No. 847,884. PATENTED MAR. 19, 1907

E. C. BELKNAP & E. H. JACKSON.

LOCKING LATCH AND BOLT MECHANISM.

APPLICATION FILED OCT. 19, 1906.

3 SHEETS—SHEET 1.

Fig. 1

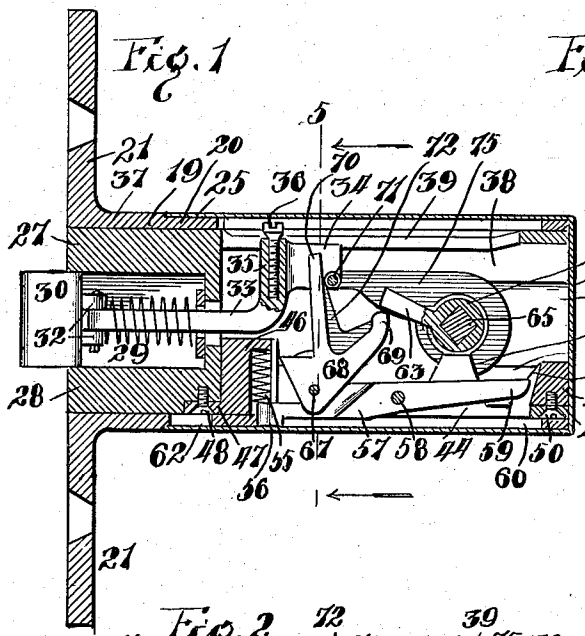


Fig. 5

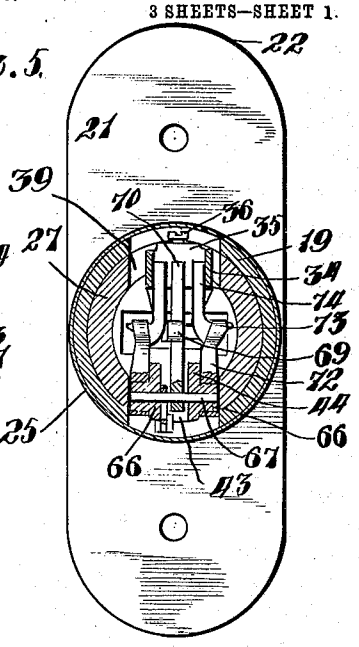


Fig. 2

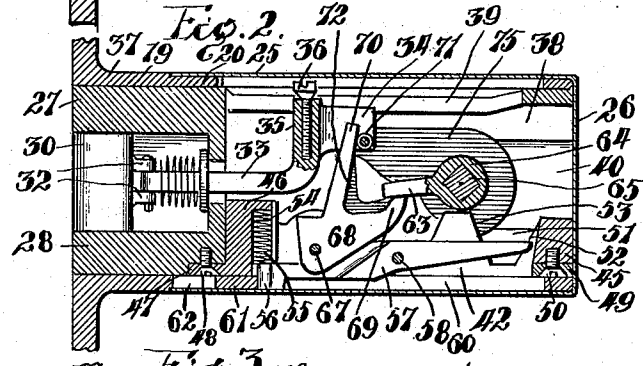


Fig. 6

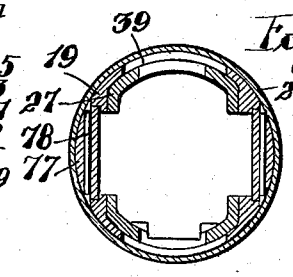


Fig. 3

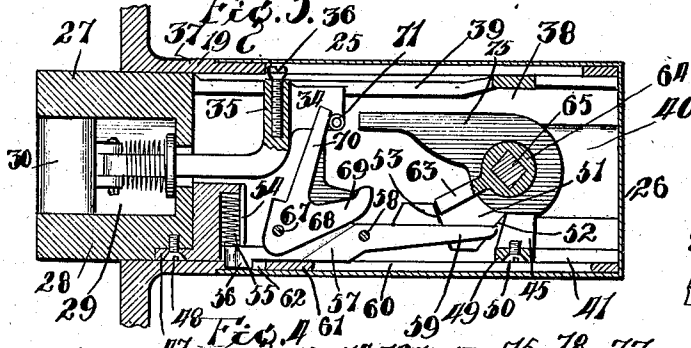


Fig. 7

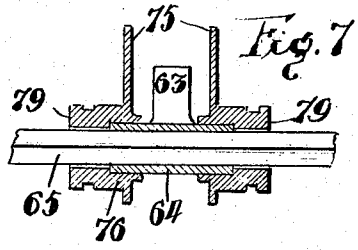
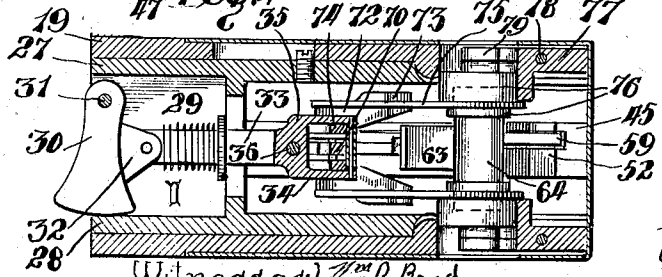


Fig. 4



Witnesses: Wm. P. Bond, Chas. F. Brooks.

