

Dec. 14, 1926.

1,611,081

F. J. ROWSE

COIN CONTROLLED LOCK MECHANISM

Filed Feb. 8, 1924

3 Sheets-Sheet 1

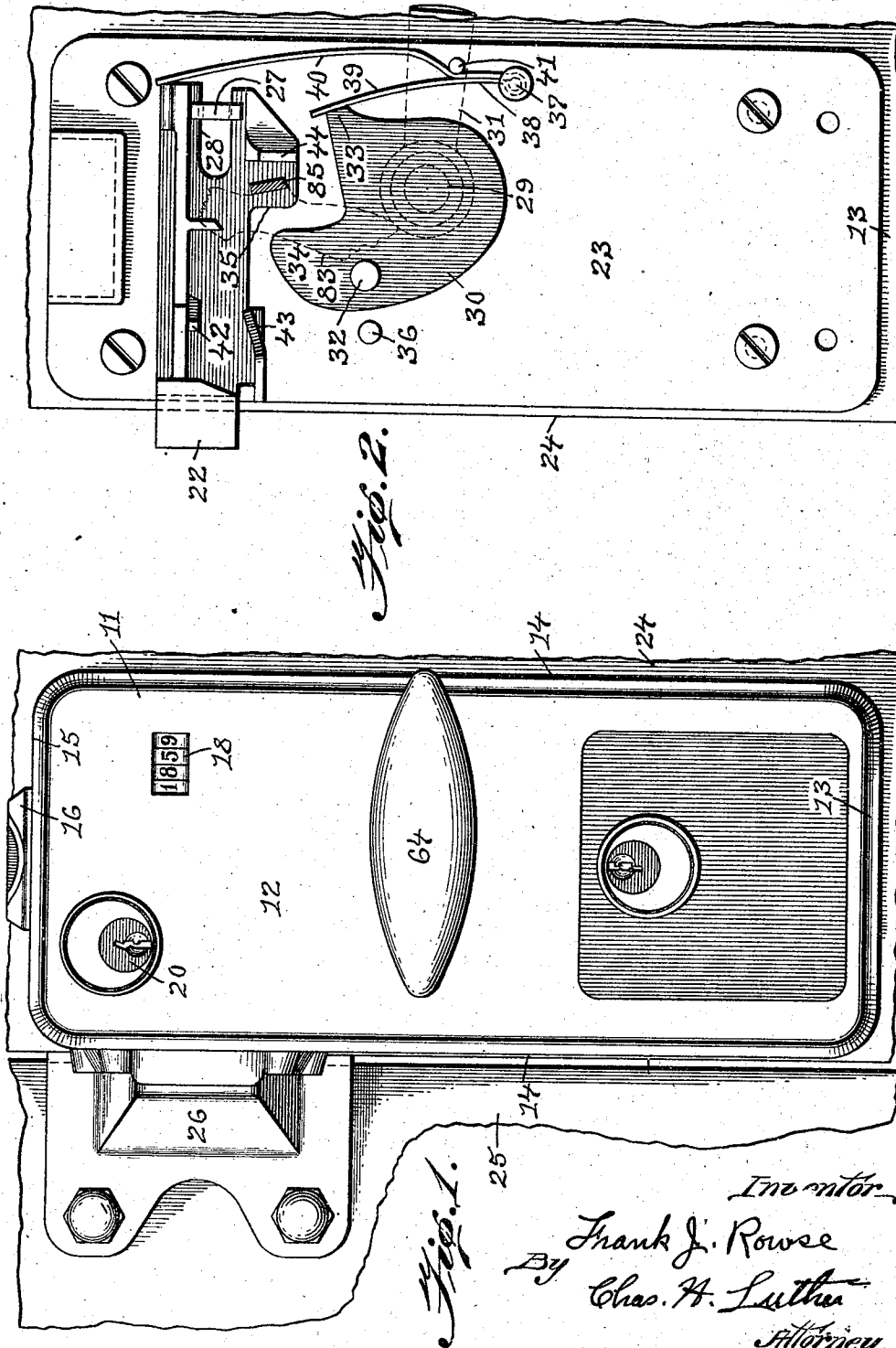


Fig. 1.

Fig. 2.

