No. 697,599.

Patented Apr. 15, 1902.

C. W. BARRETT.

LOCK.

(Application filed June 13, 1901.)

(No Model.)

2 Sheets—Sheet 1.

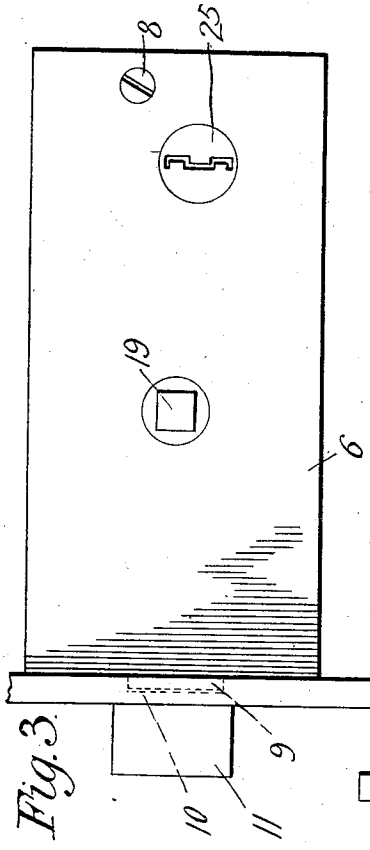


Fig. 3.

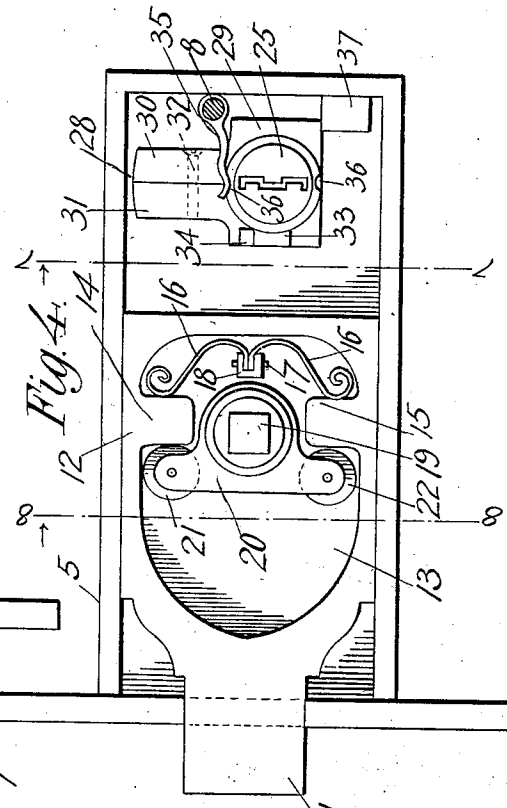


Fig. 4.

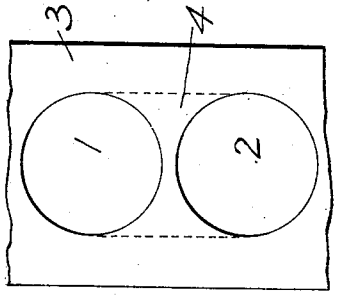


Fig. 1.

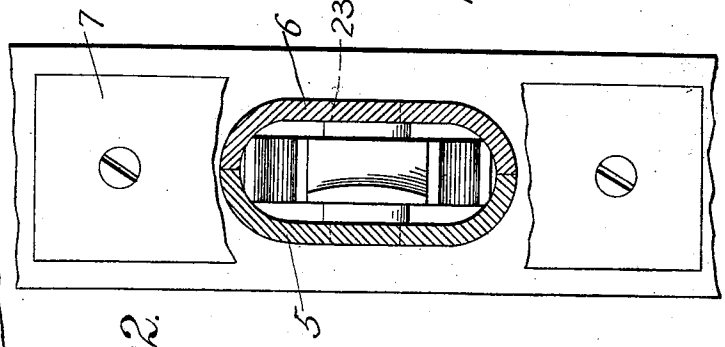


Fig. 2.

