

No. 892,632.

PATENTED JULY 7, 1908.

J. WACK.
MINE DOOR.

APPLICATION FILED SEPT. 10, 1907.

2 SHEETS—SHEET 1.

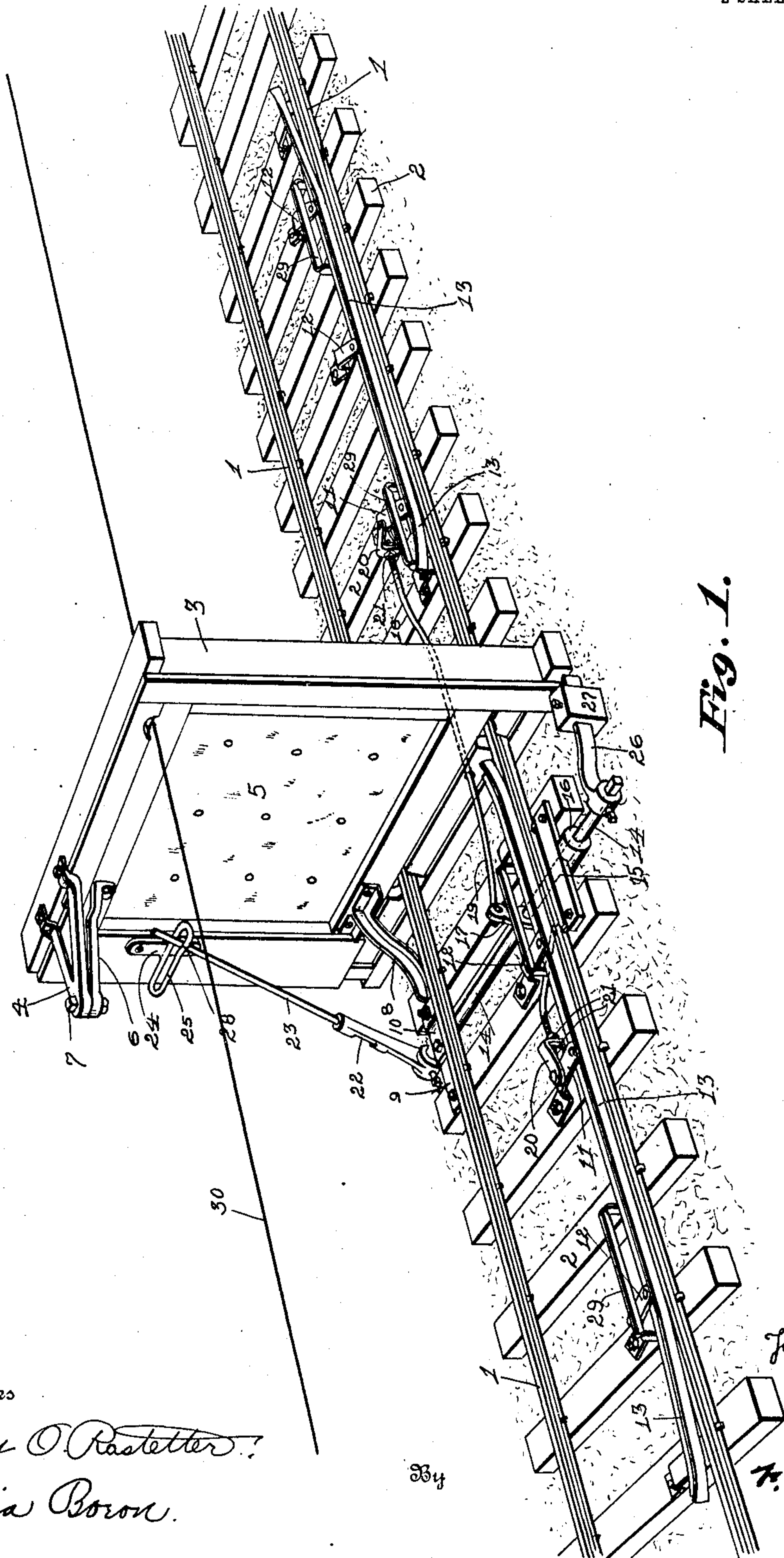


Fig. 1.

