

4 SHEETS--SHEET 1.

THE NORRIS PETERS CO., WASHINGTON, D. C.

973,209.

G. A. RAKOWSKY.
DUMP CAR.
APPLICATION FILED JULY 19, 1909.

Patented Oct. 18, 1910.
4 SHEETS—SHEET 2.

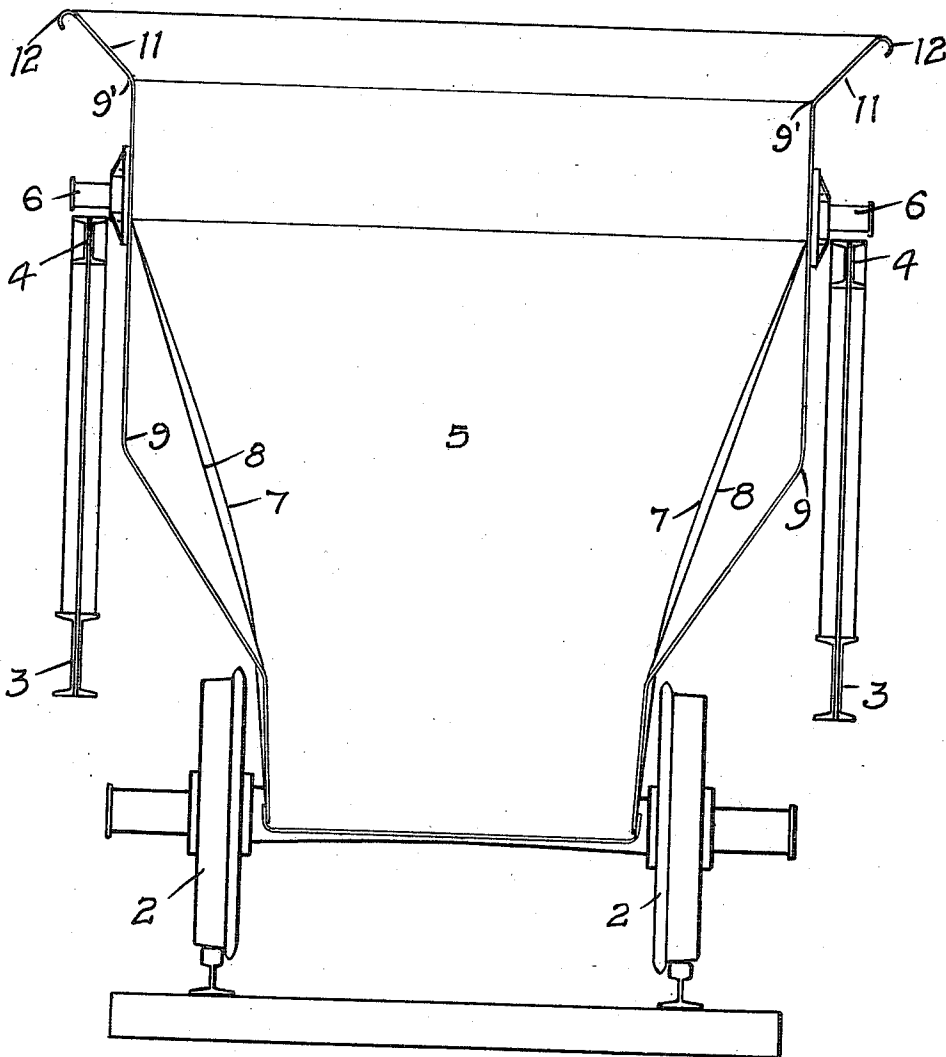


FIGURE 2

WITNESSES:

