C. P. ASTROM.

DUMPING CAR.

APPLICATION FILED OCT. 20, 1908.

928,837. Patented July 20, 1909.

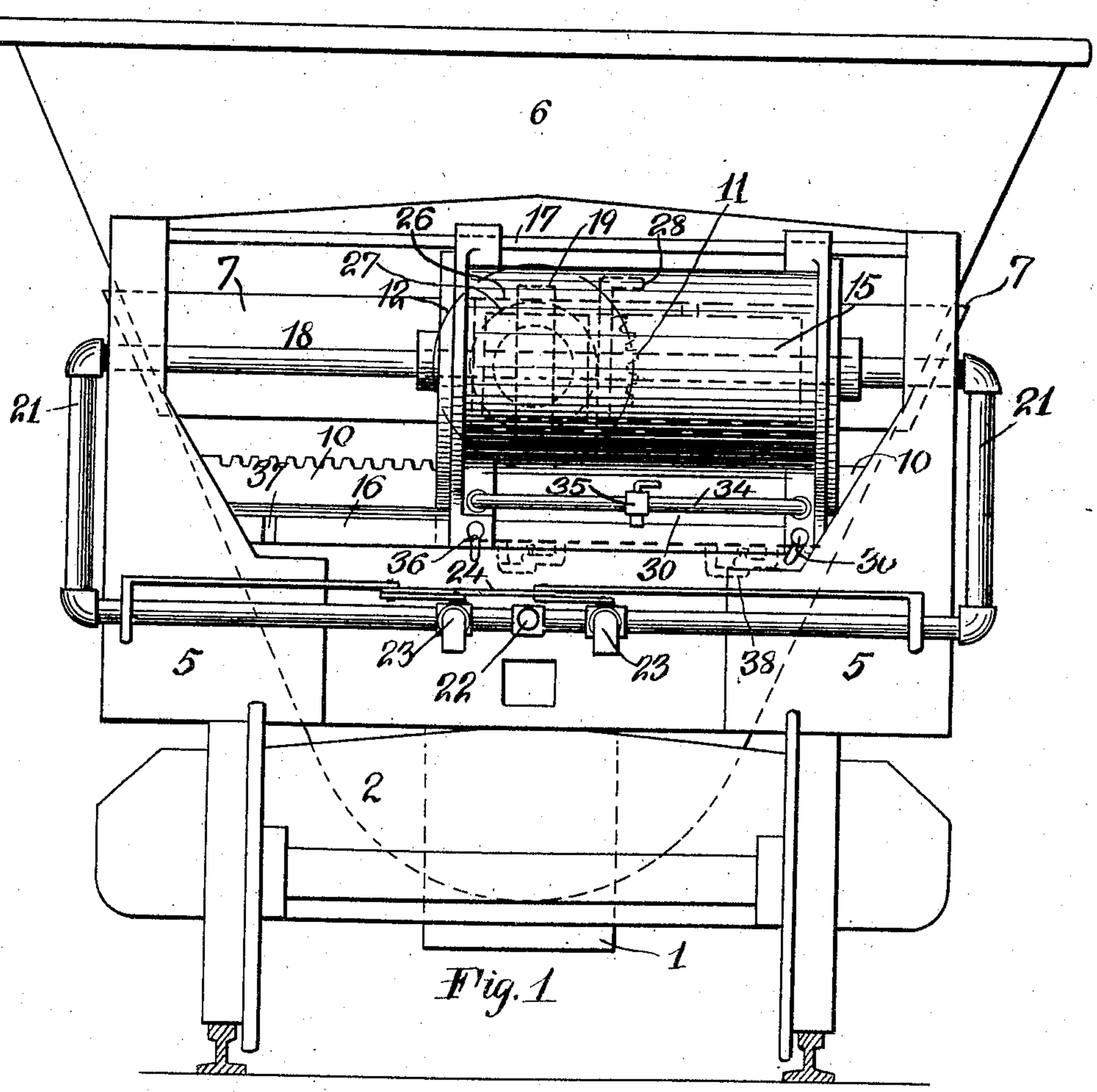


Fig. 1

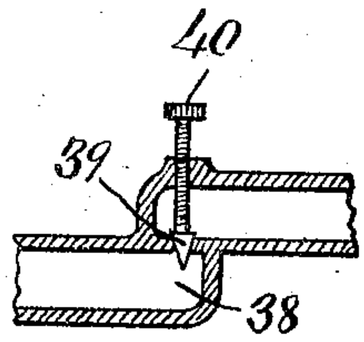
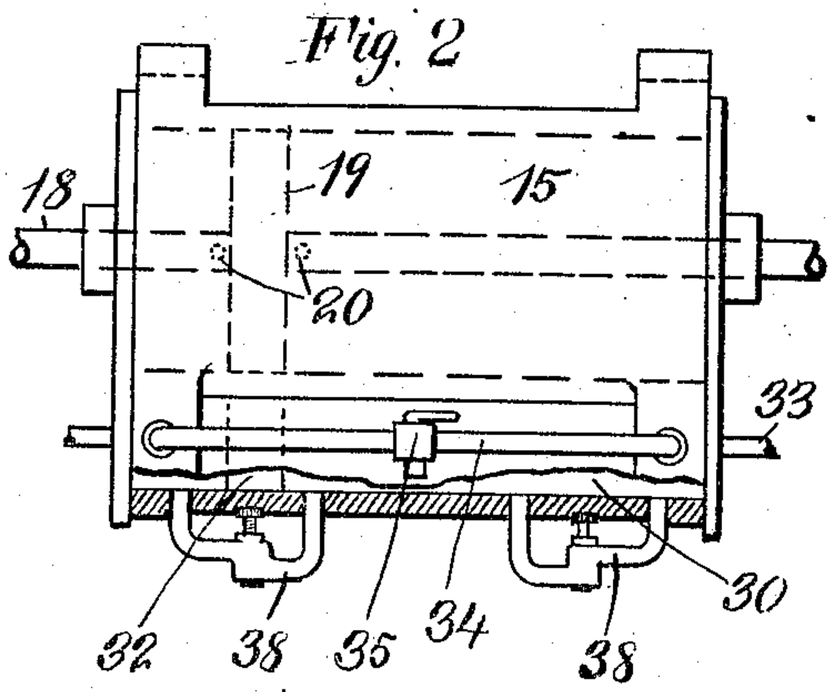


Fig. 3

Fig. 2



Witnesses

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UNITED STATES PATENT OFFICE.

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DUMPING-CAR.

No. 928,837. Specification of Letters Patent. Patented July 20, 1909.

Application filed October 20, 1908. Serial No. 458,721.

To all whom it may concern:

Be it known that I, CARL P. ASTROM, citizen of the United States, residing at Hasbrouck Heights, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Dumping-Cars, of which the following is a full, clear, and exact specification.

This invention relates to dumping cars, and more particularly has reference to cars wherein the body is mounted to be moved laterally and simultaneously turned in order to discharge the contents.

The object of the invention is to provide generally a slag or cinder dumping car of the type shown in patent issued March 17, 1908, to Munson H. Treadwell, wherein a tilting and laterally movable car body is provided with a fluid checking device preventing excessive movement of the car body when moving to and from dumping position. In such a fluid checked car body, it is desirable to allow the car body to have a faster movement as it approaches the outer end of the dumping stroke, so as to bring up against the frame with a shock, and thereby dislodge the skull which forms within the pot. According to this invention I accomplish this object by providing the fluid checking cylinder with means whereby the checking effect is automatically lessened, and thereby the speed increased, as the car body approaches its outer end. As shown herein, this is accomplished by providing auxiliary by-passes on the fluid cylinder which become effective as the end is reached to reduce the checking effect by permitting greater circulation of fluid around the piston. Means is also provided for varying or throwing entirely out of operation, as may be desired, either the main or either auxiliary by-pass, for purposes which will more fully hereinafter appear in connection with the description of the accompanying drawings, wherein—

Figure 1 is an end view of a dump car embodying the invention, Fig. 2 is a detail view showing my improvements, and Fig. 3 is a detail view showing the auxiliary by-pass valve.

