

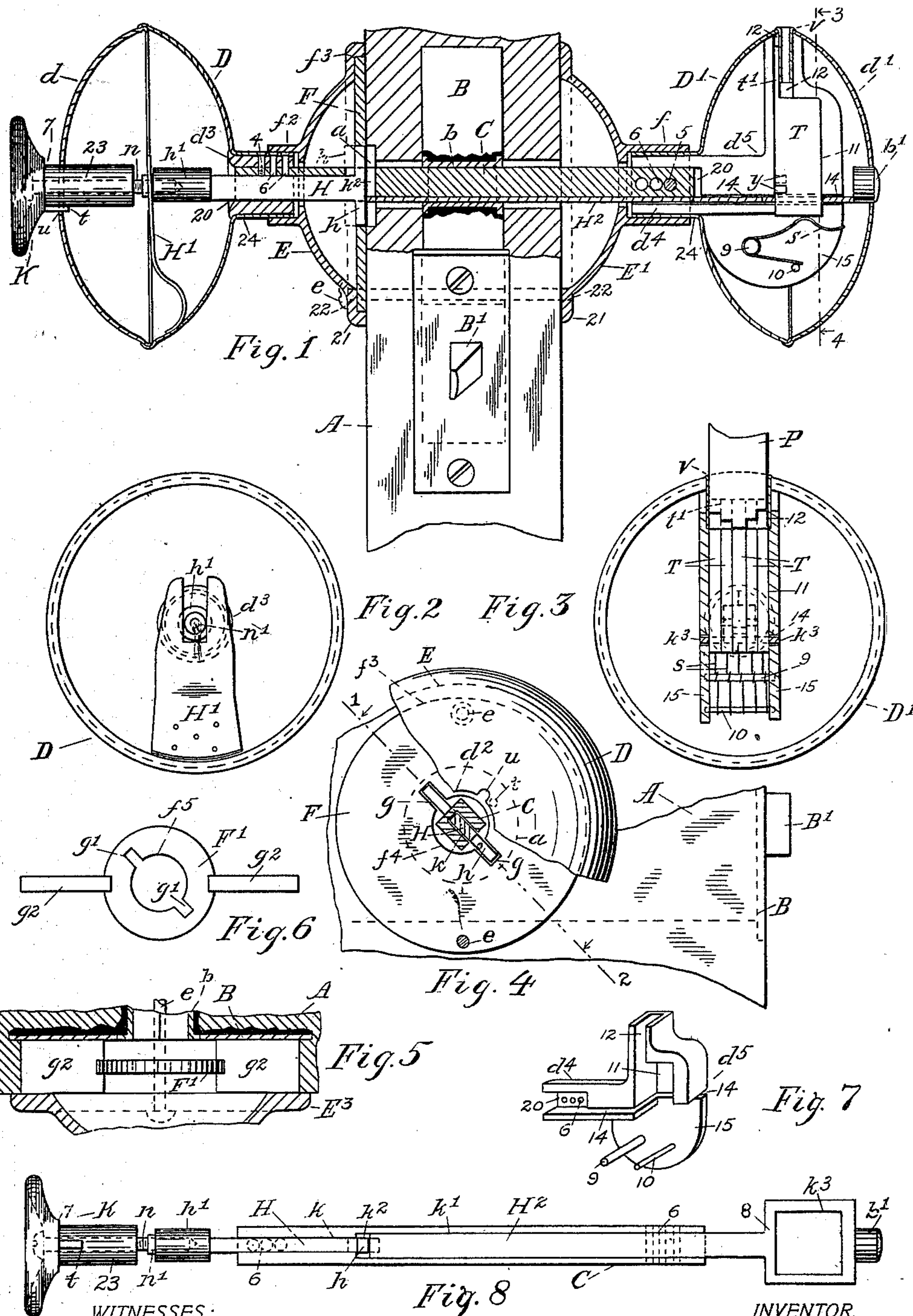
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**P. V. CORNILS.
LOCK.**

(Application filed Mar. 16, 1900.)

(No Model.)



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LOCK.

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Application filed March 16, 1900. Serial No. 8,925. (No model.)

