United States Patent [19]

Butt

[11] **3,837,117**

[45] **Sept. 24, 1974**

[54] **LOCKING AND UNLOCKING MECHANISM**

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[52] **U.S. Cl.** **49/18**

[51] **Int. Cl.** **E05b 47/00**

[58] **Field of Search** 49/15–20

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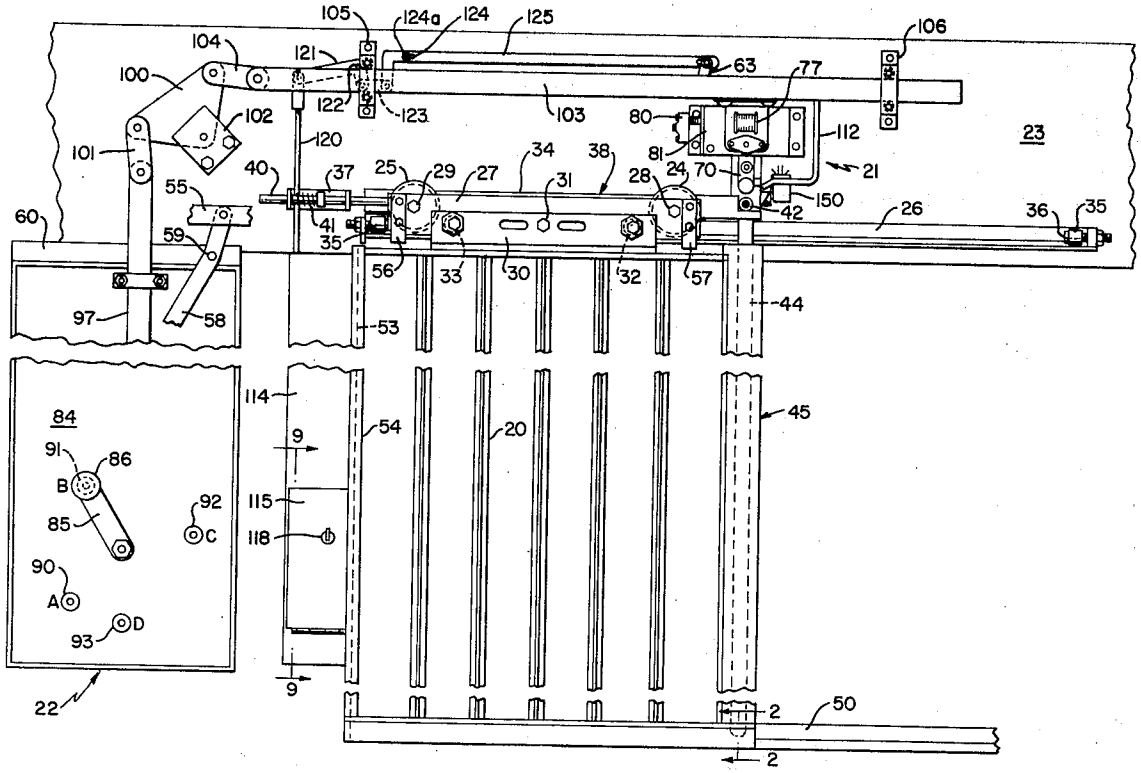
Primary Examiner—Dennis L. Taylor

Attorney, Agent, or Firm—John G. Schenk

[57] **ABSTRACT**

A locking and unlocking mechanism to secure a door has four control positions of the controlling mechanism. Two positions of the control mechanism place the securing mechanism in a deadlock condition. Direct operational links connect the control mechanism with the securing mechanism.

