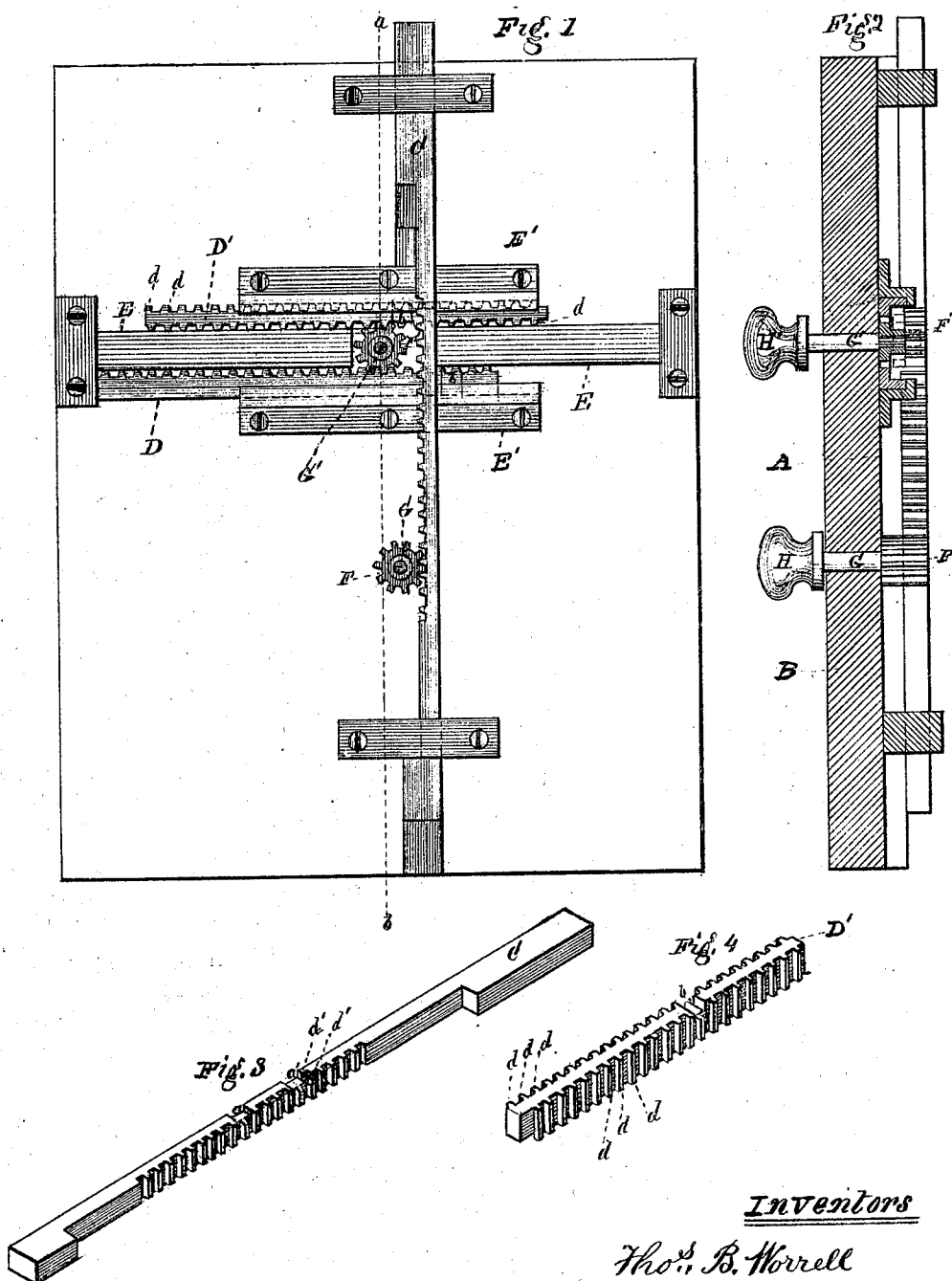


Worrell & Walker,

Lock.

No. 97,581.

Patented Dec. 7, 1869.



Inventors

Thos. B. Worrell

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Witnesses

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THOMAS B. WORRELL AND THOMAS WALKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THOMAS B. WORRELL.

Letters Patent No. 97,581, dated December 7, 1869.

IMPROVEMENT IN LOCKS.

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

We, THOMAS B. WORRELL and THOMAS WALKER, of the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Burglar-Proof Locks, of which the following is a specification.

Our invention is an improvement on that of THOMAS B. WORRELL, (one of the present applicants,) patented July 13, 1869; and

It consists, in the first place, in the construction of the teeth of one of each pair of interlocking-bars, double the width of the teeth of its fellow, whereby to provide for unequal movements of the two bars, with the same pinion, which is accomplished by shifting the pinion-shaft so as to disengage the pinion from the bar which has the short teeth at any point of the movement of both bars simultaneously, and then continuing the movement of the other bar any distance desired, thus complicating the difficulty of any one, other than the person who has the lock in charge, opening the same, as hereinafter described.

