

T. LAWSON.
DUMPING CAR.

APPLICATION FILED DEC. 12, 1907

931,933.

Patented Aug. 24, 1909.
5 SHEETS—SHEET 1.

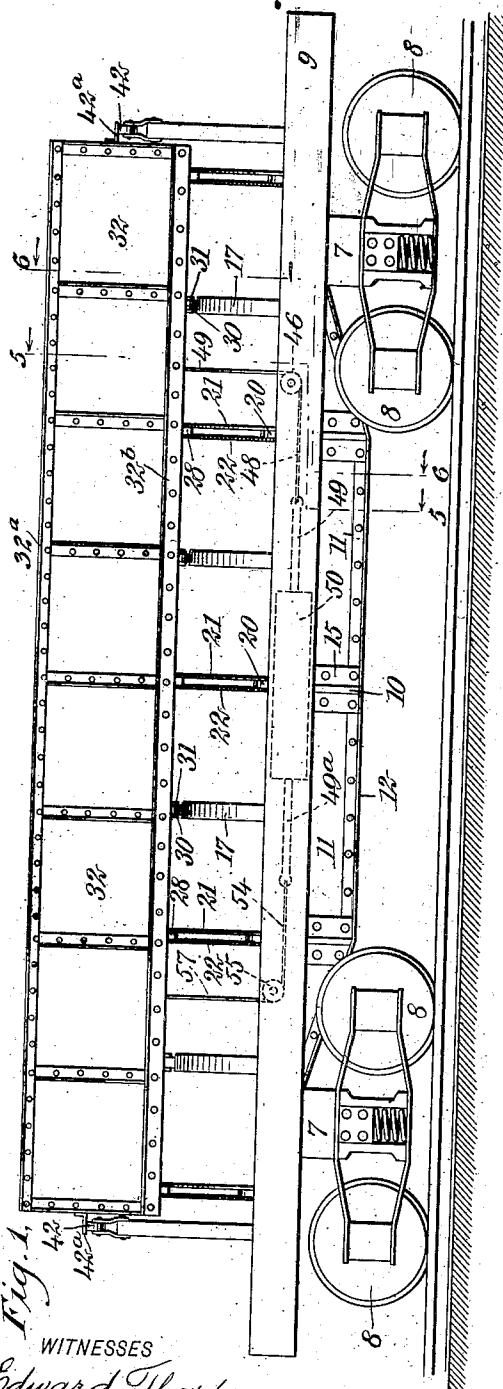


Fig. 1.

WITNESSES

Edward Thorpe
Walton Harrison

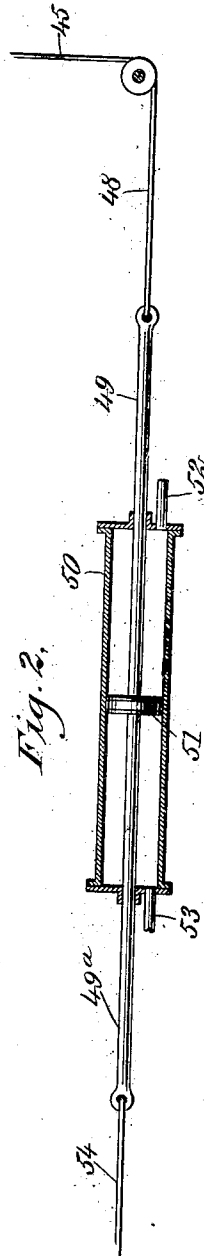


Fig. 2.

