No. 757,279. PATENTED APR. 12, 1904.

J. C. DEPEW.

DUMP CAR.

APPLICATION FILED NOV. 30, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

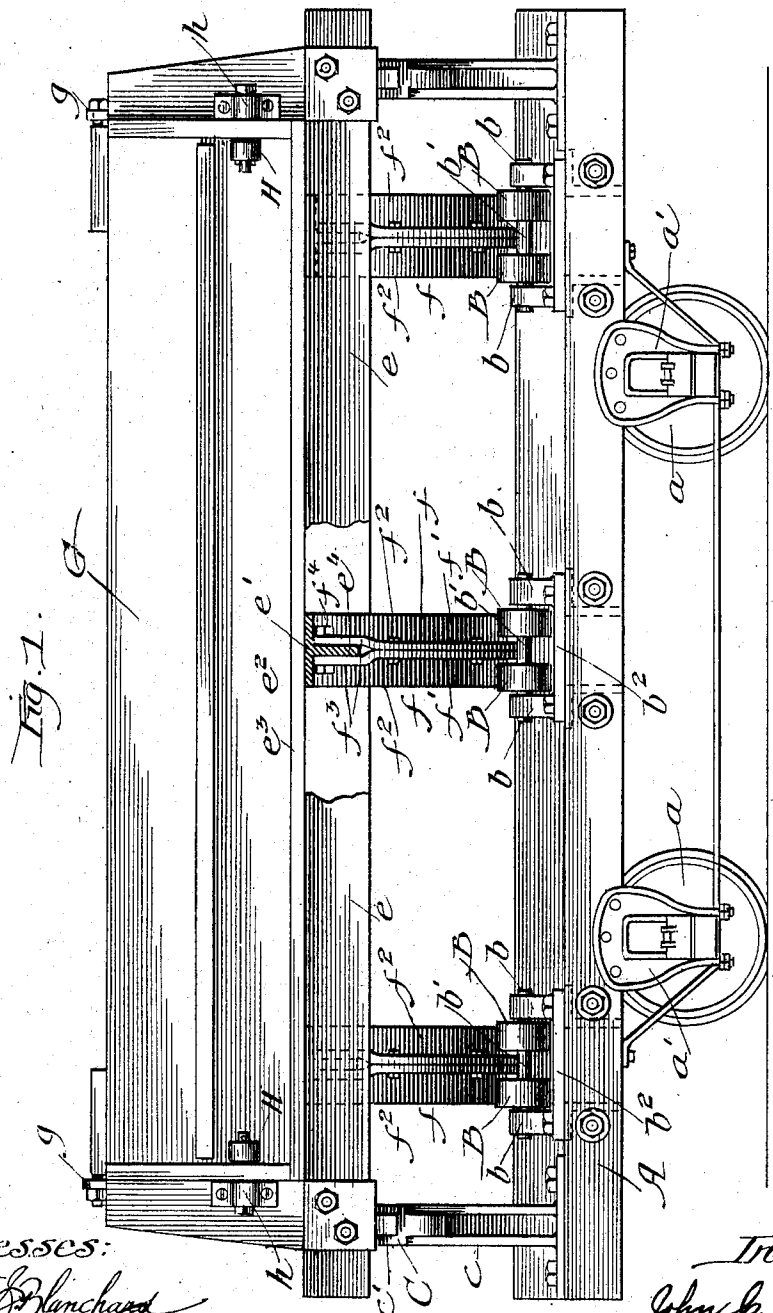


Fig. 1.

