Sept. 17, 1929. E. ELLINGSON 1,728,263

MORTISE NIGHT LATCH

Filed Jan. 19, 1928

Fig. 1.

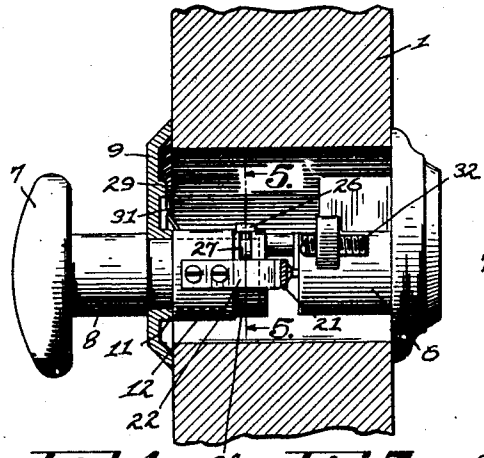


Fig. 2.

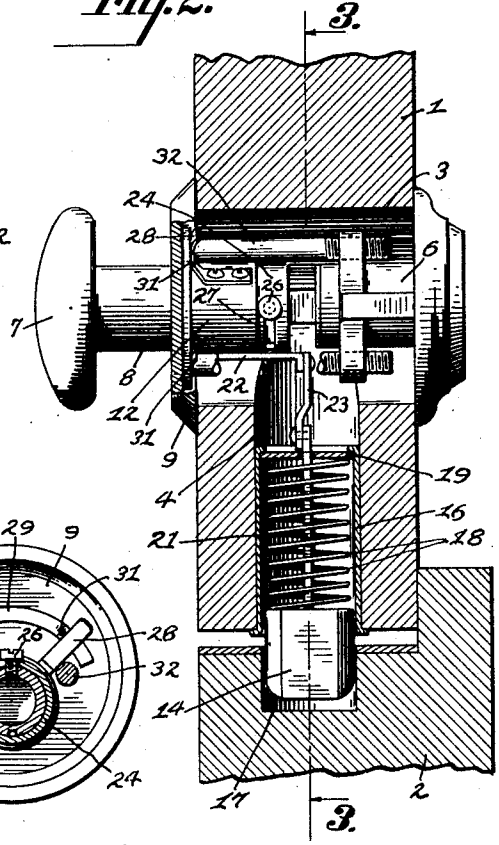


Fig. 4.

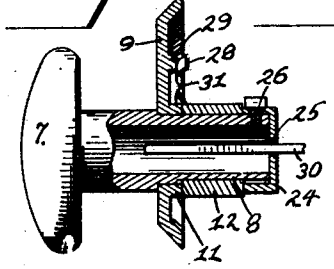


Fig. 5.

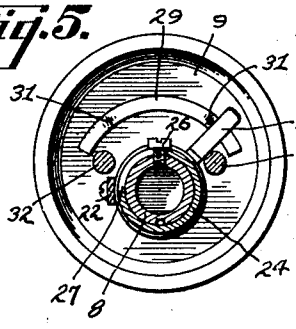
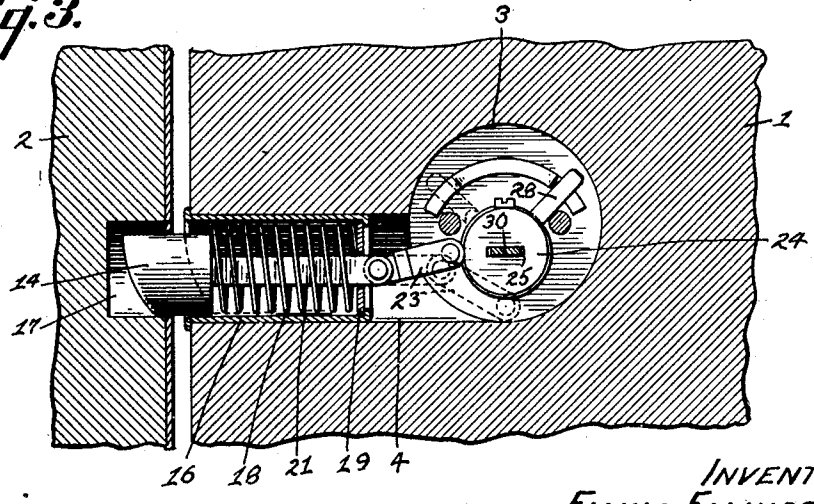


Fig. 3.



