

(Model.)

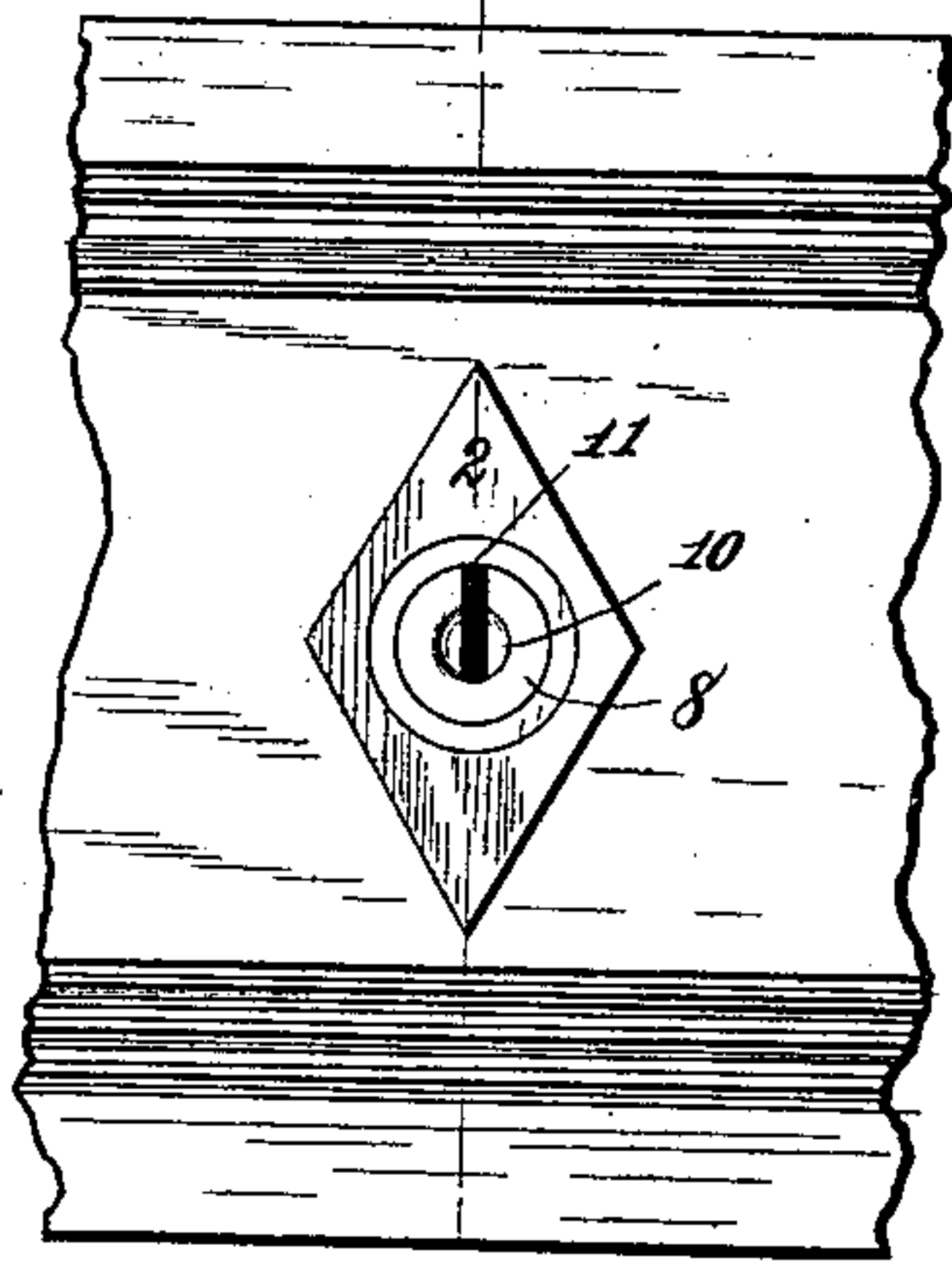
W. I. LUDLOW.

