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MEANS FOR DUMPING CARS

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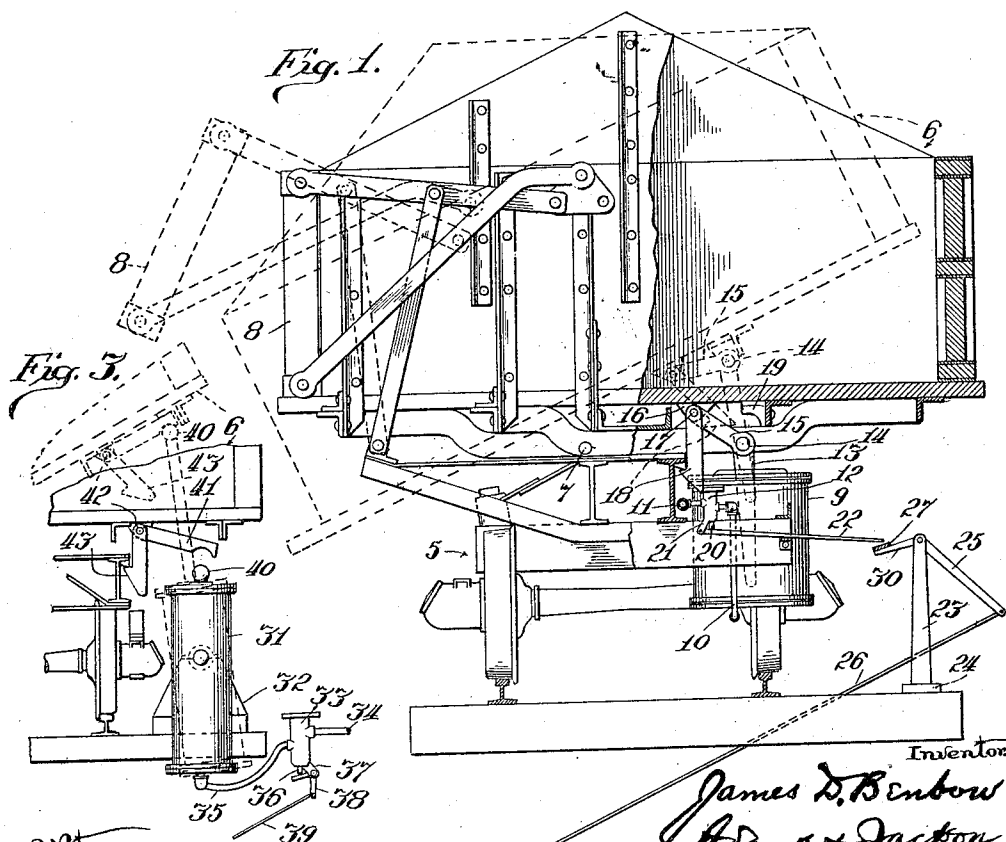
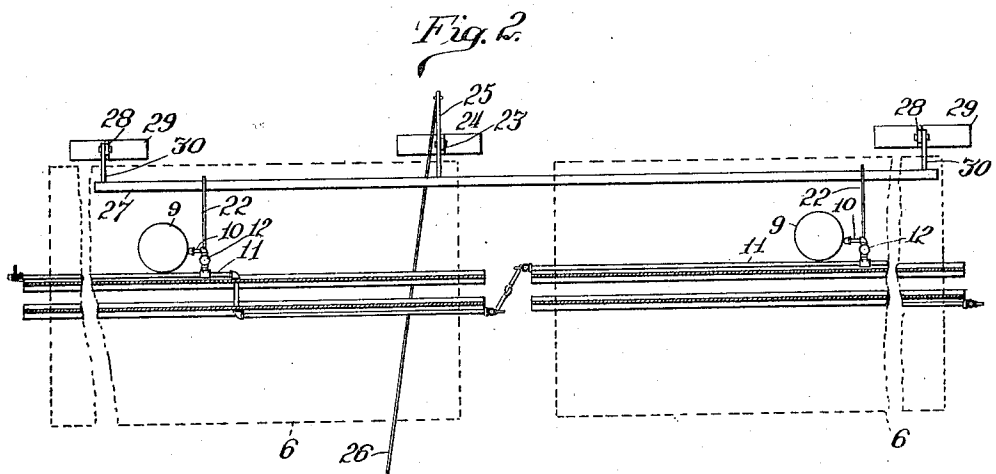
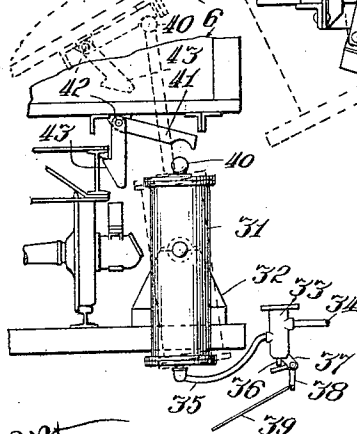


