

(No Model.)

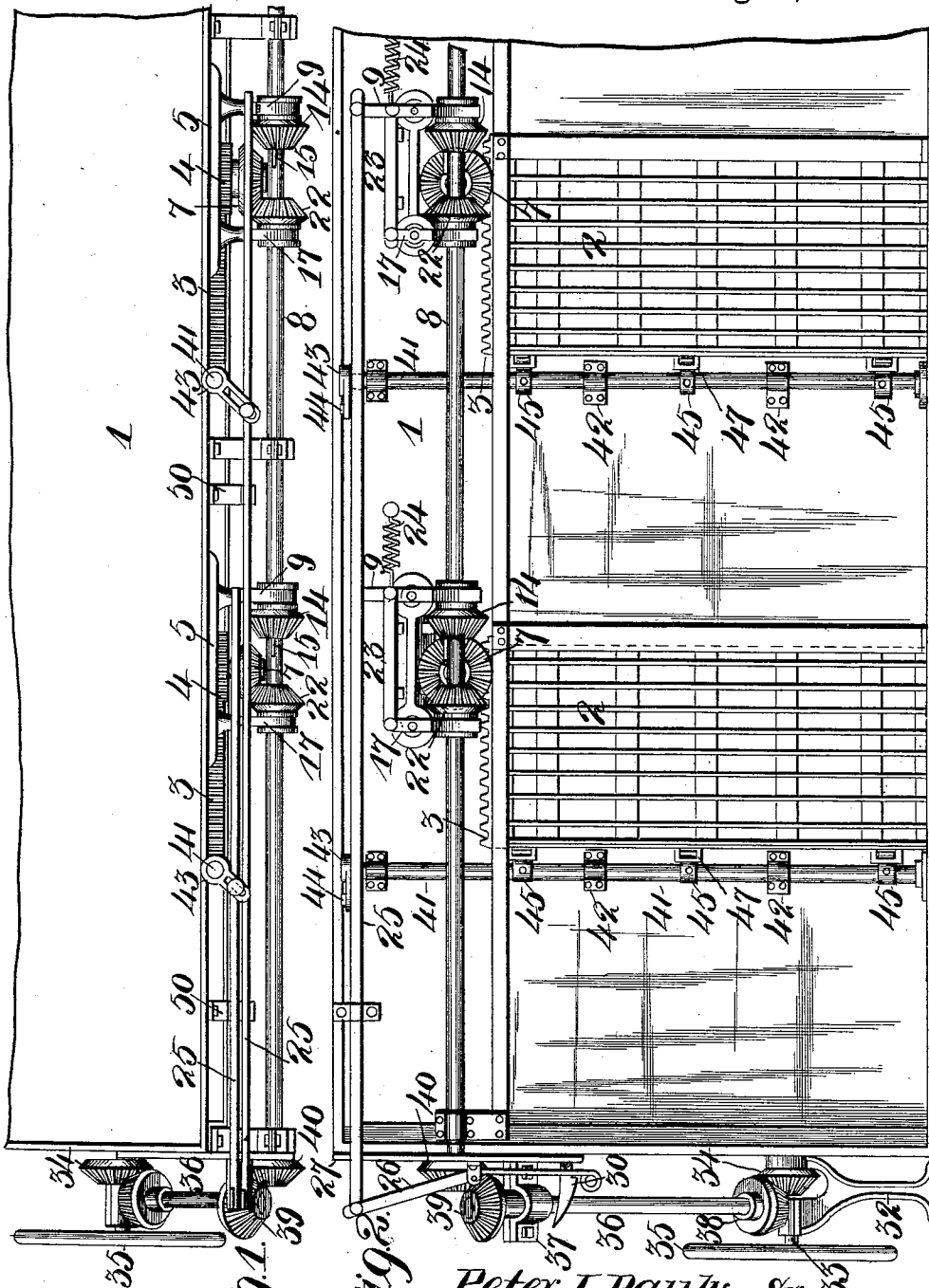
2 Sheets—Sheet 1.

P. J. PAULY, Sr. & P. J. PAULY, Jr.

MECHANISM FOR OPENING, CLOSING, AND LOCKING JAIL DOORS.

No. 480,476.

Patented Aug. 9, 1892.