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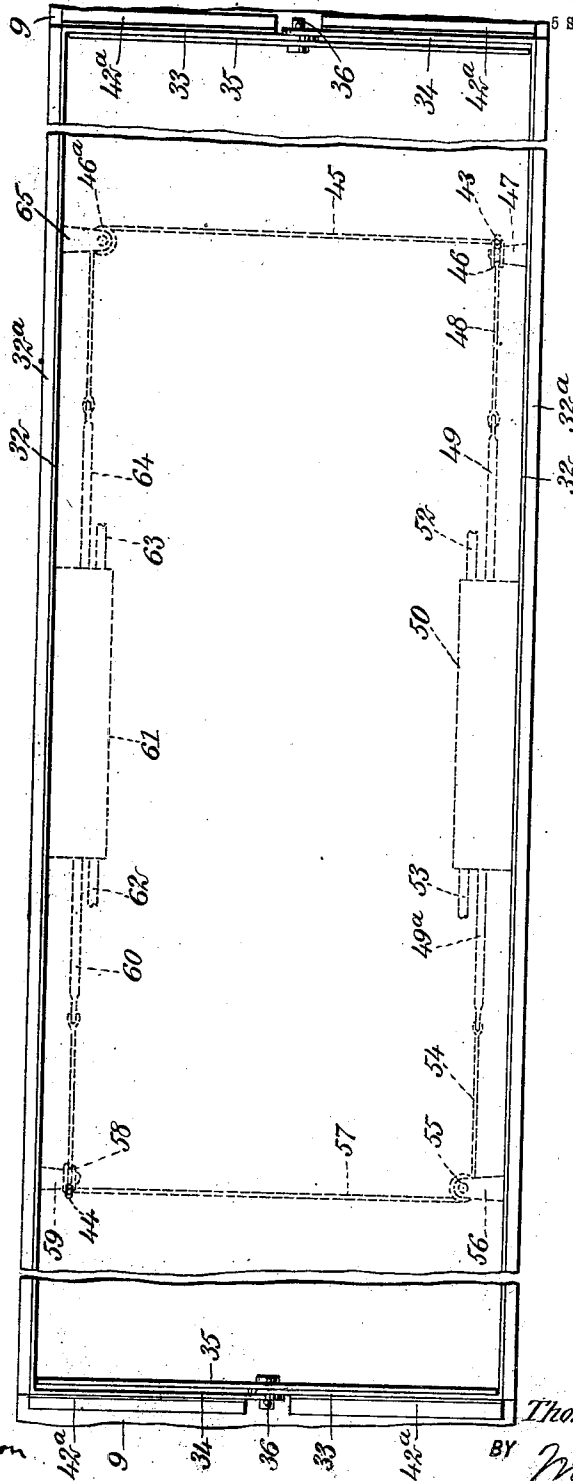
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Fig. 3.



