No. 626,341. Patented June 6, 1899.

B. PHELPS.

LOCK.

(Application filed Dec. 21, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 13.

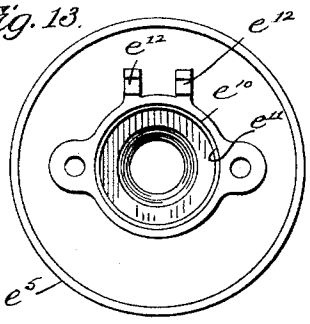
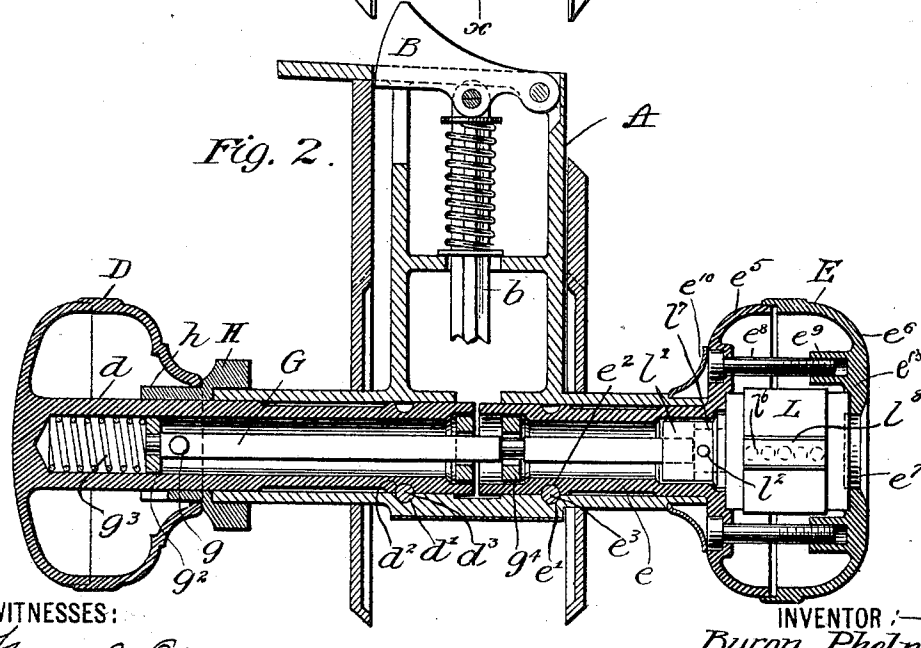


Fig. 1.

Fig. 11.

Fig. 2.



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INVENTOR:—

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BY

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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

