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H. W. DOUGHERTY.

DUMPING CAR.

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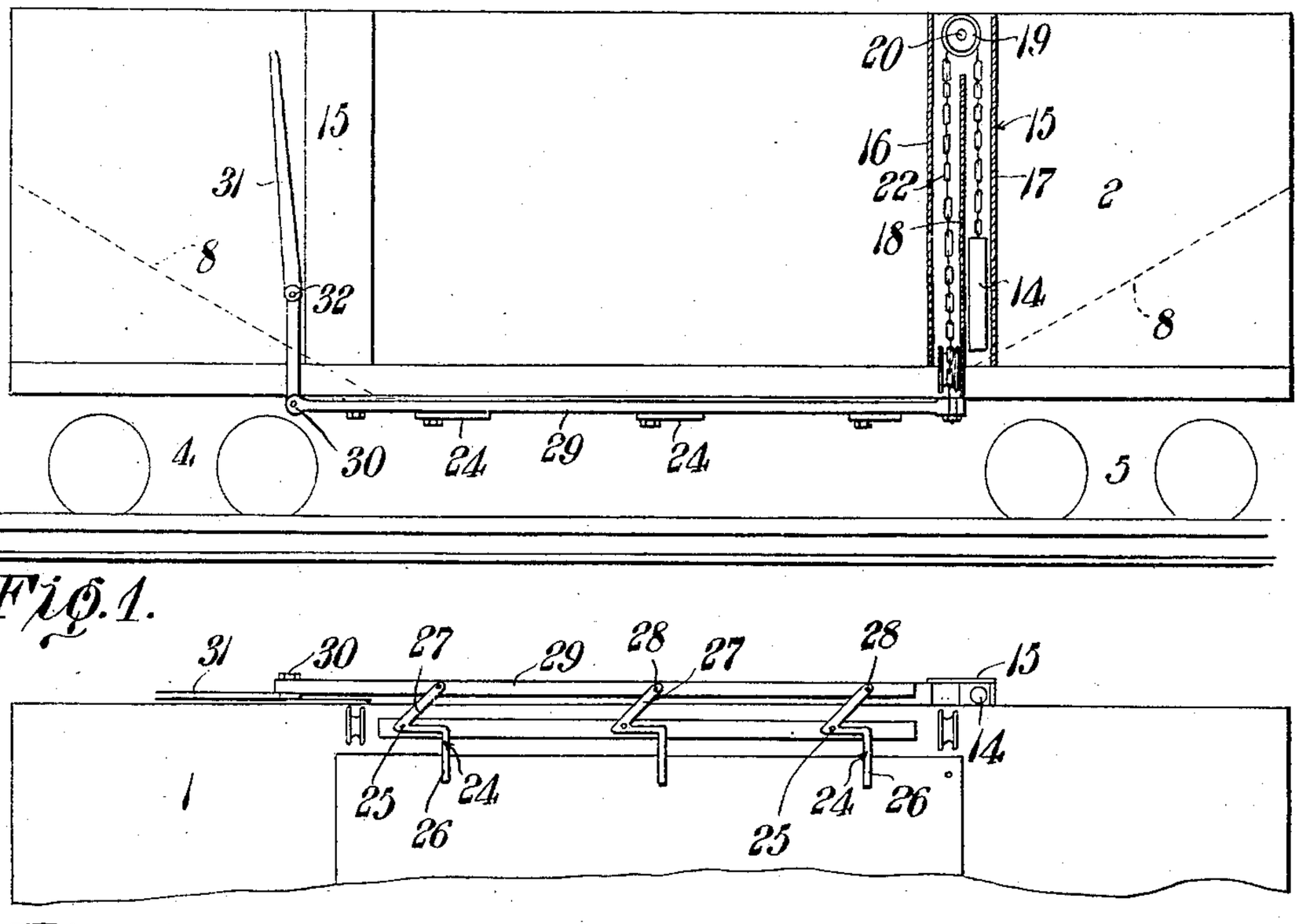

Fig. 1.

