

Dec. 26, 1961

J. E. LOOMIS

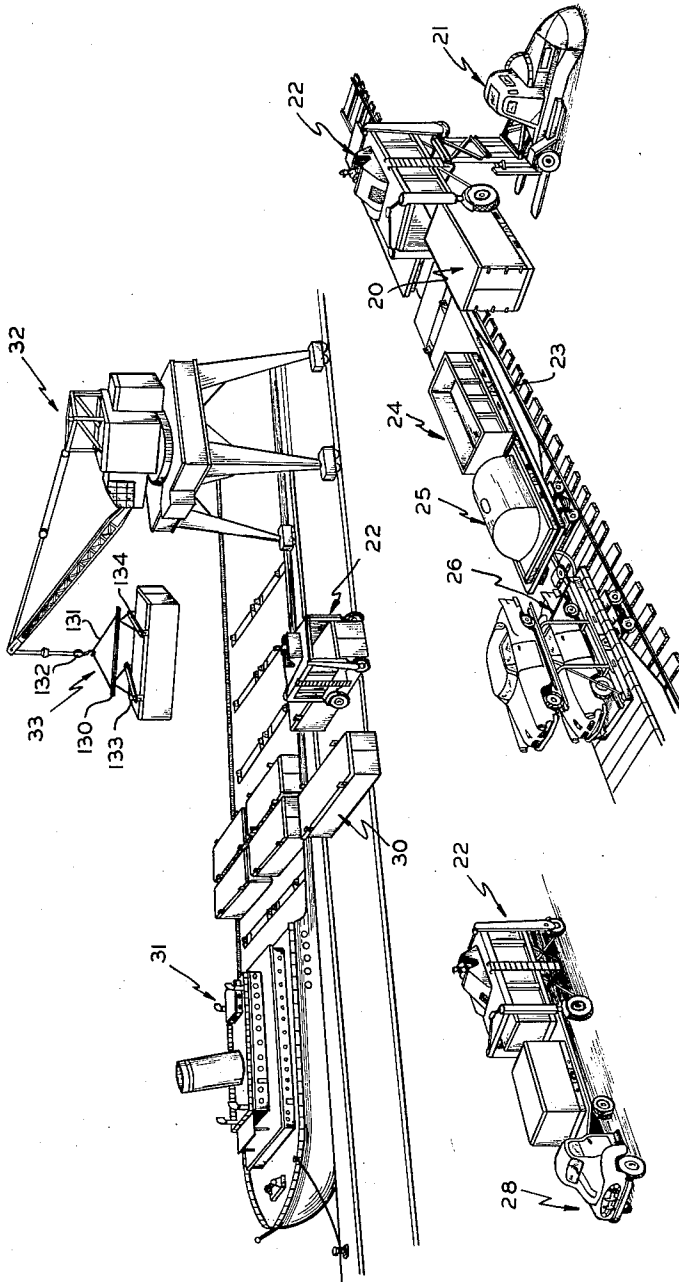
3,014,604

FREIGHT HANDLING MEANS AND METHOD

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FIG. 1



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FIG. 2

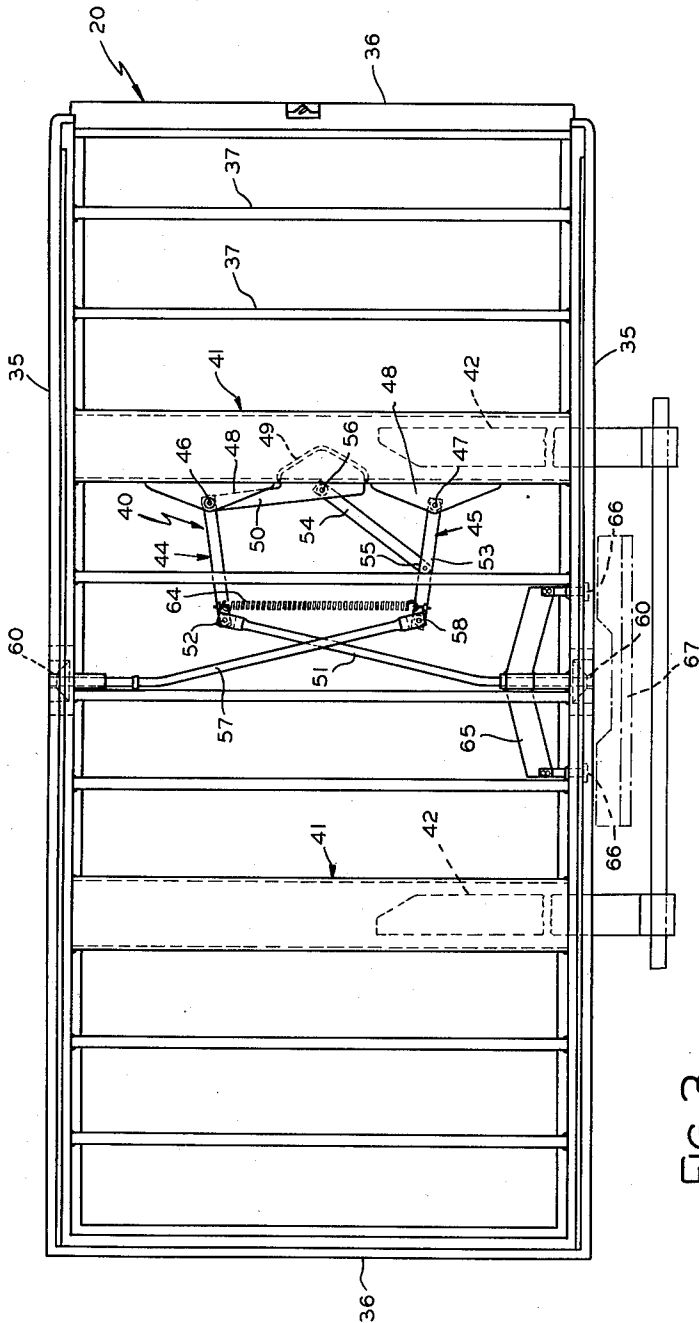
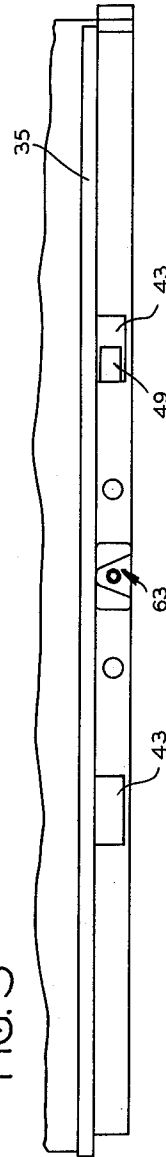


FIG. 3



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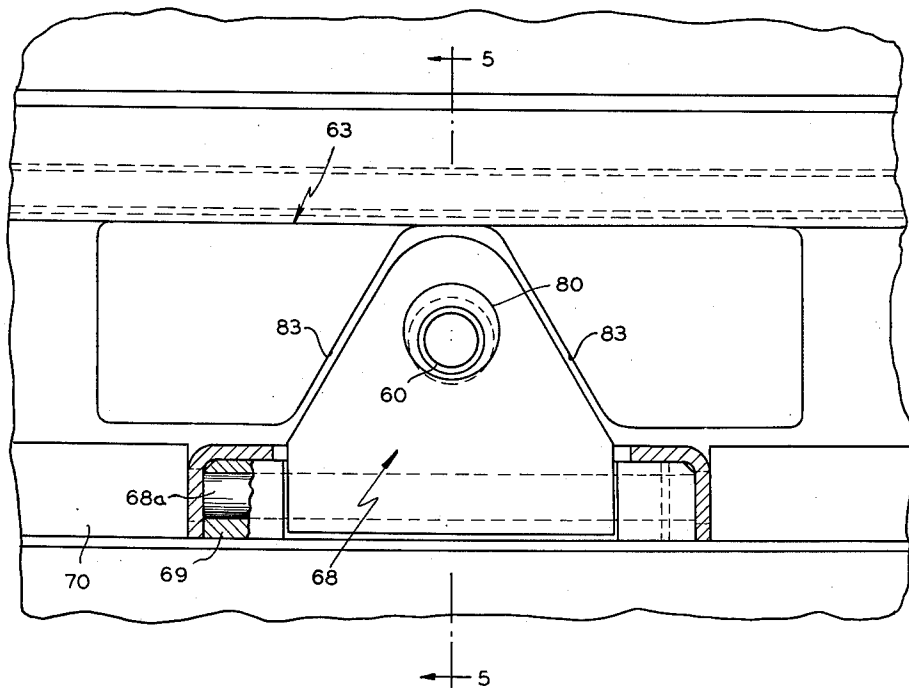
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FIG. 4



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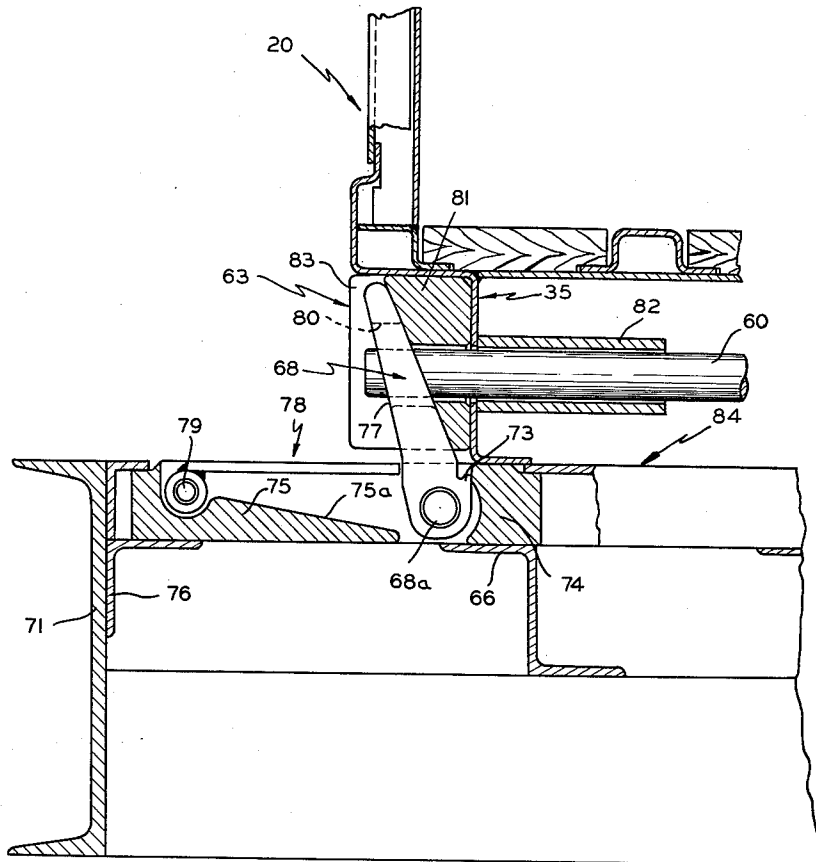
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FIG. 5



