Aug. 5, 1969 C. H. BETJEMANN 3,459,326

SHIPPING GONDOLA WITH REMOVABLE SIDE RAILS

Filed May 31, 1968 5 Sheets-Sheet 1

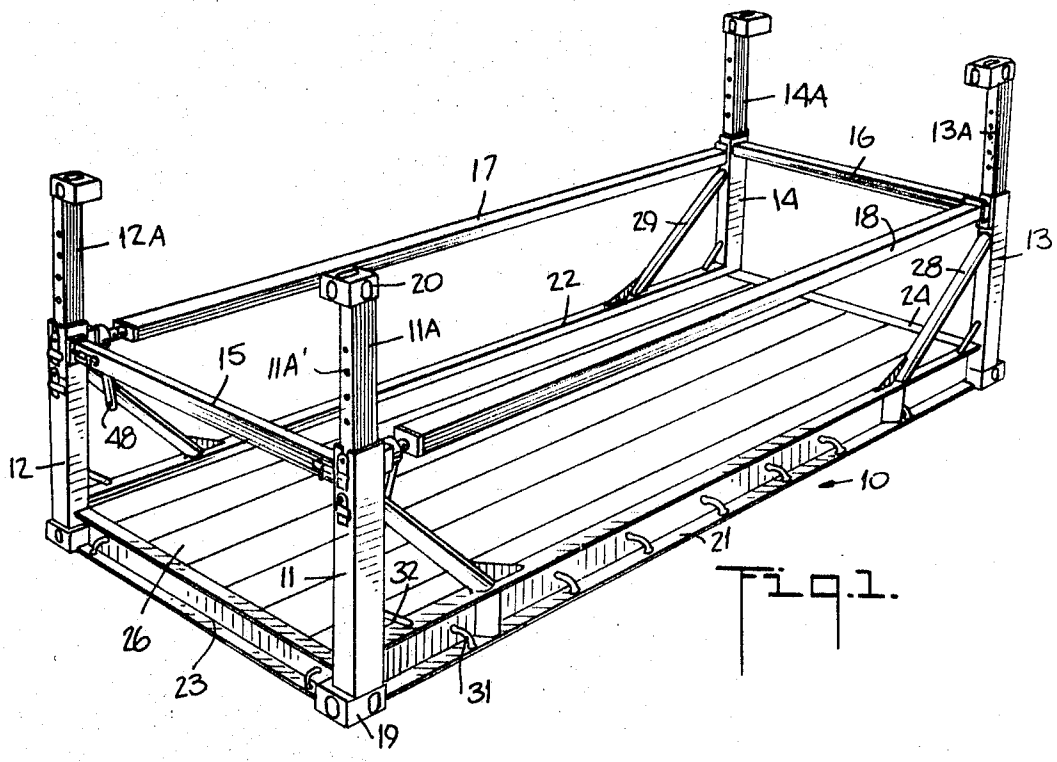


Fig. 1.

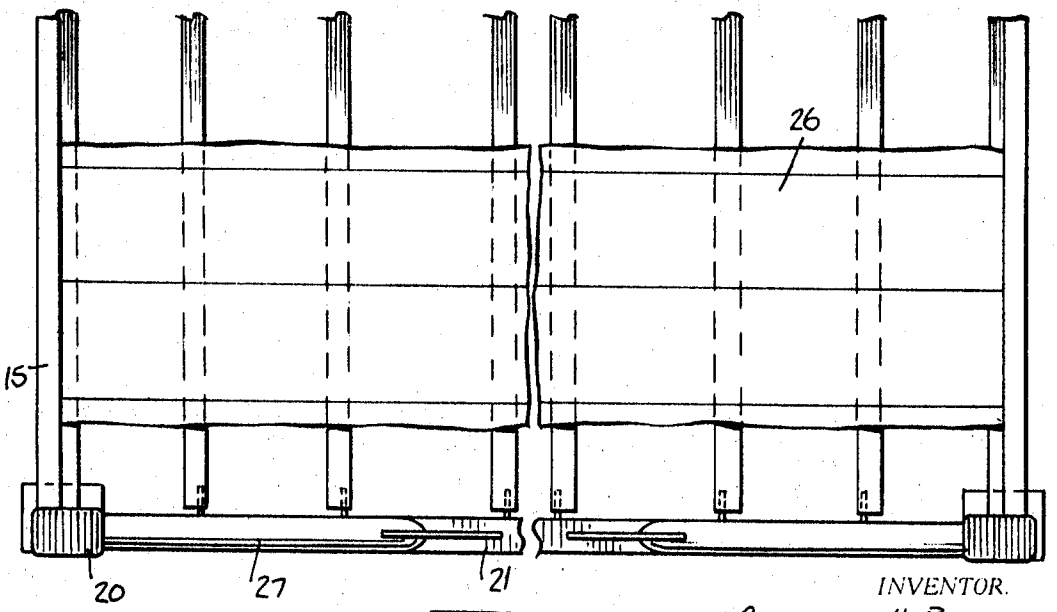


Fig. 4.

