

Patented Feb. 4, 1913.

2 SHEETS—SHEET 1.

1,052,147.

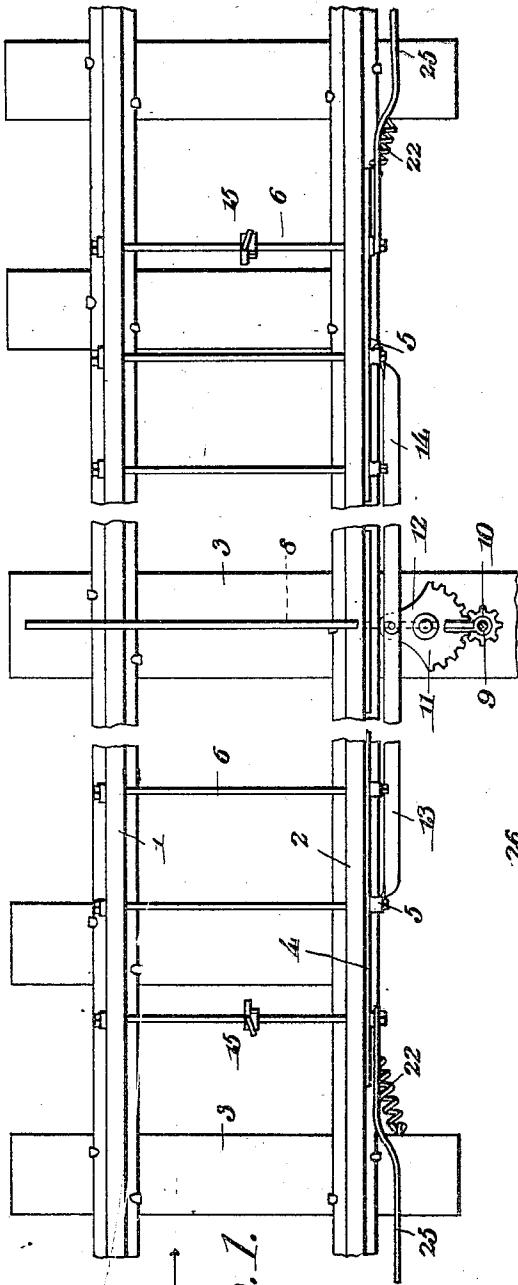


Fig. 1.

Witnesses

O. R. Clark
W. B. Austin

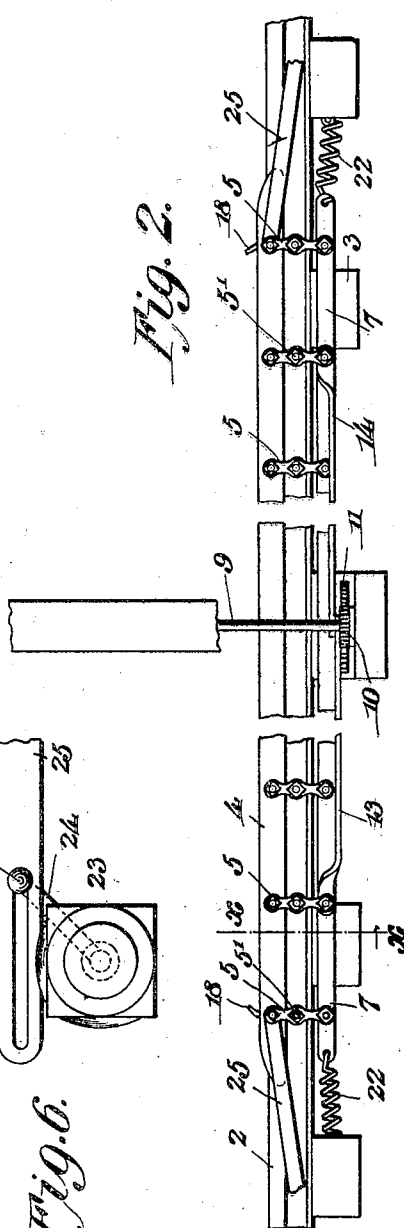


Fig. 2.

