

Jan. 12, 1960

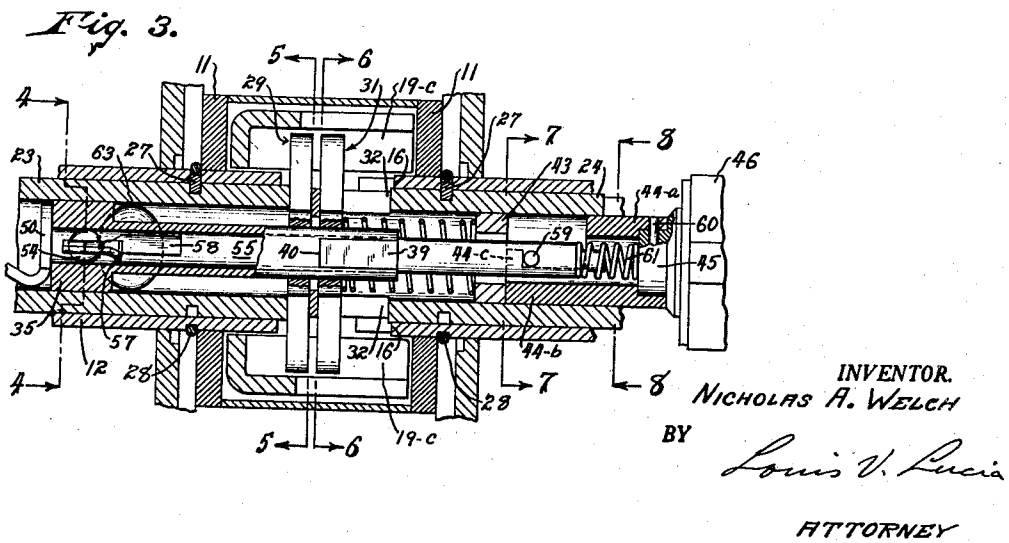
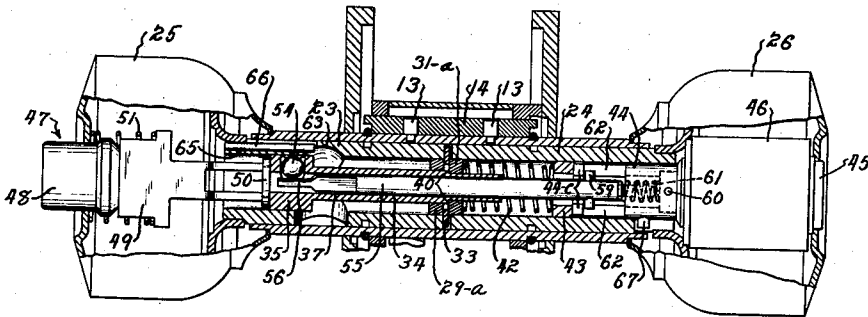
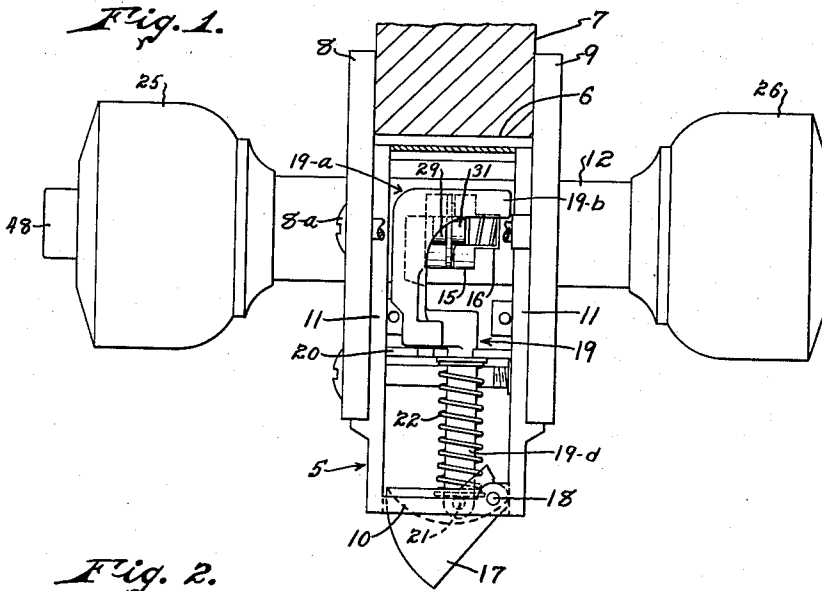
N. A. WELCH

2,920,472

DOOR LOCK

Filed June 13, 1956

2 Sheets-Sheet 1



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N. A. WELCH
DOOR LOCK

2,920,472

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2 Sheets-Sheet 2

Fig. 4.