20 Claims, 11 Drawing Figures



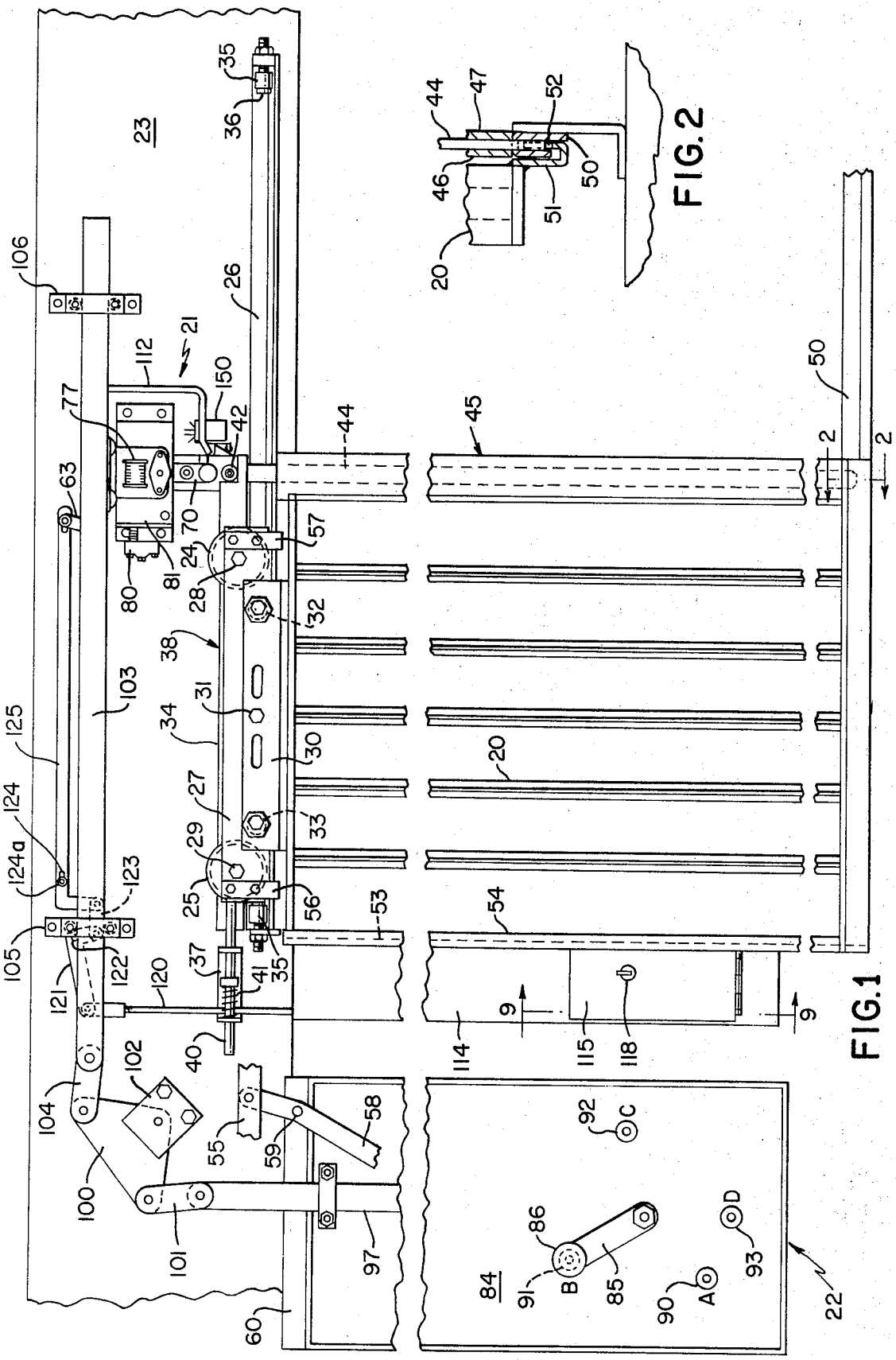

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FIG. 2

FIG. 1

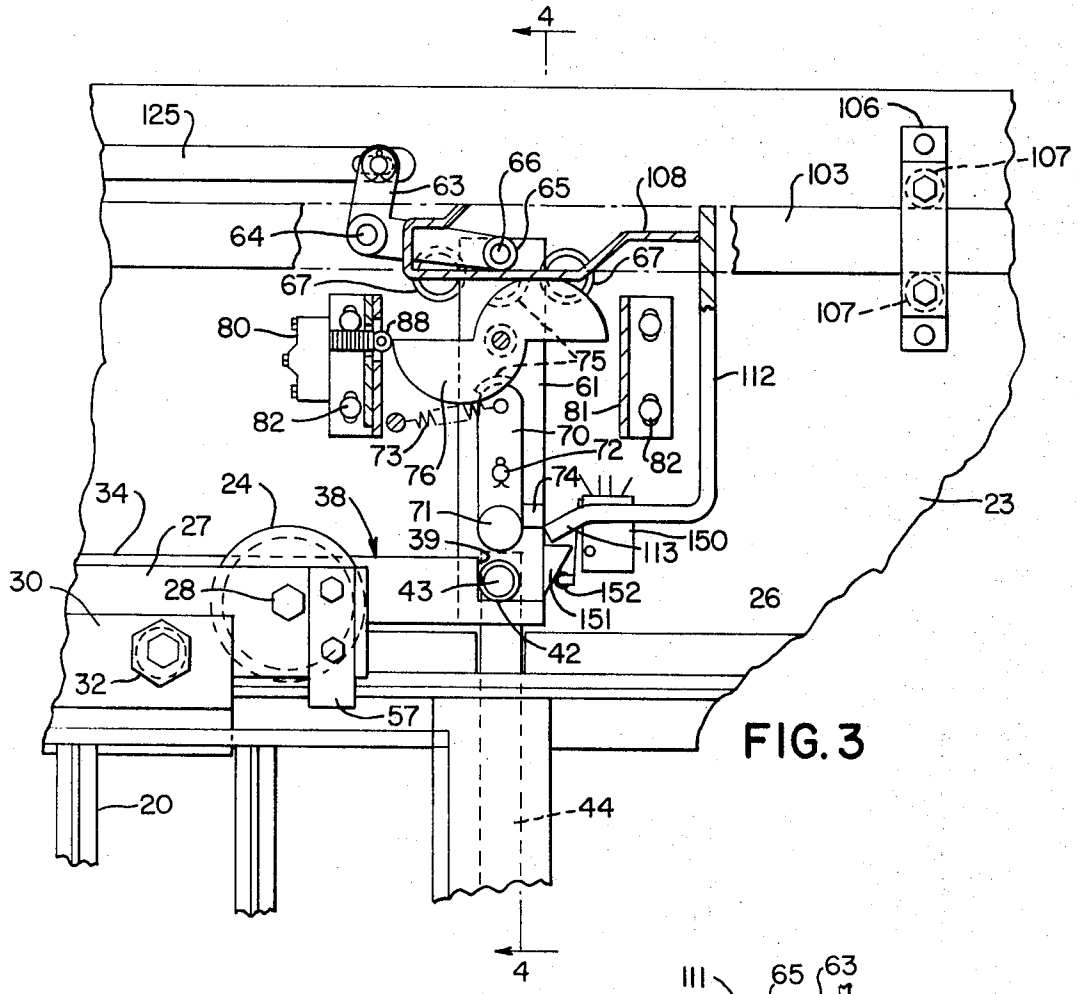


FIG. 3

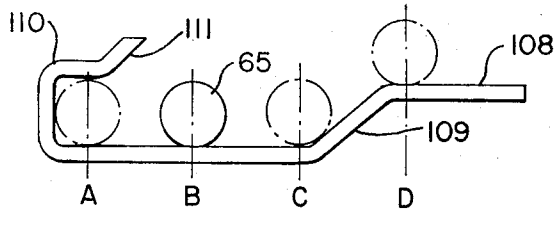


FIG. 5

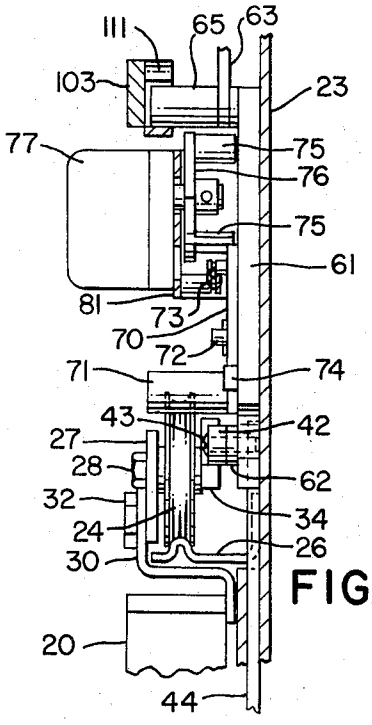


FIG. 4

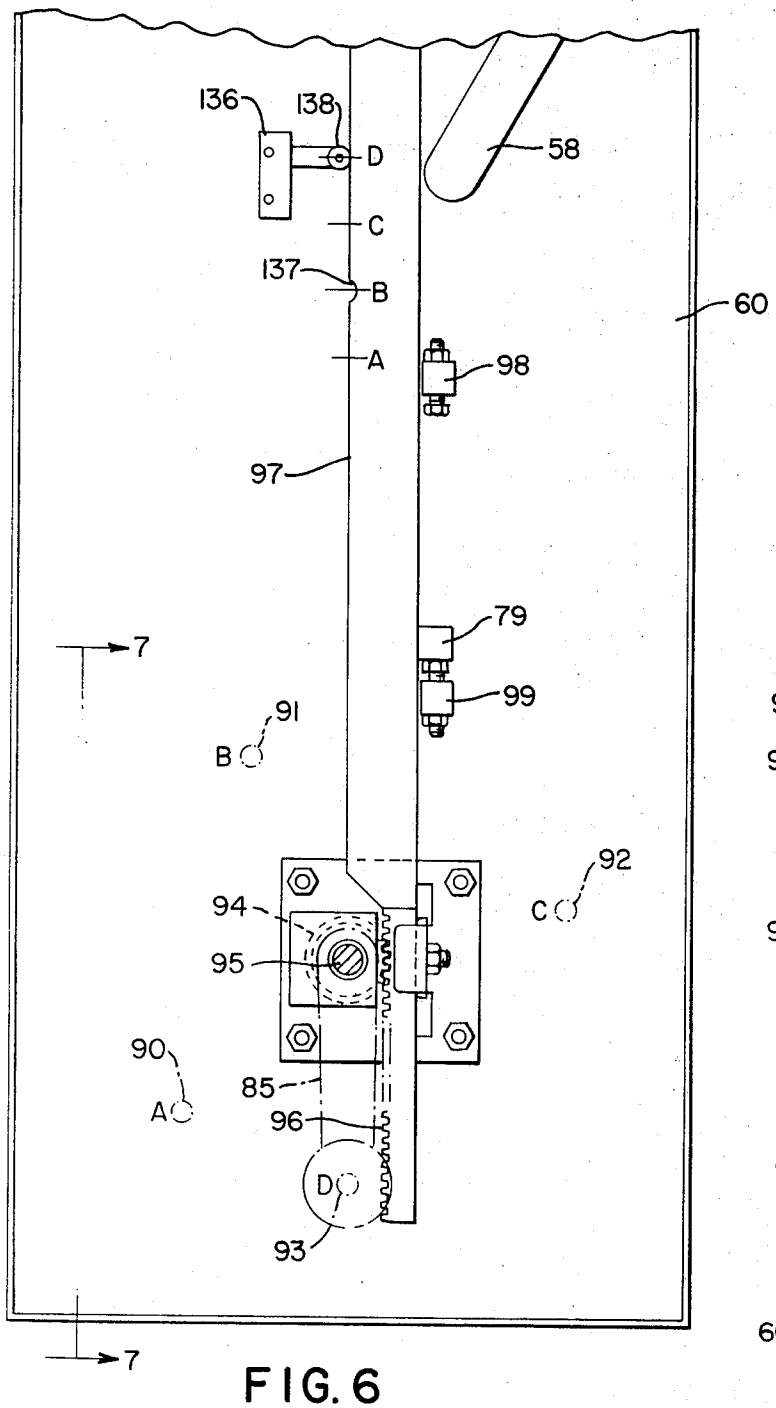

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FIG. 6

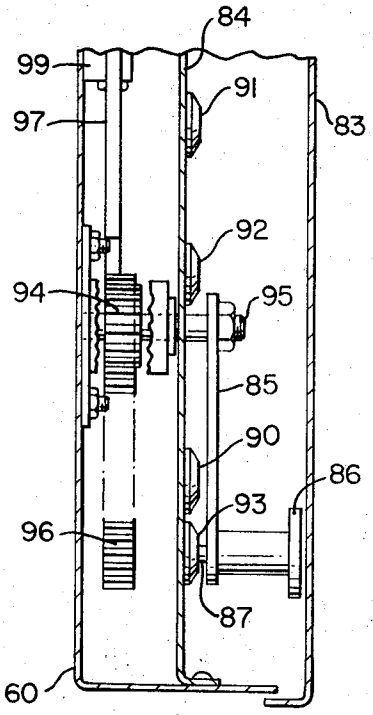

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FIG. 7

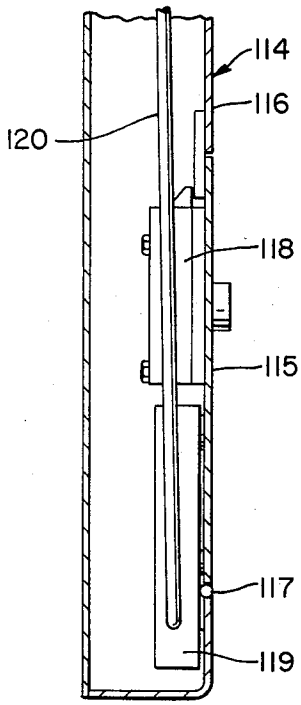


FIG. 9

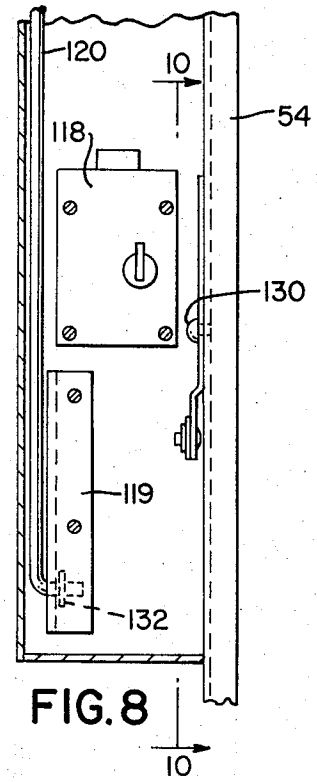


FIG. 8

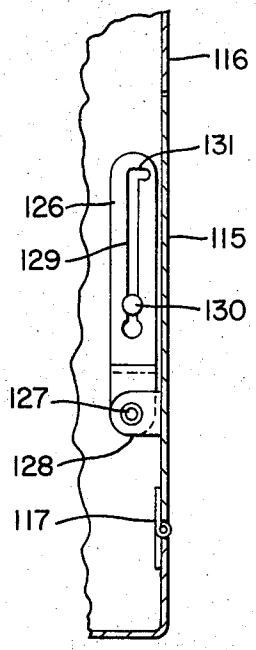


FIG. 10

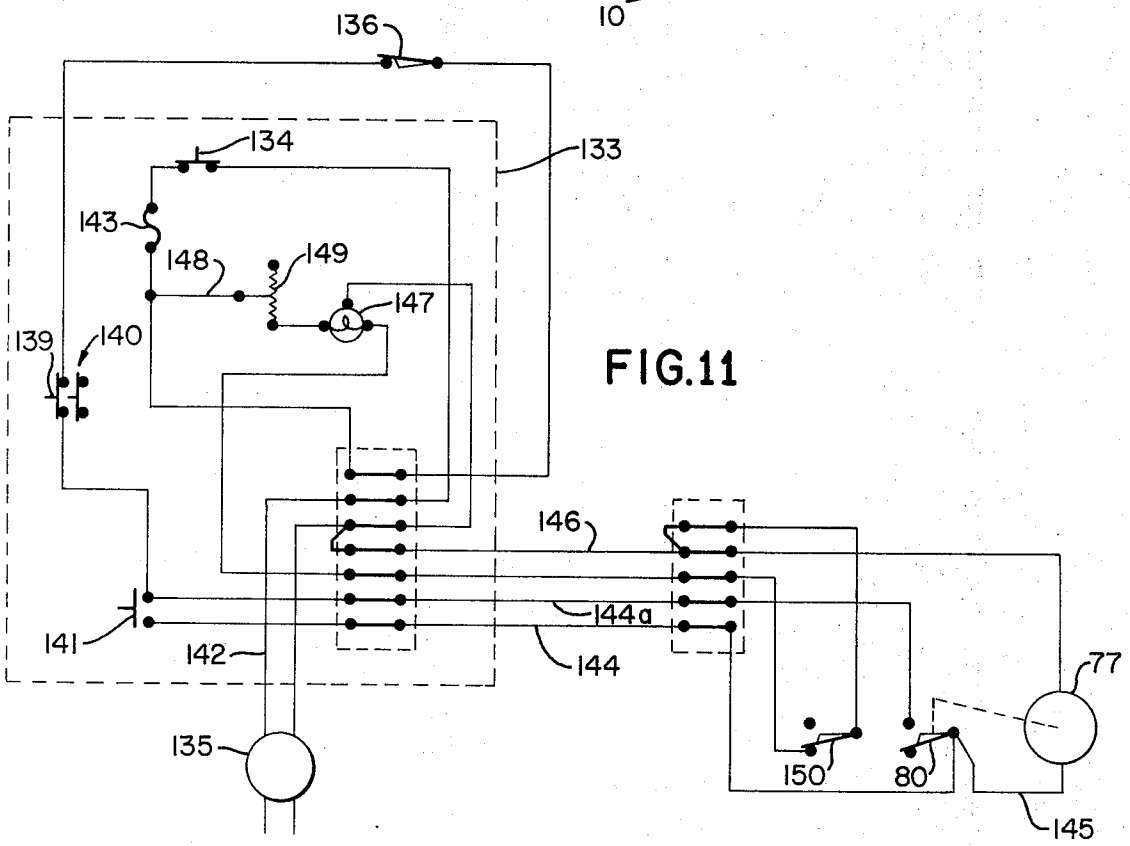


FIG. 11

LOCKING AND UNLOCKING MECHANISM

BACKGROUND OF THE INVENTION

This invention relates generally to prison cell door mechanisms and more particularly to a locking and unlocking apparatus for sliding cell doors.