Inventors: Edwin C. Belknap, Ernest H. Jackson, by Banning & Banning, Attys.

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Fig. 8.

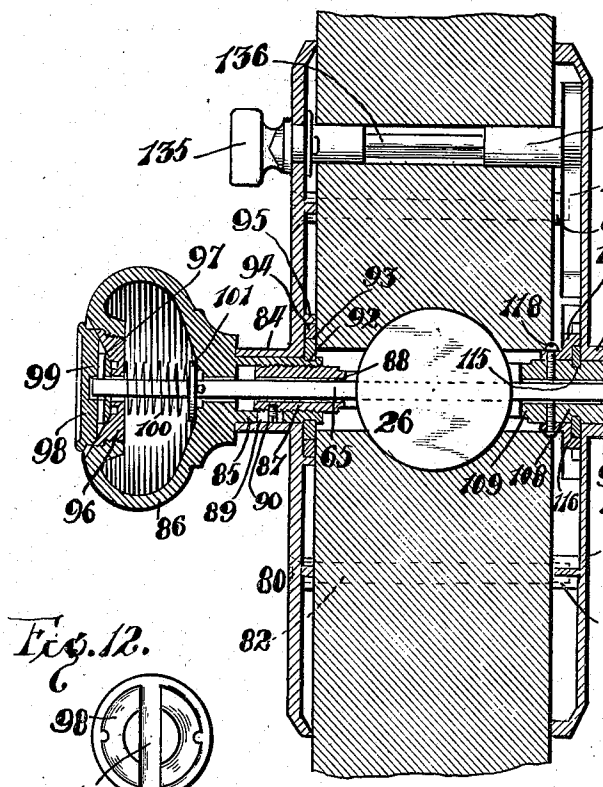


Fig. 10

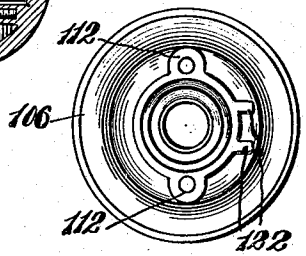


Fig. 12.

Fig. 11

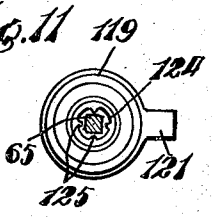
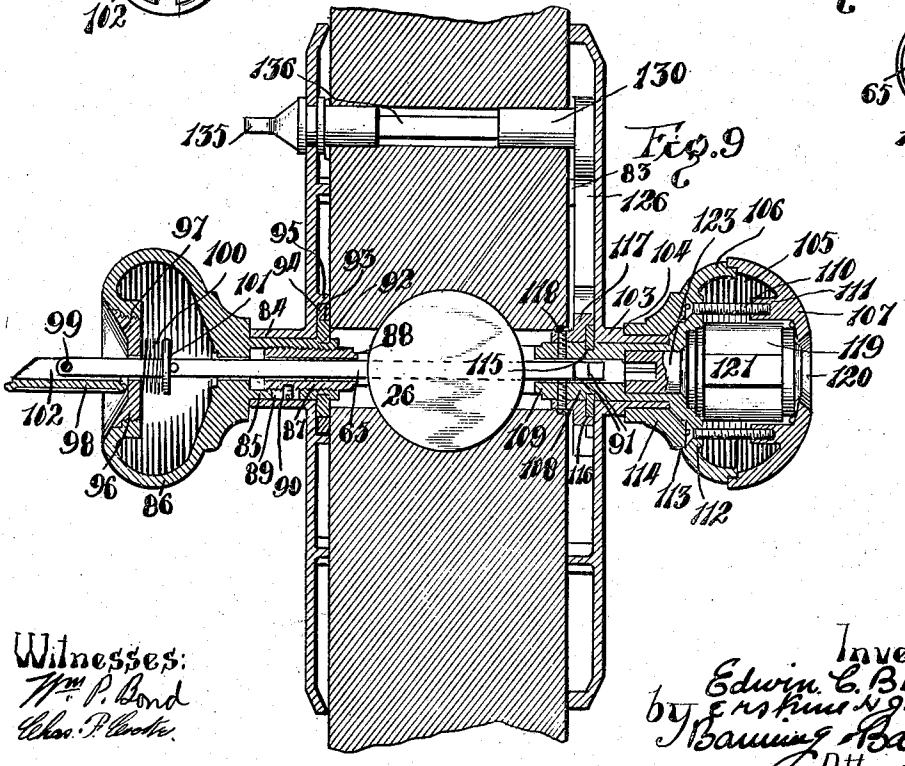


Fig. 9



Witnesses:
Wm. P. Bond
Elson P. Coote

Inventors
Edwin C. Belknap
Ershine H. Jackson
by Banning & Banning
Attys.

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3 SHEETS—SHEET 3.

