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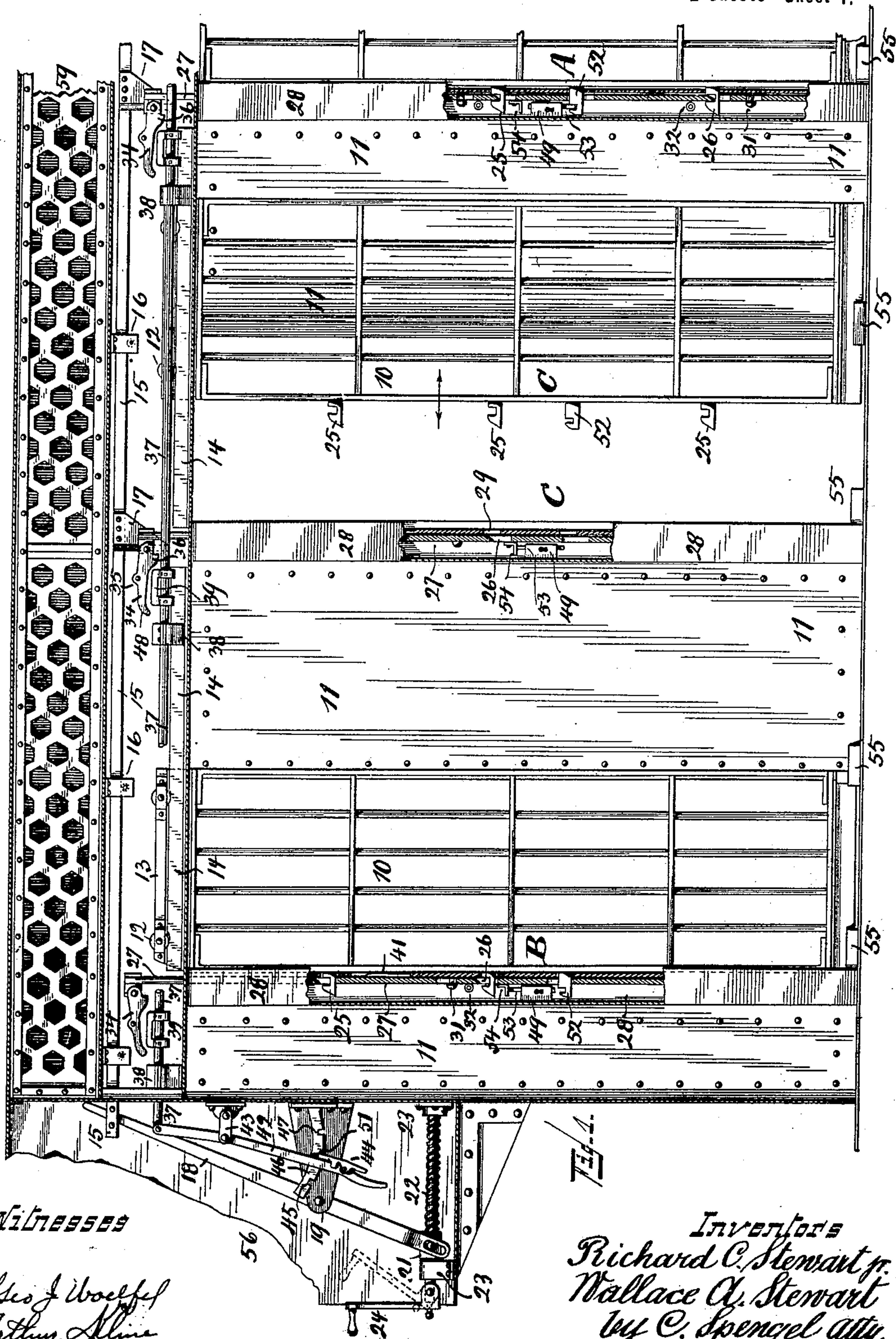
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R. C. STEWART, JR. & W. A. STEWART.
OPERATING MEANS FOR CELL DOORS.