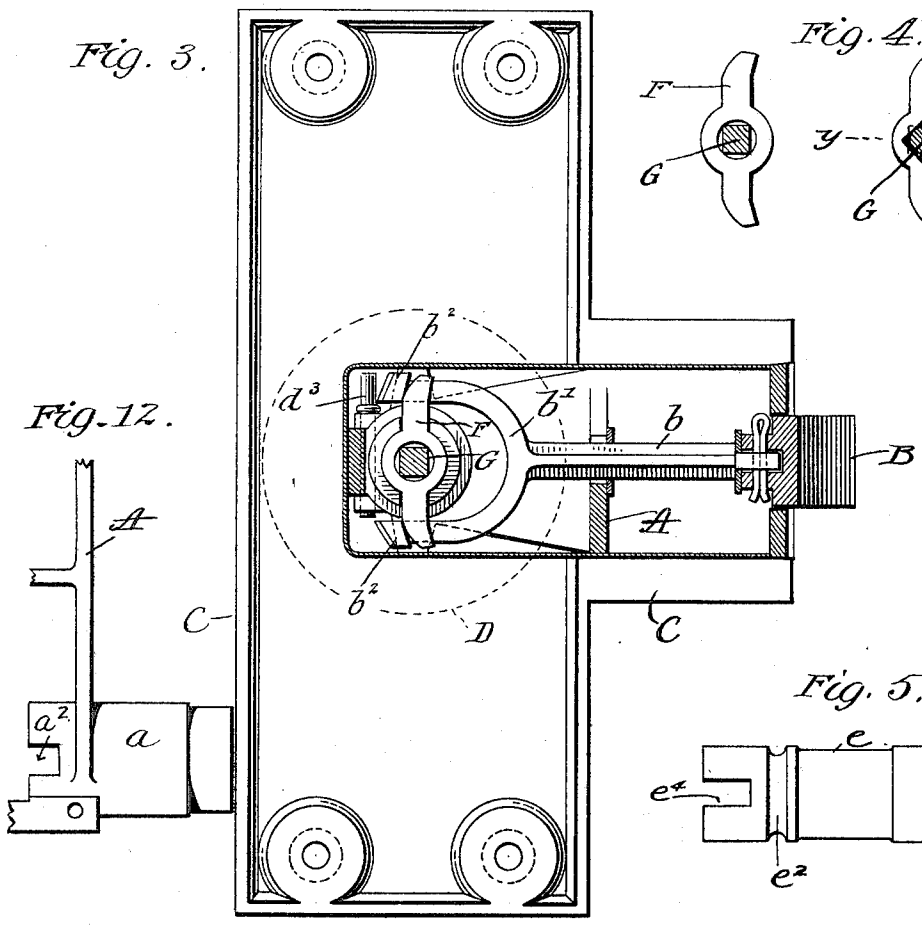


Fig. 4.

Fig. 12.

Fig. 5.

Fig. 8.

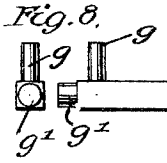


Fig. 7.

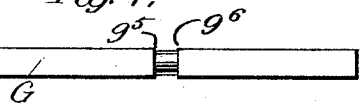


Fig. 9.

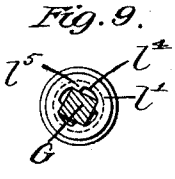


Fig. 10.

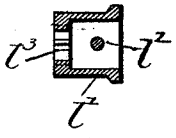
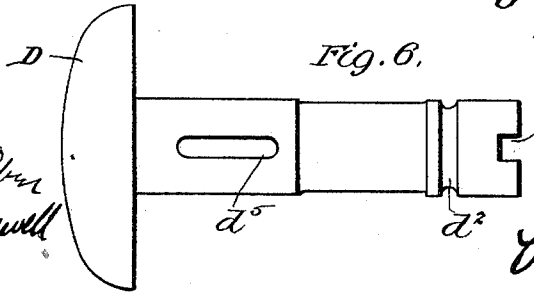


Fig. 6.



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UNITED STATES PATENT OFFICE.

BYRON PHELPS, OF SEATTLE, WASHINGTON, ASSIGNOR OF ONE-HALF TO THEODORE NELSON, OF CHICAGO, ILLINOIS.

LOCK.

SPECIFICATION forming part of Letters Patent No. 626,341, dated June 6, 1899.

Application filed December 21, 1898. Serial No. 699,891. (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 improvements in locks and locking-latch mechanism; and my object is to improve and simplify the construction of the same.

In the preferred embodiment of my invention shown in the drawings, Figure 1 shows a plan view, partly in section, of my improved door-lock. Fig. 2 shows a horizontal sectional view of the same, the parts being broken away. Fig. 3 shows a vertical section on the line X X of Fig. 1, the rod-spring having been removed, looking in the direction of the arrows. Fig. 4 shows the roll-backs in detail in their normal operative position with relation to the lock-rod. Figs. 5, 6, 7, 8, 9, 10, 11, 12, and 13 show details of other parts of the device.

In the preferred embodiment of my invention shown in the drawings, A represents a frame of the lock, having preferably integral transversely-extending spindle barrels or bearings a a', connected by an integral bridge a^3.