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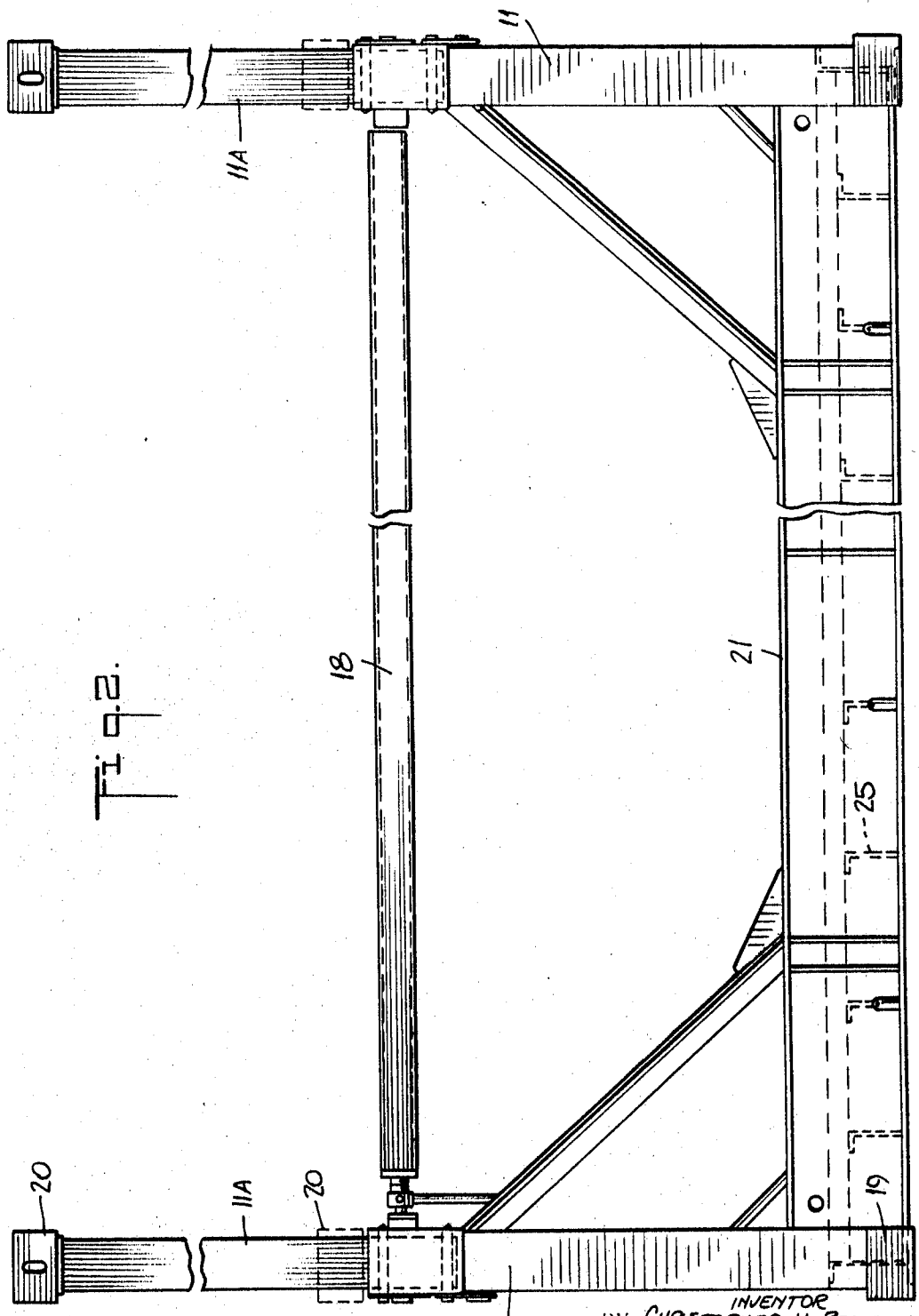


Fig. 2.

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SHIPPING GONDOLA WITH REMOVABLE SIDE RAILS

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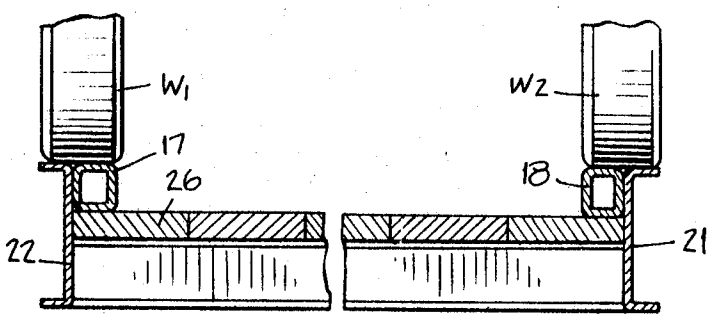


Fig. 11.