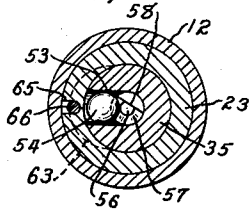


Fig. 5.

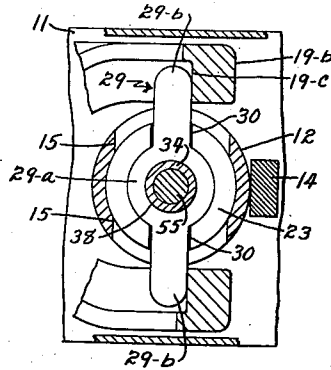


Fig. 6.

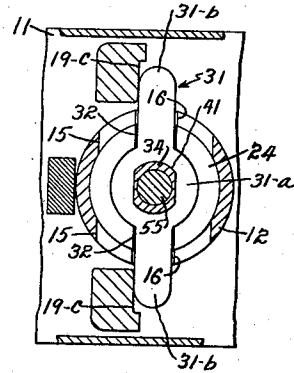


Fig. 7.

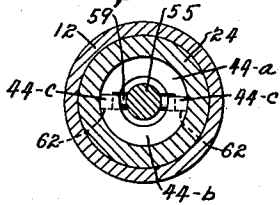


Fig. 8.

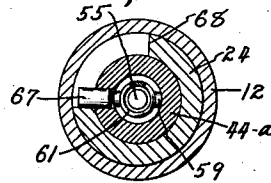


Fig. 9.

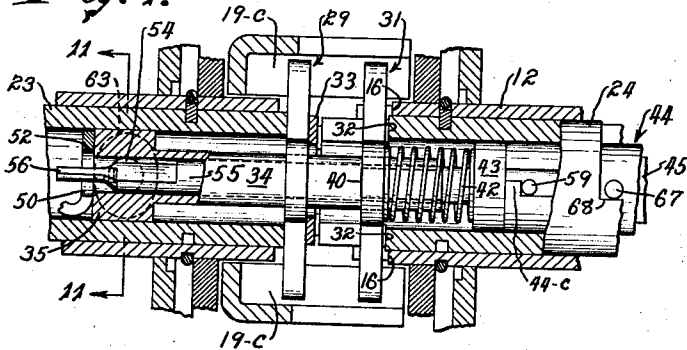


Fig. 10.

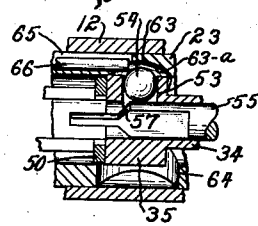


Fig. 11.

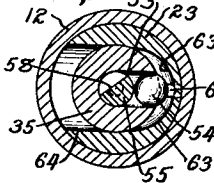


Fig. 12.

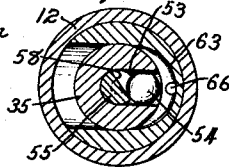
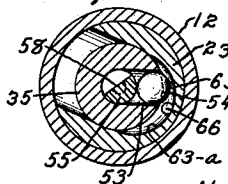


Fig. 13.



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2,920,472

DOOR LOCK

Nicholas A. Welch, West Hartford, Conn., assignor to The American Hardware Corporation, New Britain, Conn., a corporation of Connecticut

Application June 13, 1956, Serial No. 591,210

15 Claims. (Cl. 70—216)

This invention relates to a door lock of the so-called "unit" type which is primarily intended for use on the doors of offices and the like, and, more particularly, to the dogging mechanism employed in such a door lock for selectively controlling the condition of the outer door knob.

In most unit locks, the outer rollback is mounted to slide relatively to the outer knob shank into locking engagement with abutments on the lock housing to thereby dog the outer knob shank and the outer knob against rotation; said outer rollback being moved into and out of dogging position by various types of mechanism depending upon the function of the lock.

In some unit locks heretofore produced for use on doors of the stated type, the outer rollback of the lock was connected to a spindle which extended axially of the inner and outer knob shanks and was adapted to be moved by a pushbutton extending from the inner knob to shift the outer rollback into dogging position. The spindle was yieldingly retained in dogging position by a spring loaded pin which was carried in a stationary element in the lock and was received in a detent on the spindle to prevent the return thereof to undogging position under the influence of a return spring contained within the outer knob shank. Key operated means were provided in the outer knob for moving the spindle to force the detent out of engagement with the pin to thereby permit operation of the lock when the outer knob was dogged.

It was found, however, that because yieldable retaining means were used to hold the spindle, if the outer knob was struck rather hard with a mallet, or even with the heel of a shoe, the spindle could sometimes be moved a sufficient amount to cause disengagement of the detent thereon from the spring loaded pin whereupon the spindle and the outer rollback would be returned to undogging position under the influence of the return spring. As a result, the door could be opened by unauthorized persons without the use of a key.