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FIG. 6

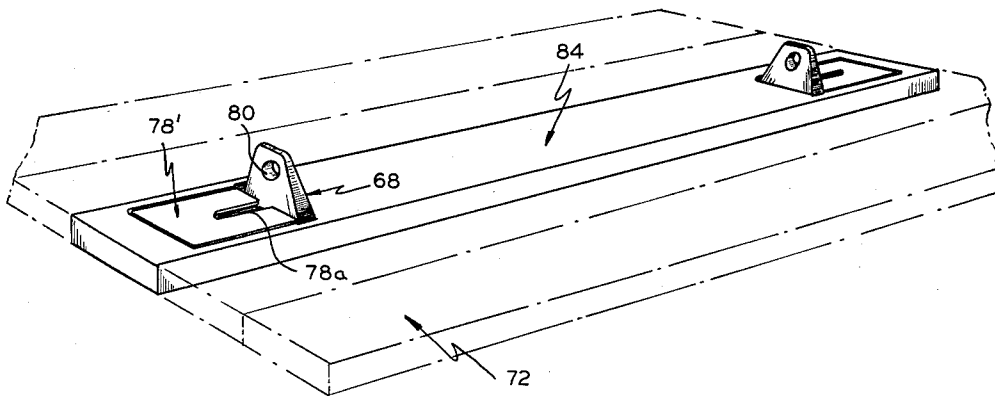


FIG. 8

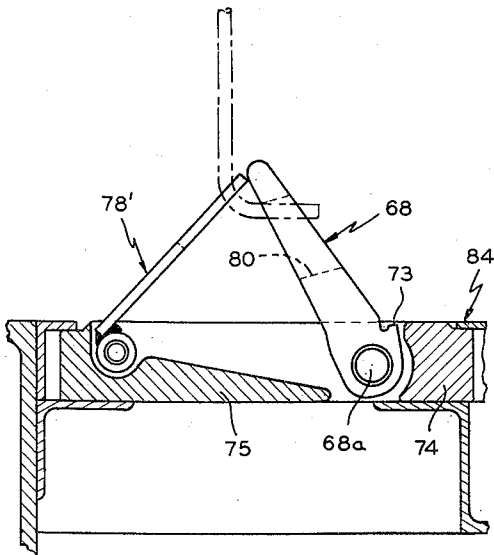
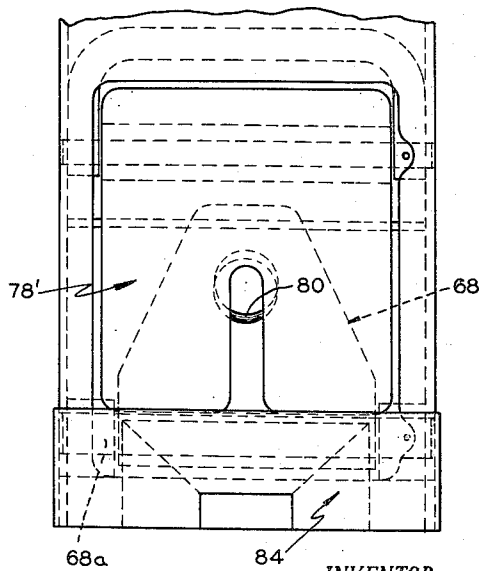


FIG. 7



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FIG. 10

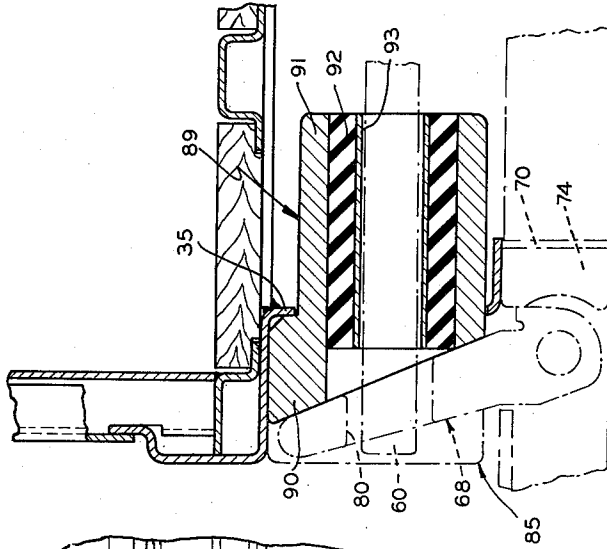
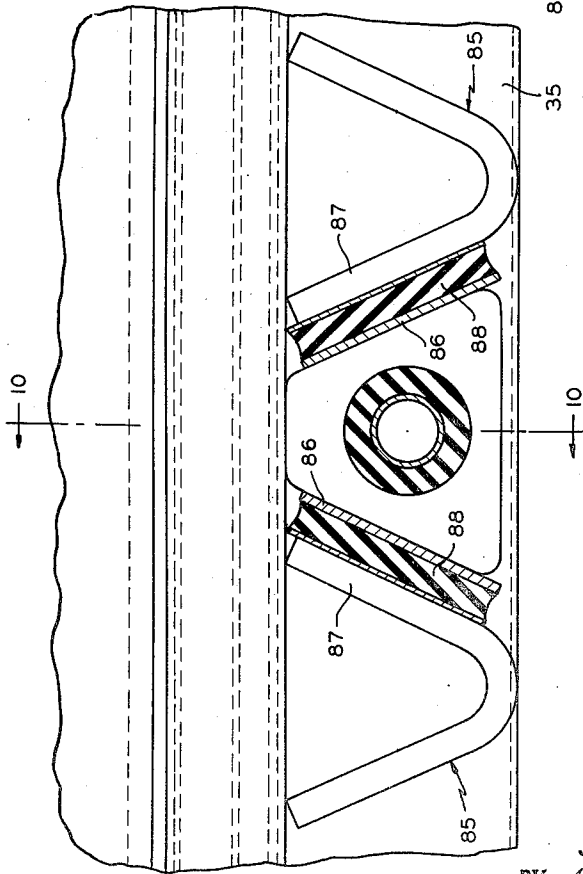


FIG. 9



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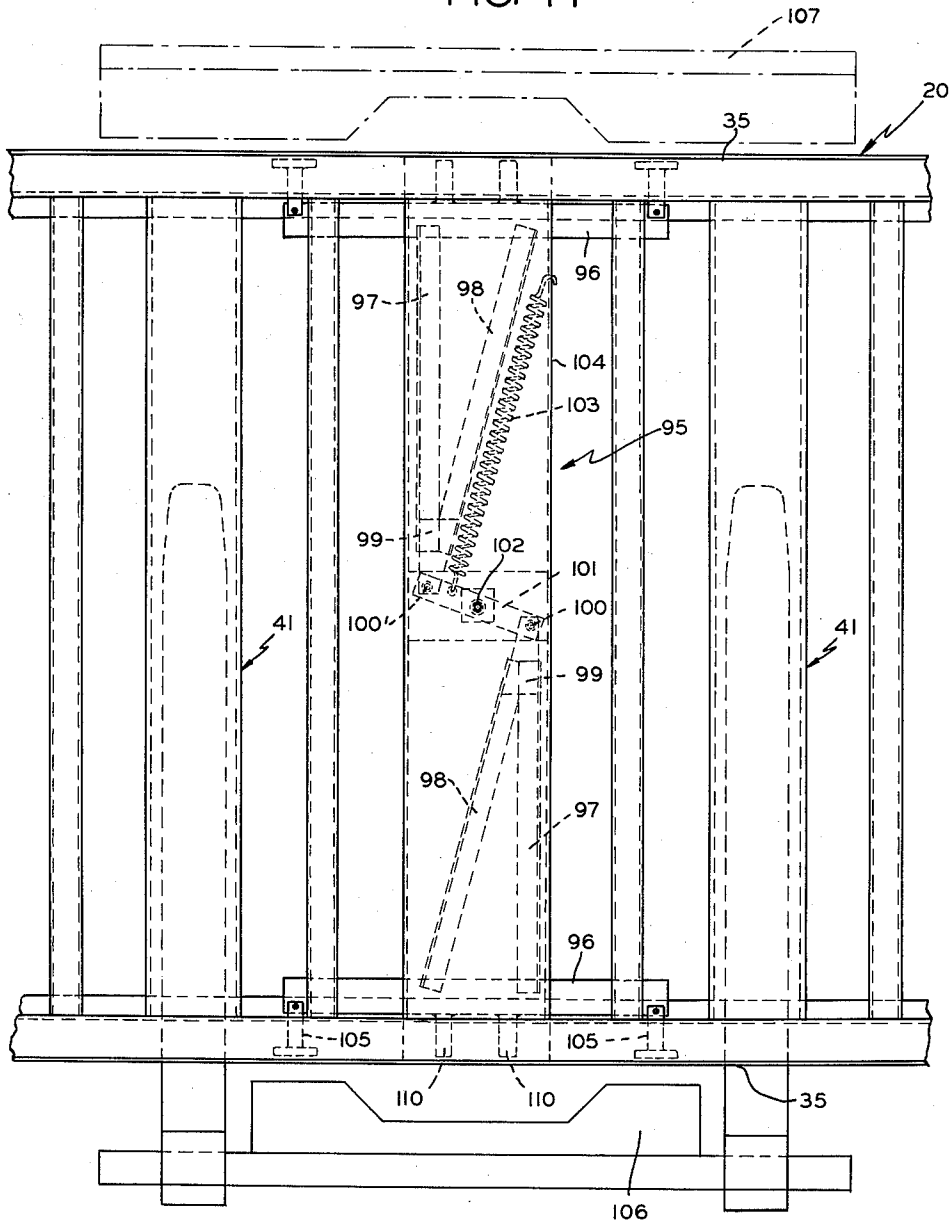
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FIG. 11