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UNITED STATES PATENT OFFICE

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MORTISE NIGHT LATCH

Application filed January 19, 1928. Serial No. 247,910.

My invention relates to improvements in door locks of the type known as "night latch" locks wherein the bolt and its actuating mechanism is enclosed in mortises cut within a door, the bolt being arranged to be actuated from the outside by means of a key and from the inside by a knob arranged to be turned independently of the lock.

The primary object of my invention is to provide an improved door lock.

Another object is to provide an improved lock of the type described wherein the actuating mechanism is entirely enclosed within the body of the door.

A further object is to provide an improved mortise lock which may be actuated by a knob from inside of the door independently of locking means.

Another object is to provide an improved construction and arrangement which will effectually prevent retraction of the bolt from the outside by means other than a key.

A further object is to provide an improved lock of the character described wherein the bolt may be readily moved and held in either a locking or unlocking position.

A further object is to provide improved bolt actuating mechanism which may be installed and utilized in connection with any ordinary cylinder lock without altering the lock construction itself.

A still further object is to provide an improved device which is simple in construction and operation, and which may be economically manufactured and easily installed.

I accomplish these and other objects by means of the improved device disclosed in the drawings forming a part of the present application wherein like characters of reference are used to designate similar parts throughout the specification and drawings, and in which—

Fig. 1 is a broken vertical section of a portion of a door showing, in elevation, my improved mortise lock mounted therein;

Fig. 2 is a broken horizontal section through a portion of a door and jamb showing a plan, partly in section, of my improved device;

Fig. 3 is a vertical section taken upon the line 3—3 of Fig. 2 in the direction indicated;

Fig. 4 is a view partly in vertical section of the bolt actuating knob; and

Fig. 5 is a sectional view taken upon the line 5—5 of Fig. 1 in the direction indicated.

Referring to the drawings, the numeral 1 is used to designate in general a door mounted adjacent the jamb 2. A lock mortise 3 is bored through the door adjacent the edge thereof, and a bolt mortise 4 is bored from the edge of the door to intersect the lock mortise 3 at substantially right angles.

A suitable lock designated in general by the numeral 6 extends into the lock mortise 3 from the outer side of the door. The lock 6 may be of any suitable construction, a lock of any ordinary construction having a cylinder arranged to be rotated by a key being adaptable to the present purpose. As the specific structure of the lock mechanism itself forms no part of the present invention, a detailed disclosure of such structure is omitted from the drawings.

A knob 7 having a stem 8 is rotatably mounted upon a knob plate 9 mounted upon the inside of the door 1 over the mortise 3, said stem being supported by a bearing 11 formed integrally with the plate 9 and extending inwardly into the mortise 3 in axial alinement with the cylinder of the lock 6. A sleeve 12 is keyed or otherwise secured upon the inwardly extending portion of the stem 8, said sleeve being turned with the knob and stem.

A bolt 14 is sildably mounted within a bolt casing 16 set within the outer end of the bolt mortise 4. The bolt is arranged to be moved into engagement with a recess 17 formed in the jamb 2 to lock the door, said bolt being normally moved to locking position by means of a spring 18 compressed within the casing 16 between the bolt and an apertured plate 19 mounted within the inner end of the casing. An extension 21 secured to the bolt 14 extends axially through the casing 16 and apertured plate 19.

An actuating arm 22 is secured upon the sleeve 12, said arm extending past the end of the stem 8. A link 23 is pivotally connected between the end of the arm 22 and the inner end of the bolt extension 21. The axis of the extension 21 is arranged below the plane of the axis of the stem 8 and also below the plane of the arm 22 when the bolt is in normal locking position, thereby causing the link 23 to incline upwardly from the extension 21 to the arm 22, as best shown in Fig. 3 of the drawings, for a purpose which will hereinafter be explained.

A cap 24 is mounted upon the inner end of the stem 8. The cap is held upon the stem by means of a screw 26 secured upon said stem and extending through a slot 27 formed in the cap 24 to permit a limited rotative movement of the stem within the cap in one direction. The cap 24 has an aperture 25 formed therein to slidably engage a tongue 20 secured to the cylinder of the lock 6 and forming a part of said lock. The tongue 20 extends into the stem 8, said stem being made hollow to receive said tongue and permit a rotative movement of said tongue therein.

A retaining arm 28 formed from spring material of any suitable character is secured upon the sleeve 12. The arm 28 is arranged to engage a rib 29 formed upon the inner side of the plate 9 and is movable past raised detents 31 formed upon said rib 29 to hold the bolt and its actuating mechanism in either a locking or an unlocking position as desired.

