April 28, 1959 J. E. WALKER 2,883,945

RAILROAD CAR

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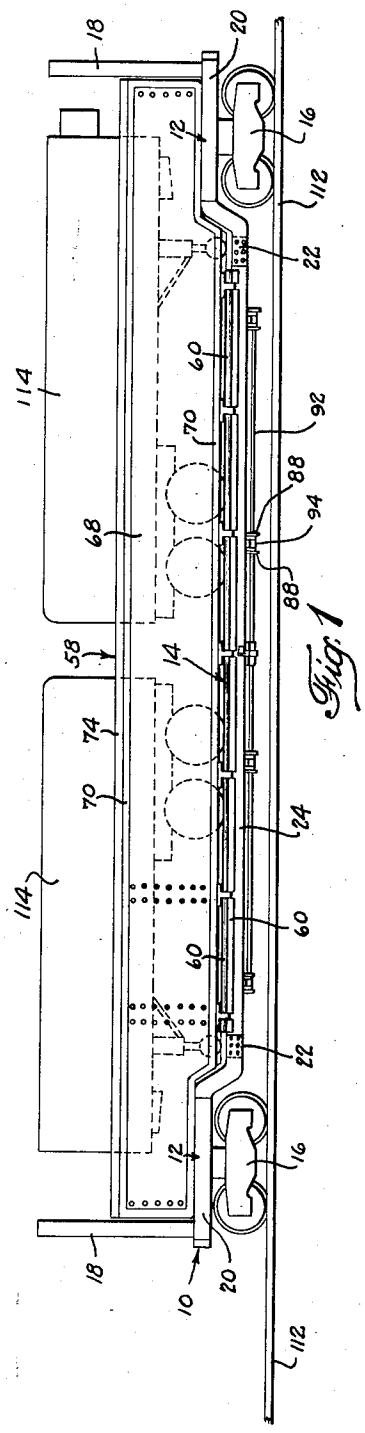


