

(No Model.)

3 Sheets—Sheet 1.

G. D. WARREN.
MINE DOOR.

No. 483,883.

Patented Oct. 4, 1892.

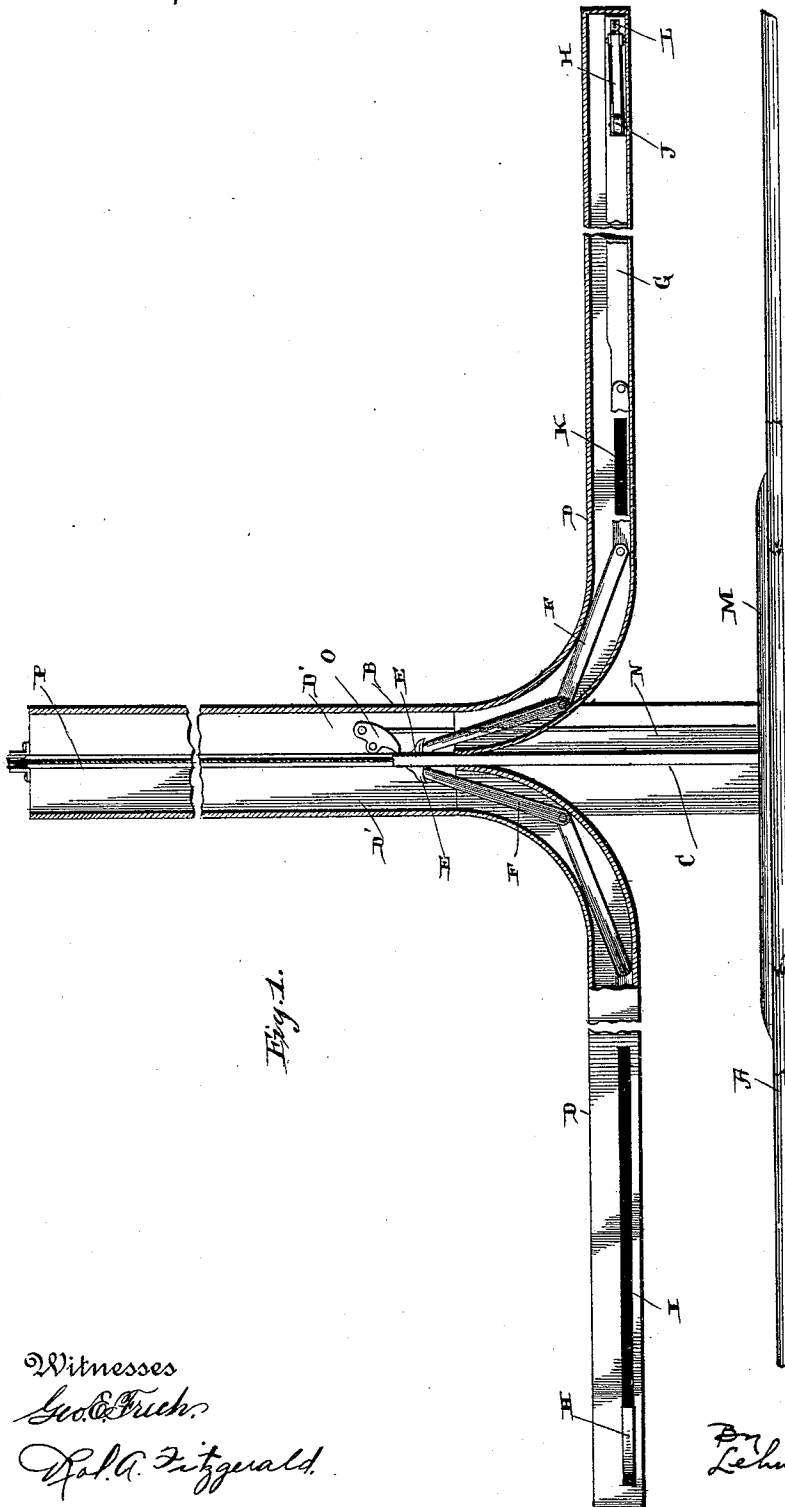


Fig. 1.

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(No Model.)

