May 17, 1927. 1,628,732

F. G. MITCHELL

UNLOADING APPARATUS FOR RAILWAY CARS

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Fig. 1.

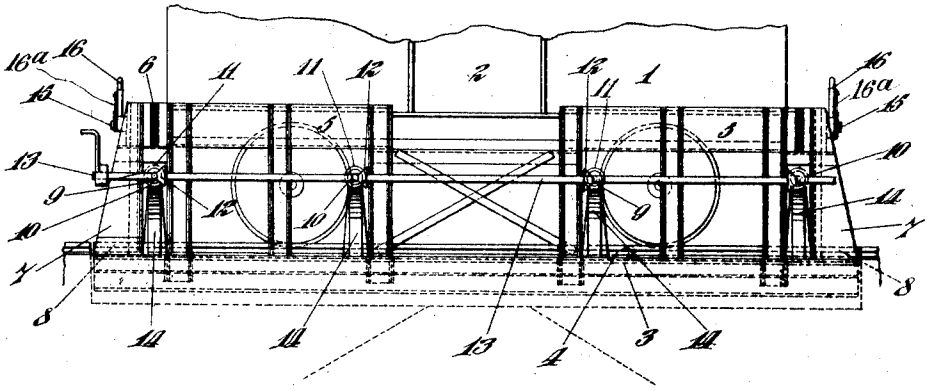
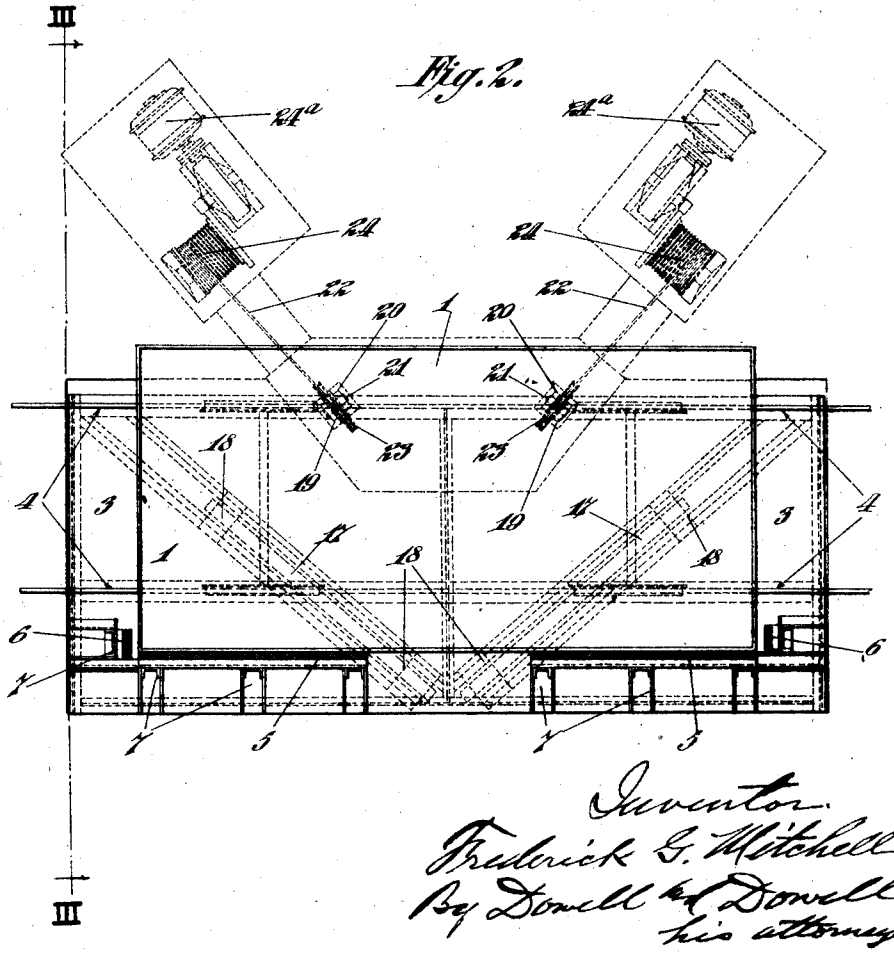


Fig. 2.



