G. D. WILLIAMS.

UNLOADING APPARATUS.

APPLICATION FILED JULY 21, 1913.

1,090,510.

Patented Mar. 17, 1914.

3 SHEETS—SHEET 1.

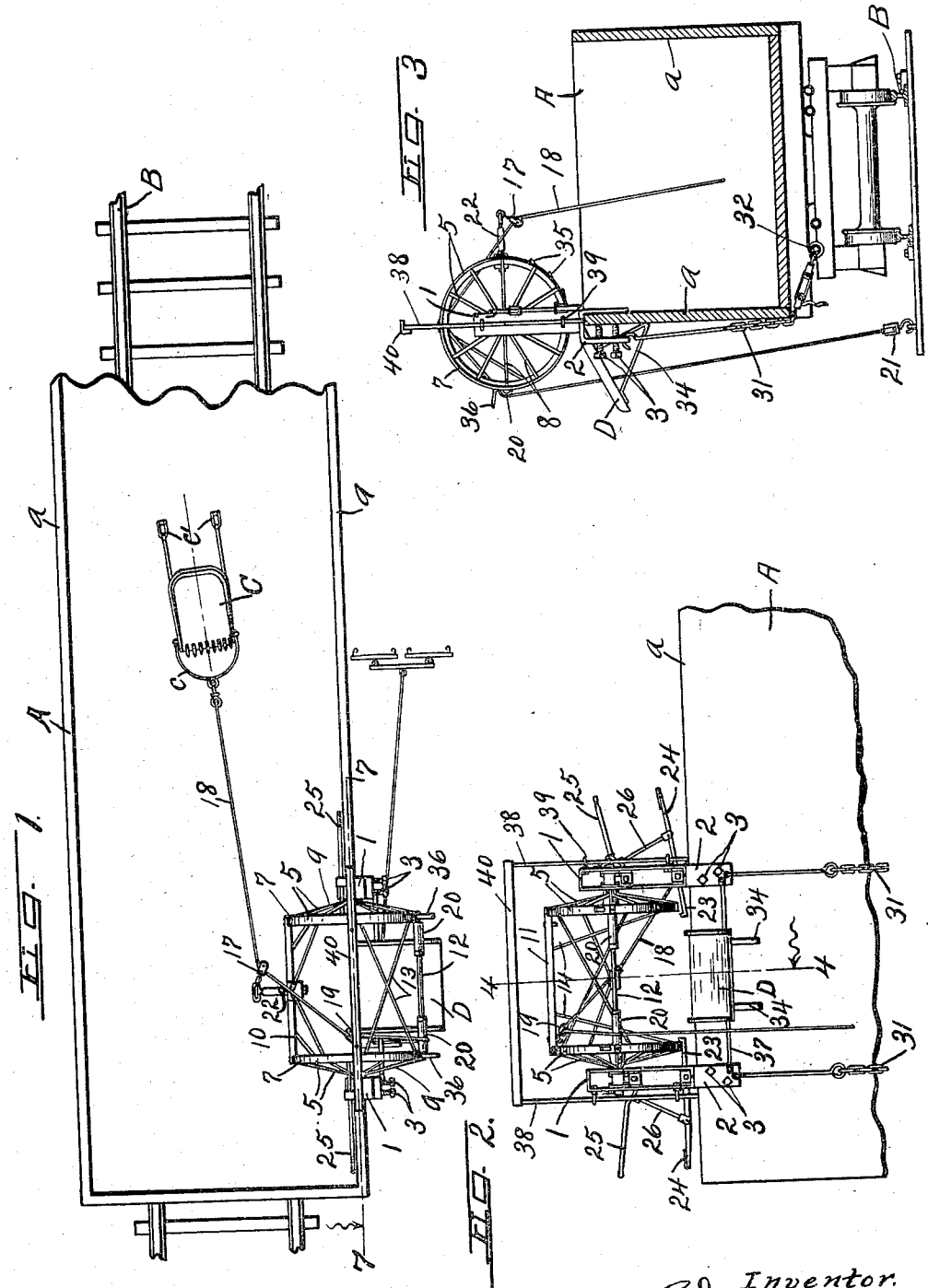


FIG. 1.

FIG. 3.

FIG. 2.

