

(Model.)

W. C. & E. I. BLOUNT.

LOCK.

No. 273,939.

Patented Mar. 13, 1883.

Fig. 1.

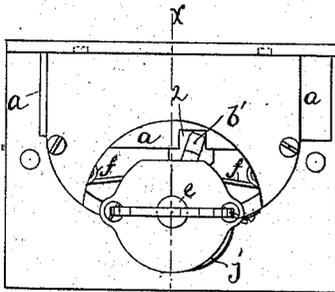


Fig 3

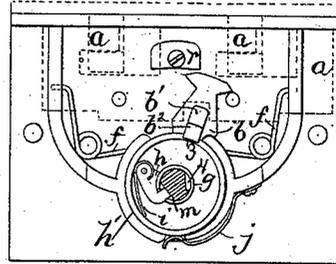


Fig 2

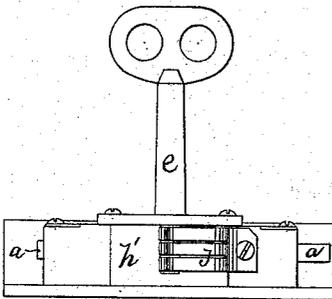


Fig 4

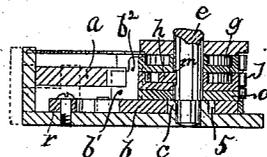


Fig 6

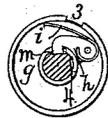


Fig 9

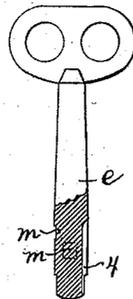


Fig 5

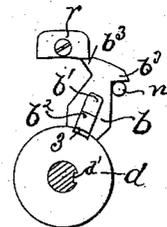


Fig 7

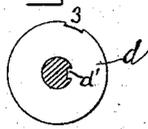
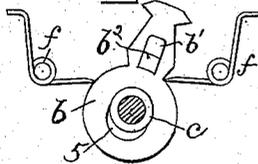


Fig 8



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM C. BLOUNT, OF BOSTON, AND EUGENE I. BLOUNT, OF  
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## LOCK.

SPECIFICATION forming part of Letters Patent No. 273,939, dated March 13, 1883.

Application filed August 15, 1882. (Model.)

*To all whom it may concern:*

Be it known that we, WILLIAM C. BLOUNT, of Boston, Suffolk county, State of Massachusetts, and EUGENE I. BLOUNT, of Cambridgeport, Middlesex county, State of Massachusetts, have invented an Improvement in Locks, of which the following description, in connection with the accompanying drawings, is a specification.

Our invention relating to locks is embodied in a lock having a series of rotating or cylindrical tumblers, which have to be brought into a certain exact definite position with relation to one another before the bolt-actuating device can be moved to throw the bolt. The said tumblers are each provided with a receiving-notch in their periphery, and the said notches, when in line with one another, receive a projection on the bolt-throwing device, which lies over the peripheries of all the said tumblers and is sustained by any one of them until the notches of all are simultaneously brought beneath it, when it drops into the said notches and is actuated to throw the bolt in the further movement of the said tumblers by the key. The key is mainly cylindrical in shape, and the tumblers have a central cylindrical opening to receive it, they being provided with spring pressed actuating dogs or projections, the ends of which extend into the said central opening in proper position to be engaged by shoulders formed in the key, which is also provided with a single longitudinal groove to receive the said projections when the key is inserted or removed, the said projections then being in line with one another. The tumblers are provided with a friction device, preventing their rotation until the dogs are positively engaged, the longitudinal groove in the key being inclined on one side, so that when rotated in one direction it merely throws the dogs back, and the tumblers do not turn until the dogs are again engaged by the shoulders, which are so arranged in relation to the receiving-notches of the tumblers that in the continued rotation of the key the said dogs are engaged, and the tumblers are first brought with their receiving-notches in line, and then beneath the projection of the bolt-actuating device, enabling the bolt to be operated. The bolt-actuating device is provided with disen-

gaging-cams, which by the continued movement of the key and tumblers remove its projection from the receiving-notches, and a locking-projection prevents the movement of the said bolt-actuating device, except when its projection lies in the receiving-notches of the tumblers.

Figure 1 is a front elevation of a lock embodying this invention; Fig. 2, an under side view thereof; Fig. 3, a similar elevation with the front plates removed, the key being shown in section and the bolt in dotted lines; Fig. 4, a section on line *x x*, Fig. 1; Fig. 5, a detail showing the bolt-actuating device, its actuating-tumbler, and locking-projection; Fig. 6, a detail showing one of the controlling-tumblers detached; Fig. 7, a detail showing the actuating-tumbler detached; Fig. 8, a detail of the bolt-actuating device, and Fig. 9 a side elevation of the key shown partly in section.

