

Feb. 7, 1928.

1,658,148

J. T. WHITEHOUSE

JAIL DOOR LOCKING MECHANISM

Filed April 19, 1926

3 Sheets-Sheet 1

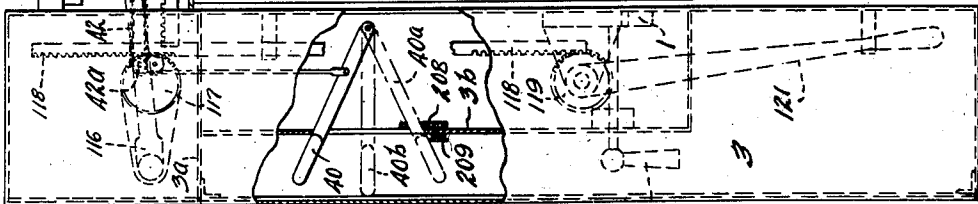
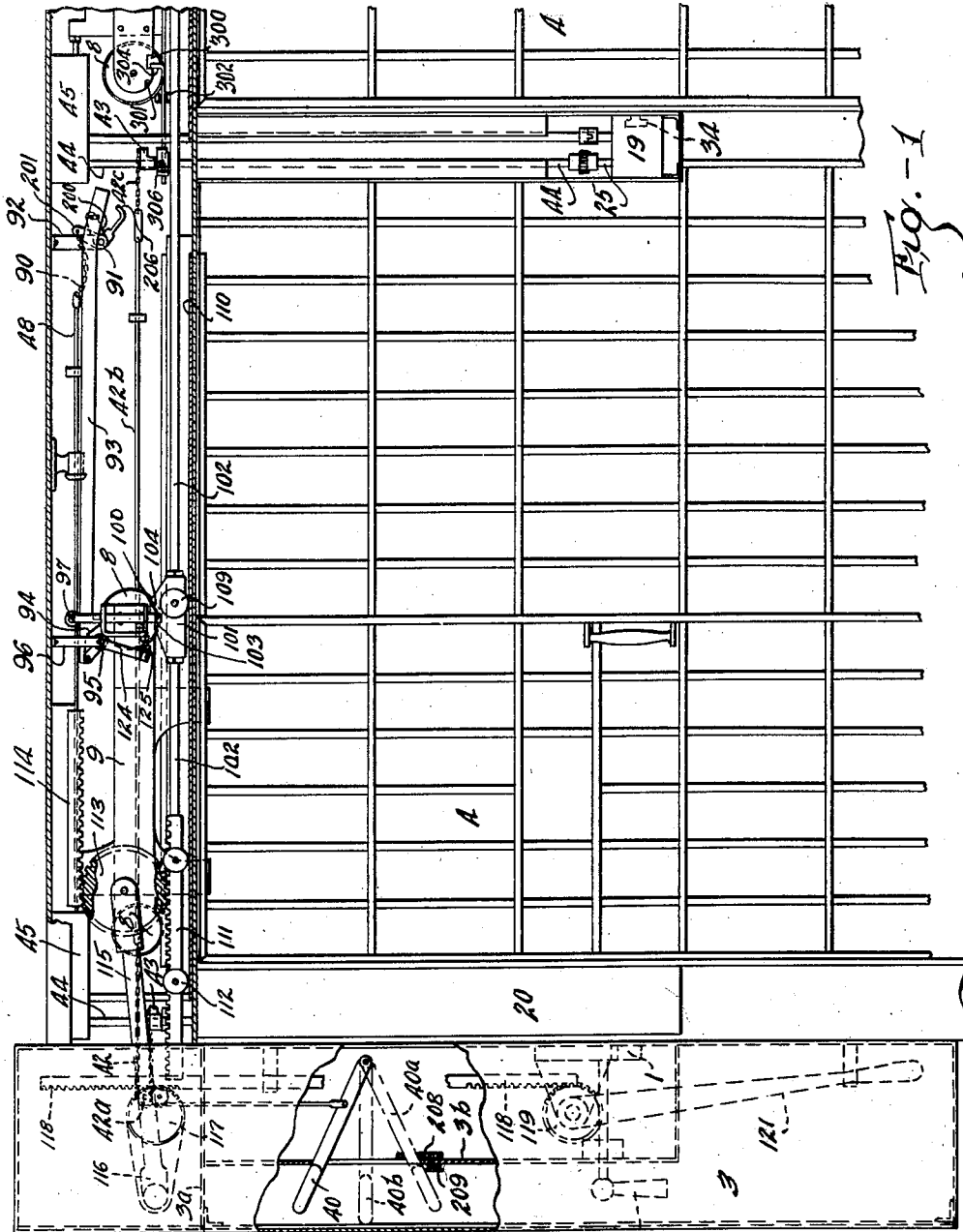
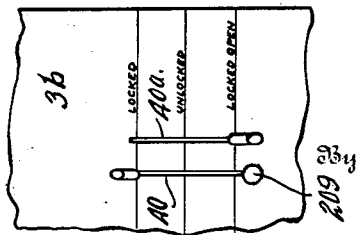