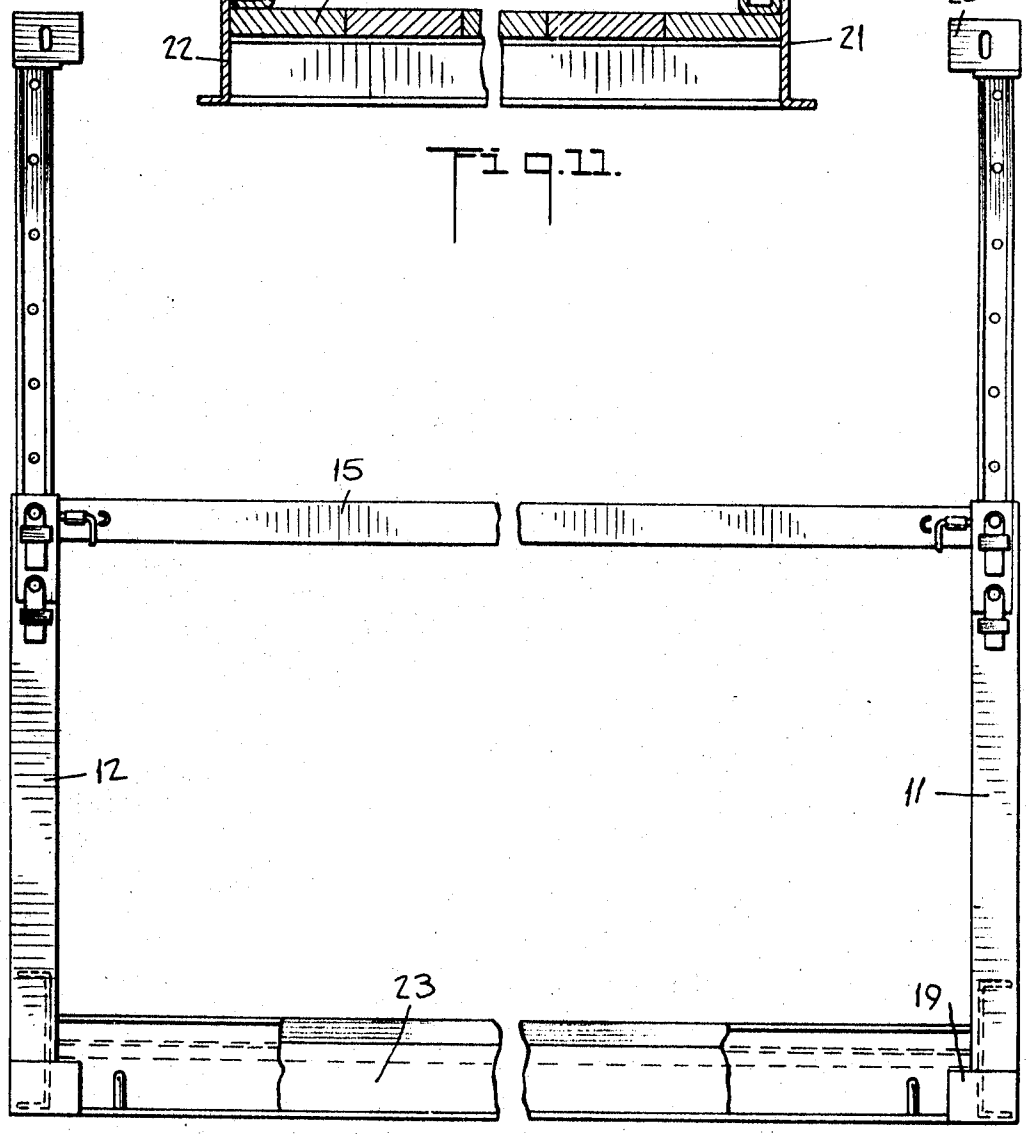


Fig. 3.

