No. 743,695. PATENTED NOV. 10, 1903.

E. H. DIMOCK.

LOCK.

APPLICATION FILED DEC. 26, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

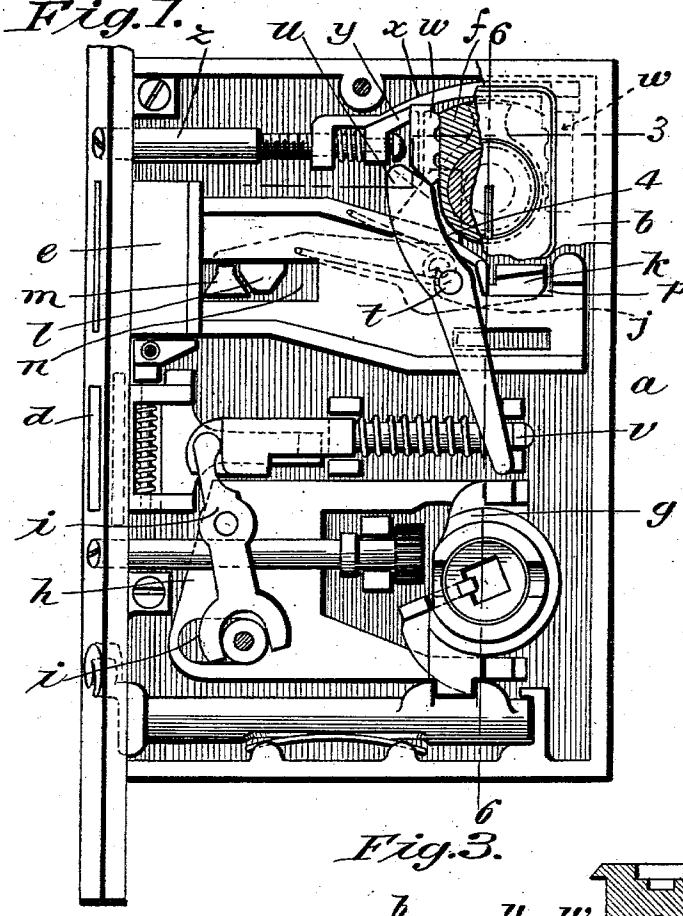


Fig. 2.

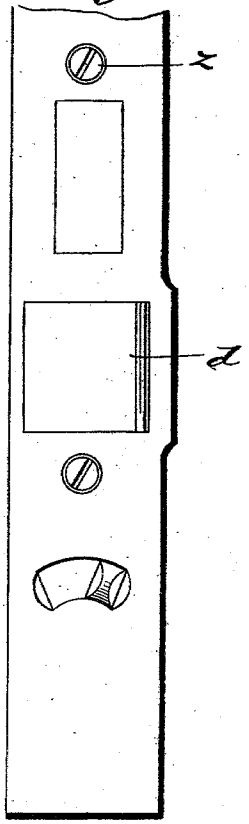


Fig. 3.

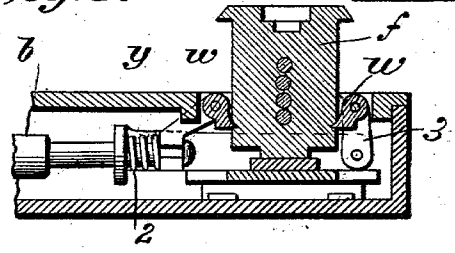


Fig. 4.

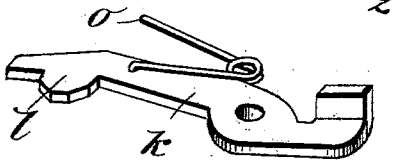
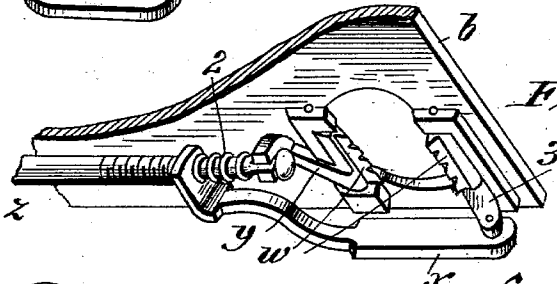


Fig. 5.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 6.

