

(No Model.)

T. B. ZELLER.
COMBINATION LOCK.

No. 368,640.

Patented Aug. 23, 1887.

Fig. 1.

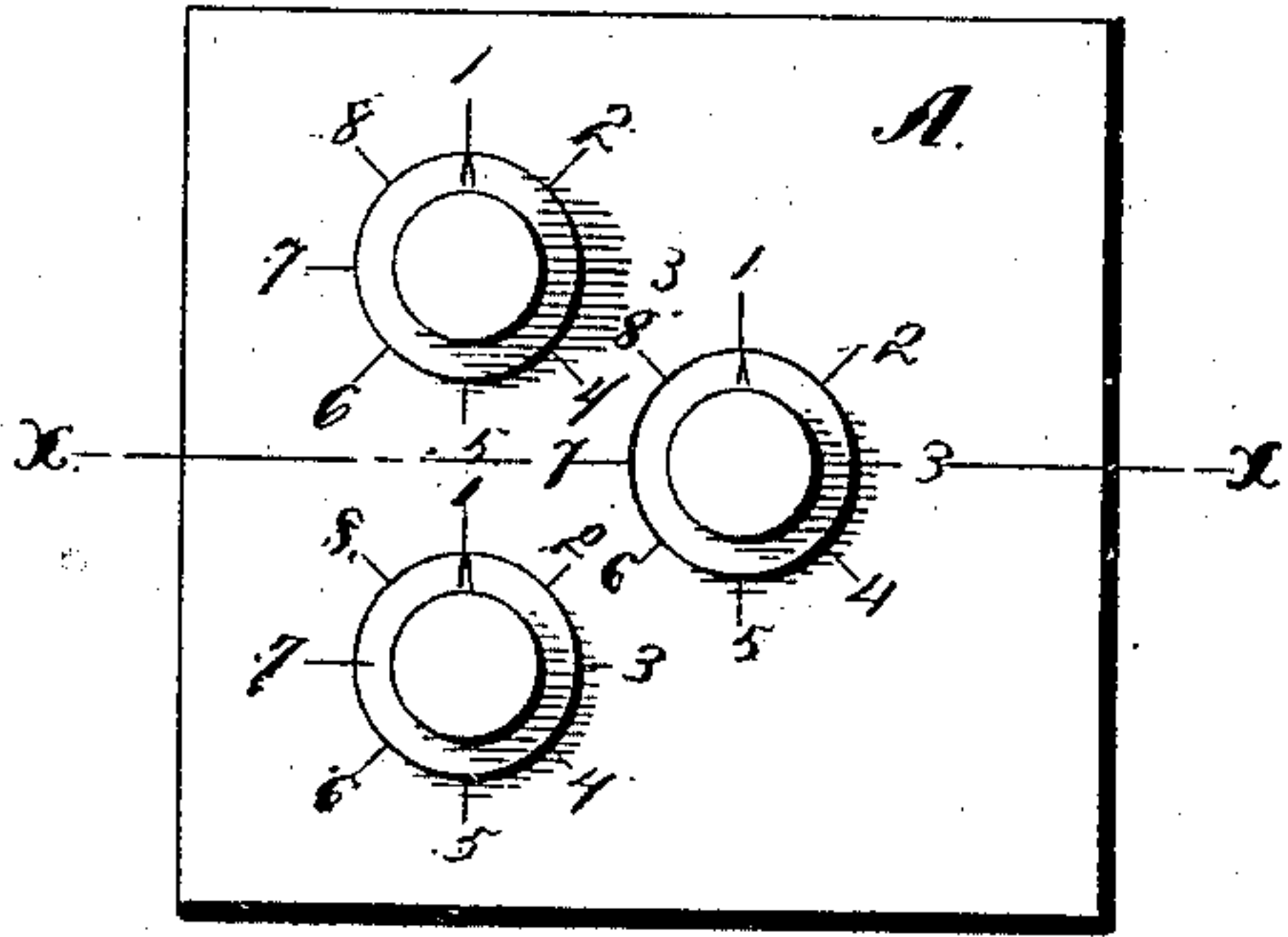


Fig. 2.