The primary object of this invention, therefore, is to provide, in a unit lock which is primarily intended for office doors, a dogging mechanism which cannot be "knocked off" by striking the outer knob, thereby providing a lock having a high degree of security.

A further object of this invention is to provide a novel spindle unit for controlling the dogging member for the outer knob shank of a door lock.

A still further object of this invention is to provide a novel spindle construction for moving and holding the dogging means of a door lock in dogging position, and to provide key operated means accessible at the outer knob of the lock for releasing said spindle to permit movement of said spindle and the dogging means to undogging position.

Further objects and advantages of this invention will be more clearly understood from the following description and the accompanying drawings in which:

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Fig. 1 is a plan view of a unit lock embodying the instant invention.

Fig. 2 is a plan view of the lock, partially in central horizontal section, illustrating the dogging mechanism; a portion of the lock housing being omitted in this view.

Fig. 3 is an enlarged, fragmentary, front view of the lock, partially in central vertical section, further illustrating the dogging mechanism of the lock and showing same in normal undogging position.

Fig. 4 is a sectional end view of the lock taken on line 4—4 of Fig. 3 and illustrating the retaining ball for the spindle of the dogging mechanism.

Fig. 5 is a fragmentary, sectional, end view of the lock taken on line 5—5 of Fig. 3.

Fig. 6 is a similar view taken on line 6—6 of Fig. 3.

Fig. 7 is a sectional end view taken on line 7—7 of Fig. 3 and illustrating the key operated driver which forms a part of the dogging mechanism.

Fig. 8 is a similar view taken on line 8—8 of Fig. 3 and further illustrating the said driver.

Fig. 9 is a view similar to Fig. 3, but illustrating the dogging mechanism in dogging position.

Fig. 10 is a fragmentary plan view of the lock, partially in central horizontal section, illustrating the position of the spindle retaining ball when the dogging mechanism is in dogging position.

Fig. 11 is a sectional end view, taken on line 11—11 of Fig. 9, further illustrating the position of the spindle retaining ball when the dogging mechanism is in dogging position.

Fig. 12 is a similar view, but illustrating the manner in which the retaining ball is released from retaining position by key operation from the outer side of the lock.

Fig. 13 is a similar view, but illustrating the manner in which the retaining ball is released when the inner knob shank of the lock is rotated.

In this application, I have chosen to illustrate my invention as embodied in a unit lock housing of the type originally disclosed in the copending application of William V. Schweitzer, Serial No. 498,525, filed April 1, 1955, and now Patent No. 2,821,849, dated February 4, 1958, but it will be readily understood that said invention is applicable to other types of door locks without departing from the spirit thereof.

Referring now to Fig. 1 of the drawing wherein I have illustrated the unit lock for which my invention is particularly intended, the numeral 5 indicates the elongated housing of the lock which is adapted to carry the entire lock mechanism and is received in a notch 6 in the edge of a door 7 in the manner characteristic of all unit locks. The housing 5 is secured in said notch by inner and outer escutcheon plates 8 and 9 which are clamped against the opposite faces of the door by screws 8-a which extend through the inner escutcheon plate and are threaded to the outer plate 9. The housing 5 has a front wall 10 and elongated side walls 11—11 which extend rearwardly therefrom. A tubular knob shank bearing sleeve 12 extends through said side walls adjacent the rear end of the housing and projects beyond the inner and outer sides thereof and through openings in the escutcheon plates 8 and 9. The said sleeve is secured to the housing by retaining pins 13—13 which extend thereinto from a tie bar 14 that is attached to the side walls 11—11. The portion of the bearing sleeve 12 between the side walls of the housing contains diametrically opposed clearance openings 15—15 which are located symmetrically with respect to the vertical axis of the sleeve and from the outer edges of which extend diametrically opposed locking notches 16—16; said locking notches being located centrally of the clearance openings 15—15.

The housing 5 also carries a latch bolt 17 which is pivotally mounted therein by a pin 18 and extends

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through an opening in the front wall 10. The latch bolt is actuated by a conventional retractor 19 which extends longitudinally of the housing and includes a yoke portion 19-a which straddles the bearing sleeve 12 and has laterally extending arms 19-b-19-b whose forward faces provide rollback platforms 19-c-19-c. A bar 19-d extends forwardly from the yoke portion of the retractor through an opening in a supporting plate 20, that extends across the housing, and is connected at its forward end to the latch bolt by a pin 21. The latch bolt and the retractor are biased into normal projected position, as illustrated in Fig. 1, by a compression spring 22 which is disposed between the supporting plate 20 and the pin 21.

The knob shank bearing sleeve 12 rotatably supports inner and outer tubular shanks 23 and 24. The inner knob shank 23 carries an inner knob 25, and the outer knob shank 24 carries an outer knob 26; each of said knobs being secured to its respective knob shank in any suitable manner, but, in the lock illustrated, preferably in the manner disclosed in United States Patent No. 2,675,692 of Nicholas A. Welch et al., dated April 20, 1954. Said knob shanks are retained against axial movement in the bearing sleeve by keys 27-27 which are held in retaining position by resilient wire rings 28-28 which surround the bearing sleeve; said knob shank retaining means being fully described in the copending application of William V. Schweitzer, Serial No. 577,509, filed April 11, 1956.