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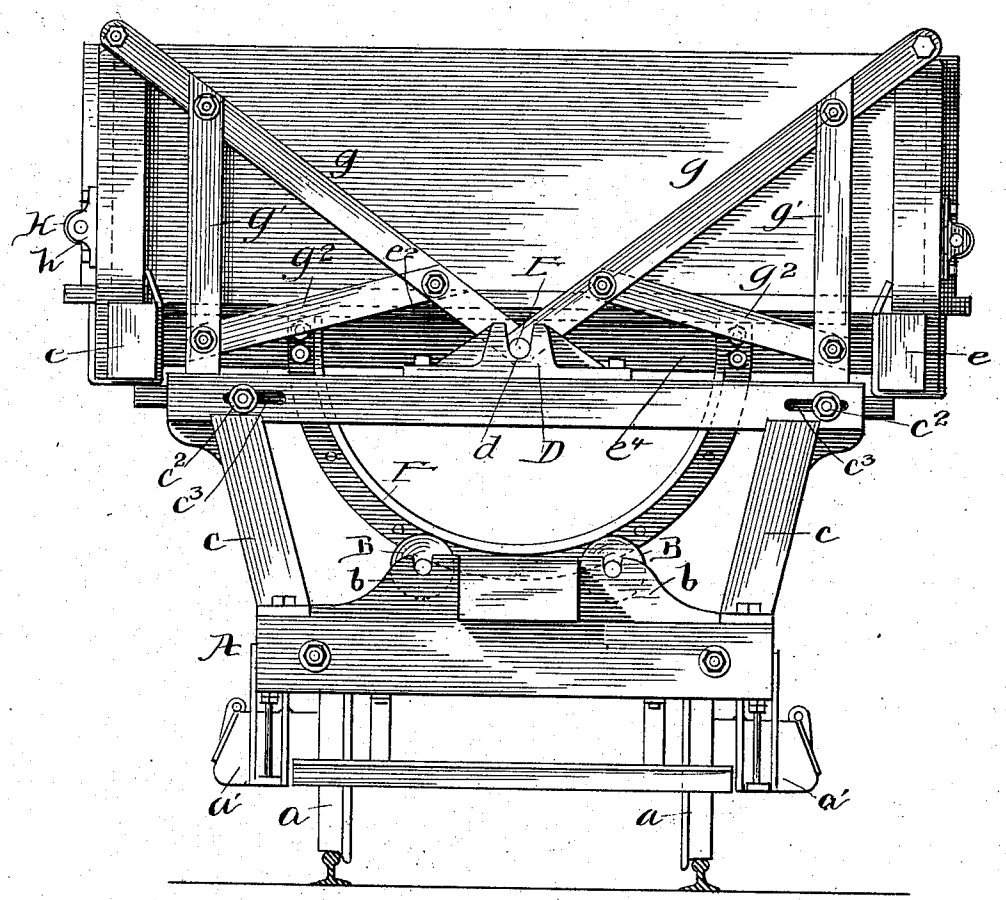
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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



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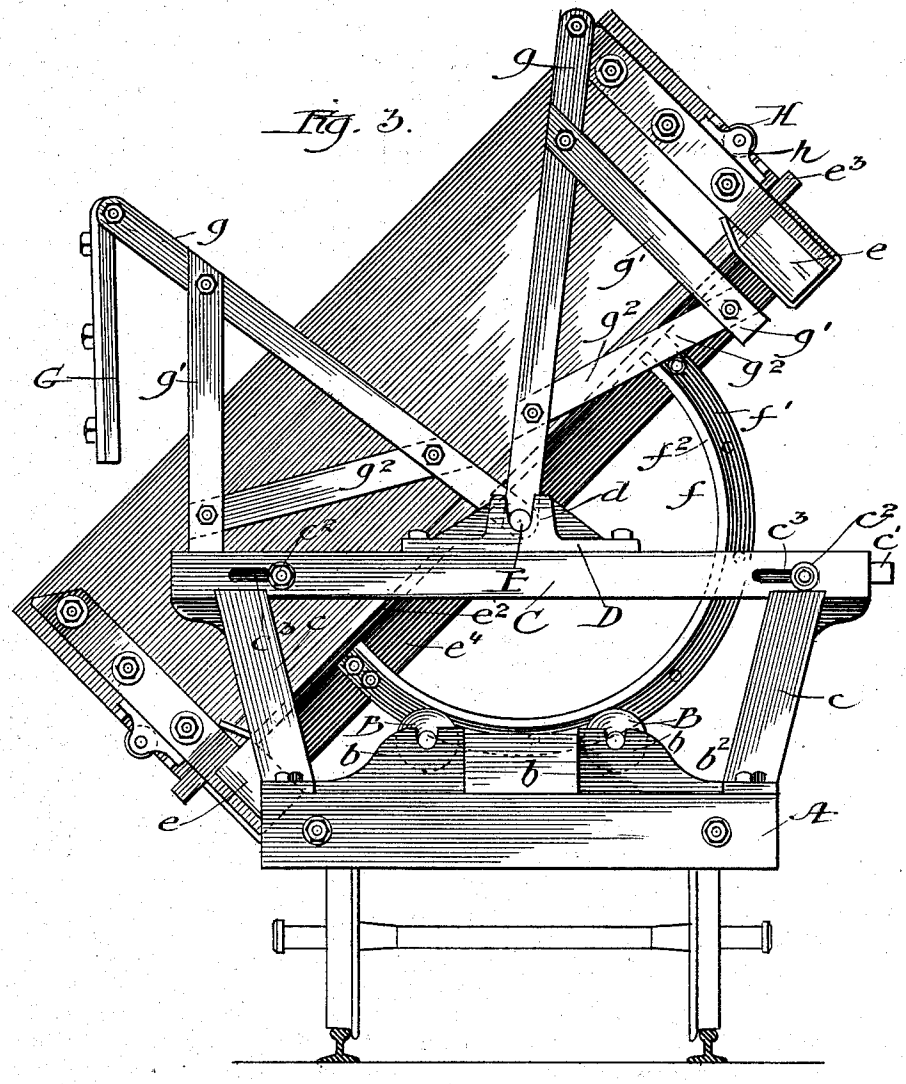
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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.