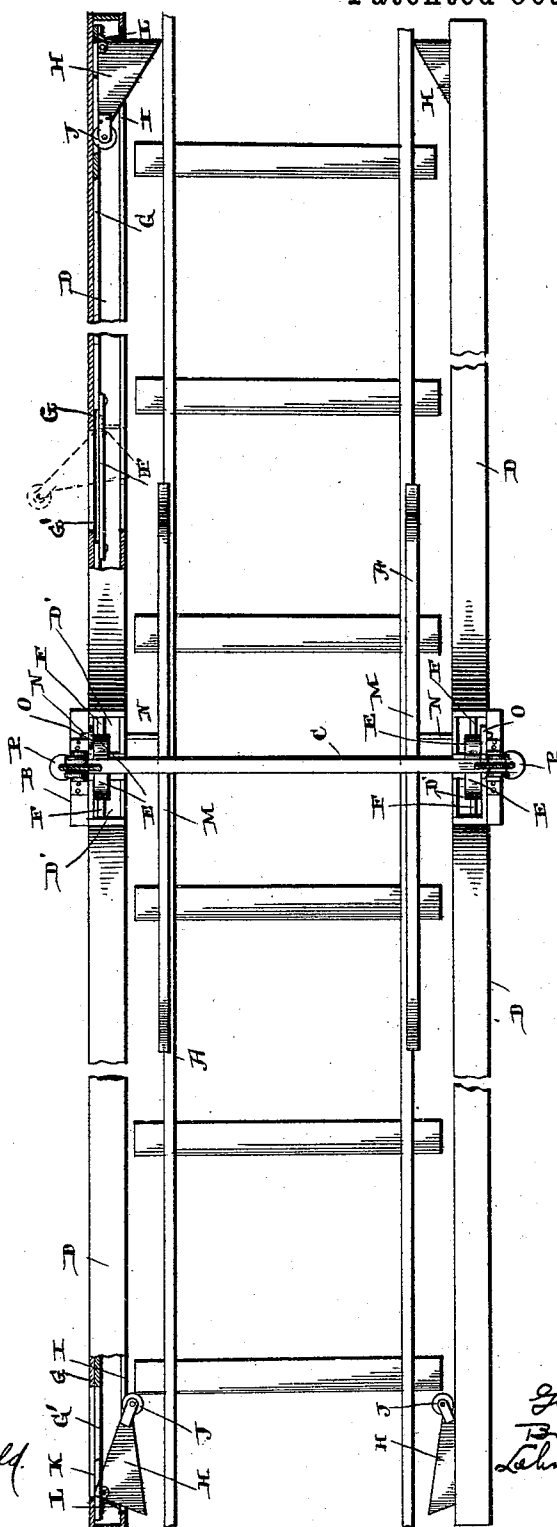
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Fig. 2.



