No. 754,280. PATENTED MAR. 8, 1904.

G. W. CASWELL.

LOCK.

APPLICATION FILED JULY 9, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

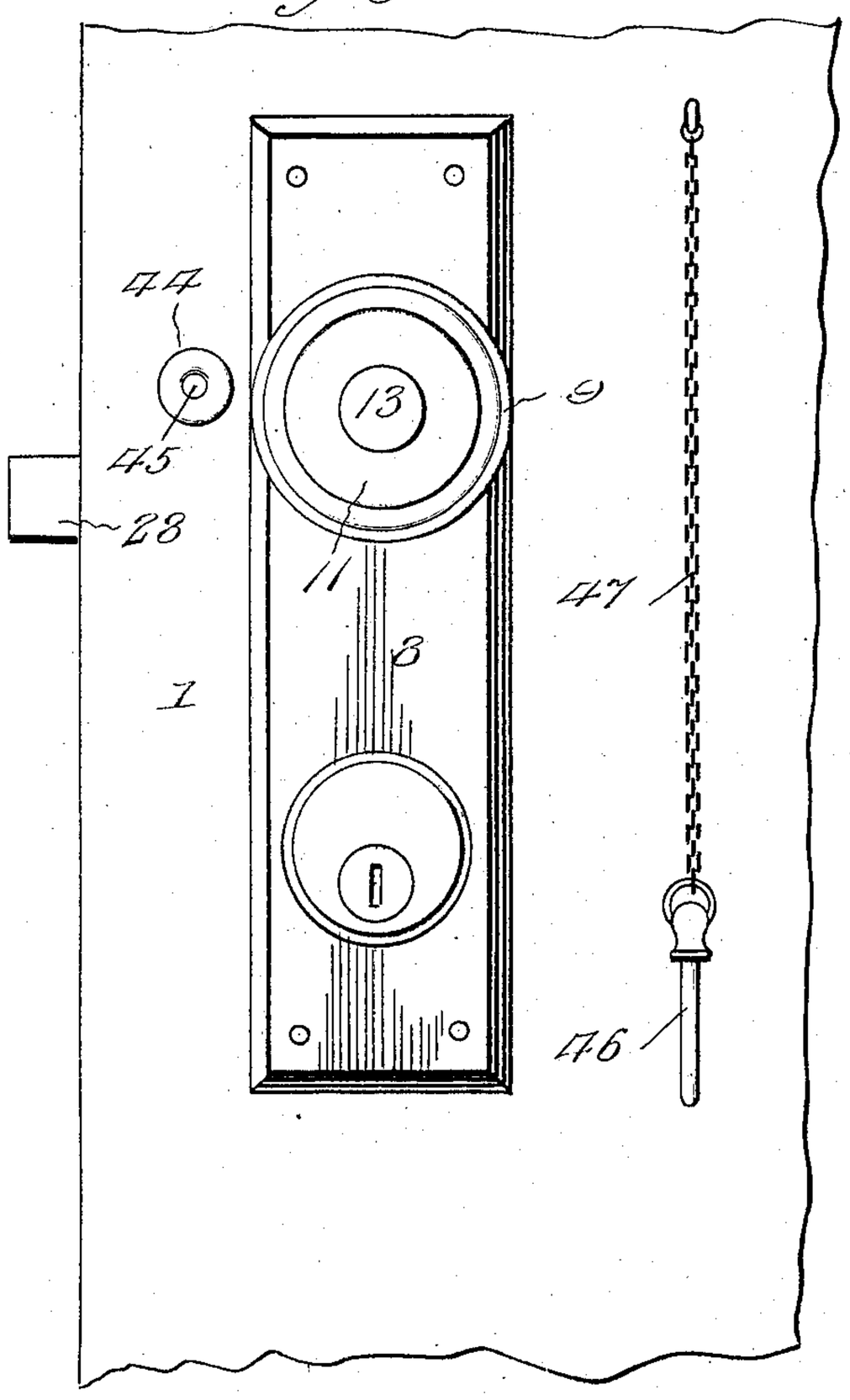