Numerous locking devices are known in the art for securing a single cell door as well as a plurality of doors such as an entire cell block. These devices include the simple key lock mechanism as well as sophisticated mechanisms which not only unlock the cell door but open the door as well. The prior art mechanisms have not been entirely satisfactory as is evident from the numerous reports of prisoners escaping from secured or locked jail cells. The known locking mechanisms for jail cells have not heretofore incorporated a manual deadlock to prevent convict tampering and opening the cells after the cells have been secured.

Accordingly, it is an object of this invention to provide a locking and unlocking mechanism for sliding cell doors having a manual deadlock condition to prevent unauthorized opening of the cell door.

A further object of this invention is to provide a locking and unlocking mechanism for sliding cell doors of simple and economical construction and which eliminate numerous linkages and slot members previously used in such devices.

A still further object of this invention is to provide a locking and unlocking mechanism for sliding cell doors having four control positions each independent of the other positions.

Yet another object of this invention is to provide a locking and unlocking mechanism for sliding cell doors having two separate deadlock conditions.

SUMMARY OF THE INVENTION

This invention provides an improved locking and unlocking mechanism for sliding cell doors. The control mechanism has four control positions which dictate the movement of the securing mechanism, i.e., whether the door may be locked or unlocked. Direct links connect the control mechanism with the securing mechanism. Two positions of the control mechanism provide deadlock conditions for the securing mechanism. The electric control positions includes a deadlock to prevent manual opening of the locking mechanism thereby insuring that only an electrical signal will cause the securing mechanism to become unlocked. A key position in the control mechanism only permits manual unlocking of the securing mechanism. A fourth or release position of the control mechanism provides automatic unlocking of the securing mechanism in the event of a power failure or the like.

