No. 769,768. PATENTED SEPT. 13, 1904.

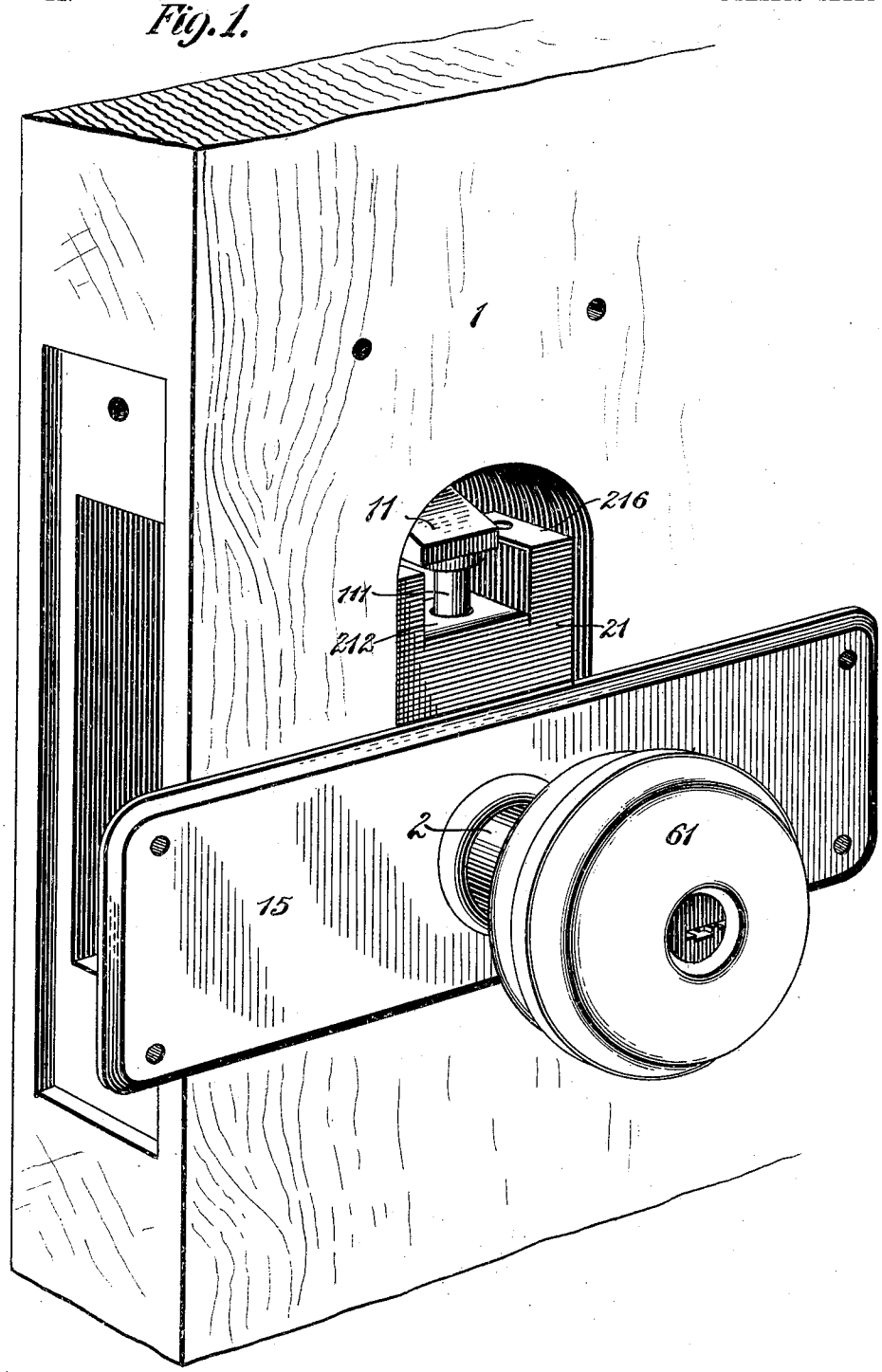
B. PHELPS.

LOCK.

APPLICATION FILED DEC. 4, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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No. 769,768. PATENTED SEPT. 13, 1904.

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APPLICATION FILED DEC. 4, 1903.

NO MODEL. 4 SHEETS—SHEET 2.

Fig. 6.

