June 29, 1937. A. P. R. PORTE 2,085,329

DEVICE FOR THE LOADING AND UNLOADING OF WHEELED LOADS ON RAILWAY CARS

Filed Dec. 12, 1934 2 Sheets-Sheet 1

Fig. 1

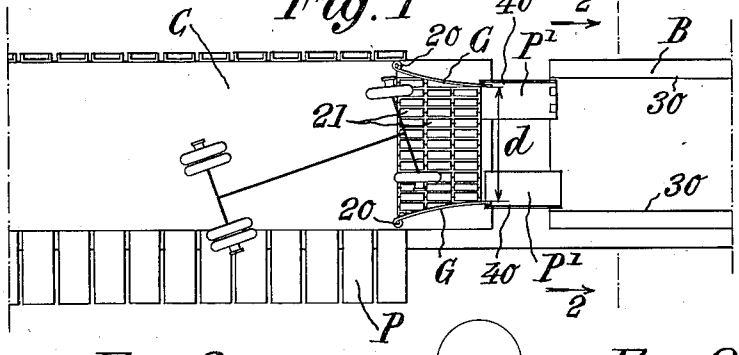


Fig. 2

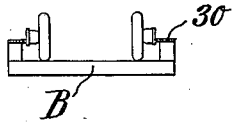


Fig. 3

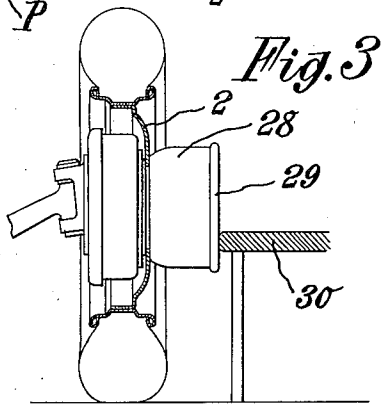


Fig. 4

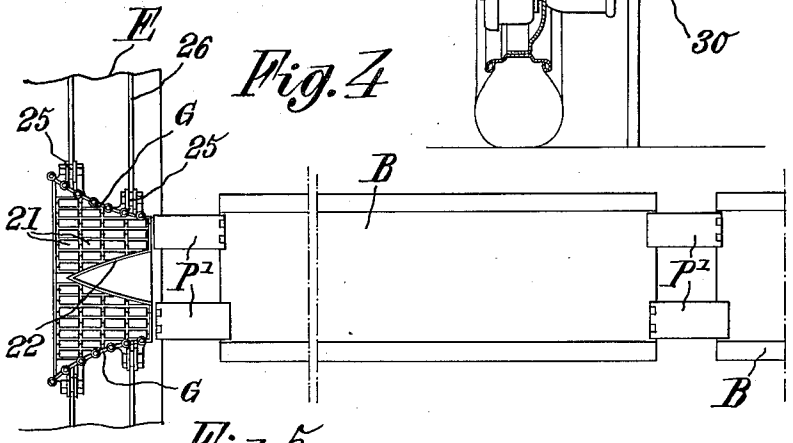


Fig. 5

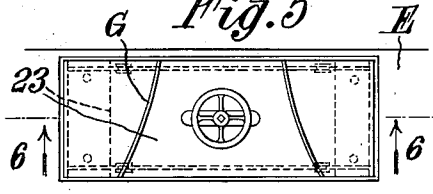


Fig. 7

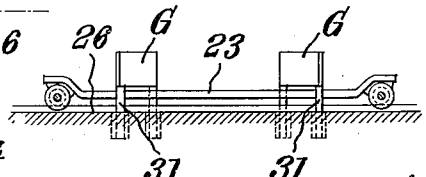
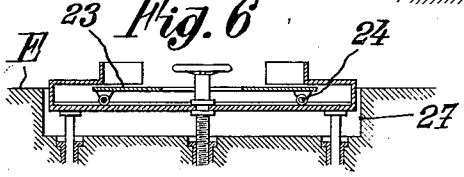


Fig. 6



Antoine Paul Rene Porte
INVENTOR

BY Mock & Blum
ATTORNEYS

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Fig. 8.