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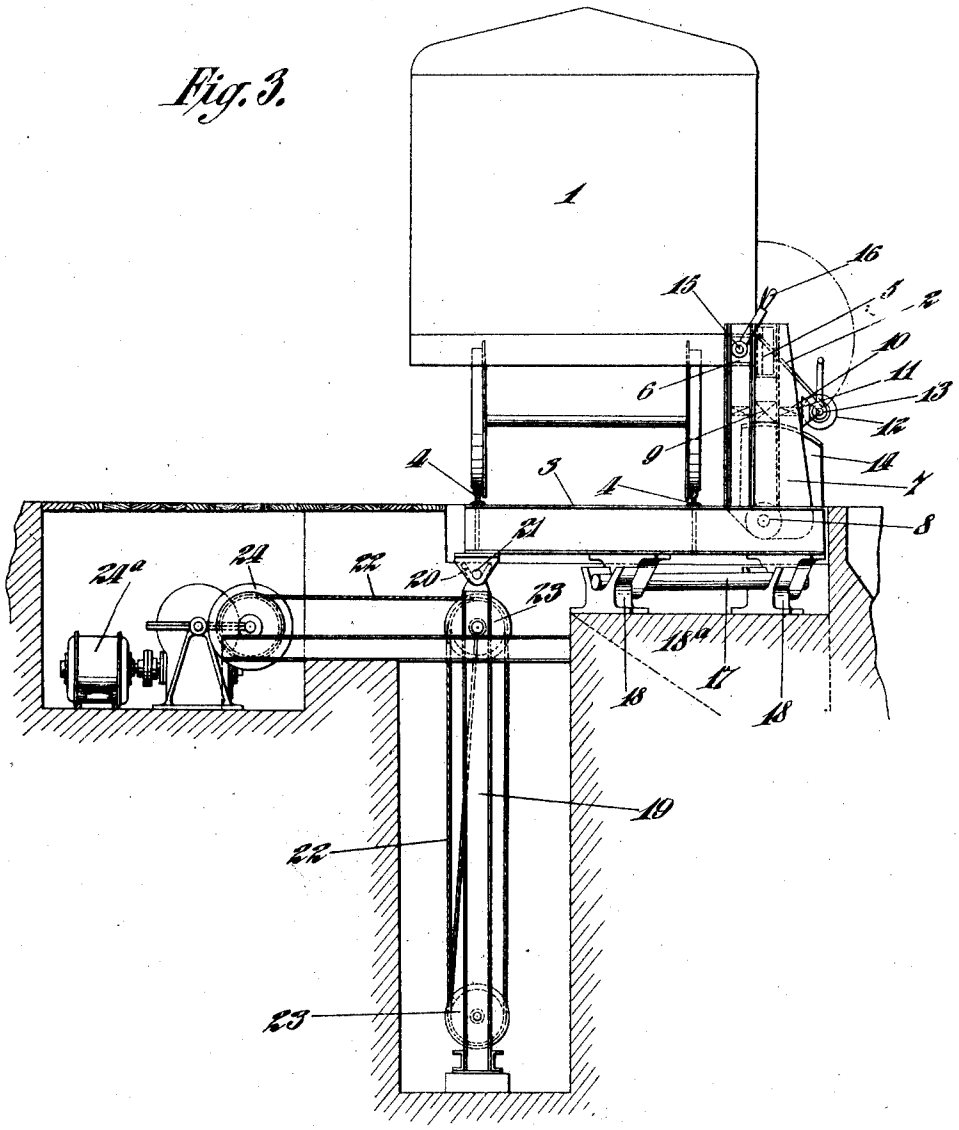
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UNLOADING APPARATUS FOR RAILWAY CARS

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Fig. 3.



