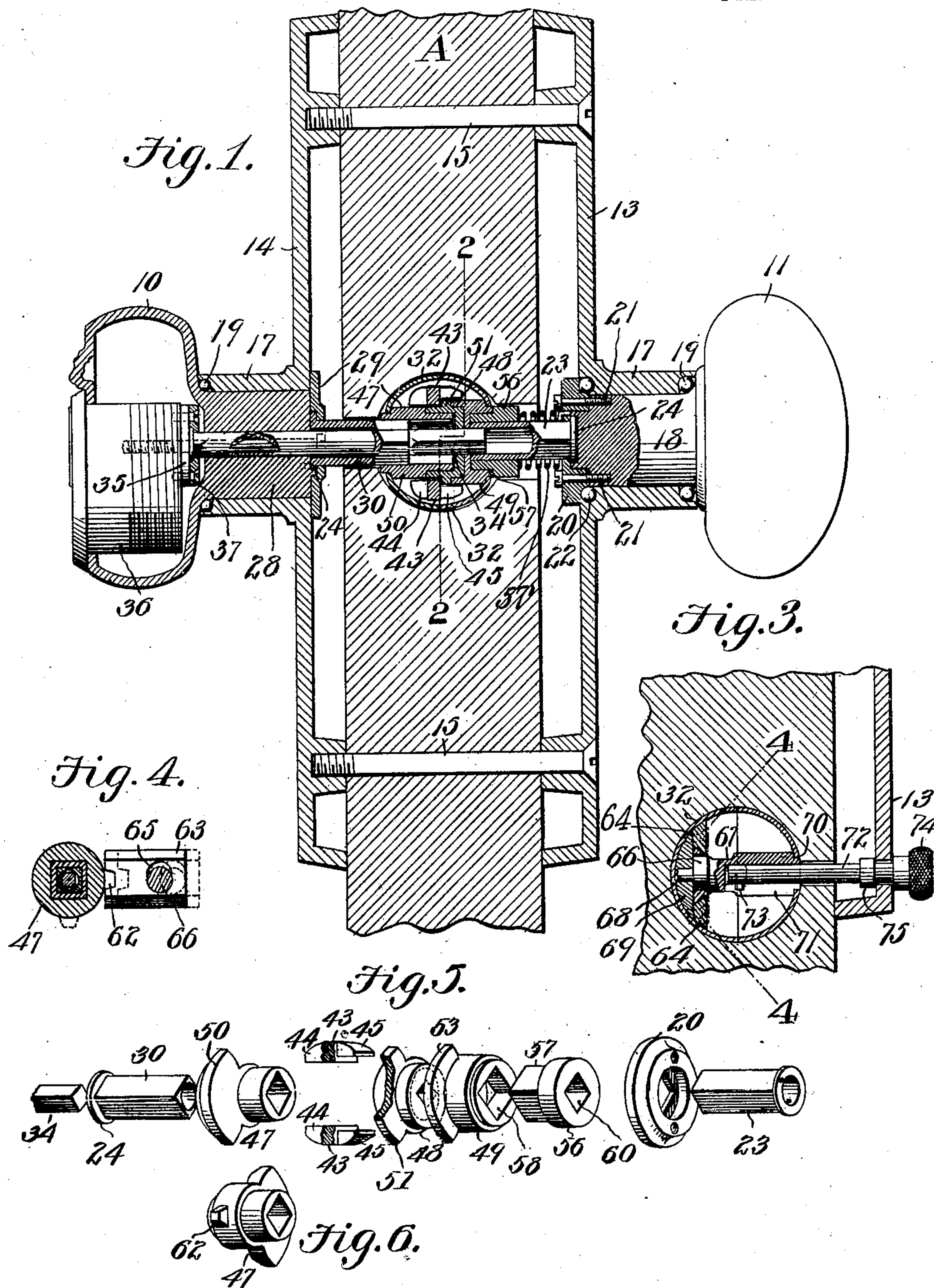


No. 862,230.

PATENTED AUG. 6, 1907.

