

(No Model.)

2 Sheets—Sheet 1.

C. E. D'ENY.  
LOCK.

No. 487,945.

Patented Dec. 13, 1892.

Fig. 2.

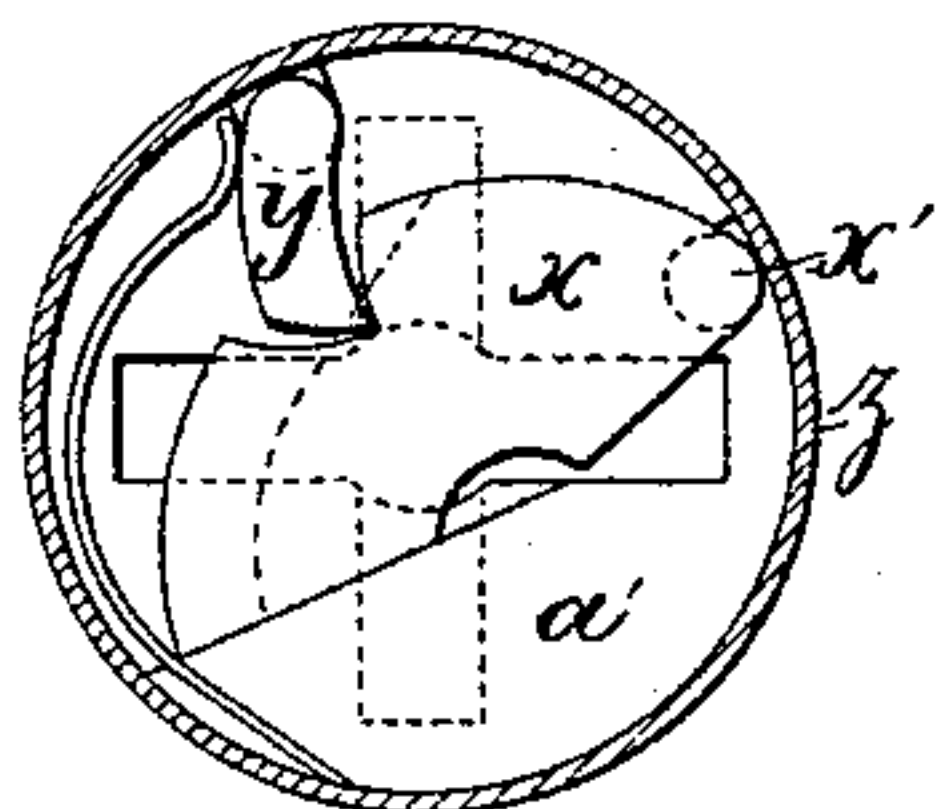


Fig. 3.

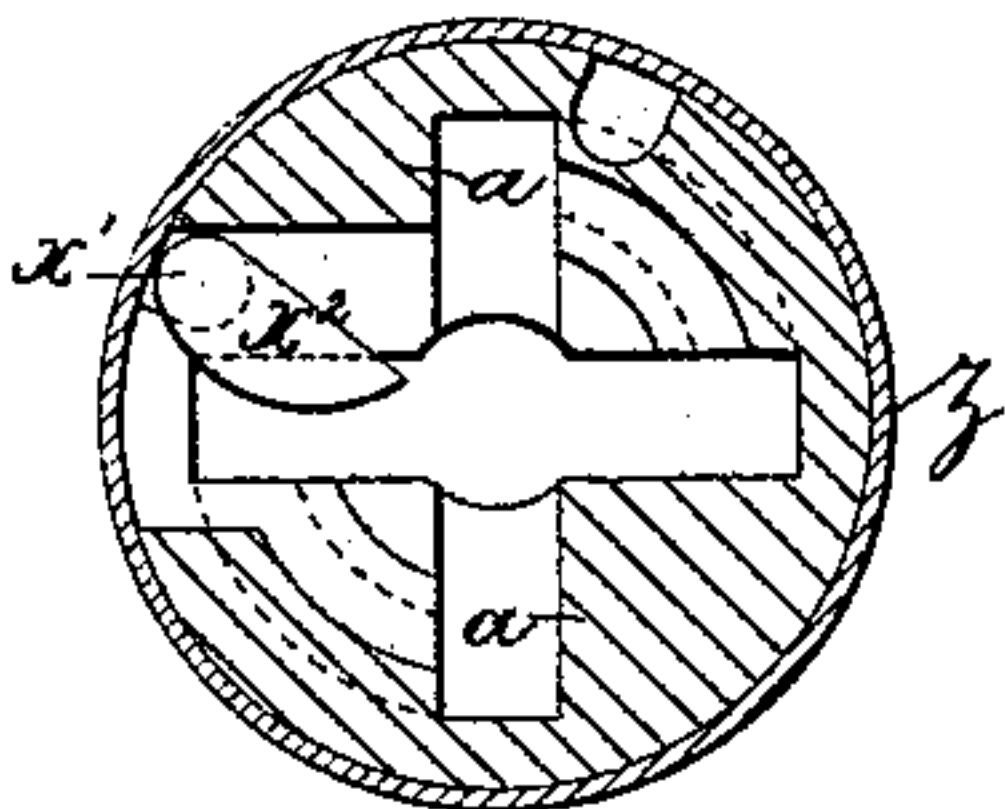


Fig. 4.

