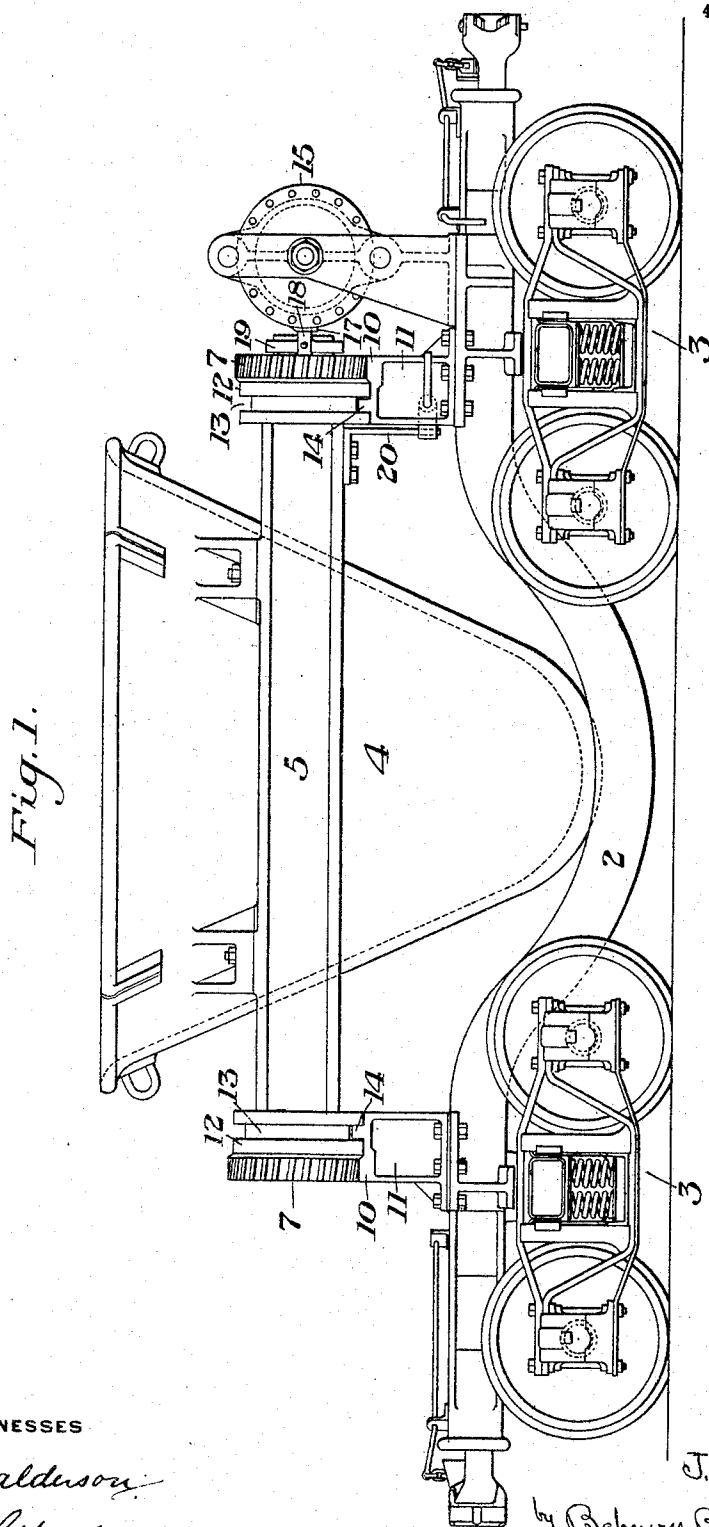


J. K. FURST.
DUMPING CAR.
APPLICATION FILED MAR. 30, 1909.

947,197.

Patented Jan. 18, 1910.

