United States Patent [19]

Krug, Jr.

[11] **3,800,712**

[45] **Apr. 2, 1974**

[54] **RAILROAD CAR FOR TRANSPORTING CONTAINERS**

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[73] Assignee: **ACF Industries, Incorporated**, New York, N.Y.

[22] Filed: **Sept. 29, 1972**

[21] Appl. No.: **293,462**

[52] **U.S. Cl.** ..... **105/366 D**, 248/119 R, 105/366 C

[51] **Int. Cl.** **B65j 1/22**, B60p 7/08

[58] **Field of Search** ..... 105/366 D, 366 R; 248/119 R

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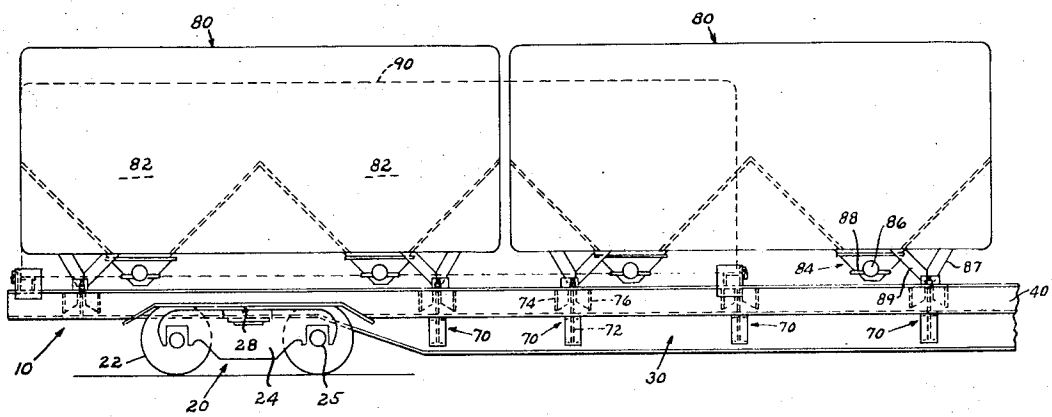
Primary Examiner—Drayton E. Hoffman

Attorney, Agent, or Firm—Henry W. Cummings

[57] **ABSTRACT**

This disclosure is directed to a railroad car having means mounting hopper type containers on the car in such a manner that they may be unloaded while on the car. The car also includes mounting means for transporting standard containers on the car, preferably on pedestals. Support structure on the car has been designed to minimize car weight.

5 Claims, 12 Drawing Figures



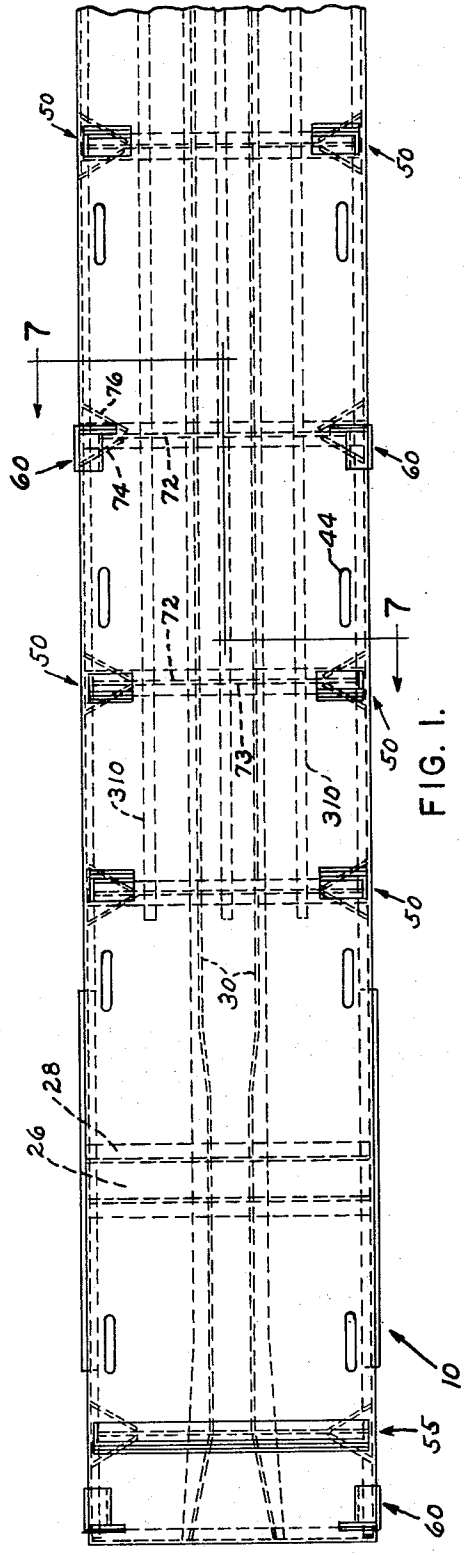

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FIG. 1.