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FIG. 12

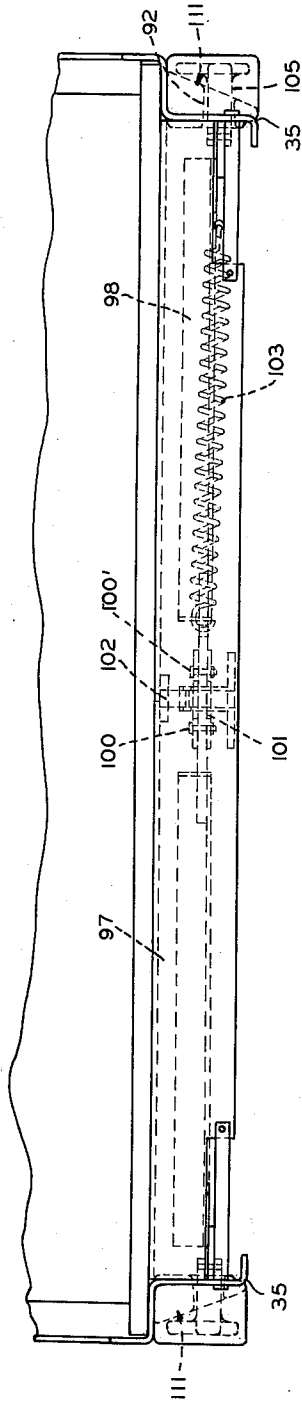
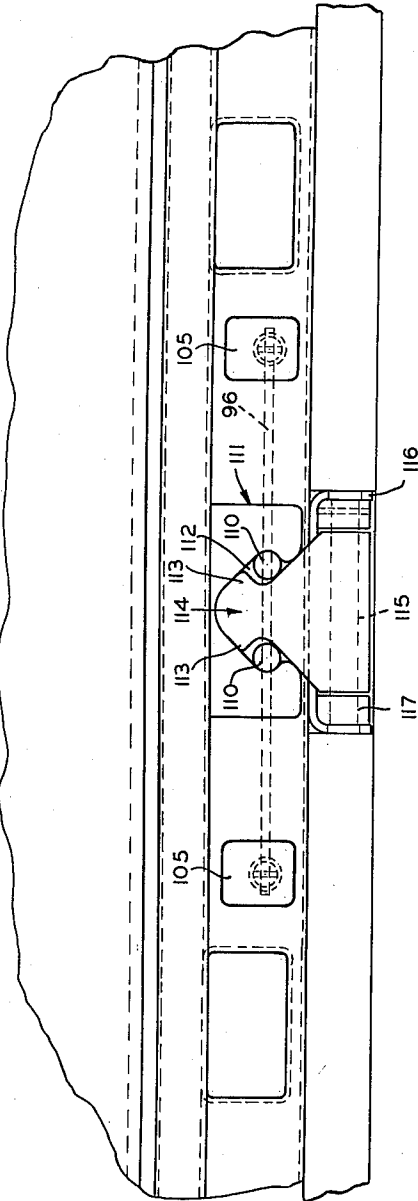


FIG. 13



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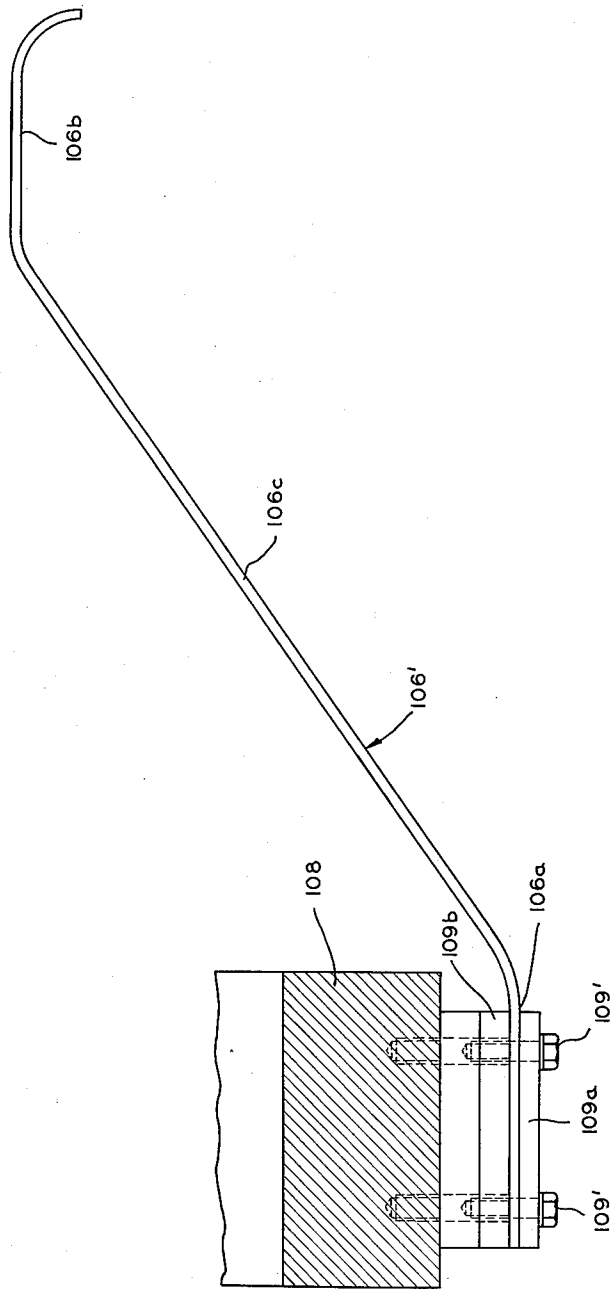
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FIG. 13B



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FIG. 14

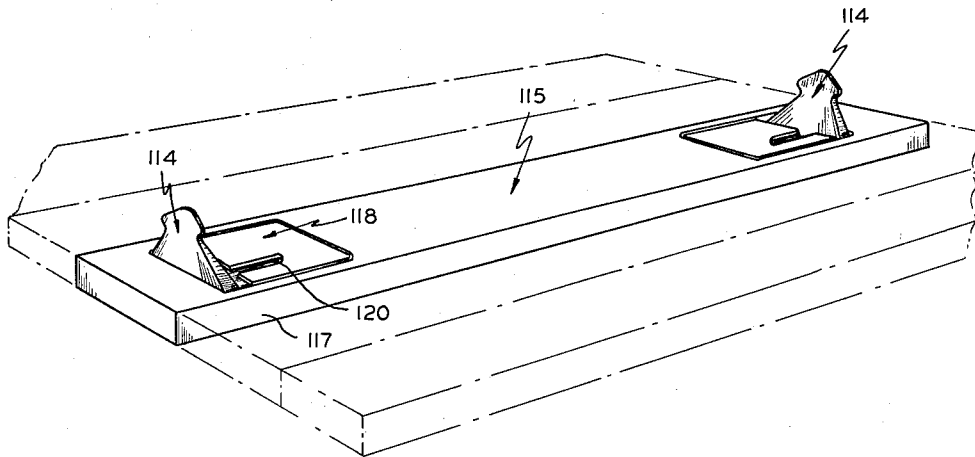
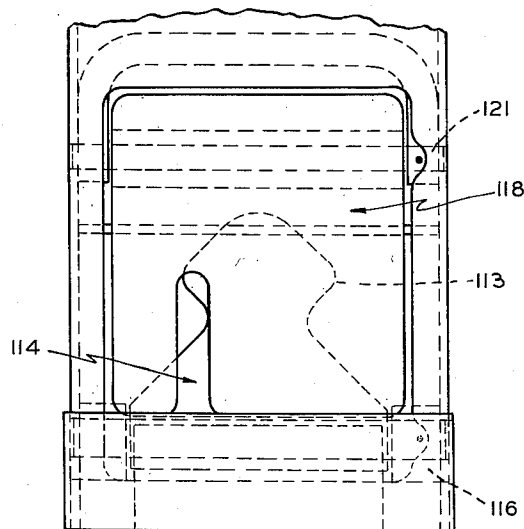


FIG. 15



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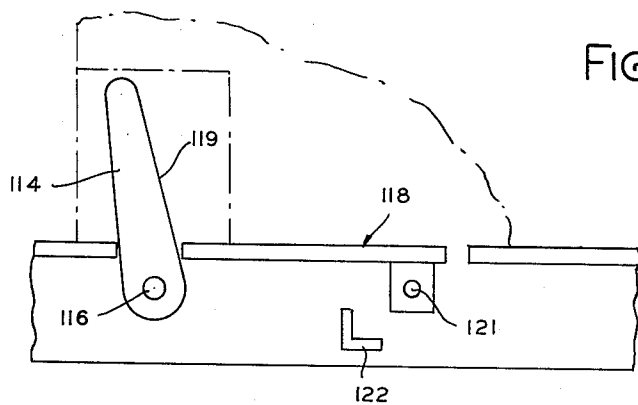


