

(No. Model.)

W. E. SPARKS.

CYLINDER LOCK.

No. 367,677.

Patented Aug. 2, 1887.

Fig. 1

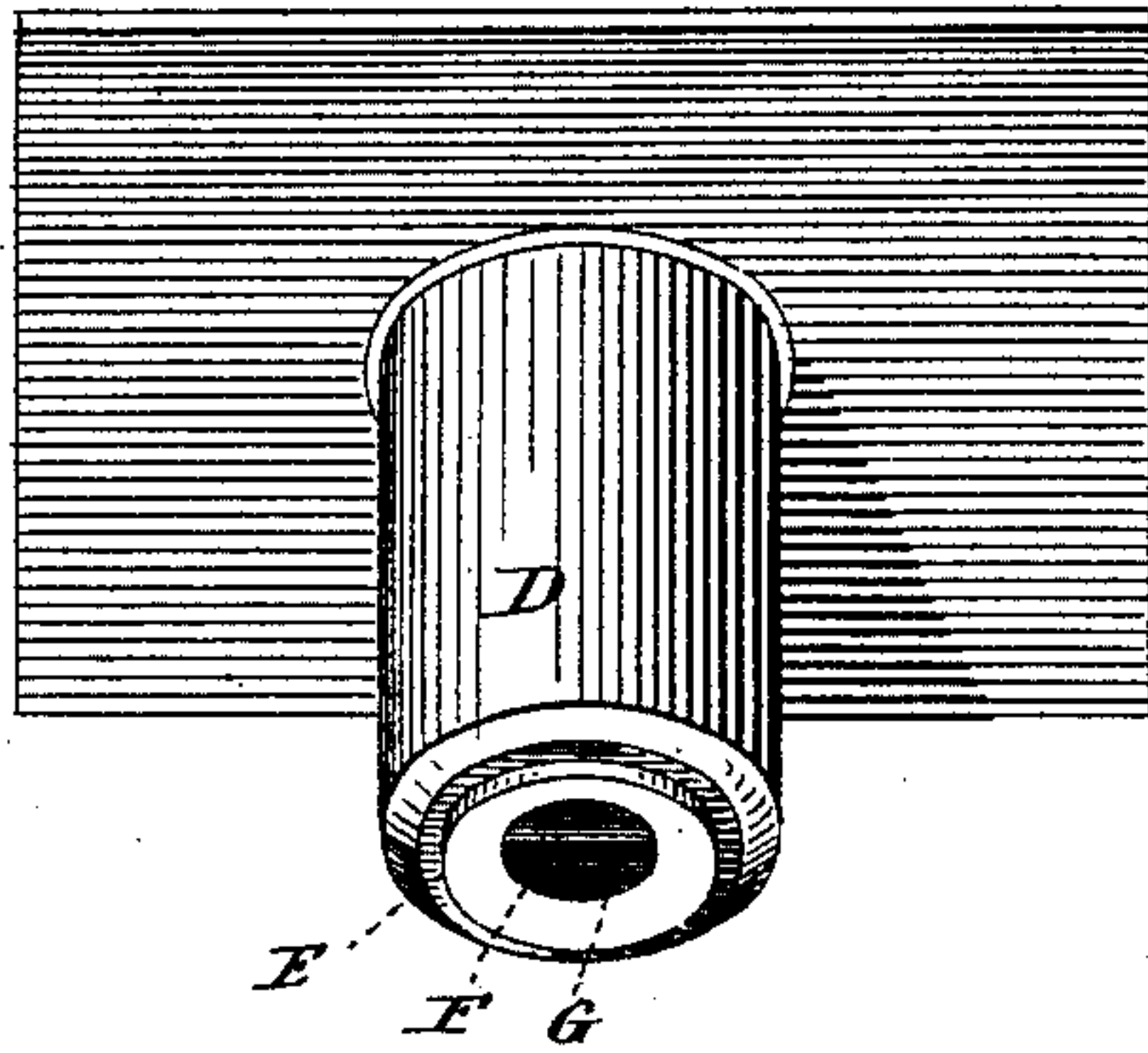


Fig. 2

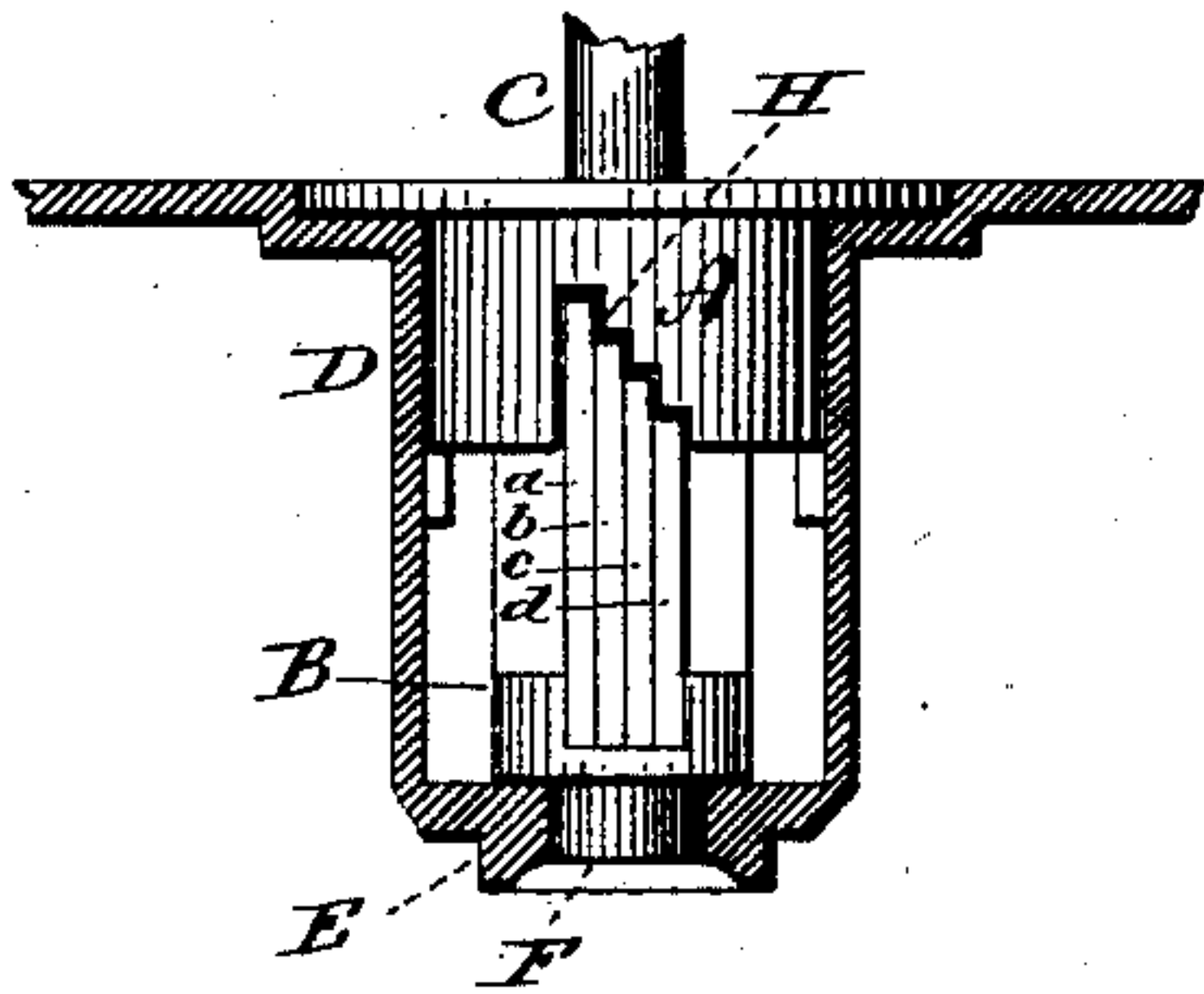


