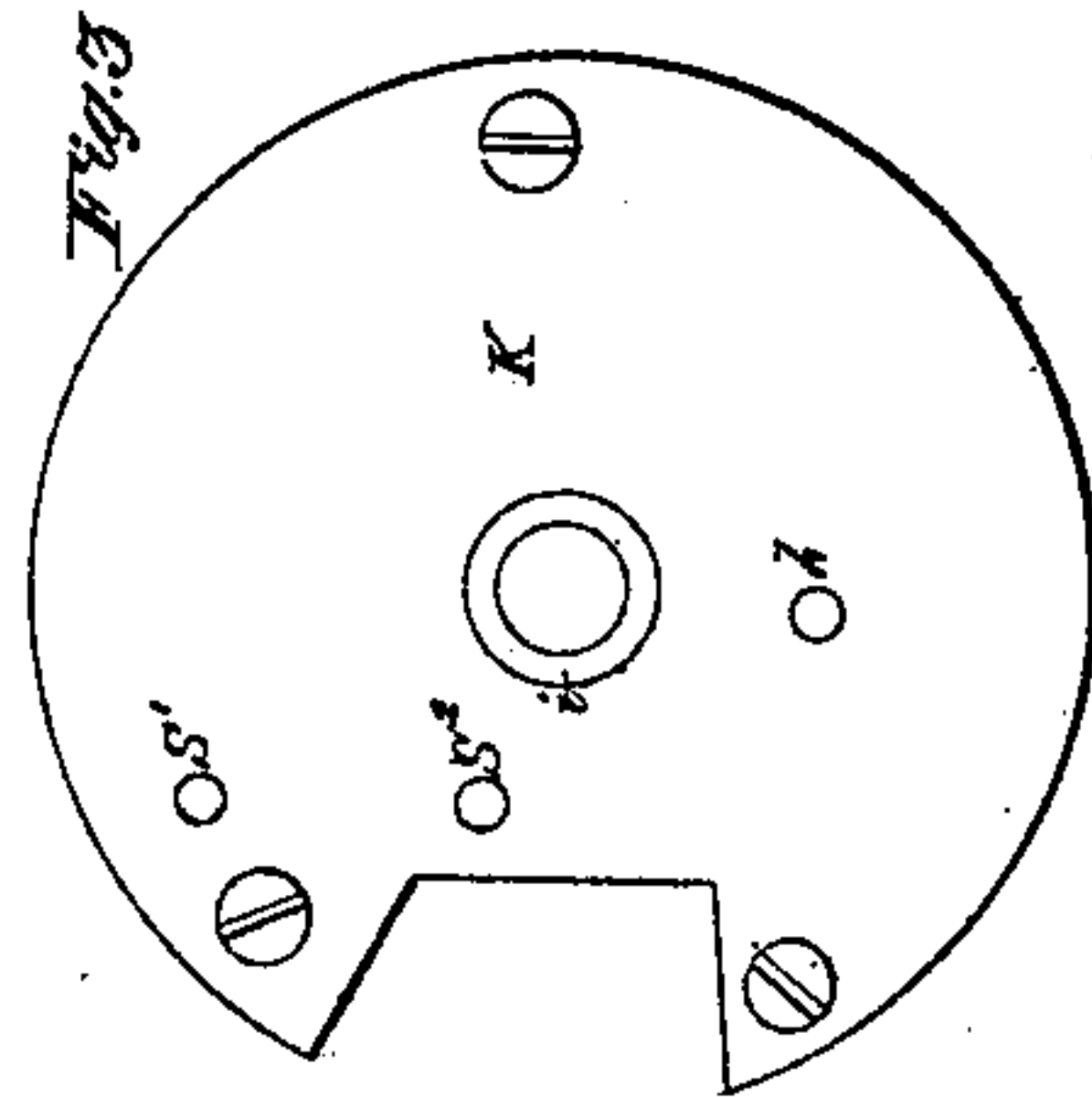