Fig. 2

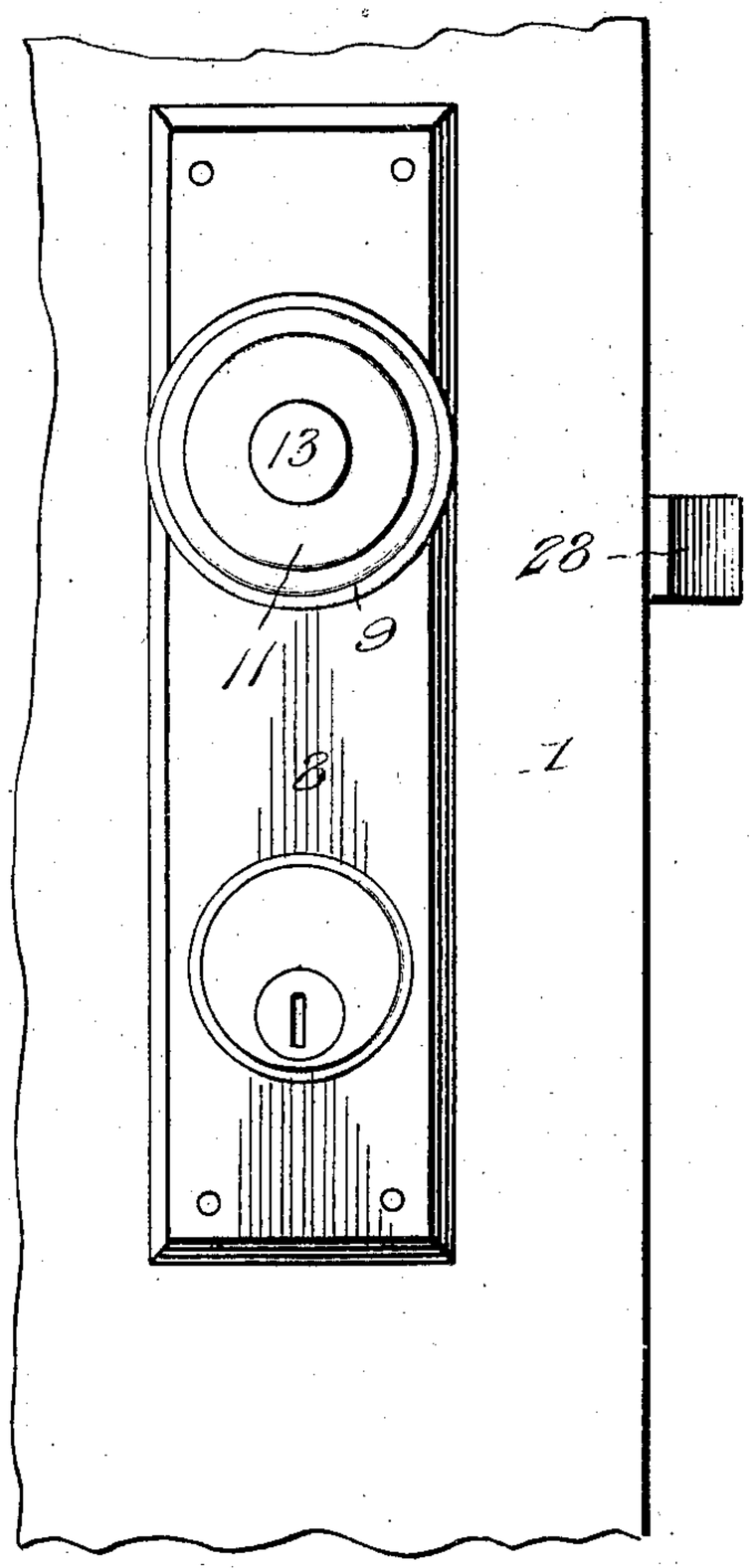


Fig. 9.

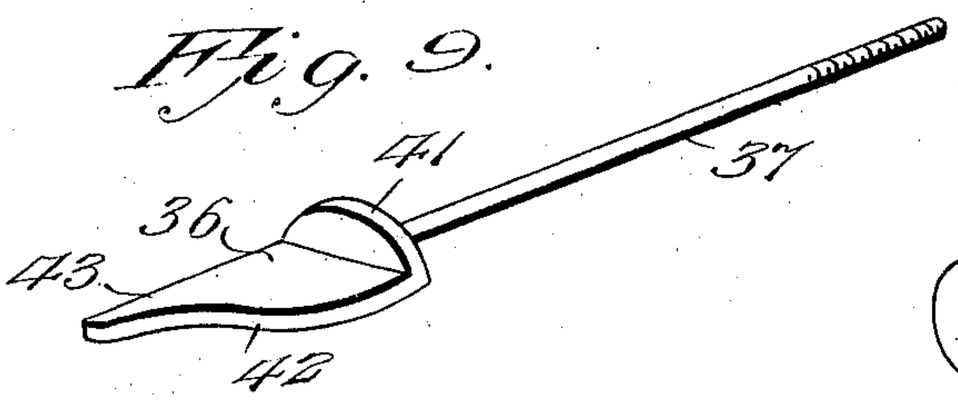
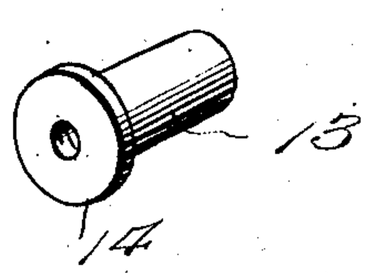


Fig. 10.



