Nov. 23, 1926. 1,608,213

J. H. HUTCHINSON

LOADING AND UNLOADING APPARATUS

Filed May 19, 1922 2 Sheets-Sheet 1

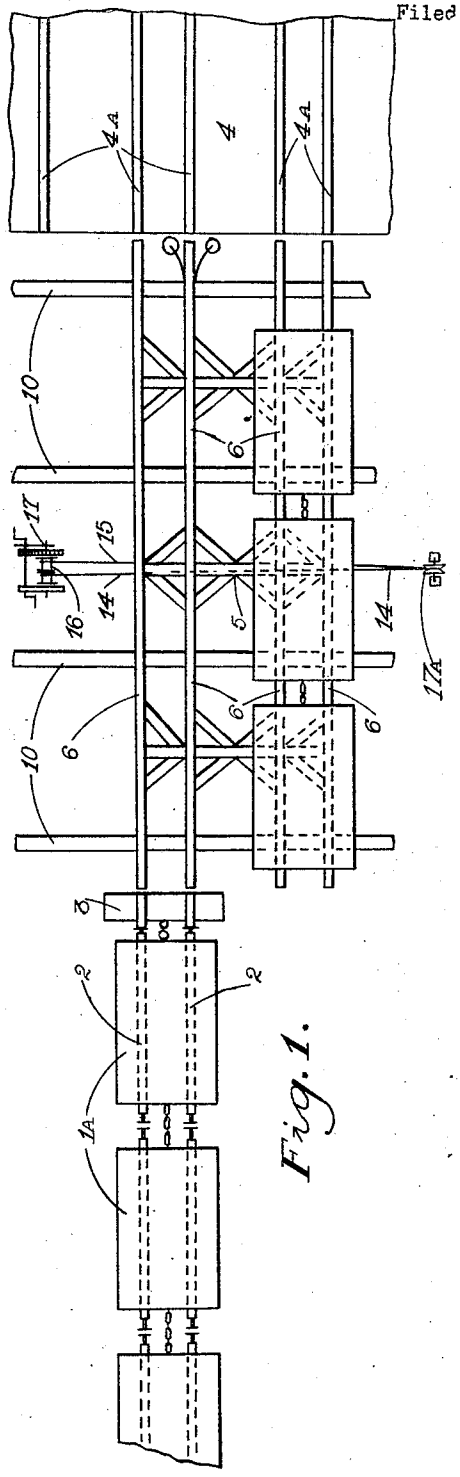


Fig. 1.

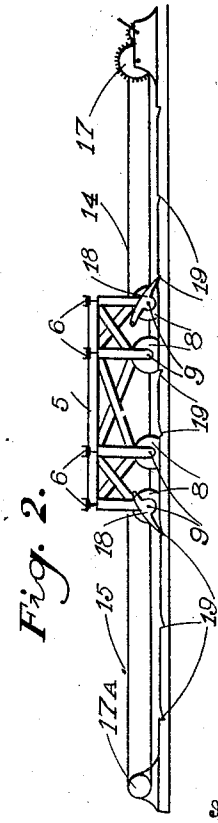


Fig. 2.

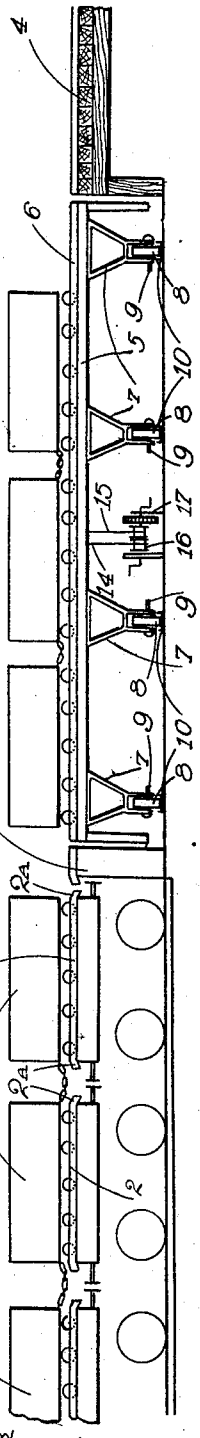


Fig. 3.