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3 Sheets-Sheet 2

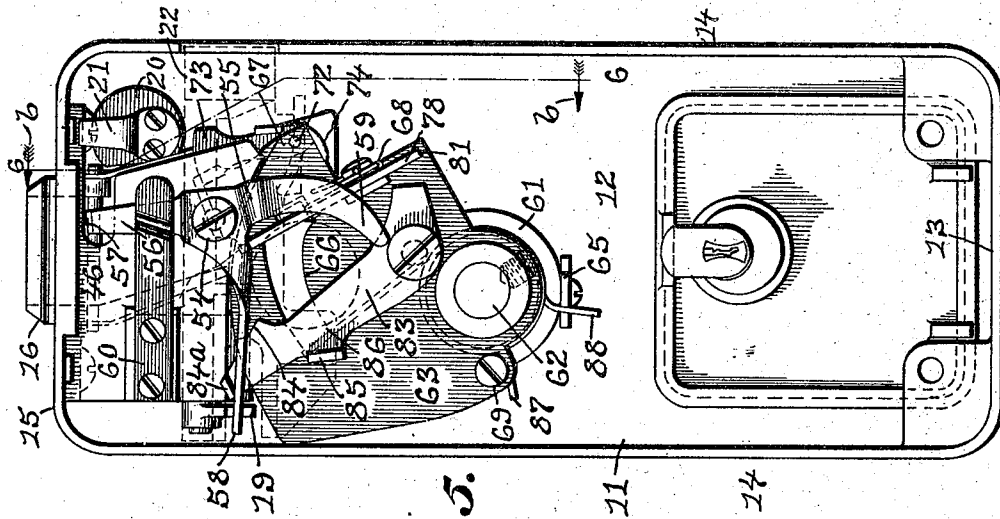


Fig. 5.

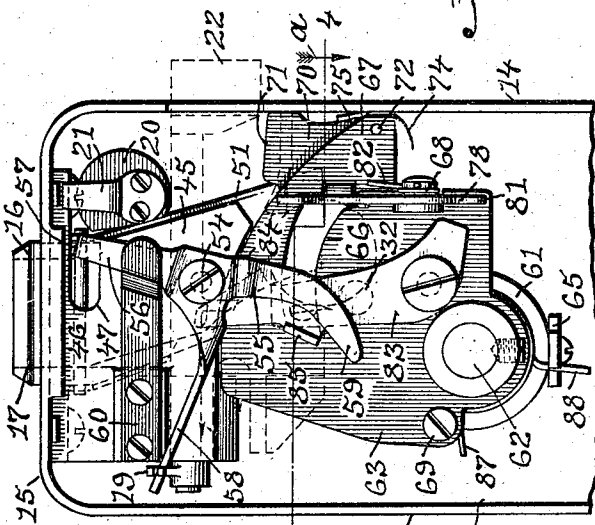


Fig. 3.

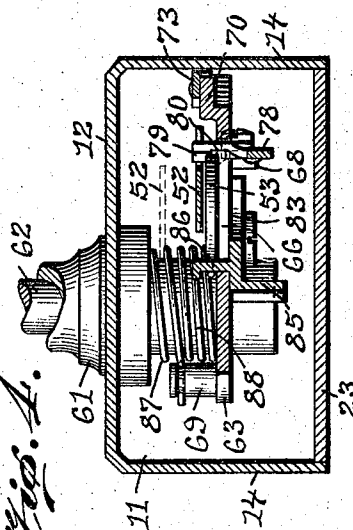


Fig. 4.

