No. 657,885. Patented Sept. 11, 1900.

M. C. PATRICK.

LOCK AND LATCH COMBINED.

(Application filed Dec. 11, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

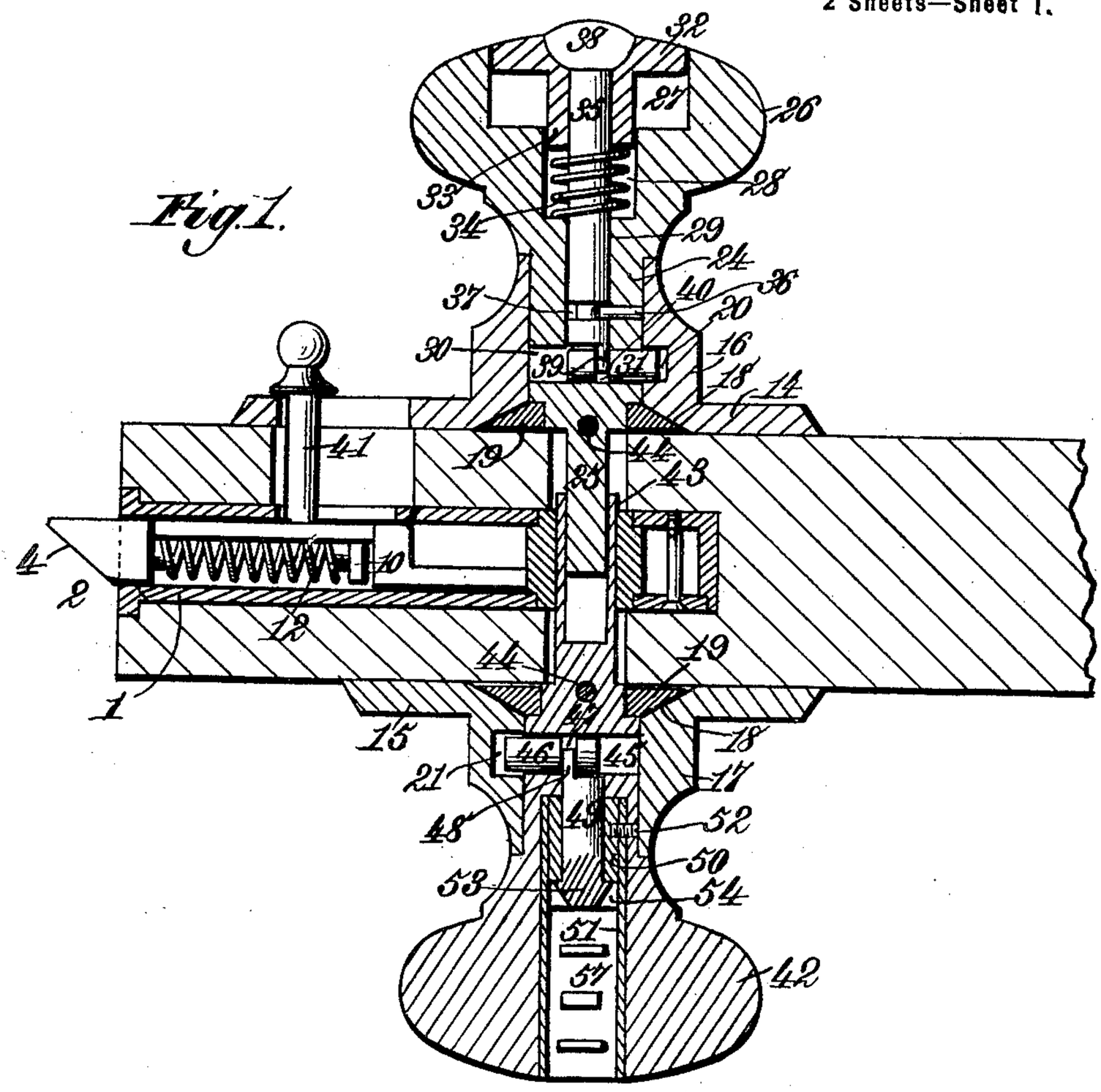
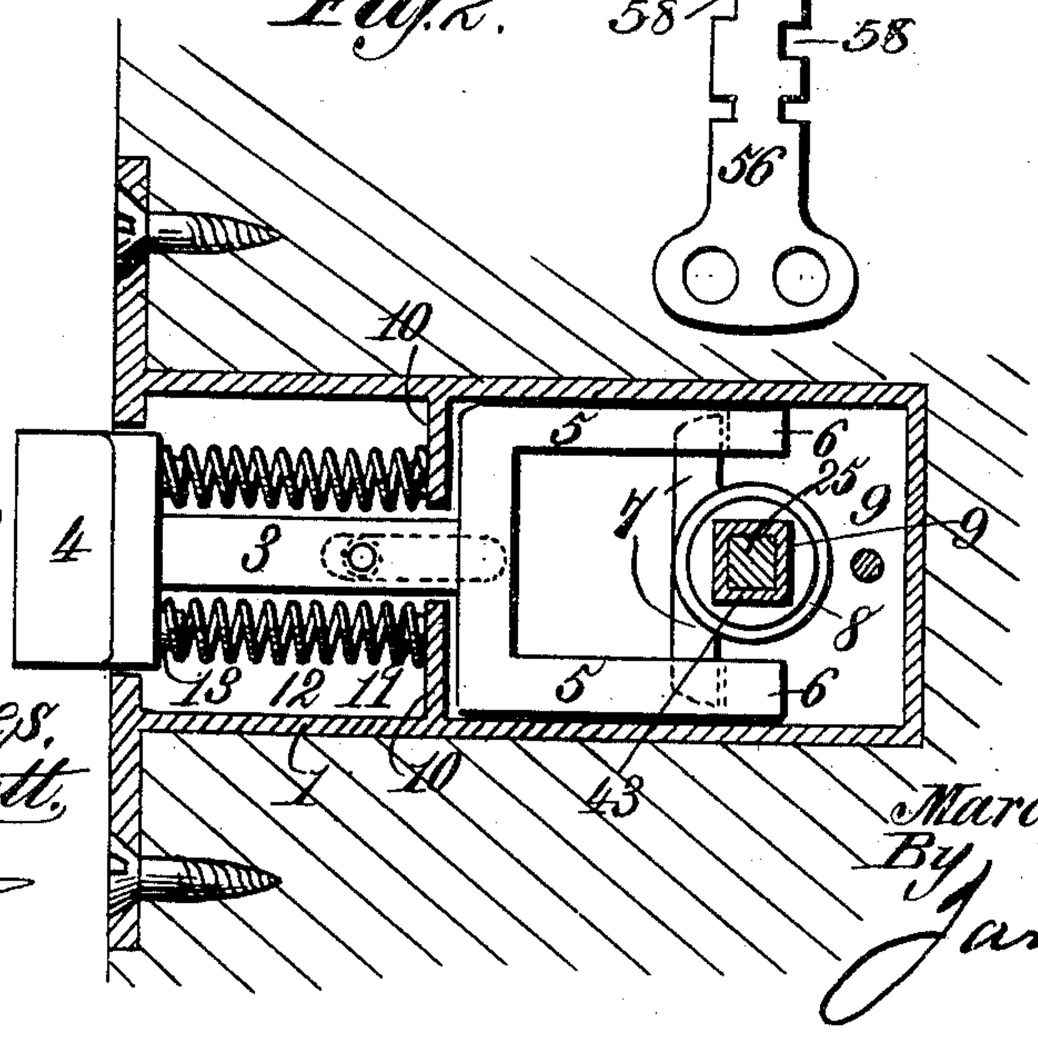