J. M. Makinson
J. B. Byington

INVENTOR

GUSTAV A. RAKOWSKY

BY

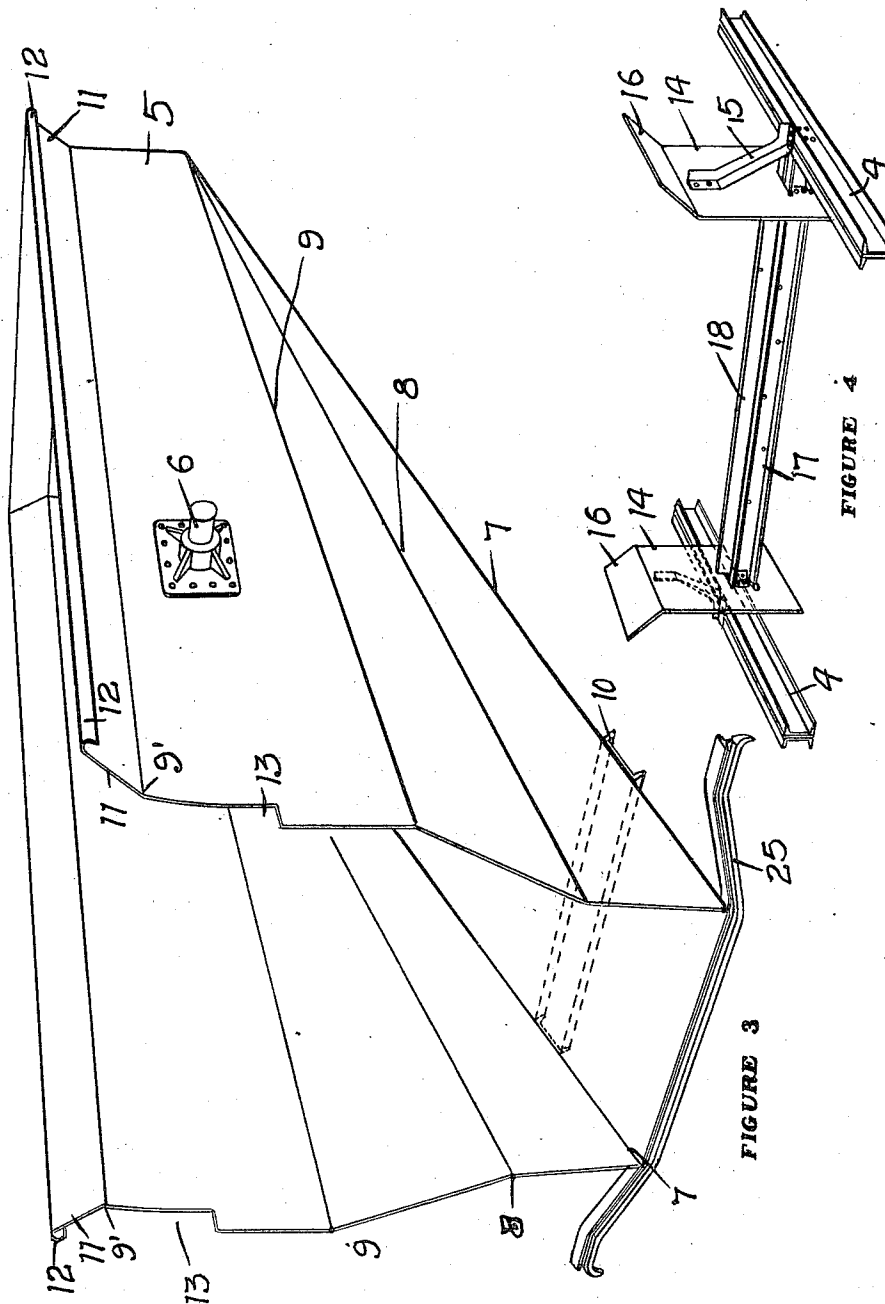
Paul Paul
ATTORNEYS

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WITNESSES:

