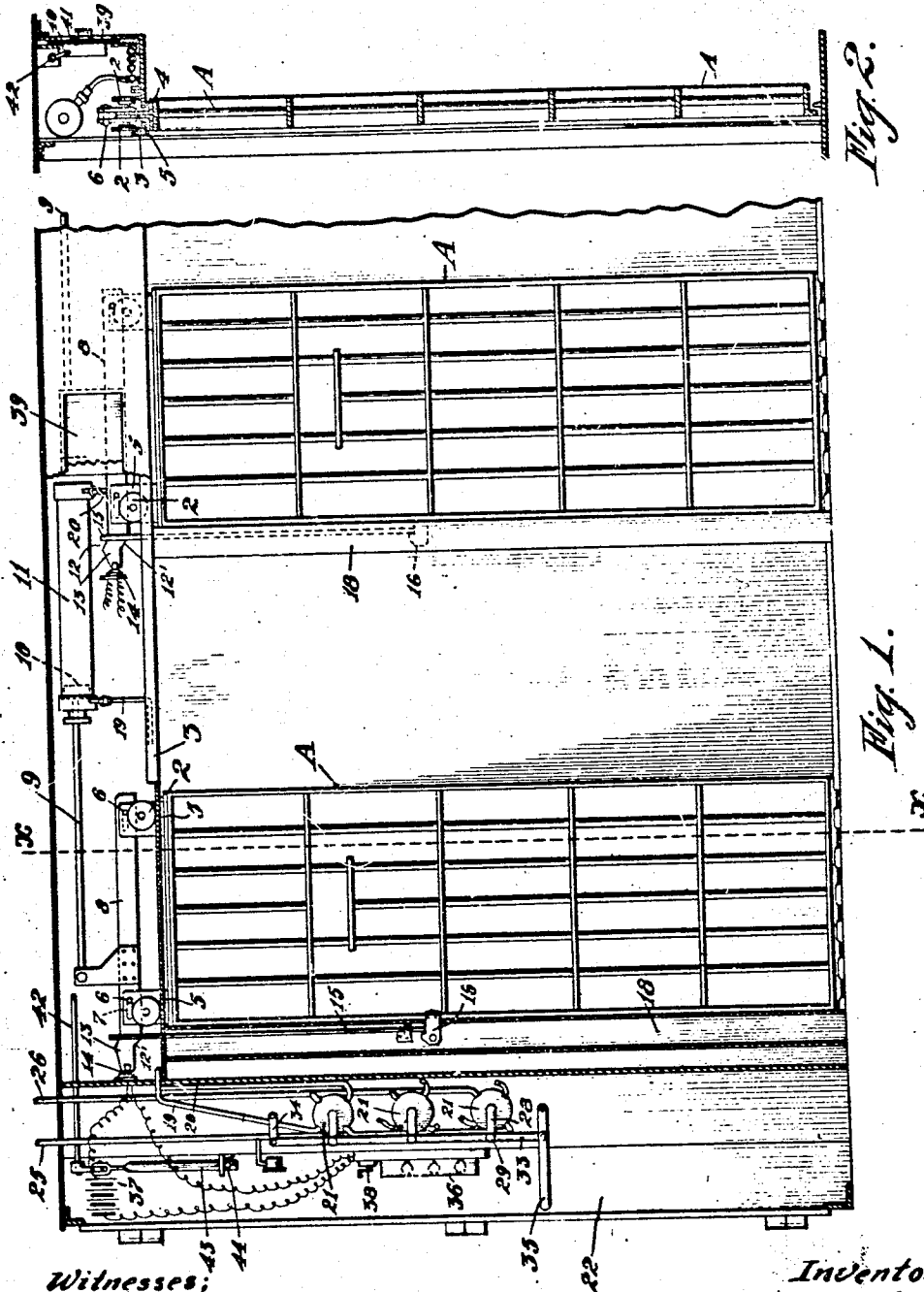


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JAIL DOOR OPERATING DEVICE.
APPLICATION FILED NOV. 18, 1909.

Patented May 24, 1910
2 SHEETS—SHEET 1.

959,329.