FIG. -5



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3 Sheets-Sheet 2

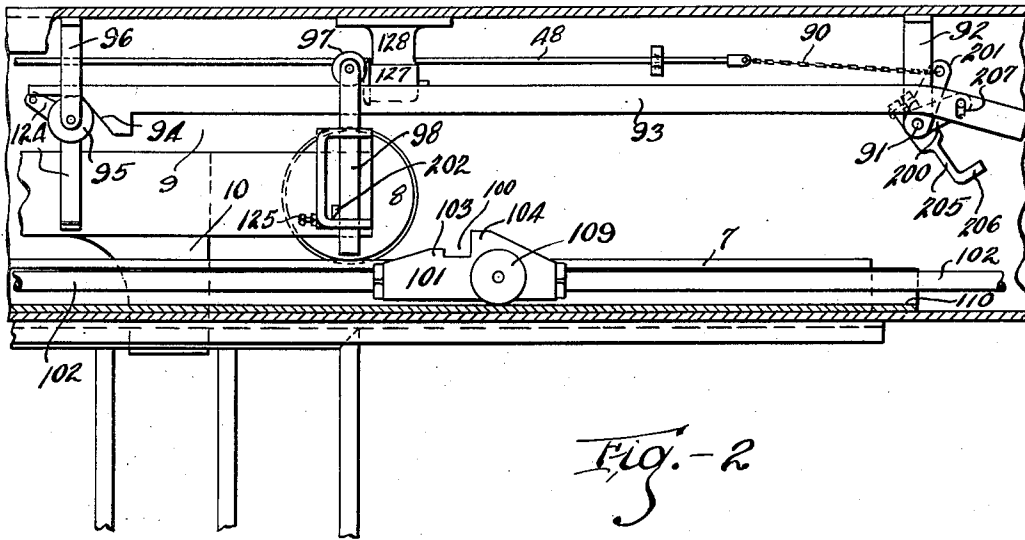


Fig. - 2

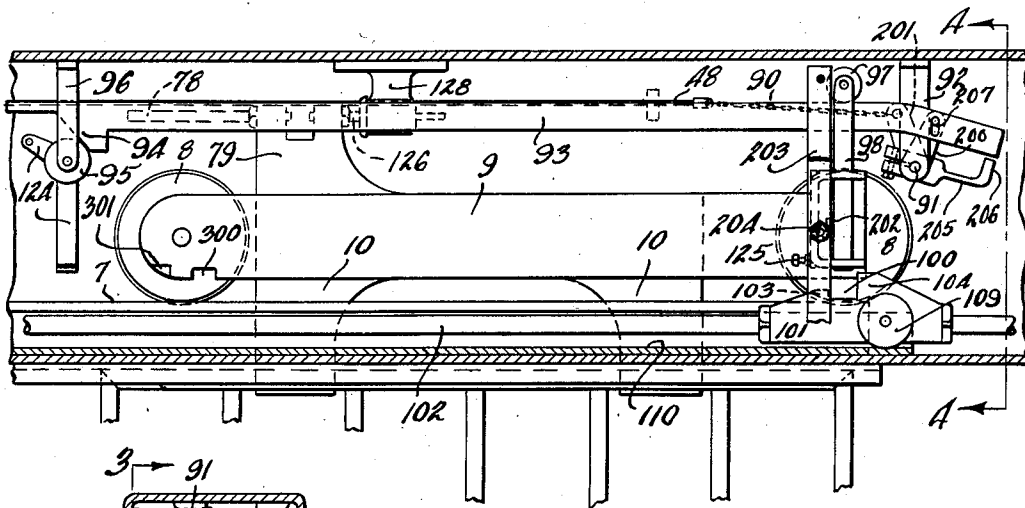


Fig. - 3

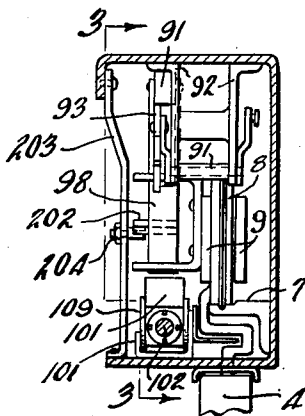


Fig. - A