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No. 757,279. Patented April 12, 1904.

UNITED STATES PATENT OFFICE.

JOHN C. DEPEW, OF CHICAGO, ILLINOIS.

DUMP-CAR.

SPECIFICATION forming part of Letters Patent No. 757,279, dated April 12, 1904.

Application filed November 30, 1903. Serial No. 183,183. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. DEPEW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dump-Cars, of which the following is a specification.

This invention relates to that class of dump-cars which are particularly adapted for use with steam-shovels upon railroads or tramways; and the objects of the invention are to produce a dump-car the hopper of which will be perfectly balanced, so that it can be easily dumped and which when dumped will return to normal position.

The invention further relates to the pivotal mounting of the hopper and to the means by which the doors thereof are operated when the hopper is dumped, and the invention finally consists of the features of construction and combination of parts hereinafter described and claimed.

In the drawings illustrating the invention, Figure 1 is a side view of the entire dump-car in normal position; Fig. 2, a similar end view, and Fig. 3 an end view showing the hopper tilted for discharging the material therein contained.

The dump-car of the present invention consists of a truck A, mounted upon wheels *a*, carried within journal-boxes *a'* of any suitable construction, and upon the truck are mounted three sets of rollers B, mounted within journal-bearing blocks *b*, each set consisting of two pair, each pair mounted upon an axle *b'*, and the two pair of rollers forming each set are laterally spaced a consderable distance apart. Each pair of rollers is positioned upon its shaft to leave a space b^2 between the respective rollers.

At the ends of the truck are arranged elevated cross-rails C, mounted upon upright bars *c*, and within the cross-rails are located draw-bars *c'*, which normally project beyond the ends of the cross-rails and support the hopper in horizontal position, and said draw-bars are shaped to be drawn back by means of draw-pins c^2, operating within slots c^3 in the cross-rails or in any other suitable manner, and the method of supporting the hopper in horizontal position forms no part of the present invention.

Upon the cross-rails are located journal-mountings fixedly secured at the center of each of the end cross-rails, and within the journal-bearings are trunnions D, which extend outwardly from the ends of the hopper E.

The hopper is constructed to have side sills *e*, which project beyond the cross-rails at the ends of the truck and are adapted to be supported by the draw-bars when projected beneath the side sills, and the hopper as a whole is adapted to swing down between the end cross-rails when the draw-bars are withdrawn from beneath the projected portions of the side sills, thereby allowing the hopper to swing on its pivotal mountings and to discharge the material contained therein.

