Nov. 23, 1971 H. E. GRAMSE 3,621,794

MULTI-PURPOSE RAILROAD CAR

Filed April 25, 1969 4 Sheets-Sheet 1

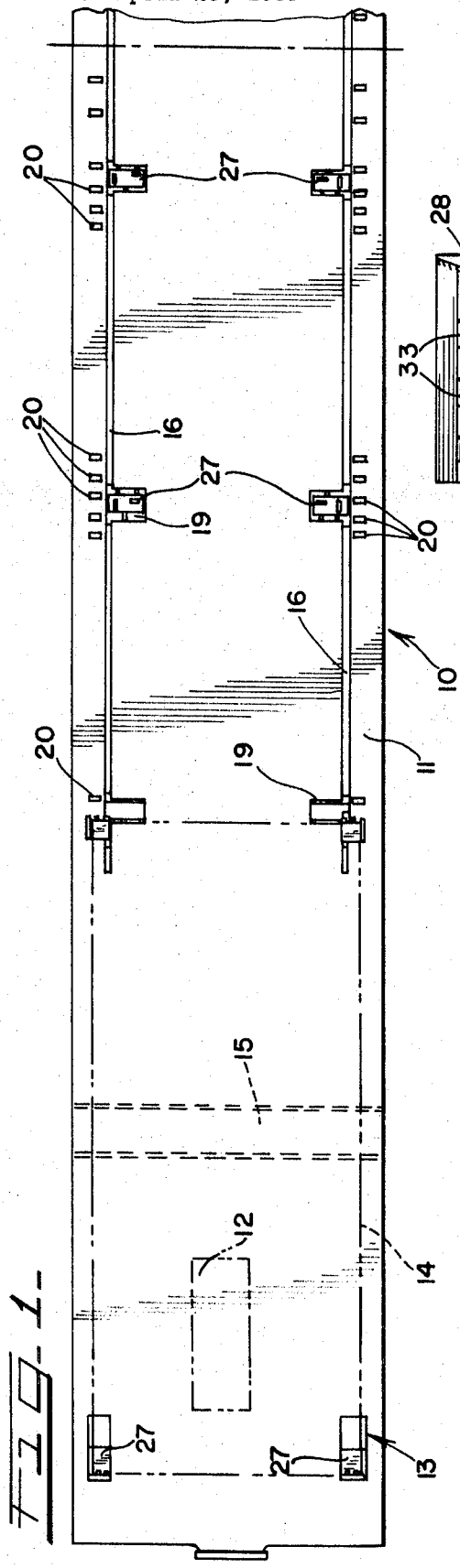


FIG. 1

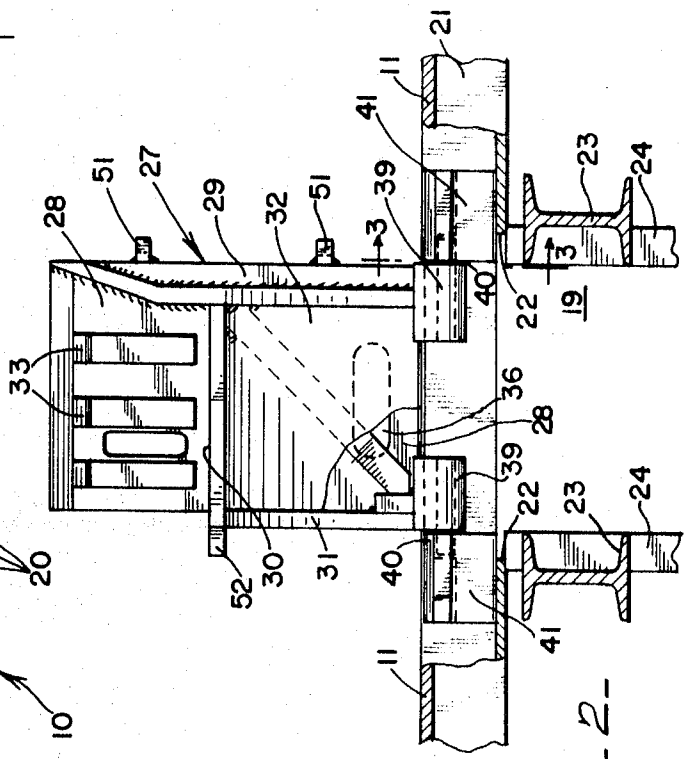


FIG. 2

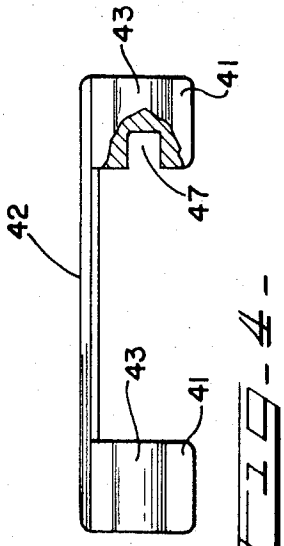


FIG. 4

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MULTI-PURPOSE RAILROAD CAR