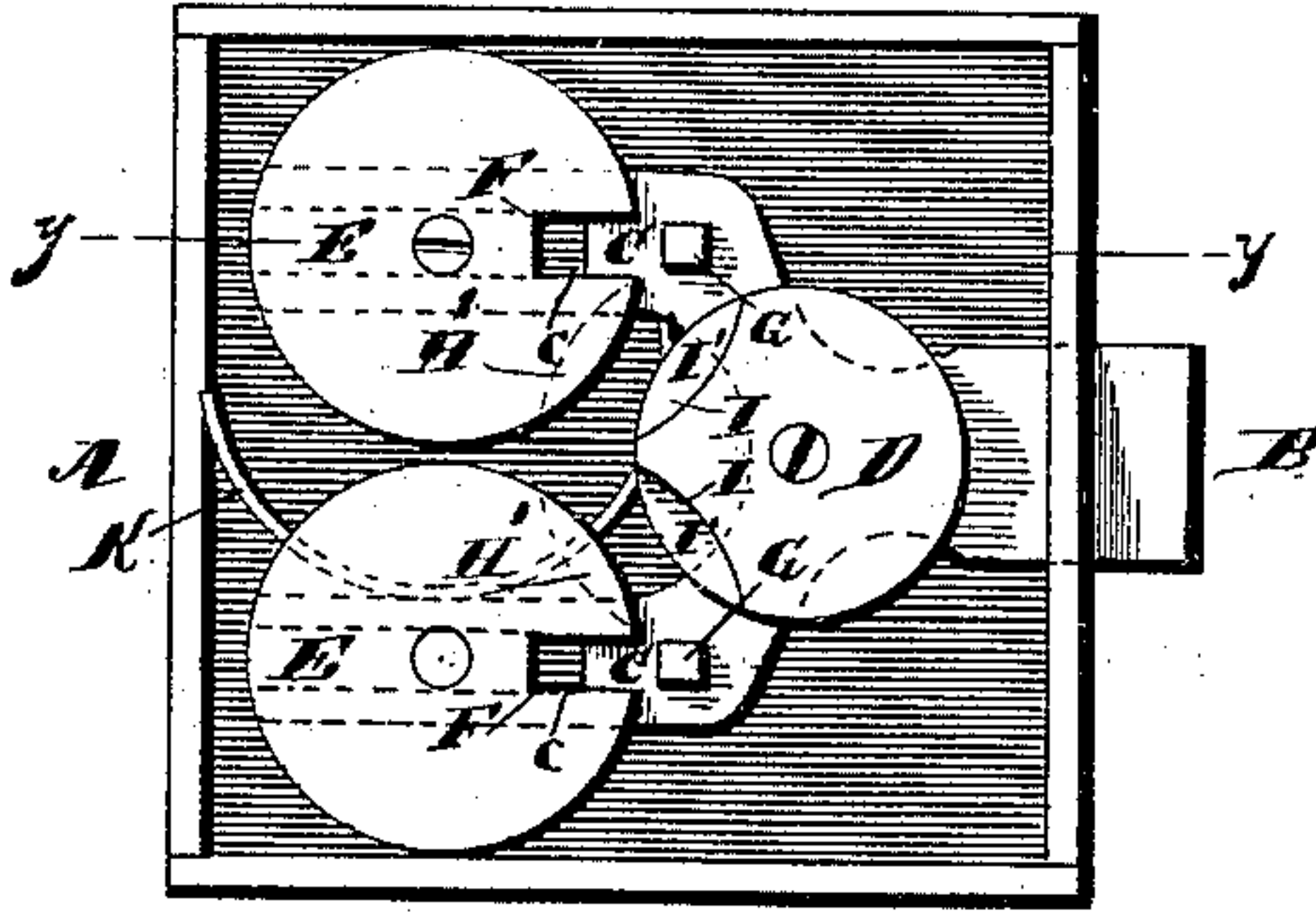


Fig. 3.

