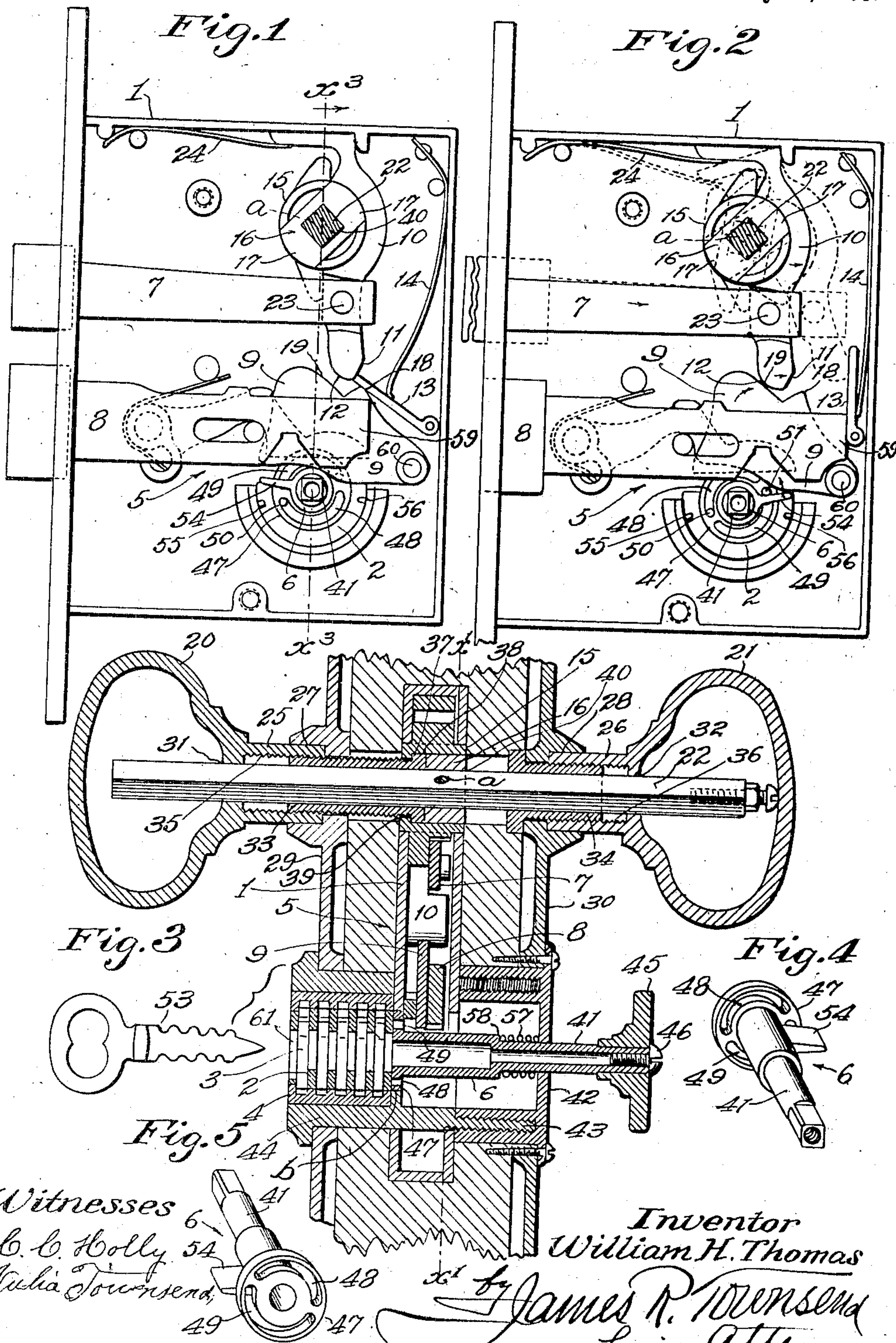


W. H. THOMAS.
 LOCK AND LATCH MECHANISM.
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929,637.

Patented July 27, 1909.



Witnesses
 C. C. Holly
 Julia Townsend

Inventor
 William H. Thomas
 by James R. Townsend
 his Atty

UNITED STATES PATENT OFFICE.

WILLIAM H. THOMAS, OF WHITTIER, CALIFORNIA.

LOCK AND LATCH MECHANISM.

No. 929,637.

Specification of Letters Patent.

Patented July 27, 1909.

Original application filed June 28, 1907, Serial No. 381,350. Divided and this application filed December 23, 1907.
Serial No. 407,870.

To all whom it may concern:

Be it known that I, WILLIAM H. THOMAS, a citizen of the United States, residing at Whittier, in the county of Los Angeles and State of California, have invented new and useful Improvements in Lock and Latch Mechanism, of which the following is a specification.