(Application filed Apr. 1, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

Geo. J. Woelfel
Arthur Shire

Inventors
Richard C. Stewart Jr.
Wallace A. Stewart
by C. Spengel atty.

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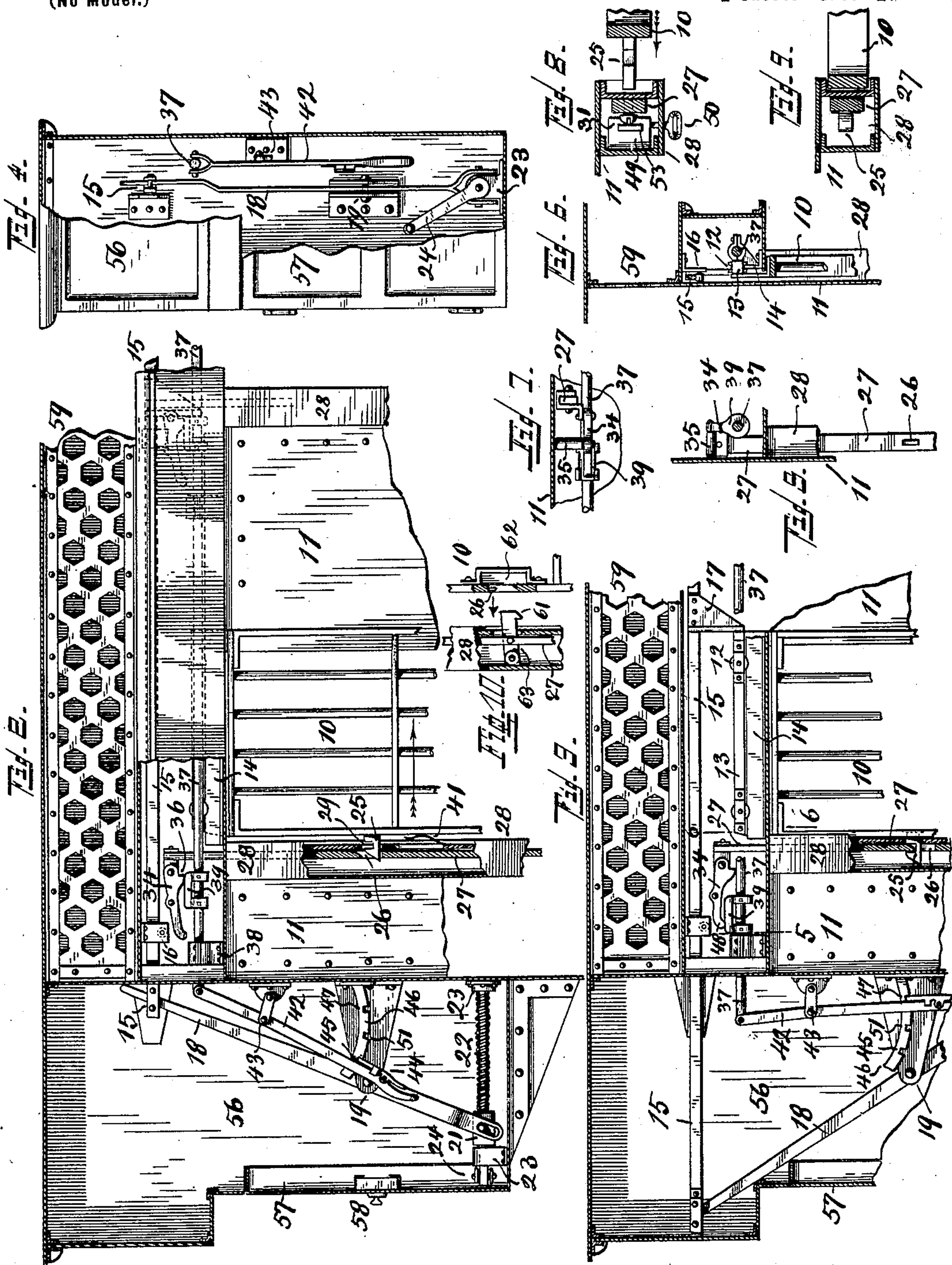
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Geo J Woelfel
Arthur Kline

Inventors
Richard C. Stewart Jr.
Wallac A. Stewart
by C. Spengel atty.

