United States Patent

[11] 3,561,369

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[21] Appl. No. 786,187
[22] Filed Dec. 23, 1968
[45] Patented Feb. 9, 1971

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[54] RAILWAY CAR FOR CARRYING CONTAINERS OF VARYING LENGTHS IN TWO TIERS
8 Claims, 14 Drawing Figs.

[52] U.S. Cl. 105/366
[51] Int. Cl. B65j 1/22, B60p 7/08
[50] Field of Search 248/119; 105/366

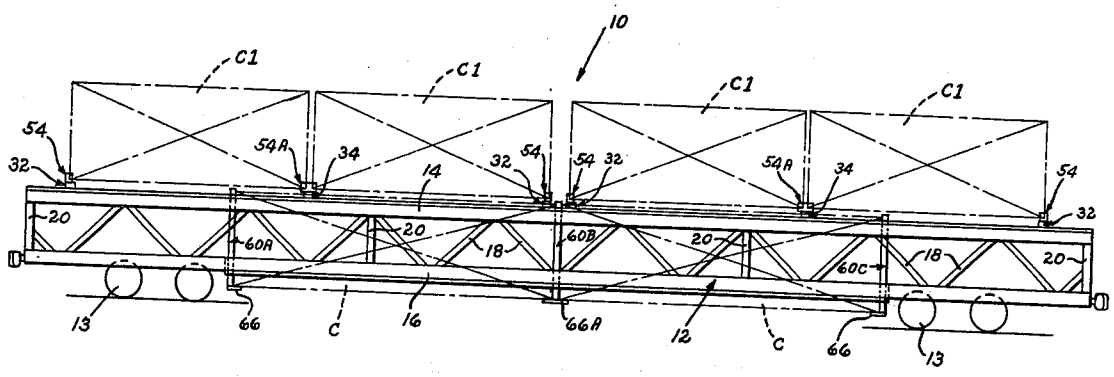
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Primary Examiner—Drayton E. Hoffman
Attorney—Eugene N. Riddle

ABSTRACT: A railway car for carrying containers of various lengths in two tiers. A side structure extends along each side of the railway car each having an upper and a lower longitudinally extending chord member. A plurality of crossframe structures are suspended from the upper chord members and extend downwardly to a position below the lower chord members and are adjustably movable along the length of the upper chord member for positioning at selected intervals. Containers in the lower tier rest on the crossframe structures which may be positioned at selected intervals along the length of the car to accommodate containers of varying lengths. Corner pedestals on the upper chord members support the upper tier of containers and may be adjustably positioned along the length of the upper chord members to support containers of various lengths in the upper tier over the containers in the lower tier.



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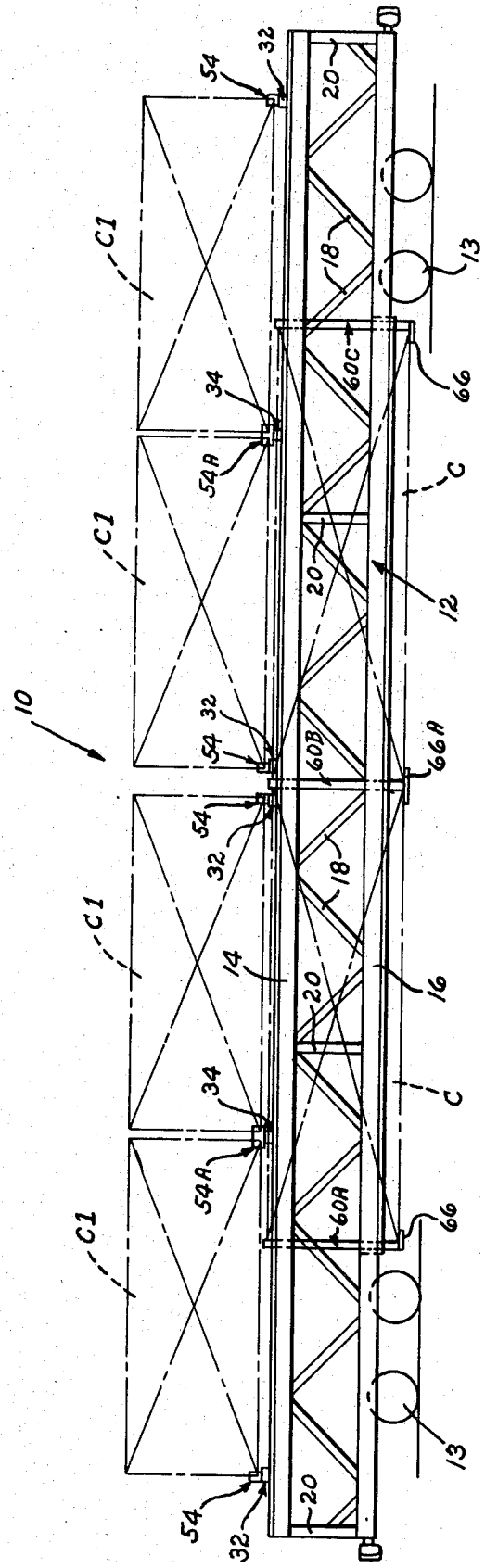


FIG. 1.

