

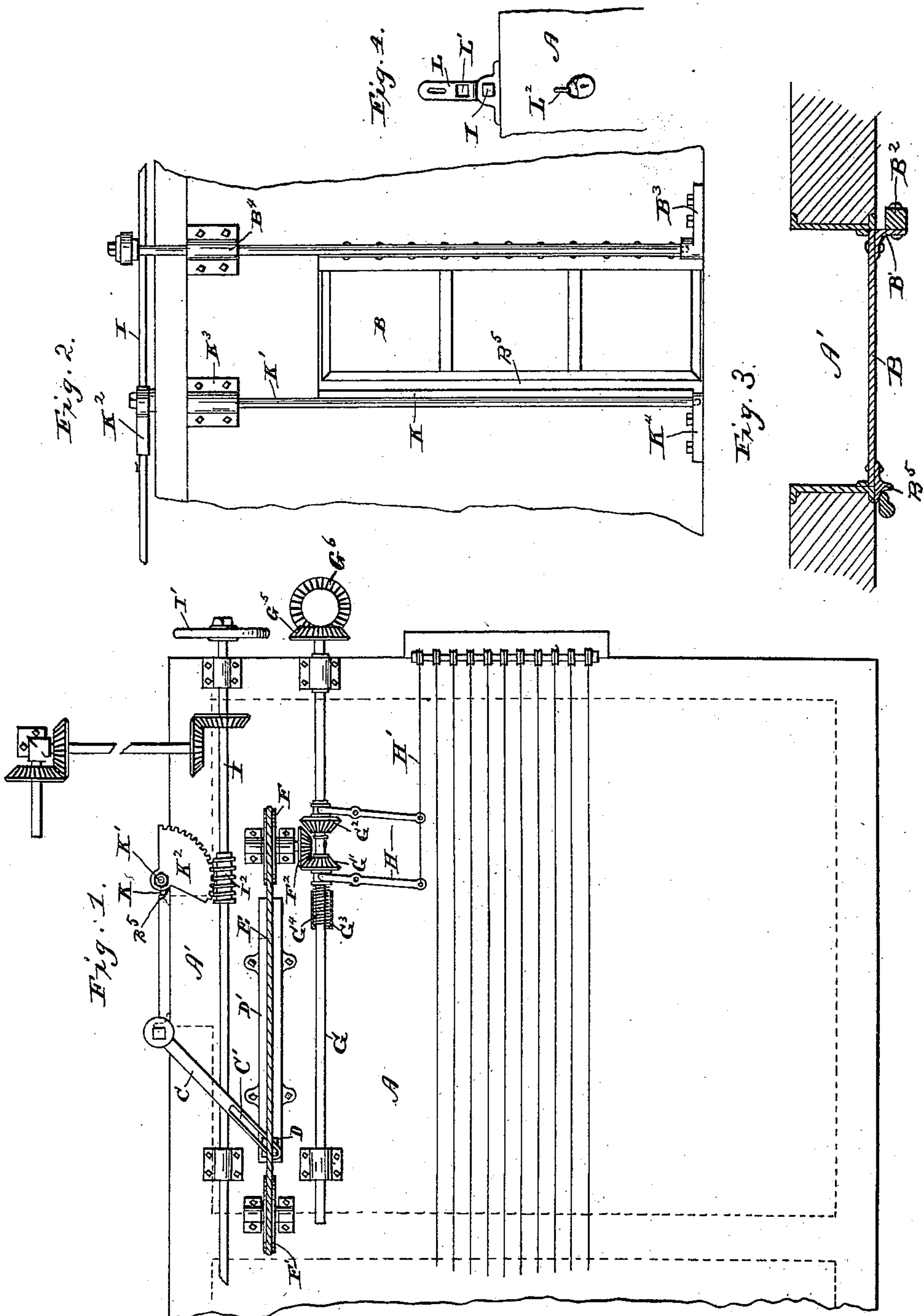
(No Model.)

G. H. MAETZEL.

STRENGTHENING AND LOCKING APPLIANCE FOR DOORS.

No. 396,584.

Patented Jan. 22, 1889.



Witnesses.
Chas. R. Burr.
H. H. Smith

Inventor
George H. Maetzel
per Mundock & Mundock
his Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE H. MAETZEL, OF COLUMBUS, OHIO.

STRENGTHENING AND LOCKING APPLIANCE FOR DOORS.

SPECIFICATION forming part of Letters Patent No. 396,584, dated January 22, 1889.

