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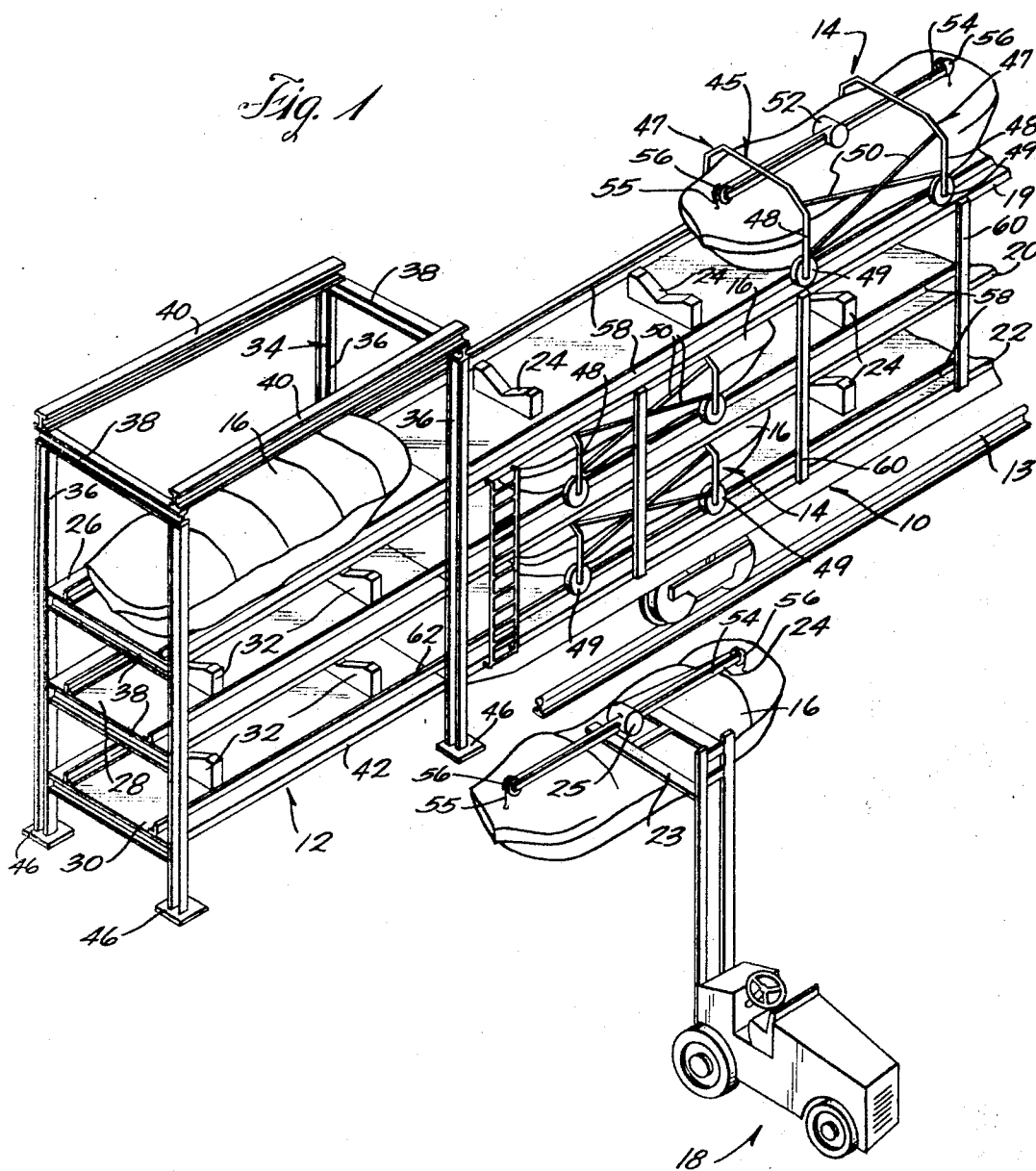
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METHOD AND APPARATUS FOR LOADING MULTILEVEL RAILROAD CARS