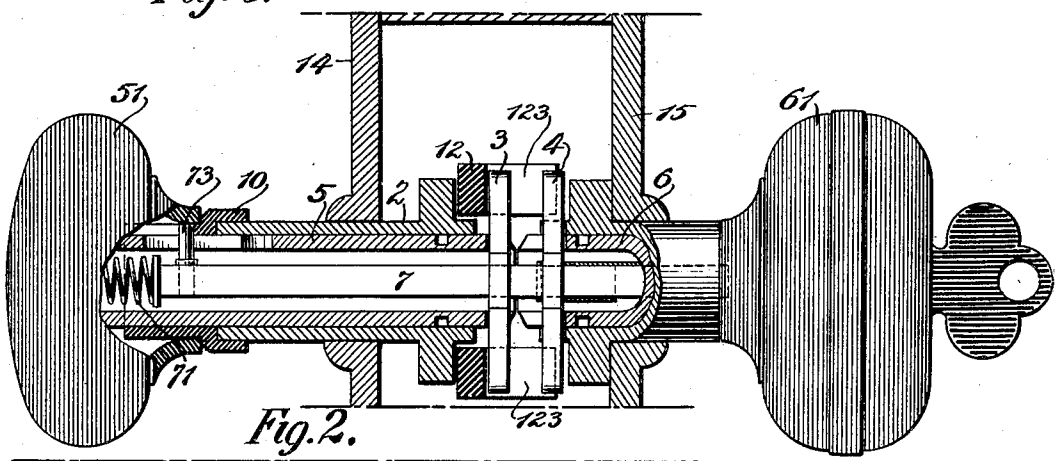


Fig. 2.

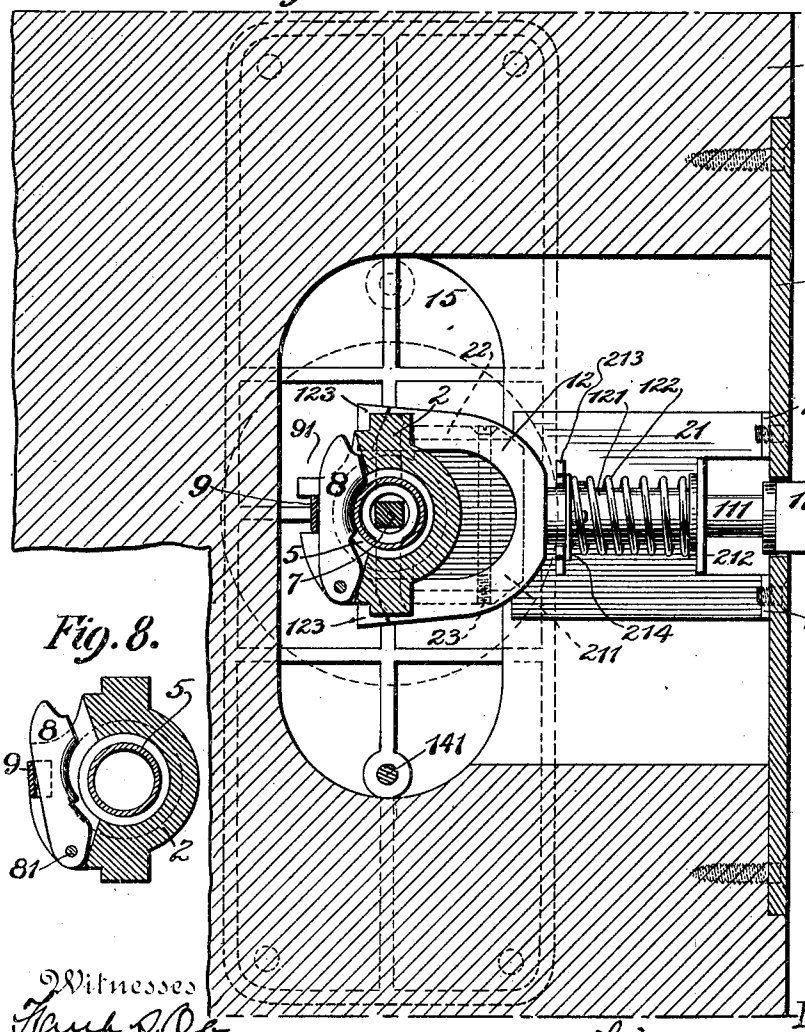


Fig. 7.

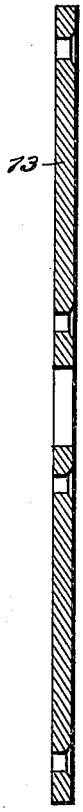


Fig. 8.

Witnesses

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NO MODEL. 4 SHEETS—SHEET 3.

Fig. 13.