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NO MODEL. 3 SHEETS—SHEET 2.

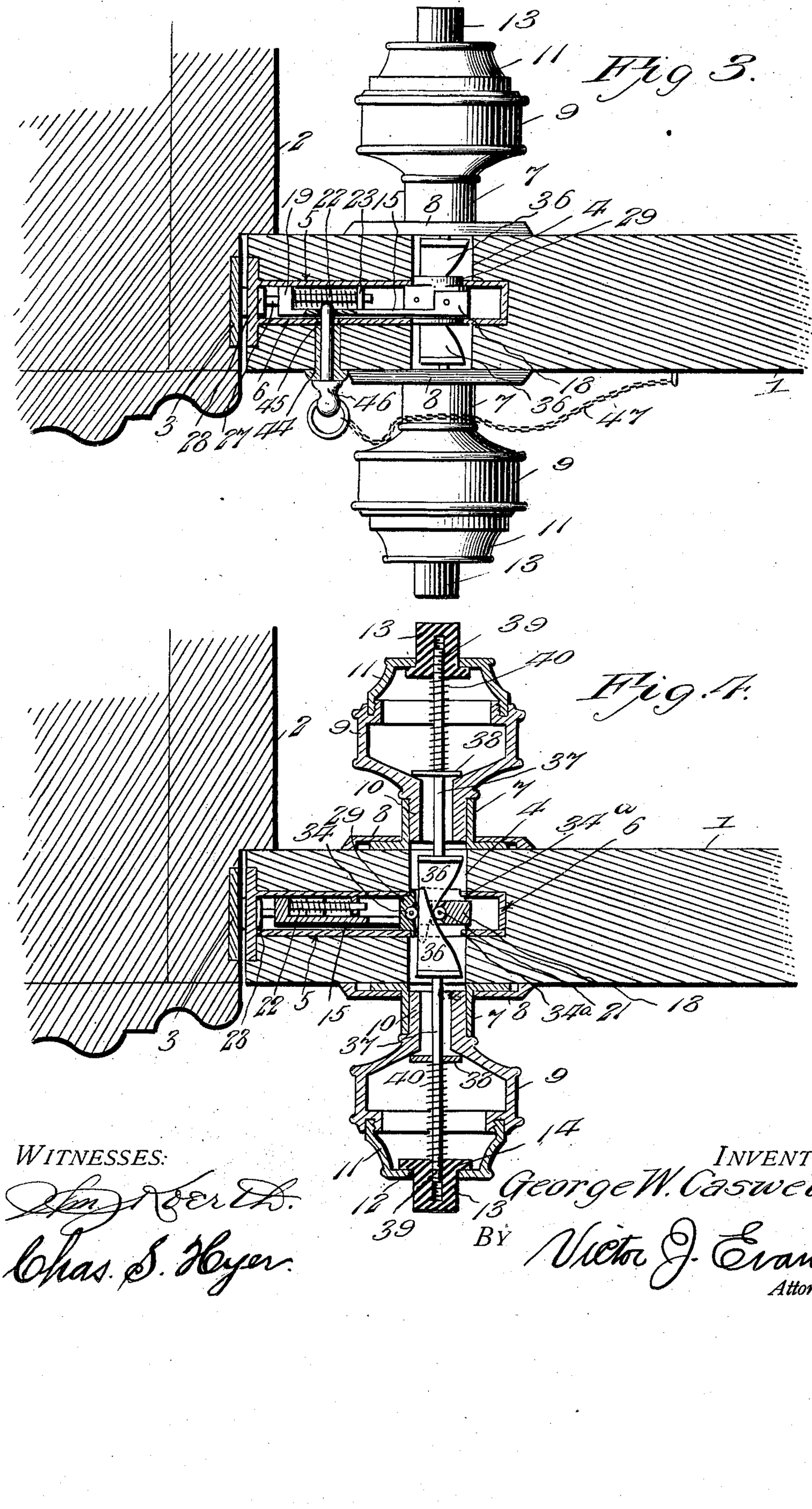

Fig 3.

