

H. L. RUSSELL.
Indicator-Lock.

No. 223,955.

Patented Jan. 27, 1880.

Fig. 1.

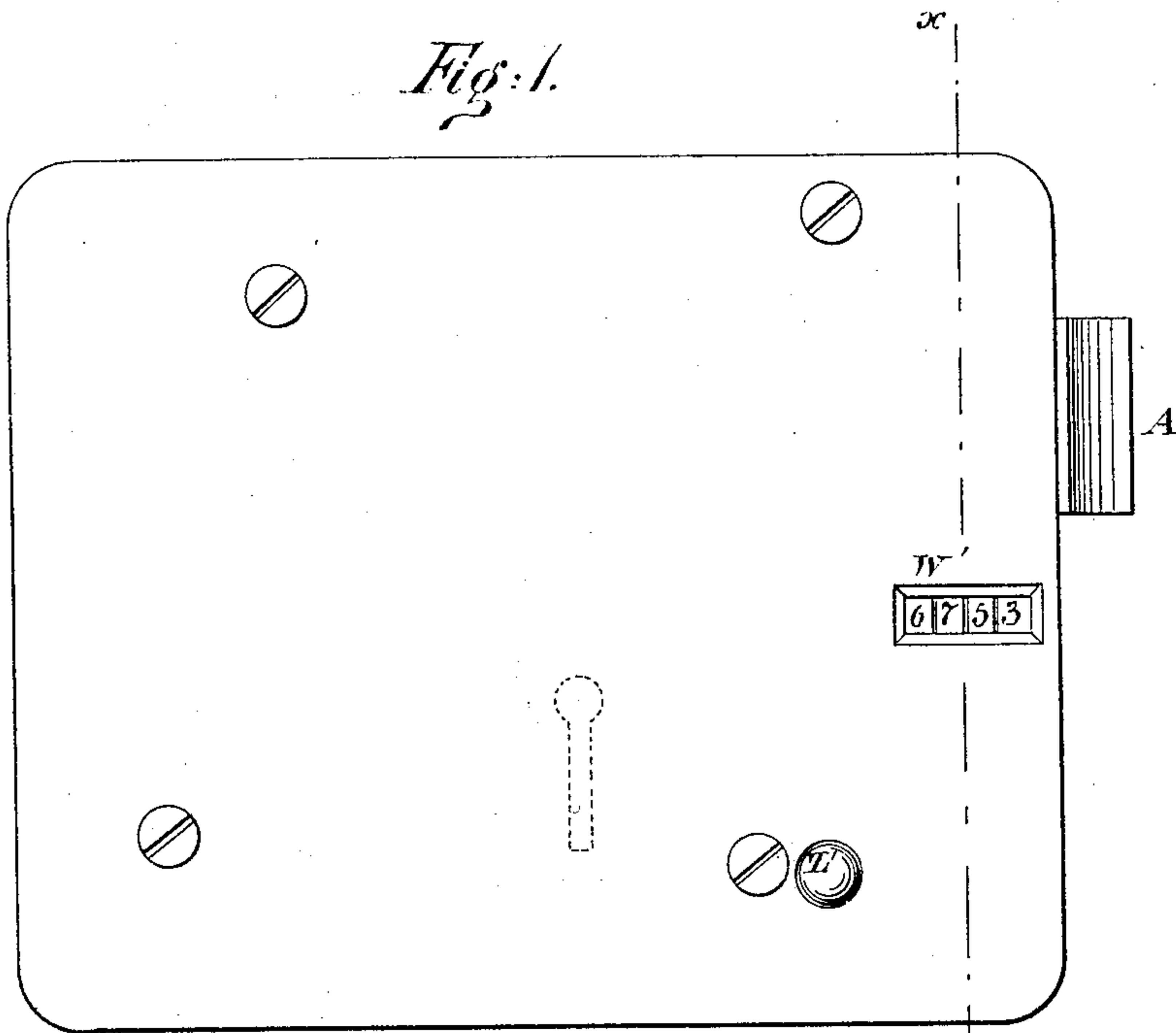


Fig. 2.