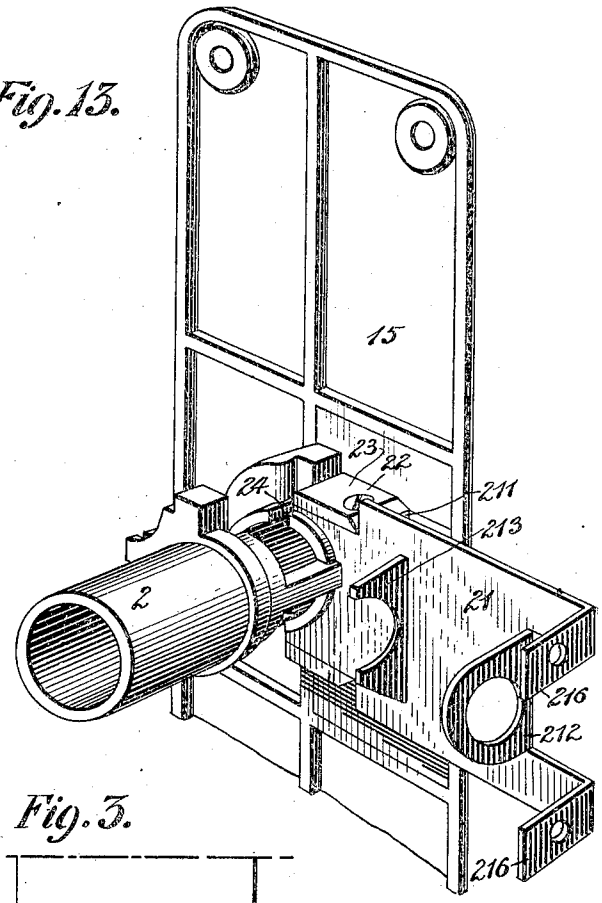


Fig. 11.

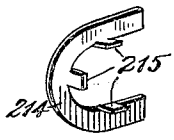


Fig. 12.

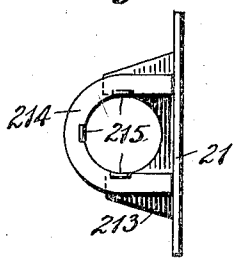
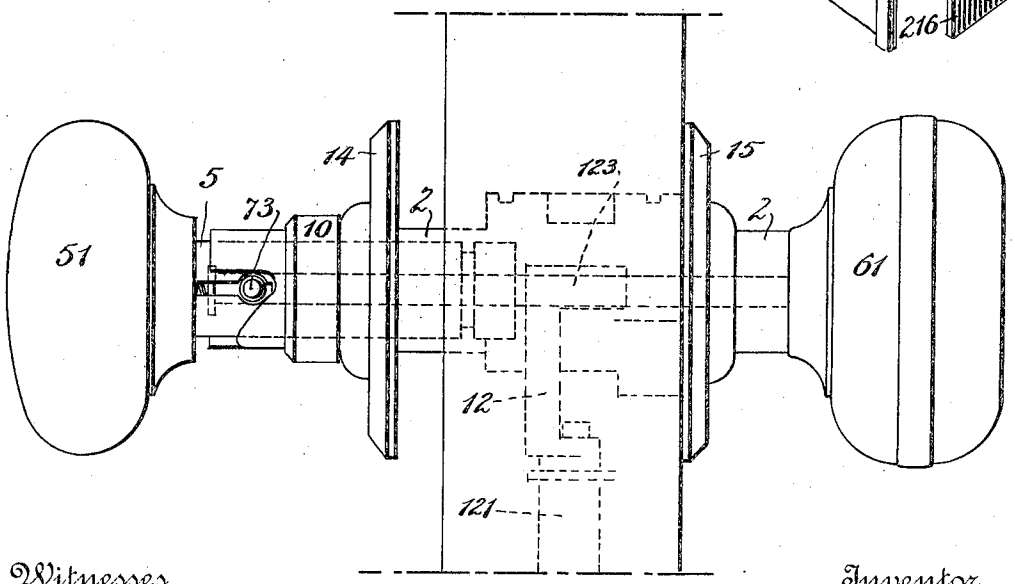


Fig. 3.



Witnesses

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LOCK.

APPLICATION FILED DEC. 4, 1903.

NO MODEL. 4 SHEETS—SHEET 4.

Fig. 4.