1 represents an underframe mounted on railway trucks 2, and provided with the usual coupling equipments used on cars of this type. At each end of the underframe are supporting pedestals 5, raised somewhat above the top of the frame, and these pedestals have their upper faces formed as transverse tracks, on which the car body is supported in such manner as to permit the body to move laterally, and simultaneously tilt, in either direction.

6 represents a car body, herein shown as a slag or cinder ladle, carried by a frame 7, provided at each end with trunnions which rest on the respective pedestals 5. Each pedestal has a rack 10, and meshing therein are gears 11, rolling on the racks 10.

The power mechanism for operating the car body comprises a reciprocatory cylinder 15, mounted on the pedestal 5 and reciprocating between horizontal guides 16, 17.

18 is a stationary hollow piston rod, having a piston 19, and at each side of the piston 19 are inlet ports through which fluid pressure, as air or steam, will be admitted to reciprocate the cylinder. Each end of the hollow rod 18 is connected by a pipe 21, with a supply pipe 22, 22, controlled by three way cocks 23, 23, so that when one side of the cylinder is opened to the pressure, the other side will be opened to the exhaust. The cocks 23 are connected by a link 24, which extends on each side to the side of the car, to permit convenient operation.

In order to move and turn the car body, the latter, through the end of the yoke 7, is connected to move to and fro and tilt with the cylinder 15. To this end, the inner side of the cylinder 15 carries a hollow box 26, into which projects the adjacent end of yoke 7 and turns, as in a trunnion in a block 27 mounted to slide in the box 26 longitudinally of the cylinder. It will thus be seen that if the block 27 is locked to the cylinder, whenever the cylinder moves, the gears 11 will roll on the racks 10, thus moving the car body bodily in a lateral direction and at the same time turning it, the end of yoke 7 turning in block 27.

28 is a key passing through slots in the upper and lower faces of box 26 for holding the block 27 at either end of the box 26. Inasmuch as it is desirable to dump the car body on both sides of the car frame, means is provided for moving the cylinder independently of the car body, by first withdrawing the key from one side of the block, and reinserting it on the other side after moving the cylinder and thereby holding the block at the other end of box 26. In this connection it should be understood that the stationary piston 19

is at about the middle of the car frame, and that the cylinder 15 and the car body when connected, move in the same direction. Thus, if the car is to dump on the left, the cylinder will move to the left from its extreme right hand position, the block 27 being at the left end of box 26, and the cylinder and car body will both move to the right in returning. If now it be desired to dump on the right, by withdrawing the key 28, the cylinder can move independently of the body until the block 27 strikes the right end of box 26, whereupon by inserting the key to hold the block, and admitting fluid pressure on the right side of piston 19, the car will dump to the right. Preferably, there will be a single key and slots in the box leaving a space on either side equal to the width of the block 27.

In dumping cars of this type, after the heavy mass is once in motion, a fluid check prevents too rapid motion, and permits control, but as the car body nears the outer end of its dumping stroke, its speed can be increased somewhat without danger, and thereby the car body stopped with sufficient jar to dislodge the skull from within the pot 6.

30 represents a fluid checking cylinder preferably cast integrally with the power cylinder 15, and moving therewith, and containing a stationary piston 32 mounted on a rod 33 carried by the pedestal frame.

34 is a by-pass carried by cylinder 30 and connecting the opposite sides of piston 32, and 35 is a controlling cock therein. The cylinder 30 will preferably be filled with a fluid, such as oil, and by adjusting the cock 35, the velocity of flow, and thus the momentum of the moving car body can be readily controlled independently of the power controlling valves. If the cock 35 be shut, the car body will be locked at any point against movement, and by nearly closing it, the momentum can be checked without straining any of the parts. When the car is not being dumped, it is prepared to lock the body by means of screws 36 carried by the ends of the cylinder casting and engaging one or the other of notches 37 in the ends of the lower cylinder guide 16, according to which side the cylinder is on. As long as the cylinder is locked the car body cannot move.