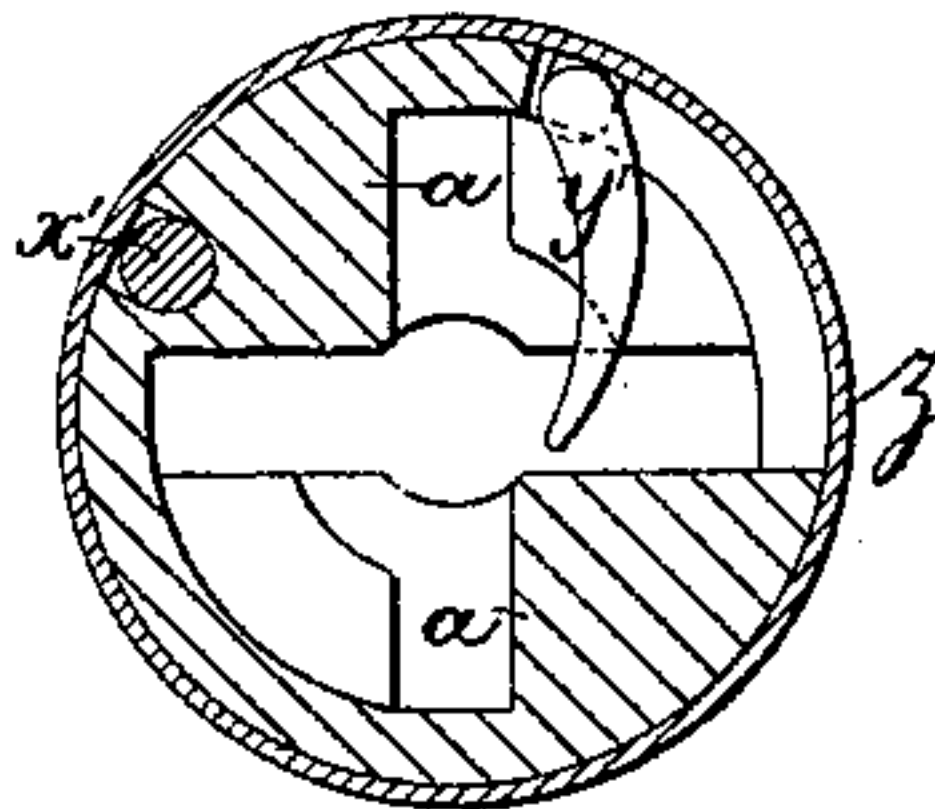


Fig. 5.

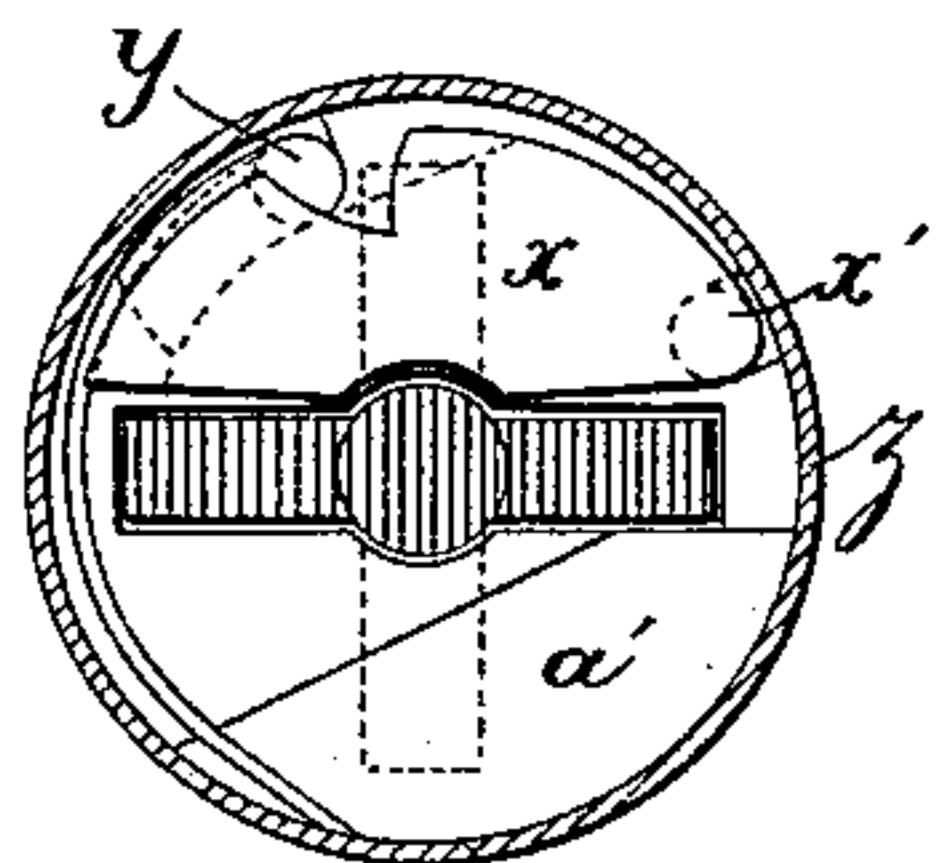


Fig. 6.