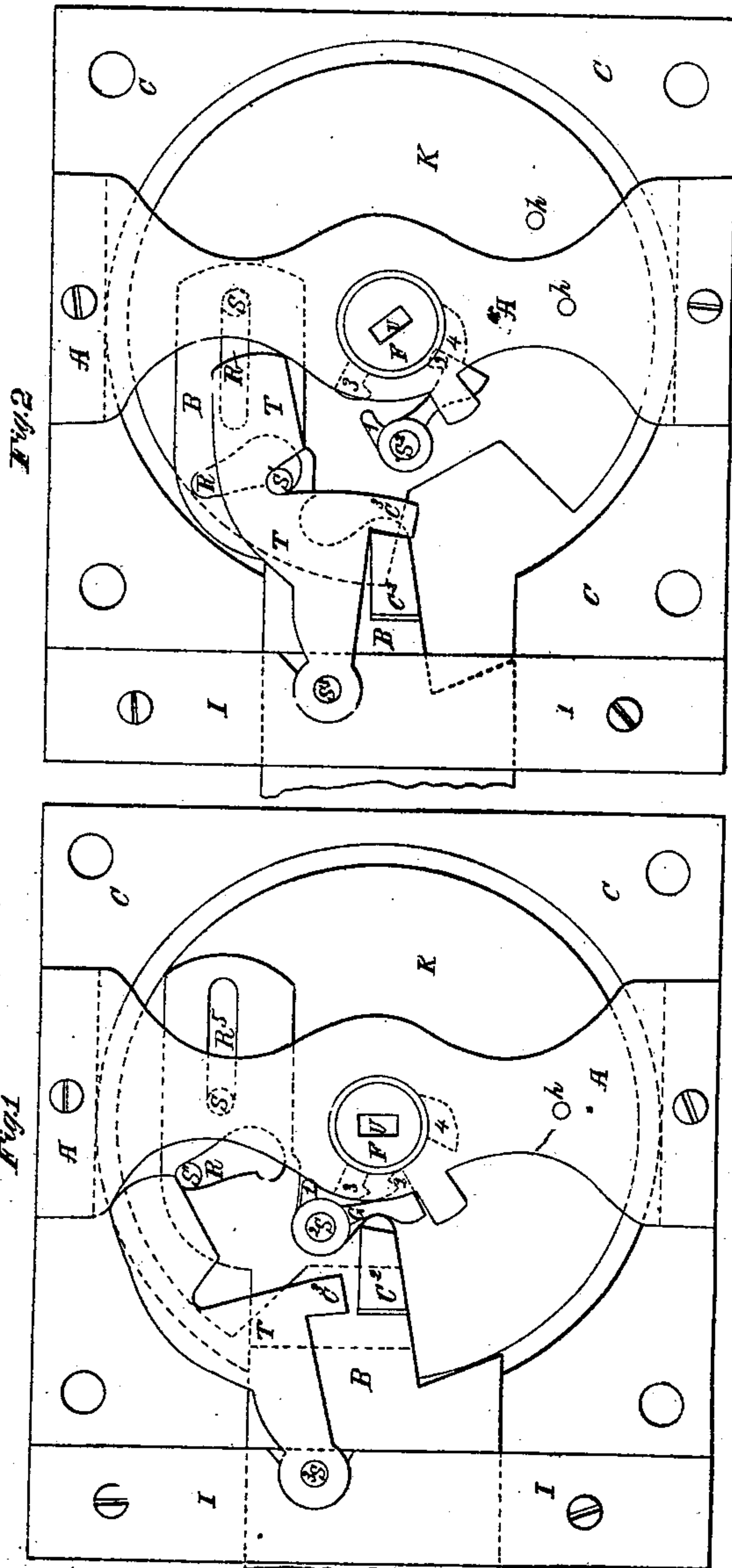


