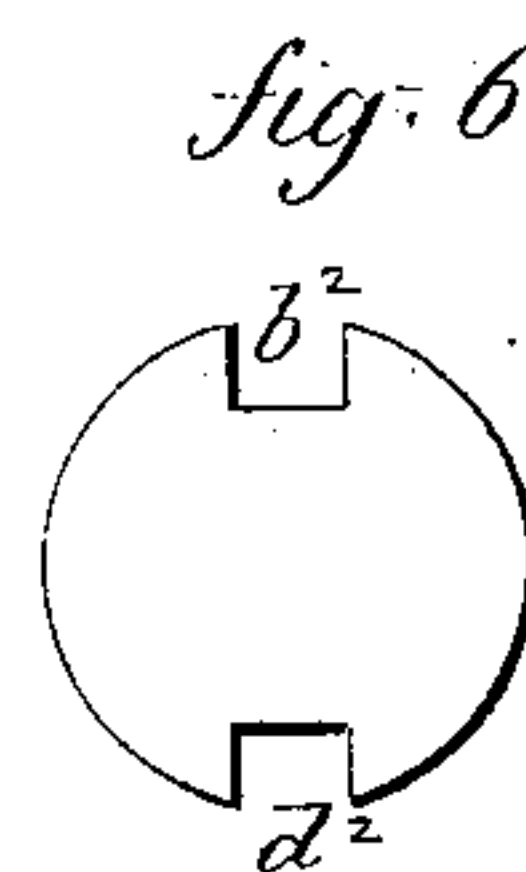