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3 Sheets-Sheet 3

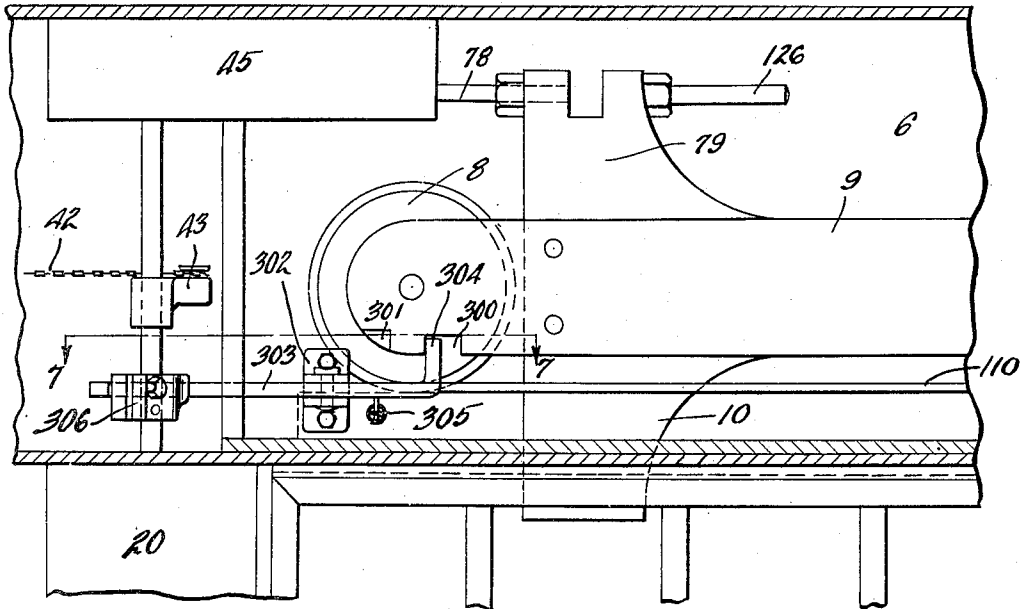


FIG. - 6

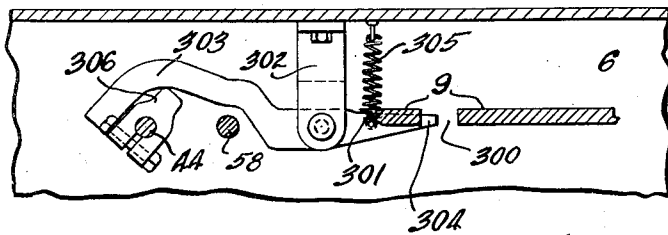


FIG. - 7

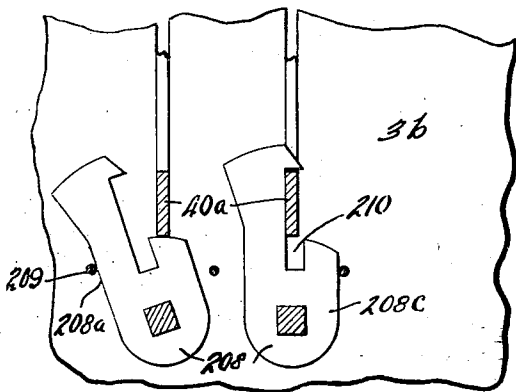


FIG. - 8

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Patented Feb. 7, 1928.