LOCK.

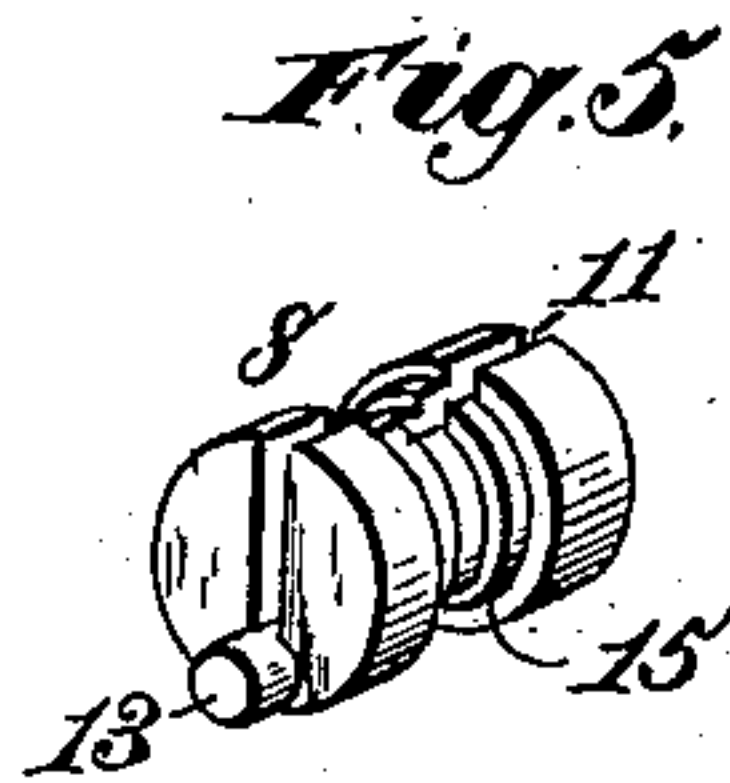
