

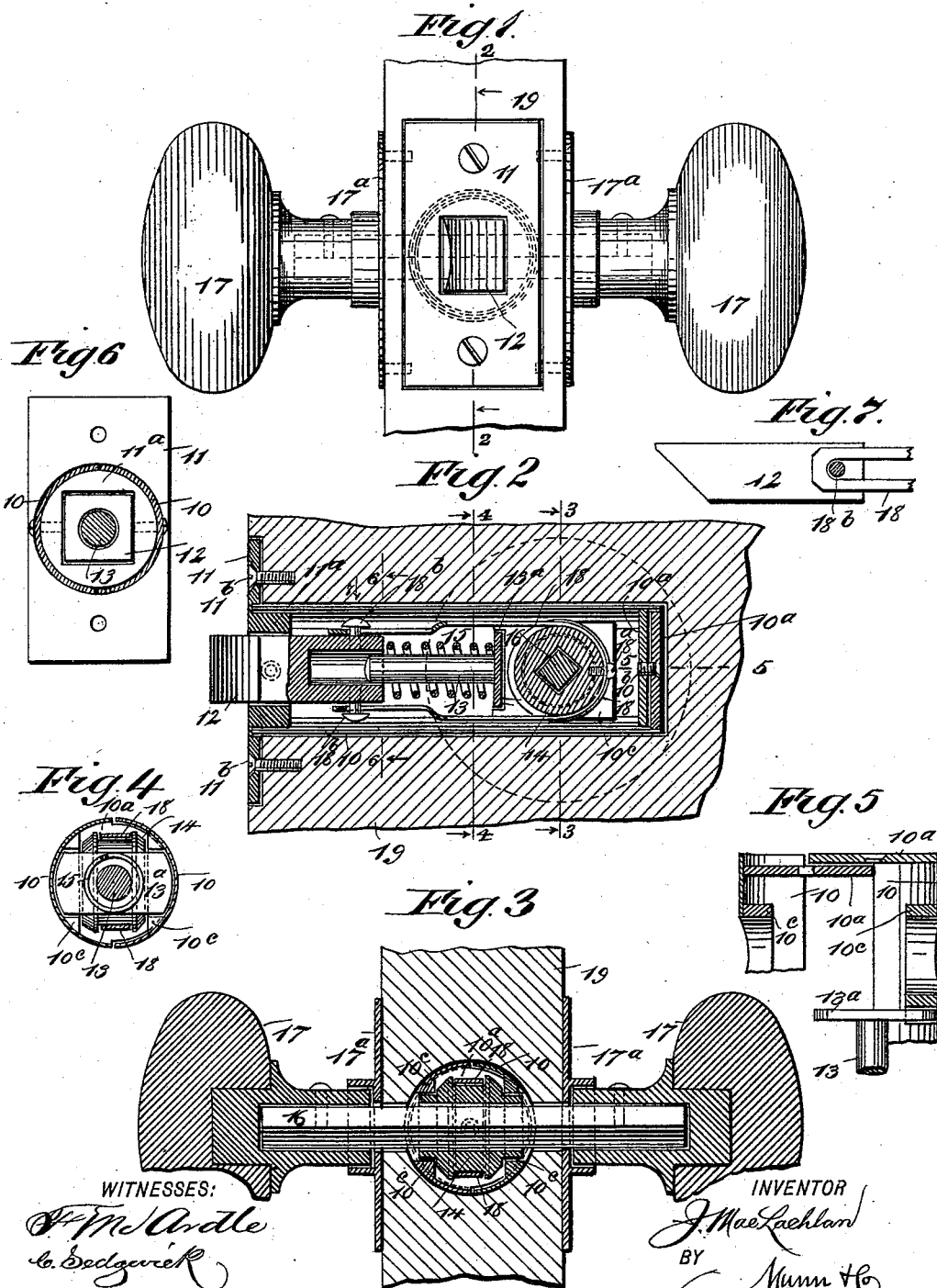
(No Model.)

2 Sheets—Sheet 1.

J. MACLACHLAN.  
LATCH AND LOCK.

No. 526,980.

Patented Oct. 2, 1894.