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UNITED STATES PATENT OFFICE.

JOHN T. WHITEHOUSE, OF CLEVELAND, OHIO, ASSIGNOR TO THE VAN DORN IRON WORKS CO., OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

JAIL-DOOR-LOCKING MECHANISM.

Application filed April 19, 1926. Serial No. 103,042.

This invention relates to jail door locking mechanism particularly adapted for application to the several doors of a row of jail cells, the locking mechanism of each door being controlled from a common point, from which the doors of the row may be selectively and positively locked, unlocked, opened or closed.

The invention comprises generally improvements upon the locking mechanism set forth in detail in my Patent No. 1,543,140, of June 23, 1925, to which reference may be had for features referred to merely in a general way herein.

Specifically the invention has for its object the provision of additional means for securing the door or doors locked in closed position.

Another object is to provide means for selectively and positively opening any or all of the doors of a row of cells, and a still further object of the invention is provision of means for automatically and yet selectively locking each door in its open position, and for selectively releasing such of the doors as may be so locked open.

Referring now to the drawings, Fig. 1 shows a jail door and portion of a similar door of an adjoining cell, in closed position, together with a complete unit of the mechanism for manipulation thereof; Fig. 2 is a detail of the mechanism with a door in partially open position; Fig. 3 is a similar detail but with the door locked in fully open position; Fig. 4 is a sectional detail along the plane of lines 4—4 of Fig. 3; Fig. 5 is a front view of a portion of the control panel showing the control levers of two doors; Fig. 6 is a detail of the additional locking means included in this invention; Fig. 7 is a horizontal section along the line 7—7, Fig. 6; and Fig. 8 is a section immediately behind the portion of the panel appearing in Fig. 5. Reference numerals in the drawings correspond in so far as possible with those appearing in above designated patent.

While the drawings illustrate the complete mechanism for control of but a single door, and reference hereinafter is generally made specifically to the various parts of a single unit, it will be understood that this is but a typical unit of the invention and that any number of doors may be so controlled in a similar manner as will be obvious from the following specification.

The general arrangement of parts as shown in Fig. 1 embraces a row of cells 4, facing upon a common corridor separated from the warden's room by a door not shown, but secured by the bolt 1 controlled by the handle 2. The handle 2 together with the control mechanism for all of the doors is inclosed in a lock box 3. The cell doors are arranged to slide open or closed, being supported upon hanger members 10, mounted with the side plates 9, upon rollers 8 movable along a suitable track 7 extending along each cell.

Adjacent the tracks 7 are similar tracks 110 and extending the entire row of cells is a pull bar 102 upon which is spaced at a unit interval of each cell width, a gap nut 101 supported on rollers 109 running on a track 110. The operating end of the pull bar is connected to a rack 111 whereby the pull bar may be longitudinally moved a distance equal to the door width in the following manner.

Within the lock box 3 is mounted a pinion 119 rotatable by means of a lever 121 to actuate the vertical rack 118. The upper end of this rack meshes with another pinion 117 in operative connection with a crank 116 and connecting rod 115 extending therefrom to a pinion 113, resting upon the rack 111 and in mesh with the fixed rack 114; raising of the lever 121 thus accomplishing through the mechanism described movement of the pull bar with its gap nuts, to the right Fig. 1, and vice versa.

Means having thus been provided for imparting lateral movement to the gap nut 101, across the cell, a coupling means between the gap nut and the door carriage is all that is necessary to impart the same movement to the door; and it will be obvious that by making such a coupling means for each door, controllable at will, upon manipulation of the lever 121 to produce reciprocation of the gap nuts 101, together with the proper manipulation of the individual coupling means, any or all of the cell doors may be moved to open or closed position as desired.

