

No. 757,277.

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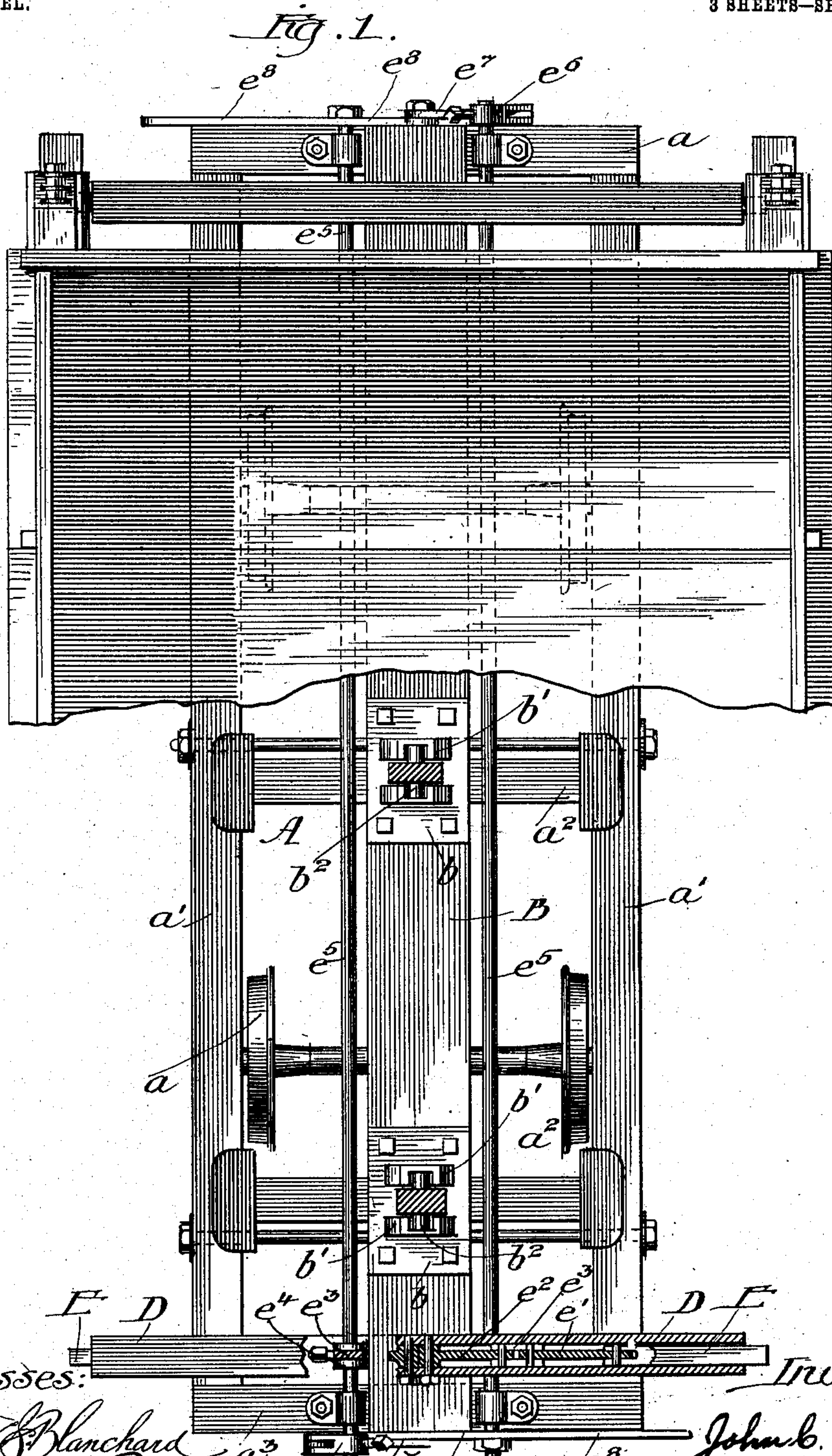
J. C. DEPEW.

METHOD OF MOUNTING HOPPERS FOR DUMP CARS.