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SHIPPING GONDOLA WITH REMOVABLE SIDE RAILS

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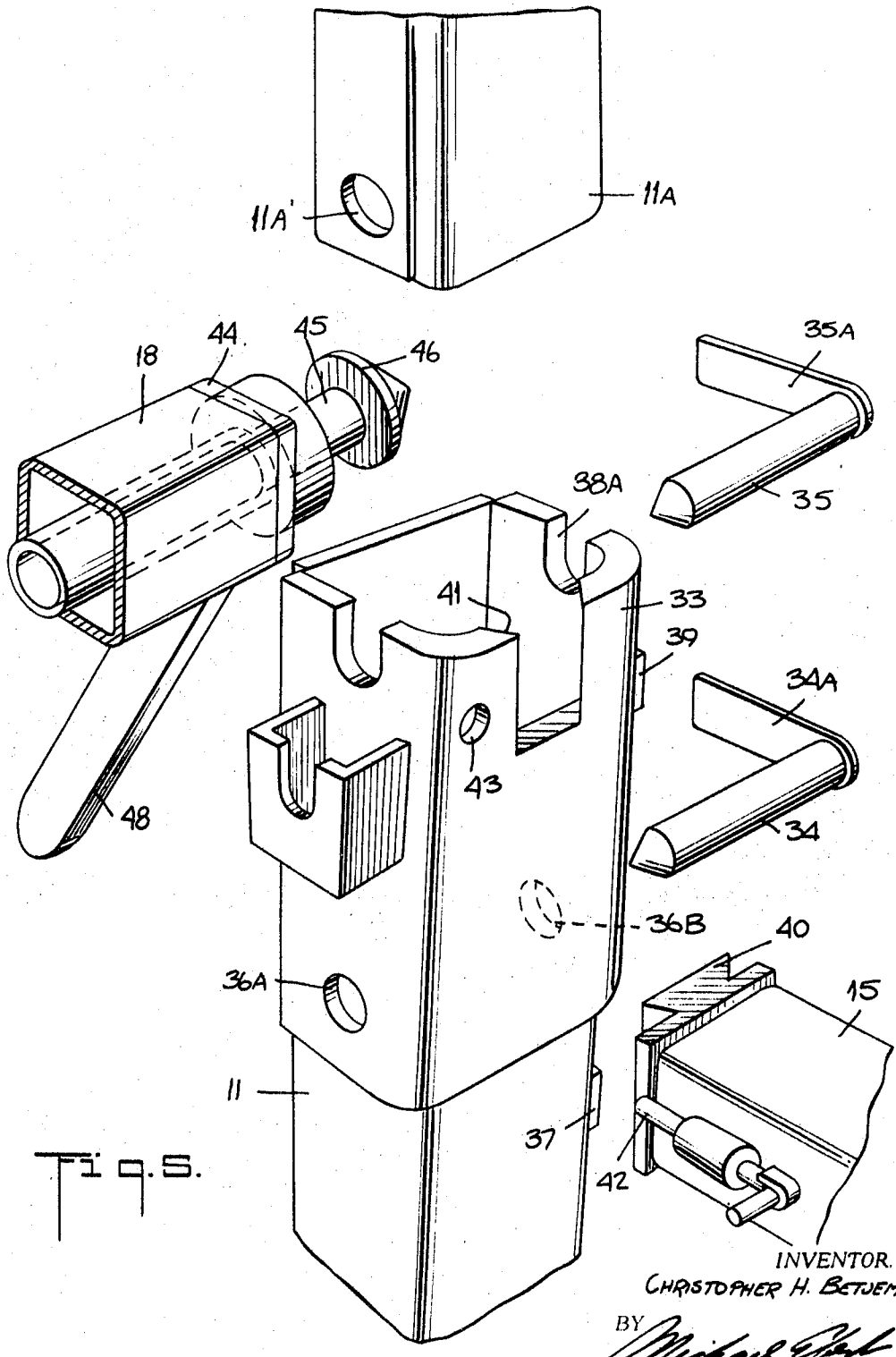


Fig. 5.

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SHIPPING GONDOLA WITH REMOVABLE SIDE RAILS

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Fig. 6.

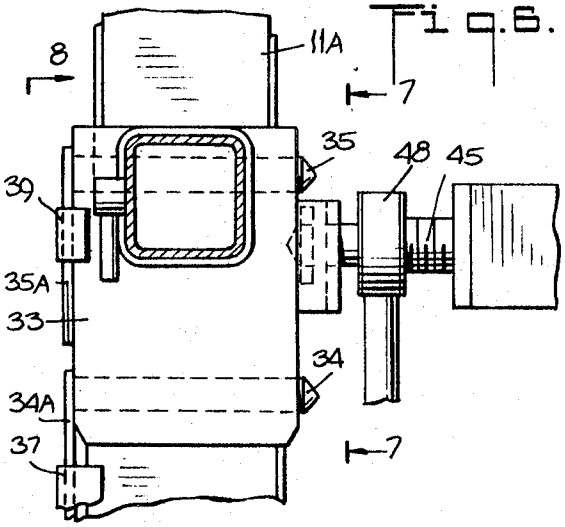
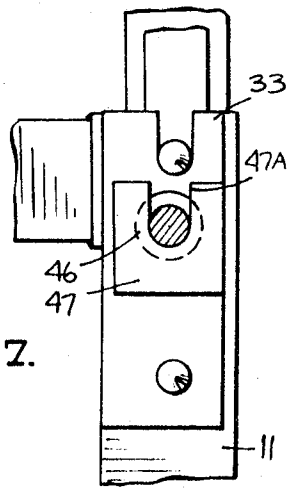


Fig. 7.



