

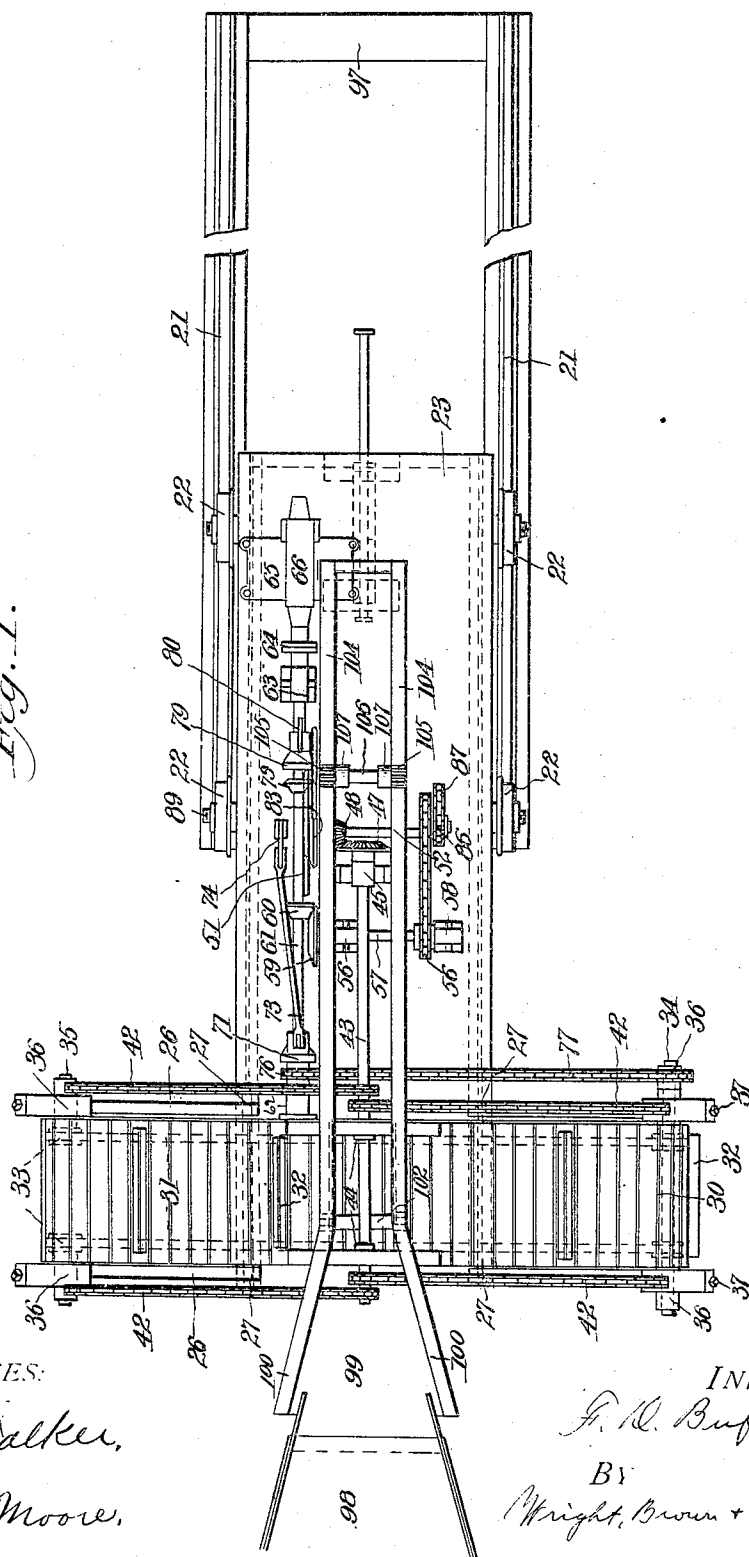
F. D. BUFFUM.

CAR LOADER.

APPLICATION FILED APR. 26, 1904.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

C. H. Walker,
J. W. Moore.

INVENTOR

F. D. Buffum

BY

Wright, Brown + Quinby
Attorneys

No. 792,495.

PATENTED JUNE 13, 1905.

F. D. BUFFUM.

CAR LOADER.

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4 SHEETS--SHEET 2.