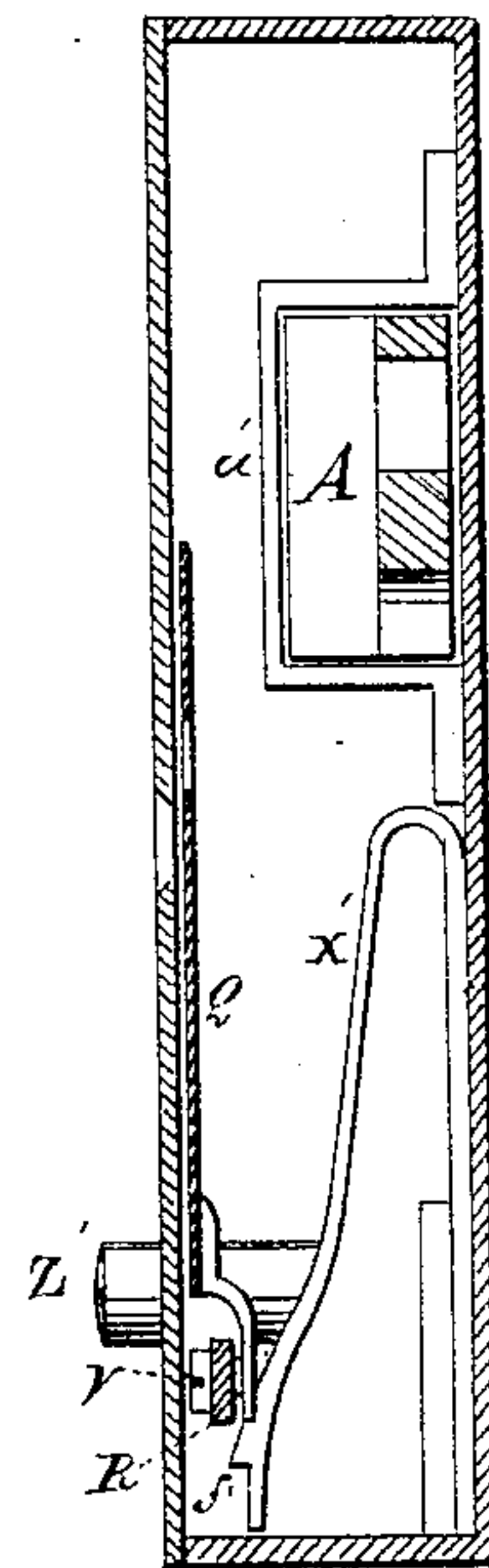


Fig. 3.

