

R. L. SITES.
DUMP CAR.
APPLICATION FILED APR. 2, 1909.

953,865.

Patented Apr. 5, 1910.

2 SHEETS—SHEET 1.

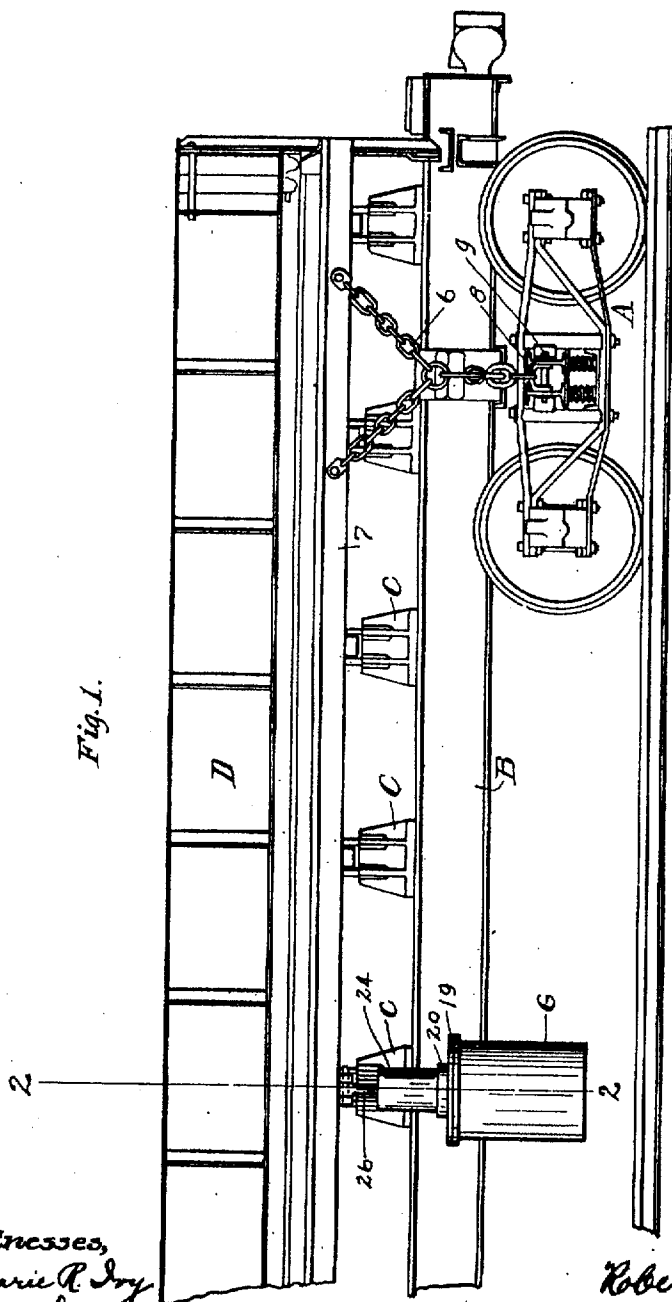


Fig. 1.

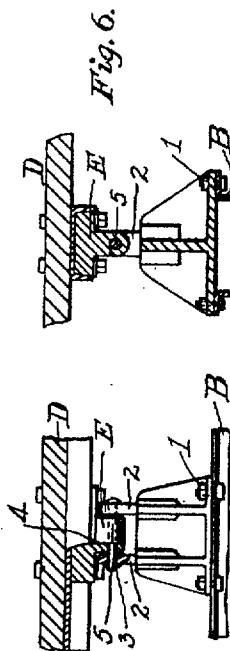


Fig. 6.

Fig. 5.

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Fig. 2.