APPLICATION FILED NOV. 21, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:

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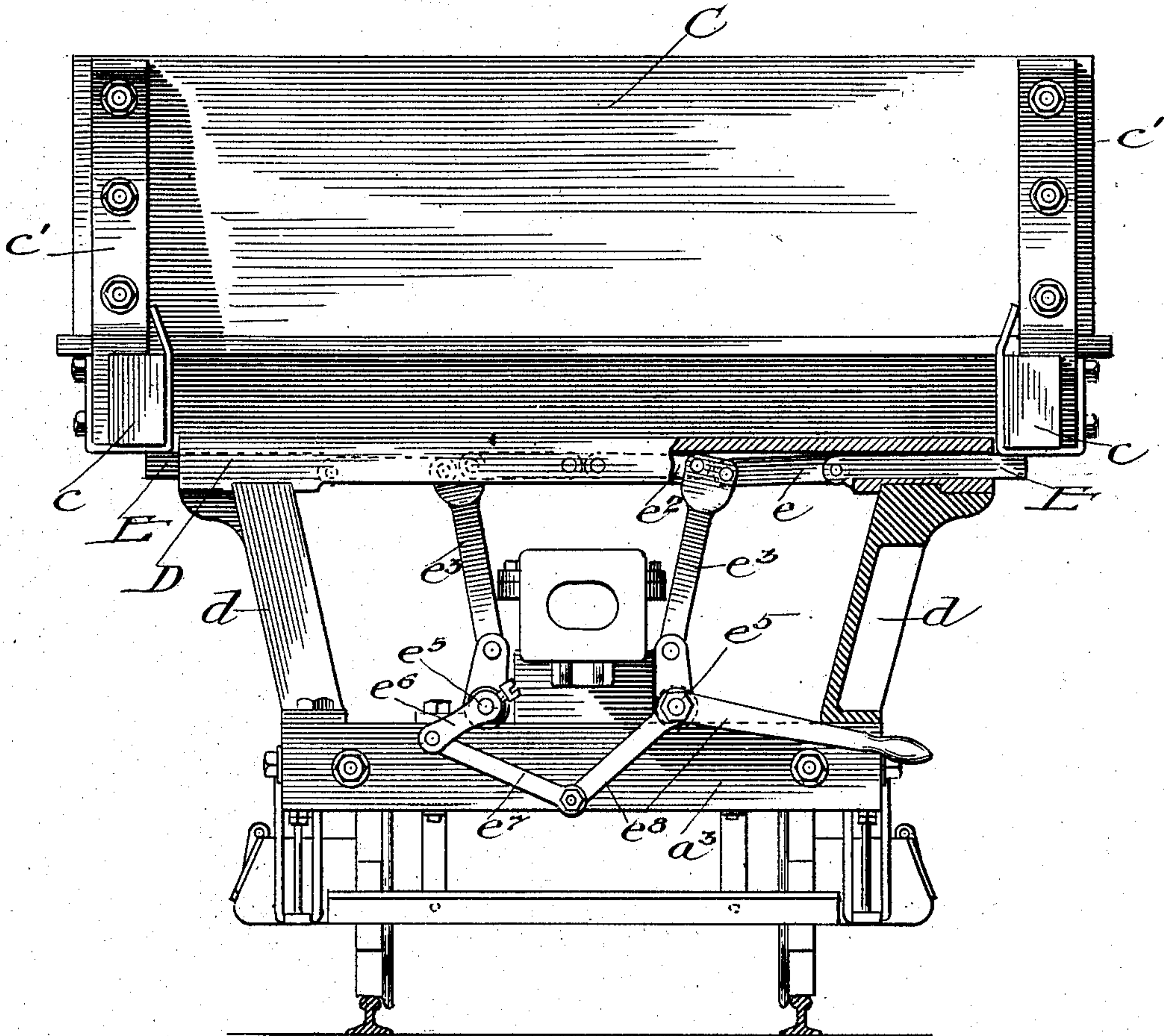
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3 SHEETS—SHEET 2.

Fig. 2.



