Dec. 21, 1943. E. R. SCHROEDER ET AL 2,337,131

CONTAINER CAR

Filed Oct. 6, 1941 2 Sheets-Sheet 1

Fig. 1.

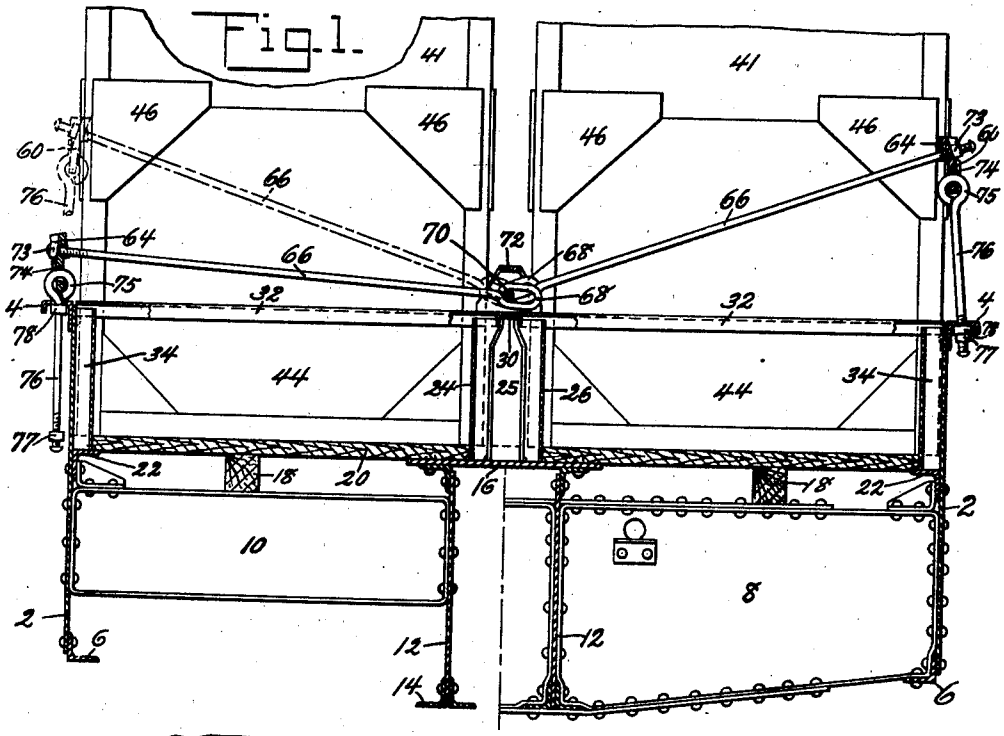


Fig. 2.

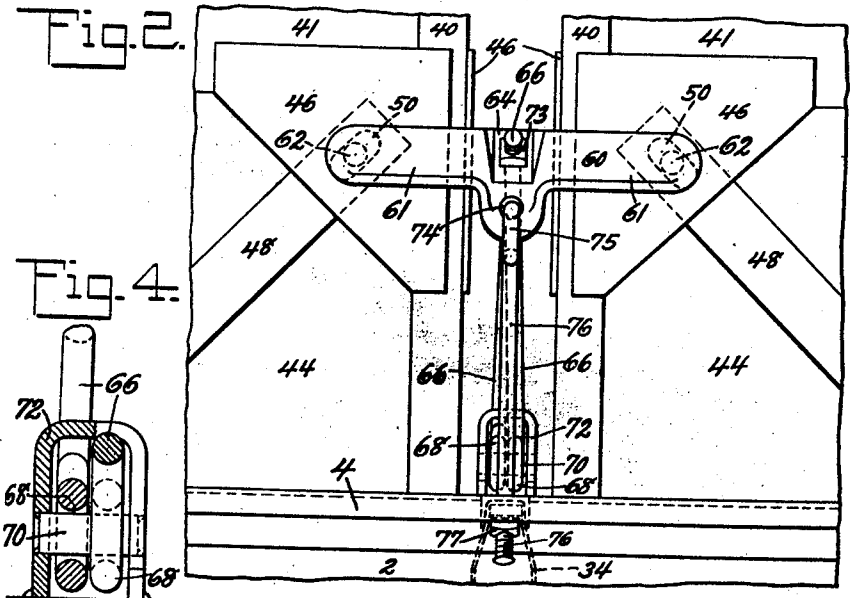
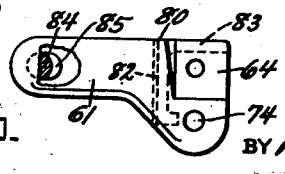


