

(Model.)

G. M. DOUGLASS.
PERMUTATION LOCK.

No. 414,381.

Patented Nov. 5, 1889.

Fig. 1.

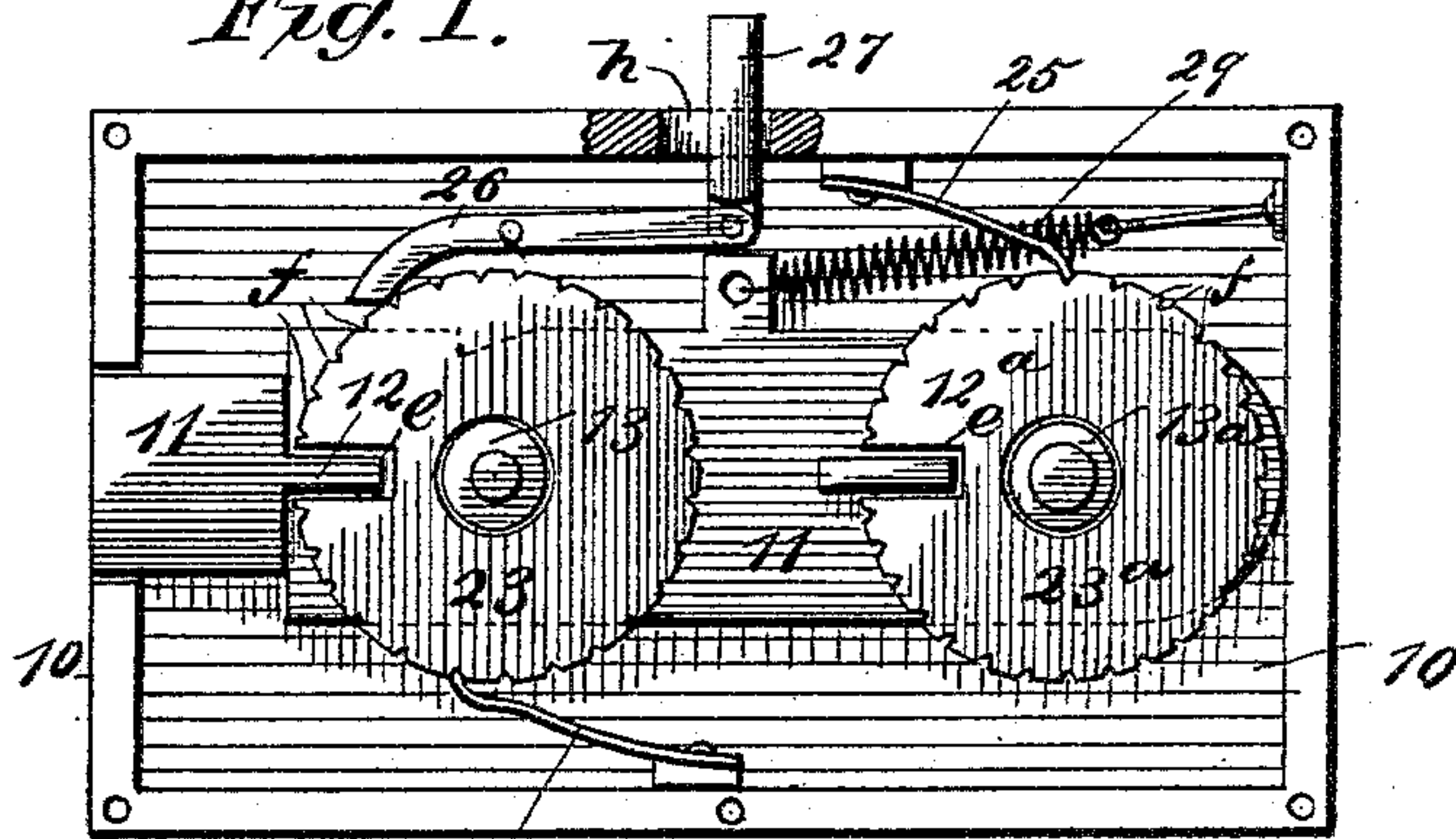


Fig. 2.

