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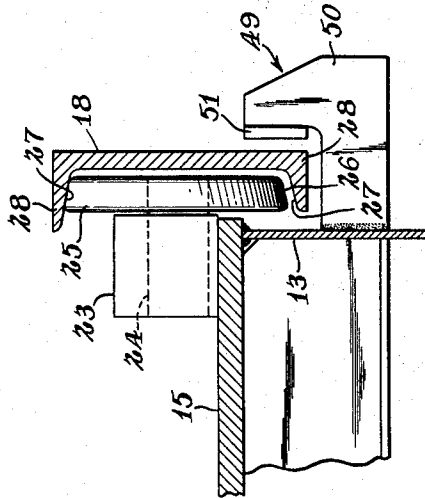
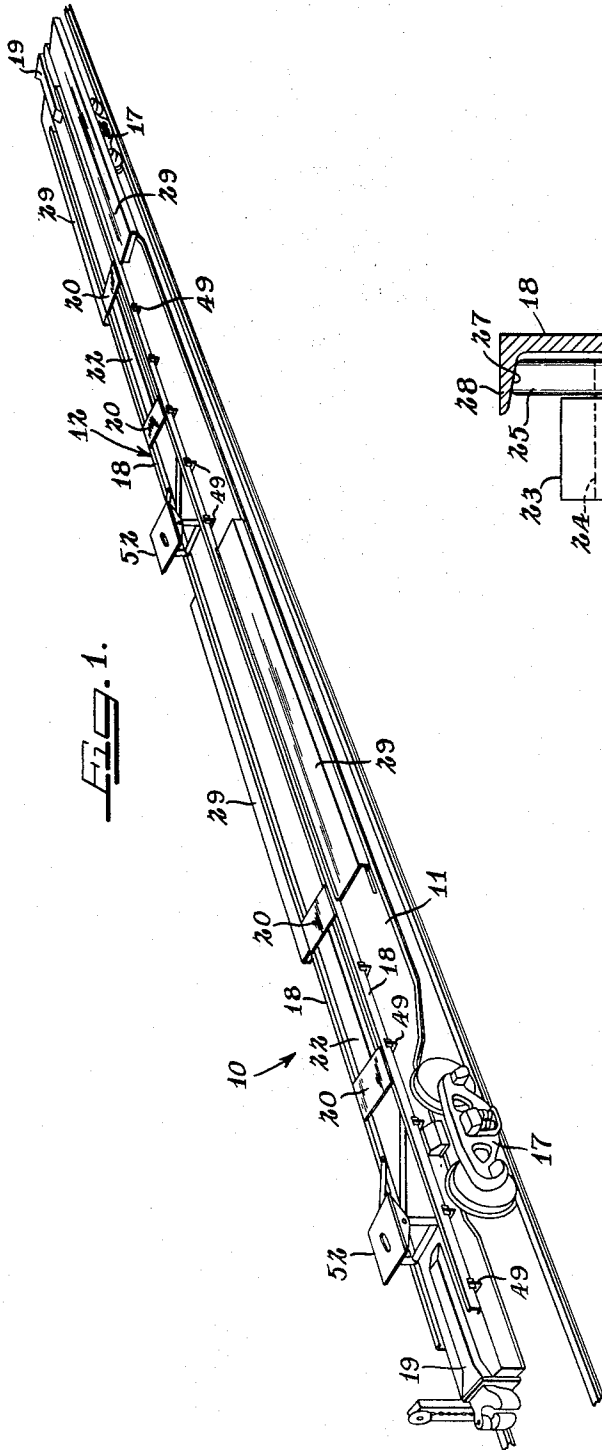
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3,180,284