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PERMUTATION LOCK.

No. 68,281.

Patented Aug. 27, 1867.



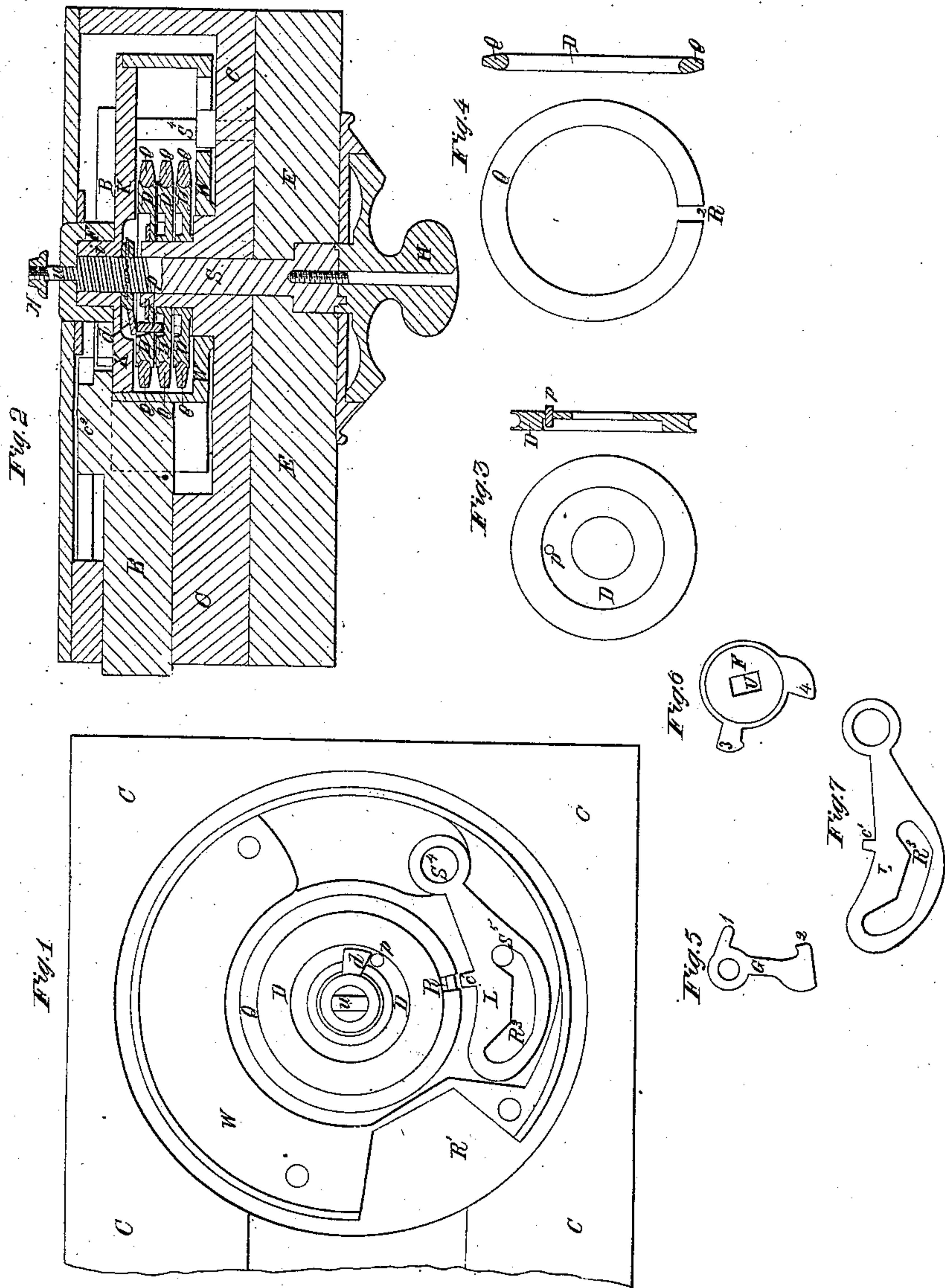
Witnesses:  
Arthur Parkinson  
Samuel Booth

Inventor:  
Edward W. Brettell

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# United States Patent Office.