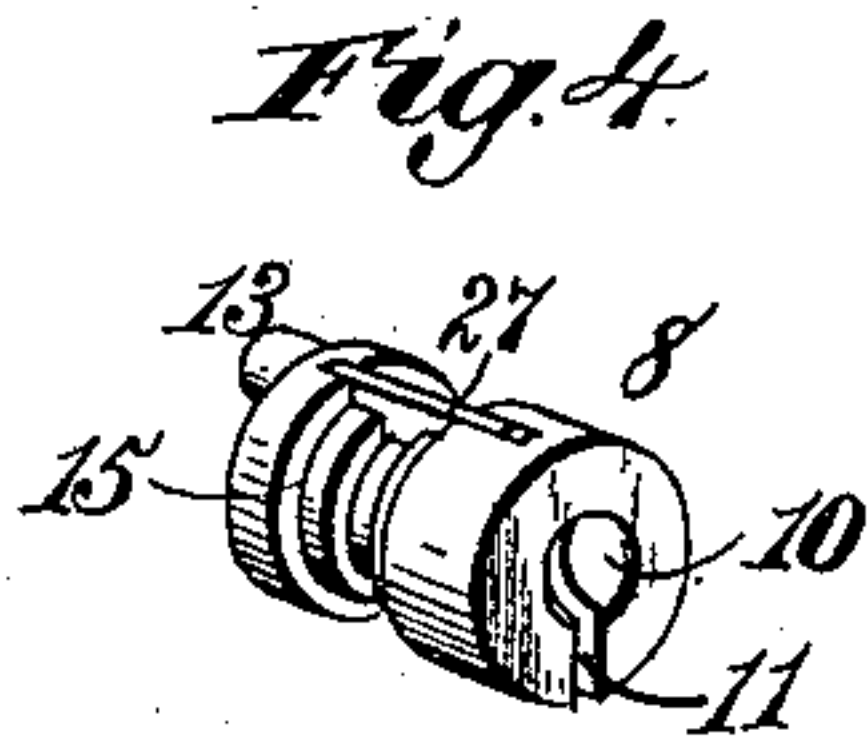
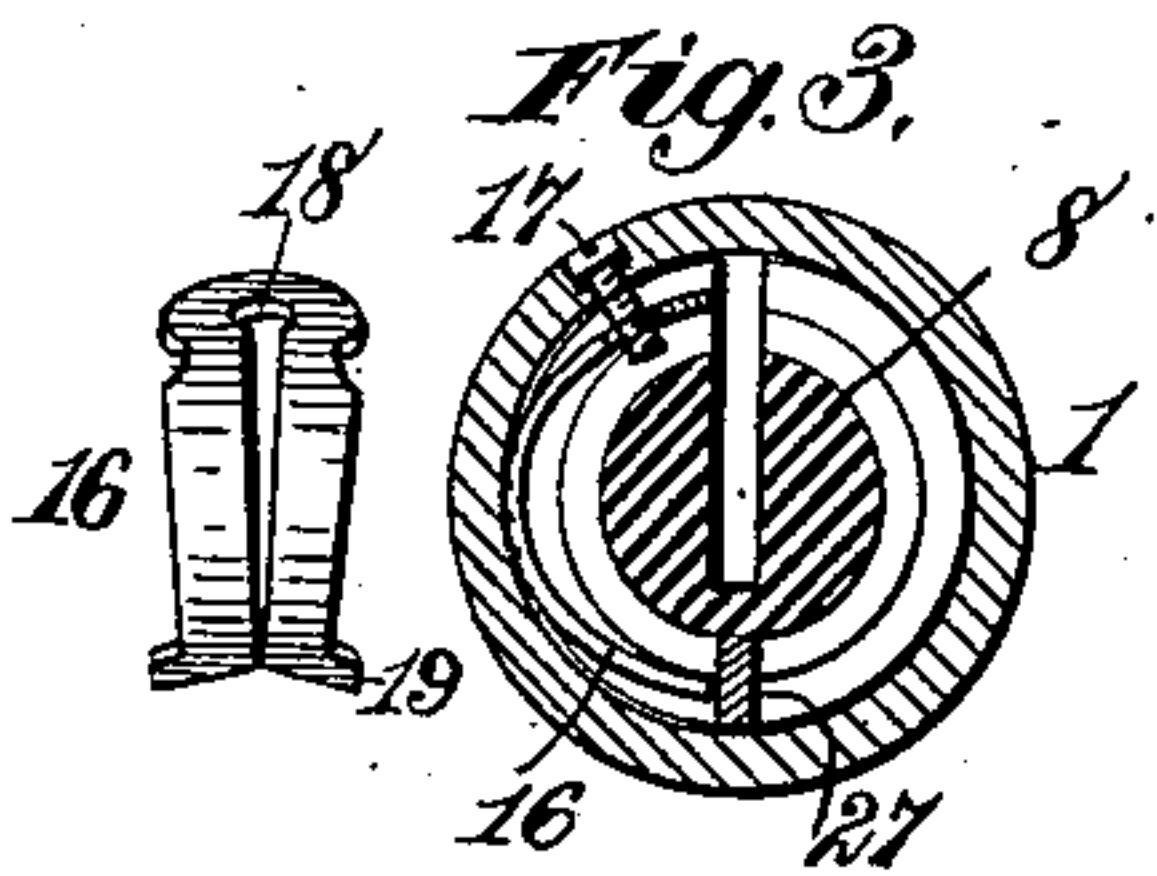
