner portion of a slide 25, the body of which slide is usually of skeleton formation; but the rear end portion of the slide extends usually above and below the corresponding sections of the body. The slide is guided in its movement, which is horizontal, by suitable guide pins or ribs 26, and a lug 27 is secured to the body A of the lock within the body of the slide, through which lug a rod 28 is loosely passed, the ends of the rod being secured in the ends of the body of the slide. A spring 29 is coiled around the rod 28 and tends to normally force the inner portion of the slide 25 against the arms of the spindle-sleeve 22.

In lieu of the ordinary bolt a plunger 30 is employed, held to travel in suitable guides and to extend into an opening 31, made in the face-plate *a;* but the plunger 30 at no time extends beyond the outer surface of the said face-plate. This plunger is held normally in the opening 31 in a manner to close said opening through the medium of a shank 32, which shank is provided with a head 33, engaging with the lower portion of the rear end of the slide 25, and the shank 32 has guided movement in a suitable slideway 34, while a spring 35, coiled around the shank and having engagement with the plunger and said slideway, serves to hold the plunger in its normal or outer position. (Shown in dotted lines in Fig. 4.)

In the operation of the lock above described, when the door is closed the latch 10 of the keeper, striking, for example, an extension at a side of the face-plate of the body of the lock, will be forced inward, and the tendency of the bolt 11 in the casing of the keeper will be to move outward. As soon as the opening 31 in the face-plate of the body of the lock is brought opposite the bolt 11 this bolt will enter the body-casing of the lock through the opening 31 and will force the plunger 30 rearward and within the casing A, as shown in positive lines in Fig. 1. The door will now be locked closed, and when it is desired to open said door this may be accomplished from either side by turning suitable knobs attached to the spindle employed in connection with the body and moving outward either arm 23 of the sleeve through which the spindle passes, thus forcing the slide 25 outward and causing the plunger 30 to carry the bolt 11 of the keeper within its casing, whereupon the door may be opened, and the opening 31 in the face-plate *a* will be immediately closed and will be kept closed by the plunger 30.

In the event it is desired to secure the lock so that the door cannot be opened by moving the knob-spindle, the device shown in Fig. 1, and likewise in Fig. 4, is employed. This device consists of a plate 36, having vertical movement in the casing A, in connection with a suitable guide 38, and in the upper end of the plate 36 a recess 37 is made, which in the upper position of the plate 36 receives the lowermost arm 23 from the spindle-sleeve 22. This locking-plate 36 is carried upward through the medium of a key passed into the casing A through a suitable keyhole 40, and the key is adapted for lifting engagement with a curved surface 39, formed in the longitudinal outer edge of the plate 36; but an auxiliary latch-plate 42 is provided in connection with the locking-plate 36, and this latch-plate is adapted to hold the plate 36 in either its upper or in its lower position. When the plate 36 is in its lower position, a projection 45 from a wall of an opening in the bottom of the latch-plate 42 engages with a stud or projection 41, carried by a side face of the locking-plate 36, as shown in Fig. 1; but when the locking-plate 36 is in its upper or locking position the projection 45 from the latch-plate will engage with the bottom portion of the stud 41 of the locking-plate. The locking-plate can be moved upward or lowered through the instrumentality of a key, since when the key is turned in the casing A the lower portion of the latch 42 is moved rearward, but is normally held in its forward or latching position by a spring 46. A slot 44, produced in the locking-plate 36 and which receives the pivot-pin 43 of the latch-plate 42, permits the locking-plate 36 to move upward or downward whenever the latch-plate is out of latching engagement with the same.

In Fig. 4 we have illustrated the addition of what may be termed a "night-latch" to the

body portion of the lock, and this addition consists in carrying an arm 47 downward from the head 33 of the stem of the plunger 30 and providing the arm with a downwardly-projecting member 48, adapted to be engaged by a projection 49, turned in the casing through the medium of a suitable latch-key, the arm 49 being connected with a revoluble disk 50, in which a keyhole is made. Thus when the arm 49 is turned in a suitable direction the plunger 30 may be forced outward and the door unlocked without disturbing the knob-spindle, as the arms 23 from the spindle-sleeve 22 may be locked at such time.

Independent of the locking device for the knob-spindle heretofore described a lever 51 is employed, provided with a bifurcated section 52, adapted to receive the lower arm 23 of the spindle-sleeve 22. This lever 51 is provided with a suitable fulcrum 53, and one end 54 of this lever extends out through a small slot 55, made in the face-plate *a* of the body-casing A, and by moving the outer end of the lever upward or downward the locking end of the lever may be freed from engagement with the said arm 23 or brought in locking engagement therewith. Thus it will be observed that after the lever 51 has been placed in locking engagement with the spindle-sleeve 22 the door cannot be opened by a key introduced through the lower or main keyhole 40, nor can it be opened by turning the knob-spindle, but must be opened by bringing the trip-arm 49 of the night-latch attachment into operation.

The parts may be so arranged that they may be operated from one side only of the door or from both sides of the door.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with a keeper provided with a spring-controlled latch and a bolt operated by the inward movement of the latch, of a lock-casing having an opening in its face-plate adapted to receive the bolt of the keeper, a tension-controlled plunger normally closing said opening in the face-plate of the lock-casing, a receiver for a knob-spindle, a slide operated by said receiver and operating on said plunger, and a locking mechanism for the receiver of the knob-spindle, as set forth.