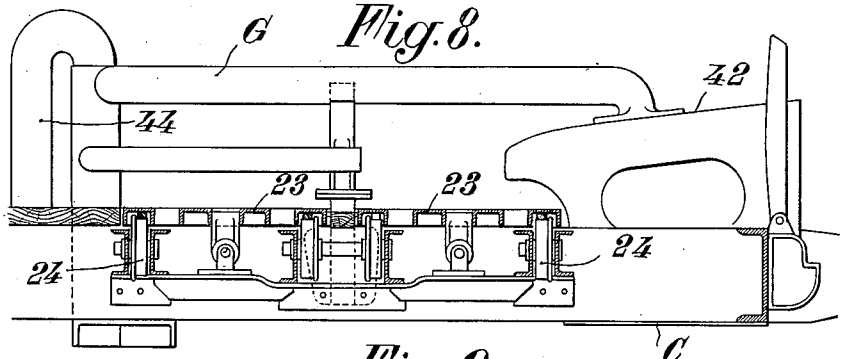


Fig. 9.

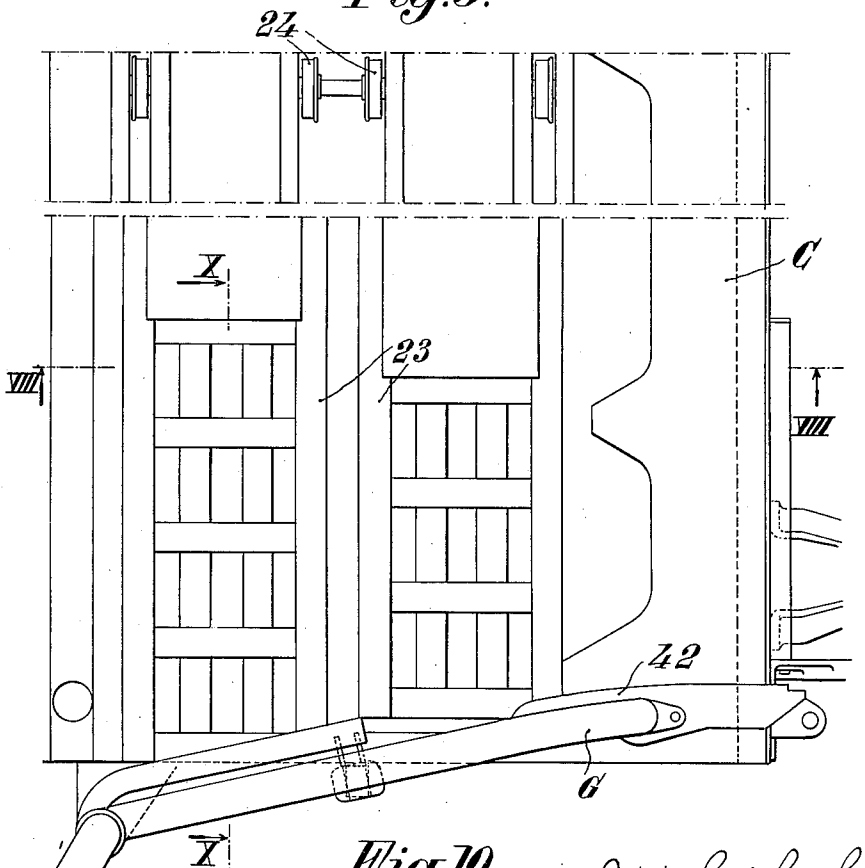
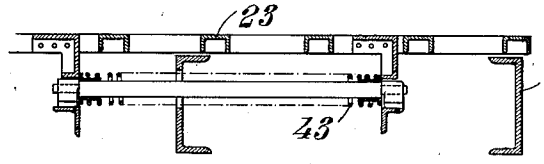


Fig. 10.