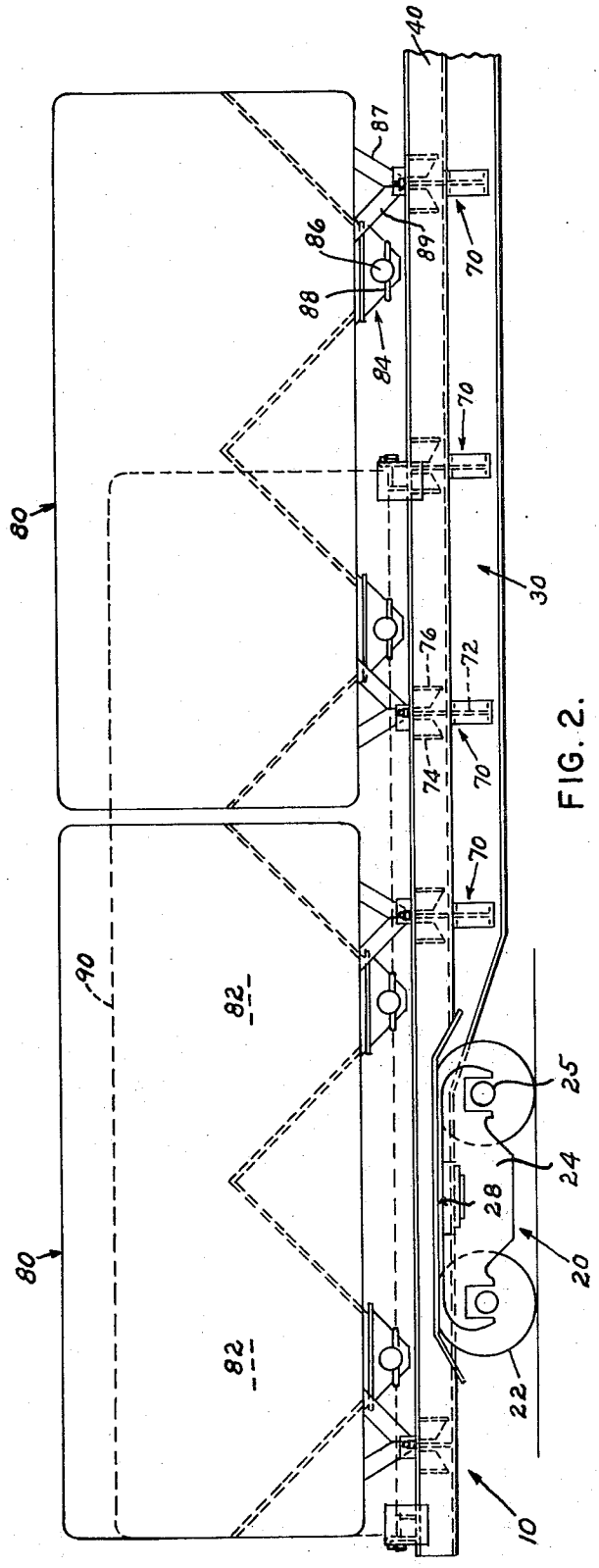

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FIG. 2.