Witnesses:
R. S. Berry
Charles H. Berry

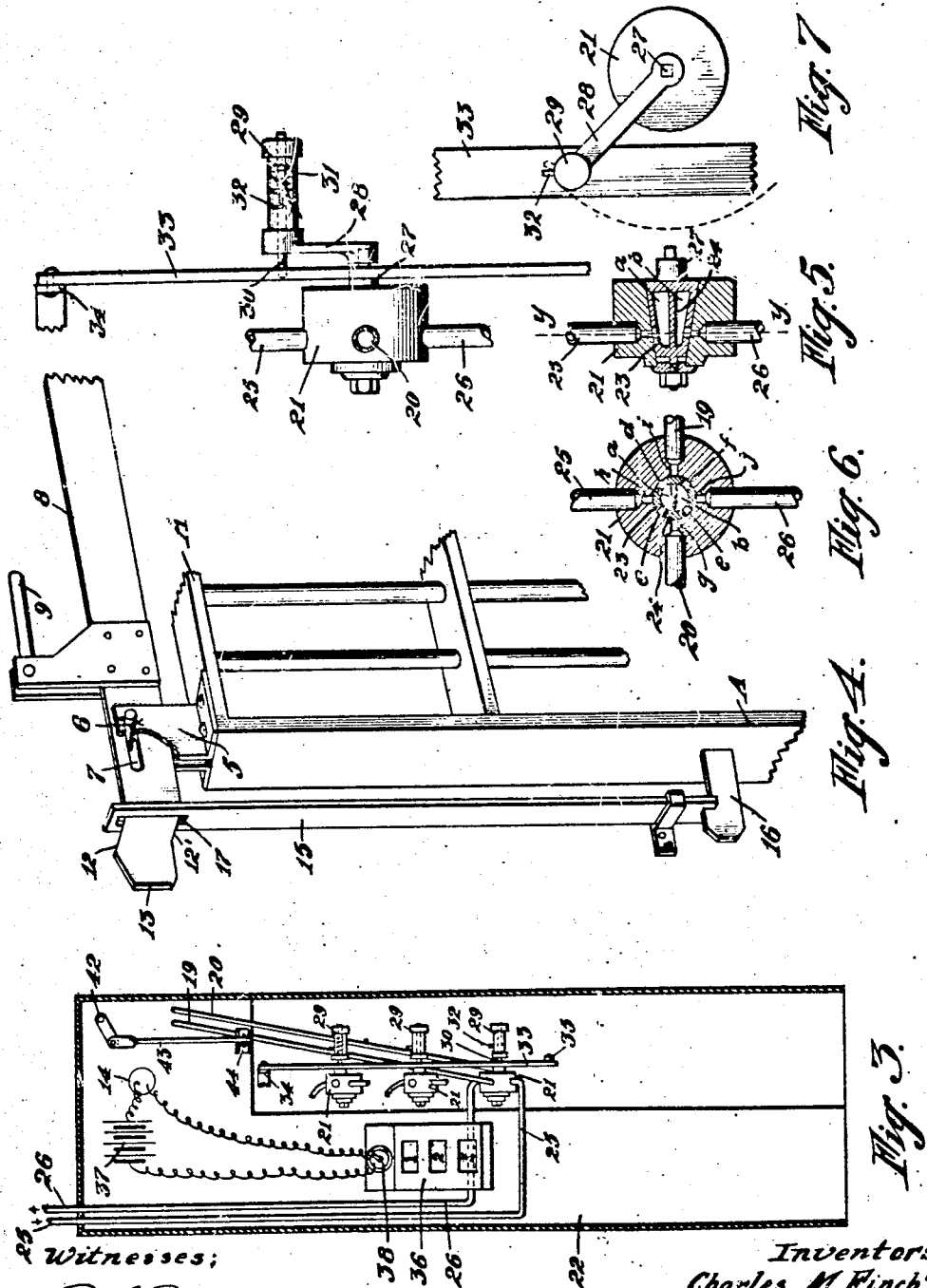
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By *G. H. Strong*
Their Attorney.

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His Attorney

UNITED STATES PATENT OFFICE.

CHARLES M. FINCH AND FREDERICK A. KOETITZ, OF SAN FRANCISCO, CALIFORNIA,
ASSIGNORS TO FINCH JAIL BUILDING AND METAL COMPANY, OF SAN FRANCISCO,
CALIFORNIA.

JAIL-DOOR-OPERATING DEVICE.

959,329.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed November 18, 1909. Serial No. 528,735.