To all whom it may concern:

Be it known that I, PETER VOLGUARD CORNILS, a citizen of the United States of America, and a resident of Seattle, county of King, and State of Washington, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My invention relates to improvements in lock mechanism, and is especially adapted to that class of locking and latching devices designated as "mortise-locks;" and I have for the objects of my invention to provide simple and efficient mechanism for locking a door that can be readily substituted for ordinary knob-spindles in latches or locks of the mortise type, which employ a rotatable spindle to retract the latch-bolt; also, to provide means for engagement with the door-stile whereby a knob-spindle may be locked from rotation from one or both sides of the door. I attain these objects by the construction, combinations, and arrangement of parts as illustrated on the accompanying drawings and set forth in the following specification.

With reference to the drawings forming a part of this specification, Figure 1 indicates a portion of a door-stile viewed at right angles to line 1 2 of Fig. 4 and indicated in transverse section to disclose the lock-case with a portion thereof broken away to uncover the knob-spindle, which is indicated in longitudinal section on line 1 2, Fig. 4, with its attendant parts indicated in relative position when the spindle is locked from rotation. Fig. 2 is an end elevation of the spindle-knob on the left in Fig. 1, but indicated with the cap thereof and its attendant mechanism removed to disclose the spring adapted to press the locking-bolt. Fig. 3 is a similar view of the spindle-knob disclosed on the right in Fig. 1 and the cap thereof removed and the tumbler-case therein indicated in transverse section on line 3 4, Fig. 1, to disclose the arrangement of tumblers provided to engage the push-bar, the yoke of which is also disclosed in transverse section at each side of the tumblers, and a portion of a key is indicated as about to press the tumblers to release the knob-spindle for rotation. Fig. 4 is an end view of the spindle-knob disclosed on the left in Fig. 1, and which is preferably the inner knob on all ordinary doors, and is

indicated with a portion broken away to disclose the plate provided on the door-stile to receive the detent carried by the locking-bolt, which is positioned in the knob-spindle and is indicated therewith in transverse section, and with the detent engaging the plate, and a portion of the door-stile and lock-case indicated in relative position. Fig. 5 is a transverse section through a portion of the door-stile and disclosing portions of a lock-case and escutcheon with a modified form of lock-plate in relative position. Fig. 6 is a plan of the modified form of lock-plate disclosed in Fig. 5. Fig. 7 is a perspective view of one-half of the casing provided in the outer knob-spindle to support the tumblers; and Fig. 8 is a side view of the knob-spindle at right angles to the view thereof disclosed in Fig. 1, but with the spindle-knobs and portions of the locking mechanism removed.

Similar characters of reference designate corresponding parts throughout the several views of the drawings.

With reference to the accompanying drawings, forming a part of this specification, A indicates the stile of any ordinary door; B, the frame of any ordinary mortise lock or latch, ordinarily termed the "lock-case," and indicated in Fig. 1 with a portion broken away to disclose the hub *b*, adapted to operate the latch mechanism, and indicated in transverse section to show the knob-spindle C passing therethrough and engaging therein with in the ordinary manner.

At opposite ends of the knob-spindle C are provided the hollow knobs D and D', the former preferably applied at the inner and the latter at the outer face of the door, and each is provided with a removable cap, as *d* or *d'*, which is secured in position in any well-known manner. These knobs D and D' and the caps therefor are preferably formed from sheet metal, and the hubs 24 thereof are provided with interior reinforcements or castings, as *d*³ and *d*⁴, which are each provided with a suitable recess 20, adapted to receive the ends of the knob-spindle C, and suitable screws, as 4 and 5, are provided to secure the said parts together in the well-known manner, a plurality of threaded apertures, as 6, being provided in the reinforcements and spindle ends to receive said screws, and there-

by provide means whereby the spindle-knobs may be adjusted to accommodate doors of various thicknesses, as in the ordinary arrangement of door-locks of the mortise type.