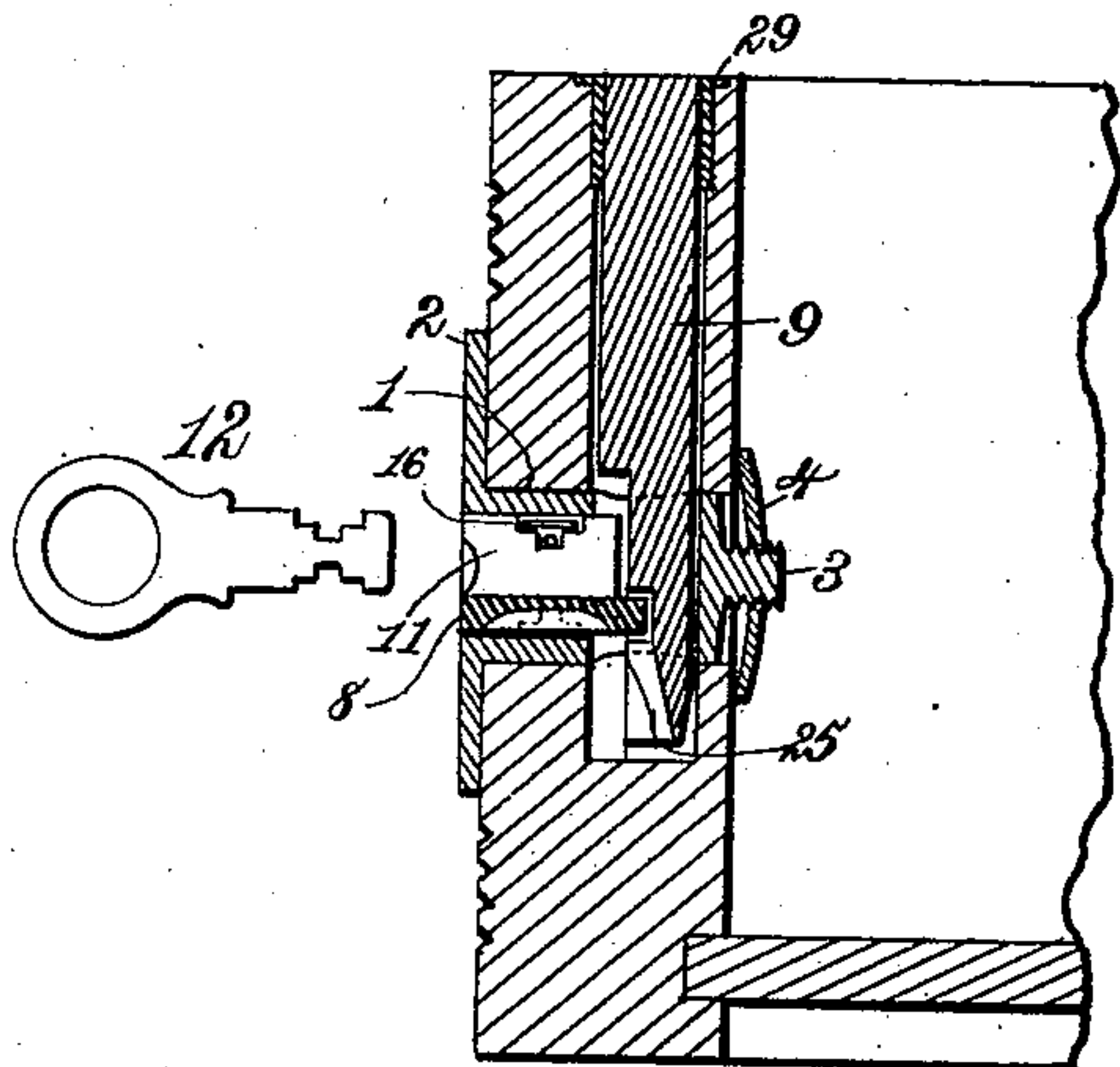
No. 315,307.

