

(Model.)

2 Sheets—Sheet 1.

C. E. A. A. DÉNY.
LOCK.

No. 448,912.

Patented Mar. 24, 1891.

Fig. 1.

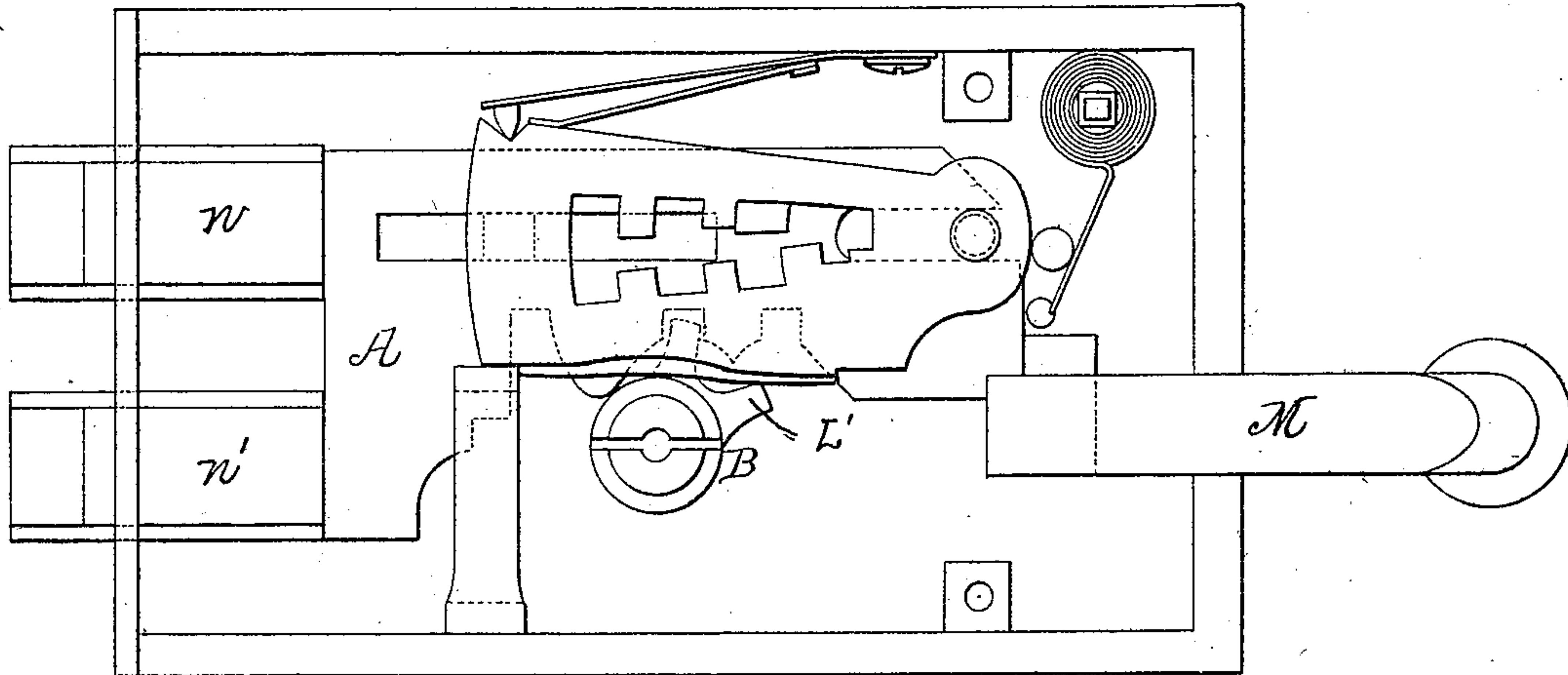


Fig. 11.

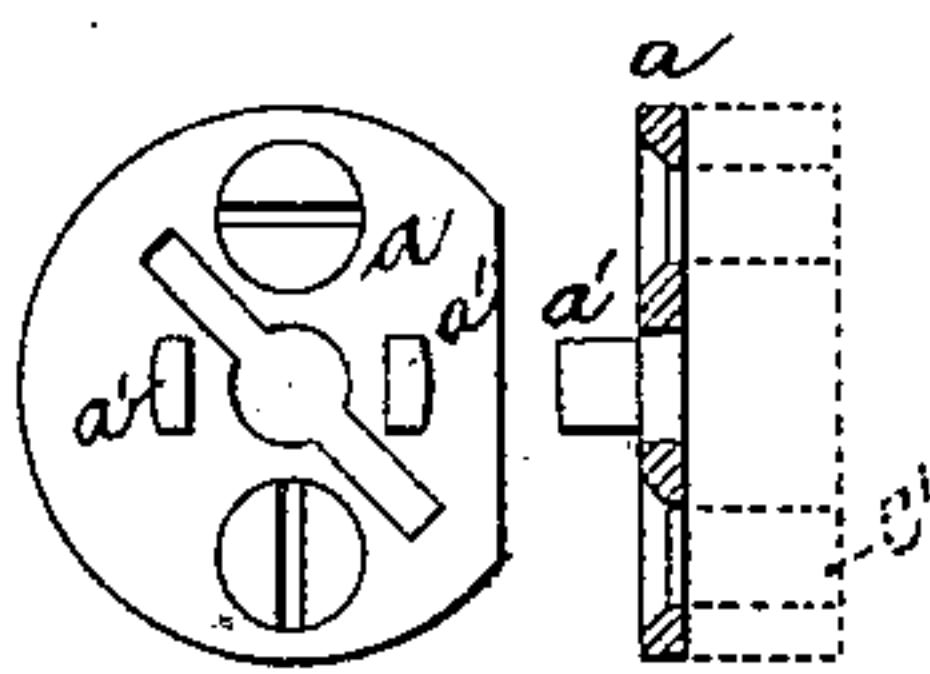


Fig. 2.