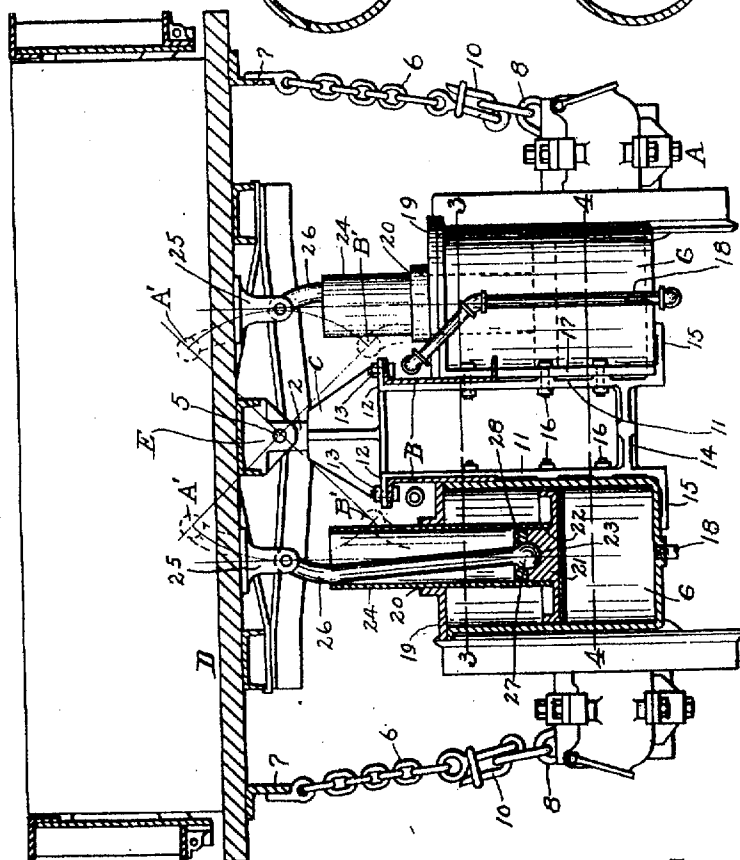


Fig. 3.

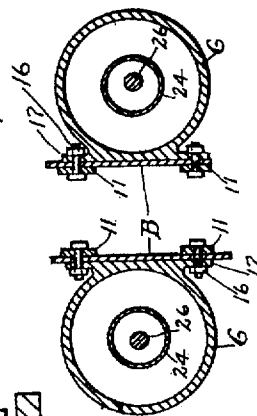
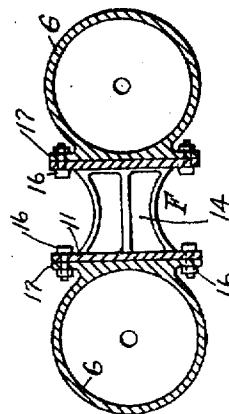


Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT L. SITES, OF KNOXVILLE, TENNESSEE, ASSIGNOR TO WILLIAM J. OLIVER MANUFACTURING COMPANY, A CORPORATION OF TENNESSEE.

DUMP-CAR.

953,865.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed April 2, 1909. Serial No. 487,475.

To all whom it may concern:

Be it known that I, ROBERT L. SITES, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Dump-Cars, of which the following is a specification, reference being had to the accompanying drawing.

My improvement relates particularly to dump cars constructed for the tilting of the body to either side and comprising mechanism for controlling such movement of the car by means of air or steam power applied through cylinders and pistons.

The object of the improvement is to provide a powerful and efficient and easily controlled mechanism for tilting and righting the bodies of large dump cars used in construction work and for similar purposes.

In the accompanying drawings, Figure 1 is a side elevation of a little more than one half of a car embodying my improvement, the middle of the car being indicated by the line 2-2, and the two halves of the car at each side of said line being identical; Fig. 2 is a section on the line 2-2 of Fig. 1, looking toward the right, the section going around the right hand cylinder; Fig. 3 is a horizontal section on the line 3-3 of Fig. 2, looking downward; Fig. 4 is a similar section on the line 4-4 of Fig. 2, looking downward; Fig. 5 is a sectional elevation of one of the hinges upon which the car body turns; Fig. 6 is a transverse upright section of said hinge.