Witnesses
D. S. Collier
A. A. Eicks

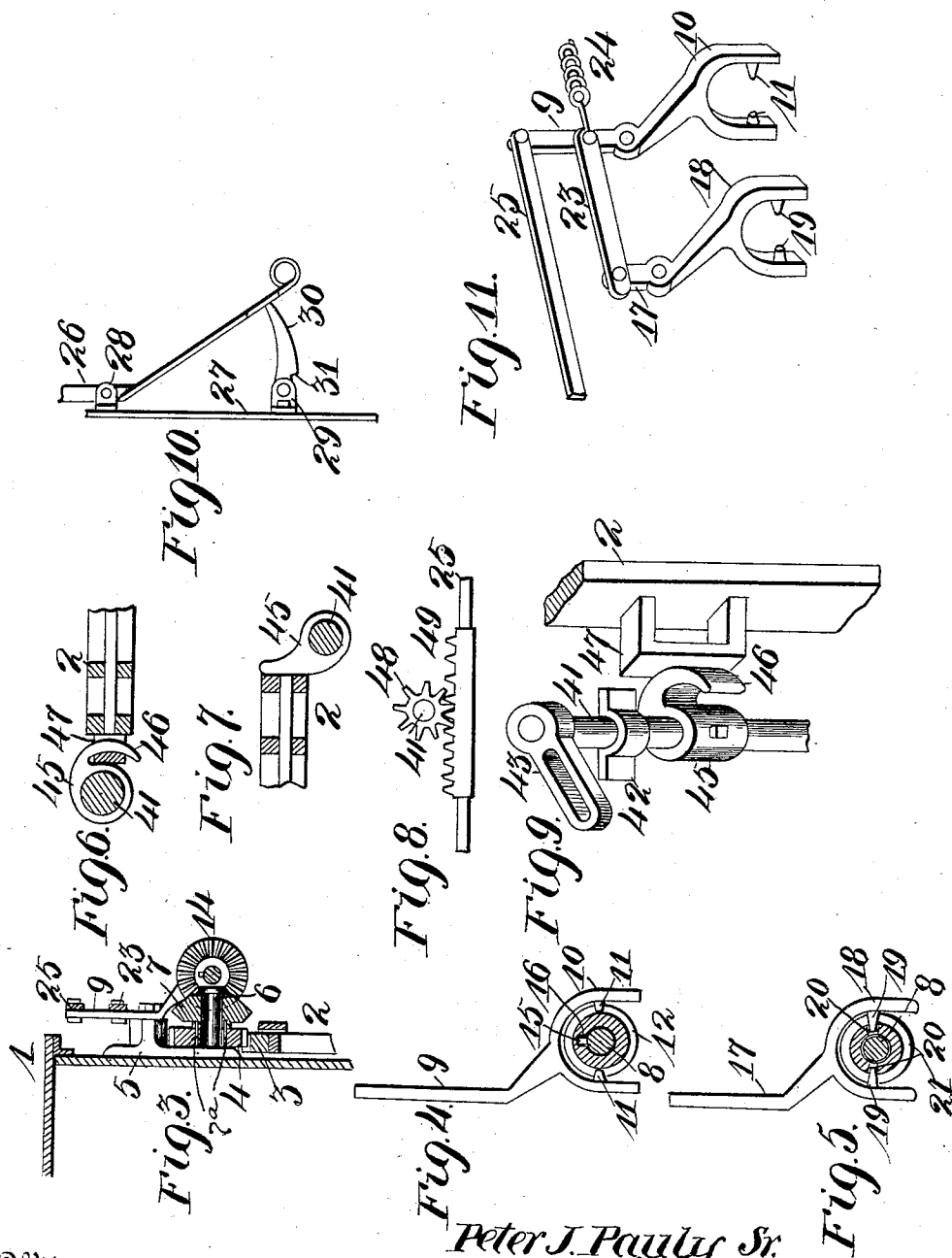
Peter J. Pauly Sr.
Peter J. Pauly Jr. Inventors

By their Attorneys
Higdon, Higdon & Longan

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UNITED STATES PATENT OFFICE.

PETER J. PAULY, SR., AND PETER J. PAULY, JR., OF ST. LOUIS, MISSOURI,
ASSIGNORS TO THE PAULY JAIL BUILDING AND MANUFACTURING COM-
PANY, OF SAME PLACE.

MECHANISM FOR OPENING, CLOSING, AND LOCKING JAIL-DOORS.

SPECIFICATION forming part of Letters Patent No. 480,476, dated August 9, 1892.

Application filed March 28, 1892. Serial No. 426,802. (No model.)

To all whom it may concern:

Be it known that we, PETER J. PAULY, Sr., and PETER J. PAULY, Jr., of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Mechanism for Opening, Closing, and Locking Jail-Doors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part
10 hereof.