The hopper is constructed to have cross-ties *e'*, secured at their ends to the side rails, and, as shown, the cross-ties are formed of sections of T-beams, having their inner portion e^2 horizontally disposed for securing the flooring e^3 of the hopper thereto and having their web portion e^4 vertically disposed, which arrangement forms a most rigid support for the flooring of the car and serves as a means of securing thereto the pivotal supports for the hopper, as will hereinafter appear.

At suitable intervals are secured the supporting-rockers F, which sustain the weight of the hopper, and said rockers are bent to a curve, having as its center the trunnions which project from the ends of the hopper, so that when the hopper is swung the weight thereof at all times will be sustained by the radially-curved rockers and the trunnions will serve to prevent the displacement of the hopper from its proper position. It will thus appear that the axis of the hopper will at all times remain in line with the axis of revolution of the trunnions and that the hopper when tilted will not be laterally projected, as is usually the case with hoppers mounted upon pivotal mountings below the body of the hopper.

The rockers F are each composed of two strips of angle-iron *f*, bolted together to have their flanges *f'* outwardly projected, so that the rocker is adapted to journal within the space b^2 between the rollers, which arrange-

ment further serves to prevent the displacement of the rockers from their position upon the rollers, and the rockers when formed in this way will have side flanges f^2 on each side of the central flange, which side flanges contact the rollers and travel thereon. The end portions f^3 of the rockers are spread sufficiently to embrace the web portion e^4 of the cross-ties, to which the ends of the rockers are secured by means of bolts f^4, thereby firmly uniting the ends of the rockers to the beam of the hopper.

The hopper is provided with side bars G, each of the bars being pivoted at its ends to supporting-arms g, which arms are set in angular relation to one another and have their lower ends brought together and pivoted by the trunnions, which project outwardly from the hopper, so that the supporting-arms have the same axis of revolution as the hopper.

Each of the supporting-arms is provided with an abutment g', rigidly secured to the supporting-arm and adapted to contact the top face of the elevated cross-rail with which it coöperates, and between the abutments and the supporting-arms are braces g^2, which serve to reinforce the connection between the supporting-arms and the abutments.

At the ends of the hopper are inwardly-projecting rollers H, rotatably mounted within journal-bearings h, which rollers are adapted to contact the outer faces of the swinging doors of the hopper and allow the same to run easily and smoothly into place.

From the foregoing description the operation of the hopper will be partially understood, but may be briefly stated as follows: When the hopper is in normal position, the doors will be closed and held in place by the rollers, which contact the outer walls of the doors, thereby preventing the displacement of the doors and the escape of material from the hopper. When it is desired to discharge the hopper, the draw-bars upon the proper side are withdrawn, which releases the hopper and allows it to swing down and allows the curved rockers to move on their rollers and the trunnions to turn within their journal-mountings, thereby tilting the hopper and allowing it to discharge and yet maintain a firm support for the hopper at all times and maintaining an axis of revolution, which is at or near the floor-level of the hopper, which arrangement greatly facilitates the replacing of the hopper after the same has been discharged. With hoppers of the ordinary type, which have a pivotal mounting below the floor of the hopper, it is necessary to lift the hopper a considerable distance before the same may be swung back into place; but with the hopper of the present invention the axis of revolution lies at a point which so disposes the weight of the hopper that it may be easily thrown back into place after it has been discharged. As the hopper is tilted the supporting-arms on the discharging sides of the hopper will be held in normal position by the contact of the abutments on that side with the elevated cross-rails. At the same time the supporting-arms on the opposite side of the hopper and the doors pivoted thereto will swing with the hopper, thereby keeping the door closed on the elevated side of the hopper, which arrangement causes the weight of the elevated door to bear against the hopper on that side and serve to bring the hopper back to normal position after the load has been discharged, whereas the weight of the door on the discharging side of the hopper is entirely supported by the supporting-arms and does not bear against the hopper in any way. By this arrangement the hopper after the load has been discharged will return to normal position automatically and without the necessity of being lifted or otherwise replaced.