W. H. F. YOUNG.
COMBINED LOCK AND LATCH.
APPLICATION FILED SEPT. 21, 1905.

2 SHEETS—SHEET 1.



Witnesses
E. H. Stewart
John E. Parker

William H. F. Young, Inventor.
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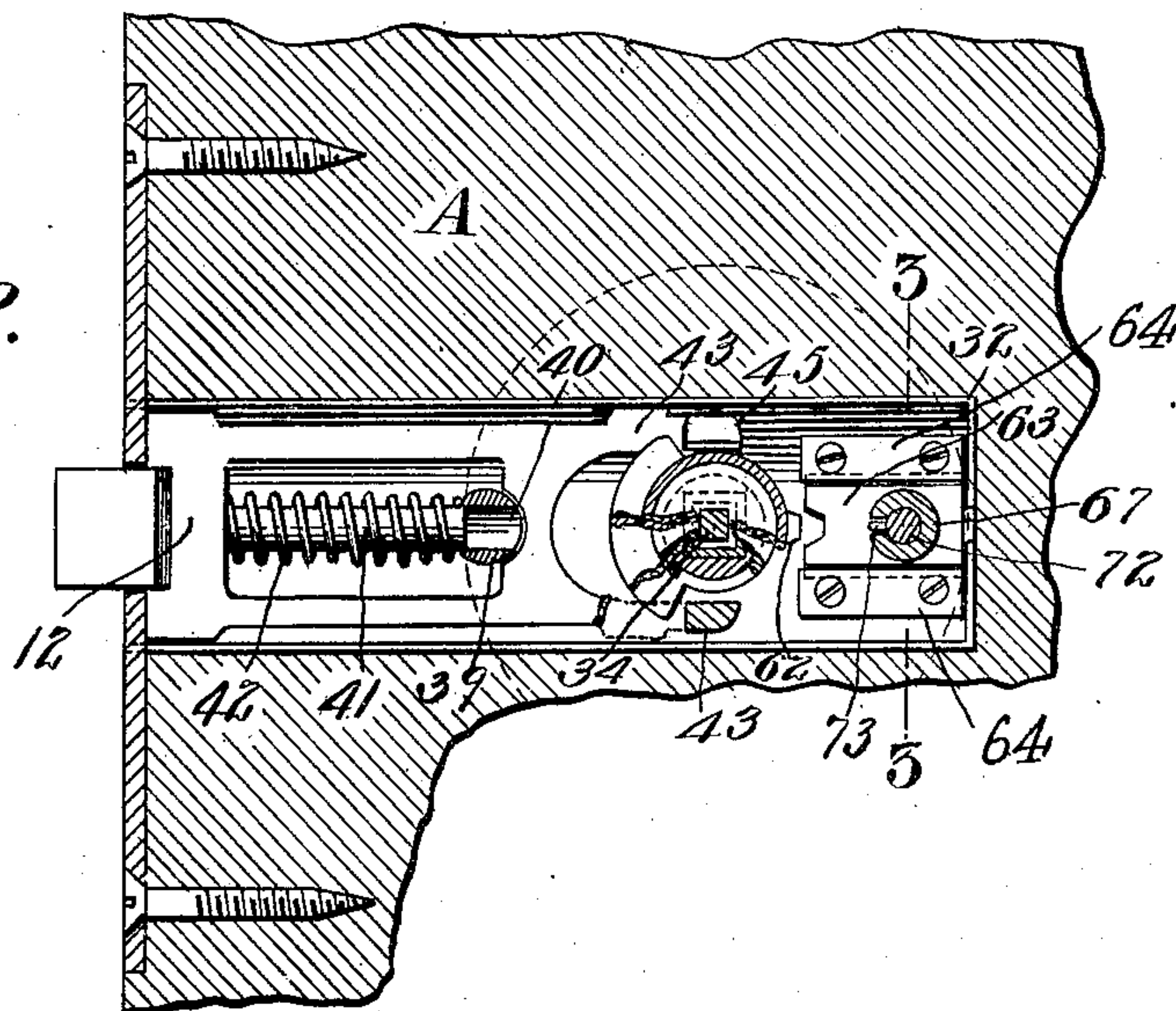
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Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM H. F. YOUNG, OF MUNCIE, INDIANA.

COMBINED LOCK AND LATCH.

No. 862,230.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed September 21, 1905. Serial No. 279,494.

To all whom it may concern:

Be it known that I, WILLIAM H. F. YOUNG, a citizen of the United States, residing at Muncie, in the county of Delaware and State of Indiana, have invented a new and useful Combined Lock and Latch, of which the following is a specification.

This invention relates to locks and latches for use on doors and similar structures, one object of the invention being to provide a construction of lock or latch in which the operating members, are attached to the escutcheons and are so made as to permit adjustment without difficulty to doors of different thickness.