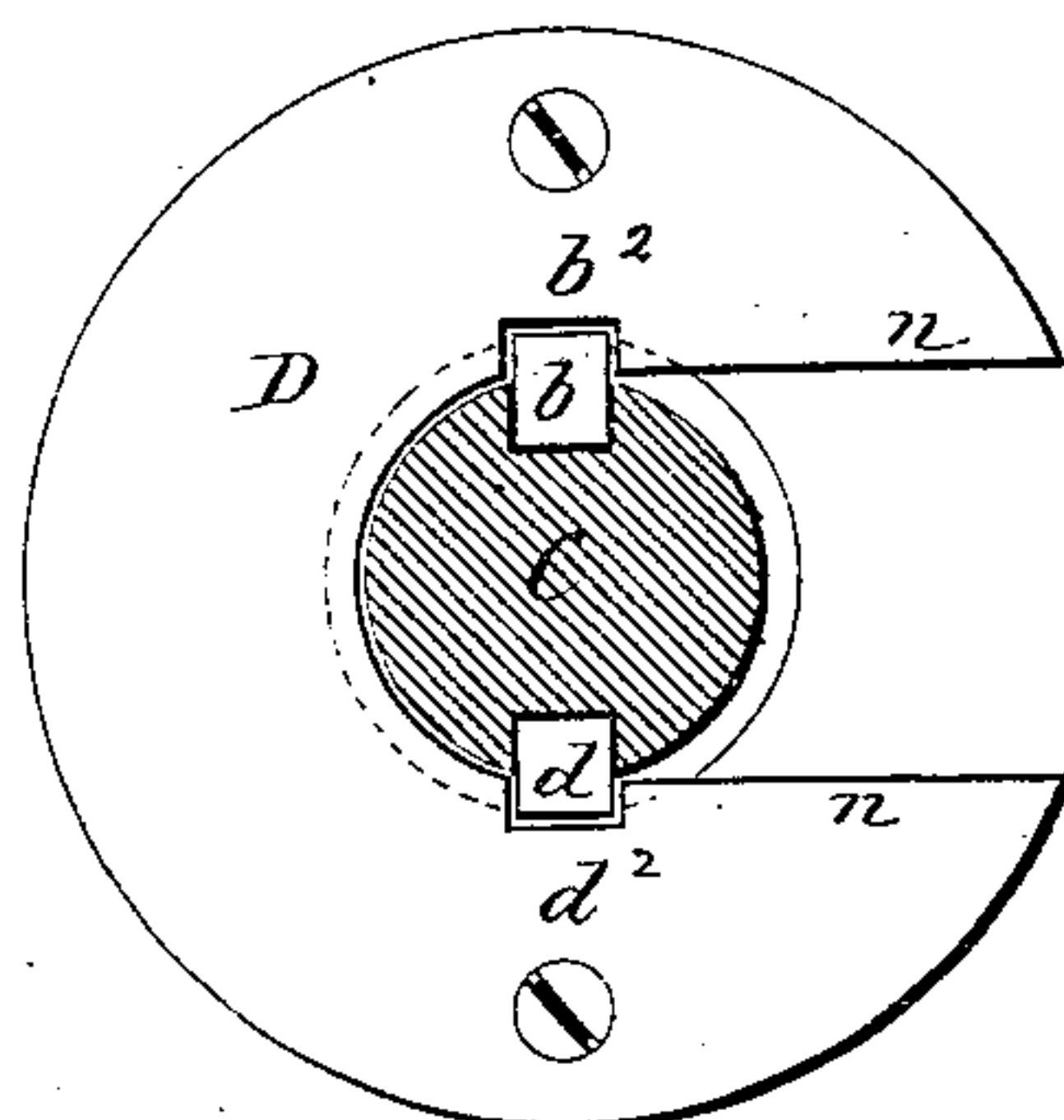
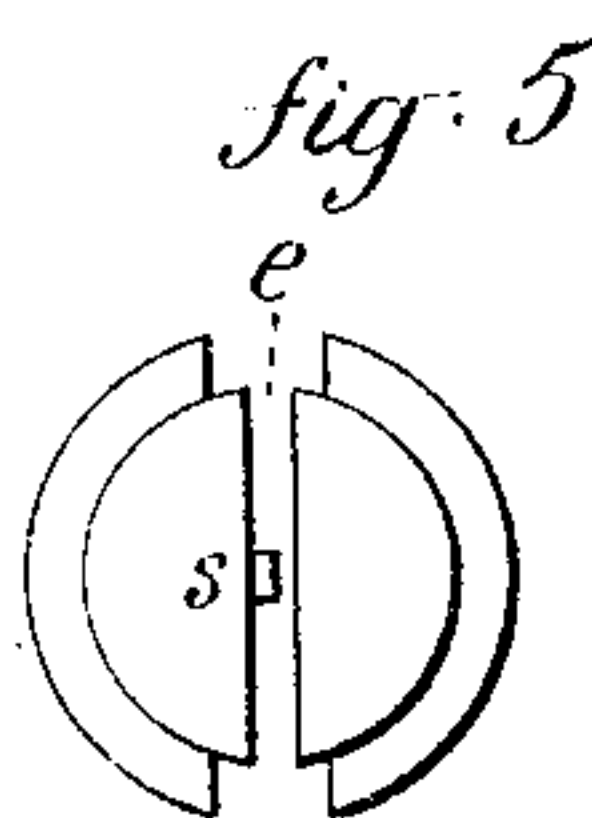
