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[54] ARTICULATED CONTAINER CAR

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[52] **U.S. Cl.** .....**105/366 A,** 105/4 R, 105/366 D, 105/367

[51] **Int. Cl.**.....**B65j 1/24,** B60p 7/16, B61d 45/00

[58] **Field of Search**...105/4 R, 366 A, 366 D, 368 T, 105/367, 369 A; 248/119 R

[56] **References Cited**

UNITED STATES PATENTS

3,272,150	9/1966	Dempster et al.	105/366 A
3,371,622	3/1968	Lich	105/4 R
3,396,673	8/1968	Livelsberger et al.	105/4 R
3,399,631	9/1968	Weber	105/4 R
3,405,658	10/1968	Kozub	105/367
3,626,868	12/1971	Mowatt-Larssen	105/366 D

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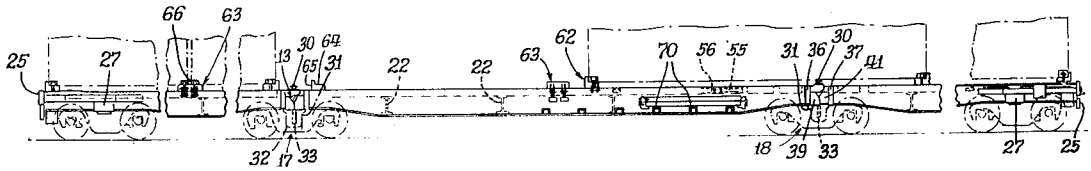
[57] **ABSTRACT**

The articulated car includes three car components connected by semi-permanent connections supported on railway trucks. Each component includes a center frame resiliently longitudinally supported between the side sills. The containers are supported upon bolsters that rest on the side sills and are resiliently connected to the center frame. A side bearing arrangement between adjacent units includes opposed overlapping members. The resilient structure allows a container to span over an articulated connection.

8 Claims, 8 Drawing Figures



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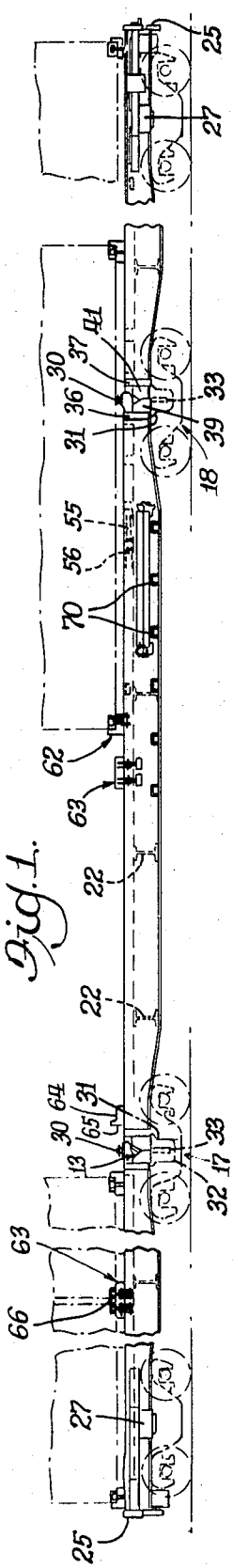

Fig. 1.

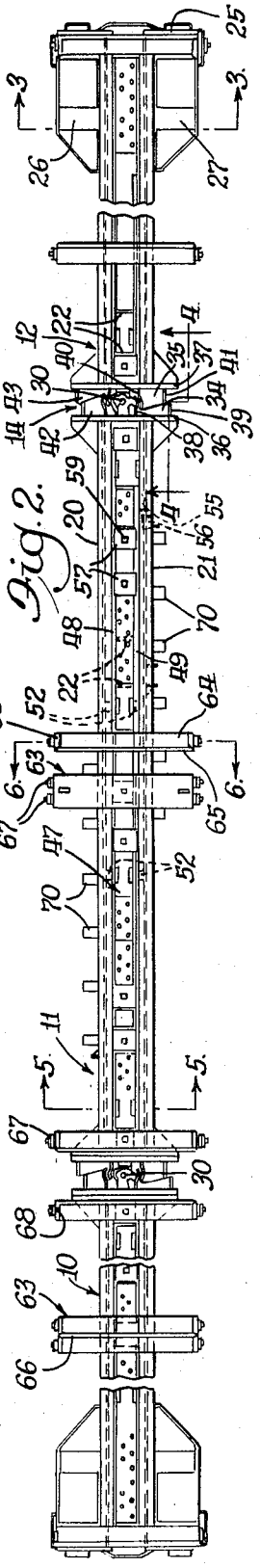

Fig. 2.