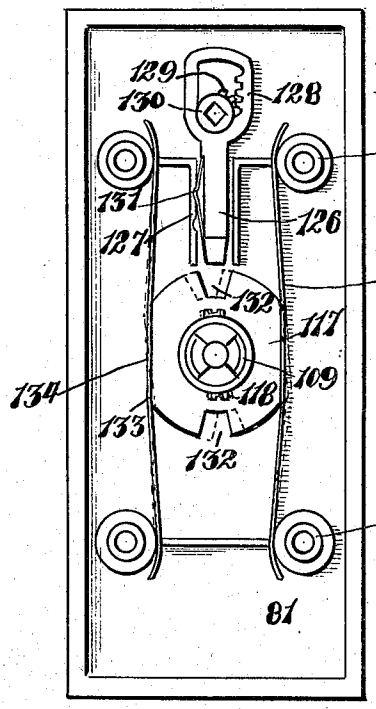


Fig. 13.

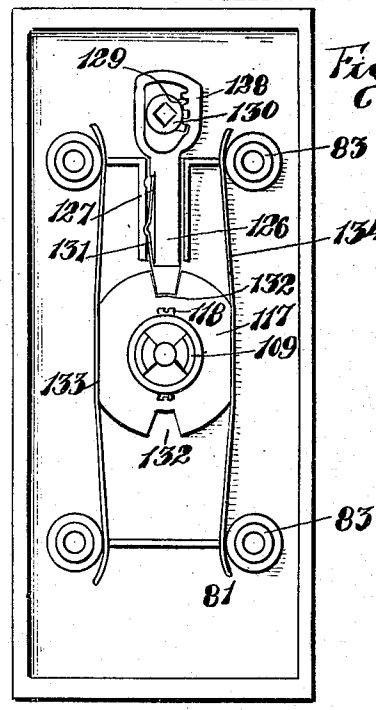


Fig. 14.

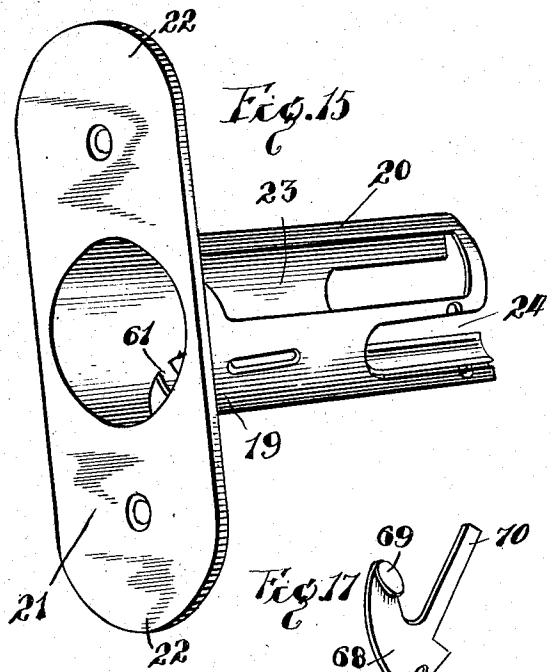


Fig. 15.

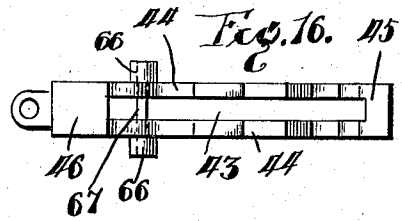


Fig. 16.

Fig. 17.

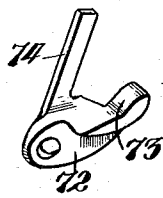


Fig. 18.

Witnesses:
Wm. P. Bond
Chas. F. Cooke.

Inventors
Edwin C. Belknap
Ershkine H. Jackson
by Banning & Banning
Attys

UNITED STATES PATENT OFFICE.

EDWIN C. BELKNAP AND ERSKINE H. JACKSON, OF CHICAGO, ILLINOIS.

LOCKING LATCH AND BOLT MECHANISM.

No 847,884. Specification of Letters Patent. Patented March 19, 1907.

Application filed October 19, 1906. Serial No. 339,729.

To all whom it may concern:

Be it known that we, EDWIN C. BELKNAP and ERSKINE H. JACKSON, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locking Latch and Bolt Mechanism, of which the following is a specification.

This invention is intended to provide a mechanism in which the latch is located and operated within but independently of the bolt, which makes the device as a whole extremely compact, rigid, and attractive in appearance and at the same time provides a bolt of large dimensions in comparison with the thickness of the door in which the mechanism is located.

The objects of the invention are to provide means by which the bolt will be automatically locked in projected position, which absolutely prevents its being forced back by pressure brought to bear against the end of the bolt; to provide mechanism adapted to be actuated from the interior of the door for throwing the key-lock out of connection with the bolt when it is desired to prevent the use of the key from the outside; to improve the construction of the outer knob so that it will be impossible to disconnect the knob, and thereby obtain access to the interior of the lock; to improve the construction and arrangement of the inner knob by which the device may be adjusted to doors of different thickness, and to provide means for locking the outer knob against movement when desired.

The invention further relates to the construction of the interior mechanism for operating the bolt and latch, to the construction and proportion of the lock-framework, and to the construction and arrangement of the device as a whole and the individual parts thereof.

The invention consists in the features of construction and combination of parts, as hereinafter described and claimed.