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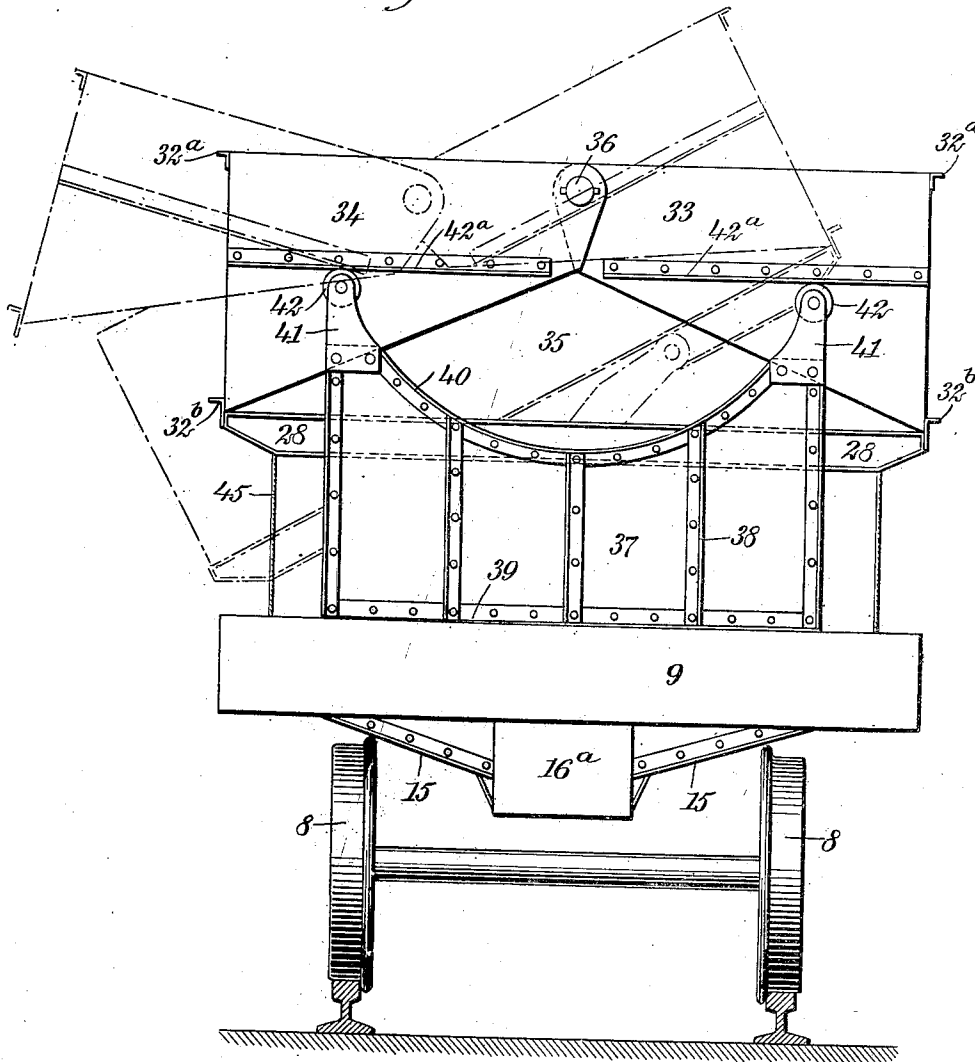
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Fig. 4.



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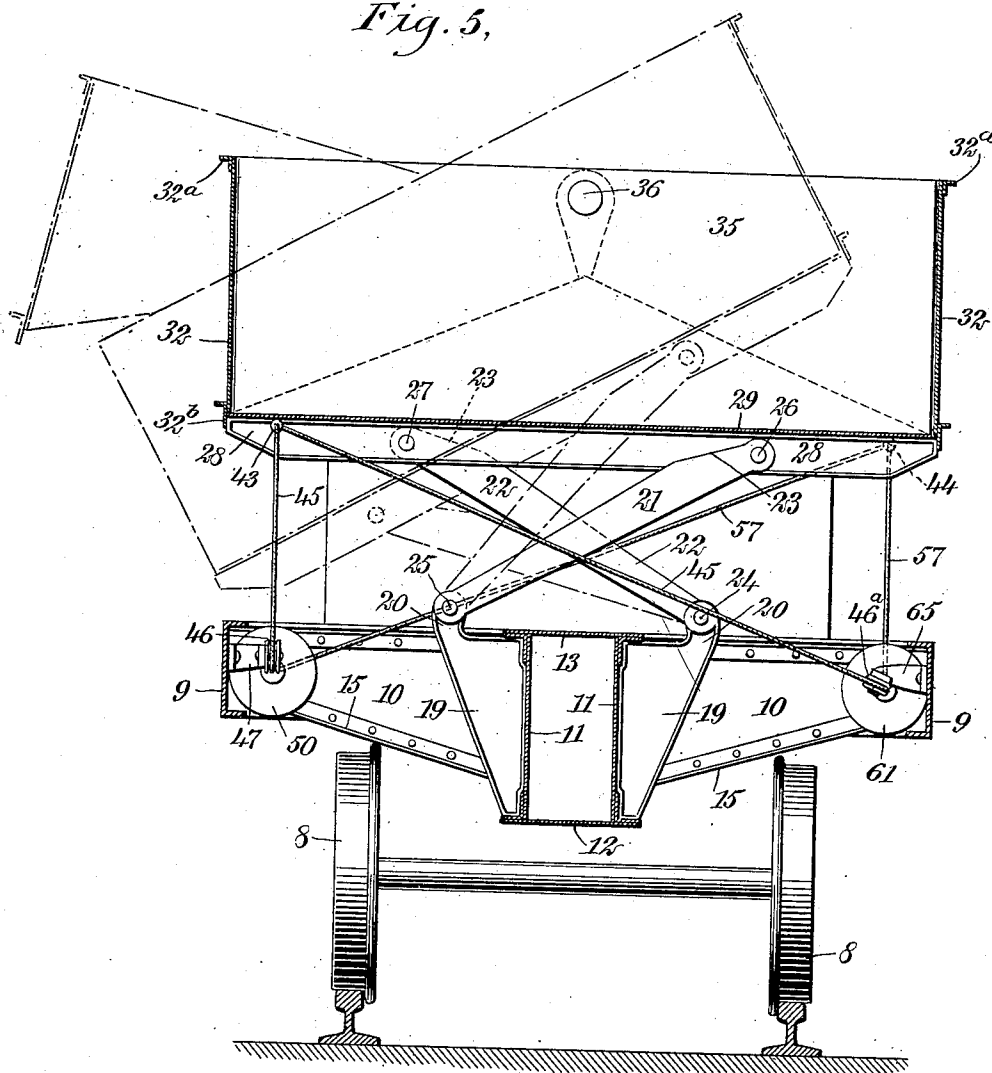
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5 SHEETS—SHEET 4.

