

H. E. THOMPSON.
DUMP CAR.
APPLICATION FILED JUNE 3, 1909.

942,598.

Patented Dec. 7, 1909.
3 SHEETS—SHEET 1.

Fig. 1.

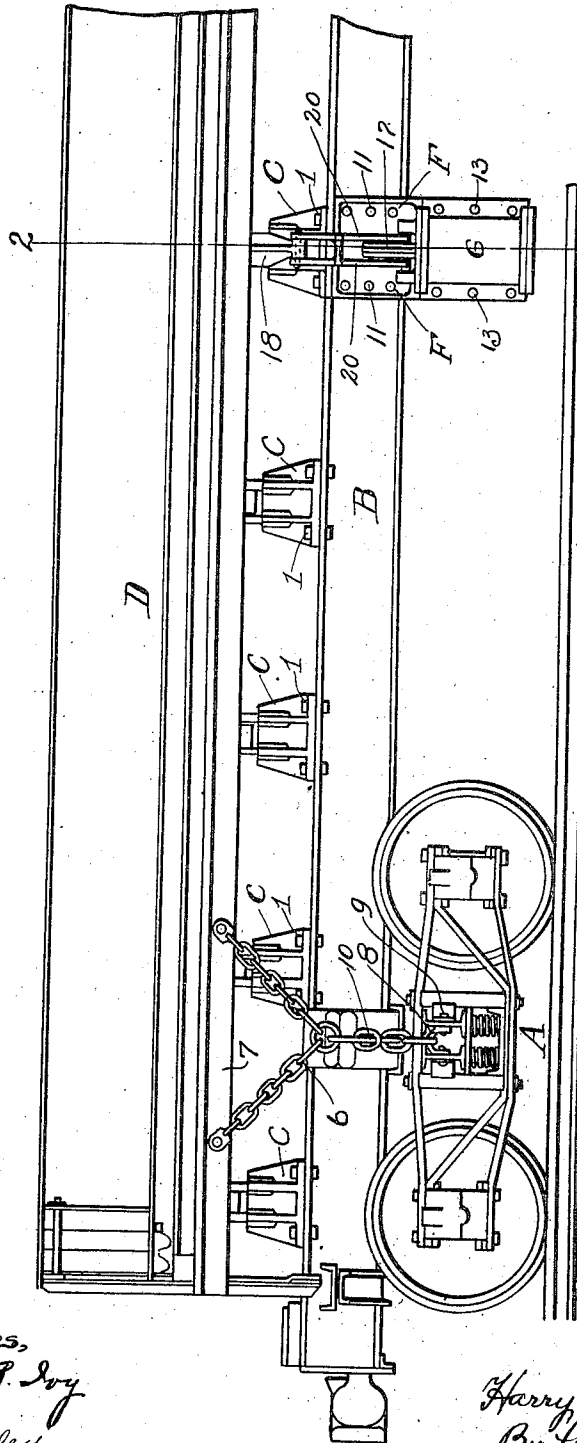


Fig. 4.

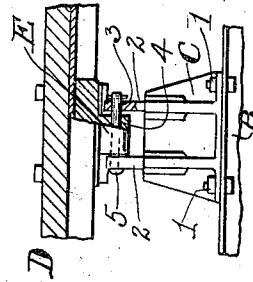
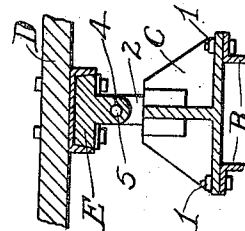


Fig. 5.



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Fig. 2.