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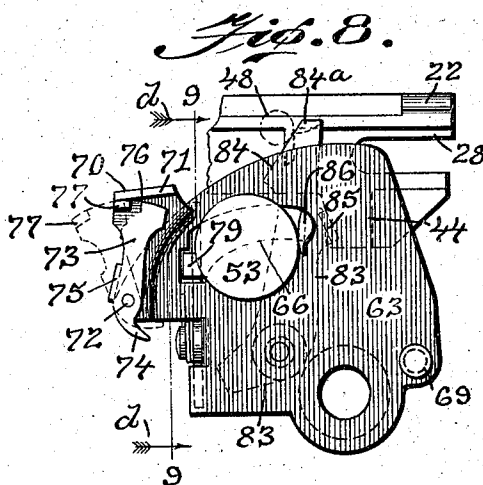
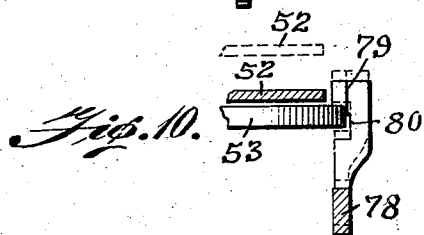
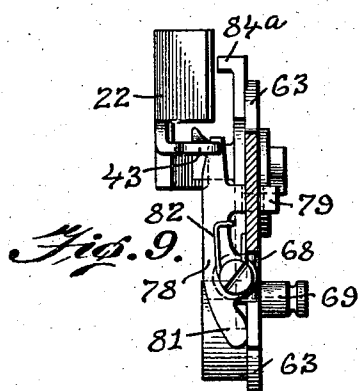
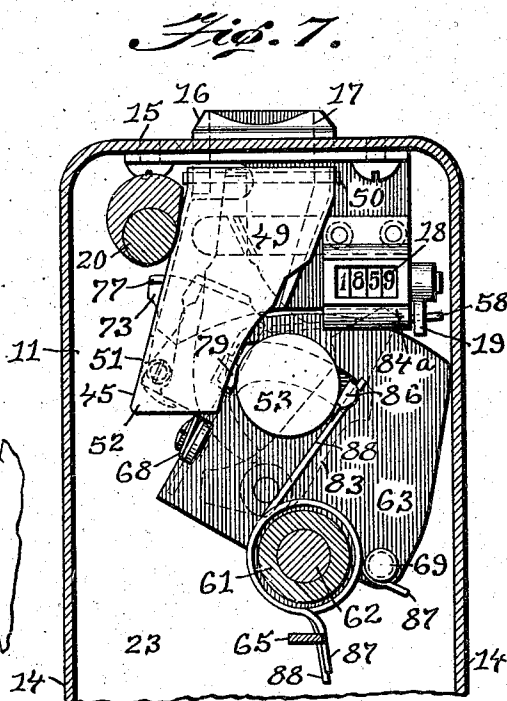
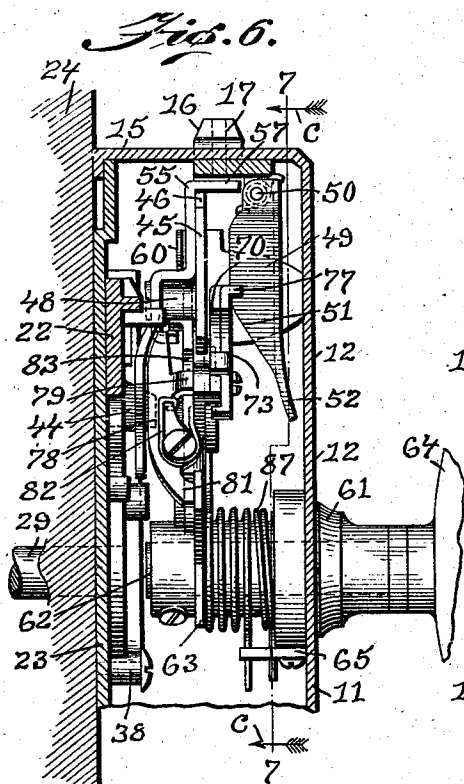
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COIN CONTROLLED LOCK MECHANISM

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3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE.

FRANK J. ROWSE, OF PAWTUCKET, RHODE ISLAND.

## COIN-CONTROLLED LOCK MECHANISM.

Application filed February 8, 1924. Serial No. 691,476.

My invention has reference to an improvement in locks and more particularly to an improvement in a coin controlled lock which requires a coin to complete the mechanism of the lock, whereby when a coin is dropped into the lock mechanism the lock may be operated to open a locked door or the like.

Coin controlled locks, are used on the doors of toilet rooms in railroad stations and other public places and are usually constructed to operate by the use of a small coin, such as a nickel or five cent piece.

The object of my invention is to improve the construction of a coin controlled lock whereby the construction is simplified, thereby reducing the cost of manufacturing coin controlled locks.

My present invention is an improvement on a previous invention as shown and claimed in United States Patent No. 992,258, granted to me May 16, 1911, in which the coin is inserted through a coin slot in the front of the lock, directly into the lock mechanism.

A further object of my invention is to produce a coin controlled lock in which the coin slot is in the top of the lock and connected direct to a downwardly inclined coin chute, said coin chute being separate and distinct from the lock mechanism controlled by the coin, thereby simplifying the construction and operation of the coin controlled mechanism of the lock.

My invention consists in the peculiar and novel construction of a coin controlled lock, said coin controlled lock having details of construction, as will be more fully set forth hereinafter and claimed.

