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JOSEPH CORBETT.

ASSR. TO THE AM. SEAL LOCK CO.
PADLOCK.

PATENTED NOV 29 1870

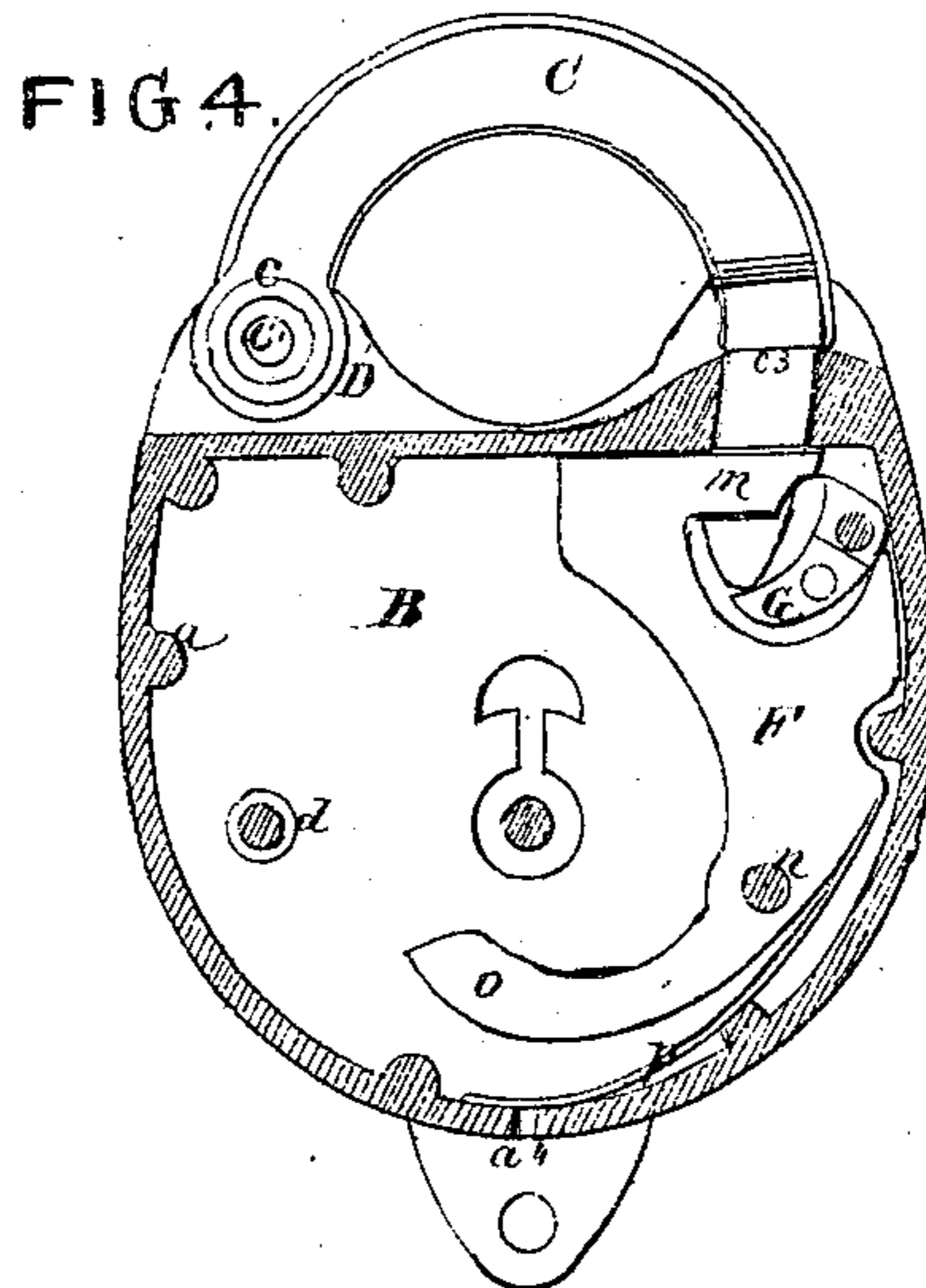
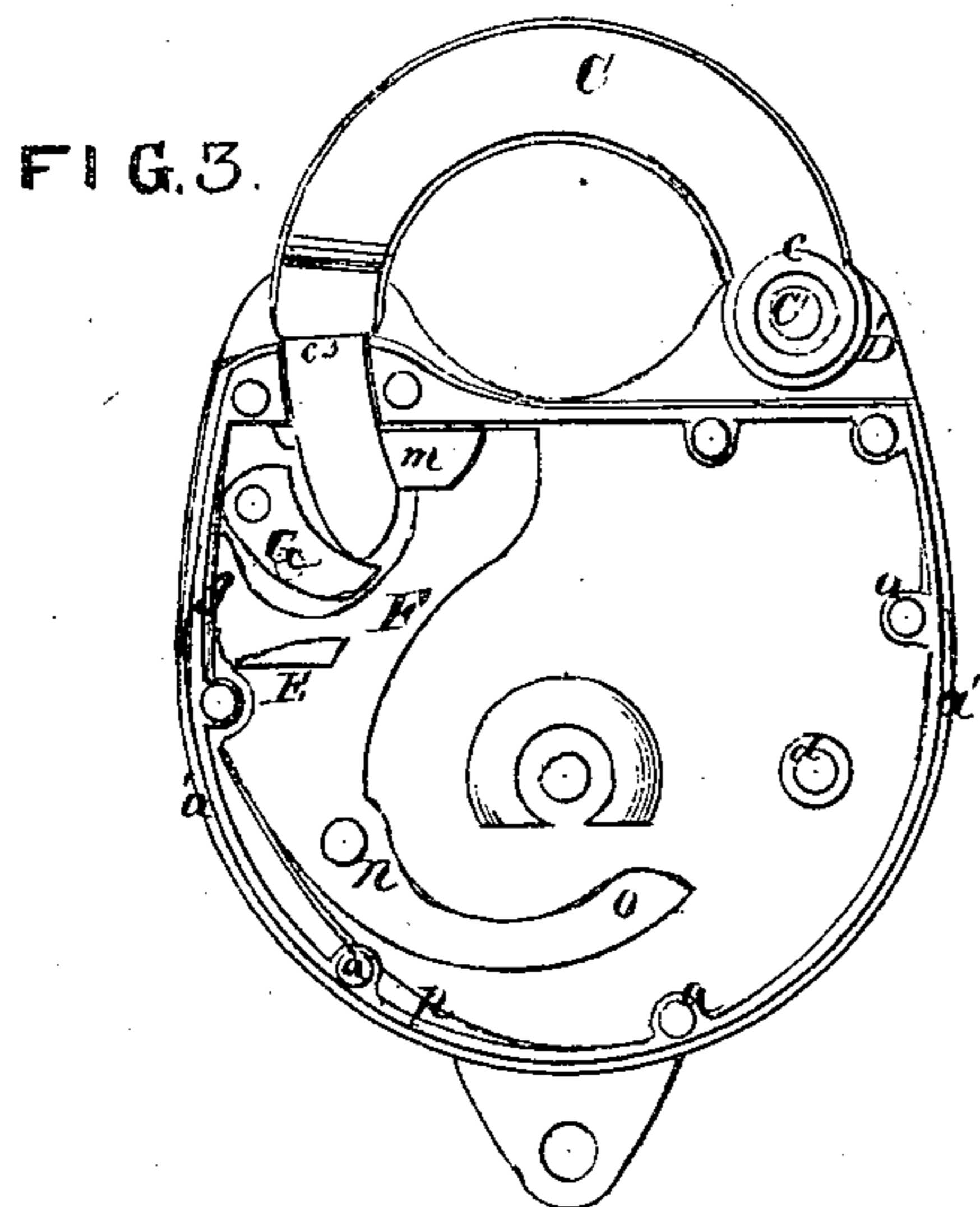