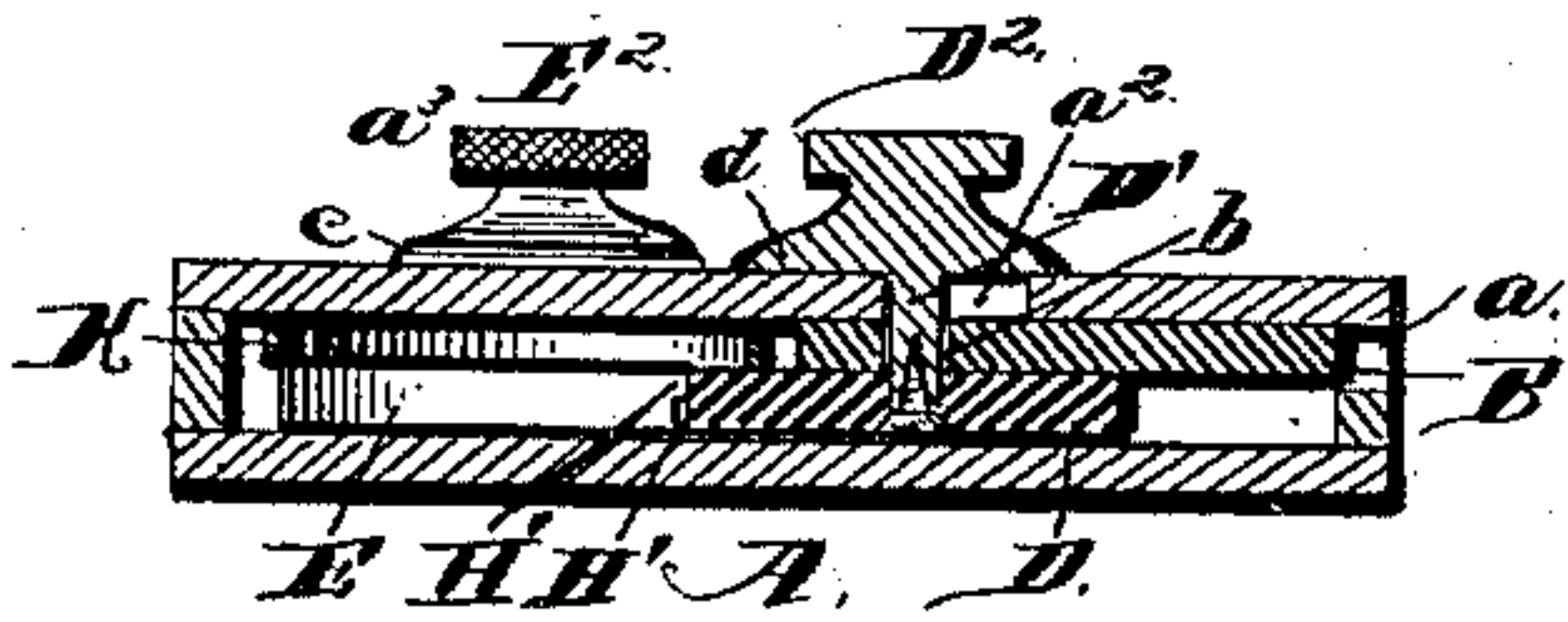


Fig. 4.