Witnesses

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Inventor.
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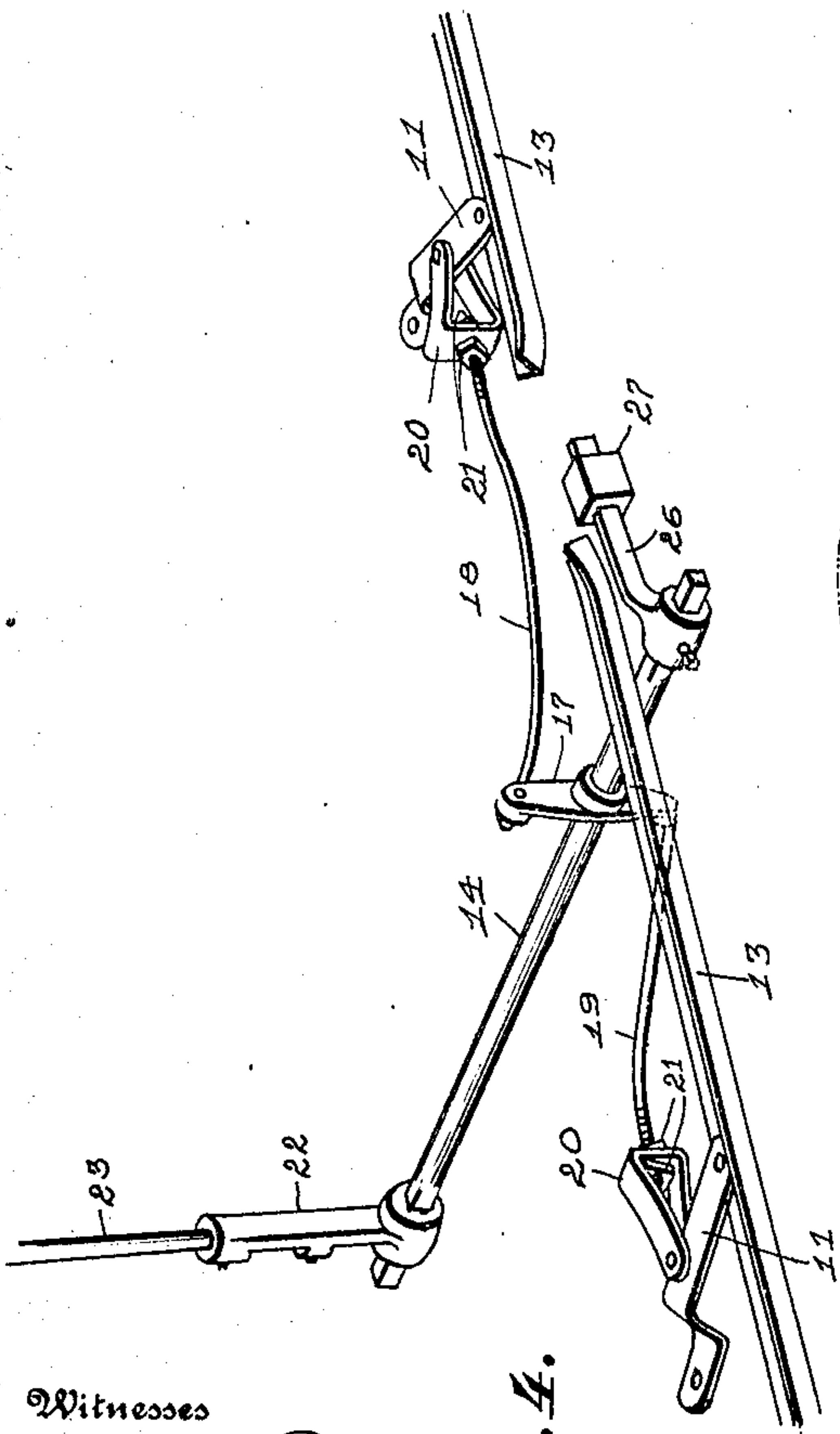