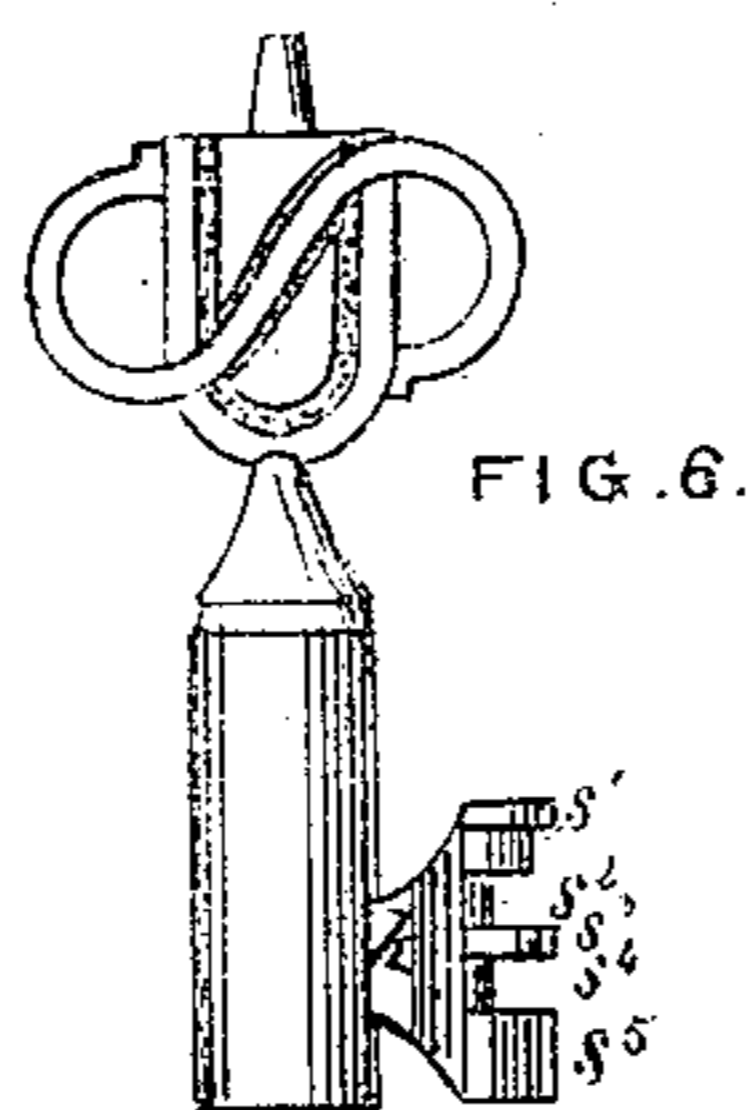
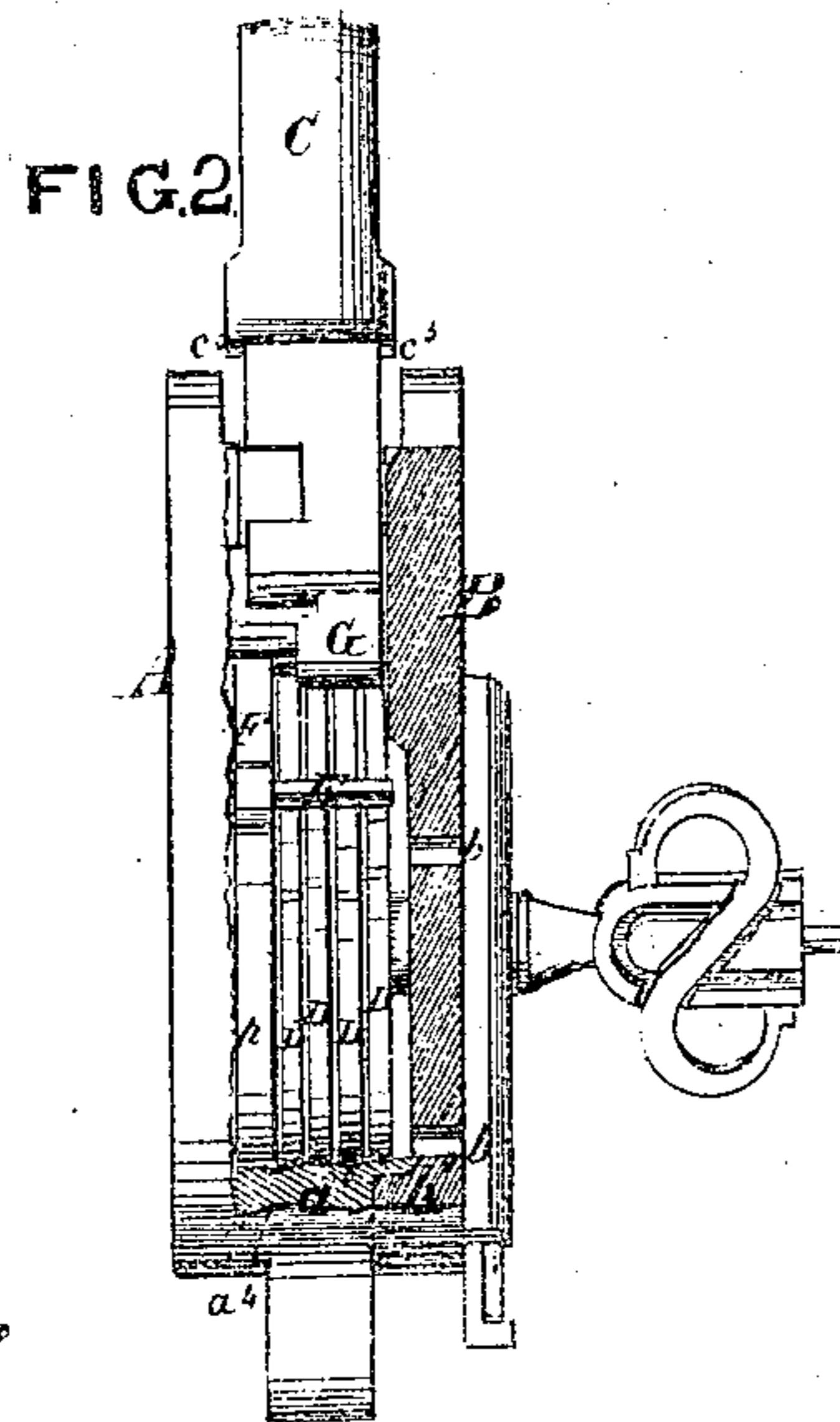