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

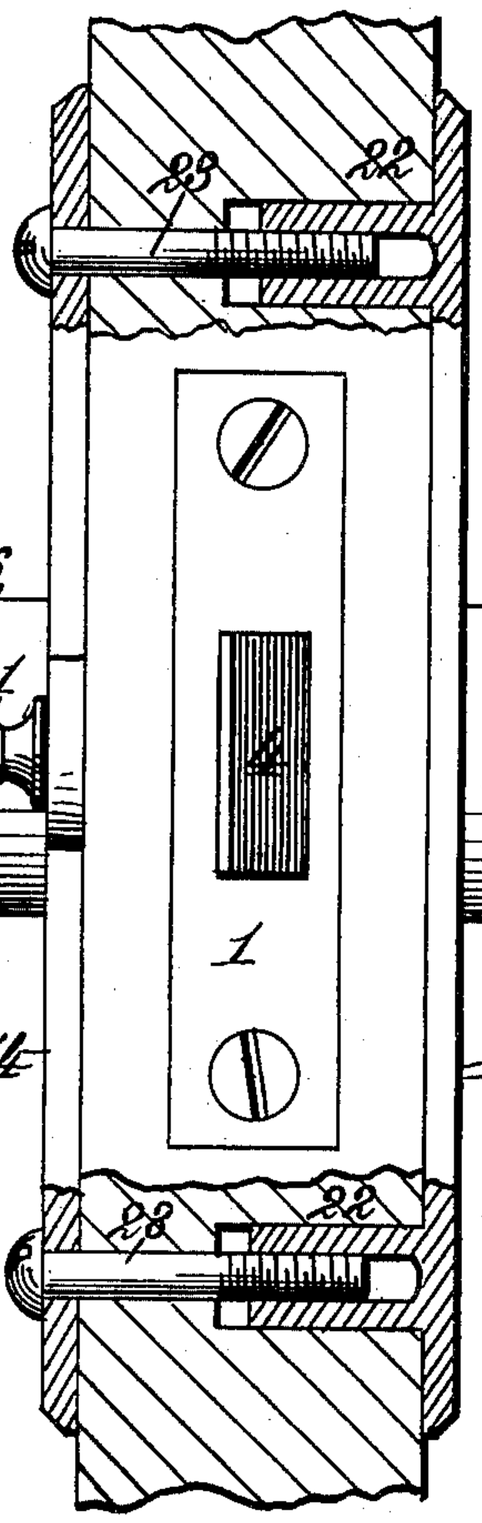


Fig. 6.

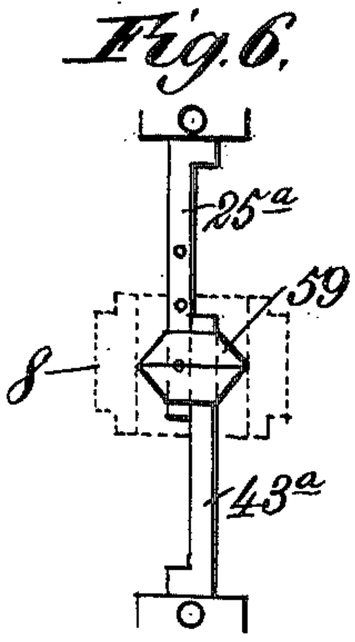


Fig. 4.

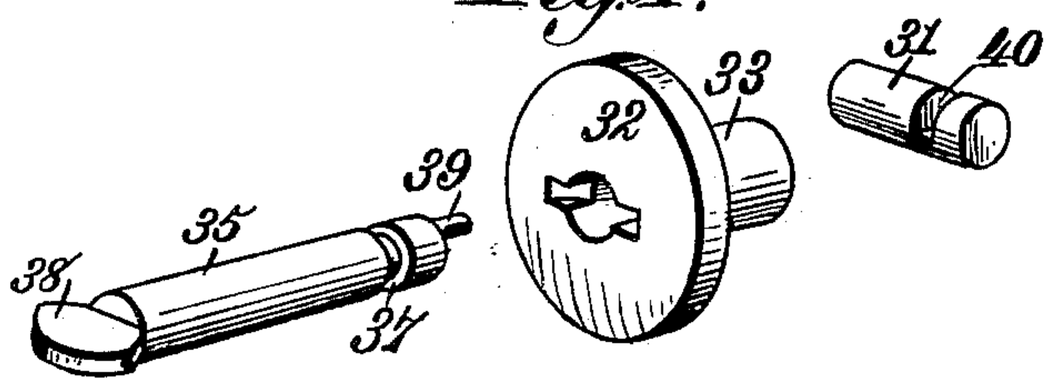
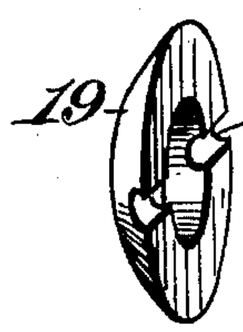


Fig. 5.



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UNITED STATES PATENT OFFICE.

MARCUS C. PATRICK, OF SEATTLE, WASHINGTON, ASSIGNOR OF ONE-HALF TO JAMES F. HOWIE, OF SAME PLACE.

LOCK AND LATCH COMBINED.

SPECIFICATION forming part of Letters Patent No. 657,885, dated September 11, 1900.

Application filed December 11, 1899. Serial No. 739,939. (No model.)

To all whom it may concern:

Be it known that I, MARCUS C. PATRICK, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented new and useful Improvements in a Combined Lock and Latch, of which the following is a specification.