Fig. 3

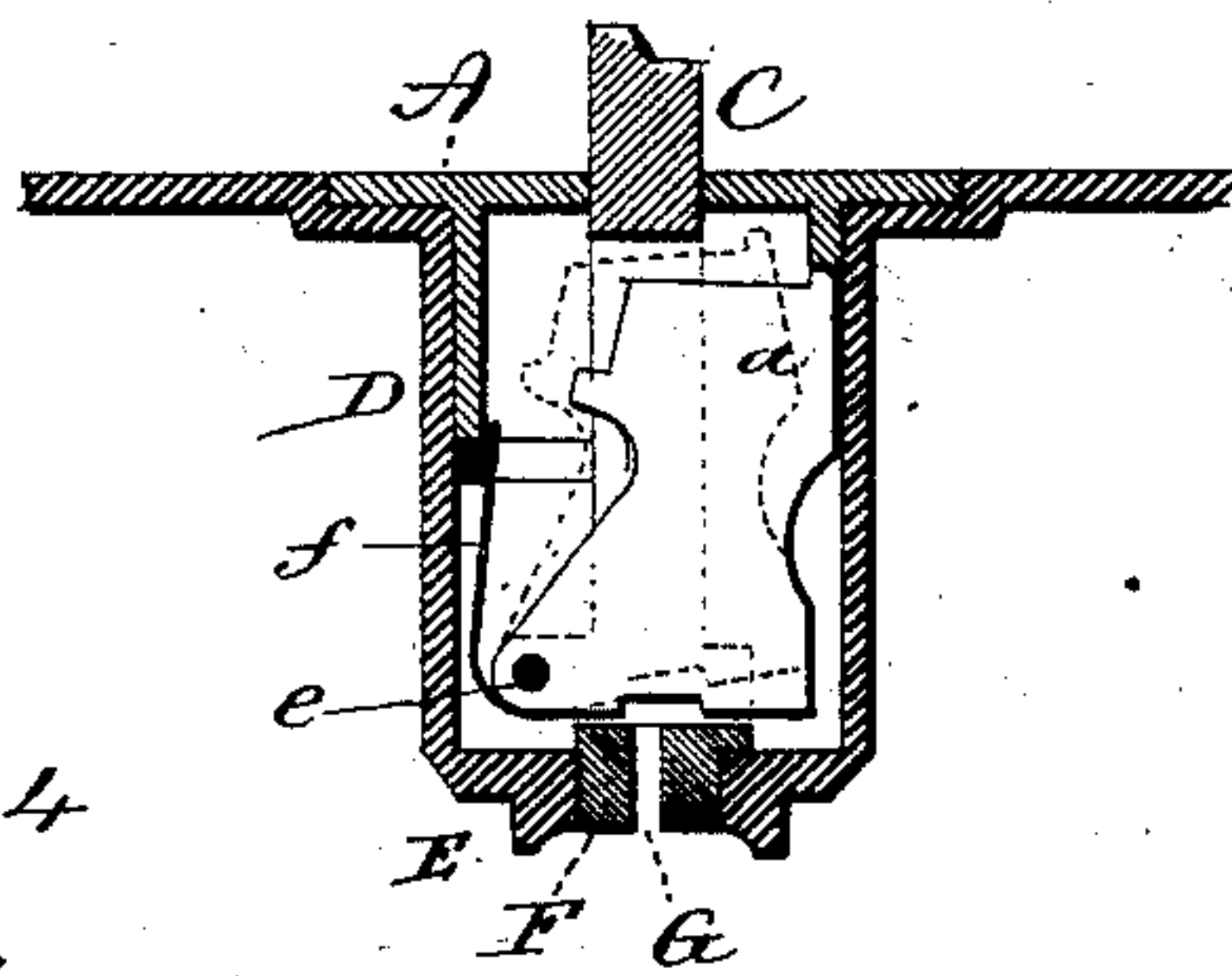


Fig. 4

