No. 739,939. PATENTED SEPT. 29, 1903.

S. K. SMITH.

CAR LOADER.

APPLICATION FILED NOV. 2, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

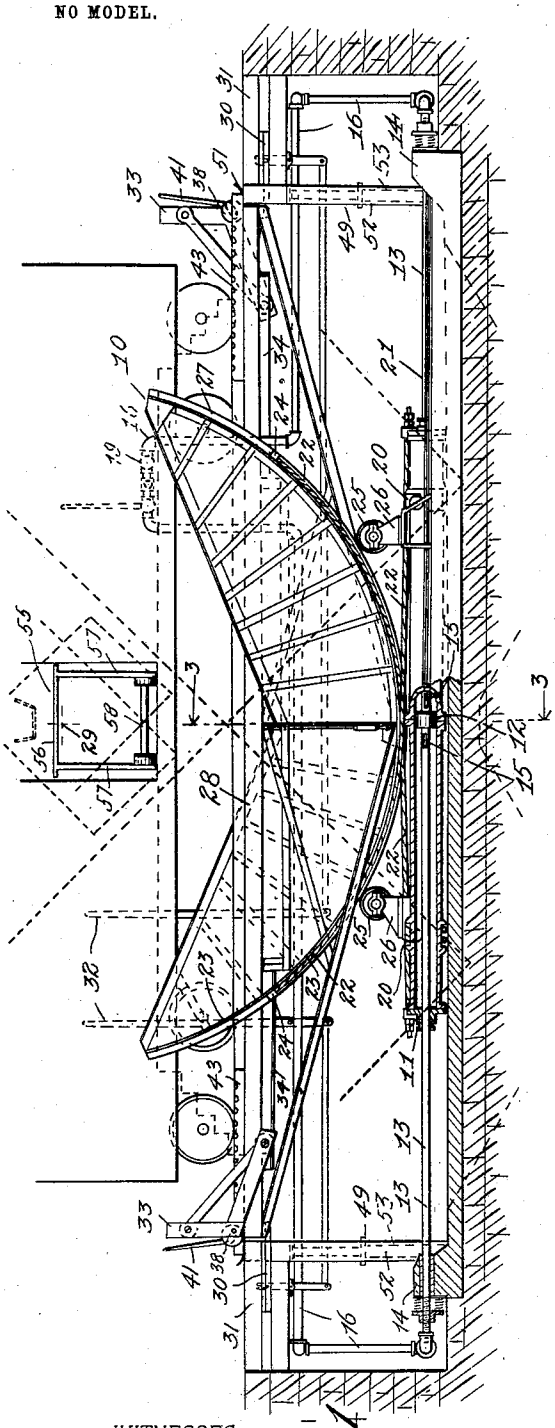


Fig. 1

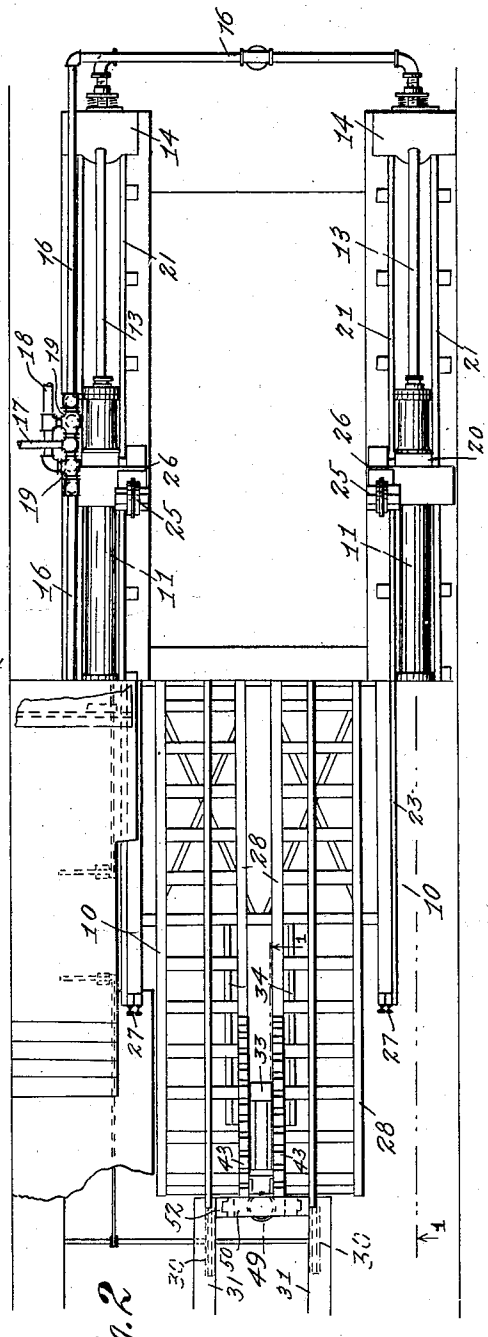


Fig. 2

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 3 SHEETS—SHEET 2.