To all whom it may concern:

Be it known that we, CHARLES M. FINCH and FREDERICK A. KOETITZ, citizens of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Jail-Door-Operating Devices, of which the following is a specification.

This invention relates to a jail door operating device, and particularly pertains to a mechanism for opening, closing and automatically locking cell doors.

It is the object of this invention to provide a jail door operating device by means of which the doors of cells may be opened, closed and locked from a point remote from the door itself.

A further object is to provide a cell door operating mechanism by means of which any one, or a number of cell doors in the prisoners' corridor, may be operated from the jailer's corridor, thus not necessitating the keeper entering the section reserved for prisoners.

Another important object of the invention is to provide means, in connection with the operating mechanism, by which the operator may be informed whether the cell doors are properly closed and locked, or not, and thus be warned in the event the door-operating mechanism is not working properly, or if any obstruction prevents the perfect closing and locking of a door.

By the arrangement and construction of the invention as later described, it will be impossible for a prisoner to operate a cell door from either the inside or the outside; neither can the door be prevented from closing without giving warning to the jailer, or an open door be closed by a prisoner.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a front elevation of the invention, showing the cell doors in the closed and locked position. Fig. 2 is a vertical section on the line $x-x$ Fig. 1. Fig. 3 is an end elevation showing the door-operating valves and signal-box. Fig. 4 is a detail in perspective of the jail-door locking and unlocking mechanism. Fig. 5 is an enlarged detail of the operating valves, in side elevation. Fig. 6 is a section on the line $y-y$ of

Fig. 5. Fig. 7 is a front view of an operating valve.

In the drawings, A is a cell door of any suitable design and construction, which is suspended from the bearings of rollers 2 adapted to travel back and forth on an overhead track 3. This track 3 is formed of angle irons extending with and above the door A, and slightly separated, as at 4, so as to form a narrow slot through which the suspending member 5 of the door A projects. Pins 6 in the upper part of the members 5 pass through longitudinal slots 7 constructed in a flat bar 8. The pins 6 ride in the slots 7, and connect the bar 8 with the door A, but in such manner that the bar 8 may be moved longitudinally the length of the slots 7 without affecting the door. A piston rod 9, provided with the usual piston 10, and adapted to be reciprocated in the cylinder 11, is secured to the bar 8 in such manner that as the piston 10 is moved backward and forward, as later described, the door A will travel therewith. The forward end of the bar 8 has its top and bottom faces inclined upwardly, as shown at 12--12', in Fig. 4, and has a projection 13 adapted to bear against an electric circuit closer 14, when the door A is in its closed and locked position. A locking bar 15, suitably mounted and guided in the door casing, has its lower end engaging with a notched bracket or latch 16, when the door A is closed, and is slotted at 17 in its upper end so as to slip upon and contact above and below the bar 8 at a point adjacent to the inclined surfaces 12--12'. The locking bar 15 is fixed against side movement, and as the bar 8 is moved back and forth, the locking bar 15 is raised and lowered by the action of the inclined surfaces 12--12' bearing in the slot 17. Thus, as the bar 8 is moved backward, the incline 12 contacts the bar 15 at the upper end of the slot 17, causing the locking bar 15 to move upward and out of the notched bracket 16. The bracket 16 is secured to and projects from the front edge of the door A, and is adapted to extend through a slot in the door jamb 18, when the door is closed.

The mechanism for operating the doors is constructed as follows: Each cell door in a chain or series, is fitted with the parts just described, the piston cylinders 11, on each door, having air conducting pipes

