May 2, 1939. B. F. FITCH 2,156,282

FREIGHT TRANSFERRING APPARATUS

Filed June 29, 1936 4 Sheets-Sheet 1

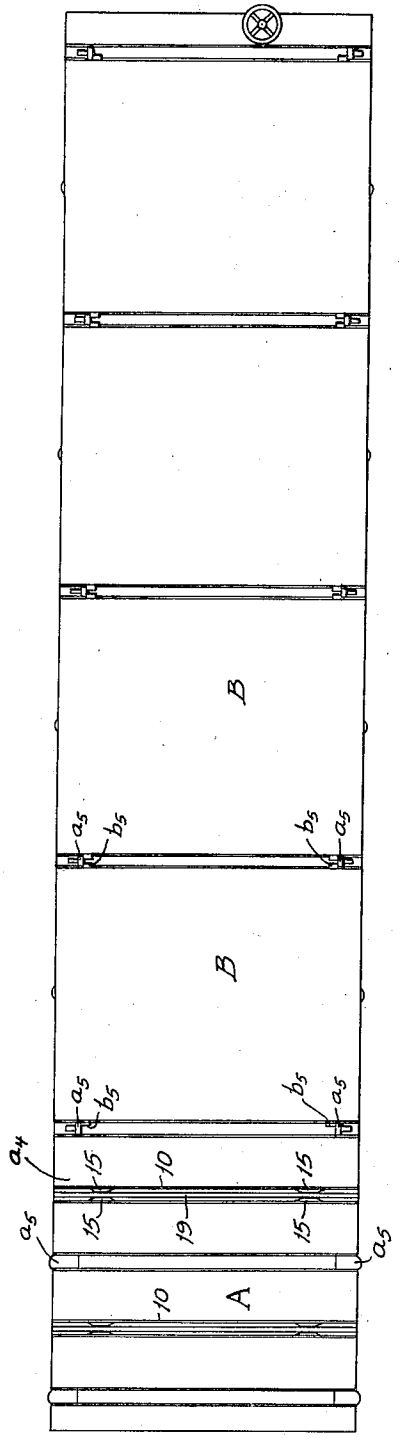

FIG. 1

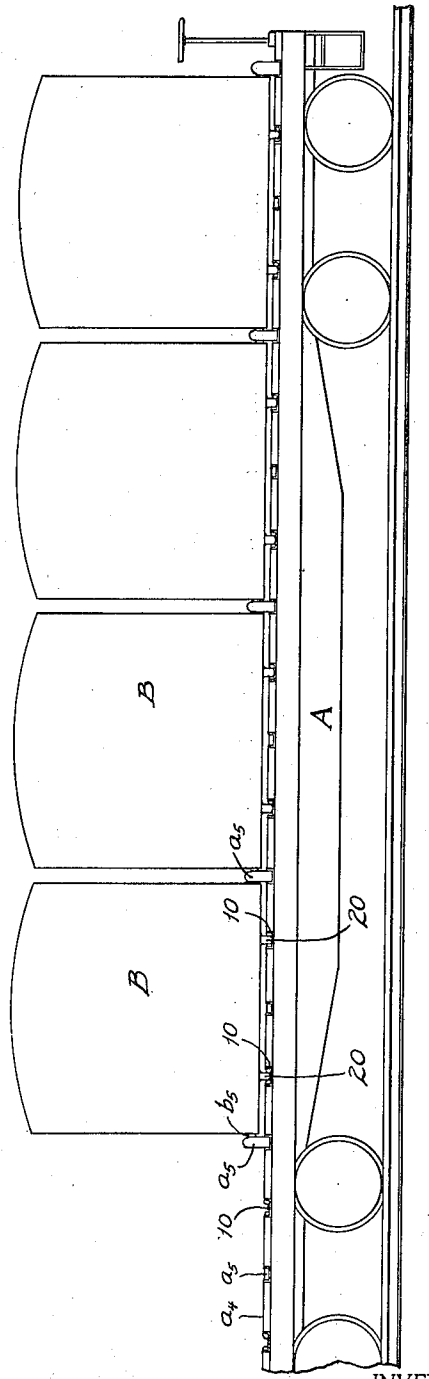

FIG. 2

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May 2, 1939. B. F. FITCH 2,156,282