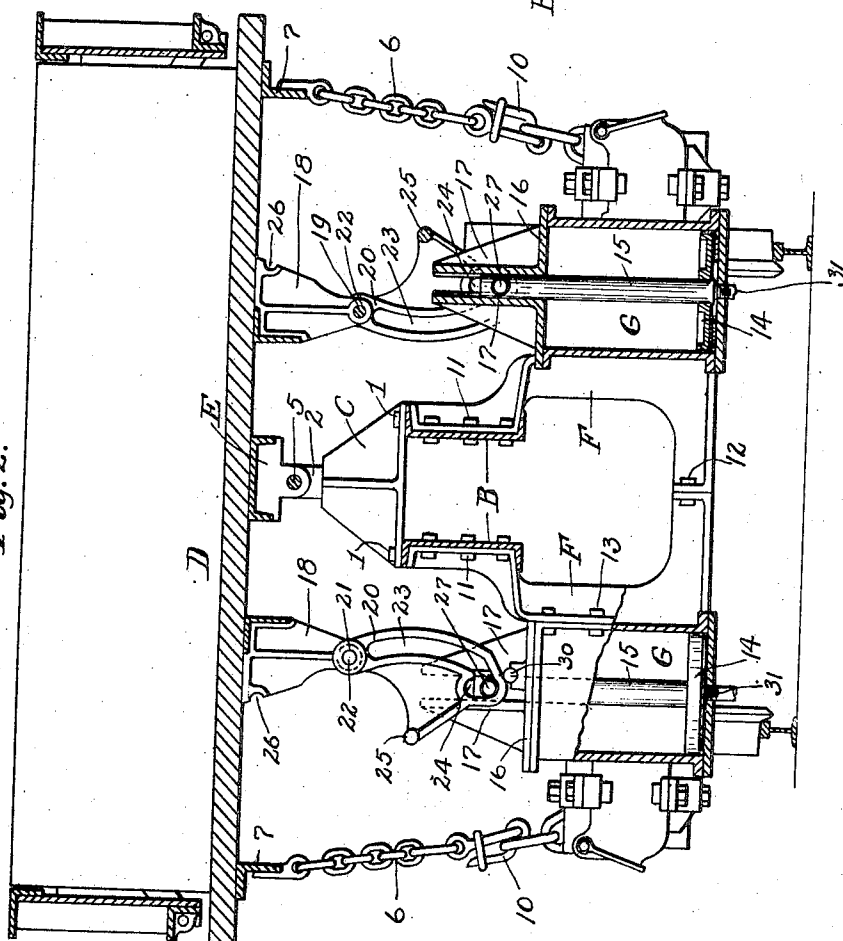
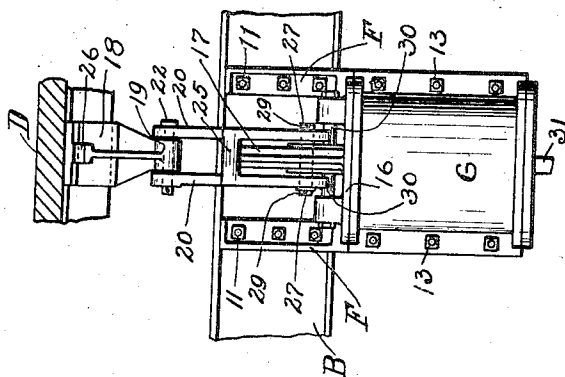


Fig. 6.



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Fig. 3.

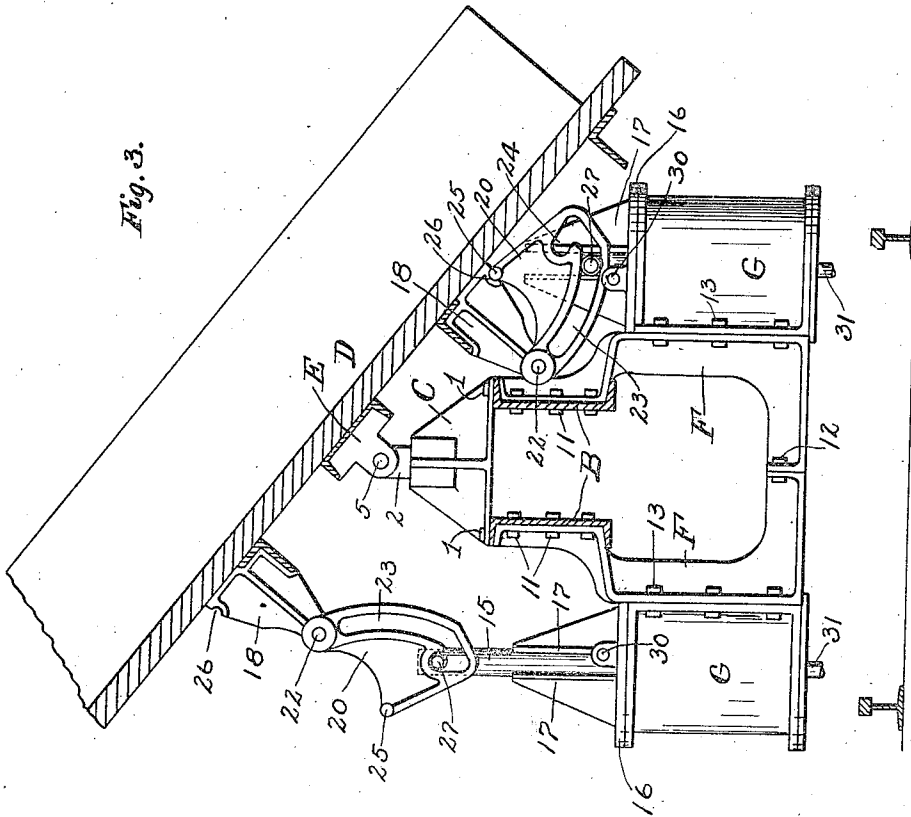
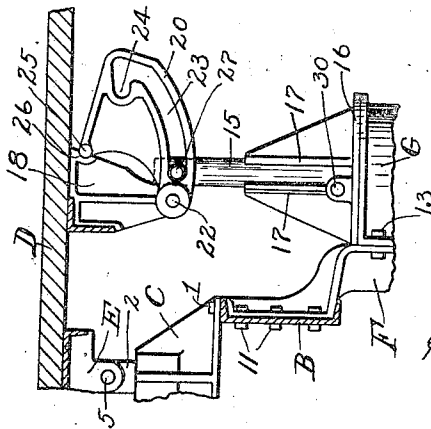