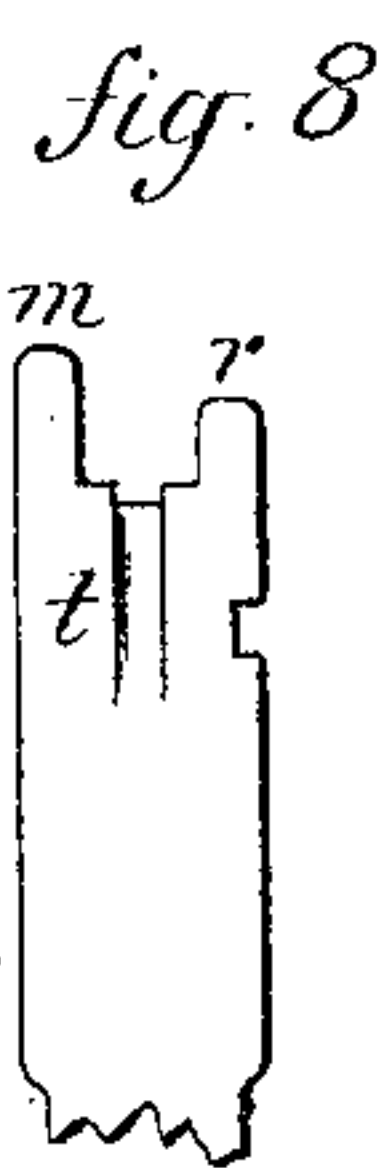