Referring to said drawings, A is one of the trucks by which the car is supported, a similar truck being under the opposite end of the car. Upon said trucks rest two horizontal parallel beams or sills, B, which constitute the chief members of the under-framing. Said sills are horizontally opposite and near each other, and at opposite sides of and equi-distant from the upright middle longitudinal plane of the car. Chairs, C, extend across and rest upon said sills and are secured thereto by bolts, 1. Each chair has two upward-directed ears, 2, which stand opposite each other in the middle longitudinal, upright plane of the car. And each ear has an aperture, 3, on an axial line which is horizontal and in said plane.

D is the car body. To the bottom thereof above each chair, C, is secured a hinge member, E, which extends between the ears, 2,

and has an aperture, 4, axially in line with the apertures, 3. A pin or bolt, 5, extends through the apertures, 3, of the ears, 2, and the aperture, 4, of the hinge member, E. Any desired number of said chairs and hinge members may be used to give the car body proper support. The complete car of the drawings has nine such chairs and hinge members. By means of said chairs and members and said bolts, the car body is supported in such manner as to permit tilting to either side or standing in the horizontal position.

To normally hold the car body in the horizontal position, stay chains, 6, are applied at each side of the car, each chain being attached by its upper end to an angle plate, 7, on the bottom of the car body near the adjacent outer edge of the latter and to a clevis, 8, which is secured to the adjacent side of the truck by a bolt, 9. All of said chains comprise a hook, 10, which permits the separating of the chains at the side of the car body which is to go up when said body is to be tilted.

Midway between the two ends of the car, a hanger, F, is applied to the beams or sills, B, said hanger comprising upright members, 11, the upper end of one bearing against the inner face of one of said beams and the upper end of the other of said members bearing against the inner face of the other of said beams, and each of said members having a horizontal arm, 12, resting upon the upper face of the adjacent sill and secured thereto by an upright bolt, 13. Near their lower ends said upright members are joined by a transverse member, 14; and each upright member has at its lower end an arm, 15, extending horizontally away from the middle longitudinal upright plane of the car.

At each side of said hanger is applied an upright cylinder, G, the lower end of each cylinder resting upon the adjacent arm, 15, of the yoke and the side of each cylinder being secured to the adjacent hanger and sill by means of horizontal bolts, 16, extending through flanges, 17, and said hanger and sill (see Figs. 2, 3, and 4), and the lower flange of the adjacent sill being cut away sufficiently to make room for the cylinder.

A fluid supply pipe, 18, is tapped into the lower end of each cylinder and leads to any suitable source of steam, air, or other fluid supply, not shown, whereby such fluid may

be forced into said cylinder. Upon the upper end of each cylinder is a removable head, 19, having a central port or throat, 20. Within the cylinder is a piston, 21, having upon its upper face a centrally located circular and exteriorly screw-threaded upward extension, 22, in the upper face of which is formed a half spherical cavity, 23. A cylindrical tube, 24, has its lower end screw-threaded around the piston extension, 22, and extends upward and slidably through the port, 20. Said tube is long enough to remain within said port when the piston is at the bottom of the cylinder. Above each tube, 24, a bracket block, 25, is secured to the bottom of the car body. A piston rod, 26, is located within each tube and hinged by its upper end to the adjacent bracket, 25, and has at its lower end a ball head, 27, resting in the half spherical cavity, 23. An apertured bearing block, 28, surrounds said piston rod and the upper portion of said ball head and bears upon the piston extension, 22.

When the car body is in the horizontal position, as shown in Figs. 1 and 2, the pistons in the two cylinders stand horizontally opposite each other and about midway between the two ends of the respective cylinders and the chains at each side of the car body are coupled to hold said body from tilting.

The operation for tilting and subsequently righting the car body is as follows: Assuming that the car body is to be tilted toward the right, the right hand side going down and the left hand side going up, the chains at the left hand side are uncoupled, and air or steam, or other fluid, is forced into the left hand cylinder through the fluid pipe, 18, whereby the piston in said cylinder is forced upward, the adjacent tube, 24, and the piston rod being forced upward by the piston, the piston rod being made to bear upward on the adjacent bracket block, 25, to press the left hand side of the car body upward. During such upward movement of these several parts at the left hand side of the car, the corresponding parts at the right hand side of the car—the right hand side of the car body, the bracket block, 25, the piston rod, the piston tube, and the piston—move correspondingly downward. When the car is to be again righted, the action just described is reversed by forcing steam, air, or other fluid into the right hand cylinder through the adjacent fluid pipe, 18, until the car body has assumed the horizontal position. Then the chains at the left hand side of the car are again connected. During such operation, the piston is maintained in its axial alinement by the engagement of the tubular upward extension of the piston with the upper portion of the cylinder, and the piston rod makes its lower