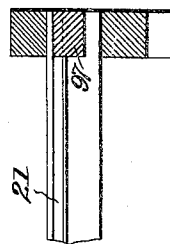
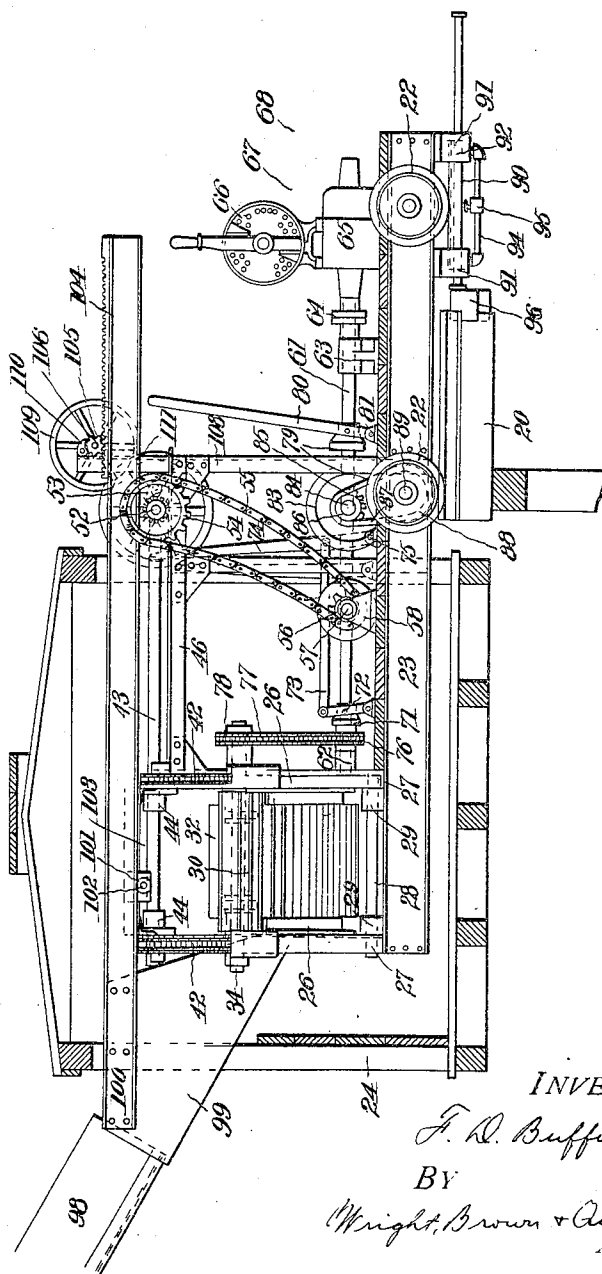


Fig. 2.



WITNESSES:

E. H. Walker,
J. M. Moore.

INVENTOR

F. D. Buffum

BY

Wright, Brown & Quincy
Attorneys

F. D. BUFFUM.
CAR LOADER.

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4 SHEETS—SHEET 3.

Fig. 3.

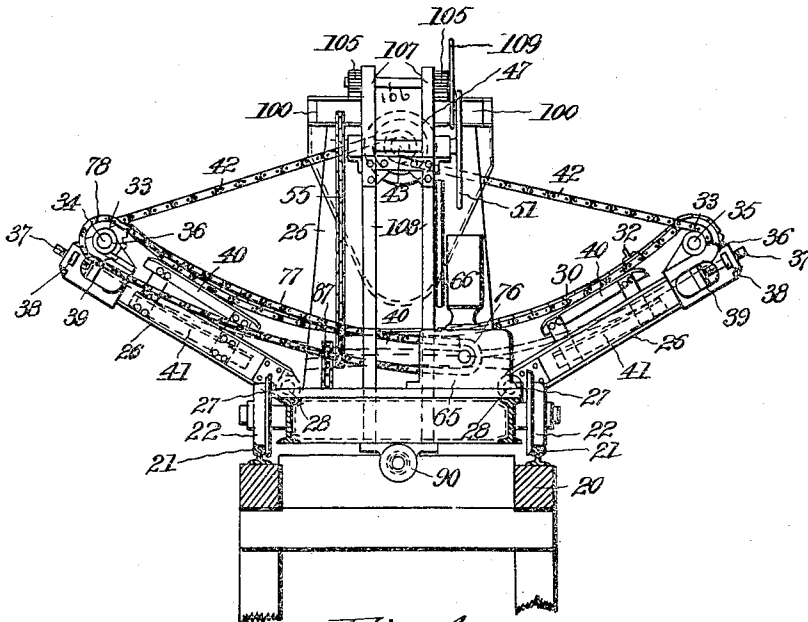
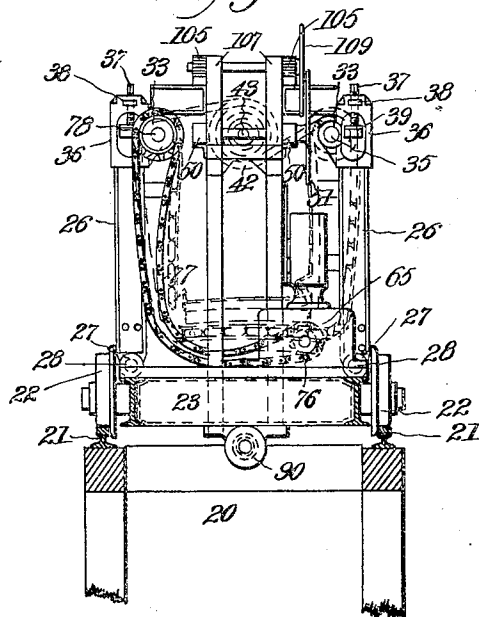


