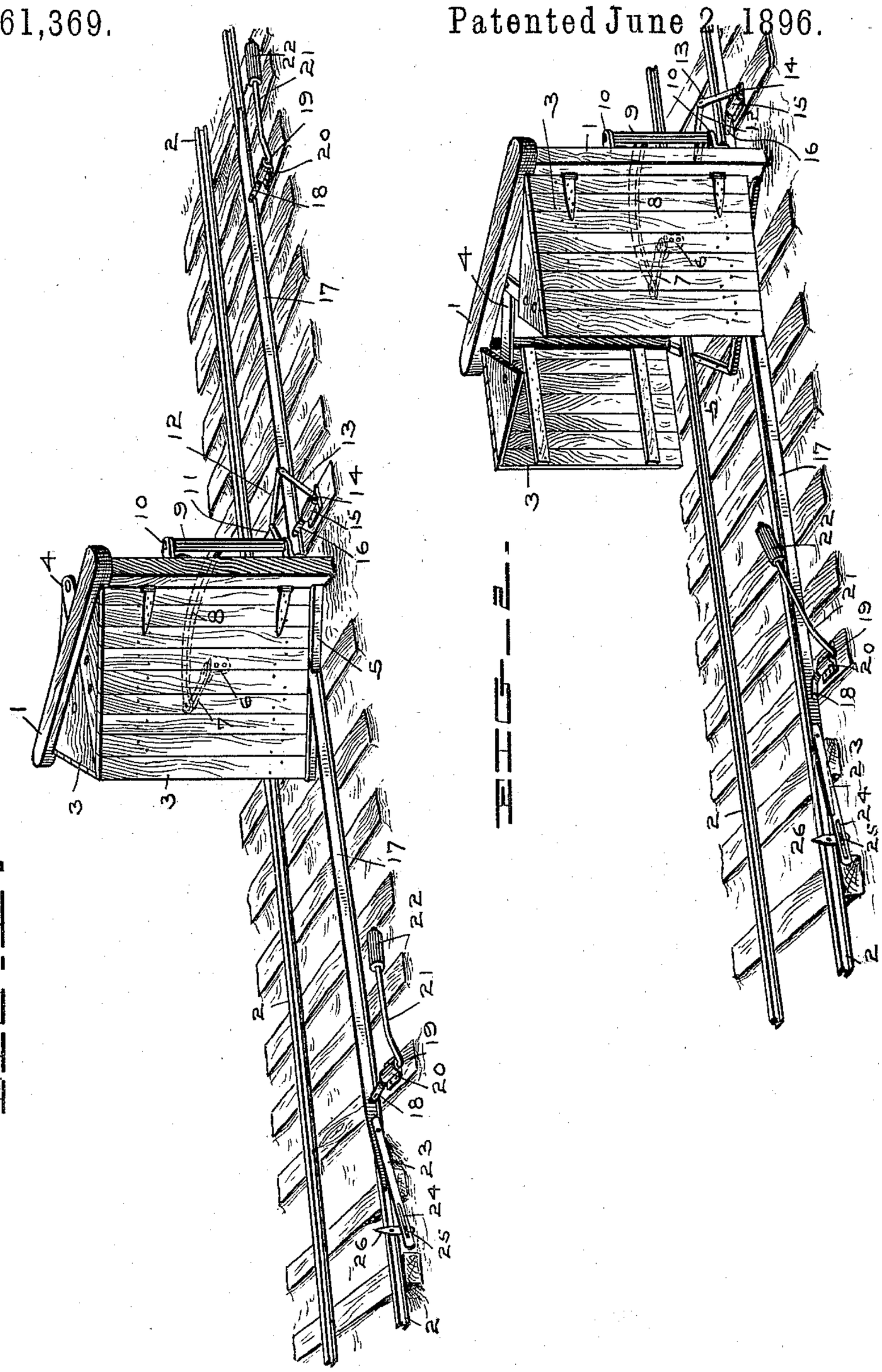
(No Model.)

2 Sheets—Sheet 1.

G. BONENBERGER.

MINE TRAP DOOR.

No. 561,369. Patented June 2, 1896.



Witnesses

M. L. Healy.

C. Carson.

Inventor

George Bonenberger

By Attorney

M. L. Healy

(No Model.) 2 Sheets—Sheet 2.

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FIG. 3.

