E. A. WEIMER.

CINDER OR HOT METAL CAR.

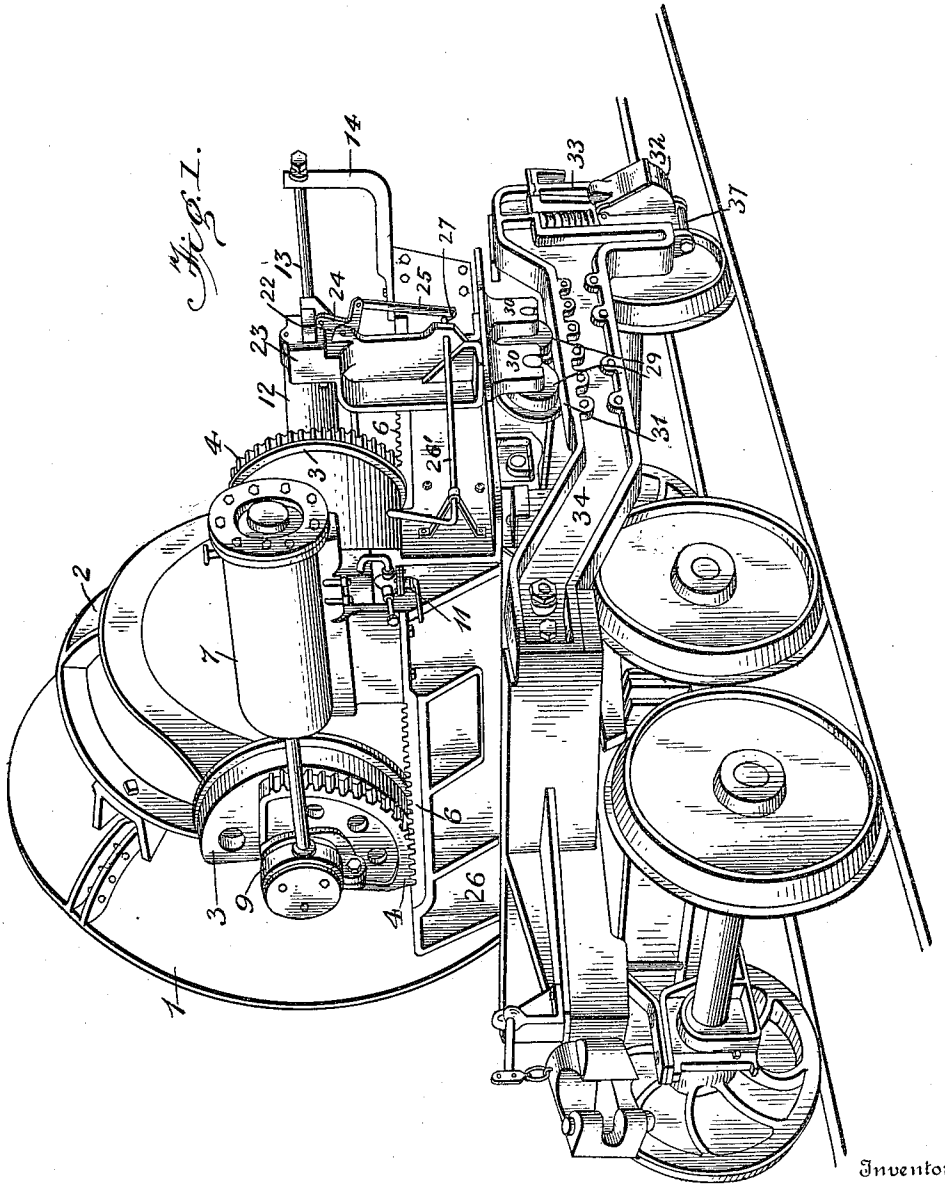
APPLICATION FILED MAR. 17, 1909.

1,151,312.

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4 SHEETS—SHEET 1.

Fig. 1.



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Fig. 5.