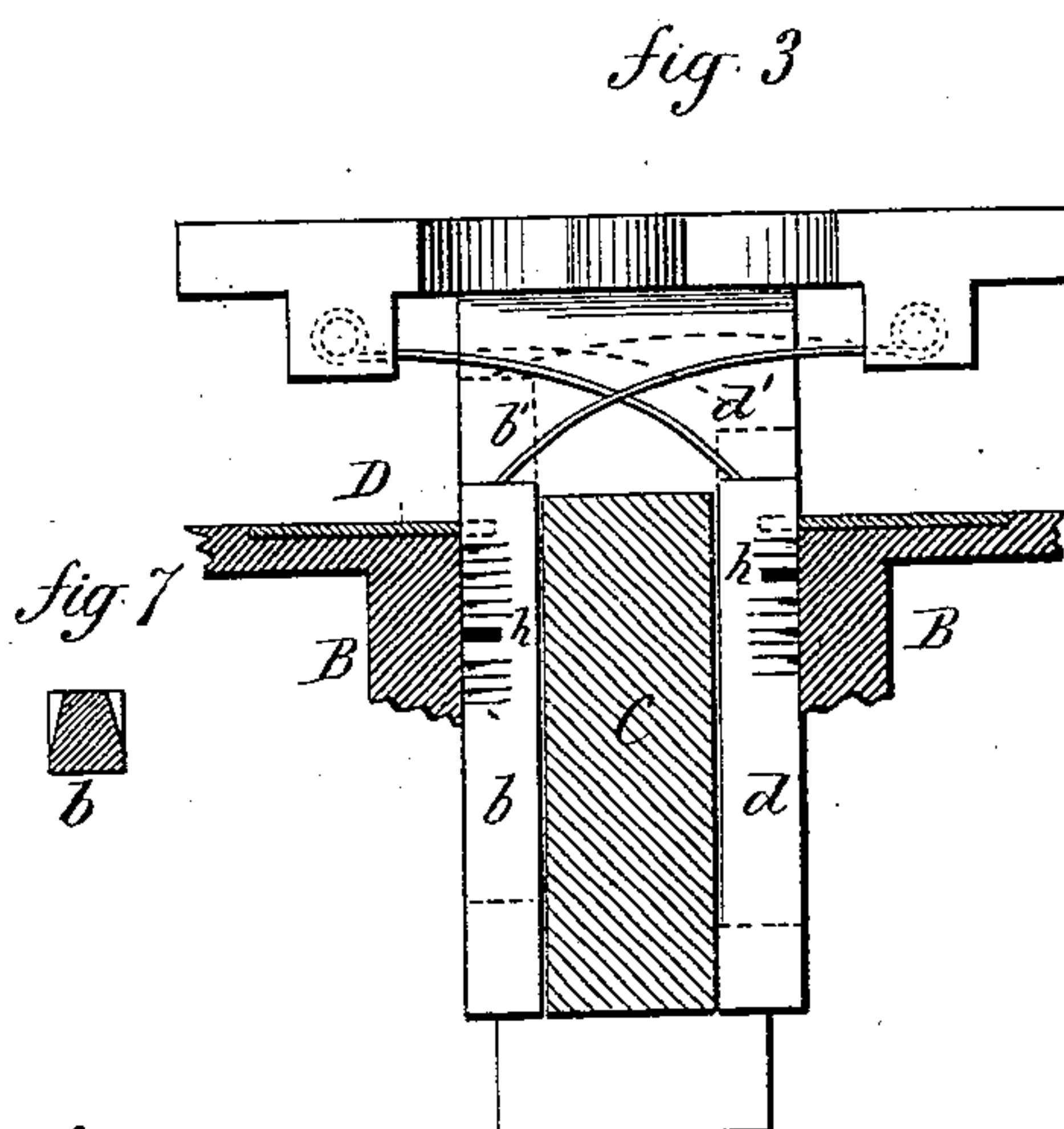
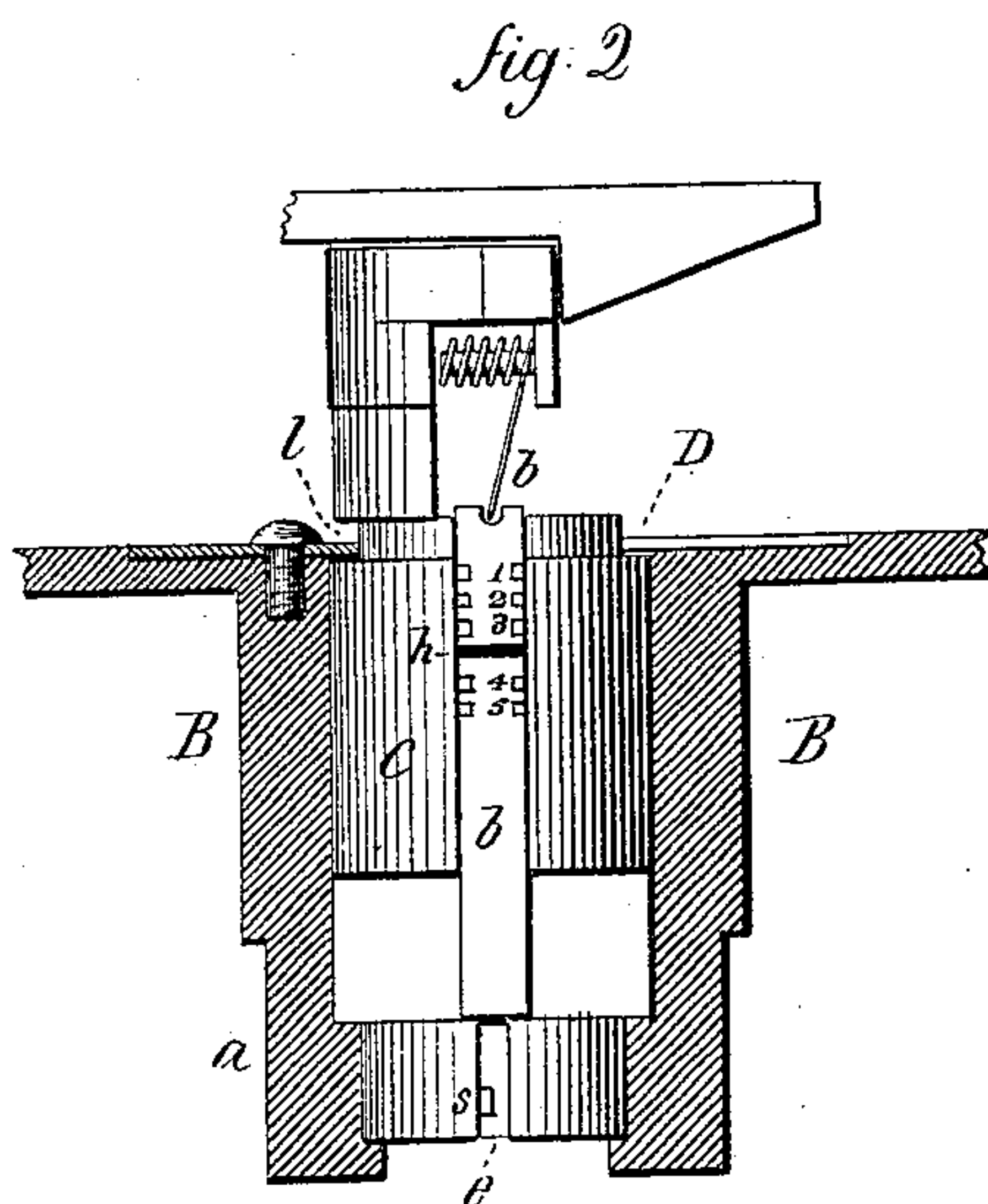