Antoine Paul Rene Porte
INVENTOR
BY Mock & Blum
ATTORNEYS

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DEVICE FOR THE LOADING AND UNLOADING OF WHEELED LOADS ON RAILWAY CARS

Antoine Paul René Porte, Les Ordonnieres, near La Ferte-Imbault, France, assignor to Societe pour l'Union des Transports Ferroviaires et Routiers, Paris, France, a corporation of France

Application December 12, 1934, Serial No. 757,088
In Belgium December 13, 1933

9 Claims. (Cl. 214—38)

The present invention relates to devices for the loading and unloading of wheeled loads on railway cars. It is more especially, although not exclusively, concerned with devices of this kind in which the load consists of a vehicle adapted to run on roads (passenger cars, motor lorries, tractors, trailers, containers, etc.).

The object of the present invention is to provide a superior device of this kind, in particular, a device which will facilitate the transfer of the load between the railway platform and the railway car, or between a car forming a loading structure and the railway car to be loaded, and which will reduce accidents.

According to the present invention, the loading structure, which, as above stated, may consist of a railway platform, a loading car, or the like, is provided with guiding means against which the wheels, or any other part, of the vehicle to be loaded on the railway car can slide during the transfer between said loading structure and said railway car. Furthermore, these guiding means are preferably combined with means, movable on said loading structure in a direction transverse to said guiding means, for supporting the vehicle to be loaded on the railway car as it slides along said guiding member while moving between said loading structure and said railway car. With this arrangement the lateral slipping displacements of the vehicle wheels as they slide along said guiding means develop but small frictional stresses, so that there is no risk of the vehicle wheels running over said guiding means.

The supporting means above referred to may, for instance, consist of a plurality of rollers journalled on said loading structure and having their axes substantially parallel to the longitudinal axis of the railway car. Or, according to another embodiment of the invention, said supporting means consist of a plate slidable on said supporting structure in a direction transverse to said guiding means.

These, and other, features of the present invention are described in the following detailed description of some specific embodiments of said invention.

Preferred embodiments of the present invention will be hereinafter described, with reference to the accompanying drawings, given merely by way of example, and in which:

Fig. 1 is a diagrammatic plan view showing two railway cars, one of which is a loading car while the other one is the car on which a road vehicle is to be conveyed, the loading car being provided with the device according to the present invention, for the loading (or unloading) of the road vehicle;

Fig. 2 is a cross sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional view showing, on a larger scale, specific means for guiding a wheel of the road vehicle on the railway car on which it is loaded;

Fig. 4 is a plan view showing a railway platform, a railway car having one of its ends located adjacent to said platform, and a device according to the present invention for the transfer of a road vehicle between the platform and the railway car;

Fig. 5 is a plan view of a similar device made according to another embodiment of the present invention;

Fig. 6 is a vertical sectional view on the line 6—6 of Fig. 5;

Fig. 7 is a vertical sectional view analogous to that of Fig. 6, but corresponding to another embodiment of the invention;

Fig. 8 is a vertical longitudinal section of still another embodiment of the device according to the present invention;

Fig. 9 is a composite plan view (some elements being supposed to have been removed in a portion of said view) corresponding to Fig. 8;

Fig. 10 is a vertical sectional view on the line 10—10 of Fig. 9.

According to the present invention, the railway car B on which a road vehicle is to be loaded (or from which a road vehicle is to be unloaded), includes a platform adapted to receive said road vehicle, and which may be either covered or uncovered. This railway car may be of any type whatever. For example, its platform may be planar, the road vehicle being fixed thereon through any suitable means. Or, alternately, said car platform may be provided with means for guiding, and therefore fixing in the transverse direction, said road vehicle on said platform. These means may consist, for example of longitudinal rails on which rollers which are carried by the road vehicles are adapted to run. Said rollers, for example, may be carried by the ends of the axles of the wheels of said vehicles. Alternately, as shown by Figs. 1 to 3, these means may consist of longitudinal guiding members 30 mounted along either side of platform B and adapted to cooperate with members 28, 29 which are carried by the wheels 2 of the road vehicle.