Patented Apr. 7, 1885.

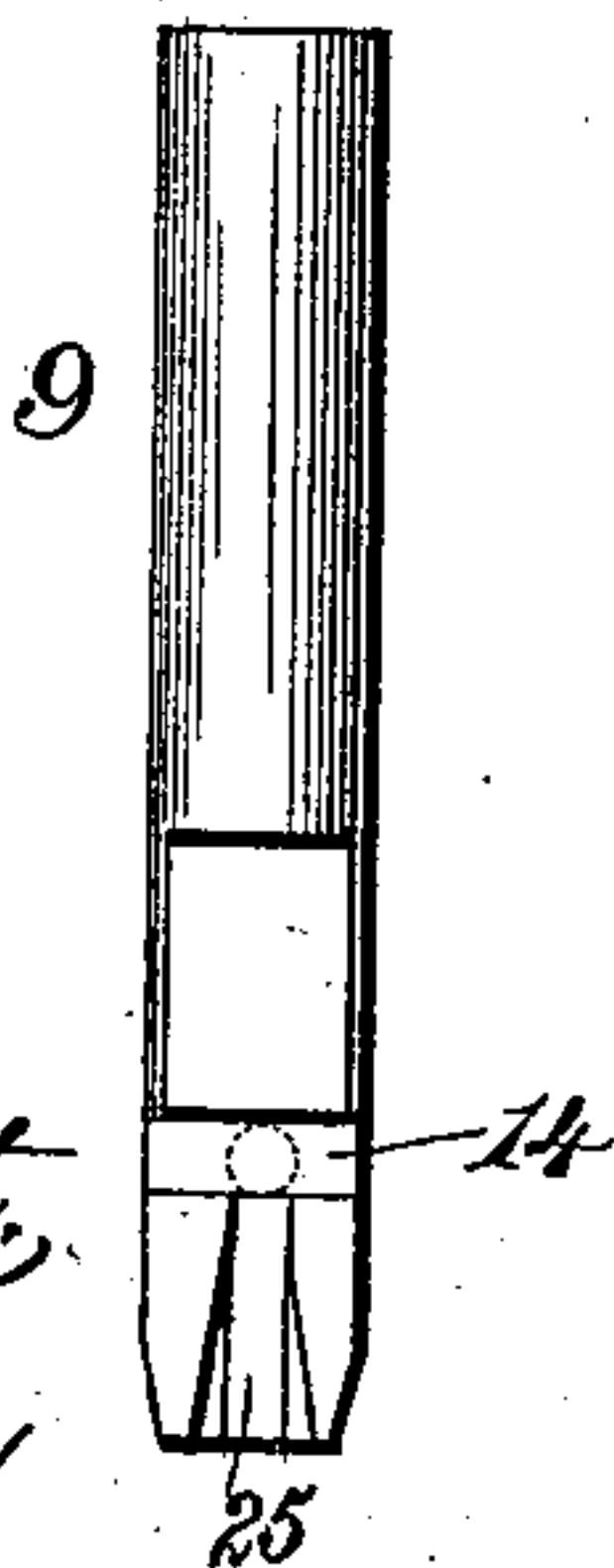
*Fig. 1.*



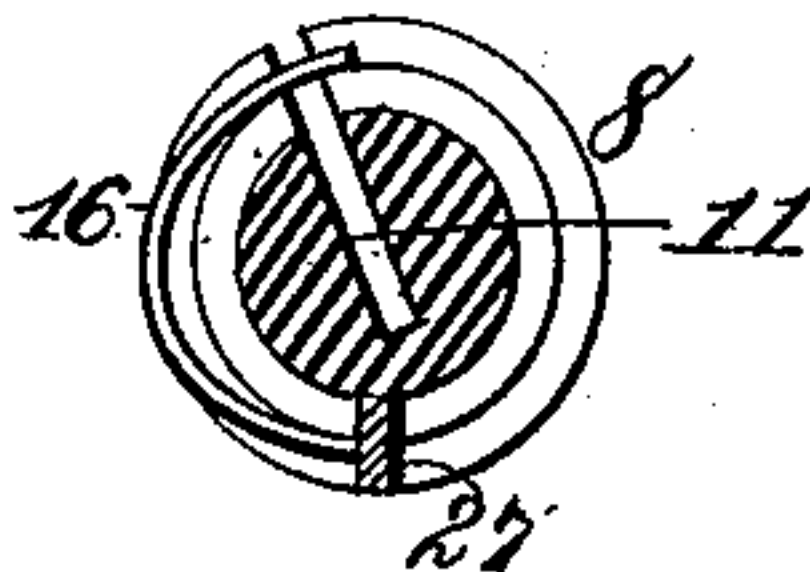
*Fig. 2.*



*Fig. 6.*



*Fig. 7.*



*Witnesses.*  
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*George W. Rea*

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*By James L. Norris.*  
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# UNITED STATES PATENT OFFICE.

WASHINGTON I. LUDLOW, OF CLEVELAND, OHIO.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 315,307, dated April 7, 1885.

Application filed December 23, 1884. (Model.)

*To all whom it may concern:*

Be it known that I, WASHINGTON I. LUDLOW, a citizen of the United States, residing at Cleveland, Cuyahoga county, Ohio, have invented new and useful Improvements in Locks, of which the following is a specification.

This invention relates to that class of locks for doors, drawers, window-sashes, and other objects in which a stationary lock case or cylinder, fixed within the door or other object, incloses a rotary key-barrel having a diametric keyway intersected by circumferential recesses for the reception of tumblers, the inner end of the key-barrel having a crank-pin which enters a slot in a sliding locking-bolt, so that when the proper key is introduced into the key-barrel the same can be rotated for the purpose of sliding the bolt in either direction.

The invention consists in a stationary lock case or shell for the reception of a rotary key-barrel which is formed with a front flange that serves as an escutcheon or face plate, and having at its other end a screw-threaded portion adapted to receive a nut or washer disposed on the inner side of the door, drawer, or other object in which the said lock-case is seated, whereby the lock-case is confined in position.

