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G. W. STRONG.
KEYLESS LOCK.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE W. STRONG, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have
5 invented a certain new and useful Improvement in Keyless Locks; and I declare the following to be a full, clear, and exact description of the invention, such as will enable
10 others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates in general to locks, and more particularly to keyless locks.

15 In the use of keyless locks for post-office letter-boxes and for similar purposes it is desirable that the tumblers may be readily set from the outside of the box to permit the bolt to be withdrawn from its keeper and that the
20 mere closing of the door will disconcert the tumblers. It is also desirable that the bolt should be capable of being withdrawn from the inside of the door without first setting the tumblers.

25 The primary object of my invention is to provide a keyless lock of the type referred to which will be simple in construction, inexpensive in manufacture, and efficient in use.

The embodiment of my invention herein
30 disclosed may be generally described as consisting in a spindle, tumblers surrounding the spindle to be rotated thereby, an oscillatory fence-section, a knob for oscillating the fence-section when the tumblers have been set, a
35 swinging link carried by the fence-section, a reciprocating bolt pivotally connected to said link, a finger projecting from the link adapted to engage a pin on one of the tumblers to disconcert the lock when the link is
40 swung relatively to the fence-section, a detent carried by the fence-section engaging notches in the periphery of a tumbler fixed on the spindle, and a spring the tension of which normally retains the fence-section and
45 link thereon in position to project the bolt and also retains the detent against the periphery of the cooperating tumbler.

My invention will be more fully described hereinafter with reference to the accompanying drawings, in which the same is illustrated in a convenient and practical form, and in which—

Figure 1 is an elevational view; Fig. 2, a

sectional view on line 2 2, Fig. 1; Fig. 3, a sectional view on line 3 3, Fig. 1; and Fig. 4, an
55 elevational view with parts removed.

The same reference characters are used to designate the same parts in the several figures of the drawings.

Reference character A designates a door of
60 any construction, upon which my improved keyless lock is mounted.

B indicates a spindle extending through and journaled in the door and having a knob
65 b for rotating the same located on the outside of the door.

C designates a tumbler fixed to rotate with the spindle in any suitable manner—such, for instance, as by providing an octagonal-shaped hole therethrough, which surrounds
70 an octagonal portion of the spindle.

D indicates a second tumbler, which is loosely mounted upon the spindle by means of a circular portion of the spindle extending
75 through a circular hole in the tumbler.

The inner faces of the tumblers are provided with pins $c^2 d^2$, located the same distance from the centers of the tumblers, so that the loose tumbler D will be rotated with the spindle when the pin c^2 on the tumbler C
80 engages the pin d^2 on the tumbler D.

In order that the tumbler D may be held from rotation with the spindle except when the pins on the tumblers are in engagement, frictional retaining means are provided consisting in a circular plate E, secured to a
85 semicircular raised portion a , formed on the inner surface of the door, which extends between the tumblers, and a washer F, which surrounds the spindle and is provided with
90 resilient tongues $f f$, bearing against the face of the tumbler D. In order that the tumbler D may be held with the desired pressure between the plate E and washer F, screws $f' f'$ pass through the ends of the resilient tongues
95 $f f$ and also through holes in the plate E and in the screw-threaded holes formed in the raised portion a on the door. By adjusting the screws $f f$ the pressure with which the tumbler D is forced against the plate E by
100 means of the washer F may be varied at will.

G designates a fence-section of substantially the shape shown in Figs. 1 and 4 and which is provided with a squared opening
105 g' , through which extends the square portion of a spindle H, the latter extending

through and being journaled in the door and provided with a knob *h* on the outside of the door. Formed integrally with the fence-section *G* is a detent *g*, which engages notches *c* in the periphery of the tumbler *C*. The fence *G'* is carried by the fence-section, which when the tumblers are set and the fence-section oscillated is received within registering notches *c'* and *d'* in the tumblers. Pivoted upon a lug *G²*, formed integrally with the fence-section, is a link *K*, to which is pivoted the bolt *L*, the latter being located within a guide *a'*, carried by the door. *l'* designates the pivot-pin, which unites the inner end of the bolt to the link *K*. A finger *k*, preferably formed integrally with the link *K*, extends over the adjacent edge of the tumbler *D* and is adapted to engage a pin *d* thereon to disconcert the tumblers.