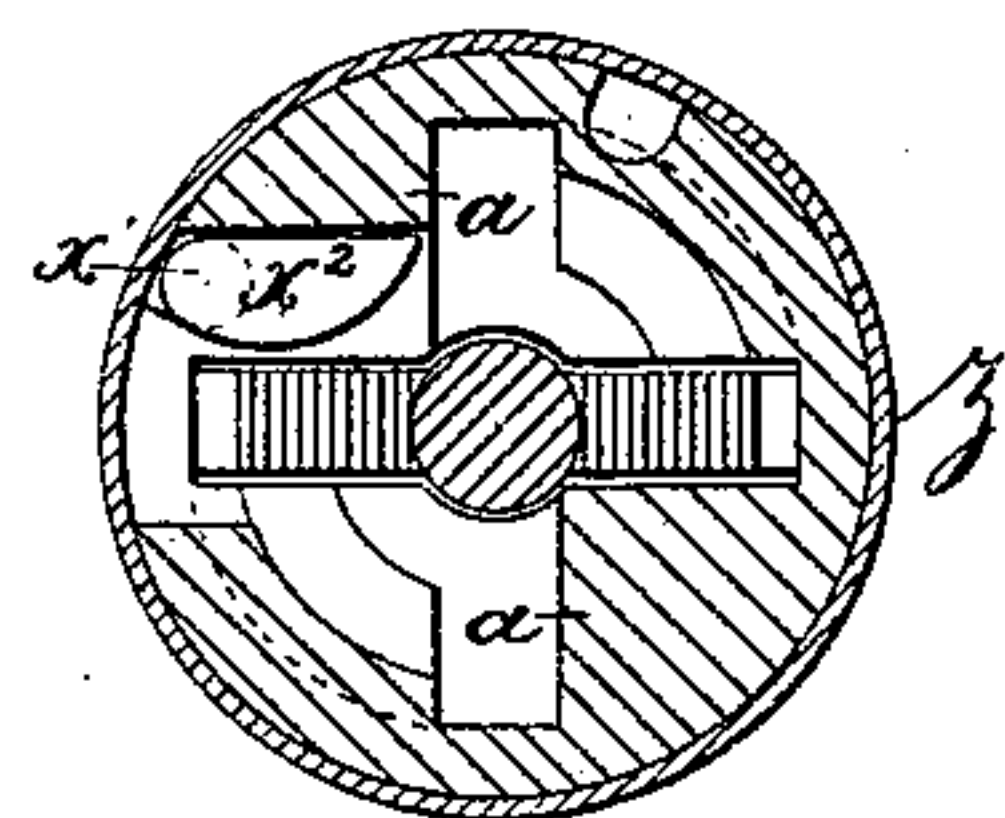


Fig. 7.

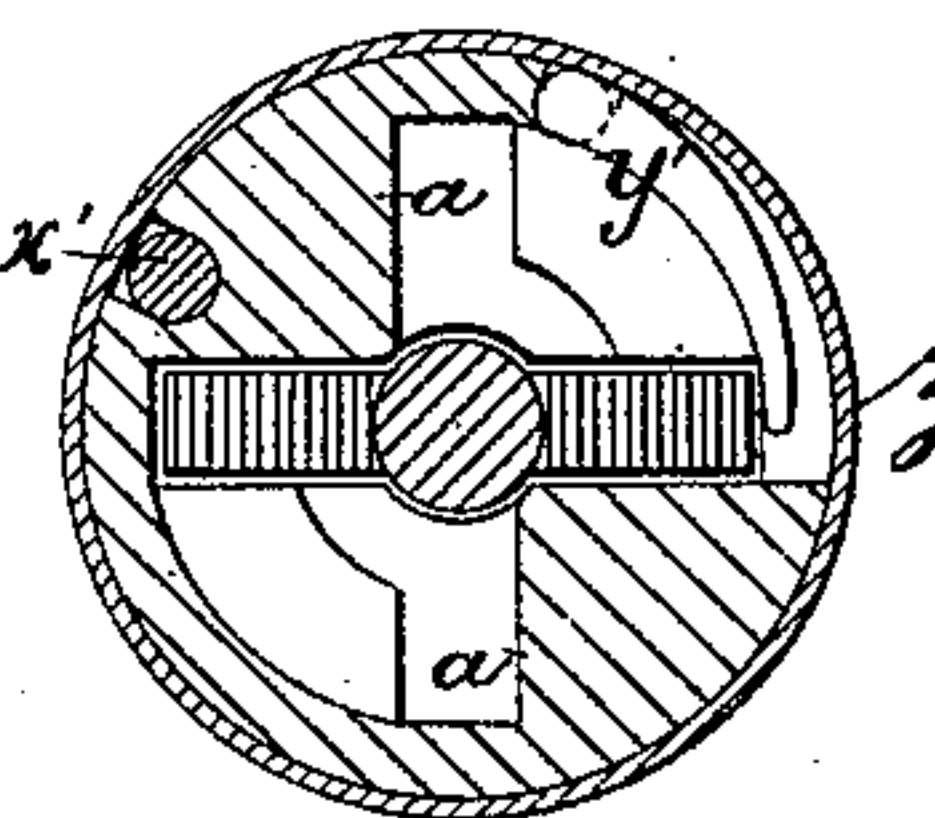


Fig. 12.

