E. L. WILLIAMS.

LOCK.

APPLICATION FILED JAN. 31, 1913.

1,239,240.

Patented Sept. 4, 1917

2 SHEETS—SHEET 1.

Fig. 1

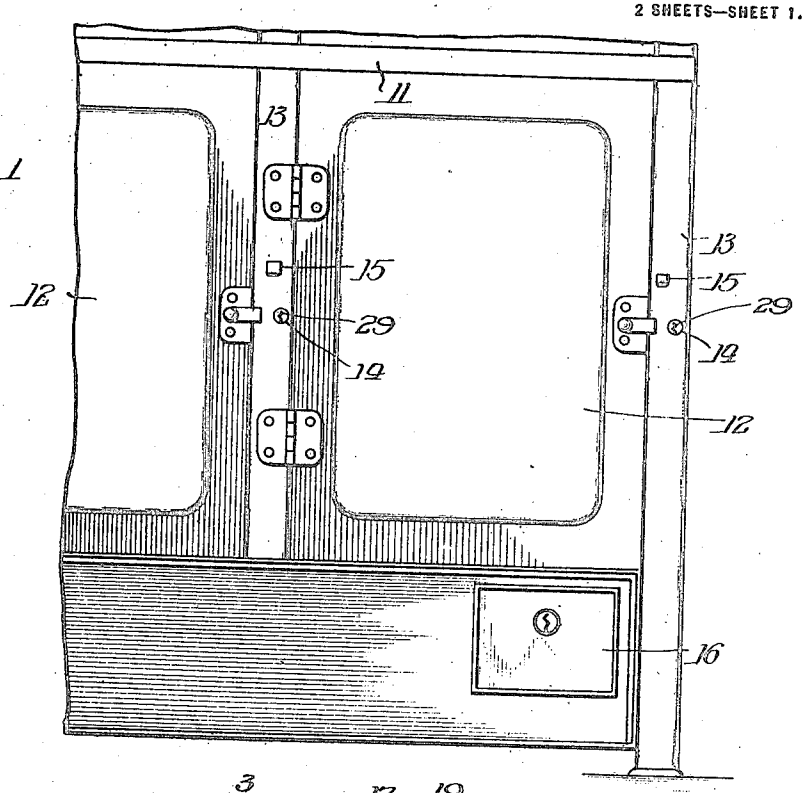


Fig. 2

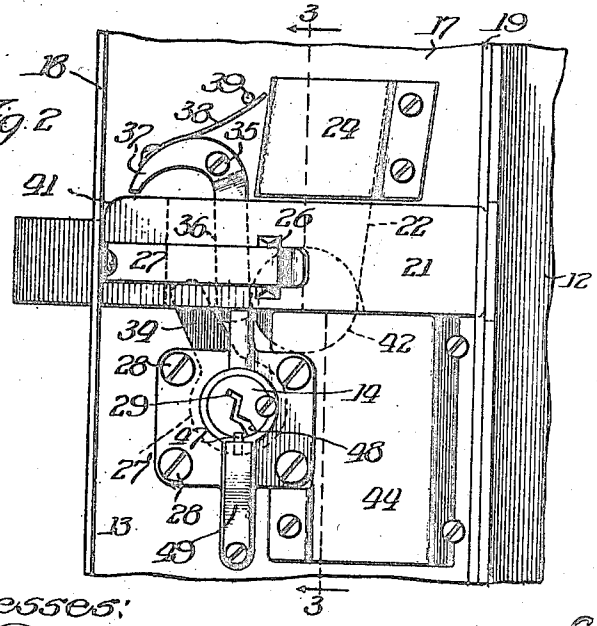
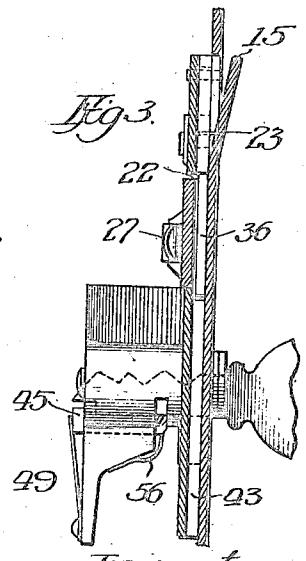


Fig. 3.



