D. M. ALEXANDER.

LOCKING AND UNLOCKING MECHANISM.

APPLICATION FILED MAR. 28, 1921.

1,419,095.

Patented June 6, 1922.

2 SHEETS—SHEET 1.

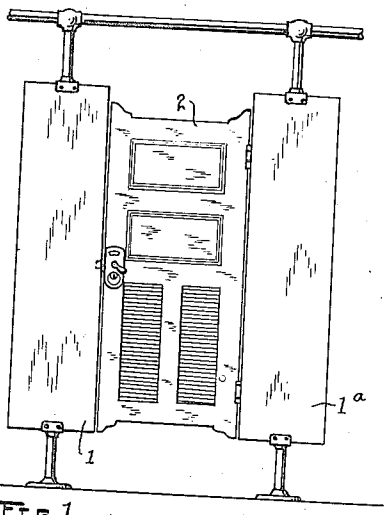


Fig. 1

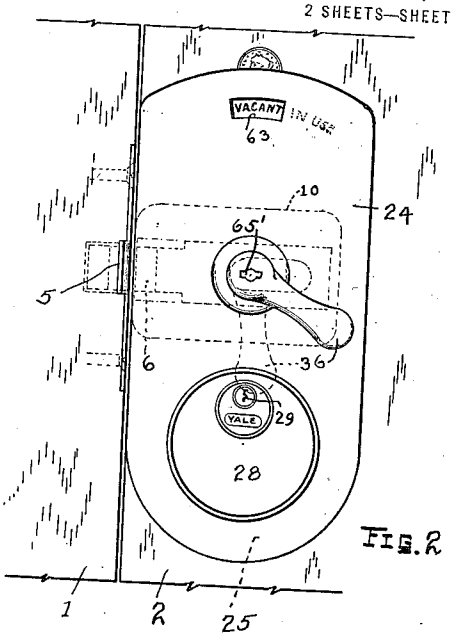


Fig. 2

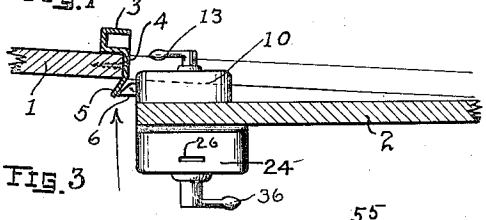


Fig. 3

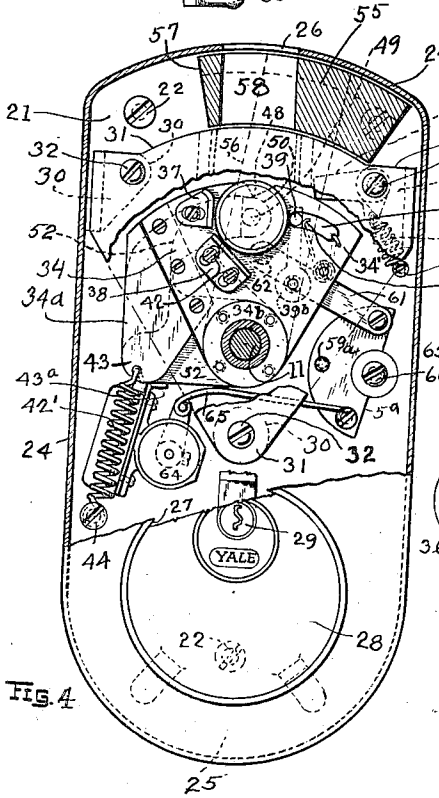


Fig. 4

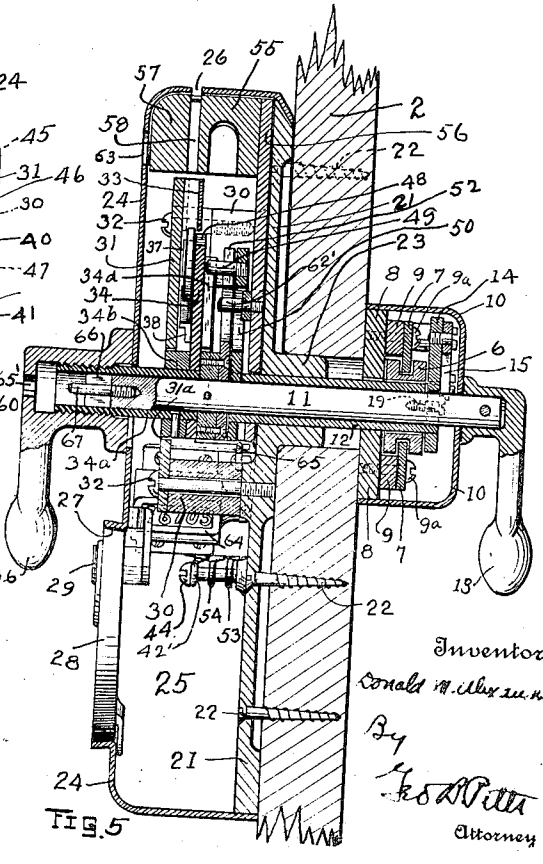


Fig. 5

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Fig. 8.