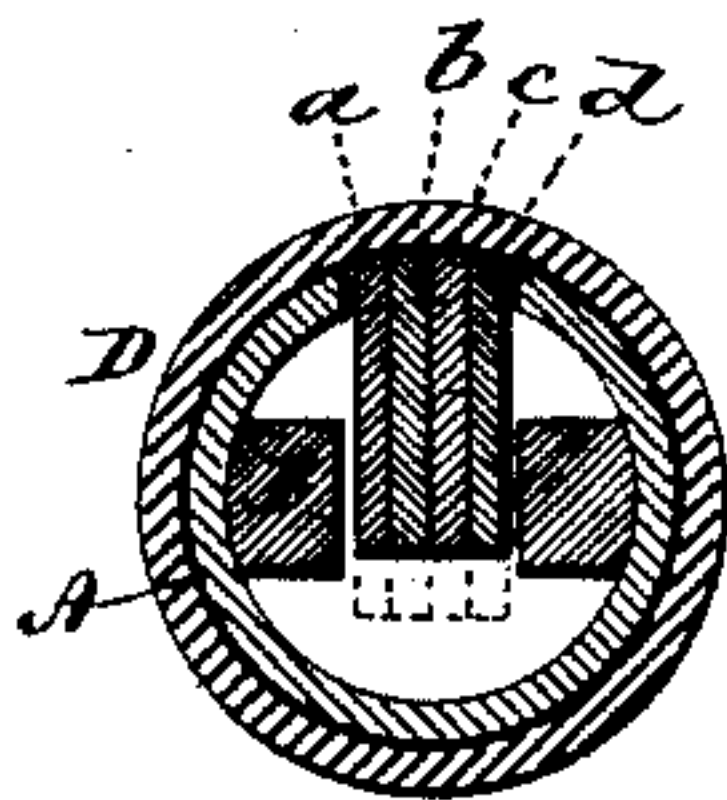


Fig. 5

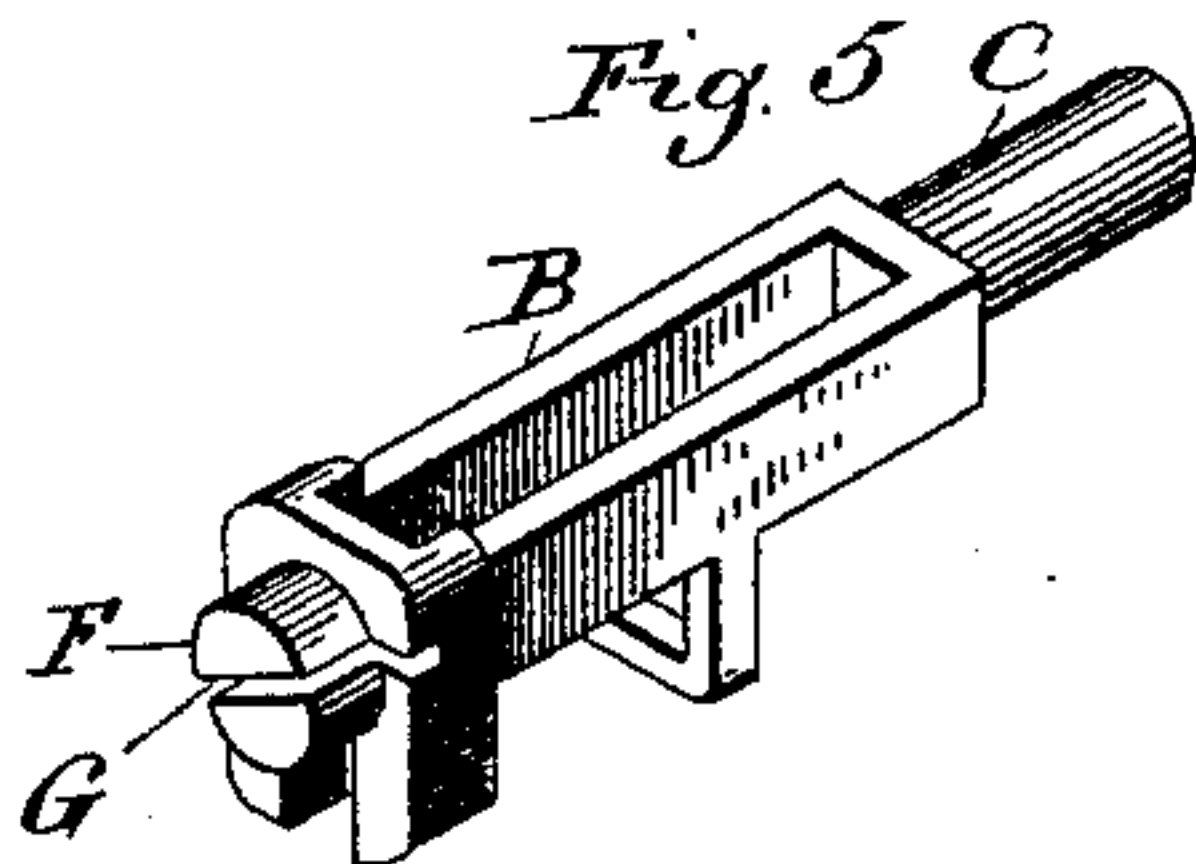


Fig. 6