UNITED STATES PATENT OFFICE.

RICHARD C. STEWART, JR., AND WALLACE A. STEWART, OF COVINGTON,
KENTUCKY.

OPERATING MEANS FOR CELL-DOORS.

SPECIFICATION forming part of Letters Patent No. 680,288, dated August 13, 1901.

Application filed April 1, 1901. Serial No. 53,848. (No model.)

To all whom it may concern:

Be it known that we, RICHARD C. STEWART, Jr., and WALLACE A. STEWART, citizens of the United States, residing at Covington, Kenton county, State of Kentucky, have invented certain new and useful Improvements in Operating Means for Cell-Doors; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, attention being called to the accompanying drawings, with the reference characters marked thereon, which form also a part of this specification.

15 This invention relates to improved and simplified mechanism to operate doors for the purpose of closing, locking, and unlocking them and where such operation is to be performed from a position more or less remote from the doors. Such a condition exists in penal institutions, jails, penitentiaries, and similar places of detention where the doors of a group of inclosed cells are to be operated from one certain position, generally outside of such group, so as to dispense with the direct and immediate manipulation of each of the doors.

The features of this invention consist of certain novel, improved, and simplified means and constructions whereby such doors may be operated from one certain position for the purpose of closing, locking, and unlocking them.

In the following specification and particularly pointed out in the claims at the end thereof is found a full description of the invention, together with its operation, parts, and construction, which latter is also illustrated in the accompanying two sheets of drawings, in which—

Figure 1 shows a few cells at the end of a row of them, the fronts of the cells being shown in elevation and with the doors and their locking means in various positions. Fig. 2 shows a part of Fig. 1 with the means for locking the doors in a position whereby these latter are unlocked. Fig. 3 in a similar view shows the doors locked and with the means for doing such held positively in their locking position. Fig. 4 is an end view of the box inclosing the operating-levers. Figs. 5 and

6 are vertical sections on lines 5 5 and 6 6, respectively, of Fig. 3. Fig. 7 is a horizontal detail view of the upper end of a latch-bar and adjacent parts. Fig. 8 is an enlarged detail view showing a horizontal section of the door-jamb with the door in a position approaching the same. Fig. 9 in a similar view shows the same parts with the door in locking contact with the jamb. Fig. 10 in a detail view shows a modified construction of the locking means.

In penal institutions and places of detention it is customary to arrange cells in which groups or rows are provided with an inclosed corridor or passage extending in front of them and with which all these cells communicate by means of their doors opening thereinto. It is for the purpose of manipulating all these doors from one certain position, preferably the outside of a group, that various means have been provided. In this our present invention the doors to be manipulated are sliding doors, and our improved mechanism operates in this manner, that a number of them, forming an operatively-connected group for the purpose, may be simultaneously locked and unlocked all from one certain position, which position may be outside of the inclosing corridor. In addition to this general operation, in common to a number of doors, any one or more of them may be locked or unlocked by an individual lock, such operation being then independent from the general operation.

In the drawings, Fig. 1 shows a few of a group of cells arranged in a row side by side, all provided with doors 10, consisting of open-grate work.

11 represents the intermediate portions of the front wall of the cells between the door-opening, which walls may be solid.

The doors are sliding ones, provided for such purpose with rollers 12, connected to an upwardly-projecting flange 13 and traveling on tracks 14. They are supposed to communicate with an inclosed corridor or passage-way, common to all, arranged in front of them, and they are manipulated by levers, (shown on the left of Fig. 1,) and which levers are supposed to be located outside of this corridor. For the purpose of closing all these

