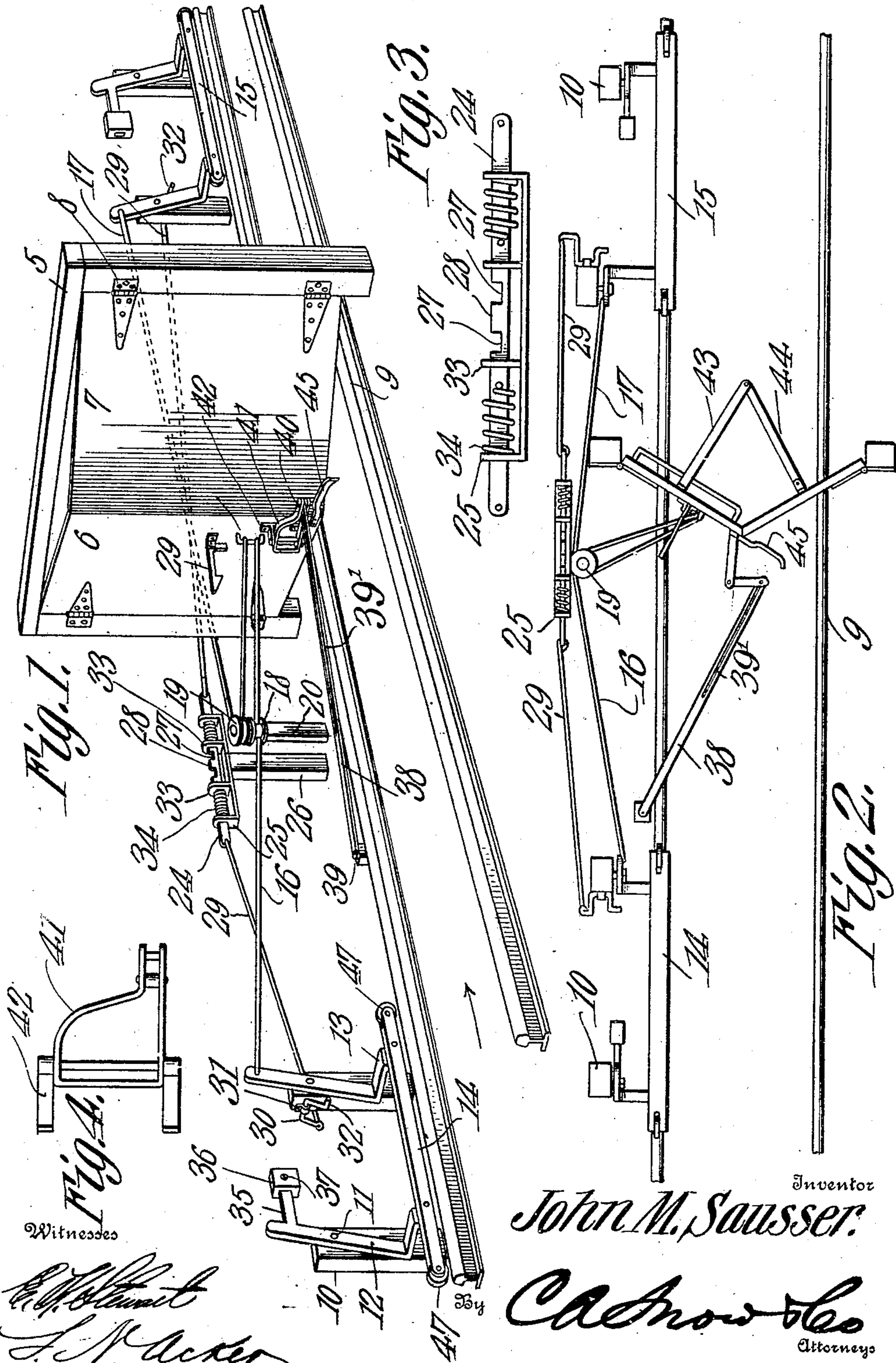


J. M. SAUSSER.
MINE DOOR OPERATING DEVICE.
APPLICATION FILED DEC. 21, 1907.

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UNITED STATES PATENT OFFICE.

JOHN M. SAUSSER, OF OSNABURG, OHIO.

MINE-DOOR-OPERATING DEVICE.

No. 908,333.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed December 21, 1907. Serial No. 407,595.

To all whom it may concern:

Be it known that I, JOHN M. SAUSSER, a citizen of the United States, residing at Osnaburg, in the county of Stark and State of Ohio, have invented a new and useful Mine-Door-Operating Device, of which the following is a specification.

This invention relates to mine doors and has for its object to provide means for automatically opening the door to permit the passage of the car, and means for returning the door to closed position.

