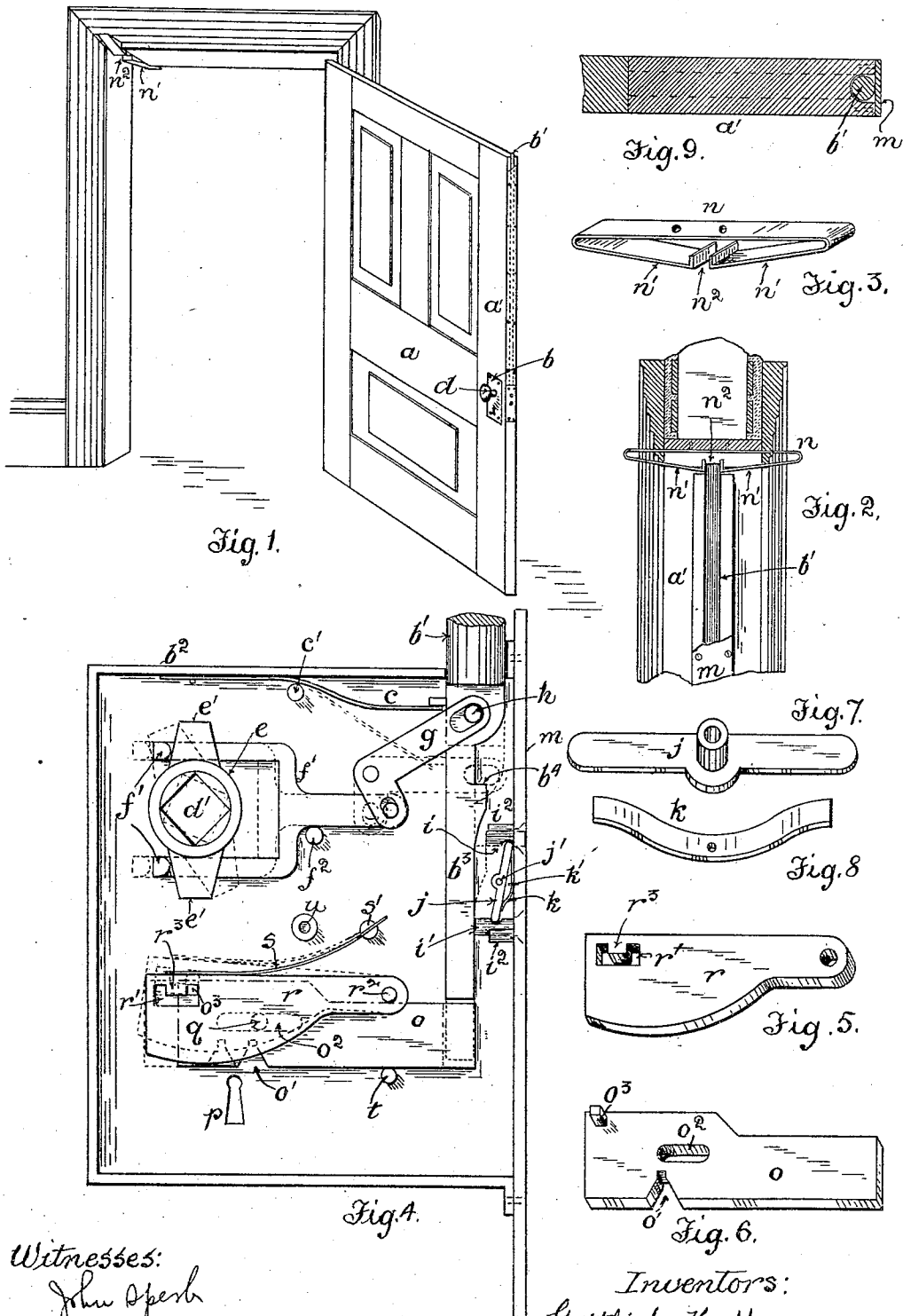


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LATCH LOCK FOR SWINGING DOORS.
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LATCH-LOCK FOR SWINGING DOORS.