SECTIONALIZED DECK RAILWAY CAR

Filed May 14, 1962

4 Sheets-Sheet 1



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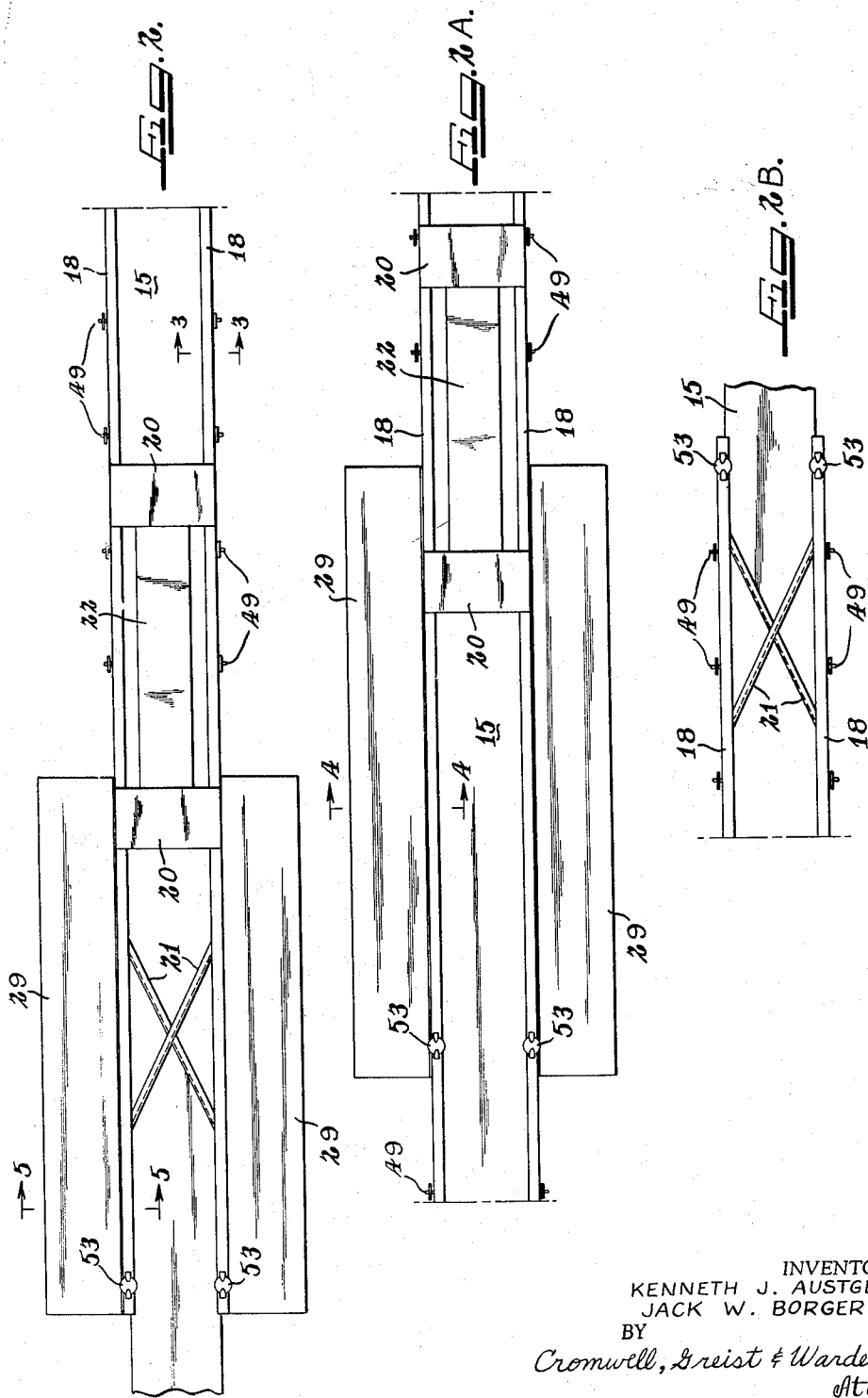
