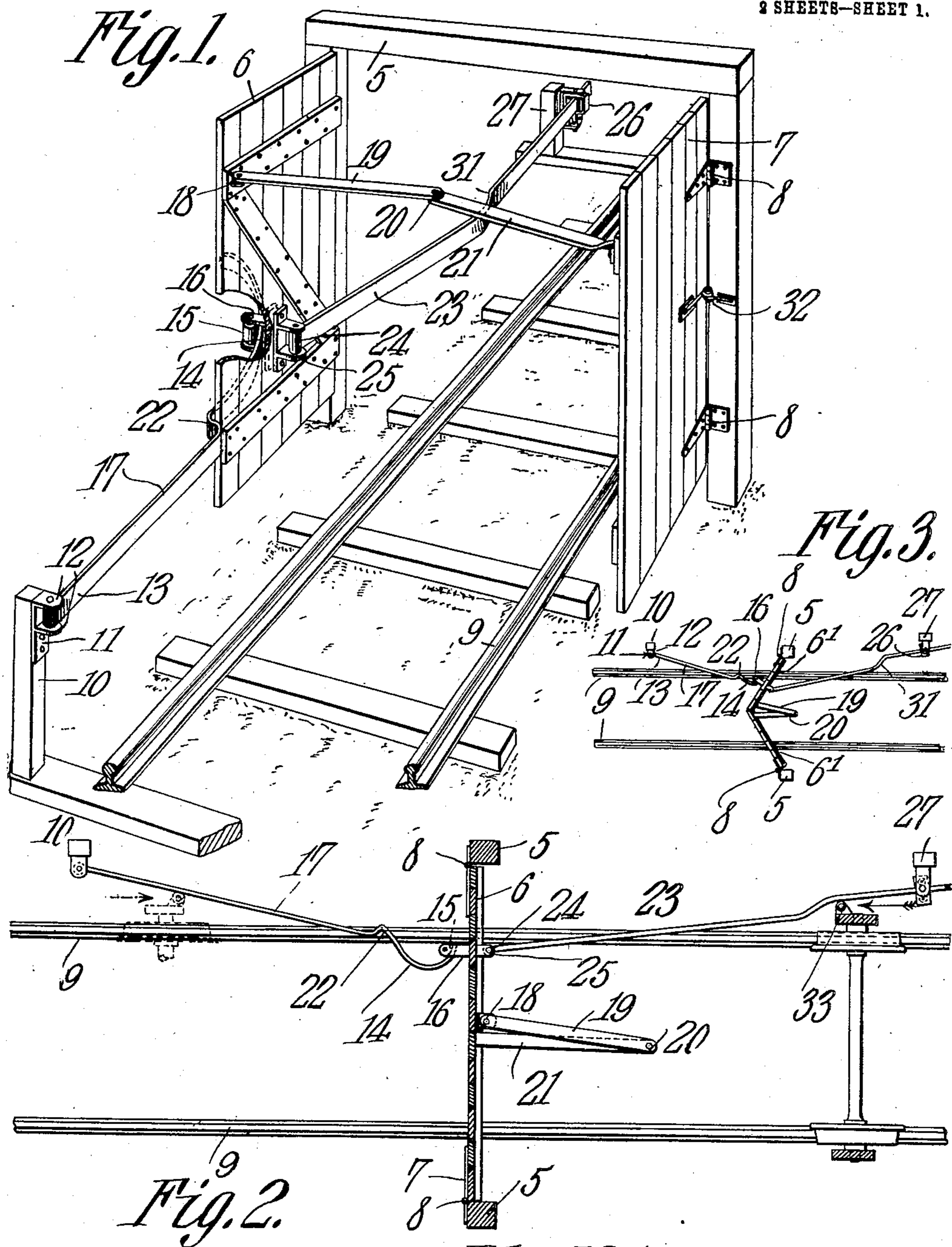


No. 891,737.

PATENTED JUNE 23, 1908.

