May 9, 1933. H. D. GARBER 1,908,234

OPPOSED DOOR JAIL CONSTRUCTION

Filed April 22, 1932 2 Sheets-Sheet 1

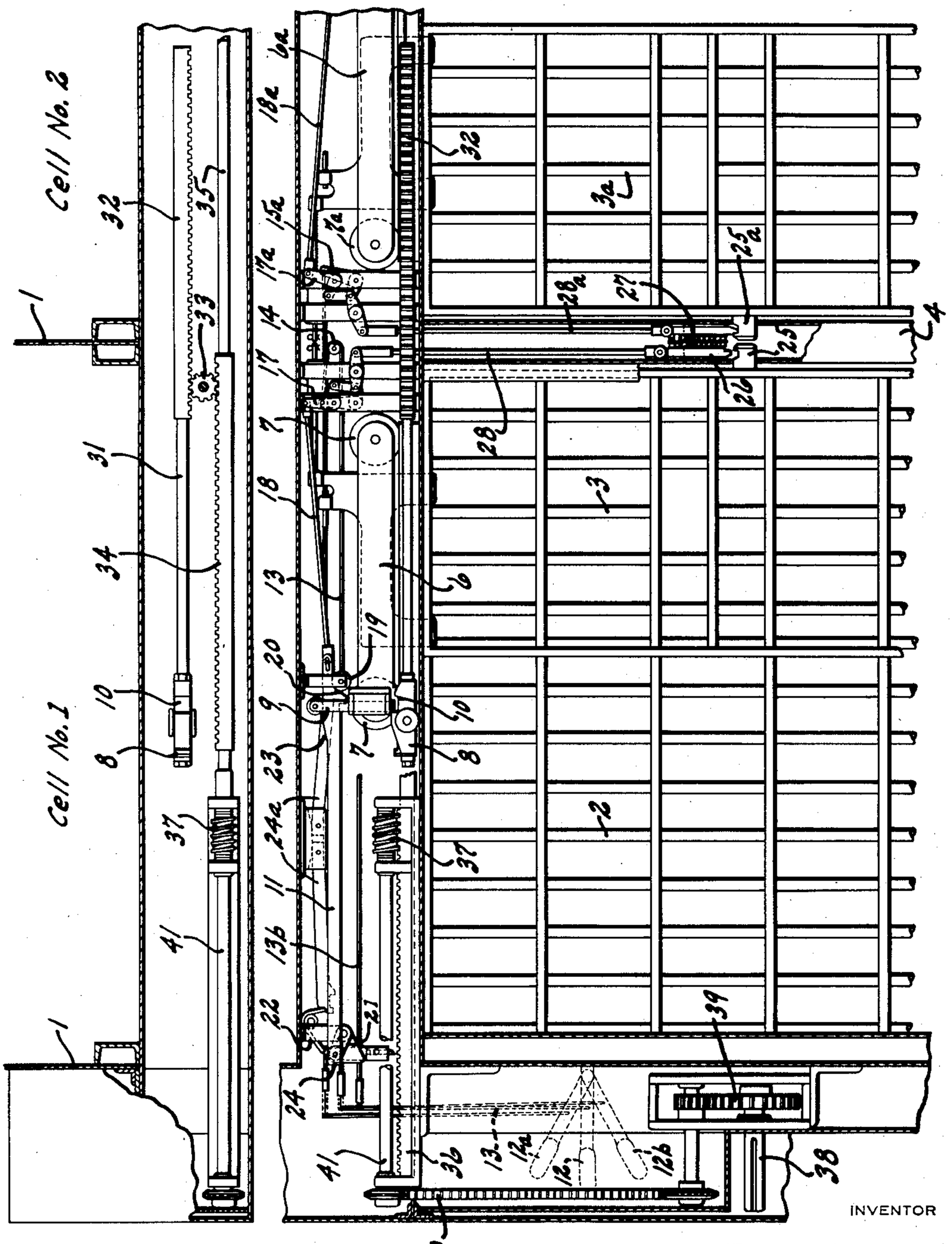