B is a latch-bolt operatively connected to the knob-spindles by a shoe b, having a yoke b' and lugs b^2 projecting therefrom.

C C are escutcheons or side plates, preferably separate from, but fitting over the spindle-bearings.

My lock as a whole is preferably designed to be introduced into a notch in the stile of the door, and some of the parts above described are broadly claimed in my former application, filed March 10, 1897, renewed December 5, 1898, Serial No. 698,371.

D is a knob preferably hollowed out and formed in two parts, as shown, and having a hollow spindle d, attached to the inside of the head of said knob. This knob and spindle are shown more in detail in Fig. 6.

d', Fig. 2, is a groove in the frame, forming an abutment for the retaining device, and d^2 is a seat, preferably a circumferential groove in the knob-spindle, adapted to register with the groove d', so that a retaining device, such as a pin d^3, may be inserted between the same and hold said knob and spindle in place. By "circumferential" I do not mean that the groove must extend necessarily entirely around the spindle. The end of said spindle is transversely slotted through both sides thereof, as shown at d^4, and said spindle is also provided with a longitudinal slot d^5 through one side thereof. A roll-back F, having a round hole and lateral projections, as shown in Fig. 4, is inclosed in the end of the hollow spindle, the projections passing through and being preferably at all times retained in said notch d^4.

G is a lock-rod, preferably of angular, in this embodiment of a square, cross-section, inclosed in the hollow spindle and extending through so as to be rotatable in the said roll-back F. This rod has a lug g and a projection g'. The projection g' is surrounded by a washer g^2, which loosely fits the inside of the hollow spindle, and g^3 is a spring pressing against the head of the knob and its washer to press the rod toward the right.

H is a finger-cam, preferably held between the knob and lateral spindle-bearing, extending transversely outside of said spindle and having a longitudinal extension h, which carries a cam-face h'. By the rotation of this finger-cam the cam-face will act upon the lug g and operate the lock-rod.

E is a second hollow knob, preferably formed of a base e^5 and a cap e^6. The base e^5 has a hollow spindle e, held in the spindle-bearing a by a pin-and-groove connection, as heretofore described in regard to the spindle d. These spindles d e are preferably not joined together; but it will be obvious that some of the functions of the mechanism herein disclosed could be performed if said spindles were so joined together. The spindle e is shown more in detail in Fig. 5 and has in the end thereof a transverse slot through both sides thereof, e^4. This slot may be deeper than the slot b^4 in the spindle d, for the purpose hereinafter set forth.

K is a second roll-back, having a square hole therein, as shown in Fig. 4, and projections to contact with the lugs b^2. This roll-back is held in the end of the hollow spindle,

as shown in Fig. 2, the projections passing through the slot e^4; but said roll-back is thinner than the depth of said slot and may therefore be moved longitudinally in the same.

a^2 is a slot through both sides of the inner extension of the spindle-bearing a, preferably just deep enough to contain the projections of the roll-back K. The spindle e when in its operative position extends inward, or to the left of the end of this spindle-bearing, as shown in Fig. 2; but the slot e^4 in the end of the spindle extends to the right into the end of the bearing a and is adapted to register, when in one position, with the slot a^2. The roll-back K can then be moved outward, or to the right, as shown in Figs. 1 and 2, and the projections thereof will enter the slots e^4 and a^2, which will result in locking the spindle e from rotation. This movement of the roll-back K is accomplished by the longitudinal movement of the rod G. This rod has a smaller and preferably rounded portion g^4, by cutting away which shoulders g^5 and g^6 are formed on the rod. The roll-back K is slipped onto the angular rod, the angular hole therein allowing it to just fit the angular outline of said rod; but when it reaches the part g^4 and the rod is then given a part of a turn, as shown in dotted lines in Fig. 4, the shoulders g^5 and g^6 on the rod, formed by cutting away the rod to form the rounded portion g^4, will not then register with the hole in the roll-back K and the roll-back will then be locked from longitudinal movement of said rod, and by the longitudinal movement of the rod said roll-back will be bodily moved in one direction or the other. As before stated, the rod is rotatable in the hole in the roll-back F. Therefore when the finger-cam H is rotated the rod will be moved in one direction or the other and will carry the roll-back K with it, but will not displace the roll-back F. The movement of this finger-cam will therefore serve to lock or unlock the knob E. The parts are shown in their locked position in Fig. 2, the finger-cam having been rotated so as to allow the spring g^3 to press the lock-rod to the right, carrying the roll-back K with it farther into the slot e^4 and also into the groove a^2 in the relatively stationary spindle-bearing a. Although the right-hand knob E is in this position locked, the left-hand knob D can still be rotated and throw back the latch, because although the roll-back K is fixed the rounded part g^4 allows the rotation of the rod G relative thereto and a very slight movement given thereto by the rotation of the knob D, sufficient to throw back the latch, will not bring said angular rod into the position to register with the angular hole in the roll-back K.