Fig. 2.

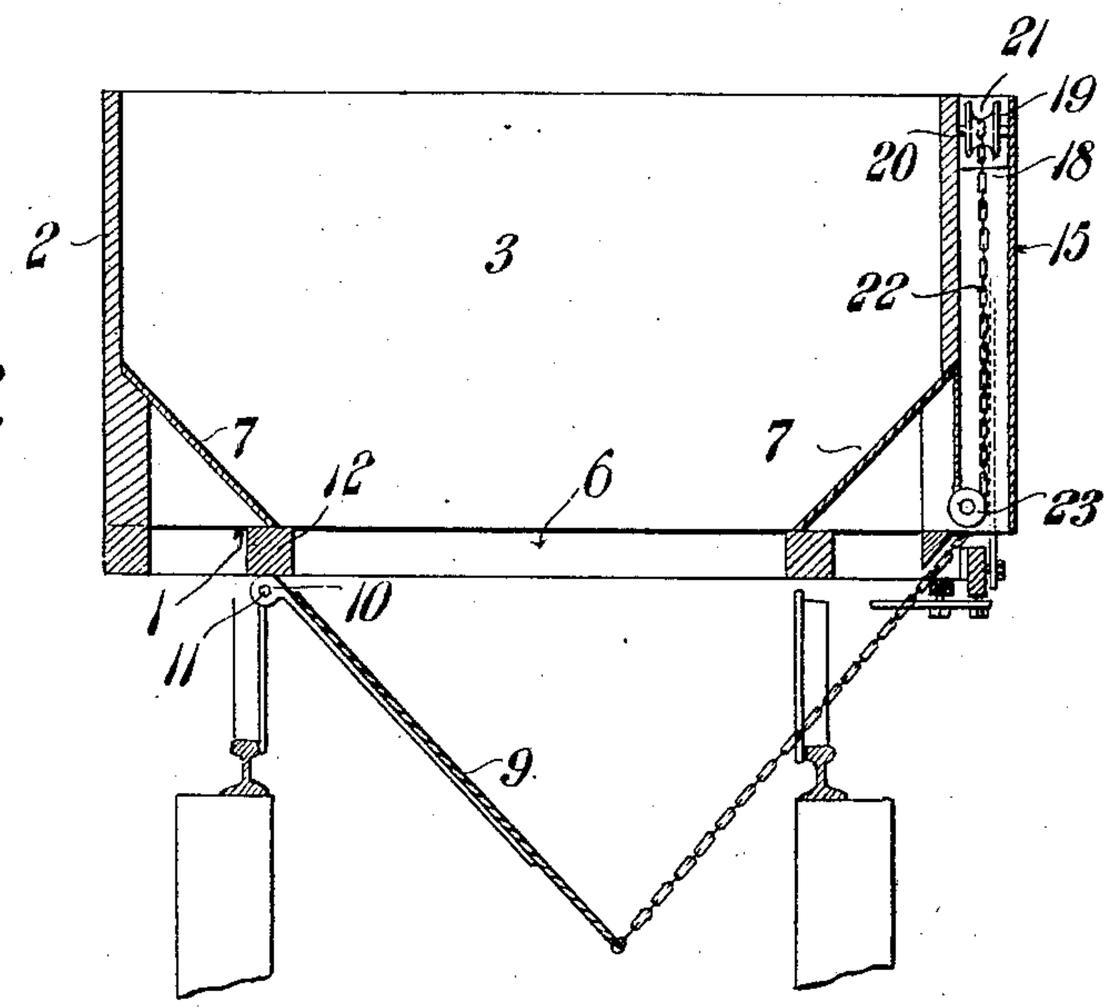

Fig. 3.

WITNESSES.

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DUMPING-CAR.

No. 863,703. Specification of Letters Patent. Patented Aug. 20, 1907.

Application filed April 17, 1907. Serial No. 368,702.