The invention also consists in the provision of a lock-case having a front flange which serves as an escutcheon-plate, and a rear stem or screw-threaded shank made of a less diameter than the body of the lock-case, said screw-threaded stem being adapted to receive a fastening nut or washer arranged on the inside of the drawer or other object in which the lock-case is seated.

The invention also consists in the provision of a sliding locking-bolt which enters the lock-case at right angles thereto, whereby said lock-case is immovably held in its slot, or is prevented from turning therein.

The invention also consists in certain details of construction and arrangement of the rotary key-barrel, locking tumbler, and bolt, as will be hereinafter more fully described, and then set forth in the claims.

In the drawings, Figure 1 represents a front view of my lock as applied to a drawer or analogous object, and showing the escutcheon-plate. Fig. 2 is a vertical section taken through

the line *xx* of Fig. 1. Fig. 3 is a transverse section showing the spring-tumbler, its fastening-screw, and the key-barrel. Fig. 4 is a detail view of the locking-barrel, showing the annular groove therein for the reception of the spring-tumbler, and the longitudinal spline or rib for limiting the movement of barrel. Fig. 5 is another view of said locking-barrel, showing more clearly the key-slot therein and the rear eccentric or wrist pin for operating the bolt. Fig. 6 is a detail view of the bolt. Fig. 7 illustrates the key-barrel in position for allowing the key to be used as a "pull" when the bolt is retracted from its keeper.