Inventor
John Harold Hutchinson
By Sewell & Son His Attys

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J. H. HUTCHINSON

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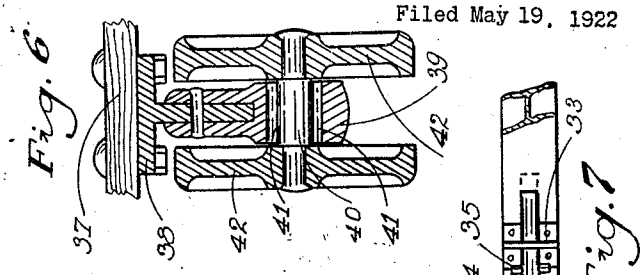


Fig. 6.

Fig. 7.

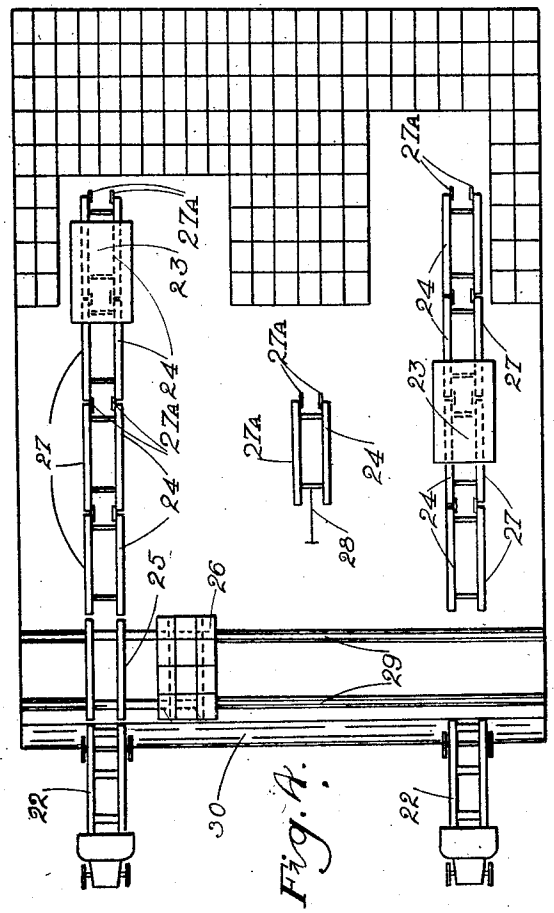


Fig. 4.

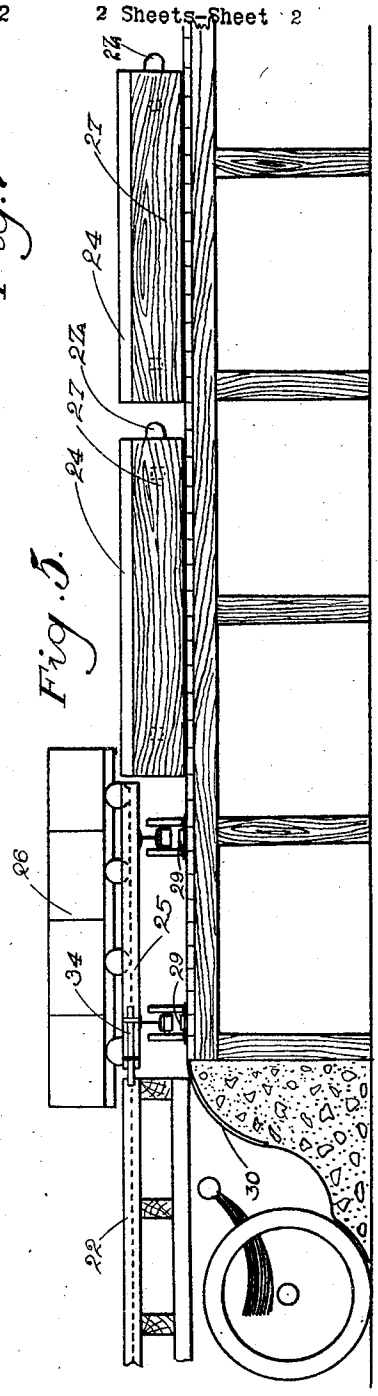


Fig. 5.