The coupling means employed is generally similar to that set forth in detail in my patent above referred to. Movable with each of the carriages 9 is a wedge bolt 98 supported from above by a roller 97 movable along a wedge strip 93. The gap nut embraces a recess 100 between two shoulders

103 and 104, the necessary width being such as to accommodate the bolt 98 which however, is controlled as to height, by the position of the wedge strip 93. The wedge strip is supported at one end upon an arm 200 of a bell crank pivoted at 91; and the opposite end of the wedge strip is provided with a cam 94 adapted to cooperate with a roller 95. In the position of the wedge strip shown in Fig. 2, upon motion of the gap nut to the left it will be obvious that the bolt 98 will ride over the projection 103 and enter the recess 100; upon counter-clockwise movement of the bell crank however, the wedge strip will move to the left, and at the same time, by action of the cam 94, will assume the position shown in Fig. 3, thus entirely disengaging the bolt from the gap nut; and it will be obvious that in an intermediate position of the wedge strip the bolt will project downwards sufficiently to clear the projection 103 but be engageable by the projection 104 so that the door may be caused to move only toward closed position.

The wedge strip is controlled by a lever 40 pivoted in the lock box in an inner compartment formed by the face plate 3^b and provided with a handle projecting through a slot in the face plate. The lever is connected by a rod 41 with a chain 42 passing over a pulley 42^a and connected through a pull rod 42^b with a second chain 42^c terminating at the lever 43. The lever 43 is mounted upon a vertical shaft 44 engaging at its lower end by a lost motion connection with a shaft 25 which controls locking means engageable with the bolt 34 of the door; and extends at its upper end into the tripper case 45. Upon the top of shaft 44 is mounted a lever connecting with the end of the pull rod 48 connecting through the chain 90 with the arm 201 of the wedge strip actuating bell crank pivoted at 91. Due to the mechanism just described downward motion of the lever 40 imparts upward motion to the wedge strip; the position of the lever at 40 corresponding with that of the bolt 98 in Fig. 2; the lever at 40^b corresponding with the position of the bolt Fig. 1, and the position at 40^a of the lever corresponding with the bolt in Fig. 3.

The bracket 96 which carries the roller 95, carries also a bell crank 124 the lower member of which is engageable with an adjustable bolt 125 upon the door carriage, to cause an elevation of the free end of the wedge strip by a pin carried by the upper end of the bell crank and upon which a projecting finger of the wedge strip rests. The normal position of this lever being shown in Fig. 2, as the door completes its closing movement the bell crank raises the wedge strip as described and thus raises the bolt 98 clear of the projection 103, the parts assuming the position shown in Fig. 1. Thus after clos-

ing the door the gap nut may either be retained in its position of engagement with the bolt providing an additional locking means for the door in closed position, or the entire pull bar may be returned to the right to pick up and close another door.

The shaft 44 is resiliently urged in a clockwise direction (looking downward, Fig. 1) by a spring within the tripper case 45, and its position is controlled by the door locking mechanism in the casing 19. The force of the spring is sufficient to overcome the weight of the lever 40 and rod 41 so that the lever is normally supported in its position by that of the door locking mechanism.

The door hanger 10 carries a plunger 78 which, as the door assumes a closed position, strikes a member within the tripper case 45 to compress a coil spring so that in closed position the door is normally urged to open position against the locking means in engagement with the staple 34. When it is desired to open the locked door, the proper lever 40 is lowered to the position of 40^a; this motion, through connection of the lever with the shaft 44 releases the staple 34 and the spring referred to acting through the plunger 78 gives the door a slight start sufficient to clear the casing 19. Thereupon, upon releasing the lever it will return to the position of 40^b where it is suspended, being positioned by the position of the shaft 44 in unlocked position of the mechanism within the casing 19.

What has thus far been described, is old in the art, being merely a résumé of the mechanism set forth in detail in my prior patent above referred to.

According to the present invention I have provided additional locking means for securing the door in closed position as follows:

Upon the end of one of the plates 9 are cut the square slot 300 and diagonal cam 301; pivotally mounted upon the fixed bracket 302 is a latch lever 303, provided with an upwardly bent portion 304 urged to engagement with the plate by a spring 305 as appears in Fig. 7. The other end of the lever extends toward and around the shaft 44, upon which is secured a collar 306 provided with a projection adapted to engage the crook of the lever 303 upon a counter-clockwise movement of shaft 44 to thus cause disengagement of the lever from the plate. Operation of this additional locking means is obvious: As the door moves to closed position the finger 304 of the lever 303 rides up the cam 301 and due to the spring 305, into the slot 300 in the plate, thus locking the plate and therefore the door in closed position. Upon rotation of shaft 44 to release the main lock of the door the lever 303 is caused to release the plate as well.