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ATTORNEY

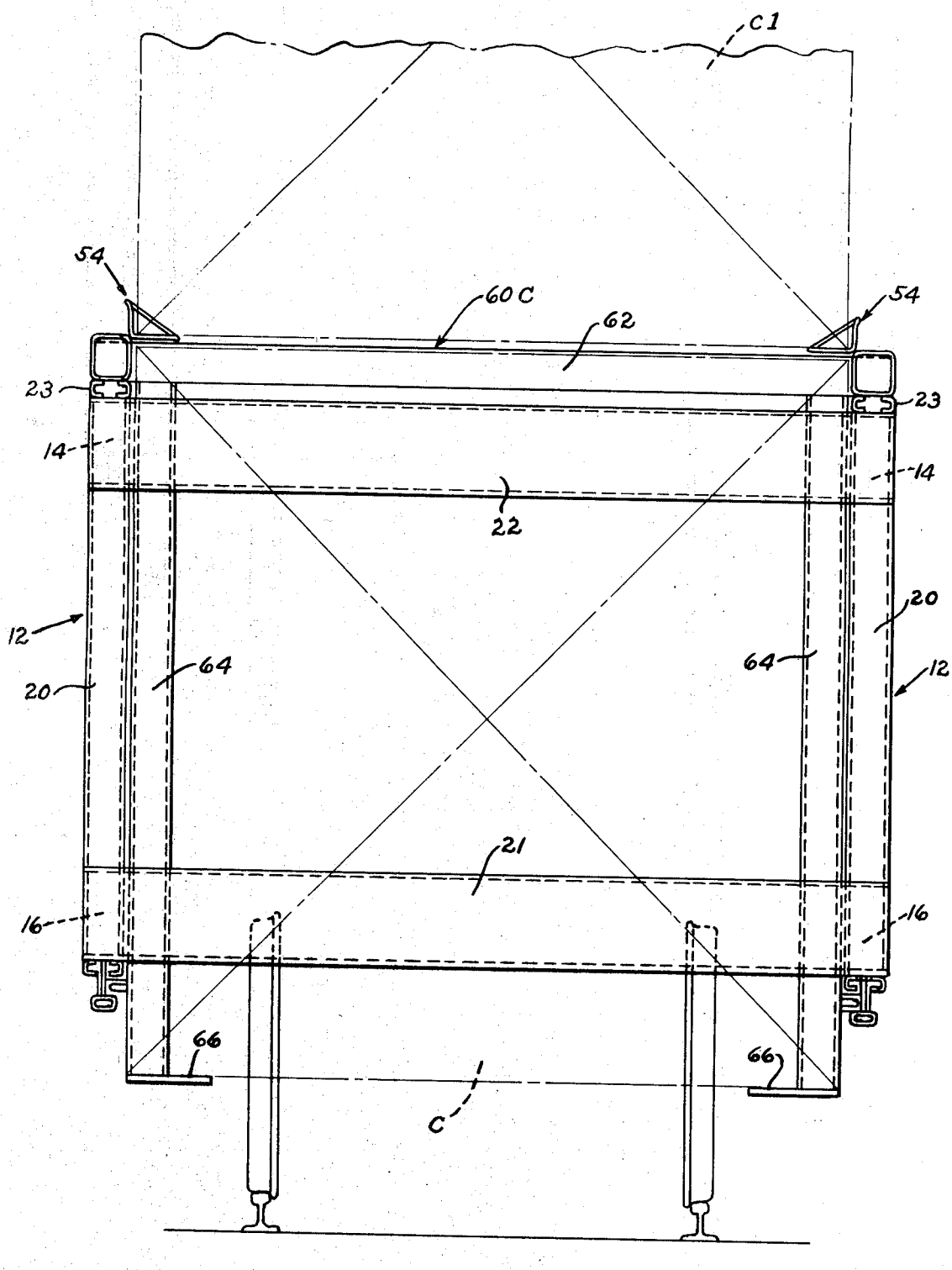


FIG. 2.

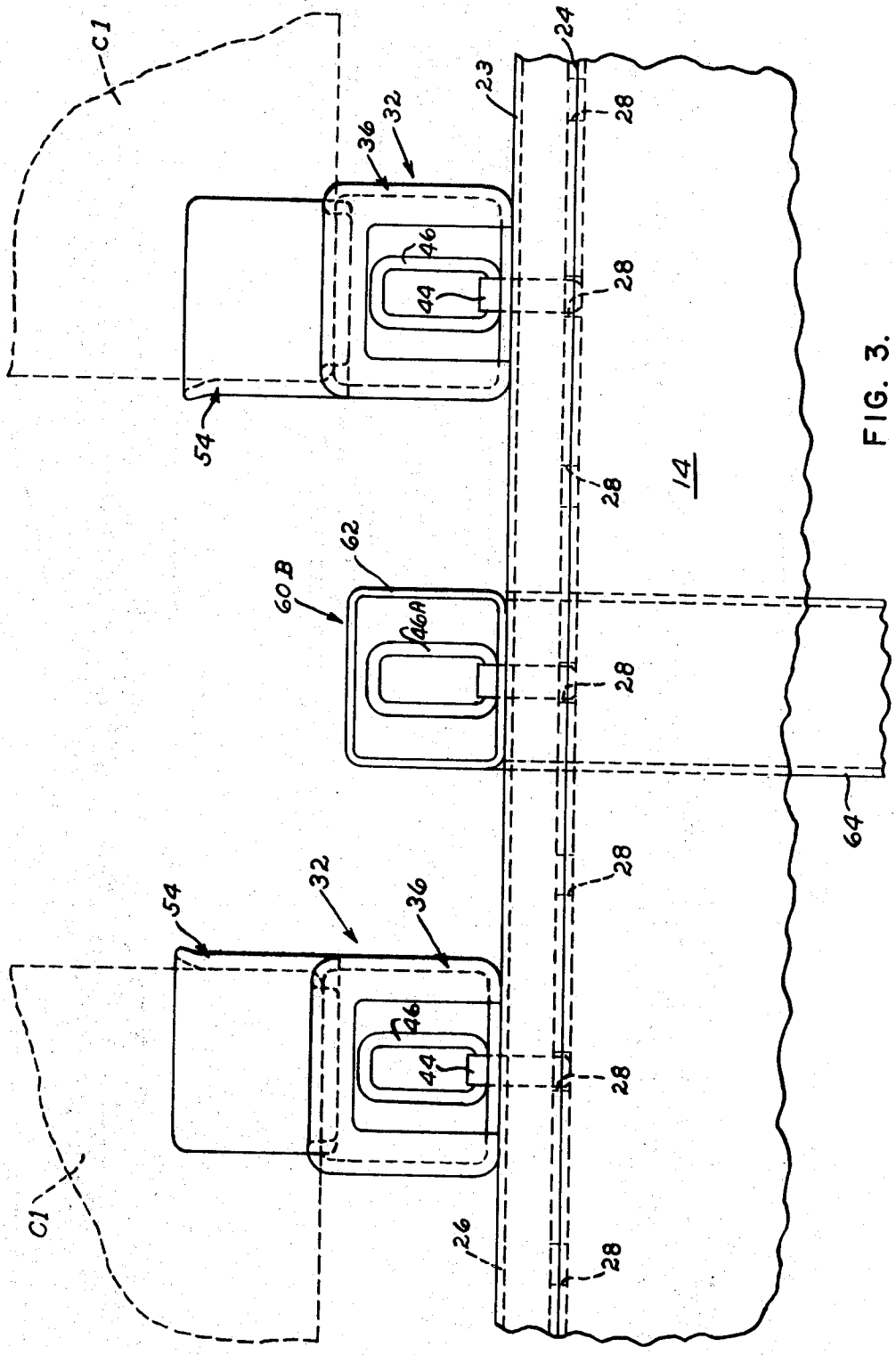


FIG. 3.