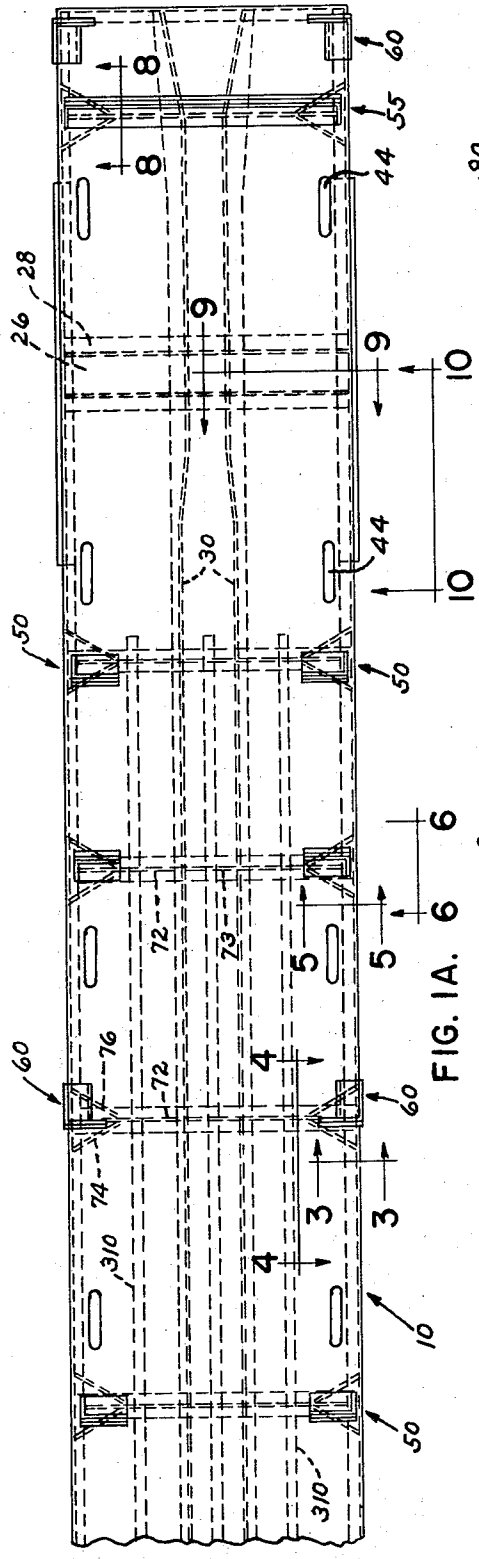


FIG. 1A.

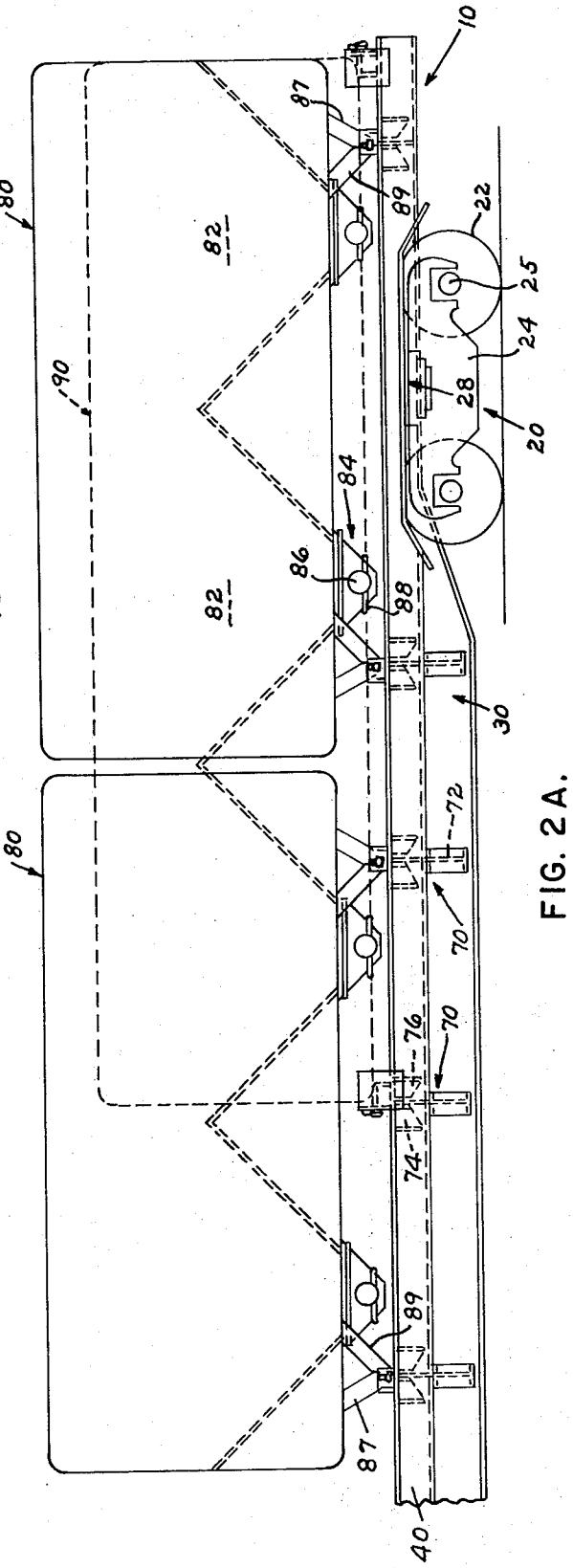


FIG. 2A.