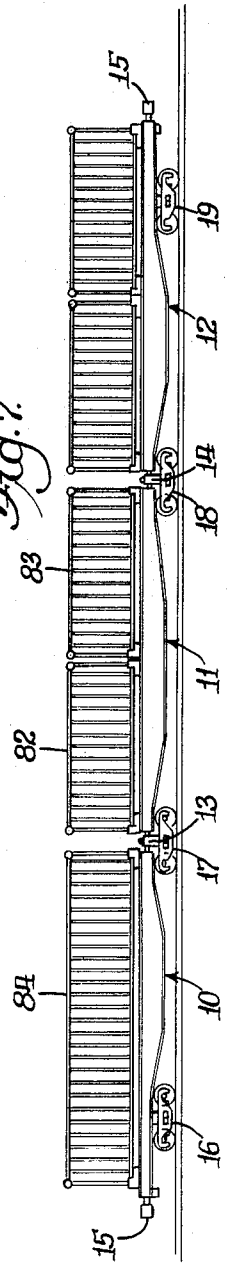

Fig. 7.

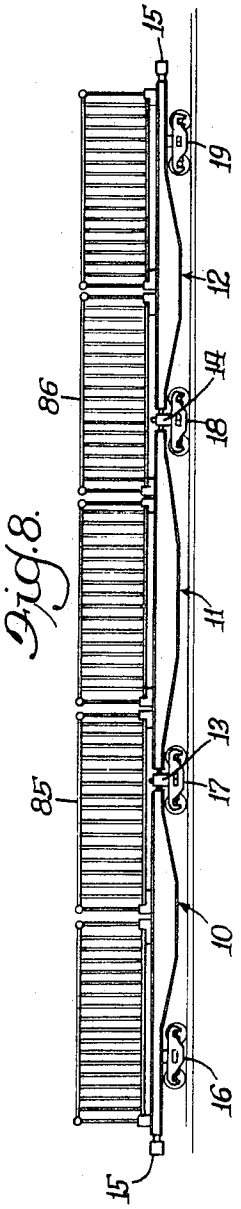

Fig. 8.

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Fig. 3.

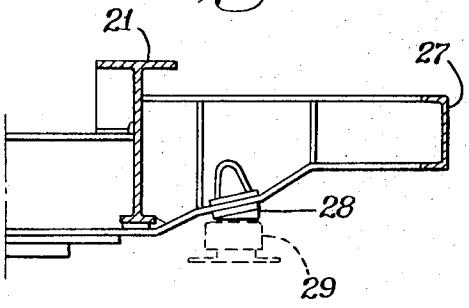
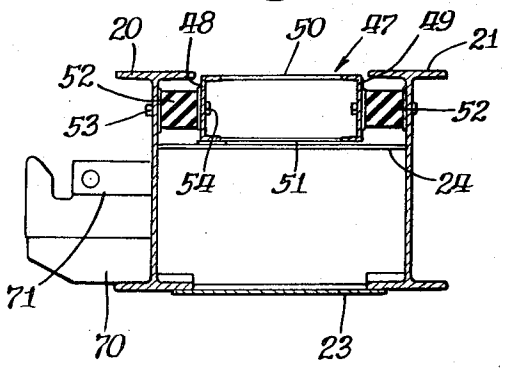


Fig. 5.



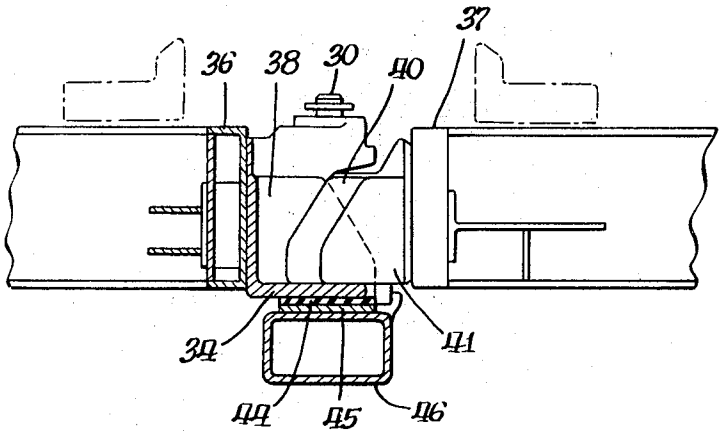


Fig. 4.

