

C. SCHOENFELD.
 DEVICE FOR OPERATING AND LOCKING PRISON DOORS.
 APPLICATION FILED SEPT. 27, 1910.

1,109,364.

Patented Sept. 1, 1914.

5 SHEETS—SHEET 1.

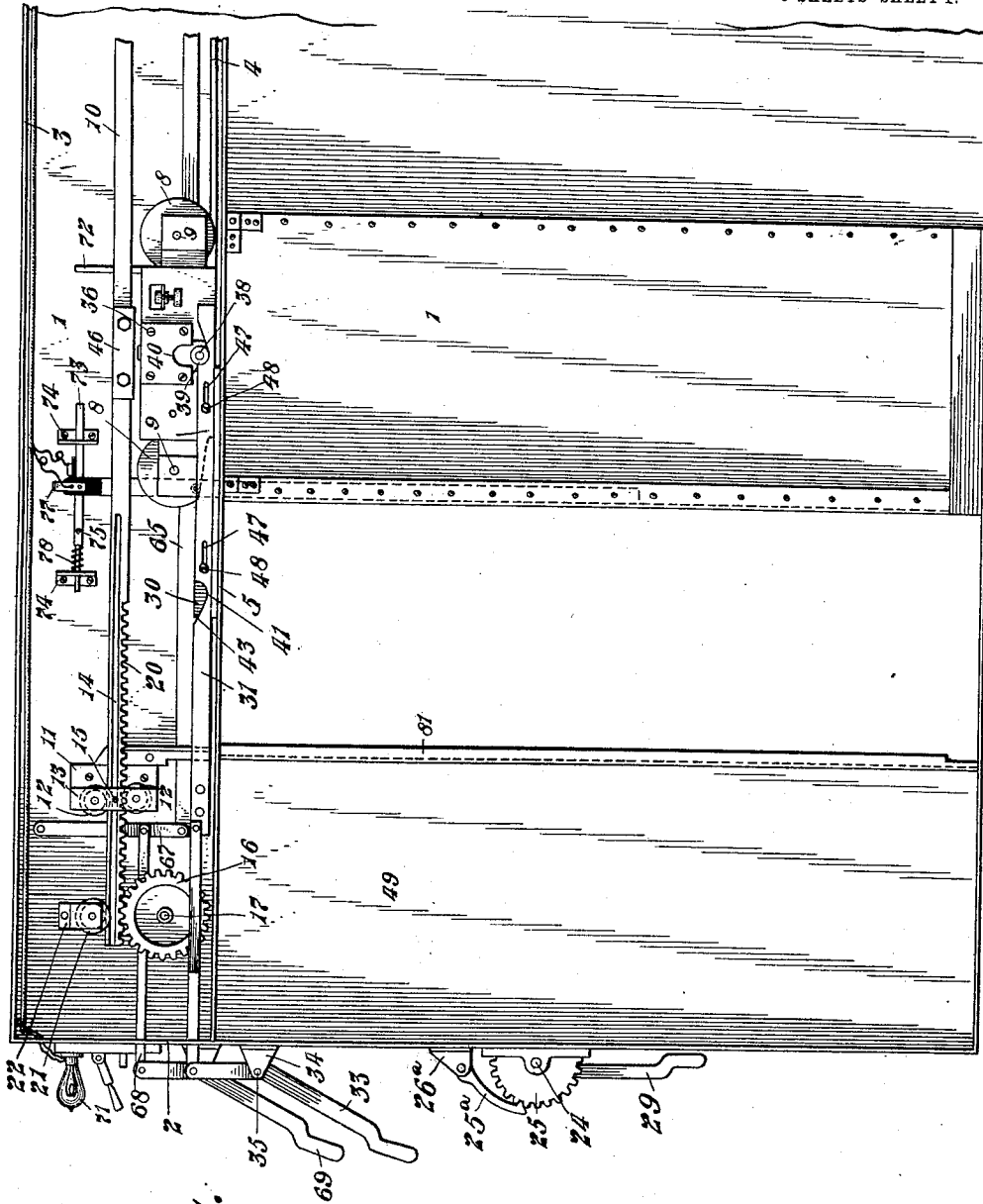


Fig. 1.

Witnesses

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Sylvia Boron.

Inventor

Charles Schoenfeld.