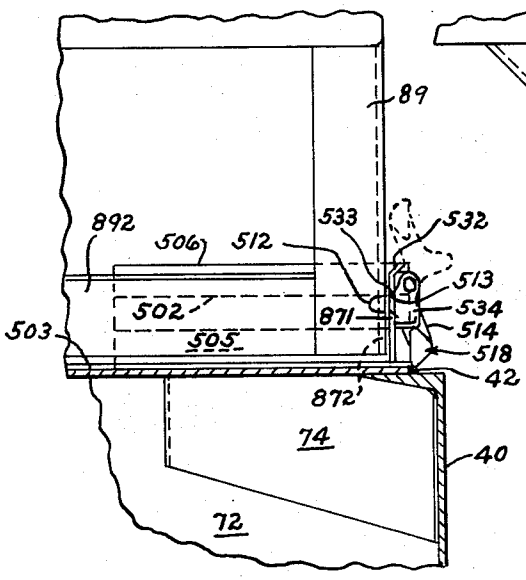


FIG. 5.

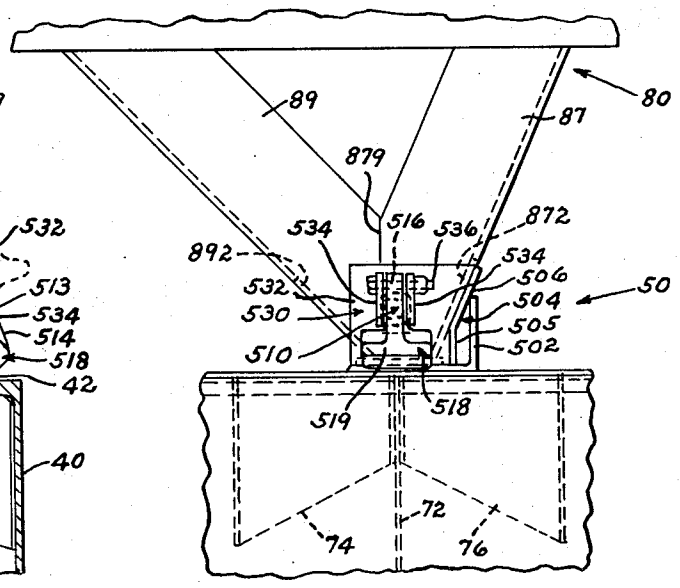


FIG. 6.

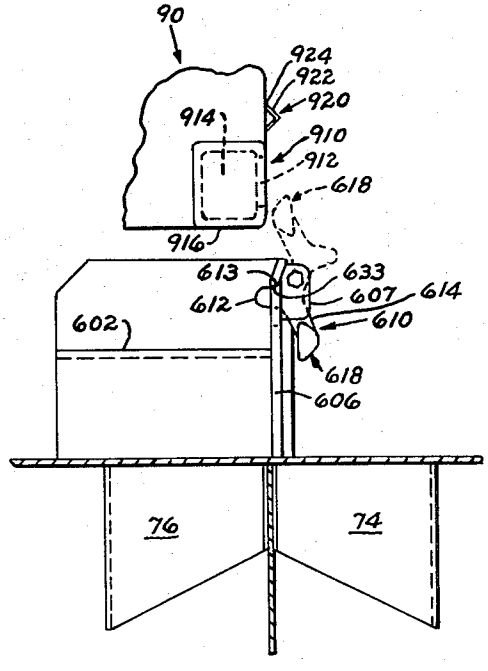


FIG. 4.

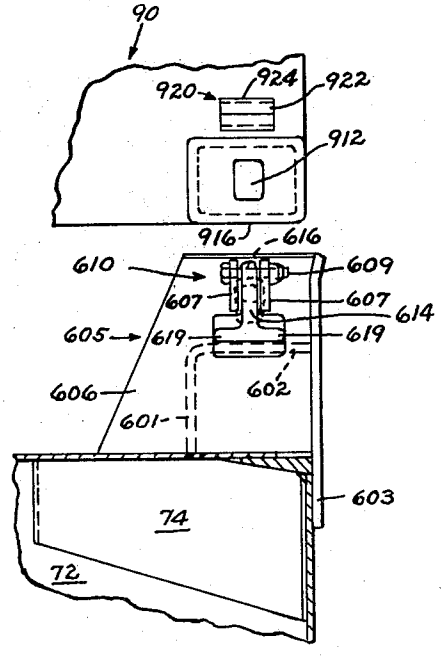


FIG. 3.