A further object of the invention is to provide a door lock and latch in which the latch bolt may be turned by the inner or outer knob or other operating device, or locked in such manner as to permit its withdrawal by the inner knob, or by a key actuated locking device from the outside of the door.

A still further object of the invention is to provide a novel form of lock and latch in which the latch bolt may be independently operated by the various members of a triple hub or roll-back, the various members of which are independently attached to the inner knob, to the outer knob, and to a key actuated locking device, respectively.

A still further object of the invention is to provide a door lock or latch in which the operating member, for instance a knob, is supported directly by the escutcheon, and is so arranged as to prevent any binding of the knob spindle, and at the same time dispense with the insecure knob fastening devices in common use.

A still further object of the invention is to provide a knob and escutcheon in which the escutcheon is provided with a projecting sleeve surrounding a portion of the shank or spindle of the knob, and provided with ball bearings in which the knob may freely turn.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a sectional elevation of a door lock and latch constructed in accordance with the invention. Fig. 2 is a vertical section of the same on the line 2—2 of Fig. 1. Fig. 3 is a similar view on the line 3—3 of Fig. 2. Fig. 4 is a detail elevation, partly in section, on the line 4—4 of Fig. 3, of the mechanism for locking the latch bolt from movement by the outer knob. Fig. 5 is a detail perspective view of the principal parts of the hub or roll-back and knob spindles, the various parts being de-

tached, and partly broken away. Fig. 6 is a detail perspective view of the roll-back or hub to be actuated by the outer knob.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, A represents the door or similar member, 10 the outer knob, 11 the inner knob, and 12 the latch bolt which ordinarily may be withdrawn to unlatch the door by turning either the outer or inner knob. To the inner and outer faces of the door are applied escutcheon plates 13 and 14, respectively, and these are held in place by machine screws 15, which are inserted through openings in the inner escutcheon, and after passing through the door are turned in threaded openings formed in bosses carried by the outer escutcheon. Projecting from the escutcheon plate 13 is a collar 17 that is arranged to receive the cylindrical shank 18 of the inner knob, and between the outer end of the collar and the base of the shank are arranged bearing balls 19. The shank is held in place by a small ring 20 secured to the inner end of said shank by screws 21, and between this ring and the inner end of the collar are arranged bearing balls 22, so that the knob is free to turn at all times without friction, and receives its support wholly from the escutcheon plate. The ring 20 is provided with a square opening which fits around the correspondingly shaped periphery of the inner knob spindle 23, the inner end of said spindle having an annular flange 24 that is confined in place by the ring, so that the spindle is firmly locked to, and turns with the knob shank. The outer escutcheon plate 14 is also provided with a collar 17 between which and the base of the shank 28 of the outer knob are arranged bearing balls 19, and at the inner end of the knob shank is secured a ring 29 which may be of the same structure as that employed in connection with the inner knob, but in the present instance this ring is shown as bearing against the inner face of the escutcheon plate. This ring 29 is, also, provided with a square opening for the reception of the correspondingly shaped periphery of the outer knob spindle 30 which is turned with the outer knob.

The two knob spindles extend into the latch casing 32 which is placed in an opening or mortise and these are arranged to engage two of the triple hub or roll-back members by which the latch bolt is actuated. In addition to these two spindles, there is a third spindle 34 having a square or non-circular operating end which may telescope within the circular opening of the spindle 23 to accommodate doors of different thickness. The spindle 34 is extended out through the spindle 30, and through a central opening formed in the shank 28 of the outer knob, and the outer end of said spindle is locked to the inner end of the barrel 35 of a pin tumbler lock 36 of any ordinary construction, such, for instance, as a

Yale lock. The outer end of the spindle 34 is provided with a square head, which passes through a correspondingly shaped opening in a ring 37 that is secured by screws or otherwise to the end of the lock barrel. When the key is inserted in the lock, and the barrel turned, the spindle 34 will, also, be turned, and will actuate the third member of the hub or roll-back.

The latch casing 32 is preferably formed of a pair of semi-cylindrical sections, which may be united in the usual manner, as by tenons on one, fitting in mortises in the other, and one of these sections carries a boss 39 having an opening 40 for the reception of a pin 41 that is formed integral with, or is secured to the latch bolt 12 and serves as a means for guiding the latter. This pin is surrounded by a spring 42 which bears at one end against the boss and at the other end against the latch bolt and tends to force the latter outward.

