

J. WEIMAR.
Permutation Lock.

No. 94,156.

Patented Aug. 24, 1869.

Fig. 1

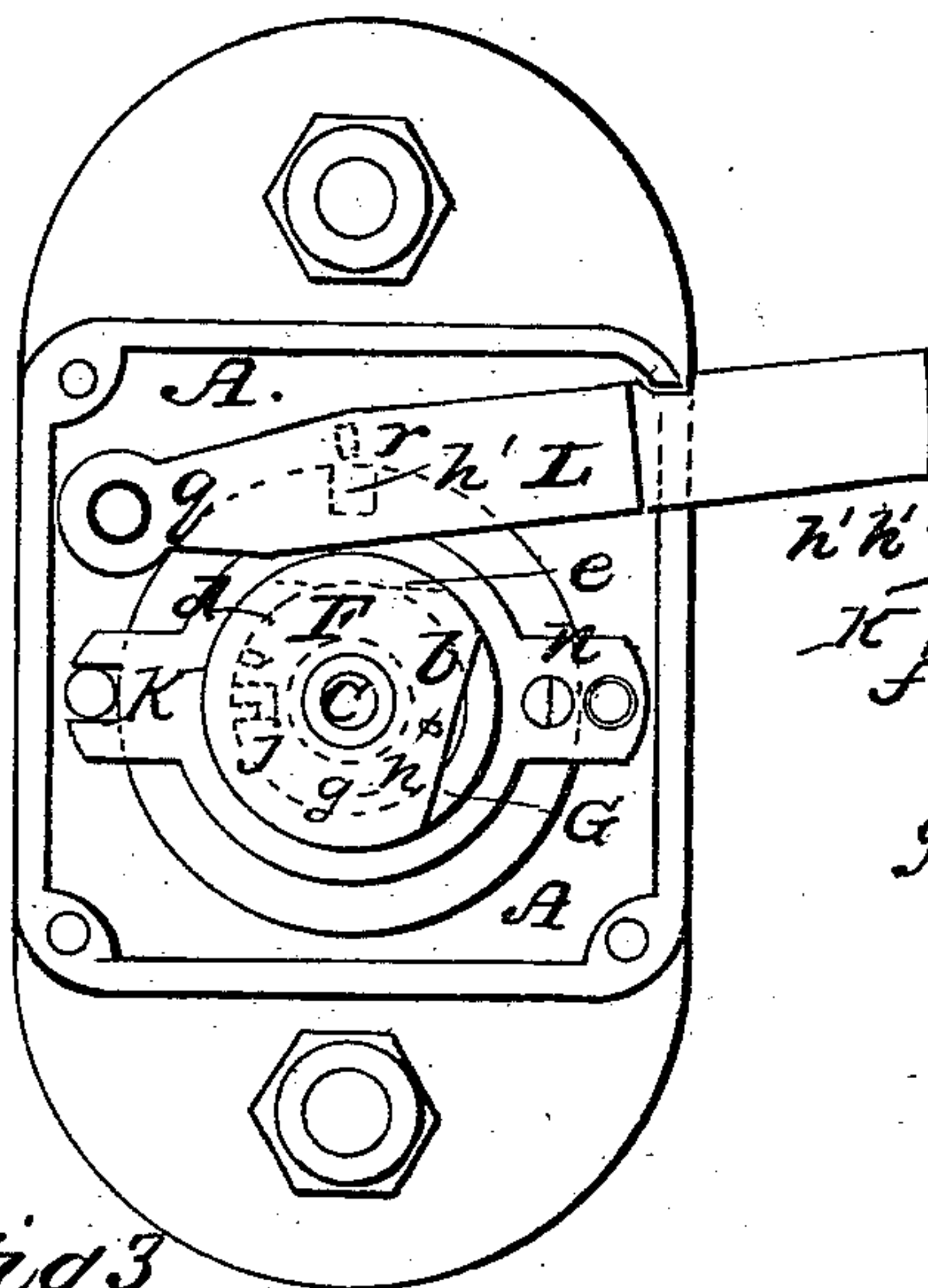


Fig. 2

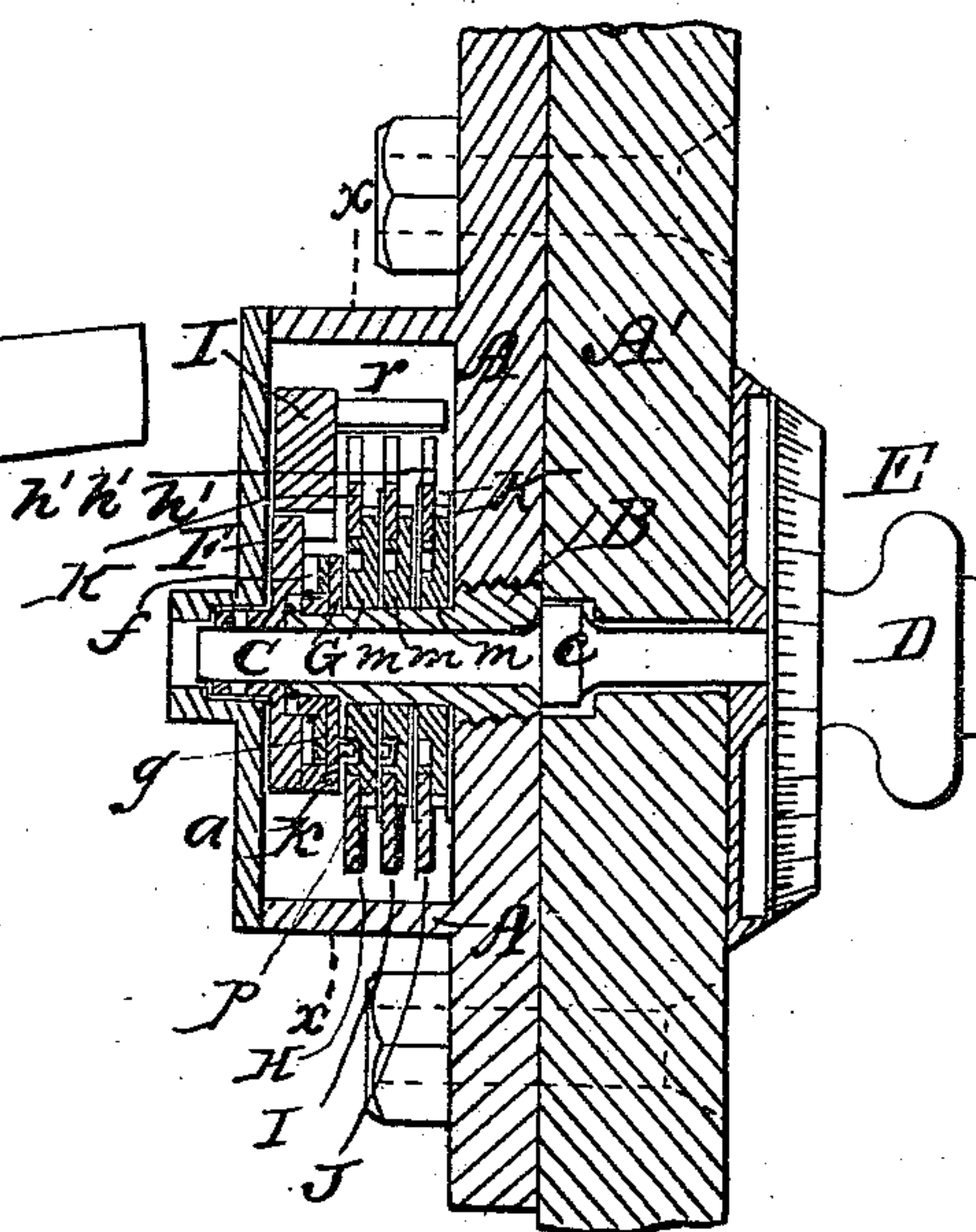


Fig. 3