It will thus be seen that the dump-car of the present invention is strong and durable and is mounted in a manner which brings the axis of revolution at the lowest possible point and at the same time so mounts the hopper that it may be easily and automatically returned to position after the load contained therein has been discharged.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a device of the class described, the combination of a hopper, a rocker secured to the body of the hopper and having its center of curvature on a line with the axis of revolution of the hopper, trunnions on the line of the axis of revolution outwardly projecting from the ends of the hopper, mountings for the trunnions, rollers for supporting the rocker and on which the rocker is adapted to travel, swinging doors for the hopper, supporting-arms attached at their inner ends on a line with the axis of revolution of the hopper between which arms the doors are hung, and means for holding in their normal position the door and the supporting-arms on the discharging side of the hopper, allowing the door and arms on the opposite side of the hopper to be raised therewith, substantially as described.

2. In a device of the class described, the combination of a hopper, a rocker secured to the body of the hopper and having its center of curvature on a line with the axis of revolution of the hopper, rollers for supporting the rocker and on which the rocker is adapted to travel, swinging doors for the hopper, supporting-arms attached at their inner ends on a line with the axis of revolution of the hopper between which arms the doors are hung, and means for holding in their normal position the door and the supporting-arms on the discharging side of the hopper, allowing the door and arms on the opposite side of the hopper to be raised therewith, substantially as described.

3. In a device of the class described, the com-

bination of a hopper, a rocker secured to the body of the hopper, and having its center of curvature on a line with the axis of revolution of the hopper, rollers for supporting the rocker on which the rocker is adapted to travel, swinging doors for the hopper, supporting-arms pivoted at their inner ends on a line with the axis of revolution of the hopper between which arms the doors are hung, abutments for preventing the downward movement of the door, and supporting-arms on the discharging side of the hopper and allowing the door and arms on the opposite side of the hopper to be raised therewith, substantially as described.

4. In a device of the class described, the combination of a hopper, a rocker secured to the body of the hopper, provided with an outwardly-projecting flange and curved to have its center of curvature lie in the line of the axis of revolution of the hopper, and two pairs of rollers, the rollers of each pair being spaced to allow the flange on the rocker to project thereinto for supporting the rocker and allowing it to move upon the rollers, substantially as described.

5. In a device of the class described, the combination of a hopper, a rocker secured to the body of the hopper, provided with an outwardly-projecting flange and curved to have its center of curvature lie in the line of the axis of revolution of the hopper, two pairs of rollers, the rollers of each pair being spaced to allow the flange on the rocker to project thereinto for supporting the rocker and allowing it to move upon the rollers and trunnions outwardly projecting from the hopper in a line with the axis of revolution thereof, substantially as described.

6. In a device of the class described the combination of two raised cross-rails on a truck, a pair of rollers rotatably mounted on the truck, each pair of rollers being laterally spaced a considerable distance, journal-mountings on the raised cross-rails, a hopper mounted between the raised cross-rails and having trunnions carried by the journal-mountings, and a rocker, secured to the body of the hopper and bent to have its center of curvature in the line of the axis of revolution of the hopper and adapted to contact the rollers on the truck and support the hopper, substantially as described.

7. In a device of the class described the combination of two raised cross-rails on a truck, a pair of rollers rotatably mounted on the truck, each pair of rollers being laterally spaced a considerable distance, journal-mountings on the raised cross-rails, a hopper mounted between the raised cross-rails and having trunnions carried by the journal-mountings, and a rocker, secured to the body of the hopper and bent to have its center of curvature in the line of the axis of revolution of the hopper and adapted to contact the rollers on the truck and support the hopper, and swinging doors at the sides of the hopper and supporting-arms from which the doors are hung and means for holding the supporting-arms on the discharging side of the hopper in normal position, and allowing the supporting-arms on the opposite side to be raised with the hopper, substantially as described.

8. In a device of the class described, the combination of a truck, two pairs of rollers, rotatably mounted on the truck, each pair of rollers being laterally spaced a considerable distance, and the individual rollers of each pair being longitudinally spaced a suitable distance, elevated cross-rails at the ends of the truck, a hopper pivotally mounted between the end rails, a rocker secured to the body of the hopper and bent to have its center of curvature lie in the line of the axis of revolution of the hopper, said rocker being formed of two sections of angle-iron, secured together to provide an outwardly-extending flange, adapted to enter the space between the individual rollers of each pair, and allow the under faces of the angle-iron to contact the rollers for tilting the hopper, substantially as described.

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