4 SHEETS—SHEET 1.



WITNESSES

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J. L. Winters

INVENTOR

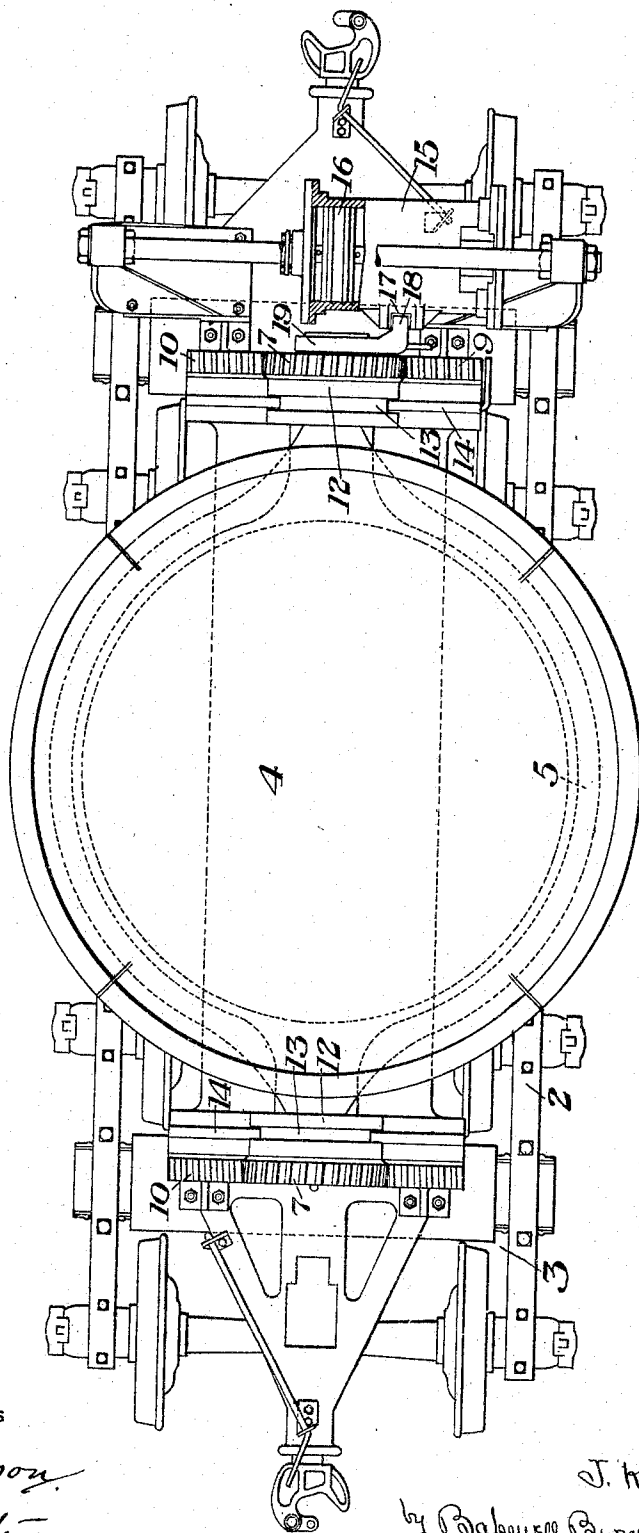
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