Fig. 1

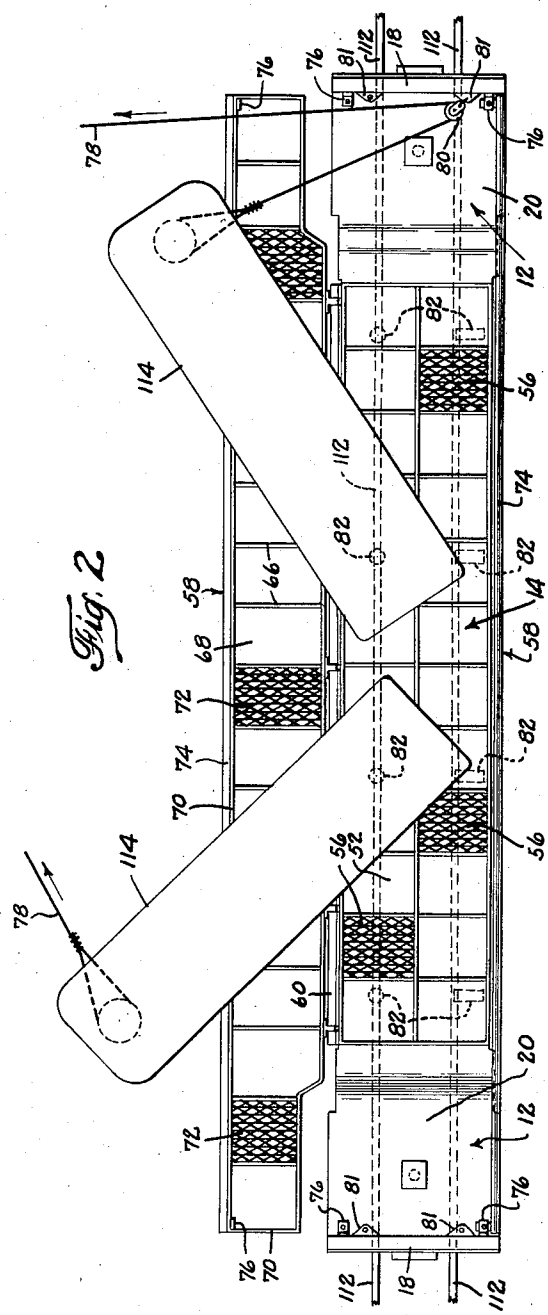


Fig. 2

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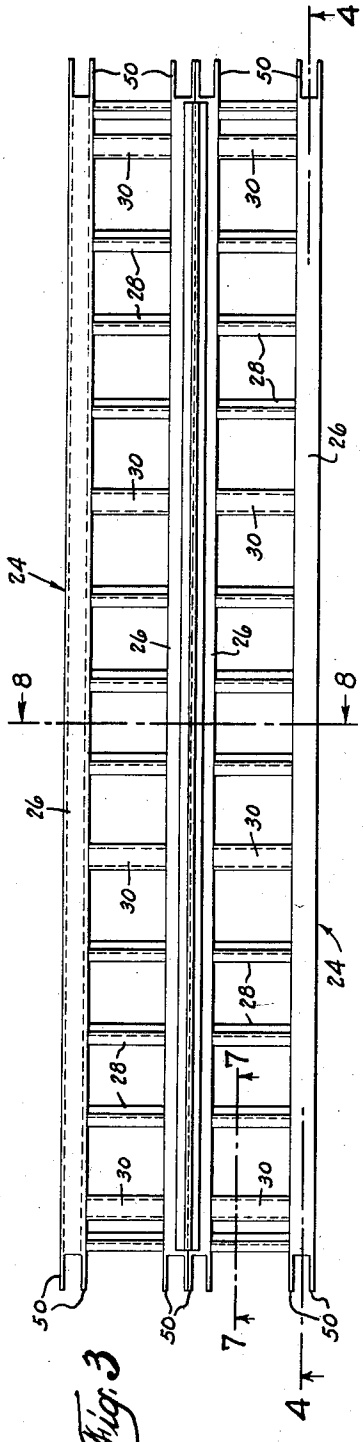