FREIGHT TRANSFERRING APPARATUS

Filed June 29, 1936 4 Sheets-Sheet 2

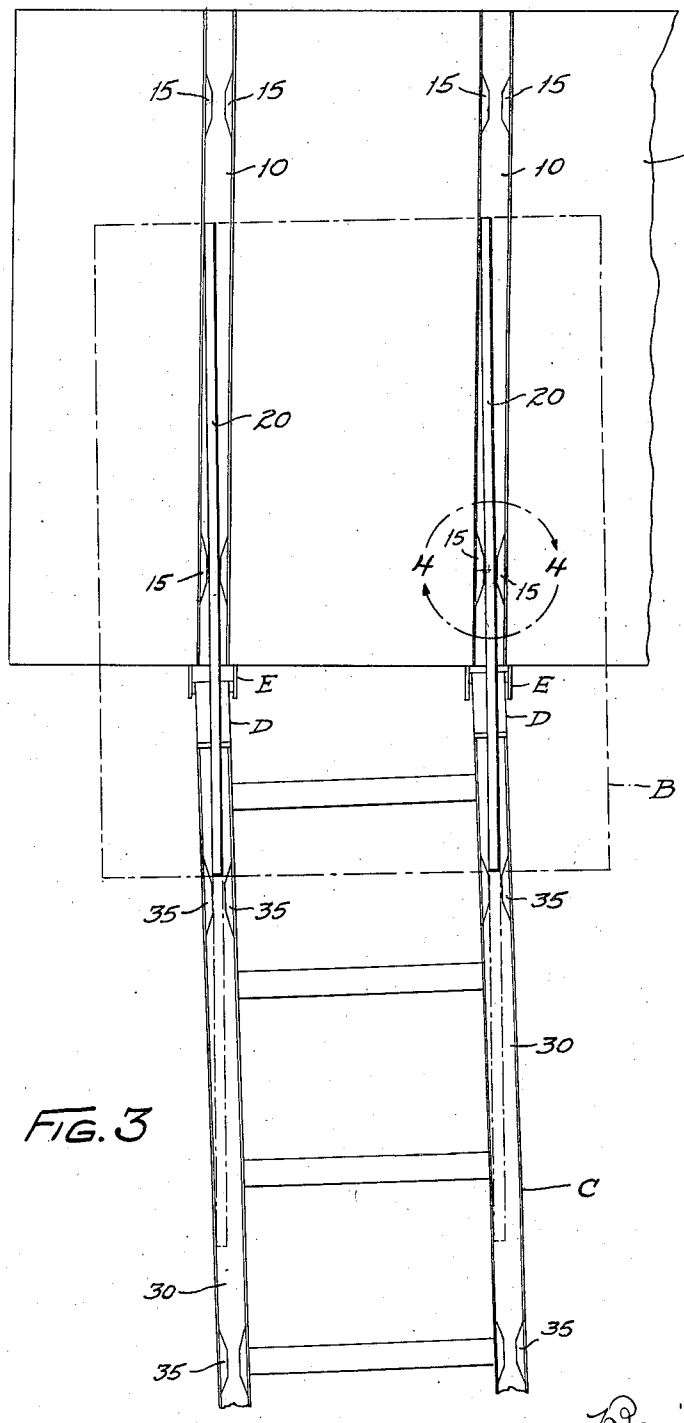

FIG. 3

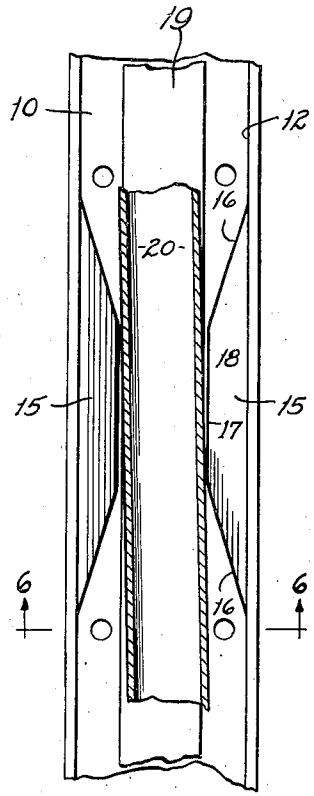

FIG. 4

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May 2, 1939. B. F. FITCH 2,156,282

