

Patented Dec. 31, 1912.
2 SHEETS—SHEET 1.

1,048,628.

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 2 SHEETS—SHEET 2.

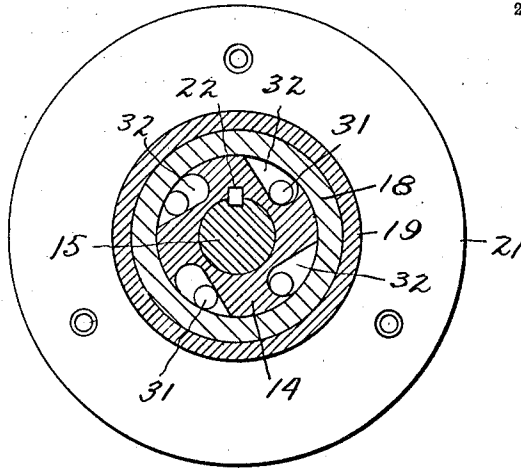


Fig. 3.

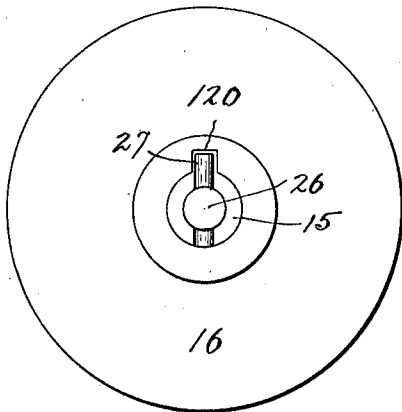


Fig. 4.

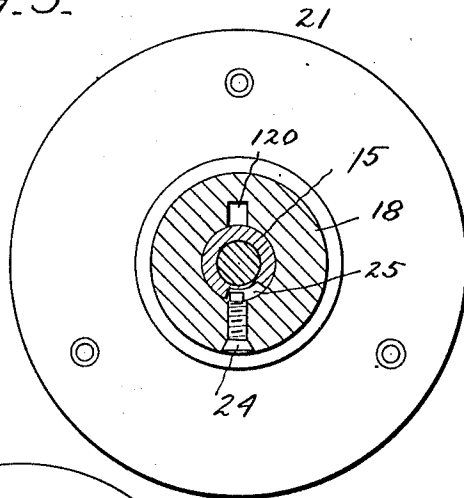


Fig. 5.

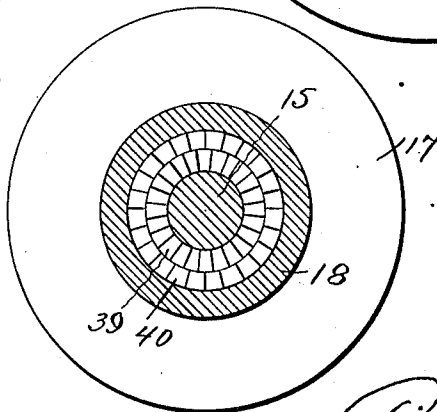


Fig. 6.

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UNITED STATES PATENT OFFICE.

RICHARD WOOLSEY, OF PORTLAND, OREGON.

LOCK FOR DOORS, &c.

1,048,628.

Specification of Letters Patent.

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Application filed February 23, 1909. Serial No. 479,365.

To all whom it may concern:

Be it known that I, RICHARD WOOLSEY, of Portland, in the county of Multnomah and in the State of Oregon, have invented a certain new and useful Improvement in Locks for Doors, &c., and do hereby declare that the following is a full, clear, and exact description thereof.

The object of my invention is to provide in a simple and compact form, a lock for the doors of hotels, boarding houses, lockers, etc., having the characteristics of capability to have the bolt thrown for locking and unlocking from the inside of the door without the use of a key, and rendering it impossible to throw the bolt to unlocking position from the outside by the use of a key or otherwise; of capability of throwing the bolt to locking position from the outside without the use of a key, and throwing to unlocking position from the outside with the use of a key, and from the inside without the employment of a key; of capability of having the bolt thrown into both locking and unlocking positions from the outside by means of a key; and which in respect to the bolt movements requiring the use of a key (either a master key or an individual key), requires an individual key of such inexpensive construction that its replacement on account of loss will be an inconsiderable item, and to the end of producing such a lock, my invention consists in the lock having the construction and combination of parts substantially as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal section of a lock embodying my invention, the parts being shown in position ready for operation from the outside by the use of a key; Fig. 2 is a cross section on the line 2—2 of Fig. 1; Fig. 3 is a cross section on the line 3—3 of Fig. 1; Fig. 4 is a detail view in end elevation looking at the inside knob with the hole-closing plug thereof removed; Fig. 5 is a section on the line 5—5 of Fig. 1; and Fig. 6 is a section on the line 6—6 of Fig. 1.