Inventor
John Harold Hutchinson
by Lemuel Ellis & Son
HIS ATTYS.

Patented Nov. 23, 1926. 1,608,213

UNITED STATES PATENT OFFICE.

JOHN HAROLD HUTCHINSON, OF PORT MELBOURNE, VICTORIA, AUSTRALIA.

LOADING AND UNLOADING APPARATUS.

Application filed May 19, 1922, Serial No. 562,166, and in Australia June 17, 1921.

This invention relates to improvements in loading and unloading vehicles, and applies particularly to mechanisms adapted to remove or replace the load carrying platforms of road or rail vehicles.

I am aware that many combinations have been devised from time to time with the object of improving transportation methods by the use of interchangeable bodies mounted on or above various types of roller systems, and also the various means devised for handling and transferring said bodies, to and from the primary carriers on road and rail systems.

In the practice of my present invention apparatus is employed for the solution of this problem, and the specific embodiment of the arrangement of the several elements thereof will be hereinafter particularly described so that others skilled in the art to which it appertains may be guided thereby.

In the drawing Fig. 1 illustrates the ground plan of a railway terminal with a double trackway "lateral body conveyor" interposed between railroad trucks and extension goods platform.

Fig. 2 is an end elevation of the lateral body conveyor shown in Fig. 1.

Fig. 3 is a side elevation of Figs. 1 and 2.

Fig. 4 illustrates the ground plan of a goods depot equipped with this invention.

Fig. 5 is an enlarged side elevation of Fig. 4 abbreviated in regard to scale.

Fig. 6 is an end sectional elevation, showing the construction and details of the roller combination evolved as best suitable for reception of superimposed wagon body constructions, and

Fig. 7 is an enlarged section of traverser rail, showing type of "adjustable synchronizing stops" preferably employed on constructions Figs. 6 and 7.

1^A shows part of a connected series of interchangeable wagon bodies mounted on guide rails 2 provided for the roller mounted body 1^A to pass longitudinally from truck to truck. The rollers (preferably attached to the body) are so distributed on their under side as to readily permit of the same bridging the gap intervening between truck and truck.

To surmount any difficulty that might otherwise arise from slight variations in the floor height of individual trucks, the ends of the trackways 2 are made to project downwardly as shown at 2^A, Fig. 3, thus providing an upward slope for the body rollers when contacting variable levels.

For loading and unloading purposes, said trucks are preferably backed up to a dead end 3. Interposed between said dead end and the goods extension platform 4 (with extension trackways 4^a shown thereon) is a lateral body conveyor 5, preferably equipped with plural trackways 6 mounted above standards 7 (Fig. 3) said standards surmounting wheels 8, preferably equipped with case hardened roller spindles inside of the bore, to enable said wheels to readily revolve around the supporting spindles 9, and thereby travel along trackways 10 placed upon the ground at right angles to the direction of the surmounting plural trackways 6. Consequently when the connected series of interchangeable truck bodies 1^A are hauled from off said trucks, in any suitable manner, on to the vacant traverser trackway fronting same, said trackway in conjunction with its adjoining duplicate holding a return series of bodies, may be mechanically operated to move to one side, by the employment of any existing mechanical means, such for instance as rack and pinion connections, or as definitely shown in Fig. 2, by reciprocating wire ropes 14 and 15, also indicated in Figs. 1 and 3, winding and unwinding around the drum 16 of a winch 17 preferably power driven, the further wire rope connection passing around a sheave pulley 17^A. Hence as one series of bodies is removed laterally away from the trucks, a return series is being brought into the vacated position, and prevented from going too far by means of adjustable stops 18, so disposed as to make their engagement with slots 19 synchronize with the exact alignment of truck trackways 2, with traverser trackways 6, or alternatively, traverser 6 with goods extension trackways 4^A. As shown in Fig. 2 the adjustable synchronizing stops 18 provided on both sides of the traverser, are of the pivotal lever type.