WITNESSES:

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*C. Sedgewick*

INVENTOR

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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

J. MACLACHLAN.  
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Fig. 8.

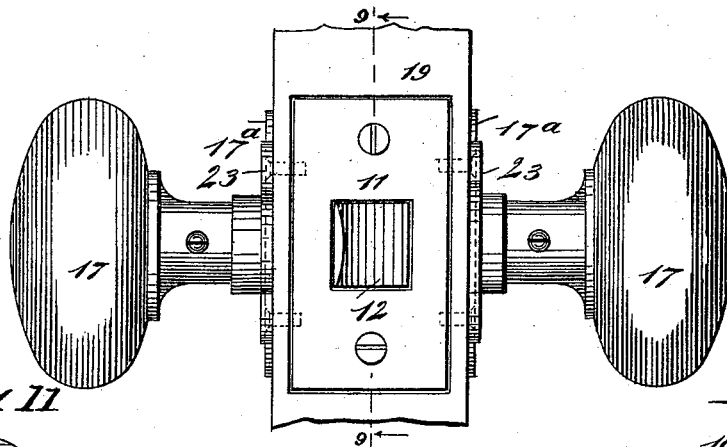


Fig. 11.

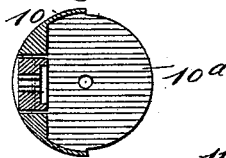


Fig. 13.

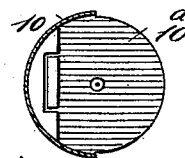


Fig. 9.

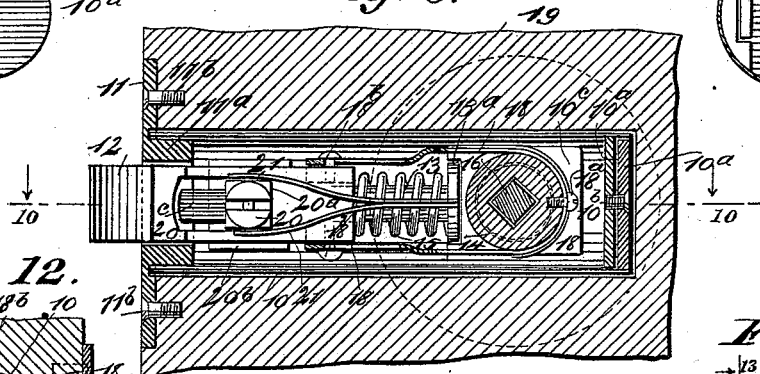


Fig. 12.

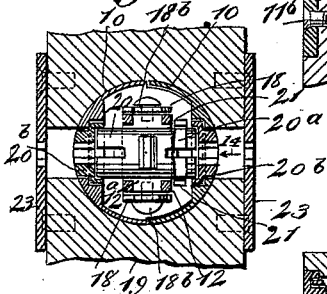


Fig. 10.

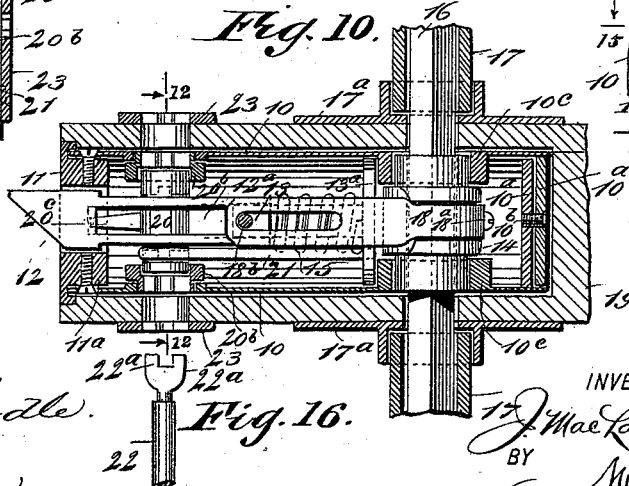


Fig. 14.

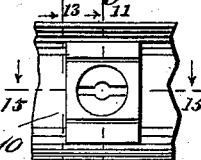
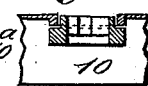


Fig. 15.



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Fig. 16.



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# UNITED STATES PATENT OFFICE.

JOHN MACLACHLAN, OF WEST HOBOKEN, NEW JERSEY.

## LATCH AND LOCK.

SPECIFICATION forming part of Letters Patent No. 526,980, dated October 2, 1894.

Application filed December 19, 1893. Serial No. 494,093. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN MACLACHLAN, of West Hoboken, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in a Combined Knob Latch and Lock, of which the following is a full, clear, and exact description.

My invention relates to improvements in door latches and locks, of a type having a cylindrical case that contains the working parts of the latching and locking devices, and has for its objects, to provide a novel device of the type mentioned, which will be reliable either as a latch or lock, be of compact construction, and that may be conveniently altered to adapt a lock having the improvements for the use of different keys.