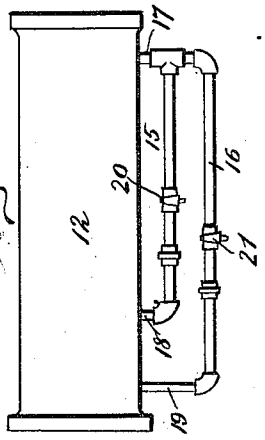


Fig. 6.

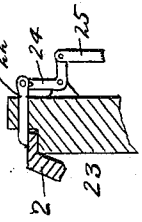
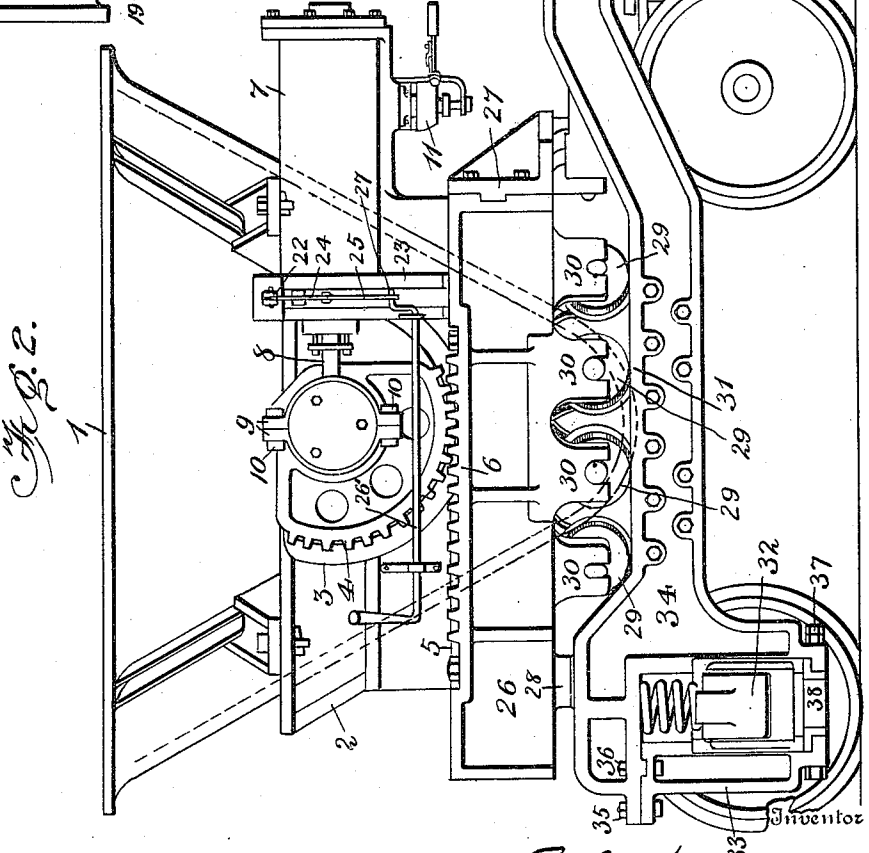


Fig. 2.