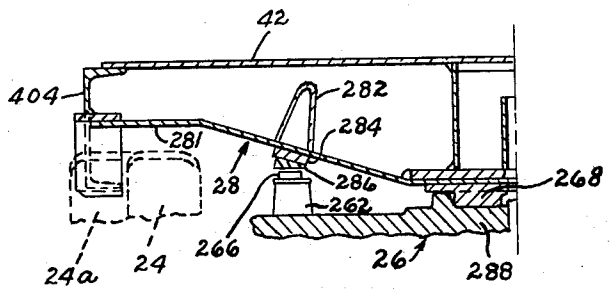


FIG. 9.

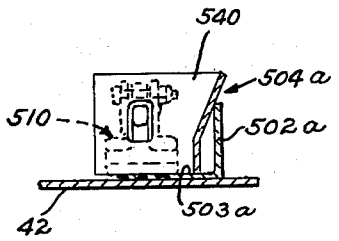


FIG. 8.

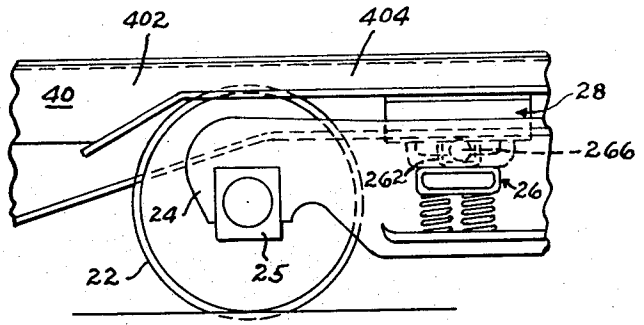


FIG. 10.

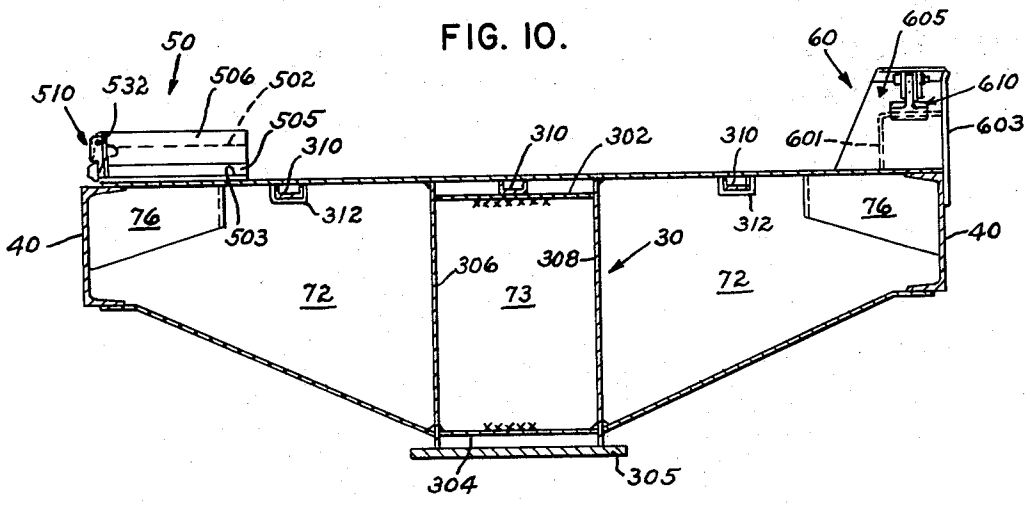


FIG. 7.

RAILROAD CAR FOR TRANSPORTING CONTAINERS

BACKGROUND OF THE INVENTION

This invention relates to railroad cars for transporting containers. In particular, it relates to a car for transporting standard type containers and at the same time transporting hopper type containers which can be unloaded while on the car. Thus, instead of merely providing a car which can transport the hopper type containers and unload them on the car, the railroad car of the present invention includes mounts suitable for transporting standard containers as well, thus making the car much more flexible and useful to the customer. Another important design objective is to minimize the weight and cost of the car.

It therefore is an object of the present invention to provide a railroad car for carrying containers having hoppers therein which can be unloaded on the car.