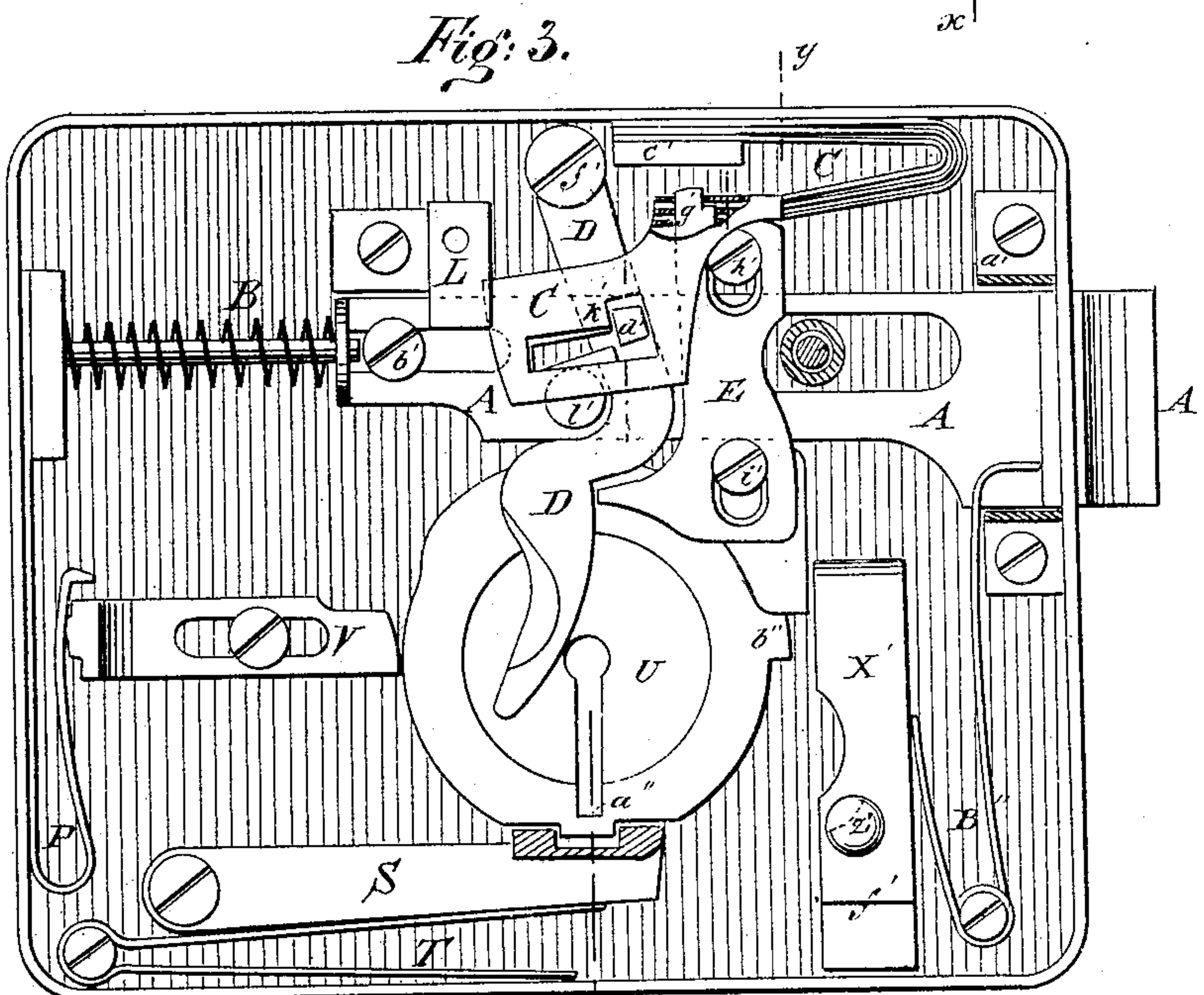
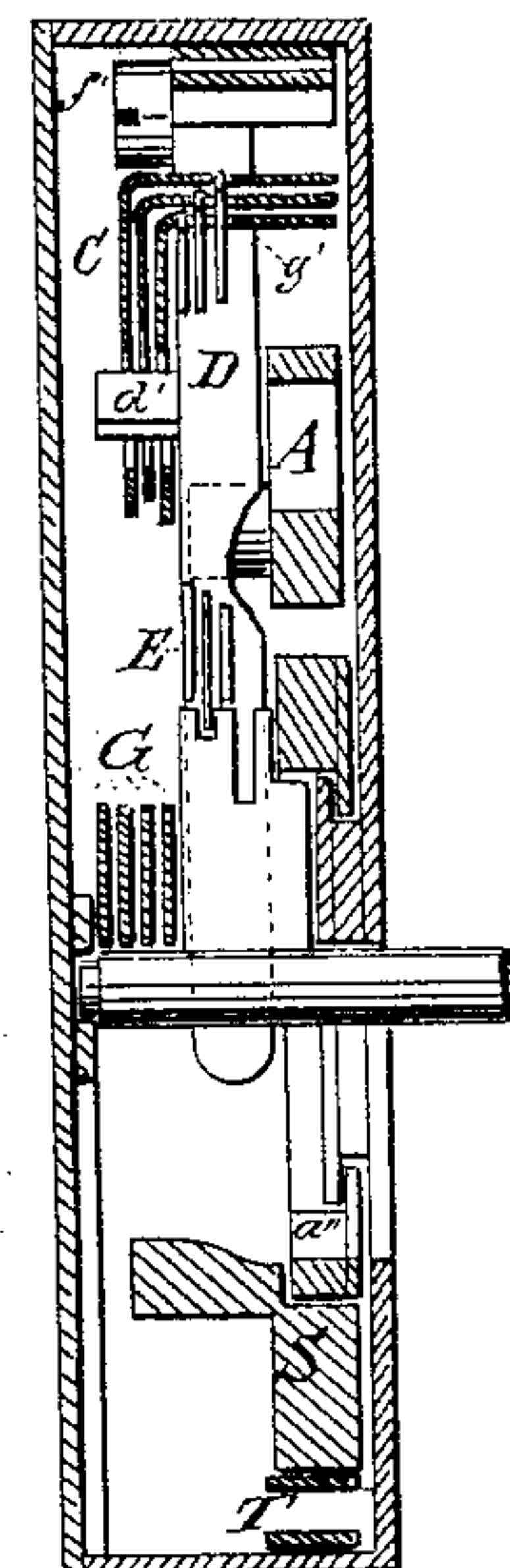


