J. F. DILLON.

MINE DOOR.

APPLICATION FILED FEB. 6, 1914.

1,107,045.

Patented Aug. 11, 1914.

2 SHEETS—SHEET 1.

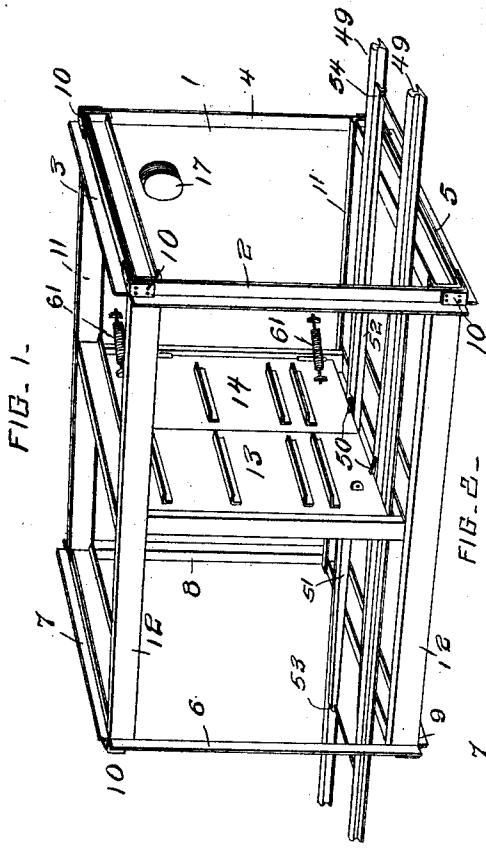


FIG. 1.

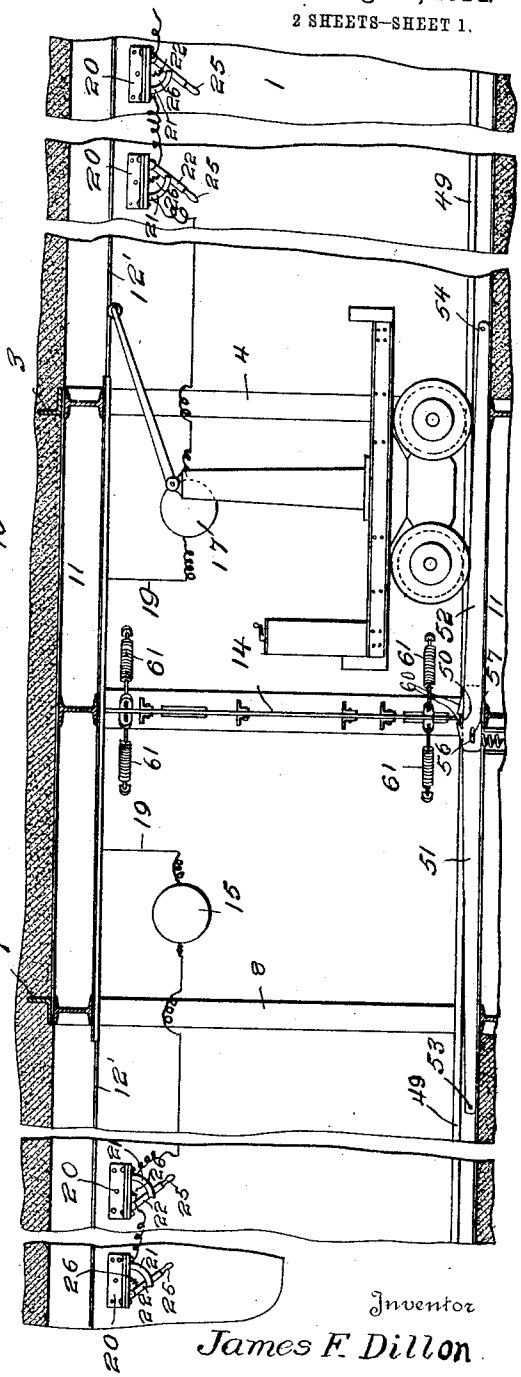


FIG. 2.