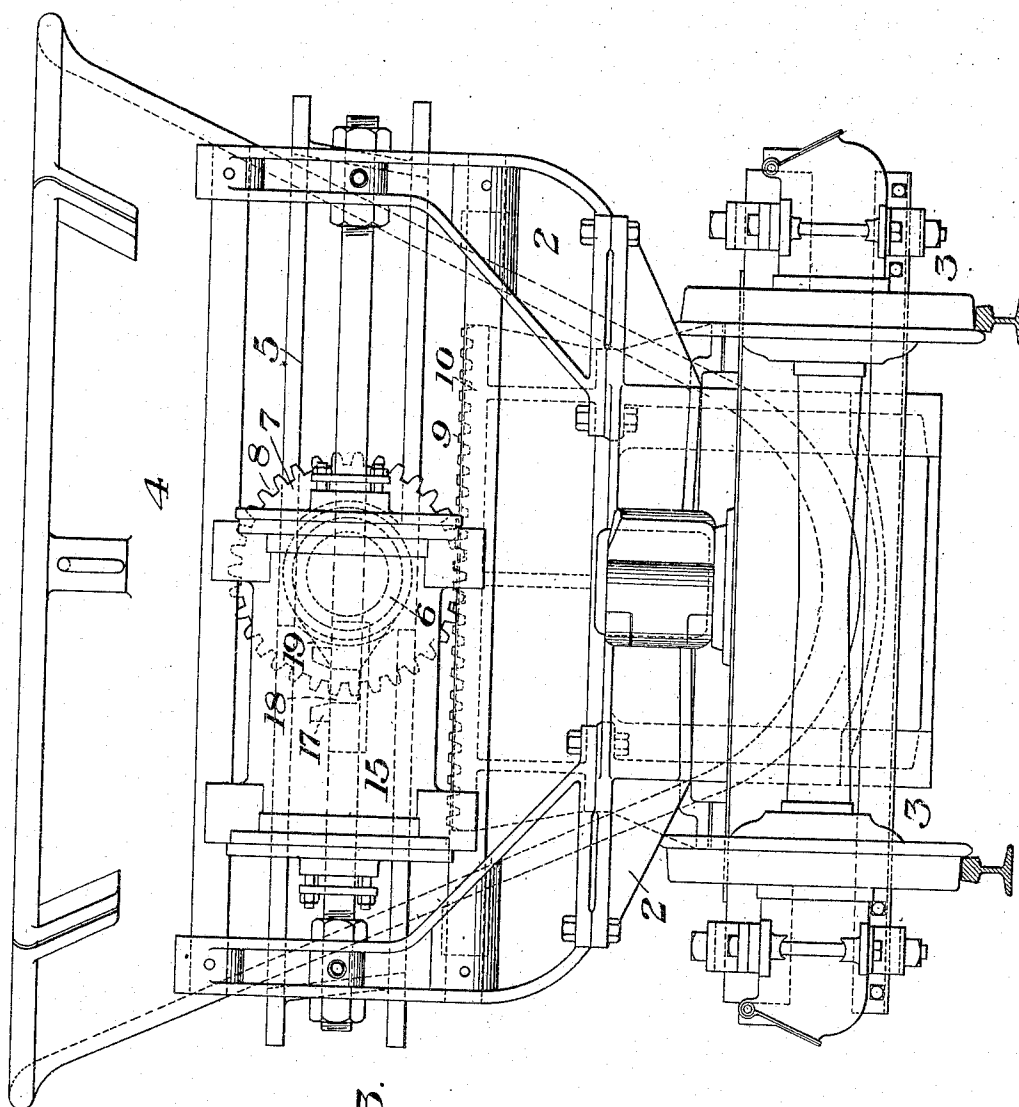


Fig. 3.

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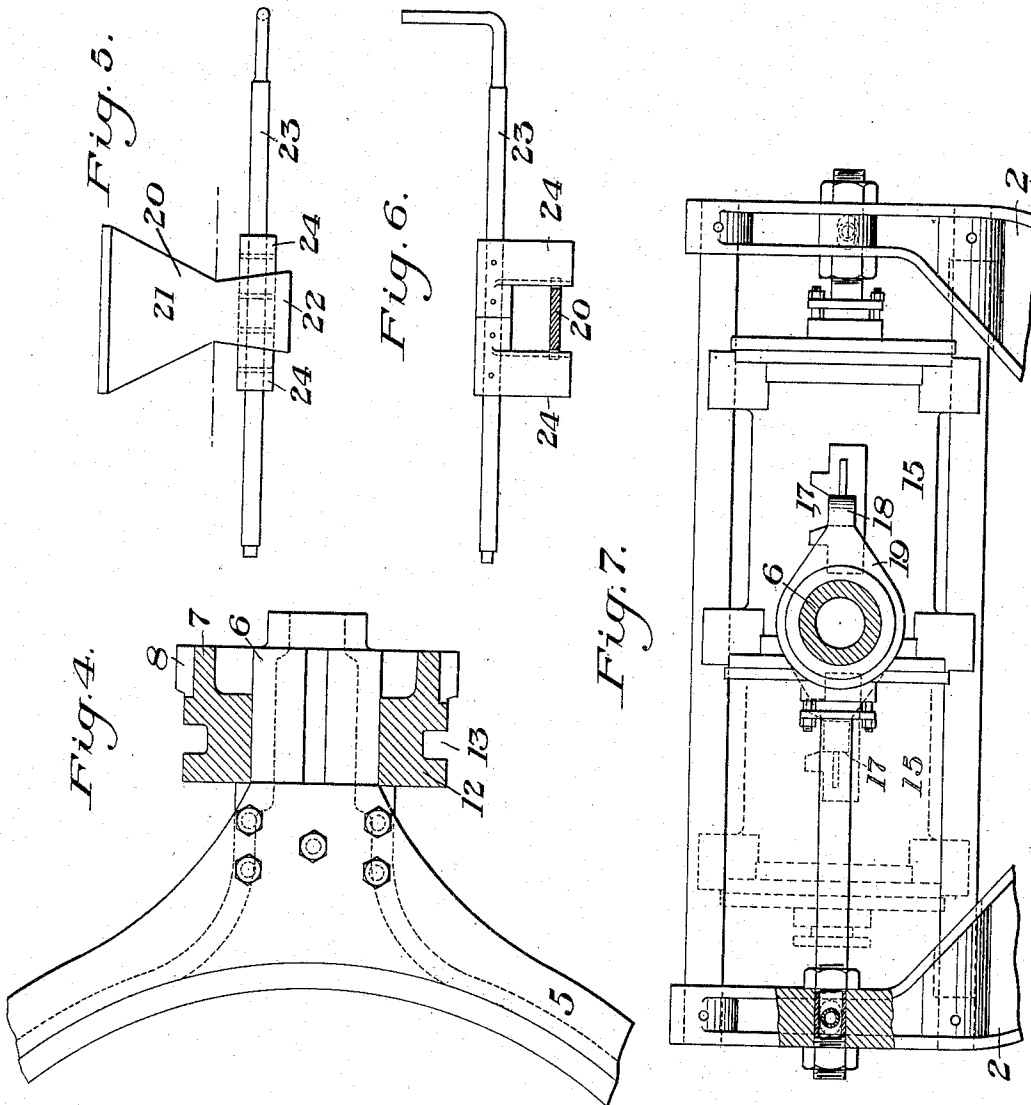
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4 SHEETS—SHEET 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN K. FURST, OF NEW CASTLE, PENNSYLVANIA, ASSIGNOR TO PENNSYLVANIA ENGINEERING WORKS, OF NEW CASTLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DUMPING-CAR.