J. M. SAUSSER.
DOOR OPERATING DEVICE.
APPLICATION FILED AUG. 8, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

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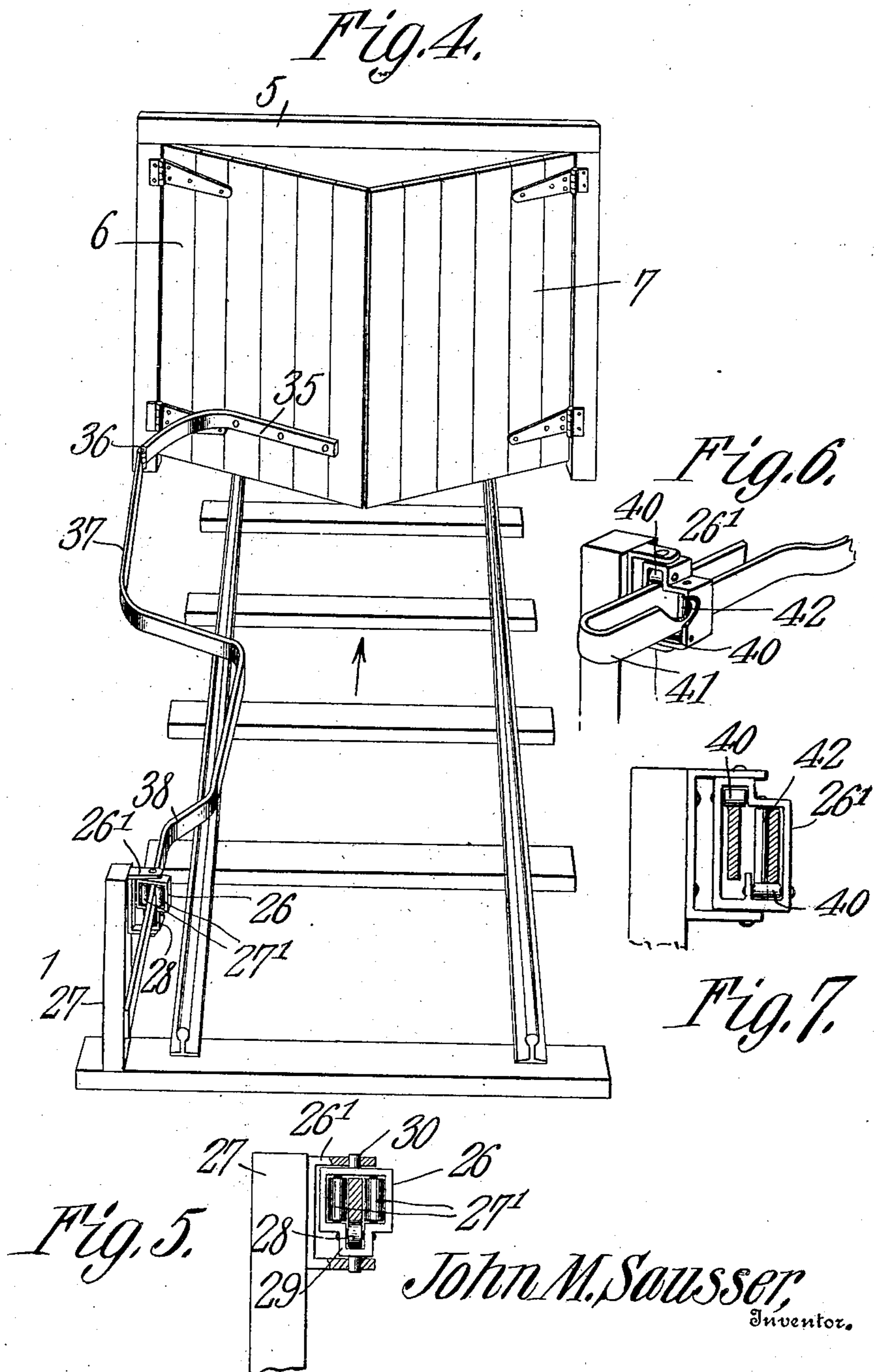
By *C. A. Snow & Co.*
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN M. SAUSSER, OF OSNABURG, OHIO.

DOOR-OPERATING DEVICE.

No. 891,737.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed August 8, 1907. Serial No. 387,726.

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 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 a car, and means for returning the door to closed position.

A 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 the operating mechanism showing the doors in open position. Fig. 2 is a top plan view showing the doors in closed position. Fig. 3 is a similar view illustrating a modified form of the invention. Fig. 4 is a perspective view illustrating a further modification. Fig. 5 is a front elevation partly in section of the roller supporting bracket. Fig. 6 is a perspective view illustrating a modified form of roller supporting bracket. Fig. 7 is a vertical sectional view of Fig. 6.

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 frame and 6 and 7 the swinging doors or closures pivotally connected with the frame, as indicated at 8 and adapted to extend transversely across the track 9.