Screws 32 extend from the plate 9 through the mortise 3 into engagement with the body of the lock 6 to secure said lock and the knob upon opposite sides of the door, said screws being made of sufficient length to accommodate doors of any ordinary thickness. The screws 32 also form stops engaging the arm 28 to limit the rotative movement of the knob 7 and stem 8.

In operation, the bolt is first mounted within the bolt recess and the knob and stem placed in position from the inner side of the door. The line 23 carried by the extension 21 is then secured to the arm 22 through the lock opening from the outside of the door. The lock 6 is then placed in position with the tongue 30 extending through the aperture 25 of the cap 24, and the screws 32 applied and tightened to hold the lock and knob in assembled relation upon the door as shown in the drawings. The arm 28 extends upwardly between the screws 32 and limits the movement of the sleeve 12 and stem 8 to about 90° of rotative movement.

When it is desired to actuate the bolt from the inside of the door, the knob 7 is turned in a clockwise direction thereby partially rotating the sleeve 12 and causing the arm 22 and link 23 to move the bolt 14 and its extension 21 inwardly from the locking position shown in full lines to the unlocking position shown in dotted lines in Fig. 3 of the drawings. In so moving the sleeve 12, the arm 28 is first moved past the detent 31 adjacent the normal locking position of the arm, and as the opposite extreme of movement is approached, the arm 28 is sprung past the opposite detent 31 to normally retain the sleeve in the releasing position. The cap 24 is held stationary by the tongue 30, the stem 8 rotating around the inwardly extending end of said tongue, and the screw 26 being moved through the slot 25, thereby permitting the operation of the knob and bolt independently of the lock 6.

When it is desired to actuate the bolt from the outside, the proper key to the lock 6 is inserted and the lock operated in the ordinary manner. As the cylinder of the lock is turned by the key, the tongue 30 is turned and it in turn actuates the cap 24. The screw 26 is engaged by the end of the slot 25 and thereby operates to turn the stem 8 and sleeve 12 which operate to move the bolt as above described.

The link 23 connected between the extension 21 and the arm 22 forms a positive connection whereby rotation of the sleeve 12 either by the knob 7 or by the lock 6 imparts a positive movement to the bolt 4. The axis of the extension 21 is arranged below the horizontal plane of the axis of the stem 12 and below the normal position of the arm 22 when in locking position so as to obtain a slight eccentricity such that any pressure applied directly upon the bolt, as by an instrument inserted between the edge of the door and the jamb, will tend to rotate the sleeve 12 in a direction opposite to the movement necessary to release the bolt, thereby effectually preventing the bolt from being retracted in this manner.

My improved device is of extremely simple construction and may be readily installed upon any ordinary door in connection with any ordinary cylinder lock. The specific details of construction and arrangement are of course subject to modification in numerous ways without departing from the spirit of my invention, however, and I therefore do not wish to restrict myself to the specific structure disclosed, but desire to avail myself of all modifications which may fall within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. A mortise night latch comprising the combination with a door having intersecting lock and bolt mortises, of a lock extending into the lock mortise from the outer side of the door; a knob provided with a stem extending into the lock mortise from the inner side of the door; a bolt slidably

mounted within the bolt mortise; means connecting the knob stem and the bolt whereby the bolt may be actuated directly by the knob; means connected between the stem and the lock whereby the bolt may be actuated by the lock, said means being arranged to permit the operation of the knob and bolt from the inside of the door independently of the lock; an arm mounted in connection with the bolt means; and detents arranged to engage the arm and hold the bolt in either a locking or unlocking position.

2. A mortise night latch comprising the combination with a door having intersecting lock and bolt mortises, of a lock extending into the lock mortise from the outer side of the door; a knob provided with a stem extending into the lock mortise from the inner side of the door; a bolt slidably mounted within the bolt mortise; means connecting the knob stem and the bolt whereby the bolt may be actuated directly by the knob; means connected between the stem and the lock whereby the bolt may be actuated by the lock, said means being arranged to permit the operation of the knob and bolt from the inside of the door independently of the lock; a spring arm mounted in connection with the bolt actuating means and movable with the knob stem; and detents arranged to engage the arm and hold the bolt in either a locking or unlocking position.