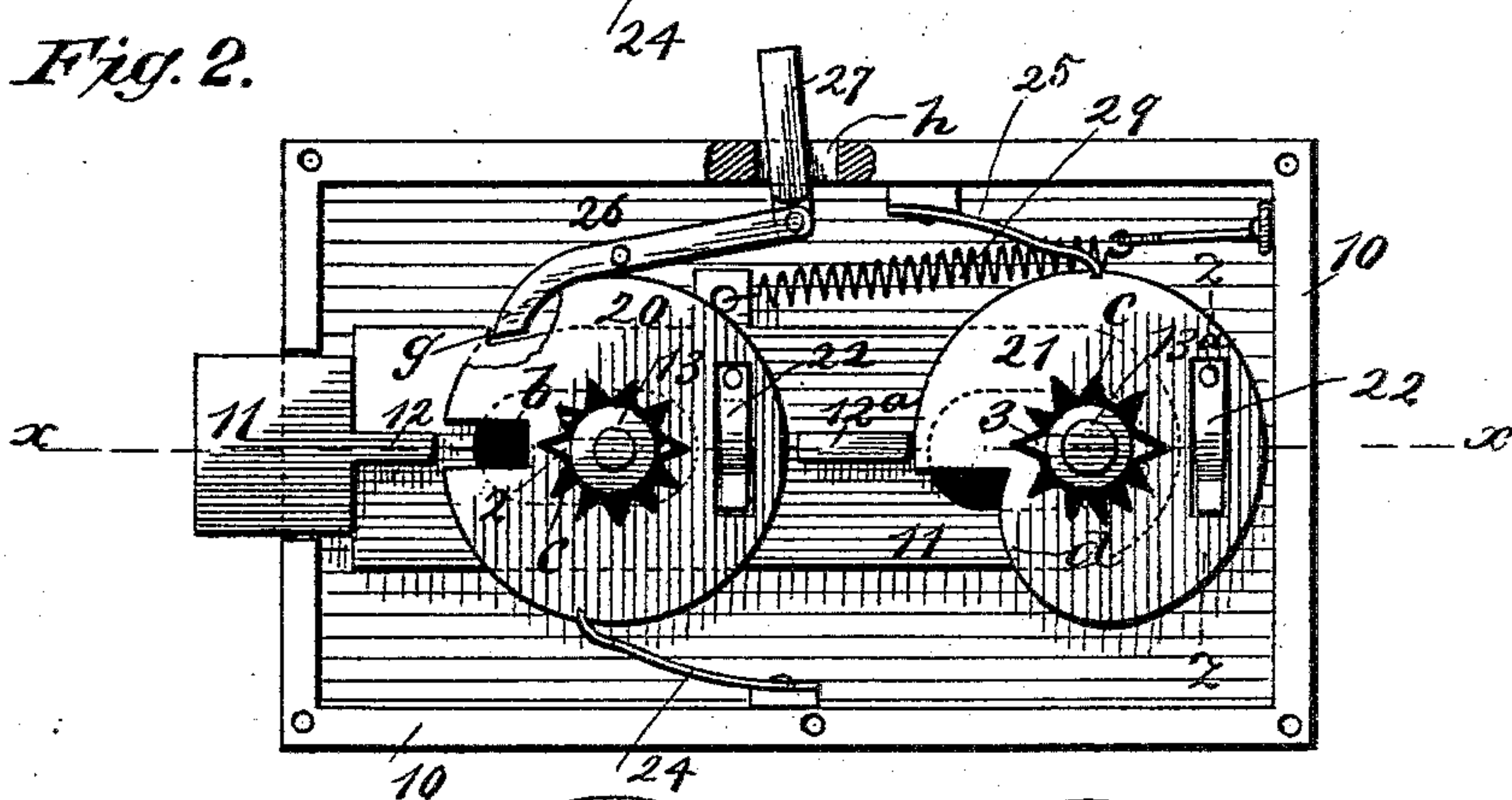


Fig. 3.

