J. MOORE.

Extension-Lock for Doors.

No. 204,070. Patented May 21, 1878.

Figure 1.

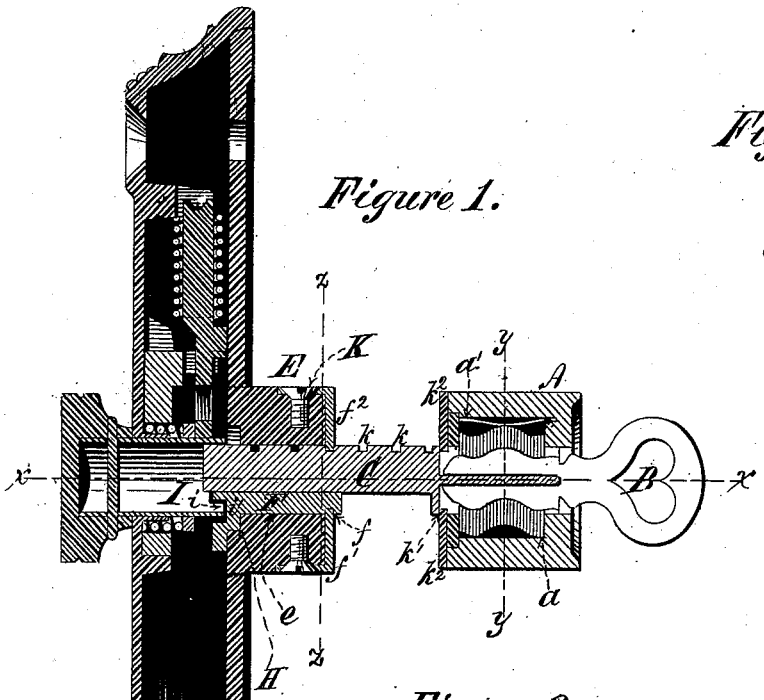


Figure 4.

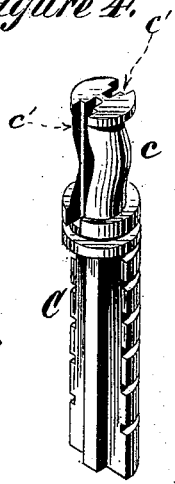


Figure 2.

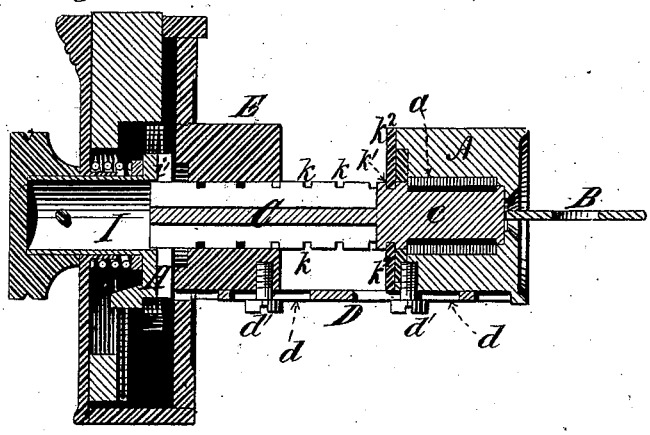


Figure 3.

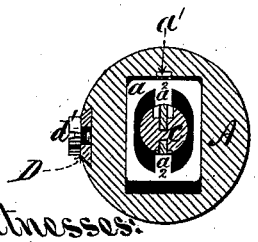
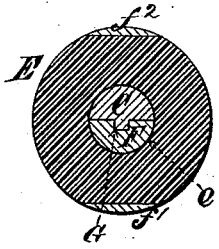


Figure 5.



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JOHN MOORE, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN EXTENSION-LOCKS FOR DOORS.

Specification forming part of Letters Patent No. **204,070**, dated May 21, 1878; application filed February 2, 1878.

To all whom it may concern:

Be it known that I, JOHN MOORE, of Brooklyn, New York, have invented certain Improvements in Extension-Locks for Doors, of which the following is a specification:

My improvements relate to that class of locks in which the tumbler-chamber, containing the key-hole and the stem which is rotated by the key to operate the bolt of the lock, is made capable of adjustment to adapt the lock for use on doors of variable thickness; and my invention relates to the construction of the rotating stem, both with reference to the sliding tumblers which are operated by the key and with reference to the method in which the rotating stem is made capable of longitudinal movement and fixed adjustment.

In the accompanying drawings, which represent my invention applied to an ordinary rim-lock, Figure 1 is a central longitudinal section of the lock, showing the key inserted in the proper position to rotate the stem which operates the bolt. Fig. 2 is a transverse section through the line *x x* on Fig. 1. Fig. 3 is a transverse section of the tumbler-chamber through the line *y y* on Fig. 1. Fig. 4 is an isometrical perspective of the rotating stem, showing the crooked upper end of the stem provided with longitudinal slots to admit the wards of the tumblers when the key is not inserted, and also showing the semi-cylindrical shape of the lower part of the stem and the longitudinal tongue on the flat face of the stem, which engages a groove in a corresponding semi-cylindrical piece which is contained in the bearing in which the stem rotates. Fig. 5 is a transverse section of the stem-bearing through the line *z z* on Fig. 1.

On reference to the drawings it will be seen that the tumbler-chamber is a rectangular recess in the cylinder A, which contains a series of loose tumblers, *a*, placed one upon the other, and adapted to slide back and forth, when operated upon by the key B, or by their gravity, in either direction, or by the action of the flat spring a^1 on one side of the tumbler-chamber. The upper end *c* of the rotating stem C, which operates the cam-shaft I, and consequently the bolt, projects through the base of the tumbler-chamber, and occupies a central position therein in proper relation to the hole in the face of the cylinder A, through which the key B is inserted. The tumblers *a* are perforated plates of thin sheet metal, and are each provided with the inwardly-projecting tongues or wards a^2, one or the other of which, when the key is not inserted, drops into one of the longitudinal recesses c' in the upper end of the stem C, and hence prevents the turning of the stem. The cylinder A is prevented from turning by reason of being secured to the steadying-plate D, which extends inwardly, and is also secured to one side of the box E, in which the stem C has its principal bearing. The steadying-plate D is provided with the slots *d* for the admission of the screws d', by which it is fastened to the cylinder A and the box E, respectively, the object of the slots being to allow the fastening of the chamber A at variable distances from the box E.

Instead of the steadying-plate D, pins may be inserted in holes drilled through the cylinder A and into the box E. Such pins may be held by set-screws corresponding to the screws d'. As the cylinder A is amply supported upon the substantial stem C, the principal function of the steadying-plate or pin is to prevent the cylinder from turning.

It will be seen that the edges of the key conform to the shape of the edges of the slot c' in the crooked upper portion *c* of the rotating stem, and hence when the key is inserted the wards of the tumblers a^2 are thrown out of the slots c', and the stem C can then be turned by power applied to the key. The principal bearing *e* of the rotating stem is contained in the box E, and it will be seen that this bearing is filled with a shaft composed of two parts, one of which is contributed by the lower portion of the stem C and the other by the corresponding semi-cylindrical piece F, which is provided with the recess *f* in its periphery for the reception of the edges of the stop-plates f^1 and f^2, which are respectively screwed to the opposite sides of the box E, and serve to prevent any longitudinal movement of the piece F. The piece F is provided with the longitudinal groove G to receive and engage the tongue on the sliding stem C. At its lower end the piece F is also provided with the projecting half-collar H, which bears upon the inner face of the box E, and which answers

the purpose of a crank to rotate the hollow cam-shaft I, which operates the bolt of the lock. The connection of the cam-shaft I with the crank H is effected by means of the tongue *i*, which projects into the groove *i'* in the face of the projecting half-collar H. The cam-shaft is made hollow to allow the longitudinal movement of the sliding stem C. The curved periphery of the sliding stem C is provided with a series of grooves, *k*, which are represented as being about a quarter of an inch apart, and which correspond to the groove *f* in the stationary piece F in respect to engaging the edges of the stop-plates f^1 and f^2, by means of which the longitudinal movement of the stem C is prevented.

It will, of course, be understood that the crank H may be connected with the cam-shaft in any convenient way—as, for example, by pins projecting into a collar on the cam-shaft, if desired.

When it is desired to vary the distance to which the chamber A projects from the lock, the stop-plate f^2 is removed by loosening the screw K, and, the screws *d'* being loosened, the chamber and sliding stem C may be moved in either direction to the desired point, and may be then permanently fixed at that point by again tightening the screws *d'* and applying the stop-plate f^2. The permanent connection of the stem C with the chamber A is effected by means of the groove k^1 and the stop-plates k^2, which are fastened to the inner face of the chamber A, and the edges of which enter the groove k^1 in the periphery of the stem C.

As doors vary in width usually by quarters of an inch, it will be seen that the series of equidistant recesses *k* in the sliding stem sufficiently adapt the lock to such longitudinal extension as may be required for ordinary use. If desired, of course, the number of these recesses may be increased, and they may be placed closer together.

I claim as my invention in an extension-lock substantially such as described—

1. The tumblers *a*, provided with the inwardly-projecting tongues a^2, in combination with a rectangular chamber and a crooked rotating stem provided with the longitudinal slots *c'*, substantially as and for the purpose set forth.

2. A cylinder provided with a rectangular chamber for containing a series of sliding tumblers and for receiving the crooked upper portion of the rotating stem, in combination with the slotted steadying-plate D and the box E, substantially as described.

3. The sliding stem C, in combination with the box E and the semi-cylindrical piece F, provided with a projecting collar or crank for operating the cam-shaft I and supporting the semi-cylindrical portion of the stem C in the bearing *e*, substantially as described.

4. The stem C, provided with the recesses *k* in its periphery, in combination with the stop-plates f^1 and f^2, substantially as described.

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