In the embodiment of my invention illustrated in the drawings, I employ an oblong frame or casing 10 designed to be mortised into the stile of a door, in the bottom of which is suitably guided a longitudinally slidable bolt 11 adapted to have its outer end projected beyond the casing for locking purposes, or drawn into the same for unlocking purposes, and to enable its reciprocation,

it is provided on its upper side at its rear or inner portion with rack teeth 12 with which mesh the teeth of a pinion 13 on a sleeve or bushing 14, mounted on a shaft 15, which extends transversely through the casing 10 to opposite sides thereof, and mounted upon it at its respective ends are two turning knobs, one 16 that is located on the inside of the door, and one 17 that is located on the outside of the door. The inside knob 16 is at all times connected with the pinion-carrying sleeve 14 in the manner to be described, so that at all times by means of the inside knob 16, the bolt may be thrown in either direction for locking or unlocking purposes, while the outside knob 17 is so connected with the pinion-carrying sleeve 14 that in the absence of the employment of a key, the outside knob 17 is operable to move the bolt only into locking position. Each of the knobs 16 and 17 is provided with an inwardly extending hub or shank 18 which at its inner end is journaled in a cylindrical or tubular housing 19 that at one end enters a flange 20 on the contiguous side of the frame or casing 10, and is provided with an annular flange 21 having screw holes for attachment to the side or face of the door.

The pinion-carrying sleeve 14 is rotatably secured to the shaft 15 by means of a spline or key 22 which permits a short longitudinal movement of the sleeve 14 for a purpose hereinafter described, and the sleeve 14 is pressed and yieldingly held toward the outer knob 17 by means of a coil spring 23 that bears at one end on the end of the sleeve 14 toward the inside knob 16, and at its other end against the outer end of the wall of the contiguous housing 19. A radially extending screw 24 passing through a threaded opening in the shank 18 of the inside knob 16, and projecting at its inner end into a segmental slot 25, in the outer side of the shaft 15, connects the inside knob 16 to the shaft 15, so that at all times the shaft 15 may be turned in either direction by the turning of the knob 16 in the corresponding direction, and as the pinion-carrying sleeve 14 is splined or keyed to the shaft 15, thereby the bolt 11 may be thrown into either locking or unlocking position. As will appear hereinafter, the longitudinal movement of the pinion-carrying sleeve 14 is provided in order to enable the turning of the sleeve 14 from outside the door as when the bolt is to be thrown into

unlocking position from outside the door, and it is to enable the employment of means to prevent the longitudinal movement of the sleeve 14 for this purpose that I provide the screw and slot connection 24 and 25 between the inside knob 16 and the shaft 15. In this connection, I provide in the shaft 15 an axially extending chamber that extends from the inner end of the shaft inward, and in such chamber I place a rotatable rod 26 whose outer end projects beyond the end of the shaft and through the projecting portion is passed a radial pin 27 that engages a longitudinal extending groove 120 in the inside knob 16, and near its end within the shaft 15 said rod has on its side a tooth-like projection 28 which engages a notch in the side of a transversely extending bar 29 slidably mounted in a slot in the shaft 15 so that one end of it by the partial rotation of the rod 26 may be projected into an annular groove 30 formed in the interior of the pinion-carrying sleeve 14 or withdrawn from such annular groove 30. When the bar 29 is projected beyond the periphery of the shaft 15 into the annular groove 30 in the sleeve 14, the latter is locked from longitudinal movement, and the reciprocation of this locking bar 29 is possible by reason of the slight independent turning movement of the knob 16 that is provided by the screw and slot connection between it and the shaft 15.

The inner end of the shank 18 of the outside knob 17, projects over the contiguous end of the pinion-carrying sleeve 14, and a clutch connection is provided to enable the clutching of the knob shank and the sleeve 14 together to enable the rotation of the sleeve by the outside knob 17 in the direction to throw the bolt into locking position, which clutch connection, as shown, is the familiar one consisting of several rollers or balls 31 in recesses or cavities 32 with inclined surfaces in the periphery of the sleeve, the balls engaging the inner periphery of the knob shank and locking them together when the knob is turned in one direction, and permitting the idle turning of the outside knob when it is moved in the opposite direction. Concentric with, and being in effect a part of the outside knob 17, is a bushing 33, which is normally locked to the knob 17 by means of a tumbler lock of the Yale type, the bushing being provided with a key-hole or slot 34 at its center for the reception of a key 35, to enable the bushing to be disconnected from the body of the knob and rotated by means of the key, and between the bushing and the shaft 15 there is a swiveled connection consisting of one or more screws 36 situated in radial openings in the bushing and projecting at their inner ends into engagement with an annular groove 37 in the periphery of the shaft 15. By reason of the swiveled connection be-