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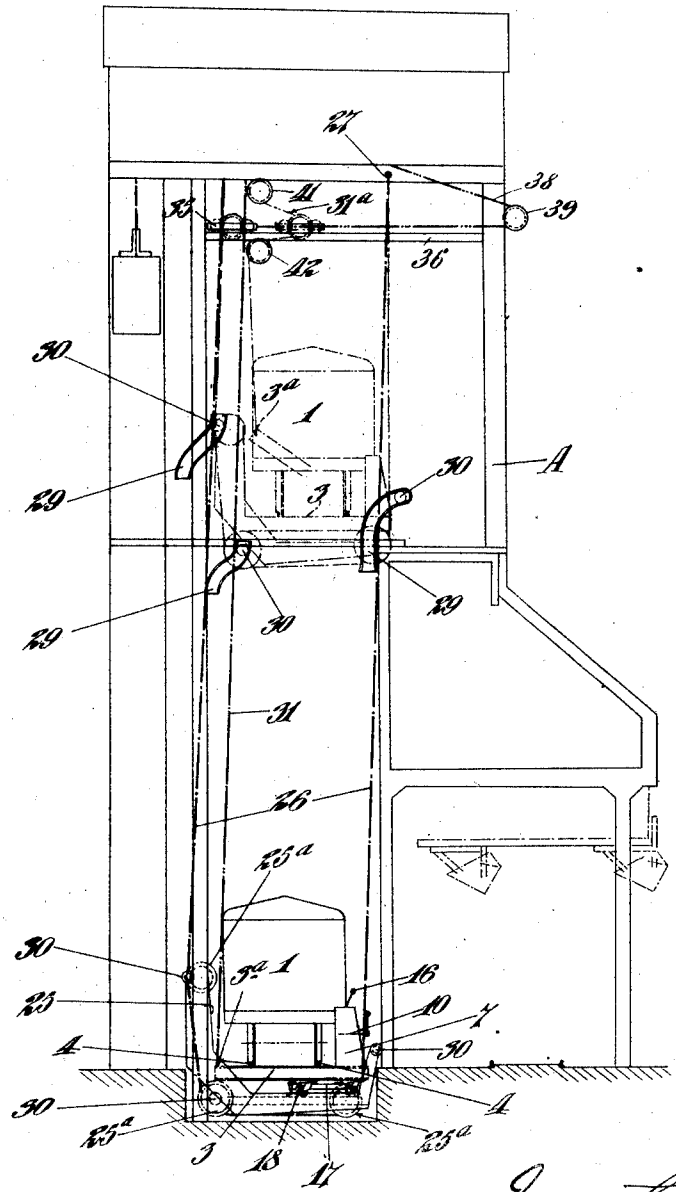
May 17, 1927. 1,628,732

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UNLOADING APPARATUS FOR RAILWAY CARS

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Fig. 4.



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UNLOADING APPARATUS FOR RAILWAY CARS

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Fig. 5.