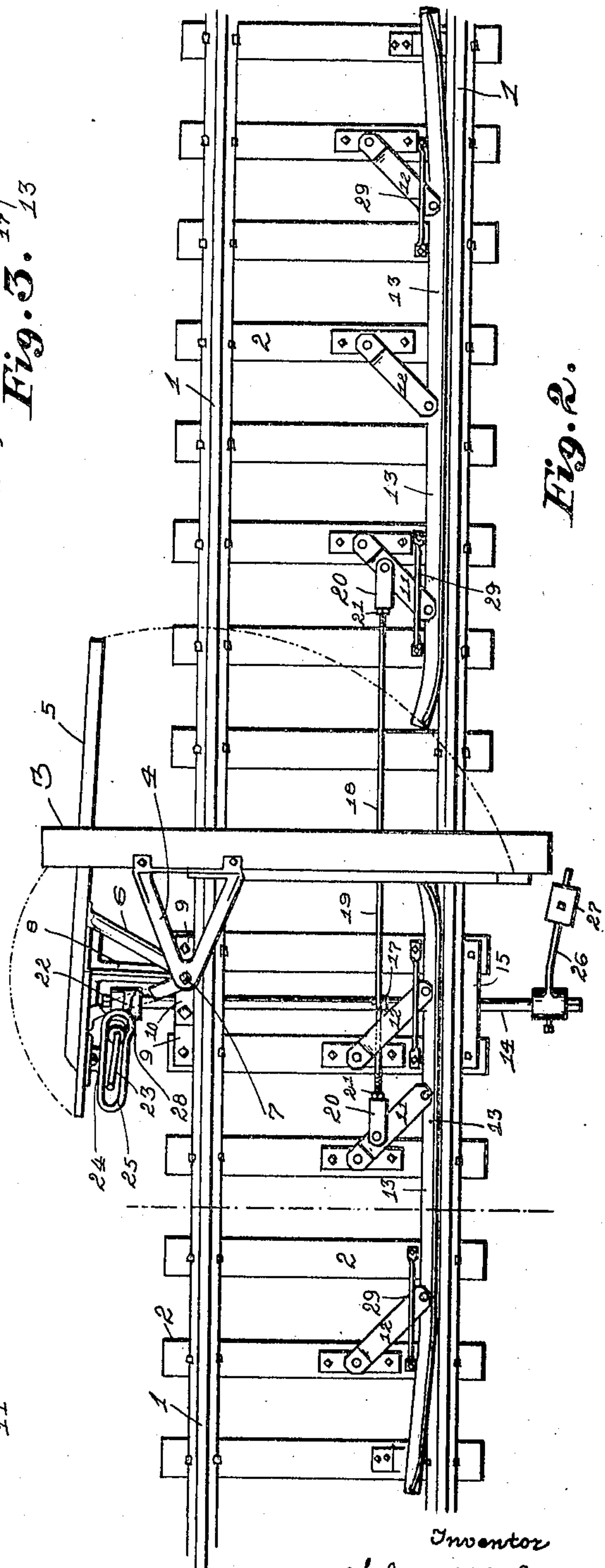
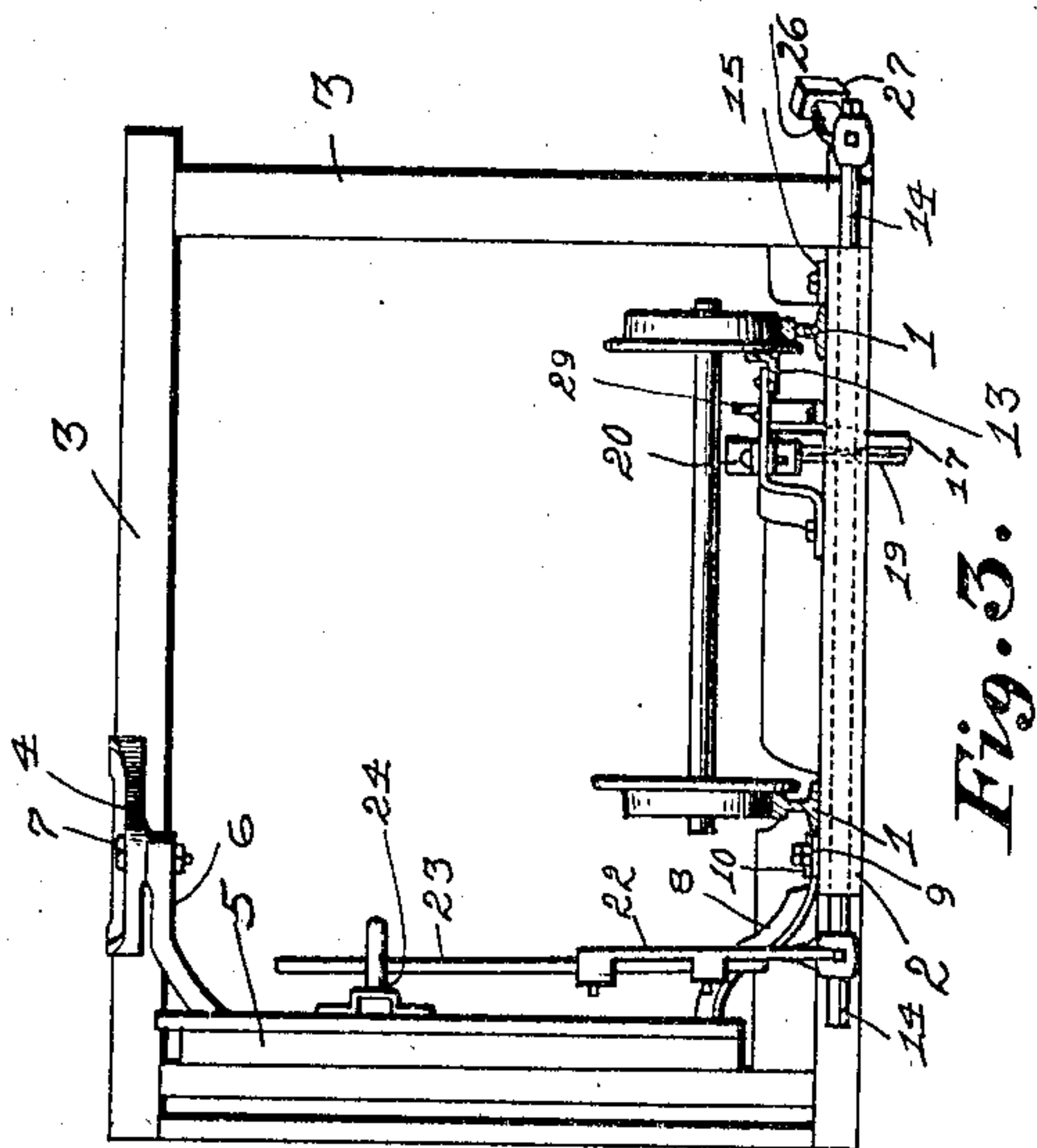
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2 SHEETS—SHEET 2.