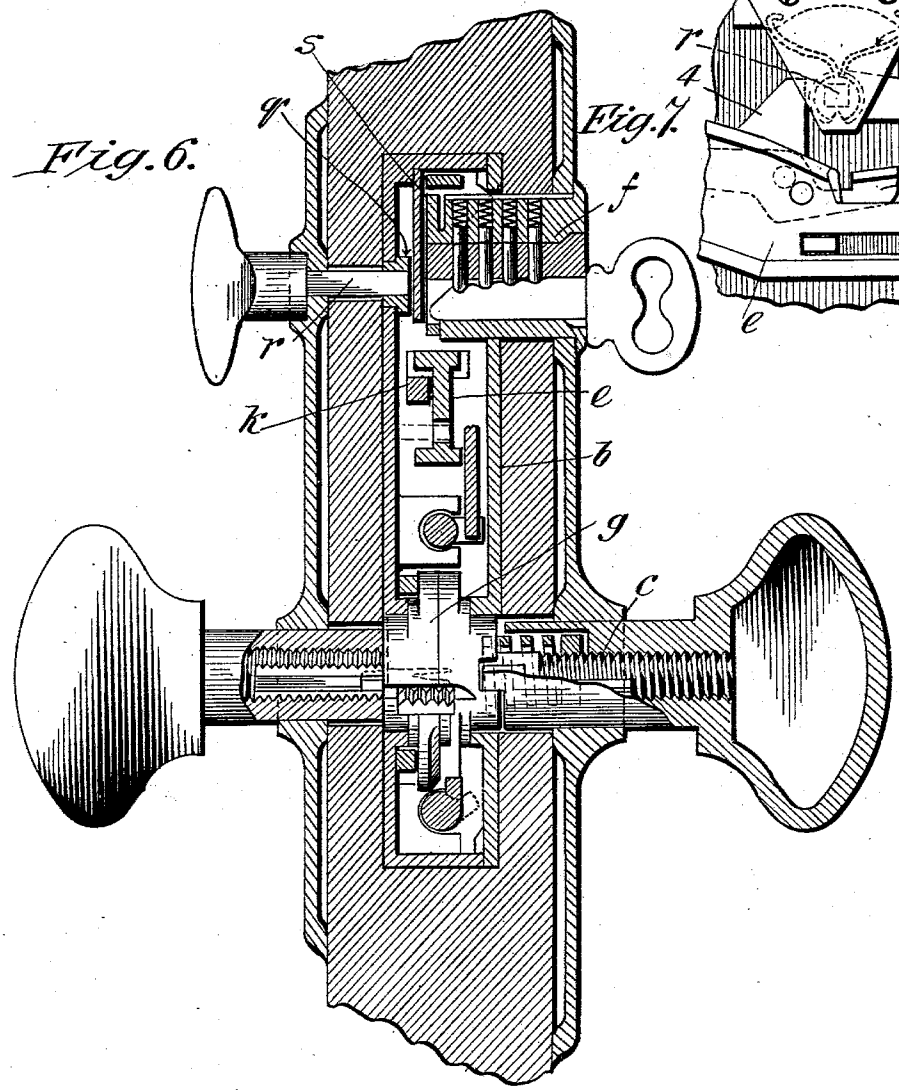


Fig. 7.

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No. 743,695. Patented November 10, 1903.

UNITED STATES PATENT OFFICE.

ELWIN H. DIMOCK, OF DORCHESTER, MASSACHUSETTS.

LOCK.

SPECIFICATION forming part of Letters Patent No. 743,695, dated November 10, 1903.

Application filed December 26, 1901. Serial No. 87,149. (No model.)

To all whom it may concern:

Be it known that I, ELWIN H. DIMOCK, a citizen of the United States of America, residing at Dorchester, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Locks, of which the following is a specification.

This invention relates to door-lock constructions, and has special reference to the cylinder-lock and to the bolt-and-tumbler mechanism operated thereby, the object of the invention being the improvement in the construction of the cylinder-lock whereby it may be secured in operative position in the lock-case in a manner to prevent its removal from outside of the lock and in the improvement of the latch-bolt and dead-bolt construction and in certain novel combinations of these bolts with the cylinder-lock, all as fully described in the following specification and embodied and defined in the claims appended thereto.

