E. D. ZINNINGER.

DOOR LOCK.

APPLICATION FILED SEPT. 10, 1909.

962,287. Patented June 21, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

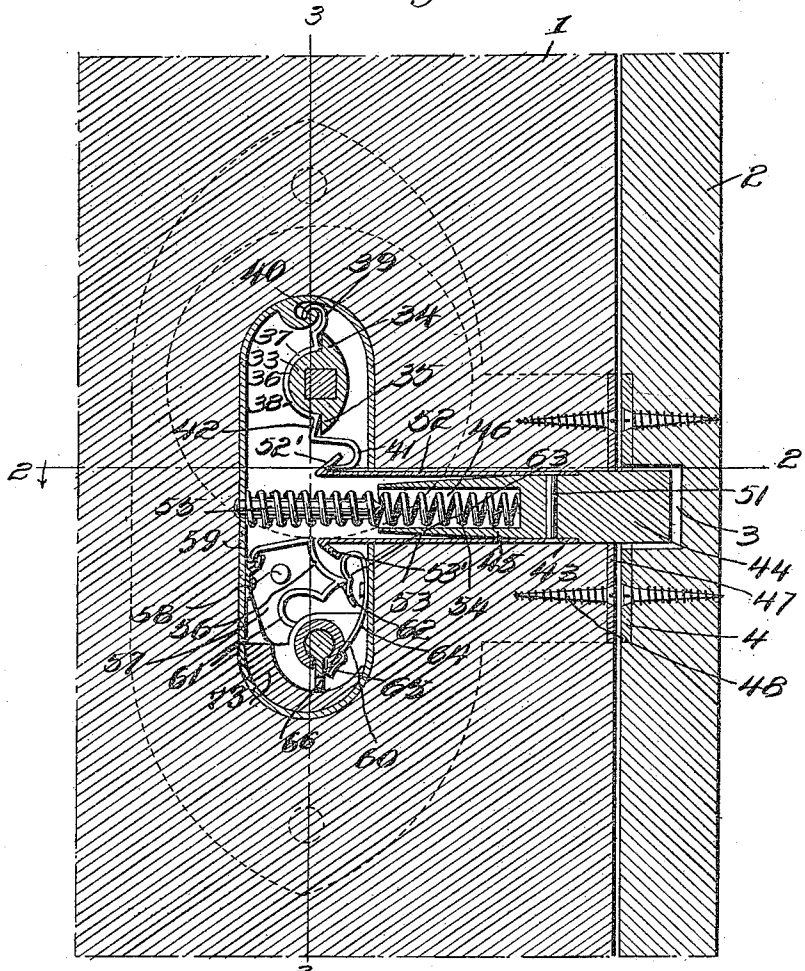
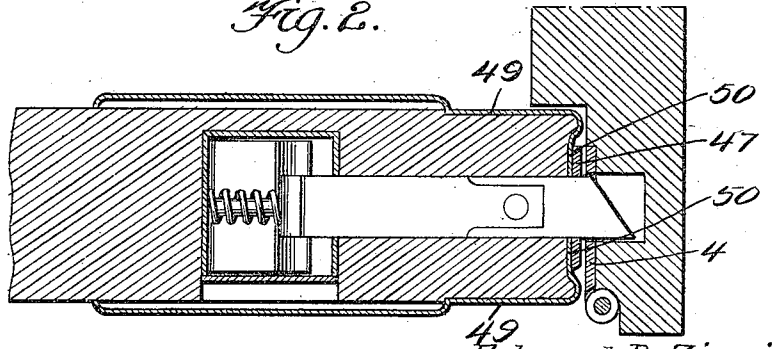


Fig. 2.



Inventor

Edward D. Zinninger

Witnesses

Geo. Ackman Jr.

C. C. Hines.

By Victor J. Evans

Attorney

E. D. ZINNINGER.

DOOR LOCK.

APPLICATION FILED SEPT. 10, 1909.

962,287. Patented June 21, 1910.

2 SHEETS—SHEET 2.

Fig. 3.