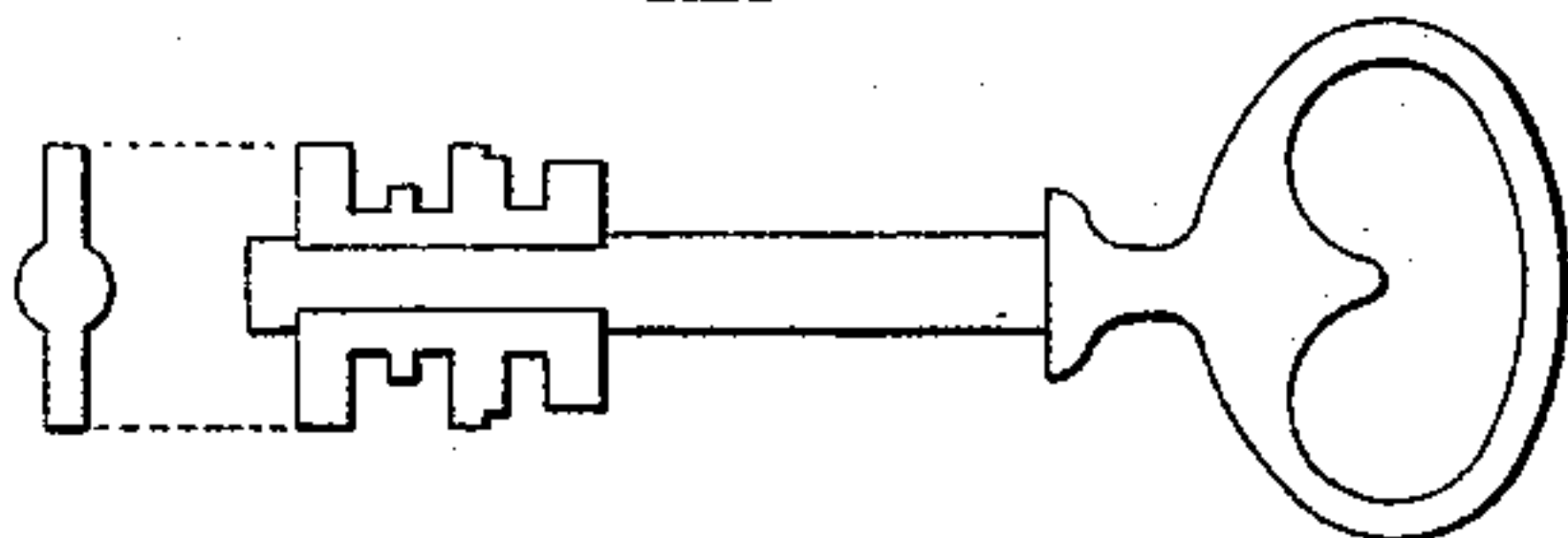


Fig. 1.