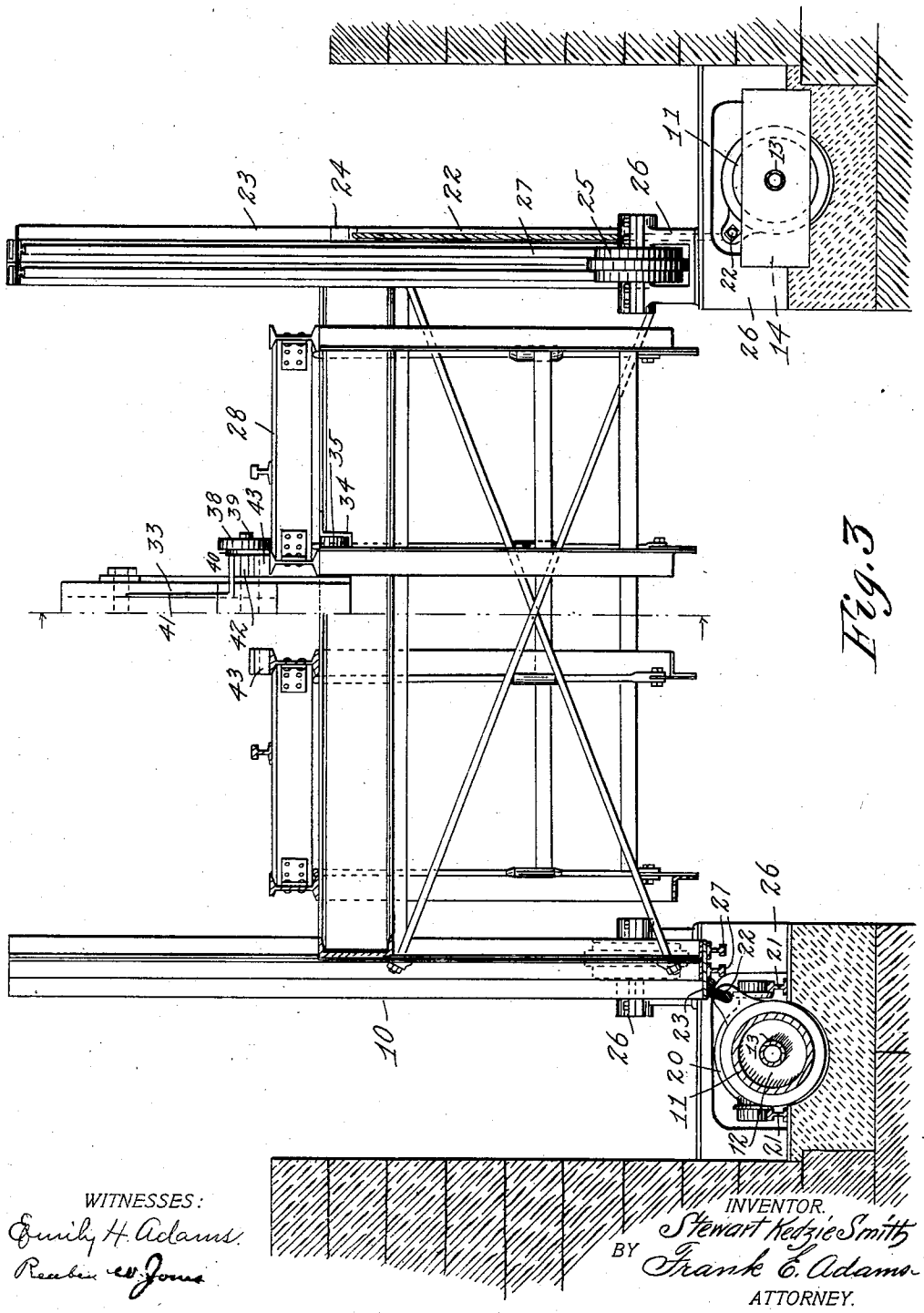


Fig. 3

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