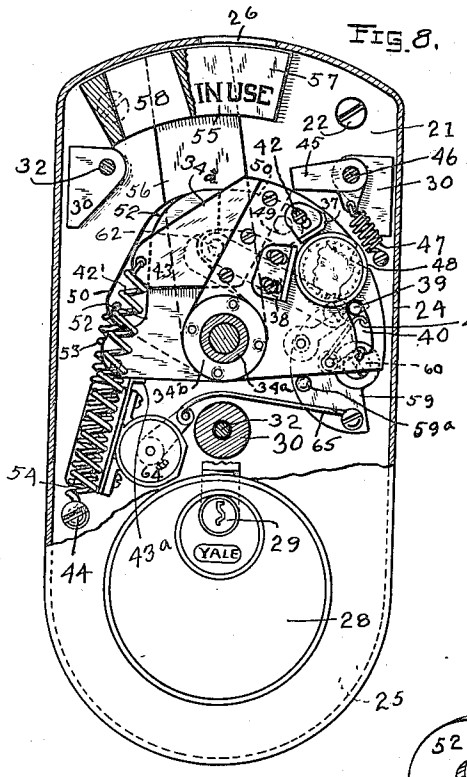


Fig. 12.

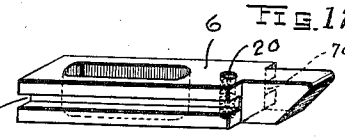


Fig. 11.

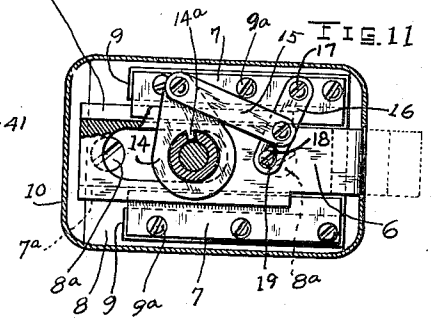


Fig. 6.

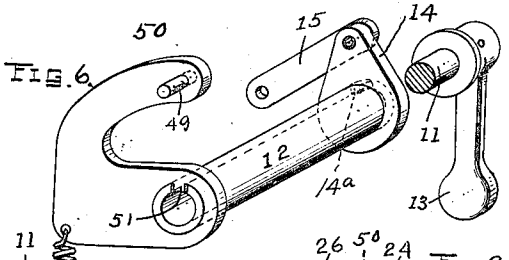


Fig. 9.

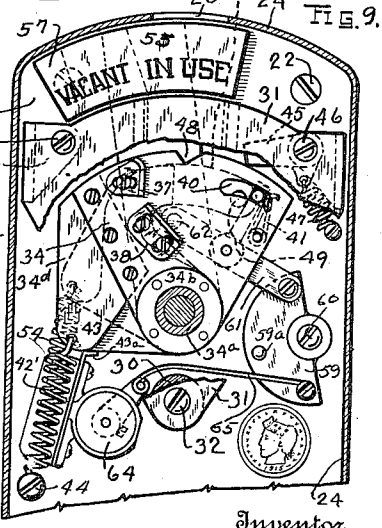


Fig. 10.

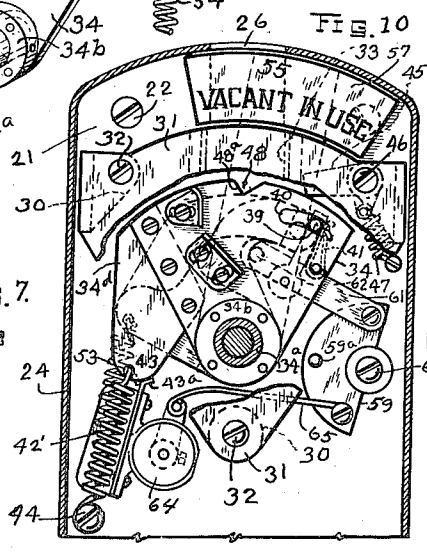
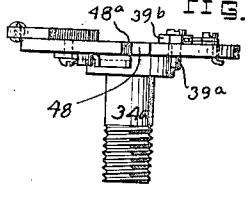


Fig. 7.



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UNITED STATES PATENT OFFICE.

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LOCKING AND UNLOCKING MECHANISM.

1,419,095. Specification of Letters Patent. Patented June 6, 1922.

Application filed March 28, 1921. Serial No. 456,108.

To all whom it may concern:

Be it known that I, DONALD M. ALEXANDER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga, State of Ohio, have invented new and useful Improvements in Locking and Unlocking Mechanism, of which the following is a specification.