doors at once there is a sliding bar 15, supported in and guided by roller-brackets 16 above the doors and extending over all of them. It has downwardly-projecting lugs 5 17, one for each door and reaching into the path of their upper ends, more particularly into the path of flanges 13 thereat, so that when said lugs, with bar 15, are moved to the left they will engage all open doors and push 10 them shut. For so moving this bar 15 we preferably use a lever 18, located outside of the inclosed cells and pivotally supported on a bracket 19. If the number of doors to be manipulated is considerable, we use a 15 screw-movement to move the free end of the levers. For such purpose we provide a nut 21 between the forked end of this lever, which nut is mounted on a screw 22, supported in bearings 23. The screw is rotated by means 20 of a crank-handle 24, hingedly connected and may be turned in and folded up when not in use. It is held in operative position by a spring-pressed pin, which at the time of use enters the end of the screw. It will now 25 be seen that by rotating screw 22 the lever will move closing-bar 15 in either direction, according to direction of rotation of the screw. When moved to the left, all doors will be closed simultaneously and none can be opened 30 independently as long as the bar remains in this position. Any door may, however, be closed independently by hand and before such is done by this closing-bar. If any one or more doors have already been so closed 35 previous to the general closing effected by this bar, then this latter when shifted will close only such doors left still open. With the exception of certain contingencies to be explained later all doors lock automatically 40 as soon as they arrive in their closed position, no matter whether moved so individually by hand or collectively by the closing-bar. For such purpose these doors at one of their upright edges have notched catches 25, which 45 are adapted to enter openings 26 in a latch-bar 27, supported within a hollow post 28. That side of this post against which the doors abut, and which side forms the jamb for the doors, has openings 29 to permit such catches 50 to enter. The upper outer corners of these catches are cut off to render them inclined, while the upper ends of openings 26 are also cut under on an incline to render entrance of the catches possible. These latch-bars are so 55 supported as to be capable of a limited movement in a vertical direction, and before locking they occupy a position which brings the upper inclined ends of openings 26 in them in line with the inclined ends of catches 25, so that 60 when the doors move into their closed position these inclined parts come in contact with each other. A slight continuation of the movement in this direction causes now the latch-bars to ride upon these catches until arrived above the notches in these latter, after 65 which they drop again and by engaging the notches in the catches hold the doors locked.

The latch-bars are held in a vertical position against the inside of the hollow post 28 by buttons 31 and rollers 32, which also facilitate their vertical movement. By raising 70 them catches 25 become free again and the doors may be slid open, provided, however, that closing-bar 15 has previously been shifted accordingly and to the right, as shown in 75 Fig. 1, to move lugs 17 out of the way of the upper ends of the doors. This unlocking of these latter is effected from the outside and affects simultaneously all doors. For such purpose 80 each latch-bar has connected to its upper end one of the ends of a lever 34, which levers are pivotally supported at 35 and have on their under side each an inclined cam-surface 36. It is evident now that by raising the connected 85 ends of these levers 34 the desired raising of the latch-bars 27 is effected. For the purpose of so raising them there is another bar 37, supported for shifting in a horizontal direction in bearings 38 and provided 90 with projections 39, located so as to be adapted to pass under levers 34, whereafter, when engaging cam-surface 36 on these levers, the ends of these latter, and with them the latch-bars, are raised. Closing-bar 15 being in 95 proper position, the doors can now be slid open, which may be done from the inside by the occupant or from the outside of the door. To facilitate this opening, as well as to indicate perceptibly to the occupant that the door 100 is now in position for opening, we provide starting-springs 41, which until then were held compressed by the locked door and which permitted now to return to their previous condition by the unlocking of the door 105 start the same partly open, as shown in Fig. 2. For manipulating this locking-bar 37 we connect the same to a lever 42, also located on the outside and only accessible thereat, it being pivoted at 43. Bar 37 may be held 110 in this position, where it holds latch-bars 27 so raised by the locking of lever 42 in position, for which purpose this latter carries a trigger 44, which at this time engages a notch 45 in bar 46, as shown in Fig. 2. In this position—that is, as shown in Fig. 2—none of 115 the doors if closed would lock, and in this manner—that is, by leaving the operating parts in their position—either the accidental or intentional locking in or locking out of a prisoner is prevented. To hold the latch-bars 120 positively down and in engagement with catches 25, which is their locking position, locking-bar 37 by means of lever 42 is moved to a position as shown in Fig. 3 and kept so by the locking of lever 42 in notch 47. This 125 movement causes projections 39 to move under the free ends 48 of levers 34, thereby preventing any movement of these latter, and particularly the one which they would have to go through in order to permit raising of 130 the latch-bars, which raising requires an unobstructed movement downwardly of said ends 48.