5 At each face of the door is provided a suitable escutcheon, which is positioned concentric with the knob-spindle C, and the outer escutcheon E' is preferably provided with an extended rim f , which encircles the hub 24 of
10 the spindle-knob D' and provides a bearing therefor to support the knob-spindle and serves to protect the screw 5 from manipulation when the lock parts are assembled in operative position on a door. The inner escutcheon E is also provided with a rim f^2 to receive and provide a bearing for the hub 24 of
15 the spindle-knob D and has an annular recess f^3 provided in the under surface of the base-flange 21 thereof of suitable diameter to
20 receive the rim of the lock-plate F.

The base-flanges 21 of the escutcheons E and E' are preferably of suitable diameter to receive bolts e in suitable apertures 22, which
25 are threaded in the outer escutcheon E' to engage the ends of these bolts and are positioned diametrically opposite to accommodate the bolts e at opposite sides of the lock-case B, whereby the bolts pass entirely through
30 the door-stile and serve to secure the escutcheons and lock-plate F in position, and thereby provide rigid support for the knob-spindle C, with the hubs of the knobs thereof engaging the rims provided on the escutcheons to receive the same.

35 The knob-spindle C is preferably rectangular in cross-section and of suitable dimensions which adapt it for substitution in place of the spindle employed in ordinary latches and locks of the mortise type and is provided
40 with slots k and k' , extending longitudinally thereof, the former preferably extending from the inner end of the spindle to a point adjacent the position of the lock-plate F and terminating at an aperture k^2 , provided transverse the knob-spindle at this point, and the
45 latter extending from said aperture to the outer end of the knob-spindle. The slot k is provided to receive a suitable locking-bolt, as H, which is preferably rectangular in cross-section to correspond with the slot k , in which
50 it may be adjusted by longitudinal movement. The locking-bolt thus positioned in the knob-spindle is preferably produced with its inner end providing a suitable detent h ,
55 which engages the aperture k^2 and extends laterally from opposite sides of the knob-spindle to engage with the lock-plate F when so adjusted in said aperture by a movement of the locking-bolt, the said plate being suitably provided with an aperture f^4 concentric
60 with the knob-spindle and having radial slots g in the periphery thereof of convenient form and size to receive the projecting ends of the detent h , whereby the knob-spindle C may be
65 locked from rotation.

The aperture k^2 , provided in the knob-spindle, is of sufficient length to permit the de-

tent h to move just beyond either face of the lock-plate F and to release therefrom, and thus unlock the spindle for rotation with the
70 detent at either side of the lock-plate, as determined by the operator.

The locking-bolt H is extended in length beyond the inner end of the knob-spindle C and enters the hollow knob D to engage a
75 suitable spring, as H', preferably formed from sheet metal and secured to the inner wall of the knob, with its free end pressing upon the outer end or head h' of the locking-bolt and having a suitable bifurcation to provide for the introduction of a suitable screw-bolt, as n , to the head h' , in which a suitably-threaded aperture n' is provided to receive
80 one end of said bolt and is of sufficient depth to permit of a longitudinal adjustment thereof. This bolt n extends longitudinally from the end of the locking-bolt H and beyond the outer surface of the knob-cap d to provide the axis for a rotatable knob K, which is
85 preferably provided as means for adjusting the locking-bolt to withdraw the detent h from the lock-plate F, and may also be employed by suitable adjustment to prevent the detent from being forced by the spring H' into the annular recess a , which is provided
90 in the door-stile to receive the detent when the push-bar H² is introduced to provide for a manipulation of the detent from the outer spindle-knob D'.

The knob K is provided with suitable means
100 for resisting the inward pressure of the spring H' when the detent h is adjusted to the unlocked position, (indicated by dotted lines on the left of the lock-plate in Fig. 1,) said means preferably comprising a suitable shoulder t ,
105 which is formed by securing a pin beneath the head of the knob upon the hub 23 thereof of suitable length to present the end thereof for contact with the outer surface of the cap d when the knob K is adjusted to an outer
110 position and given a partial rotation to disengage the pin from a suitable notch, as u , provided in the periphery of the aperture d^2 of the knob-cap d to receive said pin when the knob K is resting in an inner position,
115 with the detent h forced by pressure of the spring H' to engage the lock-plate F and to press upon the inner end of the push-bar H².