To these ends my invention consists in the peculiar construction and combination of parts as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views shown.

Figure 1 is an edge view of a door in part, and the improved latching device on it. Fig. 2 is a sectional side view on the line 2—2 in Fig. 1. Fig. 3 is a transverse sectional view, on the line 3—3 in Fig. 2. Fig. 4 is a detached transverse sectional view of the latch case and contained parts, on the line 4—4 in Fig. 2. Fig. 5 is an enlarged sectional plan view of the rear end portion of the two part latch case, showing the case sections partly separated, and taken on the line 5—5 in Fig. 2. Fig. 6 is a detached transverse sectional view, on the line 6—6 in Fig. 2. Fig. 7 is a detached side view of the latch bolt and a connected part shown in part. Fig. 8 is an edge view of a door in part, and the device in latch and lock form in place thereon. Fig. 9 is a sectional side view of the combined latch and lock, on the line 9—9 in Fig. 8. Fig. 10 is a sectional plan view of parts on the line 10—10 in Fig. 9. Fig. 11 is a detached transverse sectional view of details, on the line 11—11 in Fig. 14. Fig. 12 is a transverse sectional view on the line 12—12 in Fig. 10. Fig. 13 is a transverse sectional view on the line 13—13 in Fig. 14. Fig. 14 is an inner side view of a portion of the latch and lock case, at a point opposite the arrow 14 in Fig. 12. Fig. 15 is a longitudinal sectional view of

the case portion shown in Fig. 14, on the line 15—15 in said figure; and Fig. 16 is a side view of the key bit and part of the shank, used to lock and release the latch bolt of the combined latch and lock.

The tubular case provided to receive and support in working condition the improved latching and locking devices, consists of two semi-cylindrical sections 10, which are held connected at their edges so as to be interiorly unobstructed, by means of two circular flat wall pieces 10<sup>a</sup>, that each represent the interior diameter of the case. The wall pieces 10<sup>a</sup>, are each attached to one-half section of the case, edgewise at their rear ends, and lapped flat upon each other so as together produce a rear end wall for the case, said parts being detachably connected by the screw 10<sup>b</sup> as shown in Figs. 2 and 9.

The case sections 10, are attached at their opposite or forward ends to the face plate 11, which part is an elongated rectangular plate of proper thickness, having a central boss 11<sup>a</sup>, projected from one side, the boss being cylindrical externally considered, and of such a relative diameter that the end portions of the case half sections will fit on it, said sections being fastened to the boss by screws, as shown in Fig. 10, after their insertion in a shallow groove formed in the plate around the boss. When the improvement is constructed to be used as a door latch alone, the working parts composing it are constructed and arranged as follows: A slide bolt 12, shown clearly in Figs. 1 and 7, is furnished, and is an elongated metal piece rectangular in cross section, and of proper dimensions for its service. The slide bolt is loosely fitted in a central rectangular aperture formed for its reception in the face-plate 11 and boss 11<sup>a</sup>, these serving as a support and guide for the forward end of the bolt, which is beveled from one side as usual. A central perforation is formed of a suitable depth in the bolt 12, at its rear end, and in said perforation the cylindrical pusher rod 13, is loosely fitted for longitudinal movement, said rod being furnished with a flat rectangular head wall 13<sup>a</sup>, that projects at right angles therefrom at its rear end.

The case sections 10, are thickened an equal degree, at a proper distance from the rear end, so as to provide two similar walls 10<sup>c</sup>, that are

made parallel with each other on their inner faces, which are suitably separated for the introduction of a cylindrical block 14, the trunnion ends of which loosely engage with opposite circular apertures of an equal diameter that are centrally formed in these walls. The head wall 13<sup>a</sup>, is shaped on its edges to rest in shallow recesses formed in the front sides of the inwardly projected walls 10<sup>c</sup>, and on the body of the pusher rod a spiral spring 15, is loosely mounted, the ends of which respectively engage with the forward face of the wall 13<sup>a</sup>, and rear end of the slide bolt 12, the expansion of the spring projecting the bolt forwardly. The cylindrical block 14, is rectangularly and axially perforated as shown in Figs. 2 and 3, for the free insertion of the spindle 16, that is rectangular in cross section, and projects a proper distance at each side of the case when these parts are assembled, the knobs 17, being secured on the end portions of the spindle by the usual set screws as shown, or by other means.