947,197.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed March 30, 1909. Serial No. 486,686.

To all whom it may concern:

Be it known that I, JOHN K. FURST, of New Castle, in the county of Lawrence and State of Pennsylvania, have invented a new and useful Improvement in Dumping-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a dumping car embodying my invention; Fig. 2 is a plan view of the same; Fig. 3 is an end view; and Figs. 4, 5, 6 and 7 are detail views hereinafter more fully described.

My invention has relation to the class of dumping cars, and while capable of adaptation for other purposes, it more particularly relates to slag, cinder and ladle cars of the dumping type.

The object of my invention is to provide a car of this character with improved operating mechanism of simple and effective character, whereby the car can be readily dumped at either side; to provide means for taking up thrusts upon the car, and for maintaining the actuating gears in alinement, and to provide locking means of novel and effective character for holding the receptacle of the car in its normal position.

The nature of my invention will be best understood by reference to the accompanying drawings, in which I have shown the preferred embodiment thereof and which will now be described, it being premised, however, that various changes may be made in the details of construction and arrangement of the parts, without departing from the spirit and scope of my invention as defined in the appended claims.

In these drawings, the numeral 2 designates the frame of the car which may, in general, be of any desirable construction and which is mounted upon the trucks 3.

4 designates the hopper or receptacle of the car, which has secured thereto the yoke or trunnion ring 5, which surrounds the ladle and which is provided at its ends with the trunnions 6. Keyed to each of the trunnions is a pinion 7, whose teeth 8 are arranged to engage and travel on the teeth 9 of a horizontal rack bar 10. These rack bars are rigidly secured to the upwardly extending portion 11 of the frame near each end thereof. Each of the pinions 7 has an inwardly extending hub portion 12, formed

with a peripheral groove 13, which engages an upwardly extending rib or projection 14, on the frame inside of and parallel with the rack bar.

15 designates an operating cylinder which works on a fixed piston 16, and which is provided at one side with the recessed lug or projection 17, for engagement with the hooked end 18 of an arm 19, loosely mounted on one of the trunnions 6, outside of the pinion 7. This cylinder is provided with any usual supply connections and valves, whereby power may be admitted thereto.

The parts being in the position shown in the drawings and power being admitted to the cylinder 15, said cylinder is moved transversely on the fixed piston 16, and thereby pushes directly against the arm 19, causing the pinion 7 to travel on the rack bars 10, thereby tipping the hopper or receptacle 4. When it is desired to tip the hopper or receptacle in the opposite direction, the cylinder is moved to the other side of the car from the position in which it is shown in the drawings, and the arm 19 is turned on the trunnion to cause it to engage the lug or projection 17, on the cylinder in the changed position of the cylinder, as shown in dotted lines in Fig. 7. Power is then admitted to the other end of the cylinder and the receptacle is thereby tipped in the opposite direction from that before described.