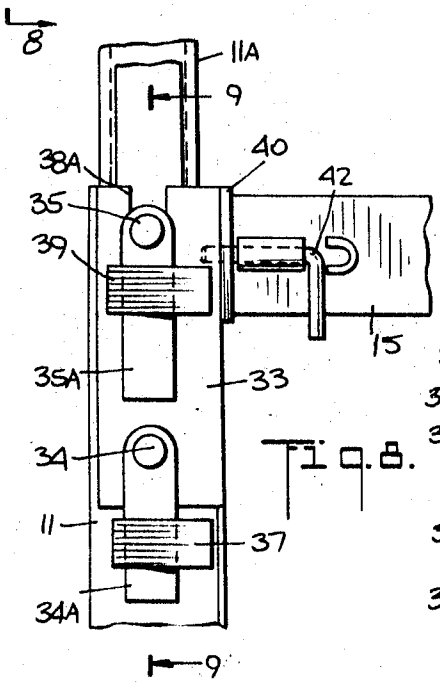


Fig. 8.

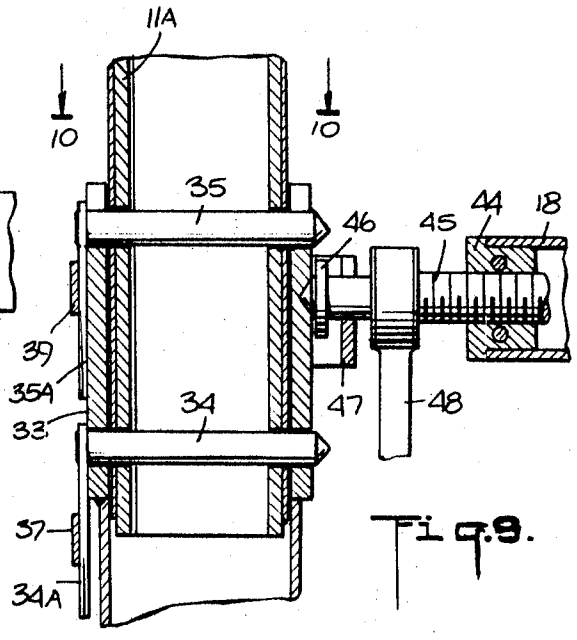


Fig. 9.

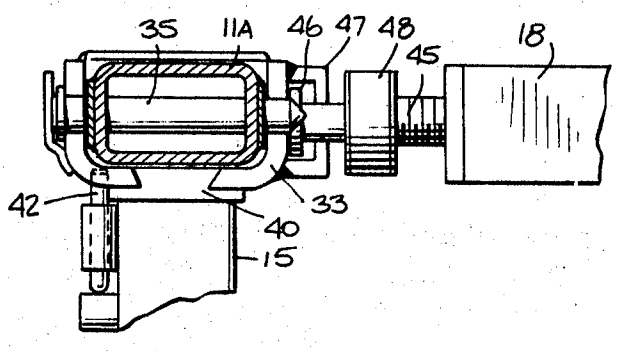


Fig. 10.

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Patented Aug. 5, 1969

3,459,326

SHIPPING GONDOLA WITH REMOVABLE SIDE RAILS

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Continuation-in-part of application Ser. No. 581,905, Sept. 26, 1966. This application May 31, 1968, Ser. No. 733,694

Int. Cl. B65d *19/06, 19/08*

U.S. Cl. 220—1.5 6 Claims

ABSTRACT OF THE DISCLOSURE

A demountable cargo gondola having a floor assembly formed by a rectangular frame constituted by a pair of side beams and a pair of end beams, boards extending between said end beams and being flush with the top face thereof to define a floor surface, the side beams being of greater height than the end beams whereby the floor surface is depressed with respect to the top face of the side beams. Secured to the corners of the frame are four hollow corner posts provided with bottom corner fittings adapted to accommodate hooks and other engaging hardware. Between each pair of posts at either end of the gondola there is disposed a removable end gate, whereas between each pair of posts at either side of the gondola there is disposed a removable side rail, which side rails have a rectangular cross-section and may be laid on the floor against an associated side beam to provide a broad track for supporting a load which occupies the full width of the gondola. Telescopically received within each corner post is an extensible section terminating in a top corner fitting, which section may be pinned to the corner post at any desired level whereby the effective height of the posts may be adjusted to the height of the load cradled in the gondola.

Related application: This application is a continuation-in-part of my copending application, Ser. No. 581,905, filed Sept. 26, 1966, now Patent No. 3,386,600, entitled, "Demountable Shipping Gondolas."

This invention relates generally to open shipping gondolas, and more particularly to a demountable shipping gondola of adjustable height which is adapted to accommodate uncrated cargo, such as Jeeps, ambulances and other vehicles, machinery, steel stock, as well as small container units.

Increasing use is being made in the United States and in highly developed foreign countries of the containership concept. A containership is designed to receive and transport hundreds of standardized demountable cargo containers which may be loaded on or discharged from a vessel in a matter of minutes, thereby effecting significant economies in time and cargo-handling costs. Huge trailers are now available for transporting such cargo containers to and from docking facilities, over super-highways, and turnpikes, thus providing a fully integrated mode of transportation.