Fig. 2 Fig. 1

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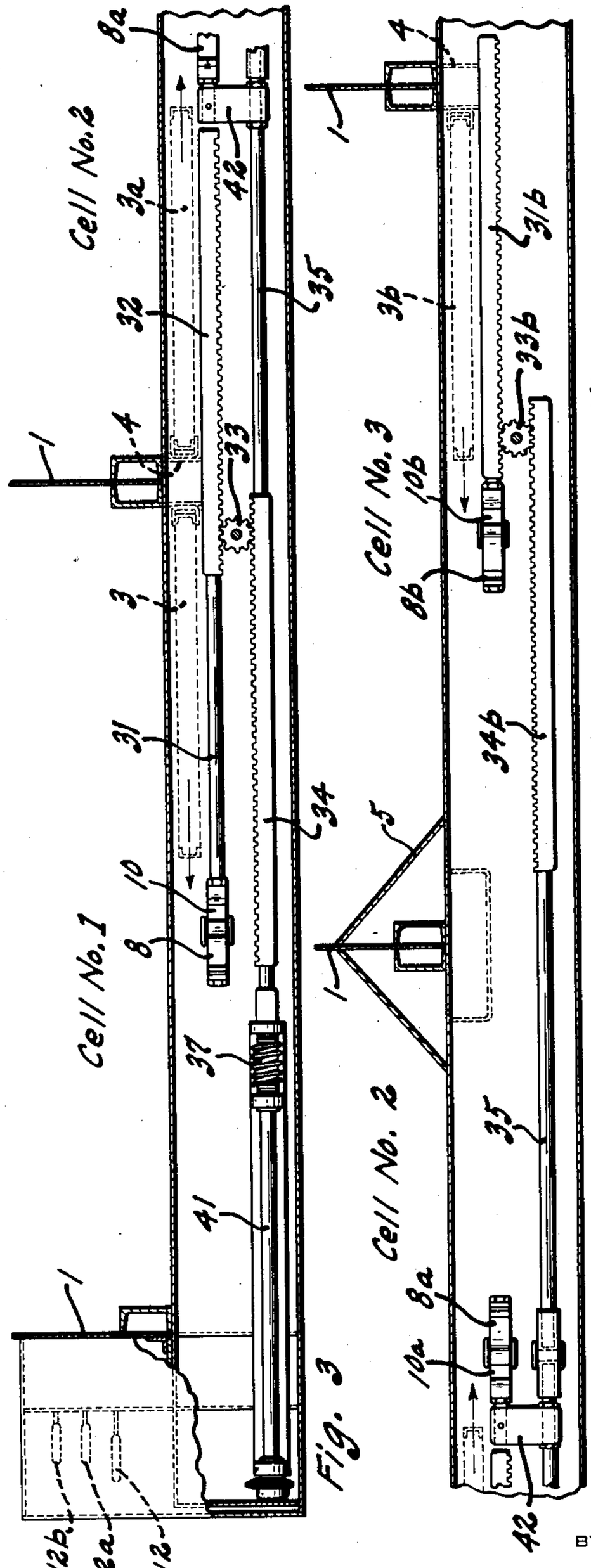