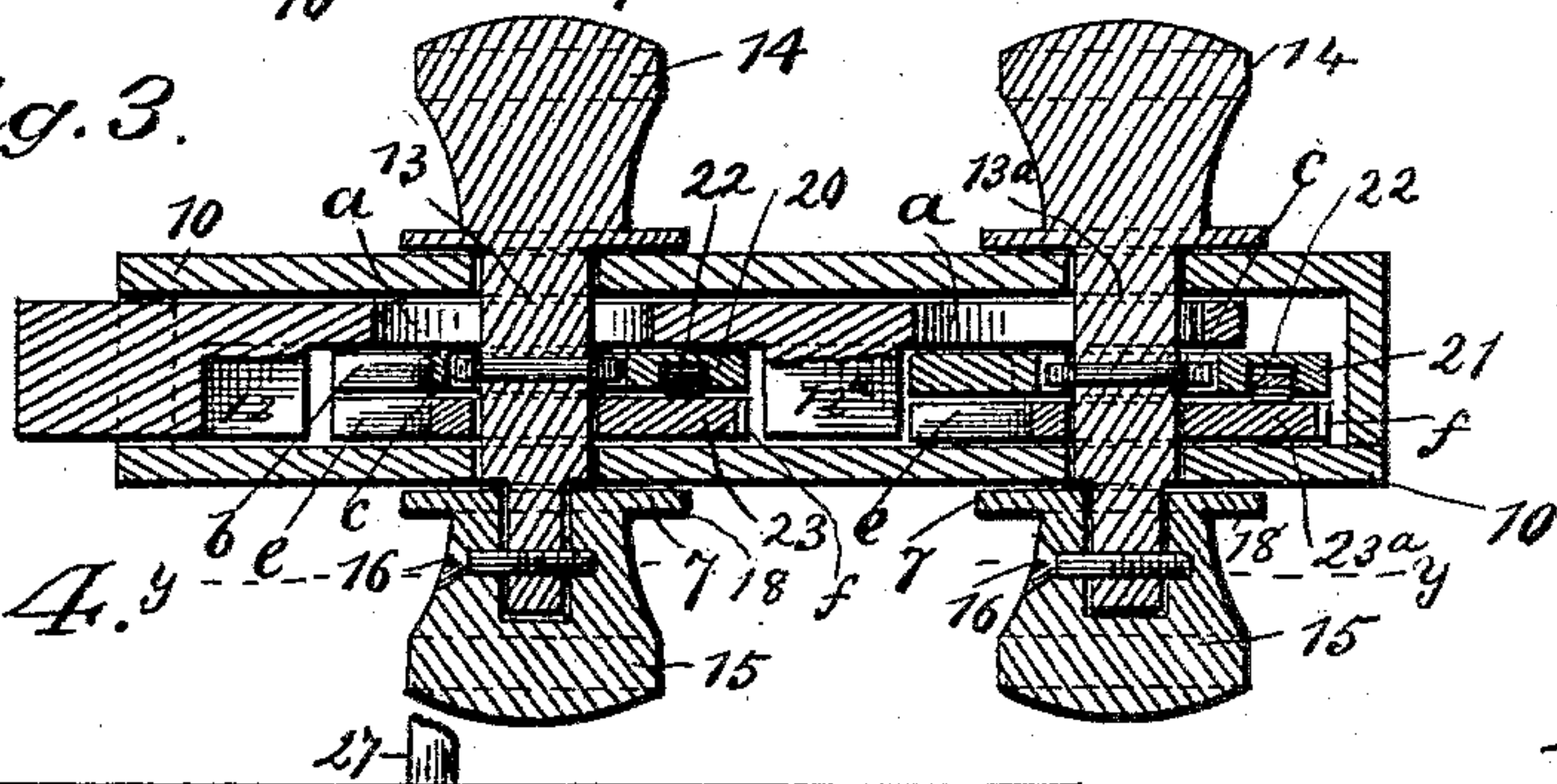


Fig. 4.