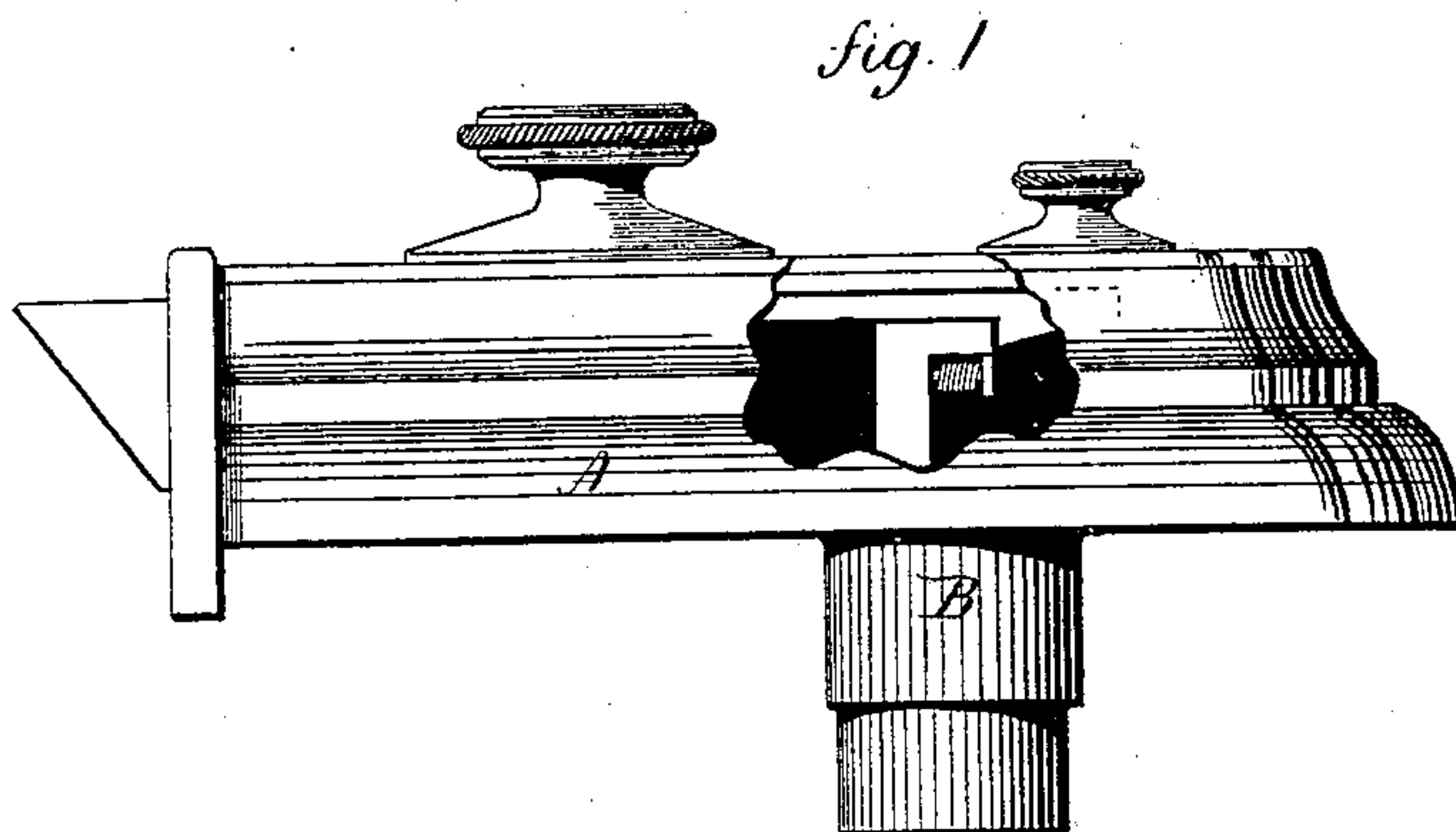