Fig. 3

Fig. 3a

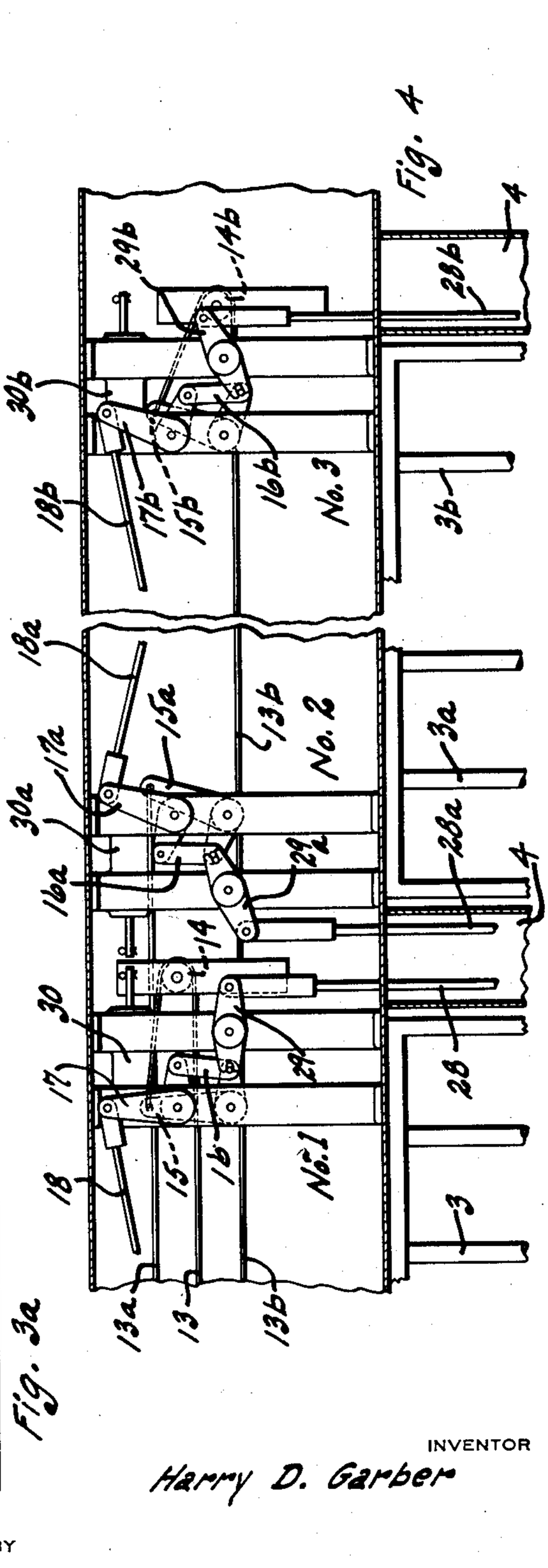

Fig. 4

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UNITED STATES PATENT OFFICE

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OPPOSED DOOR JAIL CONSTRUCTION

Application filed April 22, 1932. Serial No. 606,819.

This invention relates to jail construction of the type characterized by a row of cells having sliding doors. In some such installations it is desirable that the cells have left and right relation as to their doors, so that only alternate pilasters need be enlarged to accommodate plumbing connections. This makes it preferable that the doors of adjacent cells open and close in reverse directions.

A contemporary requirement in the art is provision for controlling all of the doors of the row from a removed location as at the end of the row, whereby an operator at such location may at his will open, close, and lock in open and closed position, any or all of the doors, and at such location may at all times be informed of the position and condition of each door.

The principal object of this invention is to provide such control of doors having the described left and right relation in a row of cells.

Other objects are to accomplish this purpose by novel and improved means as will appear.

The exact nature of this invention together with further objects and advantages thereof will be apparent from the following description taken in connection with the accompanying drawings in which Fig. 1 is a view generally in front elevation of an adjacent pair of cells in a row, parts being removed and others broken away to show details of construction, the doors being shown in closed position, that of the first cell being unlocked and that of the second cell locked; Fig. 2 is a detail showing in plan view certain of the door-actuating parts appearing in Fig. 1; Fig. 3 is a view following that of Fig. 2 but illustrating the relation of the parts shown in a three cell row, Fig. 3*a* being a continuation of Fig. 3; Fig. 4 is an enlarged detail in elevation of lock-controlling parts of the doors of the three cells, the positions of the parts being those wherein the first door is unlocked, the second door locked closed and the third door locked open.

With reference now to the drawings, cells Nos. 1, 2 and 3 are the first three cells of a row which may include any plurality, facing in a common direction, all usually adjacent as indicated so that the cells are separated only by partition walls 1. Each cell has a grill 2 extending partially across its front face, leaving an entrance opening to be controlled by a door 3. Pilasters 4 are disposed at the intersections between the partition walls and the cell front wall, and pipe shafts 5 may be provided at alternate of these intersections as indicated Fig. 3*a*, to enclose plumbing, etc. Each door 3 is carried upon a hanger 6 having rollers 7 movable upon a way to open from and close against the smaller pilaster 4 of its cell. In other words the doors are of the sliding type, mounted for movement in a common plane, generally that of the common front wall of the row of cells. The opening of each cell to be controlled by its door is located adjacent the near small pilaster 4. Consequently each pilaster 4 constitutes the abutment against which a pair of doors close, and the doors of an adjacent pair of cells have opposite opening and closing directions. Thus in Fig. 1 the door 3 of cell No. 1 closes to the right and the door 3*a* of cell No. 2 closes to the left.