Another object of the present invention is to provide a railroad car which in addition to transporting hopper type containers is capable of transporting standard type containers.

Another object of the present invention is to provide a minimum weight railroad car for transporting hopper type and/or standard type containers.

Other objects will be apparent from the following description and drawings.

THE DRAWINGS

FIG. 1 is a plan view of one-half of the car of the present invention; and FIG. 1A is a plan view of the remainder of the car of the present invention;

FIG. 2 is a side elevation view of one-half of the car of the present invention; and FIG. 2A is a view of the remainder of the car illustrating the hopper type containers in solid lines and the standard containers in dotted lines;

FIG. 3 is a view along the line 3—3 in FIG. 1A illustrating pedestals and locking means for use in connection with standard size containers:

FIG. 4 is a view along the line 4—4 in FIG. 1A also illustrating the pedestals and locking means for standard container mounting;

FIG. 5 is a view along the line 5—5 in FIG. 1A illustrating mounting of the hopper type containers on the car deck;

FIG. 6 is a view along the line 6—6 in FIG. 1 also illustrating the hopper type containers mounted on the car deck;

FIG. 7 is a view along the line 7—7 in FIG. 1 illustrating the hopper type conainter locking means on the left and the standard container and pedestal locking means on the right;

FIG. 8 is a view along the line 8—8 in FIG. 1A illustrating support structure provided on both ends of the car;

FIG. 9 is a view along the line 9—9 in FIG. 1A; and

FIG. 10 is a side elevation view along the line 10—10 in FIG. 1A illustrating the modified side sill structure which may be used in the present invention.

DETAILED DESCRIPTION

The railroad car of the present invention is indicated generally at **10** and comprises trucks **20** having conventional wheels **22**, side frames **24**, journal boxes **25**, truck bolsters **26**, and body bolsters **28**. (FIG. **10**).

The car further comprises a conventional center sill **30** having mounted therein conventional coupling structure (not shown). Side sills **40** are provided along the sides of the car.

Mounted along the longitudinal length of the car are a plurality of container support members **50** which are mounted upon the deck of the car. These container support members **50** together with special container support members **55** found at the opposite ends of the car provide mounting means for mounting the hopper type containers **80** as shown in FIGS. **2** and **2A**.

Also mounted along the longitudinal length of the car are a plurality of pedestals **60** which are utilized to mount standard type containers **90** upon the car, elevated from the car deck, as shown in dotted lines in FIGS. **2** and **2A**.

Also mounted along the longitudinal length of the car are a plurality of transverse support means **70** located generally beneath container support means **50** and pedestal support means **60.**

The hopper type containers **80** comprise hoppers **82**, having discharge outlets **84** comprising valves **86** having handles **88** for opening the same. The containers have support legs **87,89** which support the containers upon the deck, which may extend transversely across the deck when the containers are mounted upon the car.

Referring to FIGS. **5** through **7**, leg **89** is welded to leg **87** along line **879.** An opening **871** is provided in leg **87** to receive container locking means to be described hereinafter. The hopper type containers may be, for example, about 15 feet, 3 inches in length and about 8 feet wide. A lower portion **892** of leg **89** extends across the car.

Container support means **50** comprise an angle base support **502** having a horizontal portion **503** upon which the container legs are mounted on the deck. An end plate **504** is also provided having a lower portion **505** and an angle contour **506** adapted to provide support for the legs **87.** Container support means **50** further comprises a mounting means indicated generally at **530** upon which is mounted a container locking means indicated generally at **510.** The container mounting means may comprise a plate **532** having affixed thereto by welding on appropriate fasteners one or more mounting supports **534.**

The locking means utilized to hold the hopper type container in place may take a wide variety of forms. One example of a locking means which may be utilized is found in Grob et al. U. S. Pat. No. 3,391,654. Other examples include locking devices shown in U. S. Pat. No. 3,667,401 and in U. S. Pat. No. 3,525,307.