To unlock the mechanism from the knob E—that is, to rotate one of the roll-backs and throw back the latch when the parts are in the position shown in Fig. 2—I have provided a preferably pin-tumbler lock L, contained in the knob E. The pin-tumbler lock fits into a seat e^{11}, formed by a projection e^{10}, as shown in Fig. 13, and is fixed relatively to the knob by the lugs e^{12}, inclosing the tumbler-casing l^8 at the sides. The other end of the lock fits a seat e^{13}, as shown in Fig. 2, and is held in place by drawing the cap e^6 toward e^5 by the screws e^8. The lock has an inner relatively rotatable key-barrel l, locked by the pin-tumblers l^6, but releasable, as is common in that class of locks, by the insertion of a key. The projecting end of this barrel is shown in dotted lines at l^7. A cap l' (shown in detail in Figs. 9 and 10) is slipped over this projection l^7 and fixed thereto by a pin l^2, passing through both of the holes. This cap has a hole l^3 in the end, into which projects the end of the rod G. When the knob E is locked, as shown in Fig. 2, the rotation of the knob D, and consequently of the rod G, would not be possible, as the end of the rod projects into this cap, unless some play were allowed between the end of the same and the cap, because said cap is then fixed relatively to the knob E, which is then locked. To allow for this play, the angular end of the rod is fitted to a hole in the cap, as clearly shown in Fig. 9, and then the portions l^4 are cut away in said cap, so as to allow a slight rotary movement of this rod before the corners of the rod will come in contact with the shoulders l^5.

When the parts are locked, as shown in Fig. 2, by a key inserted into the key-barrel through the hole e^7 in the knob-cap, the key-barrel may rotate, although the knob E remains fixed, which will rotate the cap l', and as the barrel and cap are further rotated the shoulders l^5 will come in contact with the corners of the angular rod, and upon a still further rotation of the key-barrel the rod will be rotated, carrying with it the spindle d and the roll-back F, which will throw back the latch. The rod is thus connected with the roll-back F to operate the same, in the present embodiment not directly with it, but through the medium of spindle d. When the key-barrel and other parts are allowed to come back to their position, (shown in Fig. 2,) the key may then be withdrawn, and in this way a safe and yet convenient locking means is provided for the outside handle of a door.

Where screws or other attaching means are used in plain sight outside of the escutcheon-plates, the same may be tampered with or removed and the knob stolen or the locking or latch mechanism destroyed. It is therefore desirable to conceal or do away with such attaching means. As shown in Fig. 2, the knob E is formed of two parts, a base e^5 and a knob e^6, held together by screws e^8, passing through holes in the base and into the threaded portion e^9 in the cap. To cover up and conceal these screws, I have provided a rosette e^{10}, abutting against the base e^5 and a shoulder on the spindle-bearing. This completely conceals the screws and prevents any unlawful tampering with the same.

It will be obvious that many variations may be made in the construction herein disclosed

without departing from the spirit of my invention; and I do not, therefore, limit myself to this embodiment thereof.

