

No. 813,807.

PATENTED FEB. 27, 1906.

J. LEVAK.
DOOR ACTUATING MECHANISM FOR CARS.
APPLICATION FILED OCT. 5, 1905.

Fig. 1.

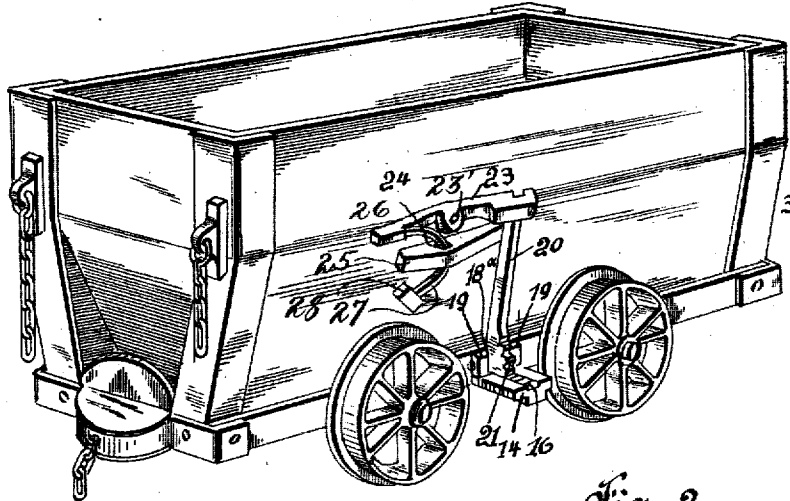


Fig. 2.

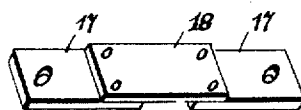
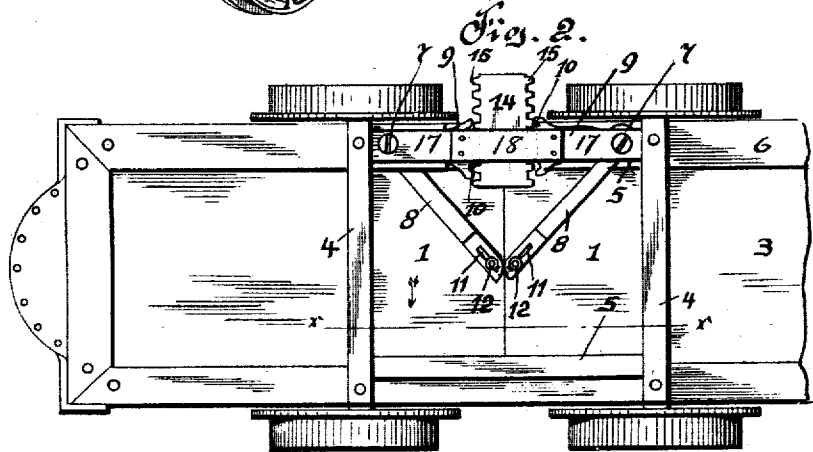


Fig. 4.



Fig. 5.

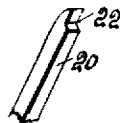


Fig. 5.

Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN LEVAK, OF LEMONT FURNACE, PENNSYLVANIA.

DOOR-ACTUATING MECHANISM FOR CARS.

No. 813,807.

Specification of Letters Patent.

Patented Feb. 27, 1906.

Application filed October 5, 1905. Serial No. 281,512.

To all whom it may concern:

Be it known that I, JOHN LEVAK, a citizen of the United States of America, residing at Lemont Furnace, in the county of Fayette and State of Pennsylvania, have invented certain new and useful Improvements in Door-Actuating Mechanisms for Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in door-actuating mechanisms for cars; and the invention relates more particularly to that type of mechanism used for opening and closing the doors of gondola, hopper, or mining cars.

The primary object of this invention is the provision of novel means for easily and quickly opening and closing the doors of a car, and in this connection the invention is intended for use in connection with pit-cars or cars having doors in their bottoms. To this end I have devised simple and inexpensive mechanism which can be readily applied to cars and easily actuated at any time desired. The mechanism which I employ comprises bell-crank levers which are operated in unison to open and close doors slidably mounted in the bottom of a car, and to actuate said bell-crank levers I employ a lever at one side of the car which can be easily reached by an attendant or operator of a car and locked to retain the doors in a closed position.

The construction of my improved mechanism will be hereinafter described in detail, and reference will now be had to the drawings accompanying this application, wherein like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a perspective view of a pit-car equipped with my improved mechanism. Fig. 2 is a fragmentary bottom plan of the same. Fig. 3 is a fragmentary longitudinal sectional view of the bottom of a car illustrating the sliding doors thereof. Fig. 4 is a perspective view of retaining-plates used in connection with my improved mechanism, and Fig. 5 is a perspective view of the upper end of the operating-lever of the mechanism.