For illustration purposes, the locking device shown is that contained in ACF application Ser. No. 293,456. Docket No. 323 in the name of Robert R. Girard, filed on even date herewith. The locking device **510** comprises a locking arm **512** integral with a generally vertically extending web portion **514** integral with a weighted base portion **518,** for example, having substantially identical weighted arms **519,** as is described in detail in the said Girard application. A pin **536** passes through opening in supports **534** and through an opening **516** in locking device **510** to provide pivot mounting of locking device **510.** As a member to be engaged, for example, a container or container leg such

as 87 having an opening therein 871 descends into engagement position, the lower portion thereof 872 contacts the locking arm 512 and moves the same outwardly as the locking member pivots about the pin 536 until the opening 871 in container leg 87 is reached, after which the locking arm 512 springs back into the opening 871 in the container leg. A substantially horizontal locking surface 513 on locking arm 512 cooperates with a locking surface 533 on plate 532 to hold the container leg in position and counteract any tendency for the container to move vertically out of position, for example, during impacts. To remove the container leg it is merely necessary to move the locking member 510 into the upright position as shown dotted in FIG. 5, and the container leg may be removed vertically unobstructed.

As can be seen from FIGS. 1 and 1A, a plurality of openings 44 are provided in the deck of the car. It will be apparent that the discharge outlets 84 are located a reasonable distance above the deck of the car. Thus, if it is desired to unload the containers 80 while they are mounted on the car, the discharge outlet arm 88 can be rotated and passed into the openings 44 in the car deck and an appropriate outlet structure attached to the discharge outlets such as a flexible conduit and/or a pneumatic system and the containers unloaded.

The support structure 70 extending transversely across the car to center sill 30 below both locking means 50 and pedestal locking means 60 can be seen in FIGS. 1, 2 and 5–7. Support structure 70 comprises a crossbearer web 72 which extends all the way across the car, together with stiffening plates 74 and 76 welded or otherwise affixed thereto and to deck 42.

FIG. 7 shows the center sill structure 30 including upper tie plate 302, bottom tie plate 304, and side plates 306 and 308. Cross bearers 72 are welded or otherwise affixed to side plates 306 and 308. A central cross bearer 73 extends between plates 306 and 308 and is welded or otherwise affixed thereto. Below deck 42 longitudinal support stringers 310 pass through openings 312 in cross bearers 72 and are welded or otherwise affixed thereto. It will be noted that transverse supports are provided preferably only below container support means 50 and 60 where the weight from the containers is transmitted to the car, thus minimizing the weight of the car. Also the use of angular support plates 74 and 76 in combination with cross-web 72 helps to distribute the weight of the containers and lading to car and reduces the need for additional cross bearers.

Turning now to FIGS. 3 and 4, the pedestal support means 60 is illustrated. A container seat 601 is provided having a generally horizontal portion 602 upon which standard containers 90 rest during transit. A pedestal end plate 603 is also provided which engages and/or supports a lower portion of the standard containers resting on seat 602. Pedestal mounting means 605 also are provided comprising a pedestal mounting plate 606 upon which are affixed, for example, by welding or other appropriate fasteners, one or more lock support members 607.

Mounted upon the plate 606 is an appropriate locking means 610. As described in connection with locking means 510, a wide variety of locking means are suitable. By way of example the locking means described in Girard application Ser. No. 293,456 Docket No. 323 is illustrated. Locking means 610 may comprise a locking arm 612, an integral web portion 614 and a weighted base portion 618 having weighted arms 619 thereon, as described in connection with locking means 510. Locking member 610 is mounted upon a locking pin 609, which passes through openings in lock support members 607 and through an opening 616 in locking member 610. Containers 90 are of rectangular or square shape and are preferably of standard size, for example, 30′ × 8′. The containers 90 may comprise four locking feet 910 at the corners integral with the container; for example, feet 910 may comprise a casting, welded or bolted to the container, having an opening therein 912 into a generally hollow portion 914. The feet 910 preferably include a lower ledge portion 916.

As described in connection with the aforementioned Girard application, the container may also be provided with an engaging means 920 for engaging the locking member 610 when the latter is in the elevated position and moving it to a locking engagement position. The engaging means 920 may comprise projections 922, for example, welded or otherwise appropriately fastened to the container at 924. In the event that the locking member 610 is in the elevated position, as shown dotted in FIG. 4, a portion of the container, preferably projection 922 may be utilized to engage base portion 618 to cause the locking member to pivot about the pin 609 and assume the position shown in solid in FIG. 4. As the container ledge portion 916 of foot 914 is lowered, it will engage the locking arm 612 and move the latter outwardly about the pivot pin 609 until such time as the foot has moved passed the locking arm and then the locking arm 612 will move back into the opening 914 and the container will be held in engagement. Impact forces urging the container out of engagement will be resisted by surface 633, preferably substantially horizontal on the mounting plate 606 and surface 613 of locking member also preferably substantially horizontal.