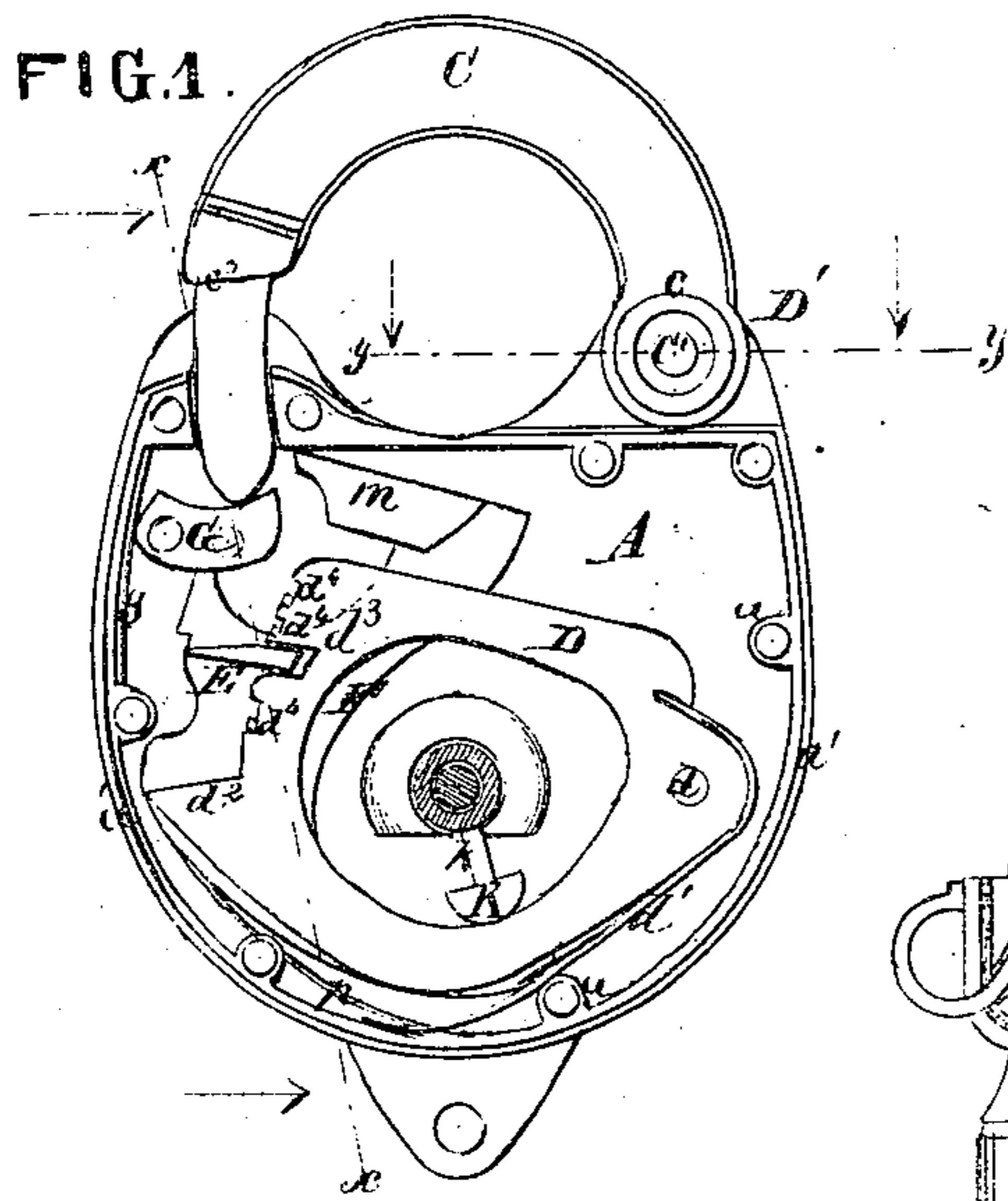
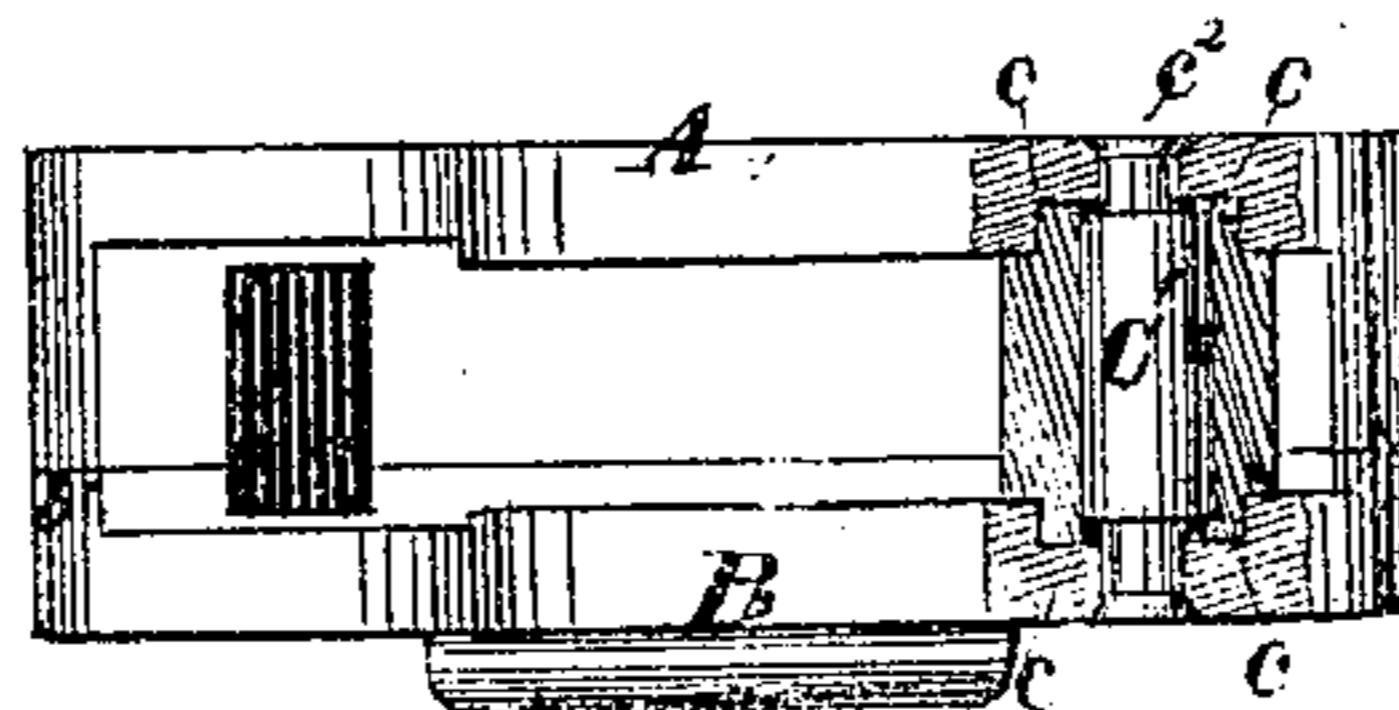