FREIGHT TRANSFERRING APPARATUS

Filed June 29, 1936 4 Sheets-Sheet 3

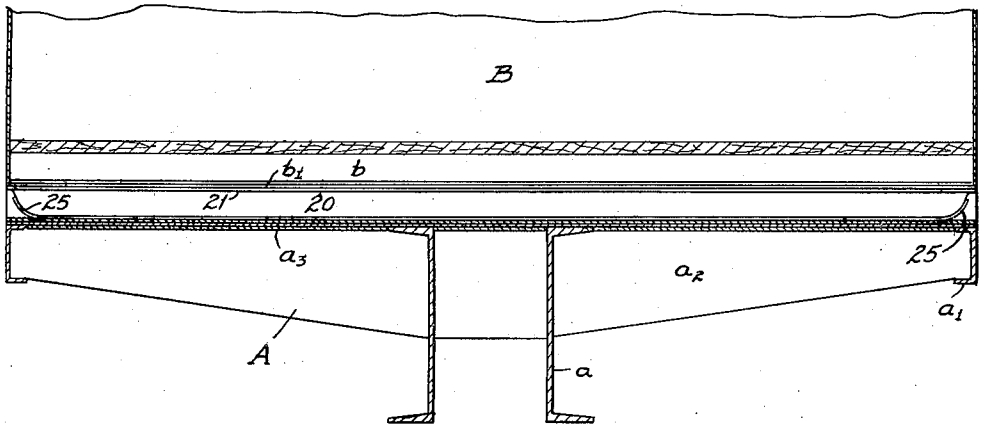

FIG. 5

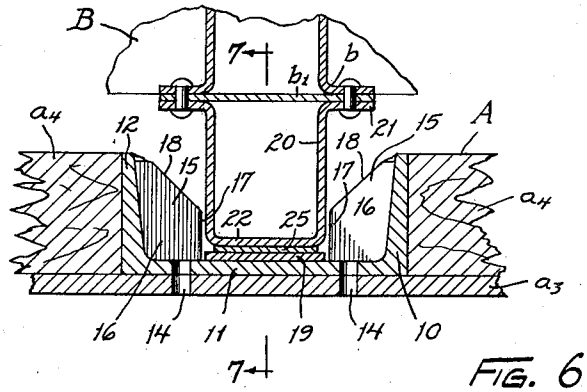

FIG. 6

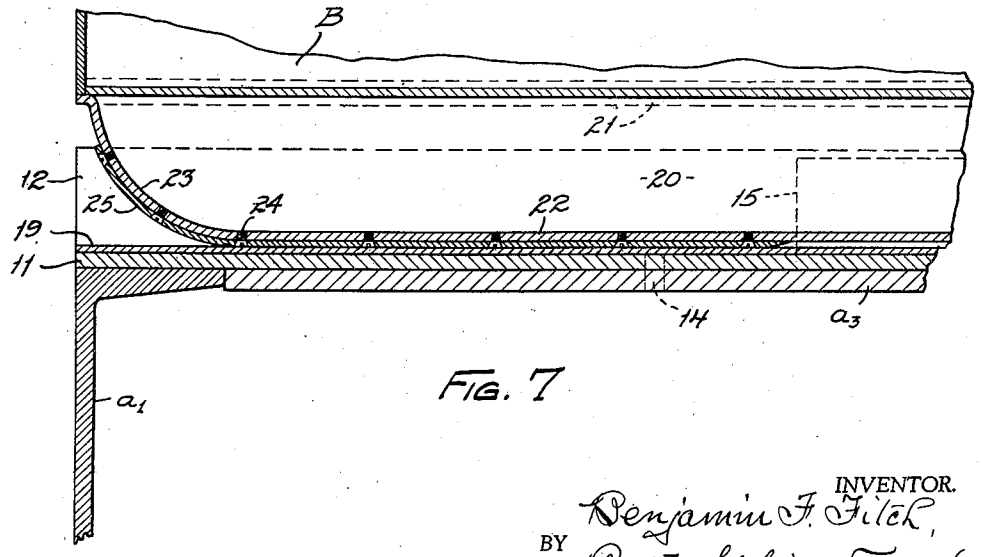

FIG. 7

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May 2, 1939. B. F. FITCH 2,156,282

FREIGHT TRANSFERRING APPARATUS