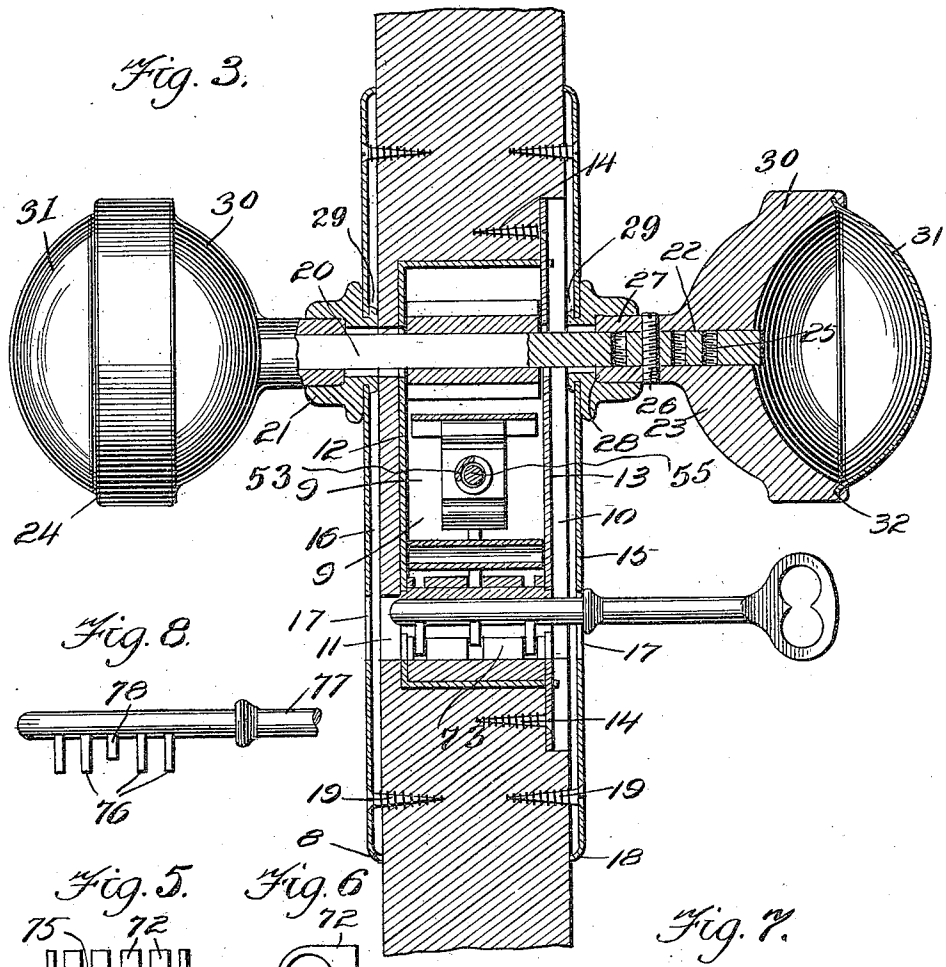


Fig. 8.

Fig. 5.

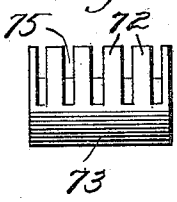


Fig. 6

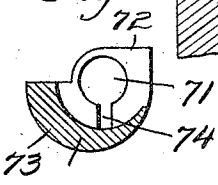
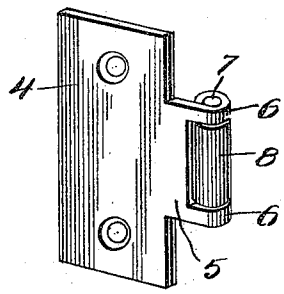


Fig. 7.



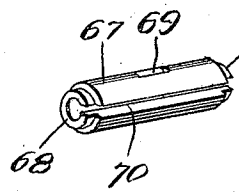


Fig. 4

Inventor

Edward D. Zinninger

By Victor J. Evans

Attorney

Witnesses

Fa. Ackman Jr.

C. C. Hiner.

UNITED STATES PATENT OFFICE.

EDWARD D. ZINNINGER, OF PORTLAND, OREGON.

DOOR-LOCK.

962,287. Specification of Letters Patent. Patented June 21, 1910.

Application filed September 10, 1909. Serial No. 517,129.

To all whom it may concern:

Be it known that I, EDWARD D. ZINNINGER, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Door-Locks, of which the following is a specification.

This invention relates to mortise locks for doors, the object of the invention being to provide a side mortise lock which is simple and inexpensive of construction and adapted to be applied with less time and labor to the door, which is reversible for application to doors hinged to either side of the door frame, and which is adjustable to different widths of doors and presents an ornamental and finished appearance.

A further object of the invention is to provide a simplified construction of locking parts and a combination type of lock in which the bolt when projected can be retracted only by the use of a particular form of key.

With these and other objects in view, the invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a vertical section through the swinging stile of a door and locking jamb of a door frame showing the door locked in closed position. Fig. 2 is a horizontal transverse section on line 2—2 of Fig. 1. Fig. 3 is a vertical transverse section on line 3—3 of Fig. 1. Fig. 4 is a perspective view of the rotary sleeve. Fig. 5 is a side view of the guard. Fig. 6 is a cross section thereof. Fig. 7 is a perspective view of the striker plate. Fig. 8 is a side view of the key.

