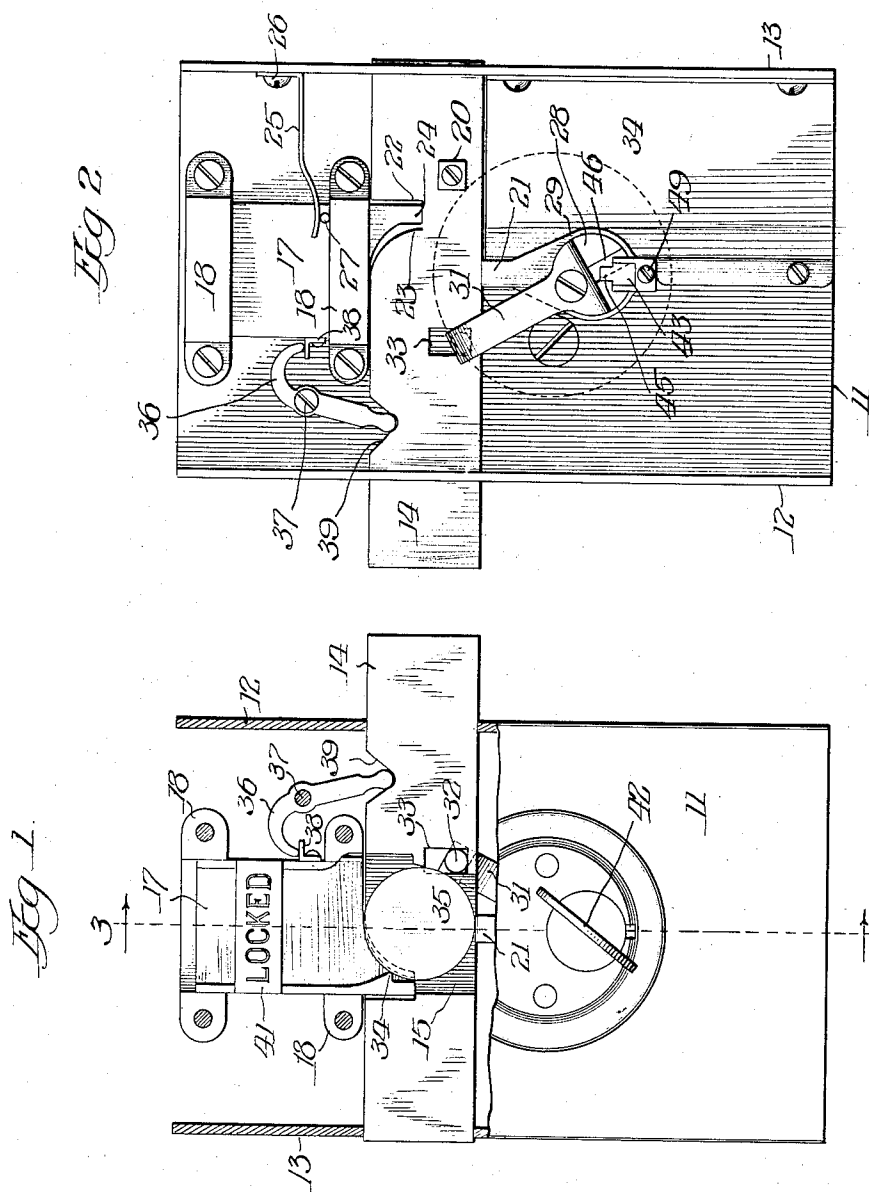


LOCK.

Patented July 28, 1914.

2 SHEETS—SHEET 1.

1,105,052.



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LOCK.

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Patented July 28, 1914.

1,105,052.