Fig. 7.



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UNITED STATES PATENT OFFICE.

HARRY E. THOMPSON, OF KNOXVILLE, TENNESSEE, ASSIGNOR TO WILLIAM J. OLIVER
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DUMP-CAR.

942,598.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed June 3, 1909. Serial No. 499,941.

To all whom it may concern:

Be it known that I, HARRY E. THOMPSON, 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, this section going around a portion of the parts; Fig. 3 is a section similar to Fig. 2, portions of the parts being omitted and the car body being tilted; Fig. 4 is a sectional elevation of one of the hinges upon which the car body turns; Fig. 5 is a transverse upright section of said hinge; Fig. 6 is a detail elevation of one of the lifting cylinders and the parts connecting said cylinder with the car body; Fig. 7 is a detail of the lifting mechanism shown in the position assumed while completing the lifting of one side of the car body into the horizontal position.

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 at the same elevation 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 each of the beams or sills. The upper ends of said hangers are secured to said sills by bolts, 11, extending through said hangers and said sills. The lower ends of said hangers are turned horizontally toward each other and meet and are joined by a bolt, 12. These hangers form supports for the cylinders, G. Said cylinders are upright, and one is applied to each hanger by means of bolts, 13, whereby said cylinders are held rigidly. In each cylinder is a piston, 14, bearing a rigid stem, 15, extending upward through the upper head, 16, of the piston. Upon the head of each piston are seated two rigid guides, 17, one being at each side of the path of the piston stem and no wider than the stem.

Above each piston a downward-directed hanger member, 18, is secured rigidly to the bottom of the car body, D. At its lower end said hanger member has a bearing, 19, which is horizontal and parallel to the length of the car. At each side of said bearing is placed the eye, 21, of a link, 20, and a shaft or pintle, 22, extends horizontally through

said eyes and said bearing. Said links are duplicates of each other and extend downward to the piston stem. Each of said links has a curved slot, 23, extending from near the eye, 21, downward to the lower end of the link. At its lower end, said groove is extended upward to form the recess, 24. Along their middle, said links are extended outward away from the middle of the car and there joined by a bar, 25. Said bar is in proper position to enter and rest in a notch, 26, on the hanger member, 18, when the links are turned outward and upward toward the bottom of the car body. In such position, the further upward movement of said link is prevented. (See Fig. 7 and the right hand portion of Fig. 3.) By thus engaging said hanger members, said links virtually abut against the car body, and the upward turning of said links is thereby limited.

On the piston, 14, is a cross-shaft, 27, which is parallel to the length of the car. Said shaft extends through the slots, 23, far enough to receive a cotter pin or similar key, 29, by which said links are held to said shaft.

Below each link, upon each piston head is seated an abutment member, 30, against which bears the edge of the adjacent link which is directed toward the middle longitudinal plane of the car when the adjacent side of the car is below the horizontal position, as will be hereinafter described. In the drawings, said abutment is shown in the form of an anti-friction roller, such roller being used for the purpose of reducing resistance to the movement of the link.

A pressure fluid supply pipe, 31, 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.