In the drawings, Figure 1 is a longitudinal sectional view showing the latch projected; Fig. 2, a similar view showing the latch retracted; Fig. 3, a similar view showing the bolt projected; Fig. 4, a sectional plan view showing the latch projected; Fig. 5, a cross-sectional view taken on line 5 5 looking in the direction of the arrows; Fig. 6, a cross-sectional view of the casing and shell; Fig. 7, a sectional view of the latch and bolt operating levers; Fig. 8, a cross-sectional view showing the knobs in section and the bolt-operating shaft in engagement with the key-cylinder; Fig. 9, a similar view showing the bolt-shaft out of engagement with the key-cylinder; Fig. 10, an inner face view of the outer section of the outer knob; Fig. 11, an inner end view of the key-cylinder, showing the configuration for the hole which engages the bolt-shaft; Fig. 12, an inner face view of the bolt-shaft thumb-piece; Fig. 13, an inner face view of the outer door-plate, showing the knob-locking bar disengaged; Fig. 14, a similar view showing the knob-locking bar in engagement; Fig. 15, a perspective view of the lock-frame; Fig. 16, a detail of the bolt-actuating bar; and Figs. 17 and 18, perspective details of the bell-crank levers for actuating the bolt and latch, respectively.

The device as a whole is located and constructed within a main frame or body 19, which comprises a cylindrical tenon portion 20 and an elongated face-plate 21, having rounded ends 22. The face-plate and tenon portions are integrally formed, and the cylindrical tenon portion is cut away on its top to provide an opening 23 and cut away on its ends to provide inwardly-extending slots or openings 24. The tenon portion when the parts are assembled is surrounded by a cylindrical casing 25, closed at its rear end 26, and the diameter of the outer casing is very slightly less than the diameter of the curved end portions of the face-plate, which arrangement is of advantage in that it permits a single bit to be used in making a central hole to receive tl e body of the lock and in making upper and lower holes adapted to receive the curved ends of the face-plate. It is thus apparent that the door can be readily prepared to receive the lock by drilling a deep hole in the center and upper and lower holes to receive the end plate and that in addition to such drilling but a very slight amount of cutting is necessary to prepare the door for the lock. Within the tenon portion of the frame is located the bolt, the latch, and the actuating mechanism therefor, which renders the device extremely compact and adapted to easy insertion into position in the door. The bolt 27 is of cylindrical formation and comprises a head 28, having in its end a

recess 29, adapted to receive a latch 30. The latch is pivoted within the recess by a vertically-extending pin 31 and is provided on its rear face with ears 32, which embrace the end of a latch-bar 33, terminating at its rear end in a yoke 34. The yoke is formed with and secured to an upwardly-extending L portion 35 of the latch-bar, which L portion has screw-threaded thereinto a stop-screw 36, which operates within the opening 23 in the top of the tenon portion of the frame and is adapted to limit the forward movement of the latch when brought into abutment with the unslotted wall 37 of the tenon portion immediately forward of the slot or opening.

Fig. 3 shows the adjustment of the parts when the bolt is projected. The movement of the latch is stopped prior to the final adjustment of the bolt, so that the latch will be drawn back entirely within the recess in the bolt as the bolt is finally projected. The head of the bolt has rearwardly-projecting therefrom a body portion 38 of general cylindrical shape, provided in its top with a slot 39, which substantially registers with the opening 23 in the tenon portion of the frame, and the body portion of the bolt is provided in its rear end with a rearwardly-extending slot or opening 40, which substantially registers with the slots or openings 24 in the rear end of the tenon portion. The body portion on its under side is further provided with a longitudinally-extending slot or opening 41, within which is located a bolt-actuating bar 42, which has in its center a longitudinally-extending slot 43, dividing the bar as a whole into side rails 44, connected at one end by a rear cross-head 45 and at the other end by a forward cross-head 46, as shown in detail in Fig. 16. The forward cross-head 46 is provided at its forward end with a tongue 47, through which passes a screw 48, which enters the head of the bolt and secures the bar rigidly thereto at its forward end, and the rear end of the bar is likewise secured to a bridge portion 49 of the wall of the bolt-body by means of a screw 50, which passes through the bridge portion and into the end cross-head 45 of the bolt-actuating bar. The bar is provided on its inner face near its rear end with a cam-recess 51, which is formed between upwardly-divergent rear and front walls 52 and 53, respectively, and the cam-recess as a whole is formed by cutting or shaping the inner or cutting edges of the companion side rails 44 of the bolt-bar in the manner specified. The forward cross-head 46 is sufficiently deep to provide a recess 54 for the reception of a coil-spring 55, which bears against the head end 56 of a bolt-locking lever 57, which is pivoted near its middle, between the side rails 44 of the bolt-bar, by means of a cross-pin or pivot 58.

The rear end 59 of the lever lies between the sections of the cam-recess 51, and the rear end of the lever is normally thrown inwardly by the spring 54 sufficiently to lie above the inner depression of the recess, as clearly shown in Figs. 1, 2, and 3. When the inner end of the lever is in normal position, the outer or head end 56 will lie within a longitudinally-extending lower slot or opening 60 in the tenon portion of the lock-frame, which slot or opening is in substantial alinement with and immediately beneath the upper slot or opening 23. The lever-head 56 when thus projected will abut against the inner edge of a bridge portion 61 at the forward end of the slot on the lower side of the tenon portion of the frame, in front of which bridge portion is a relatively small slot or opening 62, which is adapted to receive the head when the bolt is thrown forward out of normal position, as indicated in Figs. 1 and 2, into its projected position, as shown in Fig. 3. This acts as a lock for the bolt and prevents its being forced back by pressure exerted against the end of the bolt. It will be understood that the bolt-actuating bar and lever carried thereby are slidable with the bolt and within the slot 41 in the tenon portion of the frame.

