

(Model.)

J. B. COOK.
Permutation-Lock.

No. 228,316.

Patented June 1, 1880.

Fig. 1.

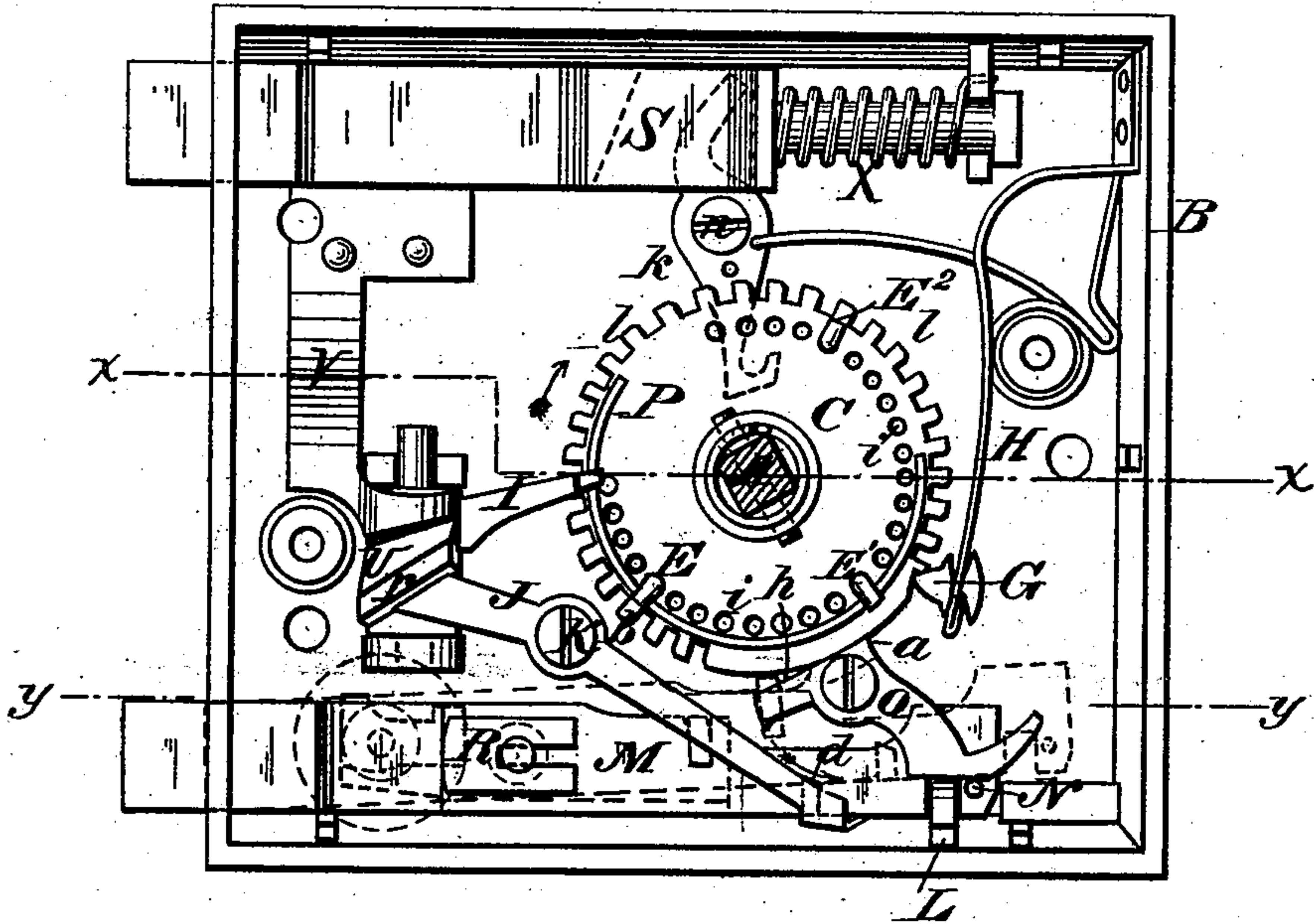


Fig. 2.