This invention relates to a lock in which a latch-bolt is operable by one or more door-knobs and keys, and a dead-bolt is operable by a key accessible from one side of the door; and in which said key is operable through the medium of a cylinder-lock by a key on the other side of the door; and in which lock the latch-bolt as well as the dead-bolt may be locked at one and the same time, and in which a partial rotation of either of said bolts will effect the unlocking of both of said bolts; provision being made whereby, whenever the dead-bolt is locked, the latch-bolt is also locked.

Objects of the invention are superior convenience and security with a lock of comparatively few and simple parts.

Other objects and advantages may appear from the subjoined detailed description.

The invention comprises a lock having a latch bolt and a dead bolt that may unitedly lock a door and will respond to a single key for simultaneous withdrawal from locking position; and from which lock the key may be withdrawn while the dead bolt is in either the locking or unlocked position, and while the latch bolt is free to act as a latch bolt for night or day locking, and to respond to the key; and in which the dead-bolt may remain in unlocked position while the latch bolt is being locked and unlocked by the key, and the key may be turned sufficiently to unlock the latch-bolt and for withdrawal through the key-hole without disturbing the unlocked dead-bolt; or may be turned fully around in the same direction, thereby throwing the dead-bolt into locking position, and may be withdrawn; and in which, when the dead-bolt is fully thrown into locking position the latch-bolt will be positively locked against withdrawal from its latching position

until the unlocking of the dead-bolt takes place.

The accompanying drawings illustrate the invention.

Figure 1 is a view of the lock from the inner side thereof, a plate of the case being omitted to show the mechanism of the lock, the parts of which are here shown in locked position. Fig. 2 is a similar view showing all of the parts of the lock in unlocked position. The unlatching position of the latch-bolt and hub-lever is indicated in dotted lines. Fig. 3 is a sectional view on line indicated by x^3-x^3 , Fig. 1, showing the lock in place in a door, the outside key being shown withdrawn. Fig. 4 is a detached perspective view of the inner key. Fig. 5 is a detached perspective view looking at the opposite end of the key shown in Fig. 4.

1 designates an ordinary mortise lock case.

2 designates the barrel of a cylinder lock, the same being provided with tumblers 3 to engage the cylinder 4 of the cylinder-lock.

5 in a general way indicates the mortise-lock mechanism, and 6 a key loosely interlocking with the barrel 2 and arranged to operate said mortise lock mechanism, which in the form shown comprises a latch-bolt 7, a dead-bolt 8, means, as a dog 81, to hold the dead-bolt stationary and a tumbler 9 to operate the latch-bolt. The key 6 which interlocks with the barrel 2 is adapted to operate the tumbler 9 directly and said dead-bolt 8.

10 is a hub-lever for operating the latch-bolt 7, the same being provided with two faces 11 and 12.

13 is a dog normally held by a spring 14 in position to engage the face 11 for locking the hub-lever 10.

15 is the hub for operating the hub-lever 10. The immediate means provided for rotating the hub comprises a block 16 provided with arms 17.

The tumbler 9 is provided with a face 18 to release the dog 13, and with a face 19 for directly operating the hub-lever 10 whenever the key 6 is rotated to unlock the dead-bolt 8. The block 16 is adapted to be rotated by knobs 20 and 21 mounted on an angular

spindle 22 inserted through said block 16 and held by a pin *a*. The latch-bolt 7 is pivoted to the hub lever 10 by a stud 23, and is normally held in latching position by the latch-spring 24 operating through the hub-lever 10. The knobs 20 and 21 are respectively provided with internally-threaded cylindrical knob-shanks 25 and 26 seated in seats 27 and 28 of the escutcheon plates 29 and 30 respectively. Said knobs are provided with angular seats 31 and 32 for rotating the angular spindle 22 which projects therethrough. 33 and 34 designate shouldered sleeves on the angular spindle 22 and which are secured into screw-threaded sockets 35 and 36 of said knobs.

37 is a cylindrical seat in the hub 15 in which a flange 38 on the outer sleeve 33 rotates, said sleeve being held in place in the hub by an offset or shoulder 39.

The block 16 is seated in the hub 15 and is adapted to rotate the hub by means of the arms 17 seated in the hub at 37. The spindle 22 rotates the hub through means of the block 16 which has an angular perforation 40 through which the spindle extends.

The inner key 6 has a stem 41 extending through a cap 42 of the cylinder that is screwed onto a portion 43 of the main body 44 of the cylinder 4 of the lock, and is provided on the end with a knob 45 fastened by a screw 46. Said inner key is provided with an enlarged base 47 mounted in a bearing *b* in the cylinder and having two slots 48 and 49 which respectively accommodate two pins 50 and 51 in the end of the barrel 2. These slots are semicircular and the pins 50 and 51 serve to communicate the rotation of the barrel 2 to the key 6 whenever said barrel is sufficiently rotated by the outside key 53; and the arrangement of the slots and pins is such that a complete revolution of the barrel may be had in the operation of turning the web 54 of the key from one stop 55 to the other stop 56, that limit the inner key 6 to a half-revolution.

