

987,223.

4 SHEETS—SHEET 1.

WITNESSES
Edward Wright
S. R. Bell.

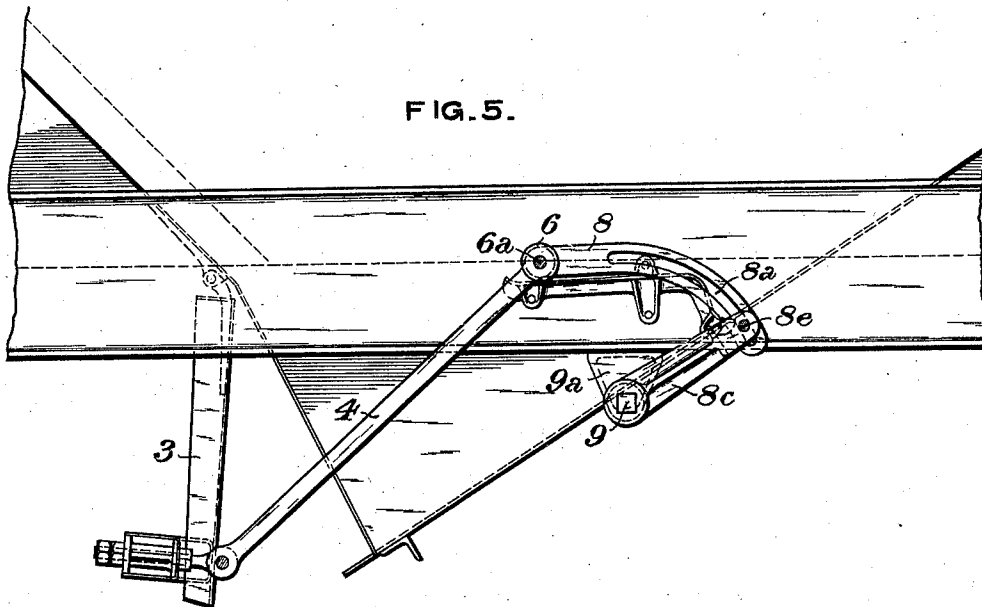
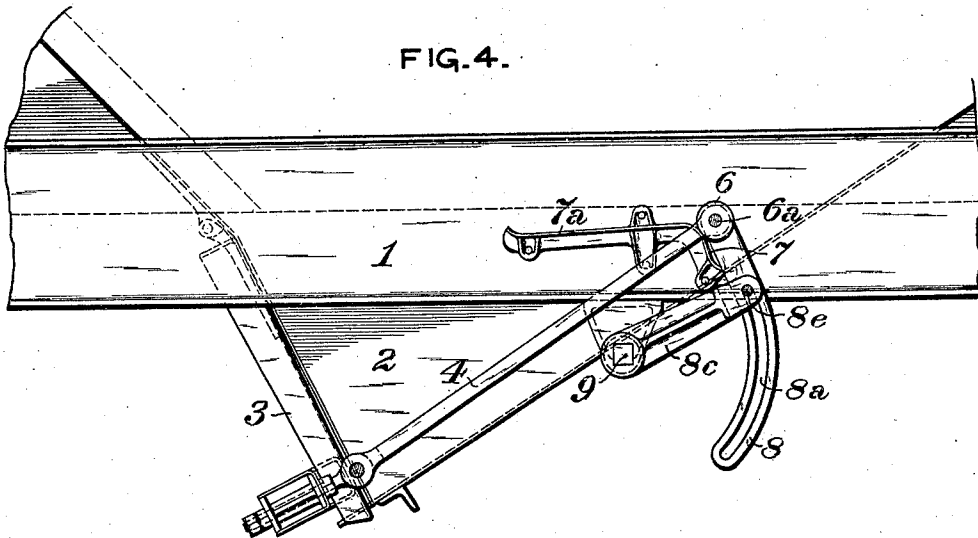
INVENTOR
Albert T. Collins
By *William D. Dyer*
att'y.

A. G. ELVIN.
DOOR OPERATING MECHANISM FOR DUMPING CARS.
APPLICATION FILED DEC. 12, 1910.

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Patented Mar. 21, 1911.

4 SHEETS-SHEET 2.



WITNESSES
Edward Wright
S. R. Bell.

INVENTOR
Albert G. Elvin.
By J. H. Mendenhall
att'y

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4 SHEETS—SHEET 3.

[illegible]

WITNESSES
Edward Wright
S. R. Bell

INVENTOR
Albert F. Elvin
by J. H. Anderson, Esq. atty

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4 SHEETS—SHEET 4.

WITNESSES
Edward Wright
S. R. Bell.

INVENTOR
Albert F. Elvin.
by J. Woodward Bell.
att'y.

UNITED STATES PATENT OFFICE.

ALBERT G. ELVIN, OF EAST ORANGE, NEW JERSEY.

DOOR-OPERATING MECHANISM FOR DUMPING-CARS.

987,223.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Original application filed October 11, 1910, Serial No. 586,444. Divided and this application filed December 12, 1910. Serial No. 596,775.

To all whom it may concern:

Be it known that I, ALBERT G. ELVIN, of East Orange, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Door-Operating Mechanism for Dumping-Cars, of which improvement the following is a specification.