FIG. 5.



WITNESSES.

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JOSEPH CORBETT, OF BROOKLYN, NEW YORK.

Letters Patent No. 109,717, dated November 29, 1870.

IMPROVEMENT IN PADLOCKS.

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

I, JOSEPH CORBETT, of Brooklyn, in the county of Kings and State of New York, have invented a new and improved Padlock, of which the following is a specification.

Nature and Objects of the Invention.

The improvements relate—

First, to a mode of constructing the key-bit and the tumblers and bolt which are operated thereby, so that the coincident adjustment and operation of said tumblers and bolt may be effected by the contact of parts of the key-bit which are not in one and the same radial plane.

Second, to a device to eject the released shackle without the use of a spring, and to hold the spring bolt in its retracted position in readiness for the return and automatic locking of the shackle.

Description of the Accompanying Drawing.

Figure 1 is a front view of a lock illustrating my invention, with the face-plate and the key-bow removed so as to show the interior of the lock and the form of the key-bit. The parts are here represented as unlocked.

Figure 2 is a section at *x x*, fig. 1.

Figure 3 is a front view, with the face-plate and tumblers removed, showing the shackle locked.

Figure 4 is a sectional view looking toward the face-plate, and showing the shackle and bolt locked.

Figure 5 is a top view, showing the shackle and its hinge in section on the line *y y*, fig. 1.

Figure 6 is a side view of the key.

General Description.

The padlock has a case, A, and a cap, B, secured together by means of studs *a a* on the former, which protrude through holes *b b* in the latter, and are riveted down upon the cap in the usual manner.

a' is a shoulder or rabbet on the case, into which fits the flanges *b'* of the cap, the object of which arrangement is to prevent the introduction of a chisel into the crack between the cap and case for the purpose of prying them apart. Any such attempt with my arrangement would betray itself by the doubling up of the flange on the cap, and the tampering would be revealed.