A further object is to provide means for locking the door in open position during the passage of the car, and means actuated by the door opening means for releasing the locking means.

A still further object of the invention is to generally improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a perspective view of a mine door operating device constructed in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a detail side elevation of the door locking device. Fig. 4 is a side elevation of the swinging bracket of the auxiliary door opening device.

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

The improved mechanism forming the subject matter of the present invention is principally designed for use in connection with mine doors and similar closures and by way of illustration is shown applied to a mine door of the ordinary construction in which 5 designates the door frame, and 6 and 7 the swinging doors or closures pivotally connected with the frame, at 8, and adapted to normally extend transversely across the track 9.

Disposed outside the track on opposite sides of the frame 5 are one or more sets of spaced posts or standards 10 on which are pivotally mounted for rocking movement at 11 vertically disposed arms 12. The lower

ends of the arms 12 are provided with angular extensions 13 to which are pivotally secured longitudinally disposed lifting bars 14 and 15. The bars 14 and 15 are disposed above and in vertical alinement with the track rails 9 and are adapted to be swung laterally and upwardly on the pivot points 11 by engagement with the wheels of a passing car, as will be more fully explained hereinafter. Secured to the inner arms 12 are ropes or cables 16 and 17 each having one end fastened to the upper end of the adjacent arm and its opposite end passed around one of the pulleys 18 and 19 and attached to one of the doors, said pulleys being mounted for rotation on a shaft 20 at the rear of the door frame 5, as shown. It will thus be seen that a car approaching the doors from either side of the frame 5 will engage and elevate the track devices or bars 14 and 15 and through the medium of the cables 16 and 17 move the doors to open position.

As a means for locking the doors in open position during the passage of the car through the door opening there is provided a longitudinally movable member or bar 24 slidably mounted in a frame or support 25 secured to the upper portion of the standard 26, the latter being anchored in the ground at the rear of the swinging doors, as shown. The upper longitudinal edge of the locking bar 24 is provided with spaced notches or recesses 27 defining an intermediate locking tooth 28 adapted to engage a catch 29 secured to the adjacent face of the swinging door 6. Fastened to the opposite ends of the bar 24 are cords or cables 29 which extend to crank shafts 30 pivotally mounted in clips 31 secured to the inner standard 10 of each set, as shown. The crank shafts 30 are provided with laterally extending fingers 32 which project into the path of movement of the rocking arms 12. Extending vertically from the frame 25 are spaced plates 33, and interposed between said plates and the adjacent ends of the frame are coiled springs 34 which serve to normally center the tooth 28 with respect to the longitudinal axis of the standard 26 and in position to receive the free end of the catch 29. The upper end of one or both of the arms 12 of each set is provided with a lateral extension 35 on which is slidably mounted a weight 36 to assist in returning the track devices or bars 14 to lowered or normal position after the pas-

sage of the car, said weights being locked in adjusted position on the extension 35 by means of screws or similar fastening devices 37.

Associated with the door opening mechanism above described is an auxiliary door operating member consisting of a bar or lever 38 having one end thereof pivoted at 39 adjacent the track 9 and its opposite end provided with an elongated slot 39' which receives a pin 40 in a swinging frame 41, the latter being mounted in a bracket 42 secured to the adjacent door 6. The lever 38 extends in the path of movement of the car so that should the cable 16 break, said car will bear against the lever 38 and through the medium of the swinging frame 42 move the doors to open position. The doors 6 and 7 are connected by links 43 and 44 so that the opening movement of one door will effect the opening movement of the adjacent door. Extending laterally from the free end of one of the doors, preferably the door 6, is a guard or plate 45 having a curved bearing surface which bears against the car when the door is in open position and which serves to assist in preventing closing movement of said door and also serves to prevent wear on the door during the passage of the car through the doorway. Journaled in the opposite ends of the track devices or bars 14 and 15 are rollers 47 the engagement of which with the adjacent traction wheels of the car serves to prevent injury to said bars.

The operation of the device is as follows:
 The wheels of a car traveling in the direction of the arrow indicated in Fig. 1 of the drawings will engage the terminal roller 47 of the adjacent lifting bar 14 and swing said bar together with the arms 12 laterally and upwardly so as to permit the wheels of said car to travel beneath the lifting bar. As the arms 12 are swung laterally on the pivots 11 a longitudinal pull will be exerted on the adjacent cable 16 and through the medium of said cable swing the adjacent door 6 laterally to open position causing the catch 29 to engage the locking tooth 28, the opposite door 7 being also moved to open position through the medium of the levers 43 and 44.
 When the car passes through the door opening the wheels of said car will engage the track device or lifting bar 15 and move said bar laterally and upwardly thus causing the arm 12 to engage the finger 32 of the crank arm and oscillate the latter to exert a longitudinal pull on the cable 29 thereby to move the locking bar 24 longitudinally within the frame. As the bar 24 moves longitudinally of the frame against the tension of the coiled spring 24 the locking tooth 28 will be moved out of engagement with the catch 29, which latter will register with one of the recesses 27 thus releasing the catch and permitting the doors to move automatically to closed position by gravity or by means of suitable

springs 48 arranged on the hinges 8 of the door.

