

W.K. Marvin,
 Permutation Lock,
 No 47,842, Patented May 23, 1865.

Fig. 1.

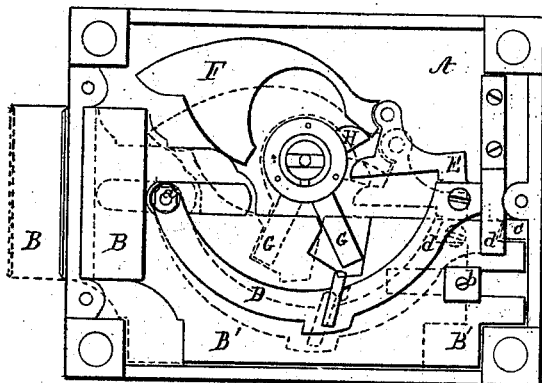


Fig. 2.

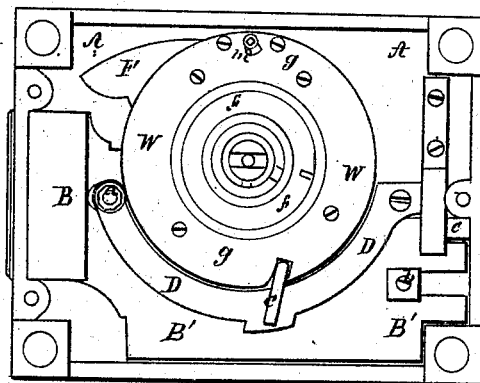


Fig. 3.

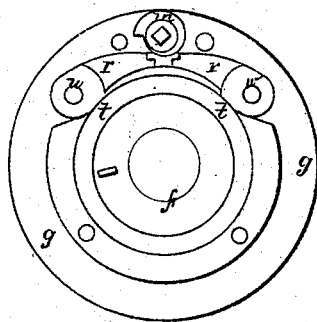


Fig. 4.

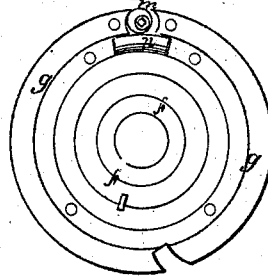


Fig. 5.

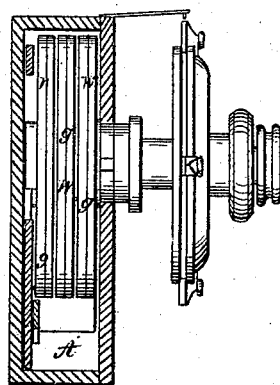


Fig. 6.



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UNITED STATES PATENT OFFICE.

WALTER K. MARVIN, OF NEW YORK, N. Y.

IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. 47,842, dated May 23, 1865.

To all whom it may concern:

Be it known that I, WALTER K. MARVIN, of New York, in the county and State of New York, have invented a new and useful Improvement in Permutation Locks; and hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of part of a lock constructed in accordance with this invention, and exhibiting the interior thereof, the wheels being removed. Fig. 2 is a similar view of the same, the wheels being shown set in position when the bolt is withdrawn. Figs. 3 and 4 are elevations of wheels, with one of the outer wheels removed to exhibit the mode of adjusting the inner wheel or disk in relation to the outer wheel. Fig. 5 represents a side view of the wheels, knob, and dial, the lock-case being cut by a vertical plane; and Fig. 6 is a section double the scale through the wheel, Fig. 4.

This invention relates to a method of preventing the indentations or gates in the wheels from being ascertained by feeling—that is, by the variations in the resistance offered to the stump by the wheels according to their various positions in relation to the stump; also, to a method of adjusting the inner wheel relatively to the outer wheel, whereby greater nicety of adjustment and more perfect security, together with cheapness and simplicity of construction, are attained.

In the following description I shall first confine myself to that part of my improvement which relates to the method of working or actuating the bolt by means of the follower and a system of levers, so that the true position of the notches cannot be detected.