2 SHEETS-SHEET 2.

Fig 5

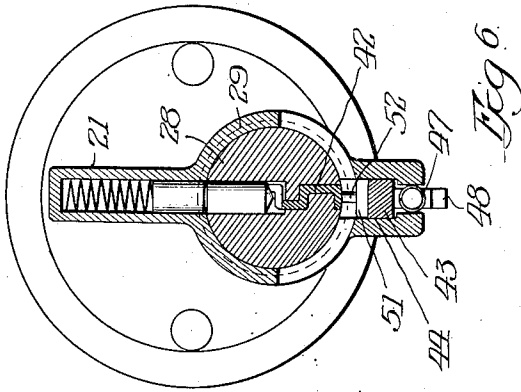


Fig 4

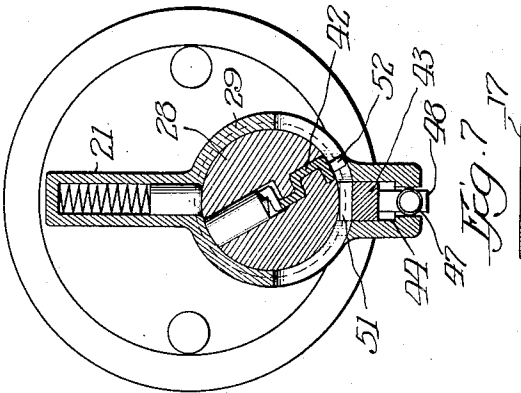


Fig 7

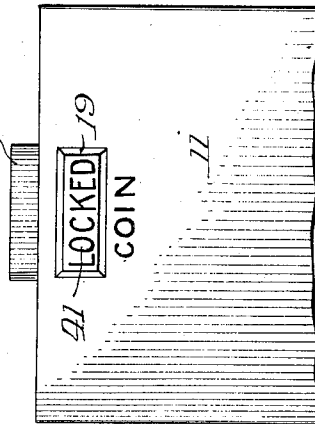
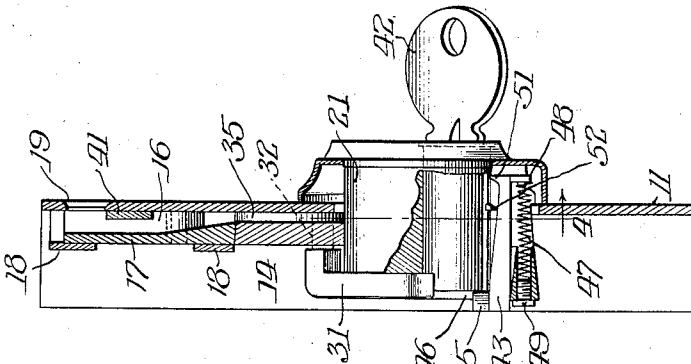


Fig 3



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UNITED STATES PATENT OFFICE.

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LOCK.

1,105,052.

Specification of Letters Patent.

Patented July 28, 1914.

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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 what are commonly known as coin-operated locks and such as are particularly adapted for use in connection with lockers, cabinets, and the like.

The primary object of the present invention is the provision of a lock of this general character which, when in unlocked position, will prevent withdrawal of the key, which can be locked only through the instrumentality of a coin, or the like, which when once locked cannot be again unlocked until the key has been withdrawn and subsequently inserted, which, when in locked position, will preclude the insertion of a coin in the slot, which shall be so constructed that the various parts cannot be moved or tampered with from the outside and which shall be simple in construction, cheap to manufacture and reliable in operation.

Other objects and many of the attendant advantages will be readily understood by those skilled in the art as the invention is fully comprehended after reference to the following description when considered in connection with the accompanying drawings throughout the various views of which like reference characters refer to similar parts.

On the drawings—Figure 1 is a front elevation of a lock embodying my invention, a portion of the frame-work being broken away to show the relation of various parts; Fig. 2 is a back view of the lock shown in Fig. 1; Fig. 3 is a longitudinal sectional view taken substantially on the line 3—3 of Fig. 1; Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 3; Fig. 5 is a similar view showing the position of the parts as the key is being withdrawn; Fig. 6 is a fragmentary side view of the lock with the key partially withdrawn as shown in

Fig. 5; and Fig. 7 is a fragmentary front view of the lock frame showing the means for closing the coin aperture.

Referring to the drawings—reference character 11 indicates the lock body or frame provided at its edges with outstanding flanges 12 and 13 having slots formed therein to support and guide the locking bolt 14. This bolt as shown in Figs. 1 and 3 is provided on its front face with a coin groove 15 which, when the bolt is in unlocked position, is disposed in alinement with a coin slot 16 formed by a channel-shaped slide 17 secured by clips 18 or other fastening means to the frame 11. The front of the frame is provided with a coin-receiving aperture 19 through which coin is inserted into the slot 16 from which it drops upon the casing extensions 21 located beneath the sliding bolt 14, (Fig. 1).

The bolt 14 is provided with a recess forming an abutment or shoulder 23 and the slide 17 has a projection or finger 24 adapted to rest in the depression 22 in the path of movement of the shoulder 23, so that when the parts are in the position shown in Fig. 2 locking movement of the bolt toward the right is precluded by engagement of the shoulder 23 with the projection 24. A spring 25 secured by a screw 26, or other means, to the flange 13 overlies a pin 27 projecting from the rear face of the slide 17 and normally urges the projection 24 into the recess 22. It will be manifest, therefore, that when the lock is in unlocked position the slide 17 holds the locking bolt against locking movement and the lock can only be operated by lifting the slide 17 to withdraw the finger 24 from engagement with the shoulder 23.