Essential to the containership concept is the cargo container, which is a shipping box suitable for storing and transporting bulk material, packages and pieces, as well as a number of smaller containers, the cargo container protecting the contents thereof from loss or damage and being large enough to entail mechanical handling. A cargo container is said to be demountable when it can be handled in transit as a unit and when it can be mounted and secured in or on marine, rail, highway or air carriers.

Demountable cargo containers have been standardized as to their height and width, but they may vary in length. Thus standard containers are eight feet in width and eight feet in height, whereas their length lies modularly in the range of 10 feet to 40 feet. But for the container-

ships, cargo containers have been standardized in 20-feet lengths (20 x 8 x 8). Such containers are of rugged construction, for they must have sufficient structural strength to withstand, without permanent deformation, the static and dynamic loads imposed by pick-up and stacking operations and the impact shock and stresses encountered in normal carrier service.

Demountable cargo containers are provided with top corner fittings having end, side and top openings adapted to accept standard hooks, shackles, slings or other engaging hardware elements for registering, picking up and securing containers on railroad flatcars, highway vehicles, ships' decks and hatches, as well as aircraft. The bottom corners are also provided with fittings, these having end, side and bottom openings suitable for engagement with lifting devices as well as with registering and securing devices. In order to facilitate vertical stacking of the containers, the bottom corner fittings must be compatible with the top corner fittings.

The demountable cargo gondola disclosed in said copending application is provided with removable end gates to facilitate the entry and exit of small shipping units, the gondola including corner posts having top and bottom corner fittings, the posts being extensible in height, whereby the dimensions of the gondola may be conformed to those of the cargo elements cradled therein. One advantage of this arrangement is that gondolas may be aligned in tandem relation with their end gates removed, thereby defining an unobstructed channel through which goods may be loaded or unloaded by fork-lift truck or other means.

In the gondola disclosed in said copending application, the side wall or rails are fixedly connected to the corner posts, thereby precluding side loading and unloading and also confining the load to the space between the side walls. In some instances, the width of the cargo to be loaded in the gondola is close to or substantially equal to the width of the gondola. Thus if a tractor, which is almost eight feet wide, is to be loaded into the gondola which also has an eight foot width, it cannot be end loaded therein, for the presence of the corner posts reduces the width of the entrance at the ends to well below eight feet. In other instances, even if the cargo can be end loaded, it may be more convenient to side load into the gondola.

Accordingly, it is the main object of the invention to provide a gondola whose side rails are removable to permit side loading of cargo.

More specifically, it is an object of the invention to provide a gondola with removable side rails which may be laid on the depressed floor of a gondola against the side beams thereof to create a widened track for supporting a load whose width is substantially equal to the width of the gondola.

A significant feature of the invention is that the effective length of the side rails is adjustable to facilitate removal of the side rails. When a gondola is supported at its ends on a carrier or other surface, the gondola tends to buckle and to impose a stress on the side rails. Hence, if the length of these removable rails was fixed, the rails could not readily be removed. However, by reducing the length of the stressed rails, the stress is relieved to permit removal thereof.

Also an object of the invention is to provide a gondola of the above-described type which is of high strength, and which is provided with securing means to permit lashing of the load to the cargo.

Briefly stated, these objects are accompanlished in a gondola having a floor assembly formed by a rectangular frame constituted by a pair of side beams and a pair of end beams, boards extending between the end beams and being flush with the top face thereof to define a floor

surface which is depressed relative to the top face of the side beams which are of greater height. Secured to the corners of the frame are four hollow corner posts provided with bottom corner fittings adapted to accommodate hooks and other hardware. Between each pair of posts at either end of the gondola there is disposed a removable end gate, whereas between each pair of posts at either side of the gondola there is disposed a removable side rail, which rail is of rectangular cross-section and may be laid on the floor against the related side beam to define a broad track for supporting a load whose width occupies substantially the full width of the gondola.

Telescopically received within each hollow corner post are extensible sections terminating in top corner fittings, which section may be pinned to the corner post at any desired level whereby the effective height of the posts may be adjusted to the height of the load cradled in the gondola.

For a better understanding of the invention, as well as other objects and features thereof, reference is made to the following detailed explanation to be read in conjunction with the drawing wherein:

FIG. 1 is a perspective view of a gondola in accordance with my invention;

FIG. 2 is a side elevational view of the gondola;

FIG. 3 is an end elevational view;

FIG. 4 is a partial plan view of the gondola with the side rail and some of the floor boards removed;

FIG. 5 is an exploded view showing the socket at the top of one of the corner posts and the manner in which the side rail, the end gate and the extension section cooperate therewith;

FIG. 6 is an elevational view of the corner posts showing the manner in which a side rail is coupled thereto;

FIG. 7 is an end view of the corner post as seen in the direction indicated by lines 7—7 in FIG. 6;

FIG. 8 is an end view of the corner post as seen in the direction indicated by lines 8—8 in FIG. 6;

FIG. 9 is a longitudinal section of the corner post as seen in the plane indicated by lines 9—9 in FIG. 8;

FIG. 10 is a transverse section taken in the plane indicated by lines 10—10 in FIG. 9; and

FIG. 11 is a transverse section taken through the gondola with the side rails resting against the side beams.

