C. C. COLEMAN.
Cylinder Lock.

No. 200,511. Patented Feb. 19, 1878.

fig. 1

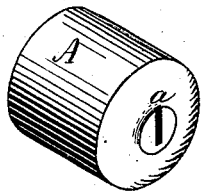


fig. 2

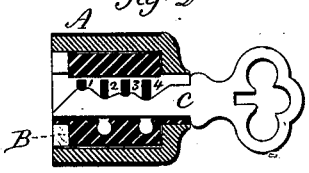


fig. 3

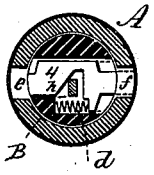


fig. 4

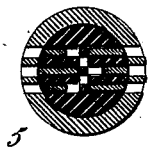


fig. 5

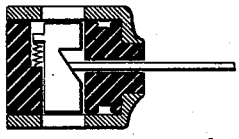
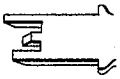


fig. 6



Witnesses.

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UNITED STATES PATENT OFFICE.

CORNELIUS C. COLEMAN, OF BRANFORD, CONNECTICUT, ASSIGNOR TO THOMAS KENNEDY, OF NEW YORK, N. Y.

IMPROVEMENT IN CYLINDER-LOCKS.

Specification forming part of Letters Patent No. **200,511**, dated February 19, 1878; application filed January 24, 1878.

To all whom it may concern:

Be it known that I, CORNELIUS C. COLEMAN, of Branford, in the county of New Haven and State of Connecticut, have invented a new Improvement in Cylinder-Locks; and I 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, perspective view; Fig. 2, longitudinal section with the key inserted; Fig. 3, transverse section of the same; Figs. 4 and 5, modifications; Fig. 6, modified key.

This invention relates to an improvement in that class of locks in which several tumblers are arranged in a cylinder within a second cylinder, the second cylinder constructed with grooves or notches corresponding to the said tumblers, and so that when the inner cylinder is turned to bring the tumblers into line with the said grooves or notches, and the key removed, the tumblers will be automatically thrown outward into the said grooves, to engage the inner with the outer cylinder. This class is generally known as the "Yale lock."

In the usual construction, the tumblers are provided with a notch or stud at right angles thereto, over which the irregular surface of the key rides on being introduced to adjust the tumblers to the unlocking position, the key lifting the tumblers in a line parallel with the plane or side of the key; hence the incline on the key must be so light that the tumblers will be raised by inclines on the edge of the key solely. This causes so much friction that it is often difficult to insert or draw out the key.

The object of this invention is to overcome this difficulty; and it consists in constructing the tumblers with an incline transverse to the incline on the key, so that the tumblers are moved by the combined inclinations on the key and the tumblers.

A represents the outer cylinder; B, the inner, fitted to turn one within the other, in the usual manner, and with a central flat key-hole, *a*, to receive the flat key C. The tumblers 1 2 3 4, more or less in number, are arranged transversely through the inner cylinder, and each provided with a spring, *d*, which, in the normal condition, will force them into their respective grooves *e* or *f*. In the outer cylinder the plane of the tumblers, as in Figs. 2 and 3, is at right angles to the axis of the cylinder, and transverse to the plane of the key. A notch is cut into each tumbler, one side, *h*, of which is inclined, as seen in Fig. 3. This incline is the working-surface for the key, and lies across the key-hole, as in broken lines, Fig. 3, when in the locked condition. The key has the usual irregular edge and inclined end. As the key is introduced the incline on the key strikes the incline *h* on the tumblers, and by a continued movement the incline of the key rides over the incline of the tumblers, causing the tumblers to be drawn into the inner cylinder, as seen in Fig. 3.

In consequence of this transverse incline bearing on the tumblers, combined with the incline on the key, a proportionately easier movement of the tumblers is attained, because this combined incline (they both being of the same angle) would be equal to an incline on the key of half the angle, to make which would necessitate constructing the key and cylinder proportionately longer, and the tumblers a greater distance apart.

For that class of flat keys, such as shown in Fig. 6, which are forced into the lock against the tumblers, the tumblers are constructed with an incline transverse to the bearing-point of the key, and the bit of the key with corresponding inclines, as seen in Fig. 6, so that as the key is inserted the inclined ends of the bit strike the incline on the tumblers, and draw them into the cylinder proportionately easier than with a single incline.

Another great advantage of this improvement is that, whereas, in the usual construction, the working-surface of the tumblers is very small, and limited to the thickness of

the tumblers, by this improvement it is distributed over the whole inclined edge of the bearing in the tumblers.

I claim—

The combination of an inner cylinder, with one or more tumblers arranged transversely therein, each tumbler constructed with a bearing for the key, inclined transversely to the inclined bit or working-surface of the key, and an outer cylinder, within which the inner cylinder is arranged to rotate by means of the key, the said outer cylinder constructed with notches or grooves corresponding to the said tumblers, and substantially as described.

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Witnesses:

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