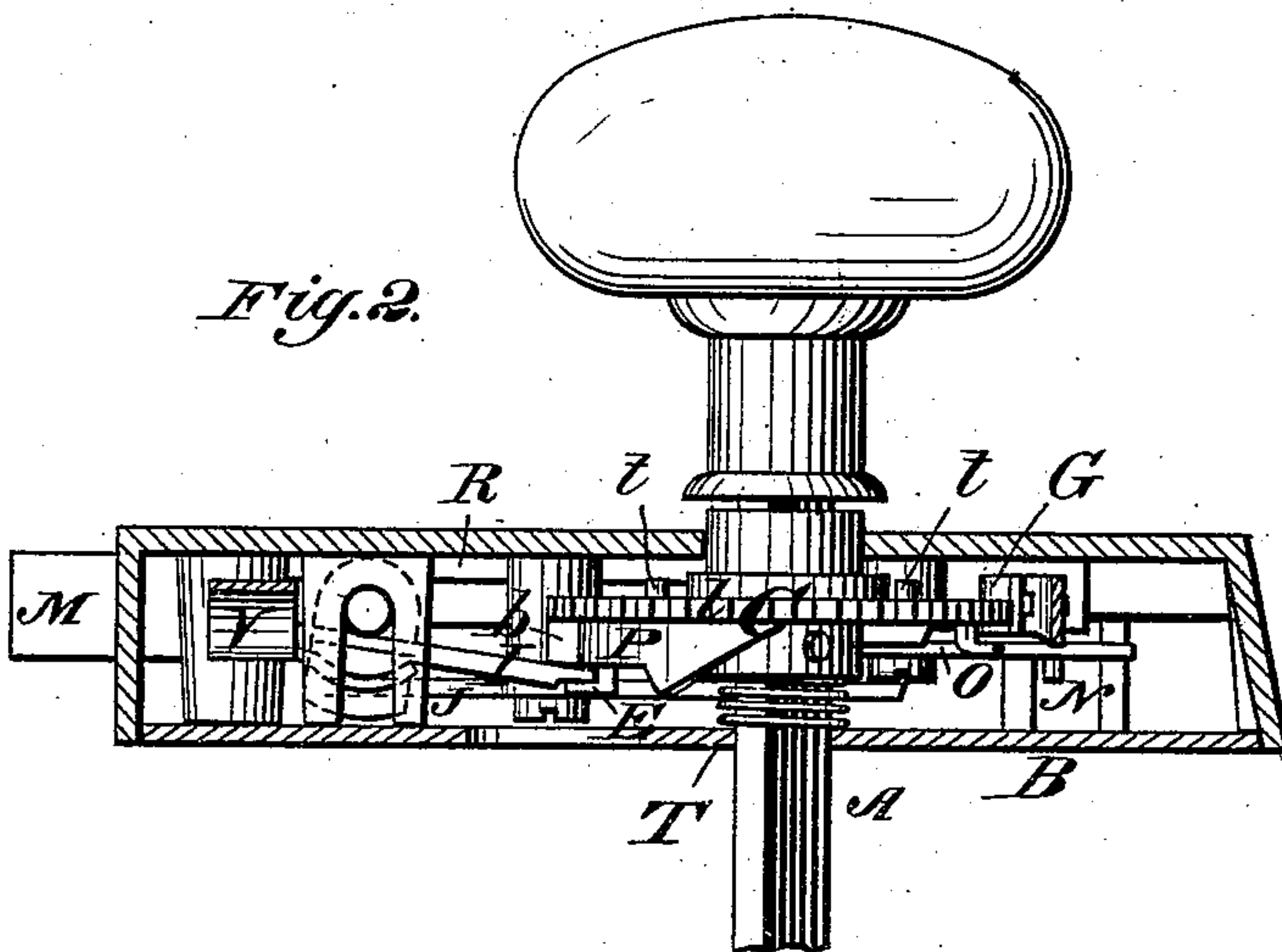
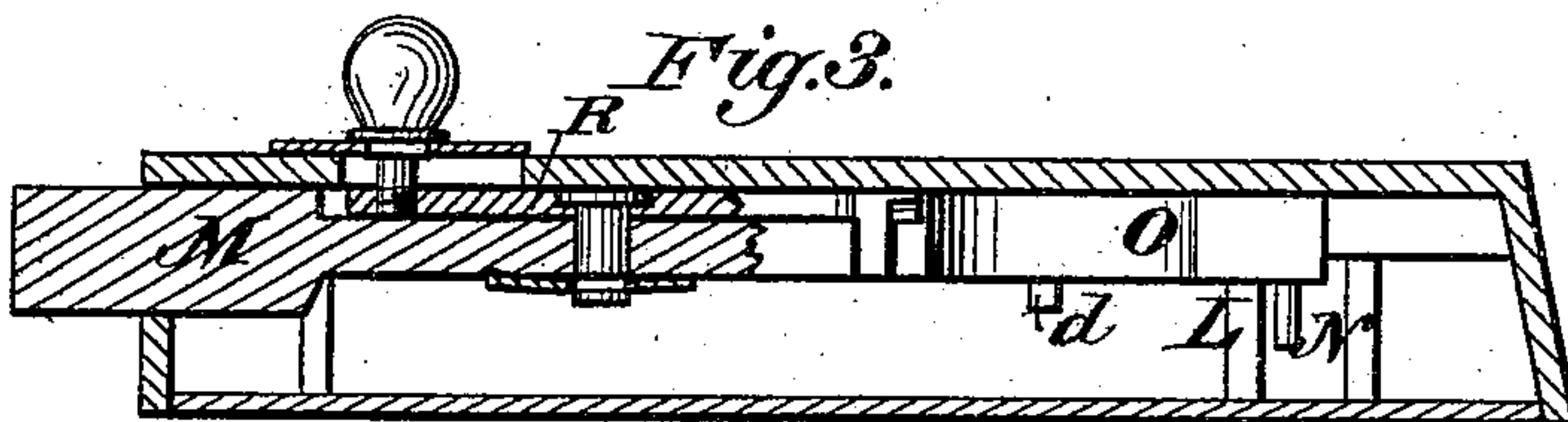