This invention relates to a door locking and unlocking mechanism, more particularly to a mechanism in which the unlocking of a door is effected by the insertion of a disk, such as a coin. The invention may be advantageously applied to the door of a room that is to be used temporarily, such as a toilet room in a hotel or public place.

One object of the invention is to provide a mechanism of this character of relatively few parts, but capable of being operated in a positive manner.

Another object of the invention is to provide an improved mechanism of this character in which the disks or coins can only be released from operative position by the closing of the door following the operation of opening it.

Another object of the invention is to provide in a mechanism of this character a disk or coin carrier which serves to support the disk or coin in a position to make the locking elements inoperative and to correlate therewith means which release the disk or coin only after the door has been opened either by reason of the subsequent closing of the door or manipulation of the operating handle on the inner side of the door.

A further object of the invention is to provide an improved mechanism of this character in which the elements are so arranged and correlated that it can be applied to a door that swings either outwardly or inwardly and from either its left side or right side.

Other objects of the invention will be apparent to those skilled in the art to which my invention relates from the following description, taken in connection with the accompanying drawings, in which—

Fig. 1 is an elevation of a room or closet having an entrance door to which is applied a locking and unlocking mechanism embodying my invention. Fig. 2 is an enlarged front elevation of the locking mechanism; Fig. 3 is a cross section taken through the door and side panel with the door open; Fig. 4 is a cross sectional elevation of a coin control mechanism and casing therefor; Fig. 5 is a cross sectional elevation taken through the center of the coin control and latch control mechanisms; Fig. 6 is a telescopic perspective view of the actuating elements of the mechanism; Fig. 7 is a plan view of a coin carrier member and coin positioning mechanism carried thereby; Fig. 8 is a view similar to Fig. 4 with the coin control mechanism rotated in a clockwise direction showing the relation of the coin carrier means to the latch operating mechanism when the latch is disengaged from the keeper; Fig. 9 is a fragmentary cross sectional elevation illustrating the relation of the various elements of the mechanism when the mechanism is operated from the inner side of the door with the coin releasing mechanism in releasing position; Fig. 10 is a view similar to Fig. 9, showing the final repositioning of all the elements for reception of another coin; Fig. 11 is a cross sectional view taken longitudinally of the latch casing and illustrating the means connecting the latch to the coin control mechanism; Fig. 12 is a perspective view of a reversible latch member.

Referring to the drawings, 1, 1^a, indicate front walls or panels of a room or closet, the entrance to which is through a door 2. The door 2 is arranged between the opposing edges of the walls or panels 1, 1^a, being hinged along one side edge to the panel 1^a, and preferably swings outwardly relative to the panel 1, as shown in Fig. 3. 3 indicates a keeper, of any suitable construction, supported in any well known manner upon the inner side of the panel 1. The keeper 3 is provided with a guide plate 4 having an inclined lip 5, on which the outer or free end of a latch 6 rides when the door 2 swings to the closed or locked position. The door 2 may be controlled by suitable springs (not shown).

In the preferred form of construction, such as illustrated in Figs. 1 to 12, inclusive, the latch 6 is mounted in guides 7, supported on the inner side of the door 2, whereas the mechanism which controls the operation of

the latch 6 is mounted on the outer side of the door 2, as will be clearly understood from Fig. 3.

8 indicates a base plate secured to the inner side of the door 2, preferably by screws 8^a, one of which is shown in Fig. 11. 9 indicates a pair of spaced bars fixed to the base plate 8 and carrying on their outer faces a pair of aligned plates the opposing edges of which form the guides 7. The guide plates may be secured to the bars 9 by screws 9^a. The outer or free end of the latch 6 is provided with a beveled face, which engages the lip 5 to facilitate inward movement thereof when the door 2 is closed. The latch 6 is formed on its upper and lower sides with slots 7^a, which receive the guides 7.

10 indicates a casing shaped to enclose the base plate 8, bars 9, guides 7, but formed with an opening at its end adjacent the panel 1 through which the latch projects for engagement with the keeper 3. As shown, the base plate 8, latch 6 and door 2 are formed with aligned openings through which a rock shaft 11 and sleeve 12 extend for purposes to be later set forth. The opening in the latch 6 is elongated (see Figs. 11 and 12) in order that it may slide endwise in the guides 7. The rock shaft 11 is extended at its inner end through an aligned opening in the casing 10 and fixedly carries at its free end, outside the casing 10, a handle or turning device 13.