The reference-numeral 1 designates a shell or lock-case, which may be in the form of a cylinder, or it can be an angular body having a cylindrical bore or chamber. The front of said lock case or shell 1 is formed with a flange, 2, which serves as an escutcheon or face plate, disposed on the front or exposed side of a drawer or other object to which the lock is applied, as is clearly seen in Fig. 1. The rear end of the cylinder or body 1 is closed, and is formed with a reduced portion or screw-threaded stem, 3, which passes through the object in which the lock is seated, and is secured on the inner side or rear of said object by means of a nut or washer, 4. The stem or screw-threaded portion is made sufficiently long so as to allow for the adjustment of the nut thereon to adapt the lock case or shell 1 to be used on objects of varying thicknesses.

It is evident that in order to obtain a secure fastening the mortise in which the shell or locking case 1 is seated should correspond with the shape thereof, and it may be observed that said shell or lock-case is preferably made of a cylindrical shape, so that the mortise for its reception can be made with an ordinary boring-tool.

By providing the reduced or shank portion of the shell 1 the mortise which receives the shell need not extend through the entire thickness of the drawer, door, or other object, since a small aperture for the passage of said stem is all that is required. The lock case or shell 1 incloses a rotating locking or key barrel, 8, which is formed from a solid cylindrical rod of suitable diameter and convenient length



to fit the bore of the shell 1 and allow the bolt 9 to operate in rear thereof. The front end of this key-barrel 8 has formed in it a circular depression, 10, for readily guiding the key into the same. This depression 10 leads into a longitudinal radial slot or diametric keyway, 11, extending throughout the entire length of the barrel, and adapted to receive a suitable flat key, 12. The rear end of the key-barrel is provided with an eccentric or wrist pin, 13, which enters a groove, 14, in the locking-bolt 9, for the purpose of actuating the same when the key-barrel is rotated in the stationary shell. An annular or circumferential groove, 15, is also formed in the barrel 8, and in this groove there is seated a bifurcated spring-tumbler, 16, constituting the locking device proper. The spring-tumbler, around which the barrel 8 rotates, is secured to the lock case or shell 1 by means of a small screw, 17, which passes through the shell 1 and enters an opening, 18, in the spring-tumbler. This screw also serves to prevent the endwise movement of the barrel. The ends of the tumbler opposite to the point of its attachment to the lock-case, or what may be termed the "free ends" thereof, are provided with prongs 19, which spring into the keyway of the barrel 8 when an attempt is made to turn the latter without the proper key, and in this manner said barrel is immovably held in the lock-case. When, however, the proper key is entered into the barrel, the latter will engage with the free ends of the tumbler and force the same away from the keyway, thus allowing the barrel to be given a half-revolution, for retracting the bolt from its keeper and allowing the drawer or other object to be opened. A rotation of the key-barrel in an opposite direction will cause the bolt to be projected into its keeper, and in either of the movements required for shooting the bolt in opposite directions the spline or rib 27, extending across the annular groove in the key-barrel, acts as a stop for limiting the movement of said barrel. When the spline or rib 27 is in line with or opposite the keyway, the key is free to be inserted or withdrawn when the bolt is opened or closed; but when, as is shown in Fig. 7, the spline or stop 27 is arranged a little at one side of the keyway, the bolt, when opened or fully retracted from its keeper, will bring the tumbler athwart the key and prevent the latter from being withdrawn, thus allowing it to be used as a pull. Furthermore, in such construction the bolt must either be projected into its keeper, or locked, or thrown above the edge of the object in which it operates before the key can be retracted; and for these reasons the key itself serves as a guide for indicating whether the drawer is locked or unlocked.

The locking-bolt, as is shown in Fig. 6, is made of a solid cylindrical rod, which is capable of being cut or reduced in length, so as to vary the "drop of the lock" or permit the lock to be set at any desired distance from the edge

of a drawer or other object. The rear portion of the bolt is flattened on one side, so as to permit the locking-barrel to rotate in contact therewith and prevent it from turning in its socket, and, as already stated, the bolt has a groove or way in which the eccentric or wrist pin on the locking-barrel operates. The bolt passes through or enters the lock-case at right angles thereto, and for this reason it serves as a medium for effectually preventing the lock-case from being turned in its seat, as will readily be apparent. The bolt operates through a suitable bushing, 29, which may be made of corrugated sheet metal, and is inserted into the bolt-opening formed in the drawer or other object.