Fig. 3.



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MEANS FOR DUMPING CARS.

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To all whom it may concern:

Be it known that I, JAMES D. BENBOW, a citizen of the United States, and a resident of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Means for Dumping Cars, of which the following is a specification, reference being had to the accompanying drawings.

In many instances it is necessary to frequently dump loads of material at a single point, as for instance into a fixed chute that conducts the material to the place where it is to be used, or in other cases to discharge the material from one or more cars day after day at some particular location that is conveniently near a particular place where such material is made use of. My invention relates to improvements designed to be employed in connection with side-dump cars, and has for its leading object the providing of novel means fixedly secured alongside of a railroad track and adapted through manual operation of lever mechanism carried by said fixed means to actuate a piston in an air cylinder so that by means of a rod connected with such piston the body of a side-dump car that has been properly "spotted" or located will be turned into dumping position,—the said air cylinder in one embodiment of the invention being secured to and carried by the car-truck and in another embodiment being entirely separate from the car and located at one side of the railroad track. It is another object of the invention to provide means connected with such lever mechanism that will enable the simultaneous actuation of the compressed air dumping devices carried by a plurality of cars. A further object of the invention is to provide in connection with said car-body dumping devices latching means that normally hold the car-body against turning but which upon the beginning of the body-pushing movement of the piston and its rod will be moved to unlatching position. These objects I accomplish as shown in the drawing and hereinafter particularly described. That which I believe to be new will be set forth in the claims.

In the drawings,—

Fig. 1 is a view partly in end elevation

and partly in section of a side-dump car in connection with which my improvements are illustrated, the dumping position of the car being shown in dotted lines;

Fig. 2 is a plan view of the compressed air cylinders of two dump cars and the mechanism for operating the valves thereof simultaneously, the car bodies being shown in dotted lines and the I-beam supports for such bodies being shown in section; and

Fig. 3 is a detail illustrating a modification.

Referring to the several figures of the drawings,—5 indicates the truck and 6 the body of an ordinary side-dump car, which body is designed to be tilted only in one direction, viz, to the left hand side as viewed in Fig. 1, its point of pivotal attachment being, as indicated at 7 in Fig. 1, slightly to one side of the longitudinal center of the car. At its dumping side it is provided with a gate 8, the movement of which is automatically controlled by a system of levers and rods such as shown in Fig. 1, or otherwise.

Supported by the truck is a vertical air cylinder 9 into the lower end of which leads a pipe 10 that is adapted to be put into communication with a train pipe 11. The communication between the train pipe 11 and the pipe 10 is controlled by a valve of any well known form located in a chamber 12, said valve being of a character to normally stand in exhausting position, or a position to prevent air under pressure from passing through the pipe 10 to the lower end of the cylinder 9. In said cylinder is fitted a piston, (not shown) as usual, to which is pivotally connected the lower end of a piston rod 13 which at its upper end has pivotally connected to it at 14 one end of a link 15 which at its other end is made fast to a rock-shaft 17 extending longitudinally of the car and journaled in suitable brackets secured to the under side of the car body, one of such brackets being shown and indicated by 16. To the rock-shaft are affixed any desired number of latches such as that indicated by 18, which latches are adapted to take under and engage a rib formed with or connected to the adjacent I-beam as clearly shown in Fig. 1.

19 indicates a block having a curved under face and suitably secured against the under face of the floor of the car and in position to be contacted by the upper end of the piston rod and the attached end of the link 15 when such piston rod is forced upward. Such forcing upward of the piston rod against the block will of course compel a turning of the car body on its pivot 7.