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FIG. 3

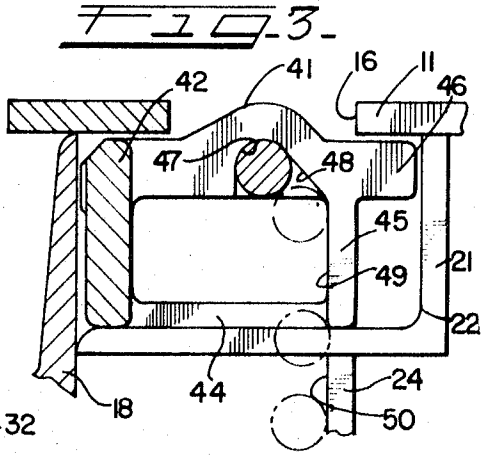


FIG. 5

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MULTI-PURPOSE RAILROAD CAR

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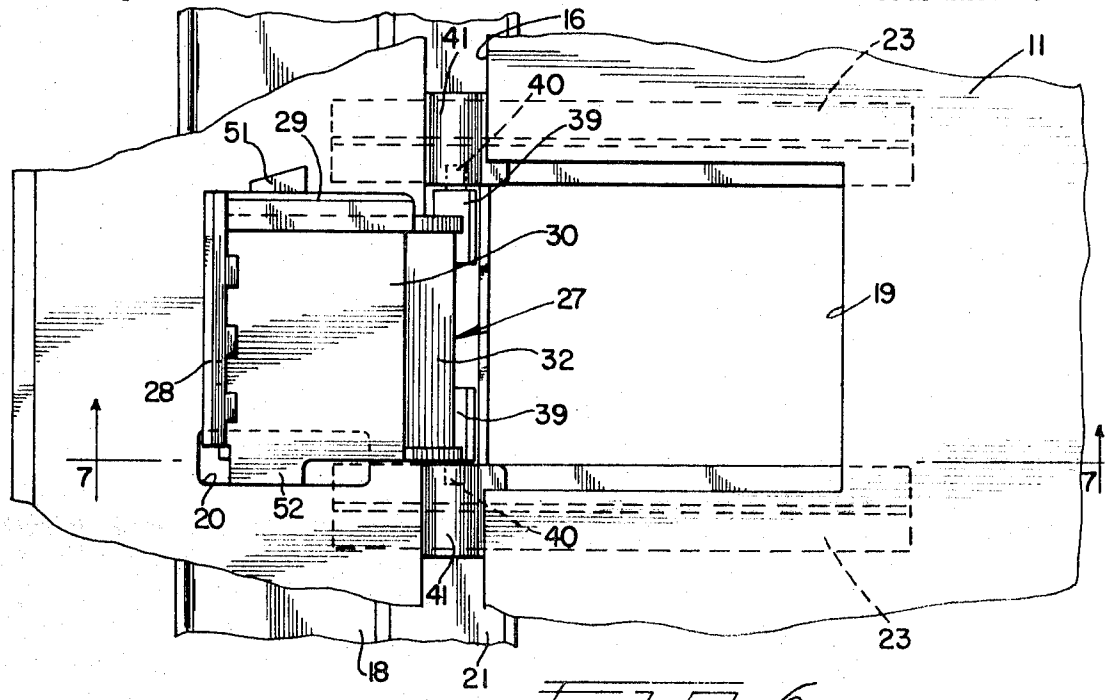