19—20 connected on each end, and run to any desired point, terminating in four-way valves 21. There is a separate valve 21 for each door, the number and location of the doors being immaterial, but where it is desired to operate a number of doors in series, the valves 21 are arranged preferably in a vertical line, in close proximity to each other, as shown in Figs. 1, 3 and 5, and inclosed in a suitable closet or cabinet 22, provided with doors and locks. The cabinet 22 is usually located in the jailer's corridor. The valves 21 consist of the usual casing in which is seated a hollow cone 23. A partition 24 divides the interior of the cone 23 into two chambers *a-b*, each chamber having two ports *c-d* and *e-f*, as shown in Fig. 6, adapted to register with ports *g-h-i-j* in the valve casing. The port *h* is open to an air supply pipe 25, leading to any suitable reservoir containing air under pressure. Port *i* is open to pipe 19, and port *g* is open to pipe 20, leading to the opposite ends of the cylinders 11. Port *j* is an exhaust port open to the atmosphere through pipe 26. The valve stem 27 is provided with a lever 28, on the outer end of which a hollow handle 29 is formed. A pin 30, mounted in the handle 29, normally projects through the lever 28 to engage a rocking bar 33, a spring 31 acting to retain the pin 30 in that position. A projecting peg 32 on the pin 30, extends through a slot in the handle 29, and is adapted to engage with notches in the side of the slot, so as to retain the pin 30 either in or out of engagement with the rocking bar 33. The rocking bar 33 extends along the side of the valves 21, and has a link bearing 34 at its upper end, and a hand lever 35 at its lower end; and is mounted in such manner that as the lever 35 is moved upward or downward, any number of valves 21 may be connected with the rocking bar 33, and will be operated simultaneously. If it is desired to operate the valves 21 separately, the levers 28 are disconnected from the rocking bar 33 by withdrawing the pin 30, and operating the selected valve by the handle 29. In like manner if it is desired to operate a number of valves and not the entire series, those that are not to be used are disconnected from the rocking bar as described, whereupon the remainder can be operated through the lever 35. As each lever 28 operates a door A, as will be later described, it is apparent that any one or number of doors in a series, may be opened and closed from the jailer's cabinet 22, at the will of the operator.

For the purpose of determining whether or not the cell doors are properly closed, an ordinary electric call system, such as are in common use in hotels, offices, etc., is employed. The detailed construction of such a system is too well known to require a full

description in this case, as any suitable system may be used that may be found necessary. In the drawings we have shown an indicator 36 located in the jailer's cabinet, and is represented as having transparent sections, numbered to correspond with the doors in the series. Incandescent electric lamps are placed behind each section, and are connected with a battery 37, and the contact springs 14 in such a manner that as the bar 13 touches the contact 14 a circuit is completed from the batteries, causing the light corresponding to the push-button pressed to glow in the indicator. The projection 13 on the bars 8 constantly bears against the contact springs 14, when the doors are closed, thus causing the lights in the indicator to glow continuously, and when the doors are opened, the lights are extinguished. A switch 38 is provided whereby the current from the battery may be shut off after the doors are closed, if desired.

In operation, to open any one, or a number of cell doors from the jailer's cabinet, the valve levers 28 on the valves selected, are connected to the rocking bar 33 as before described. An upward pull on the lever 35 throws the port C in the valve cone in alignment with the port *h* which is open to an air supply; the port *d* will then register with the port *i* open to the pipe 19 leading to the forward end of the piston cylinder 11. This causes the piston 10 to be forced back, the air behind the piston escaping through the pipe 20, ports *g* and *e* in the valve 21, and exhausting through ports *f* and *j*. As the piston moves backward, the bar 8 travels therewith, thus lifting the locking bar 15 out of engagement with the notched bracket on the door A, as before described. The slot 7 in the bar 8 permits of the bar moving independent of the door until the locking bar is released, whereupon the pin 6 is engaged by the bar 8 so as to roll the door A backward in unison with the travel of the piston 10. The doors are closed by reversing the operation just described, and turning the valve cone so that air pressure will pass through ports *h-d* and *e-g*, through pipe 20, to the rear of the piston cylinder, the air in the forward end exhausting through pipe 19, and ports *i-f* and *e-j*.

While the doors are open they are held in a fixed position by the air pressure in the forward end of the cylinder, until the operation for closing the door begins. The locking bar 15 is raised by means of the projection 13 on the bar 8 so as to drop into the notched bracket 16 as the door A closes.

The piston cylinders 11, and the immediate connections above the doors, are suitably incased in a steel box or housing, to which access is obtainable only through sliding doors 39. The doors are locked by means of a projecting stud 40 engaging with

a stop 41 on the door. The stud 40 is mounted on a shaft 42 which extends to the jailer's cabinet, and is operated by means of a lever 43 normally locked against movement by a pin 44, or other suitable means. By operating the lever 43, the shaft 42 may be rotated so as to throw the stud 40 out of engagement with the stop 41, so that the door 39 may be slid open to give access to the interior of the housing.