Considering now only the first door 3, of cell No. 1, a gap nut 8 is provided for its actuation. This gap nut is arranged for operator-controlled movement along a way corresponding to that of the door. Connection of the door with the gap nut, that the former may be caused to follow the latter, is had by a latch bolt 9 carried by the hanger 6 and vertically movable thereupon, and engageable, dependent upon its vertical adjustment, in a notch 10 in the gap nut. Such adjustment of the latch bolt 9 is had by its support upon a latch bolt bar 11 along which the latch bolt moves with the door. The latch bolt bar is under the control of an operator at a removed location by manipulation of a lever 12 preferably located at the end of the cell row as is usual in the art and as shown Figs. 1 and 2. The connection between the lever 12 and its latch bolt bar 11 includes a cable means 13 leading, with a reversing effect provided by the roll-

er 14 of fixed pivot, to an arm of the bell crank 15. This bell crank 15 has connection by a link 16 with a second bell crank 17 which in turn has connection by a link 18 with the latch bolt bar 11. The latch bolt bar is carried at one end upon a roller 19 and has a cam surface 20 cooperable therewith. At its opposite end the latch bolt bar has connection by a link 21 with a bracket 22. It will be evident that the arrangement is such that as the lever 12 is moved downwardly the latch bolt bar 11 will be moved to the right Fig. 1, and as the latch bolt bar is thus moved it will be caused to rise and thus raise the latch bolt 9 regardless of the position of the door 3 along its way. In fact the general arrangement and operation of the parts just described, by which the latch bolt bar is controlled, is identical with that disclosed more in detail in my joint application with Walter Wm. Meier, Serial No. 592,504, filed February 12, 1932, with the exception that for this door 3 of the No. 1 cell, in this application parts are reversed left and right and the motion of the line 13 is reversed by its bend about the roller 14.

The lever 12 has three positions as indicated, as consequently does the latch bolt 9. In its lowermost position the latch bolt is fully engaged in the notch 10 of its gap nut 8 so that the door is positively connected with the latter for movement in either opening or closing direction. Also, in this position of the latch bolt, if the gap nut has been removed to the left, Fig. 1, before lowering of the latch bolt, subsequent motion of the gap nut to the right will cause latching of the latch bolt in the notch 10 because of the cam surface illustrated at the right-hand end of the gap nut. It will be apparent that when the door is closed and the gap nut is in its extreme right-hand position, the door will be locked thereby against opening. Thus, uppermost position of the lever 12 corresponds with locked closed position of the door, if the gap nut be at the closed end of its stroke.

In the intermediate position of the handle 12 and latch bolt 9, which is that illustrated for door 3 of cell No. 1 in Figs. 1 and 4, the latch bolt is raised sufficiently to clear the gap nut on one side of its notch 10 but not to clear in the other direction, the latch bolt having uneven projections on the opposite sides of its notch, as illustrated Fig. 1. In this position of the latch bolt, therefore, motion of the gap nut 8 in closing direction will close the door but motion in the opposite direction will not cause the door to open. Also, if the door be open and the gap nut to the right thereof, gap nut motion to the left sufficient to pass the latch bolt, followed by door closing motion will close the door owing to the latching effect provided by the cam surface shown at the left end of the gap nut.

When the lever 12 is moved to lowermost position the latch bolt 9 is in uppermost position, one wherein it entirely clears the gap nut 8 regardless of the position of the latter, so that so far as the gap nut is concerned the door is free to be opened or closed by hand.

The latch bolt bar 11 is provided with a cam riser at 23 whose function it is to raise the latch bolt 9 one step above that corresponding to the setting of the lever 12, as the door closes. Thus if the lever 12 is in intermediate position and the door be closed, the latch bolt will be automatically raised to allow return or opening motion of the gap nut without, however, affecting the door.

