M. SCHWAERZLER.
Permutation-Lock.

No. 197,568. Patented Nov. 27, 1877.

Fig: 2

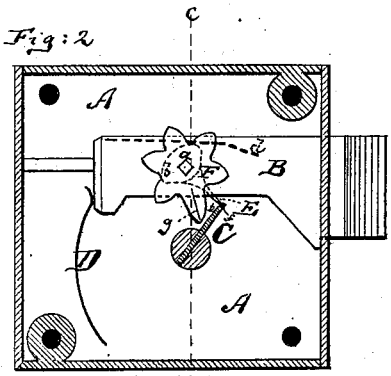

Fig: 3

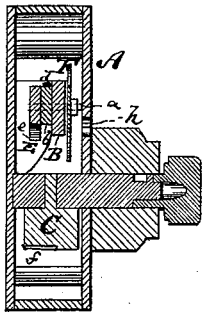

Fig: 1

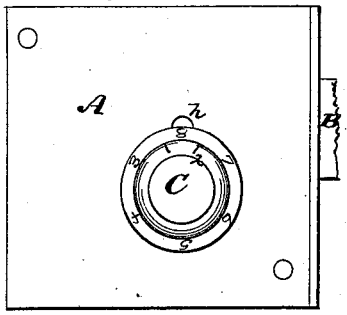

Fig: 5

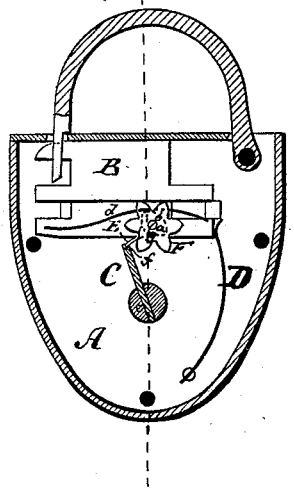

Fig: 6

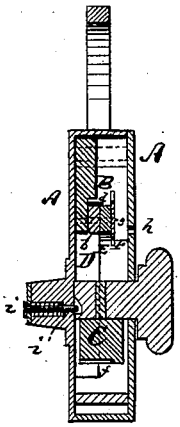

Fig: 4

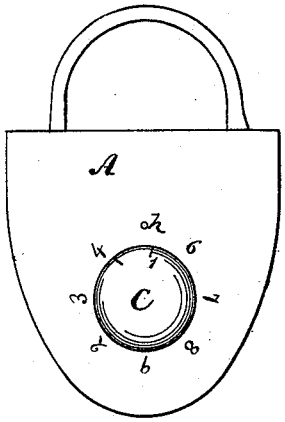

Fig: 7

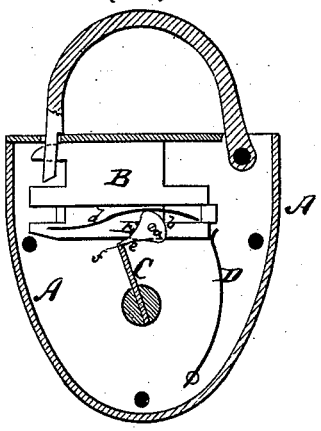

Fig: 8

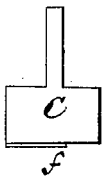

Fig: 9

Fig: 10

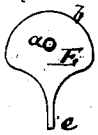

Fig: 11

Witnesses:

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by his attorney
D. V. Briesen

UNITED STATES PATENT OFFICE.

MARTIN SCHWAERZLER, OF NEW YORK, N. Y.

IMPROVEMENT IN PERMUTATION-LOCKS.

Specification forming part of Letters Patent No. **197,568**, dated November 27, 1877; application filed September 4, 1877.

To all whom it may concern:

Be it known that I, MARTIN SCHWAERZLER, of New York city, New York, have invented a new and Improved Bolt-Lock, of which the following is a specification:

Figure 1 is an outer face view of a door-lock containing my improvement. Fig. 2 is a sectional face view, showing the interior of said lock. Fig. 3 is a transverse section thereof on the line *c c*, Fig. 2. Fig. 4 is a face view of a padlock having the improvement. Fig. 5 is a sectional face view thereof, showing the inner mechanism. Fig. 6 is a transverse section thereof on the line *k k*, Fig. 5. Fig. 7 is a sectional face view of a padlock having a modification of the invention. Fig. 8 is a detail face view, and Fig. 9 a detail edge view, of the key. Fig. 10 is a detail face view, and Fig. 11 a detail edge view, of the vibrating finger which is applied to the lock-bolt.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to a new bolt-lock, being the class of lock which is provided with a reciprocating or oscillating bolt, such as door-locks, padlocks, safe-locks, and the like.