All of the operating mechanisms are suitably incased so as to be accessible only to those in authority.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

1. The combination in a door actuating device, of a slidable door, a slidable bar to which the door is connected, said bar having a longitudinal slot and said door having a part engaging the same, fluid pressure devices for operating the bar, and connections between the bar and the door lock for operating the latter during the movement of said bar.

2. The combination in a door actuating device, of a plurality of guided, slidable doors, arranged substantially in the same plane, means for simultaneously locking and unlocking said plurality of doors, longitudinally slotted bars connected to the doors, fluid pressure cylinders with pistons and piston rods for operating the bars, and intermediate connections between the bars and the doors whereby each door is first unlocked and then opened.

3. The combination in a door-actuating device, of a plurality of guided, slidable doors, independent fluid pressure cylinders, pistons, and rods, slidable bars with which the rods are connected, connections between said bars and the doors, and locking devices actuated by the bars.

4. The combination in a door-actuating device, of a plurality of guided, slidable doors, longitudinally slotted bars, fluid pressure cylinders and connections by which the bars may be moved, pins carried by the door hangers and adapted to engage the slots of the bars, locking devices, and means whereby the bars first actuate said locking devices, and subsequently move the doors.

5. The combination in a door-actuating device, of guided, slidable doors, longitudinally slotted bars, and pins carried by the doors entering the slots, fluid pressure motors connected to move the bars, latches carried by the doors and vertically guided, slidable bolts engageable with the latches, angular extensions on the bars, and a slot formed in the bolts and engaging said extensions.

6. The combination in a door-actuating device, of slidable doors, latches therefor, vertically slidable bolts engageable with the

latches, and having a slot formed therein, horizontally slidable bars having angular inclines coacting with the slot to operate the bolts, reciprocating fluid-pressure engines connected with the bars, said bars having open slots, and pins connected with the door hangers, and engaging with the slots.

7. The combination in a door actuating device, of a plurality of slidable doors, with latches and locking bolts, slidable bars with mechanism for successively unlocking and opening the doors, fluid pressure cylinders, pistons, and rods connected with the slidable bars, valves connected with each cylinder, connecting levers and rocking bar to open and close the valves, and means to engage or disengage the valve controlling levers with the bar.

8. The combination in a door-actuating device, of a plurality of slidable doors, with independently operating fluid pressure cylinders, and intermediate connecting mechanism, rotary four-way valves for each cylinder, lever arms connected to open and close the valves, and means to engage or disengage any one or more of said levers.

9. The combination in a door-actuating device, of a plurality of slidable doors with independently operating fluid-pressure cylinders, and intermediate connecting mechanism, rotary four-way valves for each cylinder, lever arms connected to close the valves, a rocking bar with which each of the lever arms is detachably connected, and mechanism by which the rocking bar may be reciprocated.

10. The combination in a door-actuating device, of a plurality of slidable doors, with independently operating fluid pressure cylinders and controlling valves, means actuated from the cylinders to close and lock the doors, indicators and an electric connection, and contacts by which a circuit is completed by each door, when properly closed.

11. A locking device for doors, said device including a horizontally slidable and longitudinally slotted bar, a slidable door having a part operating in the slot of said bar, power devices connected with the bar for operating the same, said bar having a limited movement independent of the door, and a vertically movable locking bar, said slotted bar having a cam surface adapted to engage and lift the locking bar while the horizontal bar is moved the length of its slot and independent of the door so that a continuation of the movement of the bar opens the door.

12. In a locking device for doors, the combination with a slidable door, and a vertically moving locking bolt therefor, of a horizontally slidable bar, having a longitudinal slot, said door having a part engaging the said slot and thereby allowing the bar to be moved independently of the door

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for a limited distance, and said bar having
a cam surface for engaging the locking bolt
during the first movement of the bar to dis-
engage the bolt and permit the door to be
5 opened.

13. In a device for operating doors, hori-
zontal guides upon which the door is mov-
able, a horizontally slidable slotted bar with
cam surfaces, pins extending from the door
10 into the slots of the bar, a vertically mov-
able locking bolt adapted to be engaged by
the cam bar, said door pins allowing the

cam bar to be moved to disengage the bolt,
and afterward contacting with the end of
the slot to open the door.

In testimony whereof we have hereunto
set our hands in the presence of two sub-
scribing witnesses.

CHARLES M. FINCH.
FREDERICK A. KOETITZ.

Witnesses:

W. D. BELL,
C. F. MCCARTHY.