My invention relates to a combined lock and latch, and particularly to that class in which the locking mechanism is inclosed within the knobs and operates to prevent the latter from being turned, whereby the latch cannot be retracted from the outside; and it has for its object to provide a combined lock and latch of the character described which will be exceedingly simple and composed of few parts, and hence may be manufactured at small cost, which can be easily and quickly assembled together and placed in position on a door, and which will be reliable and certain in operation and not apt to get out of order.

To these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the specification, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a central sectional view of my improved lock. Fig. 2 is a similar view of the latch. Fig. 3 is an end view illustrating the manner in which the parts are fastened in place. Fig. 4 is a detail perspective view of the inside latching mechanism, and Fig. 5 is a detail perspective view of one of the washers employed to hold the knob-spindles in place. Fig. 6 is a view illustrating a modified means of coupling together the knob-spindles.

Referring to the drawings, the numeral 1 indicates the latch-casing, and 2 the sliding latch arranged therein. The latch 2 consists of a shank or stem 3, having a beveled outer end 4, and at its inner end is forked or bifurcated to form two arms 5, the extremities of which are provided with two lugs 6, that are adapted to be engaged by arms 7, carried by a boss 8, having a square aperture 9, through which passes the squared spindle of the outer knob, as hereinafter explained. A partition 10 is fixed in the latch-casing and is provided with lugs or projections 11, over which are disposed the ends of coiled springs 12, the other ends of which are disposed over corresponding lugs or projections 13, formed on the rear side of the head 4 of the latch. The latch-casing is mortised in the edge of the door-stile in the usual manner, and the coiled springs operate to force the latch outward into engagement with the keeper, (not shown,) fixed in the door-casing, as usual. It will be manifest that by turning the boss 8 in either direction one or the other of the arms 7 will engage its corresponding lug 6 and retract the latch to permit of the door being opened.

Adapted to be secured to the opposite sides of the door are two escutcheon-plates, the numeral 14 indicating the inner and 15 the outer plate. Said plates are provided centrally with cylindrical hollow bosses, respectively indicated by the numerals 16 and 17, the inner ends of which are countersunk, as at 18, for the reception of frusto-conical washers 19, and said bosses are provided internally with radially-extending recesses or sockets, respectively indicated by the numerals 20 and 21, for the purpose hereinafter set forth. The outer escutcheon-plate is provided with inwardly-projecting hollow and internally-threaded lugs 22, into which are adapted to be screwed bolts 23, that pass through suitable perforations formed in the inner plate 14, by which means said plates are secured to the opposite sides of the door.

Rotatably arranged in the boss of the inner plate is a knob-spindle 24, terminating at its inner end in a squared shank 25. Formed in the end of the knob 26 is a recess 27, provided centrally with a cylindrical socket 28. The knob-spindle is provided with a longitudinal bore 29, that communicates at one end with the socket 28 and at its opposite end is intercepted by a transverse bore 30, in which is arranged a sliding pin 31. Seated in the recess 27 is a plunger 32, provided with an inwardly-projecting stem or shank 33, that is loosely fitted in the socket 28. A coiled spring 34 is disposed in the socket 28, beneath the stem or shank 33 and operates to force the plunger 32 outward. A rod 35 passes centrally through the plunger and its shank or stem and through the bore 29 and is pre-

vented from moving endwise by a pin 36, that is inserted in the side of the knob-spindle and engages an annular groove 37, formed on said rod. The outer end of the rod 35 is formed with a flat head 38, that normally lies in a correspondingly-shaped slot formed in the outer face of the plunger 32, and said rod at its inner end is provided with an eccentric wrist-pin 39, that engages a transverse slot 40, formed in the pin 31. When the pin 31 is in engagement with the recess 20, as shown in Fig. 1 of the drawings, it will be evident that the knob 26 cannot be turned and the latch can then only be retracted by means of the pin 41, secured to the latch mechanism in a usual and well-known manner. To unlock the inner knob, so as to permit of its being turned, the plunger 32 must first be pushed in to release the head 38 of the rod 35, and the latter is then given a partial rotation to cause the wrist-pin 39 to retract the pin 31, whereupon the knob is free to be turned.