I have also provided means for positively

securing the door in open position, as follows:

Upon the wedge bolt 98, integral or movable therewith, I provide a latch 202 the lower surface of which constitutes a cam, as appears in Fig. 2. In a position corresponding laterally with the limit of travel of this latch to open position of the lever 40^a, and mounted upon a suitable bracket 203, I provide a bolt 204, which forms an abutment engageable by the latch 202.

Operation of this door open locking means will be apparent upon actuation of the gap nut 101 to fully open the door, provided the proper selector lever is in the position 40^a, the bolt 98 and therefore the latch 202 will be supported by means of the wedge strip 93 at the proper elevation so that if the door reaches the fully open position the cam surface upon the latch will cause it to ride over the abutment 204 whereupon it will drop into abutting position behind it and thus lock the door open.

To release the latch from this abutting position and therefore free the door from locked open position, it is necessary to raise the wedge bolt 98 still further than its thus normally extreme upward position. Owing to the necessary angularity and position of the bell crank arms 200 and 201, this cannot be accomplished in the heretofore employed design of the connecting means between the lever 40 and the wedge strip 93. I have therefore constructed the mechanism at the pivoted end of the wedge bolt as illustrated in Figs. 2 and 3. Upon the pivot shaft 91 of the bell crank I secure a lever 205 having an upwardly extending finger 206 bent to the plane of the end of the wedge strip, which is bent downwards somewhat as appears in the drawings. By this means, upon counter-clockwise rotation of the members upon the pivot 91 (Figs. 2 and 3) the lever 205 will engage the end of the wedge strip and raise it much more quickly than it would otherwise move. A slot 207 is provided in the connection between the arm 200 and the wedge strip to permit this upward motion of the strip in advance of the bell crank.

In order to effect such co-operation of the lever 205 and wedge strip to clear the latch 202 from the abutment 204, it is necessary that additional downward movement of the lever 40 be provided for. This is accomplished by cutting the slots in the partition 3^b larger than heretofore, and providing in line with the end of each slot a rock plate 208 as shown in Fig. 8, operable by a handle 209 upon the front face of the partition 3^b. The natural balance of this rock plate is such that it will normally occupy the position of 208^a, against the stop 209, thus limiting the downward movement of the lever 40^a to a position which will cause the engage-

ment already described of the latch 202 to lock the door in open position. A slot 210 in the rock plate is of sufficient depth to allow, when the plate is in the position 208^c, a further downward movement of the lever 40, to lift the latch, through the lever 205 as described, to clear the abutment and free the door.

In operation, after the door is thus freed a plunger 126 upon the hanger 10, similar to the plunger 78, is moved by the spring button 127, which was compressed after the door completed its opening motion, to cause sufficient closing motion of the door to move the latch 202 past the abutment 204.

It will be noted that nothing in my present invention interferes with the prior functioning of the doors coupled by the selector levers with the gap nuts 101 to be positively closed or opened. It is possible to positively close or open any or all of the doors at the will of the operator of the control mechanism within the lock box 3.

What I claim is:

1. In a jail door mechanism, a door slidable upon a track, a reciprocable member, a bolt movable with said door and adapted for separate movement to engagement with said member for sliding said door, means for controlling said engaging movement of said bolt in all positions of said door, means fixed with respect to said track, latch means upon said bolt and adapted for movement therewith to abutting relation with said fixed means as the bolt is disengaged from said reciprocable member in fully open position of said door to lock said door in said position, and means for imparting additional separate movement to said bolt to move said latch beyond said abutting relation, and release said door for closing movement.