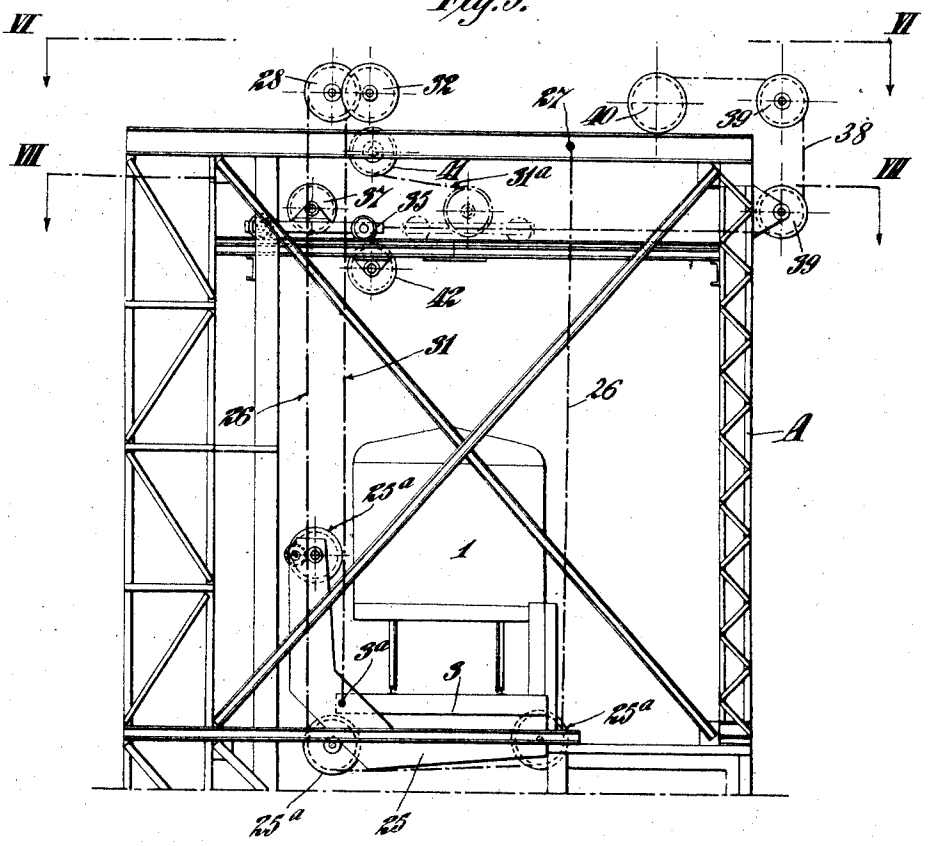


Fig. 8.

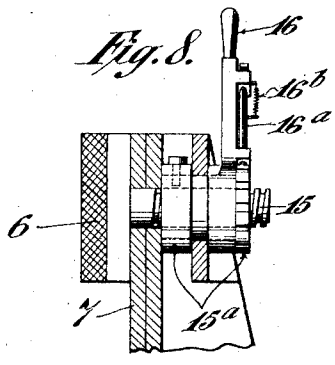
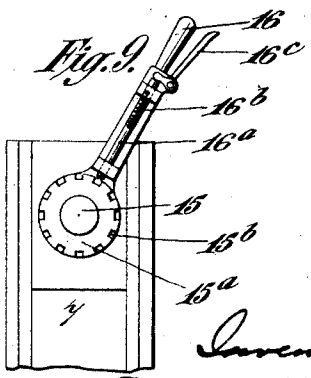


Fig. 9.



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UNLOADING APPARATUS FOR RAILWAY CARS

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Fig. 6.