By Bond & Miller

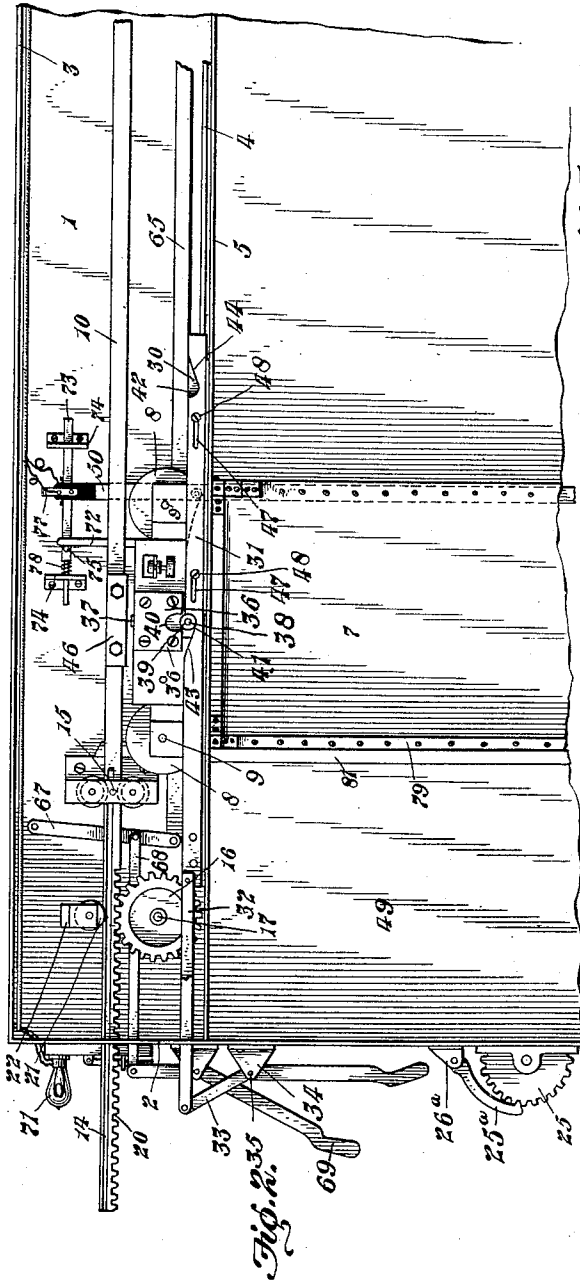
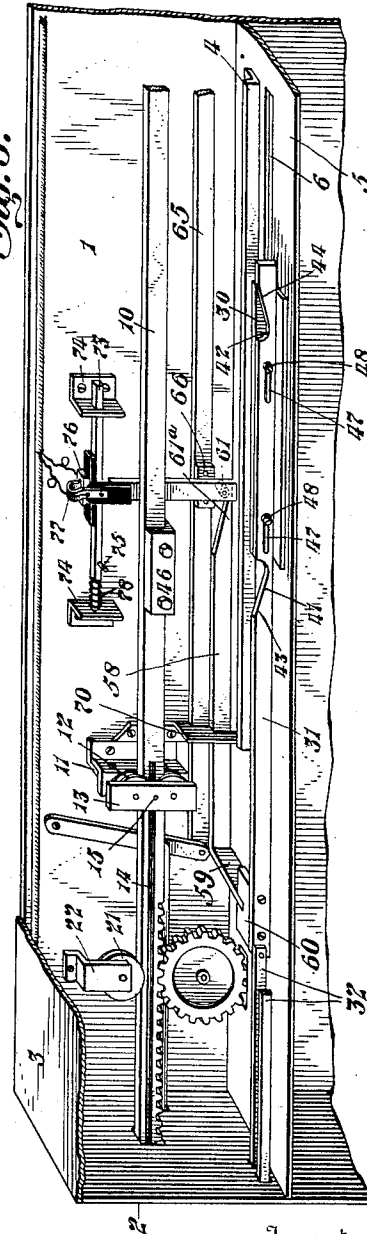
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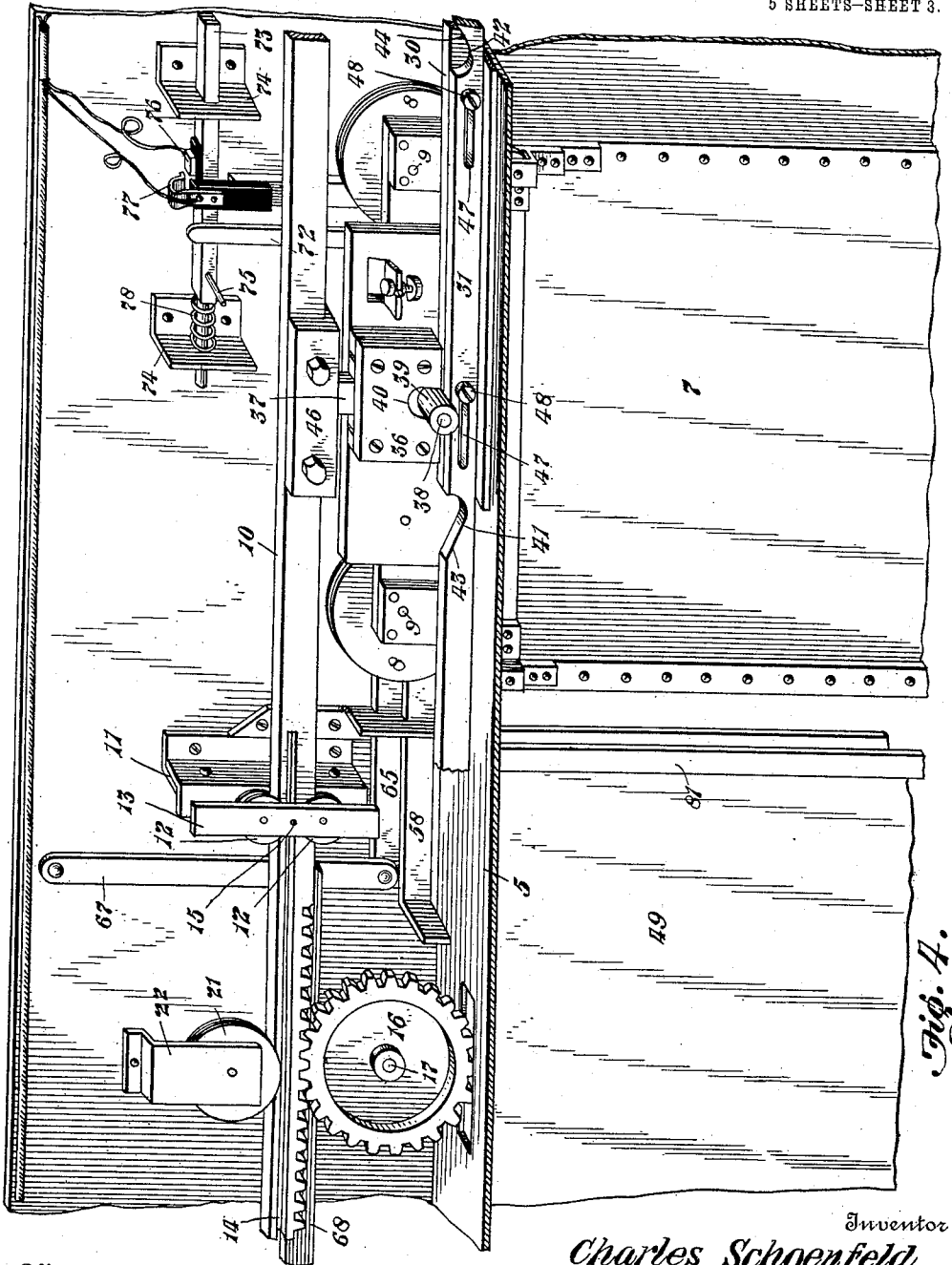