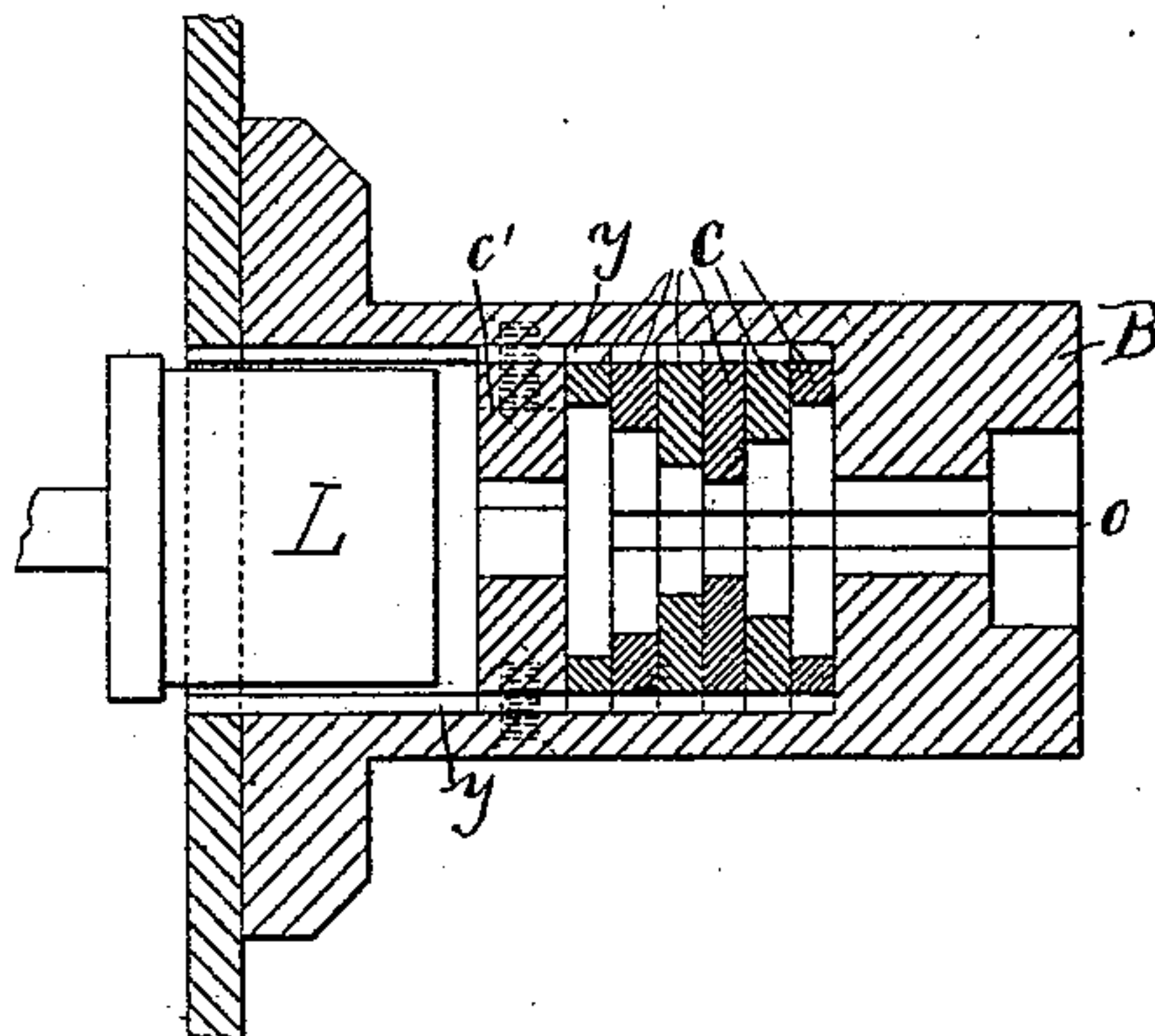
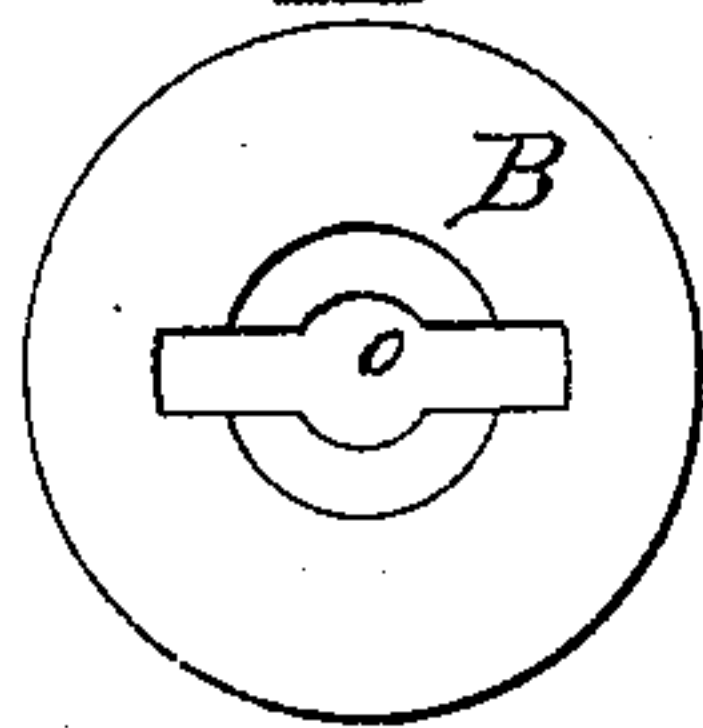


Fig. 2A.