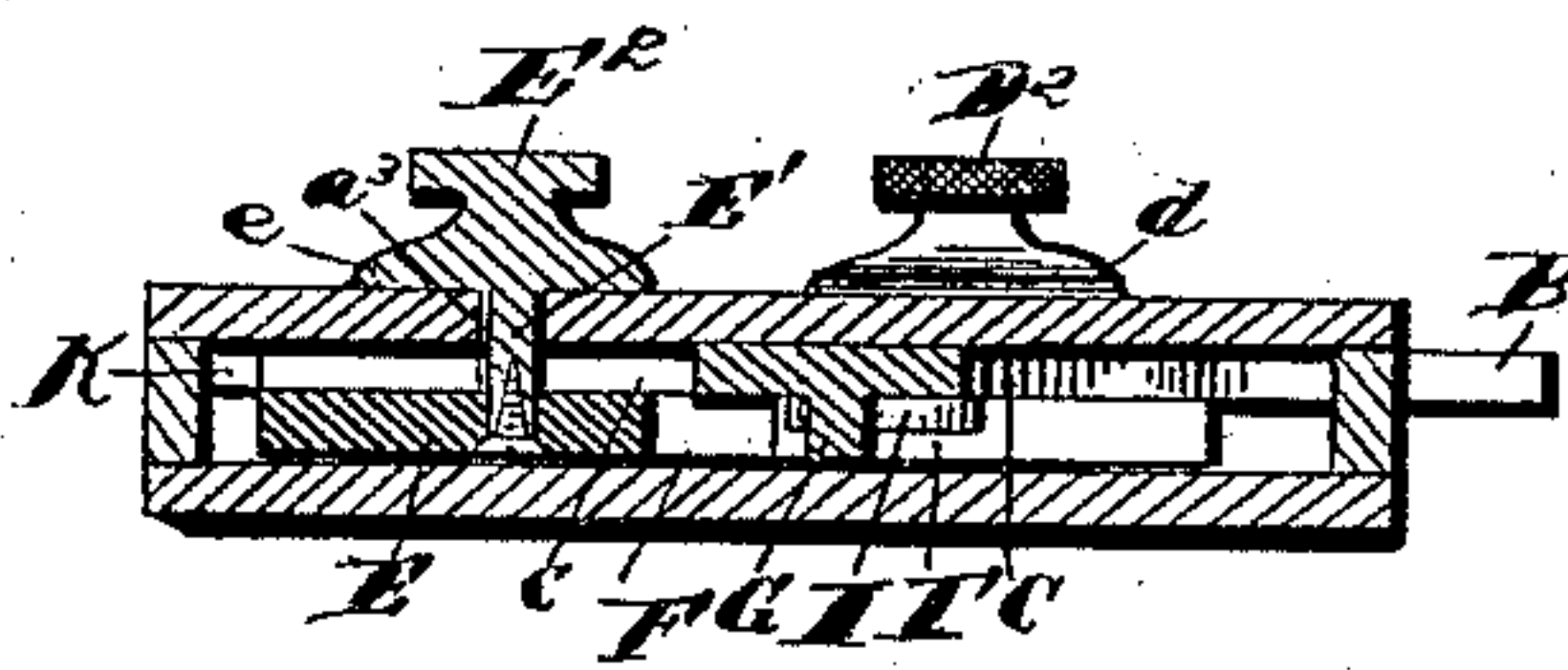


Fig. 5.