2. In a jail door mechanism, a door slidable upon a track, a reciprocable member, a bolt movable with said door, and adapted for separate movement to engagement with said member for sliding said door, means for controlling said engaging movement of said bolt in all positions of said door, means fixed with respect to said track and adapted for engagement with means upon said bolt adapted for normal engagement therewith in fully open position of said door to lock said door in said position and means for releasing said engagement.

3. In a jail door mechanism, a door slidable upon a track, a reciprocable member operable from a point removed therefrom, a bolt movable with said door and adapted for separate movement to engagement with said member for sliding said door, means for controlling said engaging movement of said bolt in all positions of said door, means fixed with respect to said track and adapted for engagement with means upon said bolt in fully open position of said door to lock said

door in said position, and means for releasing said engagement, said means being operable from said removed point.

4. In a jail door mechanism, a door slidable upon a track, a reciprocable member operable from a point removed therefrom, a bolt movable with said door and adapted for separate movement to engagement with said member for sliding said door, means for controlling said engaging movement of said bolt in all positions of said door, means fixed with respect to said track and adapted for engagement with means upon said bolt in fully open position of said door to lock said door in said position, and means for releasing said engagement, said means being operable from said removed point and comprising means auxiliary to said controlling means whereby said bolt may be moved to clear said fixed means.

5. In a jail door mechanism, a door slidable upon a track, a reciprocable member operable from a point removed therefrom, a bolt movable with said door and adapted for separate movement to engagement with said member for sliding said door, bolt supporting means for controlling the engaging movement of said bolt in all positions of said door, said means including a strip extending lengthwise of said track between supports adapted to adjust the spaced position of said strip relative to said track dependent upon its position along said track, means fixed with respect to said track and adapted for engagement with means upon said bolt in fully open position of said door to lock said door in open position, and means auxiliary to said strip supports for imparting a component motion to said strip to effect disengagement of said bolt to unlock said door.

6. In a jail door mechanism, a door slidable upon a track, a reciprocable member operable from a point removed therefrom, a bolt movable with said door and adapted for separate movement to engagement with said member for sliding said door, bolt supporting means for controlling the engaging movement of said bolt in all positions of said door, said means including a strip extending lengthwise of said track between supports adapted to adjust the spaced position of said strip relative to the track dependent upon its position along said track, a handle at said removed point adapted to move said strip on said supports, latch means upon said bolt engageable with means fixed with respect to said track in fully open position of said door to lock said door in said position, and means auxiliary to said

strip supporting means for imparting a component vertical motion to said strip to effect disengagement of said latch means to unlock said door, said auxiliary means being operable by movement of said handle beyond its normal extreme position for disengaging said bolt from said reciprocable member.

7. In a jail door mechanism, a door slidable on a horizontal track, a member reciprocable lengthwise of said track and operable from a point removed therefrom, a bolt movable with said door and adapted for vertical movement to engagement with said member for sliding said door, supporting means for controlling the elevation and therefore said engagement of said bolt in all positions of said door, said means including a strip extending lengthwise of said track between supports adapted to vertically position said strip dependent upon its longitudinal position, a handle at said removed point adapted to longitudinally position said strip, latch means upon said bolt and engageable with means fixed with respect to said track for engagement in fully open position of said door to lock said door in said position, means auxiliary to said strip supporting means for imparting a vertical component motion to said strip to effect disengagement of said latch means to unlock said door, said auxiliary means being operable by movement of said handle beyond its said engaged position.

8. In a jail door mechanism, a door slidable upon a track, a notched plate movable with said door, a latch lever adapted for engagement with the notch of said plate in closed position of said door, and spring urged to said engagement, a door lock actuating shaft extending adjacent said lever, and a cam upon said shaft adapted to effect movement of said lever to disengage said notch, upon movement of said shaft to unlock said door.

9. In a jail door mechanism, a door slidable upon a track, a notched plate movable with said door, a latch lever adapted for engagement with the notch of said plate in closed position of said door and spring urged to said engagement, a cam surface upon said plate adapted to direct said lever to said notch upon closing movement of said door, a door lock actuating shaft extending adjacent said lever, and a cam upon said shaft adapted to effect movement of said lever to disengage said notch, upon movement of said shaft to unlock said door.

In testimony whereof I hereby affix my signature.

JOHN T. WHITEHOUSE,