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(Model.)

2 Sheets—Sheet 2.

C. E. A. A. DÉNY.
LOCK.

No. 448,912.

Patented Mar. 24, 1891.

Fig. 3.

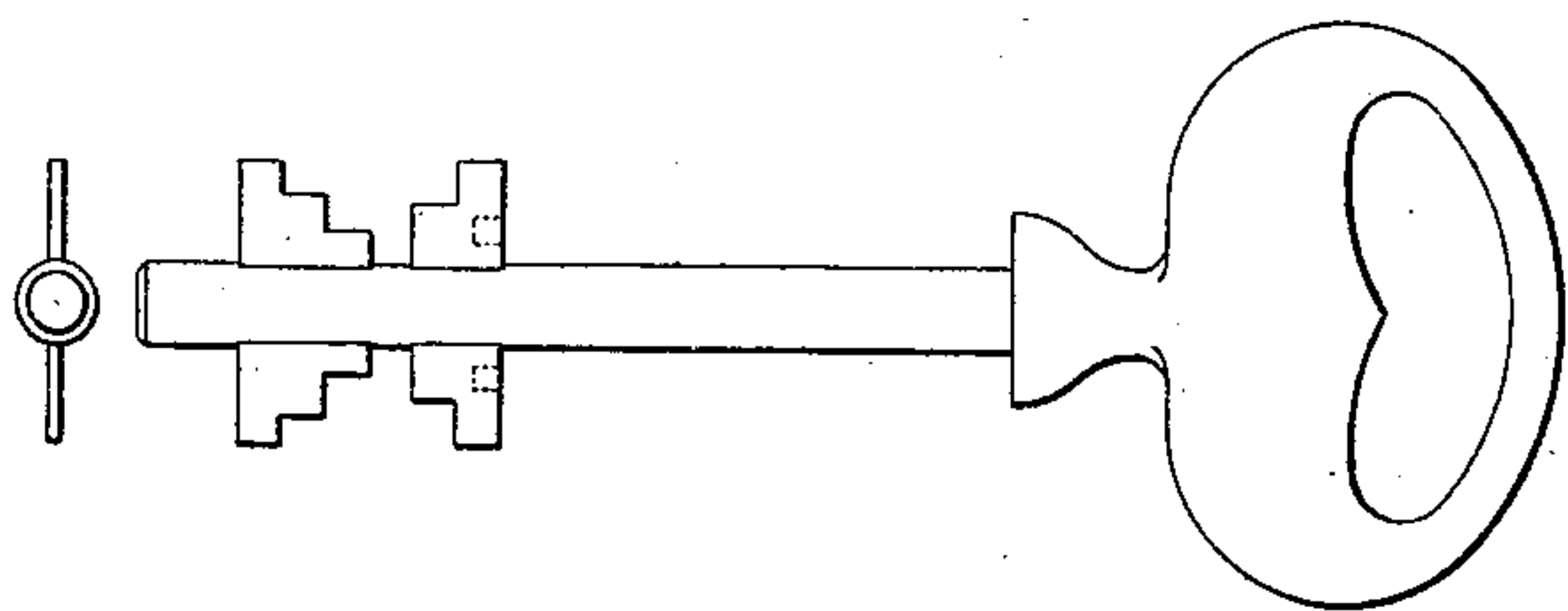


Fig. 4.

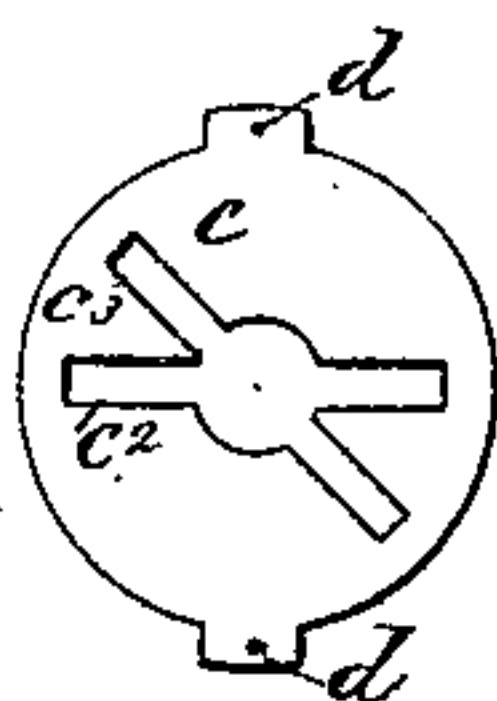


Fig. 5.

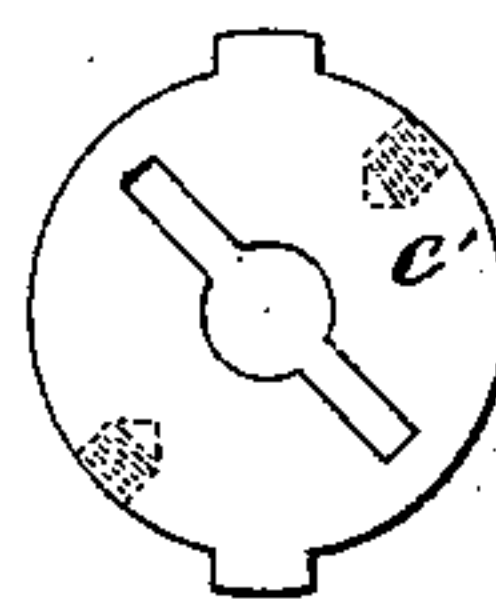


Fig. 7.