To all whom it may concern:

Be it known that I, HARRY WRAY DOUGHERTY, a citizen of the United States, residing at Leechburg, in the county of Armstrong and State of Pennsylvania, have invented a new and useful Dumping-Car, of which the following is a specification.

My present invention relates to improvements in dumping cars, and more especially to that class adapted for use in the transportation of coal, ore, and other material, and it has for its object to provide an improved device of this character wherein the door controlling the discharge of the coal or other material from the car is so balanced or counterbalanced that it will close automatically after the car has emptied its contents, and it is a further object of the invention to provide an improved locking device for the door whereby the latter is effectually supported in closed position by locking members engaging the door at a plurality of points, so that the joint between the door and bottom of the car is tightly closed and the locking members are connected to a common operating device whereby they may be operated simultaneously.

To these and other ends, the invention comprises the various novel features of construction, and combination and arrangement of parts, which will be hereinafter more fully described, and pointed out particularly in the claims appended hereto.

In the accompanying drawings, Figure 1 is a side elevation of a dumping car constructed in accordance with the present invention, the door being shown in closed position. Fig. 2 is a view of the locking devices. Fig. 3 represents a transverse section through the car and one of the casings for the counterbalances.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

In the present embodiment of my invention is shown a hopper bottom coal car of the usual or well known form, the car in the present instance embodying a floor 1, and the sides and ends 2 and 3, respectively, the floor being provided preferably at a point between the trucks 4 and 5 with a discharge opening 6, the sides being inclined, as at 7, and the ends having inclines, as at 8, for directing the coal or other material from every point within the car body to the discharge opening.

The discharge opening, in the present instance, is closed or controlled by a door 9, the latter, in the present instance, being provided with a series of hinge members 10 at one side that coöperate with a pivot pin 11 suitably supported on the car adjacent to one of the longitudinal edges of the discharge opening, the hinge pin in the present instance being supported on the under side of a longitudinal sill 12 in the floor of the car body. This door is of a length and width somewhat greater than the corresponding dimensions of the discharge opening, so that the door will overlap the edges of the opening and effectually close the latter. The door is preferably composed of sheet metal of a suitable gage and may be stiffened or reinforced by means of ribs or angle iron flanges, and such a construction enables the door to be relatively light in weight and it possesses ample strength and rigidity to sustain the weight of the material supported by it when in closed position.

In order to facilitate the unloading of the cars, especially when on trestles, it is preferable to provide means for automatically closing the door after the contents of the car has been discharged, and the means shown in the present instance for accomplishing this purpose embody a pair of counterweights 14 which are preferably guided to operate vertically within the casings 15 secured to the side of the car body, it being preferable to arrange them on the outer side for the reason that when so arranged they do not diminish the capacity of the car. These casings each embody a pair of vertically extending outer walls 16 and 17 and an intermediate partition 18, the latter extending to a point somewhat below the upper ends of the outer walls to accommodate a guiding pulley 19, the latter being revolubly mounted on a journal 20 secured to the side of the car and is provided with a grooved periphery, 21 the opposite sides of the latter being arranged tangentially to or in alinement with the vertical passages formed between the intermediate partition and the respective outer walls of the casing. The counterweights are operatively connected with the free end of the door by means of chains 22 which pass over the guiding pulleys 19, thence downwardly through the casings and over the pulleys 23 arranged at the lower ends of the respective casings and serving to prevent the chains from engaging the side of the car body, the lower ends of the chains being attached by bolts, or other suitable devices, to the opposite ends of the door at points beyond the discharge opening, so that the coal or other material discharging from the car body will not be retarded by the chains.

Any suitable means may be employed for locking the door in closed position, but it is preferable to provide a locking device that will support the free edge of the door at a plurality of points in order that it may be firmly held in engagement with the under side of the car body, and the weight of the material in the car will not distort it.