The inner knob shank 23 carries an inner rollback 29 which, as best shown in Fig. 5, includes a hub portion 29-a that is contained within the bore of the inner knob shank and has diametrically opposed arms 29-b-29-b extending therefrom through slots 30-30 in the inner end of the knob shank and through the clearance openings 15-15 to a position overlying the rollback platforms 19-c-19-c on the retractor. The slots 30-30 are of a depth equal to the thickness of the rollback and it will be understood that the side walls of said slots prevent relative rotation between the rollback and the knob shank.

The outer knob shank carries an outer rollback 31 which is identical in shape to the inner rollback 29 and includes a hub portion 31-a that is disposed within the bore of the outer knob shank and has diametrically opposed arms 31-b-31-b extending therefrom through slots 32-32 in the end of the inner knob shank and through the clearance openings 15-15 to a position overlying the rollback platforms 19-c-19-c of the retractor. The slots 32-32 prevent rotation of the outer rollback relatively to the knob shank and extend into said shank to a point substantially adjacent the outer ends of the locking notches 16-16.

The bearing sleeve 12 contains a spacing washer 33 which is disposed between the adjacent ends of the inner and outer knob shanks and separates the inner and the outer rollbacks. It will also be seen that said washer prevents the inner rollback from moving out of the slots in the inner knob shank.

The rollbacks 29 and 31 are normally retained in aligned relation intermediate the sides of the clearance openings 15-15 by the retractor which is urged against the opposite ends of the rollbacks by the retractor spring, and consequently, the slots 32-32 in the outer knob shank are normally aligned with the locking notches 16-16.

It will be understood from the above description that when the rollbacks are in normal position, as illustrated in Figs. 1 through 3, rotation of either the inner knob 25 or the outer knob 26 in either direction will cause rotation of its respective rollback which will in turn urge the retractor rearwardly relatively to the housing to thereby withdraw the latch bolt.

In door locks of the unit type, the outer rollback is

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generally utilized as the means for dogging the outer knob shank against operation, and it will be readily understood from the above description and from the drawing that the outer rollback 31 is slidable axially in the bore of the outer knob shank to a position wherein the arms 31-b-31-b thereof are disposed in the locking notches 16-16 to thereby prevent rotation of the rollback and, consequently, of the outer knob shank and the outer knob.

The mechanism which I employ for controlling the position of the outer rollback includes a tubular spindle 34 which is disposed axially of the knob shanks 23 and 24 and has a cylindrical head portion 35 at its outer end that is slidable within the bore of the inner shank. Said spindle contains an axial hole 37 and extends through a circular opening 38 in the hub portion of the inner rollback 29. The inner end of the spindle is machined to form opposed flat surfaces 39-39 thereon and the machining operation also forms shoulders 40-40 on the opposite sides of the spindle which face the outer rollback. The said inner end of the spindle extends through a similarly shaped opening 41 in the outer rollback, and it will be understood that rotation of the outer rollback relatively to the spindle is thereby prevented.

The outer rollback is normally urged against the spacing washer 33 by a compression spring 42 which is contained within the outer knob shank and has its outer end disposed against a disk 43 contained within the bore of the shank. Said disk is urged against the end of an axially immovable driver 44 that is rotatably mounted in the outer knob shank and is pinned to the key plug 45 of a conventional cylinder lock 46 that is contained within the outer knob 26, said key plug being accessible for rotation by a suitable key at the outer face of said knob.

The dogging mechanism is actuated by a pushbutton 47 that is slidable contained in the inner knob 25. Said pushbutton includes a head 48 which projects outwardly through an opening in the face of the inner knob and is secured to a plate 49 having a foot 50 that is slidable within the inner knob shank and is urged against the head 35 on the spindle by a spring 51. Said spring also urges the spindle toward the outer rollback to thereby retain the shoulders 40-40 against its inner face, but is considerably lighter than the spring 42 and does not exert sufficient force to move the outer rollback. The foot 50 has a hole 52 therein which is aligned with the hole 37 extending through the spindle.

The head 35 on the spindle contains a radially extending hole 53 which communicates with the hole 37 in the spindle and in which is mounted a retaining ball 54. Said ball is adapted to be moved radially with respect to the sleeve by a blocking rod 55 which extends into the hole 37 in the spindle from the outer knob shank. The inner end of the rod is formed to provide an axially extending finger 56 which is of a smaller diameter than the rod and is normally positioned under the retaining ball 54 to support said ball within the hole 53. The portion of the rod between the periphery of the finger and the periphery of the rod is tapered to provide a cam surface 57 which is normally aligned with the ball 54. A portion of the inner end of said rod is cut away to provide a flat surface 58 thereon which is disposed inwardly of the periphery of the rod and forms, in effect, a recess in its periphery. The outer end of the rod extends through an opening in the disk 43 and is provided with a retaining pin 59 which extends radially from the opposite sides thereof.