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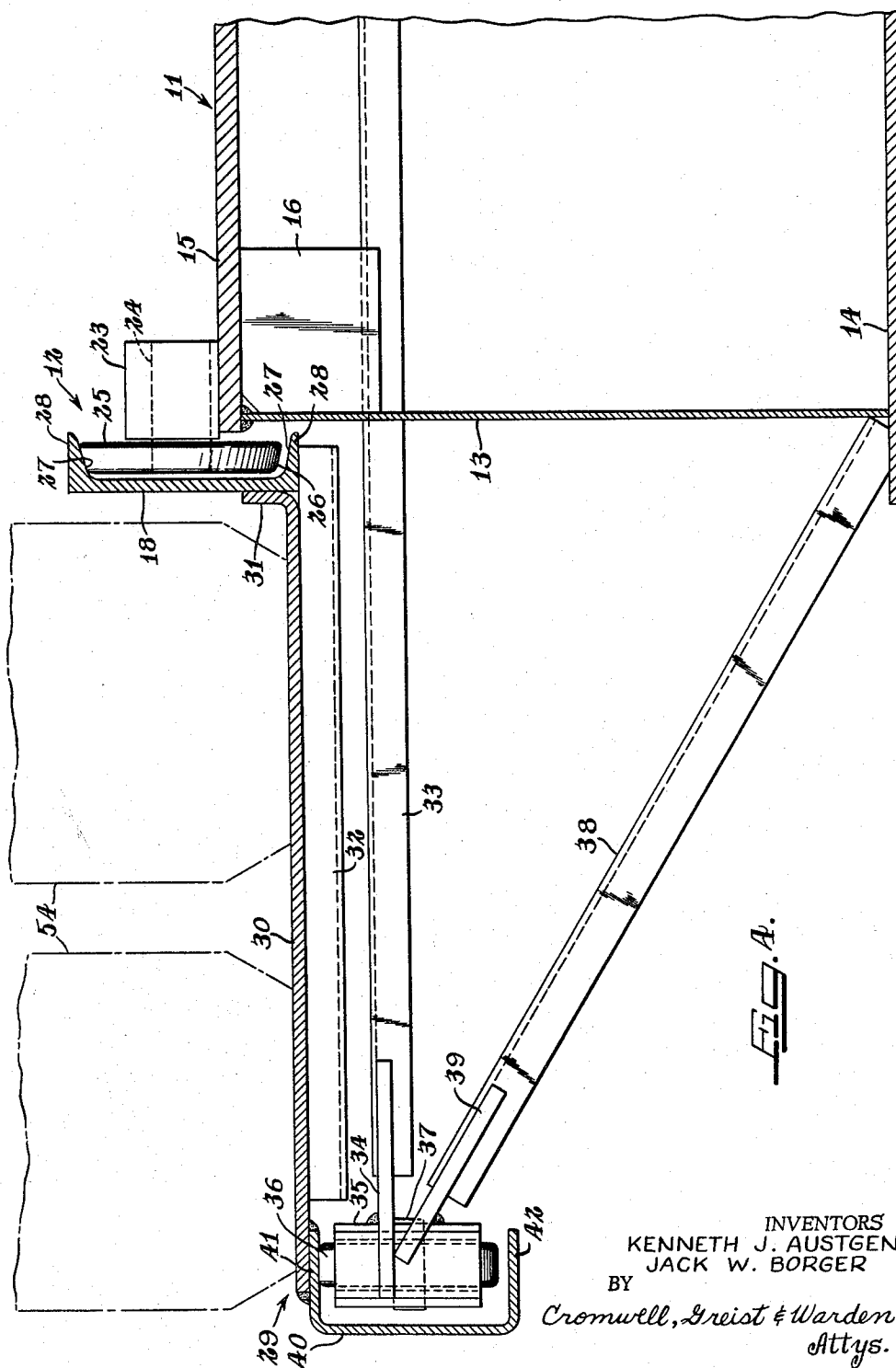
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