The door-controlling mechanism may preferably include the structure illustrated at 24 and at 24*a*, forming no part of this invention, but fully illustrated and described in Patent No. 1,811,246, issued June 23, 1931, to Shank et al., and in Patent No. 1,665,243, issued April 10, 1928, to Whitehouse, respectively.

That the door may be locked in closed position it is provided with a tongue 25, the pilaster 4 is provided with an opening to receive this tongue, and a lock bolt 26 is mounted in the pilaster for vertical motion to engage the tongue 25 by a notch provided in the latter. The bolt 26 has an associated spring 27 yieldably urging the bolt to locking position, and the bolt and tongue are chamfered as indicated Fig. 1, to have latching engagement.

The bolt 26 is associated with the mechanism which controls the latch bolt bar 11, so that manipulation of the lever 12 controls the lock bolt 26 as well as the latch bolt 9. As here shown such mechanism comprises a pull rod 28 and lever 29 arranged to receive motion from the bell crank 15 such that as the latch bolt bar 11 is raised the lock bolt 26 is lowered. The proportion and arrangement of the parts is such that only when the lever 12 is in uppermost position will the lock bolt 26 be in position to engage the tongue 25 of the door. That the lever may not be raised to this position to indicate the locking of its door, unless and until the door be entirely closed and thus actually locked, mechanism generally indicated at 30 and completely disclosed (Fig. 7) in the said copending joint application, is preferably provided.

The door 3*a* of cell No. 2 is provided with control mechanism to be actuated by the lever 12*a* adjacent the lever 12, and similar in every respect to the mechanism for the door 3 with two exceptions: First, the parts for the door 3*a* are in right-hand relation to the left-hand relation of the parts for the

door 3. Second, the cable connection 13*a* goes directly to the bell crank lever 15 instead of by way of a roller such as at 14.

The door 3*b* of the third cell has control mechanism exactly similar to that of the door 3 of the first cell, the cable 13*b* controlled by a third lever 12*b* passing over the roller 14*b* before attachment to the corresponding bell crank 15*b*.

Thus it will be apparent that similar manipulation of the levers 12 will effect similar results as to the doors controlled by the levers.

What remains to be described is the arrangement and manner of actuation of the gap nuts 8 of the several doors. Obviously the gap nuts of the left-hand doors must move in opposite directions to those of the right-hand doors if the doors are to be simultaneously moved with similar effect.

The gap nut 8 of the door 3 of the first cell has a rigidly associated pull bar 31 as is usual in the art. But this pull bar does not extend to the operator's station as heretofore. Instead, it extends in the opposite direction and is provided with a rack 32 meshing with an idler pinion 33. The pinion 33 in turn meshes with a rack part 34 on a pull bar 35. This pull bar 35 is a master pull bar and extends along the cell front wall of the row of cells, and to the operator's station where it has an actuating rack part 36 engaged by an actuating worm 37. The worm in turn is controlled by a shaft 38, through gearing indicated at 39, chain 40 and shaft 41. The arrangement of these last described parts, whereby the master pull bar 35 may be moved endwise along the cell fronts, is more fully described and illustrated in the copending application to which reference has been made. It will be apparent from Figs. 2 and 3 that when the master pull bar is moved in one direction the pull bar 31 of the gap nut 8 will be moved in the opposite direction. The pull bar 31 may thus be considered a reverse pull bar, individual to its door 3.

The gap nut 8*a* of the door 3*a* of the second cell is to have motion opposite to that of the gap nut 8 of the first door. Since the doors are to be arranged in a common plane, the gap nuts should be arranged in a line to have movement therealong. Consequently the gap nut 8*a* of the second door 3*a* is secured with the master pull bar 35 to move therewith, but is offset therefrom as by a bracket 42 into alignment with the gap nut 8.

The gap nut 8*b* of the door 3*b* of the third cell of the row, has actuation through a reverse pull bar 31*b* actuated from the master pull bar by an idler pinion 33*b* in a manner similar to that by which the gap nut 8 of the first door has actuation, the gap nut 8*b* of the third door being aligned with the gap nuts of the other doors. From what has been described it will be apparent that the gap nuts of the left-hand doors have simultaneous motion with those of the right-hand doors but in the opposite direction. Thus those of the doors which have engagement with their gap nuts may be together either opened or closed, although they actually move in opposite absolute directions, by motion of the master pull bar which is under the control of the operator.