tween the outside knob 17 and the shaft 15, independent rotary movement of these two members is provided for. On the end of the pinion-carrying sleeve 14, contiguous to the outside knob 17, I provide a series of radially extending or crown ratchet teeth 38, and on the contiguous end of the knob bushing 33 and a concentric portion of the outside knob shank 18, I provide corresponding teeth 39 and 40, respectively, so that when the two sets of bushing and knob teeth 39 and 40 aline with each other, and aline with the spaces between the teeth 38 on the pinion-carrying sleeve 14, the latter unless restrained by the engagement of the locking bar 29 as hereinbefore described, is free to be moved by the pressure of the spring 23 to cause the interlocking of such sleeve 14 and the outside knob 17, so that said sleeve 14 and the outside knob 17 may turn together, and thus the bolt 11 be thrown in the direction to unlock by proper turning of the outside knob 17. When the knob bushing 33 and the outside knob 17 are locked together by the tumblers, their teeth 39 and 40 are out of alinement, and to enable them to be placed into alinement, it is necessary to use the key 35. After the bolt 11 has been withdrawn or moved to unlocking position by manipulation from the outside, the rotation of the bushing 33 in the opposite direction to that required for producing the withdrawing of the bolt through the action of its ratchet teeth 39 on the ratchet teeth 38 on the sleeve 14, moves the latter longitudinally to disengage the interlocking teeth of the respective parts, and thereafter the key is withdrawn.

Briefly described the operation of my lock is as follows:—The inside knob 16 being always connected with the sleeve 14, the bolt 11 may be moved into locking position and back again into unlocking position by the reverse rotation of said inside knob; but the outside knob 17, since it is connected to the sleeve 14 by the pawl and ratchet devices, can be made to move the bolt 11 in but one direction, which is into locking position. In order to unlock the bolt from the outside, the inside knob 16 having previously been turned to rock the rod 26 sufficiently to disengage the bar 29 and the annular groove 30, the application of the key 35 and the turning thereby of the bushing 33, will place the teeth and spaces at the inner end of the bushing and the sleeve 14 in alinement, so that the spring 23 can force the sleeve 14 into rotatable engagement with the bushing, so that when the latter is revolved by the key 35 in the direction to unlock the bolt 11, that can be done.

It is of course to be understood that my invention may be employed in mechanisms differing in the construction and in the number of the elements or members forming an

organized device, and I therefore do not restrict myself only to such an embodiment of my invention as I have illustrated and described.

5 Having thus described my invention, what I claim is—

1. In a lock the combination of a bolt, a rotatable sleeve, connections between the sleeve and the bolt, a sleeve operating member on one side of the lock always operatively connected therewith, a shaft passing through said sleeve, on which it is longitudinally movable, a sleeve operating member on the opposite side of the lock, and key-operated means for controlling the connection between said last-named member and said sleeve both of said sleeve-operating members being connected with said shaft.

2. In a lock the combination of a bolt, a bolt operating rotatable and longitudinally movable sleeve, an operating member always operatively connected with said sleeve, a second operating member, co-acting devices between said second member and said sleeve and rendered effective by the longitudinal movement of the sleeve, a shaft passing through said sleeve on which it is longitudinally movable both of said sleeve-operating members being connected with said shaft, and means to hold the sleeve from longitudinal movement.

3. In a lock the combination of a bolt, a bolt operating rotatable and longitudinally movable sleeve, an operating member always operatively connected with said sleeve, a second operating member, co-acting devices between said second member and said sleeve and rendered effective by the longitudinal movement of the sleeve, a shaft passing through said sleeve on which it is longitudinally movable both of said sleeve-operating members being connected with said shaft, and means to hold the sleeve from longitudinal movement, under the control of said first-named operating member.

4. In a lock the combination of a bolt, a bolt operating rotatable and longitudinally movable sleeve, an operating member always operatively connected with said sleeve, a second operating member, co-acting devices between said second member and said sleeve and rendered effective by the longitudinal

movement of the sleeve, a shaft passing through said sleeve on which it is longitudinally movable both of said sleeve-operating members being connected with said shaft, a spring acting to move said sleeve longitudinally, and means to hold the sleeve from longitudinal movement.

5. In a lock the combination of a bolt, a bolt-moving device, a bolt-operating knob always operatively connected to said device, a second bolt operating member, and a clutch connection between the latter and said device, permitting independent movement of said member when turned in the direction to unlock the bolt.

6. In a lock the combination of a bolt, a bolt-moving device, a bolt-operating knob always operatively connected to said device, a second bolt operating member, a clutch connection between the latter and said device, permitting independent movement of said member when turned in the direction to unlock the bolt, a second clutch mechanism for connecting said device and said member, and key-operated means controlling said second clutch mechanism.

7. In a lock, the combination of a bolt, a rotary bolt moving element, a rotary two-part operating member, one part acting to move said element in one direction, and the other part acting to move it in the opposite direction, a key-operated lock for the two parts of said member, and means for rotatably connecting said element and said member.

8. In a lock, the combination of a bolt, a rotary and longitudinally movable bolt actuating sleeve, a shaft on which said sleeve is mounted, an operating knob connected with said shaft, a second key controlled operating member, ratchet tooth devices for coupling said sleeve and said member operated by the longitudinal movement of the sleeve, means to prevent such movement, and connections between said means and said knob.

In testimony that I claim the foregoing I have hereunto set my hand.

RICHARD WOOLSEY.

Witnesses:

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