Fig. 3

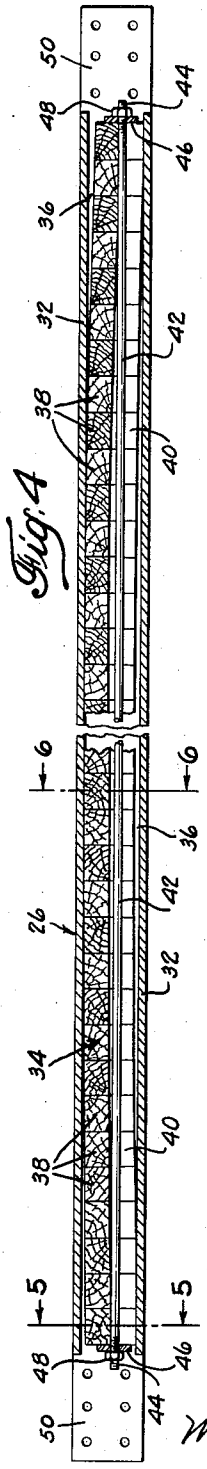


Fig. 4

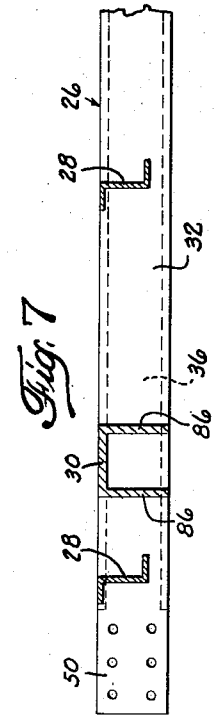


Fig. 7

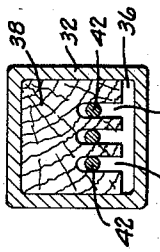


Fig. 6

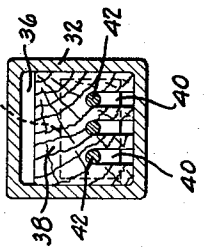


Fig. 5

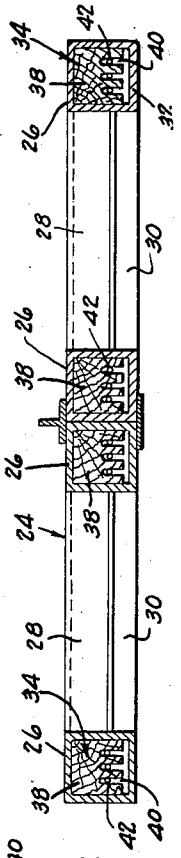


Fig. 8

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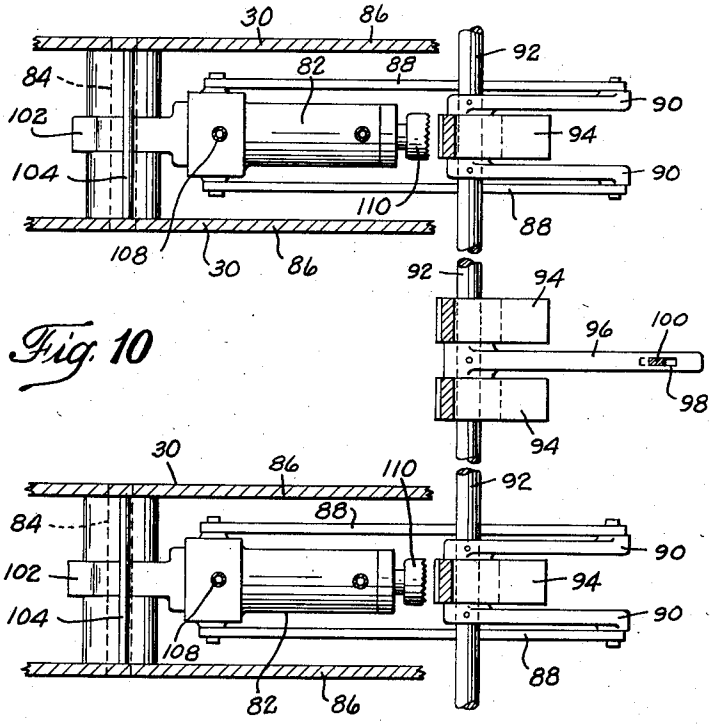