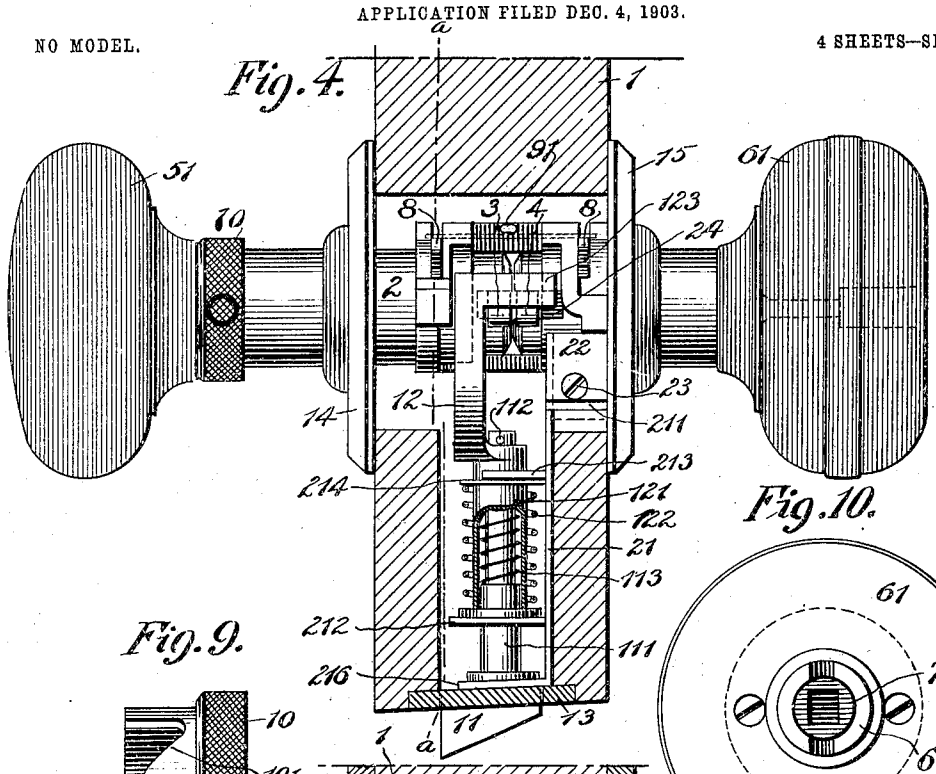


Fig. 10.

Fig. 9.

Fig. 5.

Witnesses

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By his Attorney

Remington

No. 769,768. Patented September 13, 1904.

UNITED STATES PATENT OFFICE.

BYRON PHELPS, OF SEATTLE, WASHINGTON.

LOCK.

SPECIFICATION forming part of Letters Patent No. 769,768, dated September 13, 1904.

Application filed December 4, 1903. Serial No. 183,818. (No model.)

To all whom it may concern:

Be it known that I, BYRON PHELPS, a citizen of the United States, residing at Seattle, King county, Washington, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

My invention relates to locks and latches, and particularly to one which combines the features of a unit and a mortise lock.

Those locks which are assembled preparatory to being applied to a door and in which the lock mechanism need not be taken apart in making said application and which obviate the necessity of forming a mortise in the door are now termed by the trade "unit-locks." The usual way of applying a unit-lock to a door is to saw a notch out of the stile thereof and set the lock in place bodily. A mortise-lock is not actually assembled until applied to a door. The lock mechanism is carried in a case which is introduced into a mortise formed in the edge of the door. Each type has its advantages. By my present invention I combine these advantages in one structure.

In the drawings, Figure 1 is a perspective view of a portion of a door, showing my lock partly in place and illustrating the method of cutting out the door to receive the lock. Fig. 2 is a vertical section of a door on the line *a a*, Fig. 4, showing my lock in place, a portion of the lock being also shown in section and other parts in elevation. Fig. 3 is a plan view of a portion of a door with my lock partially in place, those parts of the lock within the door being shown in dotted outline. Fig. 4 is a plan view of the lock as it appears finally in place, the door being shown in horizontal section. Fig. 5 is a vertical sectional view of a door fitted with my lock, the parts being shown in the position indicated in Fig. 4. Fig. 6 is a view similar to Fig. 5, excepting that the night-latch is applied to lock the outer knob against rotation. Fig. 7 is a vertical sectional view of the face-plate detached. Fig. 8 is a detail view partly in section. Fig. 9 is a side elevation of the night-latch-controlling device. Fig. 10 is an end elevation of the inside of the outer knob. Fig. 11 is a perspective view of a detail of construction. Fig. 12 is a detail view showing the part illustrated in Fig. 11 in place; and Fig. 13 is a perspective view of the frame of my lock, the various operating parts of the lock being detached therefrom. In this view a portion of an escutcheon-plate is shown as attached to the frame.

1 is a door in the edge of which is formed the usual mortise such as might be provided to receive an ordinary mortise-lock case. At the rear of this mortise and registering with the same is a vertically-elongated transverse opening extending through the door.

