E. L. TEICH.

LOCK MECHANISM.

APPLICATION FILED SEPT. 26, 1914.

1,177,152.

Patented Mar. 28, 1916.

4 SHEETS—SHEET 1.

Fig 1

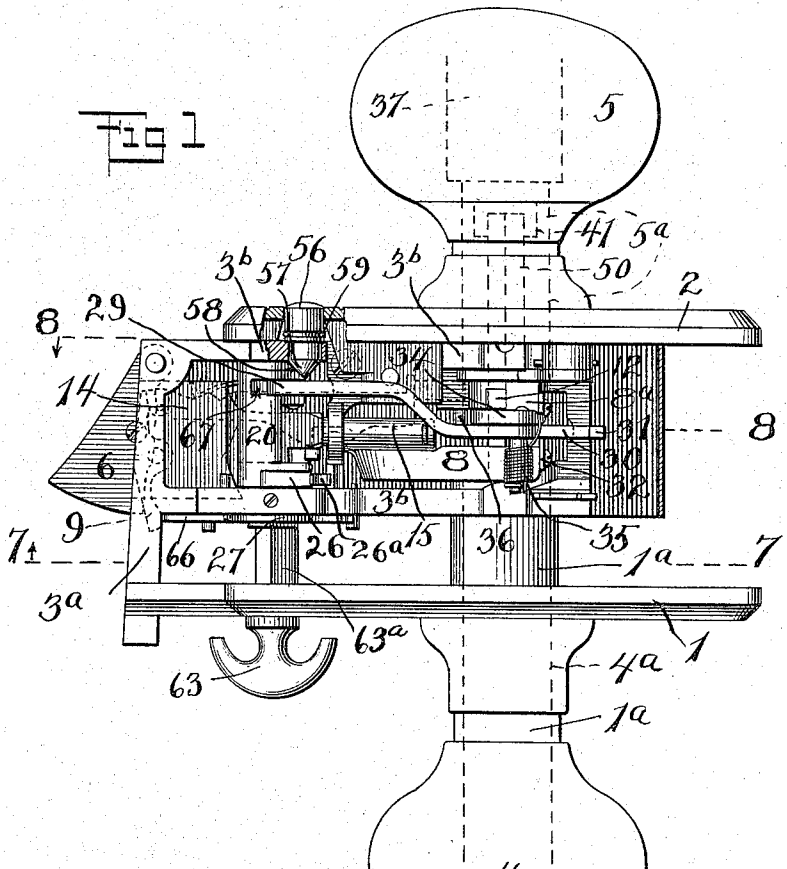
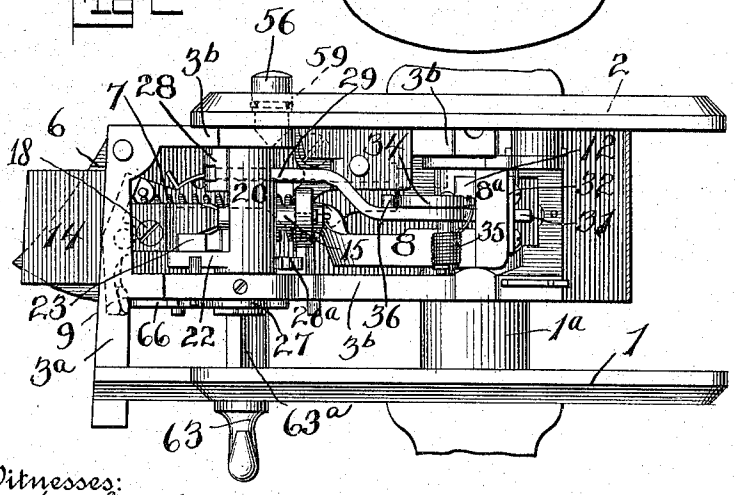


Fig 2



Witnesses:

C. J. Hachenburg

Henderson Hill

Inventor

Ernest L. Teich

By his Attorneys

Bartlett, Brownell & Mitchell

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

E. L. TEICH.

LOCK MECHANISM.

APPLICATION FILED SEPT. 26, 1914.

1,177,152.

Patented Mar. 28, 1916.

4 SHEETS—SHEET 2.

Fig 3

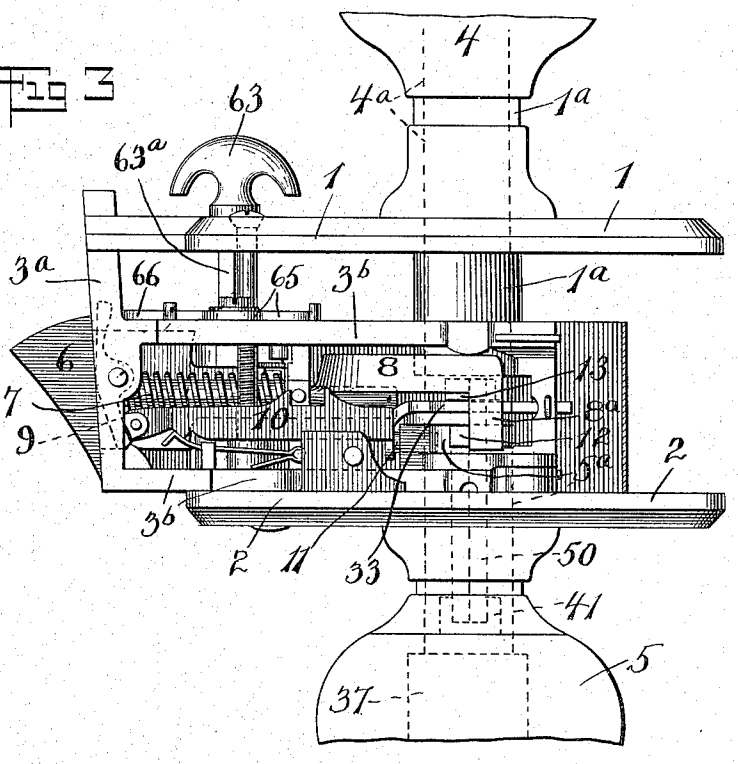
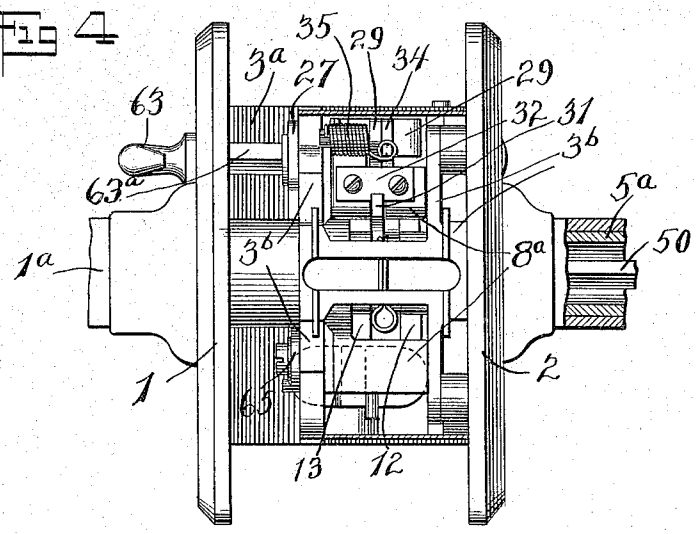