Fig. 10

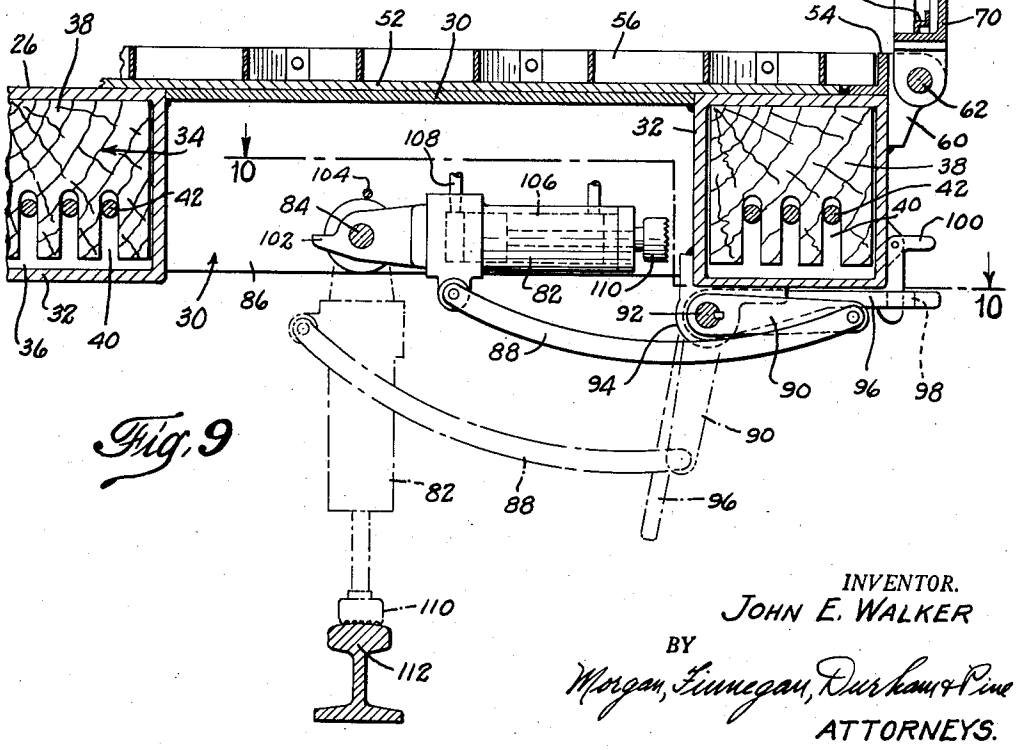


Fig. 9

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United States Patent Office

2,883,945

Patented Apr. 28, 1959

2,883,945

RAILROAD CAR

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Application November 18, 1954, Serial No. 469,770

7 Claims. (Cl. 105—368)

The invention relates to railroad cars and more particularly to railroad cars for carrying automotive truck trailers and the like.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Although in the past two decades several railroads have built up a profitable business in transporting fully loaded automotive truck trailers there still remains a vast amount of potential trailer business which has not been realized because the costs of such transportation have prevented the railroads from lowering rates to the point necessary to attract prospective customers. The chief obstacle to lower costs has been the difficulty of obtaining the proper kind of railroad car for this type of business. Ordinary flat cars do not have sufficient carrying capacity to permit a reduction in rates and, can only be loaded by the use of special terminals having platforms or by other special equipment, all of which add substantial fixed costs to the railroad's operating expense. Several attempts have been made to develop a car that would not have these drawbacks but none have been completely successful in achieving sufficient carrying capacity without requiring special loading and unloading facilities and apparatus.

It is, therefore, the object of the present invention to provide a railroad car which will have a large carrying capacity and one which may be utilized in carrying either a plurality of loaded truck trailers or general consist. A further object of the invention is to provide a trailer-carrying railroad car that can be loaded and unloaded without requiring the use of expensive terminals, platforms or apparatus and at any point in the track system whether in congested marshalling yards or not, or at any siding or main line right of way. Still another object of the invention is to provide a trailer-carrying car that will be able to accommodate trailers of large size and great height without exceeding the amount of clearance normally provided throughout track systems. Additionally, the invention has for its object the provision of auxiliary equipment on the car to support the car and to prevent tipping and swaying during loading or unloading operations.

The aforementioned objects are achieved in the applicant's railroad car which briefly comprises a flat platform having a depressed relatively long central section adapted to accommodate two large truck trailers or three smaller trailers. Because of the depression, the central section

of the car rides within a few feet of the track. To support the section a plurality of longitudinal supporting members, or beams, are provided and fixedly joined to the end portions of the platform. Each beam is prestressed to impart great strength against the loads imposed on the section and in preferred form comprise hollow box beams with prestressed cores. In order to facilitate the loading and unloading of the car the platform is provided with sides that are hinged to the platform so as to be capable of being raised and lowered, the sides being provided with stiffening members so as to be capable of serving as ramps. At either end the sides are joined to the end walls of the car and with the walls serve to strengthen the car. Bridge grating is secured to the central section of the platform and the sides to provide traction for the trailers. A series of jacks are pivotably mounted to the underside of the central section and positioned over the tracks. When the sides are lowered the jacks are pivoted to a vertical position and engage the upper surfaces of the tracks so as to support the platform and to prevent tipping of the car during loading and unloading.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Of the drawings:

Fig. 1 is a side elevation of applicant's railroad car showing the car in a loaded condition,

Fig. 2 is a plan view showing one side lowered and the method of loading and unloading the car,