10 Air is admitted to the lower end of the cylinder 9 beneath the piston by suitable movement of the valve mechanism contained within the casing 12, and such valve mechanism is so moved in the construction shown 15 by the forcing upward of a valve stem 20 that projects from the lower end of the casing 12. This is accomplished by the following means: To a downwardly-projecting ear 21 formed with a valve casing 12 is pivotally attached a bar 22 that extends 20 alongside of and projects at some little distance beyond the cylinder 9. 23 indicates a standard fixedly secured in place at a short distance from one of the railway track 25 rails, said standard being supported as here shown by a base 24 resting upon and secured to one or more railroad ties. To the upper end of this standard is pivotally secured a bent lever 25, to the lower end of the longer 30 arm of which is attached a rope 26 or other connection which may lead to any convenient point to be pulled upon by one having charge of the dumping of the car. As shown it is adapted to be led to that 35 side of the car where the dumping is to be effected, and hence the operator is in a position to judge with great exactness whether the car is in proper position to properly discharge the load. The short arm of this 40 bent lever 25 is provided with means for contacting with the free end of the bar 22, and such contacting means may be of any desired size, shape and length, but preferably it should extend lengthwise of the car 45 sufficiently so that, in order to be effective, the car will not have to be stopped or "spotted" with too great exactness as to its position. I prefer to make the contacting means in the form of quite a long bar 27, 50 so that, as shown in Fig. 2, it may be made use of for simultaneously operating the valve-operating bars 22 of two cars. When made of such length, it is very advisable of course that the end portions of such long 55 bar 27 be given support, and to that end I provide at each side of the standard 23 two other standards 28 that rise from bases 29, each of said supporting standards 28 being provided with an arm 30 for the longitudinally-extending bar 27 to rest upon.

60 With a dump car located in proper position on the tracks, it is evident that a pull upon the rope or other connection 26 will, through a turning of the bent lever 25, 65 raise the bar 22 and cause a forcing in of the

stem 20 of the valve mechanism in the casing 12, whereupon air under pressure will be admitted to the cylinder 9 and force the piston that is pivoted thereto up into contact with the block secured to the under 70 face of the body of the car, such movement also, of course, withdrawing the latch member 18 out of locking position, whereupon by the continued upward movement of the 75 piston the car body will be tilted as indicated by dotted lines in Fig. 1 so as to discharge its load. Upon the release of the pull on the connection 26, after the load has been discharged, the valve mechanism will 80 instantly return to exhausting position, and thereupon of course the car body will fall back into normal load-carrying position, such return of the body being compelled by 85 reason of the greater weight at one side owing to the pivoting of the body off the longitudinal center as shown in Fig. 1. Upon the righting of the car body, as described, the latch 18 will automatically engage under the rib on the adjacent I-beam, as will be 90 understood.

I have not deemed it necessary to show the details of my valve mechanism in the casing 12, as such mechanism may be of any approved construction. Mechanism 95 substantially as shown in my pending application, Serial No. 272,099, filed January 20, 1919, may advantageously be employed.

In Fig. 3 I have shown, and in part diagrammatically, a modification wherein the compressed-air cylinder that is employed in 100 connection with the tilting or dumping operation of a car body is not carried by the car itself, but is located on the road bed. As shown in said Fig. 3, there is provided a vertical cylinder 31 which is pivotally 105 connected with one or more suitable supports 32, so that, as indicated by dotted lines, it may have a slight rocking or swinging motion. As in the former construction this cylinder will be provided with a piston and 110 a piston rod which are actuated as described for the other construction. In this modification the valve chamber is indicated by 33, the pipe that conducts the compressed air to such casing is indicated by 34, and the 115 pipe that connects such casing with the cylinder being indicated by 35—such last-named pipe being here shown as a flexible one in order to allow of the swinging of the cylinder 31. The valve stem projecting 120 from the lower end of the casing 33 is indicated by 36; the ear that corresponds to the ear 21 is indicated by 37; the bent lever that corresponds to the bent lever 25 is indicated by 38, and the flexible connection 125 that corresponds to the part 26 in the other construction is indicated by 39. In this modification the upper end of the piston rod will be provided with a cross strip 40 of any suitable length, which corresponds 130

in function to the bar 27 of the other construction, and, as shown, such piece 40 is preferably rounded to correspond to the shape of a notch in the lower end of the member that it comes in contact with, which member is a link 41 that corresponds to the link 15 in the other construction. As such piston is forced upward it will rock the shaft that it is secured to, and which is here indicated by 42, and swing the latches 43 out of locking position as in the other construction. In this modification the contacted link 41 is forced up against the bottom of the car body, as shown by dotted lines, and remains there while the car body is being tilted into dumping position.