Fig. 4.



WITNESSES:

C. M. Walker,
J. M. Moon.

INVENTOR

F. D. Buffum

BY

Wright, Brown & Quincy
Attorneys

No. 792,495.

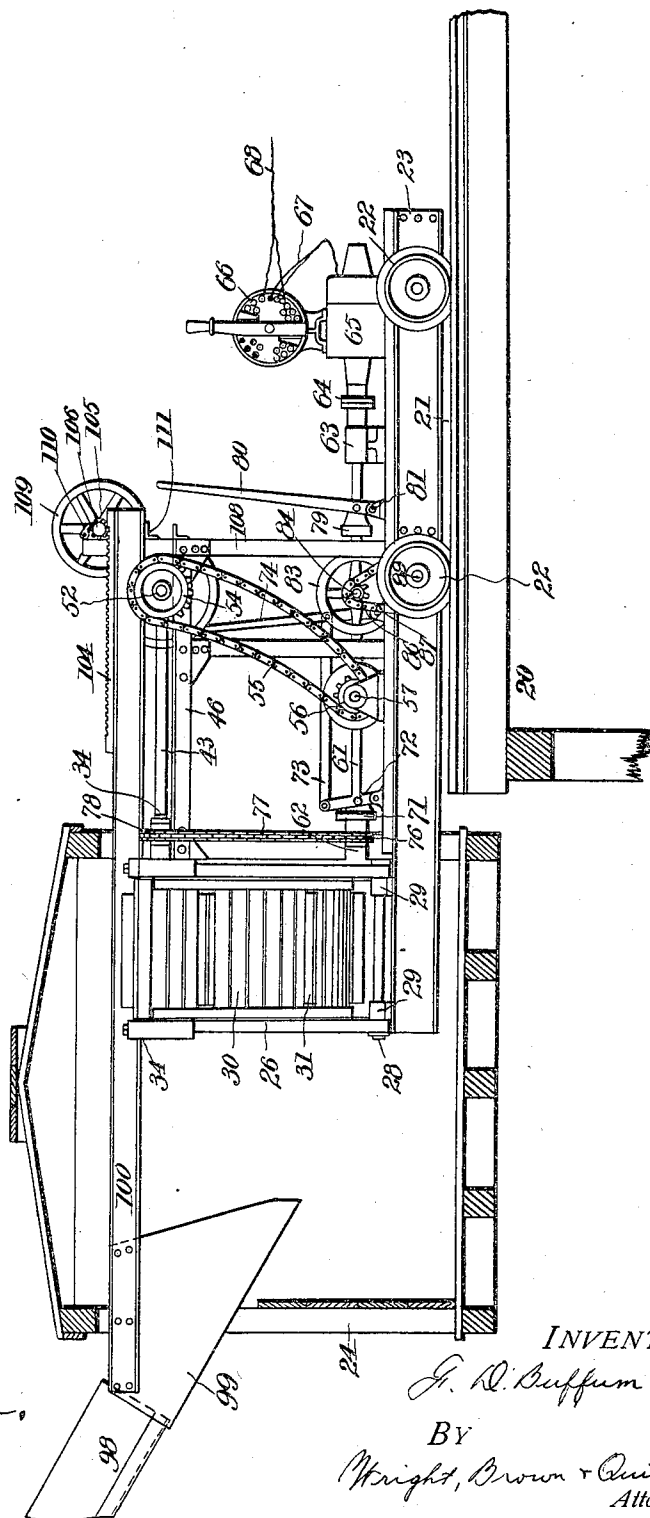
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CAR LOADER.