943,615.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, ROBERT BUETIKOFER and GOTTLIEB HOFFMAN, citizen and subject, respectively, of the United States and Republic of Switzerland, and residents of Portland, Multnomah county, Oregon, have invented a certain new and useful Improvement in Latch-Locks for Swinging Doors, of which the following is a specification, reference being had to the accompanying drawings as constituting a part thereof.

This invention relates to two-way swinging doors, and has for its object to provide a lock arranged to latch the door in shut position whenever swinging back, after having been opened; the latch-bolts being operated by a door-knob as usual, and the lock being further adapted to be locked by a key, and to be adjustable to hold the latch-bolts withdrawn, so that the door may swing free without latching.

To this end our invention comprises the arrangement and combination of parts as hereinafter fully set forth.

In the drawings: Figure 1 shows our invention applied to a two-way swinging-door of the usual type, and more particularly illustrates the position of the keeper, with which the latch-bolt of the lock is engaged; Fig. 2 is an enlarged sectional detail of the door-frame, more particularly illustrating the cooperation of the keeper and the latch-bolt of our door-lock; Fig. 3 is an enlarged detail of our spring-keeper; Fig. 4 is an elevation of a lock controlling the latch-bolt; Figs. 5, 6, 7 and 8 are details of parts included in the preceding figure; and Fig. 9 is a horizontal section through the outer edge of the door, showing the location of the retaining means for the latch-bolt.

Referring now to the reference letters: The door, *a*, is provided in its outer edge, or member, *a'*, with a lock *b*, which is of the type shown in Fig. 4; and connected with and operated by said lock is a latch-bolt *b'*, which is normally projected and held in an upward position by a spring *c*, secured to the lock-case, *b²*, and resting on a pin *c'*. The bolt *b'* lies in a groove in the edge of the door and is held in place by a plate *m*. The latch-bolt, *b*, is retracted from its projected position by turning the door-knob, *d*, mounted on the door-spindle *d'*, on which is

further mounted a collar *e*, having projecting lugs *e'*, *e²*, engaging with a notched fork *f*, provided with lugs *f'* and connected with a bell-crank *g*, one member of which bell-crank is connected with a pin *h*, rigid on the latch-bolt *b*. The latch-bolt, *b*, is provided with a downwardly projecting portion *b²*, which is made with a shoulder *b⁴*, in which to receive a bolt *i*. The latter is provided with a notch in its under side to receive the upper end of a lever *j*, the lower end of which engages in the same manner with a bolt *i'*. The lever, *j*, slides on guide-lug *f²* and on the rim of the collar *e*, and is controlled by a spring *k*. Thus, when the latch-bolt, *b*, has been retracted, by operating the spindle *d'*, and then pressing on the bolt *i*, the same will be engaged with the shoulder *b⁴* of the bolt-piece *b³*, and restrain said latch-bolt against being projected by the impulse of the spring *c*. A detail of the lever *j* is shown in Fig. 7, and a detail of the spring *k*, controlling said lever *j*, is shown in Fig. 8. The spring *k* is secured in place to the rim of the lock-case *m* at *k'*, and the lever *j* pivots on a pin *j'*. The bolts *i*, *i'* are held in guide-pieces *i²*.

To release the latch-bolt *b*, it is only necessary to press on the lower bolt *i'*, which would throw out the bolt *i*, and thus the spring *c*, to project the latch-bar. When the latch-bolt, *b*, is in its projected position, and the door swung shut, it will impinge upon one of the inclined lower members *n'* of the keeper *n*, which is made of spring-steel, for example, lifting such member of the keeper, and in so doing the latch-bar itself will be simultaneously partially depressed until the latch-bolt arrives in alinement with the space *n²*, between the members of the keeper, whereupon the latch-bolt will spring up, by reason of the impulse of the spring *c*, and become locked between the abutments *n'*, *n²* of the keeper, and the door will be latched.

To avoid the latching of the door when swinging under the keeper *n*, the latch-bolt, *b'*, is retracted and locked in its retracted position, as already explained.