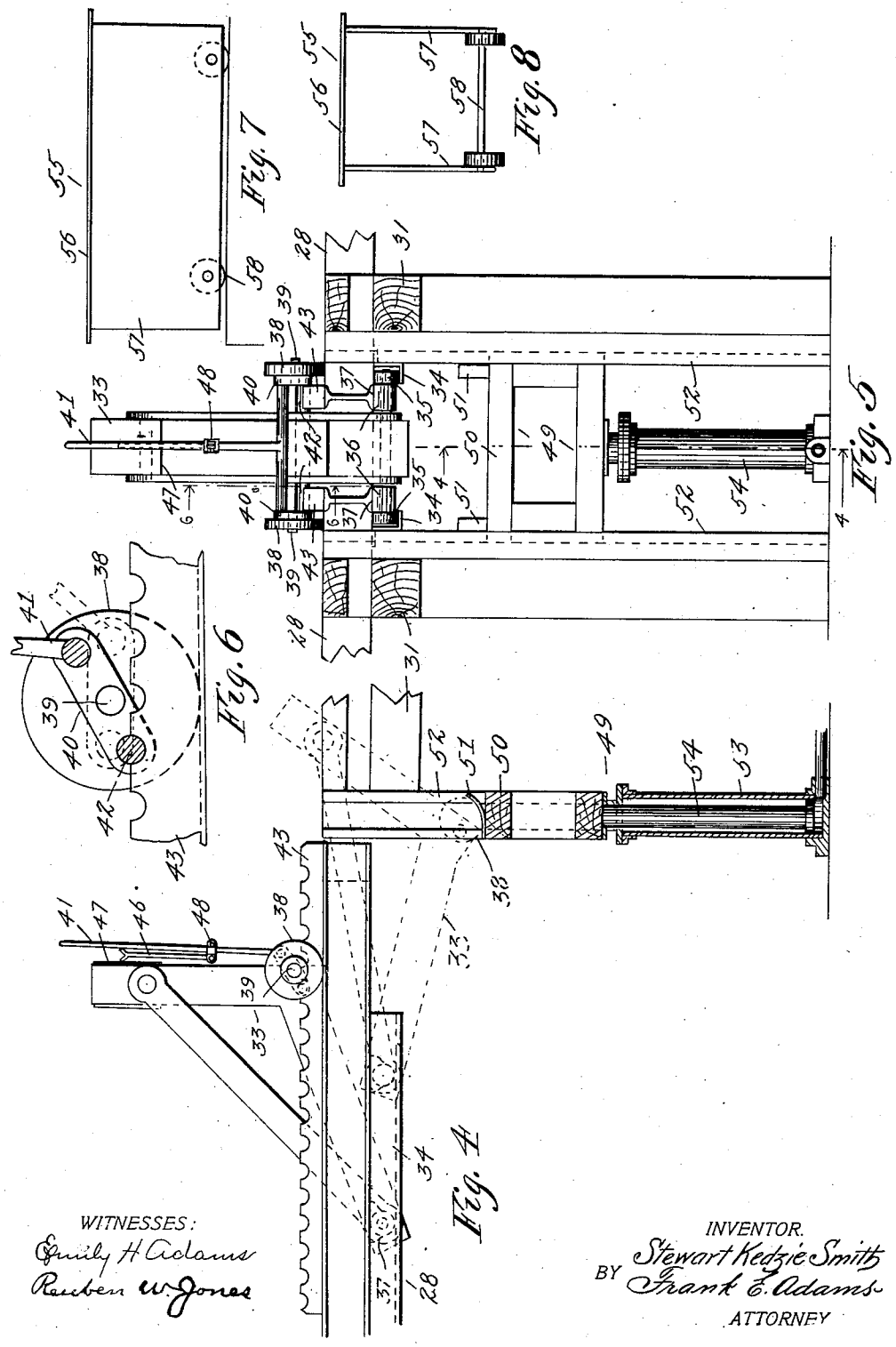
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No. 739,939. Patented September 29, 1903.