Outside of the means as described for ma-

manipulating the latch-bars for locking or unlocking of the doors some or all of them may have locks 49, accessible from the corridor, whereby any one of these latter so provided
 5 may be locked or unlocked by means of key 50 (shown in Fig. 8) and independently of the means before described. To permit such, it is necessary, however, to first move locking-bar 37 to a neutral position and intermediate
 10 the two positions before described, so as to bring projections 39 to a position between the ends of levers 34 and as shown in Fig. 1. The parts are held in this position by the locking of lever 42 into notch 51, as shown in Fig. 1.
 15 The locks 49 are secured within hollow post 28 and operate in conjunction with notched keepers 52, which are provided on each one of the doors and enter into their positions to reach the lock by passing through openings
 20 in the jamb side of post 28 and in the latch-bar within. When locking in this manner—that is, by locks 49—the latch-bars do not necessarily have to enter into action, the locking being simply by bolt 53 of lock 49,
 25 which engages keeper 52, as shown for the door A in Fig. 1. To unlock a door so locked, it is necessary to move bolt 53, so as to move it out of keeper 52, and sufficiently more to lift the latch-bar in case the same is down, so
 30 as to also disengage catches 25. In order to so lift the latch-bars, they have lugs 54, against the under side of which the upper end of bolt 53 acts, all as shown for door B in Fig. 1. Fig. 2 shows a position where the
 35 latch-bars are held in an inoperative position by levers 34, and in which position they are incapable of locking the doors. At this time, however, these latter may be locked or unlocked by locks 49. To unlock a door when
 40 so locked, it is only necessary to move bolt 53 sufficiently to raise it out of keeper 52 and as shown at C in Fig. 1, where it is in a position intermediate the positions A and B. It is then not necessary to raise bolt 53 as high
 45 as shown at B to raise the latch-bar, since this latter is already raised by lever 34 and projection 39. Left in the intermediate position C locks 49 are entirely ineffective for any purpose whatsoever as concerns the ma-
 50 nipulation of the doors by bars 15 or 37, operated by levers 18 or 42.

The various possible manipulations of the doors may now be resumed and are as follows: When the doors are open, any one may
 55 be closed independently; but they are all subject to and may be closed simultaneously by closing-bar 15. When closed in either manner, the doors lock automatically when the latch-bars are in a position as shown at
 60 A and C in Fig. 1. They may be dead-locked by moving locking-bar 37 to a position as shown in Fig. 3, when it is impossible to raise any of the latch-bars. All of these latter are raised by moving locking-bar 37 to a position
 65 as shown in Fig. 2, when any or all doors may be opened by hand, provided closing-bar 15 has first been moved to a position as shown

in Figs. 1 and 2. If it is intended to exclude from this general unlocking, as shown in Fig. 2, any certain door, such door may be kept
 70 locked by means of its lock 49, as shown at A, Fig. 1, while the other parts are in a position as shown in Fig. 2, the locking by lock 49 not interfering with the movement of the latch-bars. In such case the particular door
 75 or doors would be locked before locking-bar 37 is moved to the position shown in Fig. 2. If it is desired that any one door should not lock automatically on being closed either by hand or by the closing-bar 15, such may be
 80 prevented again by lock 49, the bolt of which is moved into a position as shown at B, Fig. 1, and in which position the dropping of the latch-bars into catches 25 is prevented when the doors arrive in their closed position. 85

Hollow post 28 is preferably constructed of two channel-irons connected in the manner shown in Figs. 8 and 9, one of the channel-irons forming also the door-jamb, receiving the edge of the door between its flanges,
 90 whereby this latter is firmly held against outward pressure. The lower edge of the doors is guided by guides 55, between which they move.