FIG. 6

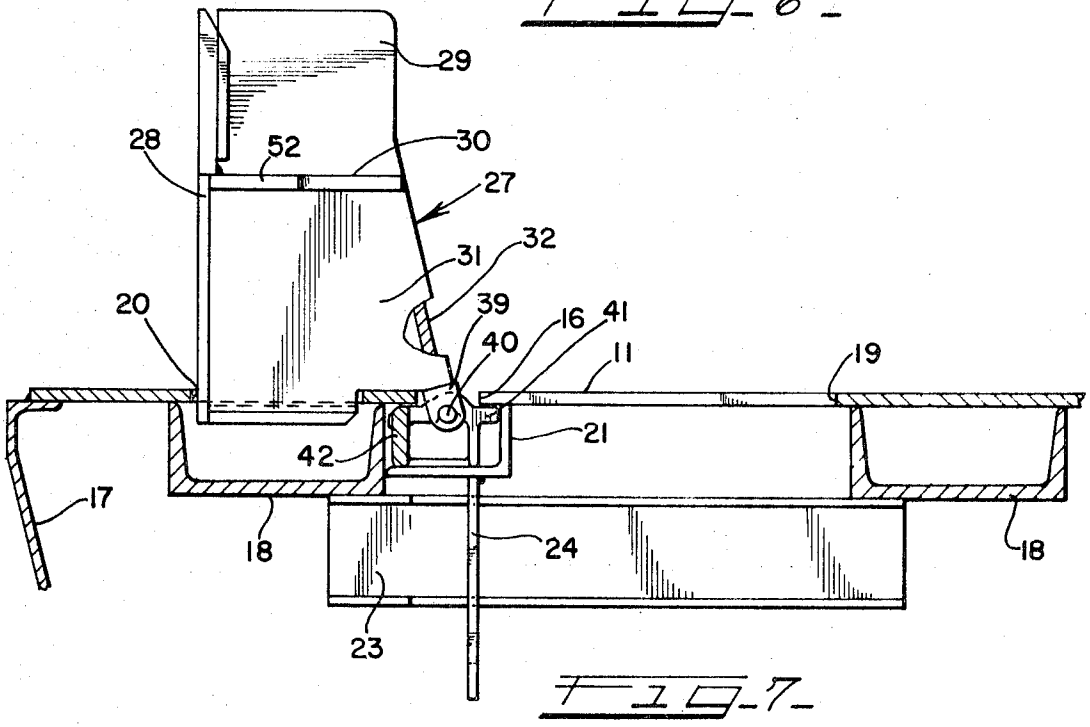


FIG. 7

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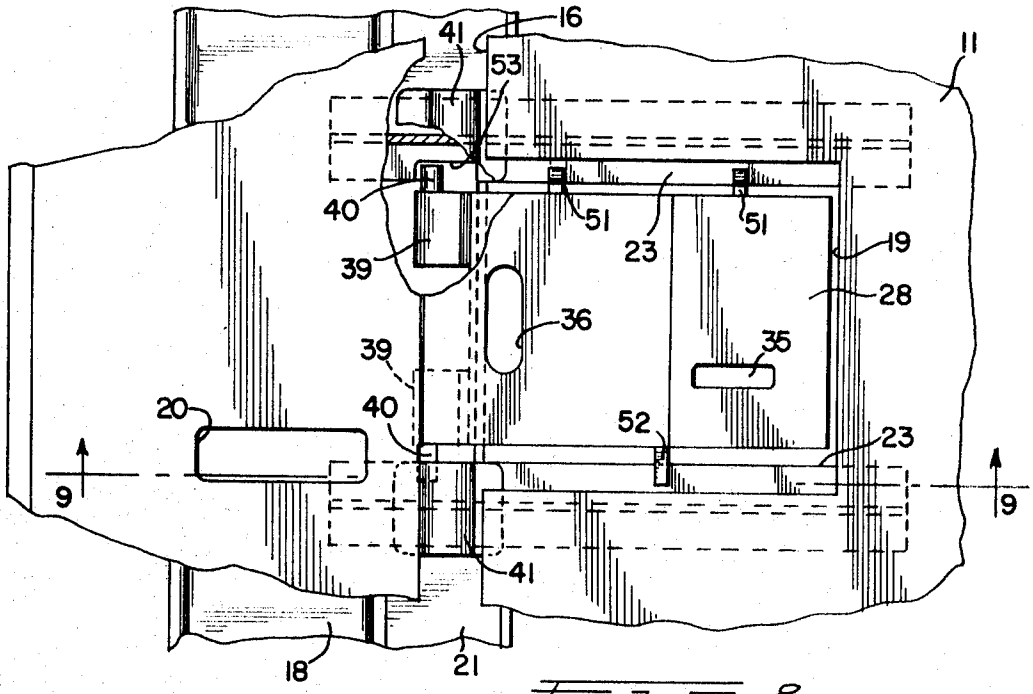


