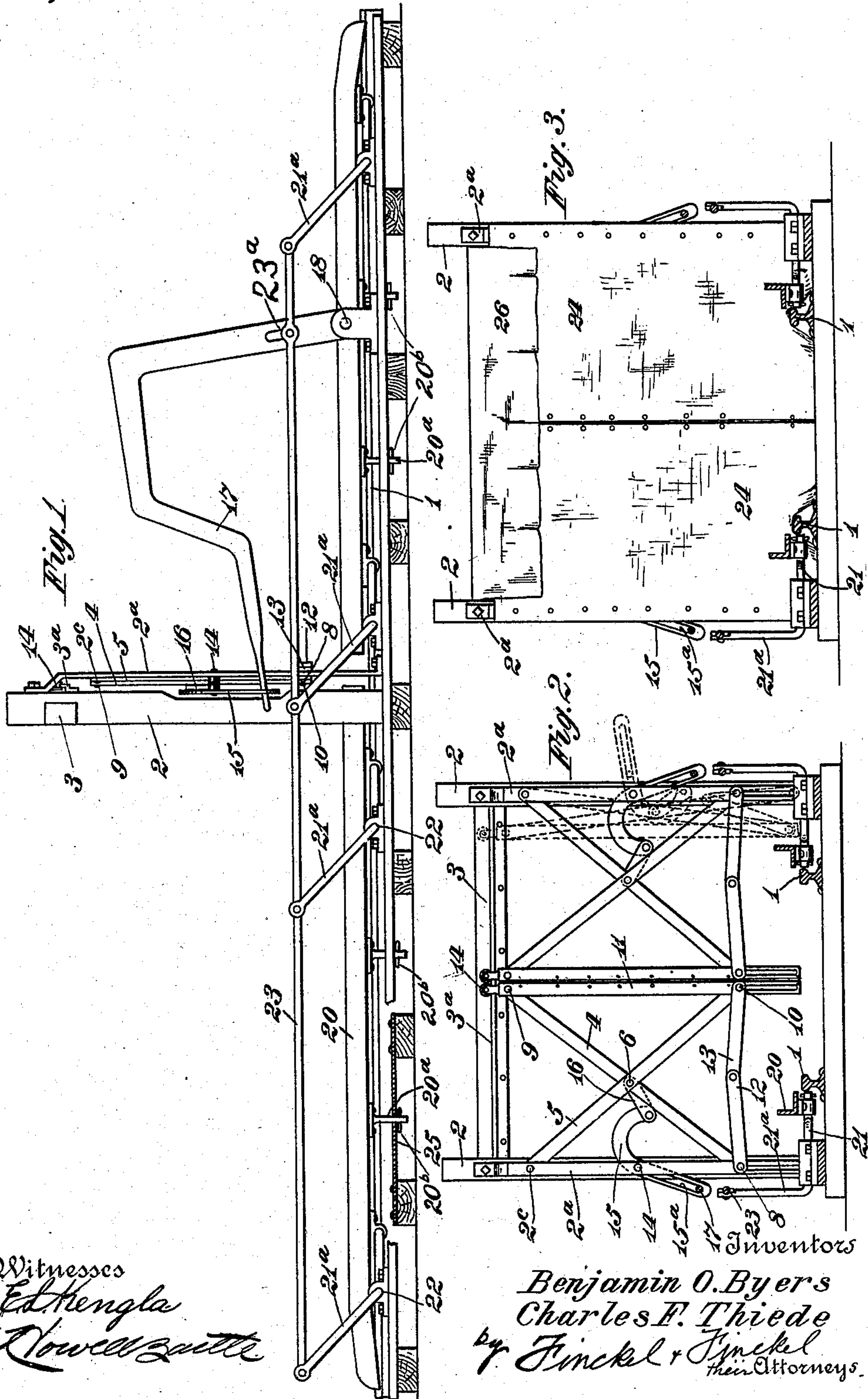


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AUTOMATIC MINE DOOR.  
APPLICATION FILED APR. 22, 1908.

900,262.

Patented Oct. 6, 1908.



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# UNITED STATES PATENT OFFICE.

BENJAMIN O. BYERS AND CHARLES F. THIEDE, OF COLUMBUS, OHIO.

## AUTOMATIC MINE-DOOR.

No. 900,262.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed April 22, 1908. Serial No. 428,531.

*To all whom it may concern:*

Be it known that we, BENJAMIN O. BYERS and CHARLES F. THIEDE, citizens of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Automatic Mine-Doors, of which the following is a specification.

The object of this invention is to provide improved means for opening and closing mine doors so that it shall not be necessary for the car man to stop on his way in going either into or out of the mine to manually operate said door.