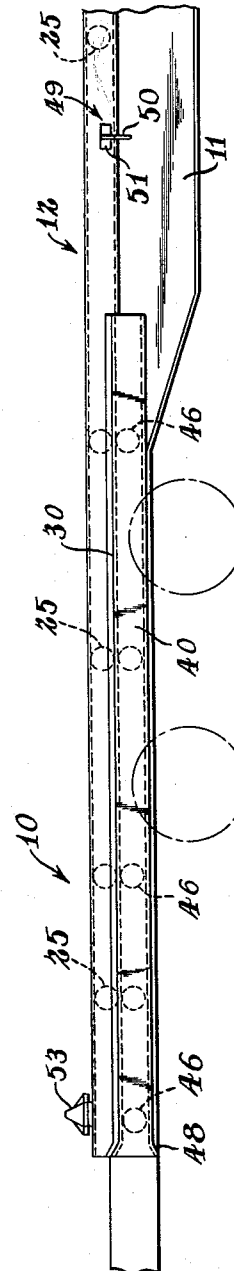
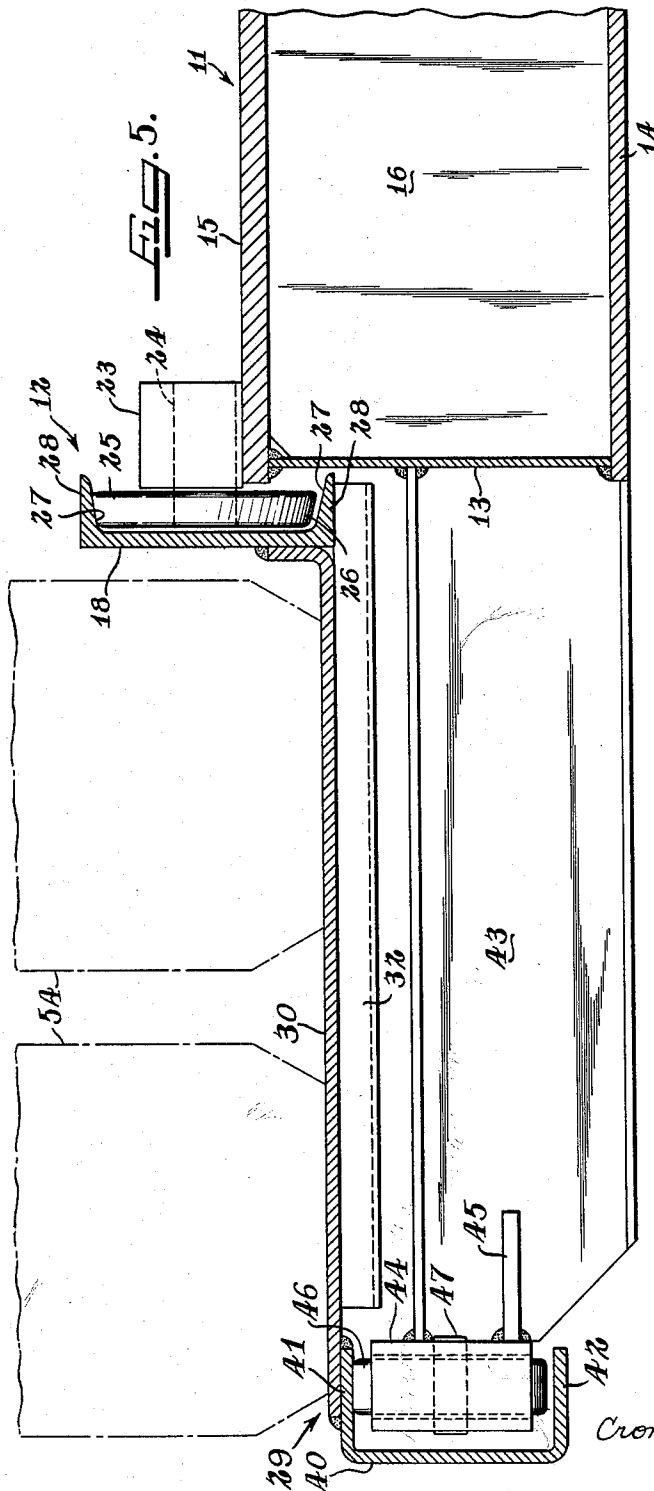
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SECTIONALIZED DECK RAILWAY CAR