EDWARD W. BRETTELL, OF NEWARK, NEW JERSEY.

*Letters Patent No. 68,281, dated August 27, 1867.*

## IMPROVEMENT IN PERMUTATION LOCKS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, EDWARD W. BRETTELL, of the city of Newark, in the county of Essex, and State of New Jersey, have invented a new and useful Bank-Lock; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon. The accompanying drawings form a part of this specification.

Figure 1, plate 1, is a front view, showing it unlocked.

Figure 2, plate 1, is a front view, showing it locked.

Figure 3, plate 1, is a cap covering the interior of the lock, with its other mechanisms, &c.

Figure 1, plate 2, is a front view with the cap removed, showing the interior of the lock, with its several parts.

Figure 2, plate 2, is a sectional view, showing the position of its several parts relatively to each other.

Figure 3, plate 2, is a front and edge of the disks.

Figure 4, plate 2, is a front and edge view of a circular spring, with its recess.

Figure 5, plate 2, is a swivelling-dog with two claws.

Figure 6, plate 2, is a claw-socket with two claws.

Figure 7, plate 2, is a lever with a recess and check.

Similar letters of reference indicate like parts in all the figures.

My invention is intended to make a lock more secure against "burglars," and little objectionable on account of cost.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation by the aid of the drawings and of the letters of reference marked thereon.

C is a casing, with a hollow shaft in the centre, containing also a stump,  $s^1$ , better seen in fig. 1, plate 2.

Fig. 1, plate 2. W is a hollow wheel, containing a stump,  $s^2$ , also a recess,  $R^1$ .

Fig. 3, plate 2. D is a series of disks, grooved on the edge, showing the position of the pins  $p$ , by which they are changed.

Fig. 4, plate 2. Q are circular springs, with a recess,  $R^2$ , which are sprung into the grooves of the disks D, and by their own elasticity are held in their proper places.

Fig. 5, plate 2. G is a swivelling-dog with two claws, 1 and 2, and swings independently of all other parts on the stump  $s^2$  of the cap K.

Fig. 6, plate 2. F is a claw-socket, and has two claws, 3 and 4, similar to those of the swivelling-dog G, and fits over the collar  $i$  on the cap K. It has also a square hole, U, the particular use of which will be hereafter described.

Figure 7, plate 2. L is a lever containing a small check,  $c^1$ , on the inner edge, and also the recess  $R^3$ , in which the stump  $s^2$  of the wheel W works, the other end of the lever being held in its place by the stump  $s^4$  of the casing C, (see fig. 1, plate 2,) which is stationary.

Figs. 1 and 2, plate 2.  $d$  is a dog attached to the shaft S, the object of which is to turn or change the disks by touching the pin  $p$  of the outside disk, it in turn communicating its motion to the others, &c.

Fig. 2, plate 2. H is a knob secured to the shaft S, and figured or lettered the same as many others now in use.

Fig. 2, plate 2. S is a shaft passing through the entire lock, the end of which is square, allowing of a nut N being screwed on, thus preventing its being entirely drawn out. E represents the door with the dial-plate attached thereon.

Figs. 1 and 2, plate 1. B is a bolt, with a check  $c^2$  on its lower edge, containing also two recesses,  $R^4$  and  $R^5$ , in which two stumps  $s$  and  $s^1$  work, thereby giving motion to the bolt; also assisting to guide the same. The bolt lying on the outside of the cap K receives its motion from the same through the stumps before mentioned.