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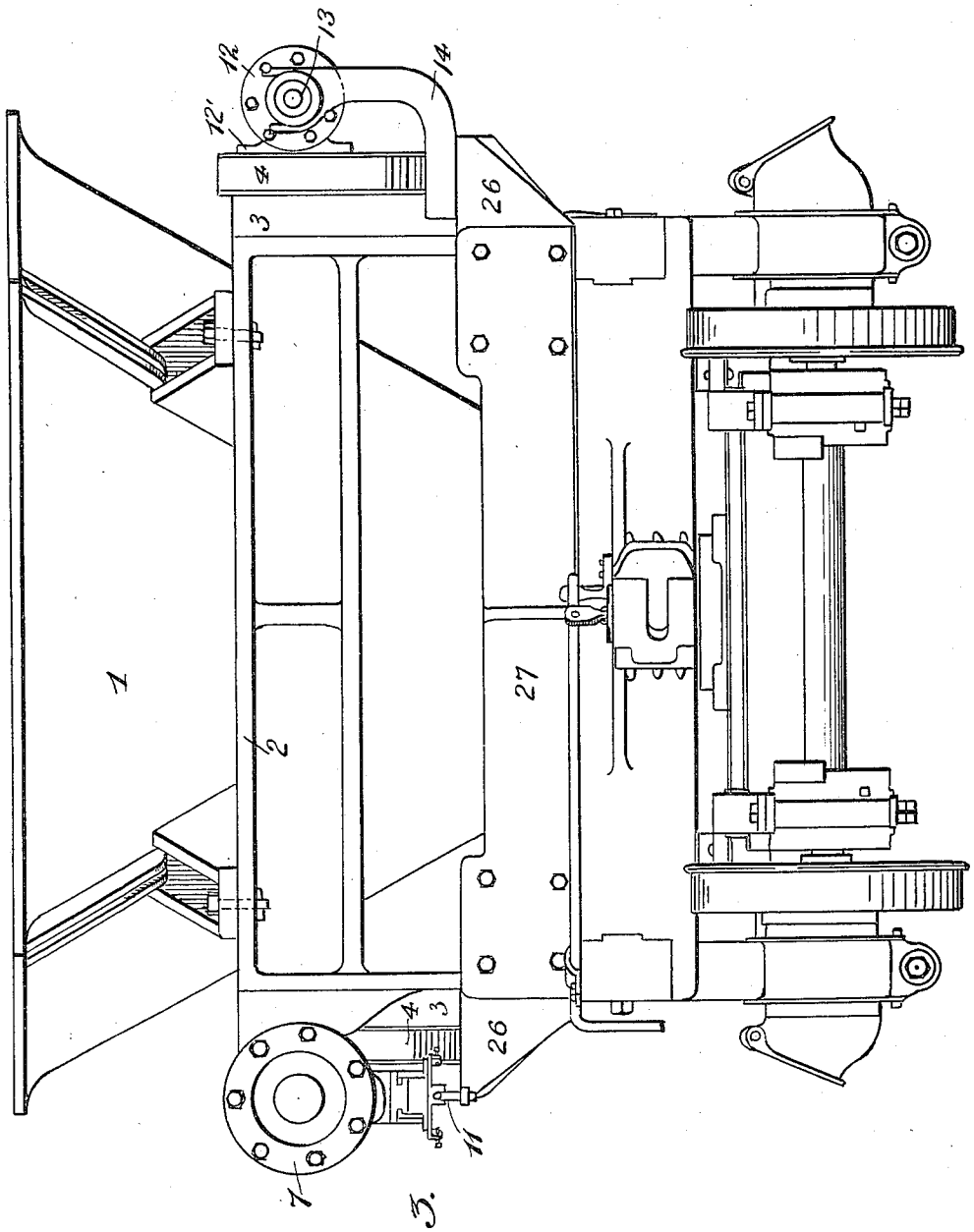


Fig. 3.