The push-bar H² is preferably employed to oppose and resist pressure of the spring H';
120 but, if desirable, the knob K may be adjusted for this purpose by entering the screw n still deeper into the head h' , thereby causing the undersurface 7 of the knob-head to bear upon the outer surface of the cap d when the locking-bolt H is adjusted to register the detent
125 h with the lock-plate F, and thus oppose movement of the detent beyond the lock-plate. In this manner the use of the push-bar H² as a stop to oppose the pressure of the spring H'
130 is avoided and the locking mechanism indicated on the inner end of the knob-spindle is adapted to operate independently of the mechanism indicated on the outer end thereof, and

means are thus provided whereby the spindle may be locked from rotation and released for rotation at one side of the door only. It will be understood that the pin which provides the shoulder t should be reduced in length proportionately as the knob K is advanced toward the head h' of the locking-bolt by the adjustment of the screw-bolt n , that the end thereof will clear the outer surface of the cap d when the detent h contacts the wall of the aperture k^2 , as indicated by dotted lines in Fig. 1, and the knob K may then be given a partial rotation to carry the pin t clear of the slot u , when it may rest in a position indicated by the dotted lines in Fig. 4 and secure the knob in its adjusted position and permit the knob-spindle C to be rotated.

To provide means whereby the detent h may be adjusted from the outer spindle-knob D' to lock and unlock the knob-spindle, the push-bar H^2 is preferably introduced and is adapted to engage the slot K' for longitudinal movement therein, with its inner end abutting the detent h and the outer end thereof providing a yoke k^3 , which is adapted to inclose a plurality of suitable tumblers, as T , located within the outer knob D' , and a suitable button b' is provided at the outer extremity of the yoke K^3 , which button projects outwardly a suitable distance from the cap d' to permit said button to be pushed inward to force the detent h from the recess a , provided in the door-stile, into which position it is pressed by the action of the spring H' when the tumblers T are adjusted to permit the inner transverse side 8 of the yoke k^3 to enter the wards y , provided therein.

The tumblers T are preferably positioned in a suitable casing d^5 , which is formed integral with the reinforcement d^4 and is suitably chambered and slotted to accommodate the movement of the push-bar H^2 and the tumblers T and to provide for the support of a plurality of suitable coiled springs, as s , which are engaged at one end with the tumblers to press them toward the keyway v and are suitably mounted on a stud, as 9, and are confined for pressure by a pin 10, which engages the opposite ends thereof. This casing is preferably formed in halves, one of which is disclosed by Fig. 7 and provides a chamber 11 to receive the tumblers T for adjustment transverse the spindle-knob and an extension 12 of said chamber to receive the keyway v , which is preferably formed of sheet metal bent to provide a casing rectangular in cross-section and of less width than the chamber 12, whereby projecting ends t' , which are formed on the tumblers T , are received between one wall of the chamber 12 and the keyway, and the tumblers are thereby more perfectly supported. The casing d^5 is also provided with a suitable recess 20 to receive the end of the knob-spindle, and a slotted extension 14 of said recess is provided to accommodate the push-bar H^2 and yoke k^3 , and each half of the casing is provided with lugs 15,

which provide support for opposite ends of the studs 9 and 10.

The tumblers T may be provided in any suitable number and with wards y transverse the inner edge thereof equal in width to the thickness of metal forming the yoke k^3 and adapted to receive the side 8 thereof when the tumblers are adjusted by pressing upon a suitable key, as P , introduced in the keyway v to force the tumblers against the pressure exerted by the springs s .

The adjustment of the tumblers T by the key P permits the spring H' to adjust the push-bar H^2 and move the detent h into an annular recess a , and thus unlock the knob-spindle C for rotation, and when desirable to again lock the spindle the button b' is employed to force the push-bar H^2 against pressure of the spring H' until the detent h is received by the notches g , provided in the lock-plate F , and the side 8 of the yoke k^3 clears the wards y , when the springs s force the tumblers T to movement and the inner edges thereof engage with the side 8 to oppose movement of the detent by the spring H' , and the knob-spindle is locked from rotation, as indicated in Fig. 1.