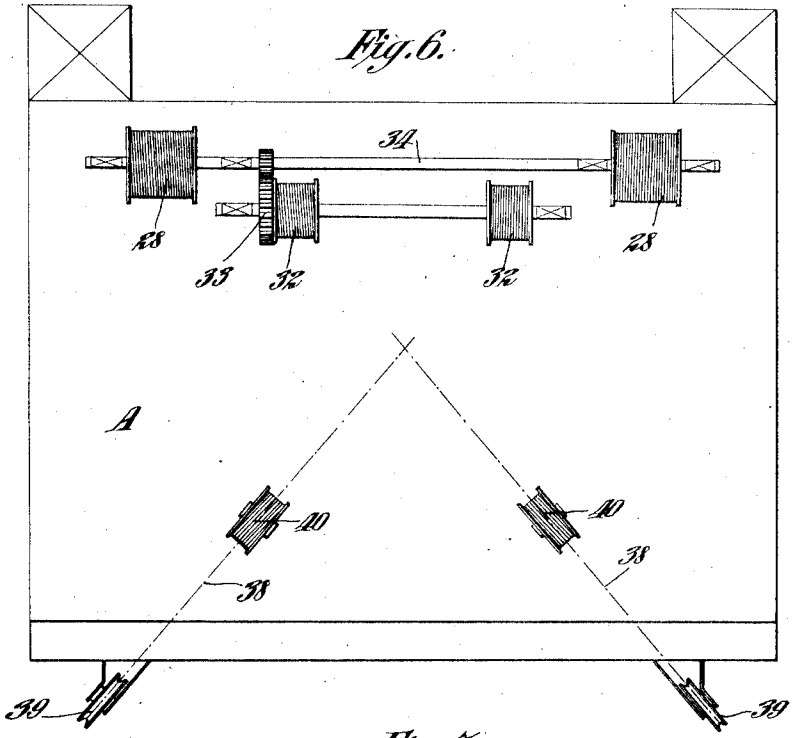
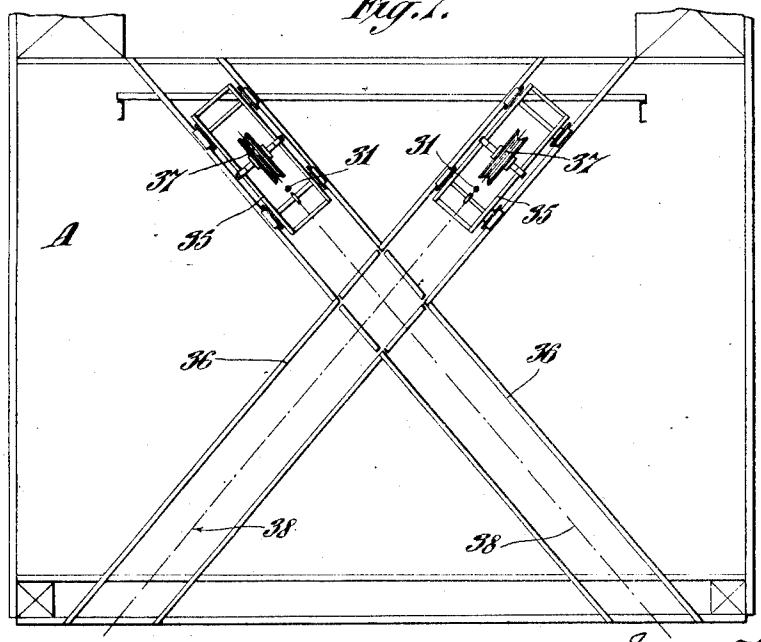


Fig. 7.



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Patented May 17, 1927. 1,628,732

UNITED STATES PATENT OFFICE.

FREDERICK GILBERT MITCHELL, OF LONDON, ENGLAND.

UNLOADING APPARATUS FOR RAILWAY CARS.

Application filed October 21, 1926, Serial No. 143,246, and in Great Britain April 23, 1925.

The object of the present invention is to enable loose bulk material to be discharged from railway cars or wagons having a restricted side doorway space, in a simple and effective manner, and also to provide reliable means for that purpose.

According to the invention, the contents of a vehicle or car are discharged through an opened side doorway by tilting the same alternately about axes which are inclined to one another and to the longitudinal axis of the vehicle, so that there results a tipping movement which may be referred to as cornerwise.

The tipping movement of the car may conveniently, though not necessarily, be due to a lift.

The apparatus employed may comprise a platform, obliquely arranged and separable bearings whereby the platform is normally carried by a support which may be stationary or vertically movable, according to the kind of car discharging apparatus to which the invention is applied and means whereby the platform and a car thereon can be lifted and tilted about one set of the bearings whilst the other bearing parts are temporarily disengaged, one tilting movement being followed, after restoration of the car to normal position, by another tilting movement of a similar character about a different axis.