With reference to Figs. 4 and 5 showing the operation of this invention as applied to a goods depot or such like, 22 shows a trackway equipped motor vehicle with its empty body 23 passing along raised trackway 24 to the goods stored at rear, whilst the lateral conveyor 25 with a loaded body 26 mounted thereon is brought into alignment with the motors body carrying track-

way, on to which it is pushed or drawn, thereby releasing the road transport vehicle 22 for further service, while body 23 is being loaded to await its turn on lateral traverser for body exchanging purposes.

To permit of body loading and unloading being readily performed on any part of the depot floor, I find it essential to provide a means, for adequately distributing the pressure of the loaded body rollers over the floor boards of existing buildings, and also of raising said trackway extensions to the level of the trackways provided on lateral conveyor 25. To this end I find it preferable to employ a number of slidable loading and unloading extension supports 27, constructed preferably of timber, with suitable metal trackways attached to the upper part thereof, for the guidance of interchangeable body rollers.

As a difficulty will arise (as the available floor space becomes limited by the stacking thereon of the incoming goods) if the slidable loading and unloading supports 27 were made in one length, it is therefore obvious that I overcome this encumbrance, by constructing them in short sections, thereby also making them more wieldy for an employe to drag into position, by means of a detachable pulling bar 28 which may be readily hooked into staples or the like (not shown) provided on the side and ends of each short section, (side guides for articulated alignment shown at 27A) thus with a minimum of labor permitting of an articulated trackway extension of any length, being formed by placing any number of short slidable supporting frames, endways on to each other, to permit of the bodies being readily removed without any risk of crushing through the floor boards to or from any part of the floor area, to or from the lateral traversing conveyor 25, which is adapted to transversely convey the bodies over the center bar guide trackways 29 secured to the floor, a lift (not shown) being readily installed, when necessary for transmitting the interchangeable wagon bodies to and from intermediate floors.

Fig. 7 shows a broken section of a traverser side member, illustrating the construction and operation of a simple type of adjustable synchronizing stop, provided for halting the aforesaid body traverser instantaneously when its trackways are in alignment with the trackways of such primary road vehicles alternately, as may be employed abreast of one another, along the whole front, the elevation of the rear end of said spring equipped motor vehicles, being easily and quickly accomplished, by abruptly forcing the said rear end of the chassis (see Fig. 5) against the steel face 30, which advisedly extends along the whole front of a stationary goods receiving platform of the above kind, thus permitting one or more plural traversers to receive and exchange bodies between several primary vehicles, operating simultaneously along the same loading and unloading frontages of the depot, thereby avoiding the delay of otherwise having to await their turn for effecting an exchange of bodies.

The form of adjustable stop used in the above connection may be of the sliding rod type, shown on the enlarged section of trackway illustrated. The two outside trackway members of the traverser having attached thereto (preferably to the outer flanges thereof) a pair of guide brackets 33 carrying a rigid bar 34 adapted to be pushed back or forth as required, to the limits allowed by the check pins 35, thus when said sliding bar is projected forward, as indicated by dotted lines, and the traverser moved along the depot front, said bar will engage with the rear side (Fig. 5) of a corresponding trackway frame, carried by the primary vehicle, thereby precluding the possibility of time being lost, through body transferences being delayed by the necessity of otherwise having to sight, in order to obtain adjustments for securing each separate trackway alignment.

