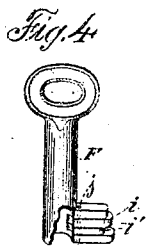
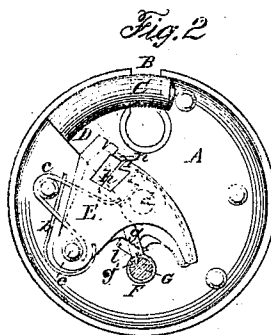
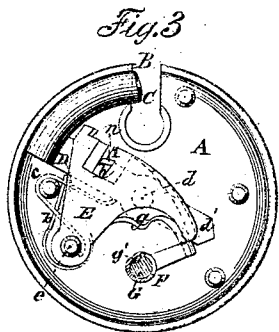
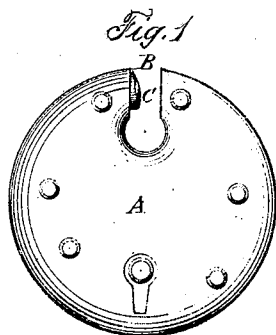


F. W. Smith, Jr.,

Padlock.

No. 99116.

Patented Jan. 25, 1870.



Witnesses:
Wm. H. Rome.
Joel Peyton.



Inventor:-
Fred W. Smith, Jr.

United States Patent Office.

FRIEND W. SMITH, JR., OF BRIDGEPORT, CONNECTICUT.

Letters Patent No. 99,116, dated January 25, 1870.

IMPROVEMENT IN PADLOCKS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, FRIEND W. SMITH, Jr., of Bridgeport, in the county of Fairfield, and State of Connecticut, have invented certain new and useful Improvements in Locks and Keys, of which the following is a full, clear, and exact description.

The object of the invention herein claimed is to render a lock unpickable; and

The improvements herein claimed consist—

First, in combining a pivoted bit, passing into the barrel of a key, with a pin, on which the key turns, having an eccentric outline to cause the bit to assume, when acting on the tumbler, an angle different from that which would be occupied by a rigid bit, this mode of construction rendering it very difficult, if not impossible, to take an impression of the key without removing the bit from the barrel; and also rendering it very difficult to measure the length of the bit at the moment of acting on the tumbler.

Second, in combining bits pivoted eccentrically to the axis of the key, and oscillating in planes at right angles thereto, with an eccentric pin, against which the inner ends of the pivoted bits press, and which pin causes the pivoted bits to assume various positions relatively to the axis of the key as it is turned in the lock. This invention constitutes an improvement on that for which Letters Patent of the United States, No. 87,518, were granted to me, March 2, 1869. In that patent, the bits swung loosely on the outside of the barrel of the key, and did not come in contact with the pin, and the key had to be turned partially backward, to bring the bits into line with the key-hole, to permit the withdrawal of the key from the lock, but in this case this function is performed by the pin, the shaft of which causes the bits to assume the proper position as they come in line with the key-hole.

Third, in combining oscillating bits and an eccentric pin with tumblers, so shaped that the key will not act upon them during the first portion of its movement, but will then move them quickly and release them again, and, as the bits strike the tumblers successively, it is more difficult to judge of their form than it otherwise would be.

Fourth, in combining an eccentric pin, a key having oscillating bits, a series of spring-tumblers, and a spring-bolt, so that the bolt always remains shot, and the tumblers locked therewith until both are moved by the positive action of the key.

In the accompanying drawings my improvements are shown as adapted to a padlock, more especially designed for a mail-bag lock, which constitutes an improvement on Letters Patent, No. 86,377, granted February 2, 1869, to Frederick Egge.

Figure 1 represents a face view of my improved lock.

Figure 2, a similar view, with the front plate re-

moved, the bolt shot, and the key in the act of unlocking the lock.

Figure 3, a similar view, with the parts shown in the attitude they assume at the moment of completing the unlocking.

Figure 4, a view in perspective of the key, with a portion of the barrel broken away to show the projecting portion of the bits.

Figure 5, an end view of the pin and key.

The mechanism is enclosed in a case, A, having a notch, B, for the insertion of the staple.

A bolt, C, moves across this notch.

This bolt is mounted on a lever, D, oscillating on a pivot, *d*, shown in dotted lines in the drawing, and having an arm, *d'*, projecting beyond the pivot.

A spring, *c*, forces the bolt across the notch whenever released from its catch, as hereinafter explained.

Tumblers E, oscillate on a pivot, *e*, and are acted on by springs, *b*.

A stud, *n*, on the bolt-lever, enters notches, *h*, as usual in locks of this class.

The key F may have one or more of its bits pivoted. In this instance, I have shown the two outer bits as fixed in the usual way, and the two inner ones, *i* *i'*, as oscillating on a pivot, *j*, eccentric to the axis of the key. The inner ends of the loose bits project through the key into its barrel, which is cut away for that purpose.

The pin G, of the lock, has a longitudinal slot or curved recess, *g*, cut in it, as shown in figs. 2, 3, and 5.

The operation of the lock is as follows:

When unlocked, the head of the bolt C projects into the notch B. As the staple of the mail-bag is inserted into the notch, it presses back the arm D, and releases the stud *n* from the catch I, on one or more of the tumblers, which latter are immediately moved far enough by their springs to allow the stud *n* to escape from the notch *h*, when the bolt D is immediately shot across the notch by its spring, and the bag is securely locked. This feature, however, is not claimed herein, as it forms the subject-matter of another application for Letters Patent filed simultaneously herewith.

In unlocking the bag, the key is inserted into the key-hole, and turned to the right. As soon as the bits abut against the tumblers, the pivoted bits fall behind the fixed ones, as shown in fig. 2, until their inner ends bear against the bottom of the groove in the pin, at which moment the key assumes the true form for unlocking the lock. As the turning of the key continues, the bits bear against the ridges *g*, on the tumblers. Move them quickly to bring their notches *h* into line for the entrance of the stud *n*, and then release the tumblers. Simultaneously with this movement, the key acts on the arm *d'*, of the bolt-lever, and forces the stud into the notches, at the same

time moving the catch 1 forward to interlock with the stud, and hold the bolt C in its retracted position, as in fig. 3. The pivoted bits are generally brought into line with the fixed bits, by their inner ends bearing on the round surface of the pin, so that when the bits arrive opposite the key-hole, they are all in proper position for the withdrawal of the key.

It is obvious that my improvement may be adapted to locks, of forms and descriptions differing from that herein shown and described.

I am aware that bits sliding transversely to the axis of the key have heretofore been combined with an eccentric pin, and therefore do not claim such a device.

I claim, as my invention—

1. The combination of the pivoted bit, passing into the barrel of the key, and the eccentric pin, these parts being constructed to operate substantially as hereinbefore set forth.

2. The combination of the fixed bits, the bits pivoted eccentrically to the axis of the key, and oscillating in planes at right angles thereto, with the eccentric pin which controls the movement of the pivoted bits, substantially as set forth.

3. The combination of the eccentric pin, the pivoted oscillating bits, and the rigid tumblers, substantially as set forth.

4. The combination of the eccentric pin, the oscillating bits, spring-tumblers, and spring-bolt, substantially as set forth.

In testimony whereof, I have hereunto subscribed my name.

F. W. SMITH, JR.

Witnesses:

JOE I. PEYTON,
WM. H. ROWE.