14 indicates a crank arm fixed to the sleeve 12, preferably at or near its inner end. The arm 14 may be keyed to the sleeve 12 by a lug 14^a (see Figs. 6 and 11). 15 indicates a link pivoted at its opposite ends to the crank arm 14 and a second link 16. The link 16 is swingably mounted at one end upon a pivot 17. At its opposite end the link 16 is formed with an elongated slot 18 through which extends a pivot pin 19 removably threaded in an opening 20 formed in the latch 6, such slot and pin forming a slidable pivotal connection between the link 16 and latch 6, whereby the latter can be moved in its guides by the links 15, 16, and crank arm 14, whenever the sleeve 12 is rotated. As the opening 20 extends entirely through the latch 6 and the guide slots or grooves 7^a are continuous from end to end of the latch 6, it will be seen that the latter can be readily removed and reversed to accommodate the latch 6 to a door which swings inwardly; furthermore, by turning the latch enclosing casing 10 over so that its upper side as shown in Figs. 1, 2, 3 and 5 becomes its lower side, the latch 6 can be adapted to a door that is hinged along its left-hand edge.

21 indicates a supporting plate secured to the outer face or side of the door 2 in any well known way, but preferably by screws 22. Near its central portion the plate 21 is provided with an annular boss 23, preferably fitting into the opening formed in the door 2 and serving as a bearing for the rock shaft 11 and sleeve 12. 24 indicates a casing shaped to co-operate with the plate 22 to form a disk or coin collecting or receiving receptacle 25, and also enclose the mechanism about to be described. The upper end wall of the casing 24 is formed with a slot 26, through which the disks or coins are inserted to effect unlocking of the mechanism and removal of the latch 6 from the keeper 3. The lower front portion of the casing 24 is formed with an opening 27 to permit access to the receptacle 25. The opening 27 is adapted to be closed by a plate 28, having detachable connection with the wall of the opening or inner face of the casing 24, which connection is controlled by a key-operated lock 29 in a well known manner.

30 indicates a plurality of blocks, preferably three in number, projecting from the supporting plate 21. 31 indicates a plate supported against the outer ends of the blocks 30 and spaced from the plate 21 thereby. The plate 31 is preferably fixed to the blocks 30 by screws 32. The screws 32 may extend through openings formed in the blocks 30 and have screw-thread connection at their inner ends in openings formed in the plate 21, thereby serving to rigidly connect the blocks thereto. 33 indicates a guide member, preferably of U-shape, arranged on the inner side of the plate 31 and disposed in alignment with the slot 26 so as to guide the disk or coin downwardly to a disk or coin carrier, indicated as an entirety at 34. The guide member 33 may be secured to the plate 31 in any desired manner. Near its lower portion, the plate 31 is formed with an opening 31^a, that forms a bearing for a sleeve 34^a (or hub 34^b thereon) connected to the disk or coin carrier 34 and also the outer end of the rock shaft 11 on which the sleeve 34^a oscillates. The shaft 11 projects into and through the sleeve 34^a to a point adjacent its outer end for reasons to be later set forth. The sleeve 34^a projects outwardly through an opening formed in the casing 24 and carries a handle 36, whereby the disk or coin carrier can be operated. The plate 31 is preferably arranged parallel to and in close proximity to the outer face of the disk or coin carrier 34, so that it may co-operate therewith to (*a*) prevent dislocation of the disk or coin on the carrier while it is being operated and (*b*) guide the disk or coin downwardly into the receptacle 25 when the disk or coin is released from the carrier 34.

The disk or coin carrier 34 preferably comprises a plate 34′, the upper edge 34^c of which is preferably curved on an arc struck from the axis of the sleeve 34^a, a thrust member 34^d and a plurality of devices 37, 38,

39, arranged preferably on the outer face of the carrier plate 34′ in the path of movement of the disk or coin when it is inserted in the slot 26 and adapted to arrest and hold the disk or coin, as shown in Fig. 4, until released in the manner to be later described. The device 39 comprises a pin or projection 39ª carried by a lever 39ᵇ pivoted upon the inner side of the plate 34′. The plate 34′ is formed with an elongated curved slot 40 through which the pin 39ª extends for coaction with the arresting and holding devices 37, 38. The pin 39ª is normally maintained at the inner end of the slot 40 by a suitable spring 41, but may be moved toward the opposite end of the slot against the tension of the spring 41, to release the disk or coin, as will be hereinafter described. The devices 37, 38, may comprise angle plates, the bases of which are adjustably secured by suitable screws 42 to the plate 34′. By adjusting the devices 37, 38, toward or from the pin 39ª, they can be correlated with the latter to arrest disks or coins of different sizes. The disk or coin carrier 34 is preferably normally maintained in the position shown in Fig. 4 by a coiled spring 42′ connected at one end to a member 44, preferably projecting from the plate 21, and connected at its opposite end to an arm 43, which may be the tail portion of the thrust member 34ᵈ. If desired, a stop 43ª may be provided to limit the movement of the plate 34′ in the anticlockwise direction under the influence of the spring 42′.