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4 SHEETS—SHEET 4.

Fig. 5.



WITNESSES:

C. Walker,
J. M. Moore,

INVENTOR

F. D. Buffum
BY
Wright, Brown & Quincy
Attorney

UNITED STATES PATENT OFFICE.

FREDERICK D. BUFFUM, OF NEWTON, MASSACHUSETTS.

CAR-LOADER.

SPECIFICATION forming part of Letters Patent No. 792,495, dated June 13, 1905.

Application filed April 26, 1904. Serial No. 205,054.

To all whom it may concern:

Be it known that I, FREDERICK D. BUFFUM, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Car-Loaders, of which the following is a specification.

This invention relates to machines for loading cars, and has particular reference to that class of machines which include an endless conveyer for throwing the coal or other material toward one end or the other of a railroad-car, the material being deposited on the conveyer by a chute entering the side of the car opposite that from which the distributor is introduced and operated.

The object of my present invention is to provide a machine of this character which shall be of comparatively low cost, efficient in operation, and easy to manipulate both in respect to placing the mechanism in position for operation and in obtaining the best results in loading the car evenly and rapidly.

A particular object of the invention is to provide an apparatus of this character having an endless conveyer, which conveyer when the mechanism is projected within the car will extend outward to one side of the frame of the apparatus, yet may have its outer end folded up to a position substantially within the cross-sectional space occupied by the frame of the apparatus.

A further object of the invention is to provide improved means for the raising or lowering of the outer end of the conveyer so that the material discharged thereby may be thrown to a greater or lesser distance when in the car.

A further object of the invention is to provide improved means for projecting the apparatus into a car and withdrawing it therefrom.

A further object is to provide means for yieldingly stopping the carriage at either extreme of its movement.

Other minor objects of the invention will appear hereinafter in connection with the detailed description of the several parts of the apparatus.

To these ends the invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a plan view of an apparatus embodying my invention in a preferred form. Fig. 2 represents a side elevation of the same, a portion of the body of a car being represented in section, the distributor and the feeding-chute being in the position which they would occupy relatively to the car when the distributor is being used to throw the coal to either end of said car. Fig. 3 represents an elevation from the right in Fig. 1, some of the parts of the apparatus being, however, omitted for the sake of clearness. Fig. 4 is a view similar to Fig. 3, but with the conveyer folded up to the position which it occupies when the apparatus is to be introduced through the door of a box-car. Fig. 5 is a view similar to Fig. 2, but showing the feed-chute and distributor mechanism in the relative position which they would occupy after the ends of a car have been loaded and the feed-chute is being used to cause the material to fill the middle portion of the car by gravity.

Similar reference characters indicate similar parts throughout the several views.

The car-loader herein described and shown is in many respects similar in construction and operation to that forming the subject-matter of my application filed March 24, 1904, Serial No. 199,735. Where the construction and operation are the same as shown and described in said former application, I shall hereinafter mention such parts briefly, if at all.

A suitable stationary frame 20 is provided for the rails 21, on which the carriage of the loader is mounted, so as to enable the distributing mechanism to be introduced through one side door of a box-car. The frame 23 of the carriage is provided with wheels 22, the latter running on the rails 21 when the distributing mechanism is introduced into or removed from the box-car indicated at 24.

Supported on the forward end of the carriage-frame 23 is the frame of the mechanism which receives the coal or other material to be distributed, as hereinafter described. In Fig. 3 two uprights of said frame are indicated at 25. Swinging arms 26 are provided, each being mounted at 27 (see Figs. 2 and 5)

on a shaft 28, supported in bearings or lugs 29, rising from the forward end of the frame 23. As shown in Figs. 3 and 4, the arms 28 are mounted so as to be swung or adjusted 5 on the pivotal supports afforded by the shafts 28 passing through the openings or bearings 27 at the lower or inner ends of said arms. The ends of the arms 26 support the conveyer, which consists of slats 30, attached to chains 10 31, to which are also attached at suitable intervals T-iron flights 32. The conveyer-chains run on pairs of sprockets 33 33 on driving-shaft 34 and driven shaft 35, running in bearings 36 at the outer ends of the folding 15 arms 26. Bearings 36 are arranged to be adjusted longitudinally of the arms to take up slack in the conveyer-chain and also in the conveyer drive-chain. Said bearings 36 are slidably fitted to the arms 26 and are formed 20 with recesses in which are nuts 38, screws 37 projecting through said nuts 38 and bearing against projecting angle-plates 39, riveted to the arms 26.