Fig 4



Witnesses:
C. J. Hachenberg
Henderson & Hill

Inventor
Ernest L. Teich
By his Attorneys
Bartlett, Brownell & Mitchell

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

E. L. TEICH.

LOCK MECHANISM.

APPLICATION FILED SEPT. 26, 1914.

1,177,152.

Patented Mar. 28, 1916.

4 SHEETS—SHEET 3.

Fig 5

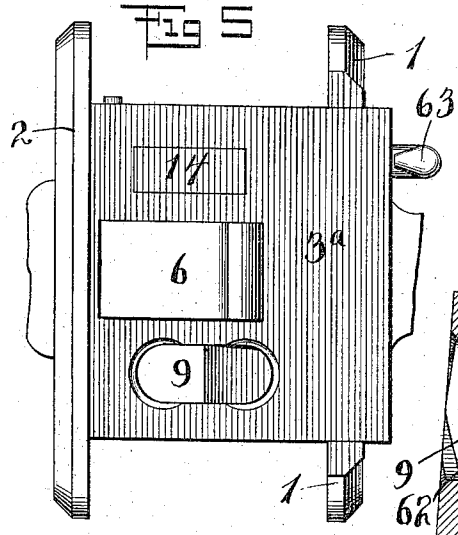


Fig 6

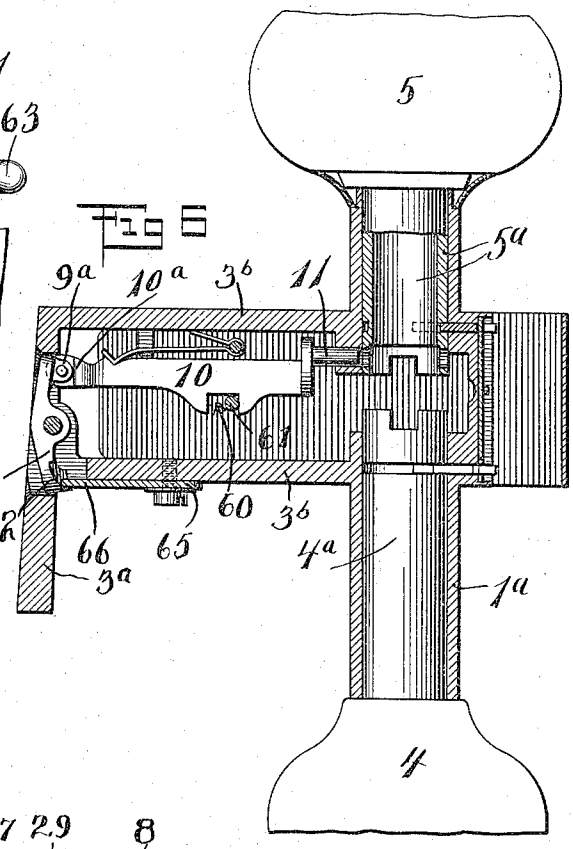


Fig 7

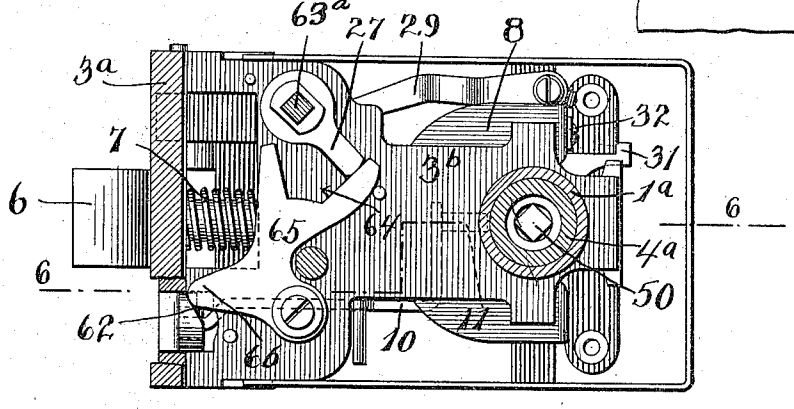
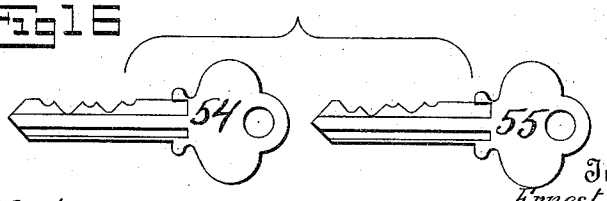


Fig 16



Witnesses:

C. J. Hachenberg

Henderson & Hill

Inventor

Ernest L. Teich

By his Attorneys

Bartlett Brownell & Mitchell

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

E. L. TEICH.

LOCK MECHANISM.