It will be understood that the locking-bolt H and push-bar H^2 are positioned within the knob-spindle with reference to the side surfaces thereof, that the spindle may be readily substituted for the ordinary knob-spindle employed in mortise-locks, also that the lock-plate F may be modified, as disclosed in Figs. 5 and 6, and may comprise a section of plate F' with a suitable aperture f^5 , adapted to receive the knob-spindle and permit free rotation thereof, and having suitable notches g' in the periphery to receive the detent h , and suitable radiating leaves or arms g^2 of greater width than the thickness of the plate and set at right angles to the faces thereof to engage the opposite edges of the leaves or arms with the escutcheon E^3 and lock-case B , whereby the lock-plate may be clamped firmly therebetween by pressure of the screws e , and a suitable recess is provided at each side of the plate F' to permit rotation of the detent h when disengaged therefrom.

By simply detaching the knob K the locking mechanism may be modified so as to be operative from the spindle-knob D' only as the spring H' presses the detent h to engagement with the slots g of the lock-plate F and to disengage from the opposite side thereof. Thus the push-arm H^2 and tumblers T are adapted to provide means whereby the detent may be retained in engagement with the lock-plate to lock the spindle or released therefrom by the use of a key, as P , to enter the recess a and free the knob-spindle for rotation when the button b' may be pressed upon by the operator to move the push-arm inward and force the detent into engagement with the lock-plate, and the tumblers are forced by the springs s to move transversely with reference to the movement of the push-bar

and to secure same from outward movement, as heretofore explained.

When the locking mechanism heretofore described is to be provided for doors of various thicknesses, it is found desirable to provide the push-bar H^2 of sufficient length to permit proper operation of the mechanism when the knob D' is adjusted to extreme outer position on the knob-spindle. The inner end of the push-bar may then be reduced in length, if it be found necessary, to adjust the knob inward on the spindle.

It will be clearly understood that the knob K may be moved longitudinally with the inner spindle-knob by simply turning the screw-bolt n , as heretofore described. Furthermore, it is apparent that the detent h is so positioned as to be adapted for engagement with the slots in the lock-plate when the knob-spindle is lying in a normal position, as determined by the latch mechanism contained in a lock-case, as B , and the position of a latch-bolt, as B' , protruding from the lock-case to secure the door in the well-known manner.

Lock mechanism is thus provided which may be readily substituted for the knob-spin- dles employed in ordinary mortise locks and latches, and may be so manipulated when thus introduced that the door may be locked and unlocked from but one side or from both sides thereof, and the knob-spindle and its attendant parts may be readily removed when the user desires to vacate and employ the mechanism on other doors.

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

1. In a lock, the combination of latch mechanism, a knob-spindle normally rotatable to operate said mechanism, a lock-plate at one face of the door-stile, exterior to the lock, locking devices on the spindle and movable into and out of engagement of the lock-plate and securing the spindle against rotation when said devices are engaged with said plate, and means independently operating from each end of the spindle for moving the locking devices out of engagement with the lock-plate and releasing the spindle.

2. In a lock, the combination of latch mechanism a normally-rotatable spindle, a lock-plate at one outer face of the door-stile, exterior to the lock-case and independent thereof, and having a central aperture, a detent movable on the spindle in line with the aperture in the lock-plate, means for actuating the detent to cause it to engage the lock-plate and secure the spindle against rotation, and other means, independent of the first-named means for disengaging the detent from the plate to allow the spindle to be rotated.

3. In a lock, latch mechanism, a knob-spindle normally rotatable to operate said mechanism, locking means carried by the portion of spindle projecting beyond the door-stile, and movable on said spindle, an apertured lock-plate fixedly arranged at one face of the door-stile and independent of the lock with

which said locking means are adapted to engage, and means operative from the end of the knob-spindle for operating said locking means to release and lock the spindle.

4. In a lock, latch mechanism, a knob-spindle normally rotatable to operate said mechanism, a lock-plate arranged at one face of the door-stile and exterior of the lock, a detent carried by said spindle and slidably mounted thereon, a spring exerting its pressure against said detent to engage the latter with the lock-plate to lock the spindle against rotation, and means operative from either end of said spindle for manipulating the detent to release and lock the spindle.