Referring to the drawings, 1 designates a portion of the swinging stile or edge of a door, and 2 the locking jamb of a door frame, which latter is provided with a keeper socket 3 opening through the face thereof and registering with a correspondingly shaped opening in a striker plate 4 secured to the face of the jamb and preferably fitted within a mortise or recess therein to lie flush with said face. The inner edge of this plate is provided with a bifurcated extension 5 the arms of which are formed to provide knuckles 6 receiving a pintle pin 7 on which is revolubly mounted between said arms a friction sleeve or roller 8 adapted to freely revolve upon the pin. This roller preferably occupies a groove or recess in the jamb so as to lie in an out of the way position, and is adapted to be engaged by the beveled face of the bolt of the lock upon the closing of the door to perform the usual function of a striker lip. The roller adapts the bolt to be retracted in the door closing movement with less friction and noise and less wear upon the parts, and also presents a rolling contact surface by which injury to the clothing of persons passing through the doorway will be prevented.

The portion 1 of the door is formed with a mortise 9 opening through its inner side and communicating on such side with a surrounding recess 10 and at its base with a transverse keyhole slot or passage 11 extending from side to side of the door. Fitted within said mortise 9 is the lock casing 12, which is preferably of oblong form, but may be of any other suitable form, and is closed on its normally inner side by a cover plate 13, which cover plate is suitably secured to said casing and projects beyond the same within the recess 10 and is fastened to the door by screws or other suitable fastening devices 14. By this construction it will be seen that the lock is of the side mortise type, which may be applied to the door with greater ease and less expense than mortise locks of ordinary construction fitted within end mortises extending through the edge of the door. Escutcheon plates 15 and 16 are arranged on opposite sides of the door and may be of any suitable ornamental character or configuration. These plates are formed with keyholes 17 registering with the passage 11, and are preferably spaced somewhat from the sides of the door, being provided with marginal inwardly extending bearing flanges or lips 18 resting against the surfaces of the door, to which said escutcheon plates are secured by screws 19 or other suitable fastening devices.

The knob shaft 20 extends through openings in the casing, cover plate and escutcheon plates, and has its opposite ends extending through bearings 21 on the escutcheon plates and into angular sockets 22 formed in the body portions of the inner and outer handles or knobs 23 and 24. In each end of said shaft a series of spaced threaded openings 25 are formed to receive a fastening screw 26 extending transversely through a tubular shank 27 projecting from the knob, by which the knobs are adjustably secured

to the shaft to vary the distance between them to suit different widths of doors. The shanks 27 of the respective knobs are circular in form to turn within sockets in the respective bearings 21, which latter have shoulders 28 to limit the endwise movements of the shaft and are provided with flanges 29 overlapping the inner faces of the escutcheon plates to fasten the bearings thereto and lie in the spaces between said plates and the opposite faces of the door. Each knob preferably has a comparatively heavy body portion 30 cast or otherwise formed and having a concaved outer portion, which is covered and closed by a concavo-convex outer section 31 of sheet metal or other material provided with a flange 32 suitably fixed within a receiving groove in the body portion.

On the central portion of the knob shaft within the casing is arranged a roll back 33 having oppositely extending lugs 34 and 35, said roll back being formed with a curved or hemispherical face 36 to fit within a correspondingly shaped seat portion 37 on a bolt controlling lever 38. This lever is preferably formed of a strip of sheet metal bent at its upper end to provide a suspending hook 39 loosely engaging a hook 40 on the lock casing by which said lever is pivotally mounted. The lower end of said lever is provided with an engaging hook 41 and an adjacent shoulder 42. The lug 34 engages the upper portion of the lever, whereby the rotary movement of the tumbler is limited, while the lug 35 is adapted to engage the shoulder 42 to force the lever inwardly, the spring material of which the lever is formed adapting it to move outwardly to normal position when the pressure of the lug 35 is relieved therefrom and the roll back is returned to its normal position by the rotation of the knob shaft.

A slot 43 extends through the edge of the door from the front wall of the casing and slidably receives the locking bolt 44 which is provided with an inwardly extending tapered shank 45 formed with a longitudinal socket 46. The end of the bolt is adapted to project through an opening in a guide or wear plate 47 countersunk in a recess in the edge of the door and secured to the latter by fastening screws 48. In order to give an ornamental finish to the edge of the door, the respective escutcheon plates are provided with extensions 49 having flanges 50 which overlap the edge of the door and extend beneath the plate 47. These flanges are adapted to be covered by the plate and are loosely fitted beneath the latter, so as to provide without interference for the spacing of the escutcheon plates to suit different widths or thicknesses of doors.

A pin or rivet 51 passes through the bolt and secures thereto the outer ends of a pair of spring strips 52 and 53 which extend into the lock casing and have hooked inner ends 52′ and 53′ respectively. The hook 52′ is engaged by the hook 41 of the lever 38, by which, under the movement of the knob shaft, motion may be transmitted from said lever to slide the bolt inwardly for the purpose of retraction, as will be readily understood. The bolt is normally projected by a coiled expansion spring 54 partially seated within the socket 46 and partially surrounding a pin 55 fixed to the casing, which serve to center and support the spring as well as to form a guide for the bolt when inserting the latter in the operation of fitting the parts of the lock upon the door.