Fig. 4.

Fig. 6.



INVENTORS
Ernest R. Schroeder
Victor Willoughby
BY Donald M. Rich ATTORNEY

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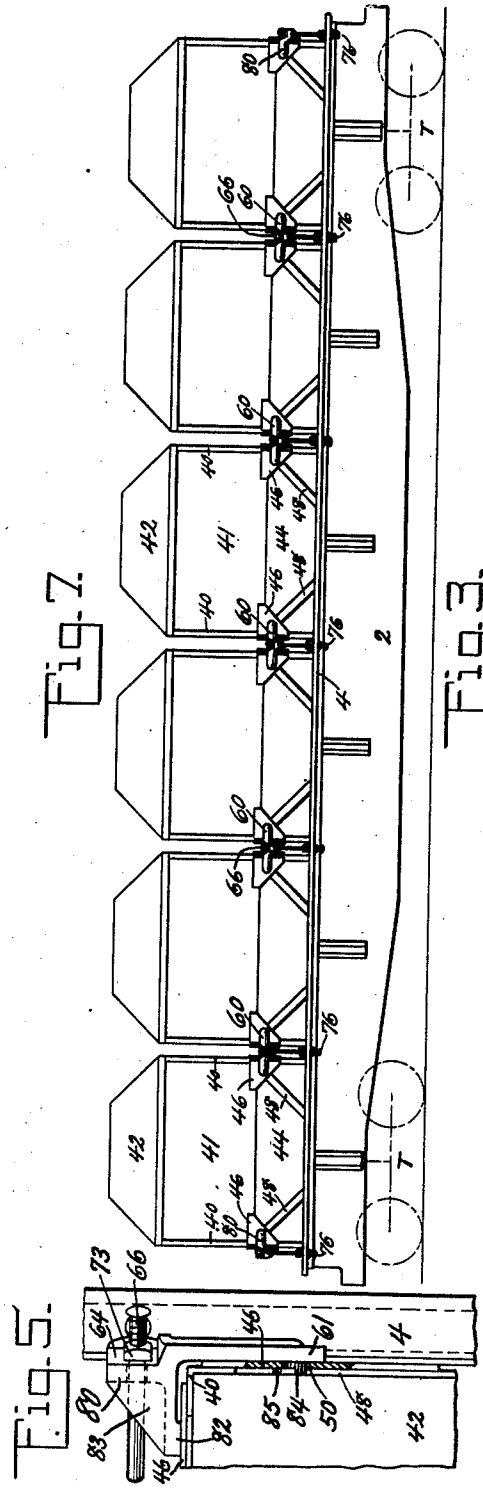


Fig. 5.

Fig. 7.