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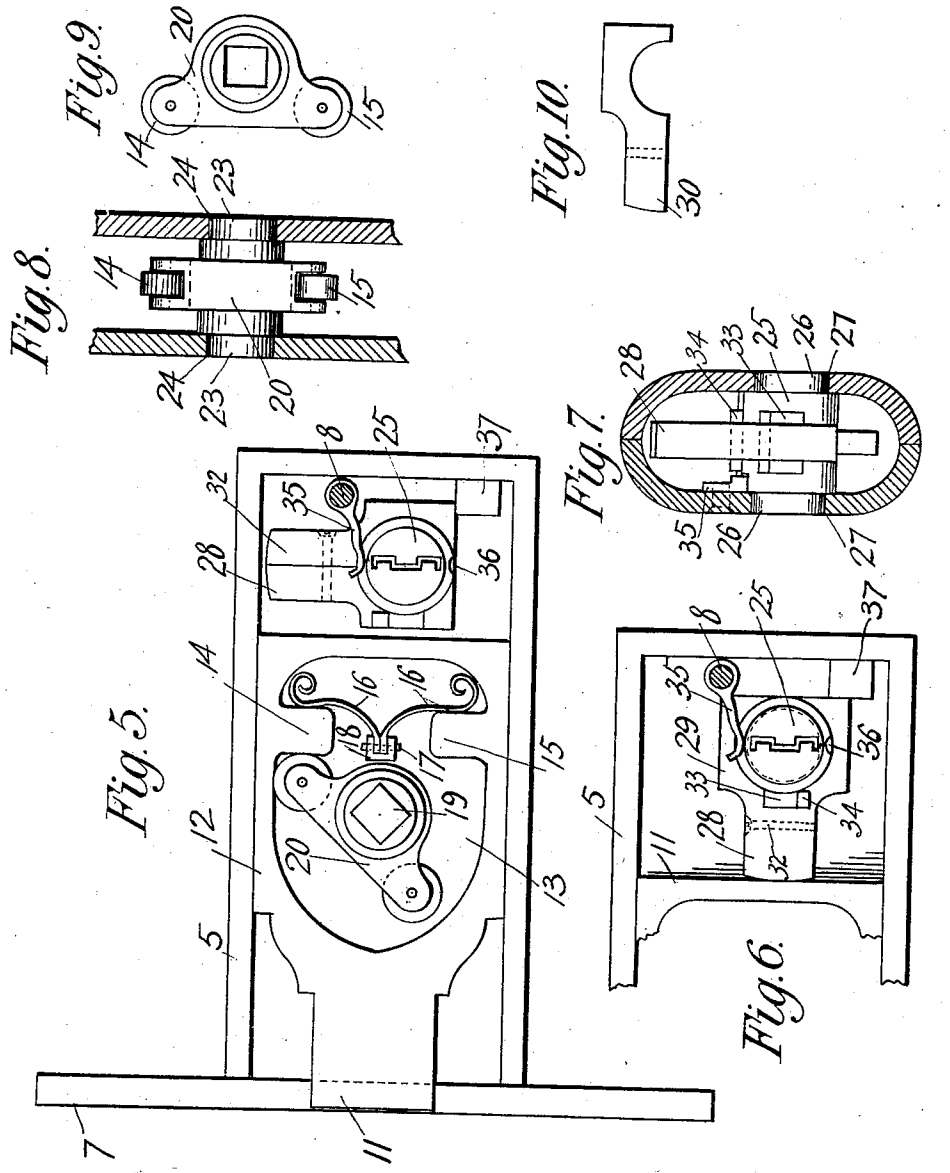
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(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

CHARLES W. BARRETT, OF RALEIGH, NORTH CAROLINA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 697,599, dated April 15, 1902.

Application filed June 13, 1901. Serial No. 64,413. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. BARRETT, a citizen of the United States, residing at Raleigh, in the county of Wake and State of North Carolina, have invented certain new and useful Improvements in Mortise-Locks for Doors; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in mortise-locks for doors.

The object of the invention is to provide a mortise-lock which is simple, cheap, and durable in construction, effective in operation, and adapted to occupy a mortise of such form as to be easily and quickly made and of such size as to not materially affect the strength of the door.