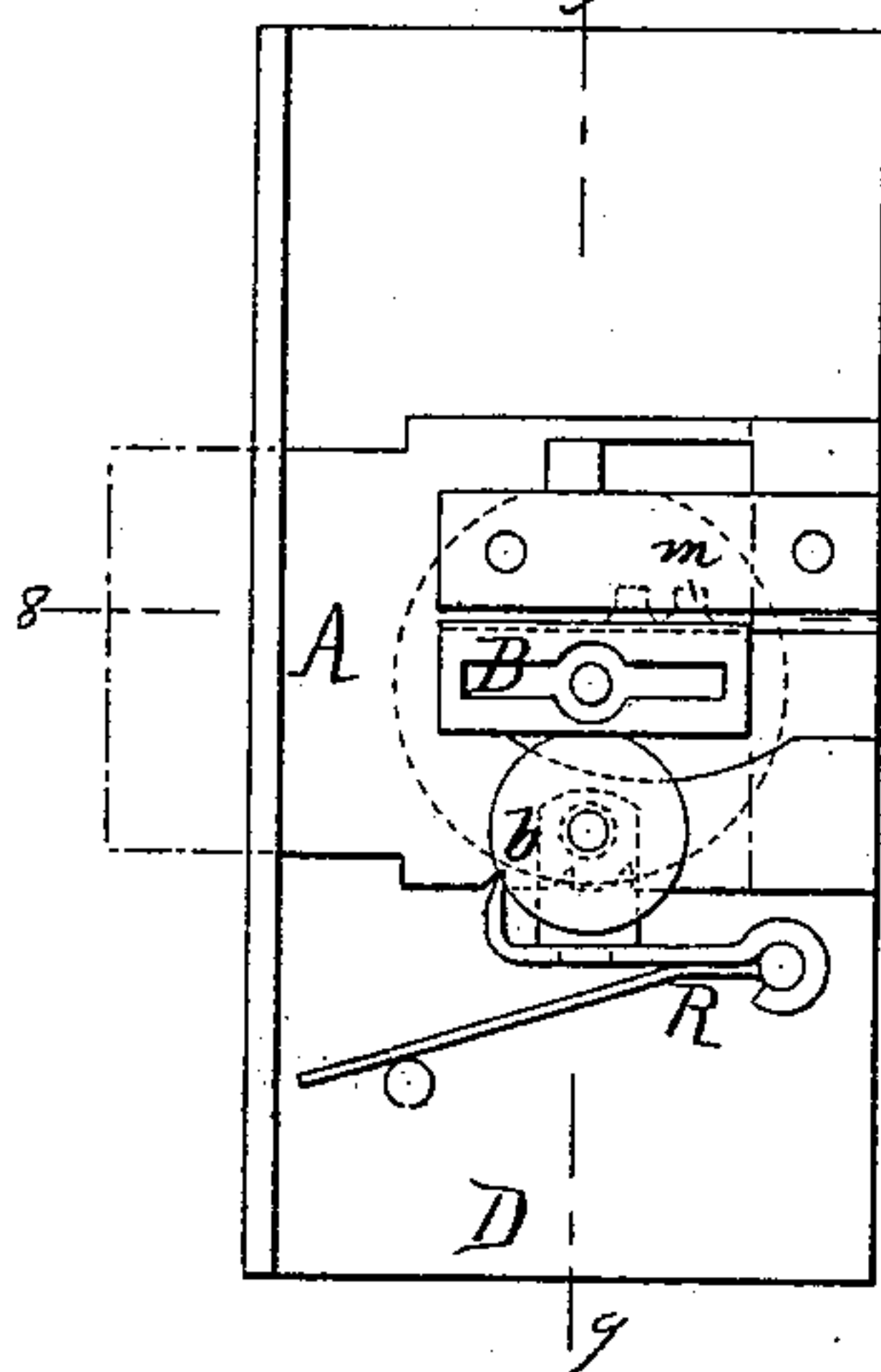


Fig. 9.