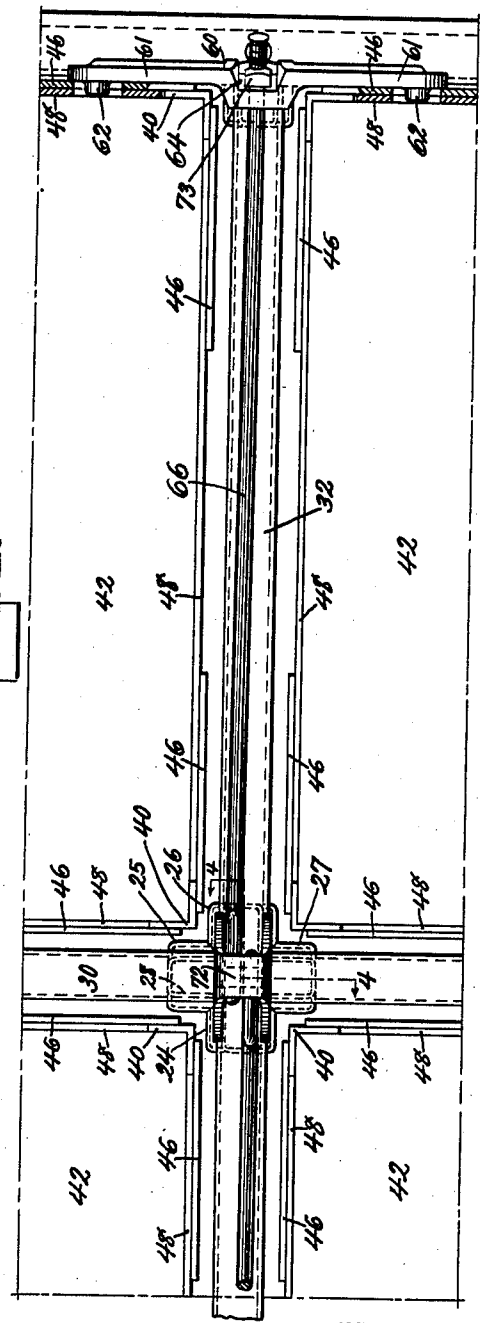


Fig. 3.

INVENTORS
Ernest R. Schroeder
Victor Willoughby
BY Donald M. Rich — ATTORNEY

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CONTAINER CAR

Ernest R. Schroeder, Hawthorne, and Victor Willoughby, Ridgewood, N. J., assignors to American Car and Foundry Company, New York, N. Y., a corporation of New Jersey

Application October 6, 1941, Serial No. 413,717

10 Claims. (Cl. 105—366)

This invention relates to anchor means for containers and particularly to anchor means for containers carried upon moving vehicles such as railway cars.

A considerable percentage of freight is now handled in small containers which may be lifted bodily with their contents from the road or rail vehicle and transported to the discharge point for unloading thereby obviating a large amount of manual handling. During transport of the containers in groups on rail or road vehicles it is absolutely necessary that the containers be held against shifting on the supporting structure. It is, of course, obvious that the higher a container may be gripped the easier it becomes to anchor the same to the supporting structure, but when high retaining means have been used in the past it necessitated excessive lift of the containers to remove them from the transporting structure. As a consequence practically all high sided container carriers were provided with one or more sides capable of holding downward, but with such a construction the sides could form no structural part of the car, that is, could not carry any load and the underframe had to carry the entire load imposed upon it by the containers. It is an object, therefore, of the present invention to provide a container car in which the entire side wall surface has a girder to carry the container load.

A further object of the invention is the provision of a low side rigid wall container car allowing removal of the containers without excessive vertical lift.

A still further object of the invention is the provision of a container car of rigid low wall construction having means for gripping and positively anchoring the containers at relatively high points upon the container sides.

A yet further object of the invention is the provision of collapsible anchor means for containers and which anchor means locks all containers together longitudinally of the transporting vehicle.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which:

Figure 1 is a transverse sectional view through the improved container car and disclosing the improved anchor means;

Fig. 2 is a side view of a portion of the car disclosing the manner in which the containers are anchored and locked together;

Fig. 3 is a plan view of a portion of the container car with parts in section to better disclose the means for locking the containers together;

Fig. 4 is a sectional view taken substantially on line 4—4 of Fig. 3;

Fig. 5 is an enlarged plan view of a corner of the container car and showing the corner anchor means;

Fig. 6 is an end view of the improved corner anchoring means, and

Fig. 7 is a side view of the improved container car and improved locking means holding containers in place.