As illustrating the type of roller construction which I have devised as being productive of the best results for ensuring easy interchangeability of primary vehicle bodies, reference will now be made to Fig. 6, showing an end sectional elevation of this preferred means, wherein 37 is a broken section of a body floor mounted upon a longitudinal body supporting bar 38, the number of said bars being preferably limited to two, said bars having attached at suitable intervals throughout their length, cast steel clip bearings 39 carrying a short stub spindle 40 surrounded by case hardened anti-friction rollers 41, whilst driven on to the two ends of the stub spindle 40, are a pair of small diameter cast steel wheels 42, machined accurately on the periphery to ensure a smooth and easy transmission of the loaded bodies, said wheels being preferably riveted to aforesaid stub spindles 40.

The special feature of this construction is the division of concentrated load stresses, centrally between the supporting rollers, thus ensuring a unique flexibility, coupled with great strength.

I claim as my invention:

1. In a loading and unloading apparatus, a platform having a side adapted for vehicles to back against, the said vehicles having removable bodies, a carriage movable adjacent the side of the platform and substantially parallel therewith and adapted to receive a vehicle body, and a movable bolt in the said carriage adapted when the carriage is in a predetermined position to contact

with a vehicle to stop the carriage in a position in which the same is aligned with the vehicle so that the vehicle body may be moved directly from its vehicle to the said carriage.

2. In a loading and unloading apparatus, a raised platform having a side adapted for vehicles to back up against, each of the said vehicles having a fixed body portion and a removable body portion, tracks on the said platform running adjacent the side thereof, a carriage mounted on the said tracks and adapted to receive the removable body portion of a vehicle, and a movable bolt on the said carriage adapted to contact with the fixed portion of a vehicle body to stop the travel of the carriage and to align the same with the vehicle so that the removable portion of the body of the vehicle may be moved therefrom directly to position on the said carriage.

3. In a loading and unloading apparatus, a platform having a side adapted for vehicles to back up against, each of the vehicles having a fixed body portion and a removable body portion, sets of wheels upon which the movable body portion of each vehicle is mounted, tracks upon the fixed body portion of the vehicle and upon which the sets of wheels of the removable body portion of the vehicle are mounted and adapted to run, a track on the platform adjacent the side thereof and substantially parallel thereto, a carriage mounted on wheels adapted to run on the said track on the platform, and a bolt shiftable to position in the said carriage and adapted to contact with the fixed body portion of a vehicle to stop the travel of the carriage to align the carriage with the vehicle so that the movable body portion of the vehicle may be run off the same directly on to the said carriage.

4. In a loading and unloading apparatus, a raised platform having a side against which vehicles may back up, each of the vehicles having a fixed body portion and a removable body portion, wheels on the removable body portion of each vehicle, rails on the fixed body portion of each vehicle upon which the wheels of the removable body portion run, a track on the said platform adjacent the side thereof, a carriage mounted on the said track and adapted to receive a removable body portion of a vehicle, and a bolt shiftable to and from position in the carriage and adapted to contact with the fixed body portion of a vehicle to arrest the travel of the carriage in a position in which the same is aligned with the vehicle so that the removable body portion of the vehicle may be moved directly from the fixed body portion thereof to a position on the said carriage.

5. In a loading and unloading apparatus, a raised platform having a side against which vehicles may back up, each of the vehicles having a fixed body portion and a removable body portion, wheels upon which the removable body portion of each vehicle is mounted, rails on the fixed body portion of each vehicle and upon which the wheels of the removable portion of the body run, a track mounted on the said platform running adjacent the side thereof and substantially parallel thereto, a carriage, wheels upon which the carriage is mounted and which run on the track on the platform, rails on the said carriage, and a bolt shiftable to position in the carriage and adapted when the carriage reaches a predetermined position to contact with the fixed body portion of a vehicle to stop the carriage in a position in which the rails on the carriage are in alignment with the rails on the fixed body portion of the vehicle whereby the removable body portion of the vehicle may be run therefrom directly to the said carriage.

In testimony whereof I have signed my name to this specification.

JOHN HAROLD HUTCHINSON.