Application filed May 28, 1888. Serial No. 275,341. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. MAETZEL, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented new and useful Improvements in Strengthening and Locking Appliances for Doors, of which the following is a full and exact description, reference being had to the accompanying drawings, making part of this specification.

This invention relates to improvements in locks, and more especially to locks for the cell-doors of jails and like structures; and it has for its objects to form a secure locking attachment which is mounted in bearings set away from the wall of the cell, so that the occupant is prevented from tampering with the fastening unobserved; to provide a means for preventing the locks being released during the absence of the person in charge without detection, and to provide a hanging for the doors which is at once strong, and has the hinges so placed as to prevent access to them unobserved.

In the drawings, Figure 1 is a plan view of the invention, showing the arrangement of parts and a mechanism for opening and closing the doors separately or jointly, which I use by preference. Fig. 2 is a front elevation of the door and of the locking attachment. Fig. 3 is a horizontal section through a door of a cell, in which is shown the relative arrangement of the parts when the door is locked. Fig. 4 shows a means for securing the locking attachment from being tampered with during the absence of the keeper.

The letters A designate the cells, which, in the majority of cases, are constructed of stone walls, and are provided with the doorways A'. The hinges for the doors as heretofore constructed have been set in the stone at the side of the doorway by the usual method of boring holes, setting the hinges in place, and pouring melted metal to retain them in place. The door is mounted upon these hinges and locked, when closed, by various known methods. Some of the difficulties attending this mounting of the doors are that in case of a defective pouring of the metal the hinge is easily forced from its hold in the wall by pressure applied from within, and that the

expense of the manipulation incident to this method of hanging the hinges is quite expensive. It is to obviate these difficulties that I have provided the method for hanging the door shown in the drawings.

At the hinge side of the door B, which is constructed of iron and braced to withstand a great amount of strain, I secure, by riveting, the angle-bar B', extending up the whole length of the door. The remaining flange of the angle-bar is riveted to the square bar B², which is mounted at the lower end in the socket-bearing B³ and passed through the bracket-bearing B⁴ near the top of the cell. The socket-bearing is bolted to the floor away from the wall of the cell, and the bracket to the side of the cell, as shown in the drawings.

The upper or bracket bearing is generally placed out of the reach of the occupant of the cell, and in some cases is passed over the top and then screwed down. This form of hinge is very strong and the fastenings are out of reach of the occupant of the cell, while at the same time forming a very steady hinge.

The devices for operating the doors to open and close them are secured to the top of the hinge-bar and rest over the cell in the space between the upper and lower tiers of cells. The lever C is set on a square shoulder at the top of the bar B³, and is provided at the end removed from the said bar with the slot C'. Operating in the slot is a pin, which is upset from the sliding block D. The sliding block D is mounted in any suitable manner in the guide-bars D', which are bolted in position, as shown, and are rigidly attached to the endless cable E, which is passed around the pulleys F F'. The pulleys F F' are mounted in bearings bolted to the top of the cell, as shown, the latter acting as an idler and the former provided on the end of its shaft with the beveled pinion F², by means of which it is rotated. In position to gear with the pinion F² are the beveled cogs G' and G², the former of which is splined on the shaft G, and the latter is mounted loosely to allow the shaft to turn within it. Both of the wheels G' and G² are provided with a grooved collar, in the groove of which is fitted a yoke end of parallel levers, H. To the rear of the wheel G', and mounted rigidly on the shaft G, is the

box G^3 , in which is contained the spring G^4 , which tends to force the wheel G' into engagement with the pinion F^2 . This tendency is counteracted by the operator drawing the string H' , which is attached to the end of the levers H , and when drawn in the direction of the operator forces the wheel G' out of and the wheel G^2 into engagement with the pinion F^2 . If it is desired to hold the parts in this position, a ring upon the end of the string H' is placed over a hook assigned to it for that purpose. By this arrangement the keeper can see at a glance which cells are locked and not locked, for this device is also a locking attachment, as will be explained. In this position of the pinion F^2 and wheels G' and G^2 it is apparent that the shaft G can be rotated without affecting the pinion F^2 and pulley F .

I do not claim in this application the above-described attachments broadly, as the purpose for which they are designed may be accomplished by other suitable means; and, further, the same is set forth and claimed in an application filed on this date and bearing the Serial No. 275,342.