FIG. 8

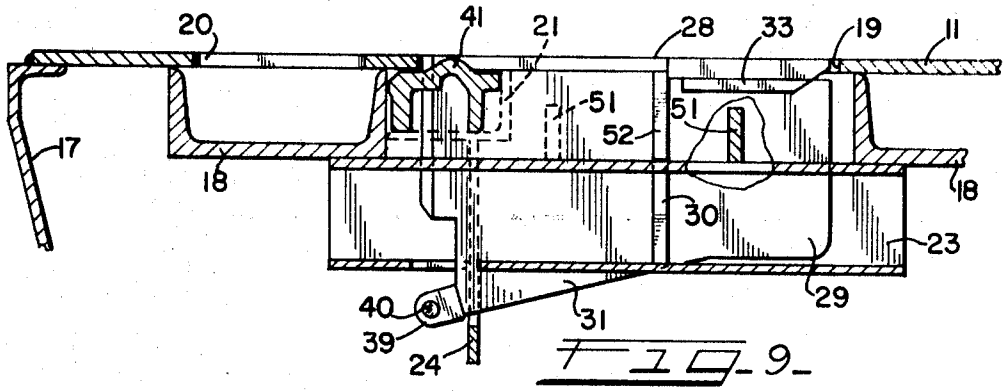


FIG. 9

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United States Patent Office 3,621,794 Patented Nov. 23, 1971

3,621,794

MULTI-PURPOSE RAILROAD CAR

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Filed Apr. 25, 1969, Ser. No. 819,370
Int. Cl. B65i 1/22; B61d 45/00
U.S. Cl. 105—366 D 6 Claims

ABSTRACT OF THE DISCLOSURE

A railroad flat car readily interchangeable for container and trailer-on-flat-car operations is provided with a container bracket arrangement having a plurality of slots in the deck of the car which permits container brackets to be longitudinally adjusted to various positions on the deck for accommodating different length containers. Apertures are provided which extend transversely of the slots and in which the container brackets are stored when the car is utilized for trailer operation. The container brackets are provided with engaging elements which are adapted to be engaged with slide blocks for permitting adjustment of the brackets longitudinally within the slots, the engaging elements on the container bracket being disengageable from the slide blocks so that the container bracket may be recessed within an adjacent aperture in a retracted position.

SUMMARY

The invention concerns a railroad flat car which may be readily used interchangeably for carrying trailers or containers. A container supporting arrangement is provided which includes a plurality of container brackets normally engaging the corners of a container for supporting the same on the car. Slot structures on the deck of the car extend longitudinally and the container brackets may be moved in such slots to a plurality of positions to accommodate different lengths of containers. Aperture structures are spaced laterally of the slots, are in communication therewith, and said container brackets may be stored within the apertures to provide a flat surface continuation of the deck to permit trailer loading operations.

The container brackets are longitudinally movable in the slots by means of slide blocks which in the erect position of the container bracket restrain the same from disengagement with the slots. When the container bracket is moved to a retracted position, engaging means in the form of pins, which normally are in engagement with the slide blocks, are disengaged from such blocks and the entire container bracket can be dropped by gravity downwardly into the aperture provided. The pins of the engaging means, during movement to the stored position, engage vertical guide elements positioned below the deck adjacent the apertures which provide a guided movement for the bracket so that it is properly dropped into the retracted position.