Fig. 4.



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C. Sedgwick

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Fig. 5.

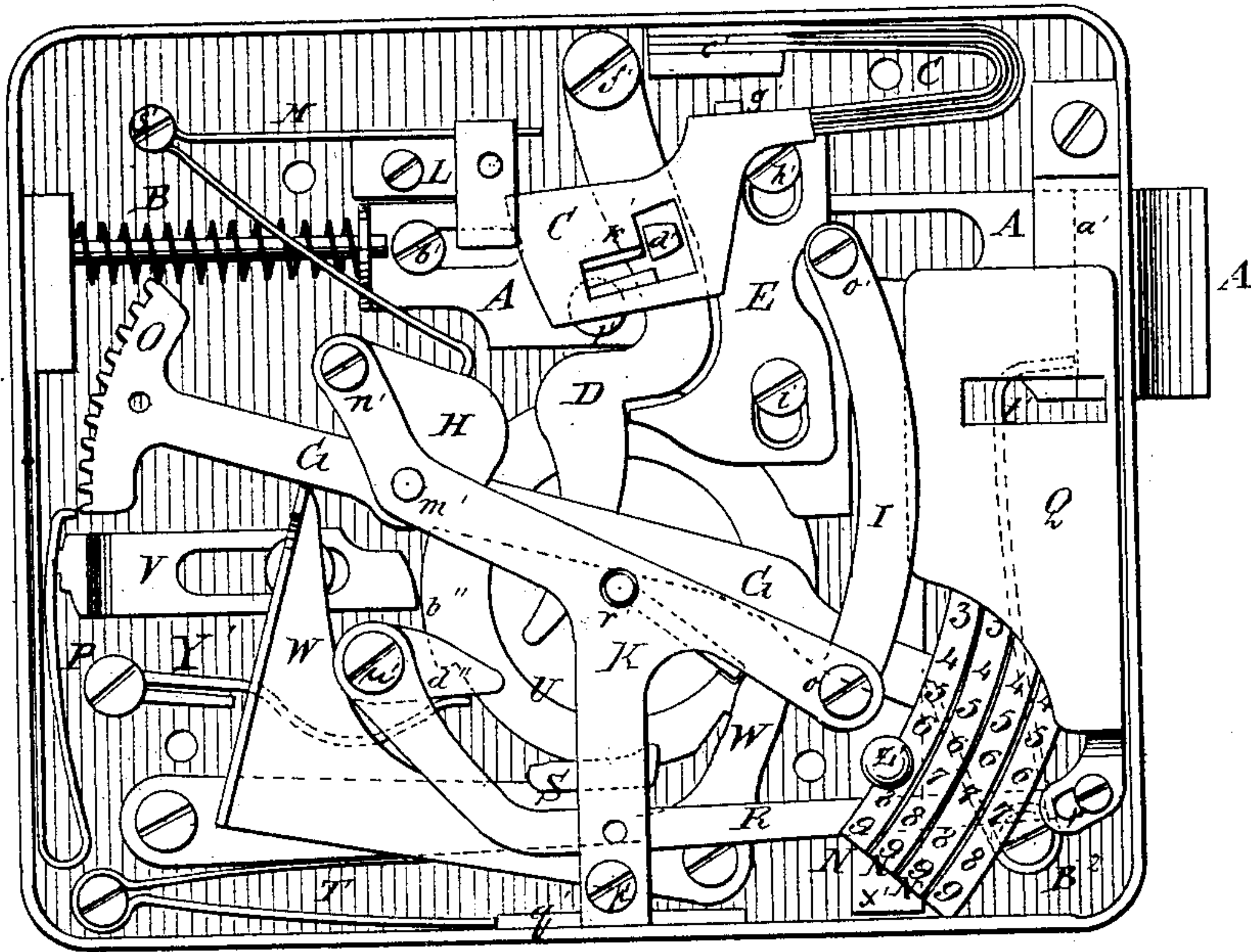
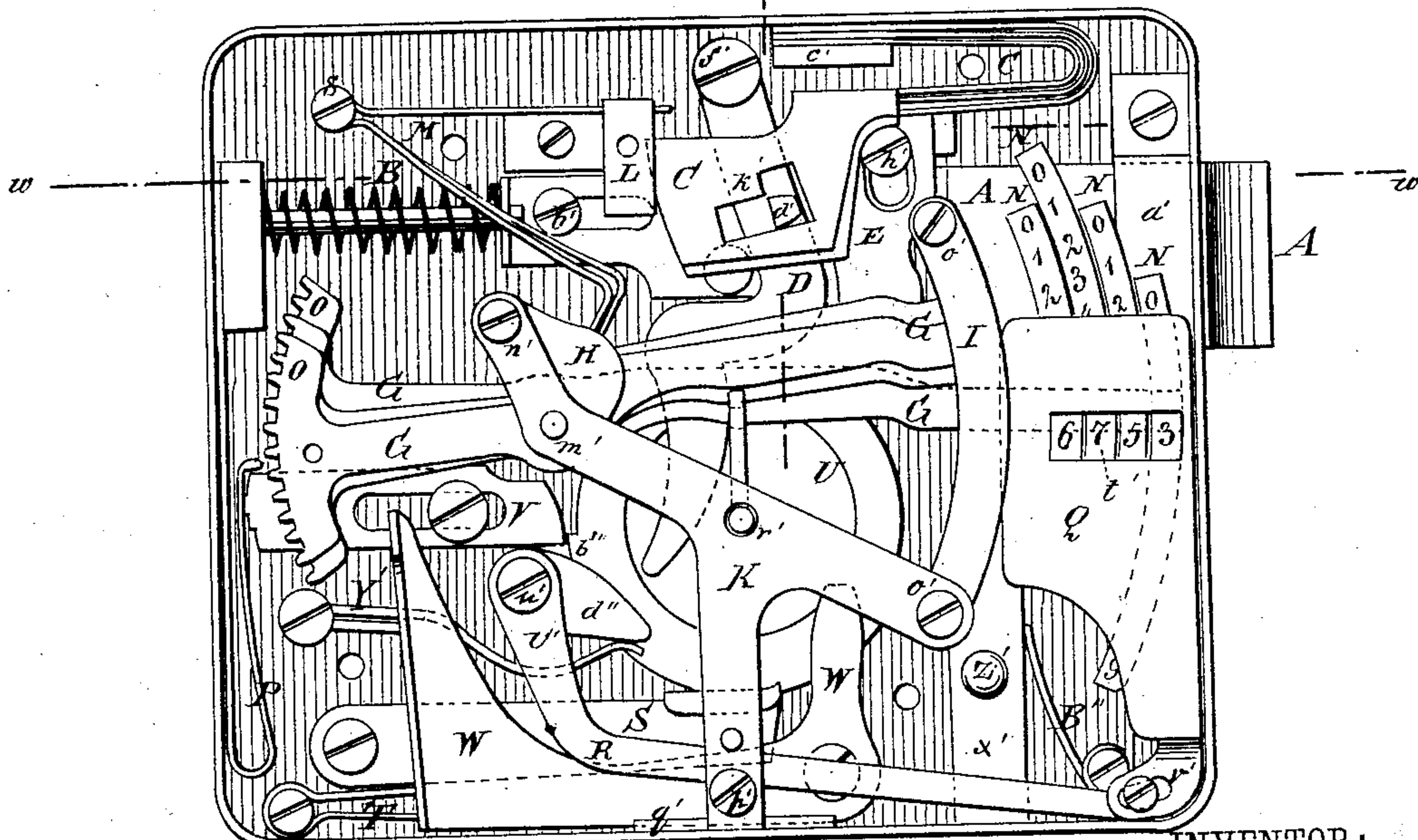


Fig. 6.



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Fig: 7.

Fig: 9.

Fig: 10.