UNITED STATES PATENT OFFICE.

STEWART KEDZIE SMITH, OF RED LODGE, MONTANA.

CAR-LOADER.

SPECIFICATION forming part of Letters Patent No. 739,939, dated September 29, 1903.

Application filed November 2, 1901. Serial No. 80,883. (No model.)

To all whom it may concern:

Be it known that I, STEWART KEDZIE SMITH, a citizen of the United States of America, and a resident of Red Lodge, in the county of Carbon and State of Montana, have invented certain new and useful Improvements in Car-Loaders, of which the following is a specification.

My invention relates to improvements in methods and devices for loading cars, and has special reference to an apparatus of this class embodying means for tilting the car to accomplish the method.

Among numerous objects attained by this invention and readily understood from the following specification and accompanying drawings, included as a part thereof, is a simplified and efficient method of loading cars—strong, durable, and positively-acting mechanism—whereby the car is expeditiously and safely handled to accomplish the method, and preferred forms of parts, combinations thereof, and other structural features incidentally developed in accomplishing the objects.

With reference to the drawings filed herewith and bearing like reference characters for similar parts throughout the several views, Figure 1 is a side elevation of my car-loading apparatus as preferably embodied with one-half thereof in longitudinal section on line 1 1, Fig. 2, and a portion of a box-car resting on the carriage, with the deflector sometimes employed in loading the car in place in the side door, and also indicates by dotted lines the approximate positions of the car as tilted to effect the loading of a cargo; Fig. 2, a plan view of the loader with one-half of the revoluble carriage and other parts removed to better disclose the means for operating said carriage; Fig. 3, an end elevation of the loader, on large scale, with one-half indicated in vertical section on line 3 3, Fig. 1, and shown with the piping and some of the other parts removed; Fig. 4, a side elevation of a portion of one end of the carriage, with a respective movable bumping-post in position and the apparatus for raising and lowering same indicated in vertical section on line 4 4 of Fig. 5 and in lowered position, with said bumping-post indicated relatively thereto by dotted lines. Fig. 5 is an end elevation of said carriage portion with the bumping-post and attendant mechanism as shown in Fig. 4. Fig. 6 is a transverse section, on large scale, of the bumping-post, truck, and locking device, taken on line 6 6, Fig. 5; Fig. 7, a side elevation of the removable deflector employed in loading, and Fig. 8 is an end elevation of said deflector.

The method involved in loading coal into cars and rendered practically possible by the apparatus hereinafter set forth consists in bodily tilting the car longitudinally to pitch the floor thereof to the required inclination for gravity of the materials loading to cause travel thereof along said floor and includes the delivery of said materials to the car through the side thereof substantially midway its length and height and after one end of the car has received, substantially, one-half of the cargo reversing the tilt of the car by a movement thereof substantially concentric said point of delivery, so as to feed the remainder of the cargo to the opposite end as delivered to the car, and thereby avoid the necessity of trimming and render it possible to load a car from one chute or like delivering apparatus without necessitating any change in its position.

From the foregoing it will be understood that the fall of the materials in the car from the elevated point of delivery indicated promotes their passage to the low end without requiring extreme tilting of the floor, and consequently the cargo in the loaded end is not disturbed by the reverse tilt given the car to load the opposite end, as gravity of the loaded materials will tend to hold them against movement, while gravity of the materials loading will insure their passage to the low end. This is particularly a fact in loading lump-coal in bulk, as contemplated by this invention and as can be readily understood.