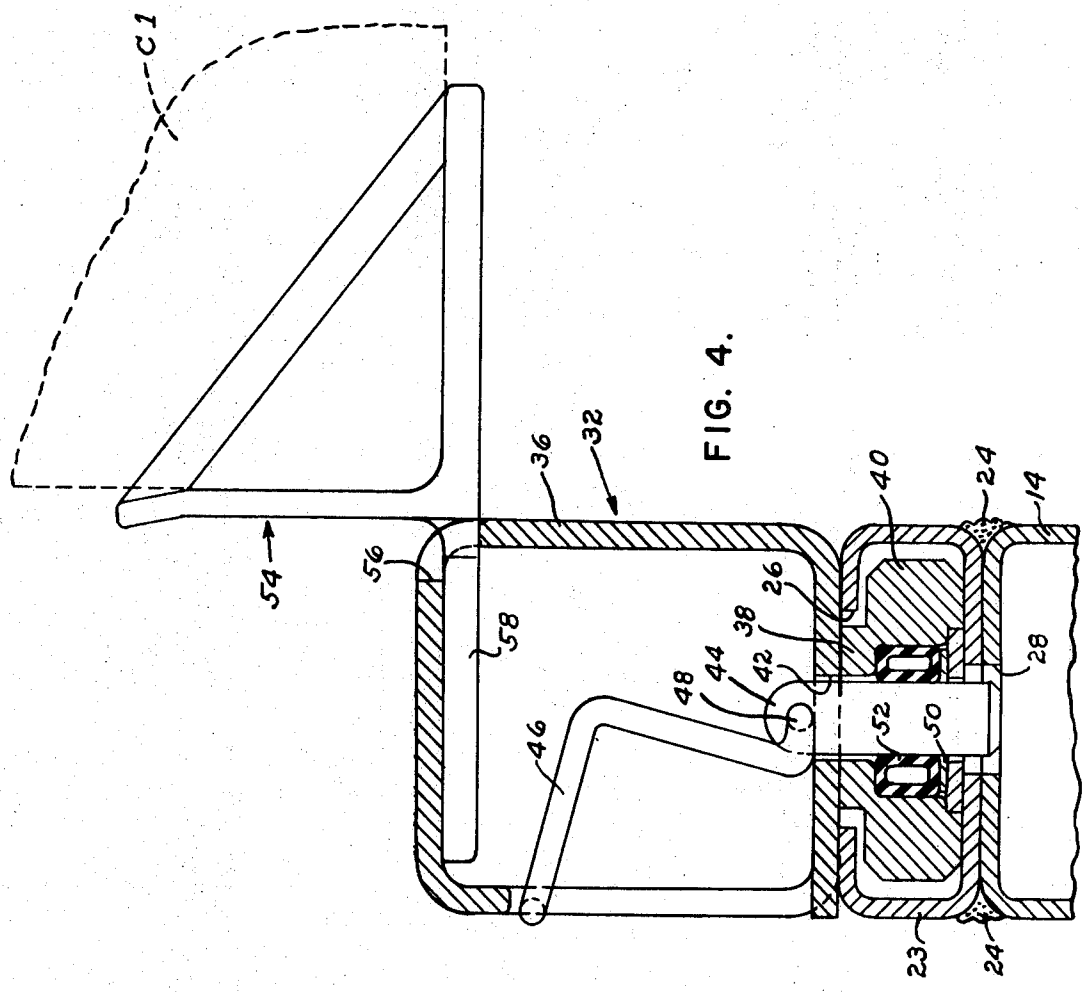

C1
54
56
58
36
32
40
24
14
26
38
44
42
48
46
52
50
28
23

FIG. 4.

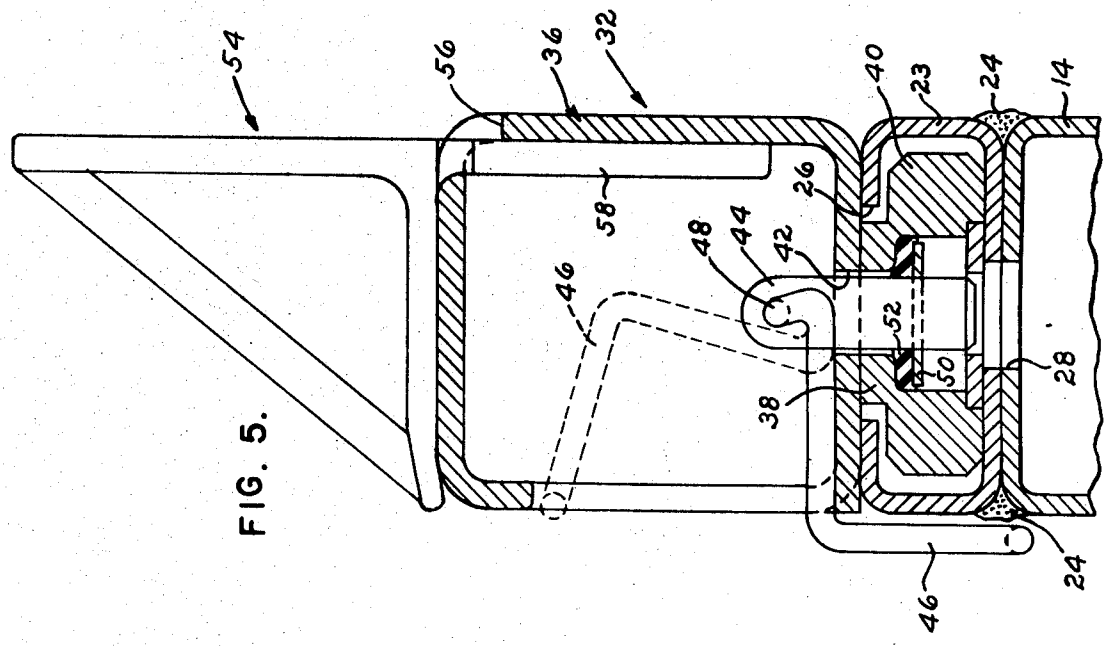

54
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32
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44
42
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52
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38
24
46

FIG. 5.