Fig. 5.



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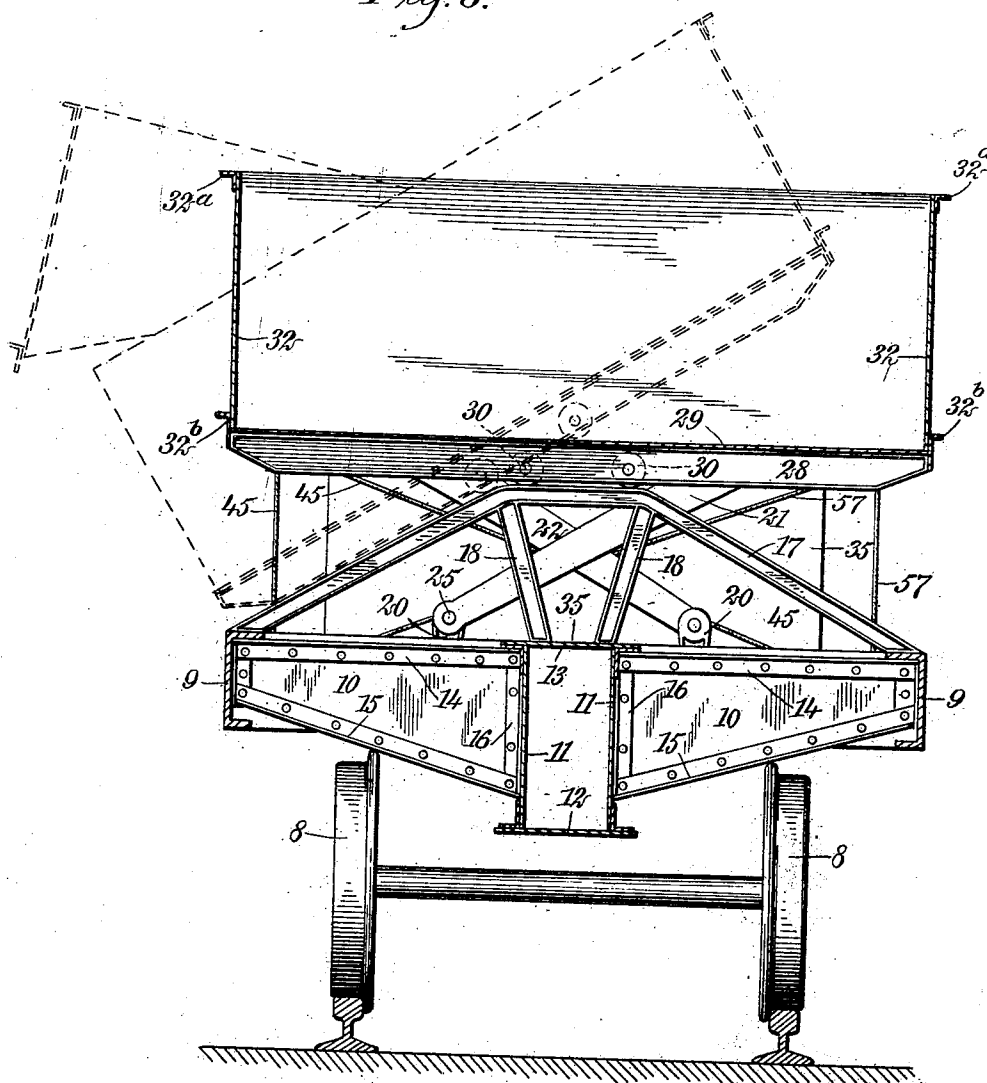
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5 SHEETS—SHEET 6.

Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS LAWSON, OF NEW YORK, N. Y.

DUMPING-CAR.

931,933.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed December 12, 1907. Serial No. 406,128.

To all whom it may concern:

Be it known that I, THOMAS LAWSON, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Dumping-Car, of which the following is a full, clear, and exact description.

My invention relates to dumping cars admitting of general use, and particularly railway dumping cars of the general type described in Patent No. 780,295, dated January 17, 1905, and issued to G. I. King and myself.

The object of the present invention is to improve the general construction of the car, and especially of the means for tilting the box and opening the doors thereof.

My invention further seeks to simplify the construction of the cars and to promote cheapness of manufacture and ease of operation of the same.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 shows my improved dumping car complete, and illustrates the normal position of the box, in which position the doors are closed; Fig. 2 is an enlarged detail section showing the cylinder and piston used for applying power to the car body for the purpose of actuating the same relatively to the under frame; Fig. 3 is a fragmentary plan of the box showing in dotted lines the cylinders used for applying power thereto, and also showing in dotted lines how these cylinders are connected with the box; Fig. 4 is an end elevation of the car complete, showing in full lines the box and certain other movable parts, occupying their respective normal positions, and showing in dotted lines the box tilted obliquely for the purpose of dumping, and also showing one of the doors as raised to facilitate this operation; Fig. 5 is a vertical cross section upon the line 5—5 of Fig. 1, looking in the direction of the arrow, and showing particularly the arrangement of the cross levers, which I designate as "compensating levers", and the connection of these with the box and with rigid brackets carried by the under frame, and indicating by dotted and full lines the relative movements of these compensating levers; and Fig. 6 is a vertical cross section

upon the line 6—6 of Fig. 1, looking in the direction of the arrow, this view showing how the car box is supported upon wheels resting upon arch frames carried by the under frame and controllable by the compensating levers.

Truck beams are shown at 7, service wheels at 8 and an under frame at 9. This under frame is provided with truss webs 10 connected with center sills 11, the latter comprising top and bottom plates 12, 13. The truss webs are braced by angle irons 14, 15, 16, as will be understood from Fig. 6. The center sills are also provided with terminal plates 16^a. A number of tracks 17, each being straight at its middle portion and bent obliquely downward from said middle portion and provided with braces 18, are mounted rigidly upon the under frame and are disposed parallel with each other, being spaced equidistant throughout practically the entire length of the car. A number of brackets 19 are disposed upon opposite sides of the center sills and are provided with upwardly projecting ears 20. Inflexible links 21, 22, which I designate as compensating links, are each provided with a facet 23, and by aid of pivots 24, 25, are journaled upon the ears 20, as will be understood from Fig. 5.

The upper ends of the links 21, 22 are connected by pivots 26, 27 with cross beams 28 which are connected with and depend from a floor sheet 29 forming a part of the car box. The facets 23 are for the purpose of enabling the links 21, 22 to make a good mechanical contact with the floor sheet and thus to partially support the latter whenever the car body is tilted, as hereinafter described.