Figure 1 is a front view of my improved coin controlled lock showing the lock and striker applied to a door and door-frame, the greater portions of which are broken away, to more clearly show my invention.

Figure 2 is a face view of the back lock plate which is secured to the door and which carries the lock bolt and its rear operating parts, the rest of the lock being removed.

Figure 3 is a rear view of the lock removed from the back plate with the lower portion of the lock casing broken away and showing the lock mechanism in its locked position.

Figure 4 is a transverse sectional view taken on line 4, 4 of Figure 3 looking downwards in the direction of the arrows *a, a*.

Figure 5 is a rear view of the lock removed from the back plate and showing the lock mechanism in the unlocked position.

Figure 6 is a vertical sectional view taken on line 6, 6 of Figure 5 looking in the direction of the arrows *b, b*.

Figure 7 is a vertical sectional view taken on line 7, 7 of Figure 6 looking in the direction of the arrows *c, c*.

Figure 8 is a detail view of part of the lock mechanism looking from the front towards the back of the lock and showing a coin in its operative position in the lock mechanism.

Figure 9 is a detail sectional edge view of that part of the lock mechanism, shown in Figure 8 and taken on line 9, 9 of Figure 8, looking in the direction of the arrows *d, d*, and

Figure 10 is an enlarged detail sectional view taken on line 4, 4 of Figure 3 looking in the direction of the arrows *a, a*, and showing a portion of a coin on edge with the coin holding member, in full lines, in its coin holding position and in dotted lines in the position it would assume in releasing the coin, when operated by the bolt cam.

In the drawings 11 indicates the casing of the lock which is in the form of an oblong box having a front 12, bottom 13, sides 14, 14 and top 15 on which is a raised member 16 in which is a coin slot 17, which extends downwards through the top 15 of the casing 11, as shown in dotted lines in Figures 3, 5, 6 and 7. The casing 11 carries a counting mechanism 18 with an operating arm 19 and which may be of any usual construction, with the numerals showing through an opening in the front 12 of the casing 11. The casing 11 also has the usual removable locked door in the front 12, for access to the usual coin chamber in the bottom of the casing 11, and a lock 20 in the front 12 with an inner arm 21 operated by a key for operating the bolt 22 to unlock the lock when required. The bolt 22 extends through an opening in the side of the casing 11 and lies flat against a back plate 23 which is secured to a door 24, by screws, as shown in Figures 1 and 2, the greater portion of the door being broken away, to more clearly show my invention. The door-frame 25 carries a striker 26, for the bolt 22 and the greater portion of the door-frame is also broken away. The cas-

ing 11 is detachably secured to the back plate 23, preferably as shown and described in my United States patent referred to. The back plate 23 has a T shaped bolt holding member 27 which works in a slot 28 in the inner end of the bolt 22, as shown in Figure 2. A shaft 29 extends through a bearing in the back plate 23 and has fixed on its inner end a bolt plate 30 and on its outer end a handle 31, as shown in Figure 2 and which is on the room side of the door. The bolt plate 30 is shaped as shown in Figure 2 and has a stud 32, a projecting portion 33 and an arm 34 in a position to engage with a shoulder 35 on the bolt 22. A stud 36 on the back plate 23 is in a position for the adjacent edge of the bolt plate 30 to engage with it and hold the bolt plate 30 in its normal position. Secured to the back plate 23 by a screw 37 is a double whip spring 38 having a spring arm 39 engaging with the projecting portion 33 of the bolt plate 30 and a spring arm 40 bearing against a stud 41 on the back plate 23 and engaging with the inner end of the bolt 22, as shown in Figure 2. By this construction the bolt plate 30 is operated to draw the bolt 22 in against the spring tension of the spring arm 39 and the bolt 22 is drawn in against the spring tension of the spring arm 40. The arm 21 of the lock 20 is positioned to engage with a projecting member 42, on the bolt 22, to unlock the door. The bolt 22 also has a cam edge 43 and a short projecting stud 44, the operations of which will be hereinafter described.