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7 Claims. (Cl. 105-368)

The invention relates to a new and improved vehicle, such as a railway car, adapted for piggyback operational use in conjunction with trailer-type and box-type freight containers. More specifically, the invention is directed to a new and improved cushioned freight attachment assembly forming a part of a railway car or other suitable vehicle, the assembly including sectionalized platform means whereby a wheel-supported end of a trailer-type container may be readily supported and accommodated on the car or vehicle.

With the emphasis on piggyback operations, efforts are being made to reduce the amount of structural material used in the fabrication of a freight car while retaining the requisite functional properties for efficient container support and attachment particularly in connection with cushioned support and attachment assemblies designed for limited and controlled travel relative to the main car structure. With the development of piggyback operations, overhead container loading and unloading facilities are being improved upon and used at an increasing rate. With the use of such facilities it has been found possible to vary freight car design and eliminate structural features of the car itself.

The present invention deals with a new and improved piggyback operational vehicle particularly adapted for use with overhead loading facilities and incorporating new and improved features of design permitting economy in construction and providing for improved operational efficiencies, these concepts constituting objects of the invention.

Still another object is to provide a new and improved freight support and attachment vehicle utilizing a new and improved cushioned rack assembly on which the freight in the form of container-like units is directly received, the improvements in design and operation being particularly adapted for efficient application to a railway car.

Another object is to provide a new and improved sectionalized deck railway car for piggyback operational use, the car comprising essentially a wheel-supported underframe of compact design and a specially constructed sectionalized deck containing rack assembly mounted in a unique manner on the underframe for controlled relative movement therebetween.

Other objects not specifically set forth will become apparent from the following detailed description of the invention made in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective of the new and improved railway car of the invention;

FIGS. 2, 2A and 2B jointly constitute plan views of sections of the car with the details of the opposite end structures of the cars being deleted therefrom;

FIG. 3 is an enlarged fragmentary section of one side portion of the rack assembly of the car taken generally along line 3-3 in FIG. 2;

FIG. 4 is an enlarged fragmentary section of one of the platform means illustrating support means carried by the underframe of the car and engaging the platform means, this view being taken generally along line 4-4 of FIG. 2A;

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FIG. 5 is a view similar to FIG. 4 but taken generally along line 5-5 in FIG. 2 to illustrate another form of platform support means used adjacent one end of a car; and

FIG. 6 is a fragmentary side elevation of one end of the car illustrating the platform means of FIG. 5 therein.

The car 10 of FIG. 1 consists essentially of an underframe 11 of "fishbelly" box-like configuration, and a sectionalized deck rack assembly 12 which is mounted on the underframe 11 for movement relative thereto. The underframe 11 is essentially a center sill structure having a deep center portion as shown in FIG. 4 and relatively shallow end portions as shown in FIG. 5. The basic elements of the underframe are vertical side plates 13, a bottom cover plate 14, a top cover plate 15 and suitable reinforcing web plates 16 located internally of the underframe at any desired longitudinal spacing. The shallow end portions of the underframe 11 have attached thereto at opposite ends of the car wheel trucks 17 as shown in FIG. 1.

The sectionalized deck rack assembly 12 includes a pair of laterally spaced and interconnected rail-like members 18 which extend continuously longitudinally of the car 10 located immediately outboard of the opposite edges of the top cover plate 15 of the underframe. The rail-like members terminate short of opposite ends of the underframe adjacent raised coupler housings 19 to permit longitudinal movement of the rack assembly 12 relative to the underframe 11 without the rack assembly overextending the opposite ends of the car during such movement. The rail-like members 18 are suitably transversely interconnected for unitary movement longitudinally of the car, this interconnection being afforded by any suitable means such as the transverse plates 20 of FIGS. 1 through 2B as well as diagonal bracing members 21 shown in FIGS. 2 and 2B. Intermediate the transverse plates 20 are suitable cushioning devices 22 of known type which interconnect the rack assembly 12 with the underframe 11 through hydraulic cushioning means or springs to provide for controlled longitudinal relative movement between the rack assembly and underframe in response to operational forces in buff and draft. Many different types of cushioning arrangements may be used, such as shown in U.S. Patents 3,003,436 and 3,082,708.

FIGS. 4-6 illustrate the provision of a plurality of roller assemblies mounted along the opposite side margins of the cover plate 15 of the underframe 11. Each roller assembly is formed with a fixed journal block 23 having received therein a pin 24 projecting outwardly therefrom and mounting relative to the block a roller 25. Each roller 25 is of relatively thin construction provided with a beveled roller edge 26 engaged with an inner beveled surface 27 of a rail-like member 18. Each rail-like member is in the form of an inwardly opening channel beam having top and bottom flange portions 28 the inner surfaces of which define the beveled roller engaging surfaces 27.

The transverse interconnection of the rail-like members 18 as previously described provides for retention of these members in supported engagement with the series of oppositely positioned and longitudinally spaced roller assemblies carried by the underframe 11. The cooperating beveled surfaces 26 and 27 provide for proper centering of the rack assembly 12 on the underframe roller assemblies to prevent binding during relative movement therebetween. In other words, the cooperating beveled surfaces maintain a clearance between the opposed vertical surfaces of the rollers 25 and rail-like members 18 throughout the length of the rack assembly.