45 indicates a dog pivoted, as at 46, to the plate 21 near that side of the casing 24 toward which the carrier 34 swings to operate the latch 6. The dog 45 is arranged to ride on the upper curved edge of the plate 34′. The dog is yieldingly maintained against the edge 34ᵉ by a suitable spring 47 connected at its opposite ends in a well known manner to the dog 45 and plate 21. Intermediate the ends of the curved edge 34ᵉ, the plate 34′ is formed with a notch 48, one wall of which—that is, that wall remote from the dog 45—forms an abutment 48ª with which the dog 45 engages to lock or prevent movement of the carrier 34 clockwise, should the handle 36 be operated in an attempt to open the door 2. The notch 48 is formed in the plate 34′ at a point that is substantially midway between the arresting devices 37 and 39, and these devices and the device 38 are arranged to arrest each disk or coin so that its upper portion will extend across the notch 48 and its free edge between the walls of the notch will serve substantially as a continuation of the curved edge 34ᵉ to raise and guide the dog 45 over or past the abutment 48ª and thus permit the carrier 34 to be moved clockwise to the position shown in Fig. 8. To insure this engagement between the dog 45 and free or circumferential edge of the disk or coin held by the arresting devices 37, 38, 39, the dog 45 is made relatively thick so that it may extend beyond the outer face of the carrier plate 34′ far enough to engage the disk or coin.

49 indicates an element arranged between the thrust member 34ᵈ and the arm 39ᵇ and so disposed that it will be engaged and moved by the thrust member 34ᵈ when the carrier 34 is moved clockwise (see Fig. 8), or in the event the element 49 is moved to the right, independently of the carrier 34 (see Figs. 9 and 10), it will engage and swing the arm 39ᵇ, which in turn will move the pin 39ª through the slot 40 and release the disk or coin that may be held by the arresting devices 37, 38, 39. The operating element 49 is carried by a crank 50 fixed in any desired manner, as by a key 51, to the inner end of the sleeve 12. Accordingly, when the carrier 34 is moved clockwise, the thrust member 34ᵈ will engage the pin or element 49, which in turn, through the crank 50, sleeve 12, crank 14 and links 15, 16, will operate the latch 6 inwardly; likewise, when the door 2 is closed, the engagement of the latch 6 with the lip 5 will move the latch inwardly, and it in turn, through the elements just mentioned, will move the operating element 49 in the clockwise direction, and in so moving it will engage and move the arm 39ᵇ, and thus cause the pin 39ª to release the disk or coin disposed between the arresting devices 37, 38, 39, in the manner above described.

To operate the mechanism, a disk or coin is inserted in the slot 26. The disk or coin drops downwardly until arrested by the devices 37, 38, 39. If the handle 36 is now turned clockwise, the carrier is moved to the position shown in Fig. 8, the dog 45 riding on the disk or coin over the abutment 48ª. The door 2 may then be opened and entrance effected into the closet or room; in doing this, the handle 36 is released and the spring 42′ returns the carrier 34 to its normal position. As shown in Fig. 7, the disk or coin remains on the carrier 34 between the arresting devices 37, 38, 39, so that if for any reason the operator did not succeed in opening the door 2 (although the handle 36 may have been released), the operator may again operate the handle 36 to operate the latch 6; if the door has been opened the operator will enter therethrough and close the door. In completing this operation, the handle 36 is of course released, thus permitting the carrier 34 to return to normal position, and the latch 6 is moved inwardly due to its engagement with the lip 5. As the latch 6 moves inwardly, it operates through the links 16, 15, crank 14, sleeve 12 and crank 50 to move the operating element 49 into engagement with the lever 39ᵇ,

which in turn releases the pin 39ª from the coin or disk that has been used by the operator to gain entrance through the door 2. When so released, the disk or coin drops by gravity (see Fig. 9) into the receptacle 25.

From the foregoing description, it will be seen that the disk or coin (*a*) remains in the operative position, that is, that position which will raise the dog 45 past the abutment 48ª, to effect the release or unlocking of the mechanism and thus insure actual opening of the door 2, and (*b*) is only released from the carrier by the act of closing the door 2, thereby insuring that the door must first be opened.

52 indicates a device mounted upon the rock shaft 11 and projecting upwardly toward the element 49 and arranged to engage with and move the latter in the clockwise direction. The device 52 preferably comprises an arm fixed in a well known manner to the shaft 11. The device 52 is normally disposed with its free end at the left side of the operating element 49. As the arm 52 is fixed to the shaft 11, it will be understood that when the handle 13 is moved clockwise, as viewed in Figs. 5, 6 and 10, for example, when the operator is in the room or closet and wants to exit himself through the door 2 therefrom, the arm 52 will engage with and move the element 49 (see Fig. 10) and the latter, through the crank 50, sleeve 12, crank 14, links 15, 16, will move the latch 6 inwardly, thus disengaging it from the keeper 3.

As shown in Fig. 5, the sleeves 12 and 34ª are rotatably mounted on the shaft 11, but are spaced from each other at their adjacent ends to permit of the provision of the device 52 on the shaft 11, whereby operation of the latch 6 by the inner handle 13 may be effected independently of the locking and unlocking mechanism. The crank arm 50 and device 52 are normally maintained in the position shown in Fig. 4 by springs 53, 54, respectively, both fixed to the projection 44.