2. The combination, with a keeper provided with a spring-controlled latch and a bolt operated by the inward movement of the latch, of a lock-casing having an opening in its face-plate adapted to receive the bolt of the keeper, a tension-controlled plunger normally closing said opening in the face-plate of the lock-casing, a receiver for a knob-spindle, a slide operated by said receiver and operating on said plunger, a locking mechanism for the receiver of the knob-spindle, an auxiliary locking-latch adapted for engagement with said receiver of the knob-spindle, which latch extends into the face-plate of the lock-casing, and a key-operated mechanism arranged to force the plunger in an outward direction and cause the bolt of the keeper, when within the lock-casing, to be forced outward therefrom, as set forth.

3. In a lock, a keeper, a bolt in the keeper, a latch also in the keeper, a pivoted lever with one end of which the latch is loosely connected, the other end of the lever being adapted to engage the bolt to retract it, and a spring carried by the lever and adapted to engage the bolt to throw it out, substantially as described.

4. In a lock, a keeper, a bolt in the keeper and provided with a lateral projection, a latch also in the keeper, a pivoted lever having one end loosely connected with the latch and its other end projecting on one side of the projection of the bolt, and a spring secured to the lever and having its free end extending on the side of the projection of the bolt opposite that of the lever, substantially as described.

5. In a lock, a keeper, a sliding bolt in the keeper and provided with a laterally-projecting pin, a latch also in the keeper, a pivoted lever having one end loosely connected with the latch and its other projecting on one side of the pin of the bolt, said lever being provided with an inclined shoulder on one face, and a plate-spring having one end secured to the end of the lever connected with the latch and having its free end projecting on the side of the pin of the bolt opposite that of the said lever, said spring being adapted to be engaged by the shoulder of the lever, substantially as described.

6. In a lock, the combination with a casing having an opening in its front plate, and a knob-spindle receiver, of a spring-pressed slide mounted in the casing and operated by the knob-spindle receiver and a sliding and spring-pressed plunger in the casing and with which the slide engages, the head of the plunger being adapted to enter the opening of the face-plate of the casing and close the same, substantially as described.

7. In a lock, the combination with a casing having an opening in its face-plate, a plunger for closing the opening of the face-plate of the casing, a knob-spindle receiver, and means for operating the plunger from the knob-spindle receiver, of means for engaging the knob-spindle receiver to lock the same and prevent the plunger from being operated thereby, substantially as described.

8. In a lock, the combination with a casing having an opening in its face-plate, a plunger for closing the opening of the casing, a knob-spindle receiver, means for operating the plunger from the knob-spindle receiver, and means for locking the knob-spindle receiver, of auxiliary means for operating the plunger when the knob-spindle receiver is locked, substantially as described.

9. In a lock, the combination with a casing having an opening in its face-plate, a spring-pressed plunger for closing the opening of the face-plate of the casing, a knob-spindle re-

ceiver, means for operating the plunger from the knob-spindle receiver, and means for locking the knob-spindle receiver, of an auxiliary means for operating the plunger, comprising an arm extending from the plunger-stem, and a projection mounted to turn in the casing so as to be brought into engagement with the said arm, substantially as described.

10. In a lock, the combination with a casing having an opening in its face-plate, and a plunger in the casing for closing the opening in the face-plate of the casing, of a knob-spindle sleeve provided with oppositely-extending arms, means for operating the plunger from the said sleeve, and a movable member having a bifurcated end adapted to receive one of the arms of the knob-spindle sleeve and lock the same, substantially as described.

11. In a lock, the combination with a casing having an opening in its face-plate, a plunger for closing said opening, a knob-spindle sleeve having oppositely-extending arms, and means for operating the plunger from the knob-spindle sleeve, of a sliding and key-operated plate having a bifurcated upper end adapted to receive one of the arms of the knob-spindle sleeve, and a spring-pressed latch-plate carried by the sliding plate and having engagement therewith at its lower end, substantially as described.

12. In a lock, the combination with a keeper provided with a spring-controlled latch, and a bolt operated by the inward movement of the latch, of a lock-casing having an opening in its front plate, a spring-pressed plunger normally closing the opening in the face-plate of the casing, and adapted to be forced inward by the bolt of the keeper, a knob-spindle receiver, and a spring-pressed slide operated by the knob-spindle receiver and engaging the inner end of the plunger to force it outward and cause it to carry the bolt of the keeper out of the lock-casing, substantially as described.

13. In a lock, the combination with a keeper provided with a spring-actuated latch, and a bolt operated by the inward movement of the latch, of a lock-casing having an opening in its front plate, a spring-pressed plunger normally closing the opening in the front plate of the casing and adapted to be forced inward by the bolt of the keeper, a knob-spindle receiver, a slide operated by the knob-spindle receiver and engaging the plunger to force it outward, a locking device for the knob-spindle receiver, and a key-operated means for operating the plunger when the knob-spindle receiver is locked, substantially as described.

14. In a lock, the combination with a keeper provided with a spring-actuated latch, a bolt, and connection between the bolt and latch, whereby the bolt will be forced outward by the inward movement of the latch, of a lock-casing having an opening in its front plate, a spring-pressed plunger in the casing and normally closing the opening in the casing, said plunger being adapted to be forced inward by the bolt of the keeper, a knob-spindle receiver, means for operating the plunger from the knob-spindle receiver, a locking device for the knob-spindle receiver, and auxiliary means for operating the plunger when the knob-spindle receiver is locked, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES MARQUEDENT BURNS.
FREDERICK T. MERCER.

Witnesses:
OSCAR R. MEYERS,
JOHN J. BURNS.