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The rack assembly 12 as best shown in FIG. 1 is further provided with platform means 29 attached to the outer surfaces of the rail-like members 18 along spaced areas thereof longitudinally of the car 10 and located outboard of the rail-like members projecting outwardly from the underframe 11. The platform means 29 are arranged in paired relation along selected portions of the rack assembly and the car 10 illustrated in FIG. 1 is provided with multiple paired sections of the platform means 29. However, it should be understood that a single section of platform means may be used where desired or any multiples thereof depending upon the type and length of container or the like to be carried by the car. With regard to the specific arrangement illustrated in FIG. 1, one section of platform means 29 is located adjacent one end of the car 10 and another section is located adjacent the center of the car 10.

FIGS. 4 and 5 illustrate the structural details of the platform means 29. In first considering the platform means located adjacent the center of the car 10 in the area of the deep center sill underframe arrangement, each platform means 29 is formed from a radially outwardly directed plate 30 defining a deck portion and attached along its inner margin to the outer bottom surface portion of the adjacent rail-like member 18. The inner attaching margin of the plate 30 is formed with a longitudinally continuous, upwardly directed flange 31 suitably welded or otherwise fixedly attached to the rail-like member 18. Any number of radially outwardly extending reinforcing beams 32 may be attached to the undersurface of the plate 30 and project radially inwardly therefrom into fixed attachment with the bottom outer surface of the adjacent rail-like member 18 to rigidify the plate 30.

For the purpose of providing adequate outer edge support for the platform means 29, the car 10 is formed with a plurality of oppositely directed, longitudinally spaced outriggers attached to the underframe 11 in any suitable manner. FIG. 4 illustrates the type of outrigger suitable for use in the deep center portion of the underframe 11. Each outrigger structure in this portion of the car 10 is formed from a top outwardly projecting horizontal beam 33 suitably fixed to the underframe, such as the side plate 13 thereof, or projecting through the underframe for continuation from the opposite side plate 13 thereof to define a similar outrigger on the opposite side of the car. The outer end of the beam 33 is formed with a fixed outwardly projecting roller assembly support plate 34 engaging a vertical sleeve-like roller housing 35 which receives therein a roller 36 mounted for rotation about a pin 37 suitably fixed in the housing 35. The outrigger further includes a diagonal support beam 38 which is suitably fixed at its lower end to the bottom portion of the underframe 11, such as the bottom cover plate 14. The beam 38 extends outwardly and upwardly toward the roller assembly and the outermost end thereof has fixed thereto a support plate 39 which engages the roller housing 35 and in conjunction with the plate 34 fixedly mounts the same outboard of the underframe for operative use with the platform means 29.

The outer longitudinal edge of the plate 30 of the platform means 29 is formed with a depending, longitudinally continuous guide plate 40 which is of inwardly opening channel-like shape. An inwardly directed top flange portion 41 of the guide plate overlaps the outer edge of the plate 30 along the bottom surface thereof and is suitably fixedly attached thereto. The bottom or inner surface of the flange 41 is in engagement with the roller 36. The bottom inwardly directed flange 42 of the guide plate 40 projects inwardly below the roller housing 35 and is positioned for engagement with the roller 36 to resist any substantial vertical displacement of the platform means 29 from its operative position.

FIG. 5 illustrates the operative mounting of the platform means 29 in the endmost shallow areas of the under-

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frame 11. The underframe 11 along the side plates 13 thereof have suitably attached thereto an outwardly directed beam 43 which at its outermost end has attached thereto a roller housing 44 of sleeve-like configuration. The attachment of the roller housing 44 to the beam 43 is reinforced by a transverse plate member 45 engaging the lower portion of the housing 44. A roller 46 is mounted in the housing 44 on a pin 47 journaled in the housing 44 and projects beyond the top and bottom ends of the housing. The platform means 29 in this location is of the same construction as previously described and the outer guide member 40 is in operative engagement with the rollers 46.

FIG. 6 illustrates the relative positioning of the rollers 25 and 46 along an end portion of the car 10 carrying a platform means 29. Bearing in mind that the platform means 29 is adapted to receive a concentrated load thereon, the number of rollers used in the area of the platform means throughout the length of the car may be greater than the number used in areas intermediate the platform means. Furthermore, a greater number of rollers may be used in supporting the outer edges of the platform means, this number requiring an equal number of outriggers carrying the same. As shown in FIG. 6, the number of rollers 46 used is greater than the number of rollers 25 and one end of the guide member 40 is formed with a flare 48 to permit ready receiving of the adjacent roller 46 in the event that the platform means 29 moves with the rack assembly to the right as viewed in FIG. 6 a sufficient distance to actually clear the endmost roller 46.