W. A. Kistner
J. A. Byington

INVENTOR

GUSTAV A. RAKOWSKY

BY

Paul Paul
ATTORNEYS

G. A. RAKOWSKY.

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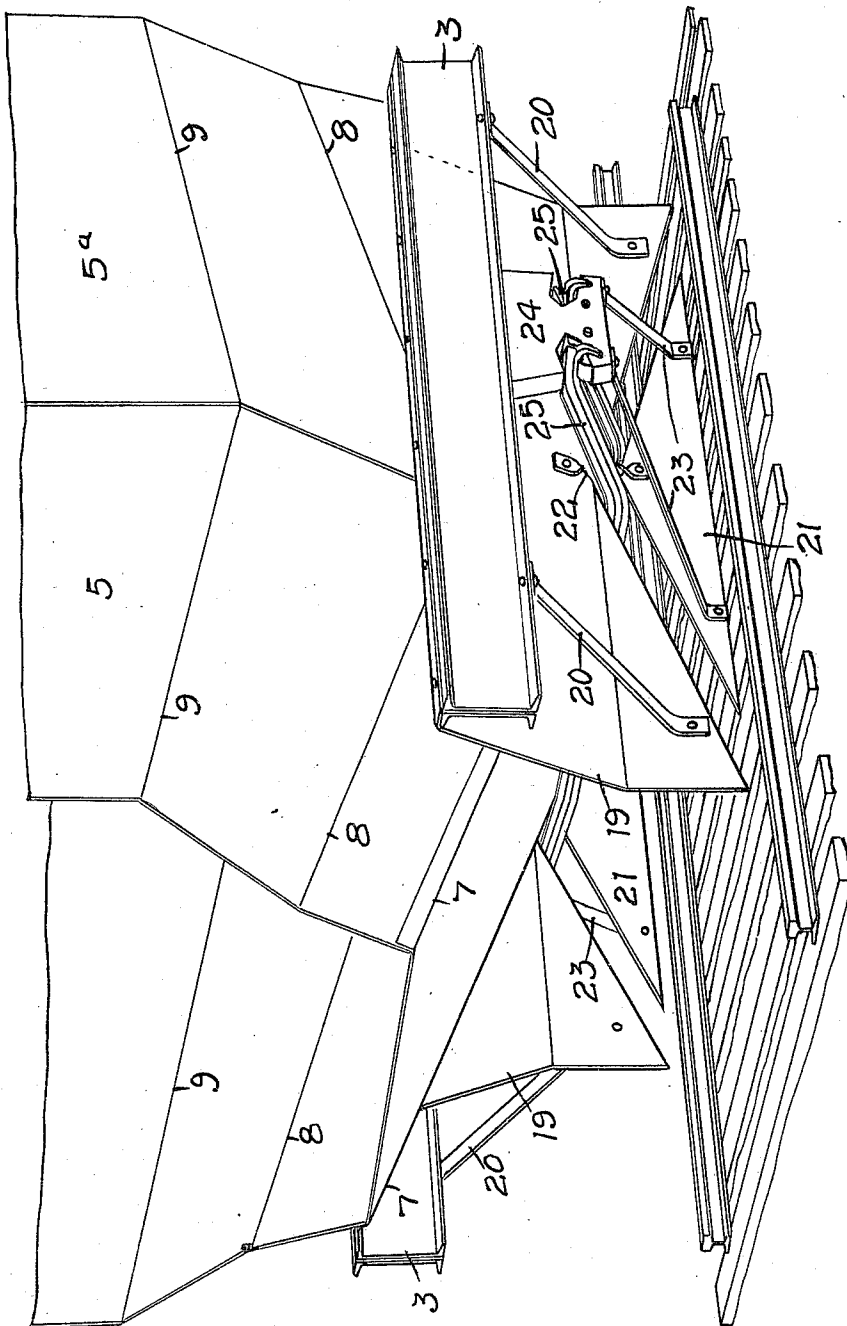


FIGURE 5.

WITNESSES:

W. A. K. Strom
J. A. Binghamton

INVENTOR

GUSTAV A. RAKOWSKY

BY

Paul H. Paul
ATTORNEYS

UNITED STATES PATENT OFFICE.

GUSTAV A. RAKOWSKY, OF DULUTH, MINNESOTA, ASSIGNOR TO AUTOMATIC UNLOADING CAR COMPANY, OF DULUTH, MINNESOTA, A CORPORATION OF MINNESOTA.

DUMP-CAR.

973,209.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed July 19, 1909. Serial No. 508,494.

To all whom it may concern:

Be it known that I, GUSTAV A. RAKOWSKY, of Duluth, St. Louis county, Minnesota, have invented certain new and useful Improvements in Dump-Cars, of which the following is a specification.

My invention relates to dump cars adapted particularly for handling ore and the invention is directed especially to the buckets and parts accessory thereto.

The object of my invention is to provide a car having buckets from which the load will be quickly and completely discharged, thus effecting a large economy in the handling of the ore at the dock pockets.

A further object is to provide a type of bucket, in which the ore will not lodge or wedge, even when wet or frozen.

A further object is to provide a dump car bucket of light, but strong and durable construction and one, which is particularly adapted for handling ore, though capable of other uses.

The invention consists generally in a bucket having walls, in which the lines of the angles therein all run toward the discharge end of the bucket and with the moving ore therein.

Further, the invention consists in filler plates arranged to close the joints between the abutting ends of the buckets.

Further, the invention consists in a transverse web plate between the filler plates.

Further, the invention consists in contracting the lower side walls of the bucket to permit it to drop down between the wheels of the car.