Referring now to FIGS. 1, 2 and 3 there is shown a demountable gondola in accordance with the invention comprising a floor assembly, generally designated by numeral **10**, and four hollow upright posts **11**, **12**, **13** and **14** welded or otherwise secured to the corners of the floor assembly. Extension sections **11A**, **12A**, **13A** and **14A** are telescopically received in the posts. Also provided are a pair of removable end gates **15** and **16** and a pair of removable side rails **17** and **18**.

At the base of each corner post is a bottom corner fitting, such as fitting **19** attached to the bottom of post **11**, and having the usual end, bottom and side openings. Such fittings, which may be fabricated from steel or aluminum castings, are of the type employed in standard demountable cargo containers and are adapted for use, for example, with twist lock mountings which engage the fittings through the bottom openings. Such mountings are secured to a flat bed track or welded to the deck of the vessel. The bottom corner fittings are also usable with lifting hardware or hooks.

Attached on top of the extendible section of each post is a top corner fitting, such as fitting **20** on section **11A**. Each top corner fitting has end, top and side openings, which openings are differently shaped and are adapted to accommodate hooks, shackles or other engaging pick-up devices. Because of the top and bottom corner fittings the gondola lends itself to handling in the same manner as a standard container.

The floor assembly **10** is formed by a pair of side beams **21** and **22**, and a pair of end beams **23** and **24** of reduced height, the beams being preferably fabricated of steel. As best seen in FIG. 4, laid over a grid of cross-pieces **25** bridged between side beams **21** and **22** are longitudinally extending floor boards **26**, the cross-pieces being formed preferably of aluminum while the boards are of wood. The boards lie flush with the top flange of end beams **23** and **24** to form a floor surface which is depressed with respect to the side beams whose height is greater than the end beams.

The gondola structure is reinforced by trusses **27**, **28**, **29** and **30** which are angled between the corner posts and the beams. To permit cargo to be tied to the gondola, securing rings **31** are provided on the side beams, and securing bars **32** are provided at the juncture of the posts and side beams.

Referring now to FIGS. 5 to 10, there is illustrated the manner in which a removable side rail and a removable end gate are coupled to a corner post, post **11** having been selected as representative. It will be seen that a hollow socket member **33** is welded to the upper end of hollow post **11**, the dimensions of the channel in the socket matching those of the post so that extensible section **11** may pass through the socket into the post.

The length of the section **11A** is such that it may be fully telescoped within post **11**, in which position the top corner fitting **20** lies directly adjacent the upper end of the post, as shown in dotted lines in FIG. 2. Or the section may be raised to its maximum extent to provide an effective corner-post height of eight feet to correspond to that of a standard container.

Since the posts are adjustable to the height of the cargo cradled in the gondola, in some situations the post height may be, say, five and one-half feet, in others seven feet, and still others, eight feet. Inasmuch as gondolas of adjustable height may be stacked one on top of the other, one need not limit the maximum height of each gondola to eight feet. Thus, if one gondola is adjusted to a seven and one-half foot height, the other may be adjusted to an eight and one-half foot height to provide a stacked total of sixteen feet, which is equivalent to two stacked standard containers. Hence, in the construction of gondolas in accordance with the invention, the extensible sections may be designed to go above eight feet to accommodate cargo whose height is greater than that which can be housed within a standard container.

The extensible sections are provided with equi-spaced bores, such as bores **11A'**, to permit the section to be pinned to the associated post by a pair of bolts **34** and **35**. Bolt **34** is extended through a pair of registered bores **36A** and **36B** in the lower end of socket **33**, the bolt going through that bore in section **11A**, which at the selected position of the section, is in alignment with the socket bores. To prevent accidental retraction of bolt **34**, it is provided with a side arm **34A** which, in the vertical position, is received within a clip **37** attached to post **11**. To retract bolt **34** side arm **34A** is turned counterclockwise to withdraw it from its holding clip, the bolt then being free for removal. Bolt **35**, which acts to stabilize the position of the extensible section within the post, is entered into a bore at a position directly above the bore on section **11A** which receives bolt **34**. Bolt **35** goes into matching notches **38A** and **38B**, cut into the upper end of socket **33**, this bolt having a side arm **35A**, which is received in a holding clip **39**.

End gate **15** is removable from the posts, each extremity of the gate having a tongue member **40** which enters a slot **41** in the upper end of socket **33**, the slot having a trapezoidal configuration conforming to the shape of the tongue. Each end gate is removed by lifting it to bring the tongues out of the slots. To hold the gate in place and to prevent removal thereof, each end of gate **15** is provided with a retractable locking pin **42** which, when the gate is in place, is in a posture to enter a hole **43** in the socket.