Fig. 4.

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No. 754,280. PATENTED MAR. 8, 1904.

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APPLICATION FILED JULY 9, 1903.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

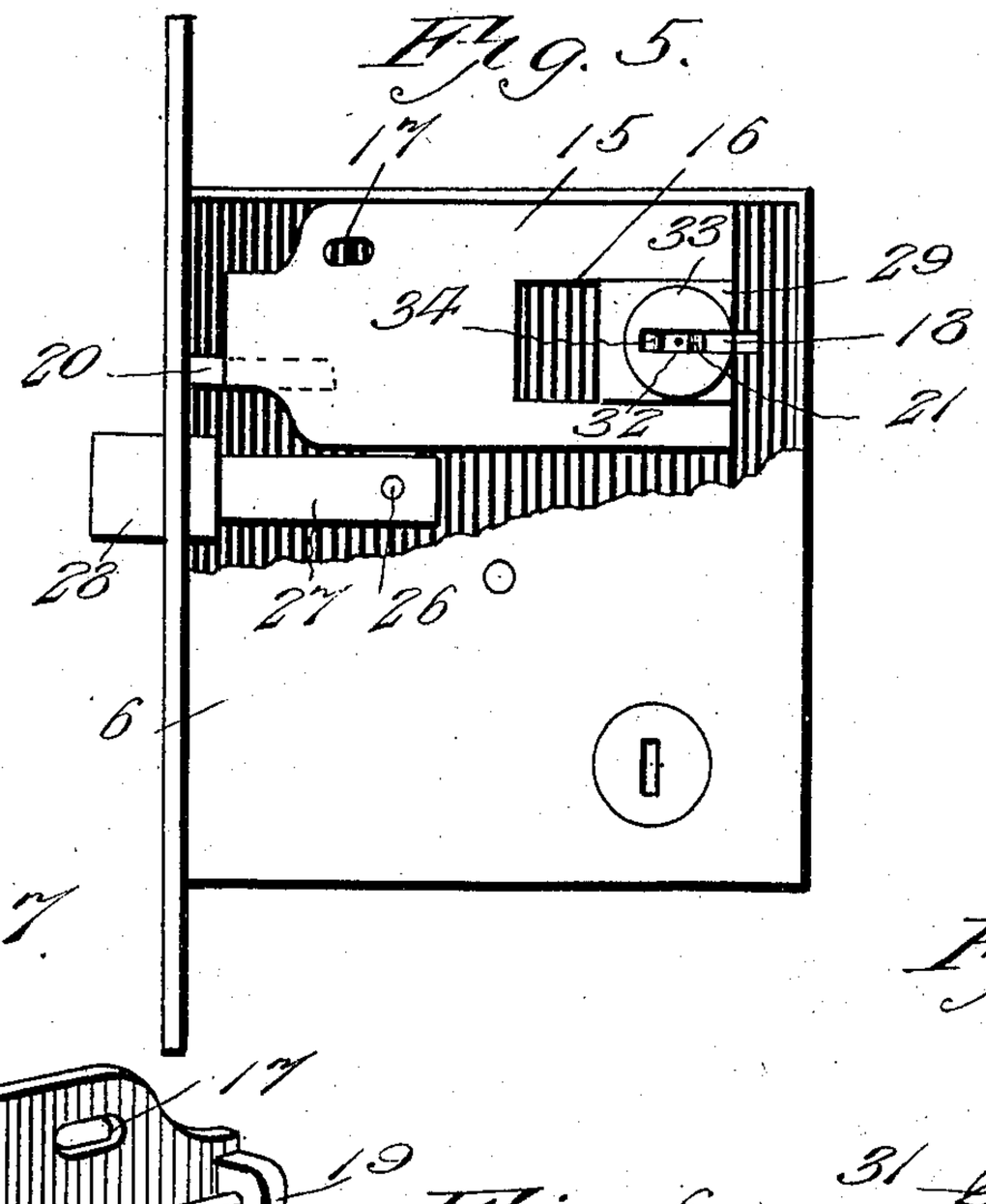


Fig. 7.