In applying my lock instead of introducing the same after the manner of introducing a mortise-lock, which is from the outside inwardly through the mortise, the lock-frame is introduced through the transverse opening with the bolt and the associated parts poised vertically. (See Fig. 1.) When the lock-frame is in the proper plane to register with the mortise, the same is rolled to the horizontal position. (Shown in Fig. 2.) In this position the forward extension supporting the latch bolt or head and the parts associated therewith stands in the mortise, while the main bearing or backbone of the lock stands within the transverse opening. This opening is finally covered by escutcheon-plates. Before introducing the lock one knob and one escutcheon-plate are removed; but the various parts of the lock mechanism proper are assembled ready for use.

One of the many advantages of locks of the "unit" type resides in the fact that the lock mechanism may be thoroughly tested before it is applied to a door. While in some respects my new lock possesses the ear-marks of a mortise-lock, nevertheless in the above respect it possesses the advantage of the unit construction.

2 is the tubular bearing which constitutes the backbone of the lock.

3 4 are roll-backs which are located in a recess formed in this bearing 2, which recess is sufficiently large to enable said roll-backs to be rocked. The roll-backs 3 4 are respec-

tively held in place by the knob-shanks 5 6, the ends of which shanks are notched to receive the same.

51 is the knob for the inside of a door.

61 is the knob for the outside of the door.

7 is a key-controlled spindle, one end of which projects into a squared opening in the hub 72 of a cylinder-lock carried by the outer knob 61.

71 is a spring preferably located within the knob 51 and pressing against the end of the spindle 7 adjacent thereto. The effect of this spring 71 is to cause the spindle 7 to normally move to the right as viewed in Fig. 5.

The knob-shanks 5 6 receive their support in the tubular frame 2, and since the support for each knob-shank is a long one said knobs are prevented from becoming loose or rattling. Furthermore, by having a long bearing for each knob-shank the perfect alinement of each knob-shank is insured and the free action of the knob made certain. Each of the knob-shanks is held in place by means of a spring-pressed latch 8, pivoted at 81 on the frame 2. The latch 8 plays in a slot in said frame and is pressed by a suitable spring 9. Each latch 8 may have a rounded bearing-face arranged to project into an annular groove in its respective knob-shank to prevent the unintentional removal or disengagement of the knob. The side of each latch 8 adjacent to the entrance for the knob-shank may be beveled, as best seen in Fig. 8, so that while it will normally project into the path of the end of the shank it may be pressed back when said shank encounters it. In Fig. 2 the latch 8 is shown in its normal operative position and holding the knob-shank 5 in place. In Fig. 8 the latch is retracted and freed from the knob-shank, as it would appear were it lifted manually against the action of the spring 9. One convenient means for providing a spring-pressure against the rear of both latches 8 8 may comprise a single spring-steel strip 9, held in place intermediate in its length by means of a cotter-pin 91. To remove either knob, it is merely necessary to lift the free end of its respective latch 8 until it is withdrawn from the annular groove in said knob-shank, whereupon the knob may be withdrawn.

The key-controlled spindle 7 passes through both of the roll-backs 3 and 4, and both of said roll-backs are rotatable independently thereof. The roll-back 4 is, however, suitably held on the spindle 7 against independent longitudinal movement for the purpose hereinafter described. The spindle 7 is locked against independent rotation relatively to knob-shank 5 by means of a removable pin 73 standing in a suitable hole in said spindle 7 and projecting outwardly through a longitudinal slot in said spindle 5. This pin projects outside of the knob-shank and into the path of a night-latch-controlling device 10.

101 is a cam-surface on said controlling device 10, against which the side of said pin 73 bears. By rotating the controlling device the pin 73 moves back and forth longitudinally of the knob-shank. (See Figs. 5 and 6.) In Fig. 5 the pin is represented as resting in a notch in the high part of the cam-surface 101, and the spindle 7 is moved to the left. When the controlling device 10 is rotated, the spindle 7 under the influence of spring 71 is shifted to the right and into the position indicated in Fig. 6. The purpose of providing means for shifting the spindle 7 is to cause the roll-back 4 to shift from the position shown in Fig. 5 to that shown in Fig. 6, or vice versa. In Fig. 4 said roll-back is shown in a position wherein the latch-bolt 11 may be retracted by the turning of either knob 51 or 61. When, however, the roll-back 4 is shifted to the position indicated in Fig. 6, the same enters a notch 24 in the stationary frame 2 and is locked against rotation. This locking of the roll-back 4 prevents the rotation of the outside knob 61, and hence prevents any one from opening the door from outside excepting by the use of a key adapted to fit the cylinder-lock in the outer knob. With such a key the spindle 7 may be rotated, which in turn will rotate the knob-shank 5 and roll-back 3 through the medium of pin 73. The rotation of the roll-back 3 will of course retract the latch-bolt.