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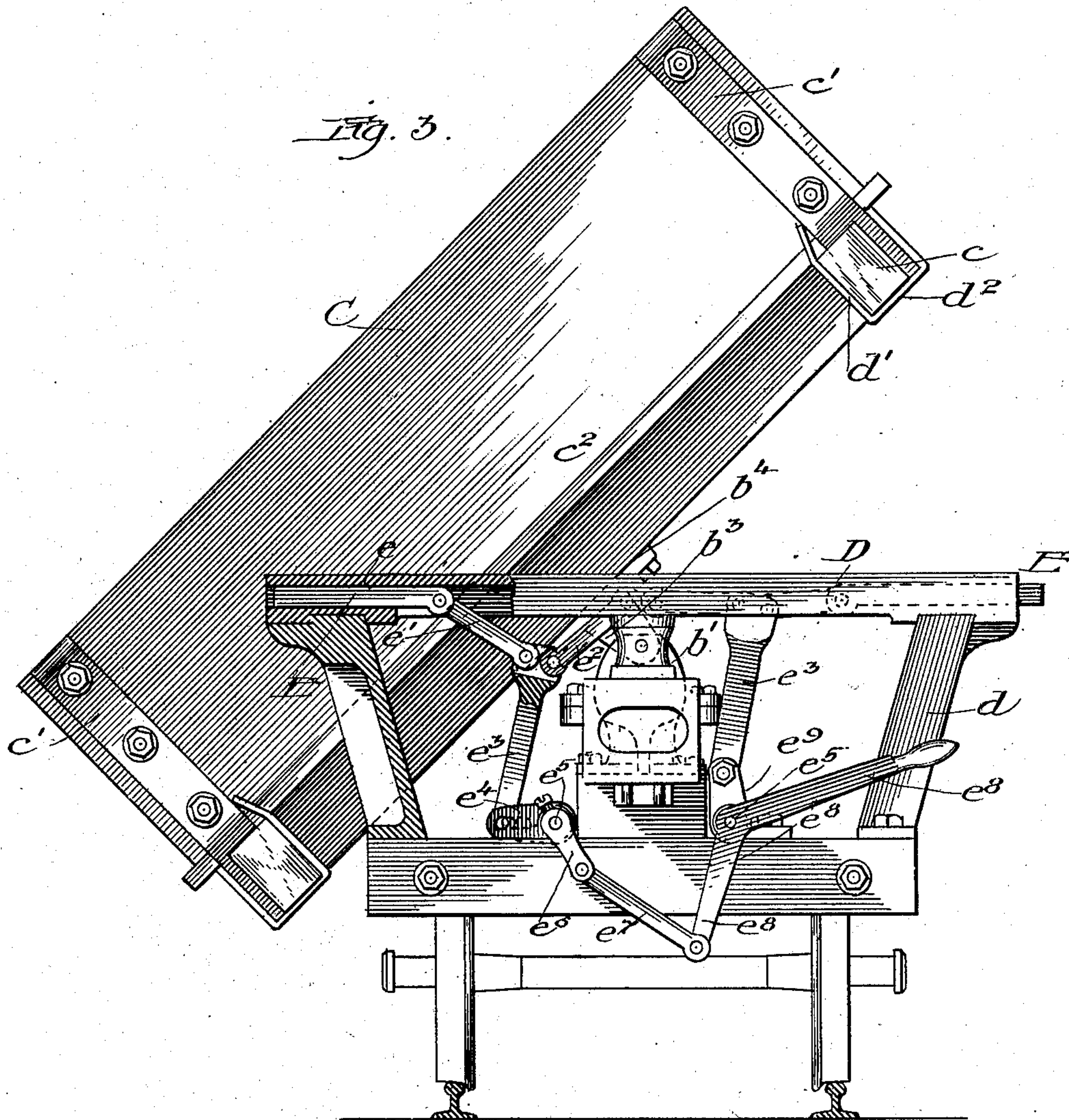
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UNITED STATES PATENT OFFICE.

JOHN C. DEPEW, OF CHICAGO, ILLINOIS.

METHOD OF MOUNTING HOPPERS FOR DUMP-CARS.

SPECIFICATION forming part of Letters Patent No. 757,277, dated April 12, 1904.

Application filed November 21, 1903. Serial No. 182,100. (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 the Methods of Mounting Hoppers for Dump-Cars, of which the following is a specification.

This invention relates to the method of mounting a hopper upon the truck of a dump-car, so that the hopper may be readily and easily tilted for discharging the dump, and the invention more particularly relates to the mechanism by which the bars supporting the hopper are automatically withdrawn upon the discharging side of the hopper to allow that side of the hopper to descend and discharge its contents.

The invention consists in the features of construction and combinations of parts hereinafter described and claimed.

In the drawings illustrating the invention, Figure 1 is a plan view of a truck with part of the operating mechanism in section and having the hopper removed; Fig. 2, an end view of the dump-car showing the hopper in normal position; and Fig. 3, a similar view showing the hopper tilted.

