

No. 765,282.

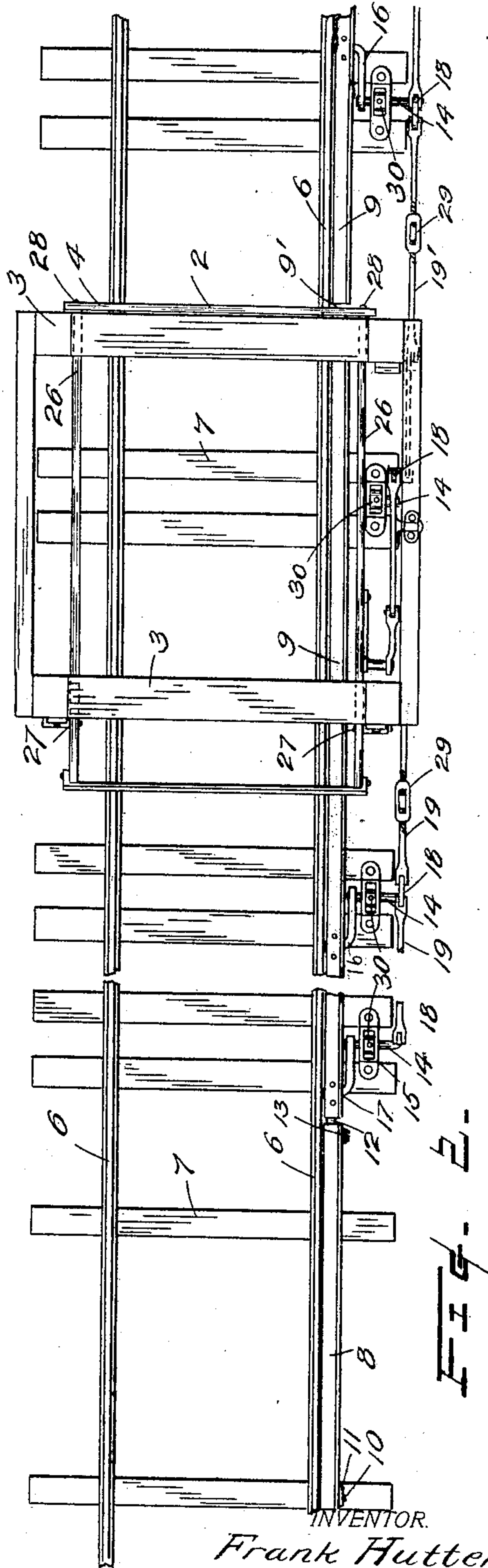
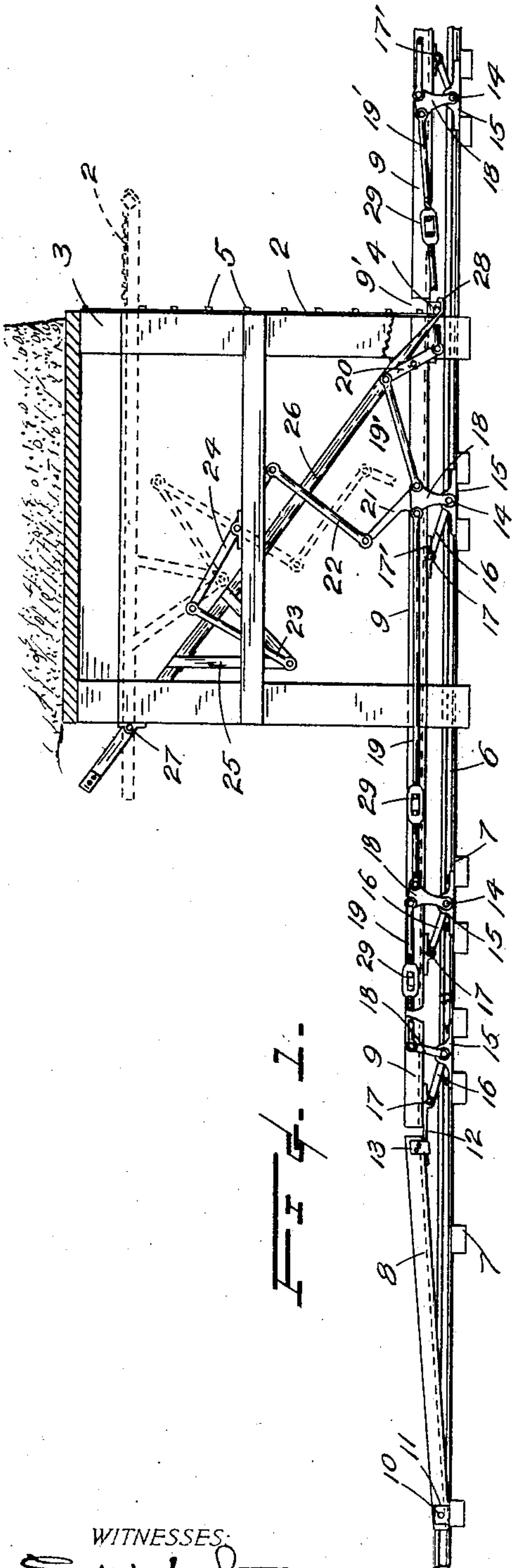
PATENTED JULY 19, 1904.

F. HUTTER.

APPARATUS FOR OPENING OR CLOSING MINE DOORS.

