H. GROSS.

PERMUTATION LOCK.

No. 108,134. Patented Oct. 11, 1870.

Fig.1.

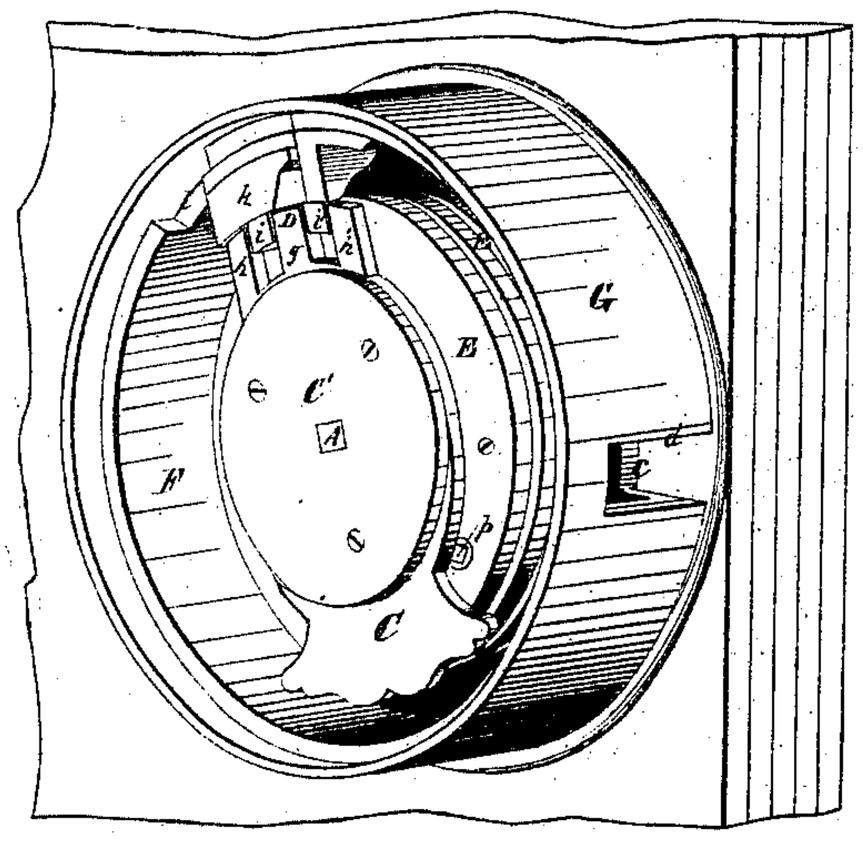


Fig.2.

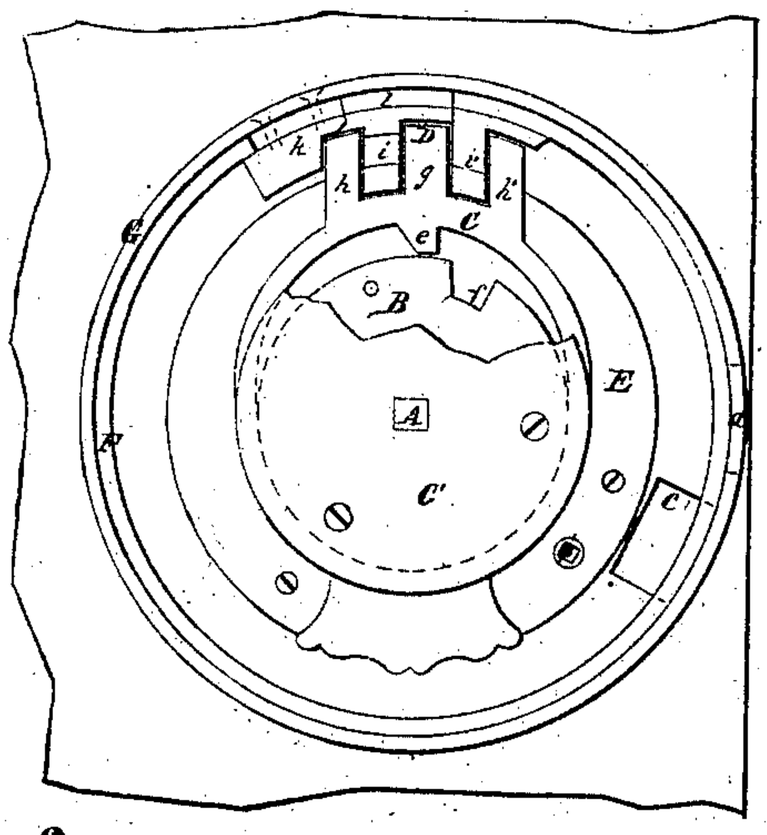


Fig.6.