FIG. 18

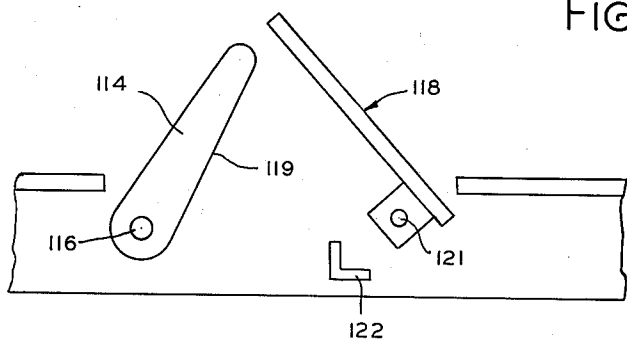


FIG. 17

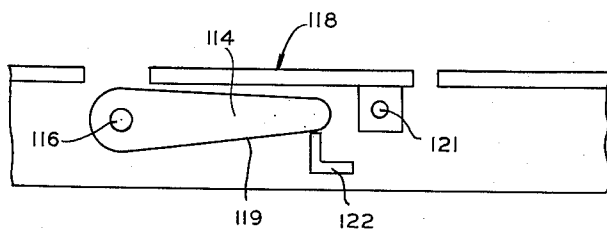


FIG. 16

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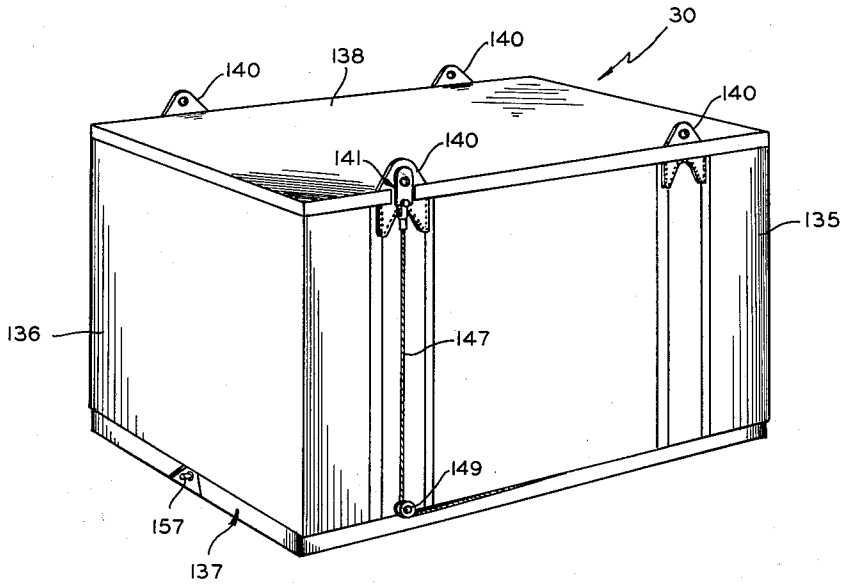
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FIG. 19



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FIG. 21

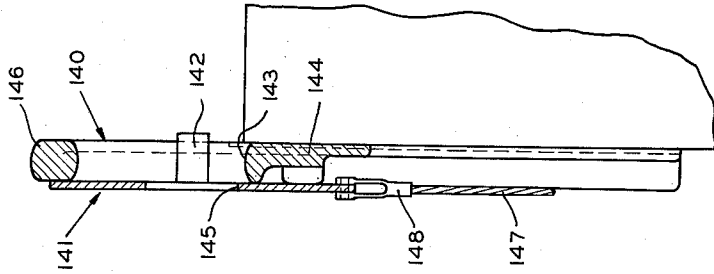
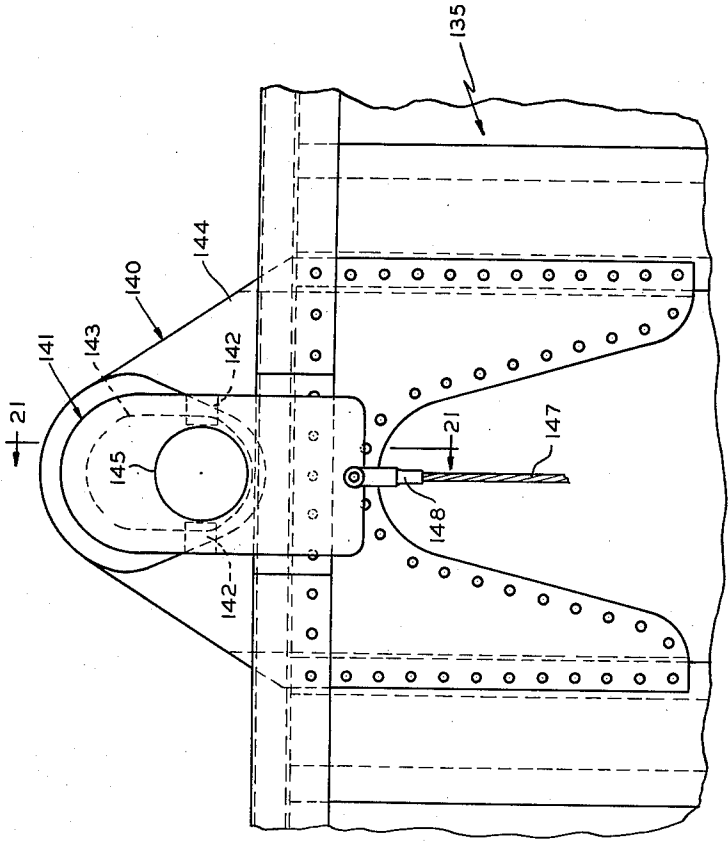


FIG. 20



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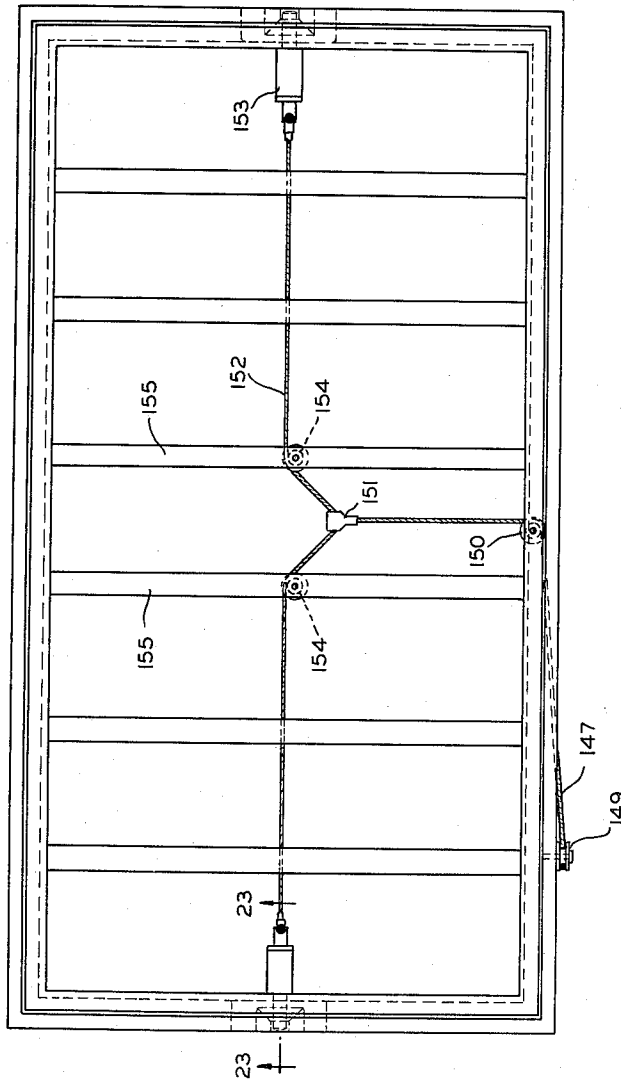
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FIG. 22



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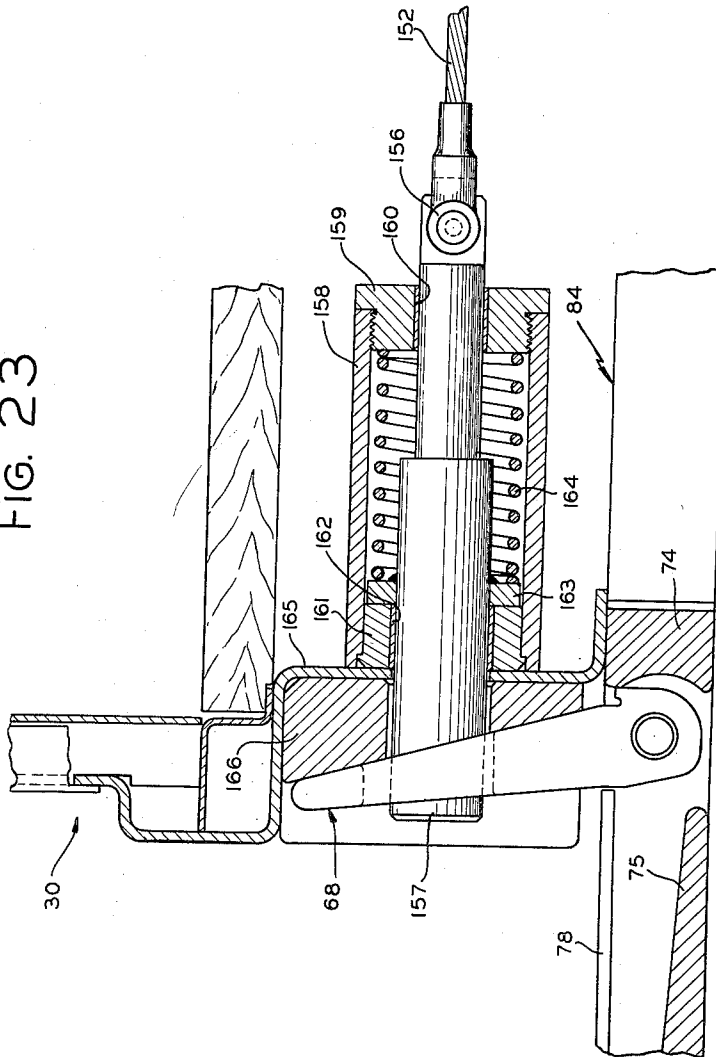
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FIG. 23



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3,014,604

FREIGHT HANDLING MEANS AND METHOD

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Filed Apr. 9, 1956, Ser. No. 577,118

14 Claims. (Cl. 214-38)

My invention relates to the handling and transporting of freight, and more particularly concerns the provision of means and method for effectively associating and disassociating suitable portable freight carrier structure means with transporting means, such as freight cars, truck trailers and vessels.

The present application constitutes a continuation-in-part of my prior application filed August 30, 1955, under Serial No. 531,489 (now abandoned), entitled Freight Handling Means and Method.

The problem of conveniently handling freight for transport without undue handling or loading and unloading from one transporting means to another form of transporting means has long existed in the art and although many have dealt with the problem no prior approaches have gone into commercial use to any substantial extent except for the system now in vogue in which conventional truck trailers are hauled by railroad flat cars, commonly referred to as the "piggy-back" system.