The apparatus comprehended to facilitate the application of the above-described method of loading includes a suitable movable car-carriage, as 10, which is preferably mounted for reciprocal rotation about a horizontal axis and is conveniently operated by a suitable mechanical device comprehending in action in the present instance a take-up or the like and a flexible connecting medium adapted to operably associate the carriage with the device and render it respondent to action

thereof for rotary movement. As now considered, this mechanical device includes a pair of traveling cylinders, as 11, disposed at opposite sides of the carriage at right angles to its axis of movement and conveniently operated by induction and eduction of fluid at opposite sides of a respective stationary piston 12, conveniently supported by oppositely-disposed rods 13, extending from opposite ends of the cylinder through suitable stuffing-boxes, secured to the heads thereof, and conveniently rigidly supported at the outer ends by suitable brackets 14, comprising pieces of masonry. These rods are preferably rendered tubular to afford a convenient passage for the operating fluid during induction and eduction and are each provided with a suitable laterally-disposed port, as 15, in the wall adjacent said piston, through which the cylinder receives and exhausts motive fluid at respective sides of the piston simultaneously, and thereby prevents overbalance from effecting the movement of the car-carriage.

As now considered the motive fluid is conveniently passed through suitable conduits 16, connected to outer ends of each rod 13 and to an induction-pipe 17 and eduction-pipe 18 through suitable operable three-way valves 19, arranged to pass live fluid from said induction-pipe to one conduit 16, while opening the opposite conduit 16 to exhaust through eduction-pipe 18, and vice versa, so as to give simultaneous reciprocal travel to cylinders 11.

In the present instance cylinders 11 are preferably movably supported on suitable trucks 20, carrying antifriction bearing-wheels operable on suitable ways, as rails 21, Figs. 2 and 3, disposed parallel the path of movement at opposite sides of respective cylinders, and each cylinder is operably connected to the carriage 10 by oppositely-disposed cables 22, which are each fixed to the cylinders at respective ends and lead therefrom about a suitable way 23, formed on the periphery of said carriage, and are fixed thereto at points 24, removed from the connection to the cylinder a sufficient distance to give the carriage a desired part of a revolution responsive to longitudinal action of the cylinders.

In the preferred embodiment carriage 10 is movably mounted on slidable bearing-rollers 25, conveniently pivotally mounted on suitable stands 26, disposed at opposite side edges of the carriage at suitable points oppositely disposed respecting the axis of movement of the carriage, and said carriage comprises any suitable framework embodying semicircular tracks 27, adapted to ride on said rollers, a suitable track-bed 28 to receive the cars, and a peripheral way 23 for cables 22. (Best shown in Fig. 3.) As now included the carriage 10 is arranged with track-bed 28, suitably positioned to bring the axis of movement of the carriage substantially equal to the point 29 at which the materials loading are preferably delivered to the car, and said carriage is suitably retained in normal position by operable stops, as 30, disposed at each end of said track-bed and slidable in a suitable mount 31, fixed adjacent thereto, so as to be engaged with said bed when desired to hold the carriage and to be moved clear thereof when desired to tilt the same, and said stops are suitably operably connected to respective operating-levers 32, as shown in full and dotted lines, Fig. 1.

At opposite ends of track-bed 28 are suitable movable bumping-posts 33, each of which comprises an L-shaped post of rigid construction, preferably disposed with the foot extending inwardly and the end thereof supported by suitable oppositely-disposed ways 34, fixed to the track-bed parallel thereto and adapted to afford bearing-surfaces for respective traction-wheels 35, pivotally mounted on said foot at opposite sides, and adjacent said wheels are provided shoes 36, which are preferably mounted on the axle of said wheels in an inverted position and are operable on suitable smooth surfaces 37, conveniently provided on the track-bed parallel said ways. These bumping-posts are each rendered readily movable to receive cars of various lengths by means of truck-wheels 38, Figs. 4, 5, and 6, which are journaled on suitable horizontally-disposed pins 39, fixed adjacent the ends of furcations 40 of a bifurcated lever 41, and which serve both as journals for said wheels and a fulcrum on which said lever operates.

