W. E. FORSTER.
Lock.

No. 212,452. Patented Feb. 18, 1879.

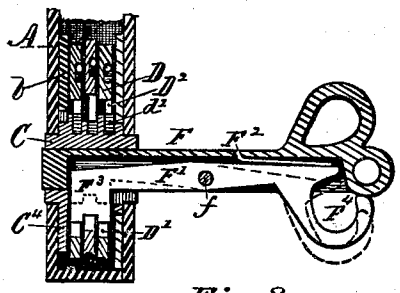

Fig. 3

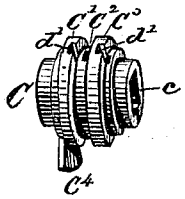

Fig. 4

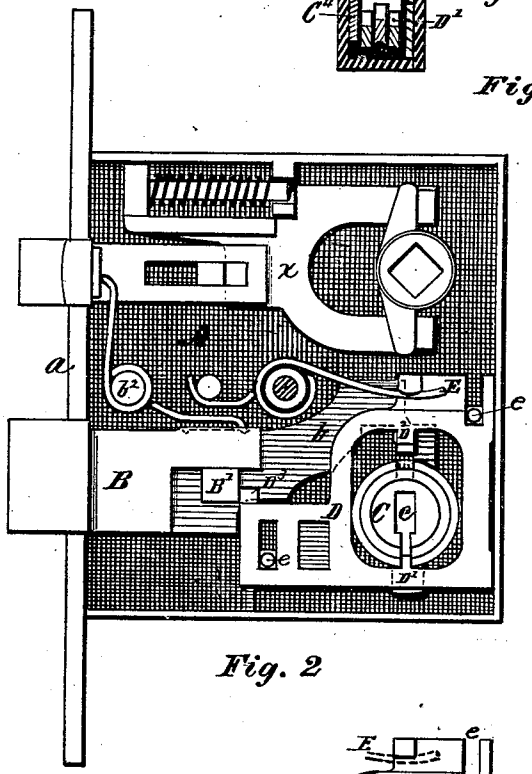

Fig. 2

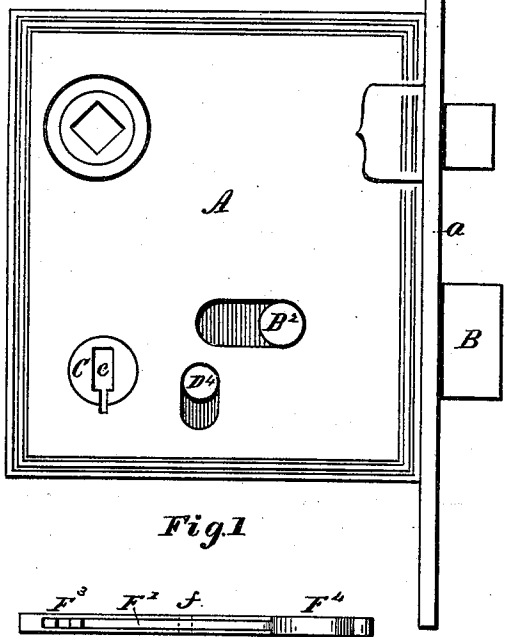

Fig. 1

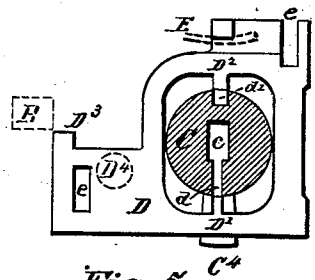

Fig. 5

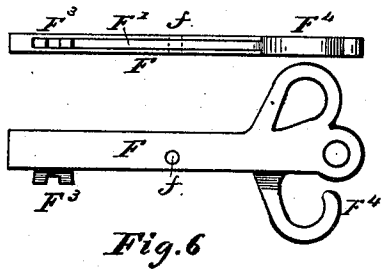

Fig. 6

Witnesses,

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UNITED STATES PATENT OFFICE.

WILLIAM E. FORSTER, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR OF ONE-FOURTH HIS RIGHT TO ERASTUS DACY, OF SAME PLACE.

IMPROVEMENT IN LOCKS.

Specification forming part of Letters Patent No. **212,452**, dated February 18, 1879; application filed November 27, 1878.

To all whom it may concern:

Be it known that I, WILLIAM E. FORSTER, of Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Locks and Keys; and I declare the following to be a description of my said invention, sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents an inner-side view of my improved lock. Fig. 2 represents an outer-side view of the same, with the cap-plates removed. Fig. 3 represents a vertical section through the tumbler, guard-plates, and key. Fig. 4 represents a perspective view of the tumbler-cylinder. Fig. 5 represents a side view of the rear guard-plate and section of the tumbler, and Fig. 6 represents a side and front of the key.

My invention is herein shown and described as applied to a door-lock; but it may be used in the construction of locks for other purposes, the forms and sizes of the parts being modified to suit the requirement of use, while the nature and mode of operation remain the same.

My invention consists in the employment of a tumbler-cylinder and a guard-plate, having oppositely-projecting points or lugs, in combination with the locking-bolt, and operating as hereinafter described; also, in the employment of a tumbler-cylinder, having rings or peripheral surfaces of different diameters, with recesses formed therein, and a series of guard-plates, with oppositely-projecting points or lugs, corresponding to the several diameters of the tumbler-rings and their respective recesses, substantially as hereinafter described.

The subject-matter claimed is hereinafter definitely specified.