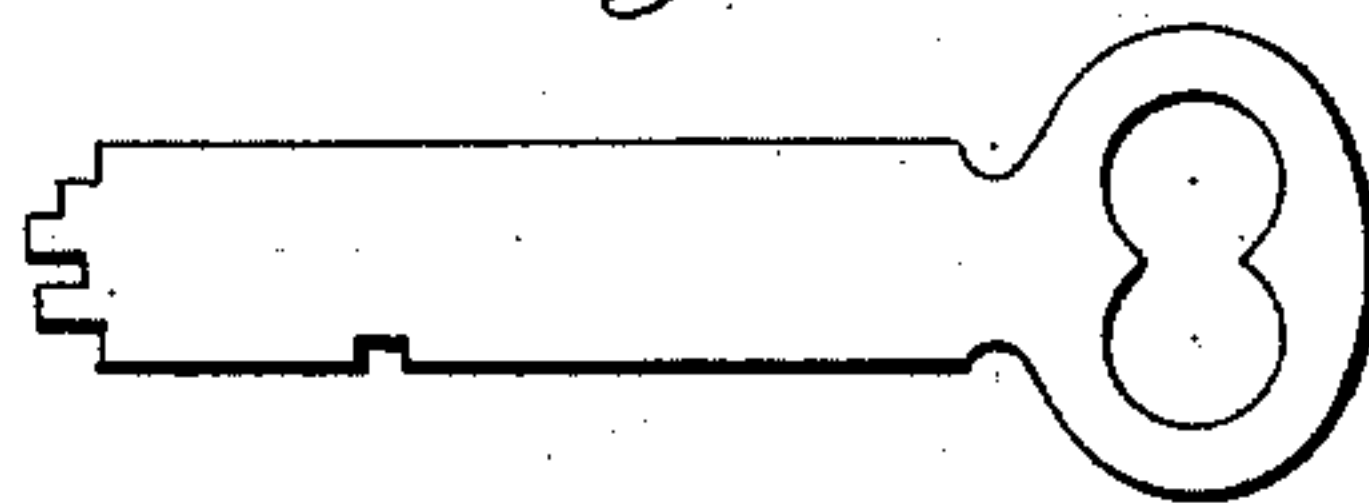
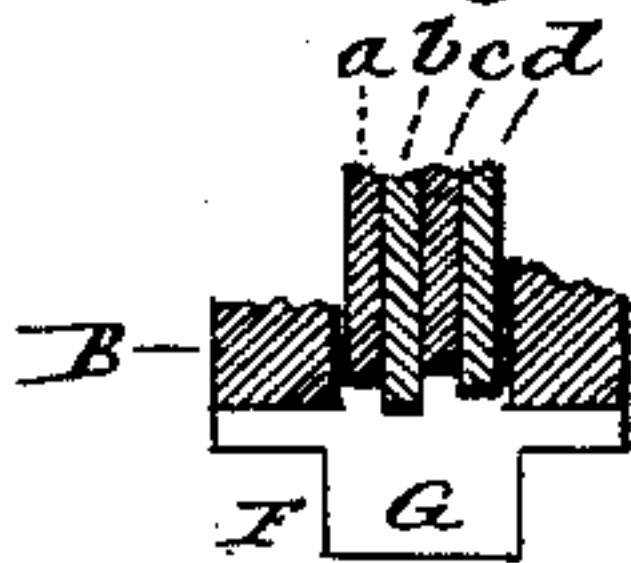