The driver 44, which is rotatable, but axially immovable, with respect to the outer knob shank, consists of a tubular portion 44-a, that is pinned to the key plug 45 by a pin 60, and a segmental extension 44-b having ears 44-c formed thereon providing abutments for the

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opposite ends of the retaining pin 59. The said pin is urged against said abutments by a compression spring 61 which is disposed between the end of the key plug 45 and the end of the rod 55, and said pin overlies abutment surfaces 62—62 formed on the segmental extension of the driver.

The inner knob shank 23 of the lock contains a recess 63 in its inner wall which is formed with a spherical milling cutter that is inserted radially into the shank through an opening 64 in the opposite side thereof, and the curved wall of said recess provides a cam surface 63-a for a purpose to be hereinafter described. The outer end of said knob shank contains a longitudinally extending groove 65 in its periphery which communicates with the recess 63 and receives an abutment pin 66 that is secured in said groove and has an end portion extending into the said recess. The pin is located centrally of the recess 63 and is aligned with the retaining ball 54 when the parts are in normal position.

When the inner knob shank is rotated in either direction by the inner knob, the inner rollback will rotate simultaneously therewith and its respective arm will urge the retractor rearwardly in the lock housing to thereby withdraw the latch bolt. Said inner knob shank and the inner rollback will rotate independently of the spindle 34 since said spindle is held against rotation by the outer rollback. When the outer knob shank is rotated, the outer rollback will rotate therewith to cause retraction of the retractor and withdrawal of the latch bolt, but it will be noted that the spindle 34, the rod 55, the driver 44 and the cylinder lock 46 will also rotate therewith and relatively to the inner knob shank.

When it is desired to dog the outer knob against rotation, the pushbutton 47 is depressed thereby causing axial movement of the spindle 34 relatively to the knob shanks and to the rod 55 which is retained against movement by the spring 61. The outer rollback will move simultaneously with the spindle and relatively to the outer knob shank in an outward direction and toward the locking notches 16—16. As the spindle and the outer rollback approach dogging position, the retaining ball 54 will engage the tapered cam surface 57 on the rod 55 and will be cammed radially with respect to the spindle into the recess 63 formed in the inner knob shank. As the retaining ball moves up the cam surface 57, it will first engage the periphery of the pin 66 which momentarily prevents further radial movement of the ball. However, at this point the rod 55 will move axially with the spindle for a short distance against the spring 61 until the retaining ball 54 rides under the end of the pin 66, whereupon the spring 61 will force the rod back into its normal position. Said rod will ride under the ball and cam it further into the recess and into a position wherein it will abut the end of said pin as shown in Fig. 10. Since the ball is confined within the hole 53 in the head 35 and is prevented from moving inwardly by the periphery of the rod 55, said ball, by its engagement with the pin 66, will positively lock the spindle and the outer rollback carried thereby in dogging position wherein the arms of said outer rollback are positioned in the locking notches 16—16 and rotation of the rollback and, consequently, of the outer knob shank and the outer knob, is prevented. Since the retaining ball is positively held in retaining position by the blocking rod 55, the dogging means cannot be released by striking the outer knob thereby preventing operation of the lock by all persons except those possessing the proper key.

When the outer knob is dogged against operation, a person possessing the proper key may operate the lock by inserting the key into the key plug 45 and rotating said key in a clockwise direction, as viewed in Figs. 2 and 8, through an arc of 90° to thereby rotate the driver 44. Said driver is provided with a radially extending stop pin 67 which is disposed in a notch 68 cut into the end of the outer knob shank and, upon reference to Fig. 8, it will be understood that said pin limits rotation of the

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driver and the key plug to 90°. As the driver rotates, it will rotate the rod 55 relatively to the spindle 34 from the position shown in Fig. 11 to the position shown in Fig. 12 wherein the flat surface on said rod is brought into register with the retaining ball 54 to thereby permit inward radial movement of the ball and disengagement thereof from the pin 66. The spring 42 will then urge the outer rollback and the spindle toward the inner knob to thereby remove the arms of the outer rollback from the locking notches 16—16. As the spindle moves toward undogging position, the pushbutton 47 will be projected to its normal position as shown in Fig. 2.

When the stop pin 67 abuts the end end of the slot 68, the dogging mechanism will have been released and further rotation of the key will, through said pin, cause rotation of the outer knob shank and withdrawal of the latch bolt.