The invention consists in the details of construction and combination of parts hereinafter described and claimed, the invention not being confined in its embodiment to precisely the forms of the parts shown in the accompanying drawings.

In said drawings—Figure 1 is a side elevation with parts broken out to show details, the door being exhibited edgewise; Fig. 2 is an elevation in front view of the door frames or sections and operating devices; Fig. 3 is a similar view showing the fabric coverings applied to the door frames.

In the views 1, 1 designate the track rails on which the mine cars run.

2, 2 designate the fixed vertical standards which have secured to their faces and parallel thereto strap members 2<sup>a</sup> and 2<sup>a</sup>.

The character 3 designates a head or cross connecting piece by which together with the standards the door frames are supported.

Because the frames of the door sections and their operating devices at each side of the track are duplicates of each other, or halves of the structure, a description of the parts at one side will suffice for both. Each door frame section includes the folding members 4 and 5 pivoted together near their middles at 6. The member 5 is pin-pivoted at a fixed point on the upper portion of the standard or on the strap member, as at 2<sup>c</sup>, and the member 4 has a sliding pivotal pin-connection, as at 8, near the lower portion of said strap 2<sup>a</sup>. The other or inner ends of the members 4 and 5 have pivotally connected to them, at pins 9 and 10, a bar 11, the connection at 10 being a sliding one. The pin connections at 8 and 10 are connected by jointed links 12 and 13 that break upward. The upper end of the bar 11 carries

a roller 14 to run on a track 3<sup>a</sup> secured to the cross piece 3. It will thus be observed that the door frame section is a folding structure capable of being collapsed (see dotted lines Fig. 2) toward and opened from (see full lines same view) the standard 2, and that in folding toward the standard the lower ends of the members 4 and 5 are projected downward and conversely. Pivoted near the middle of the strap member 2<sup>a</sup> or the standard 2 at 14 is a bent lever 15, the inner end of which is connected by means of a link 16 with the pin connection 6, while the outer end thereof is provided with a slot 15<sup>a</sup>.

17 designates a heavy arm pivoted at 18 alongside and standing in a plane parallel to the track, said arm having its free end within the slot 15<sup>a</sup> of the lever 15 so that the weight of said arm shall normally tend to hold the door frame in extended or doorway-closing position.

In front and beyond the door and close to the rails 1, 1 are short auxiliary rail sections 20. These auxiliary sections are adapted to be depressed by the car wheel and are supported on crank levers 21 pivoted in bearings at 22, said levers including upwardly extending arms 21<sup>a</sup>. Pivotally connected to all the arms 21<sup>a</sup> at each side of the track is a bar 23 and said bar is connected by a sliding connection, at 23<sup>a</sup>, with the arm 17 so that motion of said bar 23 is communicated to said arm 17, or conversely motion of said arm 17 is communicated to said bar 23. It will thus be observed that a car approaching the door from either direction will ride upon the auxiliary rails 20 and depress them and thereby move the folding door sections asunder to open the passage way into or out of the mines. It will also be observed and as can be gathered from what has already been said that when the car runs off the auxiliary rails 20 the weight of the arms 17 will tend to throw the door frames toward each other and close the passage way.

To limit the upward throw of the auxiliary rails they can be provided with downwardly projecting pins 20<sup>a</sup> containing stops 20<sup>b</sup> to abut against the under side of suitable obstructing plates 25 secured to the ties, as exemplified in Fig. 1.

The frames of the door sections are covered with flexible coverings, preferably canvas, as seen at 24, Fig. 3. And the coverings



can be supplemented at the top with a flexible permanent curtain, as seen at 26, Fig. 3. These coverings are designed to close the passage way and keep the air in the mine or  
5 preclude its too rapid discharge.

It will be noted that the weight of the car on the auxiliary rails holds the door in open position until the car leaves said auxiliary rails and that the door cannot close on the  
10 car.

What we claim and desire to secure by Letters Patent is:

1. In a mine door, the combination with fixed vertical standards 2, of folding door  
15 sections each comprising the cross bars 4 and 5, levers 15 linked to the cross bars at their junctions, weight arms 17 for operating said levers 15, movable tracks 20, and means con-

nected with said arms and with said movable tracks. 20

2. In a mine door, the combination of fixed standards 2, folding door sections each comprising the cross bars 4 and 5, levers 15 linked to the cross bars at their junctions, arms 17 for operating said levers 15, movable auxiliary tracks 20, fixed rails 1, horizontally arranged bars 23 operative by said rails, weight arms 17 having sliding connection with said bars 23 and the folding door sections, substantially as described. 25 30

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