Filed June 29, 1936 4 Sheets-Sheet 4

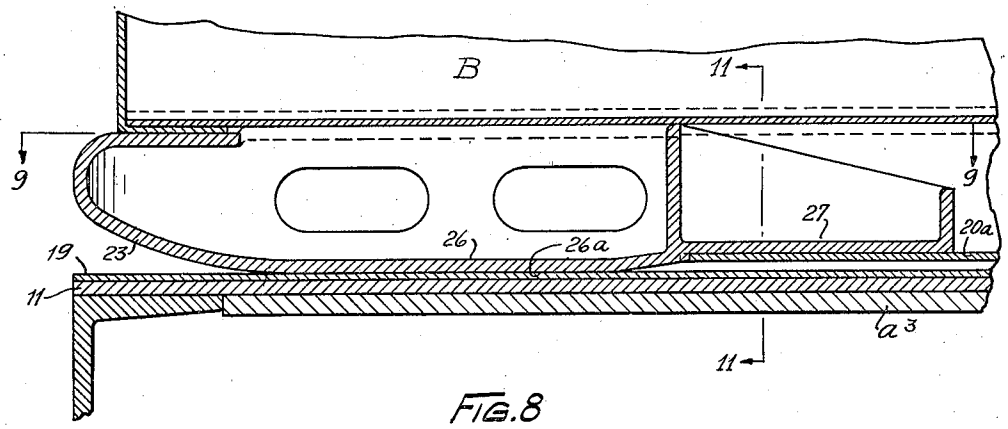

FIG. 8

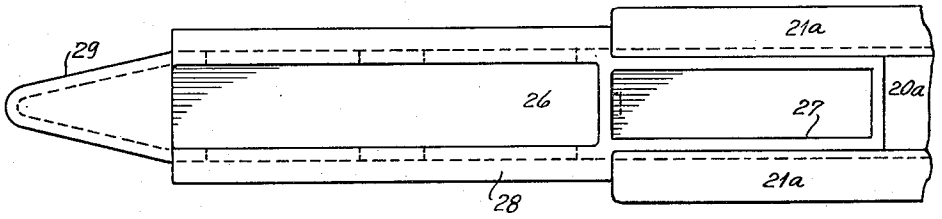

FIG. 9

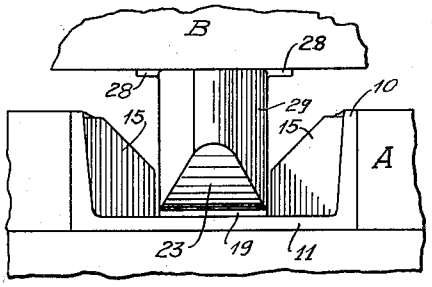

FIG. 10

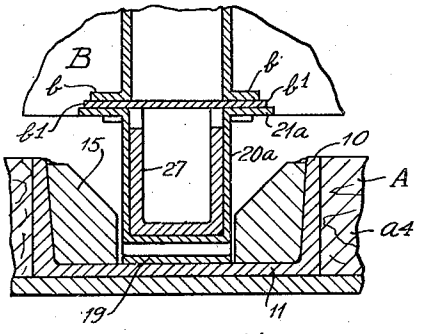

FIG. 11

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Patented May 2, 1939 2,156,282