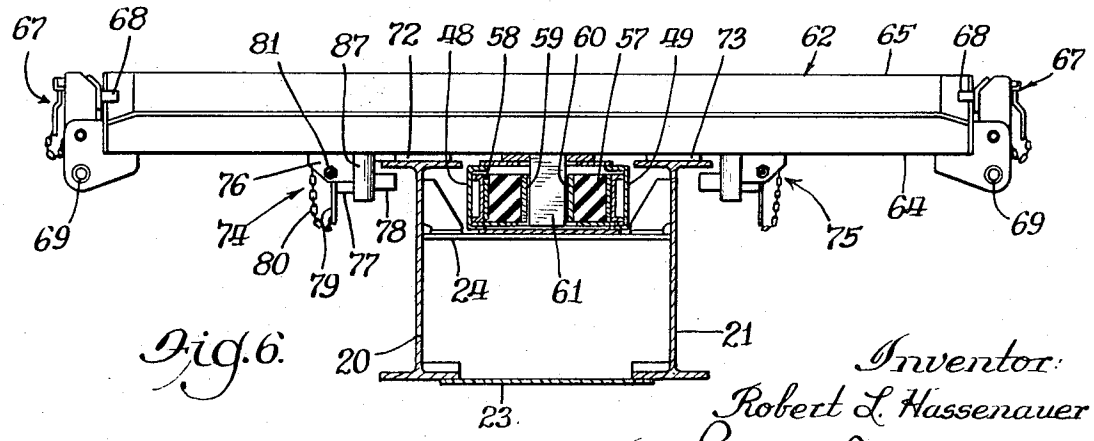


Fig. 6.

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ARTICULATED CONTAINER CAR

This invention relates to an articulated container rail car having a plurality of car units connected by semi-permanent connections mounted on trucks, wherein the car is capable of carrying containers of various lengths, including those lengths which span a connection between adjacent units.

Railway cars designed specially for carrying containers alone have not enjoyed widespread usage. In order to accommodate containers of various lengths, most container car designs are much longer than conventional designs and require special handling. Because of increased length, such cars also have poor curve negotiability and cannot always be coupled to an adjacent car on a curved track.

Accordingly, an object of this invention is to provide a rail car that is capable of carrying containers of various lengths and that is articulated for good curve negotiability.

Another object is to provide an articulated rail car with means to allow a container to span over an articulated connection without decrease in curve negotiability.

Other objects will appear in the following description taken in connection with the accompanying drawings, wherein:

FIG. 1 is a fragmentary elevational view of the articulated container car of the present invention;

FIG. 2 is a plan view of substantially the structure shown in FIG. 1;

FIG. 3 is a half sectional view taken along section line 3—3 of FIG. 2;

FIG. 4 is a fragmentary sectional view taken substantially along section line 4—4 of FIG. 2;

FIG. 5 is a sectional view taken along section line 5—5 of FIG. 2 showing the center frame structure of the car;

FIG. 6 is a partial sectional view taken along section line 6—6 of FIG. 2, showing the means for mounting the container bolsters; and

FIGS. 7 and 8 are elevational views showing various possible arrangements of containers on the subject railway car.

Referring first to FIGS. 7 and 8, it may be seen that a preferred embodiment of the articulated car comprises three separate sections or components 10, 11 and 12, with the ends of the central component 11 being connected by respective semi-permanent connections 13 and 14 to the respective adjacent ends of the outer components 10 and 12. The extreme longitudinal ends of the outer sections 10 and 12 are provided with conventional coupler and draft gear assemblies 15, and the entire car is supported upon four conventional railway trucks 16, 17, 18 and 19, two of which, 17 and 18, are located beneath the respective semi-permanent connections 13 and 14.

In FIGS. 1–2, it may be seen that the three car components 10, 11 and 12 are substantially identical with the exception of end structures, which will be separately described. Each car component includes an elongated main sill comprising a pair of spaced vertical side sills 20 and 21 made up from I-beams and extending longitudinally for the length of the component. A plurality of transverse supports 22 are secured between the side sills 20 and 21, and a horizontal bottom plate 23 (FIG. 5) connects the lower flanges of the side sills.