A key-cylinder 28 mounted in a casing 29, both of well known or preferred construction, is mounted in the frame 11 beneath the locking bolt and an operating arm 31 fixed to the inner end of the cylinder has a pin 32 at its extremity which projects through an aperture 33 in the locking bolt across the coin passage 15, as shown in Fig. 1. The slide 17 is provided with a shoulder 34 pro-

jecting into the coin passage 15 at a point above the center of a coin 35 of predetermined size when said coin is resting upon the extension 21 of the casing 29. If now the key-cylinder is rotated in a counter-clockwise direction, viewing Fig. 1, or in a clockwise direction, viewing Fig. 2, the coin 35 having been previously inserted into the lock through the coin aperture 19, the pin 32 will engage the coin adjacent the bottom thereof, thereby forcing the coin against the shoulder 34 and, since the shoulder engages the coin considerably above its center, the slide will be forced upwardly through the instrumentality of the coin thereby permitting the bolt to move toward locked position. When the coin has traveled off from the extension 21 it drops into a slot 34 which directs it to any conveniently located receptacle or coin box. It will be manifest from the foregoing that the locking bolt is normally retained in unlocked position by the slide but when a coin is inserted in the lock this coin serves as an operating element to lift the slide and release the locking bolt, thereby permitting the lock to be operated. The locking movement of the bolt is limited by engagement of the stop 20 with the flange 13.

It will be observed from Fig. 3 that the rear wall of the slide 17 is disposed opposite the coin-receiving aperture 18 when the lock is in unlocked position and, in order to prevent tampering with the lock, such as lifting of the slide by the insertion of a sharp instrument through the coin aperture 19, I have provided mechanism which precludes withdrawal of the slide from in front of the shoulder 23 except upon an initial movement of the locking bolt toward locked position. One suitable form of mechanism for this purpose consists in a dog 36 pivotally mounted at 37 on the main frame 11 and having one end overlying a shoulder or ledge 38 formed integrally with or attached to one edge of the slide 17. The other end of the dog engages in a depression or notch 39 formed in the locking bolt 14 so that any movement of the bolt will swing the latch on its pivot. When the bolt is in unlocked position as shown in Figs. 1 and 2, the dog is disposed over the ledge 38 and precludes lifting of the slide out of operative relation to the bolt. The various parts of the lock are so proportioned that there is a slight amount of lost motion between the pin 32 and the shoulder 34, or, in other words, the pin 32 must move a short distance carrying with it the bolt 14 before the coin 35 will raise the slide 17. This initial movement of the bolt is sufficient to rock the dog 36 on its pivot and partially elevate the overhanging end away from the ledge 38. As the bolt continues to move the overhanging end

of the dog is withdrawn from the path of the ledge 38 faster than the slide is raised by the coin 35, so that the slide may be elevated into inoperative position without interference by the dog. When the bolt has been moved to locked position the finger or projection 24 of the slide rests upon the top of the bolt between the recess 22 and the depression or recess 39. For the purpose of preventing the insertion of a coin in the lock when the parts are in locked position, I have mounted a bar 41 across the front of the slide 17 so that when the parts are in locked position this bar is disposed over the aperture 19 completely closing the same as shown in Fig. 7. If preferred, the bar may be provided with the word "Locked" to indicate that the locker cannot be used.

When the parts are in unlocked position the key-cylinder assumes the inclined position shown in Figs. 3 and 4 and the key 42 cannot be removed from the lock. As has previously been explained, the lock can then only be moved to locked position after a coin of the proper size has been inserted in the coin slot. My invention also provides means for positively preventing rotation of the key-cylinder after the bolt has been thrown to locked position, which means can only be released by withdrawal and subsequent insertion of the key in the lock, the construction thereby being adapted to obviate any possibility of accidental unlocking of the lock. The mechanism for this purpose comprises a latch 43 disposed in a groove 44 of the cylinder casing 29 and extending substantially parallel with and along one side of the key-cylinder 28. The outer end of the latch is provided with an overhanging lip or lug 45 adapted to engage in a depression or notch 46 formed in the end of the cylinder 28 at the bottom of the key slot. Upon rotation of the key-cylinder to locked position the notch is moved into alignment with the lip 45 which is engaged with the notch by a coiled expansion spring 47 interposed between a heel 48 projecting downwardly from the inner end of the latch and a screw 49 threaded into an opening in the casing through which the spring is introduced. The inner end of the latch is also provided with an upwardly extending inclined toe 51 adapted to be engaged by a projection 52 formed on the lower edge of the key 42, so that when the key is inserted engagement of the projection 52 with the toe 51 will force the latch longitudinally inwardly to release the lug 45 from the notch 46 in the key-cylinder. When the key is turned from locked to unlocked position, or from the position shown in Fig. 5 to that shown in Fig. 4, the projection 52 travels laterally away from the toe 51 and the latch is returned to normal position with the lip