UNITED STATES PATENT OFFICE

2,156,282

FREIGHT TRANSFERRING APPARATUS

Benjamin F. Fitch, Greenwich, Conn.

Application June 29, 1936, Serial No. 87,973

13 Claims. (Cl. 105—366)

This invention relates to a system of transporting freight by the use of demountable containers which may be mounted interchangeably on highway trucks or railway cars and thus transport the contained freight from source to destination. The present invention is concerned with co-operating guideways on the railway car and skid rails on the underside of the container adapted to occupy guideways and slide therein as the container is shifted to or from the car.

One of the objects of the invention is to provide a simple and efficient guideway on the car which will position the deposited container when in place and will enable it to be readily slid between the car and adjacent truck even though the guideways of the latter do not strictly align with the car guideways.

The guideways of the car are upwardly facing channels arranged in pairs, preferably extending transversely of the car, and the truck has correspondingly spaced channel shaped guideways preferably extending lengthwise of the truck and which register, as nearly as practicable, with those of the car during transference of the container. The highway truck, however, as it backs into place at the side of the car, is frequently not absolutely at right angles to the car side. My present invention provides for this divergence and enables the ready skidding of the body from the car to the truck and vice versa notwithstanding this lack of absolute alignment.

Another feature of my invention relates to the provision of such skid rails on the body as will enable it to slide readily, and will also reduce the adherence of the body to the car in case of freezing during inclement weather. This provision prevents a strain on the operating motor which moves the bodies in breaking them loose from the car in case of such freezing.

Preferred forms of my invention are illustrated in the drawings hereof and are hereinafter more fully described.

In the drawings, Fig. 1 is a plan of a railway flat car equipped with my transverse guide channels. Fig. 2 is a side elevation showing several bodies mounted on the car. Fig. 3 is a diagrammatic plan illustrating the sliding of a body between the car and the co-operating highway truck the channels of which are at a slight angle to the channels of the car. Fig. 4 is a sectional plan on a larger scale of a portion of the car channel and the occupying skid rail of a body in the region indicated by the arcs 4—4 on Fig. 3. Fig. 5 is a vertical cross section of the railway car and lower portion of a demountable body, showing the body rail occupying the car channel. Fig. 6 is a cross section through the car channel and body rail as indicated, for instance, by the line 6—6 on Fig. 4. Fig. 7 is a vertical section through the car channel and body skid rail, as indicated by the line 7—7 on Fig. 6. The remaining figures show a modified form of body skid rail, Fig. 8 being the vertical section lengthwise of the rail; Fig. 9 a fragmentary plan of the rail removed (indicated by the line 9—9 on Fig. 8); Fig. 10 an end view and Fig. 11 a vertical transverse section on the line of 11—11 on Fig. 8.

In Figs. 1, 2 and 3, A indicates the railway flat car and B the demountable freight containers mounted thereon, which are also suitable for mounting on highway truck, a portion of which is indicated as C in Fig. 3. Extending crosswise of the car, are pairs of parallel channels 10 which are adapted to receive skid rails 20 on the underside of the bodies B. The highway truck is equipped with a pair of parallel longitudinal channels 30 which correspond in construction and spacing to any pair of channels on the car. In use the truck is placed with its channels approximately registering with channels 10 of the railway truck. The truck is then coupled to the railway car by means of suitable bridges D engaging locking devices E on the car side, as illustrated in Fig. 3.