The connections between the roll-backs 3 4 and the latch-bolt 11 comprise a latch-slide 12, which preferably makes a telescopic connection with the latch-bolt. The latch-slide 12 has hooked extensions 123 123, which project back of said roll-backs, so that when either of the latter are rocked the latch-slide will be retracted.

111 is a stem on the bolt 11. This stem passes through a tubular portion 121 of the latch-slide 12 and is prevented from withdrawal by means of a pin 112. A spring 113 is located within the tube 121 and presses against a shouldered abutment on the stem 111 at one end and at its other end against the inner end of the tube 121. This spring causes said telescopic parts to assume normally the position shown in Fig. 4. The latch-slide and the parts associated therewith are guided by a forward extension 21 on frame 2.

211 is an enlarged bearing on the extension 21, which may fit between shoulders 22 on the tubular frame 2 or escutcheon-plate 15, which latter is secured to the frame 2. A screw 23 may be employed to pass through said shoulders 22 and the bearing 211 to hold the said parts together.

212 is a bearing which may be turned up from the forward extension 21 and which may serve to guide the stem 111 of the bolt 11. This bearing may also take the thrust of the tubular portion 121 of the latch-slide which may be pressed toward said bearing by

means of a spring 122, one end of which takes up against an abutment 213 on the extension 21.

To prevent the end of the spring becoming jammed between the abutment 213 and the slide and to prevent the end of the spring from getting under said abutment, I have provided a retaining device in the form of a U-shaped device 214, having upturned spurs 215. This U-shaped retaining device is placed in the position (see Fig. 12) on the abutment 213, the end of the spring 122 being temporarily held forward up. When the retaining device 214 is in place, the end of the spring is allowed to move down, care being taken to have the spurs 215 project within the spring. It will now be seen that when the parts are thus assembled the spring holds the device 214 in place and the abutment 213, plus the retaining device 214, forms a round guide-passage for the tubular portion 121 of the slide 12, and the spring 122 is held against dislodgment.

The extreme ends 216 of the frame extension 21 may be upturned and provided with holes to receive screws by means of which the face-plate 13 may be held in place. The bolt 11 may project through the usual opening in the face-plate 13. The roll-back 4 while mounted so as to be independently rotatable of the key-controlled spindle 7 is nevertheless secured thereon (by any suitable means) against independent longitudinal movement—for example, by a blocking device on each side—so that the same may be shifted from the position indicated in Fig. 5 to that indicated in Fig. 6, and vice versa, for the reason above stated.

14 and 15 are escutcheon-plates. The plate 15 is preferably fixedly secured to the frame 2. The plate 14 is preferably slidable on the tubular portion of the frame 2 and may be adjusted to and fro to the thickness of the door to which the lock is to be applied. When this is done, the plates 14 and 15 may be secured together by means of screws 141 141. The escutcheon-plates may also be secured to the door 1 by means of ordinary wood-screws. (Not necessary to show.) Should it be desired to have more back-set to the knobs relatively to the edge of the door, this may be very easily accomplished by merely substituting a longer forward extension 21 and a latch-bolt having a longer stem 111. None of the other parts of the mechanism may be altered in any way. The spring 113 acts as an "easy" spring to permit the bolt 11 to recede independently of the latch-slide—for example, when the door is being closed. The spring 122 is usually heavier than the spring 113, since its function is to return the roll-backs, knobs, and latch-slide to their normal position.

To apply my lock to a door, the knob 51, controller 10, and escutcheon-plate 14 are removed. This removal is effected by manually retracting the latch 8, then withdrawing the knob 51 to the position indicated in Fig. 3, in which an enlarged part of the slot in the knob-shank lies over the pin 73. The pin 73, as shown, is provided with a flange or collar, (best seen in Fig. 6,) which supports said pin in the position shown. When, however, the parts are in the position indicated in Fig. 3, the pin 73 may be readily removed, whereupon the knob-shank 5 is free to be withdrawn entirely, after which the controlling device 10 and escutcheon-plate 14 may be removed. The lock may then be inserted through the transverse opening in the door and then rolled into the final position, whereupon said escutcheon-plate 14, controlling device 10, and knob 51 may be replaced. The face-plate 13 of course is applied finally. Either knob 51 or 61 may be inserted into its bearing in frame 2 without the necessity of manually operating either latch 8; but neither knob can be detached until said latch is moved to the position indicated in Fig. 8.