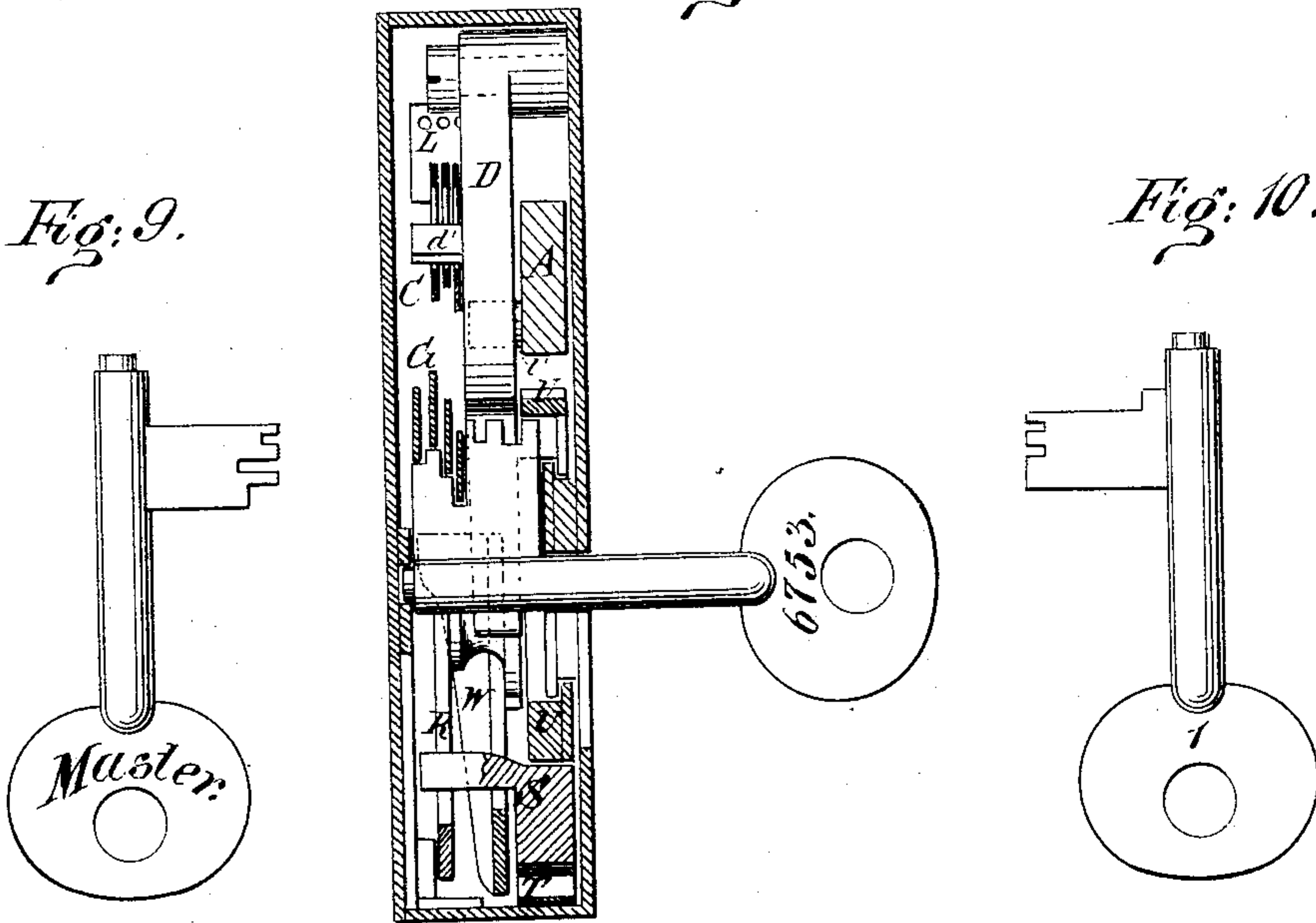


Fig: 8.