By reason of the fixed attachment of the plates 30 of the platform means 29 to the rail-like members 18, the platform means become a part of the rack assembly and move with the same relative to the car 10 as controlled by the cushion assemblies 22. The cooperating beveled surfaces 26 and 27 of the rollers 25 and rail-like members 18 prevent binding between the guide members 40 of the platform means and their respective roller housings 44 during such relative movement. The series of rollers 25, 36 and 46 provide efficiently operating anti-friction means and the mounting of these rollers effect efficient transmission of container load directly to the underframe 11 of the car.

In view of the length of the rail-like members 18 and the fact that the load of lading will be directly applied thereto during operational use of the car, it is preferable to provide a plurality of fixed guide means 49 outboard of the rail-like members 18 in longitudinally spaced relation throughout the areas of the rack assembly located between the platform means 29. The location of the guide means 49 is illustrated in FIGS. 1 through 2B. FIG. 3 specifically illustrates a preferred design of the guide means 49. Such means comprise a generally L-shaped plate 50 extending outwardly below the rail-like member 18 from fixed attachment to an adjacent side plate 13 of the underframe 11. The plate 15 projects upwardly outboard of the rail-like member 18 and the inner side surface of the upwardly projecting portion has fixed thereto a longitudinally extending guide plate 51. FIG. 6 illustrates one of the guide means 49 and the general arrangement of the plates 50 and 51 thereof. The plates 51 are spaced outwardly of the rail-like members 18 sufficiently to prevent interference therewith during movement of the rack assembly 12 along the underframe 11. However, if the force applied to the rack assembly under extreme operating conditions is sufficient to cause some outward bowing of the rail-like members 18, these members will engage the plates 51 and will be prevented from further bowing to an extent that the flanges 28 thereof completely clear the rollers 25 and cause disassembly of at least a portion of the rack assembly from the underframe.

The form of the car 10 illustrated in FIG. 1 is adapted to accommodate single end wheel-supported trailers of known type (not shown) which are provided at their op-

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posite ends with king pins for attachment with a fifth wheel stand assembly 52. The fifth wheel stand assemblies 52 as shown in FIG. 1 are suitably pivotally mounted to the rail-like members 18 for movement with the rack assembly relative to the underframe 11. The pivotal connections of the fifth wheel stand assemblies permit inoperative recessing of these assemblies between the rail members when not in use thus additionally permitting the rack assembly to present a longitudinally continuous flat support area for the accommodation of box-like containers of conventional design thereon. FIGS. 2 through 2B illustrate the use of pivotal locking cones 53 suitably attached to the rail-like members 18 and of known type for use in locking box-like containers to the rack assembly.

The car 10 and the rack assembly 12 thereof is basically designed for use with single end wheel-supported trailers as previously described. These trailers are loaded onto the car using overhead loading facilities and the wheel-supported ends thereof are received on the platform means 29. FIGS. 4 and 5 generally illustrate the locations of dual wheels 54 of the trailers on the platform means 29. The upwardly projecting rail-like members 18 function to prevent lateral displacement of the wheel-supported ends of the trailers from the platform means during operation of the car 10. The fifth wheel stand assemblies 52 function to attach the front ends of the trailers to the rack assembly 12 and prevent displacement of the trailers during operational use of the car 10. With these fifth wheel stand assemblies 52 being pivotally mounted for inoperative recessing between the rail-like members 18, the car 10 is readily convertible for use with box-like containers. Under such circumstances of use the platform means 29 are functional to aid in maintaining the rack assembly 12 in its proper operative position along the underframe 11. While the important features of the rack assembly 12 have been described in conjunction with the preferred use thereof on a railway car of special design, it will be understood that the features of the invention are equally applicable to any vehicle capable of accommodating and utilizing the same.

Obviously certain modifications and variations of the invention as hereinbefore set forth may be made without departing from the spirit and scope thereof, and therefore only such limitations should be imposed as are indicated in the appended claims.