APPLICATION FILED DEC. 10, 1903.

NO MODEL.



WITNESSES:

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FRANK HUTTER, OF CLEALUM, WASHINGTON.

APPARATUS FOR OPENING OR CLOSING MINE-DOORS.

SPECIFICATION forming part of Letters Patent No. 765,282, dated July 19, 1904.

Application filed December 10, 1903. Serial No. 184,702. (No model.)

To all whom it may concern:

Be it known that I, FRANK HUTTER, a citizen of the United States, residing at Clealum, in the county of Kittitas and State of Washington, have invented certain new and useful Improvements in Apparatus for Opening or Closing Mine-Doors, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to mine-doors or draft-barriers; and the object of the invention is to provide means for opening and closing such a barrier by the weight of a car passing there-through, so that but a small amount of air will be admitted and which will not appreciably interfere with the air-currents or system of ventilation used within the mine.

The invention consists in combination, with a door, of the novel construction, arrangement, and adaptation of devices for controlling the door, which will hereinafter be fully described, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal elevation, and Fig. 2 is a plan view, of door-actuating devices embodying my invention.

The numeral 2 represents a door constructed of canvas or other suitable material, which is suspended along its upper edge to the top of the door opening or casing at one end of a box-shaped framework 3, inserted in mouth of a tunnel leading into a mine. The door is positioned at that end of the framework from which the air is drawn by the prevailing conditions within the mine, and to prevent the door fabric from bulging inwardly of the frame I secure its lower edge to a relatively heavy cross-beam 4 and tack a number of cross-cleats 5 at intervals throughout its entire height.

6 represents the rails of the main track extending into the mine and which are secured to stringers or ties 7 in the usual manner. Supplemental rails 8 and 9, preferably of angle-bars, are positioned upon the outside of one of the main rails and are arranged in pairs upon both sides of the door, with an interstice 9' therebetween to allow the cross-beam 4 of the door to rest directly upon the main rails and upon a chock which closes the

opening between the rails, except the spaces required for the passage of the car-wheel flanges. The rails 8, of which only one is shown in the drawings, are each connected in proximity to its outer extremity by a pivot 10, extending transversely through one of the main track-rails and a stationary chair-support 11, and the intermediate rails 9 are slidably connected by bolts 12, integrally secured to rails 9 and movable in stirrups 13 of rails 8.

14 represents rocker-shafts, which are journaled in stationary boxes 15 and each provided at one extremity with a crank-arm 16, having its crank-pin 17 pivotally connected in bearings 17', attached to the rail, and at the other end of each said shaft is another arm 18, so arranged as to form a bell-crank with the respective first-named crank-arm. The arms 18 are connected with each other by reach-rods 19, excepting between the two pairs of supplemental rails, where a lever 20 is interposed, which is connected to the adjacent arms 18 by reach-rods 19'. One of the rocker-shafts 14 is placed between the ends of frame 3, and the arm 18 of this shaft has an extension 21, which is connected by rods 22, 23, and lever 24 with a bracket 25, suspended from a tilting frame 26. This frame is hinged at 27 to the framework 3 upon the end opposite to that upon which the door is hung and has toes 28, which project beneath the beam 4, whereby the door is raised when the frame 26 is tilted up, as is plainly shown by broken lines in Fig. 1. Means, such as turnbuckles 29, are provided in the said reach-rods for adjustably regulating the lengths thereof, and set-collars 30, positioned in recesses of the boxes 15, are provided for each of the several rocker-shafts, whereby they are retained at any set position transversely of the track.

The invention operates as follows: When a car approaches the entrance of the tunnel from either side of the door, the car-wheels upon the side next to the supplemental rails mount and depress the entire line thereof to actuate the various aforesaid rods and levers, which raises the door and allows an unobstructed passage for the car. Immediately the car-wheels have passed beyond the said supplemental rails the unbalanced weight of the tilt-

ing frame and the door supported thereon acts through the various connections to elevate the auxiliary rails to their normal positions and simultaneously lower the door.

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

1. The combination of the supplemental rails, the rocker-shafts each provided with two
10 crank-arms one crank-arm of each shaft being pivotally connected to the said rails, connections between the other arms, a door, a tiltable frame having one end hinged to the framework of the door and the other end project-
15 ing beneath the lower edge of the door, a pivoted lever having a hinged connection to the said tiltable frame between the hinged end and the end operating the door and means for connecting said pivoted lever to the said
20 rocker-shafts and rails, substantially as described.

2. The combination with a door suspended from suitable framework, a tiltable frame having one end hinged to said framework and the
25 other end projecting outwardly beneath the said door, and the main track-rails, of the sup-

plemental track-rails arranged in pairs upon each side of the door, the outer end of each pair being pivotally connected with the main rails, a sliding connection between the adja- 30 cent ends of each pair of supplemental rails, rocker-shafts disposed at intervals along the said supplemental rails and provided at one end of each with a crank-arm which is pivotally connected with the said supplemental 35 track-rails, a crank-arm upon the other end of each of said rocker-shafts, connections between the last-named crank-arms, and a pivoted lever attached to a frame-section of the door and to the tiltable frame between the 40 hinged end and the free end operating the door, crank-arms, rocker-shafts and supplemental track-rails having operative connections with said pivoted lever, substantially as described. 45

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

FRANK HUTTER.

Witnesses:

F. W. NAGLER,
G. PITTS SHORT.