Attention is here called to the fact that when the door is in open position the guard 45 will bear against the adjacent side of the car so as to prevent undue wear on the door as the car passes through the doorway. It will also be noted that the weights 36 serve to return the lifting bars or track devices 14 and 15 to lowered position after each operation of the device. If desired, however, these weights may be dispensed with, the weight of the bars being relied upon to return the same to normal position.

It will of course be understood that either a single or double door may be used and that the auxiliary operating device and locking mechanism may be dispensed with in some cases.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

1. The combination with a track, of a door forming a barrier for the track, means operatively connected with the door and actuated by a passing car to effect the opening of the door, and auxiliary operating means extending diagonally across the track in front of the door and operatively connected with the latter, said auxiliary operating means being actuated by a passing car to assist in opening the door.

2. The combination with a track, of a door extending across the track, a track device operatively connected with the door and operable by a passing car to effect the opening movement of the door, a spring actuated locking bar mounted for longitudinal movement in a horizontal plane on one side of the door, a catch pivoted to the door and adapted to engage the locking bar for holding the door in open position, said locking bar being actuated by the track device to release the catch.

3. The combination with a track, of a door extending across the track, lifting bars pivotally mounted for rocking movement on opposite sides of the door and operable by a passing car to effect the opening movement of the door, a spring actuated locking bar disposed in a horizontal plane on one side of the door, a catch pivotally mounted on said door and adapted to engage the bar for locking the door in open position, said bar being movable longitudinally in opposite directions to release the catch by engagement with the adjacent lifting bars.

4. The combination with a track, of a door extending across the track, spaced standards disposed on opposite sides of the door opening, rocking arms pivotally mounted on the

standards and having their lower ends provided with angular extensions projecting over the track, longitudinal bars connecting the extensions of the arms, a connection
 5 between the arms and door, said bars being actuated by a passing car to effect the opening movement of the door, a spring actuated locking member slidably mounted in a horizontal plane on one side of the track, a catch
 10 pivoted to the door and adapted to engage the locking member, crank shafts mounted on some of the standards, and a connection between the crank shafts and locking bar, said crank shafts being operable by the
 15 adjacent rocking arm to release the locking member.

5. The combination with a track, of a door normally extending across the track, spaced standards mounted on opposite sides
 20 of the door, rocking arms pivotally mounted on the standards, longitudinal bars connected with the arms, a connection between one of the arms of each set of standards and the door, a support, a frame secured to the
 25 support and having a spring actuated locking bar slidably mounted therein, a catch adapted to engage the bar for locking the door in open position, a crank arm pivotally mounted on one of the standards of each set, and a
 30 flexible connection between the crank arms and the adjacent ends of the locking bar.

6. The combination with a track, of a door normally extending across the track, sets of
 35 standards mounted on opposite sides of the door, rocking arms pivotally mounted on the standards, longitudinal bars connecting the rocking arms, a connection between one of

the arms of each set and the door, a support, a frame secured to the support, a spring actuated locking spring slidably mounted in the
 40 frame and provided with spaced recesses defining an intermediate locking tooth, a catch secured to the door and adapted to engage the tooth for locking the door in open position, crank arms pivotally mounted on some
 45 of the standards of each set, and flexible connections between the crank arms and the adjacent ends of the locking bar for actuating the latter to release the catch.

7. The combination with a track, of a door
 50 extending across the track, a bracket secured to the door, a frame mounted for swinging movement in the bracket, a bar having one end thereof secured to the swinging frame and its opposite end pivotally mounted ad-
 55 jacent the track, said bar being actuated by a passing car to move the door to open position, a spring actuated locking member slidably mounted in a horizontal plane near the track and provided with spaced recesses de-
 60 fining an intermediate locking tooth, a catch pivoted to the door and adapted to engage the tooth for locking the door in open position, and means independent of the lever and actuated by the car for releasing the locking
 65 bar from engagement with the catch to permit the closing movement of said door.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN M. SAUSSER.

Witnesses:

RALPH E. MYERS,
 J. B. SNYDER.