The fact that the latch-stem is not held positively against rotation in the tubular portion 121 of the latch-slide permits the bolt to accommodate itself exactly to the hole in the face-place through which it passes, and this obviates any undue binding which might tend to impede its free action. By arranging the latch-stem 111 so that it acts telescopically with the latch-slide 12 a straight-line motion is attained, also assisting in the free action of the parts. By forming the extension 21 of sheet metal economies in manufacture may be attained. When the parts are assembled, it will be observed that the wood of the door is well removed from all working parts of the lock, and hence there is no danger of cramping or binding of said parts due to any warping or swelling of the door. The escutcheon-plates 14 and 15 may be readily changed without in any manner modifying or changing the construction of the latch mechanism proper.

By this new method of fitting a lock to a door the mortise may be more readily formed than were the inner end of the mortise closed. The mortise necessary to receive my lock is obviously of less depth than that required for an ordinary mortise-lock. There is no necessity of sawing into or removing any substantial portion of the stile of the door; but the same preserves the appearance usual to a mortise-lock construction.

What I claim is—

1. In a lock, in combination, a main frame or backbone, knob-bearings therein, a rigid extension on said main frame, a latch and latch-operating mechanism supported by said extension and an escutcheon-plate rigidly connected to the frame spaced apart from said extension, and a separate movable escutcheon-plate.

2. In a lock in combination, a main frame, tubular bearings therein, a latch-carrying ex-

tension supported by said frame, latch-operating mechanism carried by said extension, a face-plate and means for detachably securing said face-plate to said extension and an escutcheon-plate spaced apart from said extension and separate from said face-plate.

3. In a lock in combination, a main frame, tubular bearings therein, a latch-carrying extension supported by said frame, said extension being detachable, latch-operating mechanism carried by said extension, a face-plate and means for securing said face-plate to said extension and an escutcheon-plate spaced apart from said extension and separate from said face-plate.

4. In a lock in combination, a main frame, tubular bearings therein, a latch-carrying extension supported by said frame, said extension being detachable, latch-operating mechanism carried by said extension said latch-operating mechanism including a detachable bolt or head, a face-plate and means for securing said face-plate to said extension and an escutcheon-plate spaced apart from said extension and separate from said face-plate.

5. In a lock in combination, a main frame, tubular bearings therein, a detachable rigid latch-carrying extension supported by said frame, latch mechanism carried by said extension said latch mechanism including a detachable bolt or head.

6. In a lock, a main frame including tubular bearings, an extension therefrom, latch mechanism comprising a latch bolt or head and a latch-slide said parts being telescopically connected, a spring for said latch-bolt and a spring for said slide, knobs, roll-backs and means connecting said slide with said roll-backs.

7. In a lock, a main frame including tubular bearings, an extension therefrom, latch mechanism comprising a latch bolt or head and a latch-slide said parts being telescopically connected, a spring for said latch-bolt and a spring for said slide, knobs, roll-backs and means connecting said slide with said roll-backs, said latch-bolt being rotatable in said telescopic bearing.

8. In a lock, a main frame, a knob-bearing, a tilting latch adjacent thereto and projecting into said bearing, a knob-shank, a groove therein arranged to receive the edge of the latch, and means for causing said latch to normally project into the groove.

9. In a lock, a main frame, a knob-bearing, a tilting latch adjacent thereto and projecting into said bearing, a knob-shank, a groove therein arranged to receive the edge of the latch, and means for causing said latch to normally project into the groove, one side of said latch being beveled to allow the free introduction of said knob-shank.

10. In a lock, a main frame, a knob-bearing, a tilting latch adjacent thereto and projecting into said bearing, a knob-shank, a groove therein arranged to receive the edge of the latch, and a spring for causing said latch to normally project into said groove.

11. In combination in a lock, a main frame or backbone, an extension therefrom, a latch and latch-operating parts supported and guided by said extension, all arranged and assembled to be introduced in a transverse opening in a door and turned or rolled to project said extension outwardly through a mortise in the edge of the door said mortise intersecting said transverse opening and an escutcheon-plate carried by said frame and spaced apart from said extension.

12. In combination in a lock, a main frame or backbone, an extension therefrom, a latch and latch-operating parts supported and guided by said extension, all arranged and assembled to be introduced in a transverse opening in a door and turned or rolled to project said extension outwardly through a mortise in the edge of the door said mortise intersecting said transverse opening, an escutcheon-plate carried by said frame and spaced apart from said extension, a face-plate and means for securing the same to said extension to cover the mortise.

13. In a lock, a main frame, tubular bearings formed therein, an escutcheon-plate mounted upon and secured to said frame, a second escutcheon-plate slidably mounted on another part of said frame and means for adjustably connecting said second plate with the first plate, latch-operating mechanism, a support therefor independent of said plates and extending laterally of said frame.