Further, the invention consists in a baffle plate arranged on each side of the discharge ends of the buckets.

Further, the invention consists in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of the middle portion of a car, showing the upper portions of the buckets, a transverse web plate and indicating the construction of the lower portion of the car by dotted lines, Fig. 2 is a view illustrating the tilted position of one of the buckets, Fig. 3 is a perspective view of one of the buckets, Fig. 4 is a perspective view of the filler plates and the supporting upper side rails,

Fig. 5 is a perspective view of the middle portion of the car, showing the buckets in their dumping position and the baffle plates for directing the material in between the track rails.

In the drawing, 2 represents the car trucks, 3 the lower side sills and 4 the upper side sills.

5 and 5^a represent the buckets having trunnions 6, which are journaled in bearings on the upper sills. These buckets are the same in size and shape and a description of one will suffice for both of them.

Referring to Fig. 3, which shows a perspective view of the bucket, the side walls are indicated as flaring outwardly from the bottom, the angles at 7, 8, 9 and 9' on both sides of the bucket all running in the general direction of movement of the material therein. No resistance therefore, is offered to retard the body of ore or cause it to become lodged at any point in the bucket. The series of longitudinal bends or angles formed in the side walls of the buckets also serve to brace and stiffen them and permit the use of metal of lighter gage than would ordinarily be required. A considerable incline is provided for the bottom and the lower portion of the dumping end of the bucket is sufficiently narrow to drop down between the wheels to a point near the ground, a buffer 10 of channel bar iron being secured to the bottom of the bucket to brace and stiffen the same and receive the shock of contact with the car axle and prevent damage to the bucket. The top of the bucket has flaring flanges 11, terminating in outwardly rolled edges 12, which stiffen the upper portion of the bucket, while the flanges overhang the side rails and prevent the ore from dropping down into the car frame. The shape of the bucket and the location of its trunnions have the effect of drawing in the side walls, instead of bulging them outwardly, as is usually the case in a sheet metal receptacle when heavily loaded. A considerable portion of the load is below the point of suspension, as will be evident by an examination of Fig. 3 and consequently the sheet metal walls will be drawn in. The buckets are provided with recesses 13 at the upper edge of the dumping end, to allow them to clear one another during the initial dumping movement and stationary guide or filler plates 14 are secured to the

upper side sills by brackets 15, said plates having outwardly turned flanges 16 and connected across the frame by a cross tie 17, consisting of channel bars placed back to back, with a web plate 18 inserted between them and its upper edge extending above the channel bars. These guide plates bear on the side walls of the buckets and close the gap formed by the recesses between them and prevent inward distortion of the buckets when loaded. The edges of the buckets slide on these plates during the initial dumping movement and when they return to their normal horizontal position, the tie bar, connecting the guide plates 14 serves to hold them apart and brace and strengthen the upper side sills of the car frame against inward buckling or distortion. The narrow edge of the web plate receives large lumps of ore, which may be gathered up by the steam shovel, and serves to break them apart and prevent damage to the tie bar. The lower sills 3 have baffle plates 19 secured thereto and depending inwardly therefrom and adapted to direct the material toward the center of the track, the lower portion of these baffle plates being braced and strengthened by braces 20 connecting them with the bottom of the sills 3. Plates 21 are provided below the baffle plates and spaced therefrom and supported by straps 22 and by braces 23 extending to a hanger 24, wherein the locking mechanism is arranged, as described in my companion application herewith, Serial No. 508,493. A transverse lock bar 25 passes between the baffle plate and the plate 21 and engages the locking mechanism.

When the buckets are loaded, the weight of the material therein will exert a downward inward pull and as soon as the locking devices are released, the buckets will tilt, aided by gravity and the fluid pressure operated mechanism described in my companion application herewith, and the ore will slide freely and without being materially retarded by the bucket walls to the exit opening. This rapid discharge I have found due to the shape of the bucket and the fact that all lines, formed by the bends in the bucket walls, run in the direction of the moving material.

I claim as my invention:—

1. In a dumping car, a bucket having an open end, a bottom downwardly inclined toward said end and side walls flaring outwardly and upwardly from said bottom, there being a series of longitudinal bends formed in said side walls, all of which bends or angles run lengthwise of the bucket in the direction of the moving material therein, for the purpose specified.

2. In a dumping car, a bucket having an open end, a downwardly inclined bottom and said walls, and trunnions mounted on

said side walls, said bucket being composed of sheet metal, and its side walls flaring outwardly from said bottom and having longitudinal bends formed therein, which stiffen said side walls and prevent lodging of the material thereon.