The invention consists, principally, in pivoting to the bolt a projecting finger, which, when it snaps into a notch or rabbet that is provided on the key, constitutes the lever by which the bolt is moved. And the bolt cannot be moved unless the said finger is properly engaged with the key, in manner stated.

The invention also consists in combining with said pivoted finger a star-wheel, to which intermittent rotary motion can be imparted by the key, and which, in its movements, will carry the finger around with it, to make the lock a kind of combination-lock.

The invention consists, also, in other details of improvement, hereinafter more clearly pointed out.

In the drawing, the letter A represents the lock-case; B, the sliding bolt; C, the key; D, a spring, by which the bolt is thrown into the locked position. To the bolt is pivoted, by a pin, *a*, a projecting finger, E, which has a cam portion, *b*, against which a friction-spring, *d*, bears, as clearly shown in the drawing. The point or end *e* of the finger E is quite narrow or sharp. The edge of the key C has a rabbet, *f*, formed in it. The parts thus far described are in all the locks illustrated in the drawing; but in Fig. 7 they are shown without any additional parts. Now, when, with reference to Fig. 7, the key is first turned to the left until the end *e* of the finger springs into the rabbet *f* of the key, the position shown in Fig. 7 will be attained, and the lock is then readily opened by merely turning the key to the right, in which case the key takes hold of the bolt by the intermediate lever or finger E, which is held to the bolt by its pivot, and to the key by the wall of the rabbet. But, though exceedingly simple, this lock can only be opened by a person well acquainted with its construction, as the rabbet *f* is so shallow that the key can only, with the greatest care, be prevented from passing beyond the point of the finger E, when said key is turned to the left. When the key is removed, or not in contact with the finger, the latter is, by the friction-spring *d*, that bears on the cam portion *b*, thrown into the way of the key, so that by revolving the key the said finger may be properly reached.

In Figs. 2, 3, 5, and 6 is further shown a star-wheel, F, rigidly connected with the finger E, so that its prongs will be in the way of the key. In this case the cam portion *b* of the finger is of such form as to permit the rotation of the finger. In a lock thus constructed the key may be turned in either direction, each revolution of the key causing a partial rotation of the star-wheel F and finger E. And when the finger has, by such rotation, been brought between the key and the outer end of the bolt, the key may be turned slightly outward to engage the end of the finger in the rabbet *f*, as indicated in Figs. 2 and 5, and can then be used to open the lock. Now, where the star-wheel is used, the lock becomes, in reality, a species of combination-lock, requiring figures or marks on the outer face and a mark or marks on the outer part of the key, as indicated in Figs. 1 and 4; and it further requires or renders desirable a means for observing at least one position of the star-wheel, which I provide in form of a line or mark, *g*, on the wheel or its pivot, which line or mark may be observed through an aperture, *h*, in the face-plate of the lock.

Fig. 6 illustrates, also, a spring-pin, *i*, which enters through the back plate of a padlock into a cam-groove in the end of the key, and which prevents the turning of the key in the direction which unlocks the bolt. Therefore, such a padlock can only be opened if the operator, in addition to properly placing the star-wheel and finger, also pulls the pin *i*, with one hand, clear from the key, to permit the final unlocking motion.

I claim as my invention—

1. The combination of the lock-bolt B with the finger E pivoted thereto, and with the friction-spring *d*, which acts on said finger, substantially as herein shown and described.

2. The combination of the lock-bolt B and pivoted finger E with the star-wheel F, substantially as herein shown and described.

3. The combination of the lock-bolt B, pivoted finger E, and star-wheel F with the mark *g* and aperture *h* in the face-plate, substantially as herein shown and described.

4. The combination of the lock-bolt B, pivoted finger E, and rabbeted key C with the spring-pin *i* for entering a cam-groove in said key, substantially as herein shown and described.

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