Referring now to the drawings in detail and in particular to Figures 1 and 7, it will be seen that the container car has been illustrated as a railway car supported in any suitable manner upon trucks T adapted to run on rails or other supporting structure. The car is built as a side carrying car having plate side walls 2 attached to a top angle form chord 4 and a bottom angle form chord 6, thus forming a plate girder side wall. The plate girder side wall is connected adjacent its ends to bolsters 8 and is also connected between the ends to cross bearers 10. These bolsters and cross bearers are connected to built up fish belly center sills 12 having bottom angles 14 and cover plate 16. Stringers 18 rest upon the bolsters and cross bearers and support intermediate portions of the car flooring 20 which is supported at the center of the car upon center sill cover plate and at the ends upon plate girder side walls through the medium of angle 22. Portions of the car floor are cut away in order to accommodate stub center posts of cruciform cross section attached directly to the top cover plate of the center sill. These stub posts are formed, as clearly shown in Figs. 1 and 3, of four pressings 24, 25, 26 and 27, each of general channel cross section, with the flanges welded together to form the cruciform center post. The pressings have the upper ends narrowed down to provide guide surfaces 28 and attaching portions for longitudinal channels 30 and transverse channels 32. The ends of the transverse channels are attached to the upper ends of pressings 34 attached to the plate girder side walls and to the angles 22 and of identical form with the individual pressings of the cruciform center posts. In this manner the car interior between the plate girder side walls is divided into a plurality of longitudinal and transverse pockets bounded by channels 30 and 32 and by side and center posts adapted to receive and guide the containers into place and prevent shifting of the lower part of the container.

The containers carried by the car may be of

any desired form but in the present case are rectangular containers provided with discharge outlets in the bottom thereof. Containers as disclosed are built with a bounding framework 40 to which is attached side walls 41 and inclined closed top portion 42. The bottom of the container is formed by converging walls 44 providing in effect a hopper closed by any suitable hopper discharge gate mechanism or, if desired, equipped for discharge by air pressure. Gusset plates 46 are connected to the framework and to the side wall structures as well as to the ends of upwardly diverging straps 48 anchored at their lower ends to the container framework. As clearly shown in the figures and particularly Fig. 2, the plates 46 and straps 48 are pierced to provide inclined elongated slots 50.

It will be seen from the preceding description that the containers will be securely anchored in the low side car at their bottom portions only and it will be obvious that the containers, unless otherwise anchored might be thrown from the car in case of derailment or excessive train shocks. Accordingly improved anchor means have been applied to the car for gripping the containers at points relatively high on the side walls. The anchor means, as clearly shown in the figures, consists of a plurality of cast or pressed anchor plates 60, having laterally extending arms 61 formed on their ends with inwardly projecting lugs 62 adapted to fit within inclined slots 50, previously referred to. These anchor plates are also formed with an inclined part 64 pierced to receive the threaded end of a long rod 66 extending transversely of the car and formed at its inner end with an elongated eye 68 adapted to engage over a pin 70 welded or otherwise secured to the side arms of a U-shaped bracket 72 welded or otherwise secured to the channels 30 and 32 at the center cruciform posts. The threaded part of these rods is provided with a nut 73 adapted to engage the inclined portion 64 of the anchor plate and the nut is held against loss by upsetting the threaded end of the rod. Each of the central anchor plates is also provided with a depending portion pierced as at 74 to receive eye 75 formed on a substantially vertically extending rod 76. The lower ends of these vertically extending rods extend through openings in the top chord 4 and have their ends threaded to receive a nut 77 held against loss by upsetting the end of the rod. Since the top chord is of bulb angle formation, small bearing blocks 78 are attached to the top chord beneath the web thereof in order to bring the nuts 77 in position for ready adjustment on the vertical rods 76. In order to anchor the end containers end anchor plates 80 are provided and each is formed as substantially a duplicate of half of the anchor plates 60 and accordingly, insofar as possible, the same reference characters have been applied thereto. In the case of the corner or end anchor plates, however, angular projections 82 are formed thereon to engage the end walls of the container and these projections are buttressed to the inclined portion 64 by gussets 83. Also the projecting lugs 84 are modified to provide lips 85 adapted to interlock the corner plates and container, all as clearly shown in Figs. 5 and 6. These corner or end anchor plates are held in position by the same type of transversely and vertically extending rods as were previously described in connection with the centrally located anchor plates and accordingly the same reference numerals have been applied thereto.