APPLICATION FILED SEPT. 26, 1914.

1,177,152.

Patented Mar. 28, 1916.

4 SHEETS—SHEET 4.

Fig 8

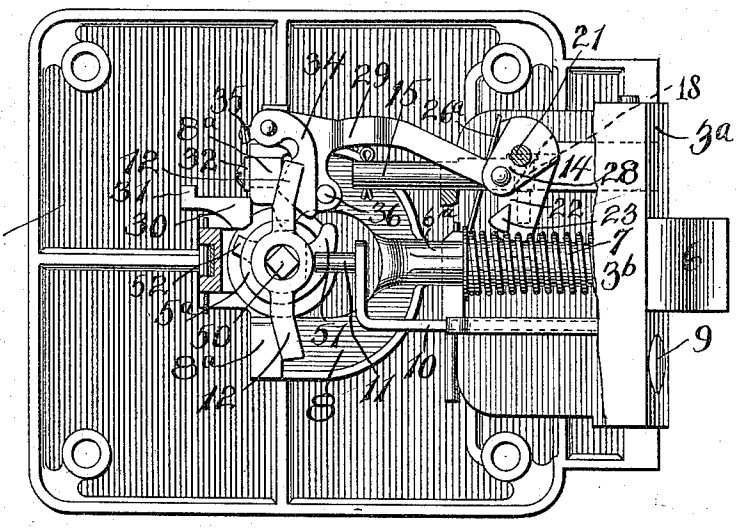


Fig 9

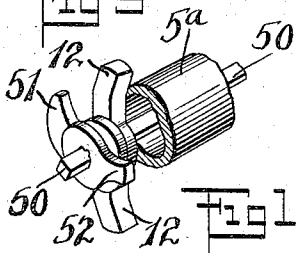


Fig 10

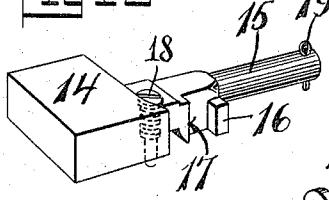


Fig 11

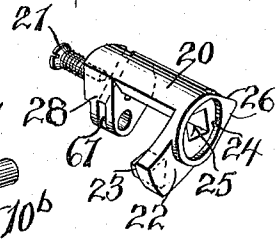


Fig 12

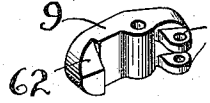


Fig 13

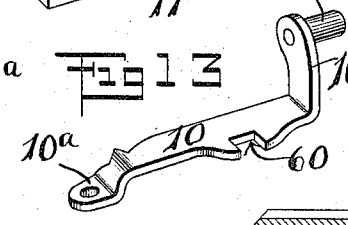


Fig 14

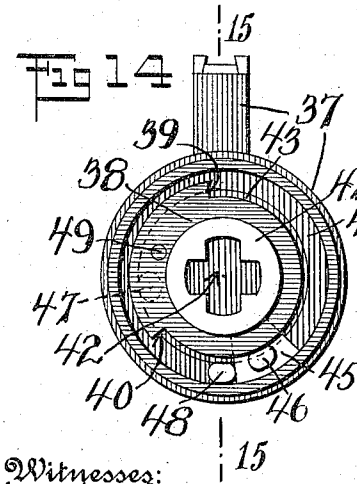
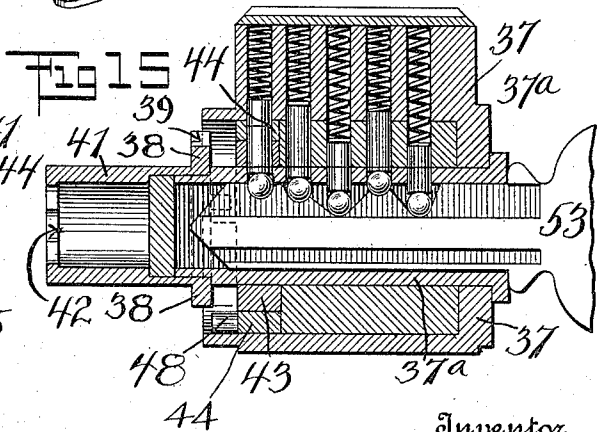


Fig 15



Witnesses:

C. J. Hachenburg.

Henderson & Hill

Inventor

Ernest L. Teich

By his Attorneys

Bartlett, Brownell & Mitchell

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ERNEST L. TEICH, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO AMERICAN HARDWARE CORPORATION, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LOCK MECHANISM.

1,177,152. Specification of Letters Patent. Patented Mar. 28, 1916.

Application filed September 26, 1914. Serial No. 863,637.

To all whom it may concern:

Be it known that I, ERNEST L. TEICH, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Lock Mechanism, of which the following is a full, clear, and exact description.