Arranged near the track on one side of the frame 5 is a post or standard 10 provided with a bracket 11 having spaced laterally extending ears 12 between which is pivoted one end of an actuating bar 13. The opposite or free end of the actuating bar 13 is provided with a curved extremity 14 having a cam face for engagement with an anti-

friction roller 15 mounted in a bracket 16 on one side of the door 6, as shown.

The intermediate portion of the actuating bar 13 is inclined laterally, so as to cause the free end of the bar to project into the path of movement of the mine car whereby the approaching car will strike the inclined face of the bar and move the door 6 to open position.

Pivotally mounted at 18 on the rear face of the door 6 is one end of a laterally extending link 19 the opposite end of which is pivoted at 20 to a relatively stationary link 21 extending laterally from the outer face of the door or closure 7 so that the opening of the door 6 will effect the opening of the door 7.

Attention is here called to the fact that the initial outward pressure exerted on the inclined face of the actuating bar will cause the cam face 14 to engage the roller 15 and partly open the door 6, a further lateral pressure causing the actuating bar 13 to move the door laterally to the position shown in Fig. 1 of the drawings.

That portion of the actuating bar 13 at the base of the curved terminal or cam 14 is off-set at 22 so that when the door 6 is in open position the free edge of the door will be seated in the recess formed by said off-set portion and thus permit the passage of the car through the door-way.

The actuating bar 13 is designed for opening the pivoted doors or closures when the car is traveling in the direction indicated by the dotted arrow in Fig. 2 of the drawings.

As a means for opening the doors when the car is traveling in the opposite direction there is provided a second actuating bar 23 one end of which is pivotally mounted at 24 between a pair of spaced ears or lugs 25 secured to the outside face of the door while the opposite end thereof is slidably mounted in a casing or housing 26 pivoted on a supporting bracket secured to a post or standard 27 similar in construction to the post 10.

Mounted for rotation in the swivel casing or housing 26 are spaced anti-friction rollers 27' adapted to bear against the adjacent sides of the actuating bar 23, there being a third roller 28 seated in the reduced extension 29 of the casing and engaging the lower longitudinal edge of the bar 23, as shown, thereby to reduce friction between the parts. The casing or housing is provided with oppositely disposed trunnions 30 which engage correspondingly shaped apertures in the arms of

the bracket so as to permit free swinging movement of the casing when the bar 23 is actuated to open or close the mine door.

The intermediate portion of the actuating bar 23 is formed with an off-set or inclined portion 31 so that when the mine car is traveling in the direction indicated by the solid arrow in Fig. 2 of the drawings the car will bear against said inclined portion and move the actuating bar 23 longitudinally between the anti-friction rollers 27' thereby to cause said bar to effect the opening of the doors 6 and 7.

The doors may be automatically returned to closed position in any suitable manner and by way of illustration suitable springs 32 are shown in connection with the door for effecting this result.

A suitable antifriction roller 33 is preferably mounted on one end of the axle of the car for engagement with the actuating bars thereby to prevent injury to both the bars and axle when the doors are actuated by a passing car.

Under normal conditions the doors 6 and 7 extend transversely across the track so as to form a closure for the shaft. When the car is traveling in the direction indicated by the dotted arrow in Fig. 2, the roller or tappet 33 will bear against the inclined face of the adjacent actuating bar and through the medium of the cam face 14 and pivoted links 19 and 21 automatically move the doors to open position so as to permit the passage of the car, in the manner before stated.

When the car is traveling in the opposite direction the tappet will engage the off-set portion 31 and force the door inwardly and laterally to open position, the springs 32 automatically returning the doors to closed position as soon as the car has cleared the door way.

In Fig. 3 of the drawings there is illustrated a modified form of the invention in which the doors 6' are normally disposed at an angle to each other, the operation of the device being otherwise similar to that shown in Figs. 1 and 2 of the drawings.

In Fig. 4 there is illustrated a further modification particularly designed for use in connection with mine doors disposed at an angle to each other although the same may be employed with equally good results on doors extending at right angles across the track.

In the form of the device shown in Fig. 4 a bar 35 is secured to one of the mine doors with its free end curved laterally and pivotally connected at 36 with the adjacent end of the actuating bar 37. The intermediate portion of the actuating bar 37 extends inwardly in the path of movement of the car and is provided with an inclined face or shoulder 38 for engagement with the anti-friction roller on the axle of said car, while the free end of the bar is slidably mounted

between the rollers of a swivel casing or housing 40 similar in construction to the casing or housing shown in Figs. 1 and 5 of the drawing. When this form of the device is employed the antifriction roller on the car will engage the inclined face or shoulder 38 and through the medium of the hinge joint 36 partially open the doors. As the car travels in the direction of the arrow the roller on the axle of said car will exert a lateral pressure on the bar 37 and move the doors to open position so as to permit the passage of the car through the door-way.