The bolt *a*, of any suitable kind, herein shown as adapted to lock the cover of a box, chest, or trunk, is provided with a notch, 2, to receive the actuating bit or projection *b'* of the bolt-actuating device *b*, so that when the latter is oscillated on the key-tube *c* of the lock-plate as a center it will throw the said bolt *a*. The said bolt-actuating device *b* is thus oscillated by means of the tumbler-projection *b<sup>2</sup>*, entering a square-sided notch, 3, in the actuating-tumbler *d*, preferably made of steel, and provided with a tongue, *d'*, entering a notch or groove, 4, in the shank of the key *e*, so that the said tumbler is positively rotated with the key *e* in either direction. The bolt-actuating device *b* is slotted, or has its bearing on the key-tube *c* elongated, as shown at 5, thus permitting a movement of the said device *b*, by which the tumbler-projection *b<sup>2</sup>* is moved radially toward and from the axis of rotation of the key and tumblers, this movement taking place when it is thrown out of or enters the notch 3. The device *b* is provided with springs *f*, tending to throw it into position with the projection *b<sup>2</sup>*, entering the notch 3, when the said notch is brought beneath it in the rotation of the tumbler *d*. The said projection *b<sup>2</sup>* is, however, prevented from thus falling into the notch 3 of the actuating-tumbler *d*, except when the proper key is used, by the controlling-tumblers *g*, any number of which may be

employed, they, together with the actuating-tumbler, being contained and rotating in a cylindrical tumbler-barrel,  $h'$ , on the lock-plate. The said controlling-tumblers are also provided with receiving-notches 3 for the projection  $b^2$ , and it is only when the notches 3 are all brought simultaneously beneath the projection  $b^2$  that the latter will drop into and be actuated by the tumbler  $d$  and key. The controlling-tumblers are rotated to bring their notches 3 into line with that of the actuating-tumbler by means of dogs  $h$ , acted upon by springs  $i$  to throw their projecting ends into the central key-socket. When the key is inserted or withdrawn the projecting ends of the dogs  $h$  and the projection  $d'$  are in line with one another, the notches 3 then not being in line, and the key-shank is provided with a longitudinal groove, 4, (see Fig. 9.) which receives the projecting ends of the dogs  $h$  and the projection  $d'$ . The upper portion of the groove 4, which receives the ends of the dogs, has one edge inclined or its bottom extended until it intersects the surface of the key, as shown in Figs. 3 and 6, so that when the key is turned in one direction (for convenience call it the "forward rotation"—namely, that of the hands of a clock) the dogs will be merely thrown back, and the tumblers will not immediately be rotated, they being partially held by a friction device,  $i$ . The key is, however, provided with a series of recesses,  $m$ —one to each controlling-tumbler—one side of which forms a shoulder, which in the continued rotation of the key will be brought in line with and engage the corresponding dogs,  $h$ , the said shoulders being so located that the dogs will each be engaged thereby at the moment in the rotation of the key and actuating-tumbler when the notch 3 of the said actuating-tumbler is in line with the notch 3 of the controlling-tumbler the dog of which is engaged. Thus by the continued forward rotation of the key the notches 3 will all be brought in line with one another, and will ultimately arrive beneath the tumbler-projection  $b^2$ , thus permitting the bolt-operating device  $b$  to be thrown by the springs  $f$  into engagement with the tumblers, as shown in Fig. 3, when it can be oscillated in either direction to throw the bolt by the backward or forward rotation of the key. The said bolt-actuating device  $b$  is provided with disengaging-cams  $b^3$ , one of which, after the bolt has been thrown in either direction, is brought in contact with the corresponding projection,  $n$ , on the lock-plate, which acts, as the said device  $b$  is forcibly pressed against it, to move the said device, with its projection  $b^2$ , radially outward (see Fig. 5) until the said projection leaves the notches 3 and the tumblers in their further movement have the unnotched portion of their periphery brought beneath the said projection  $b^2$ , thus keeping it in the position shown in Fig. 5, or in the corresponding position on the other side of the locking-projection  $r$  on the lock-plate, which pre-

vents the movement of the device  $b$  until it is moved radially inward into engagement with the tumbler-notches, it being positively held by the projections  $n$   $r$  and the periphery of the tumblers. The edges  $m$  of the key-shank are inclined on the side opposite to the shoulders, so that when the key is rotated in the backward direction the dogs  $h$  will be thrown back and the tumblers  $g$  will not move until engaged by the groove 4, which has its side thus engaged in the backward rotation made as a shoulder, so that in the continued backward rotation of the key the dogs  $h$  will all have their ends received in the groove 4 in line with the projection  $d'$ , so that the key may be withdrawn, leaving the said projections  $h$  and  $d'$  in line, ready for the next insertion of the key. It will be seen that it is only when the shoulders of the recesses  $m$  are in exactly the proper position relative to one another that the notches 3 will be brought into line and the bolt-actuating device engaged to throw the bolt, and if a key that is not properly constructed is inserted it will not be possible to injure or strain any of the parts of the lock, as the tumblers will be merely rotated in their socket without producing any further effect. The work of throwing the bolt and disengaging the actuating device  $b$  falls wholly upon the actuating-tumbler  $d$  on account of its positive engagement with the key, and the said tumbler is preferably made of steel or other material suitable for withstanding the wear. The other tumblers merely control the engagement of the projection  $b^2$ , and when thus engaged are moved by the said projection rather than by the dogs  $h$  and shoulders in the key.

We claim—

1. The bolt and the bolt-actuating device provided with a tumbler-engaging projection, a bolt-engaging bit, and disengaging-cams, combined with the tumblers, and the disengaging-projections upon the lock-plate, co-operating with the said disengaging-cams and the locking-projection  $r$  on the lock-plate, whereby the said bolt-actuating device is prevented from moving except when engaged by all the said tumblers, substantially as described.

2. The key provided with a longitudinal groove and shouldered recesses, combined with the actuating-tumbler  $d$ , provided with a projection for positively engaging the said groove, and the controlling-tumblers  $g$ , provided with spring pressed dogs  $h$ , adapted to be engaged by the said shouldered portions of the key, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM C. BLOUNT.  
EUGENE I. BLOUNT.

Witnesses:

JOS. P. LIVERMORE,  
B. J. NOYES.