3. A mortise night latch comprising the combination with a door having intersecting lock and bolt mortises, of a lock extending into the lock mortise from the outer side of the door; a knob provided with a stem extending into the lock mortise from the inner side of the door; a bolt slidably mounted within the bolt mortise; a sleeve keyed upon the stem within the lock mortise; an arm connected to the bolt; a link pivotally connected between the bolt arm and the sleeve for moving the bolt when the sleeve is turned with the knob and stem; a cap mounted upon the inner end of the stem adjacent the sleeve, said cap having a slot engaging a stop upon the stem to permit a limited rotative movement of the stem relative to the cap; and means connected between the cap and the lock whereby the cap may be actuated by the lock to turn the stem and sleeve.

4. A mortise night latch comprising the combination with a door having intersecting lock and bolt mortises, of a lock extending into the lock mortise from the outer side of the door; a knob provided with a stem extending into the lock mortise from the inner side of the door; a bolt slidably mounted within the bolt mortise; a sleeve keyed upon the stem within the lock mortise; an arm connected to the bolt; a link pivotally connected between the bolt arm and the sleeve for moving the bolt when the sleeve is turned with the knob and stem; a cap mounted upon the inner end of the stem adjacent the sleeve, said cap having a slot engaging a stop upon the stem to permit a limited rotative movement of the stem relative to the cap; means connected between the cap and the lock whereby the cap may be actuated by the lock to turn the stem and sleeve; and means carried by the sleeve for normally holding the bolt and its actuating members in either a locking or unlocking position.

5. A mortise night latch comprising a lock arranged to extend from the outside into a lock mortise formed in a door; a knob having a stem extending into said lock mortise from the inside of the door; a bolt slidably mounted within a bolt mortise intersecting with the lock mortise at substantially right angles; a sleeve secured upon the stem within the lock mortise; an actuating arm carried by the sleeve; an arm extending axially inwardly from the bolt, said arm being off center with respect to the actuating arm of the sleeve; a link pivotally connected between the actuating arm and the bolt arm for moving the bolt when the sleeve is turned with the knob; a cap mounted upon the end of the stem, said cap being arranged to turn the stem when the cap is turned, and to permit a limited rotation of the stem within the cap when the stem is turned by the knob; and means connected between the cap and the lock whereby the cap may be turned by the lock.

6. A mortise night latch comprising a lock arranged to extend from the outside into a lock mortise formed in a door; a knob plate mounted upon the inner side of the door over the mortise; a knob having a stem rotatably mounted upon the plate in axial alinement with the lock; a sleeve secured upon the stem within the mortise and arranged to be turned with the stem; a bolt slidably mounted within a bolt mortise intersecting with the lock mortise; an extension formed upon the bolt and extending axially inwardly therefrom; an actuating arm carried by the sleeve; a link pivotally connected between the bolt extension and the actuating arm to move the bolt when the sleeve is turned with the knob and stem; a retaining arm carried by the sleeve; means arranged to be engaged by the retaining arm to limit the rotative movement of the knob and sleeve; detents formed upon the inner side of the knob plate to engage and normally retain the retaining arm in either extreme position; and means connected between the stem and the lock arranged to permit said stem to be rotated independently of the lock and to rotate said stem with the lock to move the bolt.

7. A mortise night latch comprising a lock arranged to extend from the outside into a

lock mortise formed in a door; a knob plate mounted upon the inner side of the door over the lock mortise; a knob having a stem rotatably mounted upon the plate in axial alinement with the lock; a sleeve secured upon the stem within the mortise and arranged to be turned with the knob and stem; a bolt slidably mounted within a bolt mortise intersecting with the lock mortise; an extension formed upon the bolt and extending axially inwardly therefrom; an actuating arm carried by the sleeve; a link pivotally connected between the bolt extension and the actuating arm to move the bolt when the sleeve is turned with the knob and stem; a retaining arm carried by the sleeve; means arranged to be engaged by the retaining arm to limit the rotative movement of the knob and sleeve; detents formed upon the inner side of the knob plate to engage and normally hold the retaining arm in either extreme position; a cap mounted upon the inner end of the stem, said cap being arranged to turn the stem when the cap is turned, and to permit a limted rotation of the stem within the cap when the stem is turned by the knob; a tongue connected to the lock and extending axially into the stem, said tongue being slidably engaged by the cap and rotatable within the stem whereby the cap may be turned by the lock to actuate the bolt and also permit the stem to be turned independently of the lock to actuate the bolt.

In witness whereof, I hereunto set my signature.

ELLING ELLINGSON.