Rotatably arranged in the boss 17 of the outer plate is a knob 42, provided with a squared spindle 43, that passes through the square aperture in the boss 8 and is fitted over the squared inner end of the spindle 25. It will be apparent that by the construction described the two knobs cannot be turned independently of one another and that when either of them is turned the boss 8 will be rotated and the arms 7 will be actuated to retract the latch. The frusto-conical washers 19 are disposed in the countersunk portions 18 of the bosses 16 and 17, as before stated, and are fixed on the spindles 25 and 43 by means of pins 44, that pass transversely through said spindles and lie in grooves 45, formed in the inner faces of the washers.

Formed internally in the outer boss 17 is a radial socket 21, and adapted to register with said socket is a cylindrical slot 45, formed transversely in the spindle 43. Arranged to slide in the slot 45 is a locking-pin 46, provided with a transverse slot 47, which is engaged by a wrist-pin 48, formed eccentrically on the inner end of a rod 49. The rod 49 is rotatably mounted in a sleeve 50, which is fitted in the inner end of a tubular casing 51, which in turn is fitted centrally in the knob 42, and said casing and sleeve are prevented from turning by a set-screw 52, inserted through the side of the knob. The outer end of the rod 49 is formed with a head 53, that is provided on its opposite sides with nicks or notches 54, that are adapted to be engaged by prongs 55, formed on the end of a flat key 56. The tubular casing 51 is provided internally with lugs or projections 57, that are arranged to register with correspondingly-shaped notches 58, formed in the sides of the key to permit the latter to be rotated. It will be obvious that said lugs or projections 57 will operate to prevent the use of any but a properly-constructed key.

The operation of my improved lock and latch is as follows: Let it be assumed that it is desired to lock the door, so that a person having the proper key may unlock the door from the outside. Then the pin 31 is withdrawn from the socket 20 in the manner before described and the pin 46 is shot into the socket 21. The door can then only be opened from the inside by operating the bolt 41, it being impossible to turn the knob 26. By inserting the key 56 in the outer knob 42 and causing its prongs 55 to engage the notches 54 in the rod 49, then by rotating the key the pin 46 will be retracted from the socket 21, whereupon the knob 42 can be turned to withdraw the latch 2. If, however, it be desired to lock the door, so that it cannot be unlocked from the outside, then the bolt 31 is shot into its socket 20 in the manner before described, whereby neither of the knobs can be turned.

Instead of coupling the two knob-spindles 25 and 43 together in the manner before described said spindles may be coupled together as shown in Fig. 6, wherein the knob-spindles 25^a and 43^a are arranged to slide longitudinally alongside each other and through a collar 59, fastened to one of said spindles, said collar being provided with a square aperture of sufficient size to receive both of said spindles and also being squared externally to fit the square aperture 9 in the boss 8. The collar 59 is preferably beveled upon its opposite sides to enable the spindles to be inserted at a slight angle in the event of the mortise formed for its reception being not formed accurately at a right angle.

Having described my invention, what I claim is—

1. In a combined lock and latch, the combination with the reciprocating latch, of rotatable spindles for retracting the latch, said spindles being coupled together to cause them to rotate in unison, knobs for turning the spindles, locking-pins slidably arranged transversely in both the knob-spindles and locking mechanism arranged in said knob-spindles and adapted to be operated by a key inserted in one of the knob-spindles and by a rotatable rod or stem in the other knob-spindle to project the pins into radial sockets formed in the fixed knob-spindle casing, substantially as described.

2. In a combined lock and latch, the combination with the reciprocating latch, of hollow bosses attached to the opposite sides of the door and each provided internally with a radial socket, knob-spindles arranged in said bosses and coupled together to rotate in unison, said spindles operating when turned to retract the latch, locking-pins slidably arranged transversely in the knob-spindles, and locking mechanism arranged in said knob-spindles and adapted to be operated by a key inserted in one of the knob-spindles and by a rotatable rod or stem in the other knob-spindle to project said pins into the radial sockets in the bosses to lock the knob-

spindles against turning, substantially as described.

3. In a combined lock and latch, the combination with the reciprocating latch, of plates attached to the opposite sides of the door and each provided with a hollow boss, said bosses being each provided internally with a radial socket, knob-spindles arranged in said bosses and operating when turned to retract the latch, transverse locking-pins slidably arranged in the knob-spindles and each provided with a transverse slot, rods rotatably arranged centrally in the knob-spindles and provided at their inner ends with wrist-pins engaging said transverse slots and operating when the rods are rotated to move the locking-pins in and out of the radial sockets, substantially as described.