To put my invention into practice, I construct a pit-car with sliding doors 1 1, these doors being adapted to close an opening 2, formed in the bottom of the pit-car 3. The doors are retained in position by cross-bars 4 and longitudinal guides 5 5. Upon one of the longitudinal outer girders 6 of the car are

pivotally mounted, as at 7 7, two bell-crank levers 8 8, the shorter arms 9 9 of which are sector-shaped and toothed, as at 10 10. The longer arms of the levers are reinforced and slotted, as at 11 11, to engage depending studs 12 12, carried by the doors 1 1. Between the toothed sector-shaped arms 9 9 of the bell-crank lever 8 8 is mounted a rack 14, which is substantially T-shaped in cross-section. The rack is provided with teeth 15 15 upon its sides to engage the teeth of the arms 9 9 and the top of the rack is also provided with teeth, as at 16, the object of which will be presently described. The bell-crank levers 8 are guided in their movement by retaining-plates 17 17, which are secured to the girders 6, and the rack 14, which is partially mounted between the ends of these retaining-plates, is held in position by a plate 18, mounted upon the confronting ends of the retaining-plates.

The side of the girder 6 is slotted, as at 18^a, and upon each side of the slot is a lug 19, which is carried by the side of the girder. Between these lugs is a lever 20, the lower end of which is sector-shaped and provided with teeth 21 to engage the teeth 16 of the rack 14. The upper end of the lever 20 is notched, as at 22, to engage behind a grooved spring-pressed pivotally-mounted retaining-arm 23, which is carried by the side 24 of the car 3. The retaining-arm 23 is fulcrumed on a horizontal pivot 23', and a cleat 25 is secured to the side of the car below the arm 23 and is provided with a central opening 26, through which passes a U-shaped spring 27, the lower end of which is secured to the side 24 of the car by a cleat 28 and the upper end of which is attached to the end of the arm 23, said spring serving by its resiliency to press the end of the arm 23, to which is attached, upwardly, so as to cause the opposite end of said arm 23 to bear downwardly and engage the lever 20.

In Fig. 1 of the drawings the position of the lever 20 indicates that the doors are in a closed position, as illustrated in Fig. 2 of the drawings, and should it be desired to open the doors it is only necessary to press upon the rear end of the arm 23 to release the lever 20, and by pulling outwardly upon the lever the rack 14 is moved inwardly toward the center of the car, and by this movement the bell-crank levers 8 8 are moved upon their pivots to slide the doors open, the doors receding one from the other until the

opening 2 in the bottom of the car is clear. To close the doors, a forward movement of the lever 20 toward the side 24 of the car will withdraw the rack 14 and through the medium of the levers 8 8 close the doors. The doors are locked in closed position by engaging the notched end of the lever 20 in the grooved spring-pressed pivotally-mounted retaining-arm 23.

I desire to call particular attention to the fact that in case a car is loaded and the load bears upon the doors that it is an extremely easy operation to slide the doors 1 1 from beneath the load and permit of the same being precipitated through the opening formed in the bottom of the car.

It is a well-known fact that in cars equipped with drop-doors considerable trouble is experienced in closing the doors, owing to the weight of the same, it requiring considerable labor to elevate the doors and lock the same in a closed position. By the mechanism which I employ my improved doors can be easily and quickly closed, and it is thought from the foregoing that the construction, operation, and advantages of the herein-described mechanism will be apparent without further description, and various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit and scope of the invention or sacrificing any of the advantages thereof.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with a car-body hav-

ing an opening formed in its bottom, of doors slidably mounted adjacent to said opening and adapted to close said opening, bell-crank levers connected to said car and to said doors, toothed sectors carried by said levers, a rack slidably mounted upon said car and engaging said toothed sectors, a lever pivotally mounted upon said car and when rocked adapted to actuate said rack, a spring-pressed pivotally-mounted retaining-arm carried by the side of said car and adapted to engage the upper end of said lever, substantially as described.

2. The combination with a car having an opening formed in its bottom, of doors slidably mounted upon the bottom of said car, and adapted to close said opening, a rack slidably mounted upon said car, a lever adapted to actuate said rack, means actuated by the movement of said rack to open and close said doors, means to lock said lever in a fixed position, substantially as described.

3. The combination with a car having sliding doors, of a lever pivotally connected to the side of said car, levers pivotally mounted on the bottom of the car and connected to said doors and actuated through the medium of said lever to open and close said doors, and means to lock said first-named lever in a fixed position, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN LEVAK.

Witnesses:

JNO. BOYLE,
PATRICK KANE.