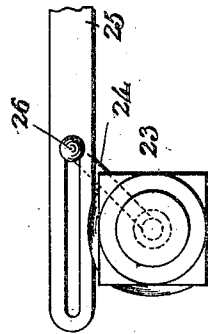


Fig. 6.

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2 SHEETS-SHEET 2.

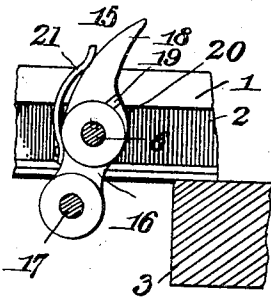
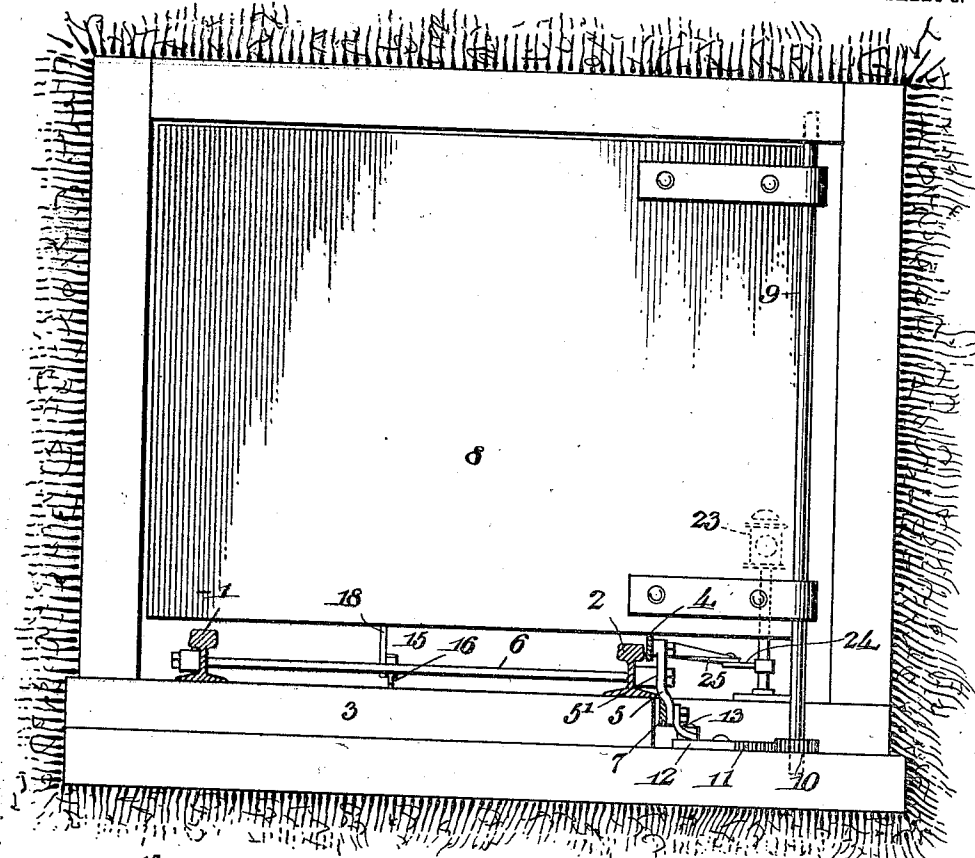


Fig. 4.

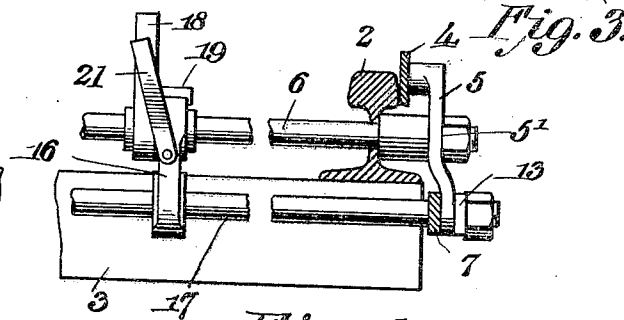


Fig. 5.

Witnesses

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MINE-DOOR.