Filed Dec. 19, 1966

Sheet 1 of 2



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Sheet 2 of 2

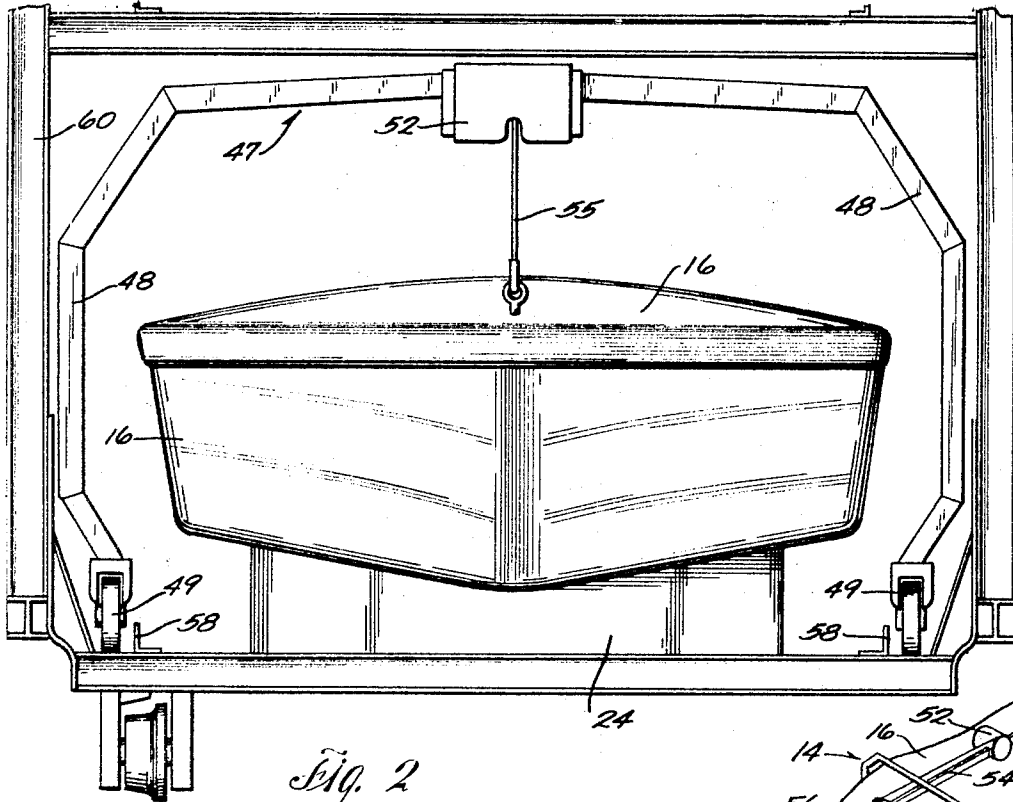


Fig. 2

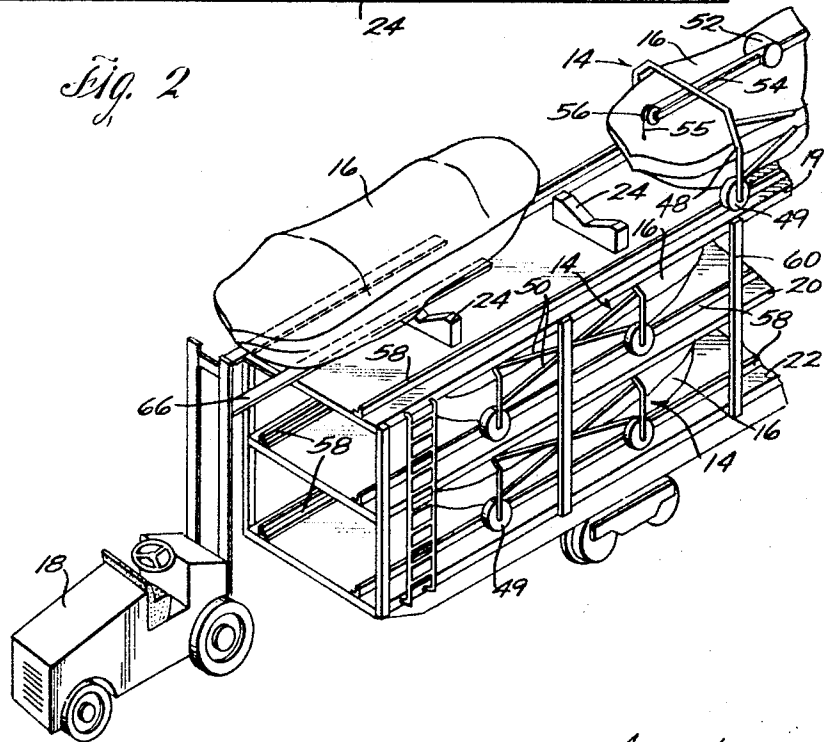


Fig. 3

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3,445,013

**METHOD AND APPARATUS FOR LOADING  
MULTILEVEL RAILROAD CARS**

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9 Claims

**ABSTRACT OF THE DISCLOSURE**

The disclosure involves loading boat hulls on a multilevel railroad car which may be located adjacent to a multilevel loading dock located at one end of the railroad car and having levels corresponding in height to the various levels of the railroad car. Gantries on each level are provided for transporting boats along the railroad car and to and from the dock or other supply means. The gantries are constructed with inverted U-shaped frames having spaced depending legs and wheels to facilitate movement of the gantries over the boats. The railroad car and the loading dock are provided with guide rails located inwardly of the gantry wheels, and on the railroad car, parallel to and adjacent to the longitudinal sides of the car.