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3 SHEETS—SHEET 2.

FIG. 4.

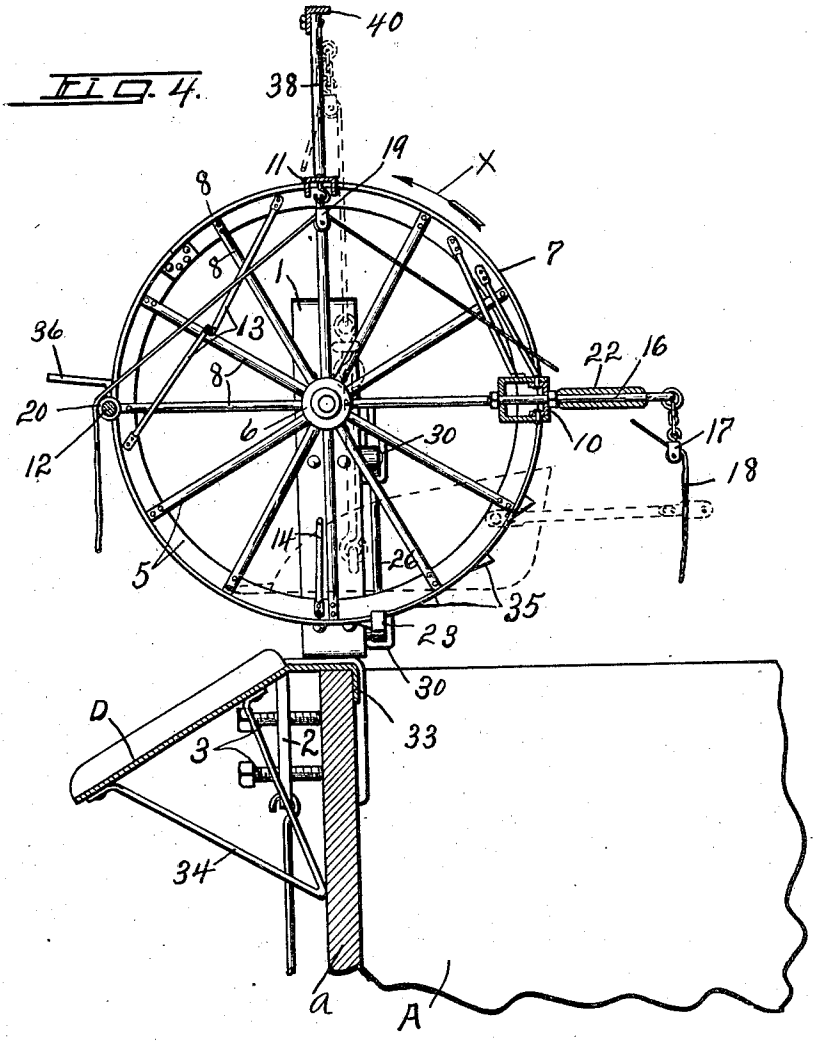


FIG. 5.

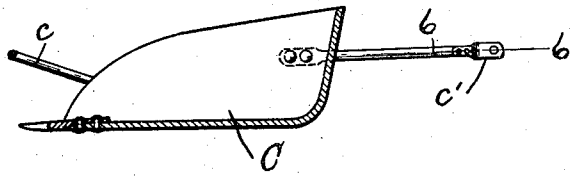
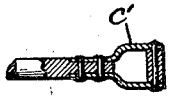


FIG. 6.



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3 SHEETS—SHEET 3.

FIG. 7.