The containers may be removed by manually rotating the locking member about pivot pin 609 into the elevated position shown dotted in FIG. 4, and moving the containers vertically.

As far as construction at the ends of the car is concerned, it will be seen from FIG. 8 that the angle support 502 and end plate 504 preferably extend all the way across the car as shown at 502*a*, 503*a* (horizontal portion) and 504*a* respectively in FIG. 8. The continuation of these members across the end portions of the car provides transverse support. A comparison of FIG. 9 with FIG. 7 will show that the transverse portion of the car is foreshortened in the end portions; thus additional transverse support is preferably provided as shown in FIG. 8.

As shown in FIGS. 9 and 10, it will be seen that side sill 40 is modified to include an inclined portion 402 and an end portion 404. If the side sill 40 were continued to the end of the car with a vertical extent illustrated in the lefthand side of FIG. 10, the side frame 24 would run into the side sill around curves; as shown dotted in FIG. 9, side frame 24 may swing out laterally past side sill 40 around corners as indicated at 24*a*. Therefore, the inclined portion 402 and foreshortened portion 404 have been provided in the side sill to avoid this problem.

Also in FIG. 9, a body bolster 28 is shown having a lower body bolster plate 281 and a bolster support member 282 welded or otherwise affixed thereto. A

truck bolster **26** has a side bearing support **262** mounted thereon having a roller wear plate **266.** Body bolster **28** has a wear plate support **284** and wear plate **286** which engages the truck bolster roller **266.** Truck bolster **28** has a bolster center plate **288** which engages a body center plate **268** and a center pin is passed therethrough to obtain engagement between the body bolster and the truck bolster, as is conventional in the art.

By way of example, the hopper type containers have been described as having legs which rest on the deck and support the container body above the deck to allow unloading while still on the car. If desired, the hopper type containers could be mounted on pedestals of sufficient height to allow unloading on the car. Also the standard containers could either be mounted on higher pedestals or be carried on the deck with locking means mounted on the deck. In the latter case, pedestals for the hopper containers and locking means on the deck for the standard containers must be dimensioned so as not to interfere with transporting the other type of containers. Also, the locking means on the deck could be used to transport containers not having hoppers, but having dimensions corresponding to the deck locking means. Thus, it is within the scope of the present invention to utilize the car in transporting entirely non-hopper type containers, should this alternative be attractive from a business view point. Alternatively, both the deck mounted (with legs) containers and the pedestal mounted containers may contain hoppers, and if desired may be unloaded on the car. Other modifications will be apparent to those skilled in the art.

What is claimed is:

1. A railway car for carrying hopper type containers and standard containers comprising:

trucks mounted on opposite ends of the car supporting a car deck;

side sills extending longitudinally on opposite sides of the car between the trucks;

hopper type containers having legs on opposite ends thereof extending transversely across the deck, and hopper outlets having handles thereon for opening and closing said outlets;

hopper container latch means spaced longitudinally along the deck on opposite sides thereof having means thereon for lockingly engaging openings in said hopper type container legs;

a plurality of pedestal support means spaced longitudinally along the deck on opposite sides thereof adapted to support a plurality of standard type containers on said pedestals above said hopper type container latch means; said pedestals having pedestal latch means thereon lockingly engaging spaced openings in a bottom portion of said standard containers to hold said standard containers above the car deck; generally transversely extending support means extending between the side sills below the deck and directly below said hopper container latch means and said directly below pedestal support means for distributing the weight of said hopper type containers and standard containers and transmitting the same to said trucks; and openings in the car deck for allowing said handles to move therein whereby said hopper type containers may be unloaded without removing the same from the car.

2. A railway car according to claim **1** wherein said hopper container latch means pivot about an axis parallel to said side sills and said pedestal latch means pivot about an axis transverse to said side sills.

3. A railroad car according to claim **1** wherein the vertical extent of said side sills are foreshortened at the end portions thereof to allow freedom of movement of the truck side frame around curves.

4. A railroad car according to claim **1** wherein said transverse support means further comprise stiffening means extending at least part way across the car.

5. A railroad car according to claim **1** wherein near the ends of the car the container latch means extend transversely across the car to provide structural support.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,800,712

DATED : April 2, 1974

INVENTOR(S) :

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 6, line 18, (claim 1) should read -- latch means and directly below said pedestal sup- --.

Signed and Sealed this

twenty-fifth Day of *May 1976*

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks