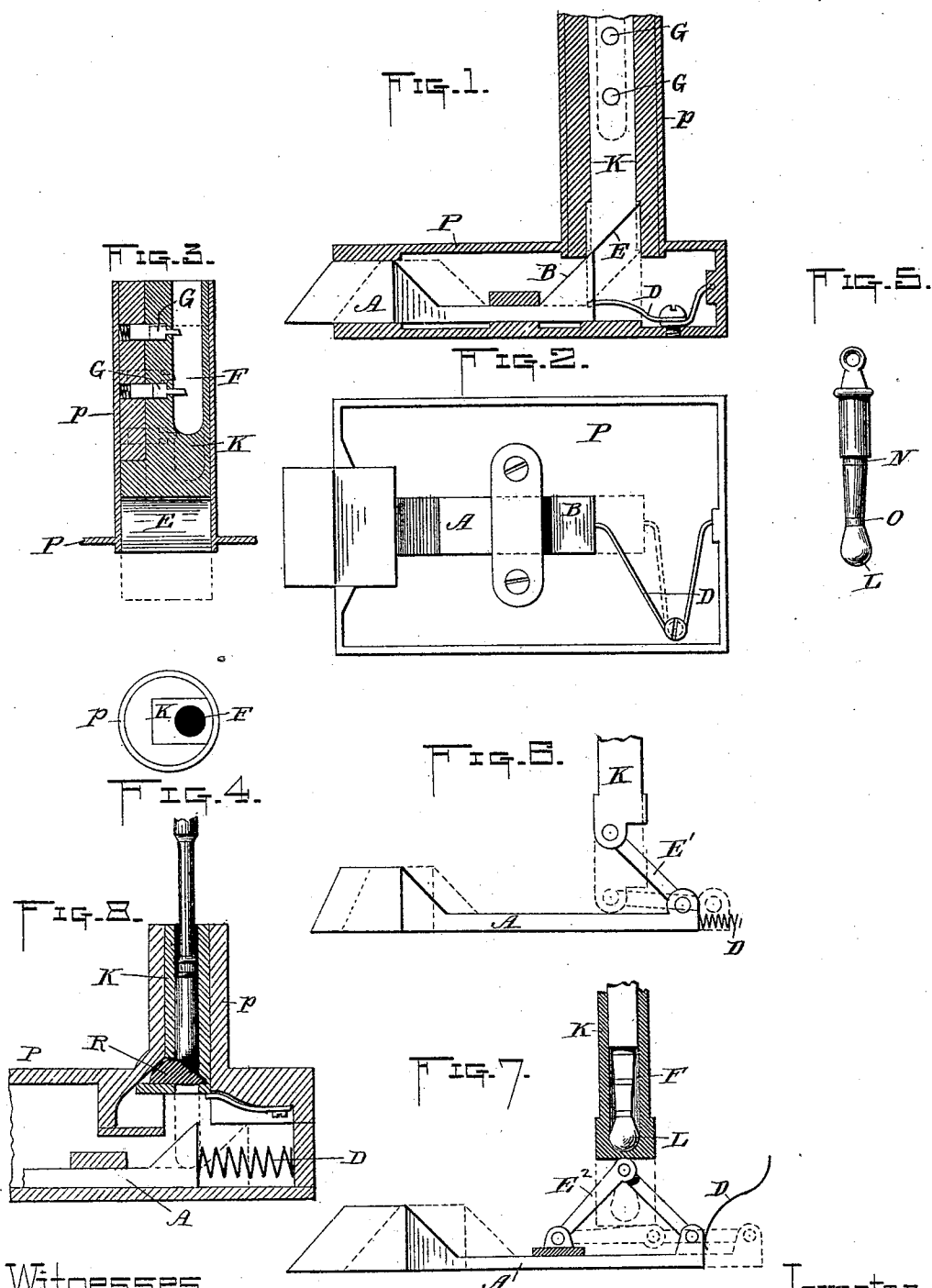


(No Model.)

T. J. JOHNSTON.
LOCK.

No. 529,388.

Patented Nov. 20, 1894.



Witnesses.

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UNITED STATES PATENT OFFICE.

THOMAS J. JOHNSTON, OF WASHINGTON, DISTRICT OF COLUMBIA.

LOCK.

SPECIFICATION forming part of Letters Patent No. 529,388, dated November 20, 1894.

Application filed June 3, 1887. Serial No. 240,152. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. JOHNSTON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Locks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a tumbler lock into which the key may be inserted any side up and the lock operated.

It also relates to a tumbler lock which is operated by a direct push of the key in the line of its insertion.

My invention comprises a part movable in the line of the insertion of the key, tumblers adapted to move toward or from the key when acted upon or released by the rectilinear movement of the latter for engaging the part, a bolt, and devices whereby the movement of said part and of the key is communicated to the bolt.

A lock is thus produced which is simple, cheap, very easy of operation, and secure.

While such number and variety of position of tumblers may be used as will give the greatest security, the entire operation of the lock is nevertheless effected by a single movement in a straight line, which is a mere continuation of the motion of inserting the key.

In order to enable my invention to be clearly understood I have shown in the accompanying drawings means for carrying the same into effect.