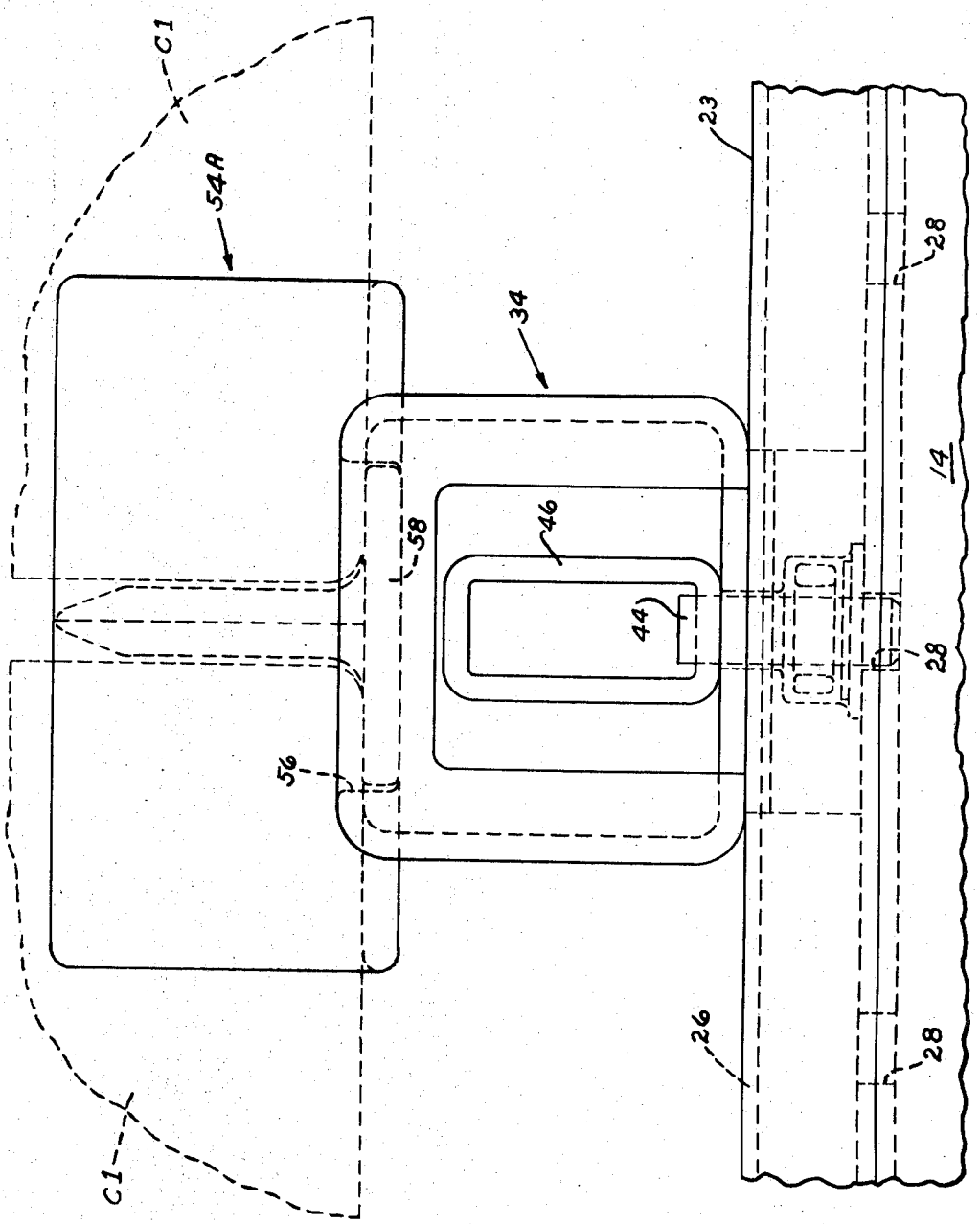


FIG. 6.

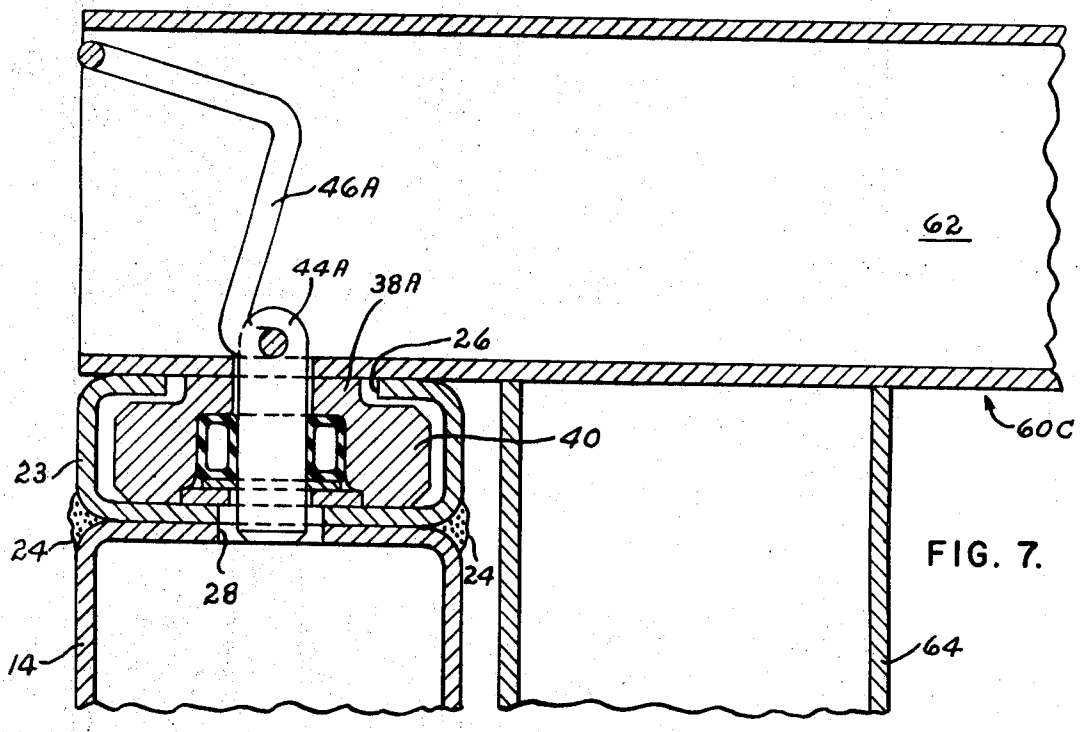

46A
62
44A
38A
26
40
60C
23
24
24
28
14
64

FIG. 7.

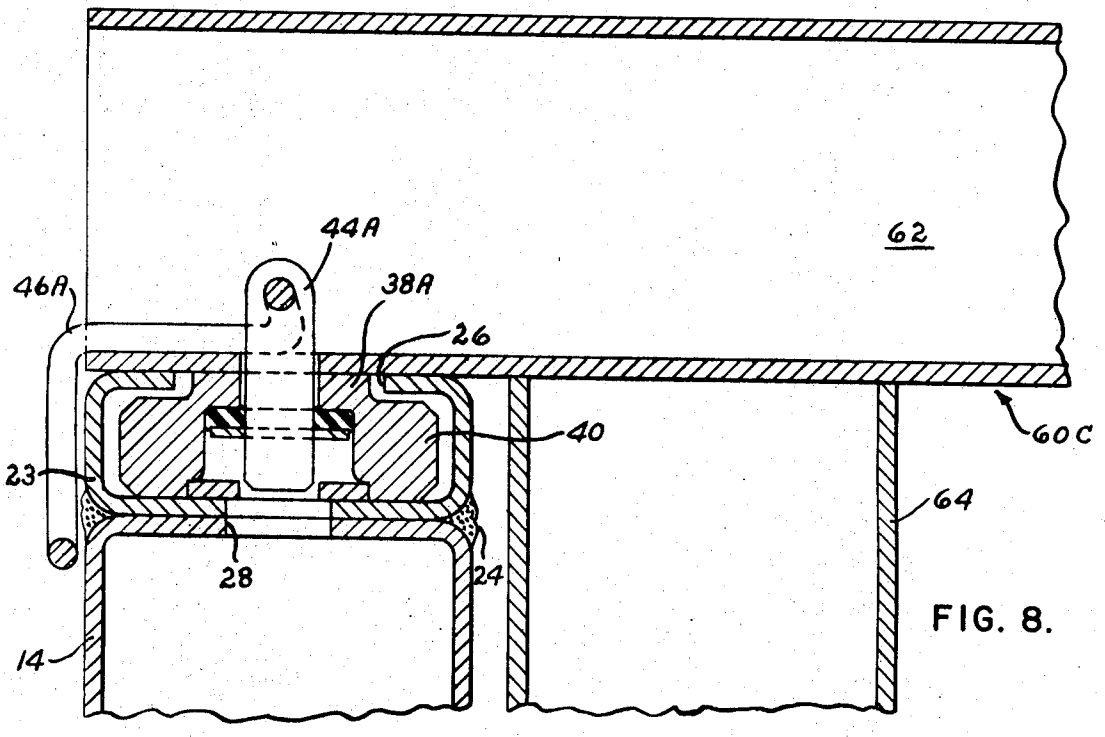

44A
62
46A
38A
26
40
60C
23
64
28
24
14

FIG. 8.