A spring *M* is provided with one or more turns, which surround a pin *m*, projecting from the door, and extends at one end above and bears against the guide *a'* of the bolt. The opposite end of the spring is offset at *m²* and bears against the link *K* adjacent its fulcrum-pin *k'*. The tension of the spring *M* forces the link *K* against a stop *g²*, carried by the fence-section.

The inner end of the spindle *B* is provided with a screw *b'*, the head of which overlies the washer *F*, and thereby prevents the spindle from being disengaged from the door. A similar screw *h'* engages the inner end of the spindle *H* to prevent the latter from being disengaged from the door and also to retain thereon the portion of the fence-section in which the square opening *g'* is provided.

A' indicates a projection on the door, into alinement with which a projection *B'*, carried by the spindle, is adapted to be brought preparatory to setting the tumblers.

The operation of my invention is as follows: In order to set the tumblers, the spindle *B* is rotated a predetermined distance in one direction, thereby through the engagement of the pins *c²* *d²* rotating the tumbler *D* to such a position that the notch *d'* therein is brought into alinement with the fence *G'*. The spindle is then rotated in an opposite direction a predetermined distance, thereby bringing the notch *c'* in the tumbler *C* into register with the notch *d'*, and consequently into alinement with the fence *G²*. The detent *g* is forced into contact with the periphery of the tumbler *C* by means of the tension of the spring *M*, thereby causing a clicking sound to be produced as the spindle is rotated and rendering it possible to readily rotate the spindle in each direction the necessary distance to bring the notches therein into register and into alinement with the fence.

When the tumblers have been set, the knob *h* on the spindle *H* is rocked, thereby oscillating the fence-section *G*, and with it the bolt *L*, so that the latter is disengaged

from its keeper. The oscillation of the fence-section is permitted by the fence passing into the registered notches in the tumblers. The tension of the spring *M* at once swings the fence to its normal position immediately upon the pressure upon the knob *h* being discontinued. When the door is closed, the movement of the bolt due to its engagement with its keeper forces the finger *k* against the pin *d*, thereby partially rotating the tumbler *D*, so that the notch *d'* therein is moved out of alinement with the fence *G'*.

The pivot-pin *l'*, which unites the bolt to the link *K*, projects a sufficient distance to enable the bolt to be withdrawn from its keeper from the inside of the door when it is desired to open the door without first setting the tumblers.

It will be observed that the spring *M* performs four separate functions: first, that of oscillating the fence-section to withdraw the fence from engagement with the notches in the tumblers; second, it forces the detent *g* into contact with the notches in the periphery of the tumbler *C*; third, it projects the bolt relatively to the fence-section, and, fourth, it withdraws the finger *k* from the path of the pin *d* after the tumblers have been disconcerted.

From the foregoing description it will be observed that I have invented an improved keyless lock the tumblers of which may be readily set owing to the clicks produced as the spindle is rotated in each direction, the bolt of which may be withdrawn from one side of the door, and in which the tumblers are automatically disconcerted by the closing of the door upon which the lock is mounted.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form, the proportion of parts, and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit of my invention.

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

1. In a keyless lock, the combination with a spindle, of tumblers rotated by the spindle, an oscillatory fence-section, a reciprocating bolt, a link interposed between the bolt and fence-section for permitting the bolt to be reciprocated relatively to the fence-section, and a spring for oscillating the fence-section and thereby projecting the bolt.

2. In a keyless lock, the combination with a spindle, of tumblers rotated by the spindle, an oscillatory fence-section, a reciprocating bolt pivotally mounted upon and carried by the fence-section, a finger connected to the bolt for disconcerting the tumblers, and a spring the tension of which oscillates the fence-

section relatively to the tumblers and reciprocates the bolt relatively to the fence-section.