The dump-car of this invention consists of a truck A, mounted upon suitable journal-wheels a of any ordinary construction, and said truck is constructed to have side sills a' , below which the wheels are journaled, intermediate cross-ties a^2 , connecting the sills together, and end cross-ties A^3 , which complete the framework of the truck. The truck is provided in its center with a longitudinally-extending supporting-sill B, to which are secured pivotal plates b , each plate being provided with upwardly-extending ears b' , through which pass pivot-pins b^2 , which pins pass through tongues b^3 , depending from plates b^4 , secured to the bottom of a hopper C, which arrangement forms a pivotal connection between the hopper and the truck and allows the hopper to be tilted in either direction. The hopper is supported upon side sills c , which project beyond the end of the hopper, and upon the projected ends of the side sills are end abutments c' , to the inner faces of which are secured the end

walls c^2 of the hopper. The hopper is provided with side doors (not shown) of any suitable and well-known construction, and the present invention relates rather to the method of mounting the hopper than to the construction of the hopper itself. The hopper is adapted to swing on its pivotal mounting inside of a pair of cross-rails D, mounted on supports d , one at each corner of the car, and, as before stated, the supporting side-sills c of the hopper extend beyond the end walls thereof a sufficient distance to swing down over the ends of the cross-rails D without touching the same, while the body of the hopper swings inside of the cross-rails, as best shown in Fig. 3. The end abutments are secured to the side sills by means of angle-plates d' , and the angle-plates have their lower portions d^2 turned in under the bottom faces of the side sills to form protective plates, under which when the car is supported in normal position extend draw-bars E, carried within the cross-rails D, which draw-bars—four in number, one on each end of each of the cross-rails—serve to rigidly support the hopper in horizontal position when extended and allow the hopper to be tilted in either direction when one pair of draw-bars is drawn back into the end cross-rails within which they operate. As shown, the draw-bars are mounted within recesses e in the end rails, and each draw-bar at its inner end is pivoted to an outer link e' , which co-operates with an inner link e^2 , as best shown in Fig. 3. When the draw-bars are extended, the two links will lie within the recess or slot in the cross-rail; but when the draw-bar is drawn, as shown in Fig. 3, the two links, which are pivoted to an outer arm e^3 , will be drawn out of the slot or recess by the action of the arm, thereby withdrawing the draw-bars on one side of the hopper and allowing the same to descend and dump the load therein. The corresponding draw-arms at the opposite ends of the car are each pivoted to rock-arms e^4 , which rock-arms are mounted at the opposite ends of a longitudinally-extending rock-shaft e^5 , (best shown in Fig. 1,) which permits of the simultaneous operation of the two draw-bars at the opposite ends of the hopper, so that when the shaft is rocked the draw-arms will

be both drawn at the same time and the two pairs of links drawn down out of the slots within which they operate, thereby simultaneously drawing the bars at both ends of the hopper and removing the supports for the ends of the side rails, which allows the hopper to swing on its pivotal mounting and tilt down between the end rails and their supports, as shown in Fig. 3.

It will be understood that there is a similar arrangement of links and a similar rock-shaft on the opposite side of the truck for operating the oppositely-disposed draw-bars to enable the car to be tilted down on the other side and with the description here given applies equally to both sides of the car. Each of the rock-shafts is provided at one end with an operating-link e^6 , which is pivoted to an arm e^7 , which in turn is pivoted to a bell-crank lever e^8 at its bend by means of a pivot e^9 , which lever in each case is mounted on that side of the car opposite to the side on which the hopper is discharged, so that when the car is tilted the operator will not be in the path of discharge of the contents of the hopper. As shown, each of the bell-crank levers is mounted upon the end of that rock-shaft which it does not operate, so that each of the rock-shafts serve both as an operating means for withdrawing the draw-bars and as a pivotal mounting for its companion operating-lever.

The operation of the dump-car will be partially understood from the foregoing description, but may be briefly stated as follows: When the car is in normal position, the draw-bars on both sides of the hopper will be projected under the projecting ends of the side sills thereof, rigidly supporting the hopper at four points. When it is desired to discharge the hopper, the operator takes his position on the side opposite to the discharging side of the hopper and throws up the lever at that point. As the lever is moved the arm e^7 will be drawn back to rock the rocking shaft on the discharging side of the dump-car, drawing down the draw-arm e^3 and with it the inner and outer links pivoted thereto, which in turn retract the two draw-bars on the discharging side of the hopper, which removes the support for the hopper at that point and allows the same to be tilted to discharge its load.

It will thus be seen that the operation of the hopper can be controlled by one man who stands in the most advantageous position away from the discharging side of the hopper and that said operation is entirely automatic and practically instantaneous and that the hopper is normally supported in the most advantageous manner by providing supporting means which are located the maximum distance away from the pivotal mounting of the hopper, so that all danger of displacement of the hopper is eliminated.