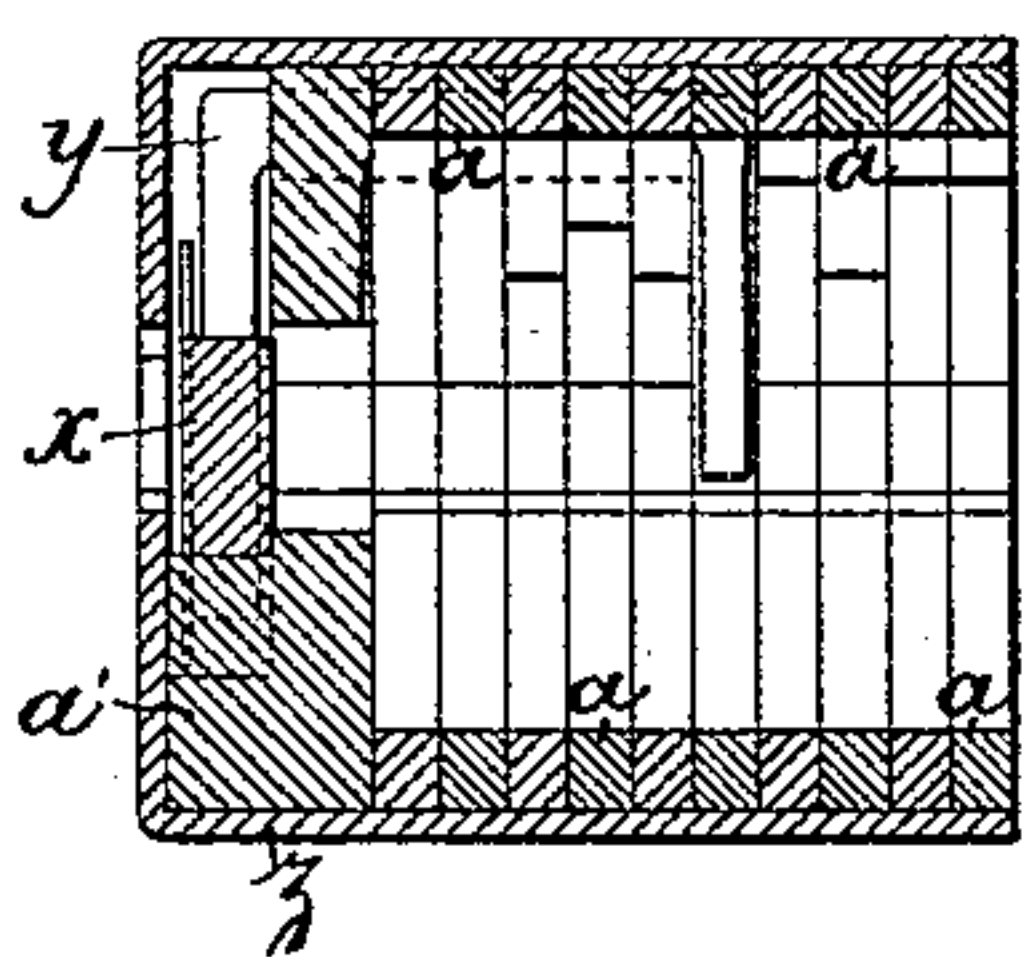


Fig. 8.

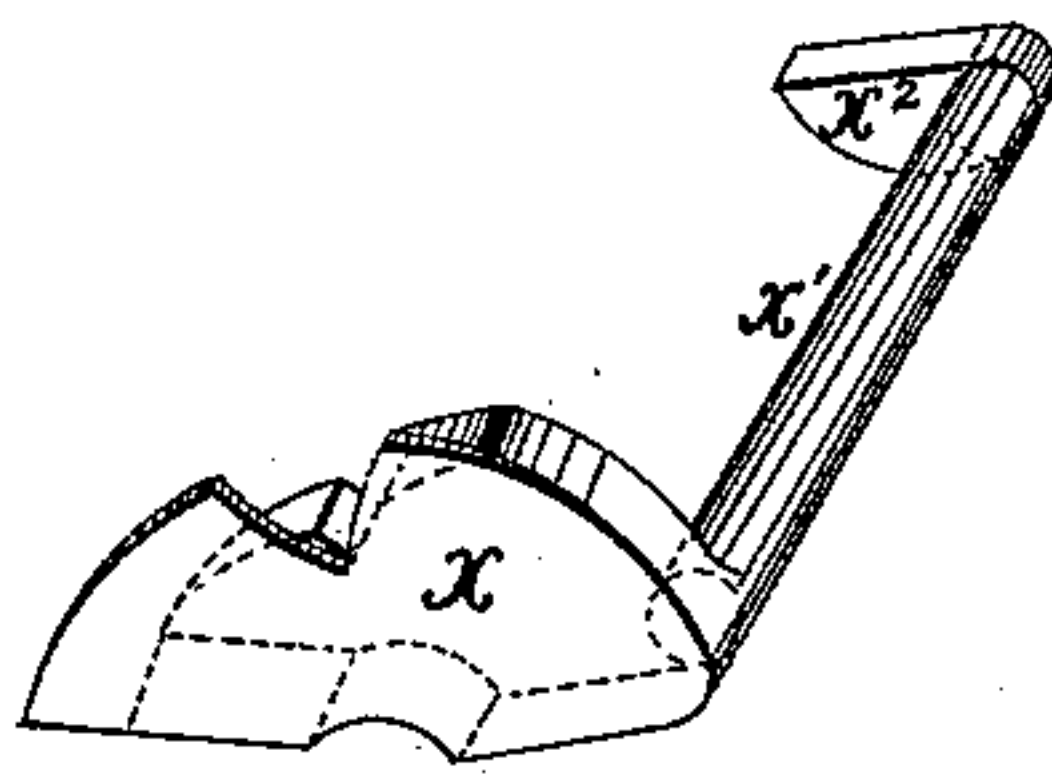


Fig. 9.



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2 Sheets—Sheet 2.