A number of rollers 30, each journaled within a roller bracket 31, are mounted upon the under side of the floor sheet 29 and sustain the great bulk of the weight of the car box. These rollers rest upon the tracks 17, as will be understood from Fig. 6, and are adapted to ride in the general direction of the length of the tracks mentioned. Doors 32 are mounted upon the car body and are provided at their upper edges with angle irons 32^a forming flanges whereby the doors are strengthened. These doors are connected with end plates 33, 34 integral therewith, as indicated in Fig. 3, the end plates 33, 34 being substantially triangular in section, as will be understood from Fig. 4, and being

journalled upon pivots 36 carried by stationary walls 35.

The doors 32 are adapted to be opened, and in opening they turn upon an imaginary axial line passing through the two pivots 36 (see Figs. 3, 4 and 5). Each door 32 is provided at its bottom with an angle iron 32^b serving as a flange to strengthen the door and also extending so as to slightly overlap the outer ends of the cross beams 28, thereby serving as guides for holding the doors properly in position.

End walls 37 are made up of plates secured together by angle irons 38, 39, these walls being provided with an angle iron 40 bent into a substantially semicircular form, as indicated in Fig. 4. Brackets 41 are mounted upon the walls 37 and are provided with rollers 42, as will be understood from Fig. 4.

The end plates 33, 34 are provided with tracks 42^a made of angle iron, these tracks being riveted directly to the end plates and engaging the rollers 42. Whenever the car body is tilted, one of the tracks 42^a, by bearing upon its corresponding roller 42, prevents the descent of the end plates 33, 34 upon which the track is mounted, and this raises one of the doors 32, as indicated by dotted lines in Fig. 4.

Mounted upon the floor sheet 29 are fastenings 43, 44 disposed adjacent to opposite ends of the car. Connected securely with the fastening 43 is a cord 45 which engages a pulley 46 journalled upon a bracket 47. The cord 45 is provided with a portion 48 which is connected with a piston rod 49, the latter working in a cylinder 50, as will be understood from Fig. 2. A piston 51, slidably mounted within this cylinder, is connected rigidly with the piston rod 49. Another piston rod 49^a is connected with the piston 51 and constitutes practically a continuation of the piston rod 49.

Pipes 52, 53 are connected with the cylinder 50 for the purpose of supplying to it an expansive medium such as steam or air for the purpose of moving the piston 51. These pipes also serve to permit the exhaust of the expansive fluid after its use.

Connected with the piston rod 49^a is a cord 54 which engages a pulley 55 mounted upon a bracket 56. This cord is continued at 57 and is secured to the fastening 44 upon the car body. The cord also engages a pulley 58 journalled upon a bracket 59 and is connected with a piston rod 60. This piston rod is of the same character as those above described. It enters the cylinder 61 which is provided with pipes 62, 63. Another piston rod is shown at 64 and is connected with the cord 45, which passes around a pulley 46^a journalled in a bracket 65, and is secured to the car body by a fastening 43.

The arrangement of the pistons, piston

rods and cords is such that when the piston rods are moved by the application of steam or compressed air to either or both of the cylinders, the cords are drawn in either of two directions and thus cause the car body to tilt. It will be observed that while all of the cords are taut at all times, the tightening of the cord by pulling it in one direction causes a corresponding slackening of some other cord so that the car body may tilt freely.

The operation of my device is as follows: The car body being in its normal position, the doors are closed by their own weight. Suppose, now, that it be desired to dump the car. The operator, by control of either or both of the cylinders 50, 61 above described, causes one of the cords to be drawn and the piston and the other cord to be relaxed, so that the car body is subjected to an unbalanced stress. Suppose that this is to the left of Figs. 5 and 6. The upper end of the link 21 turns upon the pivot 25 as a center, and thus tends to assume a position nearer vertical than that indicated in Fig. 6. The link 22, however, tends to become more nearly horizontal. These two movements of the link, it will readily be seen, cause the rollers 30 to move upon the tracks 17 so that the car body tilts, as indicated by dotted lines in Figs. 5 and 6. When the car body is to be restored to its normal position, the pull on the cords is reversed and this causes a reversal of the action just described, so that the car body is restored to its original position.