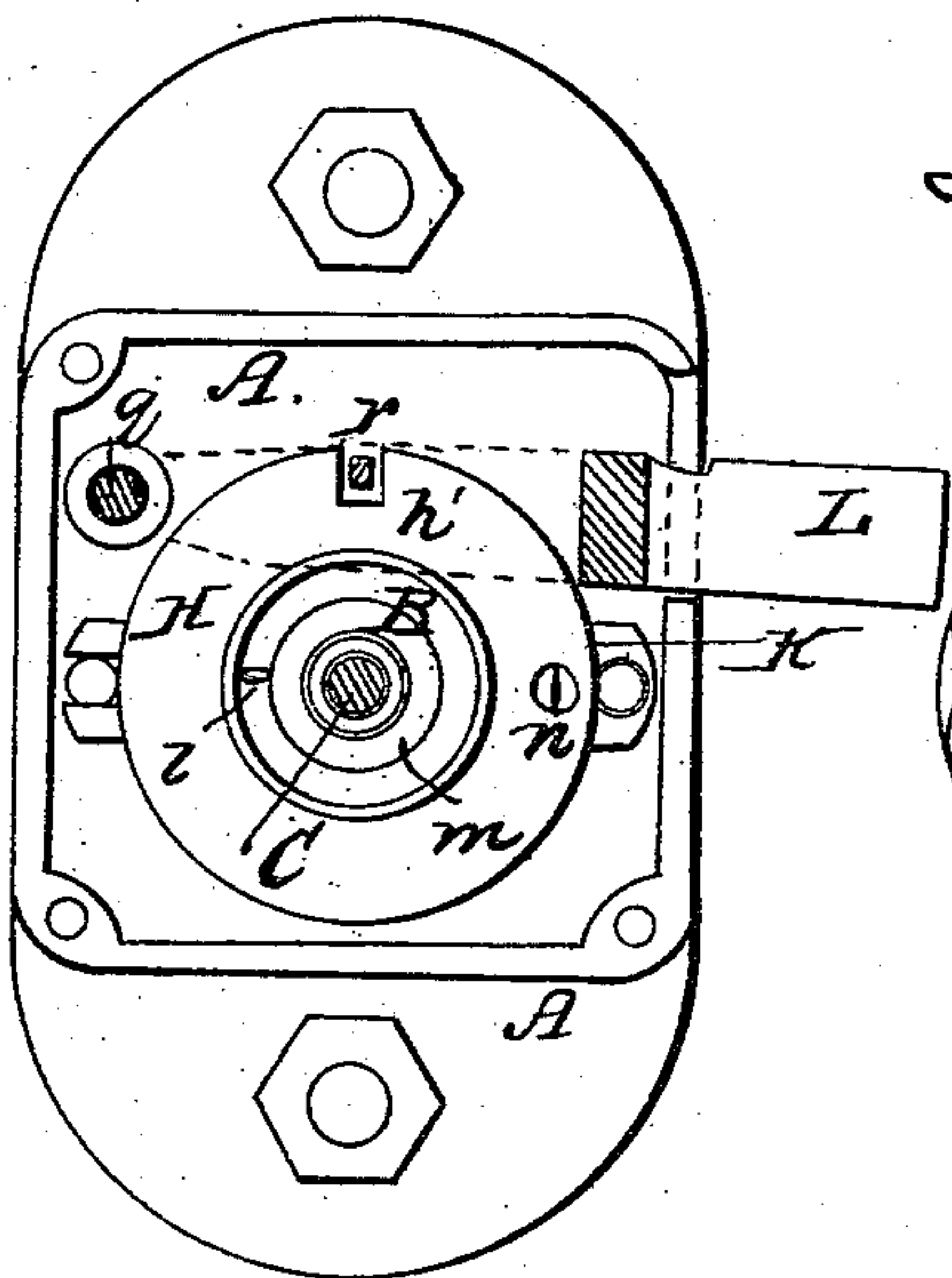


Fig. 5

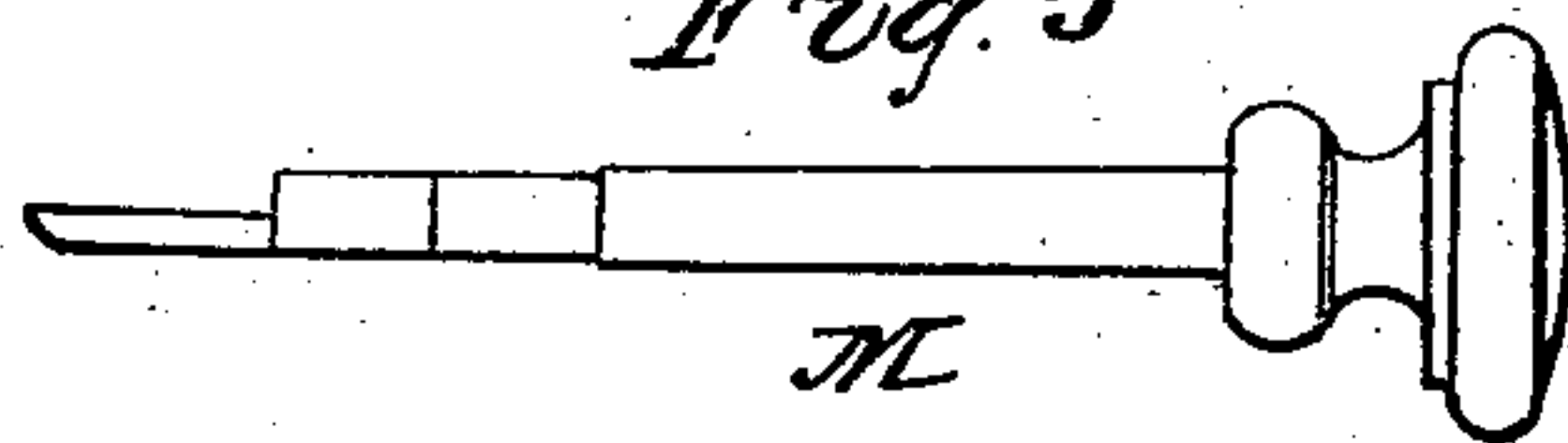