Other objects, details, uses and advantages of this invention will become apparent as the following description of an exemplary embodiment thereof presented in the accompanying drawings proceeds.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings show a present exemplary embodiment of this invention in which:

FIG. 1 is an elevation view of the locking and unlocking mechanism being used to secure a single cell door, doors and panels having been removed to show the mechanism;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is an enlarged elevation view of the securing mechanism with the gear motor removed;

FIG. 4 is a sectional view of the mechanism taken along line 4—4 of FIG. 3;

FIG. 5 is a diagrammatic representation of the master bar cam member and the respective positions of the roller member relative to the control positions;

FIG. 6 is an enlarged elevation view of the control panel particularly showing the actuator bar;

FIG. 7 is a sectional view of the control panel taken along line 7—7 of FIG. 6;

FIG. 8 is an enlarged elevation view of the mechanism used to unlock the securing mechanism in the key position;

FIG. 9 is an enlarged sectional view taken along line 9—9 of FIG. 1;

FIG. 10 is a sectional view taken along line 10—10 of FIG. 8; and

FIG. 11 is an electrical schematic showing the electrical control of the locking and unlocking mechanism.

DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Reference is now made to FIG. 1 of the drawings which illustrates one exemplary embodiment of the improved locking and unlocking mechanism for sliding cell doors. For illustrative purposes only, the mechanism of this invention is shown in conjunction with a single cell door 20. It is readily apparent that the mechanism can also be used to control a plurality of cell doors. The mechanism of this invention comprises a securing mechanism operatively connected with a control mechanism each of which is designated generally by the reference numerals 21 and 22, respectively.

The cell door 20 is carried for sliding movement along a transom 23 by a pair of wheels 24 and 25 as seen in FIGS. 1, 3 and 4. The wheels 24 and 25 roll along a track 26 which is securedly fixed to the transom by any suitable means such as welding or the like. A hanger bar 27 is carried on one side of the wheels 24 and 25. Bolts 28 and 29 respectively protrude through the hanger bar 27 and wheels 24 and 25 project into a travel rail 34 on the opposite side of the wheels. Suitable washers or the like provide separation between the wheels and the hanger bar and travel rail to insure that the wheels will be free rolling.

The cell door 20 is fixedly secured to a hanger angle member 30 by any suitable means such as welding or the like. The hanger angle 20 is connected to the hanger bar 27 by a fixed pivot bolt 31 and a pair of eccentric bushings and bolts designated generally as 32 and 33. The eccentrics and bolts 32 and 33 permit adjustment of the hanger angle about the bolt 31 to insure a level travel of the cell door 20 between the open and closed position.

Mounted at each end of the track 26 is an adjustable stop member 35, each having a cushion engaging surface 36 of rubber or the like. Each stop member 35 is positioned so that the engaging surface 36 will engage the respective ends of the hanger bar 27 when the cell door 20 is at either the full open or closed position. The stop members 35 are adjustable to permit limited axial adjustment of the engaging surface 36 to insure that the cell door 20 is properly positioned in the full open or closed condition.

A suitable U-bracket or the like 37 supports a door kicker arm 40 for engagement with one end of the hanger bar 27. The arm 40 is biased to the right by a spring 41 as seen in FIG. 1. When the cell door 20 is in the closed position, the hanger rail 27 urges the arm 40 to the left against the force of the spring 41 such that

the arm 40 is essentially cocked when the door 20 is closed. The door 20 is prevented from moving to the open position by the cooperative engagement of a cut out portion or channel 39 at one end of the travel rail 34 with a bearing or roller 42. The roller 42 is secured to a lock or drop bar 44 by a suitable screw or the like 43. When the drop bar 44 is raised upwardly, as will be explained hereinbelow, the roller 42 is raised out of the cut out portion 39. This removes the restraining force of the hanger bar 27 against the arm 40 allowing the spring 41 to urge the arm 40 to the right as seen in FIG. 1. The cell door 20 is only moved a short distance during which the roller 42 rolls along the top surface 38 of the travel rail 34. The door 20 may be opened to the full open position during which the roller 42 will be carried by the surface 38 of the travel rail 34. To close the cell door 20, the door is manually urged to the left as seen in FIG. 1 with sufficient force to overcome the spring 41 and until the roller 42 once again drops in the cut out portion 39 of the travel rail 34. When this occurs, the drop bar 44 moves downward to lock the door 20 in the closed position.

The drop bar 44 is carried for sliding movement therein in a lock post 45 at one edge of the door 20. The lock post 45 includes front and rear cover plates 46 and 47 as seen in FIG. 2. The plates 46 and 47 are joined together by suitable means such as screws, bolts or the like so as to completely enclose the drop bar 44. A guide member 50 is mounted in inverted position (FIG. 2) along the lower edge of the cell framework to provide a guide for the door 20. The guide member 50 is formed with a slot therein through which the drop bar 44 passes. A door guide 51 is secured by suitable means such as welding to the lower edge of the cell door 20. The guide 51 is shaped in a complementary form as the guide 50 such that one wall portion of the door guide 51 travels within the channel defined by the guide member 50. The door guide 51 is provided with a slot 52 through which the drop bar 44 will pass when the door 20 is in the closed position. With the drop bar 44 passing through the slot in the guides 50 and 51, the door 20 may not be opened and is thus in a secured condition. The door 20 may only be opened after the drop bar 44 has been moved vertically a sufficient distance to clear the slot in the door guide 51.

In the closed position, the cell door 20 has one edge 53 which cooperates with a strike member 54. The other end of the door 20 rests in front of the lock post 45.

A casing bar partially shown in FIG. 1 at 55 is connected to the casing lock bar lever 58 that is pivotally mounted in a control panel 60 by a pivot member 59. The casing lock bar lever 58 is shown in the locked position. The casing bar 55 and lock bar lever 58 operate in a well-known manner and need not be described herein. Retainer straps 56 and 57 are connected to hanger bar 27 for the prevention of lifting door 20 off the track 26.

The structure and operation of the securing mechanism 21 is best seen by referring to FIGS. 3 and 4. The drop bar 44 is operatively connected with a drop bar extension 61. One end of the drop bar extension 61 is formed with a slot in which the drop bar 44 fits. The screw 43 extends through an aperture in the drop bar extension 61 to engage the drop bar 44 to operatively connect the two members thereby. A spacer or washer 62 insures that the roller 42 is positioned to engage the travel rail 34. The drop bar extension 61 is pivotally supported at the other end by a bell crank 63 which is rotationally mounted to the transom 23 by a pivot element 64. One end of the bell crank 63 is connected in pivoting fashion to the bolt 66. The bolt 66 further serves to secure the drop bar extension roller 65 to the drop bar extension 61. It can be observed that rotation of the bell crank 63 counterclockwise about the pivot 64 will cause the drop bar extension 61 to be raised in a vertical direction thereby lifting the drop bar 44 when the control mechanism 22 is in the proper position as will be explained hereinbelow. A pair of bearings 67 are secured to the transom 23 on either side of the drop bar extension 61 to insure proper tracking in the vertical direction of the drop bar extension 61 during locking and unlocking of the cell door 20.