And referring to Fig. 1, A is the lock-case, B the bolt, and C the movable stump. The latter is secured or made in one piece, with a curved lever, D, pivoted at *a* to the lock-case, which pivot, together with the stud *b*, both being stationary in the lock-case, serve as guides to the bolt, slotted for that purpose. With the other end of this lever is rigidly connected a check-plate, *e*, whose lower end is shaped similarly to the fixed stump C and in conformity with the indentations *d* in the bolt-plate B'. To this check-plate is pivoted at the upper end a cam-lever, F, of such firm and con-

struction as to close by its own weight against the bolt-plate when the bolt is shut out. By this arrangement a flexible connection is established between the followers G and H (actuating, respectively, the bolt-plate and the cam-lever) and the movable stump. The form of the cam-lever F is such as that its center of gravity is on the side of the spindle which is opposite to the follower H, so that, on moving the spindle from the right to the left for the purpose of withdrawing the bolt, the follower H will bear on the cam-lever at or near its connection with the check-plate, raise both the check-plate and the end of the curved stump-lever by the tendency of the weighted end of the cam-lever to remain in place. This action is calculated to take place until the check-plate is raised out of the path of the bolt-plate, which coincides with the follower G, coming in contact with the right face of the notch in the bolt-plate. It will be seen that on further rotation being imparted to the spindle the bolt will be pushed back simultaneously with the cam-lever being lifted out of the way of the bolt.

Such is the construction and operation of the system of leverage disconnected from the tumblers and other safety devices of the lock, and is illustrated in the drawings by indicating the extreme positions of the movable parts, respectively, in red and black lines.

In order to appreciate the true object of this contrivance, I shall suppose that an obstacle, however slight, is offered to the movable stump, and, to particularize, let it be supposed that the revolving tumblers or wheels are in place and it is attempted to ascertain the position of the notches therein by feeling. Then the following will take place: The spindle being turned from right to left, the follower H will raise the curved lever and stump until the latter comes in contact with the wheels or either of them. Instead of being stopped, (and it is then that the operator is enabled of measuring the resistance,) the spindle will continue to move, the follower H lifting the cam-lever until the other follower comes in contact with the right side of the notch in the bolt and is about to move the bolt; but this is prevented by the check-plate, whose lower projection engages the indentation *d* of the bolt-plate. At this moment all the parts become perfectly rigid

and no further movement is possible. From this it will be understood that the burglar is completely baffled in his attempts at determining the position of the notches in the wheels.

The wheels to which the second part of my invention relates are denoted in the drawings by the letter *W*. They are composed, like those heretofore constructed, of three parts—to wit, the inner wheel or disk, *f*, and two flanged rims, *g*, constituting the outer wheel. The inner wheel is arranged to be set in any fixed position in relation to the outer wheel in the manner as follows: At a convenient place in the outer wheel there is an eccentric, to be operated from without the lock-case by means of a suitable instrument—a brake or other suitable friction device within the outer wheel is arranged to exert more or less pressure upon the periphery of the inner wheel or disk, according to the position of the eccentric. By this means a binding force may be applied by simply turning the eccentric, which firmly unites the inner disk with the outer wheel. On the other hand, by turning the eccentric in the contrary direction pressure on the inner wheel is released, enabling its being set in any other position relatively to the outer wheel. It will be understood that this mode of adjusting the two wheels affords an infinite variety of combinations, while in efficiency and simplicity of construction and facility of operation it excels all those heretofore known or used.

Figs. 2, 4, 5, and 6 represent several views of revolving tumblers or wheels constructed in accordance with this my invention. In said figures, *m* is the eccentric, held in the outer wheel, *g*, by means of axles or gudgeons at each side thereof. Between this eccentric and the periphery of the inner disk, and extending over said periphery in proportion to the amount of friction requisite, is a brake *n*, consisting of two braces of metal curved in conformity with the periphery of the wheels, and having interposed a strip of vulcanized

india-rubber. I prefer to make the upper brace thicker than the under brace, so that the pressure of the eccentric may be transmitted by a yielding and flexible substance. Fig. 3 shows this mode of adjusting and securing the wheels in a modified form. In said figure the eccentric *m* is caused to press upon the two lever-brakes *r* by means of an intermediate piece, *s*, which rests upon the ends of the said lever-brakes. The latter have their bearing-surfaces at *t*, and are pivoted or hinged at *w* and *w'*, so as to present considerable leverage to the eccentric, whereby a firm grasp is obtained with but little force. The eccentric in either arrangement is provided with a square or other angular hole, into and through which a suitable key or instrument is inserted to turn the eccentric upon its axis. If necessary, the eccentric may be arranged so as to keep in position after being rotated, for which purpose a ratchet-collar and locking-spring may be applied.

Having now fully described my said improvements and the manner in which the same is or may be performed, I claim—

1. The combination, with the movable stump and movable tumblers, of a system of leverage arranged substantially in the manner herein described, so as to prevent detection of the position of the gates or notches in the tumblers, as herein set forth.

2. In permutation-locks having rotary tumblers or wheels, the friction brake or brakes, in combination with the eccentric, arranged and operated substantially in the manner and for the purpose set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

WALTER K. MARVIN.

Witnesses:

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ISAAC JELFS.