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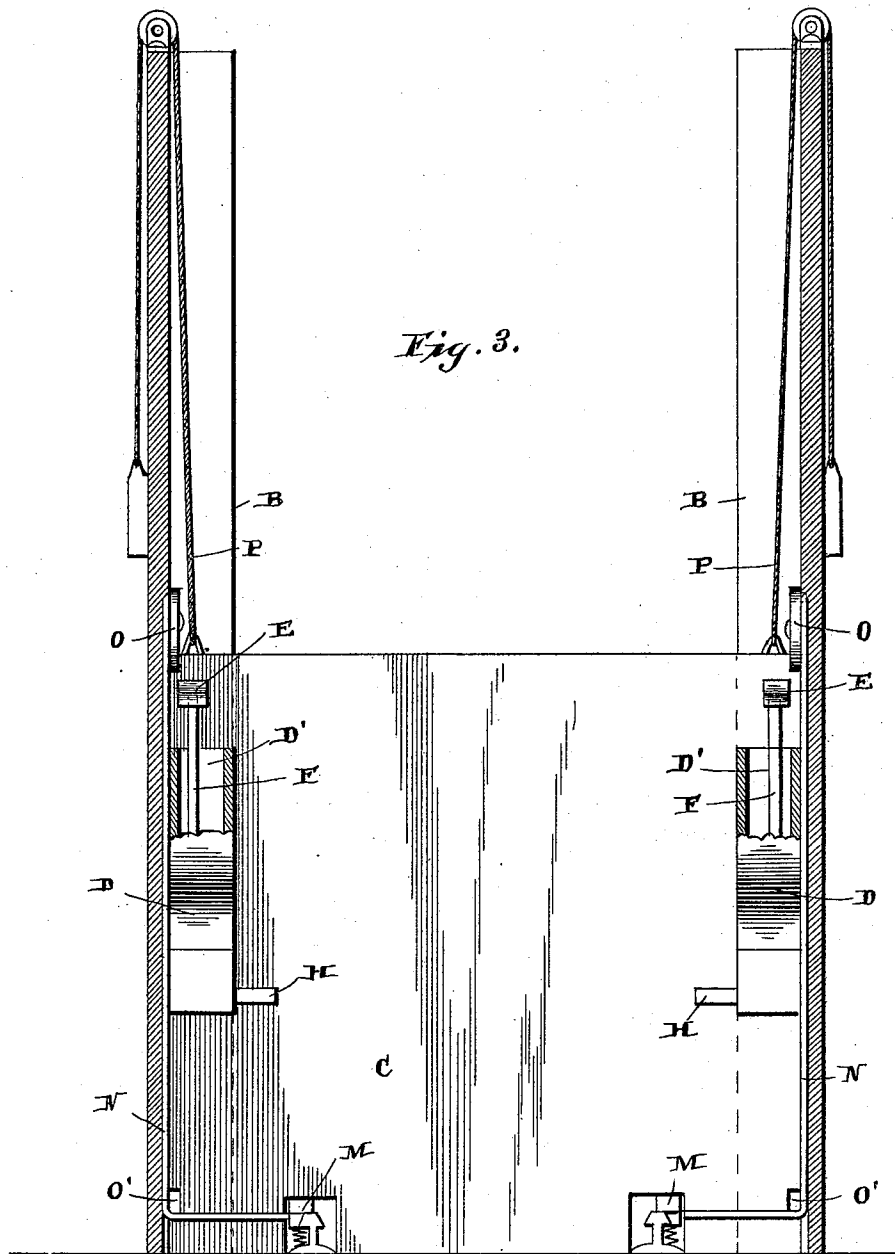
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UNITED STATES PATENT OFFICE.

GOVERNOR DREW WARREN, OF COAL GATE, INDIAN TERRITORY.

MINE-DOOR.

SPECIFICATION forming part of Letters Patent No. 483,883, dated October 4, 1892.

Application filed March 19, 1892. Serial No. 425,586. (No model.)

To all whom it may concern:

Be it known that I, GOVERNOR DREW WARREN, of Coal Gate, in the county of Choctaw, Indian Territory, have invented certain new and useful Improvements in Mine-Doors; and I 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in mine-doors; and it consists in certain novel features of construction, and in the combination and arrangement of parts, which will be fully described hereinafter, and more particularly referred to in the claims.

The object of my invention is to construct an improved door for mine-passages, which may be automatically raised or opened by the approaching pit-train, and which will drop of its own weight after the train has passed through, thus insuring at all times a closed passage, excepting when it is automatically opened by the approaching train.

Referring to the accompanying drawings, Figure 1 is a side view of my improved door and its operating mechanism, showing its position in relation to the door and track. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation.

A represents the railroad-track, B the vertical supports for the door, and C the vertically-moving door which moves therein. Extending parallel with the track, upon each side thereof and upon each side of the door, are the horizontal troughs or guideways D, which are curved upward at their inner ends, where they intersect the vertical supports, forming vertical passages D', which are at right angles to the ways D. Between the vertical passages D' moves the door C, which is provided with the stops E, which project into the said passages.

F represents jointed bars, which move in the passages D D' and which engage at their upper ends with the stops E, as shown. These bars are jointed, so that they may move around the curve connecting the passages, and thus change from the horizontal to a vertical position when the door is being raised. The outer end of this jointed bar is connected

to the horizontal bar G, and secured to the inner side of the outer end of this bar is the inwardly-extending stop or shoe H, which projects inward across the track through the slot I, formed in the side of the passage D. The bar G is slotted at G', the point where the shoe H is pivoted, and secured to the angle of the shoe is the friction-roller J, which also extends through the last-named slot and bears against the inner side of the opposite wall of the passage D. At the inner end of the slot I is formed a slot K through the said opposite wall, so that at that point there is a longitudinal passage clear across the slideway D. The train approaching the door engages the shoes H on opposite sides of the track and pushes them forward. The bars G, moving with these shoes, exert an inward and upward motion to the jointed bars F, which in ascending the passages D' carry with them the door, thus opening the passage and allowing the train to enter. This upward movement is stopped when the slot K is reached, for at this point the angle of the shoe H, carrying the friction-roller J, projects outward through this slot, thus disengaging itself from the train. The bars on the side of the door from which the train is approaching are the only ones set in motion, the bars on the opposite side retaining their horizontal position. In order to allow the train to pass the stops H on these opposite bars, they are so constructed as to swing outward on their pivots, thus allowing the train to proceed, after which they are returned to their normal positions by the springs L, arranged behind them.