Fig. 4.

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5 SHEETS-SHEET 4.

Fig. 5.

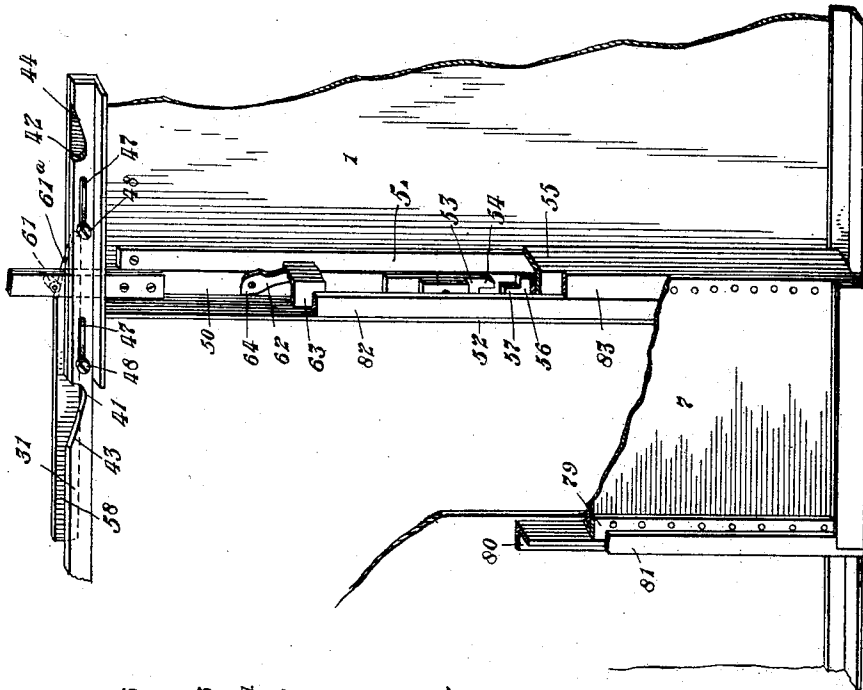


Fig. 6.

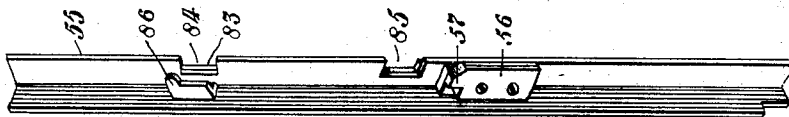


Fig. 7.

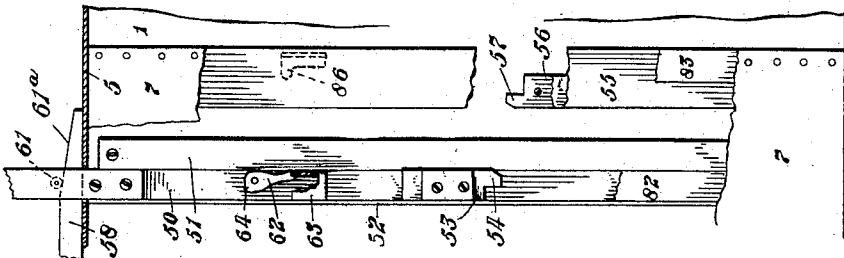
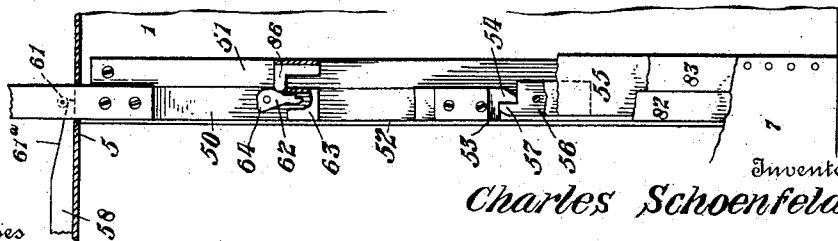


Fig. 8.