Thus it is a primary object of the invention to provide an improved and simplified container bracket arrangement for a railway car of the multi-purpose type, equally compatible for container or TOFC operations.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view showing approximately one-half symmetrical portion of a flat car including an improved container supporting arrangement;

FIG. 2 is a detailed cross-sectional view through at flat car deck showing an aperture and container bracket positioned adjacent thereto;

FIG. 3 is a cross-sectional view taken substantially along the line 3—3 of FIG. 2;

FIG. 4 is a detail plan view of a pair of interconnected slide blocks;

FIG. 5 is a perspective view of a container bracket on the deck structure of a car adjacent a storage aperture;

FIG. 6 is a plan view of a portion of a deck of a railroad car showing an aperture and container bracket in an erect position adjacent thereto;

FIG. 7 is a cross-sectional view taken substantially along the line 7—7 of FIG. 6;

FIG. 8 is a view similar to FIG. 6 showing a container bracket in a retracted position with one wall thereof forming a continuation of a deck structure of a railroad car; and

FIG. 9 is a cross-sectional view taken along the line 9—9 of FIG. 8.

DETAILED DESCRIPTION

In the drawings FIG. 1 discloses a multipurpose flat car designated by the reference character **10**. The car **10** includes a flat deck structure **11** which may consist of a plurality of panels suitably interconnected along the length of the car. The present car **10** is of the multi-purpose type suitable for both container-carrying and TOFC operations. For the latter, suitable trailer hitches **12** of conventional construction are provided at opposite ends of the car. For container operations a container bracket arrangement designated generally at **13** is provided as indicated in FIG. 1. In this case one or more containers **14** may be suitably carried on the car **10** by the container bracket ararngement **13** provided. The car includes at each end the usual bolster structure **15** suitably connected to a wheeled truck which is conventional in the art and is not shown.

The container bracket arrangement **13** includes longitudinal slots or guideways **16** extending through the deck **11** and each being disposed substantially parallel to side sills **17** on opposite sides of the deck **11**. The car **10** also includes a plurality of longitudinally extending and laterally spaced stringers **18** of channel design, as best shown in FIGS. 6 and 7. A plurality of transversely extending apertures **19** are suitably cut out in the deck **11** and are disposed in longitudinally spaced relation and in communication with the slots **16**. The deck **11** is also provided with a plurality of transversely extending slots or holes **20** which extend longitudinally alongside the slots **16** and provide positioning means for positioning container brackets. Beneath each slot **16** there is provided an angle member **21** which with one of the channel members **18**, as best shown in FIG. 7, forms a suitable track which extends substantially continuous with each slot **16**, terminating however as indicated at **22** in FIGS. 2 and 5 adjacent the apertures **19**.

A pair of transversely extending longitudinally spaced I-beam brackets **23**, as best shown in FIG. 7, are connected to the longitudinally extending stringers **18**. A pair of vertically extending guide strips **24** disposed on opposite sides of the apertures **19**, are recessed within the I-beam brackets **23** as indicated in FIG. 5, the said strips **24** extending downwardly below said I-beams **23** and being connected by horizontal strap member **26**.

The container bracket arrangement **13** may be arranged, as shown in FIG. 1, to support four 20 ft. containers, two 40 ft. containers, or various combinations thereof. By the addition of a suitable number of container brackets and by lengthening the slots further towards the end of the car as desired, greater variations may be made. The present invention is in a container bracket designated at **27**, eight of such brackets being shown in FIG. 1, which discloses one-half of the railroad car. The brackets **27** at opposite ends of the car may be of a construction shown in patent application, Ser. No. 726,283, filed May 3, 1968, now U.S. Pat. No. 3,547,048, issued Dec. 15, 1970

or the said end container brackets may be constructed in the same manner as the adjustable brackets as will now be described.