What I claim is—

1. In a lock in combination latch mechanism embracing a latch bolt or head, a plurality of rotatable spindles, bolt-actuating means adapted to be operated thereby to move said bolt, mechanism to lock one of said spindles against rotation but not the other, operative from the same side of said lock as said unlocked spindle.

2. In a lock in combination latch mechanism, a plurality of rotatable spindles extending to said mechanism to operate the same one of said spindles being chambered, locking means extending into said chamber and adapted to hold the other of said spindles against rotation but not said first spindle, and a device adapted to be operated by the fingers extending outside of said chambered spindle transversely of the axis thereof and connected with said locking means to operate the same.

3. In a lock in combination latch mechanism, a plurality of rotatable spindles extending to said mechanism to operate the same. one of said spindles being chambered, locking means extending into said chamber and adapted to hold the other of said spindles against rotation but not said first spindle, and a device adapted to be operated by the fingers extending outside of said chambered spindle transversely of the axis thereof and connected with said locking means to operate the same, and key-operated means on the same side as said locked spindle connected with said latch mechanism to operate the same.

4. In a lock in combination latch mechanism, a plurality of rotatable spindles extending to said mechanism to operate the same, one of said spindles being chambered, locking means extending into said chamber and adapted to hold the other of said spindles against rotation but not said first spindle, and a device adapted to be operated by the fingers extending outside of said chambered spindle transversely of the axis thereof and connecting with said locking means to operate the same and key-operated means contained in a knob on said locked spindle having a part thereof fixed relatively to said knob so as to move therewith and a second part movable relatively to said first part and adapted to be operated by a key and connected with said latch mechanism to operate the same.

5. In a lock in combination latch mechanism embracing a latch bolt or head, a plurality of rotatable spindles, bolt-actuating means adapted to be operated thereby to move said bolt, mechanism to lock one of said spindles against rotation, means connected with both said lock and latch mechanism to operate either and adapted to be engaged by a key from the same side of said lock as said locked spindle to operate said latch mechanism.

6. In a lock in combination latch mechanism, spindles extending thereto, means connected to said spindles and extending outside thereof transversely of the axis of the same to operate said latch mechanism, each spindle normally engaging a part of said means, a device extending outside of said mechanism on the same side as one of said spindles adapted to move that part of said means which is engaged by the other spindle and thereby lock said other spindle.

7. In combination latch mechanism, a spindle extending from one side thereof, a second spindle extending from the opposite side thereof, a roll-back connected with said first spindle and normally adapted at all times to operate said mechanism, a device to lock said second spindle but not the one carrying said roll-back, and means, connected with said device to operate the same, extending outside of said latch mechanism on the same side as said unlocked spindle.

8. In combination, latch mechanism, a spindle extending from one side thereof, a second spindle extending from the opposite side thereof, a roll-back connected with said first spindle and adapted to operate said mechanism, a second roll-back connected with said second spindle, a device connected with said second roll-back to move the same and lock the second spindle but not the first, and means, connected with said device to operate the same, extending outside of said latch mechanism on the same side as said unlocked spindle.

9. In combination, latch mechanism, spindles extending from opposite sides thereof, and each adapted to operate said mechanism, a device to lock one of said spindles, an angular rod connected with both said device and other spindle and movable with said spindle and adapted to operate both of the same, key mechanism carried by said locked spindle embracing a relatively rotatable part adapted to actuate said rod to operate said latch mechanism, a slight amount of play being allowed between said rod and rotatable part.

10. In combination a knob, a shank attached thereto and extending therefrom, a bearing for said shank, a circumferential groove in said shank, a hole in said bearing registering with said groove, and a retaining device consisting of a removable pin inserted in said hole and groove to hold said shank in place.