Referring now more particularly to Figs. 4 to 7, the car A as shown has the usual center sills *a*, side sills *a1*, and transverse bolsters *a2*. Lying on the bolsters and the top flanges of the sills are metal plates *a3* which carry floor planking *a4*. The cross channels 10 of this invention are mounted on the metal plates *a3* between spaced planking *a4* as indicated on Fig. 6. The channels have base or web portions 11 and upright side walls 12, and are of usual rolled structural shape except that in two regions, adjacent the sides of the car the width of the channel is reduced by inwardly extending bosses 15 of the form shown in Figs. 4 and 6. These bosses taper inwardly from their opposite ends, as shown as 16 on Fig. 6, to an intermediate flat vertical wall 17. The top surface of the boss also is beveled from the inner edge at the wall 17 upwardly to region adjacent to the top of channel flange 12, as indicated at 18.

As shown in Fig. 3, there are two pairs of these bosses for each channel, each pair being located a comparatively short distance within the outer edge of the car. When the body is in place on the car, as shown in Figs. 1 and 2, the skid rails thereof engage both pairs of bosses of each of the two channels for that pair of rails, and thus the body is accurately positioned on the car and cannot shift lengthwise of the car or be twisted with reference to the car. Suitable means, as hereinafter referred to, are provided for preventing the positioned body shifting cross-wise of the car or parallel to the channels thereof.

The skid rails of the body 20 are hollow mem-

bers U-shaped in cross section, as indicated in Fig. 6. These U-shaped rails are outwardly flanged at their upper end, as shown at 21, and these flanges are riveted or otherwise secured to the body B, for instance, the flanges 21 may be riveted to flanges b of suitable body bracing members through an intermediate plate b1 as shown in Figs. 6 and 11 or other connection may be employed as desired. Near their ends the U-shaped rails 20 are curved upwardly as indicated at 23 in Figs. 7 and 8.

I have shown two forms of body skid rail, each designed to engage the channel face only adjacent the ends of the skid rail by a surface formed to readily slide along the support. In the form shown in Fig. 7, I have secured a phosphor bronze skid plate 25 to the curved portion 23 of the rail proper and the adjacent flat end surface of the rail, there being one of these rub plates at each side. The rub plate is readily secured by countersunk rivets or screws 24 as indicated in Fig. 7.

In place of the phosphor bronze rub plate I may employ the construction of Figs. 8 to 11 inclusive, where the U-shaped channel rail 20a is shorter than the width of the body B and has at each end an extension or shoe 26 which is preferably a steel casting. This casting is of the hollow form shown; has an extension portion or neck 27 of U-shape but sufficiently reduced to snugly occupy the channel 20a to which it is secured by welding. The shoe also has flanges 28 which are secured to the body. The end of the shoe is oppositely tapered as at 29 and upwardly rounded on the under side as at 23.

Beyond the channel 20a the shoe has its under surface depressed corresponding to the manner in which the phosphor bronze rub plate of Fig. 7 depresses the end of the skid rail. The result is the skid rail of either form effectively supports the body by engaging the car or truck support only near the opposite ends of the skid rail.

The under surface 26 of the skid rail shoe just described is ground smoothly so it may readily slide on the support. This surface, as well as the phosphor bronze rub plate of Fig. 7, rides on a liner 19 mounted on the webs 11 of the channel 10. The engaging surface of phosphor bronze or smoothly ground steel readily slides on the liner surface. If the phosphor bronze rub plates are employed they may be readily removed and replaced by fresh rub plates whenever wear requires.

The rub plates or extension shoes described operate also to keep the center of the body rails out of contact with the car channels, thus materially reducing the extent of surface which could make a frozen contact in the winter time. Suitable drain holes 13 are provided through the base of the channels and through the corresponding plate a3 of the car to prevent accumulation of liquid in the channel. The result is that the surface which has to be broken loose, in case the body has been standing in the channels in freezing weather, is restricted to the comparatively small area between the engageable surface on the skid rail and the liner 19.