Witnesses

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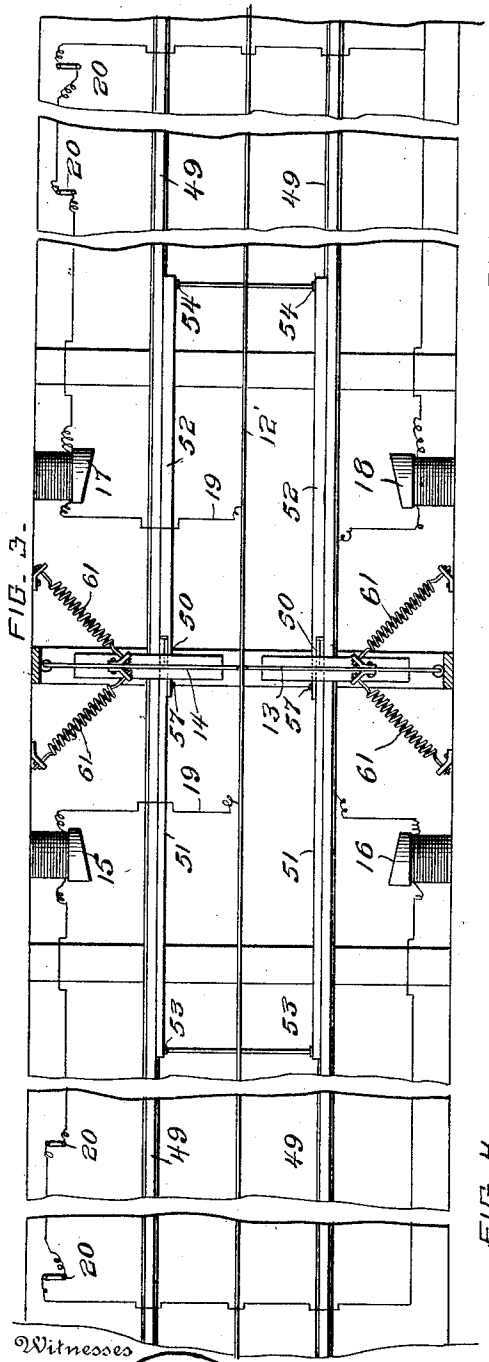


FIG. 3.

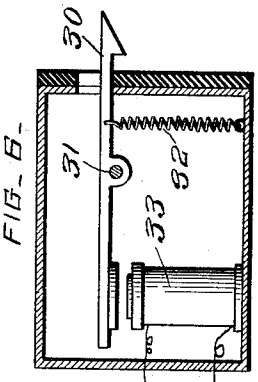


FIG. 6.

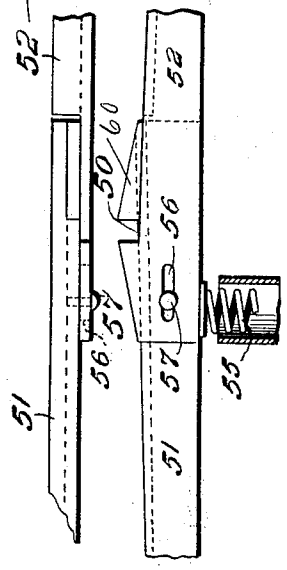


FIG. 5.

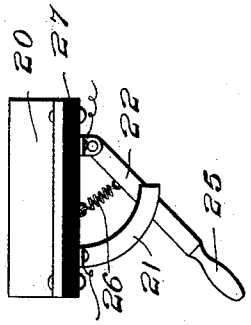


FIG. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

JAMES F. DILLON, OF DANTE, VIRGINIA, ASSIGNOR OF THREE-FOURTHS TO C. F. KILGORE AND ONE-FOURTH TO ALONZO BLEVINS, BOTH OF COEBURN, VIRGINIA.

MINE-DOOR.

1,107,045. Specification of Letters Patent. Patented Aug. 11, 1914.

Application filed February 6, 1914. Serial No. 816,877.

To all whom it may concern:

Be it known that I, JAMES F. DILLON, a citizen of the United States, and a resident of Dante, in the county of Russell and State of Virginia, have invented new and useful Improvements in Mine-Doors, of which the following is a specification.

This invention relates to mine doors, and pertains more particularly to that type of door which is automatically opened by the travel therethrough of a mine car, and in which means is provided to hold the door closed normally, and to hold it open until the car has passed entirely through the same.

In the accompanying drawing, in which like reference characters indicate similar parts, Figure 1 is a perspective view of a mine door of my invention, showing the swinging doors in closed position; Fig. 2 is a vertical sectional view of my doors, showing same being opened by the car; Fig. 3 is a plan view of the track and the wiring of the door holding means; Fig. 4 is a detail view of one of the switches for controlling the door holding magnets; Fig. 5 is a detail view of the latch for holding the doors in closed position, and Fig. 6 is a modified form of my device showing latches for holding the doors in open position having electro-magnets for releasing same.