C. E. DÉNY.  
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Fig. 10.

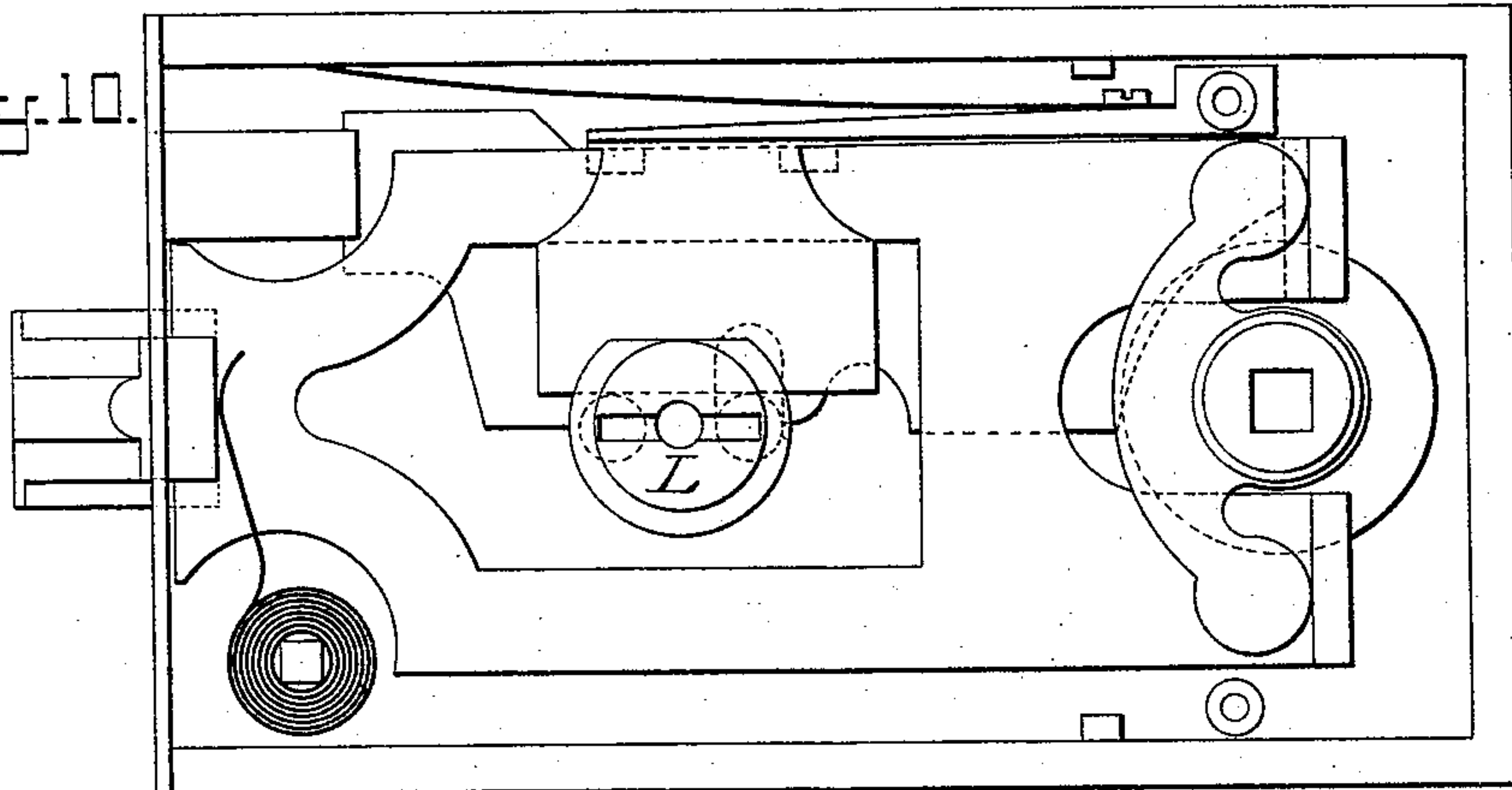
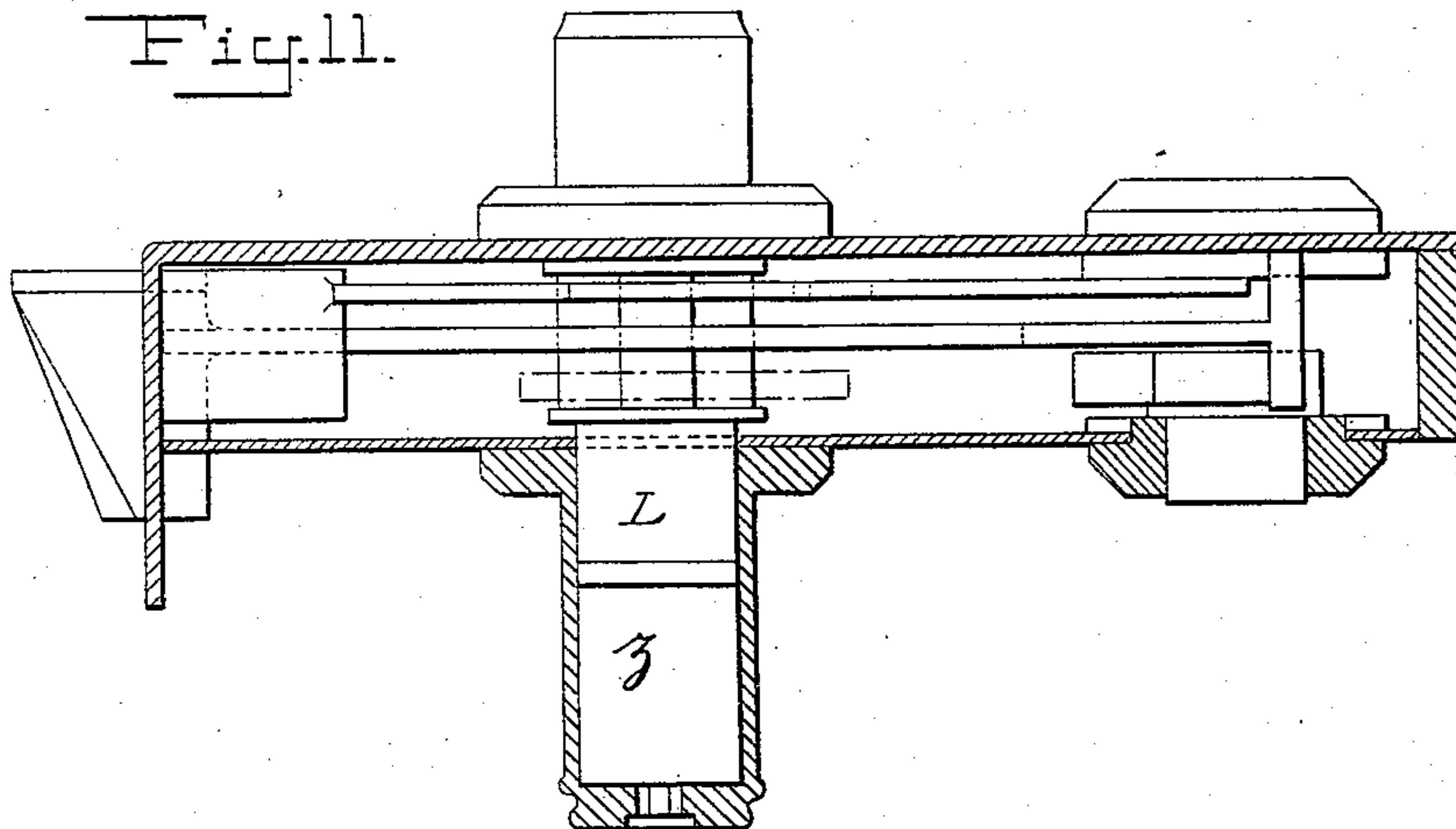