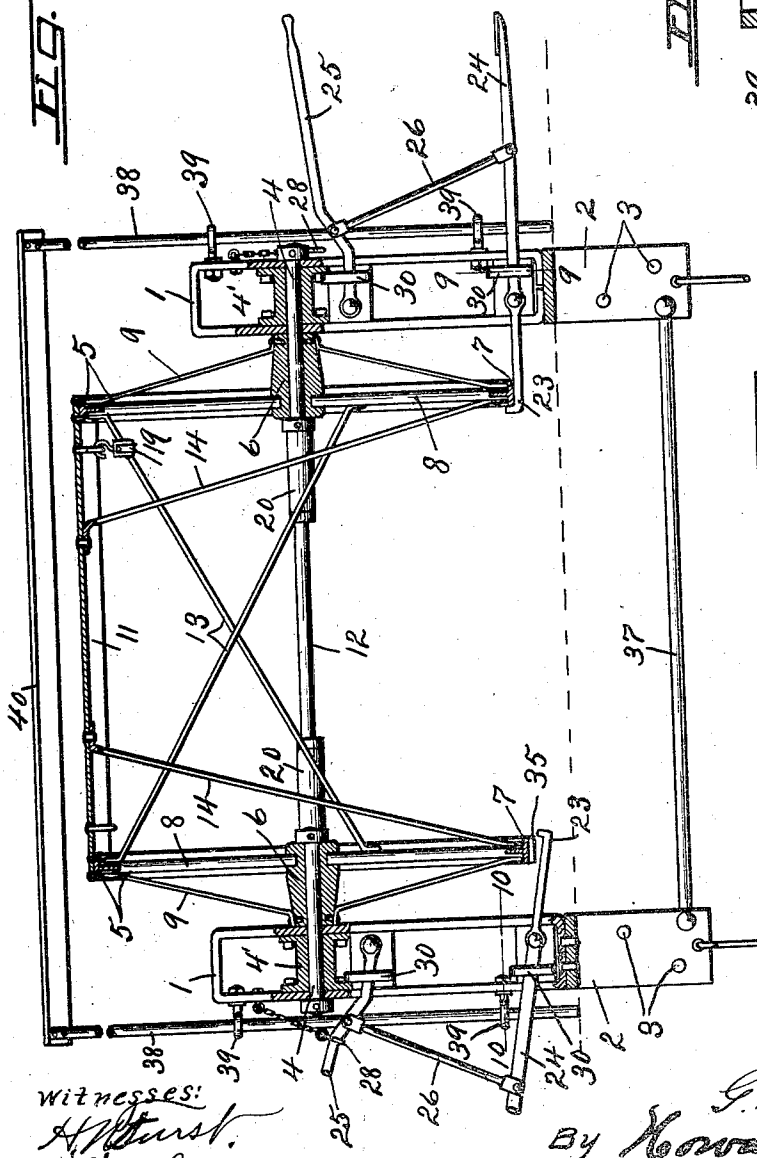


FIG. 10.

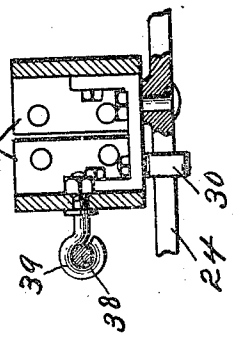


FIG. 9.

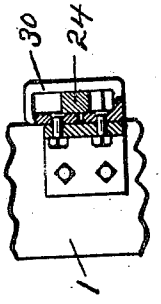
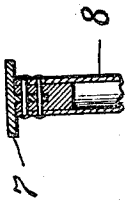


FIG. 8.



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UNITED STATES PATENT OFFICE.

GEORGE D. WILLIAMS, OF DURHAMVILLE, NEW YORK.

UNLOADING APPARATUS.

1,090,510. Specification of Letters Patent. Patented Mar. 17, 1914.

Application filed July 21, 1913. Serial No. 780,341.

To all whom it may concern:

Be it known that I, GEORGE D. WILLIAMS, of Durhamville, in the county of Oneida, in the State of New York, have invented new and useful Improvements in Unloading Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in apparatus for unloading crushed stone, sand, gravel, coal, grain and other materials of like size from cars, boats and other places where a temporary or permanent installation of such apparatus might be useful.

The main object is to provide a light, strong and portable apparatus which may be easily and quickly installed on the body of a car, boat or other support so as to afford a relatively wide range of action for transferring materials from such car or boat into other vehicles or conveyers or from one locality without altering the position of such apparatus. In other words, I have sought to provide simple means for hauling, hoisting and conveying such materials from any direction and from remote or proximate locations to a given point of deposit through the medium of a single line or cable leading to any available source of power (not shown).

Another object is to enable the cable to be utilized in the operation of a revolving hoist whereby the bucket or scraper may be automatically brought to the point of deposit from any direction without liability of entangling or jamming any part of the cable or otherwise interfering with the voluntary discharge of the bucket by the operator.