The invention can be variously carried into effect, as will be evident from the description hereinafter given with the aid of the accompanying drawings, in which Fig. 1 is a side elevation of a car tippler embodying the improvements, the car being shown broken away. Fig. 2 is a plan thereof and Fig. 3 an end view, underground parts being rendered visible by taking a section on the line III—III of Fig. 2. Fig. 4 shows more or less diagrammatically in side elevation, a tippler hoist embodying the invention. Fig. 5 shows in side elevation, the upper part of such wagon tippler hoist to a larger scale and with parts not shown in Fig. 4. Figs. 6 and 7 are plan views of the tippler hoist corresponding to the planes VI—VI and VII—VII respectively of Fig. 5. Figs. 8 and 9 are views of right angles to one another showing a detail.

Referring first to Figs. 1, 2 and 3, assuming that the cars to be unloaded are of the type having a side door midway of their ends, such as the covered wagon 1 with door 2, then a symmetrical arrangement can be employed comprising a platform 3 equipped with rails 4 to enable the car to be run thereon, and with car holding means such as side chocks 5 and, if desired, end chocks 6. These chocks may be operated automatically in any known or suitable way but are shown as carried by a framework 7 pivoted to the platform at 8, movement of the framework being controlled by worms 9 upon shafts 10 geared through bevel wheels 11, 12 to an operating shaft 13, all carried by the framework 7. The worms 9 co-act with stationary toothed quadrants 14 so that the arrangement is self locking. The end chocks 6 are (see Figs. 8 and 9) advanced towards the car and retracted by screws 15 each working in a nut 15^a that is prevented from moving axially in the framework 7 and is adapted to be stepped around in either direction at will, by means of a hand lever 16 and hand controlled clutch. The clutch shown comprises a bar 16^a normally held in its raised position against the lever 16 by a spring 16^b but adapted to be forced downward by a trigger lever 16^c so as to cause it to engage one or other of a series of notches 15^b in the nut 15^a when the latter is to be rotated in one direction or the other.

The underside of the platform 3 is fitted with two shafts 17 which occupy positions coincident with axes which more or less correspond to diagonals of the two halves of the platform 3 and intersect near the position of the car door opening when the car is in proper position for being tipped, as will be readily understood from Fig. 2. To receive these shafts 17 cup or open topped bearing pedestals 18 are employed carried in this case by a stationary support formed by the masonry 18^a whilst to elevate the platform 3 above either shaft 17, corresponding rams 19 are employed. Each ram, which has a cupped upper end 20 in loose engagement with an abutment 21 on the platform 3, may be raised in any known way, as by a flexible connection 22 and system of pulleys or sheaves 23 under the control of say a winch 24 which may be motor driven, preferably by an electrical motor 24^a.

The arrangement is such that if the ram 19 to one side of the transverse centre line of the platform 3 be raised to tilt the platform 3 about the axis of the shaft 17 at the opposite side of the said centre line, the material at the end of the car adjacent to

such shaft will remain quiescent whilst discharge is taking place from the remaining portion of the car through the side door opening at 2. When this no longer occurs, the platform 3 is lowered and tilted by the other ram 19 about the axis of the opposite shaft 17 and the emptying proceeds.

In applying the invention to a car tippler hoist, this latter may take many forms, Figs. 4, 5 and 6 illustrating one form wherein a cradle 25 is adapted to be raised and lowered in a suitable superstructure A by two similar ropes 26 one of which can be seen in Fig. 4, each anchored at 27 to the superstructure and passing around sheaves 25^a on the cradle and upward to one or the other of two overhead winch drums 28. 29 are fixed guides such that with the aid of rollers 30 on the cradle, the latter is given a lateral displacement as it nears its uppermost position. The bearing pedestals 18 for the shafts 17 on the platform 3, referred to in describing the previous example, are in this case carried by the cradle 25, and the platform 3 can be tilted in the way required by any suitable means, such as by, one or other of two depending ropes 31, such ropes being each fixed to the platform at a suitable tilting point 3^a and being led to two overhead winch drums 32. These drums 32 are driven, as through gearing 33 from the shaft 34 of the winch drums 28, the arrangement being such that the two pairs of ropes 26 and 31 can be wound up and unwound at the same speed. To enable each tilting rope to be pulled upward in turn to tilt the platform 3 and car 1 about the axis of the corresponding diagonally arranged shaft 17, after the cradle 25 has been raised to the position shown in dotted lines in Fig. 4, for discharging the car, there is associated with each of such ropes, a carriage 35 mounted to run on a diagonal track 36. The carriage is provided with a rope sheave 37, arranged in the same vertical plane as the corresponding tilting rope 31, and is connected to a rope 38 that is led around suitable guide pulleys 39 to a winch drum 40. 41 and 42 are two guide sheaves journalled in the superstructure A and arranged in the same plane as the corresponding tilting rope 31. The arrangement is such that by operating either winch drum 40, the corresponding carriage 35 will be pulled along its track 36 and its sheave 37 caused to engage the corresponding tilting rope 31 at a part thereof between the guide sheaves 41 and 42 and form it into a loop 31^a, as shown in dotted lines in Fig. 1, so as thereby to raise and tilt the platform 3 about the axis of the corresponding shaft 17 and tilt the car as and for the purpose hereinbefore explained.