(Model.) J. H. WOOLASTON & T. B. PRIDDY.

LOCKING LATCH.

No. 246,438.

Patented Aug. 30, 1881.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOSEPH H. WOOLASTON AND THOMAS B. PRIDDY, OF NEW HAVEN, CONNECTICUT, ASSIGNORS TO THE BARNES MANUFACTURING COMPANY, OF SAME PLACE.

LOCKING-LATCH.

SPECIFICATION forming part of Letters Patent No. 246,438, dated August 30, 1881.

Application filed November 8, 1880. (Model.)

To all whom it may concern:

Be it known that we, JOS. H. WOOLASTON and THOS. B. PRIDDY, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Cylinder-Locks; and we do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view, a portion broken away to show the engagement of the cylinder with the bolt; Fig. 2, a longitudinal section through the tube, showing top of cylinder; Fig. 3, a longitudinal vertical section through tube and cylinder; Fig. 4, a transverse section, showing guard-plate; Fig. 5, a front view, and Fig. 6 rear view, of cylinder; Fig. 7, a transverse section through false notches of one of the tumblers; Fig. 8, a side view of key.

This invention relates to an improvement in that class of locks or latches commonly called "cylinder" or "tubular" locks or latches, in which the tumblers are arranged longitudinally in a cylinder within a tube, and so that when the tumblers are brought into their proper relation to the guard the cylinder may be rotated to operate the bolt of the lock.

In this invention the form and arrangement of the tumblers are more strictly an improvement on the "Bramah lock," in which lock the tumblers in the cylinder, when arranged exteriorly, project beyond its periphery, so as to make engagement with some part of the tube when not under the action of the key, and the guard-plate is arranged in such cases outside or exteriorly to the periphery of the cylinder—that is to say, the diametrical plane of the tumblers is the same plane as the key, or parallel therewith.

The object of this invention is to make the tumblers entirely independent of the tube, so that the interior of the tube may correspond in shape throughout to the exterior shape of the cylinder, as well as to generally simplify and cheapen the construction of this class of locks and to reduce the diameter of the tube.

The invention consists in the construction as hereinafter described, and particularly recited in the claims.

A represents the lock-case, which may be of any of the known styles, as rim or mortise locks, (here represented as a rim night-latch.)

B is the tube which is attached to or made a part of the case or so as to be arranged in proper relation to the case, (here represented as the part of the case called the "cap.")

C is the cylinder, fitted with a shoulder, *a*, near its outer end, to rest against a corresponding shoulder and form a bearing in the outer end of the tube, the length of the cylinder corresponding substantially to the interior length of the tube.

Longitudinally on the cylinder, and preferably at diametrically-opposite points, grooves are made to receive each a tumbler, *b d*, the depth of the grooves being such that the tumblers lie entirely within the periphery of the cylinder, and so that the cylinder may be readily turned within the tube. The grooves and tumblers extend forward so that the front end of each comes in line with the corresponding side of the flat key-hole *e*, made in the end of the cylinder, and so that when the key is introduced the end of the bits will strike their respective tumblers and press them rearward against the force of corresponding springs *b' d'*, the tendency of which springs is to force the tumblers forward or toward the outer end of the cylinder. At the rear end a guard-plate, D, (see Fig. 4,) is arranged. This guard-plate extends over the end of the cylinder and is provided with notches *b² d²*, corresponding in their position to the tumblers *b d* when they are in their state of rest. The guard-plate D is secured to the under part of the lock-cap or inner end of the tube, and so as to overlap the cylinder, as seen in Fig. 2, and serves to hold the cylinder in the tube and prevent its moving longitudinally therein, but yet so as to permit the tumblers *b d* to be pressed inward through the corresponding notches, *b² d²*, as seen in broken lines, Fig. 3. The tumblers are each constructed with a full or true notch, *h*, across their faces. When the tumblers are moved inward, as seen in broken lines, Fig. 3, until the

said notches h come into the plane of the guard D, then the cylinder may be turned, the notch h of the tumblers passing onto the guard D from its respective notches $b^2 d^2$.

5 It will be understood that this lock is designed for the use of a key made from thin metal, and such as are commonly called "flat" keys, and the key is of that class in which the bits are at the end, said bits or projections extending therefrom parallel with the axis of the
10 key or cylinder into which it is to be applied. The key, Fig. 8, has its bits so shaped or of such length that when pressed inward through the key-hole such bits or projecting points will respectively strike the tumblers $b d$ and press
15 inward until the notches h in the tumblers shall come into the plane of the guard, thus allowing the cylinder to revolve, as before described, substantially as in other longitudinally-moving tumblers.
20

To prevent tampering with the lock, several shallow or false notches, 1 2 3, &c., in rear and in front of the full notches h , are made by cutting a series of grooves in each side of the
25 tumblers corresponding in width to the full notches on the face of the tumblers. They are cut from the face downward on each side, (see Fig. 7,) and die out, or nearly so, in depth at or near the bottom of the tumbler. As the cylinder is rotated the upper sides of the tumblers first pass onto the guard. The inclination of the bottom of the grooves or false notches therefore permits these false notches to pass
30 onto the guard to a certain extent, the same as do the full notches. If the false notches were cut of an equal depth throughout and across the sides of the tumblers, as in the usual manner of cutting false notches, they would greatly weaken the tumblers or necessitate
35 their being made impractically thick or alternate the notches on each side, which would reduce their number and the consequent safety of the lock; but by cutting them with the bottom inclined to the surface, as described and shown
40 in Fig. 7, they do not materially weaken the tumblers, and still permit them to pass onto and engage the guard-plate at any one of the said false notches, and in either direction. The false notches are made, as here represented, on
45 both sides of the tumblers, to guard either way, as the cylinder is made to rotate and act upon the latch or bolt either way; but where a cylinder is made to act or rotate but one way, then the false notches are required upon one
50 side only of the tumblers, in which case the said notches may be cut of equal depth throughout.