3. In a keyless lock, the combination with
5 a spindle, of tumblers rotated by the spindle, an oscillatory fence-section, a reciprocating bolt, a link interposed between the bolt and fence-section for permitting the bolt to reciprocate relatively to the fence-section, a
10 finger carried by said link, a pin projecting from one of said tumblers into the path of movement of said finger, and a spring engaging said link for projecting the bolt and removing said finger from the path of said pin.
4. In a keyless lock, the combination with
15 a spindle, of tumblers rotated by the spindle, one of said tumblers provided with notches in its periphery, a fence-section, a reciprocating bolt operatively connected to the fence-section, a fence on said section, a detent carried by the fence-section and engaging said
20 notches, and a spring the tension of which moves said fence-section relatively to the tumblers and retains said detent against the periphery of the cooperating tumbler.
5. In a keyless lock, the combination with
25 a spindle, of tumblers rotated by the spindle, an oscillatory fence-section, a reciprocating bolt operatively connected to the fence-section, a detent rigidly secured to the fence-section and engaging notches in the periphery of one of the tumblers, and a spring for retaining the fence-section normally in position to disengage the fence from the tumblers and force said detent against the
30 periphery of the cooperating tumbler.
6. In a keyless lock, the combination with
35 a spindle, of tumblers rotated by said spindle, an oscillatory fence-section, a reciprocating bolt, a link pivoted at its lower end to said fence-section and at its upper end to said bolt, a spring bearing against said link the tension of which reciprocates the bolt relatively to the fence-section and oscillates the
40 fence-section so as to withdraw the fence from engagement with the tumblers.
7. In a keyless lock, the combination with
45 a spindle, of tumblers rotated by the spindle, an oscillatory fence-section, a reciprocating bolt, a link pivoted at its lower end to said fence-section and at its upper end to said bolt, a spindle upon which the fence-section is fixed, means for rocking said spindle and thereby withdrawing the bolt from its keeper,
50 and a spring bearing against said link against the tension of which said fence-section is os-

cillated and against the tension of which said bolt is reciprocated relatively to the fence-section.

8. In a keyless lock, the combination with
60 a spindle, of tumblers rotated by said spindle, an oscillatory fence-section, a reciprocating bolt, a guide in which the bolt reciprocates, a link pivoted at its lower end to said fence-section and at its upper end to said bolt, a
65 spring supported upon a pin and bearing at one end upon the guide for the bolt and at its lower end engaging said link.

9. In a keyless lock, the combination with
70 a support, of a spindle extending through said support, a tumbler fixed on said spindle, a second tumbler loosely surrounding said spindle, means interposed between said tumblers for imparting rotary motion to the second from the first, a plate fixed to said support and extending between said tumblers,
75 and adjustable means for forcing the second tumbler into frictional engagement with said plate.

10. In a keyless lock, the combination with
80 a support, of a spindle extending through said support, a tumbler fixed on said spindle, a second tumbler loosely surrounding said spindle, means interposed between said tumblers for imparting rotary motion to the second from the first, a plate fixed to said support and extending between said tumblers,
85 a washer surrounding said spindle and bearing against the outer surface of the second tumbler, and means for varying the pressure with which said washer engages said tumbler.
90

11. In a keyless lock, the combination with
95 a support, of a spindle extending through said support, a tumbler fixed on said spindle, a second tumbler loosely surrounding said spindle, means interposed between said tumblers for imparting rotary motion to the second from the first, a plate fixed to said support and extending between said tumblers, a washer surrounding said spindle and bearing
100 against the outer surface of the second tumbler, radial resilient fingers carried by said washer, and screws extending through the ends of said fingers into engagement with said support.

In testimony whereof I sign this specification in the presence of two witnesses.

GEORGE W. STRONG.

Witnesses:

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