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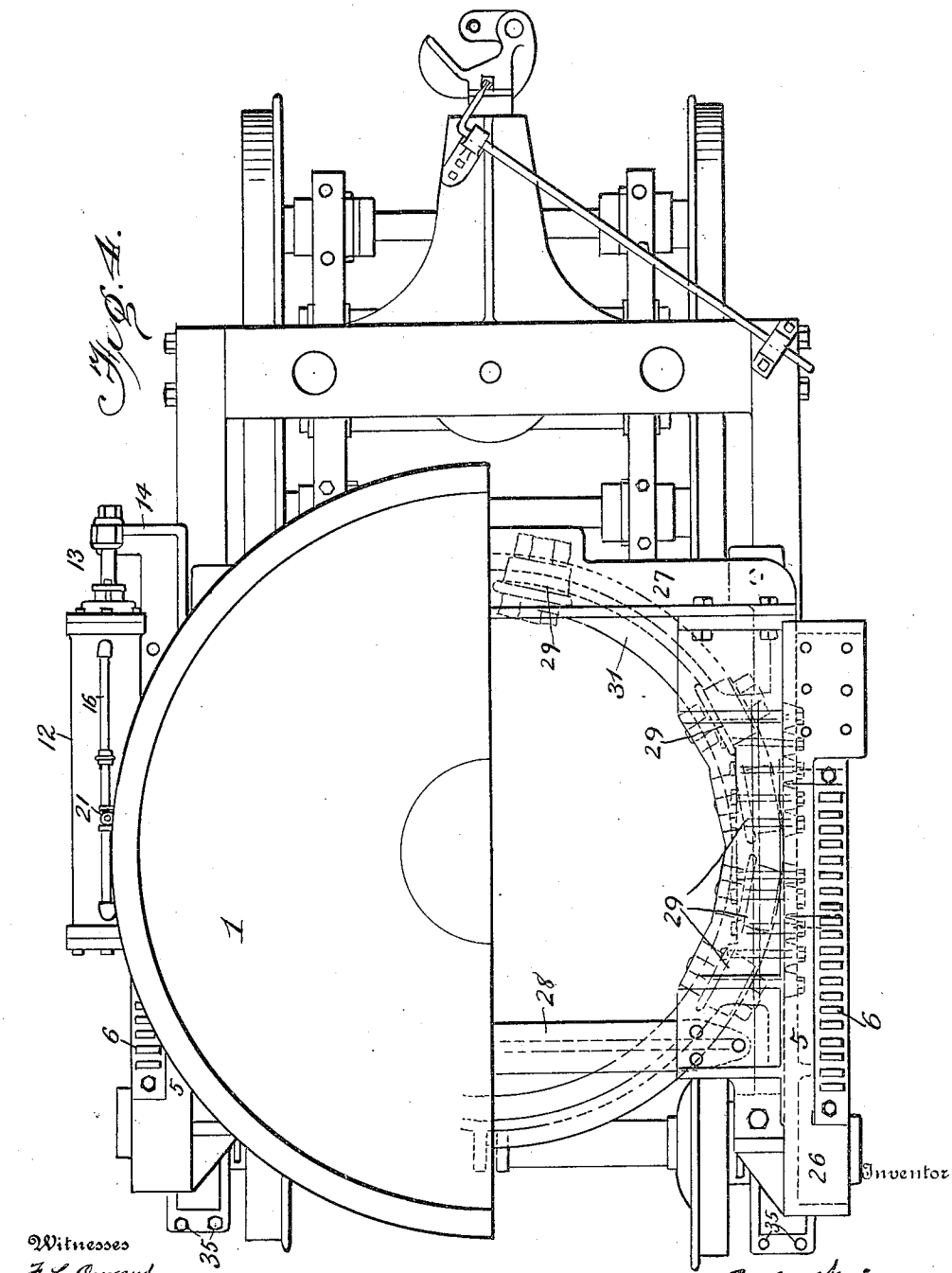
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4 SHEETS—SHEET 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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CINDER OR HOT-METAL CAR.

1,151,312. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed March 17, 1909. Serial No. 484,058.

To all whom it may concern:

Be it known that I, EDGAR A. WEIMER, a citizen of the United States, residing at Lebanon, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in Cinder or Hot-Metal Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to cars for conveying cinder or hot metal from blast or smelting furnaces, has for its object a car whose ladle can be discharged on either side or at the rear end of the car, and consists in certain improvements which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification:—Figure 1 represents a perspective of a car embodying my invention showing the body or ladle tilted to the left. Fig. 2 a side elevation showing the ladle in its normal position. Fig. 3 an end elevation of the same on an enlarged scale. Fig. 4 a top plan view, with part of the ladle cut away and the motor cylinder removed. Fig. 5 a side view of the oil cushioning cylinder detached and on an enlarged scale, and Fig. 6 a detail of the means for locking the bail of the ladle.

Reference being had to the accompanying drawings and the designating characters thereon, the numeral 1 indicates a car body or ladle, 2 a hoop or bail in which the body is supported and which is provided with oppositely arranged trunnions on which are supporting members 3, 3, and toothed members 4, 4, engaging respectively tracks or ways 5, 5, and like toothed racks 6, 6, and on both of which the body or ladle travels in a horizontal plane as the body is being tilted to discharge its contents and in restoring the body to its normal or vertical position.