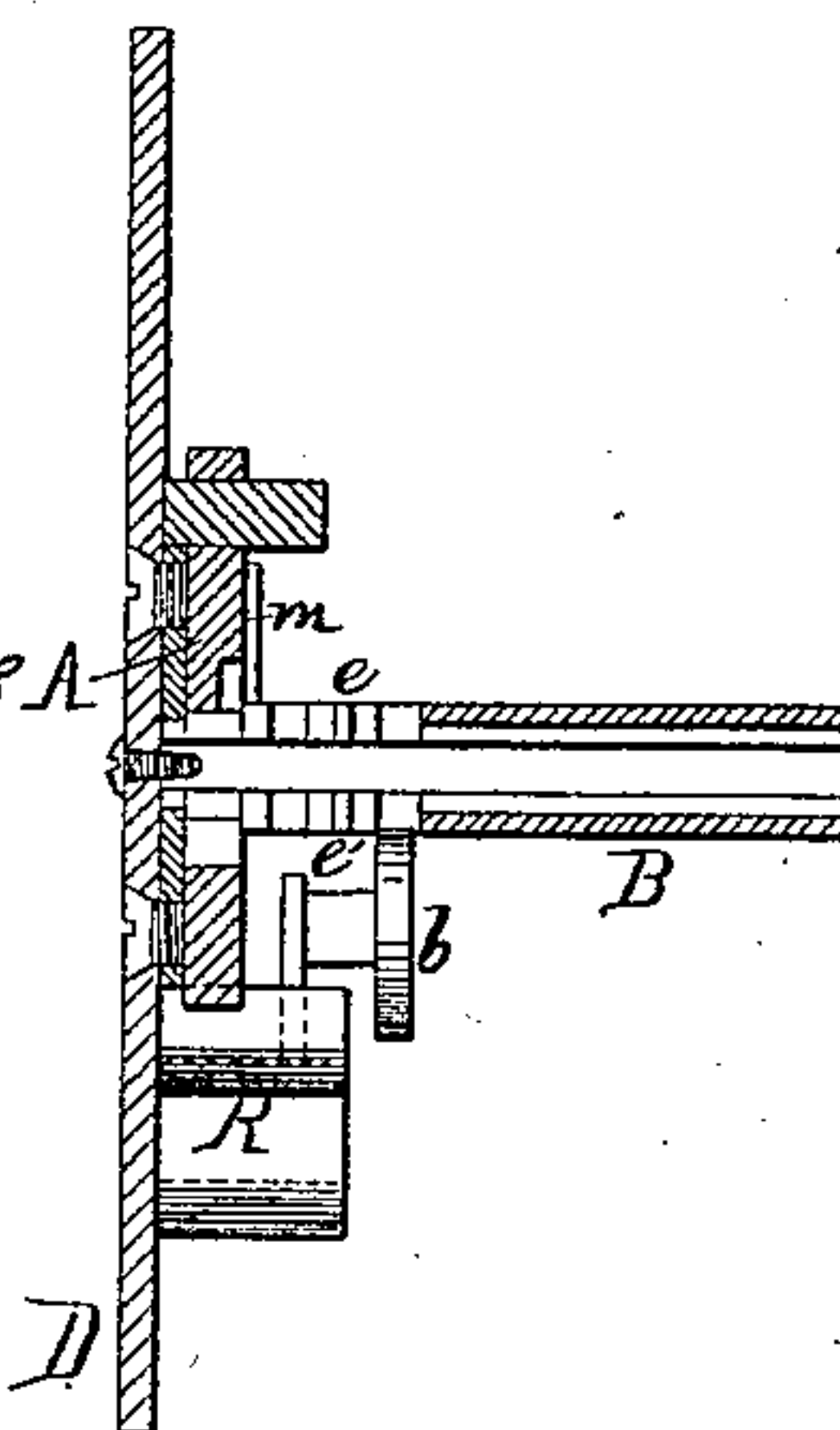


Fig. 8.