57 is a spring between the cap 42 and the shoulder 58 of the inner key-stem to hold the inner key resiliently pressed against the end of the barrel.

In practical use, the inner key may be rotated by the knob 45, thereby throwing the tumbler 9 which thereupon first engages the dog 13 and starts it from the path of the hub-lever, and then while the dog is thus being moved out of the way of the hub-lever the tumbler engages the hub-lever to draw back the latch-bolt 7. At the same time the web of the key withdraws the dead-bolt 8, which in its locked position is held by the tumbler 9 in the usual manner, but is released when said tumbler 9 is moved by the web of the inner key in the unlocking operation. By the construction shown, the hub, the latch-bolt

and the dead-bolt are all simultaneously unlocked, thus releasing the knobs on the half rotation of the inner key. The dead-bolt is provided with a rearward extension 59 that engages the dog 13 and holds it out of the way of the hub-lever, thus leaving the hub and knobs unlocked so long as the dead-bolt is drawn.

Whenever the dead-bolt 8 is in locked position, the dog 13 is held by the spring 14 in position to lock the hub-lever 10, and consequently the knobs can not be turned in either direction. Whenever the dead-bolt is unlocked, the latch-bolt can be withdrawn by simply turning the knobs.

When the lock is operated by the key 53, one complete continuous revolution of the barrel in one direction will turn the web of the key half a revolution, thus simultaneously either locking or unlocking the dead-bolt, latch-bolt, and hub, and consequently the knobs, thus allowing the key to be removed from the barrel whether the door is locked or unlocked, and leaving the barrel in the same position in both conditions of the lock.

Referring to Fig. 2 it will be noted that the dead-bolt is in unlocked position and the latch-bolt is in locking position, and that the web 54 of the key is in such position that it may be turned upward to the left in the direction of the arrow thereon, and will, when so turned, first engage the tumbler 9 and move it on its pivot 60 and swing it upward in the direction of the arrow thereon, thus moving the hub-lever 10 and the latch-bolt 7 in the direction of the pin thereon to withdraw the latch bolt, and also to allow the key to be withdrawn from the key-hole 61 without disturbing the dead-bolt. The full movement for withdrawing the latch-bolt is accomplished in about one-eighth of a turn of the key-web 54, thus allowing the door to be opened, whereupon the key 53 may be brought into line with its key-hole 61 in the barrel and withdrawn from the lock. If, instead of withdrawing the key at this juncture, the key is rotated a full revolution, it will, at the close of such revolution again come into position to be withdrawn from said key-hole 61, but will leave both of the bolts in locked position shown in Fig. 1.

No claim is made herein to the combined cylinder and mortise lock case shown for the reason that the same is the subject matter of a copending application, Serial No. 381,350, filed June 28, 1907.

What I claim is:—

1. In a lock, a barrel, mortise lock mechanism, and a key loosely interlocking with the barrel and rotatable relative thereto while interlocked and arranged to operate said mortise lock mechanism.

2. In a lock, a latch bolt, a dead bolt, a

tumbler to operate the latch bolt, a barrel, a key interlocking with the barrel and rotatable relative thereto while interlocked and adapted to operate said tumbler and said dead bolt.

3. A latch bolt, a hub lever for operating the latch bolt, a dog for locking the hub lever, a hub for operating the hub lever, means for rotating the hub, a tumbler for releasing the dog and operating the hub lever, a dead bolt, a barrel, and a key interlocking with the barrel and adapted to operate the tumbler and the dead bolt.

4. A lock comprising a latch bolt, a hub lever pivoted thereto, a dog to lock the hub lever, a spring to hold said dog in locking position and a dead bolt arranged to hold the dog out of locking position.

5. A lock comprising a latch bolt, a dead bolt, means to hold the dead-bolt stationary, a key to operate said means and the dead bolt, a pivoted member independent of the dead-bolt and operable by said key directly, and means operable directly by said member and connected with the latch bolt to withdraw the same from latching position upon operation of said member by a limited movement of said key without releasing said holding means or disturbing the dead bolt from unlocked position.

6. A lock comprising a latch bolt and a dead bolt, a key provided with a web to operate said dead bolt, means operable by said web to withdraw the latch bolt from latching position, a cylinder-lock to guard said key, and a removable key to unlock said cylinder-lock and to turn said first-named key.