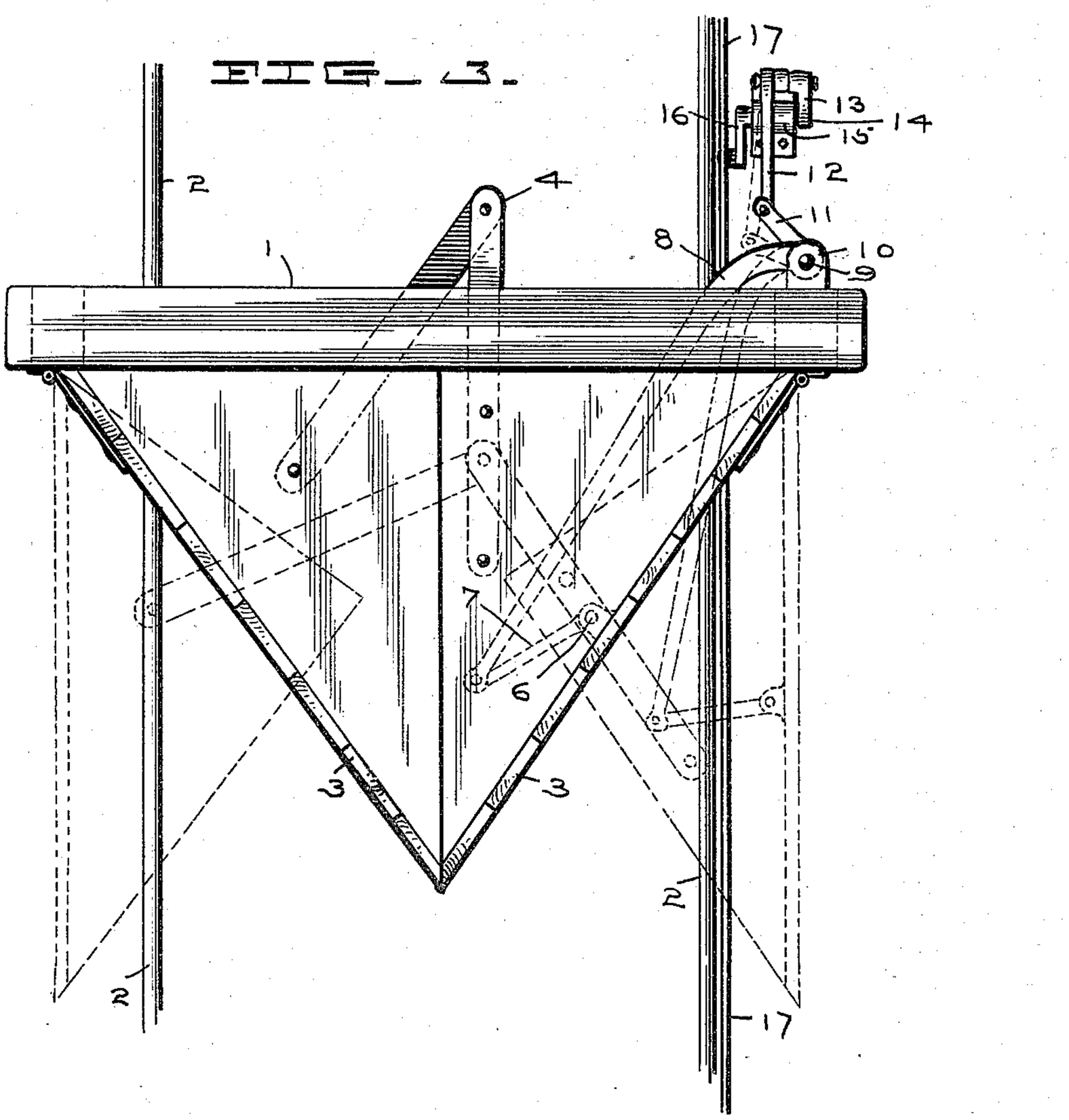
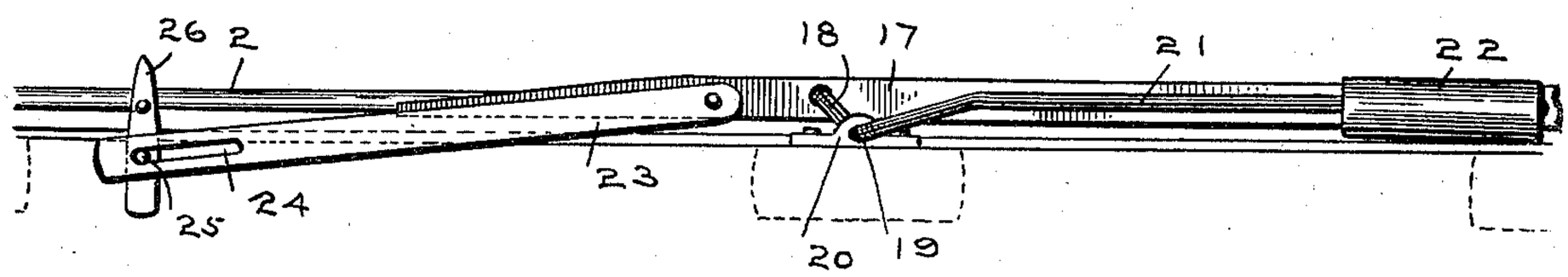


FIG. 4.