Witnesses:

Geo. C. Davison

Mrs. J. Wilson

Inventor:

Edward L. Williams

By Smith Williams Pelz & Fuller

Attys.

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2 SHEETS—SHEET 2.

Fig 4

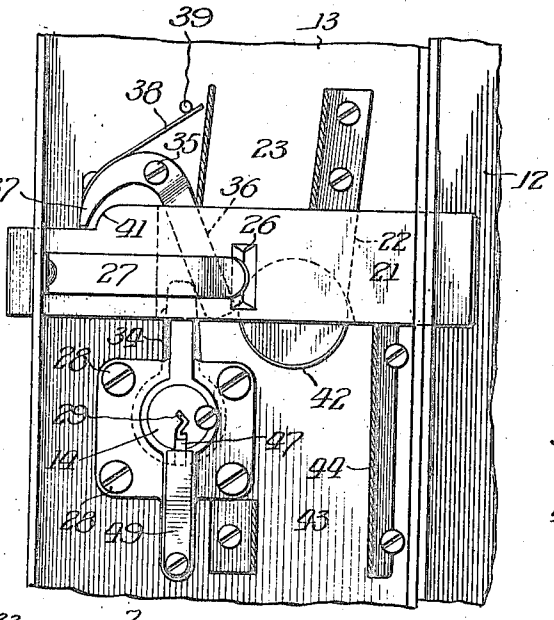


Fig 5.

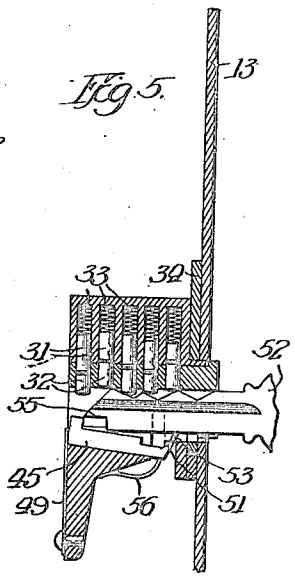


Fig 6

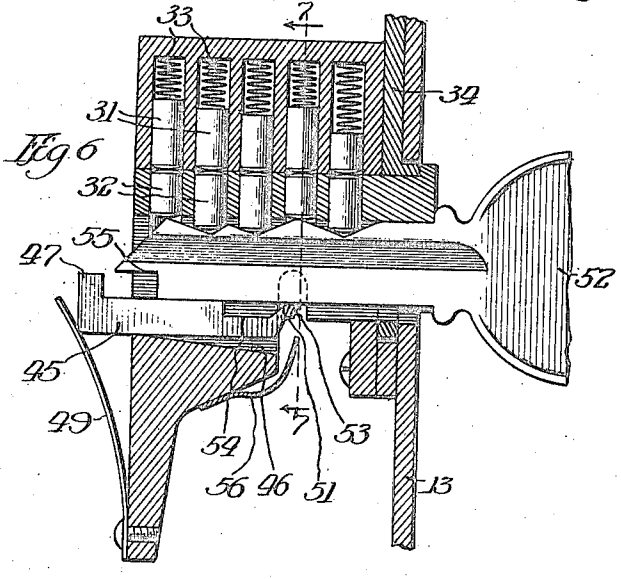
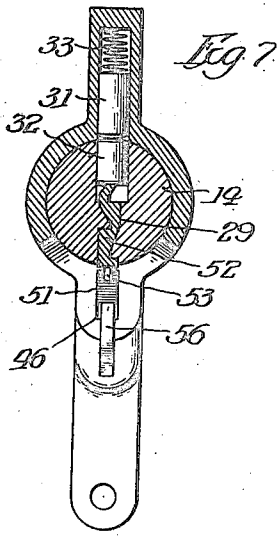


Fig 7



Witnesses:

Geo. C. Davison

Jas. J. Wilson

Inventor:

Edward L. Williams

By Lunt Bieman Belt & Fuller

Attys

UNITED STATES PATENT OFFICE.