3. In a dumping car, a bucket having an open dumping end and side walls and trunnions mounted thereon, the upper edges of said side walls having outwardly projecting flanges thereon terminating in outwardly rolled edges, for the purpose specified.

4. In a dumping car, the combination, with a frame and the carrying wheels and axles therefor, of a bucket open at its inner end journaled on said frame and having a downwardly inclined bottom, and a buffer bar secured transversely to said bottom and arranged to contact with the car axle.

5. The combination, with a car having upper side sills, of buckets journaled thereon and arranged to tilt toward one another to discharge their contents, guide plates secured to said upper side sills and having outwardly turned upper ends and arranged to contact with the upper portions of the inner ends of the side walls of said buckets and close the joint between them, and said buckets having flanged upper edges arranged to contact with the outwardly turned ends of said plates.

6. In a dumping car, the combination with buckets having flaring upper side walls and arranged to tilt toward one another and having recesses in the flaring side walls of their abutting ends, and guide plates carried by said car and having outwardly turned upper ends and arranged to close said recesses.

7. In a dumping car, the combination, with the lower side sills, of tilting buckets having open abutting ends, baffle plates depending from said sills on each side of said abutting ends, bars secured to said buckets near said open ends and projecting laterally beyond said baffle plates, a locking mechanism for said bars, and means cooperating with said baffle plates and forming guide ways in which said bars slide.

8. In a dumping car, the combination, with the lower side sills, of tilting buckets arranged between said sills and having open abutting ends, baffle plates depending from said side sills on each side of said abutting ends, bars secured to said buckets near said open ends and projecting laterally above and below said baffle plates, a locking mechanism arranged to engage said bars and lock said buckets in their normal horizontal position, and plates suspended below said baffle plates and spaced therefrom forming therewith guideways in which said bars slide, substantially as described.

9. In a dumping car, a sheet metal bucket having one end open and a downwardly-in-

clined bottom, and side walls extending upwardly therefrom, and trunnions secured to the upper portions of said side walls, said trunnions being located at one side of the vertical transverse plane of gravity, and said side walls having longitudinal bends formed therein, all of which extend in line with the direction of movement of the load toward the discharge end of the bucket, substantially as described.

10. In a dumping car, the combination, with a frame and the supporting car trucks, of sheet metal buckets having open inner ends and provided with trunnions journaled on said frame, the bottoms of said buckets being downwardly inclined toward their open ends and sufficiently narrow to drop down between the wheels of the car when the buckets are tilted to a dumping position, and the side walls of said buckets flaring outwardly and upwardly from the bottoms thereof and having longitudinal bends formed therein, and the lines of said bends all running in the direction of the moving material during the dumping operation, for the purpose specified.

11. In a dumping car, the combination, with a frame and the supporting trucks, of sheet metal buckets having trunnions journaled in said frame and provided with open inner ends, the bottoms of said buckets being inclined downwardly toward said open ends, and said open ends abutting one another when the buckets are in their horizontal or loading position, the bottoms of said buckets being sufficiently narrow to drop down between the wheels of the car to a point near the ground line, and the side walls of said

buckets flaring upwardly and outwardly from said bottom and overhanging said car frame, substantially as described.

12. In a dumping car, the combination, with the lower side sills, of tilting buckets having open abutting ends, baffle plates depending from said sills, bars secured to said buckets near said open ends and projecting laterally beyond said buckets and beneath said baffle plates, and a locking mechanism engaging the ends of said bars.

13. In a dumping car, the combination, with the lower side sills, of tilting buckets having open abutting ends, bars secured to said buckets near said open ends and projecting laterally on each side of said buckets, a locking mechanism, hangers depending from said sills and inclosing said locking mechanism, said hangers having recesses on each side thereof to receive said bars, substantially as described.

14. In a dumping car, the combination, with the lower side sills, of tilting buckets having open abutting ends, bars secured to said buckets near said open ends and projecting laterally beyond said buckets, guides wherein said bars are adapted to slide during the tilting movement of said buckets, and locking mechanisms operating to receive and lock said bars to hold said buckets in their closed position.

In witness whereof, I have hereunto set my hand this 13th day of July 1909.

GUSTAV A. RAKOWSKY.

Witnesses:

THOS. J. DAVIS,
W. H. GURNEE.