The piggy-back system although satisfactory for effecting fast transportation of trailers to eliminate the delay and hazard of highway travel has many inherent limitations. For example, truck trailers are costly and require substantial capital investment which requires the prompt dispatch of them at the shipping and receiving terminal and negates their use for storage of freight before or after shipping. Also, they present difficulties (due to their height) in satisfactorily transporting them on a transporting means, such as a railroad flat car, and additionally require elaborate anchoring mechanisms necessitating tedious and time-consuming manual activity of railroad workers for securing the trailers against rolling movement relative to the flat car or other transporting surface. Further, such known system requires the provision of special loading and unloading docks and the system is primarily suitable only for use at locations having convenient terminal facilities for loading and unloading the truck trailers.

In accordance with my invention, I have conceived that freight may be conveniently handled and transported by utilizing suitable freight carrier means which may be of innumerable designs and size depending on the character of the freight to be transported or stored. It is of significance that such freight carriers be of a size and dimension so as to be handled by known materials handling equipment, such as fork lift trucks, straddle trucks and cranes, and other mechanical devices. Within the limitation last noted, a freight carrier of my invention may comprise a single enclosed container of suitable dimensions which may be likened to the body of a truck trailer, an open frame work structure for supporting parts or complete or partial assemblies of parts, such as automobile bodies or complete automobiles, an open gondola form of container for carrying coal or other like products, or a tank-like construction for carrying fluid materials. The several freight carriers of the character last mentioned are intended as typical only, but serve to indicate the flexibility of design of such freight carriers which may be utilized in accordance with my invention.

Freight carriers of the character mentioned are constructed preferably according to my invention so as to embody in their base portions, although other locations

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as in the roof structure are also suitable, certain latching or locking mechanisms adapted to be associated with suitable anchoring or retaining means embodied with a carrier supporting surface of the transporting means, such for example as a railroad flat car, a flat bed truck trailer, a ship or aircraft, etc. The anchoring or retaining mechanisms or means associated with the carrier supporting surface of the transporting means preferably is of a nature which acts as a guide in an operative position for positioning the carrier on the supporting surface and in an inoperative position may be disposed below the level of the carrier supporting surface so that the transporting means may be used in its conventional manner if required.

It is an object of my invention to provide a freight carrier and carrier supporting surface of transporting means with cooperatively related means enabling the convenient location and retention of freight carrier means with the carrier supporting surface of the transporting means.

A further object of my invention is to provide retention means, as aforesaid, which enables the ready association and disassociation of a freight carrier relative to the freight carrier supporting surface by means of suitable load lifting and transporting mechanisms or materials handling equipment, such as by conventional fork lift trucks, straddle trucks and overhead cranes.

It is of particular significance in my invention that the freight carriers are adapted to be handled by load lifting and handling mechanisms such as presently known materials handling equipment of conventional construction, for example, fork trucks, straddle trucks and cranes, in that by virtue of the usability of such kinds of equipment or machines, no special ramps, loading or unloading dock facilities or other expensive permanent type facilities are required. Rather vehicles and devices having utility for other purposes at a manufacturing or materials receiving and handling plant may be adapted to the purpose of my invention without special modification thereof.

Accordingly, it is a further object of my invention to provide latching mechanism between a freight carrier and carrier supporting surface of a transporting means which is operable by an element or portion of a load lifting and handling mechanism or materials handling equipment of the character aforementioned, whereby the load lifting and handling mechanism in addition to effecting loading and unloading of the freight carrier relative to the carrier supporting surface also serves to effect latching and unlatching of the latch mechanism.

A further object is to provide latching means as last aforesaid which is automatically operable by positioning of the load lifting and handling mechanism in position to remove the freight carrier.

A further object of my invention is to provide latching means, as last described, characterized by having a movable outwardly visible portion upon actuation thereof so that the operator of the materials handling equipment may discern by sight if the latching means is in operative or inoperative condition.

In the practice of my invention conventional load carrying surfaces or platforms, such as provided by railroad flat cars and flat bed trailers, may be utilized without undue reconstruction thereof so that the carrying surfaces of the same may be utilized in conventional manner.

To the end last noted it is a further object of my invention to provide latching means for a freight carrier supporting surface in the form of anchor means adapted in operative position to cooperate with suitable means incorporated in a freight carrier for interlocking the carrier

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and supporting surface, and which anchor means in inoperative position is disposed beneath of in a non-interrupting relation to the freight carrier supporting surface.

A further object is to provide anchor means of the character indicated which is readily and easily disposed in operative position for locking association with latching means of a freight carrier.

A further object is to provide anchor means for the freight carrier supporting surface which may be disposed below the plane of the latter with the freight carrier disposed thereon so that, if necessary, the freight carrier may be skidded off of the supporting surface.

A further object is to provide latching means in association with a freight carrier for effecting automatic unlatching of the latch means preparatory to lifting of the freight carrier by a crane or the like.

An additional object of my invention is to provide improved means on an industrial material handling vehicle, particularly, a fork lift truck, for actuating the aforesaid latch means prior to inserting the load engaging forks of the truck fully beneath the freight carrier means and to prevent latching operation of such mechanism even though the lift truck should move away from the load slightly at the initial stages of the lifting operation.

A further object is to provide latch means between a freight carrier and a freight carrier supporting surface of a character to effect locating the freight carrier relative to the freight supporting surface in position to enable the easy operation of the latching means.

The above and other objects and advantages of my invention will appear from the following detail description of certain preferred embodiments of my invention.

Now, in order to acquaint those skilled in the art with the preferred manner and modes of practicing my invention, I shall describe such in connection with the accompanying drawings:

In the drawings:

FIGURE 1 is a schematic representation in perspective showing the use of my invention with various types of freight carrier means and freight transporting means;

FIGURE 2 is a bottom plan view of one particular type of freight carrier means embodying the features of this invention and normally adapted for use with rail-borne transporting means, such as a railroad flat car;

FIGURE 3 is a partial front elevational view of the freight carrier means illustrated in FIGURE 2;

FIGURE 4 is an enlarged partial front elevational view with parts broken away in section showing improved anchor means for use with the carrier of FIGURE 2;

FIGURE 5 is a cross sectional view taken substantially along line 5—5 of FIGURE 4 and looking in the direction of the arrows thereon;

FIGURE 6 is a perspective showing of the anchor means shown partially in FIGURE 5;

FIGURE 7 is a partial top plan view of one end of the anchor means of FIGURE 6, illustrating the same in a retracted condition;

FIGURE 8 is a partial cross sectional view, similar to FIGURE 5, showing the anchor means of FIGURES 6 and 7 being conditioned for operation;

FIGURE 9 is a partial front elevational view similar to FIGURE 4 illustrating a modified form of anchor means for use in my invention;

FIGURE 10 is a cross sectional view taken substantially on line 10—10 of FIGURE 9 and looking in the direction of the arrows thereon;

FIGURE 11 is a partial bottom plan view of the freight carrier means illustrated in FIGURE 2 but at an enlarged scale thereover to particularly illustrate a modified form of latching means useful in my invention;

FIGURE 12 is a partial end elevational view of the freight carrier means illustrated in FIGURE 11 of the drawings, showing in particular the positioning of the latching means in the base portion of such carrier means;

FIGURE 13 is an enlarged partial front elevational view

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of the latching means shown in FIGURES 11 and 12 for illustrating the aspects of an improved anchoring means useful with such latching means;

FIGURE 13A is a perspective showing of the latch mechanism illustrated in FIGURES 11—13, but showing the same in operative arrangement with a modified actuator means carried by the lift truck;

FIGURE 13B is an enlarged view in plan of a new and improved latch operating mechanism used in the installation of FIGURE 13A;

FIGURE 14 is a perspective showing of another modified anchor means useful in my present invention;

FIGURE 15 is a partial top plan view at one end of the anchor means shown in FIGURE 14, illustrating the same in a retracted condition;

FIGURES 16, 17 and 18 are sequential diagrammatic illustrations of the modified anchor means of FIGURES 14 and 15 demonstrating the mode of operating the same;

FIGURE 19 is a perspective view of a freight carrier means particularly arranged and adapted for use with an overhead crane type of material handling device;

FIGURE 20 is an enlarged partial view in front elevation of a portion of the latching means employed with the freight carrier means of FIGURE 19;

FIGURE 21 is a cross sectional view taken substantially along line 21—21 of FIGURE 20 for further illustrating the particulars of the latching mechanism portion as set forth therein;

FIGURE 22 is a bottom plan view of the freight carrier means illustrated in FIGURE 19 and particularly demonstrating an improved latching means employed therewith; and

FIGURE 23 is a cross sectional view taken substantially along line 23—23 of FIGURE 22 looking in the direction of the arrows thereon to illustrate the particulars of the anchor means employed with such freight carrier means.

Turning now to the particulars of the present invention as found in the accompanying drawings and considering initially FIGURE 1 therein, it will be observed that I have illustrated the freight handling means and method of this invention in conjunction with several types of freight carrier means and materials handling equipment. For example, in the lower right-hand portion of that figure, a freight carrier 20 is shown comprising an enclosed container arranged for engagement and transfer by either a lift truck material handling device, as indicated at 21 or a straddle truck 22. This particular type of freight carrier means will be described in greater detail hereinafter as illustrative of the basic intents and purposes of my invention and it will further be recognized that such is arranged and adapted for transportation between loading and unloading terminals on a railroad flat car 23 or other suitable type of rail, wheel-borne or air transporting means.

Also illustrated in FIGURE 1 and in association with the railroad flat car 23 are two modified forms of the box-like freight carrier means 20 comprising an open top gondola style of freight carrier 24 especially suited for carrying loose materials such as coal, sand and the like, and a tank type of freight carrier means 25 arranged especially for the transportation and storage of liquids.

Another form of freight carrier means comprising a collapsible cage is illustrated generally at numeral 26; such freight carrier means being particularly arranged and adapted to handle and store automobile parts or complete automobiles as illustrated. The details of this type of freight carrier means are to be found in a co-pending application, Serial No. 565,980, filed February 16, 1956, in the name of Dennis E. Erickson, and entitled Auto Carrier, now Patent Number 2,906,405, issued September 29, 1959.