The rear end of the latch bolt is bifurcated to form a pair of arms 43, as will be seen on reference to Figs. 1, 2 and 5, and projecting from these arms are two sets of lugs 44 and 45, the lugs 44 projecting from one side of the bolt, and the lugs 45 from the other side of the bolt.

Within the latch casing, and in a part supported by openings formed in the walls thereof, is a triple hub or roll-back, comprising three principal members, 47, 48 and 49, the member 47 having a square opening for the reception of the spindle 30 of the outer knob and permitting longitudinal adjustment of such spindle in accordance with the thickness of the door. This hub or roll-back has a projecting wing 50, the ends of which engage with the lugs 44 in order to withdraw the latch bolt when the outer knob 10 is turned in either direction. The intermediate hub or roll-back 48 has a central projecting wing 51, arranged to engage with the lugs 45 for the purpose of withdrawing the latch bolt when the lock actuated spindle 34 is turned. The periphery of the hub member 48 on both sides of wing 51 is circular in form, and that portion adjacent the hub 47 is provided with a circular recess arranged for the reception of the circular periphery of hub 47, so that said hubs may be turned freely and independently of each other.

The roll-back 49 is provided with a projecting wing 53 which is also adapted to engage with the lugs 45 for the purpose of withdrawing the latch bolt, and the inner face of said hub member 49 has a circular recess for the reception of the hub member 48, so that either of said members may be turned independently of the other. The hub member 49 has a reduced end portion which fits within an opening formed in the latch casing to permit free turning movement of said hub member, but the hub does not project beyond the latch casing, for the reason that such projection would interfere with the insertion of the casing within the circular mortise formed in the edge of the door. After the latch casing has been placed in position within the mortise, an extension hub member 56, having a squared end portion 57, is inserted in the square recess 58 in the hub member 49, and this hub extension has a square recess or opening 60 for the reception of the square spindle 23 of the inner knob. Surrounding the spindle 23 of the inner knob is a spring 57' which engages against the extension hub member 56 and tends to maintain the same in proper position.

In the construction thus far described, it is apparent

that on the turning of the outer knob, the hub or roll-back 47 will be turned, and by engagement with the lugs 44 will withdraw the latch. Turning the inner knob 11 and its spindle 23 will turn the hub extension 56, and this movement will be transmitted to the hub or roll-back 49, the wing 53 of the latter engaging the lugs 45 of the latch bolt and withdrawing the latter. If the key is inserted in the lock casing and turned, the lock spindle 34 will be turned, and this movement will be transmitted to the intermediate hub member or roll-back 48, the wing 51 of the latter engaging lugs 45 and withdrawing the latch bolt.

In a lock of this type, it is desirable to employ a simple means for locking the outer knob so that the latch bolt cannot be withdrawn by merely turning the knob. For this purpose the hub member 47 is provided with a projecting lug 62 which may be engaged by a locking slide 63 that is mounted within the latch casing, and held in place by a pair of guide plates 64. The locking slide is provided with an opening 65 for the reception of an eccentric 66 that is mounted on a spindle 67, one end of the spindle being reduced in diameter and forming a pin 68 that fits within a suitable opening formed in a block 69 attached to the casing. The opposite end of the spindle is also reduced in diameter and fits within an opening 70 formed in the casing. The spindle is provided with a central longitudinal bore from which extends a slot 71 leading preferably to the periphery of said spindle, the bore and slot being arranged, respectively, for the reception of a pin 72, and a lug 73 that is carried by the pin. The outer end of the pin extends through an opening formed in the inner escutcheon plate 13, and is provided with a milled operating knob 74, longitudinal play of said pin being prevented in one direction by the hub of the knob, and in the other direction by a collar 75 that is secured to said pin. By turning this pin in one direction, the movement may be transmitted to the spindle 67, and the eccentric 66 turned in such manner as to force the slide 63 in the direction of the hubs until the notch at the end of the slide engages the projecting lug 62 of the hub member or roll-back 47, thus positively locking the latter from movement. This affords a ready means for preventing unlatching the door by turning the outer knob, and to open the door from the outside it is necessary to insert the key in the lock 36.

Having thus described the invention, what is claimed is:—

1. In a device of the character described, a latch bolt having a plurality of sets of projecting lugs, a sectional hub or roll back having members each of which is provided with means for directly engaging and operating on said lugs, a spindle telescoping in one of said roll back members and operating the same, a spindle telescoping in another of said roll back members and operating the same, and a third spindle rotatable freely in the other two spindles and telescoping in one of them and engaging and telescoping in a third member of the roll back.