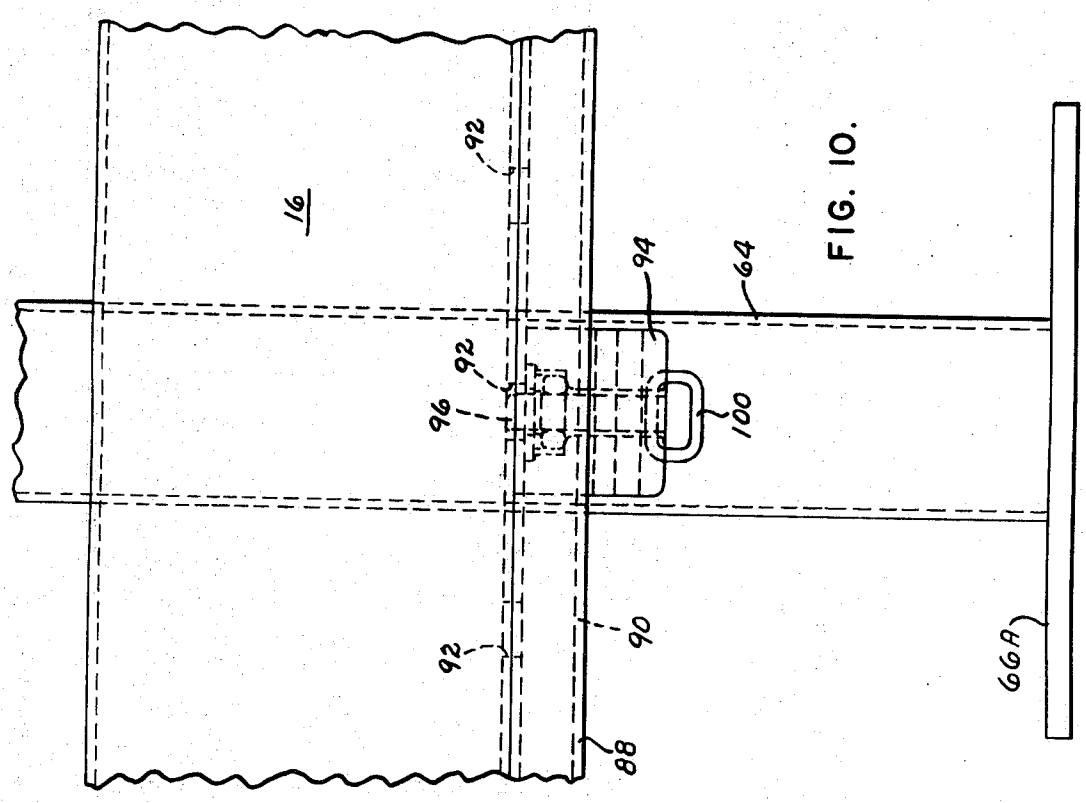


FIG. 10.

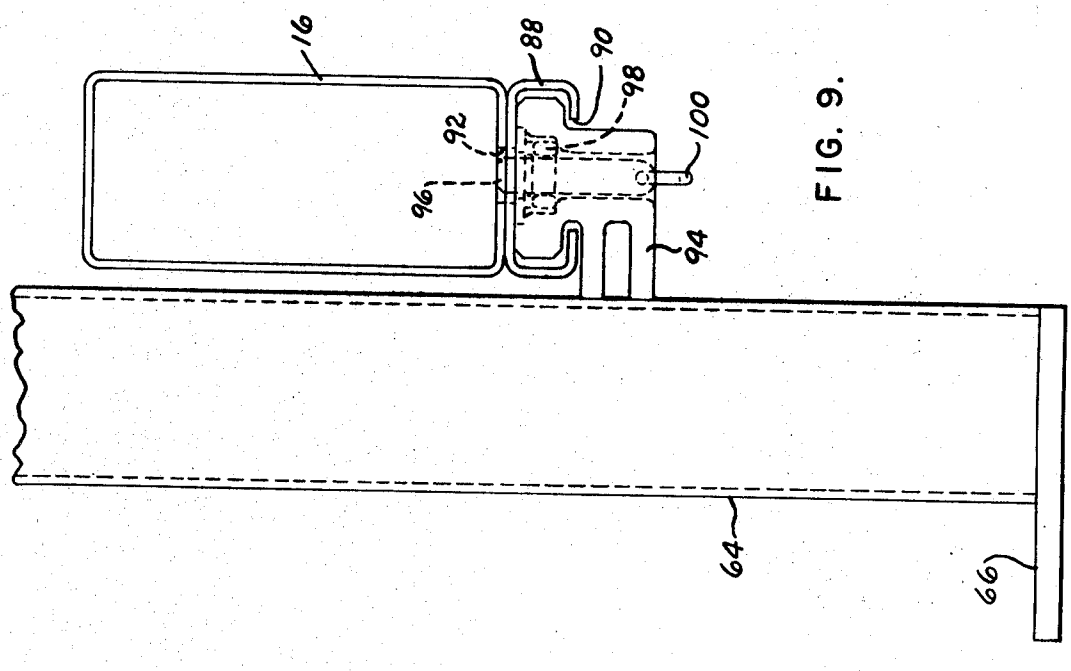


FIG. 9.

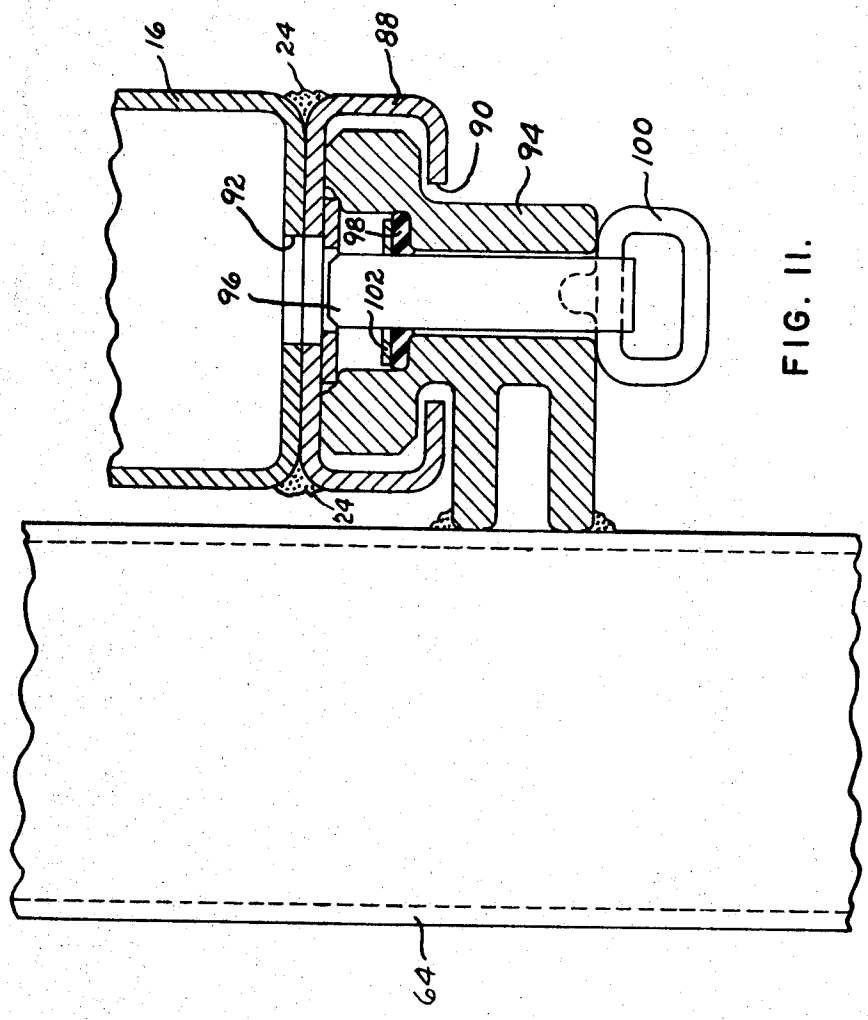


FIG. 11.