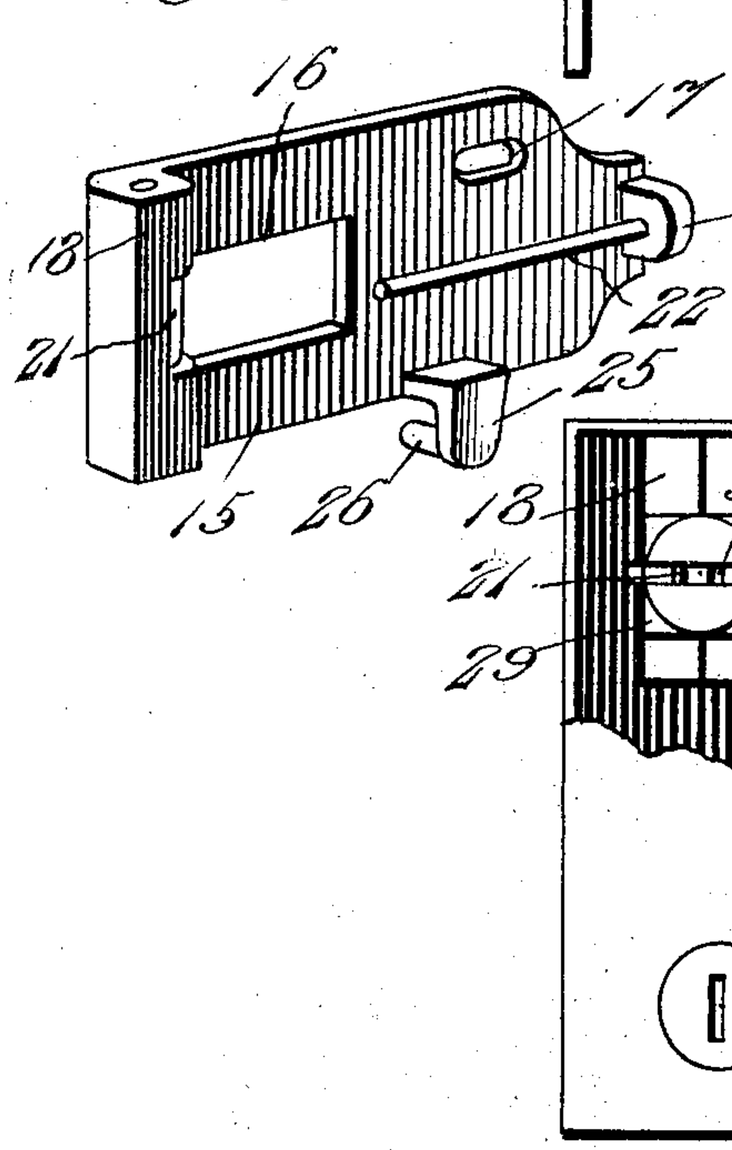


Fig. 6.