The bolt-actuating bar and the locking-lever 57 are both adapted to be actuated by means of a centrally-located finger 63, mounted upon a longitudinally transversely extending hub 64, which is squared on its interior to receive a squared bolt-shaft 65, which extends from side to side through the lock and is adapted to be actuated by means of the key from the outside and by means of a finger-piece from the inside. The finger 63 is adapted to bear against either the forward sloping cam-surface 53 or the rear sloping cam-surface 52 and is of sufficient length to bear against the rear end of the locking-lever 59 when turned to its lowermost position, which permits the head of the locking-lever to be retracted against the pressure of the coil-spring 55 and thereafter permits the bolt to be advanced or retracted by continued turning of the bolt-shaft.

The side rails 44 of the bolt-actuating bar are provided near their forward ends with laterally-extending cylindrical bosses, through which is passed a pivot-pin 67. The pin serves as a bearing for a centrally-located bell-crank lever 68, which is mounted between the side rails 44 of the bolt-bar and comprises a rearwardy-extending lower arm 69, adapted to be engaged by the finger 63, and an upwardly-extending actuating-arm 70, which enters the yoke 34 of the latch-bar 33 and bears against a cross-roller 71. When the bolt is in normal position, the lower arm of the bell-crank will be in proper position to be depressed by the finger 63 when turned in a direction opposite to that in which it is turned to operate the bolt, as shown in Figs. 1 and 2. When the bolt, however, has been

thrown, it will be impossible to operate the latch, which of course could not be used to open the door in this position of adjustment.

The bosses 66 on the sides of the side rails 44 serve as mountings for a pair of side bell-crank levers 72, each of which comprises a rearwardly-extending engaging arm 73 and an upwardly-extending actuating-arm 74, which latter, like the arm 70 of the center bell-crank, enters the yoke and bears against the transverse roller and is adapted to actuate the latch. One of the outer bell-cranks is adapted for use with the inner knob of the door and the other for use with the outer knob, and the two are thus independent one of the other. The outer bell-cranks are adapted to be actuated by means of forwardly-extending fingers 75, which are secured to hubs 76, rotatably mounted upon the outwardly-projecting portions of the hub or sleeve 64 as bearings, and the hubs are further journaled intermediate of the rounded forward ends of the slots 24 in the opposite sides of the frame, and a pair of slide-plates 77, which are entered into the ends of the slots or openings 24, serve in conjunction with the rounded forward ends of the slots to provide journal-bearings for the hubs. The slide-plates are held in place by means of vertically-extending pins 78, which can be removed when it is desired to disassemble the mechanism for any purpose whatever. The outer ends 79 of the hubs are formed to constitute clutch members which engage with the inner and outer knob mechanism of the door in a manner to be hereinafter explained.

The locking mechanism hereinbefore described is located between inner and outer door-plates 80 and 81, respectively. The plates are connected by means of screw-bolts 82, (shown in dotted lines,) which enter recess-bosses 83 on the under face of the outer plate, the face of the plate being imperforated. The inner plate is provided with a neck 84, which surrounds the shank 85 of the inner knob 86, which shank is screw-threaded on its interior to receive an adjustable clutch-plug 87, the inner end 88 of which is formed to engage with the clutch end 79 of the inner head 76 of the latch mechanism. The tubular shank 84 is provided with an elongated slot 89, which receives the end of a set-screw 90, which arrangement permits the screw-threaded plug to be adjusted with respect to the tubular shank and adapts the locking mechanism for use with doors of different thickness. The outer end, moreover, of the square bolt-shaft is provided at suitable intervals with cuts 91, which permit the shaft to be made at the factory in uniform sizes and permits the end of the shaft to be cut off, if necessary, to adapt the lock to the particular thickness of the door intended. The tubular shank is provided near its inner end with an annular groove 92, which is engaged by the sections of a split ring 93, which in turn is surrounded by a solid ring 94, which is inserted within a circular recess provided by a flange 95, formed on the inner face of the inner plate and surrounding the opening therein. The end of the square bolt-shaft passes loosely through the adjustable clutch-plug 87 and through the knob, the knob and plug being revoluble about the shaft, and the end of the shaft passes through a screw-threaded cap 96 into the outer face of the inner knob, and the cap is formed on its exterior to provide a recess 97, within which fits a thumb-piece 98, which is pivoted by means of a pin 99 to the end of the square shaft and normally lies within the recess 97 and substantially flush with the surface of the knob, so as not to interfere in any way with the use of the knob for throwing the latch. The square shaft within the knob is surrounded by a coil-spring 100, which at its inner end bears against a disk 101, rigidly mounted on the shaft, and at its outer end bears against the inner face of the closing-cap 96. This arrangement permits the shaft to be drawn back out of normal position against the tension of the spring, out of the position shown in Fig. 8 into the position shown in Fig. 9. This retraction is performed by turning the thumb-piece or button 98 out of transverse relation to the end of the shaft and into parallel relation therewith. In order to permit this adjustment, the under face of the thumb-piece or button is provided with a slot 102, which provides a space for the reception of the end of the shaft when the button is turned on edge. The button may be easily turned on edge by inserting the thumb or finger only under its periphery and thereafter pulling it up out of the recess within which it normally lies, and when thus adjusted it will serve as a handle for operating the bolt from the inside and will at the same time sufficiently retract the square bolt-shaft to disengage it from the key-cylinder to be hereinafter described, so that it will be impossible to manipulate the lock with the key from the outside.