Extending downwards at an angle from the top 15 of the casing 11 and under the coin slot 17 is a coin chute 45 consisting of a fixed plate 46 having a slot 47, a stud 48 and a spring actuated chute member 49 pivotally secured at 50 at its upper end and shaped to form the other part of the coin chute, the tension of the spring acting to hold the chute member 49 normally in its inward position to form the coin chute 45. This spring actuated chute member 49 is shaped to have a bent over edge 51 and a bent end 52 and is shaped to form a movable part of the coin chute, for a coin 53, as shown in Figures 4, 6 and 7. Pivotally secured to the stud 48 by a screw 54 is a coin slot locking and counting mechanism operating member 55 having an upwardly extending coin locking arm 56 with a bent end 57, a counting mechanism operating arm 58 and a downwardly extending curved arm 59, as shown in Figures 3 and 5. When in the position, as shown in Figure 5, the bent end 57 is in the coin chute under the coin slot 17 and prevents the entrance of a coin and the arm 58 is operatively connected to the operating arm 19 of the counting mechanism 18. A flat spring 60 is secured to the coin chute 45 and bears on the arm 56, the spring tension of the spring 60 holding the coin

locking member 55 under spring tension in either position.

In the front 12 of the casing 11 is a horizontal rock-shaft bearing 61 and extending through the bearing 61 is a rock-shaft 62. A lock plate 63, shaped, as shown in Figures 3, 5 and 8, is fixed to the inner end of the rock-shaft 62 and a knob 64 is secured to the outer end of the rock-shaft 62, the knob 64 acting to operate the mechanism of the lock and to act as a door-knob to open the door. A spring retaining member 65 is secured to the bearing 61, as shown in Figures 3, 5 and 6. The lock plate 63 is constructed to have a curved slot 66, a side extension 67, a pivot boss 68, on the back of the plate, adjacent the side extension 67 and a stud 69 on the front of the plate, as shown in Figures 3 and 4. Fixed to the side extension 67 is a normally vertical chute member operating extension 70 having a forwardly bent cam lip 71 in a position to engage with the bent over edge 51 of the chute member 49. Pivotally secured at 72 and in front of the vertical extension 70, is a movable pivoted extension 73. This pivoted extension 73 has a stop 74, on its lower end in a position to engage with the lower edge of the side extension 67 of the lock plate 63, a side stop 75 in a position to engage with the side edge of the vertical extension 70 and an upper end 76 on which is a forwardly bent stop 77, as shown in Figures 3, 5, 6, 7 and 8. Pivotally secured to the pivot boss 68 on the lock plate 63 is an edgewise positioned coin stop and releasing lever 78 having a coin stop arm 79 which extends forwardly through the curved slot 66 in the lock plate 63 and has a coin recess 80, as shown in Figure 10.

This coin stop and releasing lever 78 has a lower end 81 normally resting against the face of the lock plate 63 and a coiled spring 82 held in place by the pivot member of the lever 78 has one end bearing on the face of the lock plate 63 and the other end attached to the lever 78, the tension of the coiled spring 82 acting to normally hold the lower end 81 of the lever 78 against the face of the lock plate 63, thereby holding the coin stop and releasing arm 79 in the position, as shown in full lines in Figure 10. This position of the coin stop and releasing arm 79, as shown in full lines in Figure 10, holds the coin 53 in its operative position in the lock mechanism. Pivotally secured at its lower end to and flat against the rear face of the lock plate 63 is a coin controlled and bolt operating lever 83. The pivot of this lever 83 is intermediate the rock-shaft 62 and the pivot boss 68, as shown in Figure 5. This lever 83 has an inclined edge on its upper end 84 which bears normally against the stud 48 to which the coin slot locking and counting mechanism operating member 55, 130

is pivotally secured and a short rearwardly bent arm 84<sup>a</sup>, on its upper end in a position to engage with the counting mechanism operating arm 58, as shown in Figure 5. This lever 83 also has a rearwardly extending short bolt operating arm 85, in a position to engage with the stud 44 on the bolt 22, as shown in Figures 2, 4 and 5. Approximately opposite the arm 85, on the lever 83 is a coin engaging and stop arm 86, shaped and positioned, as shown in Figure 8. This stop arm 86 extends through the curved slot 66 in the lock plate 63, as shown in Figure 4 and with the coin stop arm 79, holds the coin 53 in its operative positions in the lock mechanism, as shown in Figure 8. A coiled spring 87 is coiled around the rock-shaft bearing 61, one end of the spring bearing against the spring retaining member 65 and the other end of the spring engaging with the stud 69 on the lock plate 63, the tension of the spring 87 acting to hold the lock mechanism over against the side 14 of the casing 11, under spring tension, as shown in Figure 5. A coiled spring 88 is coiled around the rock-shaft bearing 61 one end of the spring bearing against the spring retaining member 65 and the other end of the spring engaging with the coin stop arm 86, on the coin controlled and bolt operating lever 83, the tension of the spring acting to normally hold the inclined edge of the upper end 84 of the lever 83 against the stud 48.