Fig. 7



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UNITED STATES PATENT OFFICE.

WILLIAM E. SPARKS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO
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CYLINDER-LOCK.

SPECIFICATION forming part of Letters Patent No. 367,677, dated August 2, 1887.

Application filed June 27, 1887. Serial No. 242,595. (No model.)

To all whom it may concern:

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

Figure 1, a perspective view of the lock complete; Fig. 2, a side elevation of the lock, showing the outer casing in longitudinal section;
15 Fig. 3, a longitudinal central section in the plane of the tumblers; Fig. 4, a transverse section through the tumblers and stationary cylinder, cutting through the notch with which the tumblers engage; Fig. 5, a perspective
20 view of the frame or inner cylinder with the tumblers detached; Fig. 6, a side view of the key; Fig. 7, a section through the key-hole in the plane of the key-hole.

This invention relates to an improvement in
25 that class of locks which are known as "tube" or "cylinder" locks—that is to say, a lock which consists of a stationary tubular cylinder, a cylinder within said stationary cylinder and adapted to rotate therein, which said in-
30 ner cylinder contains the lock mechanism, adapted to engage the stationary cylinder, and from which it is disengaged by the introduction of a key, and so that by means of the key the inner cylinder may be rotated to operate
35 the locking-bolt.

The invention is an improvement upon the invention described in Letters Patent of the United States No. 212,908. In that invention
40 the mechanism of the cylinder consisted of a bolt arranged to vibrate in a plane parallel with the axis and through an opening in the inner cylinder to engage the outer cylinder, and so that by introducing the key in axial line with the cylinder the bolt is turned from
45 its engagement, so as to permit the rotation of the inner cylinder through the instrumentality of the key. In the inner cylinder several tumblers were hung upon a pivot at one side of the axis of the cylinder, and extending toward
50 the opposite side of the axis of the cylinder,

so as to swing in a plane parallel with the bolt, the said tumblers adapted to be engaged by the bit of the key when introduced. The edge of the tumblers opposite the pivots were provided each with a notch, into which a stud
55 on the bolt would pass when the tumblers were turned to a position to bring their respective notches to register with the stud on the bolt. Otherwise the tumblers presented a solid bearing-surface to the stud, so as to prevent it be-
60 ing turned from its locked position.

The object of my invention is to simplify the construction of the lock by making the tumblers themselves the bolt; and it consists in the construction as hereinafter described,
65 and particularly recited in the claims.

A represents the stationary cylinder, which is secured to the door, or whatever it may be, to which the lock is applied.

B represents the frame or inner cylinder,
70 which is supported in the stationary cylinder by a concentric extension, C, from the frame B through the inner head of the cylinder A. The stationary cylinder A is inclosed by a case, D, of corresponding cylindrical shape, terminating in a head or face, E, through which is a
75 concentric opening, and in which concentric opening a central extension, F, from the inner tube or frame, B, extends, so as to form a bearing for the outer end of the frame or inner cyl-
80 inder, and so that the said frame may rotate within the stationary cylinder upon its axis C F. Through the outer end, F, of the frame B the key-hole G is formed, which is simply a flat slit, adapted to receive the flat key.
85 (See Fig. 6.)