The bumping-post is conveniently connected to the free end of furcations 40 by a suitable rod, as 42, disposed transversely the post adjacent the angle-point and extending beyond each side and fixed by the ends to said furcations, which carry the truck-wheels at the outer sides. Character 43 refers to suitable racks disposed at each side of the bumping-post in operable relations to the extending portions of rod 42 and rigidly fixed to carriage 10, so as to retain said post when said rod rests between the teeth of the racks. In the present instance the grooves in these racks are rendered semicircular in conformity with the periphery of rod 42 and serve as fulcrums on which the respective bumping-posts operate as an angle-lever when the car is resting against the stem thereof and forces shoes 36 firmly against surfaces 37, which, combined with the support afforded by the respective teeth on the racks, serve to hold the bumping-post securely in place against movement by weight of the car when tilted. As now considered lever 41 is preferably formed in substantially L shape and disposed with the handle normally parallel the stem of the bumping-post, and a suitable dog, as 46, is conveniently pivotally mounted thereon to secure it in operated or depressed position.

The dog 46 comprises a rod having a V-shaped notch in the free end related to the edge of a plate 47, secured to the bumping-post, and is suitably pivoted to a split clamp

48, which is conveniently adjustably secured to said lever. The V-shaped notch in the end of the dog 46 is adapted to engage the lower edge of the plate 47 and be held in the proper position thereby.

From the foregoing the adjustment of each bumping-post will be readily understood, it being simply necessary to depress lever 41, which acts on pins 39, raise rod 42 from engagement with respective racks 43, when the post can be readily moved on the truck-wheels 38 as brought to suitable traction-surfaces by said movement of the lever, and when adjusted to respective ends of track-bed 28 they can be lowered clear of the passage of the car by swinging on the axles of traction-wheels 35. To conveniently raise and lower said bumping-posts, an elevator 49 is arranged at each end of track-bed 28, each having a platform 50 suitably formed to receive the truck-wheels 38 of a respective post and having upwardly-curving stops 51, adapted to check said wheels in proper position for lowering of the post. Each platform 50 is slidably engaged with suitable vertically-disposed ways 52, fixed adjacent respective ends of said track-bed, and is operated by a hydraulic motor comprising a vertically-disposed cylinder 53, having a single port for ingress and egress at the bottom end, and a suitable piston in said cylinder, with a rod 54 fixed thereto and connected to said platform and having suitable length of travel to lower a respective bumping-post the distance required to clear it from the passage of the car.

When loading fine coal, it is desirable to employ a suitable removable deflector, as 55, which comprises a horizontal platform 56 and vertically-disposed partitions 57, fixed adjacent opposite edges of said platform. This deflector is conveniently mounted on suitable trucks 58 to facilitate movement thereof and is placed transversely the car midway the length of the platform 56 beneath the point of delivery of the materials to be loaded, and said platform serves to direct the materials to respective ends of the car as tilted, and the partition 57 serves to keep fine particles of material in the loaded end of the car from passing to the opposite end when the car is reversely tilted. This deflector normally occupies a position beside the carriage 10 and rests on a suitable platform equal in height to the floor of an ordinary car, so as to be readily pushed into and withdrawn from the car as desired.

As now considered the carriage 10 is disposed in a suitable pit, as indicated in Fig. 1, with the cylinder 11 placed in the bottom thereof and the rails on track-bed 28 level with the rails of the track on which cars are brought for loading.

The operation of the apparatus will be readily understood from the foregoing, and it can be seen that cars can be rapidly and safely handled thereby for loading.

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

1. In an apparatus of the nature indicated; the combination with a revoluble car-carriage; of a longitudinally-movable fluid-operative cylinder operably connected to said carriage.

2. In an apparatus of the nature indicated; the combination with a reciprocally-revoluble car-carriage; of a pair of simultaneously-operative, longitudinally-reciprocal fluid-cylinders operably connected to said carriage.

3. In an apparatus of the nature indicated; the combination with a reciprocally-movable car-carriage; of a traveling cylinder operably connected to said carriage, a stationary piston therein, rods extending from the piston through each head of said cylinder and fixed at the outer ends and means for induction and eduction of motive fluid respecting said cylinder at opposite sides of said piston.

4. In an apparatus of the nature indicated; the combination with a reciprocally-rotatable car-carriage; of a traveling cylinder, a stationary piston therein, piston-rods extending from each head of said cylinder and fixed at the outer ends, means for induction and eduction of motive fluid respecting said cylinder at opposite sides of said piston and oppositely-disposed cables fixed to respective ends of the cylinder and to the carriage.