When the outer knob shank is dogged against rotation, as shown in Figs. 9 through 11, the spindle 34 is also prevented from rotating, but it will be noted that the inner knob shank is still free to rotate relatively thereto to permit opening of the door from within the room. Upon rotation of the inner knob shank in either direction, the pin 66 will be carried out of engagement with the retaining ball 54, as shown in Fig. 13, whereupon the spring 42 will return the outer rollback, the spindle and the pushbutton to undogging position to thereby release the outer knob. The recess 63 provides sufficient clearance on both sides of the pin 66 to allow rotation of the inner knob shank 23 relatively to the retaining ball 54 and the cam surface 63-a provided by the wall of the recess cams the retaining ball into the hole 53 in the spindle as it is moved toward undogging position by the spring 42. It will be understood that there is sufficient clearance between the cam surface 63-a and the cam surface 57 on the blocking rod to permit the ball 54 to pass therebetween as the spindle moves toward undogging position.

I claim:

1. A door lock comprising a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each having a knob secured thereto, a rollback non-rotatably connected to each of said knob shanks for actuating said retractor; the outer rollback being axially slidable relatively to said outer knob shank into engagement with abutments on said housing to dog the outer knob shank against rotation, spindle means arranged axially of said knob shanks and connected to said outer rollback, a pushbutton projecting from the inner knob and adapted, upon depression thereof, to shift said spindle and said outer rollback into dogging position, retaining means for retaining said spindle and said outer rollback in dogging position, a blocking member normally preventing the release of said retaining means, key operated means operable from the outer knob for moving said blocking member to a position wherein release of said retaining means is permitted, and spring means for returning said outer rollback and said spindle member to undogging position.

2. A door lock comprising a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each having a knob secured thereto, a rollback non-rotatably connected to each of said knob shanks for actuating said retractor; the rollback associated with outer knob shank being movable axially thereof into engagement with abutments on said housing to dog the outer knob shank against operation, a spindle member arranged axially of said knob shanks and connected to said outer rollback, means accessible at the inner knob for moving said spindle member to shift said outer rollback into dogging position, a retaining member carried by said spindle member and movable relatively thereto, an abutment in said inner knob shank, a separate member arranged axially of said knob shanks and normally disposed in the path of said retaining member, said separate member being engageable

by said retaining member upon movement of said spindle toward dogging position and adapted to urge said retaining member into engagement with said abutment, means for moving said separate member into the path of said retaining member to prevent disengagement of said retaining member from said abutment to thereby hold said spindle and outer rollback in dogging position, key operated means in said outer knob adapted to move said separate member out of the path of said retaining member to permit disengagement thereof from said abutment, and spring means for returning said outer rollback and said spindle member to undogging position.

3. A door lock comprising a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each having a knob secured thereto, a rollback non-rotatably connected to each of said knob shanks for actuating said retractor; the outer rollback being axially slidable relatively to said outer knob shank into engagement with abutments on said housing to dog the outer knob shank against rotation, a spindle member arranged axially of said knob shanks and connected to said outer rollback, a push-button extending from said inner knob and adapted, upon depression thereof, to move said spindle and said outer rollback into dogging position, an abutment in said inner knob shank, a retaining ball carried by said spindle member and movable radially thereof, means for moving said retaining ball radially of said spindle into engagement with said abutment upon movement of said spindle and outer rollback toward dogging position, blocking means for preventing disengagement of said retaining ball from said abutment, key operated means in said outer knob for moving said blocking means out of the path of said retaining ball to permit disengagement thereof from said abutment, and spring means for returning said outer rollback and said spindle member to undogging position.

4. A door lock comprising a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each having a knob secured thereto, a rollback non-rotatably connected to each of said knob shanks for actuating said retractor; the outer rollback being axially slidable relatively to said outer knob shank into engagement with abutments on said housing to thereby dog the outer knob shank against rotation, a tubular spindle slidably contained within said inner knob shank and arranged axially thereof, means connecting said spindle to said outer rollback, a pushbutton projecting from said inner knob and adapted, upon depression thereof, to move said spindle and said outer rollback axially of said knob shanks into dogging position, a retaining ball carried by said spindle and movable radially thereof; said retaining ball normally projecting into the interior of said spindle, an abutment in said inner knob shank, a rod arranged axially of said knob shanks and extending into the interior of said spindle; said rod being adapted to urge said retaining ball into engagement with said abutment upon movement of the spindle toward dogging position and to prevent disengagement of said ball from said abutment to thereby positively lock said spindle and outer rollback in dogging position, key operated means in the outer knob for moving said rod out of engagement with said retaining ball to permit disengagement thereof from said abutment, and spring means contained within said outer knob shank for urging said outer rollback and said spindle into undogging position upon the release thereof.