Supported by the arms 26 are guides 40 and 25 41 for the upper and lower stretches of the conveyer, respectively. These guides support the endless conveyer and the weight of the coal or other material carried thereby and also determine the angle at which the 30 material will be thrown by means of the conveyer, because the said guides are adjusted with the arms 26 in a manner that will be hereinafter described.

Two pairs of chains 42 are connected at 35 their outer ends to the outer ends of the arms 26, (meaning each arm 26,) and the other ends of the said chains 42 are attached to a winding-shaft 43 in such manner that as the shaft 43 is revolved the chains will coil on 40 themselves, so as to simultaneously raise or lower the ends of the conveyer. Therefore the two pairs of chains 42 42 serve to support the outer ends of the conveyer and also afford the means for folding it up. The advantage 45 of this mechanism is that when the conveyer is extended and the resistance to folding it is greatest the length of the radius or lever arm on which the suspension-chains pull is much less than when the conveyers are raised. 50 This tends to make the work of raising the ends of the conveyer uniform for all heights.

When the machine is to be run into or out of a car, the conveyer is folded by the means just described, so that its position is that 55 shown by Fig. 4. It then occupies such a space that it may be run through an ordinary box-car door.

The winding-shaft 43 is journaled in bearings 44 44 on the hopper and in a bearing 45 60 in the supporting-framework 46, forming a part of the carriage-frame. Keyed to the shaft 43 is a bevel-gear 47, in mesh with a bevel-pinion 48, keyed on a pinion-shaft 49, running in bearings 50 50. (See Fig. 4.) 65 Keyed on shaft 49 is a hand-wheel 51, with

which, through the mechanism just described, the conveyer may be folded. On the shaft 49 is also keyed a ratchet 52, engaging a pawl 53, by means of which the ends of the conveyer may be held at any height, thus furnishing a means by which the angle at which 70 the coal is thrown, and consequently the distance, can be readily varied.

The means just described provide for adjusting or folding the conveyer by hand. I 75 will now describe the mechanism whereby the conveyer may be adjusted or folded by power.

In Fig. 2 a sprocket 54 is keyed to the shaft 49 and is driven by a chain 55, which in turn is driven by a sprocket 56, keyed to shaft 57, 80 running in bearings 58. (See Fig. 1.) Keyed to shaft 57 is a bevel friction-gear 59, which is driven by bevel friction-gear 60, splined on a shaft 61, so that it may be slid into or out of contact with the bevel friction-gear 59. 85 The object of providing the parts 59 and 60 as friction-gears is to allow slippage in case the pawl 52 and the ratchet 53 should not have been thrown out of engagement before starting the chain-winding mechanism. The shaft 90 61 runs in a bearing 62 on the hopper-frame and a bearing 63 near the motor.

64 is a flange-coupling connecting the shaft 61 with motor-shaft of the motor 65.

A suitable controller 66 is provided, by 95 means of which the motor speed may be regulated or its direction of rotation changed. The wires to the motor are shown at 67 and the feed-cable from the dynamo at 68.

The friction-pinion 60 is moved into or out 100 of contact with the friction-gear 59 by means of a lever 69, fulcrumed at 70.

In Fig. 2 a friction-clutch is shown at 71, said clutch having trunnions 72, a rod 73, and a hand-lever 74 fulcrumed at 75, by means of 105 which the clutch may be thrown in or out to stop or start the conveyer. The clutch 71 is on the hub of a sprocket 76, (see Fig. 1,) said sprocket 76 driving a chain 77, which in turn drives a sprocket 78, keyed to the driving- 110 shaft 34 of the conveyer.