One end of each of the removable side rails **17** and **18** is provided with a tongue or similar means to connect the

rail to its associated post. However, since as pointed out previously, it is necessary to make the effective length of these rails adjustable to facilitate locking the rail firmly in place as well as the subsequent removal thereof under conditions where stress may be imposed on the rail, the other end of the side rails is provided (note FIG. 9) with an end plate **44** having an internally-threaded aperture which receives an externally-threaded extension rod **45**, the free end of the rod terminating in a conical cap **46**.

In attaching the side rail to the post, the conical cap **46** is admitted into an open box **47**, welded to a wall of socket **33**, the box having a notch **47A** to accommodate rod **45**. Rod **45** is extended or retracted axially with respect to end plate **44** on the side rail by means of a ratchet wrench **48** of standard design which is adapted to turn the rod in the appropriate direction.

As shown in FIG. **11**, when side rails **17** and **18** are removed from the posts, they may be laid down on floor boards **26** against side beams **21** and **22**. The dimensions of these rails are such that they are equal in height to the difference between the heights of the side and end beams. Consequently, the top face of each side rail is flush with the flange of the associated side beam to provide a broad track or platform for supporting the wheels W_1 and W_2 of a vehicle or any other load whose width is about the same as that of the gondola.

Thus the gondola may be side-loaded and used to accommodate loads which take up the full width of the gondola. These loads may be secured to the gondola by lashing them to the rings and bars provided for this purpose.

The removable side rails of a gondola according to the invention also afford maximum flexibility in cargo loading and discharging. In North Europe, most factories are equipped only with overhead cranes, which would be used in loading long pieces of steel or copper, bulky machinery, etc., into the gondola. In the United States, however, such products are usually handled in factories through the use of fork-lift machines. Thus, in the instances cited above, long pieces of steel or copper, bulky machinery, etc., would have to be dragged out of the gondola if it were equipped with rigid side rails. However, with removable side rails, such cargo could be expeditiously and economically handled with fork-lift machines after the side rail had been removed. On cargo shipped from the United States to Europe, loading would be accomplished with fork-lift machines, and discharge effected by overhead cranes.

The telescoping corner posts, in accordance with the invention, make it possible for the height of the gondola container to be adjusted to the height of the cargo within the gondola, reflecting a range from four feet, four inches, to eight feet, in increments of six inches. However, since the extensible section of the corner post is readily removable, this permits the use of longer interchangeable corner posts. Such longer extensible corner posts facilitate the handling of cargo ten feet or more in height.

The ability of the telescoping corner post of the gondola container to adjust to the height of the cargo stowed within the gondola, enables a shipper to maximize the number of containers transported on a cellular containership. Many containerships today have a maximum capacity of six hundred standard 8' x 8' x 20' containers below deck, such containers utilizing a total of 4,800 lineal feet of height within the individual cells of the vessel. As an example, if gondola containers adjusted to a height of six feet were transported aboard the same vessel, the vessel's capacity would increase from six hundred containers to eight hundred containers, an increase of thirty-three percent.

While there has been shown and described a preferred embodiment of the invention, it will be appreciated that many changes and modifications may be made therein without departing from the essential spirit thereof as defined in the annexed claims.

What I claim is:

1. A shipping gondola for loading assorted cargo into ships adapted to accommodate standard demountable containers having predetermined dimensions, said gondola comprising:

(A) a rectangular floor assembly having length and width dimensions corresponding to those of a standard container, said floor assembly having side beams which extend a predetermined distance above the floor surface whereby the floor is depressed,

(B) four upright posts attached to the corners of the floor assembly,

(C) a bottom corner fitting secured to the bottom of each post,

(D) a top corner fitting secured to the top of each post,

(E) a pair of end gates between the posts at the respective ends of the gondola, and

(F) a pair of side rails removably mounted between the posts at the respective sides of the gondola, the height of said rails corresponding substantially to said predetermined distance whereby they may be laid on the floor against said side beams to provide a platform for supporting a cargo whose width is no greater than the width of the gondola.

2. A gondola as set forth in claim **1**, wherein said posts are extendible to vary the effective height of the gondola.

3. A gondola as set forth in claim **1**, wherein said end gates are removable.

4. A gondola as set forth in claim **1**, wherein said floor assembly further includes end beams and floor boards extending longitudinally between said end beams along cross-pieces bridging the side beams.

5. A gondola as set forth in claim **1**, further including adjustable means to vary the effective length of each of said side rails.

6. A gondola as set forth in claim **5**, wherein said adjustable means includes a bolt which is threadably received in an end plate in said side rail and ratchet means to extend or retract said bolt.

References Cited

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FRANK E. WERNER, Assistant Examiner

U.S. Cl. X.R.

214—10; 217—43