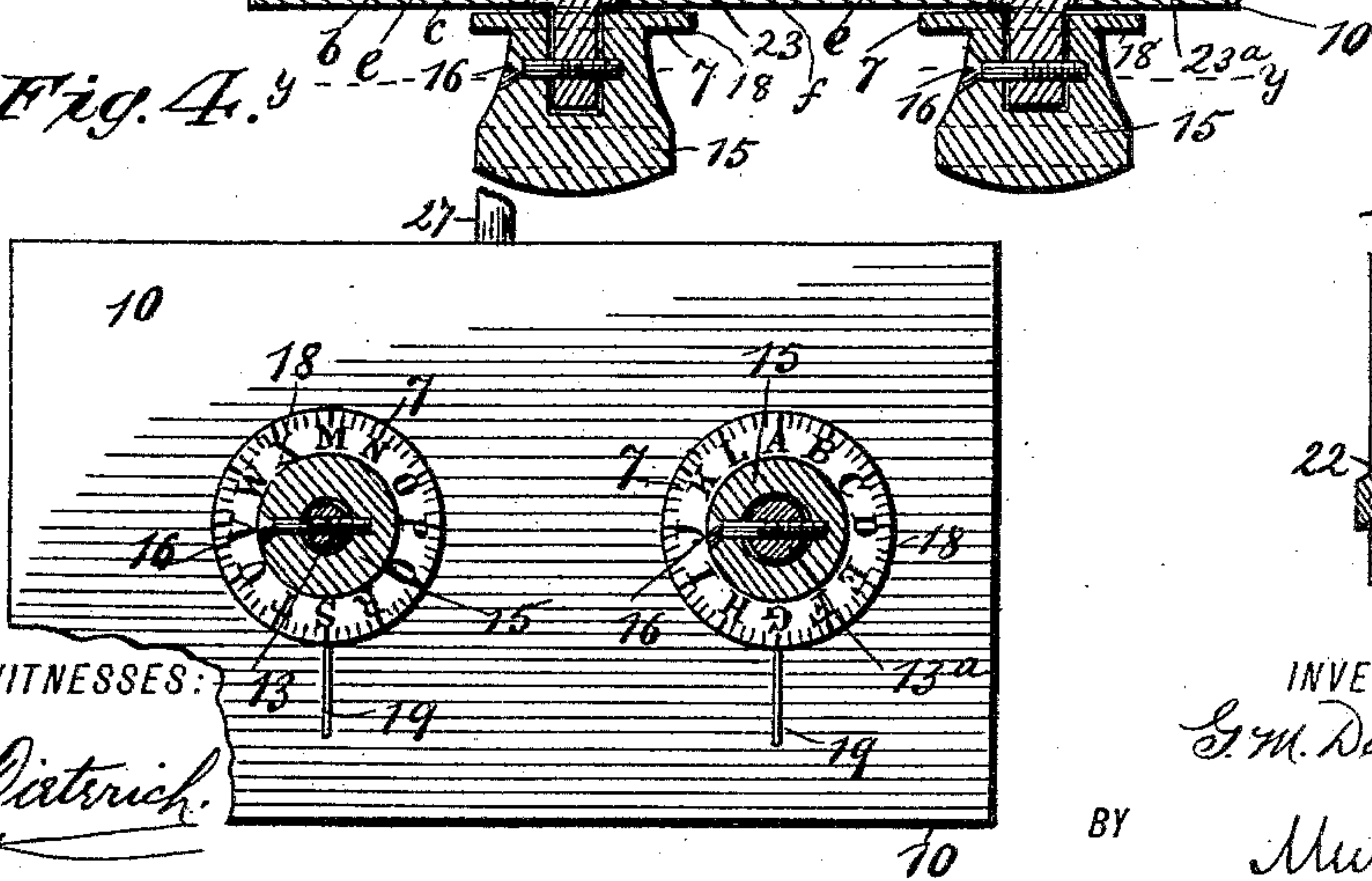
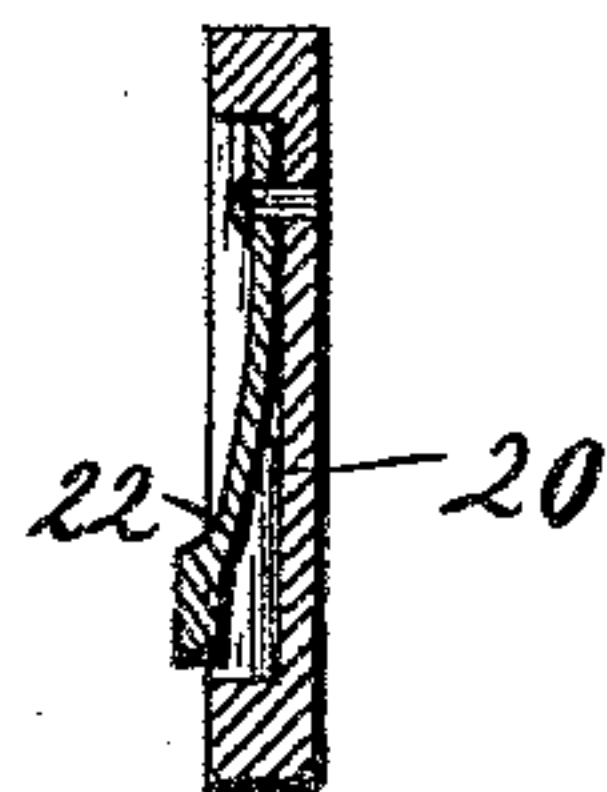