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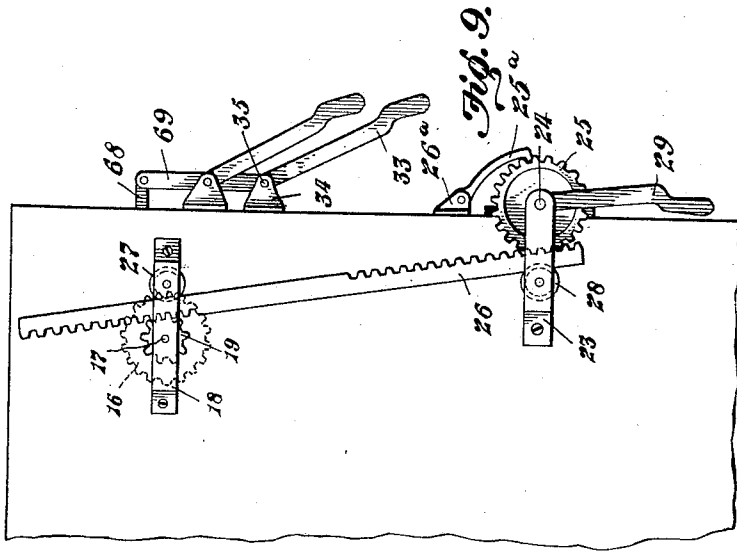
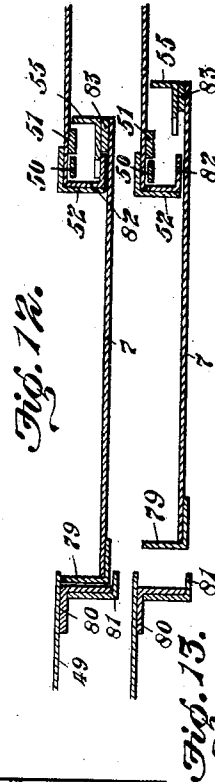
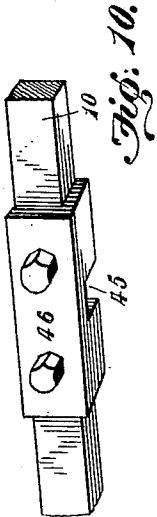
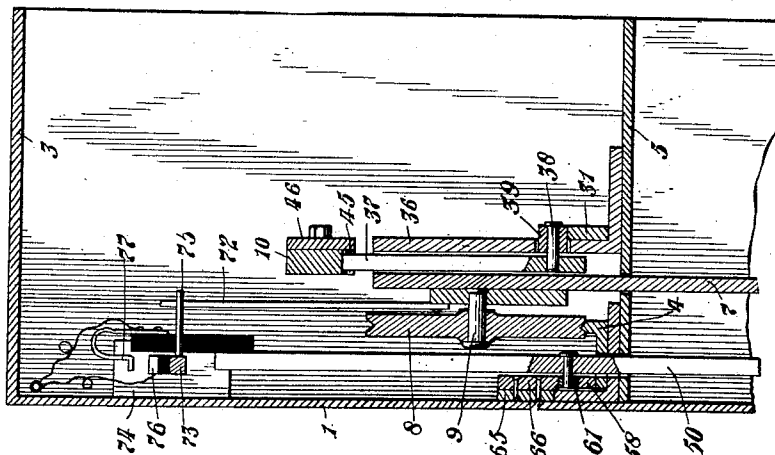
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

CHARLES SCHOENFELD, OF CANTON, OHIO.

DEVICE FOR OPERATING AND LOCKING PRISON-DOORS.

1,109,364.

Specification of Letters Patent.

Patented Sept. 1, 1914.

Application filed September 27, 1910. Serial No. 584,046.

To all whom it may concern:

Be it known that I, CHARLES SCHOENFELD, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Devices for Operating and Locking Prison-Doors.

One of the objects of the present invention is to provide means to open and close, prison-doors by mechanism intermediate the doors and the end or side of a prison structure or cell.

Another object is to provide means whereby any given door or a series of doors can be actuated independently of other doors of the series; that is to say any desired door of a series can be opened or closed without disturbing the remaining doors of the series.

With these objects in view the invention consists in the detailed construction and novel arrangement of the actuating parts and the locking parts hereinafter more fully described, reference being had to the accompanying drawings making a part of this specification and to the figures of reference marked thereon, in which—

Figure 1 is a front elevation showing the door open, illustrating the mechanism for actuating the lock bar to connect the door to the door actuating bar. Fig. 2 is a view similar to Fig. 1 showing the door closed and locked. Fig. 3 is a perspective view showing the door lock actuating mechanism, and the door actuating bar, the door and the front wall of the cell not being illustrated. Fig. 4 is a perspective view showing the prison door partially opened and illustrating the position of the partitions designed to actuate the prison door showing the door connected to or locked to the door actuating bar; also showing the electric devices used in connection with an electric light. Fig. 5 is a view showing the door closed and unlocked. Fig. 6 is a detached perspective view of the lock bar and its different parts carried by the door. Fig. 7 is a view showing a portion of the prison door, the lock bar carried by the door, also showing the door locking bar and its different parts in proper relative position. Fig. 8 is a similar view to Fig. 7 showing the door locking bar lowered and the door locked. Fig. 9 is a view illustrating the mechanism for imparting longitudinal movement to the door actuating bar, also showing the levers for actuating the bars designed to couple and un-

couple the doors to and from the door actuating bar. Fig. 10 is a detached view showing a portion of the door actuating bar illustrating the coupling or connecting head designed to lock or connect the door to the door actuating bar. Fig. 11 is a vertical section on line 4—4, Fig. 4. Fig. 12 is a horizontal section showing the door closed. Fig. 13 is a similar view showing the door partially open.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawing, 1 represents the rear wall of the case, 2 the end wall and 3 the top wall which constitutes three boundaries of the chamber designed to contain the mechanism designed to actuate the prison doors. The end wall 2 is extended down and constitutes the end of the door casing proper which is connected to the cell structure in the usual manner. The construction of the cells within themselves has no specific reference to the present invention as the present invention has specific reference to the mechanism designed to operate prison doors. Above the tops of the doors proper is located a track or way 4, which track or way is securely connected to the plate 5, which plate constitutes the bottom of the chamber above the door said plate being securely connected in the usual manner. The plate 5 is provided with a slot 6 through which slot the top or upper end of the door 7 is extended, said slot being formed of a length sufficient to allow the door 7 to travel back and forth so that said door can be moved to open and close the cell. To the top or upper end or portion of the door 7 are connected the traveling wheels 8, which traveling wheels are connected in the usual manner by means of suitable bearing bolts 9, the usual mechanism being employed to properly true up the door, which mechanism forms no specific part of the present invention.

Within the chamber above the cell door is located the door actuating bar 10, which door actuating bar is held in proper relative position by means of suitable flanges 11, which flanges carry anti-friction rollers 12, said rollers being located in contact with the top and bottom edges of the door actuating bar 10 as best illustrated in Fig. 4. For the purpose of preventing any lateral displacement of the bar 10, said bar is located be-

tween the face of the bracket 11 and the bar 13.

For the purpose of assisting in holding the door actuating bar 10 in such a manner that it will reciprocate in a true horizontal plane, said bar is provided with the groove 14 into which groove is seated a pin 15, said groove and pin being auxiliary means to hold the actuating bar 10 in proper relative position with reference to the other parts designed to impart reciprocating motion to said bar. In the chamber directly above the door and near the door operating end of the cell or cells is located the gear wheel 16, which gear wheel is preferably securely mounted upon the shaft 17, which shaft is properly journaled in the bracket 18 (see Fig. 9) and may be journaled in the wall 1. Upon the shaft 17 is also securely mounted the gear wheel 19. The gear wheel 16 meshes with the teeth 20 formed upon the lower edge of the door actuating bar 10, said teeth being formed for a sufficient distance to impart the proper reciprocating movement to the door actuating bar 10 to give proper movement to the door 7.

For the purpose of holding the door actuating bar 10 in proper mesh with the gear wheel 16 and at the same time preventing any upward movement of said door actuating bar 10, the roller 21 is provided, which roller is properly journaled in the bracket 22, said bracket being secured to the wall, 1, or its equivalent. To the door actuating end of the cell casing or structure is securely connected a bracket 23, in which bracket is journaled the shaft 24, upon which shaft is mounted the gear wheel 25, which gear wheel meshes with the bottom or lower end of the rack bar 26; the top or upper end of said rack bar meshing with the gear wheel 19. For the purpose of holding the rack bar 26 in proper mesh with the gear wheels 19 and 25, the brackets 18 and 23 are provided with the rollers 27 and 28, which rollers are located in contact with the non-toothed edges or portions of the bar 26 or more specifically upon the backs of the rack bar portions of said bar 26. For the purpose of imparting rotary motion to the gear wheel 25 the lever 29 is provided, which lever is securely connected or mounted upon the shaft 24 or the gear wheel 25 as desired.

It will be understood that it is immaterial as to just how the lever 29 is connected to the gear wheel 25, but the connection must be such that when the lever is moved in either direction such movement will rotate the gear wheel 25. It will be understood that when the gear wheel 25 is rotated in one direction the bar 26 will be elevated and when rotated in the opposite direction said bar will be lowered when either upward or downward movement is imparted to the bar 26, such upward or downward movement

will impart rotary motion to the gear wheel 19, which in turn will impart rotary motion to the gear wheel 16 and by reason of said gear wheel 16 meshing with the door actuating bar 10, reciprocating motion will be imparted to said door actuating bar; and when the door designed to be actuated is coupled to the door actuating bar 10 as hereinafter described, the reciprocating movement of the door actuating bar will carry the door 7 with said actuating bar 10.