EDWARD L. WILLIAMS, OF SANTA CRUZ, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO COIN TIME LOCK CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

LOCK.

1,239,240. Specification of Letters Patent. Patented Sept. 4, 1917.

Application filed January 31, 1913. Serial No. 745,312.

To all whom it may concern:

Be it known that I, EDWARD L. WILLIAMS, a citizen of the United States, residing at Santa Cruz, in the county of Santa Cruz and State of California, have invented certain new and useful Improvements in Locks, of which the following is a specification.

This invention relates in general to locks and has more particular reference to coin operated locks adapted for use in connection with lockers, cabinets, and the like.

The primary object of my present invention is the provision of a lock of this general character from which the key can not be withdrawn when the lock is unlocked, which can be locked only through the instrumentality of a coin, or the like, which, when once locked, can not be again unlocked until the key has been withdrawn and again inserted therein, and which will be simple in construction, cheap to manufacture and reliable in operation.

Other objects and advantages will be obvious to those skilled in the art as the invention becomes better understood by reference to the following description when considered in connection with the accompanying drawings.

Referring to the drawings—

Figure 1 is a fragmentary front elevation of a locker, or the like, for which my invention is particularly adapted;

Fig. 2 is a rear view of the lock showing the parts in unlocked position;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a view similar to Fig. 2, showing the position of the parts when the lock is locked;

Fig. 5 is a sectional view, showing the key partially withdrawn;

Fig. 6 is a view similar to Fig. 5, showing how the latch is released upon reinsertion of the key; and

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6.

On the drawings, and referring more particularly to Fig. 1, reference character 11 indicates a fragment of a locker section which is usually constructed of sheet-metal to provide any preferred number of lockers each adapted to receive traveling bags, wraps and other articles which are customarily checked. Each locker is provided with a door 12 which may be closed and locked when the articles are deposited in the locker. Parcel lockers of this general type are largely supplanting the old methods of checking in public places and, my present invention is designed to provide a lock for lockers of this kind, although it will be manifest that the lock is well adapted for other purposes.

My lock is so constructed that when it is unlocked the key can not be removed therefrom; consequently, when a person desiring to check his articles finds a locker with a key in the lock he knows that the locker is unoccupied and may be used. He thereupon opens the door, places the parcels, or other objects to be secured, therein and then deposits a coin in a slot connecting with the lock which permits the key to be turned to lock the lock. During the locking movement a latch is automatically brought into operation to hold the lock against unlocking and this latch and the key are so constructed that the latch can only be released by withdrawing the key and again inserting it. When the articles have been locked in the locker the key which bears a number or symbol corresponding to the locker is withdrawn and is carried by the owner of the articles until he desires to remove them, whereupon he inserts the key and unlocks the locker. The unlocking movement of the lock secures the key in the lock for the next user and the key can only be removed after a coin has been deposited, as previously described.

While the lock may be mounted on the door, if preferred, it is usually desirable to mount it on the stile 13 with the cylinder 14 in accessible position and the coin receiving slot 15 positioned adjacent thereto and connected by a suitable channel (not shown) with a coin till 16 in which the coins are collected. The lock body or base 17 is provided at its edges with outstanding flanges 18 and 19 having slots formed therein to support and guide the locking bolt 21. This bolt, as shown in Figs. 2, 3 and 4, is provided on its front face with a coin groove 22, which, when the bolt is in unlocked position as shown in Fig. 2, is disposed in alinement with the coin slot 23 formed by a channel-shaped member 24 secured to the backing 17. A portion of the front of the body may

be bent outwardly as shown to form the receiving end 15 for the coin slot through which the coin may be introduced from the outside, although any other preferred construction may be employed for guiding the coin into the slot. The outer face of the locking bolt is equipped with an outstanding tapered lug 26 which is engaged by a leaf-spring 27 riveted or otherwise secured to the flange 18 and which serves to yieldingly retain the bolt in unlocked and also in locked position, as shown in Figs. 2 and 4, respectively.