In order to hold the gate in a raised position until the entire train has passed through, a spring-actuated vertically-moving rail M is employed, which extends parallel with the track, and secured thereto is the vertical rod N, which is connected at its upper end to the pivoted latch O on the door-frame. The ends of these supplemental rails extend to the inner ends of the slots I, so that when the gate has been raised to its greatest height the said rails are depressed by their engagement with the wheel-flanges, drawing downward there- with the rod N and latch O, the latter while being thus drawn down engaging a suitable notch O', formed in the door, thus holding the same raised as long as any portion of the

train is resting on the rails M. These rails, beingspring-actuated, will push upward when released, raising the rod N and disengaging the latch O from the door. The latter will
 5 then descend by its own weight, pushing downward and outward the bars F and G and placing the shoes H again in their normal positions. The door is provided with counter-weights P, so that it hangs almost on a balance,
 10 and thus comparatively-little pressure is required to push it upward.

The automatic-operating mechanism herein described is very simple in construction and not liable to get out of order, while at the
 15 same time its operation is most effectual.

A door constructed as herein shown and described is much safer than those which require an operator, for the reason that its operation is mechanical, thus dispensing with
 20 any damage which might result from the negligence of the tender, while at the same time the amount required to employ an operator is saved.

Having thus described my invention, I
 25 claim—

1. The combination, with a frame and a door adapted to move vertically therein, of guideways, flexible bars moving therein, which engage the door at their inner ends and are
 30 adapted to be engaged by the train at their outer ends, and an automatic locking mechanism, substantially as shown and described.

2. The combination, with a frame and a door adapted to move vertically therein, of
 35 slotted guideways, jointed bars moving therein, which are adapted to engage the door at their inner ends, outwardly-projecting shoes secured to the rear ends of the bars and which extend through the slots, and a suitable locking mechanism, substantially as shown and
 40 described.

3. The combination, with a frame, a door adapted to move vertically therein, and continuous horizontal and vertical guideways
 45 having slots I and K, of jointed bars which move in the said guideways and which engage the door at their inner ends, the rear bar being formed with a slot, a shoe pivoted

in said slot, and a locking mechanism, substantially as shown and described. 50

4. The combination, with a frame, a door adapted to move vertically therein, and continuous vertical and horizontal guideways having slots I and K, of jointed bars which
 55 move in the said guideways and which engage the door at their inner ends, the rear bar being formed with a slot, a shoe pivoted in said slot and adapted to project through the slots I and K, and a spring arranged behind the shoe, substantially as shown and described. 60

5. The combination, with a vertical frame, vertical parallel passages secured thereto, a door adapted to move between said passages, and stops secured to opposite sides of the
 65 door, which move in the said passages, of horizontal guideways which are curved upward at their inner ends, where they are connected to the lower ends of the vertical ways, jointed bars which move in the said guideways and which engage the said stops at their upper
 70 ends, a suitable connection between the passing train and the rear ends of the bars, and a locking mechanism, substantially as shown and described.

6. The combination, with a suitable frame, 75 a door therein, and a means for moving it vertically, of a latch pivoted to the said frame, a vertical rod connected thereto, and an automatic mechanism for raising and lowering the said rod, substantially as shown and de- 80 scribed.

7. The combination, with a suitable frame, a door therein, and a means for vertically moving the door, of a latch pivoted to the frame and which is adapted to engage the
 85 door, a depending rod secured to the latch, and a spring-actuated rail or bar connected to the lower end of the rod, substantially as shown and described.

In testimony whereof I affix my signature in 90 presence of two witnesses.

GOVNR. DREW WARREN.

Witnesses:

ROBERT McDONALD,
 JOHN C. BRITTON.