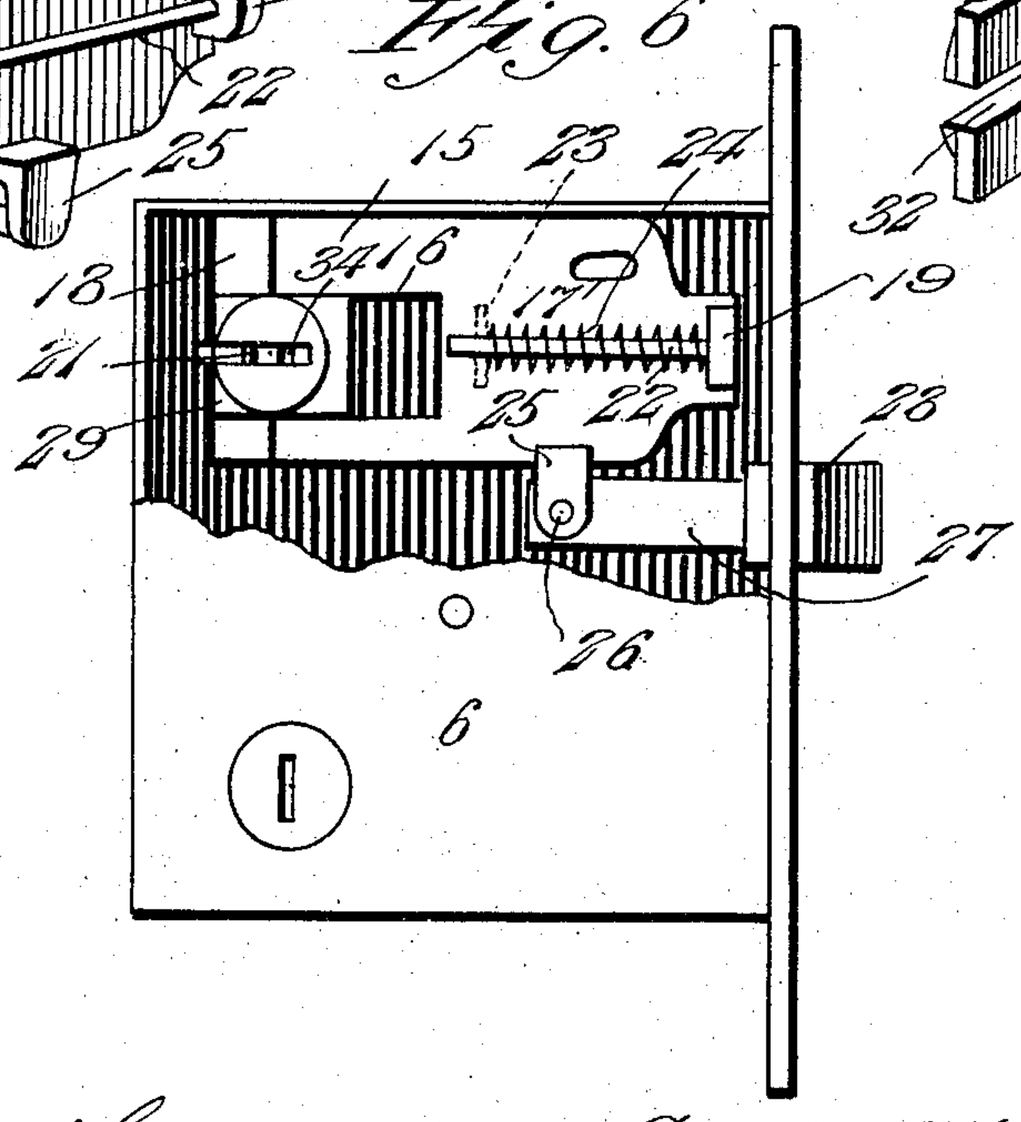
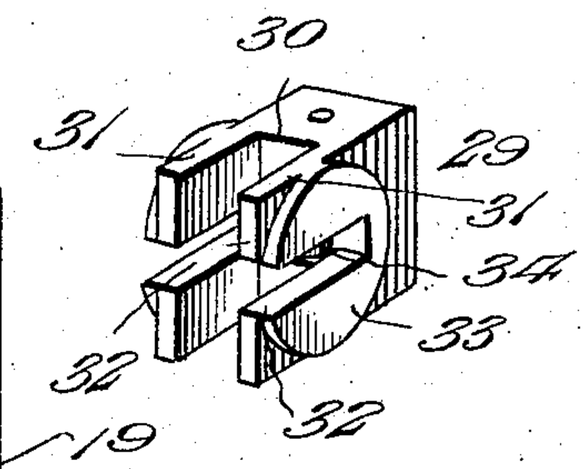


Fig. 8



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No. 754,280. Patented March 8, 1904.

UNITED STATES PATENT OFFICE.

GEORGE W. CASWELL, OF NEW BRITAIN, CONNECTICUT.

LOCK.

SPECIFICATION forming part of Letters Patent No. 754,280, dated March 8, 1904.

Application filed July 9, 1903. Serial No. 164,842. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. CASWELL, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented new and useful Improvements in Locks, of which the following is a specification.

This invention relates to door-locks of that class which are actuated without the use of a key; and the primary object in view is to provide a door-knob with simple and effective mechanism whereby the latch-bolt can be readily retracted without turning the knob, and thus permit the latter to be firmly secured to the door-casing in any desired manner to resist looseness or noise in the actuation of the same.

A further object of the invention is to provide means for locking the latch-bolt upon the inside without the use of a key and in such manner as to be inoperative by the door-knob, and thereby obstruct the operation of those feloniously inclined from entering a house or apartment from the exterior.

The improved lock overcomes many disadvantages residing in locks having knobs held on spindles projecting through the lock-casing and operative by turning either knob thereon in view of the fact that said spindles quickly become worn and work loose. Furthermore, the improved lock can be readily actuated and does not require a complex operation, and the inconvenience attending the use of a key is avoided.

The invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is an elevation of a part of a door looking toward the inner side thereof and showing the improved lock applied thereto. Fig. 2 is a similar view of the opposite side of a part of the door, showing the exterior of the lock. Fig. 3 is a horizontal section through a portion of a door and its frame and the improved lock, the latter being illustrated as secured against operation. Fig. 4 is a view similar to Fig. 3, taken in a lower plane and showing the lock free to be operated. Fig. 5 is an elevation of the lock-casing partially broken away to show the internal construction thereof and looking toward the inner side. Fig. 6 is a view similar to Fig. 5 looking toward the opposite side of the lock-casing. Fig. 7 is a detail perspective view of the latch-bolt-operating slide. Fig. 8 is a detail perspective view of a movable guide carried by the operating-slide. Fig. 9 is a detail perspective view of one of the knob-levers for actuating the slide. Fig. 10 is a detail perspective view of the button or head secured on the outer end of the knob-lever.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a door, and 2 a frame, having a striker-plate 3. In applying the improved lock the door is formed with a transverse opening 4 at a suitable distance inward from the free edge of the door, the said opening being intersected and crossed by a longitudinal mortise 5 to receive the lock-casing 6. Against opposite sides of the door around the terminals of the opening 4 sleeves 7 are secured and held in immovable position by roses 8, the sleeves having inner flanges over which the roses extend. Hollow knobs 9 have tubular shanks 10 rigidly held in the sleeves 7, each knob having an outer removable cap 11, with a central opening 12, in which a button 13 is movably mounted, and has a stop-flange 14 to bear against the inner side of the outer end of the cap. The button 13 projects outwardly beyond the knob to such extent that when said knob is grasped the button will be pressed inwardly and at once cause the latch-bolt to be retracted and the door opened by means which will be more fully hereinafter referred to.

Within the lock-casing 6 an operating-slide 15 is movably mounted and has a longitudinal slot 16 in the rear extremity thereof and a locking-slot 17 in the upper portion of the forward extremity. The operating-slide 15 has a boss or space projection 18 at its rear end and a lug 19 at its forward end, the said projection and lug holding the slide at a proper distance from the outer side of the lock-casing to accommodate the assemblage of coöperating parts therewith and to maintain the said

slide in proper position in the casing. The lock-casing will be provided with means for holding the slide in proper position in the form of projections or lugs ordinarily used in lock structures and one of which is shown by Fig. 5, as at 20, and engaged by the front end of the slide below the lower edge of the lug 19. The slide 15 terminates at the front edge of the boss or projection 18, and in the latter in line with the slot 16 an antifrictional roller 21 is mounted. Extending rearwardly from the center of the lug 19 is a guide-rod 22, which is spaced outwardly from the adjacent side of the slide and engages a stop projection 23 on the inner portion of the outer side of the lock-casing, as shown by Fig. 6, and between said stop projection and the lug 19 a spring 24 is arranged and mounted on the rod 22 to thereby cause the slide 15 to return to normal position when free or not actuated by the mechanism for withdrawing the latch-bolt. A hanger 25 depends from the lower edge of the slide 15 and is located on the outer side of the latter, the said hanger being of right-angular form and projected outwardly and having an inwardly-extending stud 26, carried by its lower end. On the stud 26 the inner end of a latch-bolt 27 is movably mounted, and at its outer end said bolt has the usual form of head 28, movable through an opening in the outer end of the lock-casing. The latch-bolt 27 is pivoted for convenience in assembling it in the lock-casing and to obviate jamming thereof during the movements in opposite directions of the slide, and it will be understood that the head 28, as in ordinary latch mechanisms, has some portion thereof always in engagement with the outer end of the lock-casing. In the slot 16 a guide 29 is mounted, as clearly shown by Fig. 8, and has a vertical slot 30 opening out through the rear end thereof to provide opposite members 31, which embrace the boss or projection 18 and a part of the opposite side of the slide 15, and through the centers of the members 31, formed by the slot 30, horizontal slots 32 are also formed, one in each member, and on the outer sides of the members are bosses 33, which project through openings 34ª in adjacent portions of the opposite sides of the lock-casing. The guide 29 is positioned in line with the opening 4, and the end wall of the slot 30 is disposed outwardly, as clearly shown by Fig. 4. In this end wall of the slot 30 an antifrictional roller 34 is vertically disposed in position to the roller 21, carried by the boss 18 of the slide 15.