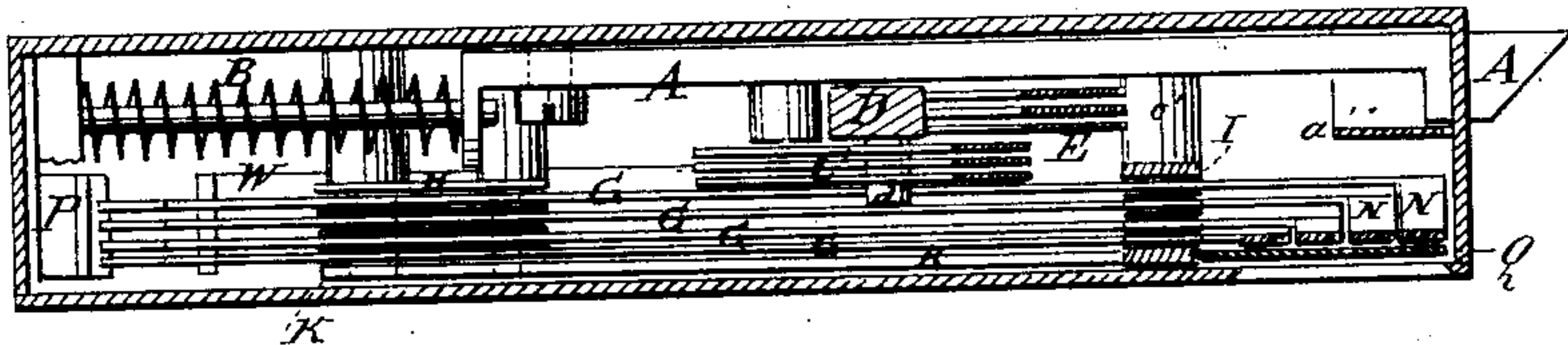
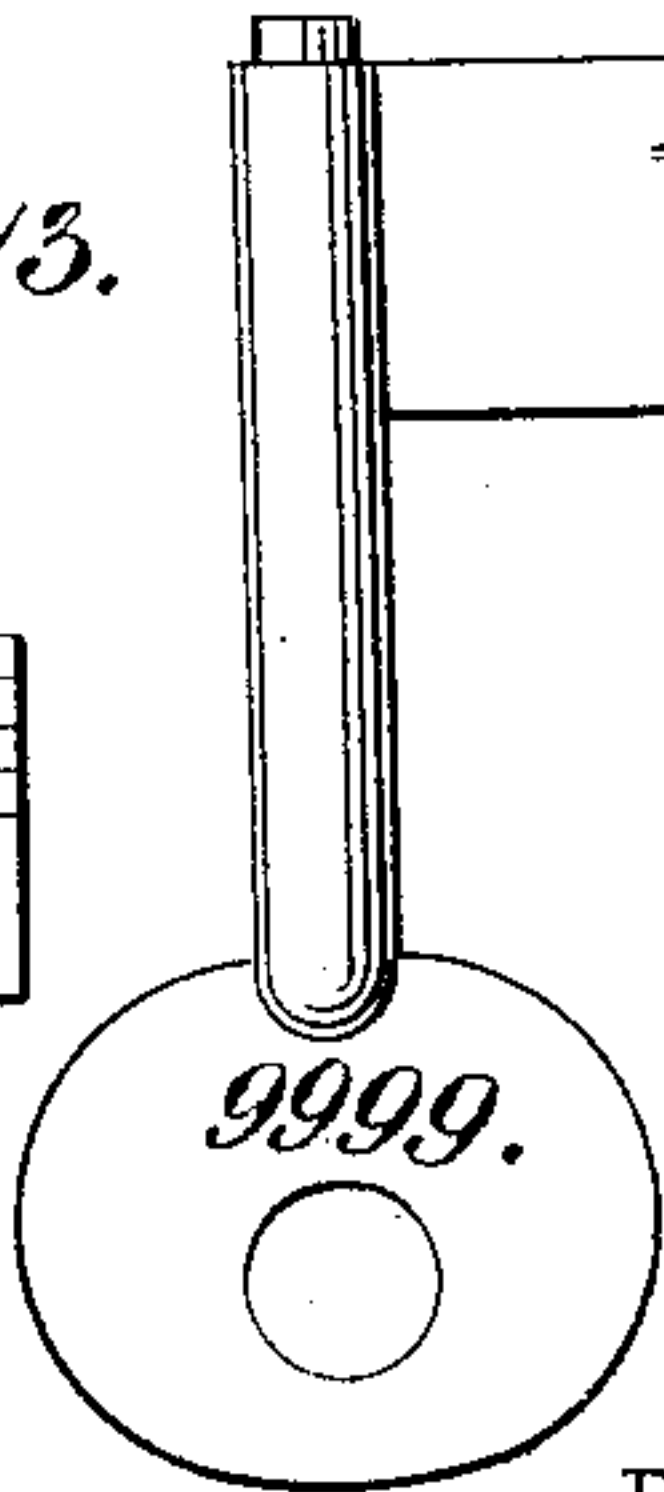
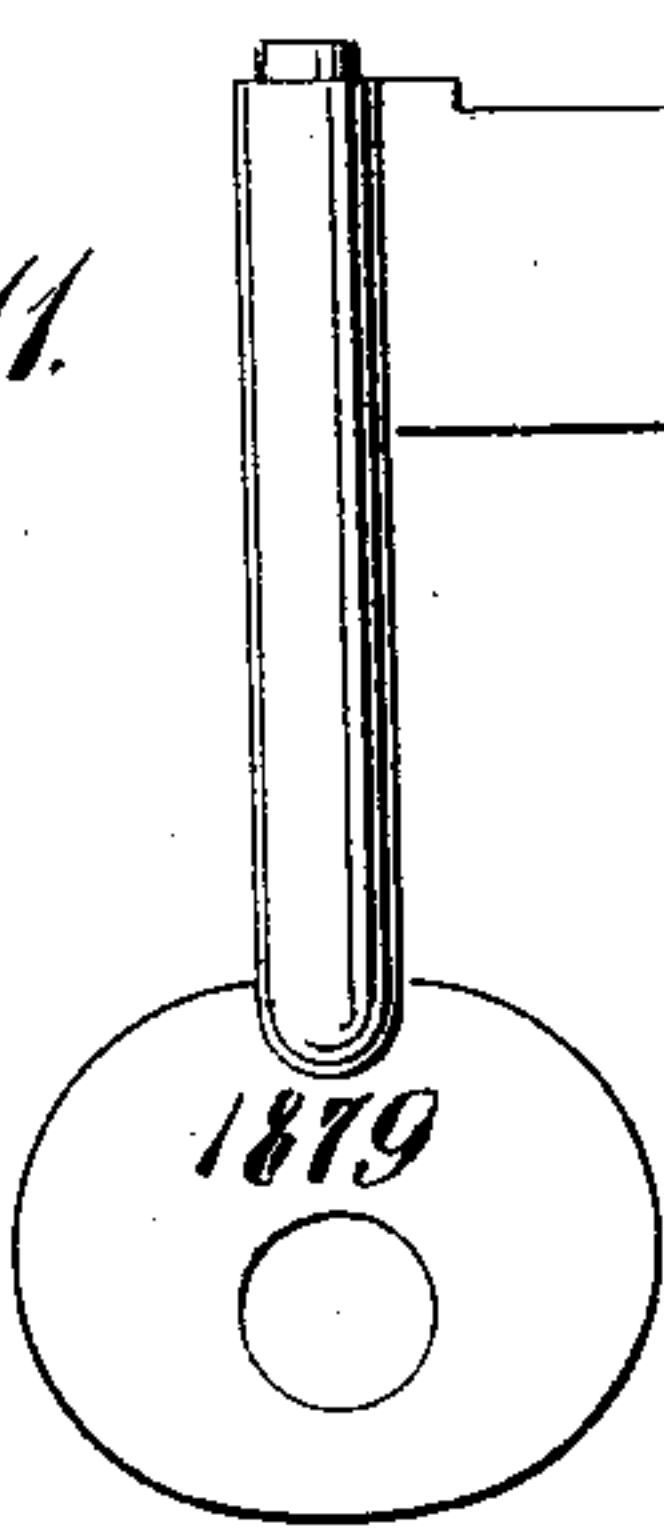