Each container bracket **27** includes a longitudinal vertical wall **28**, a transverse vertical wall **29** and a horizontal wall **30** providing a suitable seat for the corner of a container. The walls **28** and **29** are substantially high and of equal length and upright short walls **31** and **32** are suitably interconnected with the walls **29** and **30** by welding or other suitable means to provide a rigid container bracket structure. The upper ends of the walls **28**, as best shown in FIG. 5, are provided with guide strips **33** and the wall **29** is provided with a tapered guide portion **34**, the said strips **33** and portion **34** serving to guide the corner of a container into position on the horizontal wall or seat **30**. The wall **28** also is provided with a suitable recess **35** through which a locking means may be provided for engaging the corner castings of a container for securely locking the containers onto the container brackets **27**.

The vertical longitudinal wall **28** is also provided with a hand hole **36** by which the bracket may be raised and lowered, as will presently be described. The wall **31** is provided at its lower end, as best shown in FIG. 5, with a positioning shoe **37** adapted to extend downwardly into any of the holes **20** for properly positioning the container bracket **27** in the desired position. The shoe **37** is also provided with a horizontal ledge **38** which fits underneath the portion of the deck **11** adjacent the recess **20** to securely lock the container bracket **27** against longitudinal or vertical movement.

As best shown in FIGS. 2, 5 and 7, a pair of longitudinally spaced locking or engaging elements **39**, in the form of bosses, are connected to the lower end of the bracket **27** and particularly to the wall **32**. The engaging elements **39** in the position shown in FIG. 5, wherein the bracket **27** is positioned adjacent one of the cutout portions or apertures **19**, is in this position adapted to be moved from the erect to a retracted position within the aperture **19**. In this position the bosses **39** may be moved downwardly through the aperture **19** without interference. Each boss **39** has projecting outwardly therefrom a pin **40**, the said pins **40** extending in longitudinally opposite directions. Each pin **40** is adapted to engage, in the erect position shown in FIG. 5, a slide block generally designated at **41**, as best shown in FIGS. 3 and 5. A horizontally extending strap **42** suitably connects the slide blocks **41** together, as best shown in FIG. 4. Each slide block **41** is provided with a horizontal upper wall **43** and a lower wall **44** connected by means of a vertical wall **45**. A horizontally projecting ledge **46** on each of the slide blocks **41** engages a portion of the track **21**. Each block **41** is suitably constrained within each track **21** but is readily slidable therein in a longitudinal direction. The underneath portion of each horizontal wall **43**, as best shown in FIG. 3, is provided with an upwardly extending recess **47** communicating with a tapering wall portion **48**. The wall **45** is provided with an inner surface **49** which communicates with the tapering wall portion **48** and is in registry with a guide surface **50** provided on each of the vertical guide straps **24**.

The wall **29** is provided with outwardly projecting stop lugs **51** and the horizontal wall **30** is provided with an outwardly projecting stop lug **52**. As shown in FIG. 5, the I-beam brackets **23** are suitably cut out as indicated at **53** to provide for clearance of the pins **40** when the bracket **27** is moved to a retracted position.

THE OPERATION

In applicant's patent application, Ser. No. 774, 272 filed Nov. 8, 1968, now U.S. Patent No. 3,575,118 issued Apr. 13, 1971, a container bracket arrangement for a railroad flat car is disclosed wherein the container brackets are moved longitudinally within slots and are adapted to engage apertures or cut-outs extending transversely relative to the slots. As disclosed in the above application and in the present disclosure the container brackets may be added to, and additional apertures may be disposed in the deck of the car for accommodating a greater number of containers than that which is contemplated with the present arrangement. In the erect position of the brackets **27**, as shown in FIG. 1, containers may be carried by the corners on said brackets. When the car is utilized for trailer operations the brackets **27** are stored or retracted in the apertures **19**.