My present invention relates to mechanism for effecting the opening and closure of the swinging doors controlling the bottom openings of so called "drop bottom" or dumping cars, of the type set forth in an application for Letters Patent, filed by me October 11, 1910, Ser. No. 586,444, of which this application is a division, relating specifically to one of the embodiments of my general invention set forth therein, and its object is to provide an appliance of such character which shall be simple and inexpensive in construction, and which, in operation, shall present the advantages of securely holding the doors in closed position by a positive and effective gravity lock which is independent of the means whereby they are elevated into such position, and of permitting their release and movement into full open position without involving danger to the operator by sudden and rapid movement of the member which is manually operated to release them.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings: Figure 1 is a side view, in elevation, of a portion of a drop bottom car, illustrating an application of my invention; Fig. 2, a plan or top view; Fig. 3, a side view, in elevation, of the final locking means of the doors; Fig. 4, a view, similar to Fig. 1, the parts being shown in position just preceding the unlocking of the door; Fig. 5, a similar view, with the door in open position; and, Figs. 6, 7, and 8, views similar to Figs. 1, 4, and 5, respectively, showing a structural modification.

The operating mechanism is preferably, as shown, located between, and supported on the center sills, 1, 1, of a car having hopper bottoms or discharge chutes, 2, to the end openings of which are hinged swinging doors, 3. A link, 4, is pivotally connected, at its lower end, to each of the doors, 3, and has journaled in its upper end, a pin, 6^a, upon which are fixed two rollers, 6, which are adapted to traverse over the surfaces of

the center sills. The lower ends of the locking brackets are curved to form seats in which the rollers, 6, rest when the door is closed, and are thence inclined upwardly and in the direction of the door, from which, inclined positions, they extend, by slightly downwardly inclined top faces, 7^a, in the direction of the door. It will be understood that the duplication of the rollers and locking brackets is made merely for the purpose of equalizing the strain transmitted through the link, and that the structural and operative principle of the appliance is independent of such duplication.

An operating shaft, 9, extends outwardly to one side of the car, and is squared, at and adjacent to its outer end, for the application of a removable operating crank. A ratchet wheel, 10, is fixed upon the operating shaft, and rotation of the latter is prevented when the teeth of the ratchet wheel are engaged by a pivoted pawl or latch, 11, which is held in engagement with the ratchet wheel by a swinging locking arm, 12, pivoted to the side of the car above the ratchet wheel. An arm, 8^c, is fixed on the operating shaft, said arm extending downwardly therefrom at an angle to the link, 4, when the door is in closed position, and carrying, on its outer end, a pin, 8^c. The pin, 6^a, of the link, 4, is pivoted to the upper end of a bar, 8, in which there is formed a longitudinal slot, 8^a, and the pin, 8^c, of the arm, 8^c, is fitted to traverse freely in the slot, 8^a.

In opening the door, the operating shaft is released from the pawl and ratchet lock shown in Fig. 3, and is turned by a crank in the direction of the arrow, Fig. 1. The pin, 8^c, of the arm, 8^c, traverses freely upwardly in the slot, 8^a, of the bar, 8, until it reaches the upper end of the slot, against which it bears and raises the bar and the link, 4, coupled thereto. When the rollers, 6, of the link, reach the top faces, 7^a, of the locking brackets, 7, the bar is released from the pin, 8^c, and the link is swung forward to the position shown in Fig. 5, by the gravity of the door and load, carrying with it the bar, 8, and permitting the opening of the door, without imparting further movement to the arm, 8^c, and operating shaft, thus preventing any jerk or quick motion of the crank and consequent injury to the operator. As shown in Fig. 5, sufficient clearance is allowed in the slot, 8^a, below the pin,

8°, when in this position, to allow the door to swing freely outwardly when a heavy load is thrown upon it.

In order to close the door, the operating shaft is rotated in opposite direction to the arrow, Fig. 1, the bar, 8, being thereby drawn downwardly by the pin, 8°, carrying with it the link, 4, which raises the door, until the latter is closed, when the rollers, 6, of the link, drop into and rest on the lower curved bearing seats of the locking brackets, 7. The door is locked in closed position by the gravity of the bar, 8, and the bearing of the rollers, 6, against the inclined faces of the locking brackets, 7. The final locking of the door is effected by the pawl and ratchet lock shown in Fig. 3.

Figs. 6, 7, and 8 illustrate a modification of structural detail, the operation of which is identical with that of the construction above described, and which differs structurally therefrom only in the particular that the slotted bar, 8, is, in this instance, straight, instead of being curved in segment form as in the former instance. It will be readily seen that the operations of opening and closing the door, and the locking of the door when closed, are effected in precisely the same manner as above described with reference to Figs. 1 to 5 inclusive.

I claim as my invention and desire to secure by Letters Patent:

1. In a car door operating mechanism, the combination of a gravity opening door, a link coupled to said door, a fixed locking bracket normally supporting said link, an operating shaft journaled in fixed bearings

on a car, an arm fixed on said operating shaft, and a longitudinally slotted bar, pivotally connected to the link, and coupled through its slot to said arm, with the capacity of movement relatively thereto.

2. In a car door operating mechanism, the combination of a gravity opening door, a link coupled to said door, a fixed locking bracket, an operating shaft journaled in fixed bearings on a car, an arm fixed on said operating shaft, a roller journaled in the link in position to traverse over the locking bracket, a bar pivotally connected, at one of its ends, to the shaft of said roller and having a longitudinal slot, and a pin fixed in the arm of the operating shaft and traversing in the slot of said bar.

3. In a car door operating mechanism, the combination of a gravity opening door, a fixed locking bracket comprising a curved lower seat, an upwardly inclined portion, and a slightly downwardly inclined top face, a link coupled to the door, a roller journaled in the end of said link farther from the door and normally resting in the curved seat of the locking bracket, an operating shaft journaled in fixed bearings on a car, an arm fixed on said operating shaft, a bar pivotally connected, at one of its ends, to the shaft of the roller of the link and having a longitudinal slot, and a pin fixed in the arm of the operating shaft and traversing in the slot of said bar.

ALBERT G. ELVIN.

Witnesses:

F. W. MARTIN,
C. L. WINEY.