The guard-plate D is a thin plate of metal, preferably cut in the form of a disk, (see Fig. 4,) with an opening at the center of less diameter
50 than the diameter of the body of the cylinder, but concentric with the cylinder, and this opening extended to the outer edge, as seen in Fig. 4, so that the cylinder may be reduced at its rear end, as at l , to form a shoulder under which the guard-plate may be passed, through the

full or true notches in the tumblers, (they being first moved to the position to permit the sides n of the opening in the guard to pass through them,) and when secured will hold the
70 cylinder in place.

The guard D may be in the shape of a ring with the notches $b^2 d^2$ upon the inside, and the cylinder only of such length as to extend to the surface where the guard-plate is attached.
75 By the construction shown the tumblers are longitudinally brought entirely within the periphery of the cylinder and flush with the surface, and no connection is made between the tumblers and the tube which incloses the cylinder, whereby a considerable amount of labor in fitting up is avoided and a smaller tube thus obtained.
80

In this construction the key-hole necessarily extends diametrically across the front face of
85 the cylinder, so that one point, m , on the bit will strike one tumbler, and the point r on the opposite side will strike the other tumbler, and as the points are of different lengths, so as to correspond to the position of the notches h in
90 the tumblers, it follows that the key can be inserted to operate the tumblers only in one position, and if inverted so as to reverse the projections $m r$ they would not properly operate upon the tumblers. This enables the same
95 shaped bit to apply to two different arrangements of the same tumblers. Now, to prevent the introduction of the same key inverted with the reverse arrangement of tumblers the key-hole is provided with a stud, s , (see Figs. 2 and
100 5,) projecting into the key-hole, and centrally between the two opposite edges, and on the side of the key, a longitudinal groove, t , is made, (see Fig. 8,) which will permit the key to pass in over the stud s ; hence, if the key be inverted the stud s would prevent the key entering the key-hole. The stud then serves first to indicate the proper position in which the key must be introduced, and also doubles the changes which may be made in the keys. Leaving the bit and tumblers the same the groove in the key may be made in the opposite side of the third and fourth keys, and the studs s made on the opposite side of the key-hole. This adds
105 two more changes, and enables the making of four entirely different locks, yet the bits and tumblers are alike in all.
110

The connection between the cylinder and bolt is too well known to require description in this specification.
115

We are aware that keys have been made with a longitudinal groove upon one side and a corresponding projection in the key-hole. We therefore do not broadly claim such as our invention. In such cases the working-edges of
120 the bit have been made substantially parallel with the groove; but such arrangement of groove and bit does not permit the changes of key hereinbefore described; hence is not the groove of our invention.
125

We are also aware that longitudinal corrugated keys have been made in which the bit
130

was on the end of the key and at right angles to the corrugations; but in such a key it will be impossible to invert it; hence it is not the groove of our invention, and does not possess
5 any of its advantages.

We are aware of the application of John H. Barnes, No. 31,530, filed April 23, 1881, and do not claim anything shown in said Barnes's application other than as hereinafter recited in
10 the claims.

We claim—

1. In a cylinder or tubular lock, the cylinder arranged within the tube, combined with longitudinally-movable tumblers arranged in
15 grooves in the surface diametrically opposite each other entirely within the periphery of the

cylinder, and with a guard upon which the tumblers will pass when the full or true notch of each is brought into its proper relative position to the guard, substantially as described. 20

2. A flat key having the projection or bits extending from the end parallel with the axis, constructed with a longitudinal groove on the axial line of the key upon one side, combined with a stud in the key-hole corresponding to
25 said groove when the key is inserted in its proper position, substantially as described.

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