Our invention relates to improvements in mechanism for opening, closing, and locking jail-doors; and it consists in the novel arrangement and combination of parts, as will be more
15 fully hereinafter described, and designated in the claims.

In the drawings, Figure 1 is a top plan view of a jail comprising two cells and mechanism co-operating with the same. Fig. 2 is a front
20 elevation of the same, showing the doors of the cells in a closed position and securely locked. Fig. 3 is a transverse vertical section taken through the gearing for operating the doors of the cells as attached to the cell. Fig.
25 4 is a side elevation of one of the forked levers, which shows the same in operative connection with the gearing for operating the cell-door. Fig. 5 is a similar view of the adjacent lever in connection with the gearing
30 for locking the cell-door against movement. Fig. 6 is a horizontal cross-section of a portion of one of the cell-doors and the operating-shaft, showing the cam carried thereby in engagement with said door for permanently locking
35 the same. Fig. 7 is a similar view showing a modification of my invention. Fig. 8 is a top plan view of the operating-shaft, to which the cams are attached, and gearing for operating the same, showing a modification of my
40 invention in this particular. Fig. 9 is a perspective view of a portion of the operating-shaft having one cam attached thereto and a portion of the cell-door in position to be engaged by said cam. Fig. 10 represents in side
45 elevation one of the levers for operating or shifting the gearing and the means for holding the same in a locked position, and Fig. 11 is a perspective view of the levers for shifting the operating-gearing and the several
50 parts attached thereto.

The various parts composing our invention

are especially constructed and designed to be used for opening, closing, and locking sliding cell-doors; but with some little modification the same would effectually operate in a like
55 manner in connection with swinging cell-doors.

Before proceeding to describe the invention it would be well to state that all of the mechanism for operating the cell-doors are located
60 in such a position upon the cells as to be readily covered by a suitable casing, which is not shown, thereby protecting the same from dirt or other accumulations, and, further, not accessible by the prisoner or an unauthorized
65 person.

Referring to the drawings, 1 represents a portion of a jail of the ordinary construction, which, as shown in the drawings, is composed of two cells, which are deemed a sufficient
70 number to thoroughly illustrate our invention.

For the sake of elucidation we shall only describe one cell-door and the means for operating the same, for the reason that all other
75 doors are similarly operated, or in other words, are merely a duplication.

2 represents a sliding cell-door, which is securely incased between suitable bars forming guides for the same.
80

3 represents a rack-bar, which is fixed to the top of the cell-door 2 in any mechanical manner, the teeth of which are adapted to mesh with the teeth of a gear-wheel 4, which operates to open and close the said door when motion
85 is imparted to the mechanism hereinafter described.

Referring particularly to Fig. 3, 5 represents a casting, which provides bearings for the various movable parts and is located immediately above the cell-door and is attached to the front of the cell-door in any suitable manner. To the lower portion of the said casting is attached a spindle 6, upon which is mounted the movable gear-wheel 4, which
90 when rotated operates the cell-door in a manner previously stated. Also mounted upon said spindle 6 is a beveled gear-wheel 7, which is loosely fixed thereon, but locked against rotation, independent of the said gear-wheel 4,
95 preferably by means of pins 7^a.
100

8 represents a longitudinal operating-shaft,

the length of which depends upon the number of cells desired to be operated, and is adapted to be rotated by suitable mechanism hereinafter described, whereby motion is imparted to the beveled gear-wheel 7 in a manner as we shall now proceed to describe.

9 represents a lever, which is movably attached to the casting 5 intermediate of its length, the lower end of which is forked, as shown at 10, Fig. 4, and said end provided with projections 11, which are adapted to be received by the annular groove 12, formed in the hub or extension 13 of the beveled gear 14, whereby a movable connection is made between said lever and gear-wheel, in which instance the said lever operates to move the said gear-wheel in a longitudinal direction, but allows the same to be rotated independent of said movement. The said beveled gear-wheel 14 is fixed against rotation, independent of the operating-shaft, by use of the feather 15, which is located upon the said shaft at a suitable position and is located within a suitable groove 16, formed in the said gear-wheel and its extension.

17 represents a second lever, which is similarly constructed, but is somewhat shorter than the one previously referred to, and is movably fixed in a like manner to the casting 5, as better illustrated in Fig. 2. The lower end of the said lever is forked, as shown at 18, and the inner surfaces of the same provided with projections 19, which are passed into suitable openings 20, formed in the hub 21 of the gear-wheel 22. By the construction of the lever 17, above referred to, the gear-wheel 22 is locked against rotation and is only adapted to be moved in a longitudinal direction or in engagement with the beveled gear-wheel 7 for preventing the cell-door from being operated only by an authorized person who must necessarily move the gear-wheel 22 out of its engagement with the gear-wheel 7, in which instance the beveled gear-wheel 14 will be brought simultaneously into contact or engagement with said gear-wheel 7, in which position the cell-door can be opened or closed when the operating-shaft 8 is rotated.