The road vehicle is transferred onto the railway car B by which it is to be carried, by means of a loading structure, the arrangement and

location of which with respect to the railway track depends on the position which the road vehicle is to be given on the railway car B. In the following description it will be supposed that the road vehicles are disposed longitudinally with respect to the railway cars. It will be readily understood that, in this case, it is advantageous to load the road vehicle onto the railway car through one of the ends thereof that is to say, in a direction parallel to the railway tracks. In this case, the loading structure may be a railway platform at right angles to the tracks, as shown at E in Fig. 4. The loading structure may be a loading car such as shown at C in Fig. 1. In the latter case, this loading car is brought end to end with the loading car B and it may be provided with panels P adapted to be swung down upon a lateral railway platform so that a road vehicle can be loaded obliquely onto said loading car from said lateral railway platform.

A connection is established between the platform of the railway car B and the surface of the loading structure by means of bridge elements P^1, carried, for example, by said car and said loading structure respectively. Also, as shown in Fig. 4, other bridge elements P^1 may be provided between the various carrier cars B placed one behind the other, so that it is possible to move the road vehicle successively along said cars B. As shown by Fig. 1, these bridge elements P^1 may be provided with guards 40.

It will be understood that whether the loading structure is a loading car or a railway platform, it is necessary to bring the road vehicle into correct position with respect to the railway car on which it is to be loaded.

For this purpose, said loading structure is provided with guiding means G against which the wheels of the road vehicle slide during the transfer between the loading structure and the railway car. Furthermore, the surfaces on which the wheels of the road vehicle move while they are being guided by said guiding members, are preferably so devised that the lateral slipping movements of said wheels which result from their being guided by said guiding members produce but relatively small frictional stresses, preferably rolling friction stresses.

The guiding members G above mentioned, may consist of sheet metal bands of suitable height, as shown in Fig. 1.

These guiding members may also consist of tubular elements carried by suitable upright members, as shown by Figs. 8 and 9.

The structure of guiding members G is not limited to these examples, as they might, for instance, consist of a plurality of juxtaposed rollers, preferably turnable about vertical axes, or said guiding members may be made in any other suitable manner.

Likewise, these guiding members G may be so arranged as to make it possible to adjust the distance *d* between the ends of said guiding members that are nearer to railway car B. For example, these guiding members may be pivotally mounted about vertical axes 20 (Fig. 1).

I have disclosed several embodiments of the means for reducing the frictional stresses caused by the transverse slipping or movement of the wheels of the road vehicle resulting from the guiding of said wheels by members G. This slipping may be relatively important for the rear wheels, since the vehicle is generally disposed obliquely with respect to the longitudinal axis of railway car B when said rear wheels come into contact with said guiding members G.

In the embodiment of Figs. 1 and 4, the means for reducing the frictional stresses caused by the slipping of the wheels of the road vehicle consist of a plurality of rollers 21 having horizontal axes substantially parallel to the longitudinal axis of car B, and extending either over the whole surface between guiding members G (Fig. 1) or only over a portion of said surface (Fig. 4) the remainder of said surface being occupied by a tapered axial member 22.

In the embodiment shown in Figs. 5 and 6, the supporting surface between guiding members G consists of a plate 23, mounted on rollers 24 adapted to run on corresponding rails or in corresponding grooves which extend at right angles to the longitudinal axis of car B.

In the embodiment of Figs. 8 to 10, the arrangement is of the same kind. The loading car includes for example, two plates 23 which rest on rollers 24, which are carried by the railway car. These plates are preferably of the flanged type and they may be provided, in their median parts, with recesses.