To the plate 5 is securely attached the angled bar 30, to which angled bar 30 is slidably connected the coupling bar 31 to the operating end of which coupling bar is connected the rod or link 32, which rod or link is extended through the end wall of the housing or casing and to which rod or link is connected the lever 33, which lever is pivotally attached intermediate its ends by means of the bracket 34 and the cross rivet 35 or its equivalent. It will be understood that when the bottom or lower end of the lever 33 is pulled or moved outward or away from the end casing, the top or upper end of said lever will move toward the end wall, and thereby move the link 32 endwise, which movement will impart longitudinal movement to the bar 31.

To the top or upper end of the door 7 is attached in any convenient and well known manner the housing 36, which housing carries the reciprocating lock bolt 37, which lock bolt is provided at its bottom or lower end with the lateral pin 38 upon which pin is loosely mounted the anti-friction roller 39.

For the purpose of allowing reciprocating motion to be imparted to the lock bar 37, the wall of the casing 36 is provided with the recess 40, through which recess the lateral pin 38 and the anti-friction roller 39 extends, as best illustrated in Fig. 4. The coupling bar 31 is provided with the recesses or notches 41 and 42, which notches are provided with oppositely inclined walls 43 and 44. When it is desired to couple the door 7 to the door actuating bar 10, the bottom or lower end of the lever 33 is moved outward from the end wall 2 or brought into the position illustrated in Fig. 1, the movement of which lever causes the inclined wall 44 to move under and in contact with the anti-friction roller 39, thereby lifting or moving upward the lock bar 37 and entering the top or upper end of said lock bar in the socket 45 formed in the head or block 46 or its equivalent, which head or block is securely connected to the door actuating bar 10 and when the lock bolt 37 has thus been elevated and its top or upper end entered in the socket 45 the door 7 will be carried or moved with the movement of the door actuating bar 10; the locking bolt being held in elevation by reason of the anti-friction roller 39 or its equivalent riding

ing upon the upper edge of the fixed angled bar 30. For the purpose of holding the bar 31 in proper relative position with reference to the angled bar 30, said bar 30 is provided with the elongated slots 47 through which slots the retaining screws 48 are passed and connected to the angle bar 30.

When the door has been moved a sufficient distance to bring the locking bolt 37 directly over the recess 42 the bolt is permitted to drop, owing to the fact that there is nothing to support it or for the roller 39 to ride upon, and as the locking bolt 37 drops it is detached or disengaged from the block or head 46 and any further movement of the door actuating bar 10 will not move the door heretofore or before coupled to the bar 10.

It will be understood that when the door 7 is brought into position to close the opening in the front wall of the prison proper, or in the position illustrated in Fig. 2, it is necessary to lock the door against sliding movement and in fact against any movement so that the opening in the front wall 49 will be properly closed and the door held against movement. In order to provide for thus locking the door 7, a vertical locking bar 50 is provided, which vertical locking bar is located in close contact with the front wall 49, but in a different vertical plane so that the door can pass back and forth as it is opened and closed.

For the purpose of holding the vertical locking bar 50 in proper relative position and also guiding the vertical movements of said locking bar the guide plate 51 or its equivalent is secured to the wall of a prison; the opposite edge of said locking bar being held against displacement by the angled bar 52. To the locking bar 50 is attached the lock-block 53, which lock-block has a downward extended projection 54 spaced from the angled plate 52. To the angled bar 55 which is secured to the door 7 is securely attached the lock-block 56 which has an upward extended projection 57 and when the door 7 is locked against movement as hereinafter described, the lock-blocks 53 and 56 are in the position illustrated in Fig. 8, the extensions 54 and 57 being located face to face, the downward extension 54 being located over the upward extension 57. It will be understood that when the door 7 is coupled to the operating bar 10, the door should at the same time be unlocked and in order to provide for simultaneous coupling the door with the operating rod 10 and unlocking the door it is necessary to elevate the locking bar 50 a sufficient distance to disconnect the locking blocks 53 and 56 or in other words bring said locking blocks into the position illustrated in Fig. 7. In order to lift the locking bar 50 as the door is coupled to the bar 10, the bar 58 is provided,

which bar is operatively connected to the coupling bar 31 by means of the angled end 59, which angled end is connected to the block 60, which block is connected to the coupling bar 31, so that the bars 58 and 31 will move in unison.

Near the top or upper end of the locking bar 50 is located the roller 61 as best illustrated in Fig. 11 but shown in dotted lines Fig. 3. The bar 58 is provided with the beveled end 61^a which beveled end is for the purpose of elevating the locking bar 50 when the coupling bar 37 is moved in the direction to couple the door 7 to the door actuating bar 10 as above described. When the locking bar 50 has been elevated it is of importance to hold said locking bar in elevation until it is desired to lower said locking bar and lock the door after it has been fully closed. In order to hold the locking bar in elevation or in position to unlock the door the gravity dog 62 is provided, which gravity dog is pivotally connected to the locking bar 50. To the angled bar 52 is attached the bracket or loop 63, said loop being so located with reference to the gravity dog 62 that when the locking bar 50 has been elevated to its full height said gravity dog will swing into the position illustrated in Fig. 7 and catch upon the bracket 63. In order to cause the gravity dog 62 to so swing it is provided with the weighted portion 64 located at one side of the pivotal point of the dog.