11. In a lock in combination, a frame adapted to be inserted in the stile of a door and including a lateral spindle-bearing, an escutcheon-plate at one side of said frame and surrounding said bearing, a spindle inserted in said bearing and having a curved seat therein, a projection carried by said frame and adapted to coöperate with said curved seat to lock said spindle from retraction from said bearing.

12. In a lock in combination, a frame adapted to be inserted in the stile of a door and including a lateral spindle-bearing, an escutcheon-plate at one side of said frame, a spindle

inserted in said bearing and having a retaining device inside said escutcheon-plate comprising a curved seat on said spindle, a seat carried by said frame and adapted to coöperate with said curved seat to receive a pin to lock said spindle from retraction from said bearing.

13. In a lock in combination, a spindle, a transversely-divided hollowed knob, one of the divisions thereof having a spindle, means to attach said divisions together passing longitudinally outward through one of the same, and a rosette surrounding said spindle and covering said attaching means and apparently forming a continuation of the outside of said knob.

14. In a lock in combination, latch mechanism, a spindle extending laterally therefrom, means connected with said spindle and adapted to actuate said latch mechanism, a device to lock said spindle, a knob carried by said spindle and containing a lock fixed relatively thereto, so as to be movable therewith but having a movable part and a connection between said movable part and latch mechanism by the movement of which part said latch mechanism will be operated.

15. In a lock in combination latch mechanism embracing a latch bolt or head, bolt-actuating means connected therewith and adapted to operate the same, a chambered knob-spindle to retract said bolt connected with said means and carrying a hollowed knob, means to lock said spindle, means extending into said chambered spindle and movable to retract said bolt without disengaging said locking means, and key-operated mechanism contained in said hollowed knob, embracing a part fixed relatively to said knob so as to rotate therewith, and a relatively separate part, connected with said independent bolt-retracting means, and movable relatively to said first part and to said knob to retract said bolt, and a pin-tumbler to lock said two parts together.

16. In a hollowed knob in combination, a base and a cap, means to draw the same together, and a pin-tumbler lock contained in said knob and held therein fixed relatively thereto, by and between said base and cap.

17. In a hollowed knob in combination, a base and a cap, and means to draw the same together, a seat and a lug on one of said parts and a pin-tumbler lock contained in said knob and held therein in said seat and fixed relatively to said knob by engagement with said lug.

18. In a lock in combination latch mechanism, a spindle, a roll-back to actuate said mechanism, a rod within said spindle connected with said roll-back to operate the same said spindle having a knob, a pin-tumbler lock within said knob having a relatively rotatable key-barrel, a projection on the inner end of said key-barrel, a hollow cap carried by said projection and having a hole therein said rod having an angular portion projecting into and fitting said hole in said cap so that said rod and roll-back may be rotated by a rotation of said key-barrel.

19. In a lock in combination latch mechanism, a spindle, a roll-back to actuate said mechanism, a rod within said spindle connected with said roll-back to operate the same said spindle having a knob, a pin-tumbler lock within said knob having a relatively-rotatable key-barrel, a projection on the inner end of said key-barrel, a hollow cap carried by said projection and having a hole therein said rod having an angular portion projecting into and fitting said hole in said cap so that said rod and roll-back may be rotated by a rotation of said key-barrel, said connections between said roll-back and key-barrel allowing of a slight lost motion between the two.

20. In a device of the character described in combination a latch mechanism, a roll-back to actuate the same, a lock having a stationary part and a relatively rotatable key-barrel, and means between said key-barrel and roll-back normally connected with both and adapted to actuate said roll-back by a rotation of said key-barrel and allowing a slight rotation of said key-barrel before said roll-back is moved.

21. In a device of the character described in combination a latch mechanism, a roll-back to actuate the same, a lock having a stationary part and a relatively rotatable key-barrel, and means, between said key-barrel and roll-back and normally connected to both in a position to actuate the same, said means adapted to actuate said roll-back by rotation of said key-barrel.