The means for moving the machine into or out of the car consist, as shown in Fig. 2, of the friction-clutch 79, clutch-lever 80, fulcrumed at 81, for throwing in or out the bevel- 115 pinion, driving the bevel-gear 83 on the shaft 84, supported in bearings 85. Keyed to the shaft 84 is a sprocket 86, driving a chain 87, which drives sprocket 88, keyed to axle 89, on which are also keyed the front car-wheels 22. 120

For the purpose of counterbalancing the weight of the distributor and other mechanism the space within the rear portion of the loader-frame will be filled with some cheap 125 and heavy material such as described in my application above referred to.

To yieldingly bring the machine to a stop at either end of its travel, I provide the following mechanism: As shown in Fig. 2, a cylinder 90 is located underneath the rear end of 130

the frame, said cylinder having heads 91. In the cylinder is a piston 92, having a piston-rod extending through both cylinder-heads. 94 represents a by-pass pipe leading from one end of the cylinder to the other and having a valve 95. At the front and rear ends of the runway, respectively, are bumpers 96 and 97. The operation of this mechanism is as follows: In the position shown in Fig. 2 the piston-rod 93 has, owing to the forward movement of the carriage, been brought into contact with the bumper 96, which has pushed the rod back so that the piston is at the farther end of the cylinder. This cylinder is filled with air or other liquid, which is allowed to escape from in front of the piston through the pipe 94, whence it flows around into the back end of the cylinder. The valve 95 may be adjusted to regulate the resistance to this flow. The whole device acts to absorb the shock of bringing the machine to a stop at either end of its travel in a manner which will be readily understood.

98 represents the tippable-chute, and 99 the adjustable loader-chute. The loader-chute is attached to and supported by the supporting-channels 100 100, the said channels being supported on rollers 101 101, carried by shaft 102, journaled in a pair of plates riveted to guide-angles 103 103, which prevent the chute-frame from being displaced sidewise. Racks 104 are fixed to the inner end of the chute-frame. Pinions 105 mesh with said rack and are keyed to a shaft 106, running in bearings 107, carried on the upright angle-bars 108, which form a part of the previously-mentioned support 46. Keyed upon shaft 106 is a hand-wheel 109, by which the chute is controlled and moved into either of the positions shown by Figs. 2 and 5 or any intermediate position. A pawl 110 engages the pinion nearest the hand-wheel, so as to hold the chute at any desired point. The pinions and their shaft prevent the back end of the chute-frame from tipping up, and an angle-bar 111 (see Fig. 5) prevents it from tipping down. The upright angle-bars 108 prevent any sidewise movement. The object and uses of this chute are the same heretofore referred to in the application above mentioned, and in the operation of the machine the chute will be adjusted relatively to the carriage and distributing mechanism as described in the above-mentioned application.

It will be understood that although each end of the conveyer when the loader is in operation is projected beyond the side of the frame, as shown in Figs. 1 and 3, when the forward end of the frame which carries said conveyer is to be projected through the door of a box-car or withdrawn therefrom each of said ends may be folded up to a position that is substantially within the cross-sectional space occupied by said frame, as shown in Fig. 4. If the conveyer were divided at the center into two parts and the said two parts supported on

sprockets at the center of the bottom of the hopper in an obvious manner, the described adjustments of the arms 26 would remain the same and permit of the same folding within the space mentioned. I therefore do not limit myself to the single conveyer extending between the outer ends of the two folding arms 26.

I claim—

1. A car-loader comprising a frame adapted to be projected into a car and having an endless conveyer at its forward end, an arm pivoted to said frame and adapted to be swung from an outwardly-projected position to a substantially vertical position, bearings carried by the outer end of said arm and adjustable longitudinally thereof, sprockets having their shaft supported in said bearings, and means for adjusting said swinging arm.

2. A car-loader comprising in its construction a pair of swinging arms having shafts at their ends, a single endless conveyer supported by said shafts and continuously free between its ends, and guides attached to said arms for supporting the upper stretches of the conveyer.

3. A car-loader comprising in its construction a pair of swinging arms, a single endless conveyer supported thereby, and a pair of flat guides carried by each arm, one guide of each pair being for the upper stretch and the other guide for the lower stretch of said conveyer.

4. A car-loader having a single endless conveyer, pivoted arms supporting the ends of said conveyer, the said conveyer being continuously free between its ends, a winding-shaft, and flexible connections between said arms and the winding-shaft, whereby the said arms may be simultaneously adjusted.