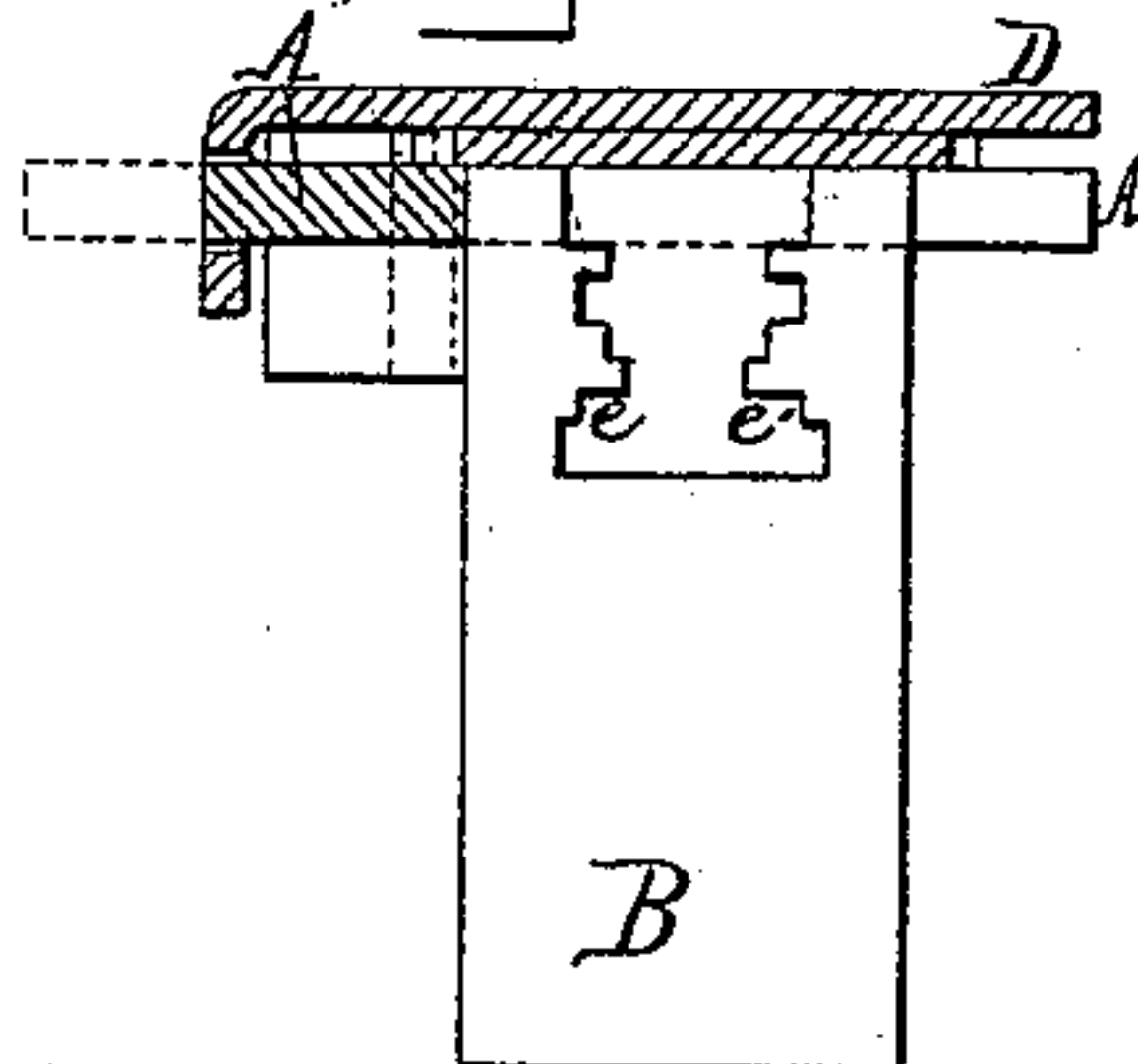


Fig. 10.

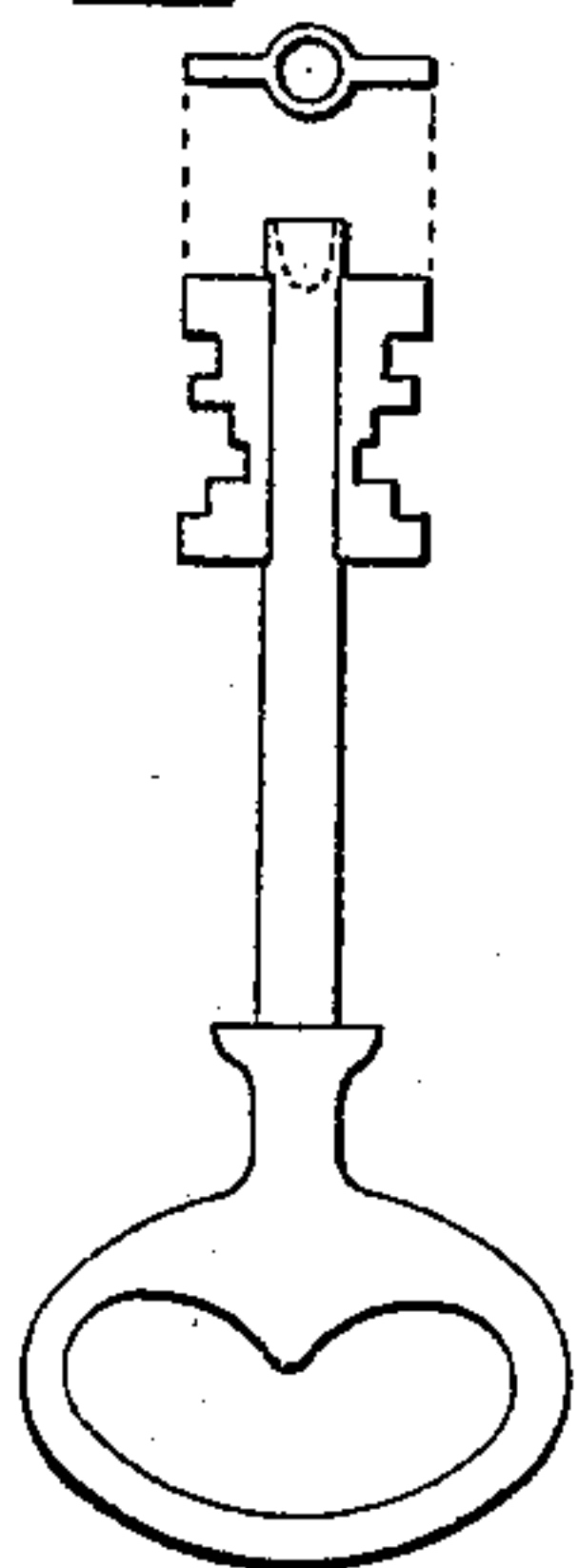
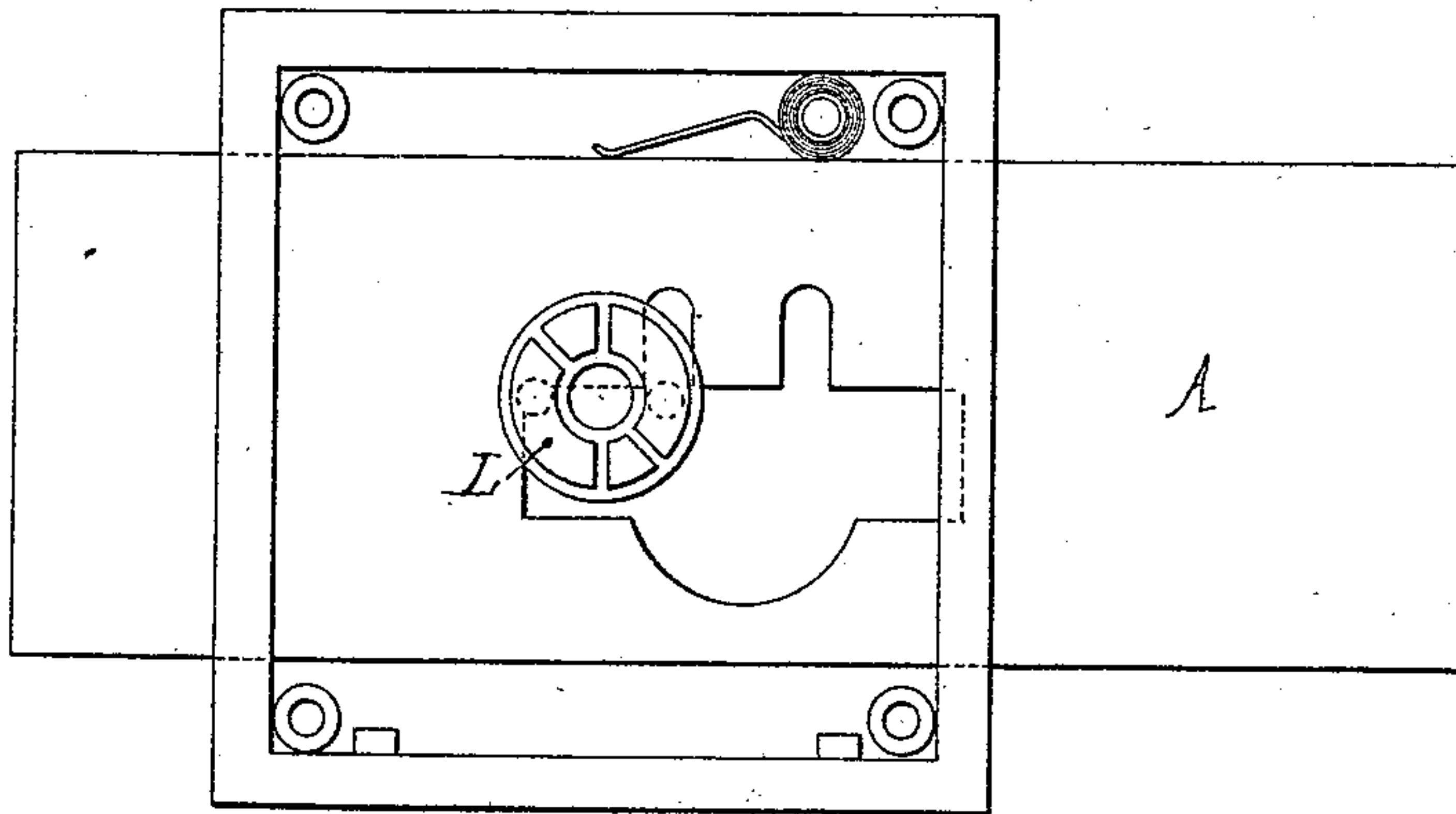