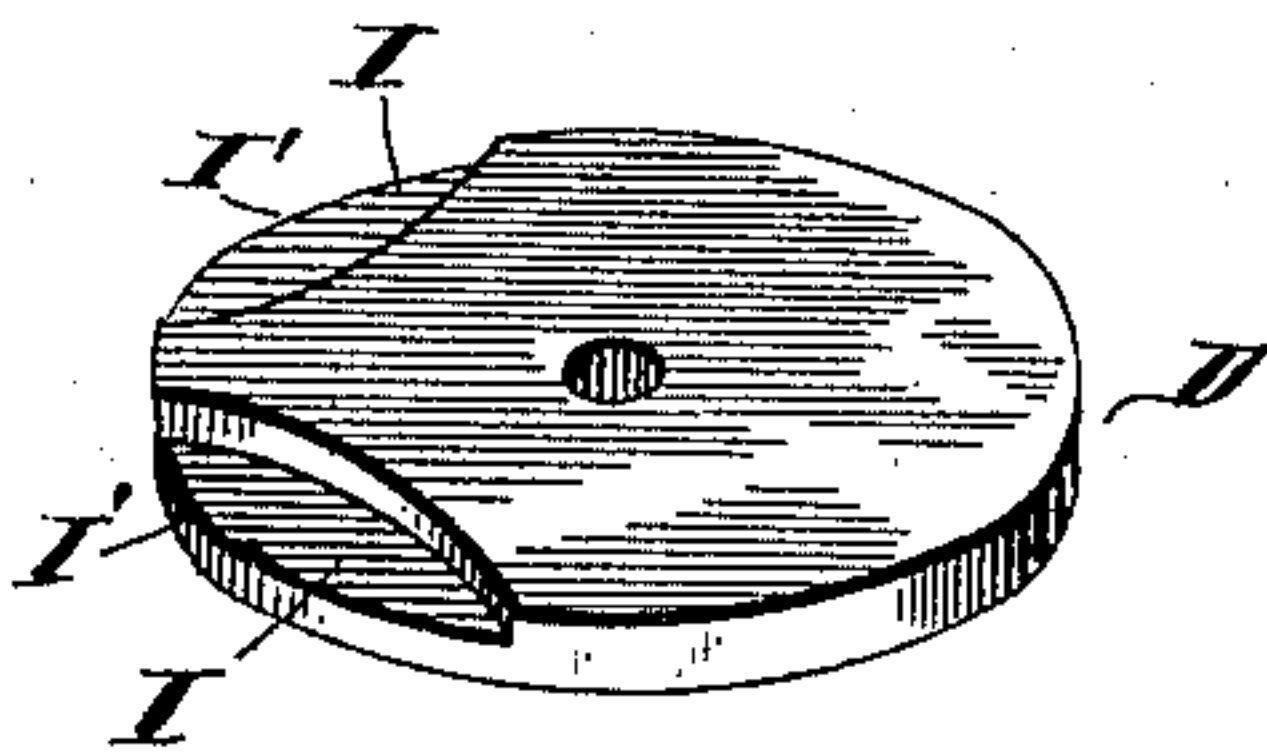


Fig. 6.