Fig. 5.



WITNESSES:

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GEORGE M. DOUGLASS, OF BENEDICT, NEBRASKA.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 414,381, dated November 5, 1889.

Application filed February 13, 1889. Serial No. 299,694. (Model.)

To all whom it may concern:

Be it known that I, GEORGE M. DOUGLASS, of Benedict, in the county of York and State of Nebraska, have invented a new and improved Permutation-Lock, of which the following is a full, clear, and exact description.

This invention relates to permutation or combination locks, the object of the invention being to increase the security of this class of lock and at the same time simplify the construction, the invention consisting of certain novel constructions and combinations of elements to be hereinafter described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a view of the lock-case in partial section, the plate or cover being removed and the parts being represented as they appear when the bolt is in its retracted position. Fig. 2 is a similar view, except that the bolt is represented as it appears when in the locking position, one set of disks being removed. Fig. 3 is a central longitudinal sectional view of the lock, taken on line *x x* of Fig. 2, all parts of the lock, however, being shown in this view. Fig. 4 is a sectional view on line *y y* of Fig. 3, and Fig. 5 is an enlarged detail view on line *z z* of Fig. 2.

In the drawings, 10 represents a case, in which there is mounted a bolt 11, that is provided with lugs or projections 12 and 12^a, and formed with longitudinal slots *a*, through which there are passed spindles 13 and 13^a, that are made integral with knobs 14, and to which there are connected other knobs 15 by means of set-screws 16. In connection with each of the knobs above described I arrange a dial 18, pointers 19 or indicating-marks being secured to or made upon the lock-case. Upon the spindle 13, I mount a disk 20, formed with a slot *b*, this disk being held to turn with the spindle by a pin 2, which passes through the spindle and engages any proper one of a series of notches *c* that are formed in the disk, while upon the spindle 13^a, I mount a disk 21, that is formed with a recessed peripheral face, one side of the recess corresponding with one of the defining-walls

of the slot *b*, while the other wall of the recess is cam-shaped, as shown at *d*. In the side faces of the disks 20 and 21 I seat spring-tongues 22. Above the disks 20 and 21 I mount other disks 23 and 23^a, these disks being loosely mounted on the spindles and formed with slots *e* and notched peripheral faces. These notches, which are shown at *f* in the drawings, are arranged so that they may be engaged by spring-fingers 24 and 25, whereby all retrograde movement of the disks will be prevented, as will be hereinafter more fully set forth.