The result of the entire arrangement described will be that although the cell row includes left and right hand door arrangements, nevertheless, so far as the operator is concerned his control of the doors is exactly the same as though all were identically disposed. He can open all, close all, lock and unlock all, or similarly control any individually, by similar manipuation of his control handles, without attention to or even knowledge of whether any particular door happens to be a left-hand one or a right-hand one.

What I claim is:

1. In a jail construction including a pair of adjoining cells, sliding doors therefor arranged to close in opposite directions, means for controlling said doors from a common location, said means including a pair of door-actuating gap nuts, one for each door, means interassociating said gap nuts for simultaneous motion in opposite directions by a common actuator, and means for selectively coupling each door with its gap nut, from said location.

2. In a jail construction including a pair of cells having sliding doors arranged to close in opposite directions, a master pull bar arranged for movement along said cells, said pull bar and one of said doors having cooperative means adapted to impart the pull bar motion to the door, a pull bar for the other door arranged for movement in the directions of that of said master pull bar, said second door and its pull bar having cooperative means adapted to impart the motion of said second pull bar to said second door, and means associating said second pull bar with said master pull bar for actuation of the former by the latter in the reverse direction.

3. In a jail construction including a pair of cells having sliding doors arranged to close in opposite directions, a master pull bar arranged for movement along said cells, said pull bar and one of said doors having cooperative means adapted to impart the pull bar motion to the door, a pull bar for the other door arranged for movement in the directions of that of said master pull bar, said second door and its pull bar having cooperative means adapted to impart the motion of said second pull bar to said second door, and means associating said second pull

bar with said master pull bar for actuation of the former by the latter in the reverse direction, said means comprising rack parts on said pull bars and gear means therebetween.

4. In a jail construction including a row of cells each having a sliding door, a master pull bar arranged for movement along said row, said pull bar and some of said doors having cooperative means adapted to impart the pull bar motion to the latter, another door having a reverse pull bar arranged for movement in the directions of that of said master pull bar, said other door and its pull bar having cooperative means adapted to impart the reverse pull bar motion to said other door, said reverse pull bar having means associating it with said master pull bar for actuation thereby but in the reverse direction.

5. In a jail construction including a row of cells each having a sliding door, a master pull bar arranged for movement along said row, said pull bar and alternate of said doors having cooperative means adapted to impart the pull bar motion to said alternate doors, intermediate doors having reverse pull bars arranged for movement in the directions of that of said master pull bar, said intermediate doors and their pull bars having cooperative means adapted to impart the reverse pull bar motion to said intermediate doors, each reverse pull bar having means associating it with said master pull bar for actuation thereby but in the reverse direction.

6. In a jail construction including cells having sliding doors arranged in a common plane to close in opposite directions, a master pull bar arranged for movement along said cells, said pull bar having an offset gap nut part for actuation of one of said doors, a pull bar for another door arranged for movement in the directions of that of said master pull bar, and having a gap nut part for actuation of said other door, said pull bars having their gap nut parts arranged to move along a common plane, and means associating said second pull bar with said master pull bar for actuation of the former by the latter in the reverse direction.

7. In a jail construction including cells having sliding doors arranged in a common plane to close in opposite directions, a master pull bar arranged for movement along said cells, said pull bar having a horizontally offset gap nut part for actuation of one of said doors, a pull bar for another door arranged for movement in the directions of that of said master pull bar, and having a gap nut part for actuation of said other door arranged to move in the plane of movement of the gap nut of said master pull bar, and means associating said second pull bar with said master pull bar for actuation of the former by the latter in the reverse direction.

8. In a jail construction including a row of cells each having a sliding door, a master pull bar arranged for movement along said row, said pull bar having an offset gap nut part for actuation of one of said doors, another door having a reverse pull bar arranged for movement in the directions of that of said master pull bar, and offset from the latter with a gap nut part arranged for movement in the line of that of the master pull bar gap nut part, and means between said pull bars interassociating them for actuation of the reverse pull bar, in the reverse direction by the master pull bar.

In testimony whereof I hereby affix my signature.

HARRY D. GARBER.