This invention relates to lock mechanism of the type employing a latch bolt operable from both sides of the lock by knobs, a stop work mechanism for controlling the outside knob and with a dead-bolt controlled from the inside of the lock by a thumb turn, or the like, and controlled from the outside of the lock by a plurality of differently constructed keys, including a key or keys operating to "shut out" the lock from the outside against opening through the other keys. Means are provided for controlling the stop work mechanism through the operation of the dead-bolt; for retracting the latch and dead-bolt from the inside of the lock by a single operation; and for providing against picking of the lock by means of a tool inserted through the jamb edge of the door. These and other advantages will be apparent from the following detailed specification, taken in connection with the accompanying drawings forming part thereof, and in which,—

Figure 1 is a top plan view of a lock mechanism of the "unit type," embodying the improvements of the present invention, the dead-bolt being shown in retracted position; Fig. 2 is a similar view with the dead-bolt projected; Fig. 3 is a reverse bottom plan view of the lock shown in Fig. 1; Fig. 4 is a rear end elevation of the lock mechanism shown in Fig. 1, the cover plate being broken away to disclose the interior; Fig. 5 is a front end elevation of the lock mechanism shown in Fig. 1; Fig. 6 is a transverse sectional view of the lock mechanism shown in Fig. 1, parts being removed and omitted to disclose the stop work mechanism; Fig. 7 is a vertical section taken on the line 7—7 of Fig. 1; Fig. 8 is a vertical section taken on the line 8—8 of Fig. 1; Figs. 9–13 inclusive show details of the lock mechanism; Fig. 14 is an end elevation of the cylinder lock mechanism; Fig. 15 is a vertical section therethrough on the line 15—15 of Fig. 14, and, Fig. 16 is a plan of keys of the second and third classes used in connection with said cylinder lock mechanism.

Referring to the drawings by numerals, 1 indicates the inside escutcheon plate, and 2 the outside escutcheon plate, between which the lock frame is held by suitable connecting screws, in the usual manner employed in unit locks. This lock frame embodies the face plate 3^a, which has extending transversely therefrom spaced frame plates 3^b, these plates having suitable interconnecting webs as shown. The frame plate 3^b, on the inside of the lock, carries an outwardly extending sleeve 1^a, for guiding the spindle 4^a of the inside knob 4, this sleeve extending through the inner escutcheon 1. The opposite frame plate 3^b carries a similar sleeve, which extends, in turn, through the outer escutcheon 2 for guiding the knob spindle 5^a of the outside knob 5.

A pivoted latch bolt 6 is carried by the face plate 3^a, and is pivotally attached thereto, the usual plunger 6^a guiding in a web of the lock frame. The bolt is normally projected through the coil spring 7 on said plunger operating between the frame web and the bolt head. The plunger 6^a terminates in a U-shaped yoke member 8, having laterally offset end portions 8^a positioned at opposite sides of the terminals of the knob spindles 4^a and 5^a. Below the latch bolt the face plate 3^a of the lock frame carries a pivoted or tilting stop work mechanism 9, in the form of a walking beam, one end of the beam having pivoted thereto the forward end of a link 10, the rear end of which is bent downwardly and carries a pin 11, arranged, in one position on the walking beam, to extend into a recess in the outer knob spindle 5^a, to lock said knob spindle against turning. This knob spindle, when not locked against turning by the pin 11, is arranged to retract the latch bolt, and to this end has its inner end notched to receive and rotate therewith a roll-back 12, the opposite arms of which are arranged to engage the offsets 8^a of the yoke, to retract the latch bolt when the knob is turned. (See Fig. 8.) At the opposite side of the locking frame the knob spindle 4^a terminates, and, in turn, is slotted to receive a

similar roll-back 13, which coöperates with the offsets 8ª at the side of the said offsets opposite the first roll-back 12. This roll-back is operable at all times, by the inside knob, to retract the latch bolt.

14 designates a dead-bolt arranged to be projected through the face plate 3ª of the lock frame, and having a shank 15 extending rearwardly in the lock frame, and suitably guided therein. Intermediate its ends, this shank has one side face cut away to provide a lug 16, which I term a retracting lug, and a shoulder 17 spaced therefrom, which I may term a projecting shoulder. The forward or projecting movement of this dead-bolt may be limited by suitable stop means, such as by a cotter and pin 19. This dead-bolt is moved to projected and retracted position through the following mechanism: At a point above the dead-bolt, a rock shaft 20 is journaled between the plates 3ᵇ of the lock frame, one end journaling on a pin 21 carried by the frame plate, and the other end journaling upon the hub of certain stop-work controlling mechanism operated through the said rock shaft, as will be later explained. At the end opposite the pin 21, the rock shaft 20 is provided with a cam arm 22, having on one face thereof a cam 23 constructed to extend between the lug 16 and the shoulder 17 of the shank of the dead-bolt, to engage these parts when the shaft 20 is rocked to retract and project the dead-bolt. This same end of the rock shaft is recessed to provide a socket 24, within which is a further and inwardly extending squared socket 25, the first-named socket journaling on the hub of a stop work controlling arm 27. This same end of the rock shaft is flattened on opposite sides as 26 (Fig. 11), and a leaf spring 26ª anchored in the frame engages these flat sides and tends to retain the shaft in bolt projected and retracted positions. At the end of the rock shaft opposite the cam arm 22, a bifurcated crank arm 28 is provided, extending from the shaft at an angle to the crank arm 22. The forward end of the pitman bar 29 is pivoted to this bifurcated crank, the bar extending rearwardly and upwardly, and terminating at a point above the upper offset 8ª of the latch bolt yoke,—(see Fig. 8). Adjacent this end of the pitman bar it is provided with a depending right angular arm 30, which extends beneath and beyond the under face of the upper offset 8ª, and terminates in an upwardly extending hook or abutment 31. This abutment is positioned in the plane of the offset 8ª, and is adapted to be engaged thereby in one position, and in one cycle of operation of the parts. A wear plate 32 is preferably attached to the rear end of this upper offset 8ª of the yoke. The under edge of the arm 30 is notched as at 33 (Fig. 3), to receive a roll-back controlled by a key from the outer side of the lock, as will be hereinafter explained.