Fig. 3 is a plan view of the supporting structure for the central section of the car,

Fig. 4 is a sectional view through a longitudinal beam,

Fig. 5 is a sectional view taken along line **5—5** in Fig. 4 looking in the direction of the arrows,

Fig. 6 is a sectional view taken along the line **6—6** in Fig. 4 looking in the direction of the arrows,

Fig. 7 is a sectional view taken along the line **7—7** in Fig. 3 looking in the direction of the arrows,

Fig. 8 is a sectional view taken along the line **8—8** in Fig. 3 looking in the direction of the arrows,

Fig. 9 is a sectional view through a portion of the car showing the construction of the body and a side, and

Fig. 10 is a view, partly in section, taken along the line **10—10** in Fig. 9 looking in the direction of the arrows.

Referring now to the drawings for a detailed description of a preferred embodiment of the invention, there is shown in Fig. 1 a railroad car **10** constructed in accordance with the teachings of the applicant's invention. The car **10** generally resembles the standard gondola type of railroad car except that the length of the car is very much greater and the flat platform **12** which forms the bottom thereof is provided with a relatively long central depressed section **14**. At each end of the car the platform is secured to wheel trucks **16** and is provided with end walls **18** in the form of substantially solid members. The end portions **20** of the car are of the usual construction encountered in flat cars having depressed centers and at the inner ends **22** these end portions are joined to a supporting structure **24** for the central portion **14** of the platform **12**.

The supporting structure **24** for the central portion of the platform preferably comprises a plurality of longitudinal supporting members **26**, or beams, which run the entire length of the depressed section and which are rigidly joined to one another by means of laterally Z-shaped beams **28** spaced at regular intervals throughout the length of the section. Additionally, the beam members **26** are re-inforced and strengthened by the provision of four U-shaped lateral channel beams **30**. Each of the

longitudinal beams 26 is strengthened by being placed in a stressed or pre-loaded condition which has the tendency to deflect the beam in a direction opposite to that of the load to be imposed upon the beam. Such pre-stressing of the beam may assume a variety of forms, however, the applicant prefers to pre-load the longitudinal beams by constructing them in the form of hollow box beams 32 and providing the beams with pre-stressed cores 34. Inserted within the hollow portion 36 of each beam 32 are a plurality of rectangularly shaped wooden blocks 38 constituting a reinforcing member having substantially vertical slots 40 formed therein and connecting with the under or lower sides of the blocks 38. A long steel cable or wire 42 is inserted within each slot 40 in the wooden blocks and is provided at either end with a threaded portion 44 adapted to extend through openings in a steel plate 46 in abutting engagement with the end blocks. Nuts 48 are threaded onto the ends of the steel wires 42 and are tightened so as to force the plates 46 to exert a compressive load on the blocks 38 within the beam 32. As the steel wires in the slots are positioned below the geometric center of the blocks such a compressive load on the blocks causes them to assume an arch-like position within the beam with the center-most group of blocks assuming the highest position. This arch-like position of the block imparts to the beam great resistance to the bending load placed on the beams when the central section of the platform bears the weight of the goods being transported. Each of the longitudinal beams 32 is provided with extensions 50 at their ends adapted to receive correspondingly shaped projections on the end portions of the platform to which they are joined by riveting or welding. A series of steel plates 52 is placed over this supporting structure so as to form a floor for the section. On the outer edges of the outer longitudinal beams 32 the central section is provided with angle bars 54 (Fig. 9) which form side members for the floor and sections of bridge or sub-way grating 56 are secured to the top of the steel plates 52 and joined thereto as by spot welding.