The operation of the improved anchoring means is as follows, assuming the car to be in fully loaded condition as shown in Fig. 7 and with the anchor means in the positions shown at the right half of Fig. 1 and by Fig. 2. Any authorized person desiring to remove the containers first backs off nuts 73 and 77 on the transversely extending and vertically extending rods, after which the central anchod plates 60 and corner or end anchor plates 80 may be disengaged from the slots 50 and allowed to drop. Dropping of the anchor plates will cause the parts to assume the full line position shown in the left hand part of Fig. 1 and the containers may now be readily removed from the car without excessive lifting. It should here be noted that when in a collapsed position the anchor means cannot project beyond the clearance limits of the car and, therefore, cannot foul trackside obstructions in case the car is moved with the anchor means in collapsed position. During loading of the container car the containers are dropped into position and the anchor plates lifted until their lugs engage the inclined slots 50, after which nuts 73 are tightened to hold the plates against the containers, then nuts 77 are tightened on rods 76, pulling the projections 62 of the anchor plates downwardly in the inclined slots 50 until the containers are tightly gripped and urged toward each other. This operation will place a small amount of slack in rod 66 and this must then be taken up by tightening nuts 73. When the nuts 73 and 77 are properly tightened the containers are held against vertical lift by rods 76 and against outward movement by rods 66. Also the anchor plates 60, due to their lugs 62, securely tie the containers together longitudinally of the car and at a point above the top chord of the car wall. Accordingly, longitudinal shifting movement of the rows of containers is prevented. It will be obvious that the improved anchor means and container positioning means may be readily applied to existing low side gondolas merely by securing the positioning means in the car and attaching the anchor means thereto. Thus the railroads or their carriers can readily convert existing cars for use as efficient container carriers and without excessive material or labor.

While the invention has been described more or less in detail with specific reference to the figures showing one modification, it will be obvious to persons skilled in the art that various other modifications and rearrangements of parts may be made and all such modifications and rearrangements of parts are contemplated as will fall within the scope of the appended claims defining our invention.

What is claimed is:

1. In a container car, the combination of a floor adapted to receive containers to support the same, plate girder side walls forming the main load carrying part of the car and adapted to overlap the lower portion only of containers carried by the car, and anchor means including anchor plates spanning the spaces between adjacent containers carried by said car and adapted to engage the intermediate portions of the container sides at points spaced upwardly from the upper edge of said plate girder side walls.

2. In a container car, the combination of a floor adapted to receive containers to support the same, plate girder side walls forming the main load carrying part of the car and adapted to overlap the lower portion only of containers carried

by the car, and anchor means carried by said car and adapted to engage the intermediate portions of the container sides at points spaced upwardly from the upper edge of said plate girder side walls, said anchor means comprising anchor plates adapted to engage the containers, and vertically and transversely extending rods connecting said anchor plates to the car, said rods holding said anchor plates at all times within the clearance limits established by the plate girder side walls.

3. In a container car, the combination of a floor adapted to receive containers to support the same, plate girder side walls forming the main load carrying part of the car and adapted to overlap the lower portion only of containers carried by the car, and anchor means carried by said car and adapted to engage the containers at points spaced upwardly from the upper edge of said plate girder side walls, said anchor means comprising a plurality of anchor plates each adapted to engage adjacent containers and lock the same together longitudinally of the car whereby a plurality of anchor plates lock together a plurality of containers, and vertically and transversely extending rods connecting each of said anchor plates to the car.