The outer plate 81, like the inner plate, is provided with an annular flange or neck 103, provided with a ledge or shoulder 104. The outer knob 105 comprises an inner section 106 and an outer section 107. The inner section terminates in a shank 108, having a clutch formation at its end 109 similar to the arrangement heretofore described, and the inner and outer sections are secured together by means of screws 110, which enter into bosses 111 on the interior of the outer section. The heads of the screws lie within countersinks 112, which are cut below the surface of an annular recess or channel 113, formed on the inner face of the inner knob-section, and the channel is closed against tampering by means of a heavy collar 114,

the outer rim of which enters deeply in the channel and the inner end of which bears against the shoulder 104 of the neck or flange 103. The collar 114 is preferably formed of cast metal and is of sufficient rigidity to absolutely prevent its removal or displacement sufficiently to secure access to the screws. The shank 108 is provided with an annular groove 115, adapted to receive a split ring 116, which in turn is held in place by means of a collar-plate 117, which is secured to the shank by means of screws 118, located inside of the face-plate and in position to prevent tampering with the screws.

Within the outer knob is located a key-cylinder 119 of usual type, an opening 120 being formed in the knob to permit access to the keyhole, and the cylinder is provided with a rib 121, which is adapted to hold the cylinder rigid between a pair of lugs 122 on the inner face of the outer section of the knob. The cylinder terminates in a tubular socket 123, having a socket-hole 124 of the configuration shown in Fig. 11, which socket-hole has four inwardly-projecting ridges or corners 125, and the arrangement is one which permits the knob to be revolved slightly around the end of the shaft, a sufficient distance to actuate the latch, without moving the shaft, which will not be engaged until the square corners of the shaft engage with the ridges or corners 125 of the socket. In order to prevent movement of the outer knob when desired, a knob-locking bar 126 is provided, which operates between guideways 127 on the inner face of the outer plate, and the bar terminates in a rack 128, which is adapted to be operated by means of teeth 129 on a sleeve 130. The bar is provided with a spring 131, interposed between the bar and one of the guideways, which spring prevents accidental movement of the bar. The end of the bar is beveled slightly and is adapted to enter one of two oppositely-disposed recesses 132, formed in the edge of the collar-plate 117, as shown in Figs. 13 and 14. The collar-plate is flattened on its sides 133, which bear against flat springs 134, which enable the plate to be turned half around or reversed when necessary. The knob-locking bar 126 is actuated by means of a thumb-knob 135, which projects from the inner plate and in position to be manipulated by persons inside the house, and the thumb-knob and rack-sleeve 130 are connected by means of a square shaft 136, which may be of suitable length to accommodate doors of different thicknesses.

The operation of the lock mechanism will be partially understood from the foregoing description, but may be briefly described as follows: The latch may be operated at any time, except when the bolt is thrown, by the turning of the inner knob, which turns freely around the square bolt-shaft, sufficiently to depress the inner latch-finger 75 against the inner bell-crank 74, which acts against the roller 71 on the yoke of the latch-bar and retracts the latch within the recess in the end of the bolt, thereby permitting the door to be opened. A similar operation can be performed by the outer knob, which is permitted to turn partially a sufficient distance without engaging the end of the square bolt-shaft, and this operation can be performed at any time except when the knob-locking bar 126 is thrown into position to engage the recess 132 in the collar-plate 117. The bolt can be thrown from within by means of the thumb-disk 98 and can be thrown from without by means of the key when turned in the proper direction. Likewise the bolt can be retracted from either position and the latch can be moved independently of the knobs by continued turning of the bolt-shaft in the direction required to retract the bolt until the finger 63 has moved around into position to engage with the middle bell-crank lever 68, which arrangement obviates the necessity for first withdrawing the bolt by means of the key and thereafter opening the door by means of the knob. This operation can be performed at all times from within the door, but it is impossible to perform from without in case the bolt-shaft has been drawn back out of engagement with the socket of the lock-cylinder. (Shown in Fig. 9.) This enables persons within the house to be secure against intrusion from without by unauthorized persons having possession of a key and provides a means for securing the door without any difficulty or loss of time.