It is further designed to more effectually exclude wet.

The shackle C is hinged on a pintle, C', which is attached to the rounded lug on the case A, and the shackle is held on the said pintle by the riveting on of the cap, through which passes one end of the said pintle.

The pintle C' of the shackle is larger within the shackle than where it passes through the case. By

this means it is strengthened for its duty. The pivots at the ends are of smaller size, so as to avoid boring away too much of the face-plate.

c c are annular projections on the hub of the shackle, and occupy corresponding grooves in the plates of the case and cap, respectively.

These annular projections answer three purposes:

First, they increase the strength of the joint, as they give an additional bearing for the hub beyond that which is due to the ends of the pintle, which penetrate the plates of the case and cap.

Second, they make a better and closer joint, tending to prevent lateral play or shake, and also opposing to a greater degree than usual the access of water to the inside of the lock.

Third, in case of drilling away the ends *c' c'* of the pintle, the shoulders *c c* will still maintain their hold in the cheeks and oppose the withdrawal of the hub of the shackle from its bearings.

It may also be mentioned that the nose of the shackle has on all sides projections *c''*, which shut down upon the top of the case and aid in keeping out water. The top of the case slants off on each side from this point of closure so as to shed water therefrom.

In the event of water entering at any point it is immediately discharged through an aperture, *a''*, at bottom.

The working parts of the lock consist of four:

First, a set of spring tumblers, of such numbers as may be deemed desirable.

Second, a bolt which engages the notch in the shackle and locks it.

Third, a fence attached to and moving with the shank of the bolt, its office being to lock against the tumblers when the lock is closed.

Fourth, a pivoted dog, which is moved by a projection on the bolt-shank, to throw up the shackle, instead of depending upon a spring to perform the movement.

The tumblers D D D D are pivoted upon a stud, *d*, which rises from the cheek-plate of the case A, and are moved by the key K or by the springs *d'*, as will be explained when describing the operation.

The form of the tumblers may be seen by examining the upper one of the set. A description of one will apply to each one of the set, excepting that the notches on the edges are various, for reasons which are familiar to experts, and will therefore be but cursorily explained in describing the operation.

Each tumbler has an open center, in which the bit of the key operates. Near the hinging portion is attached a spring, *d''*, which tends downward and engages the inside of the case, its constant tendency being to throw the tumbler upward.

d^2 is a projection on the tumbler, which comes in contact with the fence E when the tumbler flies upward in the act of locking.

Between the projection d^2 and the upper corner of the tumbler are several notches, one of which, d^3 , is deep, and forms a true notch, while the others d^4 are shallow, and form false notches. The true notch d^3 is to receive the fence E on the bolt-shank when the lock is being opened by the key in the legitimate manner. The false notches are to catch the fence when the lock is attempted to be picked by tentation.

F is the bolt which engages the notch of the shackle C.

m is the bit of the bolt which is pivoted on the stud n.

o is the tail of the bolt-shank, which is acted on by the bit of the key in the act of throwing the bolt after the tumblers have been so arranged that the fence E may enter into the true notch d^3 of each tumbler; the latter having been arranged in a prescribed order by the notched key-bit, which is adapted for that purpose.

p is a spring which tends to throw upward the tail of the bolt-shank, and to throw the fence E out of the notches d^3 in the tumblers when the bolt-shank is free to move.

G is a dog pivoted to a stud on the case A. It has two functions:

First, at a certain stage in the operation of unlocking, the dog lifts the nose of the shackle beyond the range of the bolt F, so that the shackle is freed.

Second, when the lock is open the dog G engages the bolt F so as to hold it back in readiness for the entrance of the nose of the shackle, the lock being of the self-locking description.

A spring, g, in the rear of the dog, bears upon it, and rests against one or the other of two flat portions of the dog, so as to hold it in one or the other of its portions up or down, as the lock is in the unlocked or locked position.