With this and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is a fragmentary elevational view of the edge of a door, showing the manner of forming the mortise therein. Fig. 2 is a similar view showing the lock applied, the face-plate being broken away to expose the casing, which appears in transverse section. Fig. 3 is a front side elevation of the lock detached. Fig. 4 is an interior view of the lock, the removable casing-section being detached, showing the normal position of the parts. Fig. 5 is a similar view showing the latch-bolt retracted by its tumbler-block. Fig. 6 is a fragmentary interior view similar to Figs. 4 and 5, showing the latch-bolt held projected by the key-bolt. Fig. 7 is a cross-section through the lock on line 7 7 of Fig. 4. Fig. 8 is a cross-section through the lock on line 8 8 of Fig. 4. Fig. 9 is a detail view of the tumbler-block, and Fig. 10 is a similar view of one of the sections of the key-bolt.

It is a well-known fact that mortise-locks of the construction now in common use are unnecessarily complicated and costly and also unnecessarily large, making necessary the cutting away of a large part of the door-stile at the proper point to allow of the insertion and use of the lock, thus materially weakening the door and adding to the cost of applying the lock thereto. My invention is designed to obviate this objection by the provision of a lock which is adapted to occupy a comparatively small and easily-formed mortise and is simple and cheap in construction and not liable to get out of order.

In forming the mortise for the reception of my improved lock, as shown in Fig. 1, two auger-holes 1 and 2 of the required size are made one above the other in the face of the door-stile 3 and the intermediate solid portion 4 between them cut away as far as the dotted lines, thus forming a mortise having flat parallel side walls and curved top and bottom walls. This form of mortise is much more readily and quickly made than mortises of ordinary construction, and as it covers less space than the latter weakens the door to a materially less extent. The cost of preparing the door for the reception of the lock is furthermore greatly reduced, and the work can be much more expeditiously performed.

In carrying my invention into practice I provide a lock-casing conforming to the shape or configuration of the mortise, such casing having flat side walls and curved or rounded top and bottom walls and longitudinally divided to form two sections 5 and 6. The section 5 is rigidly connected to or cast integrally with the face-plate 7, while the section 6 is removable and is adapted to be connected to the section 5 by means of a screw 8, passed through said sections at their rear ends, and by means of a tongue 9, formed upon the front end of said section 6 and adapted to enter a socket or mortise 10 in the face-plate 7, as shown in broken lines in Fig. 3. When it is desired to detach the section 6, the screw 8 is removed and said section then disconnected from the face-plate by sliding it rearwardly to withdraw the tongue 9 from engagement with the socket or mortise 10. The lock-casing is comparatively long and narrow, so as to obviate the necessity of weakening the door-stile by the formation of a wide mortise.

In the outer or front portion of the casing is mounted the latch-bolt 11, which is provided with a flat body portion 12, having a

slot or chamber 13, the top and bottom walls of which are provided with inwardly-extending oppositely-disposed lugs 14 and 15. In the rear of these lugs is arranged a protracting-spring 16, consisting of two parts or sections secured at their meeting ends by a pin 17 to a block or fixed part 18 of the casing and thence curving forwardly and bearing against the said lugs 14 and 15. This spring occupies the rear portion of the chamber and serves to project the latch-bolt and to normally hold it in projected or locking position. The knob-shaft 19 has connected therewith a trefoliate tumbler-block 20, which occupies the outer or front portion of the chamber 13, with its main or central point, to which said shaft is connected, curved or rounded and adapted to normally occupy the space between the lugs 14 and 15. The other points or arms of this block project upwardly and downwardly and carry bumpers or contact-pieces 21 and 22, which are adapted to abut against the lugs 14 and 15. These bumpers are preferably made of hard rubber or some other suitable non-resonant material, so as to make the operation of the tumbler-block practically noiseless in retracting the latch-bolt against the tension of the spring. By the described construction of the block it will be seen that upon turning the shaft 19 in one direction or the other either the contact-piece 21 will come into engagement with the lug 14 or the contact-piece 22 will come into engagement with the lug 15 and as the block swings will retract the latch-bolt against the tension of the spring 16, as clearly indicated in Fig. 5. The block 20 is formed with suitable trunnions 23, which are mounted to turn in open bearings 24, formed in the side walls of the casing-sections 5 and 6.