In said drawings:—Figure 1 is a sectional view of a lock embodying my invention. Fig. 2 is an elevation, a portion of the casing of the lock being removed. Fig. 3 is a sectional view at right angles to the section of Fig. 1, showing a portion of the lock. Fig. 4 is an end view of said portion. Fig. 5 is a view of a key for the same. Fig. 6 is a view showing another means for connecting the bolt and movable part. Fig. 7 is a similar view showing still another means for said purpose. Fig. 8 is a sectional view of a construction, in which the operation of the bolt is caused more immediately by the key.

K indicates the movable part above referred to, contained and adapted to slide in a por-

tion *p* of the lock-casing P. It is adapted to be locked in position or to be released by tumblers G operating in any well known or preferred manner.

F is the key seat formed by preference in the part K. Upon the insertion of the key to the proper depth in this seat the tumblers are disengaged and the part K and the key are both enabled to be pushed inward, by which latter movement, the key, by direct engagement or through the medium of the part K or other suitable interposed means, causes the bolt to be operated.

The bolt, shown at A, may be of any ordinary or preferred construction, and the devices through which it is operated by the key may be varied to a wide extent. In Figs. 1, 2 and 3 an inclined plane B upon the bolt and a corresponding inclined plane E, upon the part K are shown as constituting such means of operation.

In Fig. 6 a link E' pivoted to or bearing upon the parts A and K furnishes the means of operation.

In Fig. 7 a pair of levers, a toggle E², is shown as adapted to be actuated by the key and movable part.

The key may actuate the bolt or operating devices directly by its inner end, which would in such case project through the movable part K, but in such construction an additional device would be necessary for closing the opening through the part K, such as a sliding or swinging door or gate opened and shut when the key is inserted. Such a construction is shown in Fig. 8, in which R is a slide which, after the part K has been released from the tumblers, and begins to move inward, is thrust aside by the key. The latter then, instead of the part K, causes the operation of the bolt.

I prefer to make the key in the form of a solid of revolution the characteristic of such a solid being that it is circular in cross-section at every point, as shown in Fig. 5, in which N and O are cylindrical portions of proper diameter to disengage the tumblers when brought opposite to the latter.

It will be evident that the number and variety of position of the tumblers may be such as to render the lock as complicated and safe as desired.

L indicates an enlargement at the inner end of the key, of the same diameter as the seat, to give evenness of bearing and steadiness of the key relative to the tumblers.

5 The key may, however, be of any other suitable form, such as rectangular, square, or polygonal in cross section, the shape illustrated being simply that which I prefer.

The operation of the lock is as follows:—

10 Upon inserting the key, which may be done any side up, the tumblers are forced back, and, when the key is centered by the head L in its final and inmost position in its seat the portions N and O will be in proper position
15 to bring the divisions between the parts of the tumblers into line and release the part K. A push of the key, which will in practice be merely a continuation of the movement of inserting it, carries back the part K and key,
20 operating through the proper devices to draw the bolt A. The door (if the lock is applied to a door) having been opened, the spring D, which controls the bolt and normally keeps it protruded, throws forward the latter as soon
25 as the pressure has been relaxed upon the key. This movement forces back the key into the hand.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

30 1. A lock or latch having a casing, a part mounted therein, movable in the line of the insertion of the key, and provided with a seat or recess for the latter; a tumbler mounted
35 in said part, adapted to engage the casing, projecting into said recess and radially movable in its bearings in said part toward or from the recess; the bolt, and means substantially as described for imparting the movement of
40 said part to the bolt; in combination with a key consisting of a body symmetrically formed about an axis and having a peripheral surface for holding the tumbler out of engagement, whereby the key may be inserted
45 in various positions, the tumbler disengaged, and the bolt withdrawn, by its direct movement, substantially as described.

2. In a lock, the combination of a part provided with a key-seat and movable in the direction of the insertion of the key, a radial
50 tumbler movable in said part toward and from the key seat, a bolt or latch operated by the longitudinal movement of said part, and a key adapted to engage said seat and thus
55 operate the tumbler and draw the bolt by its direct longitudinal movement, substantially as described.

3. In a lock or latch the combination, with the casing, of a part mounted in said casing, movable in the line of the insertion of the key
60 and having a circular seat or recess for the latter, a tumbler mounted in a lateral bearing in the said part and adapted to move in straight lines toward and from said circular
65 recess, a bolt, and means substantially as described whereby the simple and direct insertion of the key will both disengage the tumbler and withdraw the bolt, as set forth.

4. In a lock or latch the combination, with the casing, of a part movable in the line of
70 the insertion of the key and having a circular seat or recess for the latter, a tumbler mounted in a lateral bearing in the said part and adapted to move in straight lines toward and from said circular
75 recess, a bolt, and a link whereby the movement of said part is imparted to the bolt, substantially as set forth.

5. In a lock, the combination of a longitudinally movable part having a key-seat, a bolt
80 or latch connected therewith, a tumbler mounted therein adapted to secure said part and radially movable therein, and a key adapted to operate said tumbler by its direct
85 insertion in said seat and by its continued longitudinal movement to operate said movable part, substantially as described and set forth herein.

In testimony whereof I affix my signature in the presence of two witnesses.

THOMAS J. JOHNSTON.

Witnesses:

H. N. LOW,

A. B. KELLY.