It will be understood that the locking bar 50 should be securely locked in its lowered position so that the same cannot be elevated by the prisoners and in order to lock the locking bar 50 in its lowered position the reciprocating bar or rod 65 is provided and upon which bar is secured the block 66, which block is located directly above the roller 61 secured to the upper portion of the locking bar 50. It will be understood that when the bar 65 is moved so as to bring the block 66 out of the path of the upward movement of the roller 61, the locking bar is free to be elevated. In order to provide means for moving the bar 65 to release the locking bar, suitable mechanism is employed, which mechanism in the present instance consists of a pivoted link 67, which link is pivoted at its top or upper end and its bottom or lower end connected to the bar 65.

Intermediate the ends of the link 67 is connected the rod 68, which rod is connected to the top or upper end of the operating lever 69, which operating lever is located outside of the prison wall and in proper access to those having charge of the prisoners.

It will be understood that by an outward movement of the bottom or lower end of the lever 69 the top or upper end of the said lever will be moved inward which in turn moves the rod 68 endwise and by means of

the pivoted link 67, the bar 65 will be moved endwise so as to move the block 66 out of position to engage the roller 61, after which the locking bar can be elevated by means of the beveled end of the bar 58. It will be understood that in operation the bar 65 must be first moved to release the locking bar, 50, after which the locking bar is moved by the movement of the bar 58.

For the purpose of holding the bars 58 and 65 in proper position and prevent any lateral springing of said bars suitable brackets 70 are provided, which brackets are connected to some fixed part of the prison proper, but it will be understood that other means may be employed as the only object is to hold said bars in proper relative position. For the purpose of providing means for indicating any tampering with the door 7, electric means are employed, by means of which suitable lights 71 are employed and are located near or adjacent the various operating levers designed to actuate the prison doors. The electric mechanism is so arranged in the present instance that when the doors are properly closed and locked the circuit will be closed and the light 71 so indicate. To the door 7 is attached an upward extending finger or arm 72 and near said finger or arm is located a sliding bolt 73, which sliding bolt is held in proper relative position by means of suitable bracket flanges 74, which bracket flanges are secured to the wall of the prison in any suitable or well known manner. To the bolt 73 is connected a pin 75, which pin is located in the path of the arm 72. As the door is brought into position to be closed the finger or arm 72 will strike against the finger 75 and move the bar 73 endwise in the direction of the movement of the door 7 and the finger 72, which movement brings the contact block 76 directly under the contact arm 77 and when the locking bolt 50 is lowered the contact arm 77 will come into contact with the contact block 76 at which time the circuit is closed and the light 71 indicating the door properly closed and locked. In order to move the bolt 73 in the opposite direction, from the direction it is moved by the finger or arm 72, the spring 78 is provided, which spring moves the bar 73 into the proper position to bring the contact block 76 at one side or from directly under the contact arm 77. It will be understood that the contact block 76 and the contact arm 77 are to be properly insulated, so that the electric current will not pass through the metal parts of the prison.

It will be understood that when the door 7 has been properly closed and locked it should be held against movement by any force brought against the outer or inner faces of the door and in order to provide means for holding the door against any

springing action due to pressure upon side faces of the door, the door is provided with the angled flange 79, which angled flange is seated in the channel located at the vertical edge of the door open in the prison wall, which channel is formed by the angled bars 80 and 81 or their equivalents. The opposite vertical edge of the door being held against springing movement by means of the angle bar 52 secured to the prison wall, the vertical edge of the prison wall being provided with the angle portion 82 and the door provided with the angled bar 55 spaced by the bar 83, but extended beyond said bar a sufficient distance to lap over a portion of the angled bar 82 as best illustrated in Fig. 12.

For the purpose of providing suitable clearance so that the door 7 can be properly closed the angled bar 55 is provided with the notches 84 and 85. It will be understood that when the door is properly closed, the gravity dog 62 should be moved so as to disengage from the loop 63 and in order to provide for thus moving the dog the angled bar 55 is provided with the strike-block 86, which strike block comes in contact with the edge of the dog 62 and swings its bottom or lower end so as to disengage said dog from the loop or bracket 63.

The drawings and description have been confined to a structure in which is described and shown a single door and the mechanism designed to open and close the door to lock the same when in a closed position and to properly signal a closed and locked door. It will be understood that in cell structures where a number of cells are employed each cell must necessarily have a door, but the mechanism designed and calculated to operate a series of doors is practically the duplication of the device illustrated and described.

In some instances it may be found necessary to partially open the door 7 and hold the door against sliding movement. In order that this may be accomplished, a detent or dog 25^a is provided, which detent or dog is pivotally connected to the bracket 26^a or its equivalent. The detent or dog when placed in the position illustrated in Fig. 2 will hold the door actuating bar 10 against movement by reason of the detent or dog 25^a holding the gear wheel 25 against rotation, thereby holding the door 7 against sliding movement when said door is coupled to the actuating rod 10 which it must be when the door is partially opened, owing to the fact that the bottom or lower end of the locking bolt 37 has been lifted and moved out of the notches or recesses 41 and 42.