1,052,147.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed June 7, 1912. Serial No. 702,257.

To all whom it may concern:

Be it known that I, NICOLA JACHO, a subject of the King of Italy, residing at Allentown, county of Lehigh, and State of Pennsylvania, have invented certain new and useful Improvements in Mine-Doors, of which the following is a specification.

My invention relates to mine doors or gates and more particularly to the class of doors or gates used in connection with mines equipped with railways.

The object of the present invention is to provide a door of the character described, which in normal or closed position extends transversely across the track, equipped with means for automatically swinging the same to open position upon the approach of a car from either direction.

A further object of my invention is to provide a door actuating mechanism which shall normally hold the door in closed position transversely across the track, and which, at the approach of a car or train from either direction, will automatically swing the door to open position in a direction away from the approaching car or train, returning same to normal or closed position after the car has passed.

With the above recited objects in view as well as others which will be apparent when the nature of the invention is better understood, my invention resides in a depressible rail positioned adjacent to and extending longitudinally of a traction rail of a mine railway, the said depressible rail being extended in either direction beyond the door in order that the door may be operated from a point distant from the door in either direction; a trip mechanism in connection with the depressible rail adapted to be operated by the approaching train or car whereby the depressible rail may be thrown into operative position before being contacted by the car wheel; a gate or door positioned adjacent to and being adapted normally to extend across the track, a pinion secured to the pintle of the door, a segment arranged adjacent thereto and adapted to engage the pinion, a link connecting the depressible rail with the segment, springs attached to the depressible rail whereby the mechanism shall be returned to normal position when the depressible rail is released,

and a signaling device adapted to be controlled by the movements of the depressible rail.

In the drawings:—Figure 1 is a plan view of a railway track equipped with a device embodying my invention, Fig. 2 is a side elevation of the same, a part of the door post being broken away to better show the construction, Fig. 3 is an enlarged section taken upon the line $x-x$ of Fig. 2 and looking in the direction indicated by the arrows, Figs. 4 and 5 are enlarged views of the trip mechanism, and Fig. 6 is a plan view of the signaling apparatus.

Referring now more particularly to the drawings, 1 and 2 represent the ordinary traction rails of a mine railway and 3 the ties to which the rails are securely fastened. The depressible rail member, as indicated at 4, lies adjacent to either of the traction rails and extends parallel therewith a suitable distance each side of the gate or door, and is adapted to be depressed by the weight of the car wheel. This depressible rail is supported in position by a plurality of rocker arms 5, which arms are pivotally secured to the web of the traction rail 2 by means of bolts 6. The rocker arms 5 extend below the pivot points 5' and have secured to their ends a connecting rail or bar 7. This connecting bar extends substantially the entire length of the depressible rail 4 and it is obvious that when the wheel of a car depresses the depressible rail, a longitudinal movement will be imparted to the bar 7 by means of the rocker arms 5.

The door or gate 8 is pivoted at one side of the track in the door frame by means of the pintle 9. The pintle 9 has its ends journaled in the upper and lower cross beams of the door frame, and carries adjacent its lower end a pinion 10. The pinion 10 is keyed or otherwise rigidly secured to the pintle and is engaged by a segment 11, also pivotally secured to the base beam of the door frame. The segment 11, at a point diametrically opposite the door supporting pintle is provided with an arm 12 to which are pivotally secured the ends of operating links 13 and 14. The links 13 and 14 extend in opposite directions from the arm 12 of the segment and are fastened at their ends to the connecting bar 7.