The sides 58 of the car are hinged to the platform 14 so as to be capable of being raised and lowered. In raised position, the sides constitute plate truss girders strengthening the car construction. To this end each outer longitudinal beam 32 is provided with brackets 60 having openings therein to receive a long shaft 62 which acts as a hinge for the sides. The sides comprise a plurality of vertical T-shaped members 64 having transverse stiffening members 66 mounted therebetween. The outer surface of each side is made up of steel plate 68 riveted to the flange on the vertical T-shaped members while the upper and lower edges of the side are formed from angle bar 70 and are secured to the T-shaped members and the steel plate by welding or other suitable means. Bridge or subway grating sections 72 are secured between adjacent T-shaped members 64 and lie against the transverse stiffening members 66 so as to be flush with the edges of the angle bars 70 forming the upper and lower edges of the sides. Another angle bar 74 is welded to the upper edge of each side so as to facilitate the backing of truck trailers onto the side. When the sides are in their raised position they are secured to the end walls by means of long spikes inserted in brackets 76 mounted on the sides 58 and the end walls 18. By reason of their sturdy construction the sides of the car are able to serve as loading ramps in their lowered position and enable the truck trailers 114 which are to be shipped to be backed onto the depression section of the car by the trucks themselves. In the case of especially large trailers, the trailer is partly backed onto the central section and a cable 78 is placed around one end, run through pulley 80 mounted on bracket 81 on the end wall and by means of a winch, or other suitable driving motor, pivoted onto the railroad car. The trailer is unloaded in a similar manner.

In order to prevent the railroad car from tipping during loading and unloading operations and for supporting the depressed section of the car a plurality of jacks 82, preferably hydraulic, are mounted on the underside of the supporting structure 24 between the U-shaped channel members 30. To this end each jack 82 is provided with an opening by which it is pivotably mounted on a bar 84 secured between the side walls 86 of the channel member 30. Each jack has secured to its upper end a pair of generally arcuate links 88 which are pivotally secured to the levers 90 mounted on an operating shaft 92 secured within brackets 94 welded to the side and undersides of the outer longitudinal box beams 32. At the center of the car there is provided a lever arm 96 having a generally rectangular opening 98 in the outer end thereof. The lever arm 96 is fixedly secured to the shaft 92 so as to be rotatable therewith. In normal operation the lever 96 is maintained in substantially horizontal position by means of a pivoted catch 100 mounted on the outside of the longitudinal box beam 32 and which passes through the opening 98 in the lever so as to retain it in this position. When the catch 100 is pivoted and the lever 96 dropped in a clockwise direction each of the jacks 82 mounted within the channel members is pivoted downwardly by the links 88 to a substantially vertical position until the lug 102 at the top of each jack engages the rod 104. Thereafter fluid air under pressure is admitted to the cylinder 106 through the conduits 108 and the piston rod end 110 is moved into engagement with the top of the track 112.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

I claim:

1. A railroad car suitable for carrying wheeled vehicles and operable on a track comprising a flat platform including a depressed central section, wheels supporting said platform on said track, ends rigidly fixed to said platform, side members connected to the platform intermediate said ends, at least one of the side members having pivotal connection with the platform whereby said one side member can function as a ramp, means for detachably and rigidly fixing the pivotally connected side member to said ends whereby the latter said side member can function as a plate truss girder, reinforcing means operatively disposed with respect to said platform for strengthening the same and having a pre-stress independently of said platform so as to be substantially independent of operational conditions affecting the platform other than load conditions, and at least one jack including track engaging means mounted on said platform for selective engagement of the track for a loading operation.

2. A car as claimed in claim 1 wherein the platform includes at least one channelled longitudinal beam, and said reinforcing means comprises members loosely accommodated in the beam and means coupled to the latter said members for adjustably pre-stressing said reinforcing means.

3. A car as claimed in claim 1 comprising pulleys on said ends for facilitating loading operations.

4. A car as claimed in claim 1 comprising gratings on the platform for facilitating the supporting of loads during adverse weather conditions.

5. A car as claimed in claim 2 wherein the loosely accommodated members comprise a series of contiguous blocks.

6. A car as claimed in claim 2 wherein said one side member comprises stiffening members to increase its load-supporting capability.

7. A car as claimed in claim 2, wherein the platform includes a plurality of channelled beams each accommodating reinforcing means, and transverse members coupling the channelled beams.

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