5. A car-loader having a single endless conveyer, pivoted arms supporting the ends of said conveyer, the said conveyer being continuously free between its ends, a winding-shaft, and flexible connections between said arms and the winding-shaft, whereby the said arms may be simultaneously adjusted, the said flexible connections being attached to the shaft to coil or wrap upon each other for the purpose set forth.

6. A car-loader having a single endless conveyer, pivoted arms supporting the ends of said conveyer, the said conveyer being continuously free between its ends, a winding-shaft, flexible connections between said arms and the winding-shaft whereby the said arms may be simultaneously adjusted, the said flexible connections being attached to the shaft to coil or wrap upon each other for the purpose set forth, a gear keyed on said winding-shaft, a pinion meshing with said gear, a shaft for said pinion, and means for actuating the last-mentioned shaft.

7. A car-loader having an endless conveyer, pivoted arms supporting the ends of said conveyer, a winding-shaft, flexible connections between said arms and the winding-shaft

- whereby the said arms may be simultaneously adjusted, the said flexible connections being attached to the shaft to coil or wrap upon each other for the purpose set forth, a gear keyed on said winding-shaft, a pinion meshing with said gear, a shaft for said pinion, a motor on the carriage of the loader, and connections for actuating the last-mentioned shaft by said motor.
- 10 8. A car-loader mounted on a wheeled carriage, a trackway for said carriage, bumpers to limit the travel of said carriage, and a yielding stop device attached to the carriage and adapted to absorb the shock of contact with
15 either of said bumpers.
 9. A car-loader mounted on a wheeled carriage, a trackway for said carriage, bumpers to limit the travel of said carriage in either direction, and a yielding stop device comprising
20 a cylinder attached to the carriage and having a piston and piston-rod the latter projecting through both ends of the cylinder in line with the bumpers, and a valved pipe connecting opposite ends of the cylinder.
 - 25 10. A car-loader comprising a distributing mechanism, a carriage therefor to enable it to be advanced and retracted, a feed-chute and chute-frame, the latter being carried by and movable relatively to said carriage, and
30 guides for preventing lateral displacement of the chute-frame.
 11. A car-loader comprising a distributing mechanism, a carriage therefor to enable it to be advanced and retracted, a feed-chute
35 and chute-frame, the latter being carried by and movable relatively to said carriage, a rack carried by the inner portion of the chute-frame, a shaft having a pinion meshing with said rack, and means for operating said shaft.
 - 40 12. A car-loader comprising a distributing mechanism, a carriage therefor to enable it to be advanced and retracted, a feed-chute and chute-frame, the latter being carried by and movable relatively to said carriage, and
45 means whereby the chute-frame may be locked in any position longitudinally of the carriage.
 13. A car-loader comprising a distributing mechanism, a carriage therefor to enable it to be advanced and retracted, a feed-chute and chute-frame, the latter being carried by and movable relatively to said carriage, a rack carried by the inner portion of the chute-frame, a shaft having a pinion meshing with said rack and having a hand-wheel, and a stop-pawl to engage said pinion to lock the chute-frame in adjusted position.
 14. A car-loader comprising in its construction a pair of swinging arms, a single endless conveyer supported thereby, means for adjusting said arms, and guides attached to
60 said arms for supporting the lower stretches of the conveyer.
 15. A car-loader having a single endless conveyer, pivoted arms supporting the ends of said conveyer, the said conveyer being continuously free between its ends, and means
65 for adjusting said arms relatively to each other to vary the inclination of the conveyer, the construction being such that the conveyer may be operated when the inclination is varied from the horizontal.
 16. A car-loader having a single endless conveyer, pivoted arms supporting the ends of said conveyer, the said conveyer being continuously free between its ends, a winding-shaft, flexible connections between said arms and the winding-shaft whereby the said arms may be simultaneously adjusted, and means
70 for holding the winding-shaft to retain the arms in adjusted position.
 17. A car-loader having a single endless conveyer, pivoted arms supporting the ends of said conveyer, the said conveyer being continuously free between its ends, a winding-shaft, flexible connections between said arms and the winding-shaft whereby the said arms may be simultaneously adjusted, and means
80 including a pawl and ratchet for holding the winding-shaft to retain the arms in adjusted position.
- In testimony whereof I have affixed my signature in presence of two witnesses.
- FREDERICK D. BUFFUM.
- Witnesses:
- BELLE A. BOGGS,
BELLE M. WILLIAMS.