Referring now particularly to FIGS. 3 and 5, the bracket **27** is shown in an erect position. In FIGS. 8 and 9, the bracket has been stored in an aperture **19**. To achieve the storage of the container bracket **27** the operator grasps the hand hole **36** and lifts the bracket **27** from the erect position shown in FIG. 5, rotating or folding the same toward the aperture **19**. This folding movement is achieved by the deck portion adjacent the aperture **19** supporting portions of the walls **29** and **31** whereupon the pins **40** disengage from the recesses shown in FIGS. 3 and 7. During this movement of the bracket **27** the pins **40**, upon their disengagement with the recesses **47**, slide downwardly on the surfaces **49** and guide surfaces **50** in a vertically downward direction with the wall **28** assuming a substantially parallel or horizontal position relative to the deck **11**. The operator now releases the bracket **27** which drops by gravity into the aperture **19** whereupon further downward movement is restrained by the stops **51** and **52** engaging the upper flanges of the I-beams **23**. The longitudinal wall **28** now is substantially flush with the deck **11** and forms a continuation therewith while the bracket **27** is securely retained within the aperture **19**. Thus the container bracket **27** is easily and expeditiously stored.

In order to raise the bracket **27** to the erect position it is a simple matter for the operator to grab the hand hole **36**, lift upwardly on theb racket **27** and upon engagement of the pins **40** with the recesses **47**, the bracket **27** is then pivoted or swung rearwardly until the lower ends of the walls **28**, **29**, **31** and **32** are seated upon the adjacent deck. Before completely seating the container brackets **27** in this manner, they may be moved longitudinally with the slide blocks **41** to the position desired adjacent a particular locating recess **20** whereupon the container bracket **27** may be secured against longitudinal and upward movement by the engagement of the positioning shoe **37** within the respective recess **20**.

In the storing procedure the pins **40** will be guided downwardly by the vertical guides **24** and the cut-out portions **53** in the lower flanges of the I-beam **23** provide sufficient clearance for such downward movement. It can be seen that the slide blocks **41** are engaged primarily in the upward movement of the brackets **27** to the erect position and during the longitudinal movement of said brackets but that the pins **40** are disengaged from the slide blocks **41** when the brackets are moved to the stored position. In the stored position the slide blocks **41** are retained however against longitudinal movement since they are held captive by the walls **29**, **31** and **32**, and thus are retained in the desired position when the brackets **27** are again moved to the upright or erect position.

Thus it is clearly apparent that an improved and much simplified bracket arrangement has been disclosed wherein a novel structure is provided to permit an improved function of moving a container bracket from an erect operative to a stored position, also permitting the positioning of said bracket longitudinally into the various positions desired.

I claim:

1. A railway car having a flat deck for supporting containers thereon including a container support arrangement comprising:

longitudinally extending guideways including a slot disposed adjacent each side of said deck,

said deck having a plurality of longitudinally spaced apertures in communication with said slots,

a plurality of container brackets carried by said deck, each container bracket having a plurality of vertical walls interconnected to define a seat for supporting a corner of a container,

means supporting each container bracket in said slots for relative longitudinal movement with respect thereto,

slide means for each container bracket including a pair of longitudinally spaced slide blocks disposed in said slot for sliding movement,

a pair of longitudinally spaced bosses connected to lower end portions of each said container bracket and being disposed between said pair of slide blocks,

an engaging pin on each boss,

the engaging pin on said pair of spaced bosses projecting longitudinally in opposite directions into engagement with said pair of slide blocks for unitary longitudinal movement in said slot,

each slide block having a horizontal wall including an upwardly extending recess in an under-surface of said horizontal wall,

said engaging pins being released from said recesses and being moved vertically downwardly relative to said slide blocks whereby each said container bracket may be rotated over said each aperture into a retracted position,

each slide block having a vertically disposed wall surface adjacent the recess therein for guiding movement of the engaging pin during rotation of each said container bracket, and

vertical guide means disposed beneath the deck adjacent each aperture and including a vertical guide surface in alignment with said wall surface for guiding each engaging pin as each said container bracket is moved adjacent said deck,

said slide blocks being interconnected by longitudinally extending means and said brackets being between said slide blocks for entrapment of the bracket and the slide blocks with one another in a retracted position.

2. The invention in accordance with claim **1** wherein each vertical guide surface has a length assuring continuous engagement with its engaging pin when said container bracket is in its fully retracted position.

