

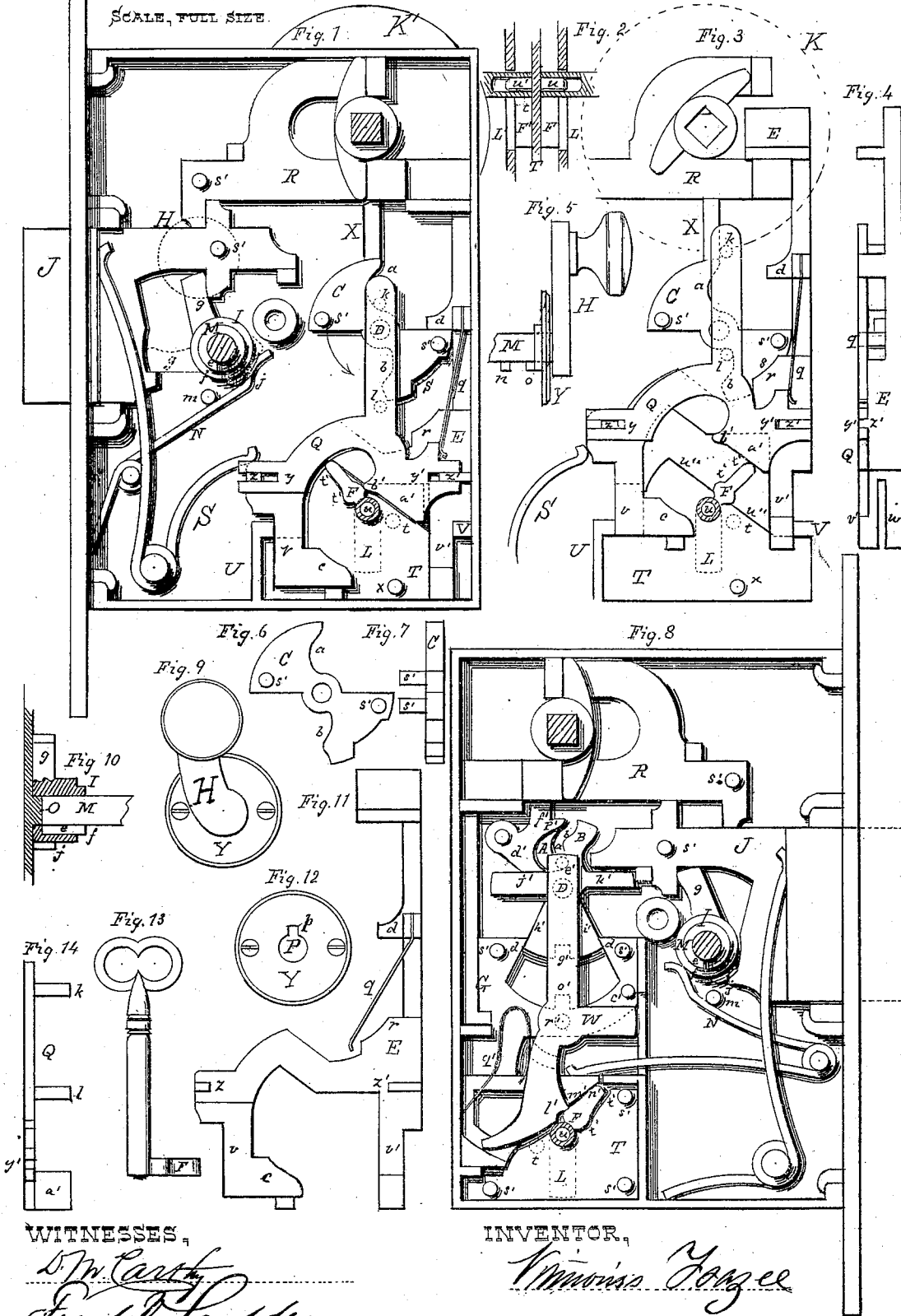
V. FRAZEE.

Improvement in Combined Latch and Lock.

No. 131,092.

Patented Sep. 3, 1872.

SCALE, FULL SIZE.



WITNESSES,

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VITRUVIUS FRAZEE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO HIMSELF AND WILLIAM L. BOVYER, OF SAME PLACE.

IMPROVEMENT IN COMBINED LATCHES AND LOCKS.

Specification forming part of Letters Patent No. 131,092, dated September 3, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, VITRUVIUS FRAZEE, of the city and county of San Francisco, State of California, have invented certain Improvements in Locks, of which the following is a specification:

Nature and Objects of the Invention.