To lock the latch-bolt against being retracted, by the turning of the spindle *d'*, we provide a slidable locking-bolt *o*, made with a notch *o'*, and to be operated by the bit of a key inserted through a key-hole *p*. The locking-bolt, *o*, is provided with a slot *o²*, to re-

ceive a guide-pin *g*. A tumbler *r* is pivoted over the locking-bolt *o*, as shown, said tumbler being provided with a shouldered notch *r'*, in which notch *r'* projects a lug *o'*, rigid on the locking-bolt *o*.

The operation of turning the key in the lock causes the bit of the key to first lift the tumbler, and then the bit, entering the notch *o'* of the locking-bolt, moves the latter in one direction or the other. The position of the locking-bolt, when moved to lock the latch-bolt against retraction, is shown in Fig. 4.

The tumbler is normally depressed by a spring *s*, fastened to a stud-pin *s'*, and the locking-bolt *o* rests on a guide-pin *t*. *u* is the threaded socket to receive the screw by which the outer plate (not shown) of the lock is secured in place.

The same locking-mechanism may also be used for the individual doors of the double swinging type.

We claim:

1. The combination of a door casing, a keeper on the top cross-member thereof, said keeper comprising two resilient inclined members, the opposing free ends of which are arranged to provide an intermediate bolt-space, a swinging door hinged to the casing, a vertically reciprocable latch-bolt on the outer edge of the door and arranged to be projected above the top of the latter, a lock in the door, into the case of which lock the lower end of the latch-bolt extends, said lock including a spindle and a knob and operating connections to retract the latch-bolt, a spring in the lock arranged to normally project said latch-bolt, and means for temporarily holding the latch-bolt against projection by said spring.

2. The combination of a door casing, a keeper on the top cross-member thereof, said keeper comprising two resilient inclined members, the opposing free ends of which are arranged to provide an intermediate bolt-space, a swinging door hinged to the casing, a vertically reciprocable latch-bolt on the outer edge of the door and arranged to be projected above the top of the latter, a lock in the door, into the case of which lock the lower end of the latch-bolt extends, said lock including a spindle and a knob and operating connections to retract the latch-bolt, a spring in the lock arranged to normally project said latch-bolt, means for temporarily holding the latch-bolt against projection by said spring, said holding means including and being operable by a push bolt, and means to lock the latch-bolt

against retraction by operating the door spindle.

3. The combination of a door casing, a keeper on the top cross-member thereof, said keeper comprising two resilient inclined members, the opposing free ends of which are arranged to provide an intermediate bolt-space, a swinging door hinged to the casing, a vertically reciprocable latch-bolt on the outer edge of the door and arranged to be projected above the top of the latter, a lock in the door, into the case of which lock the lower end of the latch-bolt extends, said lock including a spindle and a knob and operative connections to retract the latch-bolt, a spring in the lock arranged to normally project said latch-bolt, means for temporarily holding the latch-bolt against projection by said spring, said holding means including and being operable by a push bolt, a reciprocating locking bolt arranged to be engaged with the lower end of the latch-bolt to prevent the retraction of the latter by the rotation of the spindle, and means controllable by a key for securing the locking bolt in its projected and retracted positions.

4. The combination of a door casing, a keeper on the top cross-member thereof, said keeper comprising two resilient inclined members, the opposing free ends of which are arranged to provide an intermediate bolt-space, a swinging door hinged to the casing, a vertical reciprocable latch-bolt lying in a groove in the outer edge of the door and adapted to project above the top of the latter, and means retaining said bolt in said groove, a lock in the door, into the case of which lock the lower end of the latch-bolt extends, said lock including a spindle and a knob and operative connections to retract the latch-bolt, a spring in the lock arranged to normally project said latch-bolt, means for temporarily holding the latch-bolt against projection by said spring, said holding means including and being operable by a push bolt, a reciprocating locking bolt arranged to be engaged with the lower end of the latch-bolt to prevent the retraction of the latter by the rotation of the spindle, and means controllable by a key for securing the locking bolt in its projected and retracted positions.

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