What I claim is:—

1. An apparatus for unloading railway cars comprising in combination, a platform on which a car is carried, a support for said platform, disengageable bearings arranged between said platform and said support at angles oblique to the axis of the former and means whereby said platform with the car thereon may be hoisted at either end selectively to tilt about the axis of one of said bearings in release from the other.

2. An apparatus for unloading railway cars comprising in combination, a platform on which a car is carried, a support for said platform, disengageable pivotal connections arranged between said platform and said support at opposite sides of the transverse center line of the platform on lines of tilting axes converging toward one side of the platform, and means for elevating said platform with the car thereon from either end selectively so as to tilt the same upon the pivotal connections on one tilting axis while disengaging from the connections on the other tilting axis.

3. An apparatus for unloading railway cars comprising in combination, a platform on which a car is carried, a support for said platform, separable bearing means arranged between said platform and said support on lines of different tilting axes oblique to the longitudinal axis of the platform and converging toward one another at one side thereof, and means for raising said platform with a car thereon from either end selectively so as to tilt the same upon the bearing means of one tilting axis while disengaging from the bearing means of the other tilting axis.

4. An apparatus for unloading railway cars comprising in combination, a platform on which a car is carried, a support for said platform, disengageable pivotal means arranged between said platform and said support along lines of different tilting axes converging obliquely of the platform axis from opposite sides of the transverse center line of the platform toward a longitudinal edge thereof so that each of said axes is substantially diagonal to the length of the platform, said pivotal means each comprising a shaft carried by the platform and receptive bearing elements carried by said support in which said shaft normally rests, and means for elevating the platform with a car thereon from either end selectively to tilt on the pivotal means of either tilting axis in release from the pivotal means of the other tilting axis.

5. An apparatus for unloading railway cars comprising in combination, a platform on which a car is carried, a support for said platform, and separable pivotal means disposed between said platform and said support on lines at opposite sides of the transverse center of the platform on which the latter may alternately fulcrum in tilting movement, said elements each comprising a

shaft carried by the platform and receptive bearing members carried by said support within which the shaft may normally rest, said shafts with companion bearing members of the pivotal means being arranged with their axes oblique to the platform and converging toward the discharging side thereof, together with means whereby the platform with a car thereon may be lifted and tilted about the axis of either shaft as a center for the purpose described.

6. Car discharging apparatus comprising a platform adapted to carry a car, a vertically movable support for said platform, diagonally arranged pivotal connections between said platform and support at opposite sides of the transverse centre line of said platform, a stationary superstructure, means whereby said support and platform can be raised and lowered in said superstructure and means whereby said platform with a car thereon can be lifted and tilted about the axis of either of said pivotal connections at will.

7. Car discharging apparatus comprising a platform adapted to carry a car, a vertically movable support for said platform, diagonally arranged pivotal connections between said platform and support at opposite sides of the transverse centre line of said platform, a stationary superstructure, hoisting and lowering ropes extending under said movable support and anchored at one end to said superstructure, winding mechanism carried by said superstructure and connected to the other ends of said ropes whereby said ropes can be wound up and unwound to raise and lower said support and platform and means whereby the platform can be lifted and tilted about the axis of either of said pivotal connections at will.