Upon the body 17 beneath the locking bolt I have secured the cylinder housing 27′ by screws 28, or other fastening means, and in this housing is rotatably mounted the key receiving cylinder 14 equipped with the usual key slot 29. The usual plungers 31, followers 32 and actuating springs 33 are employed to effect the locking of the cylinder, this mechanism being of any well known or preferred construction. The front end of the cylinder, however, is provided with an upwardly extending arm 34 which projects into the coin slot or groove 22 of the locking bolt, and a dog, pivotally mounted upon the screw 35 above the plunger, comprises the tail 36 also projecting into the groove 22 adjacent the arm 34 and a curved finger 37 normally positioned adjacent the upper edge of the locking bolt. A leaf-spring 38 normally secured to the finger 37 and disposed beneath a stationary pin 39 normally tends to retain the dog in the position shown in Fig. 2.

As is usual with Yale, or other similar locks, embodying a cylinder and spring-pressed plungers and followers of the general character shown the key can not be withdrawn from the cylinder unless the cylinder is turned so that the followers 32 are in alinement with their respective plungers 31. When the parts are in the unlocked position as shown in Fig. 2, the key and the followers 32 are in inclined position, therefore, the key can not be withdrawn until the cylinder is turned in a clockwise direction, viewing Fig. 2, sufficiently to aline the followers 32 with the plungers. If an attempt should be made to turn the cylinder to release the key, the arm 34 will engage the tail 36 of the dog and force the finger 37 against the upper edge of the locking bolt, thereby preventing further movement of the arm or the cylinder. It will be manifest, therefore, that it is impossible to withdraw the key from the lock until the locking bolt has been moved to the locked position shown in Fig. 4, in which instance the finger 37 will drop behind the shoulder 41 of the locking bolt and permit the parts to assume the position shown in this figure, the followers 32 being then disposed in alinement with their respective plungers 31 so that the key can be withdrawn. The movement of the locking bolt, however, from unlocked to locked position can only be effected through the instrumentality of a coin, as will be now described.

If a coin of the required size say, for instance, a nickel be inserted into the slot 23 it will drop into the groove 22 and lodge upon the upper corner of the cylinder housing base 27′ so that it will be positioned between the righthand edge of the groove 22 and the tail 36 of the pivoted dog. An operative connection between the tail of the dog and the locking bolt is thereby effected through the intermediary of the coin 42, and rotation of the key cylinder 14 in a clockwise direction will, through the intermediary of the arm 34, the tail 36 and the coin 42, move the locking bolt toward the right sufficiently to carry the shoulder 41 of the bolt beneath the finger 37 thereby enabling the bolt to be moved to locked position.

The coin will thereupon drop through the slot 43 formed by a channel member 44 secured to the base 17 and will be diverted through suitable channels into the till 16. It will be manifest from the foregoing that the insertion of a coin of the proper size in the slot 23 is required before the lock can be locked or the key can be withdrawn therefrom.

The locks of this general character as constructed prior to my present invention could be unlocked immediately after locking without removing the key therefrom, with the result that the goods in the locker would be unprotected or another coin would be required to again operate the lock. My present invention incorporates an appliance for positively preventing rotation of the key cylinder after the bolt has been thrown to locking position and which can only be released by withdrawal and subsequent reinsertion of the key, thereby obviating any possibility of accidentally unlocking the lock. The appliance comprises, as shown in the drawings, a latch 45 disposed in a groove 46 of the cylinder casing 27′ and extending substantially parallel with and along one side of the key cylinder 14. The outer end of the latch is provided with an overhanging lip or lug 47 adapted to engage in a depression or notch 48 formed in the end of the cylinder 14 at the bottom of the key slot 29. Upon rotation of the key cylinder to locked position the notch is moved into alinement with the lug 47 which engages therewith under the influence of a leaf-spring 49. When the key cylinder is in unlocked position the lug 47 rests against the end of the cylinder, as shown in Figs. 2 and 3, but when the cylinder has been turned to locked position, as shown in Fig. 4, the lug engages in the notch 48 and lies flush with the end of the cylinder. The