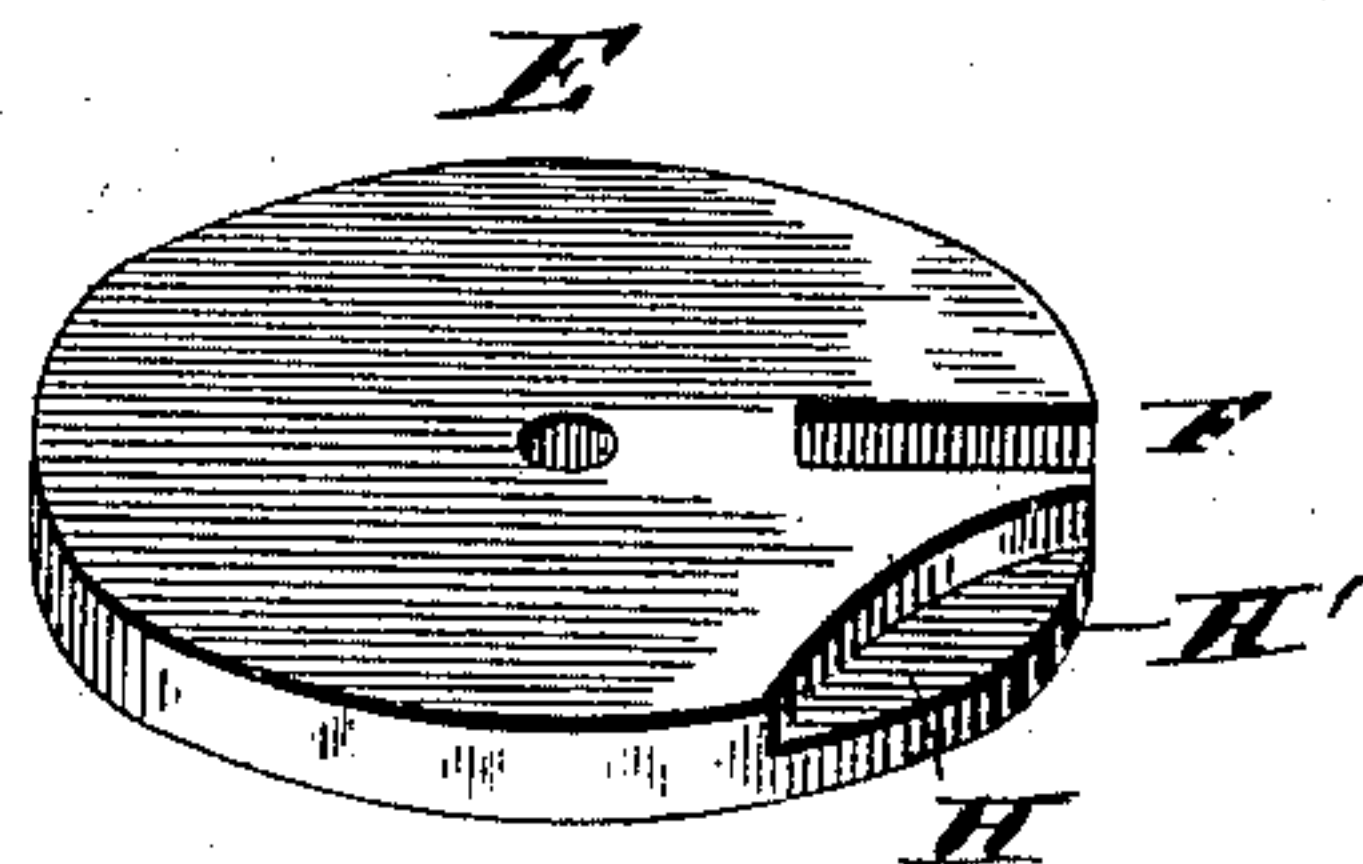
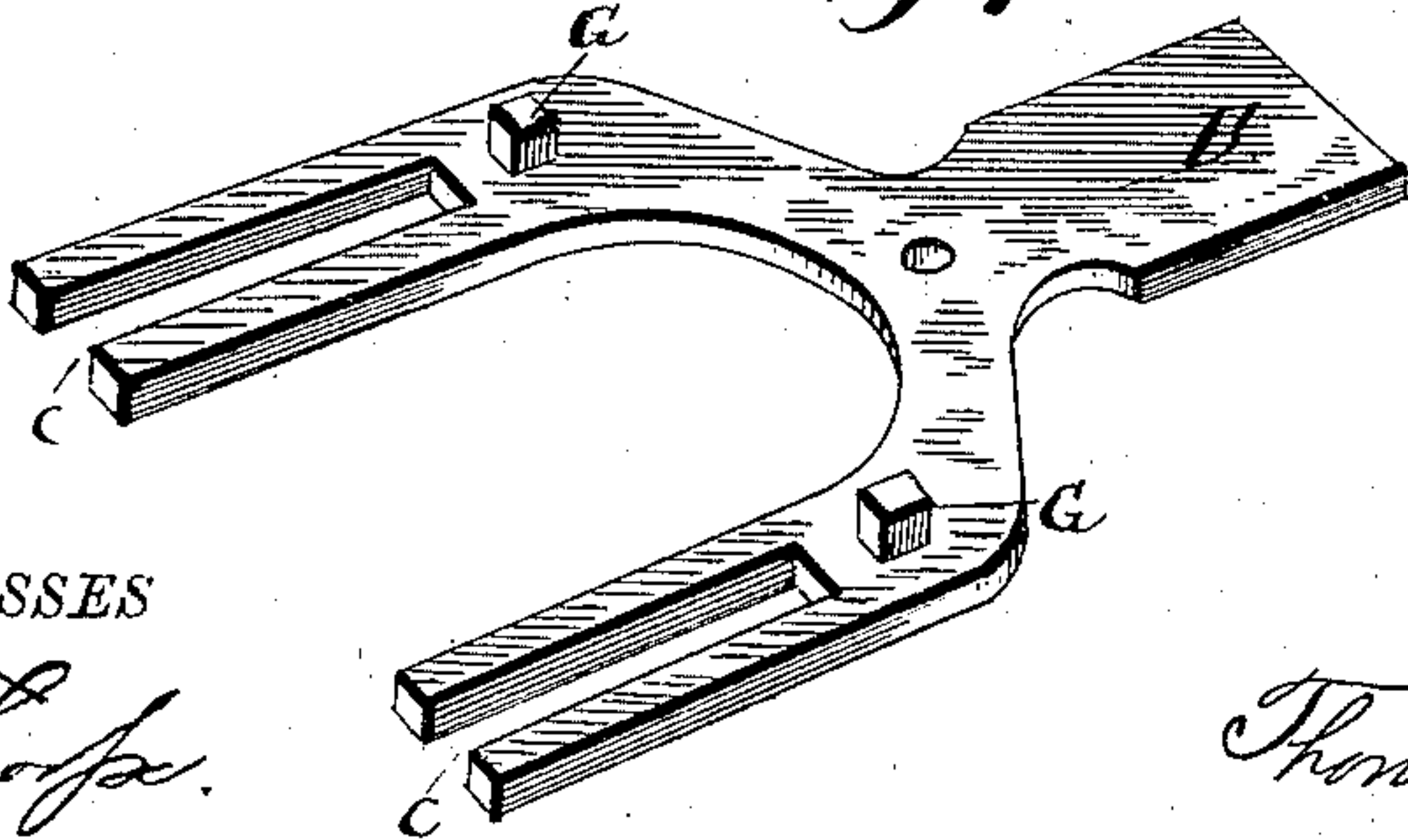