23 represents a connecting-plate, one end of which is movably attached to the lever 9 at a suitable distance from the upper end thereof and the opposite end of same likewise attached to the upper end of the lever 17, by which means the said levers are caused to be moved simultaneously when motion is imparted to but one of them.

24 represents a coiled spring, one end of which is attached to the lever 9 above its pivotal point and the opposite end fixed in any desirable manner to the front of the cell, as is best shown in Fig. 2, which, when the devices hereinafter described are released, causes the gear-wheel 14 to be moved in contact with the gear-wheel 7. To the projecting end of the lever 9 is movably attached one end of a bar 25, which leads and is connected to the upper end of a suitable oper-

ating-lever 26, which when the same is in a position as shown in Fig. 2 the beveled gear-wheel 22 will be in contact with the beveled gear-wheel 7 and the cell-door firmly locked against movement.

27 represents a plate, which is attached to one end of the cell, one edge of which projects a suitable distance and provides a support for the said lever 26 and the mechanism for locking the same.

28 represents a bearing, which is fixed to said plate and to which the said lever 26 is attached intermediate of its ends.

29 represents a second bearing, which is located below the said bearing 28 and is fixed to the said plate 27 in any desirable manner, and to the said bearing is loosely attached a curved arm 30, which is provided with a cut-away portion or notch 31 in its lower edge for locking the said lever in a position, as shown in Fig. 2, in which instance the said arm will pass through an elongated opening formed in the lower end of the lever 26.

32 represents a support, which is located outside of the cell and at one end thereof, which provides a bearing for the shaft 33, to which shaft is fixed a beveled gear-wheel 34, and to the projecting end of said shaft is a hand-wheel 35 for imparting motion to said gear-wheel.

36 represents a shaft, which is arranged at an incline and has its bearings in the support 32 and a support 37, respectively, which last-named support is fixed in any desirable manner to the end of the cell, as shown in Fig. 2. Near the lower end of the shaft 36 and fixed thereon is a beveled gear-wheel 38, the teeth of which mesh with the teeth of the beveled gear-wheel 34, and to the upper end of the said shaft is fixed a similar beveled gear-wheel 39, which meshes with the beveled gear-wheel 40, keyed or otherwise fixed to the projecting end of the operating-shaft 8, which when the hand-wheel 35 is rotated or turned the said operating-shaft 8 will also be rotated and in its turn operates the cell-door should the beveled gear-wheel 14 be in contact with the beveled gear-wheel 7, otherwise there would be no motion to the cell-door should the said hand-wheel be turned.

In order to lock the cell-door in such a manner as to prevent the prisoner or unauthorized person from opening the same, we employ the mechanism as we now describe and which is operated automatically, locking the said door when the beveled gear-wheel 22 is brought in contact with the beveled gear-wheel 7.

41 represents a vertical operating-shaft, which is movably fixed in bearings 42 and is located on the outside of the cell and to one side of the cell-door when the same is closed. To the upper or projecting end of the said shaft 41 is fixed a slotted arm 43, through which a bolt 44 or other like device is passed and fixed to the bar 25, the said slot compensating for the movement of the said bar

when the same is operated. Upon the said vertical shaft 41 is fixed any number of hook-shaped cams 45, the hooked portion 46 of which is adapted to be passed into the U-shaped extensions 47, fixed to one edge of the cell-door 2, as best shown in Fig. 6. Should the lever 26 be released or moved, as shown in Fig. 10, the operating-shaft 41 will be slightly turned or rotated, removing the hooked ends 46 of the cams 45 to be passed out of the U-shaped extensions 47, releasing their locked position upon the cell-door and simultaneously moving the beveled gear-wheel 14 in gear with the beveled gear-wheel 7, in which position the cell-door 2 will be moved in a direction for opening the cell when motion is imparted to hand-wheel 35, premising, however, that the gear-wheel 22 has been simultaneously thrown out of gear with the said gear-wheel 7.

In Fig. 7 we have shown a modification, in which instance we locate the vertical operating-shaft 41 on the opposite side of the cell-door and a suitable distance from the cell in order to allow a sufficient space for the passage of the cell-door and the cams fixed thereto, adapted to be brought in contact with the opposite edge of the the door for locking the same. In this construction, however, it will be necessary to reverse the movement of the operating-shaft in order to accomplish the result.