Below the dog is a stud, which, in the act of unlocking, is pressed against by a projecting tusk on the bolt-shank, so that, as the bolt is thrown back, the dog is rotated and lifts the shackle as before stated.

The springs d^1 p g are of German silver, and are not so apt to rust as springs of other metal.

The tumblers are plates with open centers, and are termed "ring" tumblers. The key is inserted upside-down, and the bit rotates around the key-pin within the opening in the middle of the tumblers.

The latter are four in number in the illustration shown, and each is operated by its own particular "step" on the bit. These steps are of different height, that is, radial distances from the center of rotation. Each tumbler is specially constructed in reference to the step on the bit that is to work it, so that a given point in the motion of the key the tumblers shall all be in such correspondence that the fence on the bolt-shank shall enter all the gates in the tumblers.

The further step on the key-bit operates the bolt itself at the proper time, the motions derived therefrom being—

First, to insert the fence into the gate.

Second, to withdraw the bolt from the notch in the shackle.

Third, to lift the nose of the shackle.

The operation of the bolt is by the pressure of the bit of the key on the tail of the bolt, and the bolt is hung upon a center below the level of the key-pin.

The key operates the tumblers and the bolt by turning in either direction, the shape of the lower interior edges of the tumblers and the shape of the bolt-tail being adapted to receive the impulse of the several steps on the bit of the key.

The bit of the key has a thin web, k, so as to allow it to be introduced at a somewhat narrow slit, and the bulbous end of the bit is widened so as to allow the prolongation of the operative surface of each step.

The narrowness of the slit in the lock-plate precludes the use of a false key with a thick bit.

The face of the enlarged portion of the bit is occupied by a series of steps marked in the drawing, fig. 6, s^1 s^2 s^3 s^4 s^5 . The former four are for operating the tumblers; the latter one, s^5 , is for operating the bolt.

The face of the key-bit, it has already been stated, has steps, and these have curved surfaces. It might be sufficient in some cases to make all these curves arcs of circles having a common center, but I derive an additional advantage from another arrangement. The curves of the steps s^1 s^2 s^3 s^4 s^5 are struck from various centers, and have or may have radii of different lengths.

The object is as follows:

It is designed that the steps shall not all commence at the same time to operate the tumblers and the bolt. By a suitable disposition of the curves they may be brought into action serially, and the tumblers having started at different times, if desired, and moving at different rates—as they have different distances to move, may eventually, but not necessarily, simultaneously reach the point at which their gates are ready to receive the fence.

The curves of the bit now come into a sort of correspondence, as they are required to hold the tumblers steady while the step s^5 comes in contact with the tail of the bolt and tips the latter, which causes the fence to enter the gate, the bolt to clear itself of the shackle, and the tusk on the bolt-shank to turn the dog and lift the nose of the shackle.

It would be possible to cause a series of symmetrical curves, so to speak, to act at the proper times upon the lower interior edges of the tumblers, the latter being cut away in such manner as to produce the desired effect; but I prefer as an additional security to a given lock to so arrange the mechanism that it cannot be operated by a key not specifically constructed as I have described.

My lock and key are so made that the operative points of the different steps of the key, i. e., those points which act upon the respective tumblers to bring all into coincidence, are not in a common plane, and the points in the tumblers on which they operate are not in line. It is therefore impossible to construct a thin-bitted or skeleton key with which the said lock can be opened.

I am aware that padlocks have been constructed with a projection on the bolt to elevate the shackle by direct contact therewith. This, therefore, I do not claim.

Claims.

I claim as my invention—

1. The key, constructed with a thick bit, the steps of which have operating faces of varying curves, in combination with the ring-tumblers D and with a bolt so constructed that the said tumblers and bolt, or any two of them, will be adjusted or actuated by the contact of parts of the key not in one and the same radial plane.

2. The pivoted dog G, operated positively by a tusk or equivalent device on the bolt-shank, to lift the nose of the shackle and hold the bolt in its retracted position.

JOSEPH CORBETT.

Witnesses:

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C. E. MILLS.