Witnesses
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Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN WACK, OF CANTON, OHIO.

MINE-DOOR.

No. 892,632.

Specification of Letters Patent.

Patented July 7, 1908.

Application filed September 10, 1907. Serial No. 392,156.

To all whom it may concern:

Be it known that I, JOHN WACK, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have
5 invented certain new and useful Improvements in Mine-Doors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a
10 part of this specification, and to the numerals and figures of reference marked thereon, in which—

Figure 1 is a perspective view showing the door closed. Fig. 2 is a plan view showing
15 the door open. Fig. 3 is a transverse section of the track illustrating the car axle and two wheels located on the track and illustrating the door open. Fig. 4, is a detached view of the door operating mechanism.

20 The present invention has relation to mine doors and it has specific reference to the peculiar manner of opening and closing the door and the arrangement of the devices designed to be operated by the passing of a car
25 upon the track or way.

Similar numerals of reference indicate corresponding parts in all the figures of the drawing.

30 In the accompanying drawing, 1 represents the track rails which are supported upon the ties 2, and held in proper spaced relationship with reference to each other in the usual manner. At a proper place in a mine is located the door frame 3, which door
35 frame is of the usual construction reference being had to my improvements and the arrangement of the devices hereinafter described.

40 To the top or upper part of the door frame 3 is securely attached the bracket 4, which bracket is located at one side of the vertical center of the door 5. To the door 5 is securely attached the bracket 6, which bracket is pivotally connected to the bracket 4 by
45 means of the bolt 7 or its equivalent. To the bottom of the door and directly below the bracket 6 is secured the arm 8, which arm is pivoted at a point directly below and in alinement with the pivotal points of the
50 brackets 4 and 6, said arm being pivoted to the bar 9 and the clip 10, but the manner of pivoting the arm 8 is simply mechanical and I do not desire to be confined to any particular manner of pivotally connecting the arm
55 8. To the ties 2 or their equivalents are pivotally attached a series of arms 11 and 12, to

which arms are pivotally connected the bars 13, said bars being located upon opposite sides of the door frame 3, and being substantially alike in their construction. Below the
60 track proper and below the bars 13 is located the rock bar 14, which rock bar is journaled in the bars 9 and 15, said bars being provided with the integral enlarged or flanged portions 16. To the rock-bar 14 is securely at-
65 tached the rock-arm 17, which rock-arm is extended above and below the rock-bar 14 as best illustrated in Fig. 4. To the opposite ends of the rock-arm 17 are attached the rods 18 and 19, said links or rods being arranged
70 as shown in the drawing, and connected at their outer ends to the yokes 20, said yokes being connected to the swinging arms 11.

For the purpose of providing adjustment as between the yokes 20 and the rock-arm 17
75 the links or rods 18 and 19 are adjustably connected to the yokes 20 by means of the nuts 21, said nuts being located upon screw threads formed upon the links or rods 18 and 19.
80

To the rock-bar 14 is connected the bar 22, to which bar is secured the rod 23, but it will be understood that the bar 22 and the rod 23 may be formed integral if desired, as the only
85 object designed to be accomplished is to provide a swinging or oscillating rod for the purpose hereinafter described. To the frame of the door 5 is attached the bracket 24, which bracket is provided with the elongated slot
90 25, through which elongated slot is extended the rod 23. To the rock-bar 14 is attached the arm 26, which arm is provided with the counter weight 27, which arm and counter-
95 weight is for the purpose of automatically rocking the bar 14 after the bars 13 have been freed, or in other words after the wheels of a passing car have cleared said bar.