8. Car discharging apparatus comprising a platform adapted to carry a car, a vertically movable support for said platform, diagonally arranged pivotal connections between said platform and support at opposite sides of the transverse centre line of said platform, a stationary superstructure, hoisting and lowering ropes extending under said movable support and anchored at one end to said superstructure, winding mechanism carried by said superstructure and connected to the other ends of said ropes whereby said ropes can be wound up and unwound to raise and lower said support and platform, independent lifting and tilting ropes connected to said platform and means whereby either of said lifting and tilting ropes can be raised independently of the hoisting and lowering ropes, and said platform thereby lifted and tilted about the axis of either of said pivotal connections.

9. Car discharging apparatus comprising a platform adapted to carry a car, a vertically movable support for said platform, diagonally arranged pivotal connections between said platform and support at opposite sides of the transverse centre line of said platform, a stationary superstructure, hoisting and lowering ropes extending under said movable support and anchored at one end to said superstructure, winding mechanism carried by said superstructure and connected to the other ends of said ropes whereby said ropes can be wound up and unwound to raise and lower said support and platform, independent lifting and tilting ropes connected to said platform, winding mechanism connected to said lifting and tilting ropes and geared to the aforesaid winding mechanism so that the hoisting and lowering ropes and the lifting and tilting ropes can be wound up or unwound simultaneously and to an equal extent and means whereby each lifting and tilting rope can separately be pulled upward independently of its winding mechanism and the platform and a car thereon thereby lifted and tilted about the axis of one of said pivotal connections.

10. Car discharging apparatus comprising a platform adapted to carry a car, a vertically movable support for said platform, diagonally arranged pivotal connections between said platform and support at opposite sides of the transverse centre line of said platform, a stationary superstructure, hoisting and lowering ropes extending under said movable support and anchored at one end to said superstructure, winding mechanism carried by said superstructure and connected to the other ends of said ropes whereby said ropes can be wound up and unwound to raise and lower said support and platform, independent lifting and tilting ropes connected to said platform, winding mechanism connected to said lifting and tilting ropes and geared to the aforesaid winding mechanism so that the hoisting and lowering ropes and the lifting and tilting ropes can be wound up or unwound simultaneously and to an equal extent and means whereby each lifting and tilting rope can separately be pulled upward independently of its winding mechanism and the platform and a car thereon thereby lifted and tilted about the axis of one of said pivotal connections, said means comprising for each lifting and tilting rope, a pair of vertically arranged guide sheaves adjacent to the rope, a carriage, a vertical sheave mounted in said carriage and in the the same plane as the pair of sheaves and the rope and means for moving said carriage endways to cause its sheave to engage the rope between the pair of guide sheaves and form it into a loop, substantially as described.

11. An apparatus for unloading railway

ears comprising in combination, a platform on which a car is carried, a support for said platform, separable pivot and bearing members arranged on lines of tilting axes oblique to the platform at opposite sides of the transverse center line thereof between said platform and said support, means whereby the platform with a car thereon may be lifted and tilted about the axis of either of said pivot members selectively, and means for holding a car on said platform against movement in sidewise and endwise directions.

12. An apparatus for unloading railway cars comprising in combination, a tiltable platform onto which a car is run and secured, shafts carried by said platform at opposite sides of its transverse center line and in arrangement oblique to its axis with their axes converging toward one side thereof, a base, open bearing members carried on said base subjacent to and in alinement with said shafts into which the latter normally rest for supporting the platform and car thereon, and means for elevating the platform from either end selectively so as to tilt about the axis of either of said shafts.

Signed at 1 and 2 Gracechurch Street, in the city of London, England, this eighth day of October, 1926.

FREDERICK GILBERT MITCHELL.