A pliable sheet metal strap 18, is provided that is bent around the spindle block 14, and embedded in a circumferential groove of the latter on its rear side, and thereto secured by a set screw 18<sup>a</sup>, the equal portions of the strap which extend forwardly, being longitudinally slotted a proper length from points near their front ends, which latter are imposed on opposite sides of the slide bolt 12, near its end and loosely secured in connection therewith by the set screws 18<sup>b</sup>, that pass loosely through the slots in the strap ends and have a threaded engagement with the bolt.

When the improved latching device is to be placed on a door such as 19, the latter is cylindrically apertured at a proper point in its free edge, of such a relative diameter as will permit the introduction of the case 10, 10, the face plate on its outer end being embedded in the door so as to lie flush with the edge it engages, the case being secured in place by screws 11<sup>b</sup>. A perforation is transversely formed in the door opposite the hole in the block 14, and knob escutcheon plates 17<sup>a</sup>, are secured in place oppositely on the door, so that the spindle 16, may be inserted through the door and said plates, and the knobs be affixed on the spindle, having their inner ends in loose contact with the escutcheon plates as shown in Figs. 1, 3, 8 and 10.

The beveled projecting end of the slide bolt 12, is adapted for a latched engagement with an ordinary latching plate on the door casement (not shown) so that the swinging movement of the door, will cause the bolt to interlock with said plate in the usual manner; the release of the bolt being effected by a partial rotation of the spindle 16, which will cause one end of the strap 18, to draw the bolt inwardly, the opposite end portion of said strap sliding on the bolt toward the front end of the case as the knob on either side of the door is turned, a partial revolution of the

spindle in either direction serving to withdraw the latch bolt from engagement with the fixed latch plate so as to release the door.

The length of the slotted end portions of the pliable strap 18, is so proportioned to the length of the slide bolt 12, that the latter when in a normal projected condition, will be restrained from too great a protrusion beyond the face plate of the lock case, by the engagement of the set screws 18<sup>b</sup>, with the forward terminals of the slots in the strap end-portions.

In Figs. 8 to 16, inclusive, the locking mechanism is shown in connection with the knob latch hereinbefore described, and comprises the following additional features of construction.

The slide bolt 12, has a slot 12<sup>a</sup>, vertically formed in it at the center of thickness, and at a suitable distance from its beveled front end is transversely perforated to receive the rock shaft 20, that fits therein loosely, said perforation being longitudinally elongated to permit the bolt 12, to receive a sliding movement toward or from the spindle 16. On one projected end of the rock shaft 20, a square sided enlargement 20<sup>a</sup> is formed or secured, which is clasped on opposite sides by the pair of finger springs 21, plainly shown in Fig. 9, these springs having their lapped rear end portions secured in a notch formed to receive them in the edge of the head wall 13<sup>a</sup> of the pusher rod 13, their free front ends being properly bent to adapt them to have a clasping and sliding engagement with two opposite sides of the part 20<sup>a</sup>. The rock shaft is slightly extended beyond the squared portion 20<sup>a</sup>, and is peripherally rounded on said end, the opposite end of the shaft being similarly rounded.

The case sections 10, are thickened on their inner sides at equal distances from the boss 11<sup>a</sup>, and these inward projections are made parallel on their inner faces, and oppositely and circularly perforated, each projection having its inner face longitudinally channeled to produce a rectangular flat bottomed recess in each, for the reception of the detachable key guard plates 20<sup>b</sup>, that each fit neatly within one of said recesses and have a circular edged boss formed on the side that is outermost when in place, which bosses slide through the circular holes in the case sections 10, and thus expose the guard plates for the introduction of a key, as will be further explained. The inner surfaces of the guard plates 20<sup>b</sup>, are circularly recessed to receive the ends of the rock shaft 20, that are rotatably engaged therewith. Any preferred form of slot is produced in each guard plate, which slots cut through the walls of the bosses formed on said plates, and similar slots are formed transversely in the ends of the rock shaft 20, the slots in the plates 20<sup>b</sup> being circularly enlarged at the center of the bosses they are formed in, for the ac-

commodation of a key shank such as shown in Fig. 16.

There is a locking limb 20<sup>c</sup>, formed on the rock shaft 20, and is located in the vertical slot 12<sup>a</sup> of the slide bolt 12, as indicated in Figs. 9 and 10, the length of the limb being so proportioned that it will have a sliding contact with the front wall of the slot it occupies when the rock shaft is adjusted to effect this.

It will be seen that the slots centrally formed in the ends of the rock shaft 20, are arranged in parallel with two sides of the square formation 20<sup>a</sup> on said shaft, the clasping fingers 21 serving to normally retain them in such adjustment, and as the slots in the guard plates 20<sup>b</sup>, lie in the same plane with the bit slots in the shaft ends, the introduction of a proper shaped key can be readily effected on either side of the lock, the finger springs 21, holding the shaft in proper position to receive the key when the lock is in open or locked adjustment.