When the doors are closed as described, they are locked simultaneously for the night or during the absence of the keeper by rotating the shaft I by means of the wheel I' in the office. The shaft I is provided at intervals for each door with a short worm, I^2 , in position to engage the segment cog-wheel K^2 . The segment K^2 is rigidly mounted upon the end of the rod K' , which is mounted in a bracket-bearing, K^3 , and a socket-bearing, K^4 , similar to those provided for the bar B^2 , the socket-bearing K^4 standing away from the wall of the cell and bolted to the floor. In this manner any tampering with the socket without detection is prevented, as it is within clear view of any one in the corridor. Down the side of the rod K' and edge next to the door is a flange, K , which may be formed integrally with the rod K' or separately and riveted to it, as desired. The door B is provided on the opening edge with the T-iron B^5 , which is riveted to it, and the flange of which extends over the jam of the door, passing close to the rod K' in closing.

To operate this device, the doors are closed by the attachments for that purpose described above. The operator then turns the wheel I' to rotate the shaft I and worms I^2 upon the same. The segments K^2 on the rod K' being engaged with the said worms, are drawn around, turning that rod in its bearings until the flange K is brought over the flange of the T-iron B^5 , any indicator in the operating-room designating to the operator when this has been accomplished. In this position of the parts the doors are securely locked, as it would require a strain which would buckle the door to rotate the shaft backward through the described gears by means of a pressure applied to the door. As an extra safeguard, however, and as a device which may be applied to pre-

vent tampering with the locks by any one unauthorized in the operating-room, I apply a strong hasp, L , which is hinged so as to fall over the end of the shaft I when the wheel I' has been removed. It is provided at the point where it comes in contact with the shaft with a square aperture, L' , fitting over the squared end of the shaft I , and with a slot to fit over the staple L^2 . This attachment is applied by removing the wheel I' from the shaft and dropping the hasp L into place and locking it by means of a padlock or seal, as desired. With this attachment in place it is impossible to turn the shaft I by any others than those authorized without immediate detection.

When the locking attachment herein described is applied, the movement can be transmitted from one shaft to another by any suitable means, one simple form of which is shown in Fig. 1 of drawings for transmitting the movement to the tier on the opposite side of the corridor. This consists in fixing upon the shaft I the beveled cog-wheel M . Geared to this is the beveled cog-wheel N on the shaft O . The shaft O extends across the corridor to the opposite tier of cells, where it is provided with the beveled cog P , which is in turn geared to the beveled cog Q upon the shaft R . This shaft extends parallel to the shaft I and over the tops of the opposite cells. This shaft is provided in like manner to that of the shaft I with the worm-gears I^2 , for engaging the segment-cogs on the locking-bars of the doors. The beveled cog-wheels are all equal, so that the same movement is imparted to both shafts alike by turning the wheel I' .

To unlock the cells, the wheel I' is reversed until the flange K is thrown back from the flange of the T-iron B , when the doors may be opened by the opening and closing attachments hereinbefore described.

What I claim is—

1. In a cell such as described, the combination of a door, an angle-iron riveted to the hinge edge of the door, and a bar rigidly attached to the said angle-iron and mounted in bearings, the lower of which is removed from the wall of the cell and the upper is secured to the wall of the cell at or near the top of the same, substantially as described.

2. In a cell such as described, the combination of a door, an angle-iron rigidly attached to the hinge edge of the door, a bar rigidly attached to the said angle-iron and mounted in bearings, the lower of which is removed from the wall of the cell and the upper is secured to the wall of the cell at or near the top of the same, a flange rigidly attached to the opening edge of the door and extending over the jamb, and any suitable means for securing the door when closed passing over the said flange, substantially as described.

3. In a cell such as described, the combination of a door, an angle-iron rigidly attached to the hinge edge of the door, and a T-iron rigidly attached to the opening edge,

both irons extending the whole length of the door, to brace the same, substantially as set forth.

4. In a cell such as described, the combination of a door provided with angle-irons rigidly attached to the opposite edges, a bar forming the hinge rigidly attached to one of the said angle-irons and mounted in bearings which are removed from the wall of the cell,
5 a bar similarly mounted in bearings at the opening side of the door and having a flange

or fingers adapted to rest over the adjoining angle-iron on the door, and mechanism for rotating the said bar to bring the flange over the said angle-iron and for maintaining the same in position, substantially as described. 15

In testimony whereof I have hereunto set my hand this 24th day of May, A. D. 1888.

GEORGE H. MAETZEL.

Witnesses:

DANIEL KRUMM,
HENRY KROPP.