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 tiltably mounted, draw-bars normally projecting under the hopper, supports within which the draw-bars are mounted and into which they may be retracted, a revoluble rock-shaft with which the draw-bars are connected, and means for revolving the shaft to simultaneously draw the draw-bars from their projected position under the hopper to allow the hopper to be tilted, substantially as described.

2. In a device of the class described, the combination of a tiltably-mounted hopper, draw-bars normally outwardly projected beneath the hopper to support the same, a support within which the draw-bars are slidably mounted, a revoluble rock-shaft with which the draw-bars are connected, and means for revolving the shaft to simultaneously draw back the draw-bars from their projected position beneath the hopper to allow the hopper to be tilted, substantially as described.

3. In a device of the class described, the combination of a tiltably-mounted hopper provided with projected portions at each corner, supports at each end of the hopper between which the hopper is adapted to be tilted and of a length to allow the projected portions of the hopper to swing down over the ends thereof without contact therewith, draw-bars normally projecting outwardly from the supports beneath the hopper and adapted to be drawn back into the supports to allow the hopper to be tilted, and means for simultaneously withdrawing the draw-bars, substantially as described.

4. In a device of the class described, the combination of a tiltably-mounted hopper provided with projected portions at each corner, supports at each end of the hopper between which the hopper is adapted to be tilted and of a length to allow the projected portions of the hopper to swing down over the ends thereof without contact therewith, draw-bars normally projecting outwardly from the supports beneath the hopper and adapted to be drawn back into the supports to allow the hopper to be tilted, a rock-shaft extending longitudinally of the hopper, a connection between each of the draw-bars and the rock-shaft, and means for rocking the shaft to simultaneously retract the draw-bars from beneath the projected portions of the hopper, substantially as described.

5. In a device of the class described, the combination of a tiltably-mounted hopper provided with projected portions at each corner, supports at each end of the hopper between which the hopper is adapted to be tilted and of a length to allow the projected portions of the hopper to swing down over the ends thereof without contact therewith, draw-bars normally projecting outwardly from the supports beneath the hopper and adapted to be drawn back into the supports to allow the hopper to

be tilted, a rock-shaft extending longitudinally of the hopper, draw-arms pivoted to the rock-shaft, inner and outer links pivoted to the draw-arms, the outer links being pivoted at their outer ends to the draw-bars and the inner links being pivoted at their inner ends to the supports within which the draw-bars are located, and means for rocking the shaft to draw down the draw-arms and the inner and outer links to retract the draw-bars simultaneously from beneath the projected portions of the hopper, substantially as described.

6. In a dump-car, the combination of a truck, a hopper tiltably mounted on the truck and provided with outwardly-projecting side sills, rigidly-supported raised cross-rails at each end of the truck of a length to allow the projecting portions of the side sills of the hopper to swing down over the ends thereof and spaced a sufficient distance to allow the body of the hopper to swing down between them, draw-bars slidably mounted within the cross-rails and normally projecting under the projected portions of the side sills of the hopper, a longitudinally-extending rock-shaft on the discharging side of the hopper, draw-arms pivoted to the rock-shaft, inner and outer links pivoted to the draw-arms and normally held in position within the cross-rails and adapted to be drawn down therefrom, the outer links being pivoted to the draw-bars and the inner links being pivoted within the cross-rails, and means for rocking the shaft to simultaneously draw down the draw-arms and links to retract the draw-bars, substantially as described.

7. In a dump-car, the combination of a truck, a hopper pivotally mounted on the truck and provided with outwardly-projecting side sills, rigidly-supported raised cross-rails at each end of the truck of a length to allow the projecting portions of the side sills of the hopper to swing down over the ends thereof and spaced a sufficient distance to allow the body of the hopper to swing down between them, draw-bars slidably mounted within the cross-rails and normally projecting under the projected portions of the side sills of the hopper, a longitudinally-extending rock-shaft on the discharging side of the hopper, draw-arms pivoted to the rock-shaft, inner and outer links pivoted to the draw-arms and normally held in position within the cross-rails and adapted to be drawn down therefrom, the outer links being pivoted to the draw-bars and the inner links being pivoted within the cross-rails, an operating-link fixedly secured to the end of the rock-shaft, an operating-arm pivoted to the operating-link, and a lever pivoted to the arm for rocking the shaft to simultaneously draw down the draw-arms and links connected therewith and retract the draw-bars simultaneously from beneath the projected portions of the side sills to allow the hopper to swing down between the end cross-rails, substantially as described.

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Witnesses:

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