Fig. 11.



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# UNITED STATES PATENT OFFICE.

CHARLES EMILE DÉNY, OF PARIS, FRANCE.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 487,945, dated December 13, 1892.

Application filed March 24, 1892. Serial No. 426,225. (No model.) Patented in France March 9, 1889, No. 196,585; in England May 3, 1890, No. 6,873; in Italy December 31, 1891, No. 30,981, and in Spain January 18, 1892, No. 12,811.

*To all whom it may concern:*

Be it known that I, CHARLES EMILE DÉNY, manufacturer, a citizen of the Republic of France, residing in Paris, France, have invented certain Improvements in Mechanism for Locking and Bolting, (for which I have obtained patents in France, No. 196,585, dated March 9, 1889; in Great Britain, No. 6,873, dated May 3, 1890; in Spain, No. 12,811, dated January 18, 1892, and in Italy, No. 30,981, dated December 31, 1891,) of which the following is a specification.

This invention relates to lock mechanism of the class described in the specification annexed to Letters Patent granted to me and dated March 24, 1891, No. 448,912; and it consists of improvements which I have introduced in the arrangements set forth in that specification and which are intended to increase the safety of the locks and bolts and render them absolutely unpickable.

In my said former specification I have described a barrel formed by a series of disks or washers presenting a central orifice and two radial slots constituting a comb-chamber in which the key must be rotated in order to enable it to be presented to a radial slot in a washer through which it has to pass before it can enter the lock or bolt wherein it acts upon a lantern-piece which is moved by the bit of the key and actuates the bolt.

The object of my present invention being to obtain greater safety, the barrel is combined with a curtain or shutter plate which blocks the passage of the key until the latter has released the said cover by the action of its bit.

My present invention further relates to the mode of making the barrel itself in one piece. In order that my improvements may be clearly understood, I will now proceed to describe them in detail with reference to the accompanying drawings.

Figures 1 to 9 of the drawings represent in longitudinal sections and transverse sections, respectively, and in different positions, the safety devices forming the object of the present invention being combined with a barrel forming a comb-chamber such as is described in my former specification, No. 448,912. Figs. 10 and 11 represent in front elevation and

horizontal section, respectively, a lock with a latch or chamber-lock provided with the modified barrel. Fig. 12 represents the key employed with the barrel.

The barrel comprises a series of washers *a*, perforated with radial slots arranged at any angle to one another and with a central aperture for the passage of the key. All the slots in these washers are of the same size and are placed exactly one over the other, but the central aperture is of a different diameter in each washer. One of the series of slots corresponds with the entrance to the barrel and the other series corresponds with a single radial slot formed in a washer *a'*, forming the end of the barrel and allowing the bit of the key to pass when the latter has rotated in the comb-chamber of the barrel.