22. In a lock in combination a latch-bolt, a pair of spindles, a roll-back to actuate said bolt connected with one of said spindles, said spindle being hollowed, means to lock said spindle, a second roll-back movable independently of said locked spindle to actuate said bolt and key actuated means contained in part within, and movable independently of, said locked spindle and connected with said second roll-back to move the same independently of said locked spindle.

23. In a lock in combination, a key-barrel having a projection, a cap carried by said key-barrel and fitting over said projection, said cap having a hole therein, and a rod passing through said hole and held therein, and a roll-back connected with said rod to be actuated thereby.

24. In a lock in combination, latch mechanism embracing a latch bolt or head, a plurality of rotatable spindles, one of said spindles being hollow, bolt-actuating means adapted to be operated thereby, mechanism embracing a rod movable longitudinally in said hollow spindle to lock the second spindle against rotation but not said hollow one and operative from the same side of said lock as said unlocked spindle.

25. In a lock in combination, latch mechanism embracing a latch bolt or head, a plurality of hollow rotatable spindles, bolt-actuating

means adapted to be operated thereby to move said bolt, mechanism to lock one of said spindles against rotation, means embracing a rod movable within said hollow spindles and connected with both said lock and latch mechanism to operate either and adapted to be engaged by a key from the same side of said lock as said locked spindle to operate said latch mechanism.

26. In a lock in combination, latch mechanism, spindles extending thereto, roll-backs connected with said spindles and extending outside thereof transversely of the axes of the same to operate said latch mechanism, each spindle normally engaging one of said roll-backs, a rod movable within one of said spindles having a projection therefrom passing laterally through an aperture in said spindle and a finger-piece to engage said projection and move said rod and the roll-back connected with the other spindle and thereby lock said other spindle.

27. In a lock in combination, latch mechanism, spindles extending thereto, roll-backs connected with said spindles and extending outside thereof transversely of the axes of the same to operate said latch mechanism, each spindle normally engaging one of said roll-backs, a rod movable within one of said spindles having a projection therefrom passing laterally through an aperture in said spindle and a finger-piece to engage said projection and move said rod and the roll-back connected with the other spindle and thereby lock said other spindle but not the spindle carrying said rod.

28. In a lock in combination, latch mechanism, a spindle carrying a roll-back to actuate the same, a second spindle carrying a knob, a lock in said knob having a stationary part and a relatively rotatable key-barrel and a rod between said key-barrel and roll-back and normally connected with both and adapted to actuate said roll-back to move said latch mechanism by a rotation of said key-barrel and allowing a slight rotation of said key-barrel before said roll-back is moved.

29. In a lock in combination, latch mechanism, a pair of hollow and independently-rotatable spindles, one of said spindles carrying a knob, a roll-back connected with said knob-spindle to actuate said latch mechanism, a lock in said knob having a stationary part and a relatively rotatable key-barrel and a rod extending into both of said hollow spindles, said rod being longitudinally and also rotatably movable in said knob-spindle, said rod connected with said roll-back so as to carry the same along with it and thereby lock said spindle when said rod is moved longitudinally, said rod being then rotatable independently of said roll-back, a second roll-back carried by the other spindle and connected with said rod so as to be rotated thereby and actuate said latch mechanism when said rod is rotated, said rod being movable longitudinally without removing said second roll-back from operative relation to said latch mechanism, and a finger-piece outside the spindle carrying said second roll-back and connected with said rod whereby the same may be moved longitudinally.

30. In a lock in combination, a latch-bolt, a pair of spindles, a roll-back to actuate said bolt connected with one of said spindles, said spindle being hollow, means to lock said spindle operative from the side of said lock which is opposite said locked spindle, a second roll-back movable independently of said locked spindle to actuate said bolt, and key-actuated means contained in part within, and movable independently of, said locked spindle and connected with said second roll-back to move the same independently of said locked spindle.

Signed at New York, N. Y., this 14th day of November, 1898.

BYRON PHELPS.

Witnesses:
EMERSON R. NEWELL,
L. VREELAND.