The operating-levers are inclosed in a box
 95 56, access to which is had through a door 57, controlled by a lock 58. The operating parts above the doors are all inclosed and inaccessible, as shown in Figs. 2 and 6. Above this the solid wall may be perforated, as shown at
 100 59, for purposes of ventilation.

By combining with locking-bar 37 the rotary adjustment and other accessories, as shown for bar K in our Patent No. 645,575,
 105 issued to us on March 20, 1900, the possibilities as to the individual manipulation of any particular door or doors may be still more increased in a manner described in said patent.

Catches 25 instead of engaging openings 26 in latches 27 might engage similar catches 61,
 110 projecting in reversed position from them, as shown in Fig. 10, and in which case these catches 61 would be the mechanical equivalent of openings 26, or, as shown in same figure, catches 25 might be on latch-bar 27, as
 115 shown at 61 in Fig. 10, and openings 26 might be in the first upright bar of the door, which, however, would be a mere reversal of the same parts, as shown and claimed. In this latter case unless the door is solid it becomes
 120 necessary to provide a casing 62 to inclose the projecting catches, so as to prevent access thereto.

To facilitate the movement of the latch-bars and so hold them in place, links 63 might
 125 be used, pivotally connected to them and to the inside of the hollow post, as shown in same figure.

Having described our invention, we claim as new—

1. In operating means for closing cell-doors, the combination with a number of sliding doors, of a sliding bar supported above them, downwardly-projecting lugs 17 on this latter,

one for each door, the upper parts of these latter and said lugs extending into each other's paths, a lever to shift this bar for the purpose of moving the doors into their closing position and locking means operating automatically when the doors arrive in their closed position for the purpose of holding them in such position.

2. In means for operating cell-doors, the combination of a number of sliding doors, a sliding bar supported above and provided with projections adapted to enter into operative connection with the door, a lever to shift this bar for the purpose of moving the doors, slots at the free forked end of this lever, a nut thereat having laterally-projecting pins which engage these slots, a screw-shaft on which this nut is mounted and means to rotate this screw-shaft for the purpose of manipulating the lever.

3. In operating means for cell-doors, the combination with a number of sliding doors, of means to move them, a lever to operate these means, a nut at the free end of this lever, a screw-shaft on which this nut is mounted, a closable case whereby access to this screw-shaft may be prevented, and a crank-handle to rotate this latter, the same being connected to this screw-shaft with an articulated joint to permit of the same being turned into the inclosing case after use.

4. In means for locking cell-doors, the combination of a latch-bar supported so as to be capable of a limited movement in a vertical direction behind one of the door-jambs, it being free to drop to its lowest position which it normally occupies and having openings with inclined surfaces at their upper edge, catches with notches also inclined at their outer edges projecting from that edge of the door which in closing, approaches the door-jamb mentioned and in which position said catches are adapted to enter the openings in the latch-bar, the inclined surfaces at the upper edge of the catches being normally in line with the inclined surfaces at the upper edge of said openings, so that said entrance requires a raising of the latch-bar caused by the engagement of the inclined surfaces which enables the latch-bar to drop into the notches of the catches after these latter have entered the openings in the former.

5. In means for locking cell-doors, the combination of a hollow post, a sliding door supported so as to have a movement to or from this post, a latch-bar inclosed by this latter and supported so as to be free to drop with a limited vertical movement, notched catches projecting from that edge of the door which, when closing, approaches the hollow post, openings in the side of this latter next to this approaching door edge to permit said catches to pass through, and openings in the latch-bar, back of this side of the post to permit said catches to enter for the purpose of engaging the latch-bar.

6. In means for locking and unlocking a

number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported latch-bar for each of these latter, free to drop, with a normal tendency to occupy its lowest position and having openings adapted to receive the catches and by dropping into the notches of these latter when the doors are completely closed, holds them locked and means operating to simultaneously raise the dropped latch-bars to unlock the doors.

7. In means for locking and unlocking a number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported latch-bar for each of these latter, free to drop, with a normal tendency to occupy its lowest position and having openings adapted to receive the catches and by dropping into the notches of these latter when the doors are completely closed, holds them locked and means operating to hold these latch-bars in this locking position or to raise them to unlock the doors.