The arrangement of isolated pairs of bosses 15 to co-act with the sides of the skid rail instead of continuous engagement of channel flanges with the rails reduces the friction of the sides of the skid rail, as well as the degree of adherence from freezing.

The tapered ends 16 of the channel bosses serve to guide the body rail into position between the bosses when the body is moved horizontally to or from the railway car. If the truck is slightly askew, as illustrated in Fig. 3, and the body being moved, for instance from the truck to the car, the skid rail will be guided by the first encountered beveled end 16 of the bosses. The rail will readily pass between them into position as indicated in Fig. 3. Thus the rail ends may travel adjacent the channel wall until the second set of bosses are encountered, whereupon the beveled end 16 of those bosses will swing the rails and body into true alignment with the car. It will be seen that at this time the rails have left the confining influence of the corresponding bosses 35 in the truck channels 30. Similarly in moving the body from the car, the rails 20 leave the bosses on the rear side of the car before their forward ends engage the bosses of the truck. When fully mounted on the truck the skid rail is embraced by both pairs of bosses 35 of the truck channel.

In case it is desired to deposit the body on the car or truck by overhead crane, the body may simply be approximately positioned and then lowered, and in this case the beveled upper surfaces 18 of the bosses will cam the rails in one direction or the other to accurately center them in the space between the bosses. When the body is positioned on the car or truck, either by horizontal skidding or vertical crane deposit, it is locked thereon against lateral movement by some suitable means carried by the vehicle.

While any suitable means may be employed for preventing the positioned bodies from shifting cross-wise of the car, Figs. 1 and 2 give an indication of holding means shown, described and claimed in the co-pending application No. 78,452, filed May 7, 1936, by myself and Ragnar A. Norbom. Very briefly this comprises a bracket a5 hinged to the car floor and adapted to lie parallel therewith or be turned upwardly between adjacent bodies. In this position the brackets abut lugs b5 on the sides of the body thus preventing the body shifting cross-wise of the car in either direction. It is to be understood that suitable means are to be employed for retaining the brackets in vertical position when they are raised after the body has been positioned. As the bodies are of a definite size and the channels which the body rails occupy are fixed on the car, it follows that definitely located brackets may always effectively co-act with the deposited bodies.

Reference is made to my divisional application No. 134,018, filed March 31, 1937, for claims relating to the skid rail construction of the demountable container herein illustrated.

I claim:

1. The combination, with a container having skid rails on its bottom, of a vehicle having a pair of upwardly facing channels providing guideways for such skid rails, each channel being restricted in width for a comparatively short distance adjacent one end of the channel, in a manner to prevent substantial movement of the rail crosswise of the channel at the restriction while allowing the rail to swing in the channel at other regions.

2. The combination of a pair of upwardly facing channels arranged parallel to each other, each channel provided with inwardly extending means for restricting the width thereof for a comparatively short distance in two spaced regions, and a demountable container having on its underside a pair of skid rails of substantially

the same width throughout, said rails being adapted to occupy the channels and stand between said restricting means in substantial abutment therewith.

3. The combination of a vehicle, a pair of upwardly facing open-ended channels thereon, each channel being provided with spaced bosses restricting the width, the tops of the bosses being downwardly beveled to center a skid rail on a body being lowered to position, and the outer ends of the bosses adjacent one edge of the vehicle being beveled toward such edge.

4. The combination of a railway car having on a top surface thereof transversely arranged upwardly-facing guideways arranged in pairs parallel to each other, and adapted to receive skid rails in a horizontal direction, each guideway having within it adjacent its sides two pairs of bosses to restrict the width thereof, said pairs being located adjacent the side edges of the car, the bosses of each pair being opposite to each other, each boss at its ends being tapered horizontally toward the side walls of the guideways.