As shown in Figs. 8 and 9, guiding members G may be provided with complementary guiding members 44 extending in their operative position between said members G and a railway platform (not shown) from which the vehicles to be loaded are brought onto the loading car. Said members 44 are swingably arranged and may be swung against the loading car to be moved into their inoperative position.

When the device made according to the present invention is mounted on a loading car, it may be rigidly mounted on said car or it may be movably carried by said car, but the second arrangement does not seem to have any special advantage over the first one.

When the device made according to the present invention is mounted on a railway platform it is obviously advantageous to have it so arranged that it may be readily moved out of the way or shifted.

For example, as shown in Fig. 4, the whole device is provided with wheels 25 so as to form a carriage movable on transverse rails 26.

In the embodiment of Figs. 5 and 6 the whole device is movable vertically with respect to the railway platform, so that it may be lowered down into a pit 27. This movable arrangement is not necessarily made as shown by Figs. 5 and 6: the device might be supported by a traveling crane.

With these arrangements, the device made according to the present invention can be brought into an inoperative position in which the railway platform is free so that it can therefore be utilized for other loading or unloading operations of a different kind.

I may also, as shown by Fig. 7, combine the arrangements of Figs. 4 and 5. In this case, the movable plate 23, intended to support the wheels of the road vehicle while they are being guided by members G constitutes a carriage adapted to run on rails 26. The guiding members G are carried on a kind of frame adapted to be temporarily fixed on a railway platform, for instance by means of members 31 engaging in holes provided in said platform, without interfering with the displacements of the carriage.

When movable plates such as 23 are utilized, springs 43 (Fig. 10) are advantageously pro-

vided for urging said plates **23** toward their intermediate position.

When the railway cars intended to carry the road vehicles are provided with longitudinal rails, as above mentioned, I may provide, on the loading structure (loading car or railway platform), rail elements arranged to be aligned with said longitudinal rails. For instance, as shown by Figs. 8 to 10, guiding members G are carried by rail elements **42**, which will be connected with the longitudinal rails of the car which are intended to carry the road vehicle, by means of movable rail portions analogous to bridge elements P^1.

Whatever be the embodiment that is chosen, the device according to the present invention makes it possible to easily transfer a vehicle from the loading structure to the railway car, or conversely, whether this vehicle is an automobile vehicle or a trailer. In the latter case, the loading operation will be performed by causing the trailer and its tractor to move backwards onto the loading car (when such a car is used) and then engaging the trailer between guiding members G, so that it is guided onto the car B that is to carry it, after which the trailer may be detached from the tractor.

If, for example, plates such as **23** are utilized, the trailer, if its wheels come into contact with guiding members G, is set in the desired direction by said members, the slipping of the wheels produced by this guiding action taking place without any material friction since plates **23** are slidable on rollers **24**.

While I have, in the above description, disclosed what I deem to be practical and efficient embodiments of the present invention, it should be well understood that I do not wish to be limited thereto as there might be changes made in the arrangement, disposition and form of the parts without departing from the principle of the present invention as comprehended within the scope of the accompanying claims:

What I claim is:

1. A device for the transfer of a wheeled load from a loading structure onto a railway car positioned adjacent to said loading structure, which comprises, in combination, two vertical load guiding members carried by said loading structure transversely to the edge thereof which is adjacent said railway car, and a plurality of rollers, having their axes substantially horizontal and at right angles to said edge, journalled in said loading structure, between said guiding members, for supporting the load during its sliding movement along at least one of said guiding members towards the railway car.

2. A device according to claim 1 in which said rollers occupy the whole of the space between said guiding members.

3. A device according to claim 1 in which said rollers occupy only a portion of the space between said guiding members, and including a member occupying the remainder of said space.