A pendulum 70 having a protruding mass 71 at one end is pivotally secured to the drop bar extension 61 by a pivot 72. The pendulum 70 will have a natural gravitational force acting to return the pendulum to the vertical position due to the large mass 71 at the lower end. However, to provide a positive return to vertical, a spring 73 is connected to the upper end of the pendulum 70. The spring 73 thus provides a positive return to vertical for the pendulum 70. To prevent overtravel of the pendulum 70 in the counterclockwise direction, a protrusion or stopper flange 74 is provided on the drop bar extension 61. Thus, pendulum 70 abuts against the stopper 74 in the vertical position.

In the control position illustrated in FIG. 3, which is the electrical control position, the drop bar extension 61 is prevented from upward movement because of engagement of the upper end of pendulum 70 with a one of a pair of tube segments 75. The tube segments 75 are carried on a cam plate 76. The cam plate 76 is rotationally driven by a shaded pole gear motor designated generally as 77. Such gear motors are commercially available from Dayton Electric Manufacturing Co. of Chicago, Ill., and need not be described herein. When energy is applied to the motor 77, the cam plate 76 will start to rotate in the counterclockwise direction as viewed in FIG. 3. Rotation of the cam plate 76 in the counterclockwise direction will cause the tube segments 75 to urge pendulum 70 in a clockwise direction and at the same time disengage the motor limit switch 80. Continued rotation of the cam plate 76 will bring the camming surface of one hemisphere into contact with the roller 65. Since the pendulum 70 has become disengaged from the tube segment 75 continued rotation of the cam plate 76 will urge the roller member 65 in the upward direction thereby raising the drop bar extension 61 and drop bar 44. When the roller 42 has been raised above the surface 38 of the travel rail 34, the kicker arm 40 (FIG. 1) will urge the cell door 20 open as hereinabove described. When the cam plate 76 has made one-half revolution, the camming surface will once again engage the motor limit switch 80 thereby cutting the power to the motor. The gear motor 77 is supported by a motor mount bracket 81 which is fixedly secured to the transom 23 by bolts or the like 82. In the electric condition as shown in FIG. 3, it is seen that the drop bar 44 may not be manually raised due to the engagement of the tube segment 75 with the pendulum 70. Thus, the electric control condition is seen to be in a deadlock position. Only an electrical signal applied to the gear motor 77 will permit unlocking of the cell door 20.

Referring again to FIG. 1, the control mechanism 22 is mounted in a control panel 60. The control panel 60 is secured at the end of the line of cells. The control panel shown in FIG. 1 has the front cover 83 (FIG. 7) removed and a portion of the inner panel 84 broken away. The control mechanism 22 has four positions or conditions designated as A, B, C and D. The positions indicate respectively deadlock, electric, key and release.

A handle or lever 85 is used to move the control mechanism from one position to another position. A spring biased shaft 87 is mounted at one end of the handle 85 within a knob 86. The shaft 87 is urged outwardly to cooperatively engage detents 90, 91, 92 and 93 which are secured to the inner panel 84. The handle 85 is operatively connected to a spur gear 94 by a shaft 95. The spur gear 94 drives a rack 96 which forms one end of an actuator bar 97. It can be seen in FIG. 6 that movement of the handle (shown in phantom) from one position to another position will cause the actuator bar to be raised or lowered. In FIG. 6, the handle is in the release condition so that a protrusion or lug 79 formed on the actuator bar engages a stop member 99. The stop members 98 and 99 are fixedly secured to the rear wall of the control panel 60. Each of the stop members is adjustable to permit precise travel adjustment of the bar 97. Due to the stop members 98 and 99, the handle 85 may only be rotated in the counterclockwise direction when starting from the release detent 93 and clockwise from the deadlock detent 90.

The upper end of the actuator bar 97 (FIG. 1) is pivotally connected to a bell crank 100 through link 101. The bell crank 100 is pivotally secured to the transom 23 by a bell crank bracket 102. The bell crank 100 is pivotally connected to a master bar 103 through a link 104. The master bar 103 is supported for sliding movement along the transom 23 by brackets 105 and 106. Each bracket 105 and 106 includes a pair of bearings 107 (FIG. 3) on either side of the master bar 103 to permit relatively frictionless travel of the bar 103. The brackets 105 and 106 support the master bar 103 a sufficient horizontal distance away from the transom 23 such that a master bar cam 108, as seen in FIGS. 3–5, will engage the roller 65. The cam 108 is rigidly connected with the master bar by any suitable means such as welding, and moves therewith. It can be seen that the relative position of the roller 65 to the master bar cam 108 will be changed as the handle 85 is moved from one control position to another because of the connecting links 101 and 104 and the bell crank 100.

The relative positioning between the roller 65 and cam 108 is best seen in FIG. 5 wherein the roller 65 is shown in solid lines in the electric position. The remaining three control positions are shown and the roller in each position is shown in phantom lines.

The cam 108 is seen to be formed with an inclined surface 109, a substantially U-shaped end 110 and an upwardly projecting portion 111 extending from one leg of the U-shaped portion 110. In the deadlock control position, the master bar 103 will have been urged to its extreme right hand position. In this position, the roller 65 will be cradled within the U-shaped portion 110 of the cam 108. With the roller 65 so cradled, the drop bar extension 61 may not be raised in the vertical direction. Thus, the drop bar 44 may not be manually raised nor would energization of the gear motor 77 permit raising of the drop bar extension. Thus, the cell doors 20 are secured and there is no way to unlock such doors until the handle 85 has been moved from its deadlock control position. Rotation of the handle 85 from the deadlock detent 90 to the electric detent 91 will urge the master bar 103 to the left to that position shown in FIG. 3 wherein the drop bar extension 61 may be raised as hereinabove described.