Each end of the checking cylinder 30 is provided with an auxiliary by-pass 38, containing a needle valve cock 39, and operating handle 40 for opening and closing the passage 38. On the outward movement, it will be seen that the outer auxiliary by-pass 38 will be inoperative until after the piston 32 has crossed the inner end of the by-pass, whereupon an increased flow of oil is permitted and thereby greater speed of the car body. Thus the car body will come to rest at the dumped position with a shock, determined by the opening of valve 39, and thereby the skull loosened and discharged. Suitable abutments on the under frame will be provided to take the shock successfully. In moving inwardly, preferably the cocks 39 will be closed, and control had by cock 35, though it will be seen that by leaving the outer cock 39 open, a quick start may be had; a slower intermediate movement and a quick stop, if desired, in either direction. Ordinarily, the quickened movement outwardly at the end is more to be desired than a quick inward or outward start, or a quickened movement at the inner end.

It will be understood that my invention may be applied to a structure wherein leakage past the checking piston, or through it, takes the place of the by-pass 34, and securing the same acceleration at the desired end or ends.

From the foregoing description, the operation of the car will be understood, and it will be seen that by these improvements, a dumping car is provided which can be readily controlled by means of the fluid check to have a faster movement at the ends than at the intermediate portion of the stroke.

The form of the car body may be varied as desired, from the form herein shown, and the other details of construction may also be changed, without departure from the invention, which is not to be limited to the specific form described.

Having thus described my invention, I declare that what I claim as new and desire to secure by Letters Patent, is:—

1. The combination with a dumping car body, of motor actuating means, fluid checking means, and means whereby the checking effect is reduced as the car body approaches the outer end of the stroke.

2. In a dumping car, the combination with a pivoted and bodily movable car body, and a movable power cylinder for moving the car body, of a movable fluid checking cylinder carried thereby for controlling the entire movement of the car body, and means for automatically varying the fluid flow as the car approaches the outer end.

3. In a dumping car, the combination with a pivoted and bodily movable car body, and a movable power cylinder for moving the car body, of means for positioning the cylinder to move the car body to opposite sides, and means independent of the power cylinder and moving therewith for uniformly controlling the entire movement of the car body, and means for automatically varying the effect of said controlling means.

4. In a dumping car, the combination with a pivoted and bodily movable car body, and a movable power cylinder for moving the car body, of means for positioning the cylinder to move the car body to opposite sides, and a

liquid checking mechanism movable with the cylinder and uniformly controlling the speed thereof independently of the power applied, except at the end.

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

6. In a dumping car, the combination with a car body, and a movable cylinder for dumping it, of a movable dash pot cylinder and stationary piston having a by-pass between opposite sides of the piston, and a second by-pass for varying the movement at one end of the stroke.

7. 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.

8. In a dumping car, the combination with a dumping car body, actuating means, and movable checking means, of auxiliary check relieving means, and regulating means for the latter.

9. In a dumping car, the combination with a car body of an actuating cylinder and checking cylinder, and means for controlling the checking at the ends independently of the normal speed.

10. 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.

11. 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.

12. In a dumping car, the combination with a pivoted and bodily movable car body, and means for moving and tilting it, of liquid checking means independent of the actuating mechanism for controlling the movement of the car body, and means for automatically reducing the checking effect as the car body approaches the end.

13. In a dumping car, the combination with a pivoted and bodily movable car body, a power cylinder for moving the car body, of fluid checking means moving with the car body for controlling the movement of the car body, and means for reducing the checking effect as the outer end is approached.

14. In a dumping car, the combination with a pivoted and bodily movable car body, and a power cylinder for moving the car body, of fluid checking means moving with the actuating means for controlling the movement of the car body, and means for automatically relieving the checking action to bring the car body to rest with a shock.

15. In a dumping car, the combination with a pivoted and bodily movable car body, and fluid checking means moving with the car body, of means for relieving the checking effect as the car body approaches the end, and means for regulating the relief.

16. In a dumping car, the combination with a pivoted and bodily movable car body, and fluid checking means moving with the car body, of means for relieving the checking effect as the car body approaches the end, and means for throwing the relieving device out of operation for the return movement.

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

CARL P. ASTROM.

Witnesses:
GEO. A HOFFMAN,
A. GRIEB.