The invention is a further development of the subject matter disclosed in my U.S. application Ser. No. 456,911, now Patent 3,315,825.

This invention relates to railroad cars and more particularly to methods of loading and unloading railroad cars and apparatus therefor.

Various difficulties have been encountered in loading and shipping boat hulls by railroad inasmuch as hulls are designed for intended use in water and are not suited to withstand the rough handling associated with shipping methods. Although crating of each individual hull would be desirable from a protective view point, it is not economically feasible to crate the hulls because of their size. Other difficulties experienced in shipping boat hulls by rail include the time involved in loading multilevel railroad cars which have been used for transporting boat hulls.

In accordance with the present invention methods and apparatus are provided for safe and fast loading of multilevel railroad cars with a minimum of personnel.

One method includes loading boat hulls on a loading dock and transporting the boat hulls from the loading dock to the storage location on the railroad car using a gantry. A further method includes the use of a front end loader to quickly project the hull into one end of the railroad car, raising the hull from the front end loader with a gantry, and moving the gantry with the hull along the railroad car. The apparatus of the invention includes a multilevel loading dock with the levels corresponding in height to the levels of a multilevel railroad car. Gantries on each level of the loading dock are used to raise the boats and transport the boats longitudinally along the railroad car. This invention also provides a multilevel railroad car with parallel guide rails to facilitate movement of the gantries within the supporting structure for the various levels and between the levels.

Other objects of the invention include an improved method of loading and unloading boat hulls on a railroad car with a minimum of modifications to the railroad car and a method for concurrently loading each level of a multilevel railroad car.

Further objects and advantages of the invention will become apparent from the following description and accompanying drawings in which:

FIGURE 1 is a perspective view of a multilevel railroad car and loading dock in accordance with the invention.

FIGURE 2 is a fragmentary end view of one level of the railroad car shown in FIGURE 1.

FIGURE 3 is a fragmentary perspective view of an alternate method of loading and unloading railroad cars.

Referring now to the drawings, FIGURE 1 shows a trilevel railroad car generally designated 10 and a loading dock generally designated 12, located at the end of the railroad car 10 and at the end of the rails 13. Also shown in FIGURE 1 are several boat hulls 16, and a loading vehicle 18.

The railroad car 10 has three storage levels 19, 20 and 22. Each level is provided with a gantry 14 and sets of boat supporting cradles 24 spaced apart to accommodate a plurality of boat hulls.

The loading dock 12 has three loading levels 26, 28 and 30 which correspond in height to the levels 19, 20 and 22 of the railroad car. Each level of the loading dock 12 also has a set of boat cradles 32 to support the boat hulls.

In accordance with the method of the invention, boat hulls are raised to the various levels of the loading dock 12 using any suitable apparatus such as a front end loader 18. The designation "front end loader" is intended to include any loading apparatus with a cantilevered support. As shown in FIGURE 1 the tines 23 of the front end loader 18 carry a beam 24 provided with a winch 25 to raise the hulls 16.

The hulls supported on the loading dock 12 are then connected to raising means and moved along the railroad car storage levels to the desired storage locations which initially will be at the railroad car end distant from the loading dock. The hulls are lowered onto the desired set of cradles 24, disconnected from the raising means and secured to the levels by any conventional securing means such as belts that encircle the hulls and are secured to the railroad car levels. All three levels of the railroad car may be loaded concurrently if desired by the separate gantries on each level. One or more loading vehicles 18 can be used to place hulls on the loading dock 12.

In the disclosed construction the loading dock 12 has a frame 34 comprising four spaced apart vertically upstanding beams 36 joined together by a series of cross members 38 and two top members 40. The frame 34 supports three platforms 42 which serve as the loading levels 26, 28 and 30. The beams 36 are each provided with a foot plate 46 to assist in carrying the loading forces and provide stability.

The gantries 14 comprise inverted U-shaped frames 45 including two longitudinally spaced apart inverted U-shaped structures 47 which span the boat hulls, each having spaced depending legs 48 which afford movement over the hulls and between the levels of the loading dock and railroad car levels. The legs 48 are secured by cross braces 50. Raising and lowering of the hulls is accomplished by a winch 52 carried by a cross beam 54 depending from the structures 47. In the disclosed construction pulleys 56 at each end of the cross beam 54 permit raising or lowering of the stern and bow of each hull with a cable 55. Two separate winches at opposite ends of the cross beam 54 can be employed. The legs 48 of the gantries are provided with wheels 49 at their lower ends to facilitate movement along the railroad car levels and on the dock platforms.