4. In a container car, the combination of a floor adapted to receive containers to support the same, plate girder side walls forming the main load carrying part of the car and adapted to overlap the lower portion only of containers carried by the car, and anchor means including anchor plates spanning the spaces between adjacent containers carried by said car and adapted to engage the containers at points spaced upwardly from the upper edge of said plate girder side walls, said anchor means being flexibly connected to the car and collapsible to an out of use position adjacent the plane of the top edges of the plate girder side walls and within the clearance limits of the car as defined by the plate girder side walls.

5. In a container car, the combination of a floor, a plurality of spaced containers supported by the floor, means on said containers provided with elongated slots inclined to the vertical, plate girder side walls forming a part of the car and overlapping the lower portion of the container and having the top edges spaced downwardly of said elongated slots, anchor plates spanning the spaces between adjacent containers and formed with lugs engaged in said elongated slots, and vertically extending rods connected to said anchor plates and to the top edges of said plate girder side walls, means on said rods adjustable to pull said anchor plates downwardly whereby said lugs acting in the elongated slots will bind adjacent containers together longitudinally of the car and resist vertical lifting.

6. In a container car, the combination of a floor, a plurality of spaced containers supported by the floor, means on said containers provided with elongated slots inclined to the vertical, plate girder side walls forming a part of the car and overlapping the lower portion of the container and having the top edges spaced downwardly of said elongated slots, anchor plates spanning the spaces between adjacent containers and formed with lugs engaged in said elongated slots, vertically extending rods connected to said anchor plates and to the top edges of said plate girder side walls, means on said rods adjustable to pull said anchor plates downwardly whereby said lugs acting in the inclined elongated slots will bind adjacent containers together longitudinally of the car and resist vertical lifting, and transversely extending rods connected to said anchor plates and to the car in the spaces between containers, means on said transversely extending rods adjustable to pull said containers toward the center of the car and prevent outward movement of the containers.

7. In a container car, the combination of a floor, a plurality of spaced containers supported by the floor, means on said containers provided with elongated slots inclined to the vertical, plate girder side walls forming a part of the car and overlapping the lower portion of the container and having the top edges spaced downwardly of said elongated slots, anchor plates spanning the spaces between adjacent containers and formed with lugs engaged in said elongated slots, and transversely extending rods connected to said anchor plates and extending downwardly and inwardly between the containers and connected to the car at the ends remote from the anchor plates, means on said rods adjustable to pull said anchor plates downwardly and inwardly whereby said lugs acting in the inclined elongated slots will bind adjacent containers together longitudinally of the car and will prevent vertical and transverse outward shifting of the containers.

8. Anchor means for containers having elongated slots formed therein adjacent the corners thereof and inclined to the vertical, comprising anchor plates, projections on said anchor plates engageable in the elongated slots of adjacent containers, and angularly disposed rods connected to said anchor plates and to a supporting structure for the containers.

9. Anchor means for containers having elongated slots formed therein adjacent the corners thereof and inclined to the vertical, comprising anchor plates, projections on the anchor plates engageable in said elongated slots of adjacent containers, and angularly disposed rods connected to said anchor plates and to a supporting structure for the containers, said rods being located in vertical planes substantially at right angles to each other and being vertically movable in said planes from an active to an inactive anchoring position.

10. Anchor means for containers having elongated slots formed therein adjacent the corners thereof and inclined to the vertical, comprising anchor plates, projections on the anchor plates engageable in said elongated slots of adjacent containers, and angularly disposed rods connected to said anchor plates and to a supporting structure for the containers, and means on said rods adjustable to pull said anchor plates downwardly and inwardly with respect to the containers whereby adjacent containers are held together.

ERNEST R. SCHROEDER.
VICTOR WILLOUGHBY.