The mechanism is constructed with especial reference to its availability and adaptability with doors of different styles, and by reason of the symmetrical arrangement of the parts a certain style of lock can be used on all styles of doors, whether the same be right or left hand doors or whether they swing in or out. Ordinarily it is necessary in the construction of locks to provide four styles of locks for use with the four styles of door above enumerated; but in the present case the same lock can be fitted with but slight manipulation to any style of door or doors of any thickness within reasonable limits, which greatly cheapens the construction of the device and the ease with which it can be applied to doors operating under different conditions. The actuating mechanism contained within the frame of the lock is symmetrical in all respects with the exception of the latch, which enables the lock to be turned either side up in order to bring the latch in proper position to fit the requirements. At the same time the two sides of the frame are symmetrical, which permits the inner and outer knobs to engage the mechanism from either side. This permits the lock to be applied to four different styles of door, and application in all cases will be made in the same

manner by drilling a hole in the edge of the door and thereafter drilling a recess for the face-plate. Mechanism in this compact cylindrical form is very easy of insertion, and the drilling operations necessary can be performed with much greater ease and rapidity than is possible in cases in which it is necessary to cut a deep rectangular hole to receive the lock. The same bit which is used to drill the center hole can be moved to make it a shallow cut above and below the hole to receive the ends of the face-plate, and thereafter a slight amount of chiseling will be sufficient to provide for the straight sides of the plate. The arrangement of the plate within the latch makes the device much more compact than is possible in ordinary constructions, and at the same time the appearance of the lock within the door is attractive. It is not necessary to construct the lock with special reference to the thickness of the intended door, since all locks can be constructed with reference to a maximum thickness, and the end of the bolt-shaft can be cut off by the workman applying the lock to a suitable length to fit the intended door. This arrangement enables the workman or locksmith to keep in stock a large number of the locks without the necessity for securing different styles of locks for different doors. The construction of the outer knob is one which renders tampering impossible, owing to the protection afforded the screw-heads by the deeply-inserted ring or collar 114, and this arrangement, in connection with the means by which the projected bolt is locked against pressure from without, renders the lock as a whole extremely secure and safe.

What we regard as new, and desire to secure by Letters Patent, is—

1. In a mechanism of the class described, the combination of a lock-frame, a bolt slidably mounted within the frame, comprising a recessed head and a hollow body, a latch movable within the recess in the head, inner and outer door-knobs, mechanism contained within the body of the bolt and connected with the door-knobs for moving the latch, a bolt-shaft, mechanism within the body of the bolt and actuated by the bolt-shaft for moving the bolt, a key-lock in one of the knobs normally in engagement with one end of the bolt-shaft, a disk or plate pivoted to the other end of the bolt-shaft and normally lying flat against the end of the other knob, and adapted to be turned back on edge to retract the bolt-shaft out of engagement with the key-lock and thereafter serve as a handle for turning the shaft, substantially as described.

2. In a mechanism of the class described, the combination of a bolt, a bolt-shaft, means for moving the bolt adapted to be actuated by the bolt-shaft, inner and outer knobs, a key-lock in the outer knob normally in engagement with the end of the bolt-shaft, and means on the opposite side of the door for retracting the bolt-shaft out of engagement with the key-lock preventing the use of the key, substantially as described.

3. In a mechanism of the class described, the combination of a bolt, a bolt-shaft, means for moving the bolt adapted to be actuated by the bolt-shaft, inner and outer knobs, a key-lock in the outer knob normally in engagement with the end of the bolt-shaft, a disk or plate pivoted to the opposite end of the bolt-shaft and normally in flat contact with the inner knob, and adapted to be turned on edge to retract the bolt-shaft and thereafter serve as a handle for turning the shaft, substantially as described.

4. In a mechanism of the class described, the combination of a bolt, a latch normally projecting outwardly from the bolt, a latch-bar extending rearwardly from the latch and having on its rear end a cross-abutment, companion outer bell-crank levers in engagement with the abutment, inner and outer knobs, companion fingers connected with the two knobs and adapted to engage with the companion bell-crank levers, a bolt-bar provided with abutments, a finger adapted to move between the abutments for advancing and retracting the bolt, a bolt-shaft on which the finger is mounted, such shaft passing through the latch-actuating fingers, and a key-lock in one of the knobs for moving the bolt-shaft, substantially as described.

5. In a mechanism of the class described, the combination of a bolt, a latch normally projecting outwardly from the bolt, a latch-bar extending rearwardly from the latch and having on its rear end a cross-abutment, companion outer bell-crank levers in engagement with the companion bell-crank levers, a bolt-bar provided with abutments, a finger adapted to move between the abutments for advancing and retracting the bolt, a bolt-shaft on which the finger is mounted, such shaft passing through the latch-actuating fingers, a key-lock in one of the knobs for moving the bolt-shaft, and an intermediate bell-crank lever pivoted between the companion bell-crank levers and adapted to be actuated by the finger on the bolt-shaft, substantially as described.

6. In a mechanism of the class described, the combination of a bolt having a recess in its head and having a hollow body, a latch operating within the recess, a rearwardly-extending latch-bar terminating in its rear end in a yoke, a cross-abutment on the yoke, a bolt-bar provided on its inner edge with abutments, companion outer bell-crank levers, and an intermediate bell-crank lever pivoted to the bolt-bar, inner and outer knobs, independent fingers connected with the two knobs for actuating the companion outer bell-crank levers, a bolt-shaft passing

through said fingers, a finger on the bolt-shaft adapted to operate between the abutments on the bolt-bar and adapted to be turned into position to actuate the intermediate bell-crank lever, and a key-lock in one of the knobs adapted to turn the bolt-shaft, a locking-lever pivoted to the bolt-bar and provided with a head adapted to be projected outwardly to lock the bolt in advanced position, the inner end of the lever being in position to be engaged by the finger on the bolt-shaft for retracting the head end of the lever and permitting movement of the bolt, substantially as described.