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES EMILE ALEXANDRE ALEXIS DÉNY, OF PARIS, FRANCE.

LOCK.

SPECIFICATION forming part of Letters Patent No. 448,912, dated March 24, 1891.

Application filed June 9, 1890. Serial No. 354,855. (Model.) Patented in France March 9, 1889, No. 196,585, and in England May 3, 1890, No. 6,873.

To all whom it may concern:

Be it known that I, CHARLES EMILE ALEXANDRE ALEXIS DÉNY, of Paris, Department of the Seine, in the Republic of France, have
5 invented Improvements in Mechanism for Locking and Bolting, (for which I have obtained Letters Patent in France, No. 196,585, dated March 9, 1889, and in Great Britain, No. 6,873, dated May 3, 1890,) of which the
10 following is a specification.

The improvements forming the object of the present invention relate to locks and safety-bolts, and are connected more particularly with the employment of a barrel of peculiar form designed with a view of reducing
15 the dimensions of the keys and obtaining greater security.

In the accompanying drawings, Figure 1 represents in elevation, with face-plate removed, one kind of a lock which may be provided with a barrel constructed according to my invention. Fig. 2 is a longitudinal section of the barrel. Fig. 2^a is a front view of the barrel. Fig. 3 represents a key adapted
25 to be used in the barrel shown in Fig. 2. Figs. 4 and 5 are views of the disks used in the barrel. Fig. 6 represents the part of the lock immediately behind the barrel. Fig. 7 represents a lock provided with a modified form of barrel. Fig. 8 is a sectional plan of Fig. 7,
30 taken on line 8 8. Fig. 9 is a section taken on line 9 9 of Fig. 7. Fig. 10 represents a key adapted to be used in the barrel of the lock shown in Figs. 7, 8, and 9. Fig. 11 is a view
35 of a detail.

My improved barrel attachment may be applied to various forms of locks, and it is so constructed that one small key may be provided for the opening of locks of quite different
40 character, except as to the barrel itself.

The barrel B (represented in Fig. 2) is to be fixed to the cover-plate of the lock, and it is provided with two longitudinal grooves *y y*, and an entrance *o* of small diameter with a
45 radial slot or slots for the passage of a small key with two bits, Fig. 3. Washers *c*, Figs. 2 and 4, are packed together in suitable numbers in the barrel and held therein by a ring or washer *c'*, Figs. 2 and 5, secured by screws

or otherwise to the barrel. To prevent the
50 rotation of the washers *c*, they are provided with radial projections *d d*, which enter the grooves *y y* in the barrel. Every washer *c* is provided with a radial slot *c²* and a central hole for the passage of the key. These slots
55 correspond or coincide radially with the slots in the front end of the barrel, and the central holes, being of different diameters, constitute a species of circular comb or notched chamber fitting the bit of the key. The fixed
60 ring or washer *c'* is likewise provided with a slot and a hole; but the slot does not coincide with the slot in the entrance, being set at a different angle. It results from this arrangement that the key when pushed into the bar-
65 rel is stopped by this fixed washer *c'*, and the key cannot be turned unless the openings in the centers of the other washers correspond perfectly with the form of the bits of the key. Each washer *c* has a second slot *c³*,
70 which coincides with the slot in the washer *c'*. If the washers *c* correspond with the bits of the key, the key can be turned in the barrel until its bits are at such an angle as to enable it to enter the slot in the fixed washer,
75 through which it has to pass in order to enter the lock. If the fixed washer *c'* should not be used, the second radial slot *c³* may be dispensed with. It can thus be seen that it becomes possible to furnish locks of different
80 combinations and to have for each of them a special key, and also to have a key which will fit all the combinations.