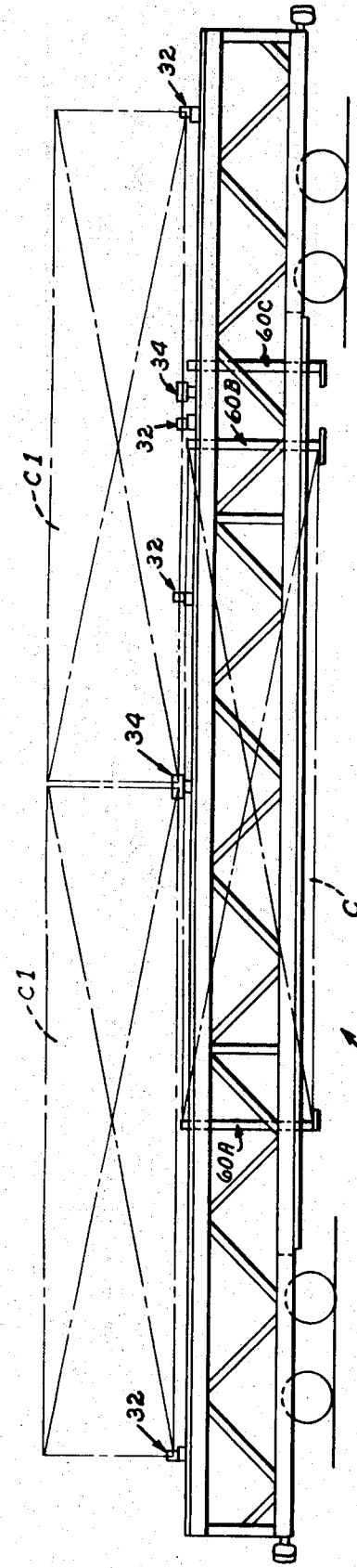

32
60C
34
60B
32
C1
32
34
C
C1
60A
32
10

FIG. 12.

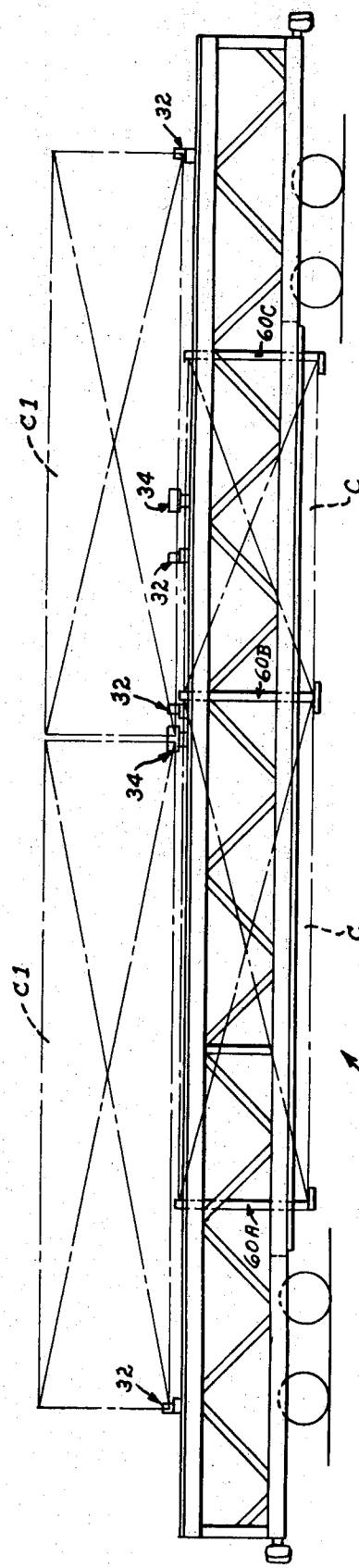

32
60C
C1
34
C
32
60B
32
34
C
C1
60A
32
10

FIG. 13.

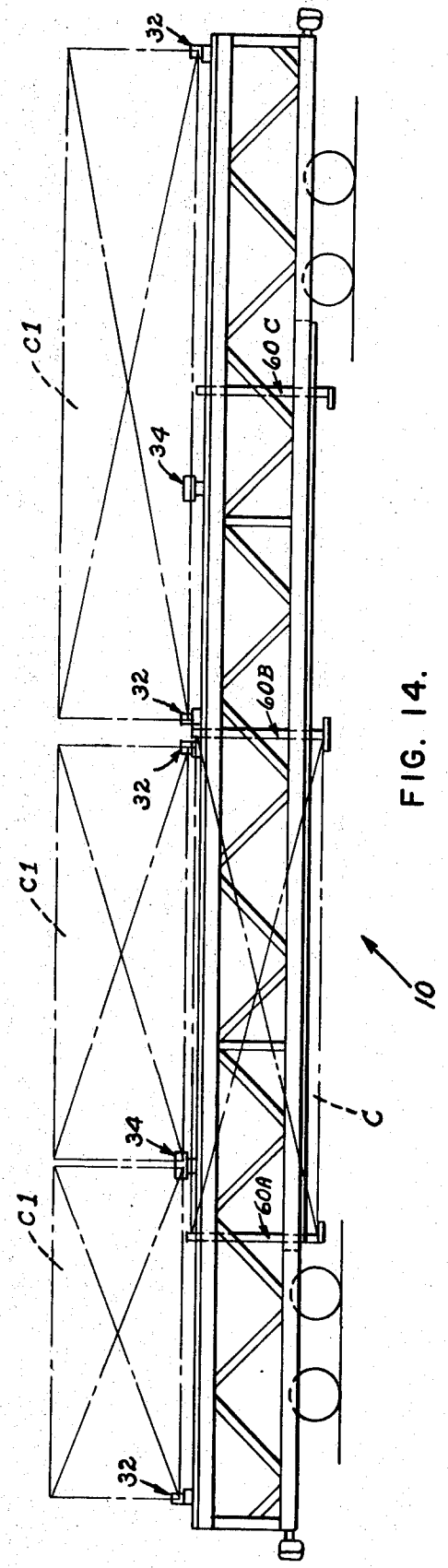


FIG. 14.