7. In a mechanism of the class described, the combination of a bolt having a recess in its head and having a hollow body, a latch operating within the recess, a rearwardly-extending latch-bar terminating in its rear end in a yoke, a cross-abutment on the yoke, a bolt-bar provided in its inner edge with abutments, companion outer bell-crank levers, and an intermediate bell-crank lever pivoted to the bolt-bar, an abutment for limiting the forward movement of the latch-bar, inner and outer knobs, independent fingers connected with the two knobs for actuating the companion outer bell-crank levers, a bolt-shaft passing through said fingers, a finger on the bolt-shaft adapted to operate between the abutments on the bolt-bar and adapted to be turned into position to actuate the intermediate bell-crank lever, and a key-lock in one of the knobs adapted to turn the bolt-shaft, a locking-lever pivoted to the bolt-bar and provided with a head adapted to be projected outwardly to lock the bolt in advanced position, the inner end of the lever being in position to be engaged by the finger on the bolt-shaft for retracting the head end of the lever and permitting movement of the bolt, substantially as described.

8. In a mechanism of the class described, the combination of a bolt, inner and outer knobs, a longitudinally-movable and rotatable bolt-shaft, a key-cylinder in one of the knobs having a revoluble socket-shank held against longitudinal movement and adapted normally to engage the bolt-shaft for revolving the same, means contained within the other knob for retracting the bolt-shaft out of engagement with the key-cylinder, and mechanism actuated by the rotary movement of the bolt-shaft for moving the bolt, substantially as described.

9. In a mechanism of the class described, the combination of a bolt, inner and outer knobs, a longitudinally-movable rotatable bolt-shaft in line with the axes of the knobs, mechanism for moving the bolt by the rotation of the bolt-shaft, a key-cylinder in the outer knob having a revoluble socket-shank held against longitudinal movement and adapted to normally engage one end of the bolt-shaft for the purpose of revolving the same, and a thumb-disk in the face of the other knob for retracting the shaft to disengage it from the key-cylinder, substantially as described.

10. In a mechanism of the class described, the combination of a bolt, inner and outer knobs, a longitudinally-movable rotatable bolt-shaft in line with the axes of the knobs, mechanism for moving the bolt by the rotation of the bolt-shaft, a key-cylinder in the outer knob having a revoluble socket-shank held against longitudinal movement and adapted to normally engage one end of the bolt-shaft for the purpose of revolving the same, and a thumb-piece secured to the inner end of the bolt-shaft and projecting outwardly for moving the bolt-shaft into and out of engagement with the key-cylinder, substantially as described.

11. In a mechanism of the class described, the combination of a bolt, inner and outer knobs, a longitudinally-movable rotatable bolt-shaft in line with the axes of the knobs, mechanism for moving the bolt by the rotation of the bolt-shaft, a key-cylinder in the outer knob adapted to normally engage one end of the bolt-shaft for the purpose of revolving the same, and a thumb-piece pivoted to the inner end of the bolt-shaft and normally lying flat against the face of the inner knob and adapted to be turned up on edge to retract the bolt-shaft out of engagement with the key-cylinder, substantially as described.

12. In a bolt mechanism, the combination of a knob provided with a shank, a key-cylinder within the knob, a collar-plate secured to and revoluble with the knob-shank and adapted to permit the knob and key-cylinder to be adjusted either side up, and provided with companion recesses on opposite sides of the plate, a knob-locking bar adapted to be projected into either recess, and a thumb-piece for moving the bar, substantially as described.

13. In a bolt mechanism, the combination of a knob provided with a shank, a collar plate secured to and revoluble with the shank, and provided with companion recesses on opposite sides, a flat spring bearing against the edge of the collar-plate and adapted to limit its rotation under ordinary circumstances, but adapted to permit the collar-plate to be swung around under tension for purposes of adjustment, a knob-locking bar adapted to enter either of the recesses, and a thumb-piece for actuating the bar, substantially as described.

14. In a bolt mechanism, the combination of a knob provided with a shank, a collar-plate secured to and revoluble with the shank, and provided with companion recesses on opposite sides, a flat spring bearing against the edge of the collar-plate and adapted to limit its rotation under ordinary circum-

stances, but adapted to permit the collar-plate to be swung around under tension for purposes of adjustment, and a knob-locking bar adapted to enter either of the recesses and provided on its end with a rack, a thumb-piece and a pinion adapted to be revolved by the thumb-piece and engaged with the rack for moving the bar into and out of engagement with the coacting recess, substantially as described.

15. In a locking mechanism, the combination of a frame comprising a face-plate and a cylindrical tenon portion, the tenon portion being open on its rear end and provided in its sides with recesses cut back from the rear open end, slide-plates adapted to be entered into the slots to provide journal-bearings, and an outer cylindrical shell fitted over the tenon portion and open at its forward end and closed at its rear end and provided with holes adapted to register with the bearings for affording a substantially dust-proof casing, substantially as described.

EDWIN C. BELKNAP.
ERSKINE H. JACKSON.

Witnesses:
SAMUEL W. BANNING,
CHAS. F. COOKE.