In the drawings, A denotes the case or frame, which may be made in any suitable form. In the present instance it is rectangular, with projecting face-plate *a*, and of sufficient capacity to contain the latch devices X, which latter are of ordinary construction and form no part of my invention, except as they may be used in connection therewith in door-locks.

B indicates the lock-bolt, made in the present instance of the form shown, with its thin rear portion, *b*, arranged next the inner side of the frame A, and provided with a stop-lug, B^1, and friction-spring b^2, of suitable form.

C indicates a revoluble tumbler, with key-hole *c*, of rectangular or other shape, to embrace the stem or shank of the key in suitable manner to be revolved thereby. The periphery of the tumbler C is made with a series of circumferential flanges or rings, C^1 C^2 C^3, of different or varying diameters, while recesses or depressions *d d'* are formed therein at opposite sides of the tumbler-cylinder, as indicated, and a projecting-finger, C^4, is arranged thereon for throwing the bolt B in and out. At the lower part the key-hole *c* is slotted through to the depressions *d*, in the manner shown. A greater or less number of rings or surfaces may be formed on the tumbler C, and the variations in their diameters can be arranged as desired.

D indicates the guard-plates, which operate in connection with the tumbler C for holding the lock. Said plates D are provided with points or projecting lugs D^1 D^2, arranged to project toward the opposite sides of the tumbler-cylinder C, or that ring or portion of it corresponding in position to the respective guard-plates D. In their width the said points D^1 D^2 are also made to correspond with the width of the recesses *d d'*. One, two, three, or more of these guard-plates D may be employed in a single lock, as desired. Said plates are arranged to move in proper order by suitable guides *e*, and are pressed in one direction by suitable springs E, so that their lugs or points D^1 will enter the recesses *d* of the tumbler C, as indicated in Fig. 2.

The first or inner plate, D, nearest the bolt *b* B, is provided with a lug, D^3, that engages the stop-lug B^1 on the bolt, and also in the present instance with a knob or boss, D^4, extending through a slot in the frame A, whereby said plate can be worked from the inside of the door without the key F, if desired. A knob or boss, B^2 is also arranged on the inner side of the bolt B, as indicated, whereby the

bolt may be moved back and forth when the plate D is pressed down by its knob D^4. These bosses or knobs are not required except where the lock is designed for use as a night-lock.

The key F is made in the form shown in Figs. 3 and 6, with a hollow rectangular stem, having an internal lever-piece, F^1, pivoted therein at *f*, and a spring, F^2, for pressing the outer end of said lever outward. The bit or pod F^3 is formed on the inner end of the lever F^1, and is drawn into the shank or stem for a portion of its length by the action of the spring F^2. The lower part, F^4, of the handle is formed on the outer end of the lever F^1, in such manner that by pressing thereon with the thumb the bit F^3 may be extended or moved outward in a direction perpendicular to the axis of the stem. (See dotted and full lines, Fig. 3.)

The opening of the key-hole *c* is of such size as to admit the key when the bit F^3 is in its contracted position. Then after the key is inserted pressure on the part F^4 causes the extension of the bit F^3, so as to force the points D^1 of the guard-plate D out from the recess *d* of the tumbler C, so that said tumbler C can be revolved for moving the bolt, the lug D^3 at the same time releasing the stop B^1. (See Fig. 5.) If the points D^1 are pressed down too far the opposite points, D^2, of the plates D enter the upper recesses, *d'*, of the tumbler C, and hold the tumbler securely in position, since the distance between the points D^1 and D^2 equals the diameter of the tumbler-cylinder C, or that portion of it corresponding to the respective plates, so that there is only one position where the tumbler can be revolved; hence it will be observed that the lock cannot be worked except by the proper key F, and with that only when the pod or bit is properly extended.

The stem of the key F may be of other than rectangular form, provided it is such as will contain the expansible bit devices and will turn the tumbler C.

The several pins or points of the key-bit may each be attached to a separate lever, F^1, so that they can be pressed outward independently of each other, if desired.

Any desired number of guard-plates D may be used, and the rings on the tumbler C varied so as to require different degrees of depression for the several guard-plates to release the tumbler-cylinder, the bit of the key F being made to correspond therewith, without departing from the nature of my invention.

The guard-plates D may have plain plates or partitions between them, if desired, so that each guard will operate in a separate space or chamber; and lugs D^3 may be formed on each of the plates to engage with the stops B^1, in which case the knob D^4 should be arranged to depress the whole series of plates D.

The tumbler-cylinder C and guard-plates D, with points D^1 D^2, may be used in locks of various kinds, the shape and size being modified to suit the requirements of the case.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. The cylindrical tumbler for locks, the exterior surface of which is formed in rings or portions having different or various diameters, with recesses at the opposite sides thereof, and having the key-hole and bolt-throwing finger, as set forth.

2. In combination, the revoluble key-hole tumbler, provided with peripheral recesses, and the guard plate or plates, provided with oppositely-projecting points or lugs, corresponding in size and position with said recesses, and distant from each other equal to the diameter of said tumbler, as set forth.

3. In combination, the tumbler-cylinder C, provided with peripheral recesses and finger C^4, the guard-plate D, with oppositely-projecting lugs D^1 D^2 and stop-lug D^3, and the bolt B, with stop B^1, as set forth.

4. In combination, the tumbler-cylinder C, with surfaces of various diameters, recesses *d d'*, and finger C^4, the extensible key F, the guard-plates D, with guards or points D^1 D^2 and lug D^3, the springs E, and bolt B *b*, with stops B^1, as set forth.

Witness my hand this 22d day of November, A. D. 1878.

WILLIAM E. FORSTER.

Witnesses:
F. A. EATON,
P. A. HAMMOND.