5. In locks providing a mortise-case; a knob-spindle normally rotatable to operate same, a lock-plate exterior the lock-case and independent thereof, a detent engaged with the spindle and adjustable thereon, means pressing said detent to engage the lock-plate to lock the spindle and means, engaging said detent and independently operating from each end of the spindle, whereby the detent may be adjusted to lock and unlock said spindle; substantially as shown and described.

6. In locks; latch mechanism, a knob-spindle normally rotatable to operate same, a lock-plate exterior of the lock and independent thereof, a movable detent engaged with the knob-spindle and spring-pressed to engage with the lock-plate from one side thereof, to lock the spindle, and to disengage from said plate at the opposite side, to unlock the spindle; means, operative from one end of the knob-spindle to withdraw and secure the detent from engagement with the plate and adjustable to permit spring action thereof and other means opposing spring action of the detent when engaging the plate, and operative from the opposite end of the knob-spindle to permit full spring action of and to move said detent to again engage the plate; substantially as shown and described.

7. In locks; latch mechanism, a knob-spindle normally rotatable to operate same and providing a hollow knob, a lock-plate, a locking-bolt slidably engaged with the knob-spindle and having a detent formed at its inner end and projecting from opposite sides thereof, a spring within said knob pressing said bolt to engage the detent with said lock-plate to lock the knob-spindle, and means connected to the locking-bolt and operative from the exterior of said knob whereby said bolt may be operated to unlock the spindle; substantially as shown and described.

8. In locks; latch mechanism, a spindle normally rotatable to operate same and having a hollow knob, a lock-plate, a locking-bolt slidably engaged with the spindle and having a detent formed at its inner end and projecting from opposite sides thereof, a spring, pressing the detent to engage the lock-plate to lock the spindle, and a knob connected to said bolt and projecting from the spindle-knob and providing means whereby the detent may

be operated to unlock the spindle; substantially as shown and described.

9. In locks; latch mechanism, a rectangular spindle, normally rotatable to operate same, 5 and having a hollow knob and a longitudinal slot, a lock-plate, a locking-bolt slidably engaged in said slot and having a detent formed at its inner end and projecting from opposite sides thereof, a spring within said knob pressing the locking-bolt to engage said detent with 10 the lock-plate, and a knob attached to the locking-bolt and projecting from the spindle-knob and providing means whereby said detent may be operated in said slot and secured 15 in adjusted positions to lock and unlock the spindle; substantially as shown and described.

10. In locks; latch mechanism, a knob-spindle normally rotatable to operate same, a lock-plate secured at one face of the door- 20 stile, a detent slidably mounted upon said spindle and spring-pressed to disengage from the plate, and means operative from one end of the spindle, to oppose spring action of said detent when engaging the plate, and adjust- 25 able to permit of said action and to force the detent to move against said pressure to again engage the plate; substantially as shown and described.

11. In locks; latch mechanism, a spindle 30 normally rotatable to operate same and having hollow knobs, a lock-plate, a locking-bolt slidably engaged with the spindle and pro-

vided with a detent adapted to normally engage said plate to lock the spindle, means 35 within one spindle-knob pressing said locking-bolt to disengage the detent from said plate, and adjustable means engaging said bolt to oppose said pressure, and operative from the opposite knob to adjust said detent 40 to unlock and lock said spindle; substantially as shown and described.

12. In locks; latch mechanism, a rectangular spindle normally rotatable to operate same and having a hollow knob and a longitudinal 45 slot, a lock-plate, a detent engaged with said spindle and normally engaging the lock-plate to lock the spindle and spring-pressed to disengage from the plate, an adjustable push- 50 bar in said slot opposing spring action of the detent and extending through and projecting from said spindle-knob, and tumblers within said knob engaging the push-bar to secure said detent in its engaging position and operative, by means of a key, to release same 55 for spring action; substantially as shown and described.

Signed by me at Seattle, county of King, State of Washington, this 13th day of February, 1900.

PETER VOLGUARD CORNILS.

Witnesses:

FRANK E. ADAMS,
RUPERT SCHULTHEISS.