8. In means for locking and unlocking a number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported latch-bar for each of these latter, free to drop, with a normal tendency to occupy its lowest position and having openings adapted to receive the catches and by dropping into the notches of these latter, when the doors are completely closed, holds them locked, means to simultaneously move all open doors into such closed position and means operating to simultaneously raise the dropped latch-bars to unlock the doors.

9. In means for locking and unlocking a number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported latch-bar for each of these latter, free to drop, with a normal tendency to occupy its lowest position and having openings adapted to receive the catches and by dropping into the notches of these latter, when the doors are completely closed, holds them locked, a sliding bar and means operatively connecting it with the upper ends of the latch-bars whereby these latter may be raised to unlock the doors.

10. In means for locking and unlocking a number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported and vertically-movable latch-bar for each door having openings adapted to receive the catches and by dropping into the notches of these latter, when the doors are completely closed, holds them locked, a sliding bar adapted to engage the upper parts of all the doors and operating to move all open doors into such closed position and an additional sliding bar operatively connected to the upper ends of the latch-bars, whereby these latter may be manipulated to unlock the doors.

11. In means for locking and unlocking a number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported latch-bar for each of these latter, free to drop, with a normal tendency to occupy its lowest position and having openings adapted to receive the catches and by engaging the notches in these latter, when the doors are closed, holds them in such closed position, a sliding bar supported to have a reciprocatory movement past all latch-bars and close to them, a projection on one and an inclined cam-surface on the other whereby, when these two engage each other, the latch-bars may be raised.

12. In means for locking and unlocking a number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported and vertically-movable latch-bar for each door having openings adapted to receive the catches and by engaging the notches in these latter, when the doors are closed, holds them in such closed position, levers at the upper end of each latch-bar, a sliding bar supported to have a reciprocatory movement past all these levers and projections on this bar whereby, when engaging the levers mentioned, the latch-bars may be manipulated.

13. In means for locking and unlocking a number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported latch-bar for each of these latter, free to drop, with a normal tendency to occupy its lowest position and having openings adapted to receive the catches and by engaging the notches in these latter when the doors are closed, holds them in such closed position, levers pivotally supported between their ends and connected with one of their free ends, one to each latch-bar, a sliding bar having projections and supported so as to permit of it being moved to bring these projections either under the connected or free ends of the levers mentioned, whereby in the first case the end connected to the latch-bars is raised and in the other case the lever is prevented from moving.

14. In means for locking and unlocking a

number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported latch-bar for each of these latter, free to drop, with a normal tendency to occupy its lowest position and having openings adapted to receive the catches and by dropping into the notches of these latter, when the doors are completely closed, holds them locked, and means operating to positively hold the latch-bars in their locked position.

15. In means for locking and unlocking a number of cell-doors, the combination of notched catches projecting from one of the edges of each door, a vertically-supported and vertically-movable latch-bar for each door having openings adapted to receive the catches and by dropping into the notches of these latter, when the doors are completely closed, holds them locked, means operating to simultaneously raise the dropped latch-bars to unlock the doors, an independent lock for each one of these latter, whereby any door may be kept locked, irrespective of the general locking and a projection on each latch-bar adapted to be engaged by the bolt of this independent lock, whereby any latch-bar may be independently raised to unlock the particular door independent of the general unlocking.

16. In means for locking and unlocking cell-doors, the combination of notched catches projecting from one of the edges of each door, a hollow jamb-post formed of two connected channel-irons, one of which between its flanges, receives the edge of the door when the same is closed, openings in the web of this channel-iron to permit the catches on the door to pass through, a vertically-supported and movable latch-bar supported within this hollow post and having openings adapted to receive the catches after they have passed through the openings in the jamb and by engaging these latter, holds the doors closed.

In testimony whereof we hereunto set our hands in the presence of two witnesses.

RICHARD C. STEWART, JR.

WALLACE A. STEWART.

Witnesses:

C. SPENGEL,

ARTHUR KLINE.