(Model.)

L. F. WHITNEY & T. K. KEITH.

PERMUTATION LOCK.

No. 279,298. Patented June 12, 1883.

Fig. 1.

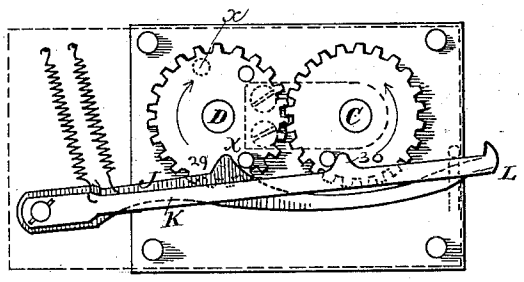


Fig. 2.

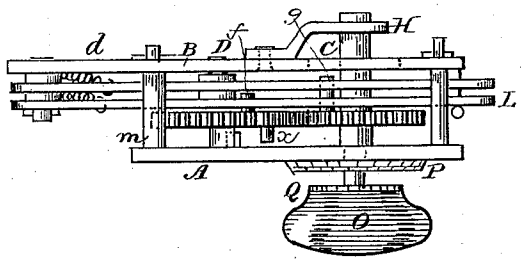


Fig. 3.

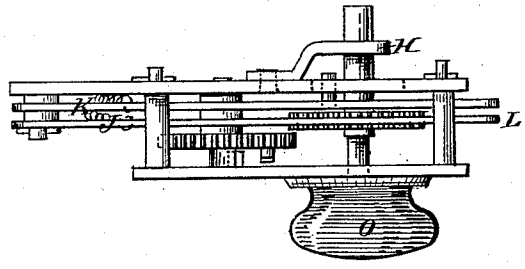


Fig. 4.

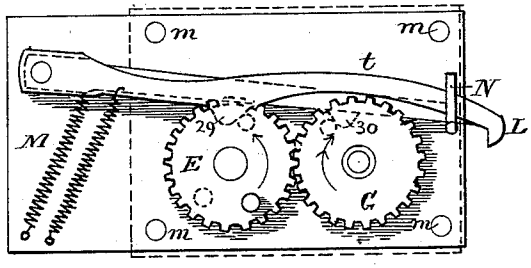


Fig. 5.

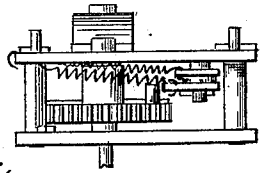
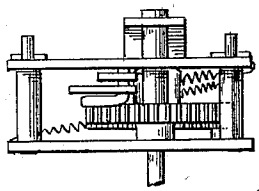


Fig. 6.



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UNITED STATES PATENT OFFICE.

LEONARD F. WHITNEY AND THOMAS K. KEITH, OF HAVERHILL, MASS.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 279,298, dated June 12, 1883.

Application filed December 26, 1882. (Model.)

To all whom it may concern:

Be it known that we, LEONARD F. WHITNEY and THOMAS K. KEITH, of Haverhill, in the county of Essex and State of Massachusetts, have invented a certain new and useful Improvement in Locks, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation showing the lock with one of its plates removed and the latch-levers reversed; Fig. 2, a top plan view showing the gears engaged; Fig. 3, a top plan view showing the gears disengaged; Fig. 4, a side elevation showing one of the plates removed and the levers in a reversed position from that shown in Fig. 1; Fig. 5, an end elevation showing the end to which the springs are attached, and Fig. 6 a view showing the opposite end from that shown in Fig. 5.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

Our invention relates to that class of locks known as "combination" or "permutation" locks; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a simpler, cheaper, and more effective device of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following description, its extreme simplicity rendering an elaborate explanation unnecessary.

In the drawings, A B represent the sides or plates of the lock, which are connected by the pillars *m*, the plate B being elongated, as shown at *d*.

Journaled horizontally in the plates A B on the shaft D there is a gear, E, which intermeshes with a corresponding gear, G, journaled on the shaft C, the latter shaft being so arranged as to slide longitudinally in the plate A and bracket H a sufficient distance to permit the gears to be disengaged, as shown in Fig. 3. The gear E is provided with a stop or pin, *x*, projecting laterally toward the plate A, and adapted to intersect with a stud or pin, *v*, which projects inwardly from said plate.

Two levers, J K, are pivoted at one end to the projection *d* on the plate B, and respectively provided at their opposite ends with the hooks L. Each of the levers is also provided with a coiled spring, M, attached to the plate B, and acting contractively to draw the levers down onto the bracket or stop N.

Projecting laterally from the gear E, on the side of the same nearest the plate B, there is a lifting pin or stud, *f*, the gear G being provided with a corresponding but longer pin, *g*, these pins being respectively designed for engaging the cam-shaped projections 29 and 30, and raising or lifting the levers J K. The lever J is curved or bent upwardly at *t*, to permit the gear G to pass under the same, or be disengaged from the gear E, when desired, without raising said lever.

From the foregoing it will be obvious that to open or unlock the lock both of the levers J K must be raised simultaneously, and that to accomplish this both of the pins or studs *f g* must act in unison on the projections 29 and 30.

In the use of the improvement, the gears being engaged, the knob O is, for instance, turned to the left until the stop or pin *x* in the gear E is brought into contact with the stud *v*. The shaft C is then pushed in until the gears are unmeshed, after which the gear G is turned to the right or left, as the case may be, until its lifting-pin *g* corresponds in position with the lifting-pin on the gear E, or is brought into a proper position to act in unison with the same, when the shaft C is withdrawn, causing the gears to intermesh, after which the knob is turned to the right or left, as the case may be, to bring both of the pins *f g* into contact with said projections and raise the levers J K simultaneously, thereby opening or unlocking the lock, or causing the hooks L to be disengaged from their fastenings in a manner which will be readily understood without a more explicit description. The pins *f g* are both adjustable in their respective gears, or adapted to be moved into other positions, for the purpose of changing the combination of the lock as desired. A dial, P, is also attached to the plate A, and an index, Q, to the knob O, the index and dial being used by the person knowing the correct combination on which

the lock is set to open the same in the manner described.

Having thus explained our invention, what we claim is—

1. The improved lock described, the same consisting of the gear E, mounted on the shaft D, and provided with the pins *x f*, the gear G, mounted on the shaft C, and provided with the pin *g*, the levers J K, provided with the springs M, projections 29 30, and hooks L, the plate A, provided with the stud *v*, and the plate B, with the bracket H, all constructed, combined, and arranged to operate substantially as set forth.

2. In a lock substantially such as described, the gear E, provided with the pins *x f*, in combination with the levers J K, stud *v*, and with another gear provided with a pin corresponding with the pin *f*, and adapted to be moved out of and into connection with the gear E, for the purpose of being adjusted or arranged in such a position as to act in unison therewith in unlocking or opening the lock, substantially as specified.

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