The operation is as follows: The car body being in the horizontal position, as shown in Fig. 2, the chains, 6, connected, and the links, 20, and both pistons in their lower positions, assuming that the car is to be tilted toward the right, as shown in Fig. 3, the left hand chain, 6, is disconnected, and steam or other fluid is driven into the lower end of the left hand cylinder through the pipe, 31, whereupon the piston and the cross-shaft, 27, are driven upward, said cross-shaft entering the recesses, 24, of the slot, 23. With the further upward movement of the piston, said cross-shaft forces said link upward, causing the latter to push against the hanger member, 18, whereby the left hand side of the car body is pushed upward, while the right hand side moves downward, the car body tilting on the hinge formed by the chairs, C, members, E, and bolts, 5. This movement continues until the piston reaches its upper limit. As soon

as the right hand portion of the car body begins to descend, the lower inner face of the right hand links, 20, bears upon the abutment roller, 30, whereby the lower end of said link is deflected or shifted laterally toward the right, the cross-shaft, 27, following the slots, 23, a short distance. The relative dimensions of the parts are such as to bring the bar, 25, of the right hand links nearly into the notch, 26, of the adjacent hanger member, 18, by the time the car body has been tilted to the desired angle. Thus the bar, 25, is ready to engage the notch, 26, during the reverse movement as described below. To support the car body at the limit of such tilting, suitable buffers, not shown, may be placed upon the car body to bear upon the under-framing. When the car is to be tilted in the reverse direction to again bring it into the horizontal position the left hand pipe, 31, is cut off from the fluid supply and opened for exhaust, and the power-fluid is turned into the lower portion of the right hand cylinder through the right hand pipe, 31, whereby the right hand piston is driven upward, the cross-shaft, 27, bearing upward in the slots, 23, the bar, 25, continuing to rest in the notch, 26, and the links moving obliquely upward and toward the right while the cross-shaft, 27, moves directly upward, until the eyes of the link, 20, are close to said cross-shaft, the latter resting in the upper end of the slots, 23. As soon as the left hand pipe, 31, was connected for exhaust, the left hand piston moved downward by gravity until the cross-shaft, 27, hung in the lower portion of the slot, 23, of the adjacent links, 20. While the right hand side of the car is now thus being moved upward, the left hand side descends correspondingly, allowing the left hand piston and the left hand links to descend by gravity into their normal positions. The left hand stay chains are now again connected. Then the right hand fluid pipe is set for exhaust, whereupon the right hand piston and links descend by gravity to their normal positions (the positions shown in Fig. 2), the pistons and links at each side of the car being again ready for lifting.

I claim as my invention:

1. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, piston stems rising from said pistons, links hinged at their upper ends to the car body and slidably engaged with said piston stems and formed at their

lower ends for temporarily non-slidably engaging said stems.

2. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, stems rising from said pistons, and members interposed between said stems and the car body and arranged for non-slidable engagement with said stems during the upward movement of the latter and for slidable engagement with said stems during the descent of the latter and while the latter are at their lower limit and said members are descending.

3. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, piston stems rising from said pistons, slotted links hinged at their upper ends to the car body and adapted to abut against the adjacent cylinder, and a cross-shaft upon said piston and extending into the slots of said links.

4. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, piston stems rising from said pistons, pairs of links hinged at their upper ends to the car body and slidably engaged with said piston stems and formed at their lower ends for temporarily non-slidably engaging said stems.

5. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, piston stems rising from said pistons, links hinged at their upper ends to the car body each having a slot and a recess at the lower end of said slot, and cross-shafts located upon said piston stems and extending into said slots.

6. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, piston stems rising from said pistons, links hinged at their upper ends to the car body and adapted to turn laterally to a fixed extent and slidably engaged with said piston stems and formed at their lower ends for temporarily non-slidably engaging said stems.

7. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, piston stems rising from said pistons, hanger members applied to the bottom of the car body above said pistons, links hinged at their upper ends to the hangers and adapted to turn laterally against said hanger members and slidably engaged with said piston stems and formed at their lower ends for temporarily non-slidably engaging said stems.

8. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, piston stems rising from said pistons, hanger members applied to the bottom of the car body above said pistons, links hinged at their upper ends to said hanger members and adapted to turn laterally against said members and having slots at the lower end of each of which is a recess, and cross-arms on said piston stems extending into said slots.

9. In a dump car, the combination with trucks, under-framing, 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, fluid pipes leading into the lower portions of said cylinders, upright pistons in said cylinders, piston stems rising from said pistons, hanger members applied to the bottom of the car body above each of the pistons, links hinged at their upper ends to

the hanger members and adapted to bear at
 their lower ends upon the cylinders and turn
 laterally to a limited extent and having slots
 at the lower end of each of which is a recess,
 5 and cross-shafts located upon said piston
 stems and extending into said slots.

In testimony whereof I have signed my

name, in presence of two witnesses, this 29th
 day of May, in the year one thousand nine
 hundred and nine.

HARRY E. THOMPSON.

Witnesses:

R. E. GODDARD.

R. L. SITES.