I is the cross-bar for the purpose of holding the bolt in its proper place, and is screwed to the casing across the nose of the bolt, as seen in figs. 1 and 2, plate 1. It also contains a stump,  $s^3$ , on which one end of the tumbler T works, the other end receiving its motion from the same stump  $s^1$  as throws the bolt. On the lower edge of this tumbler will be found a check,  $c^3$ , for the purpose of assisting the wheel W to back up the bolt, as will be seen in fig. 2. It has but two actions, upward and downward, the stump raising it, it falling back of its own weight.



Figs. 1 and 2. A is a bridge for the purpose of holding the claw-socket F in its place on the cap K, and also to give support to the wheel W, but allowing of the free action of either.

Having now described the various parts, I will now describe its operation.

First throw out the bolt; as shown in fig. 2, plate 1, then pass a flat piece of wire through the small hole *h* into the recesses of circular springs Q, thereby spreading them apart, likewise holding them opposite to the check *c'* on the lever L, fig. 1, plate 2, then pull the knob out and, turning to the right or left, set to any figures desired. If we now withdraw the wire the circular springs will resume their proper positions, holding each disk to the number or letter to which it may have been set. We will now push the knob in, and, by turning it to the right or left, we can throw the bolt in or out. As the lock is now set, all that is necessary to lock it is, first to throw out the bolt, then pull out the knob and turn it round three or four times, either to the right or left. It is now locked, and can be opened only by the figures or letters by which it may have been set.

We will now observe the movement of the several parts. By reference to figs. 1 and 2, plate 1, we will find that there is a square hole in the claw-socket F, the object of which is to allow of the square end of the shaft to enter, the socket being the portion by which we communicate motion to all other portions of the lock. We now give the knob a quick and sudden turn to the right. The claw 3 strikes claw 1 on the swivelling-dog G, passing it and causing claw 2 to swing up in time to be caught by claw 4 of the claw-socket, which holds it while we turn the wheel W. As soon as the wheel W begins to move, the lever L, fig. 1, plate 2, is raised by the stump *s'* of the wheel, causing the check of the lever to enter the recess of the circular springs Q, but at no time allowing it to remain in the recess, locked or unlocked. At the same time that we turn the wheel so as to cause the lever to move we also cause the stump *s'* of the cap K to raise the tumbler T, so as to clear the check *c'* of the bolt, at which point the bolt begins to move back toward the recess in the wheel, and as we keep turning it enters it far enough to allow the door to be opened, and of course the lock is unlocked, the tumbler T resting upon the stump *s'*, by which it was raised. In locking we turn the wheel to the left, which throws the bolt B out and the tumbler T drops of its own weight in its proper place behind the check *c'* of the bolt, and as we keep turning the place, formerly occupied by the recess of the wheel is occupied by a solid portion of the wheel, which backs the bolt up solid, as seen in fig. 2, plate 1. If we now pull the knob out we cause the claw-socket to lose its hold of the swivelling-dog, and by turning the knob to the right or left a few times we change the recesses of the circular springs, and the lock can be opened only by the figures or letters by which it was set, no matter how many times you turn the knob either to the left or right. Pushed in or pulled out, backward or forward, it is the same; it can be opened only by the same figures or letters by which it was set.

Having now fully described my lock, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. I claim the wheel W, the stumps *s'* and *s''*, the recess R<sup>1</sup>, and the cap K, with its stumps *s'* and *s''*, as shown in fig. 1, plate 2, and fig. 3, plate 1, when arranged in the manner and for the purpose herein set forth.

2. I claim the lever L, with recess R<sup>2</sup> and check *c'*, as shown in figs. 1 and 7, plate 2, substantially in the manner and for the purpose herein set forth.

3. I claim the cross-bar I, with its stump *s'*, also the tumbler T, as shown figs. 1 and 2, plate 1, in the manner and for the purpose herein set forth.

4. I claim the swivelling-dog G and the claw-socket F, as shown in figs. 1 and 2, plate 1, and figs. 5 and 6, plate 2, when arranged in the manner and for the purpose herein set forth.

EDWARD W. BRETTELL.

Witnesses:

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