55 indicates as an entirety a mechanism which (1) automatically exhibits either one of two or more signals, dependent upon the operation of the locking and unlocking elements, to indicate whether the room is vacant or in use, and (2) closes the slot 26 against the insertion of a disk or coin when the room is in use. Of this mechanism, 56 indicates an arm pivotally mounted at its lower end on the sleeve 12, and preferably between the plate 21 and crank arm 50. 57 indicates a segment carried on the upper end of the arm 56. 58 indicates a slot formed in the segment 57, near one end thereof and extending entirely through the segment, and arranged to register with the slot 26 when the segment 57 is in its normal position. As shown, the wall of the segment 57, at its opposite end is closed, so that when the arm 56 is moved to the position shown in Figs. 8 and 9, the slot 26 is closed or shut off. In order that the closing of the slot 26 may be completely effected, I prefer to curve the upper end wall of the casing 24 and the segment 57 on an arc struck from the axis of the sleeve 12; accordingly, when the segment 57 is moved to the left, it will positively close the slot 26.

59 indicates a device, preferably a plate, pivoted at 60 to the plate 21. 59ª indicates a lug carried by the plate 59 and projecting laterally therefrom into the path of movement of the carrier plate 34′, whereby the latter, when operated to unlock the door 2, will swing the plate 59 from the position shown in Fig. 4 to that shown in Fig. 9. 61 indicates a link pivoted at one end to the plate 59 and at its opposite end at 62 to the arm 56, whereby operation of the plate 59 by the carrier plate 34′ will swing the arm 56 to its abnormal position. To provide for the return movement of the arm 56, I preferably extend the pivot pin 62, as shown at 62′, (see Figs. 4 and 5) so that it will be disposed in the path of movement of the arm 52. As a result of this construction, when the arm 52 is operated, it will engage the extension 62′ and through it and the link 61 and plate 59, move the link or arm 56 back to its normal position as shown in Figs. 4 and 10. 63 indicates an opening formed in the front wall of the casing 24 and disposed in line with the path of movement of the segment 57, so that by placing on the latter appropriate instructions or signals, for example, words "Vacant" and "In use," the same will be exposed through the opening 63, according to the position of the segment 57 and indicates whether or not the room can be used.

64 indicates a recording device arranged to register each use of the room and thus record the number of disks or coins deposited and collected in the receptacle 25. The recording device is preferably connected by a link 65 with the oscillating plate 59, so that upon each operation thereof in one direction, the recording device will operate to register the same. From the foregoing description, it will be understood that the signaling mechanism 55 is operated in one direction by the disk or coin carrier 34 and in the opposite direction by the device 52; accordingly, in the complete operation of the mechanism incident to the unlocking and opening of the door 2 to gain entrance therethrough, closing the door and again opening it from the inner side, the recording device 64 registers but once.

The operating element on the recording device 64 or the connections between it and the plate 59 are preferably so arranged that the registering device registers during the

operation of the plate 59 by the carrier plate 34′, this arrangement permitting operation of the latch 6 to unlock the door 2 by rotation of the shaft 11, for example, by an attendant, without operating the recording device 64.

65′ indicates an opening of suitable shape formed in hub portion of the handle 36 to permit the insertion of a key (not shown) into a key-way formed in the outer end of the shaft 11. The key-way preferably comprises a transverse slot 66 and a centrally arranged stud 67. The provision of a key-way in the end of the shaft 11 permits an attendant to unlock the door 2 and open it at any time without the use of a disk or coin. As already set forth, when the shaft 11 is thus operated, no movement is imparted to the plate 59 and accordingly the counting device 64 does not register.

To those skilled in the art of making apparatus of the class described, many alterations in construction and widely differing embodiments and applications of my invention will suggest themselves without departing from the spirit and scope thereof. My disclosures and description herein are purely illustrative and are not intended to be in any sense limiting.

What I claim is:

1. In mechanism of the class described, the combination with a pair of members, one movable relative to the other, and carrying respectively, a keeper and a latch, of a pair of swingable elements, connections between one of said elements and said latch, means for locking the other element, means for receiving and supporting a disk in position to make said locking means inoperative, whereby said last mentioned element can be operated, and means between said elements serving to operate the element connected to said latch when the other element is operated.

2. In mechanism of the class described, the combination with a pair of members, one movable relative to the other, and carrying respectively a keeper and a latch, of a pair of swingable elements, connections between one of said elements and said latch, means for locking the other element, means carried by said last named element for receiving and supporting a disk in position to make said locking means inoperative, whereby said last mentioned element can be operated, and means between said elements serving to operate the element connected to said latch when the other element is operated.