7 indicates a motor for operating the body 1, and the piston rod 8 of the motor is connected to one of the trunnions in any preferred manner, as by a yoke or strap 9 made in two parts and connected by bolts 10, the stroke of the piston, not shown, of the motor being equal to the travel of the body or ladle in tilting. The motor is provided with a controlling or engineer's valve 11 of any preferred form.

12 indicates a fluid cataract cylinder, connected to the trunnion on the opposite side of the car-body or ladle by a flange 12′, as shown in Fig. 3, and the piston rod 13 is secured to a fixed bracket 14, so that the cylinder moves longitudinally while the piston in the cylinder is stationary. The cylinder is provided with conduits 15, 16, both of which communicate with the cylinder at one end at 17, and the opposite end of conduit 15 communicates with the cylinder, beyond the longitudinal center thereof at 18, and the conduit 16 communicates with the cylinder at 19. The conduits 15, 16, are provided respectively with valves 20 and 21 to control the flow or passage of the fluid in the cylinder as it is displaced by the piston as the cylinder reciprocates coincident with the travel of the car body in discharging and being returned to its normal position.

The travel of the car body or ladle while being discharged is arrested progressively, that is to say, that during part of the travel of the cylinder, the fluid flows through both of the conduits 15, 16, at 18 and 19 and is transferred to the opposite end of the cylinder at 17, but leaving sufficient fluid in the cylinder to be trapped between 18, and the adjacent end of the cylinder to arrest the ladle at the end of its travel in discharging its contents.

In the return stroke or opposite reciprocation of the cylinder in returning the ladle, sufficient fluid is trapped between 17 and the adjacent end of the cylinder to arrest the ladle when it is brought to the end of its return travel.

The body or ladle is locked in its vertical position by means of a bolt 22, supported in a post 23, through which it is projected by a bell-crank lever 24, a link 25 and a crank-lever 26′, one end 27 of which engages the link 25, as shown in Figs. 2 and 6. The bolt 22 engages the bail 2 and prevents accidental tilting or rocking of the ladle.

The body or ladle 1 is supported upon a turn-table whose sides 26, are provided with the ways 5 and the toothed racks 6, and said sides are secured together at one end by the transverse end piece 27, while the opposite end of sides 26, are secured together by a curved transverse bar 28 secured to the lower edge of the sides 26, to allow the ladle to lie between the sides when the ladle is tilted to discharge its contents.

The turn-table is provided with a plu-

rality of rollers or wheels 29, engaged by vertical lugs 30, and travel on a track 31 on the truck-frame, as shown in Figs. 1, 2 and 3, whereby the body or ladle may be tilted or discharged on either side of the car and at one end, thus providing for distribution of the contents of the ladle as circumstances may require. The turn-table may be revolved by any suitable means as change in position may be desired.

The track-frame being composed of steel castings and the entire structure being heavy, it becomes necessary to provide against having to raise one end of the car out of engagement with the axle-boxes 32, for the purpose of renewing the same. To avoid this, the outer side or wall 33 of the axle-box pocket is detachably secured to the side frames 34 by bolts 35, 36 and transverse bolt 37, with a filling piece 38 interposed between the fixed and the detachable sides of the axle-box pocket. By removing the sides 33 from both ends of the axle, the car need be raised just sufficient to take the weight off the axle when the axle and the axle-box may be removed from the axle-box pocket, and the latter renewed.

It is obvious that the body or ladle may be manipulated by manually operated mechanism, and that the cataract cylinder may be attached to the motor cylinder, such being mere changes in construction within the skill of the art, and that changes in the form of the constructions shown may be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim is—

1. A cinder or hot metal car having a tilting body or ladle mounted on trunnions and revolubly supported thereon, and adapted to be moved in a horizontal plane toward either side or one end of the car while in the act of tilting.

2. A cinder or hot metal car having a tilting body or ladle mounted on trunnions and revolubly supported thereon, means supported on the car for tilting the body and moving it in a horizontal plane toward either side or one end of the car while in the act of tilting and for returning the body to its normal position.