The latch-bolt is held projected to maintain the door locked by a key-tumbler and key-bolt located in the rear of the casing. The key-tumbler 25 is provided with journals 26, mounted in open bearings 27, formed in the side walls of the casing to allow said tumbler to have a rotary movement, and is formed with a suitable slot for the reception of the key. The key-bolt 28 is carried by the tumbler and comprises a bolt proper and a collar 29 to embrace the tumbler, which collar fits within an annular groove formed in the tumbler. To adapt the key-bolt to be readily applied and removed and to be tightened or loosened, as desired, I preferably form the same of two corresponding parts or sections 30 and 31, connected together by a screw 32, which holds said sections adjustably and loosely connected to the key-tumbler, so that the latter may turn as freely as desired therein. By means of the screw 32 the two sections of the key-bolt may be adjusted to compensate for wear and to fit with a greater or less degree of looseness upon the tumbler, as may be found necessary or desirable. The tumbler is adapted to be rotated through the instrumentality of a key fitted within the slot therein, and in order to adapt the same to have a certain amount of independent movement and to operate the key-bolt when turned to the proper position I provide said tumbler with a contact-lug 33, which is adapted to engage a pin 34 on the key-bolt. By this construction when the tumbler is turned in one direction the lug 33 is brought into contact with the pin 34 to move the key-bolt from the vertical position, which it normally occupies, to the horizontal position (shown in Fig. 6) to hold the latch-bolt 11 projected and at the same time to prevent turning of the knob-shaft 19 and tumbler-block 20. Upon turning the tumbler in the reverse direction it is adapted to have nearly one complete revolution before bringing the lug 33 again into engagement with the pin 34, and at this time said lug will bear against the under side of said pin, and a continued movement of the tumbler 25 will restore the key-bolt to its normal position (shown in Figs. 4 and 5) and permit the latch-bolt 11 to be retracted by the movement of the tumbler-block 20. In order to provide the necessary resistance to the movement of the key-tumbler 25 to prevent its too free operation and to maintain it in locking and unlocking position, I employ a detent-spring 35, which is mounted upon the screw 8 and is adapted to engage recesses or indentations 36, formed at diametrically opposite points in the periphery of the tumbler, so that when the tumbler is turned to either of the aforesaid positions the spring will seat in one of said indentations and oppose a resistance to the movement of the tumbler and key-bolt, which resistance may be, however, overcome by the insertion of the proper key within the key-slot within the tumbler to turn the same in the proper direction to bring the lug 32 in one or the other of its proper operative positions. The key-bolt is limited in its downward movement and held from being turned beyond the vertical in one direction and beyond the horizontal in the other direction by means of a stop-block 37, fixed upon the rear end wall of the casing, which stop-block is made of some suitable sound-deadening material, so as to make the operation of the key-bolt practically noiseless.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation, and advantages of the invention will be readily understood, and it will be seen that it provides a lock which is simple of construction, adapted to be fitted within a comparatively small mortise, and embodies a number of desirable and advantageous features due to its peculiar construction alone.

While the preferred embodiment of the invention is as herein disclosed, it will of course be understood that changes in the form, proportion, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

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

In a mortise-lock, the combination with a casing; of a latch-bolt having a body portion formed with a slot, the walls of which are provided intermediate their ends with opposite, inwardly-extending lugs, a support upon the casing projecting into the slot, a protracting-spring occupying the rear portion of the slot and secured to said support and having forwardly-curved ends bearing against said lugs, an annularly-grooved key-tumbler, a rotary key-bolt having a collar loosely fitting the groove in the key-tumbler, said bolt and collar being longitudinally divided, forming corresponding sections, means for adjustably securing said sections together to regulate the frictional engagement of the collar with the key-tumbler, a detent-spring for exerting resistance to the movement of the key-tumbler, a contact-piece carried by the key-bolt, a contact-piece on the key-tumbler to engage said contact-piece on the bolt and turn said bolt in one direction or the other, the tumbler having nearly one complete revolution in order to bring the contacts in engagement in either direction of movement, and a stop limiting the extent of rotation of said key-tumbler, substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES W. BARRETT.

Witnesses:
W. M. RUSS,
F. K. THOMSON.