3. In mechanism of the class described, the combination with a support and a latch carried thereby, of a pair of members mounted in said support to swing about a common axis, a device disposed on one side of said support and connected to the adjacent member, for operating it, connections between the other member and said latch for operating the latter, means for locking the member connected to said operating device but arranged to be made inoperative upon the insertion of a disk, operating connections between said last mentioned member and the member connected to said latch, and means for operating the member connected to said latch independently of the other member.

4. In mechanism of the class described, the combination with a support and a latch carried thereby, of a pair of members mounted in said support to swing about a common axis, a device connected to one of said members for operating it, connections between the other member and said latch for operating the latter, means for locking the member connected to said operating device but arranged to be made inoperative upon the insertion of a disk, operating connections between said last mentioned member and the member connected to said latch, and means arranged upon one side of said support for operating the member connected to said latch independently of said other member.

5. In mechanism of the class described, the combination with a support and a latch carried thereby, of a pair of members mounted in said support to swing about a common axis, a device connected to one of said members for operating it, connections between the other member and said latch for operating the latter, means for locking the member connected to said operating device but arranged to be made inoperative upon the insertion of a disk, operating connections between said last mentioned member and the member connected to said latch, and means arranged on either side of said support for operating the member connected to said latch independently of the other member.

6. In mechanism of the class described, the combination with a support and a latch carried thereby, of three members arranged side by side, a rock shaft connected to the center member, a sleeve mounted on said rock shaft connected to one of the outer members, devices including connections with said latch and a sleeve on said rock shaft connected to the other outer member, means for locking said first mentioned outer member against movement but arranged to be made inoperative upon the insertion of a disk, means interposed between said outer members permitting operation of the member connected to said latch by the other outer member, one element of said operating means being arranged in the path of movement of said center member, and means for operating said rock shaft.

7. In mechanism of the class described, the combination with a support and a latch carried thereby, of three members arranged side by side, a rock shaft connected to the center member, a sleeve mounted on said rock shaft.

connected to one of the outer members, devices including connections with said latch and a sleeve on said rock shaft connected to the other outer member, means for locking said first mentioned outer member against movement but arranged to be made inoperative upon the insertion of a disk, means interposed between said outer members permitting operation of the member connected to said latch by the other outer member, one element of said operating means being arranged in the path of movement of said center member, and means arranged at one side of said support for operating said rock shaft.

8. In mechanism of the class described, the combination with a support and a latch carried thereby, of three members arranged side by side, a rock shaft connected to the center member, a sleeve mounted on said rock shaft connected to one of the outer members, devices including connections with said latch and a sleeve on said rock shaft connected to the other outer member, means for locking said first mentioned outer member against movement but arranged to be made inoperative upon the insertion of a disk, means interposed between said outer members permitting operation of the member connected to said latch by the other outer member, one element of said operating means being arranged in the path of movement of said center member, and means arranged at either side of said support for operating said rock shaft.

9. In mechanism of the class described, the combination with a pair of relatively movable members, one being provided with a keeper and the other with a latch, of a disk carrier, an element for locking said carrier against movement, means on said carrier for holding a disk thereon in position to make said locking element inoperative, devices interposed between said carrier and said latch for disengaging the latter from said keeper when the carrier is operated, and means actuated by one of said devices when the latch is operated independently of the carrier for releasing the disk from said carrier.

10. In mechanism of the class described, the combination with a keeper and a latch arranged to engage therewith, of a lock mechanism including a carrier having devices arranged to arrest and hold a disk to effect operation of said carrier, and means interposed between said carrier and said latch and operable by said carrier to disengage said latch from said keeper and operable by said latch to release the disk from the arresting and holding devices in said carrier.

11. In mechanism of the class described, the combination with a pair of members, one movable relative to the other, and carrying respectively a keeper and a latch, of a pair of members swingably mounted on the latch carrying member, connections between one of said members and said latch, means for locking the other member, devices carried by said last named member for supporting a disk in position to make said locking means inoperative, whereby said last mentioned member can be operated, one of said devices being movable to release the disk, and interengaging elements between said members serving to operate the member connected to said latch when the other member is operated, the element carried by the member connected to said latch being arranged to engage said movable device and release the disk when said member is operated independently of the other member.

12. In mechanism of the class described, the combination with a pair of members, one movable relative to the other, and carrying respectively a keeper and a latch, of a pair of members swingably mounted on the latch carrying member, connections between one of said members and said latch, means for locking the other member, devices carried by said last named member for supporting a disk in position to make said locking means inoperative, whereby said last mentioned member can be operated, one of said devices being adjustable and another of said devices being movable to release the disk, and interengaging elements between said members serving to operate the member connected to said latch when the other member is operated, the element carried by the member connected to said latch being arranged to engage said movable device and release the disk when said member is operated independently of the other member.

13. In mechanism of the class described, the combination with a movable latch arranged to engage with a keeper, of an operating device, connections between said device and said latch, a carrier, means for locking said carrier against movement, a pair of elements on said carrier disposed on opposite sides of said operating device, one arranged to engage with and move said operating device and the other arranged to be engaged and operated by said operating device, and means on said carrier co-operating with the element operated by said device for receiving and removably holding a disk thereon in position to make said locking means inoperative, whereby said carrier can be moved to actuate said device and the latter operated to release the disk.