We claim:

1. A railway car for piggyback operational use, said car comprising a wheel-supported underframe of column configuration having mounted thereon a cushioned rack assembly extending longitudinally of said underframe and including a pair of laterally spaced and interconnected rail-like members interconnected with said underframe through cushioning means for travel relative to said underframe longitudinally thereof from a neutral position, platform means attached to said rack assembly and extending outboard of said rail-like members for movement therewith, said platform means being substantially shorter than said rack assembly and adapted to receive thereon wheel-supported container ends for attachment to said rack assembly, outriggers fixed to said underframe in longitudinally spaced relation substantially throughout the length of said platform means in the neutral position of said platform means, and support means carried by said underframe and by said outriggers, the support means of said outriggers engaging said platform means adjacent outer margins thereof, the support means of said underframe engaging said rail-like members, said support means including anti-friction means.

2. The railway car of claim 1 wherein said rail-like members are in the form of inwardly opening channel beams mounted on a series of longitudinally spaced rollers carried by said underframe.

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3. The railway car of claim 1 wherein said rail-like members are in the form of inwardly opening channel beams mounted on a series of longitudinally spaced rollers carried by said underframe, said underframe carrying a plurality of fixed guide means overlying said rail-like members outboard thereof and located out of the path of movement said platform means.

4. The railway car of claim 1 wherein said support means of said outriggers are exposed roller assemblies in supporting engagement with said platform means, the outer margins of said platform means including inwardly opening channel beams received about said roller assemblies.

5. A railway car for piggyback operational use, said car comprising a wheel-supported underframe of column configuration having mounted thereon a cushioned rack assembly extending longitudinally of said underframe and including a pair of laterally spaced and interconnected rail-like members interconnected with said underframe through cushioning means for travel relative to said underframe longitudinally thereof from a neutral position, platform means attached to said rack assembly and extending outboard of said rail-like members for movement therewith, said platform means being substantially shorter than said rack assembly and formed in longitudinally spaced multiple sections and adapted to receive thereon wheel-supported container ends for attachment to said rack assembly, outriggers fixed to said underframe in longitudinally spaced relation substantially throughout the length of said platform means in the neutral position of said platform means, and support means carried by said underframe and by said outriggers, the support means of said outriggers engaging said platform means adjacent outer margins thereof, the support means of said underframe engaging said rail-like members, said support means including anti-friction means.

6. A railway car for piggyback operational use, said car comprising a wheel-supported underframe of column configuration having mounted along opposite side top portions thereof a plurality of longitudinally spaced roller assemblies, a rack assembly including a pair of inwardly opening channel beams transversely interconnected and extending longitudinally of said underframe and receiving said roller assemblies therein for support thereby, cushion means interconnecting said rack assembly to said underframe for controlled relative longitudinal movement therebetween, a plurality of platform means spaced longitudinally of said car and attached to said channel beams outboard thereof, outriggers carried by said underframe below said platform means, anti-friction means on said outriggers and engaging said platform means to provide support therefor outboard of said channel beams, and fifth wheel assemblies carried by said channel beams beyond said platform means to accommodate a plurality of single end wheel-supported containers on said car with the wheel-supported container ends mounted on said platform means.

7. A railway car for piggyback operational use, said car comprising a wheel-supported underframe of column configuration having mounted along opposite side top portions thereof a plurality of longitudinally spaced roller assemblies, a rack assembly including a pair of inwardly opening channel beams transversely interconnected and extending longitudinally of said underframe and receiving said roller assemblies therein for support thereby, top surface portions of said channel beams projecting above said underframe, cushion means interconnecting said rack assembly to said underframe for controlled relative longitudinal movement therebetween, a plurality of platform means spaced longitudinally of said car and attached to said channel beams outboard thereof, outriggers carried by said underframe below said platform means, anti-friction means on said outriggers and engaging said platform means to provide support therefor out-

board of said channel beams, and fifth wheel assemblies carried by said channel beams beyond said platform means to accommodate a plurality of single end wheel-supported containers on said car with the wheel-supported container ends mounted on said platform means, said 5 fifth wheel assemblies including pivotal connections with said channel beams for inoperative recessing between said channel beams, and box container attachment means carried by said channel beams in longitudinally spaced relation to attach containers in load supported relation on 10 the top surface portions of said channel beams.

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