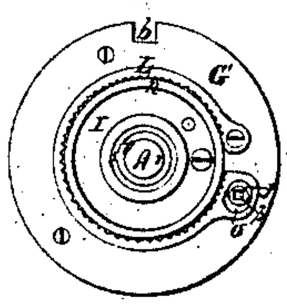


Fig.3.

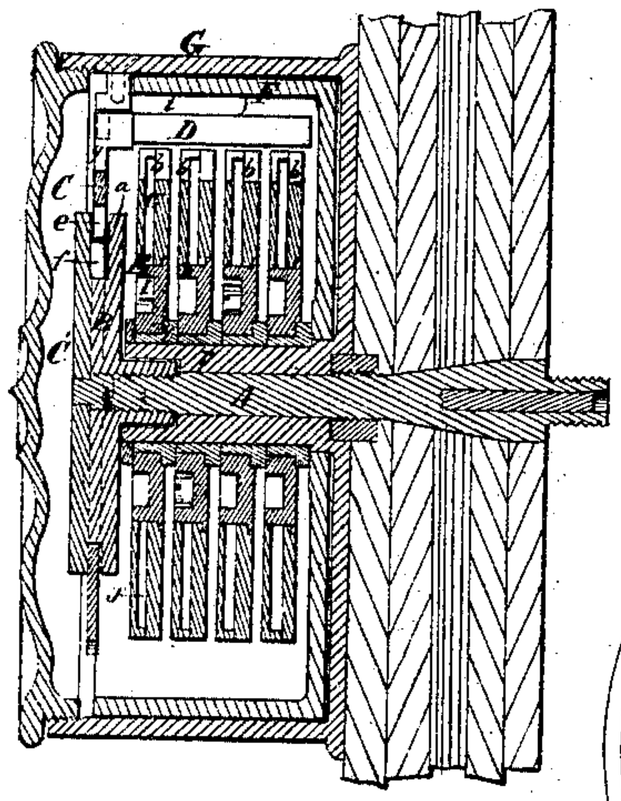


Fig.4.

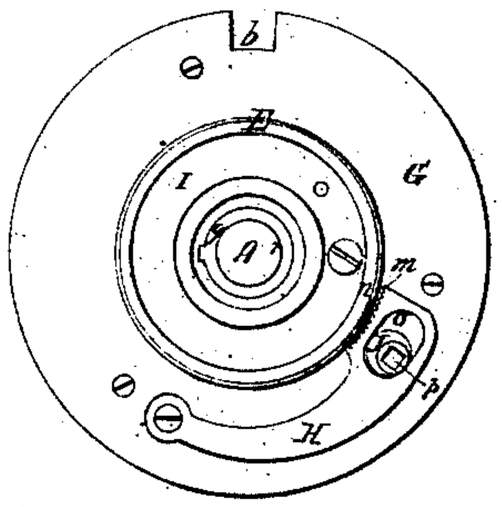
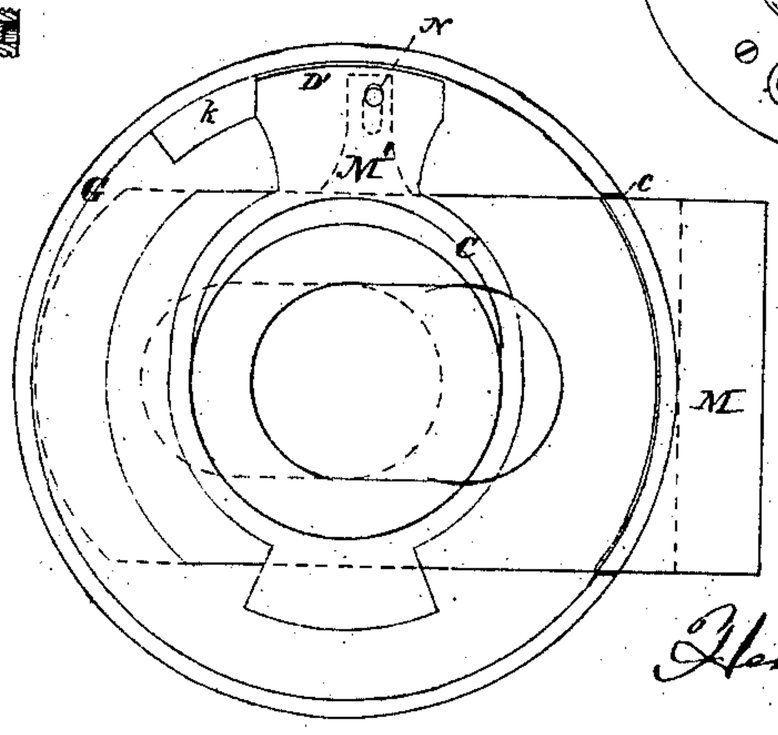


Fig.5.