Attached to the rear end of the pitman bar 29 and depending therefrom, is an angular dog 34, the lower end of this dog being positioned in line with the upper offset 8ª of the yoke. A coiled spring 35 is carried by the abutment bar and connected to the end of the dog 34, normally tending to move said dog forwardly and against a pin 36, carried by the lower arm 30 of the pitman bar. As this dog is pivoted to the pitman bar, it may be moved independently of the bar and against the yoke offset to move it in a direction to retract the latch bolt.

The outer knob 5 carries a cylinder lock mechanism (indicated in dotted lines in Fig. 1), the casing of this lock being designated by the numeral 37. This cylinder lock is of a pecular construction and is specifically described and claimed in my copending application, Serial No. 863,638, filed September 26, 1914. For the purpose of the present disclosure it is sufficient to state that this cylinder lock employs the usual rotatable plug element 37ª, and inner and outer concentric sleeves (Figs. 14 and 15). The end of the plug 37ª, in the direction of the lock mechanism, carries a sleeve 41 which has a socket 42 therein and which also has an offset shouldered member or disk 38, having its edge cut away to provide shoulders 39 and 40.

43 indicates the inner sleeve of the lock; 44 the outer sleeve, both sleeves terminating back of the disk 38 (shown in Figs. 14 and 15 of the drawings), there being a clearance space between these sleeve faces and the adjacent face of said disk. Seated against the end faces of the sleeves, and back of the disk 38, is a connector block 45 of a width equal substantially to the combined width of the sleeves, said block having therein a pin 46, which extends between the cut away edge of the disk and the casing of the cylinder lock, and in the line of movement of the shoulders 39 and 40 of the disk 38. The outer sleeve 44 carries a similar pin 48, likewise arranged to engage the connector block, these pins both clearing the inner face of the disk and clearing each other as the sleeves move relatively. The disk 38 carries on its adjacent face a pin 49, arranged to engage the pin 47 of the inner sleeve, when the disk is rotated.

50 designates a roll-back spindle seating in the socket 42 of the plug sleeve, and extending through the outer knob sleeve 5ª and through the outer roll-back 12, to a point between the roll-backs 12 and 13. This spindle will rotate when the plug is rotated, the manner of rotation of said plug being governed by the key used. On the inner end of this spindle, adjacent and in-

wardly of the roll-back 12, I mount a roll-back 51, which is positioned in line with the pivoted dog 34 of the pitman bar. Rotation of this roll-back 51 to the left (Fig. 8) will engage said dog and move it, independently of the pitman bar, to engage the upper offset 8[a] of the latch yoke to retract the latch. Adjacent and inwardly of this latch roll-back, the spindle 50 carries a dead-bolt roll-back 52, positioned in line with the notched edge 33 of the lower arm 30 of the pitman bar. The rotation of this roll-back 52, in opposite directions, moves the pitman bar to project and retract the dead-bolt. The amount of rotation and direction of rotation of these roll-back members is governed by the particular type of key used. A key of one class, such as 53 (Fig. 15) will be so bitted as to alone rotate the plug, with its disk 38 and sleeve 41. The direction of rotation is limited to substantially a half turn in counter-clockwise direction, or a half turn in a clockwise direction as seen in Fig. 14, the shoulder 39 of the disk engaging the pin 46 of the connector block and stopping the latch roll-back 51 at the end of substantially a half revolution. The outer sleeve 44 and also the inner sleeve 43 will not rotate, and consequently the pin 48 of the outer sleeve forms a rigid abutment, preventing movement of the connector block 45. Operation of the cylinder lock, through one class of keys, will, therefore, act to retract the latch bolt. This type of key would be used, of course, when the outer knob spindle is locked against rotation by reason of the stop work button 9, and its associated parts, as heretofore described.

A second and differently constructed class of keys is arranged to operate the pitman bar, to project and retract the dead-bolt as well as to project and retract the latch bolt. A key of this class will be so bitted to operate the pin tumblers of the cylinder lock, so that the sleeve 43 and the plug will rotate together. It will be seen, from Fig. 14 of the drawings, that this will permit the rotation of the parts for at least a full revolution to the left and back. As before stated, the roll-back 52 is in line with the notched edge 33 of the pitman bar. Consequently, if a key of the second class, such as 54, Fig. 16, is inserted from the outside of the door in the cylinder lock, the spindle 50 may be turned for a full revolution in opposite directions. Movement in a clockwise direction (Fig. 8) operates to move the pitman bar and rock shaft in a direction to project the dead-bolt. Movement of said roll-back subsequently and reversely, by the same key, will engage the notch 33, to move said parts in the opposite direction and retract the dead-bolt. The roll-back spindle 50, when rotated through keys of this second class, can obviously be rotated in a direction to operate the latch roll-back 51 to retract the latch so that keys of the second class operate both the dead-bolt and latch bolt. When the dead bolt is projected by a key of this second class, it cannot be retracted from the outside through a key of the first class operating to retract the latch bolt. This is prevented because the dog 34, in dead bolt projecting position of the pitman, is beyond the arc of movement of the roll-back 51. One of a third class of keys, such as 55, Fig. 16, is to be so bitted as to position the tumblers so that the plug, inner sleeve and outer sleeve may be rotated together. This will allow a key of said class to project and retract the dead-bolt and to retract the latch bolt under all conditions. It will also permit such a key to project the dead-bolt and "shut out" the lock, or, in other words, block the retraction of the dead-bolt through the operation of any of the other keys. It will be evident that in this operation a key of this third class will, to project the dead-bolt, turn the plug 37[a] and inner and outer sleeves 43 and 44 as a single body, moving the disk 38 a complete revolution to the left, in Fig. 14, returning the parts to the same position shown in Fig. 14. In this position of the plug and sleeves, and of the disk 38 and sleeve pins, the key of the third class may be withdrawn. The dead-bolt may not now be retracted by a key of the first or second class, inasmuch as this requires movement of the disk 38 for a full revolution to the right, in Fig. 14. A key of the second class will couple the plug 37[a] and inner sleeve 43 so that these two may rotate, but not the outer sleeve 44. Consequently, if it is attempted to rotate the plug and inner sleeve with the disk to the right, in Fig. 14, the shoulder 39 of the disk will be stopped by the pin 46 carried by the connector block 45, and sufficient movement in this direction to retract the bolt is prevented. Consequently the retracting movement of the dead-bolt is prevented by a key of the second class. A key of the first class may only rotate the plug and disk, as seen in Fig. 14, in a similar direction and for the same distance, movement to the left being prevented by the pin 49, carried by the disk, engaging with the stationary pin 47, carried by the inner plug. From this it will be seen that a key of the third class operates as a "shut out" key and prevents retraction of the dead bolt from the outside by any other key.

