J. J. DINNAN.
Lock.

No. 212,908. **Patented Mar. 4, 1879.**

fig. 1

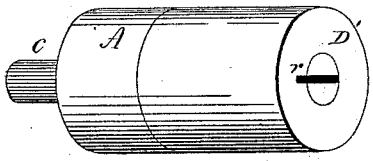


fig. 2

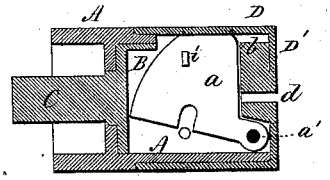


fig. 3

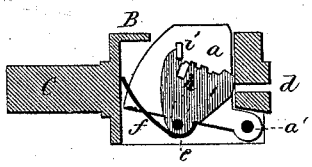


fig. 4

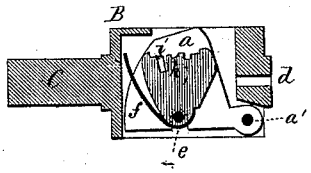


fig. 5

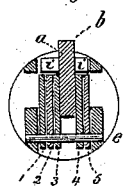
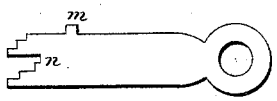


fig. 6



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. **212,908**, dated March 4, 1879; application filed January 6, 1879.

To all whom it may concern:

Be it known that I, JOHN J. DINNAN, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in 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 of the cylinder complete; Fig. 2, central section through the bolt; Figs. 3 and 4, sectional side views of the inner or rotating cylinder; Fig. 5, transverse section; Fig. 6, key.

This invention relates to an improvement in that class of locks known as "tube or cylinder locks"—that is to say, a rotating cylinder within a stationary cylinder, and means for engaging the two, combined with tumblers operated upon by the key to disengage the rotating cylinder from the fixed cylinder, and the rotating cylinder in connection with the bolt of the lock, so that rotating the cylinder draws the bolt; and the invention consists in the construction, as hereinafter described, and more particularly recited in the claims.

A is the stationary cylinder, which is made fast to the lock or door, and within this the cylinder B is arranged, the one concentric with the other, and so that the cylinder B may be turned within the outer cylinder, A. From the rotating cylinder B a stem or spindle, C, extends to the bolt or mechanism of the lock, and so that the rotation of the cylinder B actuates the lock mechanism in the usual manner for this class of locks.

The rotating cylinder B has a mortise through it, in which lies the bolt *a*, this bolt pivoted forward, as at *a'*, and so as to be moved downward, as from the position in Fig. 3 to that in Fig. 4. This bolt *a* extends up and into a slot, *b*, in the stationary cylinder A, as seen in Figs. 2 and 5, and when in that position the two cylinders are engaged, so as to prevent the rotation of the inner cylinder; but when the bolt *a* is moved down or drawn into its cylinder, as in Fig. 4, then the cylinders are disengaged and the inner may be turned. A flat key is used and introduced through a central slit, *d*, in the cylinder, the plane of the key at right angles to the plane of the bolt *a*. Pressing the key, therefore, against the bolt *a* will force the bolt into its cylinder and free it from engagement with the stationary cylinder. Combined with this pivoted bolt are several tumblers, 1 2 3, on one side, and 4 5 on the other, more or less in number, pivoted in the cylinder near the lower side of the mortise, as at *e*. These tumblers are provided each with its own independent spring *f*, or other suitable spring, the tendency of which is to force the tumblers toward the key-hole, and preferably so as to bring them into the same line before the key-hole, as seen in Fig. 3. One of the notches in each of the tumblers is made deeper than others, as at *h*, but at different relative positions in different tumblers.

On each side of the bolt, above the tumblers, is a stud, *i*, the thickness of which corresponds to the width of the notch *h* in the tumblers; hence, when the tumblers are all moved to such a position that the slits *h* in the several tumblers come into line below the studs *i*, as in Fig. 4, then the bolt may be turned downward, the studs *i* entering the slits *h*; but in any other position of the tumblers the movement of the bolt is impossible.