The hook end 53′ of the strip 53 is adapted to be engaged by a shoulder 56 on a tumbler or locking device 57 pivotally mounted in the casing on a screw or pivot pin 58, which may also serve to secure the cover plate in position. The downward pivotal motion of this tumbler is limited by a hook 59 thereon engaging a stop piece or projection 60 on the lock casing. Said tumbler is formed with a partially circular shoulder or seat 61 and with a point or projection 62, which latter is adapted to engage the bent end 63 of a spring strip 64 intermediately secured to the casing and having a lower bent locking end or latch 65 formed with an instruck portion or shoulder 66. Fig. 1 shows the locking tumbler elevated so that its shoulder 56 lies in the path of the hook 53′, thus preventing the bolt from being retracted by the action of the knob shaft, in which position said tumbler is held by engagement of its projection with the spring latch or locking end 63 of the spring strip. When the tumbler is swung downward from such position, the projection is disengaged from the spring latch, and the shoulder 56 thrown below the plane of movement of the part 53′, allowing the latter to slide over the same so that the bolt may be retracted in the usual manner to serve as a latch bolt through the action of the knob shaft.

The means for operating the tumbler 57 may be an ordinary key, or key actuated device, or a form of ward device, one embodiment of which latter I have disclosed in the present instance. This ward device consists of a rotary sleeve or tube 67 having end journals 68 arranged to turn in suitable bearing openings in the outer wall of the casing and its cover below the seat portion of the locking tumbler. This sleeve is formed in one side with a notch or recess 69 engaged by the projection 66 of the spring latch 65 to hold said sleeve in normal position in alinement with the keyhole 17.

In the sleeve is formed a longitudinal slot 70 arranged at the bottom of said sleeve when the latter is in key receiving position. The sleeve is also arranged to turn within openings 71 formed in spaced flanges or

plates 72 upon a guard 73, which guard is suitably secured in position within the casing. The upper face of the body of the guard is partially circular to permit rotary movement of the sleeve and the flanges or plates 72 thereof are formed with depending slots 74 adapted to normally register with the slot 70. The flanges 72 are properly spaced to provide passages 75 for a desired number of lugs or bits 76 on the stem of the key 77, the arrangement of passages and bits varying as desired to produce the desired combination or permutation action, so that the lock can only be operated by the particular type of key. When the parts are in position to receive the key, the bits extend outward through the slot 70 in the sleeve and may turn in the passages 75 to permit rotation of said sleeve 67, so that the sleeve or bits may engage the seat portion 61 of the locking tumbler and elevate the same to the position shown in Fig. 1 to lock the bolt against retraction. A finger 78 is provided on the key to engage the spring latch 65 to force the shoulder 66 thereof out of engagement with the recess 69, so that the sleeve may be released and turned by the key. Upon the reverse movement of the key the locking tumbler 57 will be forced downward so as to allow the bolt to be retracted.

From the foregoing description, taken in connection with the drawings, the construction and mode of use of my improved mortise lock will be readily understood, and it will be seen that the invention provides a side mortise lock which is simple of construction and capable of being manufactured at a comparatively low cost, and also that by forming the mortise within the sides of the door the amount of time and labor required to fit the lock will be reduced and the cost of application cheapened. Also such a type of mortise may be more easily formed than an ordinary edge mortise, with a consequent reduction in labor and without the necessity of employing highly skilled labor for the purpose. The construction also enables the lock to be applied with facility to different widths of doors and produces an arrangement of parts not liable to get easily out of order.

I claim:—

1. In a lock, a casing, a sliding spring projected bolt, hooked spring fingers carried by the bolt, means, including a hooked member, coacting with one of said hooked fingers to retract the bolt, a pivoted tumbler movable to engage the other finger to lock the bolt from inward movement, said tumbler being gravity retracted and having a projection, a locking spring adapted to engage said projection, a key controlled member for operating the tumbler and retracting said locking member, and a second locking member for normally locking said key controlled member in retracted position.

2. In a lock, a casing, a sliding bolt, hooked spring fingers carried by the bolt, means including a hooked member adapted for coaction with one of said fingers for retracting the bolt, a pivoted, gravity retracted tumbler adapted to engage the other finger to hold the bolt projected, said tumbler being provided with a projection, means for limiting the swinging movement of the tumbler, a key controlled member for operating the tumbler, said member having a locking recess, and spring members adapted to engage the locking projection on the tumbler and locking recess in the key controlled element for normally holding the projected and key controlled element retracted.

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

EDWARD D. ZINNINGER.

Witnesses:

J. E. Spier,

F. A. Rennick.