It will be observed that when in normal or inoperative position the connecting points at the extremities of the rocker arms are in vertical alinement with the pivot point thereof so that the device is inoperative until the depressible rail is thrown off center. To throw the mechanism into operative position at the approach of a car or train I provide at each end of the depressible rail and at a position between the traction rails, a trip mechanism. This trip mechanism is indicated at 15 and consists of an arm 16, one end of which is loosely mounted upon the bolt 6, the other end extending downwardly to engage a bar 17, which bar is in turn connected with the connecting bar 7. Pivottally mounted upon the bolt 6, adjacent the arm 16, is a tripping finger or pawl 18. This pawl 18 is provided with a laterally extending lug 19 which extends across the arm 16 and is adapted to engage a shoulder 20 upon the upper end thereof. The pawl 18 is held in vertical or engaging position by means of a leaf spring 21 attached to the arm 16. It is obvious that this arrangement will, when tripped by an approaching car, operate the connecting bar sufficient to overcome the aforementioned dead center and it is designed to be operated at a time just before the first wheel of the car contacts the depressible rail. When tripped by a car traveling in a direction away from the door, the pawl 18 will not operate the arm 16, but will idle back and forth and will be returned to vertical position by means of spring 21 after the train has passed. By having a trip mechanism at each end of the depressible rail to give an initial movement to the rail in the proper direction, it will be seen that the mechanism will be operated to open the gate in the direction away from the approaching car or train, irrespective of the direction of the approach of the car or train. For the purpose of restoring the mechanism to normal position after the depressible rail has been released, springs 22 are provided which are preferably connected to the ends of the connecting bar 7.

In order that persons or cars on the opposite sides of the door may be warned of the approach of a car from beyond the door, a signal 23 is provided. This may consist of an ordinary semaphore arranged at a distance each side of the door and so connected to the door operating mechanism that the signal on the opposite side of the door only, from that approached by the car, will be operated. To this end I provide the usual rotatable lamp 23 to which is rigidly secured a horizontally disposed arm 24. The arm 24 is operated by a link 25 which is attached to the connecting bar 7. An elongated slot is provided in the end of the link 25 adjacent the arm 24 to receive a pin 26 on said arm. By this construction the sig-

nal upon the opposite side of the door from that approached by the car alone will be operated.

The operation of the device is as follows: Assuming that a car is approaching from the direction indicated by the arrow in Fig. 1, the car first engages the pawl 18 thereby throwing the depressible rail into a position that will actuate the mechanism to open the gate in a direction away from the car, and will at the same time, operate the semaphore beyond the gate to warn persons or cars there of the approach of the car mentioned. Owing to the slotted connection of the link 25 and the pin 26 of the semaphore arm, it will be obvious that the signal upon the side of the door from which the car is approaching will not operate, but will remain clear. After the car or train has passed by the door and is clear of the depressible rail, the mechanism is automatically returned to operative position and the signal indicates a clear track.

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

1. The combination with a railway track, a gate mounted beside the track and adapted normally to extend across the same, means comprising a depressible rail adapted to be actuated by the wheels of a car approaching from either direction, means connecting the depressible rail with the gate whereby the gate will be swung to open position away from the approaching car, trip mechanisms positioned on the track a suitable distance in each direction beyond the gate for initially actuating said depressible rail, substantially as described.

2. The combination with a railway track, a gate mounted beside the track and adapted normally to extend across the same, means comprising a depressible rail adapted to be actuated by the wheels of a car approaching from either direction, means connecting the depressible rail with the gate whereby the gate will be swung to open position away from the approaching car, trip mechanisms positioned on the track a suitable distance in each direction beyond the gate for initially actuating said depressible rail, and means for returning said gate and said gate actuating mechanism to normal position when the said depressible rail has been relieved of pressure, substantially as described.

3. The combination with a railway track, a gate mounted beside the track and adapted normally to extend across the same, mechanism connected with said gate and adapted to be operated by an approaching car, to swing said gate to open position, a trip adapted to impart initial movement to said mechanism, said trip consisting of an arm pivottally mounted adjacent the traction rails, a pawl mounted adjacent said arm

and adapted to be contacted by a car, a laterally extending finger upon said pawl, said arm being provided with a shoulder, adapted to be engaged by said finger, means for
6 holding said finger normally into engagement with said shoulder so that said arm will be rotated when said pawl is moved in one direction but will remain idle when moved in the opposite direction, a bar connecting the free end of said arm to said
10 mechanism whereby the latter will be ac-

tuated by said trip, and means for restoring said mechanism to normal position when the same has been released, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NICOLA JACHO:

Witnesses:

FRANCESCO D'ONAFRIO,
GEORGE E. BOYLE.