5. In an apparatus of the nature indicated; the combination with a reciprocally-rotatable car-carriage having a horizontal axis of movement; of a traveling cylinder disposed at right angles to said axis beneath the carriage, a stationary piston therein, piston-rods extending from each head of said cylinder and fixed at the outer ends, means for induction and eduction of motive fluid respecting said cylinder at opposite sides of said piston and oppositely-disposed cables fixed to respective ends of the cylinder and to the carriage.

6. In an apparatus of the nature indicated; the combination with a reciprocally-rotatable car-carriage having a horizontal axis of movement; of a traveling cylinder disposed at right angles to said axis beneath the carriage, a stationary piston therein, tubular piston-rods extending from each head of said cylinder and fixed at the outer ends, ports in the walls of said rods adjacent opposite sides of said piston, conduits leading to the outer ends of the rods and oppositely-disposed cables fixed to opposite ends of the cylinder and to said carriage.

7. In an apparatus of the nature indicated; the combination with a track-bed; of a movable bumping-post having a foot at substantially right angles to the stem, an inverted shoe at the free end of said foot, a bearing-surface for said shoe on said bed, longitudinally-disposed racks at each side of said post on said bed and a rod projecting from each side of said post to engage the racks.

8. In an apparatus of the nature indicated;

the combination with a track-bed; of a movable bumping-post having a foot at substantially right angles to the stem, an inverted shoe at the free end of said foot and a traction-wheel pivotally mounted on said foot, a bearing-surface for said shoe and a way for said wheel on said bed, longitudinally-disposed racks at each side of said post on said bed and a rod projecting from each side of said post to engage the racks.

9. In an apparatus of the nature indicated; the combination with a track-bed; of a substantially L-shaped bumping-post, an inverted shoe mounted on the foot of said post adjacent the end, a traction-wheel journaled to said foot, a bearing-surface for said shoe and a way for said wheel on said bed, longitudinally-disposed racks at each side of said post on said bed, a rod projecting from each side of said post, a bifurcated lever with the ends of the furcations engaged with the ends of said rod and wheels mounted on the furcations of said lever intermediate said rod and the handle of the lever.

10. In an apparatus of the nature indicated; the combination with a track-bed; of a movable bumping-post, a bifurcated lever engaged by the ends of the furcations with said post and truck-wheels journaled to said furcations intermediate the post and end of said lever.

11. In an apparatus of the nature indicated; the combination with a track-bed; of a movable bumping-post, racks at opposite sides thereof fixed to said bed, a rod disposed transversely said post to normally lie with its end portions in said racks, a bifurcated lever with the furcations engaging the ends of said rod and truck-wheels journaled on said furcations.

12. In an apparatus of the nature indicated; the combination with a track-bed; of a movable L-shaped bumping-post, racks at opposite sides thereof fixed to said bed, a rod disposed transversely said post adjacent the angle-point with the end portions normally engaging said racks, a bifurcated lever with the furcations engaging the ends of said rod, truck-wheels journaled on said furcations, an axle transversely the end of the foot of said post, traction-wheels on said axle, inverted shoes also on said axle, a way for said traction-wheels and a bearing-surface for the shoes on said track-bed.

13. In an apparatus of the nature indicated; the combination; with a track-bed; of a movable L-shaped bumping-post, racks disposed on said bed at each side of said post, means to engage said post at the angle-point normally with said racks and means to slidably secure the free end of the foot of said post from being elevated.

14. In an apparatus of the nature indicated; the combination with a car and a tiltable car-carriage; of a deflector adapted for placement transversely a car and comprising a platform having a vertically-disposed partition.

15. In an apparatus of the nature indicated; the combination with a car and a tiltable car-carriage of a removable deflector adapted for placement transversely a car and comprising a platform having vertically-disposed partitions adjacent the side edges and trucks.

16. In an apparatus of the nature indicated; the combination with a car and a reciprocally-revoluble car-carriage; of a removable cargo-deflector adapted for placement transversely a car and comprising a platform having a vertically-disposed partition-wall adjacent each side edge extending downwardly, and truck-wheels mounted on said walls.

Signed at Red Lodge, Montana, this 19th day of September, 1901.

STEWART KEDZIE SMITH.

Witnesses:
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WM. MCINTYRE.