The operation of my improved coin controlled lock mechanism is as follows. Looking at the front of the lock with the door closed and locked, as shown in Figure 1, the knob 64 may be turned to the right, without unlocking the door. This movement of the knob 64 moves the lock plate 63 with the lock mechanism from the position, as shown in Figure 3, to the position, as shown in Figure 5, against the spring tension of the coiled spring 87. In this movement of the lock plate 63 and lock mechanism, the coin controlled and bolt operating lever 83 has a vertical swinging movement, the inclined edge of its upper end 84 being held against the stud 48, by the spring tension of the coiled spring 88. In this operation of the knob 64 there is no mechanical connection with the bolt 22 to unlock the door.

With the door locked, the coin slot locking and counting mechanism operating member 55 is in the position, as shown in Figure 3, with its bent end 57 out of the coin slot 17. When a person desires to enter a room, such as a toilet room, the door of which is locked with my improved coin controlled lock, he drops a coin such as a five cent piece, into the coin slot 17 in the raised member 16 on the top 15 of the casing 11. The coin now drops down by gravity through the coin chute 45, guided by the plate 46, which forms the rear part of the coin chute and also guid-

ed by the spring actuated chute member 49, which also forms a part of the coin chute, when in its normal position, its bent end 52 guiding the coin into its operative position in the lock mechanism. If there has been any obstruction or external matter previously dropped into the coin chute, where it would lodge and stay, the chute member operating extension 70 would operate the spring actuated chute member 49 so as to move the chute member 49 outward, thereby widening the coin chute and releasing the coin. The coin now comes to a stop in the lock mechanism where it is held in its operative position by the coin stop arm 79 on the coin stop and releasing lever 78 and by the coin stop and operating arm 86 on the coin stop and bolt operating lever 83, as shown in Figures 7, 8 and 10. The coin now being held as described locks the coin controlled and bolt operating lever 83 to the lock plate 63 so that it may now move with the lock plate and lock mechanism. The knob 64 is now turned to the right to unlock the door, the lock plate 63 and its lock mechanism assuming the position shown in Figure 5, against the spring tension of the coiled spring 88. In this movement of the lock mechanism from its normal position, as shown in Figure 3, to the position, shown in Figure 5, the rearwardly extending arm 85 on the lever 83 engages with the stud 44 on the bolt 22 and moves the bolt 22 back into the lock, against the spring tension of the double whip spring 38 on the back plate 23, thereby withdrawing the bolt 22 from the striker 26, and unlocking the door. The person now opens the door by the knob 64 and enters the room, the door closing after him, by the usual door spring, not shown, and the door then locks. In this unlocking movement of the lock plate 63 and lock mechanism the cam lip 71 on the rigid vertical extension 70 and the upper end of the movable extension 73 has contacted with the bent over edge 51 of the spring actuated chute member 49 and moves the chute member 49 towards the front of the casing 11, this widening the coin chute and thus freeing the bent end 52 from the coin, as shown in Figure 6. The stop 77 on the movable extension 73, engaging with the bent over edge 51 of the chute member 49, limits the movement of the movable extension 73. This movement of the lock plate 63 and lock mechanism into the unlocked position, brings the bent arm 84<sup>a</sup>, on the upper end of the coin controlled and bolt operating lever 83, into engagement with the counting mechanism operating arm 58 and moves this arm 58 downwards into the position, as shown in Figure 5 and this downward movement of the arm 58 operates the counting mechanism 18 through its connection with the counting mechanism operating arm 19.

In the closing of the door and second inward movement of the bolt 22 the cam edge 43 on the bolt 22 engages with and moves the upper end of the coin stop and releasing lever 78 towards the front of the lock, against the spring tension of the coiled spring 82, as shown in Figure 9. This movement of the lever 78 brings the coin stop arm 79 and the coin recess 80, into the position, as shown in dotted lines in Figure 10. The coin 53 is now free to pass downward through the coin recess 80 and drops into the bottom of the casing.

This downward movement of the arm 58 also moves the coin slot locking and counting mechanism operating member 55 into the position, shown in Figure 5 and moves the bent end 57 of the arm 56 through the slot 47 and into the coin slot 17, thereby locking the coin slot against the entrance of a coin, while the person is in the room.