Movement of the handle 85 from the electric detent 91 to the key detent 92 will urge the cam 108 to the left relative to the roller 65 to that position wherein the roller 65 is at the bottom of the inclined portion 109. In addition, the inclined surface 113 of a pendulum tripper 112 (FIG. 3) will have engaged the pendulum mass 71 causing the pendulum 70 to rotate in a clockwise direction. This movement will free the upper end of the pendulum 70 from the tube segment 75 so that the drop bar extension 61 can be raised by a counterclockwise rotation of bell crank 63 as will be explained hereinbelow. The pendulum tripper 112 is secured by welding or the like to the master bar 103 and is carried therewith.

As the handle 85 is moved from the key detent 92 to the release detent 93, the cam 108 is urged to the left thereby driving the roller 65 up the inclined surface 109 to the release position as shown in FIG. 5. The relative movement of the roller 65 along the surface 109 results in a direct lifting of the drop bar extension 61 thereby raising the roller 42 out of the channel 39 of the travel rail 34. Thus, when the control handle 85 is moved to the release detent 93, the drop bar 44 is automatically raised such that the cell doors 20 are unlocked as hereinabove described. It should be noted that the handle 85 may not be moved to the deadlock detent 90 while the drop bar extension 61 is in the raised position, i.e., any cell door 20 is not locked. In the unlocked condition of any cell door 20, the roller 42 will be resting on the surface 38 of travel rail 34. In addition, the roller 65 will be raised a corresponding distance. In the raised position, the projecting end 111 will engage the raised roller 65 to prevent the handle 85 from moving to the full deadlock position.

When the handle 85 is moved to the key detent 92, the securing mechanism 21 is positioned so that counterclockwise rotation of bell crank 63 (FIG. 3) will raise the drop bar extension 61 and drop bar 44 to unlock the cell door 20. At each cell door a key pilaster 114 (FIG. 1) is mounted. The bell crank 63 is rotated through operation of the door 115. As best seen in FIGS. 8–10, the door 115 is pivotally connected to the pilaster front wall 116 by a suitable hinge member 117. A lock mechanism 118 is mounted in the door and is operable by a key. The lock 118 only serves to secure the door 115 relative to the wall 116. The lock 118 in no way operates to unlock the cell door 20. A bracket 119 is secured by any suitable means to the inside surface of the door 115. It should be noted that the front wall 116 and door 115 have been removed in FIG. 8. A rod 120 having a substantially right angle turn at one end projects through a cooperating aperture in the bracket 119. Suitable means such as a lock washer, C-ring, or the like 132 is attached to the rod 120 to prevent its inadvertent removal from the bracket 119. The upper end of the rod 120 is pivotally attached to a bell crank 121 as seen in FIG. 1. The bell crank 121 is pivotally attached to the transom 23 by pivot 122. Link 123 pivotally connects the bell crank 121 with a link arm 125 which is pivotally connected with the bell

crank **63**. Link arm **125** has limited axial movement due to coaction of link arm elongated slot **124** and bolt **124***a* mounted in transom **23**. Accordingly, when the door **115** is opened through a 90° arc, the rod **120** is urged upward causing the bell crank **121** to rotate about pivot **122** in the clockwise direction. Clockwise movement of the bell crank **121** will cause a movement of the link arm **125** to the left as viewed in FIGS. **1** and **3**. The movement of the link arm **125** causes the bell crank **63** to be rotated in a counterclockwise direction about the pivot **64** to lift the roller **65** and drop bar extension **61** as hereinabove described.

Referring once again to FIG. **10**, a latch member link **126** is pivotally attached through a pivot pin **127** to a lug **128**, the lug **128** being secured by any suitable means to the door **115**. The latch member link **126** is formed with a slot **129** therealong through which a pin **130** is engaged. The pin **130** is fixedly connected to the strike **54**. When the door **115** is opened, the latch member link **126** pivots about pin **127** and permits the door **115** to be opened until the pin **130** reaches the notched end **131** of the slot **129**. To prevent inadvertent closing of the door **115**, the latch member link **126** must be lifted to take the pin **130** out of the notched end **131**.

The electrical opening of the cell door **20** is performed through a control console **133** shown schematically in the circuit diagram of FIG. **11**. The console **133** may be positioned adjacent the control panel **60** or placed at a remote location. A master power switch **134** interrupts the power from a power supply **135** to the electrical circuit. A second interrupted switch **136** is mounted in the control panel **60** and opened and closed by the actuator bar **97** as seen in FIG. **6**. In FIG. **6**, it is seen that the actuator bar **97** is formed with a groove **137**. In any position of the actuator bar except when the groove **137** is in alignment with the interrupter switch **136** plunger **138**, the switch **136** will be in the open condition thereby preventing power from being supplied to the gear motor **77**. Accordingly, before the gear motor **77** can be actuated, switches **134** and **136** must be closed.

Referring once again to FIG. **11**, a cell switch **139** must be closed in order to actuate the gear motor **77**. If there is a plurality of cells involved, individual isolation switches shown generally as **140** may be used to isolate any cell which it is not desired to open. It can be seen that the switch **80** is in the open condition due to engagement of the cam plate **76** with the switch **80** plunger **88** (FIG. **3**). To unlock the cell door **20**, a push button **141** is closed. The closing of the push button **141** completes the circuit from the power supply **135** through lead line **142**, switch **134**, fuse **143**, switches **136**, **139**, **141**, lead line **144** and lead line **145** to the gear motor **77**. Lead line **146** completes the circuit from the gear motor **77** back to the power supply **135**. After the gear motor **77** had been energized and cam plate **76** rotated to disengage the plunger **88**, the switch **80** is closed such that power to the gear motor **77** is supplied over lead line **144**a, through switch **80** the lead line **145**. At the completion of one-half revolution of the cam plate **76**, the plunger **88** is again engaged so that switch **80** is opened to interrupt the power to the gear motor **77**.