5. A door lock comprising a housing, a retractor for a latch bolt movable in said housing, an inner and an outer tubular knob shank mounted to rotate in said housing and each having a knob secured thereto; said inner knob shank having a recess in its inner wall, an abutment member extending into said recess, rollback means associated with each of said knob shanks for actuating the retractor, the rollback associated with the outer knob being movable axially thereof into engagement with abut-

ments on said housing to dog the outer knob shank against operation, a spindle extending axially of said knob shanks and connected to said outer rollback, a push-button projecting through the inner knob and adapted, upon depression thereof, to move said spindle to thereby shift said outer rollback into dogging position, a radially movable retaining member carried by said spindle and normally aligned with said abutment member, means for moving said retaining member into said recess and into engagement with said abutment member upon movement of said spindle into dogging position to thereby retain said outer rollback in dogging position; said recess permitting rotation of said inner knob shank relatively to said spindle to thereby carry said abutment member out of engagement with said retaining member, and means for returning said outer rollback and said spindle to undogging position upon the release of said retaining member.

6. A door lock comprising a housing, a retractor for a latch bolt movable in said housing, an inner and an outer tubular knob shank mounted to rotate in said housing and each having a knob secured thereto; said inner knob shank having a recess in its inner wall, an abutment pin carried by said inner knob shank and having an end portion projecting into said recess and disposed centrally thereof, a rollback non-rotatably connected to each of said knob shanks for actuating said retractor; the outer rollback being axially slidable relatively to the outer knob shank into engagement with abutments on said housing to dog the outer knob shank against rotation, a spindle member slidably contained within said inner knob shank and non-rotatably connected to said outer rollback, a pushbutton extending from said inner knob and adapted, upon depression thereof, to move said spindle and said outer rollback into dogging position, a radially movable retaining ball carried by said spindle and normally aligned with said abutment pin, means for moving said retaining ball into said recess and into engagement with said abutment pin upon movement of the spindle into dogging position to thereby retain the outer rollback in dogging position; said recess permitting rotation of the inner knob shank in either direction relatively to said spindle to thereby carry said abutment pin out of engagement with said retaining ball, and spring means contained within said outer knob shank for moving said outer rollback and said spindle to undogging position upon the release of said retaining ball.

7. A door lock comprising a housing, a retractor for a latch bolt movable in said housing, an inner and an outer tubular knob shank mounted to rotate in said housing and each having a knob secured thereto; said inner knob shank having a recess in its inner wall, an abutment pin carried by said inner knob shank and having an end portion projecting into said recess and disposed centrally thereof, a rollback non-rotatably connected to each of said knob shanks for actuating the retractor; the outer rollback being axially slidable relatively to the outer knob shank into locking engagement with abutments on said housing to thereby dog the outer knob shank against rotation, a tubular spindle slidably contained within said inner knob shank and non-rotatably connected to said outer rollback; said spindle having a radial hole through its wall normally aligned with said abutment pin, a retaining ball contained within said hole and projecting into the bore of the spindle, a blocking rod extending into the bore of said spindle from the outer knob shank, a cam surface on the end of said blocking rod engageable by said retaining ball upon movement of the spindle toward dogging position for camming said ball radially of the spindle and into said recess to a position wherein said ball will engage the end of said abutment pin, spring means for moving said blocking rod into the path of said retaining ball to prevent disengagement thereof from said abutment pin and thereby hold the spindle and the outer rollback in dogging position; said blocking rod having a portion thereof

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cut away to provide a recess in its periphery, key operated means accessible at the outer knob for rotating said rod to move said recess therein into alignment with said retaining ball to permit disengagement thereof from said abutment pin, and spring means contained within said outer knob shank for moving said outer rollback and said spindle to undogging position upon the release of said retaining ball.

8. A door lock as set forth in claim 7 wherein said recess in the inner knob shank is of sufficient size to permit rotation of said inner knob shank relatively to said retaining ball when said outer knob shank is dogged to thereby carry said abutment pin out of engagement with said ball and release said dogging means.

9. A door lock including a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each being adapted to actuate said retractor, dogging mechanism shiftable axially in said inner knob shank and including a dogging member adapted to interlock with said outer knob shank and a stationary portion of the housing for preventing rotation of said outer knob shank, means projecting from the inner knob shank for shifting said dogging mechanism into dogging position, an abutment in said inner knob shank, a retaining member carried by said dogging mechanism movable into engagement with said abutment when said dogging mechanism is shifted into dogging position, a blocking member in said inner knob shank movable relatively to said dogging mechanism and having a portion engageable with said retaining member for preventing disengagement thereof from said abutment to thereby lock said dogging mechanism in dogging position, manually operated means connected to said blocking member for moving said portion thereof out of engagement with said retaining member whereby said dogging mechanism is released, and means for returning said dogging mechanism to undogging position.