Fig. 3.



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JAMES B. COOK, OF LONDON, ONTARIO, CANADA.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 228,316, dated June 1, 1880.

Application filed March 25, 1880. (Model.)

To all whom it may concern:

Be it known that I, JAMES BELL COOK, of London, in the county of Middlesex, Province of Ontario, and Dominion of Canada, have invented a new and useful Improvement in Combination-Locks, of which the following is a specification.

My improvements relate to combination or permutation locks for safes, houses, and other places where a burglar-proof lock is desired.

My invention consists in a permutation-wheel of novel construction having pin-holes carrying two or more pins, which release the bolt by their successive action when properly operated. The wheel also has a click for indicating the movement by sound, and a device that resets the lock or prevents movement of the bolt in case the wheel is improperly operated.

The construction and operation will be more particularly explained with reference to the accompanying drawings, wherein—

Figure 1 is a front elevation of my improved lock in a form adapted for a house-door, the back plate of the case being removed. Fig. 2 is a sectional plan view on line *x x* of Fig. 1. Fig. 3 is a sectional plan view on line *y y*.

Similar letters of reference indicate corresponding parts.

A is the spindle; B the case, and C the permutation-wheel. The squared portion of shank A passes through a square mortise in wheel C, so that the spindle and wheel turn together, and they also are fitted for movement in case B endwise of the spindle. Around the spindle is a coiled spring, T, which forces the wheel and spindle outward.