The operation of the device is substantially as follows: Let it be assumed that the door 5 is in the position illustrated in Fig. 1, and
100 that a car is to move from left to right through the door frame after the door 5 has been opened. The proper wheel of the approaching truck will come in contact with the curved end of the bar 13 located upon the
105 left hand side of the door, which contact as between the wheel and the bar 13 will move the bar a short distance endwise, said bar being carried by the arms 11 and 12, and at the same time impart a swinging movement to
110 said arms. As the arm 11 on the left hand side of the door moves toward the door, the

rod or bar 19 by means of its connection will rock the rock bar 14; and after the rock-bar 14 is actuated the rod 23 by means of its connection to the arm 22 will move or swing
 5 away from the door frame 3, but owing to the fact that the rod 23 is located through the slot 25, said arm will cause the door 5 to turn upon its pivotal points and bring the door into the position illustrated in Fig. 2, at
 10 which time the car is free to pass upon the track and through the door-frame.

It will be understood that the bars 13 should be so spaced from each other that the door will be held in an opened position during all the time the truck or car is passing the bars 13 during the time it approaches the closed door and recedes from the open door. After all of the truck wheels have fully passed the bars 13 the counter-weight 27 will automatically rock the bar 14 and swing the rod 23 toward the door frame 3 carrying with it the door 5. In the operation of mine doors it is desirable to provide a means for opening and closing the doors in such a manner that
 25 any heavy draft of air will not seriously interfere with the opening and closing of the doors, and by my peculiar manner of hinging the door and operating the same the door proper is moved in the arc of a circle, thereby presenting only a small surface of the door
 30 against any draft of air through the mine. When the door is brought into an opened position the bracket 24 will assume the position illustrated in Fig. 2 or in other words be brought at right angles to the position shown
 35 in Fig. 1 or practically so, thereby allowing the rod 23 a limited free movement without imparting any movement to the door proper, this limited free movement being brought
 40 about by the movement that may be imparted to the bars 13 during the time the truck or car is passing the door.

For the purpose of giving an easy and free movement to the door proper when it is started to be opened the elongated slot 25 is provided with the inclined inner face 28, upon which inclined face the rod 23 strikes, as it is moved away from the door frame 3. It being understood that as the door turns upon
 50 its pivotal points the arm will carry the bracket 24 and as the bracket describes the arc of the circle the inner end of the bracket will approach toward the rod 23.

For the purpose of better confining the
 55 arms 11 and 12 and holding the bars 13 in

proper relative position with reference to the adjacent track rail the guards 29 are provided, which guards may be attached to the ties or their equivalents.

For the purpose of allowing the wheels of a
 60 passing truck or car to properly enter between the track rail and the bars 13, the ends of said bars are curved inward as best illustrated in Figs. 1 and 2. By connecting the bars 13 to swinging arms, said bar will have
 65 what might be termed a compound movement that is an endwise movement and a lateral movement.

For the purpose of providing a means for operating the cars by electricity the trolley
 70 wire 30 may be provided, which is supported in the proper position in the usual manner.

Having fully described my invention, what I claim as new and desire to secure by Letters
 Patent, is— 75

1. In a mine door, the combination of a door frame, a door hinged intermediate its vertical edges and at one side thereof, a slotted bracket secured to the door at one side of its pivotal point, a rock bar provided with an
 80 arm, the free end of said arm located through the slotted bracket, a series of pivoted arms, bars pivotally attached to said pivoted arms, links connected to pivoted arms, and a rock arm connected to the rock bar and the links
 85 connected to said rock arm, substantially as and for the purpose specified.

2. In a mine door, the combination of a track, bars located adjacent to one of the track rails, arms pivoted at their free ends to
 90 the bars adjacent the track rails, a rock bar provided with a rock arm said rock arm extended above and below the rock bar, links connected to the rock arm and adjustably connected to the arms pivoted to the bars
 95 adjacent one of the track rails, a door and a door frame therefor, said door hinged at one side of the door frame, a bracket secured to the door and provided with a slot, a rod located through the slot in the bracket and said
 100 arm connected to and actuated by the rock bar, substantially as and for the purpose specified.

In testimony that I claim the above, I have hereunto subscribed my name in the
 105 presence of two witnesses.

JOHN WACK.

Witnesses:

F. W. BOND,
 SYLVIA BOND.