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS B. ZELLER, OF KOSSUTH, ASSIGNOR OF ONE-FOURTH TO WILLIAM NAGLE, OF EAGLE ROCK, PENNSYLVANIA.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 368,640, dated August 23, 1887.

Application filed May 6, 1887. Serial No. 237,353. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. ZELLER, a citizen of the United States, residing at Kossuth, in the county of Clarion and State of Pennsylvania, have invented a new and useful Improvement in Combination-Locks, of which the following is a specification.

My invention relates to improvements in combination-locks; and it consists in a certain novel construction and combination of parts for service, fully described hereinafter, and specifically pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a front view of the lock. Fig. 2 is a rear view of the same with the rear plate removed. Fig. 3 is a section on the line xx , Fig. 1. Fig. 4 is a similar view on line yy , Fig. 2. Figs. 5 and 6 are detail views of the disks. Fig. 7 is a detail view of the sliding bolt.

Referring to the drawings by letter, A designates the body of the lock, and B the sliding bolt therein, projecting at the front end through an opening, a , in the front side or edge of the said body. The rear end of the said bolt is provided with the two lateral arms C C, having the longitudinal slots cc therein, for a purpose hereinafter explained, and D designates a disk or tumbler adjustably secured on the inner end of a spindle, D' , which passes through a bearing, b , in the said rear end of the straight portion of the bolt, and also through a slot, a^2 , in the face-plate of the body. The outer end of the said spindle is provided with a knob, D^2 , having a flange, d , provided with an index, and by means of the said knob the bolt is operated to retract or throw the same when a spring is not used.

E E are similar disks or tumblers, side by side, in the body of the lock, and provided with spindles $E' E'$, which are journaled in bearings a^3 in the face-plate, and on the outer ends of the said spindles are secured the knobs E^2 , having the flanges e , provided with indexes, for a purpose to be explained. The slots cc in the rear ends of the arms or forks C of the bolt are adapted to receive the said spindles E' to allow the bolt to operate, and F F are notches or recesses formed in the peripheral edges of the said disks to receive the small studs G G on the said arms C C of the

bolt when the said notches are turned to align with the motion of the said studs.

H H are small recesses in the edges of the disks E, thus forming the segmental lips H' H' on the rear sides thereof, and I I are similar recesses in the rear sides of the edge of the disk D to receive the said lips, the lips I' I' of the disk D fitting into the recesses H H of the disks E, as will be readily understood. The said recesses H and I are formed in the thickness of the disks, extending only half way through the same, and thus, when the said recesses and lips are properly aligned and the bolt B retracted, the edges of the disks D and E mesh or engage with each other. The lock is so constructed that when the said lips and recesses align the studs G and the notches F also align, and consequently when so arranged the bolt may be retracted.