A horizontal steel sheet 24 (FIG. 5) is also connected between the upper portion of the side sills 20 and 21. The extreme end structures on the outer components 10 and 12 each comprise an end sill 25 secured to one end of the main sill, and a transverse body bolster segments 26 and 27 (FIG. 3) secured to and extending transversely outward from the respective side sills 20 and 21 adjacent the end sill. A conventional side bearing 28 is secured to the underside of each body bolster segment 26 and 27 and engages a side bearing 29 located on the bolster of the underlying end trucks 16 and 19.

The semi-permanent connections 13 and 14 comprise interengaging and mating parts connected by a pin 30 and allow vertical and horizontal angling between adjacent car components with a minimum of slack. As shown in FIG. 1, the lower portion of each connection is adapted to be supported upon the center plate 31 of the bolster 32 of each underlying truck 17 and 18. A pin 33, extending from each connection through an opening in the center plate of the truck bolster, allows for the rotation of the connection relative to the bolster about the axis of the pin.

Adjacent ends of the car components 10, 11 and 12 comprise special overlapping side bearing constructions, as best seen in FIGS. 1, 2 and 4. Opposed overlapping and engaging horizontal tongues 34 and 35 are secured on both sides of the respective end sills 36 and 37 of adjacent cars that are joined by a semi-permanent connection. The tongues each include respective pairs of spaced vertical side walls 38 and 39, and 40 and 41, with the side walls of the overlapping tongue 35 being spaced narrower and spaced from than the side walls of the other tongue 34, such that the overlapping tongue is supported upon and fits within the other tongue. The inboard vertical walls 38 and 40 of the respective tongues 34 and 35 have a concave curvature with respect to the articulated connection to accommodate horizontal angling between adjacent car components. Similar opposed tongues 42 and 43 on the other side of the respective end sills 36 and 37 are oppositely arranged with respect to overlap such that the narrower and overlapping tongue 43 is located on the end sill 37 opposite to the corresponding tongue 35 secured to the other sill 36. Thus, each of the adjacent end sills has one tongue that overlaps its corresponding tongue on the adjacent sill. From FIG. 4, it may be seen that the lowermost tongue 34 is supported on a resilient, preferably urethane, pad 44 secured to a pedestal 45 of the truck bolster 46. In this manner, vertical rocking motions of the car components are transferred from the tongues 34 and 35, and 42 and 43, to the resiliently supported bolster 46 of the railway truck.

As shown in FIGS. 1, 2 and 5, means are provided to cushion the containers of the car from normal longitudinal inertia forces on the car components. A center frame structure 47 is provided in each car component comprising a pair of spaced channel members 48 and 49 connected by respective upper and lower sheets 50 and 51 and is resiliently supported by a plurality of resilient or rubber pads 52 connected between the channel members 48 and 49 and the respective corresponding side sills 20 and 21, by bolts, such as 53 and 54. The center frame 47 is therefore resiliently movable longitudinally between and relative to the side sills

20 and 21. A stop 55 secured near both ends of the center frame 47 is normally spaced from but engageable with a second stop 56 secured to one of the side sills to prevent travel of the resiliently supported center frame 47 beyond either end of its car component.

As illustrated in FIGS. 2 and 6, a plurality of resilient or rubber torsion blocks 57 are secured in the center frame structure 47 in a longitudinally spaced relationship and in a sufficient number that will accommodate containers of various lengths, as will be hereinafter explained. Each block includes a metal outer shell 58 and a central square aperture 59 also lined by a metal element 60. The square apertures 59 each may receive an interfitting metal pin, such as 61, the top of which is secured to a transverse container support, which may take the form of either a single bolster 62 or a double bolster 63. The container bolsters are therefore longitudinally adjustable to any of the plurality of locations afforded by the resilient torsion blocks 57. It will be noted that the apertures 59 are arranged such that two of the opposed sides thereof are substantially parallel to the longitudinal axis of the truck, thereby maintaining the container bolsters 62 and 63 on lines normal to said axis. The torsion blocks 57 also allow for limited rotation of the bolsters, as well as longitudinal and lateral flexibility.