RAILWAY CAR FOR CARRYING CONTAINERS OF VARYING LENGTHS IN TWO TIERS

BACKGROUND AND DESCRIPTION OF THE INVENTION

Heretofore, containers have been supported on railway cars in two tiers, such as illustrated in U.S. Pat. No. 3,389,663 dated Jun. 25, 1968. However, such arrangements for supporting containers in two tiers have not been able to accommodate containers of various lengths in two tiers.

The present invention provides a railway flat car for carrying containers of various lengths in two tiers. A side structure extends along each side of the railway car each having upper and lower longitudinally extending chord members. Three vertical crossframe structures are suspended from the upper chord members in longitudinal spaced relation and extend downwardly therefrom to a position below the lower chord members for supporting containers thereon at an elevation below the lower chord members. The crossframe structures are mounted for movement along the upper chord members for selective positioning longitudinally of the car to accommodate different lengths in a pair of lower containers in the lower tier, and pedestal support members on the upper chord members support upper containers thereon over said pair of lower containers between the crossframe structures and may be adjustably positioned along the length of the car to provide a railway car for carrying containers of various lengths in two tiers.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated,

FIG. 1 is a side elevation of a railway car embodying the present invention and illustrating a pair of containers in a lower tier supported on crossframe structures and an upper tier having four containers supported on the upper chord members of the side structures;

FIG. 2 is an end elevation of the railway car of FIG. 1;

FIG. 3 is a partial side elevation of an upper chord member showing a crossframe structure suspended therefrom and a pair of pedestal structures for supporting the lower corners of containers;

FIG. 4 is a section of the pedestal structure illustrated in FIG. 3 illustrating the pedestal structure in a locked position with a container corner support thereon supporting the lower corner of a container;

FIG. 5 is a section similar to FIG. 4 but showing the pedestal structure in an unlocked position for movement along the upper chord member with the container corner support in a retracted position;

FIG. 6 is an enlarged side elevation of a pedestal structure on an upper chord member mounted for movement along the chord member;

FIG. 7 is an enlarged section of the connection of the crossframe structure to an upper chord member illustrating the crossframe structure in a locked position;

FIG. 8 is a section similar to FIG. 7 but illustrating the crossframe structure in an unlocked position to permit movement of the crossframe structure to another position along the length of the top chord member;

FIG. 9 is an enlarged partial end elevation of a crossframe structure illustrating a connection releasably connecting the crossframe structure to a lower chord member;

FIG. 10 is an enlarged partial side elevation of the releasable connection illustrated in FIG. 9;

FIG. 11 is an enlarged section of the releasable connection of FIGS. 9 and 10 illustrated in an unlocked position;

FIG. 12 is a schematic view illustrating a loading arrangement in which a single container is in the lower tier and two containers are in the upper tier;

FIG. 13 is a schematic view illustrating another loading arrangement in which two containers of different lengths are in both the lower and upper tiers; and

FIG. 14 is a schematic view illustrating a further loading arrangement in which a single container is in the lower tier and three containers of different lengths are in the upper tier.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now to the drawings for a better understanding of the invention and more particularly to FIGS. 1—3, a railway car is indicated generally 10 and includes a side structure indicated generally 12 on each side of car 10. A wheeled truck 13 is mounted adjacent each end of car 10. Each side structure 12 is a truss-type structure and includes respective upper and lower chord members 14 and 16 of box-shaped cross sections. Diagonal strut members 18 and vertical strut members 20 connect chord members 14 and 16. End cross members 21 and 22 extend between side structures 12 only at the ends of car 10. Top chord member 14 has an upper generally box-shaped guide 23 welded thereto at 24 with an upper slot 26 extending along its length. Spaced at 1-foot intervals along the length of top chord 14 and guide 23 are circular openings 28. Railway car 10 may be of a length of around 89 feet.

Referring particularly to FIGS. 3—6, an end pedestal structure generally indicated 32 is adapted to support the lower corner of one container and an intermediate pedestal structure indicated generally 34 is adapted to support the lower corners of two adjacent containers. Each pedestal structure 32, 34 is adapted for relative positioning along the length of upper chord members 14. Pedestal structure 32 comprises a generally cubical body portion 36 having an integral lower guide 38 fitting within slot 26 and received by coacting guide 23 on upper chord member 14. Projecting lugs 40 on lower guide 38 prevent removal of pedestal structure 32. Mounted within a central opening 42 of body portion 36 is a locking pin 44 adapted to fit within circular openings 28 spaced along the length of chord member 14. An actuating handle 46 is pivotally connected at 48 to pin 44 for movement of pin 44. An annular ring 50 is secured to pin 44 and a resilient hollow ring 52 fits around pin 44 against ring 50 and urges pin 44 to a locked position as shown in FIG. 4. A corner support 54 is mounted within an elongate slot 56 in body portion 36 and is adapted to support the lower corner of a container thereon as shown in FIG. 4. An extension 58 of corner support 54 is housed within body portion 36 and permit movement of support 54 between an operable support position shown in FIG. 4 and an inoperable retracted position shown in FIG. 5. For positioning of pedestal structure 32, handle 46 is moved to the position of FIG. 5 to withdraw pin 44 from opening 28. Then, pedestal structure 32 may be moved along top chord member 14 to a desired position at which pin 44 is vertically aligned with a subjacent opening 28. Movement of handle 46 to the position of FIG. 4 locks pedestal structure 34 in position. The intermediate pedestal structure 34 is similar to pedestal structure 32 except in regard to the container support. Container support 54A on pedestal structure 34 includes a pair of seats to support the lower corners of two adjacent containers. Thus, pedestal structures 32 and 34 may be positioned at selected intervals along the length of upper chord member 14 to accommodate containers of various lengths. The containers in the upper tier are designated C1 and the containers in the lower tier are designated C.

Suspended from upper chord members 14 are three crossframe structures 60A, 60B, and 60C mounted between trucks 13 and adapted to support containers C in a lower tier between trucks 13. Each crossframe structure 60A, 60B, 60C is generally identical and only crossframe structure 60C will be described in detail, it being understood that the remaining crossframe structures 60A, 60B are similar. Crossframe structure 60C as shown in FIG. 2 includes an upper horizontal beam 62 and integral vertical side members 64 extending downwardly from beam 62 inwardly of adjacent side structures 12. Side members 64 extend downwardly to a position below lower chord members 16 and have laterally extending support ledges 66 thereon to support the lower corner of a container thereon. Containers C fit against side members 64 and are restrained thereby against longitudinal movement

relative to railway car **10**. Crossframe structure **60C** is suspended from top chord members **14** on cross beam **62** and may be moved along the length of top chord members **14** for positioning at selected intervals. The locking means for securing crossframe structure **60C** at selected intervals is similar to the locking means for the pedestal structures **32** and include a pin **44A** adapted to fit within openings **28** as shown in FIG. **7**. Handle **46A** is actuated for locking and unlocking pin **44A**. Guide **38A** is secured to the lower surface of cross beam **62** and fits within slot **26** and guide **23** for sliding movement along upper chord member **14**.