3. A cinder or hot metal car having a tilting body or ladle mounted on trunnions, a turn-table on which said body is supported and provided with means for allowing the body to travel in a horizontal plane toward either side or one end of the car while in the act of tilting, and means on the car for operating said body.

4. A cinder or hot metal car having a tilting body or ladle mounted on trunnions, a turn-table on which said ladle is supported and provided with means for allowing the body to travel in a horizontal plane toward either side and one end of the car while in the act of tilting, a track on which the turn-table travels, and means on the car for operating the body.

5. A cinder or hot metal car having a body or ladle adapted to be moved in a horizontal plane while in the act of tilting, a turn-table on which said body is supported, means connected to one of the trunnions of the ladle for operating the ladle, and means for controlling the speed of the tilting of the body.

6. A cinder or hot metal car having a body or ladle adapted to move in a horizontal plane while in the act of tilting, means for operating the body, and a fluid controlled cylinder provided with by-pass conduits arranged to control the speed of the tilting of said body progressively and arrest the body at the ends of its travel.

7. A car having a tilting body or ladle adapted to travel horizontally while being tilted, and means for operating the body, in combination with a liquid speed controlling cylinder connected to the ladle and having suitable by-passes provided with valves to allow said by-passes to be closed to the flow of the liquid in a predetermined direction and open to the flow in the reverse direction, whereby the piston may be retarded or accelerated at predetermined points along the travel of the piston.

8. A car having a tilting body or ladle adapted to travel horizontally while being tilted, and means for operating the body, in combination with a liquid speed controlling cylinder connected to the body and arranged to by-pass the liquid from one side of the piston to the other and retard or increase the flow at predetermined points along the travel of the piston to accelerate the motion at predetermined points in one direction and retard the motion in the reverse direction along predetermined distances in the path of the travel of said piston.

9. A car having a tilting body or ladle adapted to travel horizontally while being tilted, and means for operating the body, in combination with a liquid speed controlling cylinder provided with a plurality of by-passes having valves therein for controlling the passage of the fluid, whereby the speed of the tilting of the body is controlled progressively throughout its travel and arrested at the end thereof.

10. A cinder or hot metal car having a body or ladle adapted to be tilted, a bail provided with trunnions and supporting said body, and means for engaging said bail to lock the body in vertical position.

11. In a dumping car, the combination with a movable car body, of power devices for operating the car body, and means for controlling the speed of the car body throughout its entire movement independ-

ently of the power devices, and means for automatically varying the checking effect at a predetermined portion of the stroke.

12. In a dumping car, the combination with a movable car body, and means for moving it to discharging position, of means independent of the actuating mechanism for controlling the movement of the car body, and means automatically permitting variation of the control as the car body approaches the end.

13. In a dumping car, the combination with a movable car body, and means for moving it to discharging position, of fluid checking means for controlling the movement of the car body, and means automatically permitting variation of the control as the car body approaches the outer end.

14. In a dumping car, the combination with a movable car body, and actuating means, of fluid checking means, and means for reducing the checking effect automatically at a predetermined point of the stroke.

15. A car comprising the combination of running gear, a turn table rotatably supported thereon, a ladle mounted in trunnions on said turn-table, and a power operated motor carried by said turn-table and connected to said ladle for tilting said ladle to either side or to one end of the running gear as desired.

16. A car comprising the combination of running gear, a turn-table rotatably supported thereon, a ladle mounted in trunnions on said turn-table, a power operated motor carried by said turn-table and connected to said ladle for tilting said ladle to either side of the running gear as desired, and a controlling valve for said motor mounted at the end thereof at the side of the turn-table opposite to that toward which the ladle dumps.

17. In a car of the character described, a body having oppositely disposed supporting trunnions, a power device connected to one trunnion for tilting said body and a controlling device connected to the opposite trunnion.

18. In a car of the character described, a body adapted to be tilted and to move horizontally, a stationary power cylinder, a movable piston rod connected to said body to move it, a stationary piston rod and a liquid containing cylinder thereon connected to said body to check it.

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

EDGAR A. WEIMER.

Witnesses:
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EBENEZER T. LIGHT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."