A further object is to provide suitable brake mechanism coacting with the hoist drum for controlling the position of the drag cable when loading the bucket and also for regulating the speed of said drum and position for discharge of the bucket.

Other objects and uses relating to specific parts of the apparatus will be brought out in the following description.

In the drawings Figure 1 is a top plan of a portion of a railway car and my improved unloading apparatus in operative relation thereto. Fig. 2 is a side elevation of the same apparatus and adjacent portion of the car omitting the bucket or scraper. Fig. 3 is an end view of the same apparatus shown in Fig. 2, the body of the car being shown in section. Fig. 4 is a transverse vertical sectional view through the drum and adjacent portion of the car body taken on line 4—4, Fig. 2. Fig. 5 is an enlarged longitudinal sectional view of the detached bucket or scraper. Fig. 6 is an enlarged sectional view through one of the handles of the scraper taken on line 6—6, Fig. 5. Fig. 7 is an enlarged longitudinal vertical sectional view through the hoisting drum and its supporting frame taken on line 7—7, Fig. 1. Fig. 8 is an enlarged detail sectional view of a portion of the rim of one of the drum heads taken on line 8—8, Fig. 4. Figs. 9 and 10 are enlarged detail sectional views through the lower portions of the drum-supporting frame taken respectively on lines 9—9 and 10—10, Fig. 7.

In order that my invention may be clearly understood, I have shown a portion of a railway car —A— as mounted upon a track —B— and provided with the usual upright sides —*a*— for receiving and supporting the major portion of the unloading apparatus forming the subject matter of my present invention.

This apparatus comprises a pair of upright standards —1— having their lower ends provided with inverted U-shaped clamping members —2— and screws or bolts —3— by which they may be easily and quickly clamped to the upper edges of one side as —*a*— of the car for firmly holding the standards in an upright position some distance apart. The upper ends of these standards are provided with journal bearings —4′— for receiving and supporting a pair of axle studs or sections —4— which are free to rotate in their respective bearings and extend inwardly toward each other some distance beyond the same for receiving and supporting a pair of rotary drum heads —5— forming a part of the hoisting drum presently described. The inner ends of the axle studs —4— are also spaced some distance apart sufficient to permit the passage of a bucket as —C— between them. The drum heads —5— are mounted upon the inner ends of the studs or axle sections —4— to rotate therewith or thereon and are also spaced apart a sufficient distance to permit the bucket to pass between them in the operation of discharging a load therefrom, said drum heads being provided with hubs —6— and rims —7— connected to said hubs

by radial spokes —8— and tension rods —9—, the latter serving to connect the rims with the outer ends of the hubs for bracing the drum heads to resist the strains to which they may be subjected. The rims of the drum heads are connected by stiffening bars —10—, —11— and —12— spaced apart circumferentially at an angle of approximately 90° so that the bars —10— and —12— are normally disposed in a substantially horizontal plane at diametrically opposite sides of the axis while the bar —11— is normally at the top of the drum heads when the apparatus is at rest as shown more clearly in Figs. 4 and 7. The drum heads are also additionally impressed against relative movement by diagonally extending cross bars —13— disposed in intersecting planes wholly at one side of the axis opposite that at which the bar —10— is located, the bar —11— being also braced to each drum by brace bars —14— which are located nearly in the plane of the axis of the drum but are spaced a sufficient distance apart longitudinally of said axis to permit the bucket —C— to pass between them in the operation of discharging its load.

The drum heads —5— and connecting bars —10—, —11— and —12— together with the brace bars —13— and —14— constitute what may be termed a hoisting drum and serve to receive, divert and hoist the loaded bucket from the interior of the car to its position of discharge upon the chute —D— which is supported upon the adjacent side of the car in a plane below the hoisting drum and between the heads thereof so as to conduct any material which may be discharged thereon from the bucket to the exterior of the car and thence into a wagon or other conveyer or into any other receptacle as may be desired. The hoisting drum is positioned upon its supporting members or standards —1— so that substantially one-half overhangs the interior of the car while the other half extends beyond the exterior of said car directly over the chute —D— and when the hoisting drum is in its normal position for loading the bucket, the bar —10— is located directly over the interior of the car and is provided with a radially projecting arm —16— for receiving and supporting a pulley block —17— around which is passed a cable —18—. One end of this cable is attached to a bail —c— on the front end of the scraper or bucket —C—, the opposite end after passing around the sheave or pulley block —17— being passed through another pulley block —19— on the lengthwise bar —11— and thence over a suitable roller —20— on the cross bar —12— from which it passes around a foot block or pulley —21— and is adapted to be connected to any available source of power either animal, electrical or mechanical for drawing the loaded bucket forward through the material to the hoisting drum and then rotating the hoisting drum with the bucket thereon to its position of discharge into the chute —D—. Mounted upon the arm or spindle —16— is an anti-friction roller bearing —22— for the adjacent portion of the cable —18— which is adapted to bear against said roller as the bucket is drawn to and from the drum in the operation of loading or returning from and to different portions of the car.