The operation of the rock shaft 20 may be utilized to operate an indicator member to indicate to the person outside of the door, such as a maid in the case of a hotel, that the door is locked against opening from the outside through the knob or through a key

of the first class. In the drawings I have shown an indicator button 56 of the "push button" type, the inner end of this button being conical, as at 57, and coöperating with the cam face 58 formed on the rock shaft 20, so that when the rock shaft is oscillated to project the dead-bolt said cam surface 58 will press against the beveled end 57 of the button and force it outwardly to telltale position. This button is normally forced inwardly to a position substantially flush with the outer face of the escutcheon 2 by suitable means, such as a spring 59.

Referring to the specific construction of the stop work mechanism, it will be seen that the link 10 at its forward end is bent as at 10^a, and journaled between lugs 9^a at the rear face of the walking beam or button 9. Its opposite end is bent at right angles, as at 10^b, and carries a pin 11 extending in a plane substantially parallel with the body of the link 10 and through apertures formed in the frame plate and in the sleeve of the outer knob, as best seen in Fig. 6 of the drawings. When this pin 11 extends through these apertures a sufficient distance to couple the knob sleeve to the frame, it will be evident that the knob cannot turn to retract the latch bolt through its roll-back 12. One edge of the link is notched, and a leaf spring secured to the frame plate engages in these notches in the two different positions of the link to retain the link in the position in which it is last moved. In its opposite edge is formed the notch 60 within which extends a stop pin 61 carried by the lock frame and serving to limit the movements of the link. The walking beam 9 on its inner face, at the end opposite the lugs 9^a, is formed with a bevel or cam face 62, with which certain stop work controlling mechanism coöperates. This mechanism is necessary to dog the walking beam 9 against being shifted back to a position where the outer knob will be undogged. This could be accomplished, if such a mechanism were not provided, by means of a tool inserted through the jamb of the door and turned to engage one end of the walking beam and move it inwardly. One such tool, for instance, is the familiar button hook of the sneak thief. It is necessary to prevent such an action because if the outer knob is undogged it may be turned to retract the latch bolt. Even if the dead-bolt is projected, this retraction of the latch bolt will serve to retract the dead-bolt also, inasmuch as the upper offset 8^a of the yoke 8 will engage the hook or abutment 31 of the pitman bar, moving said bar rearwardly and oscillating the rock shaft 20 to retract the dead-bolt. This abutment 31 is provided, in order that the dead-bolt and latch bolt may be retracted substantially simultaneously from the inner side of the lock, and by simply turning the interior knob to retract the latch bolt, as will be evident. Some preventative means is therefore necessary in order to prevent the picking of the stock work, as heretofore described, so that the outer knob may not be turned to likewise retract both the latch and dead-bolts. This stop work controlling mechanism is best shown in Fig. 7 of the drawings and includes the controlling arm 27 on the hub of which the rock shaft 20 is journaled. The hub of this arm is hollow and the square shank 63^a of the inside thumb turn 63 extends therethrough and is coupled to the rock shaft, so that the latter is oscillated when the thumb turn is turned on the inside, and so that the controlling arm 27 is likewise turned when this rock shaft is turned. The arm 27 performs the functions of a roll-back in that it operates in a notch 64 in the upper end of the blocking arm 65, pivotally mounted at its lower end on the frame plate of the lock case, and having a lateral extension 66 positioned to engage the bevel or cam face 62 of the walking beam 9. When the controlling arm is moved by the dead-bolt projecting oscillation of the rock shaft, it will engage the blocking arm 65 at the forward edge of the notch 64 and will move the extension 66 downwardly, forcing it against the beveled edge 62 of the walking beam, and forcing that end of the walking beam outwardly from the position shown in Figs. 6 and 7, so that the link 10 is moved rearwardly to move the pin 11 into dogging engagement with the aperture in the sleeve of the outer knob. As long as the dead-bolt is projected, therefore, the end of the offset arm 66 will be positioned immediately in the rear of the projected end of the walking beam, so that while the dead-bolt is projected the stop work may not be picked by means of a tool forced against this end of its walking beam 9. When the dead-bolt is retracted the arm 27 will engage the upper end of the arm 65 at the rear end of the notch 64 and will swing this arm 65 to move its offset 66 away from the lower edge of the walking beam 9 and up to position shown in Fig. 7.