Within the frame, and in a plane at right angles to the plane of the key-hole, the tumblers *a b c d* are arranged, and are hung upon a pivot, *e*, common to all, the pivot being at
90 right angles to the axis, but in the frame at one side of the axis, and so that the tumblers may swing in a plane parallel with the axis of the cylinder, as indicated in broken lines, Fig. 3, and so that the outer end of the tumblers
95 stand before the key-hole, and so that as the key is introduced the bit of the key will bear directly upon the ends of the tumblers. The surface of the tumblers presented to the key-hole are offset, as indicated in Fig. 7, to cor-
100

respond to the shape of the key, and so that the key introduced will, because of the offsets, strike the tumblers all alike and move them as a single tumbler. The tumblers are each provided with a spring, *f*, the tendency of which is to force their free end outward.

The stationary cylinder A is constructed with a recess, H, corresponding to the several tumblers, and through which the nose of the tumblers may work, as indicated in Figs. 2 and 4, and so that when the tumblers stand in the recess H in the cylinder A the rotation of the inner cylinder is impossible; but when the key is introduced and the tumblers turned from engagement with the stationary cylinder, as indicated in broken lines, Fig. 3, then the inner cylinder is free to be rotated with the key.

If a key presenting a different-shaped bit from that for which the tumblers are offset be introduced, that key will operate upon some tumblers, but not upon others. Some of the tumblers will therefore remain engaged with the stationary cylinders, while others may have been turned from such engagement, so that the key particularly adapted for the lock can only be utilized to disengage the inner cylinder or frame from the stationary cylinder.

The recess H, by means of which the tumblers engage the stationary cylinder A upon the active side, is a series of offsets corresponding to the number of tumblers, and the length of the tumblers is made to correspond to the several offsets or shoulders on the active side of the recess, so that if one or more of the tumblers be turned by the introduction of an instrument through the key-hole so as to escape from the cylinder the remaining tumbler or tumblers will still bear upon their respective shoulders and prevent rotation of the frame to any extent or give any information whether or not the preceding tumblers have been actually turned from engagement with the cylinder. This arrangement of the shoulders serves as a guard against tampering with or picking the lock.

This construction very much simplifies the lock and reduces its cost without materially departing from the safety of the lock.

It will be understood that the concentric ex-

tension C from the inner frame or cylinder engages with the lock-bolt, so as to throw the bolt under the rotation of the inner cylinder or frame, in the usual manner for this class of locks.

I claim—

1. The combination of the stationary cylinder A, constructed with a notch or recess to receive the tumblers, the inner frame, B, arranged upon a concentric axis within the stationary cylinder A and constructed with a flat key-hole in its outer end in the plane of the axis, two or more tumblers hung in the frame upon a pivot at one side of the key-hole, the said axis being in the plane of the key-hole, whereby the tumblers are adapted to swing in a plane at right angles to the plane of the key-hole, the said tumblers extending to the opposite side of the key-hole, and so as to present their outer ends to the key-hole, the free ends of the tumblers adapted to engage the said recess in the stationary cylinder, the said tumblers each provided with a spring serving to force and hold the tumblers in such engagement with the outer cylinder, substantially as described.

2. The combination of the stationary cylinder A, constructed with a recess, H, the active side of said recess presenting a series of shoulders corresponding to the respective tumblers of the lock, the frame or cylinder hung upon an axis concentrically within said stationary cylinder, the outer end of the said frame constructed with a flat key-hole in the plane of its axis, two or more tumblers hung upon a pivot in said frame at one side of the key-hole and adapted to swing in a plane at right angles to the key-hole, the outer end of said tumblers standing in the range of the key-hole, the free ends of the tumblers extending to the opposite side of the key-hole and adapted to respectively engage the shoulders in the recess in the stationary shoulders, each tumbler provided with a spring, substantially as described.

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Witnesses:

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