The single container bolster 62 comprises a main support beam 64 extending transversely relative to the longitudinal center line of the car and having a single end wall 65, which allows for the support of a bottom end of a container, as shown in FIG. 1. The double bolster 63 is longitudinally wider than the single bolster and has no end wall; rather, a central transverse partition 66 is removably attached on the upper side thereof to enable support of adjacent ends of a pair of containers. When the partition 66 is removed, the bolster is capable of supporting an intermediate portion of a container without interfering with the end support thereof. The outboard ends of each bolster are provided with a releasable locking mechanism 67 having a pin 68 that is engageable with an aperture in the lower outside corner of the container. When the locking mechanism is released, the assembly may pivot downward about the axis of a hinge 69 to facilitate removal of the container. Extra bolster storage racks 70 may be secured to the side of the car body and may include one or more apertured supports 71 (FIG. 5) to which the locking mechanisms 67 may be engaged.

Again referring to FIG. 6, wear pads 72 and 73 are secured to the top of the respective side sills 20 and 21 and directly support the container bolster. Opposed lock pin assemblies 74 and 75 are secured on the bottom surface of each bolster adjacent the respective side sills 20 and 21 to prevent the bolster from lifting off the car. Each of the assemblies 74 and 75 comprises a support 76 secured to the bolster and having a transverse sleeve 77 telescopically receiving a removable pin 78, with the inboard end of said pin extending beneath the outer flange of one of the side sills and the outboard end of said pin having a downward depending cap 79. A safety chain 80 connects the pin cap 79 to the support 76, and a bolt 81 through the support serves to maintain the pin cap 79 in abutment with the outboard end of the sleeve 77. The support 76 includes an inboard convex curved surface 87 to accommodate rotation of the container bolster relative to the side sills.

FIGS. 7 and 8 show various possible arrangements of containers on the present rail car. From FIG. 7, it may be seen that either pair of containers 82 and 83, or a single long container 84, may be mounted on each car component, if the containers are of proper length. FIG. 8 shows containers, such as 85 and 86, spanning the respective semi-permanent connections 13 and 14. Since the car components pivot about a shorter radius than the containers, the supporting container bolsters must move longitudinally. Longitudinal movement of the bolsters is provided by the resiliency of the blocks 57 and the pads 52 incorporated into each car component.

Having thus described the invention, what is claimed is:

1. An articulated railway car comprising three car units connected by two semi-permanent connections each supported on a railway truck, a pair of railway trucks supporting the extreme ends of said car, each of said car units comprising a pair of spaced side sills extending longitudinally for the length of said unit, a center frame between the side sills and spaced therefrom, resilient means connecting each of the side sills to the center frame, a plurality of resilient blocks carried by the center frame, container support means extending laterally of said unit and supported on top of said side sills, pins extending downward from said container support means, an aperture in each of said resilient blocks adapted to receive one of said pins, and means for preventing rotation of said pin in said aperture.

2. The railway car of claim 1 wherein a container is supported on said car between two adjacent car units.

3. The railway car of claim 1 wherein the resilient means connecting each of the side sills to the center frame comprises a plurality of resilient pads secured between said side sills and said center frame.

4. The railway car of claim 1 wherein the container support means comprises a plurality of bolsters each comprising a beam, means at the end of said beam for securing an end of a container thereto, and means on said beam engageable with said side sills for limiting upward movements of said beam relative to said side sills.

5. The railway car of claim 4 wherein said means on said beam engageable with said side sills comprises a support depending from said beam adjacent each side sill, and a member removably carried by said support and engageable with said side sill upon upward movement of said beam.

6. The railway car of claim 1 wherein the means for preventing rotation of said pin in said aperture comprises a non-circular aperture, and wherein said pin comprises a shape to fit into said aperture and be upwardly removable therefrom.

7. In an articulated railway car comprising two car units supported by railway car trucks and interconnected for relative pivotal movement on a substantially vertical axis by a pivotal connection; the combination of spaced center frames carried by respective units, spaced bolsters supported by respective units, a single container attached to said bolsters, resilient pads attached to the center frames, and polygonal cross-section pins of the bolsters received within complementary sockets of said pads for resiliently resisting said relative pivotal movement between said units from a straight line position.

8. In a railway car comprising a unit supported by railway trucks; the combination of a center frame moveably supported by said unit and extending longitudinally thereof, resilient means on said unit for resisting movement of said frame longitudinally and laterally of said unit, resilient pads on said frame, a container comprising bolsters slideably supported on said unit, and pins connected to the bolsters, said pins being removeably and snugly fitted within sockets of respective pads, both pins and sockets being of complementary polygonal shape when viewed in cross-section.

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