7. A lock comprising a latch bolt and a dead bolt, a key in said lock adapted to make practically a full revolution therein, means operable by said key to withdraw the latch bolt from latching position, stops to limit the revolution of said key in one and the other direction, a cylinder-lock to guard said key and a removable key to operate said first-named key.

8. A lock comprising a latch bolt and a dead bolt, a dog to lock the latch bolt in latching position, a key for the dead bolt, and means operable by said key to withdraw the latch-bolt, said dead bolt being adapted to hold said dog inoperative when the dead bolt is in unlocked position.

9. A lock comprising a latch bolt, a hub to operate the latch bolt, a dead bolt, means for locking the hub, the dead bolt and latch bolt, and means for simultaneously unlocking said hub and withdrawing both bolts.

10. A lock comprising a latch bolt, a knob for operating the latch bolt, a dead bolt, means for locking the knob, the latch bolt and dead bolt, and a key adapted to lock said knob, latch bolt and dead bolt by a continuous turn in one direction and to unlock

the knob and withdraw both bolts by a continuous movement in the other direction.

11. A lock provided with a dead bolt and a latch bolt, a dog to lock the latch bolt, and a tumbler operable by a key to move said dog out of locking position and to withdraw said latch bolt.

12. A lock comprising a latch bolt, a dead bolt, a key to operate the dead bolt, a pivoted member independent of the dead bolt and directly operable by said key, and means directly operable by said member and connected with the latch bolt to withdraw the same from latching position without disturbing the dead bolt from unlocked position.

13. A lock comprising a latch bolt and a dead bolt, a key provided with a web to operate said dead bolt, a hub-lever to operate the latch-bolt and means independent of the dead bolt and directly operable by said web and arranged to engage said hub-lever to withdraw the latch bolt from latching position.

14. A lock comprising a latch bolt and a dead bolt, a key provided with a web to operate said dead bolt, means independent of the dead bolt and operable by said web to withdraw the latch bolt from latching position, and a removable key to turn said first-named key.

15. A lock comprising a latch bolt and a dead bolt, a key in said lock adapted to make practically a full revolution therein, means independent of the dead bolt and operable by said key to withdraw the latch bolt from latching position, stops to limit the revolution of said key in one and the other direction, and a removable key to operate said first-named key.

16. A lock cylinder, a barrel therein, a cap for the cylinder, and a key loosely interlocking with the barrel and extending through the cap, said key being adapted to rotate the barrel a partial rotation and also adapted to rotate a partial rotation independently of the barrel.

17. A lock cylinder, a barrel therein, a cap for the cylinder, a key interlocking with the barrel and having a stem extending through the cap, and a spring to hold the key in interlocking position.

18. In a lock, a barrel provided at one end with two projecting pins, and a key provided with two semicircular slots for interlocking with said pins.

19. In a lock, a case having a hole forming a semicircular bearing, a cylinder having a segmental portion in said hole and provided with a semicircular bearing corresponding to that in the case, a barrel in said cylinder, a cap for said cylinder, a key in said cylinder interlocking with said barrel and having a stem extending through said cap and a cir-

cular portion between said semicircular bearings.

20. In a lock, a case having a hole forming a semicircular bearing, a cylinder having a segmental portion in said hole and provided with a semicircular bearing corresponding to that in the case, a barrel in said cylinder, a cap for said cylinder, a key in said cylinder interlocking with said barrel and having a stem extending through said cap and a circular portion between said semicircular bearings, and yielding means to press said key toward said barrel.

21. In a lock, a case having a hole forming a semicircular bearing, a cylinder having a segmental portion in said hole and provided with a semicircular bearing corresponding to that in the case, a barrel in said cylinder, a cap for said cylinder, a key in said cylinder interlocking with said barrel and having a stem extending through said cap, and a circular portion between said semicircular bearings, and a spring to press said key toward said barrel and to form a positive stop to prevent withdrawal of the key from interlocking position.

22. A lock provided with a dead bolt, a

latch bolt, and means for operating the dead bolt and latch bolt said means comprising a key and a cylinder lock, said cylinder lock interlocking with said key for operating the same.

23. The combination with a bolt of a key to operate the same, a cylinder lock to operate the key and a spring to yieldingly hold the key toward the cylinder of the cylinder lock.

24. A lock provided with a dead bolt, a latch bolt, and means for operating the dead bolt and latch bolt, said means comprising a key and a cylinder lock, said cylinder lock interlocking with said key and operable thereby.

25. A lock cylinder, a barrel therein, a cap for the cylinder and a key interlocking with the barrel and extending through the cap.

In testimony whereof, I have hereunto set my hand at Los Angeles California, this 16th day of December 1907.

W. H. THOMAS.

In presence of--

JAMES R. TOWNSEND,
W. A. RUSSELL.