Upon one side of the bolt 11, I form a notch *g*, which, when the bolt is in the position in which it is shown in Fig. 2, may be engaged by a lever 26, that is pivotally mounted within the case and provided with a thumb-piece or stem 27, that extends outward through a slot *h*, formed in the upper wall of the case. The bolt 11 is normally held retracted by a spring 29, that is preferably arranged as shown in the drawings.

Such, in general, is the construction of my improved permutation or combination lock, the parts operating as follows: The operator, understanding the combination, will turn the knob in a proper direction to bring the spring-tongues 22 into engagement with the slots *e* of the disks 23 and 23^a, the motion being continued until said slots have been brought into line with the lugs or projections 12 of the bolt 11. The motion of the knobs is then reversed, the disks 23 and 23^a at this time being held by their spring-fingers 24 and 25, and the reverse motion is continued until the slot *b* of the disk 20 and the recess *c* of the disk 21 are brought into register with said lugs or projections, immediately after which the spring 29 will be free to act to draw the bolt to the position in which it is shown in Fig. 1. When it is desired to throw the bolt outward to its locking position, the spindle 13^a is turned so as to bring the cam-face *d* of the disk 21 against the lug or projection 12^a, when any continued turning of the spindle will force the bolt outward, and after the bolt has been so thrown outward it may be locked to place by means of the lever 26, which can be brought into engagement with the notch *g* by simply drawing out the thumb-piece or stem 27, as will be readily understood.

It will be seen that by changing the pins 2 and bringing them into engagement with different ones of the recesses *c* the combination, in so far as the disks 20 and 21 are concerned, may be varied, and in changing the combination for said disks the combination for the disks 23 and 23^a is necessarily changed.

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

1. The combination, with a case, of a bolt mounted to slide therein and provided with lugs, a spring arranged in connection with the bolt, spindles passing through the case and through slots formed in the bolt, slotted disks held to turn with the spindles and provided with spring-tongues, and other slotted disks loosely mounted on the spindles and arranged to be engaged by the spring-tongues of the first-named disks, substantially as described.

2. The combination, with a case, of a bolt mounted to slide therein and provided with lugs or projections, a spring arranged in connection with the bolt, spindles passing through the case and bolt, slotted disks held to turn with the spindles, one of said disks being cam-faced, spring-tongues carried by the disks, and other slotted disks loosely mounted on the spindles and arranged to be engaged by the spring-tongues of the first-named disks, substantially as described.

3. The combination, with a case, of a bolt

mounted to slide therein and provided with lugs or projections, a spring arranged in connection with the bolt, spindles passing through the case and through slots formed in the bolt, a slotted disk held to turn with each spindle, one of said disks being formed with a cam-face, spring-tongues carried by said disks, other slotted disks formed with notched peripheral faces loosely mounted on the spindles and arranged to be engaged by the spring-tongues of the first-named disks, and spring-fingers arranged to engage the notched peripheral faces of the second-named set of disks, substantially as described.

4. The combination, with a case, of a bolt mounted to slide therein and provided with lugs or projections, a spring arranged in connection with the bolt, spindles passing through the case and through slots formed in the bolt, a slotted disk adjustably held to turn with each spindle, one of said disks being formed with a cam-face, spring-tongues carried by said disks, other slotted disks formed with notched peripheral faces loosely mounted on the spindles and arranged to be engaged by the spring-tongues of the first-named disks, and spring-fingers arranged to engage the notched peripheral faces of the second-named set of disks, substantially as described.

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