engagement with the piston at or near the body of the latter and the base of said extension. And during said operation, the horizontal line on which the piston rod is hinged or coupled to the bracket block, 25, does not cross the upright axial line of the piston and cylinder. For said hinge line is in said axial line and also horizontally opposite the hinge line upon which the car body tilts. Hence, when the car body tilts, the upper hinge of the piston rod will move in an arc to which the axial line of the piston and cylinder is tangential, said arc being between said axial line and the hinge of the car body.

In Fig. 2, A¹ and B¹ indicate the upper and lower limits of the upper piston hinge and the curves, A¹ B¹, indicate said arcs. The upper end of each piston rod is curved toward the middle longitudinal upright plane of the car, in order that it may clear the upper portion of the piston guide extension when the piston and the piston rod are at their lower limit. It will be observed that this structure permits a maintained connection between the piston and the car body and makes feasible the tilting of the car by a single movement of the piston, notwithstanding the fact that the upright space allowed for the placing of the cylinders and their adjuncts is relatively very limited, as may be seen by noting the distance between the lower edges of the truck wheels and the bottom of the car body in Fig. 2.

I claim as my invention:

1. In a dump car, the combination with trucks, under-framing comprising longitudinal sills, and a car body mounted upon said under-framing for tilting sidewise, of means for normally holding the car body in the horizontal position, upright cylinders located at opposite sides of the middle longitudinal upright plane of the car, a hanger supporting said cylinders and rising between and supported by said sills, fluid pipes leading into the lower portions of said cylinders, pistons in said cylinders, piston tubes rising from said pistons and extending slidably through the upper walls of the cylinders, and approximately upright piston rods extending downward through said tubes and having a bearing at the bottom of the latter and having their upper ends joined to the car body.

2. In a dump car, the combination with trucks, under-framing comprising longitudinal sills, and a car body mounted upon said under-framing for tilting sidewise, of means for normally holding the car body in the horizontal position, upright cylinders secured to said sills at opposite sides of the middle longitudinal upright plane of the car, fluid pipes leading into the lower portions of said cylinders, pistons in said cylin-

ders, piston tubes rising from said pistons and extending slidably through the upper walls of the cylinders, and approximately upright piston rods extending downward through said tubes and having a bearing at the bottom of the latter and having their upper ends in operative relation with the car body.

3. In a dump car, the combination with trucks, under-framing comprising longitudinal sills, and a car body mounted upon said under-framing for tilting sidewise, of means for normally holding the car body in the horizontal position, upright cylinders located at opposite sides of the middle longitudinal upright plane of the car, a hanger supporting said cylinder and having lateral arms resting upon said sills, fluid pipes leading into the lower portions of said cylinders, pistons in said cylinders, extensions rising from said pistons and slidably engaged by the upper portion of the cylinder, and approximately upright piston rods engaging said piston at the base of said extension and having their upper ends hinged to the car body.

4. In a dump car, the combination with

trucks, under-framing comprising longitudinal sills, and a car body mounted upon said under-framing for tilting sidewise, of means for normally holding the car body in the horizontal position, upright cylinders located at opposite sides of the middle longitudinal upright plane of the car, a hanger supporting said cylinders and extending between and supported by said sills, fluid pipes leading into the lower portions of said cylinders, pistons in said cylinders, piston tubes rising from said pistons and extending slidably through the upper walls of the cylinders, and approximately upright piston rods extending downward through said tubes and having a bearing at the bottom of the latter and having their upper ends in operative relation with the car body.

In testimony whereof I have signed my name, in presence of two witnesses, this 23rd day of March, in the year one thousand nine hundred and nine.

ROBERT L. SITES.

Witnesses:

F. D. OWINGS,
R. E. GODDARD.