I have heretofore stated that both the latch bolt and dead-bolt may be retracted through the single operation of turning the inside knob. Under these conditions it will be evident that it would be possible to force the latch bolt from the outside to effect this function and to unlock the door, unless some means is provided to dog or dead-lock the latch bolt against retraction. To this end the dead-bolt itself is blocked against being forced inwardly from the jamb edge of the door, because, in projected position, its shoulder 17 is engaged by cam 23 on a dead center with the rock shaft 20, this providing a dead center lock against inward movement

of the bolt independently of the rock shaft, as by forcing in the manner described. The dead-bolt carries adjacent its head a blocking pin 18 which extends below the plane of the bolt head and into the plane of the head of the latch bolt 6. When the dead-bolt is projected, this pin 18 will be positioned immediately in rear of the head of the latch bolt. As the dead bolt may not be retracted by movement independently of the rock shaft (except through the inside knob as heretofore described), this pin 18 forms a rigid abutment which will prevent the latch bolt from being retracted from the jamb edge by a tool to thereby retract the dead-bolt also. It will, of course, be understood that with the dead-bolt projected and with the pin 18 in latch bolt blocking position, both the bolts may be retracted by the inside knob because the pin 18 is spaced slightly from the rear of the latch bolt head, and this enables the inside roll-back 13 to move the upper offset 8^a of the yoke against the hook 31 of the pitman bar to oscillate the rock shaft 20 and retract the dead bolt. This action on the rock shaft is the same as when the roll back 52 operates on the notched edge 32 of the pitman bar.

I have herein shown and described a specific embodiment of my invention, but desire it to be understood that the same is susceptible of variation in structure and arrangement of the parts within the spirit of the invention and the scope of the appended claims. Such parts of my invention as are shown herein but not specifically claimed, are specifically described and claimed in my copending applications Serial Nos. 863,638 and 856,896 filed, respectively, September 26, 1914, and August 15, 1914.

What I claim and desire to secure by Letters Patent is,—

1. In a lock, a latch bolt, means controlled by an outside knob for retracting said latch bolt, means controlled by an inside knob for independently retracting said latch bolt, stop work mechanism for dogging said outside knob controlled means against latch retracting movement, a dead-bolt, manually operable means controlled from the inside of the lock for projecting and retracting said dead-bolt, means controlled by a key from the outside of the lock for retracting said latch bolt independently of said outside knob, and means controlled by another and different key from the outside of the lock for projecting and retracting said dead-bolt and for retracting said latch bolt.

2. In a lock, a latch bolt, means controlled by an outside knob for retracting said latch bolt, means controlled by an inside knob for independently retracting said latch bolt, stop work mechanism for dogging said outside knob controlled means against latch retracting movement, a dead-bolt, manually operable means controlled from the inside of the lock for projecting and retracting said dead-bolt, means controlled by a key from the outside of the lock for retracting said latch bolt independently of said outside knob, means controlled by a plurality of other and different keys from the outside of the lock for projecting and retracting said dead-bolt and for retracting said latch bolt, one certain of said keys being arranged to project said dead-bolt and to block its subsequent retraction from the outside of the lock through the other of said plurality of keys.

3. In a lock, a latch bolt, means controlled by an outside knob for retracting said latch bolt, means controlled by an inside knob for independently retracting said latch bolt, stop work mechanism for blocking said outer knob controlled means from latch retracting movement, means controlled by a key from the outside of the lock for retracting said latch bolt independently of said outside knob, a dead-bolt, a rock shaft with means connected therewith and operable by oscillation of said shaft to project and retract said dead-bolt, means operable from the inside of the lock for oscillating said rock shaft to operate said dead-bolt, and means controlled from the outside of the lock by a second and different key for operating said dead-bolt and for retracting said latch bolt.

4. In a lock, a latch bolt, means controlled by knobs at the inside and outside of the lock for independently retracting said latch bolt, stop work mechanism for blocking the outside knob controlled means against latch retracting movement, means controlled by a key from the outside of the lock for retracting said latch bolt independently of said outside knob, a dead-bolt, a rock shaft with means controlled thereby and operatively connected with said bolt and operable by the oscillation of said shaft to project and retract said dead-bolt, means manually operable from the inside of the lock for oscillating said rock shaft to project and retract said dead-bolt, and means controlled from the outside by a second key for oscillating said rock shaft to project and retract said dead-bolt, and for retracting said latch bolt.

5. In a lock, a latch bolt, means controlled by an outside knob for retracting said latch bolt, means controlled by an inside knob for independently retracting said latch bolt, stop work mechanism for blocking said outer knob controlled means from latch retracting movement, means controlled by a key from the outside of the lock for retracting said latch bolt independently of said outside knob, a dead-bolt, a rock shaft with means connected therewith and operable by oscillation of said shaft to project and re-

tract said dead-bolt, means operable from the inside of the lock for oscillating said rock shaft to operate said dead-bolt, means controlled from the outside of the lock by a plurality of other and different keys for oscillating said rock shaft to operate said dead-bolt and for retracting said latch bolt, one certain of said plurality of keys being arranged to operate said rock shaft to project said dead-bolt and to hold the same against retraction by any of the other of said keys.

6. In a lock, a latch bolt, means controlled by outside and inside knobs for independently retracting said latch bolt, stop work mechanism arranged to block said outside knob controlled means against latch retracting movement, a cylinder lock mechanism, means controlled thereby and operable through a key from the outside of the lock for retracting said latch bolt independently of said outside knob, a dead-bolt, means controlled from the inside of the lock for projecting and retracting said dead-bolt, and means controlled through said cylinder lock mechanism and operable by a second key from the outside of the lock for projecting and retracting said dead-bolt and for retracting said latch bolt.

7. In a lock, a latch bolt, means controlled by outside and inside knobs for independently retracting said latch bolt, stop work mechanism arranged to block said outside knob controlled means against latch retracting movement, a cylinder lock mechanism, means controlled thereby and operable through a key from the outside of the lock for retracting said latch bolt independently of said outside knob; a dead-bolt, means controlled from the inside of the lock for projecting and retracting said dead-bolt, and means controlled through said cylinder lock mechanism and operable through a plurality of other and different keys from the outside of the lock for retracting and projecting said dead-bolt and for retracting said latch bolt, one certain of said plurality of keys being arranged to operate through said cylinder lock mechanism to project said dead bolt and to hold the same against retraction from the outside through the other of said plurality of keys.