Fig. 4

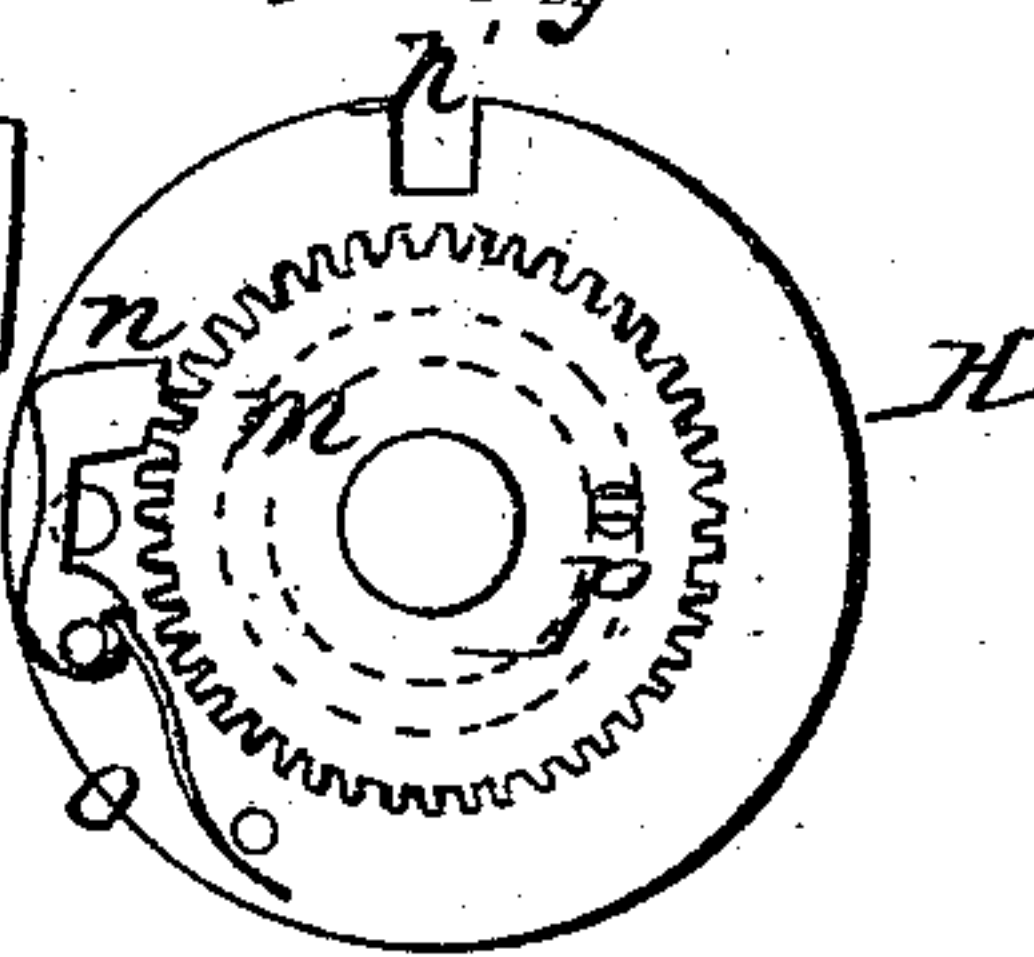
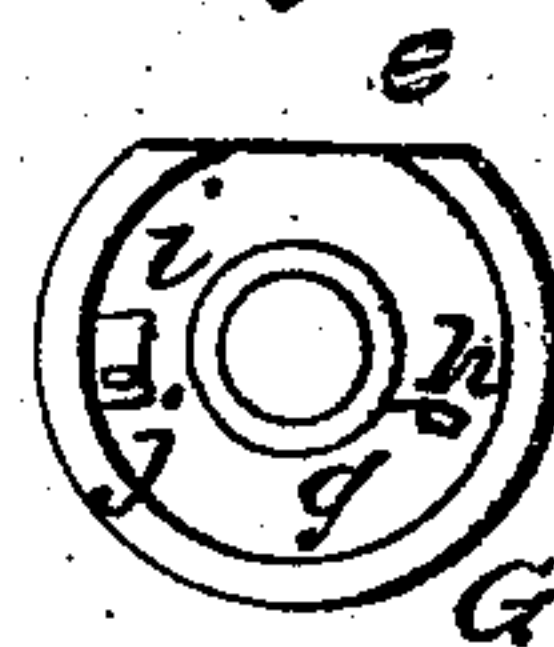