I call special attention to the arrangement of the compensating links 21, 22. These links being crossed and pivotally connected as they are, allow the car body to turn with a minimum of friction and yet with a positiveness of movement not easily obtained by other mechanisms heretofore used for analogous purposes. The definite movement of the links necessarily means a definite position for the car body used and vice versa. The tracks 17 are built upon straight lines inclined slightly in relation to each other, and this form gives the car body the ideal amount of inclination without raising the weight carried by it.

While the car I show is a so-called "single box car", I do not limit myself to this particular construction. Neither do I limit myself to the particular construction of any of the parts shown, the scope of my invention being commensurate with my claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a dumping car, the combination of an under frame, a car body movable relatively thereto, a door mounted upon said car body, a track mounted upon said door, a support mounted upon said under frame at a

point adjacent to said track, and a revoluble member mounted upon said support and engaged by said track for the purpose of opening said door.

2. In a dumping car, the combination of an under frame, a car body mounted thereover, a door for opening and closing said car body, said door being provided with end plates of substantially triangular form, pivots mounted upon said car body and engaging said end plates so as to allow the latter to turn, tracks mounted upon said end plates, and a stationary roller supported by said under frame and disposed within the path of said tracks so as to be engaged thereby as said car body is tilted.

3. In a dumping car, the combination of an under frame, a wall mounted thereupon and provided with an upper surface having a substantially semicircular shape, the ends of said wall thus being higher than the center thereof, brackets mounted upon said ends, rollers carried by said brackets, a car body mounted over said under frame and adapted to tilt relatively thereto, doors mounted upon said car body, tracks connected rigidly with said doors and engaging said rollers, and means for tilting said car body relatively to said under frame.

4. The combination of an under frame, a car body mounted thereover and provided with a bottom, links connecting said under frame with said car body for the purpose of maintaining said car body and said under frame in a predetermined working relation, said links being provided with faces for engaging the bottom of said car body in order to form a partial support for the same.

5. In a car, the combination of an under frame provided with a supporting member, brackets disposed in pairs and mounted upon opposite sides of said supporting member, said brackets extending upwardly therefrom, inflexible links journaled upon said brackets and arranged in pairs corresponding to the pairs of said brackets, the links of each pair being crossed, a car body connected with said links, and supports inde-

pendent of said links for sustaining said car body.

6. In a dumping car, the combination of an under frame, a plurality of tracks mounted thereupon and disposed parallel to each other, said tracks being spaced equidistant at intervals throughout the entire length of said under frame, a car body, revoluble members mounted upon the under side of said car body and engaging said tracks, and inflexible links pivotally connecting said car body with said under frame, the number of said inflexible links being independent of the number of said tracks.

7. In a dumping car, the combination of an under frame, a plurality of tracks carried thereby, said tracks being disposed at intervals throughout the entire length of said under frame, a car body, revoluble members mounted thereupon and engaging said tracks, and inflexible links connecting said car body with said under frame.

8. In a dumping car, the combination of an under frame, a plurality of tracks mounted across said under frame and disposed at intervals throughout the entire length of the same, a car body, revoluble members mounted upon said car body and engaging said tracks, and inflexible links pivotally connected with said car body and with said under frame.

9. In a dumping car, the combination of an under frame provided with a longitudinal central member extending throughout its entire length, brackets mounted upon said central member and projecting upwardly therefrom, links pivotally mounted upon said brackets, a car body disposed over said links and connected thereto, and means co-acting with said links for tilting said car body.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS LAWSON.

Witnesses:

WALTON HARRISON,
EVERARD B. MARSHALL.