Fig: 11.

Fig: 13.

Fig: 12.

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UNITED STATES PATENT OFFICE.

HENRY L. RUSSELL, OF BLOOMINGTON, ILLINOIS.

INDICATOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 223,955, dated January 27, 1880.

Application filed May 28, 1879.

To all whom it may concern:

Be it known that I, HENRY LEWIS RUSSELL, of Bloomington, in the county of McLean and State of Illinois, have invented a new and Improved Lock, of which the following is a specification.

Figure 1 is a plan of the lock. Fig. 2 is a sectional elevation on line *xx*, Fig. 1. Fig. 3 is a plan of the lock with the back of the case and the registering-levers, &c., removed. Fig. 4 is a sectional elevation on line *yy*, Fig. 3. Fig. 5 is a plan of the inside of the lock. Fig. 6 is a plan of the inside of the lock, showing the position of the parts of the mechanism when registering No. 6753. Fig. 7 is a sectional elevation on line *zz*, Fig. 6. Fig. 8 is a horizontal section on line *WW*, Fig. 6. Fig. 9 represents the master-key. Fig. 10 represents key No. 1. Fig. 11 represents key No. 1879. Fig. 12 represents key No. 9999. Fig. 13 represents a key-blank marked to indicate the system of construction.

Similar letters of reference indicate corresponding parts.

The object of this invention is to provide a lock especially designed for fire-alarm boxes, railroad-switches, &c., where it may sometimes be desirable to know who unlocked it last, that must be opened with numbered keys, and will register the number of the key that last unlocked it.

The lock is provided with the usual bolt A, which is held in its horizontal plane by the yoke *a'* and pin *b'*, and is thrown and held out by the spiral spring B and bent springs B''. It is also provided with three tumblers, C C, that are secured at *c'* to the inside of the rim of the case, whose free slotted ends set over the boss *d'*, which projects upward from the lever D, that is pivoted at *f'*, and with three slides, E, that are held in place over the bolt A, with their pointed upper ends, *g'*, engaging in corresponding holes in the tumblers by the pins *h'* and *i'*, that pass through their slots and are secured in the front plate of the lock.

When a key is put into the lock and turned it will come in contact with the lower edge of one or more of these slides and cause it or them to move the tumblers to release the boss *d'* from the shoulder or shoulders *k'* and hold

them there until the key, in its further turning, is brought against the lever D, which engages with the stud *l'* on the bolt A and presses it back until the bolt is drawn in. Then the key slips past the end of the lever, when the action of the spiral spring B restores the parts to their original position. Though the effects produced by their action resemble those of corresponding parts in other locks, it will be seen that there is much novelty both in construction and arrangement of the tumblers, slides, and lever, and this construction and arrangement makes easy the construction and arrangement and the accurate working of the registering mechanism of the lock.

The registering arrangement consists of four levers, G G, placed side by side and pivoted on the pin *m'*, and they are kept from interfering with each other and their swing or movement is limited by the two sets of plates H and I, within which they play, and which are secured to the front plate of the lock by the screws *n'* and *o'*. Secured also on screws *n'* and *o'*, and by screw *p'* to the lug *q'* on the inside of the rim, is the plate K, provided with a central socket, *r'*, in which the key pivots when turned in the lock; or when a pipe or barrel key is used a pin will be substituted for the socket; or the plate K may be altogether dispensed with and the pin or socket located in the back of the lock.

The rectangular block L, which is firmly secured to the front plate, is provided with four holes for the reception of the ends of the springs M M, that are bent around the stud *s'*, and thence directed between the plates H against the levers G G, to assist in operating them.

To one end of the levers are attached the parallel segmental tablets N N, on each of which are inscribed a cipher and the nine digits, and the other ends of the levers are broadened into curved ratchets O O, in which engages the spring-pawl P, each ratchet being provided with as many teeth as there are numbers on the corresponding tablet.