4. A device for the transfer of a wheeled load from a loading structure onto a railway car positioned adjacent to said loading structure, which comprises, in combination, rails on said loading structure parallel to the edge thereof which is adjacent said car, a carriage movably supported by said rails, two vertical load guiding members carried by said carriage transversely to said edge, and a plurality of rollers, having horizontal axes substantially at right angles to said edge, journalled in said carriage, between said guiding members, for supporting the load during its sliding movement along at least one of said guiding members on its way to the railway car.

5. In a device for the transfer of a wheeled load from a loading structure onto a railway car positioned adjacent to said loading structure and provided with longitudinal guiding rails adapted to cooperate with corresponding elements of the wheeled load, the combination of two vertical load guiding members carried by said loading structure transversely to the edge thereof which is adjacent said railway car, rail elements connected to said guiding members and adapted to be aligned with said longitudinal rails of the railway car, and means carried by said loading structure between said guiding members and movable in a direction transverse to said guiding members for supporting the load during its sliding movement along at least one of said guiding members towards the railway car.

6. In a device for the transfer of a wheeled load from a loading structure onto a railway car positioned adjacent to said loading structure and provided with longitudinal guiding rails adapted to cooperate with corresponding elements of the wheeled load, the combination of two vertical load guiding members carried by said loading structure transversely to the edge thereof which is adjacent said railway car, the distance between the ends of said guiding members adjacent to said railway car corresponding to the gauge of said longitudinal guiding rails, means extending between said loading structure and said railway car so as to bridge the space therebetween for permitting rolling of the wheeled load from the loading structure onto the railway car, and means carried by said loading structure between said guiding members and movable in a direction transverse to said guiding members for supporting the load during its sliding movement along at least one of said guiding members towards the railway car.

7. In a device for the transfer of a wheeled load from a loading structure onto a railway car positioned adjacent to said loading structure and provided with longitudinal guiding rails adapted to cooperate with corresponding elements of the wheeled load, the combination of two vertical load guiding members carried by said loading structure transversely to the edge thereof which is adjacent said railway car, the distance between the ends of said guiding members adjacent to said railway car corresponding to the gauge of said longitudinal guiding rails, rail elements connected to said guiding members and adapted to be aligned with said longitudinal rails of the railway car, said rail elements having inclined upper surfaces, and means carried by said loading structure between said guiding members and movable in a direction transverse to said guiding members for supporting the load during its sliding movement along at least one of said guiding members towards the railway car.

8. In a device for the transfer of a wheeled load from a loading structure onto a railway car positioned adjacent to said loading structure and provided with longitudinal guiding rails adapted to cooperate with corresponding elements of the wheeled load, the combination of two vertical load guiding members carried by said loading structure transversely to the edge thereof which is adjacent said railway car, the distance between the ends of said guiding members adjacent to said railway car corresponding to the gauge of said longitudinal guiding rails, means extending

between said loading structure and said railway car so as to bridge the space therebetween for permitting rolling of the wheeled load from the loading structure onto the railway car, roller means arranged in said loading structure, and a plate carried by said roller means between said guiding members and movable in a direction transverse to said guiding members for supporting the load during its sliding movement along at least one of said guiding members towards the railway car.

9. In a device for the transfer of a wheeled load from a loading structure onto a railway car positioned adjacent to said loading structure and provided with longitudinal guiding rails adapted to cooperate with corresponding elements of the wheeled load, the combination of two vertical load guiding members carried by said loading structure transversely to the edge thereof which is adjacent said railway car, the distance between the ends of said guiding members adjacent to said railway car corresponding to the gauge of said longitudinal guiding rails, means extending between said loading structure and said railway car so as to bridge the space therebetween for permitting rolling of the wheeled load from the loading structure onto the railway car, and means carried by said loading structure between said guiding members adapted to support the load and to impart to the latter a rolling movement in a direction transverse to said guiding members during the sliding movement of the load along at least one of said guiding members towards the railway car.

ANTOINE PAUL RENÉ PORTE.