10. A door lock including a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each being adapted to actuate said retractor, dogging mechanism shiftable axially in said inner knob shank and including a dogging member adapted to interlock with said outer knob shank and a stationary portion of the housing for preventing rotation of said outer knob shank, means carried by said inner knob shank and operable from the inner side of the lock for shifting said dogging mechanism into dogging position, an abutment in said inner knob shank, a retaining member carried by said dogging mechanism movable into engagement with said abutment when said dogging mechanism is shifted into dogging position, a rotatable blocking member mounted in said knob shanks and having a portion engageable with said retaining member for preventing disengagement thereof from said abutment whereby said dogging mechanism is locked in dogging position, key operated means in said outer knob shank operable from the outer side of the lock for rotating said blocking member to move said portion thereof out of engagement with said retaining member to thereby release said dogging mechanism, and spring means for moving said dogging mechanism to undogging position upon the release thereof.

11. A door lock including a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each being adapted to actuate said retractor, dogging mechanism shiftable axially in said inner knob shank and including a dogging member adapted to interlock with said outer knob shank and a stationary portion of the housing for preventing rotation of said outer knob shank, means carried by said inner knob shank and operable from the inner side of the lock for shifting said dogging mechanism into dogging position, an abutment

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in said inner knob shank, a movable retaining member carried by said dogging mechanism, and a blocking member in said inner knob shank having a cam portion engageable by said retaining member upon movement of said dogging mechanism into dogging position and adapted to shift said retaining member into engagement with said abutment, said blocking member having a portion movable into engagement with said retaining member to prevent disengagement thereof from said abutment to thereby lock said dogging mechanism in dogging position.

12. A door lock including a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each being adapted to actuate said retractor, dogging mechanism shiftable axially in said inner knob shank and including a dogging member adapted to interlock with said outer knob shank and a stationary portion of the housing for preventing rotation of said outer knob shank, a pushbutton projecting from said inner knob shank and adapted, upon depression thereof, to shift said dogging mechanism into dogging position, an abutment in said inner knob shank, a movable retaining member carried by said dogging mechanism, a blocking member in said knob shanks having a cam portion engageable by said retaining member upon movement of said dogging mechanism into dogging position and adapted to cam said retaining member into engagement with said abutment, a blocking portion on said blocking member, spring means urging said blocking member to a position wherein said blocking portion is in engagement with said retaining member to prevent disengagement thereof from said abutment whereby said dogging mechanism is locked in dogging position, key operated means carried by said outer knob shank adapted to move said blocking member out of blocking engagement with said retaining member, and spring means for returning said dogging mechanism to undogging position upon the release thereof.

13. A door lock including a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each being adapted to actuate said retractor, a spindle slidable axially in said inner knob shank, a dogging member carried by said spindle and adapted to interlock with said outer knob shank and a stationary portion of the housing for preventing rotation of said outer knob shank, a pushbutton projecting from said inner knob shank and adapted, upon depression thereof, to shift said spindle and said dogging member inwardly into dogging position, an abutment in said inner knob shank, a retaining member carried by said spindle and movable relatively thereto, a rotatable blocking rod in said outer knob shank having a portion extending into said inner knob shank, a spring urging said blocking rod toward said inner knob shank, a cam surface on said blocking rod engageable by said retaining member upon movement of said spindle into dogging position and adapted to cam said retaining member into engagement with said abutment, a blocking portion on said blocking rod, said spring urging said rod into a position wherein said blocking portion is in engagement with said retaining member to prevent disengagement thereof from said abutment whereby said spindle and said dogging member are locked in dogging position, key operated means carried by said outer knob shank adapted to rotate said blocking rod to move the blocking portion thereof out of engagement with said retaining member, and separate spring means for urging said spindle and said dogging member to undogging position on the release thereof.

14. The subject matter set forth in claim 13 wherein means are provided for preventing rotation of said spindle when in dogging position whereby said abutment is movable out of engagement with said retaining member upon rotation of said inner knob shank to thereby release said spindle and said dogging member.

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15. A door lock including a housing, a retractor for a latch bolt movable in said housing, an inner and an outer knob shank mounted to rotate in said housing and each being adapted to actuate said retractor, dogging mechanism shiftable axially in said inner knob shank and including a dogging member adapted to interlock with said outer knob shank and a stationary portion of the housing for preventing rotation of said outer knob shank, means projecting from the inner knob shank for shifting said dogging mechanism into dogging position, an abutment on said inner knob shank, a retaining member carried by said dogging mechanism movable into engagement with said abutment when said dogging mechanism is shifted into dogging position, a blocking member in said inner knob shank movable relatively to said dogging mechanism and having a portion engageable with said retaining member for preventing disengagement thereof from said abutment whereby said dogging mechanism

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is locked in dogging position, said abutment being carried out of engagement with said retaining member when the inner knob shank is rotated to thereby release said dogging mechanism, means in said outer knob shank connected to said blocking member and operable from the outer side of the lock for moving said portion of the blocking member out of engagement with said retaining member to release the dogging mechanism, and spring means for returning said dogging mechanism to undogging position.

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