It will be understood, especially from a study of the lower left-hand portion of FIGURE 1, that such above listed freight carrier means may conveniently be transported to a railroad siding for example via a trailer

truck means, indicated generally at numeral 28. In such instance, either a straddle truck 22 will remove the carrier means from the bed of the trailer truck or the fork lift truck 21 may be employed for the same purpose. After removal from the truck bed, such freight carrier means are disposed on the bed of a railroad flat car, for example, for transportation over long distances and between loading and unloading terminals.

In addition to the enclosed type of freight carrier means heretofore described in which conventional material handling devices engage the same substantially at its bottom wall or base, I further set forth the features of a freight carrier means 30 shown in association with a ship 31 in FIGURE 1. Such freight carrier means 30, like carrier means 20, comprises an enclosed box-like structure but differs thereover by virtue of upwardly projecting plate means whereby an overhead crane 32 equipped suitably with a harness assembly 33 may be adapted for handling this form of freight carrier means from a dock site, for example, to the decking of ship 31.

With respect to the several forms of freight carrier devices hereinabove described, it should be remembered and understood that all such devices have means embodied therewith for locking the same with suitable anchor devices associated with the supporting surface of a freight transporting means and that such latching mechanisms or means are designed to accommodate disassociation from the anchor means engaged thereby on the positioning or arranging of the material handling means in a manner to effect the movement of the freight carrier means.

Without elaborating on such system in greater detail at this juncture, the descriptive material which follows presently concerns itself largely with the features and operation of the enclosed type of freight carrier means, such as the box-like structure 20 illustrated in FIGURE 1 and modifications thereof. As shown thus in FIGURES 2 and 3, the freight carrier means 20 includes a base structure comprising longitudinal side frame rail members 35, 35, end frame members 36, 36 and plural cross tie or brace members 37, 37 paralleling the end frame members 36, 36; the whole presenting a substantially rectangular frame structure of rugged and rigid nature suitable for supporting and carrying a freight containing wall structure of the freight carrier means. It will be recognized that such base structure is applicable also to the freight carrier means 24, 25 and 26, as illustrated in FIGURE 1.

Included in the base of the freight carrier means 20 is a means for automatically associating and disassociating the same with respect to an anchor system or means related to the freight transporting means, such as the supporting surface of a railroad flat car 23. Such latching or locking mechanisms may vary as to particulars of design and operation, but one illustrative type useful with my present invention is set forth generally in FIGURES 2 and 3 of the drawings and is indicated generally at numeral 40 therein. While the specific features of the particular latching mechanism 40 comprise the subject matter of a separate copending application, Serial No. 583,232, filed May 7, 1956, in the name of Russell Hastings, Jr., and entitled Latch Linkage Mechanism, now Patent Number 2,898,872, issued August 11, 1959, such nevertheless will be described briefly herein as exemplifying the type of latching mechanism requisite for the successful application of my invention.

Generally, it may be stated that the base structure for the freight carrier means 20, includes a pair of parallel spaced hollow box-like channel members 41, 41 which extend transversely between the parallel side rails 35, 35 of the base structure. Such are designed specifically for the axial entry and reception of fork members 42, 42 of a conventional material handling lift truck, such as 21, shown in FIGURE 1. To accomplish the entry of such fork members, the channel members 41, 41 open in-

wardly of the side rails 35, 35, as shown at 43 in FIGURE 3. The construction of the latching mechanism 40 is designed to respond to the positioning of the fork members 42 within the channel members 41, 41 when such are being located ready for lifting the load carried in the freight carrier means 20.

In greater detail, the latching mechanism 40 includes a bell crank assembly 44 and an associated linkage means 45 respectively pivoted at 46 and 47 on pivot anchor plates 48, 48; the latter being secured adjacent one side of a channel member 41 to extend toward the other channel member. A suitable opening is formed in such one side wall of the particular channel member 41 which supports the plates 48 for the passage of a trip bar 49 formed as an integral extension of a base arm 50 in the bell crank means 44. Thus, as the fork arms 42 move into the interior of the channel members 41, one thereof engages the trip bar 49 and the bell crank 44 is responsively moved clockwise as viewed in FIGURE 2 to longitudinally motivate a reach arm 51 pivotally joined at 52 to the outer end of the secondary arm of the bell crank 44.

The linkage means 45 includes arm members 53 and 54 which are pivotally interjoined in an angular intersecting relationship as at 55. Arm 54 is pivotally secured at one end 56 to the arm 50 of the bell crank 44 while arm 53 is secured to one of the pivot plates 48 by pivot means 47. The free end of the arm member 53 is pivotally secured to one end of a second reach arm 57 by pivot means 58. Engagement of the trip member 49 by one fork arm 42, spoken of hereinabove, causes clockwise rotation of bell crank 44, but reverse or counterclockwise rotation of the linkage means 45, thus motivating the reach arm members 51 and 57 in opposite axial directions.

A latching pin or plunger means 60 is joined and formed coaxial with the outer end of arm means 51 while a similar latching pin is disposed at the outer end of the arm means 57. Such two pins 60, 60 are designed to invade openings in a cast pad means 63, one of which is shown especially in FIGURE 4 of the drawings. In this regard, it will be appreciated that a spring means 64 extends between the assemblies 44 and 45 to normally bias pin means 60 into a position wherein such project through the pads 63. Conversely, the trip means 49 of the attached bell crank linkage means, which is operable in response to positioning the fork members 42 within channels 41, is designed to disengage or retract the pin means 60 to release the freight carrier means from the anchor system or means carried in a projecting manner on the supporting surface of a transporting means, such as a railroad flat car, trailer truck bed or like supporting surface.

In certain instances, a straddle truck 22 will be usefully employed to raise and lower the freight carrier means 20. In such instance, the straddle arms of such a freight handling mechanism do not include the fork members 42, 42 and thus the freight carrier means 20 equipped only for operation by fork lift trucks would be limited in its utility. To that end, it is recognized that an auxiliary means for operating the latching mechanism 40 is needed when employing a straddle truck. To accomplish this means a bolster arm 65 is attached to the latching pin 60 near the outer end of the arm 51 in the system hereinabove described. Such arm 65 reaches substantially transversely at rod 51 and extends outwardly thereof in symmetrical fashion to support at its ends a pair of trip pins 66, 66 extending through the side frame member 35 of the carrier's base structure. Such arm 65 is rigidly attached to the link 51 and the trip pins 66 extend sufficiently outwardly of the side frame 35 to be engaged by the engaging arms 67 of a straddle truck. Thus, when the straddle truck is positioned in a straddling manner over the freight carrier means 20, the pin members 66 may be depressed by the straddle arms 67 to operate the latch-

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ing mechanism 40 and retract the latching pins 60 from their projecting condition with respect to pad means 63.

With special attention now to FIGURES 4 and 5 of the drawings, the features and concepts of a preferred form of anchor retaining means for cooperation with pad 63 will be described. From these views it is well to appreciate that triangular anchor plate means 68 cooperate with the latching mechanism hereinabove described in retaining the freight carrier means on the transporting means and particularly the load supporting surface thereof.

As shown in these two figures, the substantially triangular shaped anchor plate 68 is pivotally supported at its lower end on a shaft member 68a carried on the side framing of the transporting means, as for example, in the frame work of a railroad flat car. Particularly, such shaft 68a is held by spaced bearing blocks 69, 69 mounted on a channel member 70 of the supporting bed of the railroad flat car 23. The location of the structural member 70 is inwardly of the extreme outside rail member 71 of the flat car and the pivotal axis defined by shaft 68a is beneath the upper surface of the decking 72 which constitutes a supporting surface of such railway car (see FIGURE 6). Mounted behind the anchor plate 68 so as to form a stop or abutment member for engaging a limit stop projection 73 of the anchor plate, is a block 74 which may comprise a suitable casting or the like. This relationship is illustrated in FIGURE 5 of the drawings.

The block 74, of course, limits upward swinging movement of the anchor plate 68 to dispose the general plane thereof at an angle slightly less than 90° with respect to the horizontal decking 72.

A cast block member 75 is supported on an angular channel member 76 which is welded or otherwise suitably secured to the inside face of frame member 71. Such block member presents a sloping upper face 75a which mates with the angularly disposed outside face 77 of the anchor plate 68 when the latter is nested therewith. Therefore when the anchor plate is disposed in its lowered or non-operative position surface 77 matingly engages the block 75 and presents a flush undersupport to an overlying pivotal cover plate 78. In particular, plate 78 is pivoted adjacent its outer end as on axle 79, to be pivotally movable counterclockwise, as viewed in FIGURE 5, or in opposite rotational sense when lifted upwardly about its pivotal axis from the corresponding motion of the anchor plate 68.

The operating function of the cover plate 78 of FIGURE 5 is substantially as follows:

With the anchor plate 68 in its lowered position so that surface 77 thereon engages the member 75, the cover plate 78 will be in a covering position or overlying the anchor plate. A suitable circular hole or opening (not shown) is provided in the cover plate for the insertion of a hook or an operator's finger to lift the cover plate to a substantially vertical position whereafter the anchor plate may be raised as shown in FIGURE 5, so that an opening 80 therein aligns coaxially with the projecting end of the pin means 60 of the latching mechanism whereby the pin may enter opening 80 and lock therewith. Cover plate 78 is then lowered to its FIGURE 5 position whereat the outer end thereon rests against the anchor plate and prevents the latter from swinging downwardly away from the freight carrier means 20. Thus, plate 78 serves to lock the anchor plate in its raised operative condition.

A certain modified cover plate 78' as shown in FIGURES 6, 7 and 8 is constructed with a slotted aperture 78a extending to the outward end of the plate 78' so that the entry of a hook through the cover plate to engage the eye opening 80 of the anchor plate permits lifting the anchor plate without first removing the cover plate (see FIGURE 8). Thereafter lifting the anchor plate automatically raises the cover plate until such clears the outer end of the anchor plate whereafter the cover plate falls downwardly behind the raised anchor plate to hold

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the latter in its raised condition. In such an arrangement it is contemplated that an operator may easily raise the anchor plates for engagement by the pin means 60, 60 of the latching mechanism in a very efficient manner.

With relation to the positioning of the freight carrier means 20 on the anchor or retaining means, it will be noted from FIGURES 4 and 5 especially that each casting 63 comprises a wedge portion 81 which is engaged by the raised anchor plates in operation with the carrier positioned on the anchor means carried by the freight transporting means, the pin members 60, pass through such wedge portions 81; the pins being guided in their sliding or reciprocating motion by sleeve means 82. Each casting 63 is also formed to present a substantially central triangular indentation defined by two sloping side walls 83, 83 (see FIGURE 4); into which the anchor plate is guided. The wedge portion 81 defines the rear wall of the triangular indentation and its wedge shape acts as a guide and lock to tightly wedge the attached freight carrier means against lateral motion with respect to the raised anchor plates. The walls 83, likewise serve to hold the carrier against longitudinal displacement by engaging the anchor plates. It is also to be noticed that the side walls 83 of triangular indentation in casting 81 serve as guide means for locating and guiding the freight carrier means onto the raised anchor plates. At the same time, the wedge formation of portion 84 permits vertical withdrawal of the freight carrier means after the disengagement of the latching means from the anchor retaining means.

While the foregoing description of the anchor retaining means is related to the attachment of one end of the latching pin means 60 to one anchor retaining means, reference at this point to FIGURE 6 of the drawings will reveal the preferred construction for the anchor retaining means as embodied on the transporting means. Note that two such described anchor plate and cover plate members are located at the opposite ends of an intertying plank or beam member 84. The plank 84 is designed especially to replace a portion of the planking or decking 72 of a railroad flat car or like supporting surface on the transporting means and is further preferably constructed of metal, such as a C-channel or the like. By utilizing the plank means in combination with two anchor mechanisms a unit giving accurate lateral spacing between the anchor plate means 68 is provided and more rigid and uniform construction and installation is made possible. It is contemplated of course, that the adaptation of present supporting surfaces on railway flat cars, for instance, to my system and mechanism may be speedily brought about by removing certain of the deck planks therein and replacing the same with the combined anchor retaining units illustrated in perspective in FIGURE 6 of the drawings. It is also fully contemplated that in certain installations the requirement for the full interconnecting plank means 84 is not essential or desirable and to that end, of course, individual anchor retaining means as illustrated in FIGURE 5 of the drawings may be disposed at appropriate locations in the supporting surface for the freight transporting means. In general however, it may be stated that the preferred embodiment for the anchor retaining means is according to FIGURE 6; such comprising substantially two plank units for each freight carrier means supported by the freight transporting means.

It will be understood that when employing the plank means 84, the block member 74 which lies behind the anchor plate 68, as shown in FIGURE 5 of the drawings, will comprise an integral portion of such plank member 84 or be rigidly affixed thereto as by welding or other suitable connective devices. In this manner then the anchor plate members 68 will be paired in the plank member 84 to assure the advantages outlined hereinabove.

In practice, the anchor retaining means are raised to the position illustrated best in FIGURE 6 of the draw-

ings and the freight carrier means is lowered thereon so that the anchor retaining means automatically pilot the freight carrier into position and automatically lock therewith. To the latter end the sloping rear face on the anchor plates cooperates with the opposed sloping face of the wedge portion 81 to wedge-lock the freight carrier means against lateral movement and to bias the pin means 60 sufficiently inward to cause their automatic engagement with the openings 80 of the anchor plates. Thus, the retaining connection between the freight carrier means and the anchor retaining means is normally an automatic operation according to the concepts and contemplation of this invention. Likewise, the disengagement between the freight carrier means, or specifically the latching means and the anchor retaining means is automatic at positioning of the load material handling means appropriately to dispose such in condition for tripping the latching mechanism 40. As an example of this latter operation, regard the fork members 42 of the fork lift truck and their insertion into the channel members 41 of the base structure of the freight carrier means 20. Such movement results in automatic engagement of arms 42 with the trip bar 49 to release the latching mechanism as hereinabove described. It is also contemplated that the connection and disconnection between the latching means and the anchor means may be accomplished manually as by suitable levers or crowbars, etc.

Turning now to FIGURES 9 and 10 of the drawings, I have therein illustrated certain modifications of the anchor and latching systems described herebefore. Specifically, the modified means therein illustrated is essentially the same in construction and operation as the anchor retaining and latching means described so far with the exception of the inclusion of shock-absorbing means to lessen vibration and shock created at the impact of associating the latching mechanism on the carrier means with the anchor retaining means on the transporting means. The modifications embodying such shock-absorbing means are effected largely on the freight carrier means and the mechanism associated directly with the latching means thereof.

As shown in FIGURE 9, for example, the casting 63 which serves as a guide means for the anchor plate 68 is positioning the freight carrier means, has been replaced with a pair of substantially V-shaped members 85, 85 which are suitably welded or otherwise fixedly secured to the outside of the carrier's side frame member 35. Wear plates 86, 86 are disposed in parallelism to the adjacent angularly disposed arm 87, 87 of the V-shaped members 85 outwardly of cushion pads, such as rubber pads 88, so that impact between the substantially V-shaped anchor plate guide thus formed and the outer edges of the triangular shaped anchor plate 68 of the order shown in FIGURE 6, is substantially absorbed by the rubber cushions 88.

From FIGURE 10 it will be noted that the wedge portion 81, as formerly described and shown in FIGURE 5, has been replaced with a revised cast member 89 which includes a sloping wedge portion 90 for engaging the anchor plate in its angularly disposed position and for effecting the wedge locking action therewith as described hereinabove. A cast integral cylindrical sleeve portion 91 extends rearwardly of the wedge portion 90 to encompass a cushion sleeve 92 disposed concentrically therewithin and surrounding a guide bearing 93 corresponding substantially with sleeve 82, as illustrated in FIGURE 5 of the drawings. This guide bearing acts as a means for guiding the pin means 60 as such moves in and out of the central opening 80 in the anchor plate. The presence of such cushioning means 92 materially assists in absorbing the shock occasioned by the interfitting of the latching mechanism and the anchor retaining means. Such shock-absorbing means is contemplated as a desirable feature to be embodied in the structural aspects of this invention.

While the anchor and latching means hereinbefore described are satisfactorily operable to perform their de-

sired functions in the present invention, a desirable modified form thereof is illustrated in FIGURES 11, 12 and 13 of the drawings, to be employed especially in instances where straddle truck type of material handling equipment is involved. Bearing in mind therefore that the latching means and anchor retaining means, as illustrated in these figures are particularly adapted for use with the straddle type materials handling equipment, or in the event that a fork lift truck is to be used and such is properly equipped for adaptation to the system therein shown, the features of this modified latching system will be more readily understood.

As seen in FIGURE 11, a modified latching means, indicated generally at 95, is located substantially centrally of the base structure for a freight carrier means, as for example, freight carrier means 20 hereinabove described; it being understood, of course, that such latching means 95 is located beneath the decking members which define the supporting surface or bottom wall of such freight carrier means. Specifically, at the opposite sides of the base structure and inwardly adjacent the side rails 35 thereof, are parallel cross rail members 96. A two arm linkage system comprising angularly related members 97 and 98 is rigidly attached to each of such cross rails 96 as by welding or like means. Such arm members intersect at their outer ends and have rigid interconnection as at 99. Pivot means 100 and 100' inter-join the outer ends of the two sets of arm members 97 and 98 to a cross head 101 pivoted on a central vertical axle member 102. It will be noted that each end of the cross head 101 is pivotally joined to one set of the paired arm members 97 and 98 so that movement of either set of such arm members toward the other causes a counterclockwise rotation of the cross head 101 as viewed in FIGURE 11.

A spring means 103 extends between the cross head 101 and the underframing 104 of the base supporting structure for the freight carrier means. Such spring opposes the pivotal rotation of the cross head as caused by the movement of the sets of arm members 97-98 toward one another. Rotation of the cross rails 96 and thus the attached arms 97 and 98 toward one another is brought about by virtue of a pair of extending finger members 105, 105 which are mounted at the ends of each cross rail 96 and project outwardly through the side rails 35 of the base structure in separated relationship for engagement by an abutment member or portion 106 associated with the fork carriage of a lift truck or with a similar clamp member 107 associated with the gripping arms of a straddle truck (see FIGURE 11). Each of the finger members 105 has an enlarged outer end forming a contact pad for engagement with the abutment members 106 and 107 as the case may be. It thus will be understood that thrusting the finger members 105 inwardly either by portion 106 of a fork truck or the clamp portion 107 of a straddle truck (when such are in a ready position for gripping the load or freight carrier means), causes a responsive retraction of the latching mechanism or movement of the cross rails 96 toward one another.

Attached approximately centrally of the cross rails 96 and extending outwardly through the opposite side rails or frame members 35 for the freight carrier, are a pair of locking pins 110, 110, which are disposed in spaced relationship as best seen in FIGURE 13 of the drawings. Such pin members project past a wedge-shaped cast block 111 and specifically through a central triangular opening 112 thereof. The locking pins engage or fit in indentations formed beneath shoulders 113 adjacent the outer end of modified anchor plate means 114, best illustrated in FIGURES 13, 14 and 15, as will be described hereinbelow.

When utilizing the fork members 42 of a lift truck, with the latching mechanism of FIGURES 11-13, it will be seen that such forks enter the channel members 41 dis-

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posed transversely of the bed assembly for the freight carrier means as described heretofore and shown particularly in FIGURE 2 of the drawings. However, such fork arms 42 fail to engage any sort of a tripping system corresponding to the trip bar 49 of the FIGURE 2 type of latching mechanism. Such an automatic tripping mechanism is not required however, in the latching mechanism of FIGURE 11 because of the fact that this mechanism operates in response to engagement of members 105 by the abutment members 106 associated with the fork lift truck assembly for example, or the similar abutment member 107 associated with a straddle truck as explained hereinabove.