Fig. 6



Witnesses
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JACOB WEIMAR, OF MOUNT VERNON, NEW YORK.

Letters Patent No. 94,156, dated August 24, 1869.

IMPROVEMENT IN PERMUTATION-LOCKS.

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

To all whom it may concern:

Be it known that I, JACOB WEIMAR, of Mount Vernon, in the county of Westchester, and State of New York, have invented a new and useful Improvement in Safe and other Locks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a vertical face view of the interior of a lock constructed according to my improvement, the inner plate being removed.

Figure 2, a vertical transverse section of the same.

Figure 3, a section in a plain parallel to fig. 1, taken, as indicated, on the line *xx*.

Figure 4, a face view of one of the tumblers, showing the arrangement for changing the relative position of the same, and

Figure 5, a view of the key for accomplishing said change.

Figure 6 represents a face view of the cam *G*, with its compensating-ring *g*.

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

This improvement relates to locks of a permutation character, the same being either applicable as a lock, independent of any other fastening, or as a check or locking-bolt to another lock; and

It consists in a novel arrangement of two cams, and any desirable number of circular gate-tumblers, and a hinged or pivoted latch or stop, which latter is allowed to drop when said tumblers are placed in a certain position, in manner hereinafter described.

To enable others skilled in the art of constructing locks, I will proceed to describe my invention, by reference to the drawing, in which—

A represents the lock-case, designed to be firmly secured to the inside of the safe or its door.

a is the inside plate to the lock, the same being fastened to the latter in the usual way.

B is a bush, permanently fitted to the case through which the knob-spindle *C* is inserted.

c is a collar, which is formed on the spindle to retain it in its proper position in the case.

Attached to an outward extension of the spindle *C*, inside of the knob *D*, is a dial-plate, *E*, that is marked or divided on its circumference, whereby, on bringing certain of such marks or divisions, (by turning the knob-spindle,) opposite a certain fixed mark on the safe, front, the tumblers are rotated to the necessary position to allow the bolt or stop *L* to fall to the position represented in fig. 3.

F is a cam, mainly of circular form, but having about one-fourth of its circumference flattened or cut away, as at *b*, and is firmly secured to the spindle *C*, so as to turn with it.

Said cam is also provided with a driving-stud, *d*, on its inner face, and works against a similarly-shaped cam, *G*, arranged to turn loosely on the bush *B*, and having, also, a flattened portion, *e*, at its periphery.