The improvement, in the second place, consists in the construction of the bar which has the wide teeth, with teeth on two parallel edges, to provide for reversing the bar endwise at pleasure, so as to make the lock susceptible of a greater number of changes than when the bar has teeth only on one side.

To enable others skilled in the art to which our invention appertains, to make and use the same, we will proceed to give a full description thereof.

In the accompanying drawings, which make a part of this specification—

Figure 1 is a face view of the inside of the improved lock, and of the door to which it is attached.

Figure 2 is a vertical section of the same, at the line *a b* of fig. 1.

Figure 3 is an isometrical view of the locking-bolt C, with its lower side up.

Figure 4 is a like view of the interlocking-bolt D', as it appears in fig. 1.

Like letters in all the figures indicate the same parts.

A is the improved lock, and

B, the door to which it is attached.

C is the locking-bolt, and

D D', interlocking-bars in combination therewith.

The said bars slide between the central guide-strip E, and the outer guides E' E'.

The locking-bolt C has cross-grooves, *a a'*, through which the interlocking-bars D D' are permitted to move, as hereinafter described, and the said bars have cross-grooves, *b b*, for the passage of the locking-bolt C, as it is moved inward and outward.

The said bolt is moved either way by means of the pinion F, on the inner end of the short shaft G, the operator taking hold of the knob H on the outer end of the shaft.

The interlocking-bars D D' are moved by the pinion F', on the shaft G', by means of the knob H' on the outer end of the shaft.

So far, the locking-bolt C and interlocking-bars D D' are constructed and arranged in the same manner as in the patent of THOMAS B. WORRELL, above referred to, and the lock is susceptible of an indefinite number of changes set forth in said patent. We therefore deem a further description of the same unnecessary, except as to our improvements, which will now be described.

We make the teeth A of the interlocking-bar D' of thrice the width of those of the bar D, so that when the bars have been moved either way, by turning the pinion F' when in the position it assumes by full lines in fig. 2, and is in connection with both bars to bring the cross-grooves *b* out of range with the locking-bolt C, the shaft G' may be pushed inward, as represented by dotted lines in fig. 2, so as to disconnect the pinion F' from the bar D, having the narrow teeth, and then moving the bar D' still further; the cross-grooves *b b* of the said bars D and D' are consequently of unequal distances from the locking-bolt C, and to bring them in range with the bolt by turning a single pinion, so that the bolt may be shot backward, is impossible for any one except the person who has charge of the lock.

Instead of moving both bolts simultaneously, to bring their cross-grooves *b b* out of range with the locking-bolt, and then shifting the pinion F', and moving the bar D' still further, as described, the pinion may be shifted at the commencement of the operation of moving the bars, and their simultaneous movement effected after the pinion has been brought back to its first position, the circumstance of making an unequal movement of the bars being accomplished either way.

The different movements of the two bars will perplex any one but the person who has set the lock, or made the movement, not knowing what movement to make, so that their cross-grooves *b b* may coincide as to their distance from the locking-bolt C.

Even should this difficulty be overcome, there still remains the difficulty of bringing the bars into the positions which will make their cross-grooves range with the locking-bolt, so it may be shot backward.

We make teeth on each side of the bar D', so the bar may be reversed endwise to accomplish other changes.

We make teeth, *d*, on the outer side of the cross-groove *a'*, in the under side of the bolt C, so that when a burglar forces the bolt backward, in feeling the lock, to see if any difficulties are removed, or where they exist, the said teeth *d* press between the teeth *d*, on the outer edge of the bar D', and hold the pinion F' fast, and thus secure both interlocking-bars, so compelling him to let them remain free; and one having to be moved further than the other, to bring the cross-

grooves *b b* in range with the bolt *C*, it is impossible for him to know when either is right.

We have only represented in the drawings one pair of interlocking-bars *D* and *D'*, as that is enough for illustration, and will be found sufficient in locks for ordinary purposes. We design, however, to construct the lock, sometimes, when deemed necessary, with two or more pairs of said bars, and then the difficulty of any one but he who has set the lock opening it, as must readily be seen, amounts to an impossibility.

We also construct the lock with a plurality of locking-bolts, but as these have been shown and explained in the patent above referred to, we deem it unnecessary to describe their arrangement.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination and arrangement of the interlocking-bars *D* and *D'* with the pinion *F'*, when the teeth of one bar are of greater width than the teeth of

the other, and the pinion has a reciprocating movement inward and outward, so as to be disengaged at pleasure from one of the bars, whereby an unequal movement of the two bars is effected, substantially in the manner and for the purpose hereinbefore described.

2. The construction of the bar *D'*, with teeth, *d*, on both edges, whereby to provide for changing its connection with the pinion *F'*, to make the lock *A* susceptible of many additional changes, substantially as described.

In testimony that the above is our invention, we have hereunto set our hands and affixed our seals, this 22d day of October, 1869.

THOS. B. WORRELL. [L. S.]
THOS. WALKER. [L. S.]

Witnesses:

STEPHEN USTICK,
WM. LARZELERE.