inner end of the latch is shaped to provide a toe 51, the top and bottom faces of which are inclined, as best shown in Fig. 6, and the key 52 which is of the non-reversible type is provided on its lower edge with a similarly inclined projection 53 adapted to engage with the toe 51 when the key is inserted. Assuming that the lock is locked and the latch is engaged in the notch 48, as previously described, and that the key has been withdrawn, when the key is inserted the shoulder 53 will engage with the toe 51 and force the latch inwardly against the action of the spring 49 and out of engagement with the notch 48 into the position shown in Fig. 6, whereupon the cylinder may be turned by means of the key to throw the bolt 21 to unlocking position. As the key is rotated the shoulder 53 will travel laterally from beneath the toe 51 and the latch will thereupon be returned to the position shown in Fig. 3. A depression 54 is formed in the face of the latch adjacent the toe 51 to accommodate the shoulder 53 when the key and cylinder are again turned to locked position. This recess or depression 54 is of sufficient length to permit the latch to again engage with the notch 48 in the cylinder end as it is turned to locked position and before the key is withdrawn and the key, also, is preferably provided with a notch 55 to permit the lug 47 to seat in the notch 48 in the cylinder end. The shoulder 53 is now in alinement with the toe 51 but above the toe in the recess 54. Upon withdrawal of the key the inclined outer face of the shoulder 53 will ride over the inclined inner face of the toe 51 thereby pressing the inner end of the latch rearwardly into the position shown in Fig. 5, the slot 46 in which the latch 45 is disposed having an inclined rear wall, as shown, to permit this movement of the latch. A leaf-spring 56 secured upon the cylinder casing is adapted to return the inner end of the latch to its position adjacent the key cylinder after the key has been withdrawn and when the key is again inserted, the shoulder on the key will engage with the toe and force the latch out of operative engagement with the cylinder into the position shown in Fig. 6, as previously described.

It is believed that my invention and its mode of operation will be understood from the foregoing without further description and it will be manifest that I have provided a lock which, when in unlocked position, will prevent withdrawal of the key and, which can only be moved from unlocked to locked position upon the insertion of a coin in the slot, also, that after it has been once locked it can not be again unlocked except upon the withdrawal and the reinsertion of the key in the key slot. While I have shown and described a preferred embodiment of the invention, I do not wish to limit myself to the structural features disclosed, since the invention is capable of considerable variation and modification in its structural details without departing from the spirit of the invention or sacrificing any of its material advantages.

I claim:

1. In a lock, the combination of a key operated bolt, means for preventing withdrawal of the key when the bolt is in unlocked position, and means for preventing movement of the bolt from locked to unlocked position until the key has been withdrawn and reinserted in the lock.

2. In a lock, the combination of a key operated bolt, and means rendered operative upon movement of the bolt into locked position and prior to the withdrawal of the key from the lock to prevent unlocking movement of said bolt said means being adapted to be released by the insertion of the key into the lock.

3. In a lock, the combination of a key operated locking bolt, a key-receiving cylinder, connections between the cylinder and said bolt to move said bolt to locking position, means automatically operative to lock the cylinder against rotation when the locking bolt has been moved to locked position thereby preventing rotation of the cylinder until and after the key has been withdrawn, and a key having a device thereon for automatically releasing said last mentioned locking means upon insertion of the key in the cylinder.