In Fig. 8 we have shown a further modification, in which instance we fixed to the upper projecting end of the shaft 41 a pinion 48, which would necessarily take the place of the slotted arm 43, and secure to the bar 25 a rack-bar 49, the teeth of which are adapted to mesh with the teeth of the pinion 48, which mechanism would have a similar effect upon the shaft 41 and operate to move the cams 45 in and out of engagement with the extensions 47 of the cell-door.

50 represents brackets, which are arranged at predetermined distances apart and are fixed to the front of the cells for holding the bars 25 in their proper alignment and further preventing the same from sagging, especially where a considerable number of cells are desired to be operated from one locality.

It will be understood from the foregoing description that a separate bar—such as 25—is attached to the independent mechanism for operating the cell-doors, and, further, that one, several, or all of the cell-doors may be operated at one time by the manipulation of the operating-levers 26, each one of which is connected with the mechanism for operating its appropriate cell-door.

Having fully described our invention, what we claim is—

1. The herein-described mechanism for operating cell-doors, comprising a longitudinal operating-shaft, beveled gear-wheels loosely mounted upon the same, a rack-bar fixed to the said door and adapted to be moved by the said mechanism, and a bar, such as 25,

for simultaneously operating said beveled gear-wheels, substantially as described.

2. The herein-described mechanism for operating cell-doors, comprising a horizontal operating-shaft 8, bevel-gears, such as 14 and 22, adapted to be simultaneously operated, a gear-wheel 4, fixed to a beveled gear-wheel 7, a rack-bar fixed to the upper edge of said door and in engagement with the said gear-wheel 4, levers in movable connection with the said gear-wheels 22 and 14, and a bar, such as 25, movably attached to one of the said levers, substantially as described.

3. The herein-described mechanism for operating cell-doors, comprising an operating-shaft 8 and means for operating same, beveled gear-wheels loosely mounted upon same, one of which is fixed against rotation and the other adapted to be rotated by said shaft, suitable mechanism of gearing located between said wheels and the cell-door for sliding same in either direction, levers in movable connection with said gear-wheels, causing the same to be simultaneously operated, an operating-bar, such as 25, in connection with the said levers, means for operating said bar, an operating-shaft, such as 41, fixed to the cell and located to one side of the door, cams 45, located upon said shaft, a slotted arm 43, also fixed to said shaft, and a bolt or other like device passed through the slot and into said bar 25 for movably attaching the same, whereby the said levers and the said shaft 41 are operated simultaneously, substantially as described.

4. The herein-described mechanism for operating cell-doors, comprising an operating-shaft 8 and means for operating same, beveled gear-wheels loosely mounted upon same, one of which is fixed against rotation and the other adapted to be rotated by said shaft, suitable mechanism of gearing located between said wheels and the cell-door for sliding same in either direction, levers in movable connection with said gear-wheels, causing same to be simultaneously operated, an operating-bar, such as 25, in connection with the said levers, means for operating said bar, an operating-shaft, such as 41, fixed to the cell and located to one side of the door, cams 45, located upon said shaft, and means attached to the upper end of the said shaft for movably uniting the said bar 25 to the same, substantially as described.

5. The herein-described mechanism for operating cell-doors, comprising a rack-bar 3, fixed to the upper end of said door, a spindle 6, rigidly secured to the front of the cell above said door, a gear-wheel 4, loosely mounted upon said spindle and in engagement with the said rack-bar, a bevel gear-wheel 7, fixed to the said gear-wheel 4, an operating-shaft 8, adapted to be rotated by suitable mechanism, beveled gear-wheels 14 and 22, adapted to be moved upon said shaft, one of which is locked against rotation and the other adapted to be rotated by said shaft, levers fixed to the

front of the cell and in engagement with the
said beveled gear-wheels and adapted to move
the same simultaneously, an operating-bar in
movable connection with the said levers, a
5 vertical operating-shaft 41, cams 45, fixed to
the same and adapted to receive suitable de-
vices carried by the door, a slotted arm 43,
fixed to the upper end of the said shafts and
adapted to be movably attached to the said
10 operating-bar 25, and a lever, such as 26, for
operating the said bar, causing the said shaft

41 and the said beveled gear-wheels 14 and
22 to be operated simultaneously, substan-
tially as described.

In testimony whereof we affix our signatures 15
in presence of two witnesses.

PETER J. PAULY, SR.
PETER J. PAULY, JR.

Witnesses:

C. F. KELLER,
ALFRED A. EICKS.