3. In a railway car for transporting containers and trailers, the combination comprising

a substantially flat deck,

longitudinally extending guideways including slot means disposed adjacent each side of said deck,

a plurality of longitudinally spaced apertures in said deck communicating said slot means,

flange means carried by said deck underneath each aperture to define bracket rests,

a plurality of container brackets, one for each aperture, carried by said deck,

each container bracket including

a plurality of vertically disposed walls interconnected to define a supporting seat for a part of a container,

a pair of spaced bosses connected to lower end portions of one of said walls and being disposed for longitudinal movement in said slot means,

an engaging pin projecting outwardly from each of said bosses and being in alignment with the guideway under said slot means,

slide means adapted for slidable movement along said guideway and including

a pair of spaced blocks respectively disposed adjacent said pair of spaced bosses and longitudinally extending means interconnecting said spaced blocks whereby said bracket is between said spaced blocks and said longitudinally extending means and spaced blocks are moved as a unit during such slidable movement and for entrapment of the bracket and the slide means with one another in the retracted position,

a horizontal wall on each block with an upwardly extending recess in an undersurface of said horizontal wall,

a vertical wall on each block extending from said horizontal wall and defining a vertically disposed surface adjacent said recess,

said engaging pin on each boss extending into the recess on its adjacent block when said container bracket is in an erect position and sliding relative to said recess and to said vertically disposed surface during movement of said bracket between erect and retracter positions, and

said engaging pin on each boss being displaced from said vertically disposed surface when said container bracket rests on said flange means whereby said container bracket is completely freed from said slide means when in its stored position.

4. The invention in accordance with claim **3** wherein vertically disposed guide surfaces are mounted beneath said deck in alignment with the vertically disposed surface on each block to assure continuous engagement of each engaging pin when said bracket is in its retracted position.

5. A railway car having a flat deck for supporting containers thereon including a container support arrangement comprising:

longitudinally extending guideways including a slot disposed adjacent each side of said deck,

said deck having a plurality of longitudinally spaced storage apertures spaced transversely with respect to said slots and in communication therewith,

a plurality of container brackets carried by said deck,

each container bracket having a vertical transverse wall and a vertical longitudinally extending wall providing a seat for supporting the corner of a container,

a plurality of positioning elements longitudinally spaced on said deck at predetermined intervals on an opposite side of each slot,

means supporting each container bracket in said slots for relative longitudinal movement with respect thereto including a channel-shaped longitudinally extending track member disposed below each slot and having its open end in communication with said slot,

a slide means for each container bracket including a pair of longitudinally spaced slide elements disposed in said track member for sliding movement,

a pair of longitudinally spaced engaging members connected to each said container bracket,

said engaging members in the erect operative position of said brackets being connected to said slide elements and longitudinally movable therewith,

means on each container bracket releasably engaging said positioning elements to position each container at a plurality of erect operative positions along said slots, and

means releasably connecting said engaging members to said slide elements during the erect position of said brackets whereby said container brackets may be rotated over and into said storage apertures and said engaging members are thereupon released from said slide elements and said container brackets are moved into a retracted position within the storage apertures with said engaging members being disposed below said track member and said vertical longitudinal wall is disposed horizontally and forms a continuation of said deck,

each means releasably connecting an engaging member including an open recess in the underside of the slide element and a guide wall connecting with the recess for guiding a respective engaging member away from the recess,

the engaging members being disposed in the recesses in the elevated position for movement thereof along the slot, said engaging members leaving the recesses and being guided along the respective guide walls and away from the slide elements when the bracket is moved into the retracted position and means in the storage aperture in the deck to support the bracket when released from the slide elements,

said slide elements being interconnected by a longitudinally extending element and said bracket being between said slide elements for entrapment of the bracket and the slide elements with one another in the retracted position.

6. The invention in accordance with claim 5,

including vertical guide means disposed beneath said deck adjacent said apertures for guiding said engaging members vertically into and out of engagement with said recesses during movement of said container brackets between retracted and erect positions,

said guide means including vertically extending guide elements on opposite sides of said apertures and having longitudinally extending guide surfaces engaged by said engaging members,

said guide elements being spaced below the guide walls and in vertical alignment therewith for movement of the engaging members from the guide walls to the guide elements.

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U.S. Cl. X.R.

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