A suitable indicator light **147** is mounted at the control console **133** to provide an indication of the safe or unsafe condition of the cell door **20**. Power is supplied to the indicator light **147** through lead line **148** and resistor **149**. The resistor **149** reduces the voltage of the power supply to the proper amount needed for the light **147**. It may be noted that if a plurality of cells is involved, a transformer would replace the resistor **149**. An indicator switch **150** is mounted on the transom **23** as best seen in FIG. **3**. A projecting protuberance **151** on the drop bar extension **61** opens and closes the switch **150**. When the drop bar extension **61** is in the down or locked position, the indicator switch **150** is closed thereby completing the circuit through the light **147**. Thus, when the cell door **20** is locked and in the safed condition, the light **147** will be lit. When the drop bar extension **61** is raised, the protuberance **151** is disengaged from the indicator switch plunger **152** and the switch **150** is opened thereby breaking the circuit for the light **147**. Thus the light is not illuminated wherein the unsafe condition is indicated.

While a present exemplary embodiment of this invention has been illustrated and described, it will be recognized that this invention may be otherwise variously embodied and practiced within the scope of the following claims.

What is claimed is:

1. A mechanism for locking and unlocking a door comprising:

a bar being positionable relative to the door to provide locking and unlocking conditions;

securing means operatively connected with said bar to move said bar from the locked condition to the unlocked condition;

control means having four operating control positions, two of the control positions resulting in a positional deadlock for sad bar and securing means; and

link means operatively connecting said control means with said securing wherein movement of said bar to the unlocked condition is dependent on the operating position of said control means whereby positioning said control means in each of two operating positions operatively places said bar and securing mechanism in a deadlock position to prevent manual movement of said bar to the unlocked condition.

2. The mechanism as set forth in claim **1** further comprising travel means operatively carried by the door and movable therewith, said travel means preventing opening of the door in the locked condition and holding said bar in the unlocked condition when the door is open.

3. The mechanism as set forth in claim **1** in which movement of said control means to a first positional deadlock control position moves said link means to cooperatively engage and deadlock said securing means to prevent said securing means from moving said bar to the unlocked condition; and further comprising electric drive means operatively connected with said securing means to permit electrode drive operation of said securing means to move said bar to the unlocked condition when said control means is in the second positonal deadlock control position; and switch means responsive to said control means to prevent actuation of said electric drive means in any control position except the second control position.

4. The mechanism as set forth in claim **3** further comprising hand-operated link means connected with said securing means to permit manual operation of said se-

curing means when said control means is in a third control position wherein actuation of said hand-operated link means causes said securing means to move said bar to the unlocked condition.

5. The mechanism as set forth in claim **4** in which movement of said control means to a fourth control position simultaneously causes said securing means to move said bar to the unlocked condition.

6. The mechanism as set forth in claim **1** in which said securing means further comprises a bar extension member operatively connected at one end with said bar, said bar being moved in response to movement of said bar extension member, a roller rotatably mounted adjacent the other end of said extension member, said roller coacting with said link means in response to movement of said control means.

7. The mechanism as set forth in claim **6** in which said link means comprise a master bar mounted for movement normal to said bar extension member, said master bar being connected with said control means, and further comprising a cam fixedly secured to said master bar, said cam coacting with said roller wherein relative movement occurs therebetween in response to movement of said control means.

8. The mechanism as set forth in claim **7** in which said cam includes a substantially U-shaped end portion and an inclined portion.

9. The mechanism as set forth in claim **8** in which movement of said control means to a first control position moves said master bar relative to said roller to relatively position said roller in the U-shaped portion of said cam to positionally deadlock said bar extension from moving said bar to the unlocked condition.

10. The mechanism as set forth in claim **9** in which movement of said control means to a second control position moves said master bar relative to said roller to position said roller out of said U-shaped portion and further comprising electric drive means operatively connected with said bar extension to move said bar extension upon actuation of said drive means and switch means responsive to said control means to prevent actuation of said drive means when said control means is in any control position except the second control position.

11. The mechanism as set forth in claim **10** further comprising hand-operated link means connected with said bar extension roller for movement of said bar extension member when said control means is in a third control position wherein actuation of said hand-operated link means causes said bar extension member to move said bar to the unlocked condition.

12. The mechanism as set forth in claim **11** in which movement of said control means to a fourth control position moves said master bar relative to said bar extension member to drive said roller up said cam inclined portion thereby moving said bar to the unlocked condition.

13. The mechanism as set forth in claim **12** in which said electric drive means includes an electric motor, a cam plate rotationally driven by said motor, said cam plate engaging said roller to cam said roller during part of the rotational movement of said cam plate, and further comprising a limit switch responsive to said cam plate for interrupting operation of said motor when said bar has moved to the unlocked condition.

14. The mechanism as set forth in claim **13** further comprising a pendulum pivotally mounted at its center portion on said bar extension member, and in which said cam plate includes a pendulum engaging segment wherein a deadlock condition exists during engagement of said cam plate segments with said pendulum.

15. The mechanism as set forth in claim **14** further comprising a tripper arm secured to said master bar, said arm being engageable with said pendulum to pivot said pendulum out of engagement with said cam plate segment during movement of said control means to the third and fourth control positions.

16. The mechanism as set forth in claim **15** further comprising a roller rotationally secured to said bar, a travel rail carried by the door and movable therewith, said rail having a bar roller receiving portion to receive said bar roller in the bar locked condition and wherein said bar roller engages the top surface of said rail in rolling contact in the bar unlocked condition.

17. The mechanism as set forth in claim **16** in which said control means comprises a handle moveable to the four control positions, an actuator bar, gear means operatively connecting said handle with said actuator bar wherein movement of said handle to a control position causes a movement of said actuator arm, and wherein said actuator bar is pivotally connected with said master bar whereby movement of said actuator arm causes relative movement between said master bar and bar extension roller.

18. The mechanism as set forth in claim **17** in which said actuator bar is formed with a groove thereon, said groove cooperating with said switch means when said handle is in the second control position thereby allowing said switch to close to permit actuation of said electric motor.

19. The mechanism as set forth in claim **18** in which said hand-operated link means comprises a pivotally mounted door, a rod connected with said door, a link arm operatively connected with said rod at one end, a pivotally mounted bell crank connecting the other end of said link arm with said bar extension roller wherein pivotal movement of said door causes movement of said bar extension roller to move said bar to the unlocked condition.

20. The mechanism as set forth in claim **19** further comprising a door guide secured to the door and movable therewith, said guide being formed with a bar receiving slot therein for receipt of said bar in the locked condition.

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