The bucket —C— is preferably of the shovel type having the front edge of its bottom provided with teeth for handling coarse material while its rear end is provided with suitable handles —c'— adapted to be engaged by the attendant or operator for properly manipulating the scraper while loading and also to facilitate the discharge of the scraper into the chute —D— by the same operator when the scraper or bucket is hoisted to its dumping position by the drum. The rotary action of the drum may be controlled by the same or a different attendant from either end thereof by one or the other of a pair of brakes —23— mounted on the inner ends of pedal levers —24— which are fulcrumed on the adjacent upright standards —1— at the underside of the drum heads and may be operated by hand through the medium of hand levers —25— which are connected to the pedal levers —24— by links —26— as shown more clearly in Figs. 2 and 7 and, inasmuch as it is only necessary to operate one of these brakes at a time, I have provided means as hooks or detents —28— by which the inactive lever may be held in its inoperative position while the other lever is released for action, the levers —25— being also fulcrumed upon the adjacent uprights —1—, both levers —24— and —25— being guided in their vertical movement in suitable ways —30— as shown more clearly in Fig. 9.

In addition to the clamps —2— and —3— for holding the upright standards —1— in operative position upon the side of the car, they are additionally secured in place by flexible connections —31— connected at one end to the lower ends of the clamps —2— and at their opposite ends with one of the truss rods, as —32— on the underside of the body of the car, these connections being readily detachable when desired to remove or shift the apparatus from one car to another.

The chute —D— is provided with hook-shape arms —33— engaging the upper edge and inner side face of the adjacent side of the car, said chute being also provided with V-shaped braces —34— secured to its underside and bearing at their apexes against the outer faces of the adjacent side of said car so that the chute may be readily placed in

operative position and removed when desired.

During the operation of loading the bucket, the pull upon the cable tends to rotate the drum in the direction indicated by arrow X, Fig. 4, but is held against rotary movement by the active brake shoe —23— which is also adapted to engage one or the other of a series of radially projecting stops —35— on the periphery of the adjacent drum head —5— as shown more clearly in Fig. 4, said stops being limited in this instance to that portion of the periphery between the bar —10— and normal bottom of the drum head, the several stops serving to permit the drum to be stopped at any one of the stop points —35— to properly position the pulley block —17— according to the direction of draft or elevation of the loaded bucket—that is, as the material in the car is lowered by continued removal, the pulley block may be correspondingly lowered by stopping the drum at any one of the other points —35—.

In order to prevent the drum from being rotated too far during the operation of hoisting the bucket preparatory to discharging the load, the peripheries of the drum heads are provided with radially projecting stops —36— diametrically opposite the arms —16— and adapted to contact with the adjacent side of the car as the drum is rotated in the direction indicated by the arrow X in the operation of lifting the loaded bucket to its dumping position.

In order that the standards —1— may be more rigidly held in fixed relation, the lower ends of the clamps —2— are connected by a brace bar —37— while the upper portions are additionally braced by upright bars —38— passing through eyes —39— on said standards and having their upper ends connected by a lengthwise bar —40— some distance above the drum, the lower ends of the rods —38— resting upon the upper edge of the adjacent side of the car. This bar —40— together with its supporting rods —38— constitute a crane for the reception of suitable pulley blocks and cables by which the drum heads —5— may be hoisted into position for mounting upon their respective axle sections —4— or the entire drum may be made up as a unit and hoisted into position between the standards —1— and secured in such position by inserting their respective axle studs —4— through the hub —6— and into the journal bearings —4'— and afterward securing the axle studs in place by suitable collars on the ends thereof as shown more clearly in Fig. 7.