A sliding plate, Q, provided with an aperture, *t'*, that crosses the tablets at about a right angle, covers or nearly covers the tablets, and is operated by the lever R, that is held on the pin *u'*, and connected with the said plate by means of the pin *v'*, that plays

in a slot in the end of the plate. Through the aperture in the plate and a corresponding one, W' , in the back of the lock may be seen the figures registered each time a key has been applied.

The lock herein shown will register all numbers from 0001 to 9999, and for each number in this range there is provided a separate key, whose application to the lock will invariably register a certain combination of numbers and none other, and each key will have stamped upon it the number of the combination it will register, and in addition is a key called the "master-key," that does not change the register. Once applied to the lock and turned so as to pass the lever S , no key save the master-key can be withdrawn until it has been turned completely around and has moved the tablets to register its number under the aperture in the back plate of the lock. The master-key alone can move the plate Q to open the register.

In operating the lock, care must be had that the slide or plate Q covering the register is in its proper position. A key is then introduced into the key-hole and socket r' , pressing down the lever S against the pressure of the spring T as it enters, so as to disengage it from the revolving ring U , and at the same time engaging in the slot a'' in the edge of the ring.

As the ring revolves to the right with the key its eccentric edge b'' presses against the slide V , and, forcing it against the spring-pawl P , causes the pawl to release the ratchet ends of the levers $G G$. Still turning, the key then strikes one end of the lever W and throws the other end up against the levers $G G$, to bring them again all parallel with each other, as shown in Fig. 5. Still turning, the key then releases the lever W , which falls back to its first position, and the key then comes in contact with the edges of one or more of the levers $G G$ and moves them so that their combined tablets shall register immediately under the aperture in the back of the lock, the number corresponding with that imprinted on the key. At the same time the key is in contact with the slides E , and is causing them to operate upon the tumblers $C C$ to make them release the lever D , by whose means the bolt A is drawn back. Then the key comes in contact with the lever D , and as it moves the lever backward the eccentric rim of the revolving ring U releases the slide V , which permits the pawl P to re-engage with the ratchet O and hold the levers $G G$ in place. Continuing its movement, the key forces back the lever D and bolt until the lock is unlocked, and then, still turning, it releases the lever and permits the bolt to be thrown out again by the action of the spiral spring B and the spring B'' .

The master-key, when put in the lock and turned, does not carry around with it the revolving ring U , but simply draws back and then releases the bolt A until it comes in con-

tact with the lower arm, d'' , of the lever R , which it presses down until the lever draws down the attached slide Q , so that the aperture in it is brought directly under that in the lock-plate, thus opening the register, and at this point the said lever is caught and held by the shoulders f'' in the bent spring X' . Pressure down upon the stud Z' will force the spring down at any time and release the lever R , when the spring Y' , that bears against the arm d'' , will cause it to force the plate Q upward and close the register.

The addition of another lever and segmental tablet would make one hundred thousand combinations of numbers; but so large a number of keys would hardly be required for one lock.

I do not confine myself to the precise form of registering-tablets herein shown, nor to the exact form of the tablet-levers, for in a padlock, for instance, the tablets will be thick enough to receive the numbers on the faces instead of on the sides, and the numbers will be seen through a slit in the bottom edge of the lock. There would also be a flange turned up on the concave face of the tablet and the ratchets cut therein.

Other modifications may be made in applying the device to other styles of locks without departing from my invention.

In the matter of the keys that part of the blank nearest the hand operates on the bolt of the lock, which may be of any desired construction, while the other part operates the registering apparatus.

Fig. 13 shows a key-blank marked with four rows of nine squares each, to correspond respectively with the number of levers and the numbers on the tablets.

The blank, it will be seen, can be cut away to make the key avoid one or the other or all of the levers; or points may be left to press upon one or all of the levers, and of such length as to press them, or any of them, to the full or partial extent of their range.

The master-key, Fig. 9, is cut away so that it avoids the registering apparatus. The key in Fig. 10 is so cut that only one lever will be moved, and that so slightly as to register only number 1. Figs. 11 and 12 show keys that are cut to register numbers 1879 and 9999, respectively.

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

1. The combination of the bolt A with springs B and B'' , slotted tumblers $C C$, provided with shoulders h' , lever D , provided with boss d' , and slides E , whose pointed ends $g g'$ engage in corresponding holes in the tumblers, substantially as herein shown and described.

2. In the construction of a lock, the combination of the levers $G G$, segmental tablets $N N$, inscribed with figures, and ratchets $O O$,

with the plates H and I, springs M M, pawl P, and slide V, constructed substantially as and for the purpose described.

3. In combination with the levers G G, provided with tablets N N, the sliding plate or cover Q, provided with an aperture, t' , and aperture W in the lock-case, substantially as herein shown and described.

4. The combination of the lever S, spring T, revolving ring U, provided with slot a'' and eccentric rim b'' , slide V, pawl P, and levers G G, substantially as and for the purpose described.

5. The combination of the lever W with the levers G G, tablets N N, and ratchets O O, substantially as herein shown and described.

6. The combination of the lever R, provided with a lower arm, d'' , the slide Q, spring X', provided with shoulder f' and stud Z', and spring Y', substantially as and for the purpose described.

HENRY LEWIS RUSSELL.

Witnesses:

J. F. PANCAKE,
B. P. MARSH.