4. In a lock, the combination of a key operated locking bolt, a key receiving cylinder, connections between the cylinder and said bolt whereby the bolt is moved upon rotation of the cylinder, means for preventing rotation of the cylinder in one direction except upon the establishment of an operative connection between the cylinder and the bolt, and means for preventing rotation of the cylinder in the opposite direction to unlock the bolt, said last mentioned means being rendered inoperative upon the insertion of the key in said cylinder.

5. In a lock, the combination of a key operated locking bolt, a pivotally mounted dog adapted to engage with said bolt and prevent its movement, a key receiving cylinder, connections between said cylinder and dog for operating said dog, and a latch, adapted to automatically engage with said cylinder and prevent movement of the cylinder, the dog and the bolt, when the bolt is in locked position, said latch being unaffected by the withdrawal of the key from the cylinder, but constructed to be released by the reinsertion of the key therein, whereby the lock may be unlocked.

6. In a lock, the combination of a key op-

erated locking bolt, a key receiving cylinder, operative connections between the bolt and cylinder, and a latch adapted to automatically engage in a notch in the cylinder when the bolt is moved to locked position to prevent rotation of the cylinder, said latch being adapted to be released upon reinsertion of the key in the cylinder.

7. In a lock, the combination of a key operated locking bolt, a key cylinder, connections between the bolt and cylinder, and a spring-pressed latch adapted to engage a notch in the cylinder to lock said cylinder when the bolt is moved to locked position, said latch being constructed to permit withdrawal of the key from the cylinder but to be engaged by the key upon reinsertion thereof, whereby the latch is released to permit the unlocking of the bolt.

8. In a lock, the combination of a key operated locking bolt, a key cylinder, connections between the cylinder and bolt, and a latch disposed parallel with the cylinder and adapted to engage in a notch therein when the cylinder is moved to locked position, said latch being adapted to be released upon reinsertion of the key in the cylinder by a projection on said key.

9. In a lock, the combination of a key operated locking bolt, a key cylinder, and a latch adapted to automatically engage with the cylinder upon movement of the cylinder and bolt to locking position and before withdrawal of the key from the cylinder, whereby to prevent unlocking of the lock, said latch being adapted to be released only upon reinsertion of the key in the cylinder to thereupon permit the lock to be unlocked.

10. A lock comprising a key operated bolt, means for operating said bolt and means engaging said operating means and preventing movement thereof to operate said bolt from locked to unlocked position until the key has been withdrawn from the lock and re-inserted therein.

11. The combination with a key, cylinder and tumblers of a lock, of means coöperating with the cylinder and key to permit the rotation of the cylinder only on the initial insertion of a key therein, and which will operate to lock the cylinder against rotation after the lock has been operated before removal of the key therefrom.

12. In a lock, the combination of a key-cylinder, tumblers therein, a locking bolt connected to said cylinder, a key adapted to actuate said tumblers upon insertion into said cylinder, and means for locking said cylinder against movement when it assumes a predetermined position and prior to withdrawal of the key, said means being releasable by the return of the key into the position that it occupied prior to withdrawal.

13. In a lock, the combination of a key-cylinder constructed to receive a non-reversible key, a key therefor, a locking bolt operable by said cylinder, and means automatically operable upon movement of the bolt to locked position to prevent return movement of said bolt prior to longitudinal movement of the key, said key being adapted to release said means upon return of the key to fully inserted position to thereby permit return movement of said bolt.

14. In a lock, the combination of a key-cylinder, a latch adapted to lock said cylinder against rotation, and a non-reversible key constructed to release said latch upon insertion into said cylinder, said latch being arranged to re-lock said cylinder upon movement of the cylinder to locking position and prior to withdrawal of the key.

15. In a lock, the combination of a latch, a key-cylinder adapted to be engaged when in one position only by said latch, and a key constructed to disengage said latch from the cylinder upon insertion into said cylinder and to permit reëngagement of said latch with the cylinder when said cylinder assumes its engaging position with said key fully inserted in the cylinder.

EDWARD L. WILLIAMS.

Witnesses:
C. B. TAYLOR,
JOHN DEEBINS.