Each level of the railroad car 10 is provided with a pair of spaced apart and parallel guide rails 58 to confine

the movement of the gantries and prevent striking of the railroad car frame 60 which supports the levels. The guide rails are located on the upper surface of each level. The loading dock also is provided with similar guide rails 62 on each level. The guide rails 58 and 62 can comprise strips of angle iron bolted or otherwise secured to each level. They can be located inside or outside the gantry wheels 49. The guide rails also can be bent inwardly to converge at the loading end to align the wheels 49 when moving the gantry to and from between the loading dock and the railroad car.

FIGURE 3 shows apparatus for practicing an alternate method of the invention using a loading vehicle 18 having tines 66 which extend longitudinally under the boat hull. As shown in FIGURE 3 the loading vehicle 18 raises a boat hull 16 to the desired loading level of the trilevel railroad car 10, and projects the boat hulls inwardly of one end of the railroad car and above the desired level. The boat hull is raised from the tines 66 by a gantry 14 by connection to winch cable 55 and carried to the desired location on the railroad car and lowered, disconnected from the cable 55 and secured in place. This method also is suitable for unloading hulls and is particularly important for use at a shipping destination where a loading dock as herein described may not be available.

Various of the features of the present invention will become apparent from the following claims.

What is claimed is:

1. A method of loading boat hulls on a multilevel railroad car comprising the steps of loading boat hulls on a multilevel loading dock, raising the hulls from each level of the loading dock with respective raising means movable longitudinally on each of the levels of the dock and railroad car, moving the hulls along each of the levels of the railroad car to given locations, lowering the hulls onto the railroad car, and securing the hulls on the railroad car.

2. A method in accordance with claim 1 plus the preliminary step of lifting the hulls with a front end loader and lowering the hulls onto one of the loading dock levels.

3. A method of loading boat hulls on each level of a multilevel railroad car comprising the steps of loading the boat hulls on each of the several levels of a multilevel loading dock, connecting the boat hulls to raising means of respective gantries movable on each of the levels of the railroad car and the loading dock, raising the boat hulls from the loading dock with the raising means on the gantry, moving each of the boat hulls with the gantry along the railroad car, lowering the boat hulls onto the railroad car, securing the boat hulls on the railroad car, and disconnecting the raising means from the boat hulls and moving the gantries to afford use in the loading of other boat hulls.

4. Loading apparatus comprising a multilevel railroad car, a loading dock having multiple levels corresponding in height to the levels of said multilevel railroad car and located at one end of the car, a gantry on each of said levels, said gantries having wheels engageable with the upper surface of said levels to afford movement of said

gantries onto said loading dock and along said railroad car, said gantries having raising means, and guide means on said loading dock and railroad car for guiding gantry movement.

5. Apparatus in accordance with claim 4 wherein each of said gantries comprises, two longitudinally spaced apart inverted U-shaped structures having transversely spaced legs, said structures being adapted to span a boat hull, cross braces connecting said structures, each of said legs being mounted on a wheel, a cross beam connected to said structures, and a winch carried by said cross beam.

6. A railroad car including a plurality of levels each including at least one boat storage area, a gantry on each of said levels, said gantries being movable along their respective levels, said gantries each including means for raising and lowering boat hulls relative to said boat storage area, and guide means on each of said levels for guiding gantry movement.

7. A railroad car including a plurality of levels each having an upper surface, a gantry on each of said levels, said gantries being movable along their respective levels, said gantries each including wheels and means for raising and lowering boat hulls, and guide means on each of said levels for guiding gantry movement, said guide means on each of said levels comprising parallel rails extending along the length of each of said levels, secured to said upper surface, supporting said gantries, and spaced between said wheels of the associated one of said gantries to prevent lateral gantry movement and afford longitudinal gantry movement along said car.

8. A method of loading a boat hull on a multilevel railroad car comprising the steps of lifting the hull with a front end loader, projecting the raised hull in one end of the railroad car above a level, raising the hull from the front end loader with a gantry equipped with a winch, moving the hull with the gantry along the railroad car, lowering the hull onto the railroad car, and securing the hull to the railroad car.

9. Loading apparatus comprising a loading dock having multiple levels corresponding in height to the levels of a multilevel railroad car and located at one end of the railroad car, a gantry on each of said levels, said gantries each having wheels, said gantries being movable on said loading dock and the railroad car, said gantries having raising means, and guide means on said loading dock for guiding gantry movement.

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