To thus move the tumblers a flat key, such as seen in Fig. 6, is made, with shoulders at its ends corresponding to the respective tumblers, and so that by pressing the key against the tumblers they will be moved to the position where the several notches *h* coincide. Then the shoulder *n* on the key will strike the front edge of the bolt *a*, and a continued movement of the key will force the bolt down, disengaging the inner cylinder from the stationary cylinder, and so that it may be turned by means of the key. The movement of the key to turn the bolt *a* will at the same time continue the movement of the tumblers; hence the notch *h* must be of a shape corresponding to the path of the combined movement of both bolt and tumblers, and not on a circle of which the pivot *a* of the bolt is the center, which would be the case were the tumblers stationary while the bolt is moving.

A sleeve, D, is placed over the cylinder, with a head, D′, so as to secure the inner cylinder in place longitudinally.

The tendency of the springs is to throw the key outward; hence it is desirable that the key should be secured while turning the cylinder. To do this a stud, *m*, on one edge of the key passes through a notch, *r*, in the head of the sleeve, which coincides with the key-hole in the rotating cylinder when the lock is in its normal condition; then, when the key is pressed inward and turned, this stud *m* rides against the inner face of the head D′, and is prevented from being withdrawn until the key-hole is returned to its normal position.

As thus far described, the device is applicable to spring or night locks; but in dead-locks—that is, in which the bolt is thrown or drawn so as to remain in either position—the movement of the rotating cylinder would be but a half-revolution. In that case there must be a slot in the stationary cylinder opposite the slot *b*, so that the bolt *a* would enter that slot when fully unlocked and the other slot when fully locked; and in order to remove the key in that second position, there must be a notch in the head D′ opposite and corresponding to the notch *r*, to release the stud *m*.

It will be understood that the tumblers need be arranged only on one side; but both sides are preferable.

The bolt and tumblers, both pivoted to swing in parallel planes, and so that both move under the same action of the key, may be applied to other classes of locks.

I claim—

1. The combination of the pivoted bolt with one or more tumblers, pivoted to swing in a plane parallel with the plane of the bolt, each tumbler provided with a notch and the bolt with a stud, which, when the tumblers are turned by the key until the notch therein coincides with the stud on the bolt, will permit the unlocking of the bolt by a continued movement of the key, substantially as described.

2. The combination of a stationary cylinder, an inner rotating cylinder, a bolt pivoted in the said rotating cylinder in a plane parallel with the axis of the cylinder, and so as to automatically engage with a slot in the stationary cylinder, or be disengaged therefrom by means of a key introduced to turn the said bolt on its pivot, substantially as described.

3. The combination of a stationary cylinder, an inner rotating cylinder, a bolt pivoted in the said rotating cylinder in a plane parallel with the axis of the cylinder, and so as to automatically engage with a slot in the stationary cylinder, or be disengaged therefrom by means of a key introduced to turn the said bolt on its pivot, and one or more tumblers, pivoted within said rotating cylinder so as to move in a plane parallel with the plane of the bolt, each tumbler provided with a notch and the bolt with a stud, which, when the tumblers are moved by the introduction of the key so that the notch in the tumblers coincides with the stud on the bolt, both the bolt and tumblers will then be moved by the same key, substantially as described.

4. The combination of a stationary cylinder, an inner rotating cylinder, a bolt pivoted in the said rotating cylinder in a plane parallel with the axis of the cylinder, and so as to automatically engage with a slot in the stationary cylinder, or be disengaged therefrom by means of a key introduced to turn the said bolt on its pivot, and one or more tumblers upon each side of the bolt, pivoted within said rotating cylinder so as to move in a plane parallel with the plane of the bolt, each tumbler provided with a notch and the bolt with a stud on each side, which, when the tumblers are moved by the introduction of the key so that the notches in the tumblers coincide with the studs on the bolt, both the bolt and tumblers will then be moved by the same key, substantially as described.

JOHN J. DINNAN.

Witnesses:

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