The person in leaving the room opens the door by turning the handle 31 on the inside of the door, to the left. This turning of the handle 31 partly rotates the bolt plate 30 and brings the arm 34 on the bolt plate 30 to the left and against the shoulder 35 on the bolt 22 and moves the bolt 22 inwards, freeing the bolt from the striker and unlocking the door.

In this opening of the door by the inside handle 31, the stud 32 on the bolt plate 30, engages with the curved arm 59 of the coin slot locking and counting mechanism operating member 55 and moves this member 55 back into its normal position, as shown in Figure 3, thereby moving the coin slot locking end 57 out of the coin slot 17. After the person leaves the room the door is closed and locked and the lock is again in its normal position, to be operated by a coin.

Having thus described my invention I claim as new:—

1. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a coin slot in the casing top, a rock shaft in the bearing, a bolt in the casing, a stud on the bolt, a coin controlled lock mechanism fixed to the rock shaft and including a lock plate having a slot, a coin stop and releasing lever pivotally secured to the lock plate in a transverse position and having a coin stop and releasing arm extending through the slot in the lock plate, said arm having means for holding a coin and means for releasing the coin, means on the bolt for operating the coin stop and releasing lever, a coin controlled and bolt operating lever pivotally secured to the plate parallel with the plate and having a coin stop arm extending through the slot in the plate and a bolt arm in a position to engage with the stud on the bolt.

2. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a rock

shaft in the bearing, a coin slot in its top, a coin chute extending downwards from the coin slot, a movable chute member forming a part of the chute, a bolt in the casing, a coin controlled lock mechanism fixed to the rock shaft and including a lock plate, a coin stop and releasing lever, pivotally secured to the lock plate, said lock plate having a slot for the coin stop and releasing lever, a coin controlled and bolt operating lever pivotally secured to the lock plate, means on the bolt in a position to operate the coin stop and releasing lever, means on the bolt in a position to engage with the coin controlled and bolt operating lever and means on the plate adapted to operate the movable chute member.

3. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a coin slot in its top, a coin chute extending downwards from the coin slot, a movable chute member forming a part of the coin chute, a bolt in the casing, a coin controlled lock mechanism including a rock shaft in the rock shaft bearing, a lock plate fixed to the rock shaft, a coin-engaging and stop arm, a coin stop and releasing lever pivotally secured to the lock plate, a coin stop and releasing arm, said lock plate having a slot for the coin stop and releasing arm, means on the bolt for operating the coin stop and releasing lever and means on the lock plate for operating the movable chute member.

4. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a coin slot, a coin chute extending downwards from the coin slot, a movable chute member forming one wall of the chute, a bolt in the casing, a rock shaft in the bearing, a coin controlled lock mechanism including a lock plate fixed to the rock shaft, and means on the lock plate adapted to operate the movable chute member to widen the chute, to give free passage to a coin.

5. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a coin slot, a coin chute, a bolt in the casing, a rock shaft in the bearing, a coin controlled lock mechanism including a lock plate fixed to the rock shaft, a coin stop and engaging arm, a coin stop and releasing lever pivotally secured to the lock plate and having an arm extending through a slot in the lock plate, said last named arm having means for holding a coin and means for releasing the coin, said bolt having means for operating the coin stop and releasing lever.

6. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a coin slot, a coin chute, a bolt in the casing, a rock shaft in the bearing, a coin controlled lock mechanism including a lock plate fixed to the rock shaft, a coin controlled and bolt operating lever, said lever having a coin stop arm extending through a slot in the lock



plate and a bolt operating arm, said bolt having a stud in a position to engage with the bolt operating arm on the coin controlled and bolt operating lever.

5 7. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a coin slot, a coin chute, a bolt in the casing, a rock shaft in the bearing, a coin controlled lock mechanism including a lock plate fixed to the  
10 rock shaft, a coin stop and releasing lever pivotally secured to the lock plate and having a coin stop and releasing arm extending through a slot in the lock plate, a coin controlled and bolt operating lever having a  
15 coin stop arm extending through a slot in the lock plate and a bolt operating arm, said bolt having means for operating the coin stop and releasing arm and a stud positioned to engage with the bolt operating arm on  
20 the coin controlled and bolt operating lever.

8. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a rock shaft in the bearing, a coin slot, a coin chute, a spring actuated movable chute member  
25 forming one wall of the chute, a coin controlled lock mechanism including a lock plate fixed to the rock shaft, a rigid arm on the lock plate adapted to operate the movable chute member to widen the coin chute for  
30 giving a free passage to a coin.

9. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a rock shaft in the bearing, a coin slot, a coin chute, a spring actuated movable chute member  
35 pivotally secured to the chute, a coin controlled lock mechanism including a lock plate fixed to the rock shaft, a rigid arm on the plate and a movable arm on the plate, the rigid and movable arms being in a position  
40 to operate the movable chute member to widen the coin chute to give free passage to a coin.

10. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a coin  
45 slot, a coin chute, a bolt in the casing, a rock shaft in the bearing, a coin controlled lock mechanism including a lock plate fixed to the rock shaft, a chute member pivotally secured to the coin chute, means for holding  
50 the chute member in its normal position under spring tension to form one part of the coin chute, means on the lock plate to operate the pivoted chute member to widen the coin chute to give free passage to a coin and  
55 means for operating the rock shaft.

11. In a coin controlled lock mechanism, a casing having a rock shaft bearing, a coin  
60 slot, a coin chute, a bolt in the casing, a coin controlled lock mechanism including a rock shaft in the bearing, a lock plate fixed to the rock shaft and having a slot, a coin stop and engaging arm, a coin stop and releasing lever  
pivotally secured to the lock plate, an arm on the coin stop and releasing lever extend-

ing through the slot in the lock plate and  
65 having a coin stop end and a coin releasing notch, means on the bolt for operating the coin stop and releasing lever and means for operating the rock shaft.

12. In a coin controlled lock mechanism, a  
70 casing having a rock shaft bearing, a coin slot, a coin chute, a bolt in the casing, a stud on the bolt, a coin controlled lock mechanism including a rock shaft in the rock shaft bearing,  
75 a lock plate fixed to the rock shaft and having a slot, a coin controlled and bolt operating lever pivotally secured to the lock plate, said lever having a coin controlled  
arm extending through the slot in the lock plate and a bolt arm in a position to engage  
80 with the stud on the bolt and means for operating the rock shaft.

13. In a coin controlled lock mechanism, a casing having a coin slot and a rock shaft  
bearing, a rock shaft in the bearing, a coin  
85 chute, a stud on the coin chute, a lever on the stud, said lever having a slot closing arm, a counter mechanism operating arm and an inside handle releasing arm, a coin  
controlled lock mechanism including a lock  
90 plate fixed to the rock shaft and having a stop, a coin stop and releasing lever pivotally secured to the lock plate, a coin holding and bolt operating arm on the lock plate and engaging normally with a counter mechanism  
95 arm to operate the counter mechanism when moved by the coaction of a coin, a bolt operating lug on the coin holding and bolt operating arm, spring means for holding the  
coin holding and bolt operating arm in its  
100 normal position against the stud on the coin chute, a bolt in the casing, said bolt having means to engage with the coin stop and releasing lever on the lock plate and means for  
operating the rock shaft.  
105

14. In a coin controlled lock mechanism, a casing having a coin slot, a coin chute having  
a slot, a stud on the coin chute, a spring actuated coin chute member pivotally secured to the coin chute, a back plate having a  
110 bolt plate shaft, a bolt plate fixed to the bolt plate shaft and having a stud and an arm, a bolt reciprocally secured to the back plate and having a shoulder, a projecting member, a cam edge and a stud, a double whip spring  
115 secured to the back plate and having a spring arm engaging with the bolt plate and a spring arm engaging with the inner end of the bolt, a rock shaft bearing in the front of the casing, a rock shaft in the bearing, a  
120 coin controlled lock mechanism including a lock plate fixed to the rock shaft and having a curved slot, a side extension, a stud, a fixed arm and a movable arm, a coin stop and coin releasing lever pivotally secured to the lock  
125 plate and having a coin stop and coin releasing arm extending through the slot in the lock plate, a coin controlled and bolt operat-



ing lever pivotally secured to the lock plate  
and having a bolt operating arm, means for  
operating the rock shaft, means for operat-  
ing the bolt plate shaft, means for holding  
5 the lock plate in its normal position under  
spring tension, means for holding the coin  
stop and releasing lever in its normal posi-

tion under spring tension, and means for  
holding the coin controlled and bolt operat- 10  
ing lever in its normal position under spring  
tension, for the purpose as described.

In testimony whereof, I have signed my  
name to this specification.

FRANK J. ROWSE.