In Figs. 6 and 7 of the drawings there is illustrated a modified form of roller supporting bracket in which the swivel casing is provided with spaced horizontally disposed anti-friction rollers 40 adapted to bear against the upper and lower longitudinal edges of the curved end 41 of the adjacent actuating bar, there being a vertical roller 42 journaled in the casing and bearing against the adjacent face of the actuating bar, as shown. This construction relieves the pivot points of excessive strains and permits the door to swing easily when moved to open and closed position.

It will of course be understood that actuating bars may be arranged on both sides of the rail-way track and if desired, suitable weights may be connected with the doors for effecting the closing of the same after the passage of the car.

It will also be understood that the mechanism shown in the several figures of the drawings may be employed for actuating either single or double doors and that the tappet may be dispensed with and the actuating bars operated by contact with other parts of the car without departing from the spirit of the invention.

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, a bracket secured to one side of the door, a support, a casing swiveled on the support and provided with anti-friction rollers, and an actuating bar having one end thereof pivoted to the bracket and its opposite end slidably mounted between the rollers of the swiveled casing, said bar being actuated by a passing car for automatically moving the door to open position.

2. The combination with a track, of pivoted doors extending across the track, a link connection between the doors, a bracket secured to one side of one of the doors, a support, an actuating bar having one end thereof pivotally mounted on the support and its

opposite end provided with a cam face for engagement with the bracket, said bar being actuated by a passing car to effect the opening of both doors, and means for automatically closing the doors.

3. The combination with a track, of a door extending transversely across the track, a bracket secured to one side of the door, a pivoted actuating bar having its free end provided with a cam face for engagement with the bracket, said bar being actuated by a passing car to effect the opening of the door, and means for automatically closing the door.

4. The combination with a track, of a door extending across the track, a bracket secured to the door and provided with an anti-friction roller, a post disposed adjacent the track, an actuating bar having one end thereof pivotally connected with the post and its opposite end provided with a cam face adapted to engage the roller, said bar being actuated by a passing car to effect the opening of the door, and means for automatically closing the door.

5. The combination with a track, of a door extending transversely across the track and having a bracket secured to one face thereof, an anti-friction roller journaled in the bracket, a post disposed on one side of the track, an actuating bar pivotally connected with the post and having its opposite end provided with a cam face adapted to engage the roller, there being an off-set portion formed in the actuating bar at the juncture of the bar and cam, said bar being actuated by a passing car to effect the opening of the door.

6. The combination with a track, of a door extending transversely across the track and provided with oppositely disposed brackets, an anti-friction roller journaled in one of the brackets, supports mounted on opposite sides of the door, an actuating bar pivotally connected with one of the supports and having its opposite end provided with a cam face for engagement with the anti-friction roller, a casing swiveled to the other support, an actuating bar having one end thereof piv-

otally mounted in the other bracket and its opposite end slidably mounted in the casing, said bars being actuated by a passing car to effect the opening of the door, and means for automatically closing the door.

7. The combination with a track, of a door frame, doors pivotally mounted on the frame and extending transversely across the track, a link connection between the doors, brackets secured to opposite sides of one of the doors, a support disposed adjacent the track on each side of the door frame, an actuating bar pivotally connected with one of the supports and having its opposite end provided with a cam face for engagement with one of the brackets, a casing swiveled on the other support and provided with spaced anti-friction rollers, an actuating bar pivotally connected with the other bracket and having its opposite end slidably mounted between the rollers of the swivel casing, said bars being actuated by a passing car to effect the opening of both doors, and means for automatically returning the doors to closed position.

8. The combination with a track, of a door frame, a door pivotally mounted for lateral movement on the frame and extending transversely across the track, a bracket secured to one side of the door, a roller journaled in the bracket, a support, an actuating bar having one end thereof pivotally connected with the support and the opposite end thereof provided with a cam face for engagement with the anti-friction roller, said bar being provided with an inclined face arranged in the path of movement of a car and actuated by the latter for automatically moving the door to open position, and means for automatically closing the 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:

W. O. WENTZ,
L. C. WISE.