In my former specification the washers are described as being independent and the comb-chamber which they formed as being of a circular form. According to the present arrangement, I solder or weld all the washers together so as to form one solid block, and the orifices, in place of being made of circular shape, form in the case of the larger washers only notches or recesses, which enable them to be utilized as stops to the rotation of the key engaged in the barrel. This mode of construction of the barrel is illustrated in Figs. 1 to 9 of the drawings. This barrel applied to any kind of lock enables a key of very small dimensions to be employed, and the bit of the key may be cut in such a manner as to enable the same key to operate different locks. These advantages are referred to in my former specification. In order to increase the security afforded by this barrel, I combine with it a curtain or shutter plate with a pawl, the said plate covering the slot in the washer *a'* until the key itself forces this passage by performing its rotation in the barrel. The curtain or shutter plate *x*, Figs. 1 and 2, is connected to a spindle *x'*, the opposite extremity of which is provided with a short arm *x''*, Fig. 8. The spindle *x'* works in a longitudinal recess, Fig. 4, formed in the edges of the washers *a* and *a'*, so that the shutter is presented at the rear end of the block or cylinder formed by the said washers, Fig. 2, while the arm *x''* projects inwardly, being placed opposite to or in



the plane of any one of the washers  $a$ . The pawl  $y$ , Fig. 9, is provided with a lever or tail  $y'$  and is likewise arranged in a longitudinal recess in the edges of the washers  $a$  and  $a'$  and presents itself in the same plane as the shutter, Fig. 2. The tail  $y'$  projects into the barrel through any one of the washers  $a$ , so as to project, Fig. 4, into the comb-chamber in the same way as the cam  $x^2$ .

The shutter  $x$  is provided on its periphery or edge with one or more teeth, (and may resemble a toothed quadrant,) and the pawl  $y$  engages with this tooth or these teeth, Fig. 2. The shutter and the catch are actuated by the influence of their own weight; but counter-springs may be provided, if required.

The series of washers  $a$  and  $a'$ , provided with the shutter  $x$  and catch  $y$ , is covered by or inclosed in a sheath or case  $z$ , which retains all the parts in position without interfering with the freedom of movement of the shutter and pawl, which by their own weight are caused to assume the closed position represented in Figs. 1, 2, 3, and 4. The case  $z$  is provided with a slot corresponding with the slot in the washer  $a'$  and set at an angle to the slot at the entrance to the barrel.

When the key, Fig. 12, is introduced into the barrel and caused to rotate in the comb-chamber from left to right, its bit acts in the first place upon the tail  $y'$  and moving it into the position indicated in Fig. 7 liberates the shutter by elevating and disengaging the pawl. The bit then acts upon the arm  $x^2$ , Fig. 6, and elevates the shutter  $x$ , which then exposes the slot in the washer  $a'$ , Fig. 5, and enables the key to be pushed into the lock, where it engages with the lantern L, Figs. 10 and 11, and acts upon the latter in the usual way for the purpose of shooting the bolt. By means of this arrangement the key is compelled to operate two devices—namely, the pawl and the shutter—before it can enter the lock, and absolute security is thus insured, it being practically impossible to cause a pick to act upon these two devices simultaneously in such a manner as to enable it to expose the opening and pass the obstacle.

I claim as my invention—

1. In a lock, the combination of a barrel provided with a slotted washer  $a'$  with a shutter normally covering the slot in the said washer and means for moving aside the said shutter by the key, substantially as set forth.

2. In a lock, the combination of a barrel provided with a slotted washer  $a'$  with a spindle working in a recess in the barrel and provided at one end with a shutter adapted to normally cover the slot in the washer  $a'$  and at the other end provided with an arm  $x^2$ , projecting into the path of the rotation of the key in the barrel, all substantially as and for the purposes set forth.

3. In a lock, the combination of a barrel provided with a slotted washer  $a'$  with a shutter normally covering the slot in the said washer, a catch to lock the shutter, and means for moving the catch and the shutter by the key, all substantially as and for the purposes set forth.

4. In a lock, the combination of a barrel provided with a slotted washer  $a'$  with a shutter normally covering the slot in the said washer, a spindle for the shutter, provided at its extremity with an arm  $x^2$ , a catch to engage the shutter, the said catch being provided with a tail  $y'$ , the said arm  $x^2$  and the said tail  $y'$ , adapted to be acted upon by the rotation of the key in the barrel, all substantially as and for the purposes set forth.

5. In a lock, the combination of a barrel provided with washers having different-sized openings and a slotted washer  $a'$  in front of the lock with a shutter normally covering the slot in the said washer, and an arm  $x^2$ , connected to the shutter and projecting into the opening in one of the first-named washers, the said arm adapted to be acted upon by turning the key in the barrel, all substantially as and for the purposes set forth.

6. In a lock, the combination of washers having different-sized openings and a slotted washer  $a'$ , the said washers being welded together and incased to form a barrel in front of the bolt, with a shutter normally covering the slot in the washer  $a'$ , a catch to lock the said shutter, and means for releasing the catch and removing the shutter by turning the key in the said barrel, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES EMILE DÉNY.

Witnesses:

LEVI CRAWKENS,  
ROBT. M. HOOPER.