5. A vehicle having a pair of parallel upwardly facing channels extending from one edge of the vehicle and adapted to receive skid rails on the base of a container, and spaced projections within the channel located respectively adjacent the opposite ends thereof at some distance inwardly from the ends and a considerable distance apart whereby a skid rail may be able to enter the channel even though not aligned with the space available at the first encountered projection, and a skid rail completely in the channel may be skewed therein after leaving the projection adjacent the far end of the channel and while still in engagement with the projection adjacent the near end thereof.

6. A platform provided with a pair of parallel guideways, each in the form of an upwardly facing channel, adapted to receive a relatively narrow skid rail on a body to be supported on the platform, and means within the channel extending for a comparatively short distance only for restricting the width thereof to such an extent that the movement of the body lengthwise of the platform is prohibited by the coaction or the restricting means with the container rail and yet swinging movement of the disengaged portion of the container rail in other portions of the channel is permitted.

7. The combination of a pair of channeled guideways, each provided with inwardly extending means to restrict the width of the guideway for a comparatively short distance only, and a demountable container having depending skid rails on the base thereof adapted to occupy the channels and stand between said restricting means, the restriction of the guideway being to such an extent that the movement of the container in a direction transverse to the length of the guideway is prohibited by the coaction of the restricted means with the container rail, and yet swinging movement of the disengaged portion of the container rail in other portions of the guideway is permitted.

8. The combination, with a suitable support, of a guideway thereon in the form of an upwardly facing channel, adapted to receive and confine a guide rail of a demountable body when projected horizontally, and inwardly extending projections within the channel extending for a comparatively short distance only and effective to restrict the width thereof to such an extent that movement of said demountable body transversely of the guideway is prohibited by the coaction of the projections with the body rail and yet swinging movement of the disengaged portion of the body rail in other portions of the guideway is permitted.

9. A guideway, as set out in claim 8, combined with a container having on its underside a skid rail adapted to slide along the projections.

10. The combination of a vehicle, a pair of upwardly facing channels thereon arranged to receive and guide horizontally projected skid rails, each channel containing a pair of rigid bosses opposite each other restricting the width of the channel for a comparatively short distance only, the ends of such bosses being tapered to guide a skid rail between them, the bosses restricting the width of the channels to such an extent that movement of the skid rail transversely of the channel is prohibited by its coaction with the bosses and yet the swinging movement of the disengaged portion of the skid rail in other portions of the channel is permitted.

11. The combination of a vehicle, a pair of upwardly facing open-ended channels thereon, each channel being provided with spaced bosses restricting the width, the tops of the bosses being downwardly beveled to center a skid rail on a body being lowered to position, and the outer ends of the bosses adjacent one edge of the vehicle being beveled toward such edge, said bosses restricting the width of the channels to such an extent that when a container has skid rails occupying the channels movement of such container longitudinally of the car body is prohibited by the coaction of the bosses with said rails, and yet swinging movement of the disengaged portion of the rails in other portions of the channel is permitted.

12. A vehicle having a pair of parallel upwardly facing channels extending to one edge of the vehicle and each having a base and two sides, and adapted to receive skid rails on the base of a container and spaced projections within the channels and adjacent the base and sides thereof for restricting the width thereof to such an extent that the movement of the container transversely of the channels is prohibited by the coaction of the projections with the container rail and yet swinging movement of the disengaged portion of the container rail in other portions of the channel is permitted.

13. A platform provided with a pair of parallel guideways each in the form of an upwardly facing channel adapted to receive a relatively narrow skid rail on a body to be supported on the platform, and means within the channel extending for a comparatively short distance only and located some distance inwardly from the end of the channel for restricting the width thereof to such an extent that movement of the body transversely of the guideways is prohibited by the coaction of the restricted means with the body rails, and yet swinging movement of the disengaged portion of the body rails in other portions of the channels is permitted, said restricting means leaving the channel unobstructed between said means and the adjacent end of the channel whereby such skid rail can enter and swing horizontally in the channel before encountering the projection.

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