45 pressed against the end of the key-cylinder and, when the key is again turned to locked position, the lip 45 engages in the notch in the key cylinder as previously described and positively precludes turning movement of the cylinder. In order to unlock the cylinder it is necessary to withdraw the key, withdrawal being permitted by reason of the inclined outer face and inclined inner face of the projection 52 and the toe 51, respectively, the latch assuming the position shown in Fig. 6 as the key is withdrawn and, upon subsequent insertion of the key, the latch is disengaged from the cylinder as previously described. It will be understood, therefore, that I have provided a lock, which, when in unlocked position, will prevent withdrawal of the key, which can only be moved from unlocked to locked position upon the insertion of a coin and which, when once locked, cannot be again unlocked until the key has been withdrawn and again inserted in the lock. My improved construction also precludes tampering with the lock and prevents the insertion of a coin when the lock is locked.

It is believed that the construction and operation of the invention will be fully understood from the foregoing without further description and it will be manifest that many variations in the structure disclosed may be resorted to without departing from the spirit of the invention and without exceeding the scope of the appended claims.

I claim.

1. In a lock provided with a coin-receiving slot, the combination of a bolt, key-actuated mechanism for operating said bolt, means normally holding said bolt against locking movement, said means being rendered inoperative by a coin upon initial movement of said bolt, and a device operable by said bolt for preventing movement of said means until an initial movement of the bolt has been effected.

2. In a lock provided with a coin slot, the combination of a locking bolt, key-actuated mechanism for operating said bolt, a slide normally positioned to prevent movement of the bolt to locked position, said slide being adapted to be moved into inoperative position by a coin disposed in said slot upon initial locking movement of said bolt, and means connected to said bolt and adapted to engage said slide for preventing movement of the slide into inoperative position except upon movement of the bolt.

3. In a lock, the combination of a sliding bolt provided with a shoulder, a slide normally positioned in the path of said shoulder to prevent movement of the bolt to locked position, and means for normally holding said slide in operative position, said means being connected with said bolt where-

by initial movement of the bolt releases the means from the slide.

4. In a lock, the combination of a sliding bolt provided with a shoulder, a slide movable transversely of said bolt and having a portion thereof normally disposed in the path of said shoulder to prevent movement of the bolt to locked position, and a pivotally mounted dog connected with said bolt and normally preventing movement of the slide when the bolt is in unlocked position, said dog being adapted to be withdrawn from operative relation to the slide upon initial movement of the bolt.

5. In a lock, the combination of a frame provided with a coin receiving aperture, a sliding bolt, key actuated mechanism for operating said bolt, a slide arranged to prevent movement of the bolt from unlocked to locked position, said slide being adapted to be released upon initial locking movement of said mechanism by a coin disposed between a portion of the slide and said mechanism, and means carried by said slide for closing said aperture when the slide is at one end of its travel.

6. In a lock, the combination of a frame provided with an aperture, a channel-shaped slide forming a coin slot, a sliding bolt provided with a transverse passage disposed in alinement with said coin slot when the bolt is in unlocked position, said slide having a projection adapted to cooperate with a shoulder on the sliding bolt to hold said bolt in unlocked position, means for supporting a coin in said passage in the sliding bolt, a projection on the slide adapted to engage said coin above its center, and key-actuated mechanism for moving said sliding bolt, said coin being adapted upon initial movement of the bolt to force the slide out of operative relation with respect to said bolt.

7. In a lock, the combination of a frame provided with a coin receiving aperture, a channel shaped slide forming a coin slot adjacent to said aperture, a locking bolt adapted to be engaged by said slide whereby the bolt is held against locking movement, means for normally holding said slide in engagement with the bolt, said means being connected with said bolt and adapted to be released from the slide upon initial locking movement of the bolt, means actuated through the medium of a coin inserted in said slot for moving the slide out of operative relation to the bolt upon initial locking movement of the bolt, and means carried by the slide to close said aperture when the bolt is in locked position.

8. In a lock adapted to receive a coin, the combination of a locking bolt, means for normally holding said bolt in unlocked position, a key-actuated cylinder, an arm mounted on said cylinder for actuating said bolt,

a latch for retaining said holding means in operative position with respect to the bolt, and a closure carried by said holding means adapted to prevent the insertion of a coin into the lock when the locking bolt is in locked position.

9. In a lock provided with a coin-receiving slot, the combination of a bolt, mechanism for operating said bolt, means rendered inoperative upon initial movement of the

bolt by a coin inserted in said slot and normally holding said bolt against locking movement and a closure carried by said means for closing said slot when the bolt is in locked position.

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MARION HART.