14. In a lock in combination, a knob, a shank extending therefrom, a bearing for said shank, a groove in said shank, a groove in said bearing registering with the groove in said shank, and a retaining device comprising a tilting latch and a spring arranged to yieldingly press said latch through the groove in said bearing and into the groove in said shank.

15. In combination, a knob, a shank extending therefrom, a bearing for said shank, a circumferential groove in said shank, a groove in said bearing registering with the groove in said shank, a pivotally-mounted latch one end of which is free, a spring pressing against said latch and projecting the same through the groove in said bearing and into the groove in said shank.

16. In a lock in combination, a main tubular frame or backbone, a lateral extension from the same, latch mechanism including a latch-bolt carried by said extension, an escutcheon-plate at one side of said frame surrounding said bearing and secured to said frame, the said parts, excepting said escutcheon-plate, being arranged and assembled to be inserted in a transverse opening near the edge of a door and to register with a mortise intersecting said transverse opening, said escutcheon-plate being secured to the frame at

such an angle relatively to the extension that when the parts are rolled to their final position the said escutcheon-plate will cover said transverse opening.

17. In a lock in combination, a main frame or backbone, knob-bearings at each end thereof, an extension from the side thereof, a latch bolt or head carried by said extension, means for operating said latch, an escutcheon-plate secured to said frame and surrounding one of said knob-bearings and arranged in a plane at right angles to said extension whereby the middle portion of the frame and the extension therefrom may be introduced through a vertical transverse opening in the side of a door and turned so as to project said extension outwardly through a mortise intersecting said transverse opening, whereupon said escutcheon-plate covers said transverse opening.

18. In a lock in combination, a main frame, a tubular knob-bearing at one end thereof, a latch-bolt, a support therefor comprising a rigid extension from said frame, said extension and said bolt being detachable whereby other similar parts of different length may be substituted to vary the setback of the knob-bearings.

19. In a lock in combination, a main frame, a tubular knob-bearing at each end thereof, a latch-bolt, a support therefor comprising a rigid extension from said frame, said extension and said bolt being detachable whereby other similar parts of different length may be substituted to vary the setback of the knob-bearings.

20. In a lock in combination, a main supporting-frame, knob-bearings therein, an extension therefrom, a latch-slide having a tubular extension, a latch bolt or head controlled thereby, a spring surrounding said tubular extension one end of said spring being held thereby and a retaining device for the other end of said spring comprising a **U**-shaped member, a flange on its inner edge, said flange being arranged to project into the coils of said spring, and a support on said extension for said **U**-shaped member.

21. In a lock in combination, a main frame or backbone, a recess therein, a roll-back in said recess and means for operating said roll-back, a latch-slide, a support therefor extending laterally from said frame, an abutment on said support, a coil-spring mounted on part of said latch-slide one end of said spring bearing against said latch-slide, the opposite end of said spring exerting a thrust toward said abutment, a retaining device comprising a curved member interposed between said abutment and the adjacent end of said spring, a portion of said **U**-shaped retaining member projecting within a coil of said spring.

22. In a lock, a latch bolt or head, a plurality of rotatable shanks, bolt-actuating means adapted to be operated thereby to move said bolt mechanism to lock one of said shanks against rotation but not the other said means being operative from the same side of the door as said unlocked shank, a key-controlled device for operating said latch bolt or head from the same side of said lock as said locked shank, said means comprising a spindle passing through said shanks and including a pin having an enlarged portion, said pin being removably mounted in said spindle and passing through a slot in said unlocked shank, a controlling device located adjacent to said pin and engaging the same, a portion of the slot in said shank being enlarged to form a passage for the enlarged part of said pin to permit the latter to be removed when said shank is partially withdrawn and means coöperating with said controlling device whereby said pin and thereby said spindle may be shifted longitudinally.

23. In combination in a lock, a main frame or backbone, an extension therefrom, a latch and latch-operating parts carried by said extension all arranged to be introduced into a transverse opening in the side of a door and turned or rolled to project said extensions outwardly through a mortise in the edge of the door said mortise intersecting said transverse opening.

24. In combination with a mechanism of the character described, a door, a mortise in the edge thereof, a transverse opening to the rear of the edge of the door intersecting said mortise said transverse opening extending through said door and being of sufficient size on one side of said mortise to permit of the insertion and removal of the latch and latch-carrying mechanism.

Signed at New York, N. Y., this 3d day of December, 1903.

BYRON PHELPS.

Witnesses:
R. C. MITCHELL,
L. VREELAND.