In the interior of the lock and covered by the barrel there is a lantern-piece *L*, Figs. 2 and
85 6, likewise provided with a radial slot for the reception of the bit of the key with which it becomes connected. This lantern-piece is capable of rotation and is provided with a false bit to act on the talons of the bolt and on
90 its levers or plates (when such are employed) to move the bolt.

The barrel or tube presents the advantages of being unpickable and of great strength, all its parts being fixed, and it requires a key
95 of relatively very small dimensions.

For greater security a warded disk *a* may be provided on the front or back of the fixed

ring c' . This disk a is shown in Fig. 11 as provided with projections $a' a'$ to act as wards with which the bit of the key must correspond, as indicated by dotted lines in Fig. 3, in order to rotate.

The barrel B can be applied to a safety-bolt and act in combination with a rotating knob or handle connected to the lantern L, which receives the action of the key and transmits it to the bolt, as indicated in Fig. 6.

Fig. 1 represents the barrel B as applied to a lock having a forked bolt A with two heads $n n'$ capable of a throw of two turns and a half. The other turns are obtained by means of the key and the lantern-bit L', while the half-turn is obtained by an additional movement of the key from the outside and by the sliding knob M on the inside.

In cabinet or furniture locks of small size the barrel or tube is preferably constructed in the manner represented in Figs. 7, 8, and 9. In these figures the key-barrel B is a flat tube of rectangular form in transverse section with a symmetrical or regularly-formed opening or entrance for the insertion of the double-bitted key. It is perforated at its upper and lower sides with stepped or notched openings $e e'$ in place of the comb or steps formed by the stationary washers c , of the construction before described. The barrel thus formed acts in the same manner as the cylindrical barrel before described; but its construction is more simple and more economical. Of course the steps or notches in the openings $e e'$ must be of corresponding form to the bits of the key, Fig. 10, in order that the latter may turn freely, and the openings are different in each lock, which thus retains its individuality. The bolt A is forked and the legs pass on opposite sides of the tube. One leg carries the talons, which are acted on by outer bits of the key, and the other is provided with notches engaging with the stop-spring R. The key, after being turned so that the bits pass through and project from the openings $e e'$ in the side of the flattened tube, acts simultaneously and in opposite directions on the bolt and on an anti-friction roller b on the spring catch or stop R. The movement resulting from this action is very smooth, the resistance to be overcome being balanced or equalized. In order to obtain further security, a thin plate or curtain m covers the talons of the bolt and opposes the introduction of a pick, and with the same object the bowl or anti-friction roller b on the spring-catch on the opposite side can be arranged at any desired level facing the notched or stepped opening.

Cabinet-locks constructed under these conditions are of great strength, but at the same time devoid of complication, and present perfect safety, as hereinbefore explained.

In conclusion, it should be observed that all the parts embodying my invention can be composed of any suitable metal and be of any

suitable shapes and dimensions. I do not limit myself as to their combination or grouping and connection, which may be modified according to circumstances and conditions arising from practice and in accordance with the type of lock in which they are employed. For example, the comb or stepped chamber in the barrel, in place of being formed with washers c , placed one over the other in suitable numbers, may be formed of a single piece obtained by any suitable means and corresponding to the notches or steps in the bits of the key.

I claim as my invention—

1. A lock having a bolt and at the side a barrel with a slotted opening and a notched chamber and a key with like bits on both sides of the stem to correspond with the notches in the chamber, whereby the key may make a complete rotation in the barrel, substantially as described.
2. A lock having a bolt, and also a barrel provided with a slotted opening and a notched chamber to correspond with the bits of the key, and a fixed ring or washer having a slot at an angle to the slot in the barrel, as and for the purposes set forth.
3. A lock having a bolt and a barrel provided with a slotted opening and washers, each washer having a central opening to correspond to one of the bits of the key, and a radial slot, substantially as and for the purposes set forth.
4. A lock having a bolt and a barrel provided with a slotted opening and washers, each washer having a central opening to correspond to one of the bits of the key, a radial slot, and one or more warded disks, substantially as set forth.
5. A lock having a bolt and a barrel having a slotted opening and washers, each of which has a central opening and two radial slots, one to correspond with the slot in the barrel and the other at an angle to the first slot.
6. A lock having a bolt, a barrel provided with a slotted opening and a fixed washer having a central opening and a slot at an angle to the slot in the barrel, and additional washers, each having a central opening and two radial slots, one to correspond with the slot in the barrel and the other to correspond with the slot in the fixed washer, all substantially as and for the purposes set forth.
7. A lock having a bolt and a barrel provided with a slotted opening and washers, each having a central opening, two radial slots, one to correspond with the slot in the barrel and the other at an angle thereto, and a lantern-piece into which the key is adapted to pass to operate the bolt, all substantially as and for the purpose set forth.
8. A lock having a bolt and a barrel provided with a slotted opening and a fixed washer having a central opening and a slot at an angle to the slot in the barrel, addi-

tional washers, each having a central opening and two radial slots, one to correspond with the slot in the barrel and the other to correspond with the slot in the fixed washer,
5 and a lantern provided with a radial slot to receive the key to operate the bolt.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

CHARLES EMILE ALEXANDRE ALEXIS DÉNY.

Witnesses:

LEVI FRANCKEN,
R. J. PRESTON.