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Letters Patent No. 108,134, dated October 11, 1870.

IMPROVEMENT IN PERMUTATION-LOCKS.

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

I, HENRY GROSS, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain improvements in Permutation-Locks, of which the following is a specification.

My invention relates to a device for preventing the engagement of the "dog" and tumblers by "feeling" for the gates in the tumblers, and consists in an oval yoke, which carries the dog, and an internal lug, of a form adapted to enter a recess in the driving-wheel attached to the spindle extending through the center of the tumblers and the door of the safe or receptacle, and connected with a suitable handle for manipulating and opening the lock.

Figure 1 is a perspective of a lock embodying my improvement, in which the inner case is removed, and the parts in place to permit the retraction of the bolt.

Figure 2 is an elevation of the same, showing the positions of the working parts when the bolt is out.

Figure 3 is a cross-section of the lock taken through the spindle and dog.

Figures 4 and 6 represent a style of adjustable tumblers adapted for use in this and similar locks.

Figure 5 represents a modification of my lock to adapt it to the use of a locking-bolt, located within the lock, and to be protruded therefrom in locking, it being, in that respect, the reverse of the other form.

A is the operating stem secured, within the lock, to the driving-wheel B.

The face of the driving-wheel is recessed at *a*, concentrically with the axis of the stem A.

An elliptical yoke, C, is confined in the recess *a* of the wheel B by the cap C′, which is secured to the driving-wheel.

The dog D, secured to the inner surface of the yoke C, projects inward, and is entered in the gates *b* of the tumblers E, when the opening *c*, in the circular guard F, is in line with the corresponding opening *d* in the case G of the lock, in which position of the relative parts the bolt may be retraced.

A lug, *e*, extends inwardly from the inner face of the yoke C, to which it is secured, at the same end of said yoke that is the dog D.

In form it is adapted to enter the recess *f*, in the edge of the driving-wheel B.

The yoke C bears upon its outer face, at a distance from the pillar *g*, which carries the dog D, equal to their width of face, the fingers *h h′*.

They engage the "stops" *i i′*, attached to the circular guard F.

The circular guard-stop *k* limits the throw of the circular guard, being attached to the lock-case, and extending inwardly through the recess *l* in the circular guard F.

In the modified form of my improved lock, delineated in fig. 5, the slide-bolt M may be operated by the same handle with which the tumblers are manipulated.

An arm, M′, attached to the top of the bolt M, has a vertical slot, in which moves the pin N, projecting from and secured to the arm D′ of the yoke C.

This arm D′ is in close contact with the stop *k*, attached to the case of the lock, when the dog is not gated in the tumblers.

When the yoke is permitted to drop, the bolt may be retracted, in which case the arm D′ passes freely beneath the stop *k*.

The operation of the lock may be thus described:

By means of a key, entered in the perforations *p* of the eccentrics J, the eccentrics are rotated in such a manner as to liberate the serrated faces *m* of the free end of the friction-bars H from the rim *n* of the inner wheel I, rotating the driving-wheel B to form a new combination, then turning the key in the eccentrics, to connect the rim G′ and inner wheel I of the tumblers, the dog D, attached to the yoke C, not being gated. In the mean time, the opening *c*, in the circular guard F, is not opposite, or a continuation of the opening *d* in the case G of the lock, and, consequently, the bolt cannot be retracted. Any attempt to do so would impinge the inner end of the bolt upon the circular guard.

When the gates of the tumblers are in line, according to the combination, the dog D is entered in the gates *b* of the tumblers E, and the recess *f*, in the face of the driving-wheel B, receives the lug *e*, projecting inward from the yoke C, the yoke having dropped upon the driving-wheel; the finger *h* being now liberated from the stop *k*, the driving-wheel may be rotated, and the fingers *h h′*, engaging the stops *i i′*, secured to the circular guard F, cause it to rotate until checked by contact of the stop *k* with the opposite face of the recess *l* in the circular guard, when it will be apparent that the openings *c* of the circular guard F and *d* in the case G are in line, then the bolt may be retracted, its inner end passing through the openings into the lock.

I claim as my invention—

1. The case G, provided with the opening *d* and stop *k*, in combination with the rotating guard F, provided with the opening *c* and stops *i*, the yoke C, provided with the fingers *h* and lug *e*, and the notched operating wheel B, all constructed and arranged to operate substantially as described.

2. The combination of the tumblers E, the operating wheel B provided with the notch *f*, having its rear face inclined, the yoke C provided with the corresponding lug *e*, and the dog D, substantially as described.

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