The engagement of the ribs or projections 14 with the grooves 13 of the pinion hubs provides means for taking care of shocks and thrusts, and also for holding the pinions and racks in proper gearing alinement.

For the purpose of locking the hopper or receptacle in its normal position, I preferably provide the yoke or trunnion ring 5, with the depending locking arm 20, of the form shown in detail in Fig. 5, having the downwardly tapering upper portion 21 and the oppositely tapering lower portion 22.

23 is a rock shaft which is journaled in suitable bearings in one of the frame members 11, and which is provided with locking arms 24, which are adapted to be turned into position to engage with the tapered edges of the lower portion 22 of the locking arm 21, in the manner clearly shown in Figs. 5 and 6 of the drawings. The tapered or wedge form of the locking members 22 and 24 makes a very secure lock when these members are in engaging position, since the tend-

ency is for the members 24 to constantly become wedged in tighter engagement with the member 22, so that they will not be shaken loose by the movement of the car.

- 5 In addition to forming a secure lock, the beveled form of the locking members 24 makes it possible to throw said members into locking position before the hopper or ladle has come to its exact normal or central position.

10 After the locking members have once been entered, they gradually wedge together, as above described, this action being helped by the slight rocking of the ladle or receptacle, and in a short time come to final locking position. To release the lock, the shaft 23 is actuated to throw the locking members 24 upwardly and backwardly, the double tapered form of the member 21, as shown in 20 Fig. 5, clearly permitting this movement of said members.

The advantages of my invention result from the provision of the means substantially as described for effecting the actuating 25 connection between the movable cylinder and the hopper or receptacle; from the provision of the means described for taking up end thrusts and shocks, and for holding the gearing in alinement, and from the provision of the described means for locking the 30 hopper or receptacle in its normal position.

The construction and arrangement of these parts is extremely simple and the use of complicated actuating connections between 35 the cylinder and the hopper or receptacle is obviated. The construction and arrangement is also a very strong and durable one, there being no parts or elements of a character likely to become broken or injured in 40 service.

I claim:

1. In a dumping car, a receptacle having trunnions, pinions mounted on said trunnions, rack-bars supporting and engaging 45 the pinions, a movable actuating cylinder having a slotted projection, and an arm loosely mounted on one of the trunnions, and engaging the slotted projection; substantially as described.

- 50 2. In a dumping car, a receptacle having trunnions, pinions mounted on said trunnions, rack-bars supporting and engaging the pinions, a movable actuating cylinder having a slotted projection on its inner side, 55 and an arm mounted on one of the trunnions and having a hooked end portion which en-

gages the said slotted projection, said arm having its axis substantially parallel to the axis of the cylinder; substantially as described.

3. In a dumping car, a receptacle having trunnions, pinions mounted on said trunnions, a movable actuating cylinder having a slotted projection, and an arm mounted on one of the trunnions, and engaging the slot- 65 ted projection, said cylinder being movable transversely of the car, and the arm being capable of being moved to engage the projection of the cylinder in either of its extreme positions to thereby provide for tip- 70 ping the hopper or receptacle in either direction, substantially as described.

4. In a dumping car, a receptacle having trunnions, pinions mounted on said trunnions, rack-bars supporting and engaging 75 the pinions, a movable actuating cylinder having a slotted projection, and an arm loosely mounted on one of the trunnions and engaging the slotted projection, said pinions and the truck frame having coöperating thrust members, substantially as de- 80 scribed.

5. In a dumping car, the combination with a tiltable receptacle, of a locking member secured thereto and having tapered locking 85 edges, and locking members adapted to be moved into and out of engagement with said edges, substantially as described.

6. In a dumping car, the combination with a tiltable receptacle, of a locking member 90 carried thereby, said locking member having oppositely tapered portions, and other locking members having tapered faces adapted to engage one of the tapered portions of the first named member, and means for moving 95 the same into and out of engagement therewith, substantially as described.

7. In a dumping car, the combination with a tiltable receptacle, a trunnion ring or yoke secured thereto and a depending locking 100 member carried by the trunnion ring or yoke and having oppositely tapered locking edges, a rock shaft, and locking members carried by said shaft and adapted to have a wedging engagement with said tapered edges, 105 substantially as described.

In testimony whereof, I have hereunto set my hand.

JOHN K. FURST.

Witnesses:

GEO. B. WILLIAMS,
E. M. UNDERWOOD.