The locking device shown in the present instance embodies a series of locking members spaced in the direction longitudinally of the car, these members being composed of a row of cranks 24 that are pivoted at 25 to the under side of the car body and have inwardly extending arms 26 adapted to move into and out of cooperative relation with the door, and, on the opposite sides of their respective pivots, they are provided with outwardly extending operating arms 27, and the operating arms of the several members of the series are piv-

otally connected, as at 28, to a reciprocatory actuating bar 29, and the latter is pivotally connected, at 30, to an operating lever 31, the latter being pivoted to the side of the car, as at 32.

When the upper end of the operating lever is moved toward the right, as shown in Fig. 1, the door engaging arms 26 of the several locking members will be simultaneously disengaged from the free edge of the door, and the latter will immediately swing open by reason of its own weight and the weight of the material above it, and as the door swings to the open position as shown in Fig. 3, the counterweights will be elevated the full height of their respective casings, the weight and impact of the coal or other material serving to retain the door in open position until the car is empty, when the counterweights will overbalance the weight of the door and be automatically operated to spring the door in closed position, a reverse movement of the operating lever serving to relock the door.

The casings inclosing the counterweights and their connected parts are preferably closed at their outer side by the covers 33 which serve to guide the weights and chains in the vertical passages of the casings.

A car or other vehicle constructed in accordance with my present invention may be emptied with the greatest facility, as the door controlling the discharge of its contents may be released instantly by movement of a single lever, and after the discharge of the contents of the car, the door will close automatically, thereby obviating the necessity of winding up one or more drums as is customary, and by pivoting the door on one of its longitudinal edges, the counterbalances and their connections may be conveniently arranged at one side of the car, and, if so desired, the door may be partly opened so that it will act as a deflector or chute for discharging the coal or other contents at one side of the track instead of between the rails, as may be done when the cars are emptied on an elevated trestle.

What is claimed is:—

1. In a dumping car, the combination with a car body provided with a discharge opening in its bottom, and a door mounted to swing into open and closed positions relatively to said opening, of a pair of counterweights operatively connected to the said door, and vertical casings arranged on the car body and serving to close and guide the counterweights.

2. In a dumping car, the combination with a car body having a discharge opening in the bottom thereof, of a door adapted to close the said opening having one of its longitudinal edges pivoted to the car body at one side, and counterweights arranged on that side of the car opposite to the side on which the door is pivoted and operatively connected to the free longitudinal edge of the door.

3. In a dumping car, the combination with a car body having a discharge opening therein, and a door mounted in pivotal relation with said opening, of a casing mounted on the car body and embodying a pair of vertically extending sides, and an intermediate partition, a pulley mounted in the upper part of the body of the casing and having its journal arranged substantially in alinement with the partition, a counterweight mounted to operate within the casing at one side of the partition, and a flexible connecting device connected to the weight and extending over said pulley, thence through the casing and having its opposite end connected to a movable part of the door.

4. In a dumping car, the combination with a car body having a discharge opening, and a door adapted to fit said opening and having one of its longitudinal edges pivoted to the car body at one side thereof, of a pair of pulleys journaled at the side of the body adjacent to the free edge of the door, a pair of pulleys journaled on the side of the car body above the pulleys first mentioned, a pair of counterweights guided to operate vertically on the car body, and chains connected to the said weights, passing over the pulleys and operatively connected to the free edge of the door.

5. In a dumping car, the combination with a car body having a discharge opening therein, and a door mounted in pivotal relation therewith, of locking mechanism embodying a series of cranks arranged on the under side of one of the side sills and pivoted to turn on vertical axes at points adjacent to the free edge of the door and having inwardly extending arms thereon arranged to move into and out of the path of the free edge of the door, and outwardly extending operating arms on the cranks, an actuating bar pivotally connecting the operating arms of the several cranks of the series, and a lever operatively connected to the actuating bar.

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

HARRY WRAY DOUGHERTY.

Witnesses:
G. B. FISCUS,
A. M. BOLLINGER.