By my invention I have provided very simple and easily controlled mechanism by which one or more side-dump cars when located or spotted at approximately the desired point may be tilted to discharge their contents and thereafter immediately return to normal load-carrying positions. Inasmuch as the flexible connection 26 may be of any length desired, the operator is enabled to stand at that side of the track at which the dumping is to be effected, and, of course, to locate himself at such a distance from the track as to him may seem necessary or desirable.

Obviously, the invention is not limited to the particular type or kind of dump car herein illustrated and particularly described, but may be employed in connection with such other constructions as it may be found adapted for, and the claims are, therefore, to be construed accordingly.

What I claim as my invention and desire to secure by Letters Patent, is—

1. In combination, a side-dump car, a fluid-pressure cylinder, a piston and piston-rod therein, valve mechanism for controlling the admission of fluid under pressure to the cylinder to move said piston-rod toward the car body for tilting said body, a bar adapted by movement in one direction to actuate said valve mechanism to admit fluid under pressure to the cylinder, and manually-controlled means mounted at one side of the track on which the car stands for moving said bar.

2. In combination, a side-dump car, fluid-pressure operated means adapted to tilt the car body, manually operable means located at one side of the track on which the car stands for controlling said fluid-pressure operated means, and means for causing said fluid-pressure operated means to engage and tilt the car body when the car is in different positions on the track relative to said manually operable means.

3. In combination, a side-dump car, fluid-pressure operated means supported on the truck of the car adapted to tilt the car body, and means located at one side of the

track on which the car stands for controlling said fluid-pressure operated means.

4. In combination, a side-dump car, fluid-pressure operated means supported on the truck of the car adapted to tilt the car body, and manually-operated means located at one side of the track on which the car stands for controlling said fluid-pressure operated means.

5. In combination, a side-dump car, fluid-pressure operated means supported on the truck of the car adapted to tilt the car body, and a lever located at one side of the track on which the car stands for controlling said fluid-pressure operated means.

6. In combination, a side-dump car, fluid-pressure operated means supported on the truck of the car adapted to tilt the car body, a lever located at one side of the track on which the car stands for controlling said fluid-pressure operated means, and a connection leading from said lever to permit the lever to be operated from a distant point.

7. In combination, a side-dump car, fluid-pressure operated means supported on the truck of the car adapted to tilt the car body, and means located at one side of the track on which the car stands, said last-named means comprising a lever and a bar connected therewith and extending approximately parallel with the track so as to operatively engage the fluid-pressure operating means with the car located in different positions with respect to said lever.

8. In combination, a side-dump car, a fluid-pressure cylinder, a piston and piston-rod therein, valve mechanism for controlling the admission of fluid under pressure to the cylinder to move said piston-rod toward the car body for tilting said body, a bar adapted by movement in one direction to actuate said valve mechanism to admit fluid under pressure to the cylinder, said bar projecting beyond one side of the car-truck, a lever pivotally mounted at that side of the track adjacent to said bar, and a cross-bar carried by said lever and extending approximately parallel with the track so as to operatively engage said valve-actuating bar when the car is located in different positions with respect to said lever.

9. In combination, a side-dump car, a swinging latch for normally holding the car body in substantially horizontal position, fluid-pressure operated means adapted to release the latch from locking position and thereafter tilt the body of the car, and manually-operable means located at one side of the track on which the car stands for controlling said fluid-pressure operated means.

10. In combination, a side-dump car, a fluid-pressure cylinder, a piston and piston-

rod therein, valve mechanism for controlling the admission of fluid under pressure to the cylinder to move said piston-rod toward the car body for tilting said body, 5 valve-controlling means mounted at one side of the track on which said car stands, a swinging latch for normally holding the car body in substantially horizontal position, and means connected with said latch and adapted to be moved by said piston-rod to release the latch as said piston-rod 10 is forced toward the car body.

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