8. In a lock, a latch bolt, a rotatable inside knob, means controlled by said inside knob for retracting said latch bolt, a dead-bolt, means controlled from the inside of the lock for operating said dead-bolt, and means whereby retraction of said latch bolt from the inside by said inside knob also retracts said dead-bolt when projected.

9. In a lock, a latch bolt, a rotatable inside knob, means controlled by said inside knob for retracting said latch bolt, a dead-bolt, manually operable means at the inside of the lock for operating said dead-bolt, means of connection between said latch controlling means and said dead-bolt operating means whereby retraction of said latch bolt through said inside knob operates to retract also said dead-bolt when projected.

10. In a lock, a latch bolt, means controlled by the inside knob for retracting said latch bolt, a dead-bolt, operating means therefor manually controlled from the inside of the lock, said operating means including an abutment member, with means of connection between said abutment member and said latch bolt operating means whereby retraction of said latch bolt through the interior knob operates to move said abutment to also retract said dead-bolt when projected.

11. In a lock, a latch bolt having a retracting abutment, a roll back operable by an inside knob to engage and move said abutment to retract said latch bolt, a dead-bolt, means for operating said dead-bolt, said means being manually controlled from the inside of the lock and including an abutment member positioned in the path of latch retracting movement of said latch abutment when said dead-bolt is projected, whereby retraction of said latch bolt through said inside knob operates to also retract said dead-bolt when projected.

12. In a lock, a latch bolt having a stem and a retracting abutment thereon, a roll back arranged to engage said abutment, a knob at the inside of the lock arranged to operate said roll back to engage said abutment, a dead-bolt, a thumb turn at the inside of the lock, operating connections between said thumb turn and said dead-bolt, said connections including a link having an abutment thereon positioned in the path of latch retracting movement of said latch abutment when the dead-bolt is projected by the thumb turn, whereby retraction of the latch bolt through the inside knob operates to retract also said dead-bolt when projected.

13. In a lock, a latch bolt, means controlled by outside and inside knobs for independently retracting said latch bolt, stop work mechanism arranged to be operated to block the outside knob controlled means against latch retracting movement, and manually operable means for blocking the latch bolt and stop work mechanism against movement from their respective locking positions by a tool inserted between the edge of the door and the door casing.

14. In a lock, a latch bolt, means controlled by inside and outside knobs for independently retracting said latch bolt, stop work mechanism arranged to be moved into and out of position to dog said outside knob controlling means against latch retracting movement, a dead-bolt, means for projecting and retracting said dead-bolt, and means

operable upon the projection of said dead-bolt to block said latch bolt and stop work mechanism against unlocking movement.

15. In a lock, a latch bolt, means controlled by outside and inside knobs for independently retracting said latch bolt, stop work mechanism arranged to be moved to block said outside knob controlled means against latch retracting movement, a dead-bolt, means for operating said dead-bolt from the inside of the lock, and means operated by the projection of said dead-bolt from the inside of the lock to dog said stop work against unlocking movement and to block the retracting of said latch bolt by tools inserted between the edge of the door and the door casing and acting against said stop work mechanism and said latch bolt.

16. In a lock, a latch bolt, means controlled by outside and inside knobs for independently retracting said latch bolt, stop work mechanism arranged to be moved to block said outside knob controlled means against latch retracting movement, a dead-bolt, means for operating said dead-bolt from the inside of the lock, means of connection between the knob controlled latch retracting means and said dead-bolt operating means whereby retraction of said latch bolt by a knob operates also to retract said dead-bolt when projected, and means operated by the projection of said dead-bolt to automatically dog said stop work mechanism against outside knob releasing movement and to block said latch bolt against retracting movement through a tool inserted between the edge of the door and the door casing, and operating against said latch bolt and stop work.

17. In a lock, a latch bolt, a dead-bolt, means controlled by a key from the outside of the lock for retracting said latch bolt, means operable from the inside of the lock for independently retracting said latch bolt, means for projecting and retracting said dead bolt from the inside of the lock, means for retracting said dead-bolt through the retraction of said latch bolt from the inside of the lock, and means for blocking the retraction of said latch bolt from the outside through said key when said dead-bolt is projected.

18. In a lock, a latch bolt, a dead-bolt, means controlled by a key from the outside of the lock for retracting said latch bolt, means operable from the inside of the lock for independently retracting said latch bolt, means for projecting and retracting said dead-bolt from both the outside and inside of the lock, means for retracting said dead-bolt through the retraction of said latch bolt from the inside of the lock, and means for blocking the retraction of said latch bolt, from the outside through said key when said dead-bolt is projected.

19. In a lock, a latch bolt, a dead-bolt, means controlled by a key from the outside of the lock for retracting said latch bolt only, means for projecting and retracting said dead-bolt from the inside of the lock, means controlled by a second and different key from the outside of the lock for projecting and retracting said dead-bolt, means for retracting said dead-bolt through the retraction of said latch bolt, and means for blocking the retraction of said latch bolt from the outside of the lock through said first-named key when said dead-bolt is projected.

20. In a lock, a latch bolt, means controlled by outside and inside knobs for independently retracting said latch bolt, means controlled by a key from the outside of the lock for retracting said latch bolt independently of said outside knob, stop work mechanism arranged to block the retraction of said latch bolt through said outside knob, a dead-bolt, means operable from the inside of the lock for projecting and retracting said dead-bolt, means operable from the outside of the lock by a second and different key for projecting and retracting said dead-bolt and for retracting said latch bolt, means for retracting said dead-bolt through the retraction of said latch bolt, means operable by the projection of said dead-bolt to operate said stop work mechanism to block said outside knob against latch retracting movement, and means for blocking the retraction of said latch bolt from the outside through said first-named key when said dead-bolt is projected.

ERNEST L. TEICH.

Witnesses:
WILLIAM V. COLLINS,
NEWTON G. CURTIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."