The wheel C is provided on its face with any suitable number of pin-holes, *i*, adapted for receiving bent pins *E E' E²*. The number and position of these pins regulate the combination, and they may be changed as desired, or more of them used.

The edge of wheel C is formed with cogs *l*, equal in number with pin-holes *e*, with which cogs a click, G, on the end of a spring, H, engages. One portion of the edge of wheel C is cogless, for use as a starting-point, from which the successive engagement of click G with the cogs is to be counted by the sound. There is upon the face of wheel C an inclined

flange or rim, P, and *h* and *b* are pins projecting from wheel C, for purposes hereinafter described.

M is the bolt, formed at its back end with a notch that engages with a stud or catch, L, and provided with a pin, N, that is beneath one end of a rocking tumbler, *o*, when the bolt is projected. Upon the bolt M is hung a lever, R, one end of which engages with the bolt, while the other end is fitted to move in a slot of the front plate, and is fitted with a knob, so that the bolt may be moved back and forth from the inside; or by raising the end into the L's, one of which is formed in each end of the slot, the bolt will be locked in or out.

J is a lever hung on pin *k*, having one end extended beneath the inner end of bolt M and the other end extending beneath a cam-projection, *r*, of a piece, U, that is fitted for a turning movement, and is held in place as moved by a pressure-spring, V.

I is an arm on slide U, extending over the rim P of wheel C. S is a spring-bolt, projected by spring X, and moved back by pins *t* on the back of wheel C, that are placed to act at every quarter-revolution of the wheel C on a rocking lever, *k*, which connects with bolt S.

The operation is as follows: The pins *E E' E²* being placed, as shown, in the fifth, thirteenth, and twenty-third hole, the handle is to be first turned in the direction of the arrow until four clicks are counted, the handle then pulled inward and turned one click to bring pin *E* over the arm I. The pin *E* will then move the arm I down or toward the wheel C, and lever J will lift the bolt M about one-third the distance required to free it from stud L. The handle is then to be turned seven clicks more, pulled in and turned one click, and pin *E'* moves arm I farther, and raises bolt M one-third more. Then, by turning nine clicks, and one with the handle pulled in, the pin *E²* completes the movement of arm I and raises the bolt clear of the stud. At the same time the pin N of bolt M raises one end of tumbler *o*, and moves the point *a* of the tumbler in the path of the pin *b* on wheel C, so that as the pin *b* comes around it will turn the tumbler, which tumbler, engaging with a stud, *d*, on the bolt, moves the bolt back.

During the rotation of wheel C, as described, the first and second pins E E' are prevented from entirely raising the bolt M by the inclined rim P, which is formed with its edge projecting at three different widths. The highest point first raises the arm I to its outward position as the handle is turned, the second portion of the rim allows the arm I to move down nearer to the wheel, and the third portion still nearer, so that if an attempt is made to open the lock by a person not knowing the combination the highest part of the rim will reset the arm I, should the first number be found and the second missed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In locks, the turning and sliding spindle A, wheel C, provided with the rim P, fixed pin *b*, and movable hook-pins E E' E², the turning piece U, provided with arm I and cam *r*, the bolt-lifting lever J, bolt M, provided

with studs *d* N, the rocking tumbler *o*, and fixed stud L, combined for operation, substantially as shown and described.

2. In locks, the wheel C, provided with holes *i*, inclined rim P, and cogs *l*, and fitted with removable hook-pins E E' E², combined with the swinging arm I, that is fitted for raising the bolt, the turning device U, and the spring V, that retains the arm as moved, substantially as shown and described.

3. The rocking tumbler *o*, combined with the wheel C, having pin *b*, and the bolt M, having studs *d* N, substantially as and for the purposes set forth.

4. The lever K and spring-bolt S, combined with the permutation-wheel C, provided with pins *t*, as and for the purposes set forth.

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Witnesses:

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