My invention consists, first, in a pivoted tumbler provided with traversed edges, in combination with a locking-bar and a slide provided with two projecting pins; second, in a locking-bar having a slide connected therewith by means of slots and projections, in combination with a tumbler having traversed edges; third, in a slide provided with two projecting pins that engage with a tumbler, in combination with a locking-bar, the yoke of a latch-bolt, and the peculiar form of the side of the key-bit, as will be more fully described hereafter; fourth, in a hub provided with an arm which engages with the latch-bolt, and which is operated by a crank in such a manner as to secure or withdraw the latch-bolt, and also that the latch-bolt may, when required, be actuated solely by an ordinary knob.

Figures.

Figure 1 is an elevation of the lock with the cover removed and the parts in a locked position; Fig. 2, a section, showing the positions of the keys F F', the plate T, and the stop t. Fig. 3 shows the positions of the principal pieces when in an unlocked position; Fig. 4, an edge view of the locking-bar E with the slide Q attached; Fig. 5, an edge view of the crank H; Fig. 6, an elevation of the tumbler C; Fig. 7, an edge view of the tumbler C; Fig. 8, an elevation of a modification of my lock with the bolt J withdrawn; Fig. 9, an elevation of the crank H; Fig. 10, a section, showing a portion of the axis M of the crank, the hub I, and pivot O; Fig. 11, an elevation of the locking-bar E; Fig. 12, an elevation of the escutcheon; Fig. 13, the key; Fig. 14, an edge view of the slide Q.

General Description.

For common use it is intended that the lock-

case and interior works shall be manufactured of cast-iron, and the exterior parts of brass. For ship and special uses, however, any approved materials may be used. It is further intended that the lock shall be manufactured either as a mortise or rim lock, double or single, and with or without the crank H, for banks, bank-safes, offices, stores, dwellings, ships, &c.

I shall now describe the operation of the lock with its full complement of works, premising it to be in proper position on a door.

From the inner side the ordinary knob K, the crank H, and the key-hole L are seen, and from the outer side are seen the ordinary knob K' and the key-hole L'. The door can always be opened from the inner side by a movement of the crank H toward the knob K. The crank H, by its axis M and the bit e fitting into the slot f of the hub I, commands the movements of the hub I. The hub I is provided with the arm g, by which the latch-bolt J is withdrawn, Fig. 8, or by which it is locked (as shown in broken lines, Fig. 1) as against any movement of the knob or key on the outer side. The protuberance j of the hub serves, conjointly with the spring N, to retain the crank in its upright position, Fig. 9, and also prevents it from jarring out of place when pushed down to lock the bolt. The pivot O, Fig. 10, is used as a center for the hub I, in lieu of a hole in the outward side of the lock-case, to prevent access to the hub from without by means of a gimlet. The projection m prevents the spring N from pressing against the circular portion of the hub I, Figs. 1 and 8. The axis of the crank is provided with bits n o, Fig. 5, for its retention in the escutcheon Y. The escutcheon is provided with the aperture P and notch p for the reception of the axis and bits. The escutcheon is turned with the notch p opposite to whatever bit the thickness of the door will admit, and screwed fast. To suit doors of different thickness the axes of the various cranks should be of different lengths.

When the works are in the position shown in Fig. 1 the door may be unlocked from without by the key F', Fig. 2. The key-bit raises the slide Q and locking-bar E in common. The

slide Q is attached to the bar E, and has an independent horizontal movement. The key-bit, in the essential part of its movement, acting simultaneously on both slide and bar, produces a particular movement of the slide Q, which is pressed against the portion $t' t'$ of the key-bit by the light spring q attached to the bar E, corresponding to the form $t' t'$ of the key-bit. The edges a and b on the tumbler C, Fig. 6, are cut in such a form that the pins k and l , Fig. 14, of the slide Q may follow them. Any false movement either to the right or left will revolve the tumbler on the pivot D in the direction indicated by the arrow and prevent the locking-bar E from being raised sufficiently for the yoke R to be shot back. In a proper movement, however, the locking-bar and slide are raised, the key-bit passes from the bar E to the slide Q, and the full movement is finally accomplished, allowing the knob K' to be turned and the yoke shot back, Fig. 3, by which movement the latch-bolt J is withdrawn. The projection r of the bar E now fits into the gating s of the tumbler C, as shown in Fig. 3. The tumbler should be of a form to balance in any position it may be placed. The strong spring S retains the locking-bar E when either up or down, Figs. 3 and 1. The stop t prevents the key from the outer side from making a complete circuit, so that it has to be turned back to be withdrawn, thus by means of the hook c locking the lock, but not preventing the closing of the door. The projection d of the bar E brings the tumbler C into proper position when brought down, Fig. 1. The door from within is unlocked in the same manner as from without, and with the same or a similar key, which acts directly on the same parts. The only difference is that there is no stop to prevent a full circuit of the key. Thus the door may be unlocked, or, in other words, placed on a free latch from within, and remain so with the key either in or out. The plate T, beveled as at $u'' u''$, and provided with the pins $u u'$, on which the keys turn, forms part of an arrangement by which two similar keys may enter and be in the lock simultaneously, Fig. 2, either of them acting directly and in the same manner on the same works and parts without interference, and by which arrangement the key from without may have a stop, t , fixed either to the plate T or to the lock-case to prevent a complete circuit of the key and a consequent liability of leaving the door unlocked. And further, that a key may always remain in the lock from the inner side, for the convenience of locking or unlocking the latch. The legs $v v'$ of the locking-bar E have slots w , Fig. 4, in which the plate T is placed. The projections x on either side of the plate T, together with the partitions U V of the case, assist in keeping the plate T in position. The partition U, slide Q, and bar E, block any effective entrance for picklocks to the secret works. The slots $y y'$ in the slide Q traverse the projections $z z'$ of