Witnesses
M. L. Healy
C. Carson.

Inventor
George Bonenberger
By Attorney H. D. Healy

UNITED STATES PATENT OFFICE.

GEORGE BONENBERGER, OF EVANSVILLE, INDIANA, ASSIGNOR TO THE AUTOMATIC MINE DOOR COMPANY, OF TERRE HAUTE, INDIANA.

MINE TRAP-DOOR.

SPECIFICATION forming part of Letters Patent No. 561,369, dated June 2, 1896.

Application filed January 9, 1896. Serial No. 574,855. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BONENBERGER, a citizen of the United States, residing at Evansville, in the county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in Mine Trap-Doors; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to new and useful improvements in mine trap-doors, and to one of that class which is adapted to cut off or control air-currents in the different entries or rooms of a mine; and the object is to provide a door that is automatically opened and closed by a car or cars passing through the entry in which the door is placed, the car as it approaches the door from either direction operating on its mechanism to open it, and after it has passed through such door allowing it to close.

In the drawings, Figure 1 is a perspective view of my improved door and its operating mechanism, the door being closed. Fig. 2 is a similar view showing the operating mechanism on one side only of the door, the door itself being open. Fig. 3 is a top plan view of the door, showing it closed in full lines and opened in dotted lines, the connections of the door being also shown in their two positions. Fig. 4 is a detail view showing the trip-lever which is connected with one end of the moving bar.

In detail, 1 represents a framework supported across a track 2 in the entry of a mine, 3 being the double doors, which are hinged to the frame 1, and are connected together by links or similar connections 4. The doors close over the tracks, and 5 are strips or sills which fill the space between the bottom of the doors and the ground.

6 is a bracket secured to one of the doors, and to this is pivoted a link 7, which is connected to the end of an operating-lever 8, secured to an upright rod 9, having its ends pivoted in brackets 10, secured to the door-frame 1. Near the lower end of the rod 9 there is formed a projection 11, to the end of which is pivoted the connecting-rod 12. This is in turn pivoted to a crank 13, formed on a short shaft 14, carried in a box 15 outside of the rails.

16 is a short crank formed on the inner end of the shaft 14, and this is pivoted to the outside of the moving bar 17, which lies alongside of and close to the rail on that side. This moving bar is supported by the crank 16 near the door and by a crank 18 at each end, the latter cranks being formed on the inner ends of short shafts 19, carried in boxes 20, arms 21 being formed integral with or connected to the outer ends of the shafts and provided with weights 22 for closing the doors, as hereinafter described.

The cranks 16 and 18 are all pivoted to the moving bar 17, and all are adapted to move in the same direction on the depression of such bar, which normally is supported by such cranks along the level of the top of the rail. To one end of the moving bar is pivoted a flat strip 23, provided with a slot 24 in its outer end, a pin 25 on a pivoted latch or trip 26 engaging with and working in such slot, the trip 26 being pivoted to the outside of the rail, alongside of which the moving bar extends, and its pin 25 normally lying in the outer end of the slot 24 of the strip 23.

It will be noticed that though both ends of the moving bar are inclined it is always moved in the same horizontal direction, for when a car approaches the end of the bar connected with the strip 23 it will first engage with and move the trip 26, depressing it and moving the moving bar before the car reaches it. As soon as the car passes off of the moving bar it resumes its normal position through the dropping of the weighed arms 21.

It will be noticed that the trip 26 only moves the moving bar when a car approaches from that side of the door, for when a car passes onto the moving bar from the other side and moves the trip 26, as it leaves the moving bar, the pin of the trip moves only in the slot of the strip 23, and hence has no effect on the bar.

This door is very simple in construction, is

positive in action, and has few parts to get out of order, and is entirely above ground, so that it can be readily repaired.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a mine trap-door, of a moving bar carried on cranks alongside of and close to the rail; connections whereby the depression of the bar opens the doors; a trip at that end of the bar toward which the cranks incline, which depresses the moving bar before it is struck by a car approaching in that direction, and means for raising such bar after it has been depressed, substantially as described.

2. The combination with a mine trap-door, of a moving bar carried on cranks alongside of and close to the rail; connections whereby the depression of the bar opens the door; a trip pivoted near one end of the moving bar and in the path of passing cars, a strip pivoted to said moving bar and to the trip by a slotted connection whereby the trip will be inoperative when moved in one direction, but will move and depress the moving bar when moved in the other direction, substantially as described.

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

GEORGE BONENBERGER.

Witnesses:

EDWARD MARTZ,

JOHN G. POTTS.