K designates a leaf-spring, pressing at one end against the rear end of the body of the lock and at the other end against the rear end of the bolt B, and is adapted to hold the bolt normally extended. Around the flanges, on the inner ends of the knobs on the face-plate of the lock, is arranged a series of letters or numbers, adapted to form the combinations for the lock, the indexes on the said flanges serving to indicate the proper combination.

It will be seen that a combination of three letters or numbers may be formed with this lock; and it is absolutely necessary that all the parts of the lock be properly arranged before the bolt can be retracted. When the said parts are aligned properly, the bolt is pushed back by means of the knob or handle D^2 , the spindle thereof operating in the slot a^2 in the face-plate. The said combination can be altered at will by simply loosening the screws which secure the disks on the rear reduced ends of the spindles and turning the same to the desired combination.

The lock may be used either with or without the leaf-spring herein described to throw the bolt, it being inconvenient in some cases to use the same.

The construction of the lock is very simple, compact, strong, and durable, and is, in addition, very safe, there being three knobs to turn, it being necessary that the mechanism

operated thereby should be properly disposed before the bolt is retracted.

I am aware that heretofore locks having three tumblers have been used; but I am not aware that the arrangement of the parts in any is the same as in my improved lock.

I have endeavored to combine effectiveness under all circumstances with extreme simplicity. In one case, referring especially to United States Patent No. 229,829, the bolt is designed to be retracted by gravity alone, which, from some cause, may fail, as the parts may become swelled or warped and prevent the bolt from moving; also, in order that the bolt may operate, even under favorable circumstances, the lock must be so disposed that the bolt is "thrown" upward and "withdrawn" downward. In my lock I provide the bolt with a handle to operate the same, thus obviating all delay and making the manipulation of the lock certain. Further, the means provided for guiding the bolt in the patent cited—namely, between the tumblers at the upper end and by a guide slot and stud at the lower end—is very uncertain, whereas in my improvement I aim to overcome this by providing an opening in the front end of the body of the lock. I cause the spindle of the movable tumbler to operate in a guide-slot in the face-plate, and provide the rear ends of the lateral arms of the bolt with slots to receive and operate on the spindles of the stationary tumblers. Thus it is impossible for the bolt to be jarred or strained out of place.

My manner of meshing the tumblers, by means of the lips and recesses hereinbefore referred to, is a novel feature, and is a very effective means of preventing the picking of a lock.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, in a lock, of the sliding bolt B, rearwardly-extending lateral arms C C, slotted at the rear ends, studs G G on the said arms, disk or tumbler D, pivoted on and movable with the said bolt, recesses I I and lips I' I' in the peripheral edge of the said disk, stationary revoluble disks E E, notches F F therein to receive the studs G G, and the recesses H H and lips H' H' in the peripheral edges of the said disks to mesh with the said lips and recesses of the disk D, substantially as and for the purpose set forth.

2. The combination, in a lock, of the body A, sliding bolt B, lateral arms C C on said bolt, having slotted rear ends, slot a^2 in face-plate, disk D, having a spindle, D', operating in a bearing in the said bolt and passing through the slot a^2 , knob D² on the outer end of the said spindle, having a flange, d , around the inner end thereof, disks E E, having the spindles E' E', operating in bearings in the said face-plate, knobs E² E² on the outer ends of the said spindles, having the flanges e around the inner ends thereof, a series of letters or numbers around each of the said flanges, studs G on the said arms C of the bolt, notches F F in the disks E E to receive the said studs, recesses H H in the edges of the said disks, lips I' I' on the peripheral edges of the disk D, and the spring K, to normally hold the said bolt extended, all constructed and arranged substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

THOMAS B. ZELLER.

Witnesses:

W. L. JEFFORDS,
SAM GIBBS.