The slots 32 and the openings 34ª have cam extensions 36 continually projecting therethrough, the said extensions being in reverse position and individually attached to the inner ends of push-rods 37, having movement through guides 38, held within the knobs 9 and also provided with screw-threads at their outer ends, as at 39, to removably receive the buttons or heads 13. Between the inner ends of the buttons or heads 13 and the guides 38 springs 40 surround the push-rods to return the latter to normal position when pressure has been removed from the heads or buttons. The push-rods, with the cam extensions and the buttons, provide rigid sliding levers by means of which the latch-bolt may be actuated without rotating the knobs 9. The cam extensions 36, as clearly shown by Fig. 9, are flat metal plates with outer angular ends 41, to which the rods are attached, and inner compound curved beveled edges 42 running to points or reduced extremities. The reduced extremities of these clamp extensions are overlapped in the slots 32 and openings 34, and the outer edges 43 of the extensions are straight and bear against the antifrictional roller 34, carried by the guide 29. The inner curved beveled edges 42 of the extensions contact with the antifrictional roller 21 in the rear wall of the slot 16 of the slide, and from this arrangement it will be seen that when either of the rods 37 is pushed inwardly the guide 29 and slide 15 will be retracted and the latch-bolt moved in the same direction, and thereby release the door.

Means are also provided for locking the latch-bolt 27 against movement from the inner side of the door, and for this purpose a metallic guide 44 is inserted in the door in line with the slot 17 of the slide 15, an opening 45 being also formed in the adjacent side of the lock-casing in alinement with the slot 17. A locking-pin 46 is insertible in the guide 44 and is long enough to extend through the opening 45 into the slot 17. This pin is held by a chain 47, attached to the door, so that it will not become lost. When the pin 46 is arranged in the guide 44, as shown by Fig. 3, the slide 15 will be prevented from moving and an effectual latch-lock is produced. It will be understood that the door carrying the improved latch-lock and latch-operating means will also have the usual locking-bolt.

From the foregoing it will be seen that a very effective yet simple means for operating the latch-bolt is provided. One of the main advantages of the improved latch construction is the rigid manner in which the knobs are retained on opposite sides of the door, as well as the simple method of operating the push-rods or the rigid primary actuating-levers, of which the push-rods form a part, and the positive retraction by the cam extensions of the latch-bolt and slide carrying the same. It is also proposed to extend the screw-threads on the outer ends of the push-rods a considerable distance over the latter, so that buttons or heads of various length may be secured to said rod, and lost motion or looseness that may appear will be quickly overcome by adjusting the heads or buttons on the rods. By adjustably applying the buttons or heads on the push-rods means for compensating for a vari-

ation in the thickness of doors will be present, and it will be unnecessary to construct locks embodying the features of the invention with special proportions to accommodate them to doors of different thickness. It will be understood, however, that changes in the proportions, dimensions, and minor details may be resorted to without departing from the spirit of the invention.

Having thus fully described the invention, what is claimed as new is—

1. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide formed with a slot having a lateral projection at the inner edge thereof, a latch-bolt having pivoted relation to the slide, a guide located in said slot and constructed with parallel members embracing said projection and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and spring-controlled cam devices movable through these slots in opposite directions against parts of the slide and guide to retract the slide and latch-bolt.

2. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide having an angular hanger extending therefrom, and formed with a slot having a lateral projection at its inner edge, a latch-bolt pivoted at its inner end to said slide, a guide located in said slot and constructed with parallel members embracing said projection and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and spring-controlled cam devices movable through these slots in opposite directions against parts of the slide and guide to retract the slide and latch-bolt.

3. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide formed with a slot having a lateral projection at the inner edge thereof, a latch-bolt having pivoted relation to the slide, a guide located in said slot and constructed with parallel members embracing said projection and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and means for securing the slide against movement.

4. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide having an angular hanger extending therefrom, and formed with a slot having a lateral projection at its inner edge, a latch-bolt pivoted at its inner end to said bracket, a guide located in said slot and constructed with parallel members embracing said projections and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and means for securing the slide against movement.

5. The combination in a door-lock, of a door having a transverse opening therethrough, and formed with a mortise extending from the edge of the door and crossing said opening, a lock-casing located in this opening, and itself formed with opposite openings in the sides thereof, a spring-projected slide formed with a slot having a lateral projection at its inner edge, said projection supporting a friction-roller, a latch-bolt having pivoted relation to the slide, a guide located in said slot and also supporting a friction-roller and having parallel members embracing said projection and a part of the slide, these members having lateral bosses fitting in the openings in the lock-casing, and both the said members and bosses having alining horizontal slots therein, and spring-controlled cam devices movable through the slots in opposite directions between and against said friction-rollers.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. CASWELL.

Witnesses:
JOSEPH L. ERLBAND,
PATRICK RYNER.