14. In mechanism of the class described, the combination with a movable latch adapted to engage with a keeper, of a carrier formed with a notch, a pawl arranged to engage one wall of the notch to lock said carrier against movement, devices on said carrier for removably supporting a disk thereon in position to bridge said notch, whereby said locking pawl is carried over

said notch to permit movement of the carrier, means interposed between said carrier and said latch for disengaging the latter from said keeper when the carrier is operated, and means actuated by the subsequent operation of the latch inwardly for releasing the disk from said carrier.

15. In mechanism of the class described, the combination with a movable latch adapted to engage with a keeper, of a carrier formed with a notch, a pawl arranged to engage one wall of the notch to lock said carrier against movement, devices on said carrier for removably supporting a disk thereon in position to bridge said notch, whereby said locking pawl is carried over said notch to permit movement of the carrier, means interposed between said carrier and said latch for disengaging the latter from said keeper when the carrier is operated, means actuated by the subsequent operation of the latch inwardly for releasing the disk from said carrier, and separate means for operating said latch independently of said carrier.

16. In mechanism of the class described, the combination with a movable latch adapted to engage with a keeper, of a carrier formed with a notch, a pawl arranged to engage one wall of the notch to lock said carrier against movement, adjustable devices on said carrier for removably supporting a disk thereon in position to bridge said notch, whereby said locking pawl is carried over said notch to permit movement of the carrier, means interposed between said carrier and said latch for disengaging the latter from said keeper when the carrier is operated, and means actuated by the subsequent operation of the latch inwardly for releasing the disk from said carrier.

17. In mechanism of the class described, the combination with a movable latch adapted to engage with a keeper, of a carrier, means for locking said carrier against movement, devices on said carrier for holding a disk thereon in position to make said locking means inoperative, one of said devices being movable to permit release of the disk, an operating element, connections between said element and said latch, whereby operation of the latter through engagement with the wall of the keeper will actuate said movable device to release the disk from said carrier, and an element on said carrier arranged to engage said operating element when the carrier is unlocked and actuated to disengage said latch from its keeper.

18. In mechanism of the class described, the combination with a movable latch adapted to engage with a keeper, of a carrier, means for locking said carrier against movement, devices on said carrier for holding a disk thereon in position to make said locking means inoperative, means interposed between said carrier and said latch for operating the latter to disengage it from said keeper when the carrier is operated, but permitting operation of the latch independently of said carrier, a register, connected devices having a connection with said register actuated by said carrier and latch operating means, respectively, and so arranged that the register is operated by the movement of the carrier in one direction.

19. In mechanism of the class described, the combination with door and frame members, having a keeper carried by one of said members, and a latch slidably supported in the other member, of a pair of movable elements, connections between one of said elements and said latch, means for locking the other element, means carried by said last named element for supporting a disk in position to make said locking means inoperative, whereby said last mentioned disk supporting element can be operated, and connecting means between said elements serving to operate the element connected to said latch when the disk supporting element is operated.

20. In mechanism of the class described, the combination with a support carrying a latch adapted to engage a keeper, of means on one side of said support for slidably supporting said latch, and means on the other side of said support for operating said latch, said means comprising a device operatively connected with said latch, a carrier pivotally mounted on said support, means normally acting to lock said carrier against movement, devices on said carrier arranged to receive a disk and hold the same in position to make said locking means inoperative, means on said carrier arranged when said carrier is unlocked, to engage with and operate said operating device and means for operating said carrier.

21. In mechanism of the class described, the combination with a support carrying a latch adapted to engage a keeper, of means on one side of said support for removably and slidably supporting said latch, and means on the other side of said support for operating said latch, said means comprising a device operatively connected with said latch, a carrier pivotally mounted on said support, means normally acting to lock said carrier against movement, devices on said carrier arranged to receive a disk and hold the same in position to make said locking means inoperative, means on said carrier arranged when said carrier in unlocked, to engage with and operate said operating device, and means for operating said carrier after it is unlocked.

22. In mechanism of the class described, the combination with a support carrying a latch adapted to engage a keeper, of means on one side of said support for removably

and slidably supporting said latch, means on the other side of said support for operating said latch, said means comprising a device operatively connected with said latch, a carrier pivotally mounted on said support, means normally acting to lock said carrier against movement, devices on said carrier arranged to receive a disk and hold the same in position to make said locking means inoperative, means on said carrier arranged, when said carrier is unlocked, to engage with and operate said operating device, means upon one side of said support for operating said carrier after it is unlocked, and means on the other side of said support for operating said latch independently of said carrier.

In testimony whereof I have hereunto subscribed my name.

DONALD M. ALEXANDER.