It should be observed that in fitting the lock in position the case or shell thereof is entered into its seat and the nut is loosely applied to its screw-threaded end. The key-barrel is then turned in the lock-case so as to bring the eccentric pin thereon uppermost, and then the bolt is entered into its openings in the lock-case and made to engage with the wrist-pin on the key-barrel. The bolt being properly in place, the nut on the lock-case extension is tightened, and all the parts are now firmly held in place. A flaring opening, 25, in the rear end of the bolt, leads to the groove in which the eccentric pin operates, and the inner end of said opening, adjoining the eccentric pin groove, is contracted, or made sufficiently narrow, so that the pin must be forcibly passed through the same in order to enter the groove in which it works. By reason of such formation the bolt cannot be accidentally withdrawn or disengaged from the locking-barrel, since the pin on the latter cannot pass the edges of the opening 25 without the exercise of considerable force.

It is obvious that by changing the shape and position of the tumbler and varying the form of the annular groove in the key-barrel and the wards of the key fitting said annular groove and engaging with the tumbler different combinations can be produced, so that the key adapted for one lock will not fit another lock. It is also apparent that by providing a keyway in the key-barrel which does not extend entirely through the same diametrically the key is supported by a wall of metal at the base of said keyway.

Heretofore the cylinder or case of a lock has been provided with an external screw-thread along its length, in order that it can be screwed into a cylindrical hole provided for its reception. Such, therefore, I do not herein claim.

What I claim is—

1. A lock case or shell having at one end a flange to serve as an escutcheon or face plate, and threaded at the other end for receiving a nut whereby the case or shell can be securely confined in its seat without other fastening devices, substantially as described.

2. In combination with the case carrying the



key-barrel and locking mechanism of a lock, a screw-threaded extension on the case or barrel to receive a nut for confining it in its seat, and a lock-bolt entering the case or barrel at right angles thereto, said bolt being actuated by the key-barrel and locking mechanism and operating-key, substantially as described.

3. The combination of a lock-case having at its outer end a flange serving as an escutcheon, a key-barrel arranged in the case, a lock-bolt arranged at right angles to and entering the rear end portion of the case behind the escutcheon-plate, and connected with the key-barrel at a point between the escutcheon-plate and the rear end of the case, and locking mechanism operated by the key-barrel, substantially as described.

4. The combination of a locking-bolt having a flattened rear portion, a seat for a wrist-pin, and a flaring opening contracted at the intersection with the seat for the wrist-pin, with the lock-case and the key-barrel having a wrist or eccentric pin, substantially as described.

5. The combination of the bifurcated spring-tumbler having an opening for a fastening-screw, and the key-barrel provided with an annular groove in which the spring-tumbler is fitted, with the lock-case having an opening for the locking-bolt and a hole for the passage of the tumbler-fastening screw, substantially as described.

6. The combination of the key-barrel having a keyway, an annular groove, and a spline or transverse rib arranged in said groove, with a lock-case having a bifurcated spring-tumbler, around which the spring-barrel can rotate, and a key for operating said barrel, substantially as described.

7. The combination of the key-barrel having a keyway, an annular groove, and a stop arranged in said groove at one side of or out of line with the keyway, with a lock-case having a tumbler or stop adapted to engage with the stop of the key-barrel, and a key for operating said barrel and serving as a pull when the bolt is unlocked, substantially as described.

8. The combination of the key-barrel having a diametric keyway, an annular groove, and a stop or spline arranged in said groove, with a lock-case provided with a stop adapted to engage with the stop of the key-barrel and limiting the movement of the latter, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

WASHINGTON I. LUDLOW.

Witnesses:

JAMES L. NORRIS,  
J. A. RUTHERFORD.