This latter cam *G* is provided with a recess, *f*, on the side toward the cam *F*, into which a concentric, loose disk, *g*, is fitted, that carries a stud, *h*, for the stud *d* of the first cam to strike against, by which the cam *G* is turned, the disk *g* being moved so as to bring the one end of a slot, *i*, in it against the stud *j*, which is fast to the cam *G*.

This slot *i*, in the loose disk *g*, is essential to cause the dial to indicate the same number or division at the moment the driving-stud *d* comes in contact with the stud *h*, whether it be turned to the right or to the left.

The cam *G* is furthermore provided, on its opposite face, with a driving-stud, *h*, to engage with the stud *l* on a toothed plate or disk, *m*, arranged within a ring-tumbler, *H*, constructed with a slot or gate, *h'*, and to which it is geared by a pawl, *n*, that is held in place by a spring, *o*, both being fitted to the tumbler *H*, which may freely turn on the bush *B*.

The disk *m* is also provided with a driving-stud, *p*, that engages with the ring-tumbler *I*, constructed similarly to the tumbler *H*, and having like attachments or devices.

This second ring-tumbler may gear with a third tumbler, *J*, also of similar construction, and so on for any number of tumblers.

K K are stationary dividing or anti-friction plates, interposed between the several gate-tumblers.

L is the locking-bolt that swings on a pin, *q*, secured to the case *A*, and, on the several tumblers being brought into proper position, falls on the flattened portions *b* and *e* of the tumblers *F* and *G*, the bar *r*, projecting from the bolt, entering the slots or gates *h'* of the ring-tumblers *H I J*.

The cam *G* being the last one set to position, when it is desired to unlock the door, it, together with the cam *F*, forms a complete circle, on which the latch or bolt rests during the manipulation of the gate-tumblers, and until it (the cam *G*) is in position, when, by moving the knob slowly in the reverse direction from that by which the cam *G* was set, until the flattened portion of cam *F* is brought upward, the latch or bolt is allowed to drop.

By this construction and arrangement of parts, a safe, cheap, and simple permutation-lock can be made.

The operation for setting the tumblers, when in an unlocked position, to effect a new combination of marks and numbers, by means of the knob-spindle, is as follows:

A key, *M*, constructed as shown in fig. 5, is inserted through holes provided in the inner case-plate, and

the several dividing-plates and ring-tumblers, to lift the several pawls out of gear, by a quarter turn, thereby enabling the disks *m*, of the ring-tumblers H, I, and J, to be set, so that when certain marks or numbers on the dial-plate come opposite a fixed mark on the safe-front, the tumblers will be in an unlocking-position.

For example, suppose the ring-tumblers to occupy an unlocking-position, when the first or outermost tumbler corresponds with number 10 on the dial-plate, the second tumbler with number 20, and the third tumbler with number 30. Then make five or more complete turns of the spindle from left to right, and stop when number 10 comes opposite the fixed mark on the safe-front, which then brings the first tumbler J into position; then turn in an opposite direction for three complete rotations, and until the number 20 comes opposite the fixed mark the fourth time, which sets the second tumbler I in position; then rotate again to the right until number 30 comes opposite the fixed mark the third time, thereby setting the third tumbler H, after which, revolve in an opposite direction yet again, until 0 comes opposite the mark the second time; this sets the fourth tumbler or cam G. Then turn from left to right slowly until the bolt drops, that is, until tumbler F comes in position to allow the bolt

L to drop on its flattened portion. The key is then turned back again, and withdrawn to allow the pawls *n* to lock the disks *m* with the ring-tumblers, which, by the operation just described, have now come in an unlocking-position. The key is only used when a change is required. The changes may be innumerable, as may be readily seen.

When a combination is thus made, it is only necessary to give the knob three or more turns in one direction to lock the door, which can only be unlocked by working the combination last set, in the manner before described.

It should be observed, that in this construction of lock, the only motion, in locking or unlocking, is a rotary one, as no sliding motion of the spindle is necessary, as in other locks of similar character.

What I claim, and wish to secure by Letters Patent, is—

The arrangement of the cam-tumblers F and G, the gate-tumblers H I J, and lever-catch L, all constructed and operating substantially as set forth.

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Witnesses:

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