4. In a combined lock and latch, the combination with the reciprocating latch, of plates attached to the opposite sides of the door and each provided with a hollow boss, said bosses being each provided internally with a radial socket, knob-spindles arranged in said bosses and operating when turned to retract the latch, transverse locking-pins slidably arranged in the knob-spindles and each provided with a transverse slot, rods rotatably arranged centrally in the knob-spindles and provided at their inner ends with wrist-pins engaging said transverse slots and operating when the rods are rotated to move the locking-pins in and out of the radial sockets, and means for independently rotating said rods, substantially as described.

5. In a combined lock and latch, the combination with the reciprocating latch, of plates attached to the opposite sides of the door and each provided with a hollow boss, said bosses being countersunk at their inner ends and each provided internally with a radial socket, knob-spindles arranged in said bosses and operating when turned to retract the latch, transverse locking-pins slidably arranged in the knob-spindles and each provided with a transverse slot, rods rotatably arranged centrally in the knob-spindles and provided at their inner ends with wrist-pins engaging said transverse slots and operating when the rods are rotated to move the locking-pins in and out of the radial sockets, and frusto-conical washers disposed in the countersunk portions of the bosses and fixed on the knob-spindles, substantially as described.

6. In a combined lock and latch, the combination with the reciprocating latch, of plates attached to the opposite sides of the door and each provided with a hollow boss, said bosses being each provided internally with a radial socket, knob-spindles arranged in said bosses and operating when turned to retract the latch, said knob-spindles being connected at their inner ends to rotate in unison, transverse locking-pins slidably arranged in the knob-spindles and each provided with a transverse slot, and rods rotatably arranged centrally in the knob-spindles and provided at their inner ends with wrist-pins engaging said transverse slots and operating when the rods are rotated to move the locking-pins in and out of the radial sockets, substantially as described.

7. In a combined lock and latch, the combination with the reciprocating latch, of plates attached to the opposite sides of the door and each provided with a hollow boss, said bosses being each provided internally with a radial socket, knob-spindles arranged in said bosses and operating when turned to retract the latch, transverse locking-pins slidably arranged in the knob-spindles and each provided with a transverse slot, rods rotatably arranged in the knob-spindles and provided at their inner ends with wrist-pins engaging said transverse slots and operating when the rods are turned to move the locking-pins in and out of the radial sockets, and means for normally holding said rods against rotation, substantially as described.

8. In a combined lock and latch, the combination with the reciprocating latch, of a plate attached to the outer side of the door and provided with a hollow boss having an internal radial socket, a knob-spindle arranged in said boss and operating when turned to retract the latch, a transverse locking-pin slidably arranged in the knob-spindle and having a transverse slot, a tubular casing fitted centrally in the knob-spindle and provided with internal lugs or projections, a sleeve fixed in the inner end of said casing, a rod rotatably arranged in said sleeve and provided at one end with an eccentric wrist-pin engaging the slot in the locking-pin to move the latter in and out of the radial socket, and provided at its opposite end with a head having notches formed in its opposite sides and adapted to be engaged by a key to turn the rod, substantially as described.

9. In a combined lock and latch, the combination with the reciprocating latch, of a plate attached to the inner side of the door and provided with a hollow boss having an internal radial socket, a knob-spindle arranged in said boss and operating when turned to retract the latch, a transverse locking-pin slidably arranged in the knob-spindle and having a transverse slot, a rod rotatably arranged in the knob-spindle and provided at one end with an eccentric wrist-pin engaging the slot in the locking-pin to move the latter in and out of the radial socket in the boss, and provided at its other end with a head by means of which it may be turned, substantially as described.

10. In a combined lock and latch, the combination with the reciprocating latch, of a plate attached to the inner side of the door and provided with a hollow boss having an internal radial socket, a knob-spindle arranged in said boss and operating when turned to retract the latch, a transverse locking-pin slidably arranged in the knob-spindle and having a transverse slot, a rod rotatably

arranged in the knob-spindle and provided at one end with an eccentric wrist-pin engaging the slot in the locking-pin to move the latter in and out of the radial socket in the boss and provided at its other end with a flat head by means of which it may be turned, a hollow plunger surrounding the outer end of said rod and provided with a recessed head adapted to inclose the headed end of the rod, and a spring for forcing said plunger outward, substantially as described.

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

MARCUS C. PATRICK.

Witnesses:
HENRY F. BUTLER,
R. B. ALBERTSON.