In the drawings forming part of this specification, Figure 1 is a side elevation of a lock with the side plate removed embodying my invention. Fig. 2 is a front edge elevation of Fig. 1. Fig. 3 is a sectional view taken on line 3, Fig. 1, through the cylinder-lock and showing, partly in section, the means for retaining said lock in the lock-case. Fig. 4 is a perspective view of a lever on the dead-bolt. Fig. 5 is a view of a portion of the under side of the removable side plate of the lock-case, showing thereon the means for securing the cylinder-lock in said case. Fig. 6 is a vertical section on line 6 6, Fig. 1. Fig. 7 is a detailed view of the upper right-hand corner of the lock and comprises the end of the dead-bolt and one of its locking devices.

Referring to the drawings, which comprise, for the sake of clearness, a side elevation and vertical section of a complete lock, *a* indicates the case, having one removable side *b*, within which case is located the usual spindle *c*, the latch-bolt *d*, the dead-bolt *e*, and the cylinder-lock *f*, operated by a key from the outside of the lock only and whereby the dead-bolt and its locking-lever may be operated to permit the opening of the door. The spindle *c* is provided with the hubs *g*, which operate the plate *h*, on which there is pivotally hung the lever *i*, whereby the latch-bolt *d* is retracted. This mechanism, aside from the latch-bolt, does not form part of this application.

The dead-bolt *e* is supported in the usual manner for transverse sliding movements in the case and has pivoted to one side thereof at *j* a locking-lever *k*. (Shown in dotted lines only in Fig. 1 and in perspective in Fig. 4.) On one end of this lever there is a projection *l*, having a beveled or rounded edge, which is adapted to engage with a fixed projection *m*, having preferably beveled edges, which projection extends up through a horizontal slot *n* in the dead-bolt. The lever *k* is provided with a spring *o*, which is adapted to force said projection *l* down by the side of the projection *m*, on either side thereof, according to the position of the bolt. The opposite end of said lever *k* is bent at right angles to its body and lies within a notch *p* in the upper edge of the dead-bolt *e* in position to be engaged and depressed either by the arm *q* on the thumb-bolt *r* or by the arm *s* on the plug of the cylinder-lock *f*. In Fig. 6 the relative positions of these two arms *q* and *s* and the locking-lever *k* are clearly shown, and in Fig. 7 the position of the arm *q* relative to said lever *k* is shown, the cylinder-lock being removed. When either of said arms *q* and *s* is rotated, the end of the lever *k* will be depressed and the projection *l* on the opposite end thereof will be raised sufficiently to permit it to pass over the projection *m* on the lock-case. The continued rotation of said arms *q* and *s* will bring them into engagement with the end of the notch *p*, whereby the dead-bolt *e* can be moved. As soon as the projection *l* has passed over the narrow upper end of the first projection *m*, the spring *o*, forcing the beveled end of the projection *l* downward, will by the engagement of the beveled or rounded edges on said projection move the bolt *e* to the limit of its outward movement and hold it there, and the effect is the same in whichever direction said bolt may be moved.

On top of the dead-bolt there is pivoted at *t* a lever *u*, whose upper end, which is turned at right angles to the body, lies in the path of movement of the arm *s*, and whose opposite extremity engages the upturned end of a bolt *v*, operatively engaging the latch-bolt *d*. As-

suming the dead-bolt to be turned to lock the door, if a key be inserted in the cylinder-lock and the plug is turned, carrying with it the arm *s*, the latter will first depress the rear end of the lever *k*, lying within the notch *p* of the dead-bolt *e*, and then striking against the rear edge of said notch shoot the bolt rearwardly, carrying with it the lever *u*, the key being turned to the left from the position of the cylinder-lock shown in Fig. 6. At the limit of the rearward movement of the dead-bolt *e* the arm *s* will pass out of the notch *p* in the latter, and its continued rotation will cause it to strike against the inturned upper end of the lever *u*, which by the retraction of the dead-bolt has been brought into the path of rotation of said arm, and the contact of the latter with said lever will cause the latter to retract the bolt *v*, which operates the latch-bolt *d*.

The dead-bolt *e* may be operated by the thumb-knob from the inside of the door in the same manner that said bolt is operated by the cylinder-lock from the outside, and by means to be described farther on said bolt *e* may be blocked by means of the thumb-knob to prevent the operation of the said bolt by means of the cylinder-lock.

Ordinarily in lock constructions of this character the cylinder or casing which carries the separate key-operated mechanism (and which will be hereinafter referred to as the "cylinder-lock") has been secured by screwing it into an opening in the lock-casing, or it has been slidably fitted into such an opening, and whether screwed in or otherwise it has been secured in position by some suitable means, as a screw.