For the purpose of preventing the door from moving when it is fully open, the pin or roller 39 drops at the end of the bar 30 together with the locking bolt 37, thereby,

preventing any sliding movement of the door 7, and the same is true when the door is closed, the roller 39 dropping down at the opposite end of the bar 30.

5 Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is—

1. In a structure of the character described, in combination with a slidable door, 10 a door coupling bolt and a door locking bar, a door actuating rod, hand lever actuated means for actuating said rod, hand lever actuated means for actuating the coupling bolt to couple and uncouple said door with 15 relation to said rod and to simultaneously actuate said door locking bar, and hand lever actuated means for locking said door locking bar against movement.

2. In a structure of the character described, in combination with a slidable door, 20 a vertically reciprocating bolt connected to said door, a door actuating bar arranged above said bolt and provided with a socket adapted to receive said bolt when same is in raised position, a coupling bar arranged 25 beneath said bolt, said coupling bar provided with notches, said bolt adapted for contact with the upper edge of said bar, said notches so disposed as to permit said 30 bolt to drop into said notches when the door is in the fully open and fully closed positions and means, independent of said coupling bar, for maintaining said bolt in raised position at all points intermediate 35 said fully open and fully closed positions.

3. In a structure of the character described, in combination with a slidable door, a vertically reciprocating bolt connected to said door, a door actuating bar arranged 40 above said bolt and provided with a socket adapted to receive said bolt when same is in raised position, a fixed bar arranged beneath said bolt and adapted to maintain said bolt in its raised position at all points except in the fully open and fully closed positions of said door and a coupling bar also 45 engaging said bolt, said coupling bar adapted for movement with relation to said bar and adapted to raise said bolt when said 50 door is in the fully open and fully closed positions.

4. In a structure of the character described, in combination with a slidable door, a vertically reciprocating bolt connected to 55 said door, a door actuating bar arranged above said bolt and provided with a socket adapted to receive said bolt when same is in raised position, a fixed bar arranged beneath said bolt, said bolt adapted to bear against 60 said fixed bar when in raised position, said fixed bar terminating at points where said bolt may drop down over the ends of said bar when said door is in the fully open and fully closed positions and a coupling bar 65 also engaging said bolt and movable with

relation to said fixed bar, said coupling bar adapted to raise said bolt at the ends of said fixed bar, substantially as described.

5. In a structure of the character described, in combination with a slidable door, 70 a vertically reciprocating bolt connected to said door, a door actuating bar arranged above said bolt and provided with a socket adapted to receive said bolt when same is in raised position, fixed bolt sustaining means 75 beneath said bolt and adapted to maintain said bolt in raised position at all points except in the fully open and fully closed positions of said door and movable means for raising said bolt when said door is in the 80 fully open and fully closed positions.

6. In a structure of the character described, a cell having a door opening, a door adapted to close the door opening, a vertical 85 locking bar provided with a lock block, a fixed lock block, said lock blocks provided with projections adapted to be lapped face to face, a gravity dog carried by the locking 90 bar, a fixed bracket adapted for engagement with the gravity dog, said gravity dog adapted to hold the locking bar in elevation and means for releasing the gravity dog from engagement with the fixed bracket, 95 substantially as and for the purpose specified.

7. In a structure of the character described, a cell having a door opening, a door adapted to close the door opening, a vertical 100 locking bar provided with a lock block, a fixed lock block, said lock blocks provided with projections adapted to be lapped face to face, a gravity dog carried by the locking 105 bar, a fixed bracket adapted for engagement with the gravity dog, said gravity dog adapted to hold the locking bar in elevation and means for releasing the gravity dog from engagement with the fixed bracket, 110 and means for lifting the locking bar, substantially as and for the purpose specified.

8. In a structure of the character described, a cell having a door opening, a 115 fixed track or way above the door opening, a sliding door having wheels mounted upon the track or way, a casing adapted to inclose said track or way and the wheels, a door 120 actuating rod, means for connecting the door and disconnecting the door to and from said actuating rod and means for imparting movement to the door actuating rod, a locking 125 bar slidably mounted in the cell structure, a lock block fixed to the locking bar and a fixed locking block adapted for engagement with the lock block carried by the locking bar and means for locking the locking bar in a lowered position, substantially 130 as and for the purpose specified.

9. A structure of the character described comprising, in combination, a plurality of 135 slidable doors, a door coupling bolt and a door locking bar for each of said doors, a

door actuating rod common to all of said
doors, hand lever actuated means for actuat-
ing said rod, a plurality of hand lever actu-
ated means each adapted to actuate the cou-
pling bolt and locking bar of one of the sev-
5 eral doors to couple and uncouple said door
with relation to said rod and to simultane-
ously actuate the locking bar thereof, and
hand lever actuated means common to all of

said doors for locking the door locking bars 10
against movement.

In testimony that I claim the above, I
have hereunto subscribed my name in the
presence of two witnesses.

CHARLES SCHOENFELD.

Witnesses:

JOHN H. SPONSELLER,
SYLVIA BORON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."