Operation: In operation, assuming that the parts are in their normal positions, as shown in the drawings, in which the bucket is ready to receive a load and that suitable power is applied to the opposite end of the cable for drawing the cable endwise through the pulley blocks —17— and —19— and around the rollers —20— and —22—, it being understood that the bucket is to be guided by the operator through the medium of the handles —c—, then, as the bucket is drawn forwardly sufficiently to cause the cable attachment on the bail of the bucket to engage the pulley block —17—, the continued draft on the cable will cause the rotation of the drum from its normal position in the direction indicated by arrow —X— until the bucket is brought to a substantially horizontal position between the drum heads and directly over the inner end of the chute —D— whereupon the rear end of the bucket is tilted upwardly by the operator to discharge its load into the chute, one or other of the brakes —23— being applied to the adjacent drum head to stop the rotation of the drum as soon as the bucket has reached its dumping position between the drum heads. After the bucket is dumped, the power for drawing it forward is released and the bucket together with the cable attached thereto and also the hoisting drum are returned to their normal positions ready for a repetition of the operation just described, one or the other of the brakes being applied as soon as the bucket approaches its position for reloading.

It will be seen from the foregoing description that the mechanism and operation are particularly simple and economical and, although I have shown a specific form of drum and manner of connecting the cable thereto, it is evident that the whole construction may be somewhat modified without departing from the spirit of this invention, and, therefore, I do not limit myself to the exact construction shown and described.

What I claim is:

1. A loading and unloading apparatus comprising upright standards having clamps for securement to a suitable support, a hoisting drum journaled in said standards and having drum heads spaced some distance apart to receive a bucket between them, a pulley block on the drum between the heads, a cable passed through the pulley block, a bucket attached to one end of the cable, the other end of the cable having means for attachment to a suitable power for operating the same.

2. A loading and unloading apparatus comprising a drum having heads spaced some distance apart, cable guides on the drum between the heads, a cable rendering over said guides, a bucket attached to one end of the cable, the other end of the cable having means for attachment to suitable power for drawing the bucket and cable endwise, said bucket having means coöperating with the drum to rotate the latter as the cable is drawn endwise whereby the

bucket is raised and carried between the heads by the rotation of the drum for dumping.

3. A loading and unloading apparatus comprising a rotary drum having heads spaced some distance apart, a chute below the drum, cable-supporting sheaves on the drum, a cable passed around said sheaves, means on the cable for engaging one of the sheaves and rotating the drum as the cable is drawn in one direction, and a bucket attached to said cable.

4. A loading and unloading apparatus comprising a drum having heads spaced some distance apart for receiving a bucket between them, cable-supporting sheaves on the drum between the heads, a bucket attached to one end of the cable and means for holding the drum against rotation while the bucket is being drawn toward the drum, and additional means actuated by the cable for rotating the drum when the bucket is drawn into close proximity thereto whereby the bucket is carried upwardly between the heads to its dumping position.

5. A loading and unloading apparatus comprising upright standards, axle sections mounted on said standards in axial alinement and having their inner ends spaced some distance apart to receive a bucket between them, drum heads mounted on said axle studs and also spaced some distance apart, a bar secured to the peripheries of said drum heads, a cable guide mounted on the bar between the heads, a cable passed through said guide, means on the cable for rotating the drum when the cable is drawn in one direction a predetermined distance and a bucket attached to the cable and adapted to be lifted and carried between the drum heads when the drum is rotated.

6. In combination with a car body, upright standards clamped to one side of the car body, axle studs mounted in said standards coaxial with each other and having their inner ends spaced some distance apart for receiving a bucket between them, drum heads mounted on the axle studs and also spaced some distance apart, a bar connecting the peripheries of the drum heads, a cable guide on the bar, a cable passed around the guide and having means coöperating therewith to rotate the drum as the cable is drawn in one direction a predetermined distance, and a bucket attached to said cable.

In witness whereof I have hereunto set my hand this 18th day of July, 1913.

GEORGE D. WILLIAMS.

Witnesses:
H. E. CHASE,
EVA E. GREENLEAF.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."