The bits 22<sup>a</sup> on the key shank 22, are to be fashioned to suit the conformation of the slots in the guard plates 20<sup>b</sup>, and mating slots in the end portions of the rock shaft 20.

It will be seen that if the key is introduced so that it may be rotated in one of the guard plates 20<sup>b</sup>, its bits having a locked engagement with the slots in the adjacent end of the rock shaft 20, the partial rotation of said key will throw the limb 20<sup>c</sup> forwardly, and prevent a retraction of the slide bolt 12, until the limb is removed from contact with the front end wall of the vertical slot 12<sup>a</sup>, and is rearwardly moved to permit the free reciprocation of the slide bolt by a partial revolution of the spindle 16.

When the latching and locking device is placed on a door, the latter is perforated opposite the bosses on the guard plates 20<sup>b</sup>, and an escutcheon plate 23, is secured over each perforation, these plates being slotted to conform with the shape of the key bits, so as to prevent the entrance of any key but one having a correct shape.

By providing removable guard plates, these may be altered slightly in form, so that a key that will open one of the improved locks will be prevented from complete introduction within another of the same general construction, that has the slots in the guard plates and escutcheon plates slightly altered in form.

It is claimed for this improved device, that it is very compact, is simple and cheap, and can be quickly applied to any door of moderate thickness, and afford an excellent knob-latch and lock combined, or a latching device alone if this is preferred.

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

1. In a door-latch and lock, the combination with a case, and an apertured face plate on one end of said case, of a spring pressed slide

bolt therein, a transversely disposed spindle, a circular block on the spindle, and a thin pliable strap in U-form, its bow portion passing around and secured to the block at the side opposite the slide bolt, the legs of said strap having a sliding connection with the opposite sides of said bolt, substantially as described.

2. In a door latch and lock, the combination with a two part cylindrical case, and a face plate at one end of the case, apertured to receive a slide bolt, of a longitudinally perforated slide bolt in said case, a pusher rod in the rear end of the bolt, a spring on said rod, a knob-spindle extending transversely in the case, a block on the spindle, and a flat and U-shaped pliable straps slotted at ends that are connected to the bolt, set screws passing through said slots into the slide bolt at its rear end and adapted to connect the spindle block with the slide bolt, substantially as described.

3. In a door latch and lock, the combination with a case, and a face plate at one end of the case, apertured to receive a slide bolt, of a longitudinally perforated slide bolt in said case, a pusher rod in the rear end of the bolt, said rod being provided with a head wall on its rear end, a spiral spring on the rod, a knob-spindle extending transversely in the case behind the pusher rod, a cylindrical block on said spindle, having trunnioned ends engaging perforated walls of the case, a pliable strap secured near its center on said block and lapped at its ends on the slide bolt, and screws fast in the slide bolt and loose in longitudinal slots formed in the strap near its ends, substantially as described.

4. In a door lock, the combination with a case, a slide bolt therein spring-pressed outwardly, a transverse rock shaft loosely sustained at its ends in perforations at opposite sides of the case and passing through an elongated hole in the bolt, which shaft is formed to receive and interlock at its ends with a key, curved finger springs fast on the rear end of a bolt support and pressing their free ends oppositely on flat parts of the bolt a locking limb on the shaft movable in the slot of the bolt and arranged to hold the bolt locked when the limb is forwardly projected, and a key insertible from the sides of the lock and adapted to engage the ends of the rock shaft for its partial rotation, substantially as described.

5. In a door lock, the combination with a case, a sliding latch bolt therein, and a bolt retracting device connected to a transverse knobbed spindle, of a spring pressing the bolt outwardly, a rocking shaft transversely arranged within the case, passing through a longitudinally elongated hole in the bolt, having its ends slotted for the engagement of a key, and furnished with a limb that lies in the bolt slot to lock it in forward adjustment, guard plates working in perforations

of the case and loosely supporting the ends  
of the shaft, two plate-like curved finger  
springs fast by rear ends on a head wall  
transversely arranged in the case and fast on  
5 the rear end of a pusher rod that is made to  
slide in and support the rear end of the latch  
bolt, which springs clasp a squared portion of

the rock shaft to restrain its movement, and  
a key to rock said shaft, substantially as de- 10  
scribed.

JOHN MACLACHLAN.

Witnesses:

THEODORE B. CHANCELLOR,  
GEORGE A. MACLACHLAN.