the bar E. The slot y should only be so long that the greatest movement of the slide Q toward the latch-bolt J shall not, by means of the pin k , revolve the tumbler C far enough to more than barely touch the projection d , when the locking-bar E is raised about one-twelfth of an inch above its lowest position. This leaves about three-twelfths of an inch of the traversed edges a and b , measured vertically, intangible to the gating s , and for which part of the edges no data can be had by a lock-picker. The movement in a direction from the latch-bolt is not sufficient, on account of the block a' , Figs. 1 and 14, to require consideration. The object sought above is to have the greatest amount of secret movement commensurate with a horizontal movement of the slide Q, that it may follow, by its point b' , any even-shaped key-bit that can be inserted in the key-hole. In larger locks, or locks for banks and special purposes, the lengths of the edges $a b$ may be increased, as also the key-bit on which they are dependent. The fixed projection X on the lock-case retains the pin k in its proper position when raised above the tumbler C. In this case, however, it is only used to economize room. In larger locks the tumbler may be of sufficient dimensions to accomplish the same purpose.

In Fig. 8 is shown a modification of my improved locking device, the tumblers A B of which are pivoted at D, and are separated from each other by the stationary plate d' , which is provided with a notch, f' , to receive and retain the pin e' of the lever W when in the unlocked position. There is a pin inserted into the pivot D, with a flat head projecting sufficiently to protect the tumbler B from the lever W. The tumbler B is provided with the traversed edge b , and the tumbler A with the traversed edge a , and each is provided with a gating, g' , beveled edges $h' i'$, and balancing-arms $j' k'$. The lever W has a small notch, l' , immediately adjoining the point m' , to allow the point m' to follow the side of a key-bit whose outline has one or more indentations of considerable sharpness. The movement of said lever is limited by the stop e' on the slide G. When the end n' of the key-bit and the point m' come together in the turning of the key, the projection o' on the slide G should be just within the gatings g' , or else the pin e' should rest against the portion p' of the separating-plate, so that the lever, by reason of the pressure of the spring q' , may be held against moving the tumblers while the key-bit passes the notch l' . The tumblers A B are brought into proper positions in the falling of the slide G by means of the beveled portions $d d'$. The slide G is made in two pieces, so that the lever, with its pin e' and pivot r' , in one piece, may be connected therewith. The several projections s' , in Figs. 1 and 8, are merely for retaining the pieces on which they are fixed in proper positions.

I claim as my invention—

1. The tumbler C provided with the traversed edges *a b*, and movable on the pivot D, in combination with the pins *k l*, slide Q, and locking-bar E, substantially as and for the purpose hereinbefore set forth.

2. The locking-bar E and slide Q connected therewith by the slots *y y'*, in combination with the tumbler C having traversed edges *a b*, substantially as and for the purpose hereinbefore set forth.

3. The slide Q provided with the pins *k l* and tumbler C, in combination with the locking-bar E, the yoke R, and the portions *t' t'* of the key, substantially as and for the purpose hereinbefore set forth.

4. The hub I provided with the arms *g*, slot *f*, and protuberance *j*, in combination with the latch-bolt J, spring N, axis M, and crank H, substantially as and for the purpose set forth.

5. The crank H provided with the axis M, on which are the bits *e n o*, in combination with the escutcheon Y, hub I, arm *g*, and latch-bolt J, substantially as and for the purpose set forth.

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Witnesses:

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