Referring more particularly to the drawings, the numeral 1 designates a mine opening in which is securely fitted a frame of suitable angle bars 2, 3, 4 and 5, and within the opening is another frame composed as is the first frame of angle-bars 6, 7, 8 and 9. These frames are suitably braced at their corners by plates 10. Connecting the two front and rear frames, and on each side of the opening are provided the frames 11 and 12, which may be boarded or filled to comprise suitable walls for the mine opening.

The cars used in the operation of my device run on tracks 49 and are of the ordinary electrically-driven type, and for the supply of the electric current therefor a suitable trolley wire 12′ is strung above the track in the usual manner. Suitably hinged on the side frames of the walls, are provided the doors 13 and 14, the free edges of which meet at approximately the center of the track. Said doors are made of metal and are of the character that is susceptible to electro-magnetism, and are so positioned on their hinges that they may be opened sufficiently to allow a clear passage between them for a mine car running on the track. These doors are normally held in closed position by suitable latches 50 pivotally mounted on the track. Said latches comprise two pivoted bars 51 and 52 pivoted at 53 and 54, respectively. The said bars are normally held in elevated and locking position by a suitable coil spring 55 seated in a casing beneath the track. The latch member 52 is provided with a slot 56, through which projects a pin 57 carried by the member 51, which construction permits the necessary play between the members when the bars are depressed or released. The heads 60 on the bars will normally engage the lower edge of the doors and hold them in closed position, and it will be apparent that as a car approaches the doors, the flanges on the wheels thereof will depress the bars and release the doors to permit them to be pushed open by the car. Suitably positioned on the side frames of the mine opening, are a plurality of electro-magnets 15, 16, 17 and 18, which are employed to hold the doors in their open position during the passage of the car. There are preferably four of said magnets provided, one at each corner of the side frames, designed to operate in pairs, the two magnets 15 and 16 serving to hold the doors open in one direction, while magnets 17 and 18 serve to hold them open in the opposite direction. Said magnets are in multiple with the electric circuit and are of such resistance that the electric power for operating the trolley cars will not be impaired by the energizing of same. Connected with the trolley wire, is a conductor 19 which extends through all of the magnets and furnishes the current to magnets constantly energized. Said conductor extends to the track through which it is grounded in the ordinary manner. Suitably positioned at ample distances on each side of the doors to permit the clearance of cars or trains through the doors are provided a plurality of spring switches 20 the purpose of which is to break the circuit through the magnets thus deënergizing them and allowing the doors to swing to closed position under the tension of the springs 61 attached thereto.

The spring-switches 20 are of ordinary knife switch type having one fixed contact 21 and the movable contact 22 adapted to be connected to complete the circuit therethrough. The pivoted contact 22 has an extension arm provided with an insulated handle 25. Said switch is mounted on a suitable base 27 on which is secured a spring 26 connected with the movable contact by which the movable contact is normally held closed and by which it is returned to closed position after having been opened to allow the release of the doors.

In the modified form of my invention shown in Fig. 6 of the drawings, the electro-magnets for holding the doors open are omitted, and the doors are held in open position by means of the catches 30 which are pivoted at 31, and held in engaging position by the spring 32. Behind the shank of the catches 30 is provided an electromagnet 33 suitably connected with a source of electric power, and suitably wired with a suitable switch or plurality of switches by which the energizing of the magnets is controlled to draw the latches out of contact with the doors and release them to close in normal position under the tension of their controlling springs as heretofore described.

It will be apparent from the foregoing, that the doors described will be held normally closed, and that they may be released and opened by the collision of a car in either direction, when, in the first form described, the doors are drawn open by the electromagnets. When the car has passed entirely through the opening, the operator may throw a switch to deënergize the door-holding magnets and allow them to swing to their closed position.

In the modified form of my invention described, the doors are secured in their open position by means of pivoted latches which may be released by the action of electromagnets adjacent thereto and which may be energized by switches similarly positioned as those for deënergizing the door-holding magnets.

Having thus described my invention, what I claim as new, and desire to be secured by Letters Patent, is—

In a device of the character described, the combination with a railway track and an electric trolley wire, of a plurality of pivoted doors arranged transverse of the track, a latch in said track for normally holding the doors in closed position and adapted to be released by the approach of a vehicle running on the track in either direction, a plurality of constantly energized magnets in circuit with said electric trolley wire for holding said doors in open position by magnetic attraction, a plurality of spring switches arranged in spaced positions along the track on either side of the doors for deënergizing the magnets to release the doors from open positions, and means for returning the doors to closed position, substantially as described.

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Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."