In the construction herein shown the cylinder-lock is adapted to be pushed back into position in the lock-case from the outside of the door, and arranged within the lock-case is a pawl or detent spring-held against the side of the cylinder-lock and adapted to engage a notch on the latter, whereby it is retained in position. This detent or pawl is operable only from the face of the lock and permits the cylinder-lock to be slidably fitted into the lock-casing, but prevents its withdrawal therefrom. These lock-retaining devices are clearly shown in Figs. 1, 3, and 5 and are constructed as follows: The body of the cylinder-lock, as shown in the partial section in Fig. 1, is provided with two parallel flat sides, in which, as shown in Fig. 3, there are angular notches, with which the pawl-levers *w*, hung on the plate or removable side *b* of the lock-case, may engage. These pawl-levers have a rocking motion toward and from the flattened sides of the cylinder-lock *f* and are connected by the arms *x* and *y* with an operating screw-rod *z*, the latter, as shown in Fig. 1, projecting through the face of the lock, the arm *y* engaging the extremity of the screw-rod *z* by a fork connection therewith, and the arm *x* having a screw-threaded engagement with said rod *z*, and between the end of the arm *y* and the end of the arm *x* is a spring 2, adapted to press the ends of these arms apart. The spring 2 when the rod *z* is screwed outwardly is compressed, and when the rod is rotated in the opposite direction the reaction of the spring operates to force that pawl-lever to which the arm *y* is attached against one side of the cylinder-lock, and by pressure in the opposite direction against the end of the arm *x* (the rod *z* being movable endwise through the face of the lock) the opposite pawl-lever, attached to said arm *x* by a crank-arm 3, is forced against the opposite side of the cylinder-lock, both pawl-levers *w* being thus spring-held in engagement with the sides of said lock with a force proportionate to the compression of the spring 2.

In practice the flattened sides of the lock will be provided with a number of parallel grooves, to the end that said lock may be fitted to doors of varying thicknesses.

On the dead-bolt *e* is located a lug 4. (See Fig. 7.) When the thumb-knob is turned to throw the dead-bolt, as described, after the latter has been thrown if the thumb-knob has described half a revolution the arm *q* thereon will then find itself in a position opposite to that shown in Fig. 7, its end lying in close proximity to the vertical edge of the lug 4, positively blocking the return of the dead-bolt. Any suitable means, as the spring 5, for example, (shown in Fig. 7 in dotted lines,) which engages a notch in the hub of the arm *q*, may be employed to hold the thumb-knob in the desired position. As long as the arm *q* remains in the position described the dead-bolt cannot be manipulated by means of a key inserted in the cylinder-lock outside the door. If, however, the thumb-knob be constructed to complete one revolution after having moved the bolt *e* into locking position, then the operation of the cylinder-lock would retract the dead-bolt. The thumb-knob may be constructed to make either a half or full revolution, as desired.

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

1. In a lock, a dead-bolt, a lever thereon for positively holding said bolt in an extended or retracted position, a thumb-knob, and a key-operated mechanism for independently operating said bolt from opposite sides of a door, and means on said thumb-knob for holding said bolt against operation by said key-operated mechanism, in combination with a latch-bolt, and a suitable connection between the latter and said dead-bolt, whereby both of said bolts may be retracted, or said latch-bolt alone, by the key-operated mechanism only.

2. The combination in a lock or latch, of a separate key-operated mechanism for operating a bolt of said lock, and means for removably securing said mechanism in the lock, consisting of two pawl-levers adapted to swing one toward the other, grooves in oppo-

site sides of the casing of said key-operated mechanism with which said pawl-levers engage, and means operated from the face of the lock for holding said pawl-levers in engagement with said grooves.

3. The combination in a lock or latch, of a separate key-operated mechanism, located in a suitable casing, to operate a bolt of said lock, said casing being adapted to be slidably inserted in an opening in the lock; a member operable independently of the lock mechanism and supported on the lock to yieldingly engage said casing to permit endwise movement of the latter in one direction only.

4. The combination in a lock, of a separate key-operated mechanism for operating a bolt of said lock, there being a socket in the lock for the reception of said mechanism; means for removably securing said mechanism in said socket consisting of a pawl-lever yieldingly movable in one direction only, to permit the key-operated mechanism to be slidably inserted therein, there being grooves in the casing of said mechanism for said pawl-lever, together with means operated from the face of the lock independently of the lock mechanism to hold said pawl-lever in engagement with one of said grooves.

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