To guide and aid in supporting the lower portion of crossframe structure **60C** and referring particularly to FIGS. **9—11**, a lower guide **88** is secured to the lower surface of each lower chord member **16**. A longitudinally extending slot **90** extends the length of guide **88**. Openings **92** are spaced at 1-foot intervals along the length of lower chord members **16** in vertical alignment with openings **28** in upper chord members **14**. Outwardly extending guides **94** are secured to the outer surface of side members **64** and are received within guides **88** and slots **90**. Pin **96** is received within opening **92** and is urged upwardly by resilient hollow ring **98** into locked position as shown in FIGS. **9** and **10**. To release crossframe structure **60C** for movement to another position, handle **100** may be gripped and pulled downwardly against the bias of resilient ring **98** to withdraw pin **96** from opening **92**. Then pin **96** is rotated 90° and handle **100** engages the lower surface of guide **94** as indicated in FIG. **11**. A washer **102** is secured to pin **96** to form an abutting surface for resilient hollow ring **98**. Crossframe structures **60A** and **60B** function in a manner similar to crossframe structure **60C**. However, intermediate crossframe structure **60B** has a container support ledge **66A** extending on both sides thereof to support two adjacent containers C.

As shown in FIGS. **12—14**, railway car **10** is adapted to transport a variety of containers having different lengths by movement of crossframe structures **60A**, **60B**, and **60C** and pedestal structures **32** and **34** along the length of the car. For example, a total of six containers might be transported with four containers C1 20 feet in length being in the upper tier and two containers C 27 feet in length being in the lower tier as shown in FIG. **1**. FIG. **12** indicates a loading arrangement in which two containers C1 around 40 feet in length are arranged on the upper tier and a single container C 40 feet in length is provided in the lower tier. When only one container is transported in the lower tier, an end crossframe structure is not employed and may be secured outwardly of the end of the container. The pedestal structures **32** and **34** which are not employed when less than four containers are transported in the upper tier may be pivoted to an upward position as shown in FIG. **5** and will not obstruct the clearance between side structures **12**.

FIG. **13** indicates a loading arrangement in which two containers C, one being 30 feet in length and the other being 20 feet in length, are transported in the lower tier and two containers C1, one being 40 feet in length and the other being 35 feet in length are supported in the upper tier.

FIG. **14** indicates another loading arrangement in which one container C 35 feet in length is supported on the lower tier and three containers C1, 20 feet, 25 feet, and 40 feet in length, are supported on the upper tier.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results obtained.

I claim:

1. A railway car for transporting containers in two tiers thereon comprising, a side structure extending along each side of the car each having an upper and a lower longitudinally extending chord member, a wheeled truck adjacent each end of the car, three crossframe structures supported on the upper chord members between the wheeled trucks and extending transversely of the car between the side structures, coacting guides on the upper chord members and the crossframe structures mounting the crossframe structures for movement longitudinally of the car for positioning at selective intervals along the length of the car, means for releasably securing the crossframe structures at said selective intervals, means adjacent the lower end of the crossframe structures at a height below the lower chord members to support two containers of varying lengths thereon in said lower tier, separate container support means on the upper chord members to support containers in an upper tier above the lower tier of container, coacting guides on the upper chord members and the separate container support means mounting said separate container support means for movement longitudinally of the car for positioning at selective intervals, and means for releasably securing the separate container support means at said selective intervals thereby to accommodate containers of varying lengths in the upper tier.

2. A railway car for transporting containers as set forth in claim **1** wherein each of said crossframe structures includes a cross beam supported on the upper surfaces of the upper chord members, and a pair of vertical members secured to and extending downwardly from said cross beam closely adjacent the associated side structures to a position below the lower chord members.

3. A railway car for transporting containers as set forth in claim **1** wherein said separate container support means comprising a main body mounted for movement along the associated upper chord member and a container support member connected to the main body for movement between an operable support position extending inwardly of the associated upper chord member and an inoperable retracted position removed generally from the area between the upper chord members thereby not obstructing the space between the upper chord member.

4. A railway car for transporting containers as set forth in claim **1** wherein coacting guides on the lower chord members and the crossframe structures are provided to aid in guiding and supporting the crossframe structures for movement longitudinally of the car.

5. A railway car for transporting containers as set forth in claim **1** wherein said coacting guides on said upper chord members and the crossframe structures comprise a longitudinally extending slot along the upper surface of the upper chord member and a guide on said crossframe structure mounted within said slot for longitudinal movement along the car.

6. A railway car for carrying containers comprising, a side structure extending along each side of the railway car each having an upper and a lower longitudinally extending chord member, at least one vertical crossframe structure mounted on the upper chord members and extending downwardly therefrom to a position below the lower chord members, means on said crossframe structure to support a container thereon, said crossframe structure extending transversely of the car for the entire width thereof and being supported on the upper chord members at a height generally above the container supported on the crossframe structure, said crossframe structure comprising a pair of vertical side members disposed adjacent the upper chord members and an upper cross beam connecting the side members and extending over the upper chord members, coacting guides on the upper chord members and the cross beam for guiding the crossframe structure longitudinally along the upper chord members, and locking means for releasably securing the crossframe structure at predetermined intervals along the length of the upper chord members to accommodate containers of varying lengths.

7. A railway car for carrying containers comprising, a side structure extending along each side of the railway car each having an upper and a lower longitudinally extending chord member, a wheeled truck adjacent each end of the car, three vertical crossframe structures between the trucks supported on the upper chord members in longitudinal spaced relation and extending downwardly therefrom to a position below the lower chord members, means on said crossframe structures to support containers thereon at an elevation below said lower

chord members thereby to accommodate a pair of containers between the crossframe structures, said crossframe structures extending transversely of the car for the entire width thereof and being supported on the upper chord members at a height generally above the container supported on the crossframe structures, said crossframe structures each comprising a pair of vertical side members disposed adjacent the upper chord members and an upper cross beam connecting the side members and extending over the upper chord members, coacting guides on the upper chord members and the associated cross beam for guiding the crossframe structures longitudinally along the upper chord members, and locking means for releasably securing the crossframe structures at predetermined intervals along the length of the upper chord members to accommodate containers of varying lengths.

8. A railway car for carrying containers comprising, a side structure extending along each side of the railway car each having an upper and a lower longitudinally extending chord member, a wheeled truck adjacent each end of the car, three vertical crossframe structures between the trucks supported

on the upper chord members in longitudinally spaced relation and extending downwardly therefrom to a position between the lower chord members, means on said crossframe structures to support containers thereon at an elevation below said lower chord members thereby to accommodate a pair of lower containers between the crossframe structures in a lower container tier, said crossframe structures extending transversely of the car for the entire width thereof and being supported on the upper chord members at a height generally above the containers supported on the crossframe structures, said crossframe structures each comprising a pair of vertical side members and extending over the upper chord members, coacting guides on the upper chord members and the associated cross beam for guiding the crossframe structures longitudinally along the upper chord members, and locking means for releasably securing the crossframe structures at predetermined intervals along the length of the upper chord members to accommodate containers of varying lengths.

PO-1050
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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,561,369 Dated February 9, 1971

Inventor(s) Walter E. O'Leary

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 12, after "bers" insert -- disposed adjacen the upper chord members and an upper cross beam connecting the side members --.

Signed and sealed this 18th day of May 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

WILLIAM E. SCHUYLER, JR
Commissioner of Patents