2. In a device of the character described, a latch bolt having a plurality of sets of projecting lugs, a sectional hub or roll back having interfitting members each of which is provided with means directly engaging and operating on the said lugs, a spindle telescoping in one of said roll back members and operating the same, a spindle telescoping in another of said roll back members and operating the same, and a third spindle rotatable freely in the other two spindles and telescoping in one of them and engaging and telescoping in a third member of the roll back.

3. In a device of the character described, a cylindrical

latch casing, a slidable latch bolt mounted therein and provided with a plurality of sets of projecting lugs, a plurality of independently operable interfitting roll backs, partly supported by the casing, and partly supporting each other, 5 said roll backs being confined within the limits of the casing to permit the insertion of the latter in a mortise, an extension member insertible in one of said roll backs after the casing has been placed in position, and a plurality of independently operable spindles arranged in telescopic relation and engaging said roll backs. 10

4. In a device of the class specified, a cylindrical latch casing; a slidable latch bolt arranged therein and provided with a plurality of sets of projecting lugs, a plurality of interfitting roll backs having independent wings for engagement with said lugs, the length of the set of roll backs being approximately equal to the diameter of the casing to permit the insertion of the latter in a circular mortise, an extension member arranged to enter one of said roll backs from a point outside the casing after the latter has been 20 inserted in position, spindles for independent engagement with the roll back members, and a spring surrounding one of said spindles and tending to hold the extension member in position.

5. In a device of the character described, the combination with a latch bolt, of a series of independently operable interfitting roll back members, each provided with a non-circular opening, and a plurality of spindles having non-circular peripheries arranged to enter such non-circular openings, one of said spindles being arranged to telescope 30 within the others and the other spindles being arranged to telescope in the corresponding roll back members to accommodate doors of different thickness.

6. In a device of the character described, the combination with a latch bolt, and roll backs, of an escutcheon 35 plate having a projecting annular sleeve or collar, a knob or similar actuating member having a shank portion fitting within and wholly supported by said sleeve or collar, and a spindle projecting from the shank and arranged to enter one of said roll backs and a ring secured to said shank and confining the spindle thereto to prevent independent longitudinal movement of said spindle. 40

7. In a device of the class described, the combination with a latch bolt, of a roll back for operating the same, an escutcheon plate having a projecting sleeve or collar, an operating knob having a cylindrical shank portion arranged 45 within the sleeve or collar, and wholly supported thereby,

means for locking the knob shank from independent and longitudinal play with respect to said sleeve or collar said knob and shank being detachable with the escutcheon plate, and a spindle member secured to the inner end of 50 the shank and arranged to engage the roll back.

8. In a device of the character described, the combination with a latch bolt having a plurality of lugs, of a plurality of independently operable roll backs, one of said roll backs provided with a projecting lug, independent spindles 55 for engaging the roll backs, a slide having a notch for the reception of the roll back lug, said slide having a transverse opening, a hollow spindle extending through said opening and having an eccentric for engaging the walls thereof, and an operating pin arranged to engage said hollow spindle for moving the slide to or from engagement 60 with the roll back lug.

9. In a device of the character described, the combination with a latch casing, of a slidable latch bolt arranged therein, a plurality of roll backs for engaging the latch 65 bolt, one of said roll backs being provided with a projecting lug, independent spindles for engaging said roll backs, a slide arranged within the casing and having a notch for the reception of the roll back lug, guiding bars for said slide, an eccentric for moving the slide, a spindle carrying 70 said cam and having end bearings within the casing, said spindle having a central bore, and a radial slot extending therefrom, and a spindle operating pin telescoping within the bore, and having a projecting lug entering said slot.

10. In a device of the character described, an escutcheon 75 plate having a projecting collar or sleeve, the inner and outer ends of which are arranged to form component members of ball races, an operating knob having a cylindrical shank extending through said collar or sleeve, the base of the shank being shaped to form in conjunction with the 80 collar or sleeve a ball race, and a ring secured to the end of the shank and, also, forming in conjunction with the collar or sleeve a ball race, and bearing balls mounted within the races.

In testimony that I claim the foregoing as my own, I 85 have hereto affixed my signature in the presence of two witnesses.

WILLIAM H. F. YOUNG.

Witnesses:

WILLIAM H. THOMPSON,
L. L. BRACKEN.