In operating a latching mechanism of the order set forth in FIGURE 11 by means of a fork lift truck, for example, in which the operation of the latch mechanism is carried forth by engagement of the abutment member 106 with the finger members 105 as described, it is possible to relatch the carrier to the freight transporting means if per chance the fork lift truck should roll backwardly after opening the latch mechanism. Such happenstance might result in serious damage to the latching mechanisms, particularly the anchor pins and plates associated therewith. In FIGURES 13a and 13b, I have illustrated a form of device employed to alleviate such an occurrence; the modified latch actuating mechanism comprising essentially a pair of cantilever leaf spring members 106' attached to the upright legs 108 of the fork lift truck means of a block assembly 109 and tie bolts 109'.

Specifically, each leaf spring element 106' includes a first arm portion 106a which is received between blocks 109a and 109b of a block assembly 109. Block 109b abuts the upright leg 108 of one of the lift forks whereat bolt members 109' fix the arm portion 106a and related block assembly 109 to the rear face of the leg 108. The outer or free ends of the cantilever spring members 106' comprise a flattened second arm portion 106b paralleling arm 106a for engaging the extending finger members 105 associated with the latching mechanism 95 of FIGURE 11, previously described. It will be noticed that the angular disposition of the main body arm portions 106a and 106b with respect to the main body 106c of the springs 106', places the finger engaging arm portion 106b thereof in advance of the upright lift fork leg 108 so as to engage the fingers 105 on the latch mechanism prior to full insertion of the lift fork beneath the freight carrier means. In so engaging the actuating fingers 105, the spring members 106' are resiliently flexed under the forward or inserting movement of the fork arms. As in the engagement of the abutment member 106 with the fingers 105 described hereinbefore, the latching mechanism 95 is actuated to draw pins 110 from the anchor plates thereby releasing the freight carrier from the freight transporting means. If, after thus disengaging the latching pins from the anchor means, the lift truck should roll backwardly a short distance to partially withdraw the fork arms from beneath the load, the resilient thrust of the cantilever leaf springs 106' will continue to press the pin members 105 in to hold the latching mechanism in an unlatched condition. Thus, the need for maintaining the lift truck in a tightly imposed position against the fingers 105 as when employing the abutment member 106 as illustrated in FIGURE 11, is alleviated to a certain degree by the described resilient actuating means.

With particular reference now to FIGURES 14 and 15 of the drawings, it will be understood that two anchor plate means 114 are pivotally mounted at the opposite ends of a plank member 115 which is normally mounted transversely of a freight transporting means and corresponds closely to the plank member 34 shown in FIGURE 6. Each anchor plate 114 is formed as a substantially triangular casting having projecting ear portion 113 adjacent its upper ends and forming thereby suitable recesses beneath such ear portions for receiving the locking pins 110 of the FIGURE 11 type of latch mechanism

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described. The anchor plate means 114 are pivotally carried at their lower ends on transverse shaft members 116 mounted between side walls 117, 117 of the plank member 115. In this regard it will be noted that the anchor plate means 114 are disposed adjacent the outer ends of the plank member 115 with a pivotal cover plate 118 disposed inwardly thereof. The anchor plate 114 bears a wedge-shaped cross section and presents a sloping surface 119 to the complementary wedge-shaped cast block member 111 of the freight carrier means so that these two members may interengage in the manner hereinabove related. As described before in the discussion of the anchor means in FIGURES 6, 7 and 8 of the drawings for example, the wedge block 111 is suitably formed with an indentation 112 therein so as to present a pilot opening for guiding the freight carrier means onto the projecting anchor plates of the transporting means. It should be noted that if the anchor plates 114 are raised as formerly described during the loading operation, it is essential that the projecting pin means 110 be retracted to clear the shoulder portions 113 of the anchor plates. This, of course, is easily effected by employing a straddle truck material handling device or the modified fork lift truck as described.

The cover plates 118, which are disposed inward of the anchor plate means 114, are suitably carried on pivot shafts 121 extending transversely of plank means 115 and such are pivotal in an opposite rotational sense from the anchor plate means 114. In this regard it is again the function of the cover plate 118 to cover the anchor plate means 114 when such is recessed and to lock the same in an upwardly extending position when required.

As seen in FIGURES 14 and 15, the cover plates 118 are suitably fitted with slotted apertures 120 adjacent one edge thereof which extend to the outer end of the plate for the insertion of a hook means. By passing a hook through such openings, the anchor plates may be engaged beneath shoulder portions 113, for raising the same from a retracted condition as illustrated in FIGURES 16-18. It will be recognized that this operation parallels the corresponding operation of anchor plate means 68 in FIGURE 7.

In FIGURES 16, 17 and 18 of the drawings, I have diagrammed the operation of the reverse acting anchor retaining means, which I have termed an "inboard" type hereinabove. By "inboard" I refer to the fact that the anchor plate 114 therein swings in a counterclockwise direction toward the outer edge of the carrier as such is raised to an operative position and conversely clockwise when disposed to its retracted condition. The sequence of movements for the anchor and cover plates is shown in these figures as related to the anchor systems shown in FIGURES 14 and 15. Normally, in operating an inboard anchor retaining means, as illustrated in FIGURE 16, the cover plate 118 acts to cover the anchor plate 114 when the latter is in its recessed condition against an underlying stop means 122 (see FIGURE 16). Such cover plate also serves to hold the anchor plate means in its raised condition for operatively engaging the latching mechanism of a freight carrier means (see FIGURE 18). Since the cover plates 118 are inaccessible beneath such a carrier when the latter is loaded on the transporting means, the use of an automatic tripping mechanism is required when using inboard style of anchor plates. For this purpose, a fork operated tripping means of the type shown in FIGURE 2, for example, may be used to release the anchor means by merely the positioning of the lift truck forks 42 as described. The above requirement will be appreciated when it is understood that the swinging of the anchor plate means inwardly to retracted condition negatives the possibility of manually disengaging such anchor means from the locking pin means as is possible in the outboard type of anchor retaining means illustrated in FIGURES 4 and 5. Thus, when utilizing the inboard type of anchor retaining means, an interlock

between the freight carrier means and the freight transporting means is presented requiring the use of a material handling device for the disengagement of the latching means and the anchor means.

So far I have emphasized the adaptation and utilization of my invention with respect to the employment of material handling devices in the nature of lift trucks and straddle trucks. My invention, however, is not so limited in its aspects since it is equally well adapted for use with an overhead crane type of material handling device, such as crane 32 illustrated in FIGURE 1. It will be recalled from that figure that the crane 32 with its usual hauling cable and hook means, is associated with a sling or harness 33 for cooperation with the freight carrier means 30. Specifically, the harness means 33 includes a spacer rail 130 provided with a length of cable 131 extending substantially between its ends and normally engaged by the hook 132 of the crane means. Transversely of the spacer member 130 and adjacent the opposite ends thereof are two bars 133, 133 suspended by spaced cable means 134 and having hook elements adjacent their outer ends for cooperation with projecting eye plates associated with the freight carrier means 30.

For better understanding of the details of construction and operation of the freight carrier means 30 and particularly the latching mechanism associated therewith, reference is made to FIGURES 19 through 23 of the drawings. As illustrated in FIGURE 19, the freight carrier means 30 comprises an enclosed rectangular container having side walls 135, end walls 136, a base assembly 137 and an enclosing cover or top wall 138. Mounted at the intersection of the side walls 135 and the top or cover wall 138 and extending upwardly from positions alongside such side walls so as to project beyond the plane of the cover wall 138, are plural eye assemblies 140 designed and intended specifically for engagement by the hook elements of the harness assembly 33 to the end that the freight carrier means 30 may be lifted and moved by a crane type of material handling device.

As shown in FIGURES 20 and 21 of the drawings, at least one eye assembly of the several thereof shown in FIGURE 19, is equipped with a tripping mechanism for operating a latching means associated with the freight carrier. Such trip mechanism comprises a trip plate 141 guided for vertical sliding movement by guide members 142 which extend through an elongated opening 143 of an eye portion 144 to assure against disassociation of the trip plate from such eye portion. To accomplish this feature the guides 142 are U-shaped to embrace the portion 144 and are rigidly fixed to trip plate 141. It will be appreciated that the elongated opening 143 is disposed opposite a circular opening 145 formed in the trip plate 141. Note also that opening 145 is substantially smaller than the slotted opening 143 so that when a hook (not shown) is inserted through opening 145 it does not normally engage the walls of the eye portion. The upper end of opening 143 is defined by a wall 146 which serves to contain the hook of the lifting harness means when a strain is placed on the uphaul cable. For the hook to engage wall 146 it must first slide trip plate 141 upwardly so that the openings 143 and 145 register at their upper ends. This upward movement of the trip plate 141 is preparatory to the lifting of the freight carrier and the engagement of the wall portion 146 by the hook of the crane harness means 33. Therefore, when the hooks of the hauling harness 33 are in position to impose a strain on the eye assemblies 140, the trip plate 141 will be properly conditioned to cause an automatic disengagement between the latching mechanism of the freight carrier means and an anchor retaining device or means associated with the supporting surface of the transportation means, as will now be set forth.

With further reference to FIGURES 20 and 21, it will be seen that the lower end of trip plate 141 is attached to a cable member 147 as by turn buckle means 148. Such

cable means 147 extends downwardly along the one side wall 135 of the freight carrier means and then trains over a rotatable sheave wheel 149 disposed adjacent the base 137. This latter relationship may best be understood with reference to FIGURE 19.

Looking at the bottom plan view, FIGURE 22, it is seen that cable 147, after passing around the sheave wheel 149, continues underneath the base framing of the freight carrier means to pass around a second sheave wheel 150 whereafter it terminates in a coupling means 151, designed to embrace a second cable 152 which extends substantially transversely to the axis of cable 147 and longitudinally of the freight carrier. Said second cable 152 is joined at its opposite ends to a pair of latching pin assemblies 153, 153 as will be described presently. Suitable spaced sheave wheels 154, 154 or other like guide means are provided on two of the supporting frame members in the base structure 137, as for example frame members 155, 155, for guiding the cable 152 so that transverse pulling thereon by cable 147 responsively withdraws the ends of cable 152 toward each other to operate the latching pin means.

As best seen in FIGURE 23 of the drawings, each end of the cable 152 is joined by a turn buckle or pivotal connector means 156 to one end of a cylindrical latch pin 157 mounted co-axially of a cylindrical spring housing 158. A threaded cap 159 is disposed at the inner end of the cylindrical housing 158 and such contains a bearing means 160 for guiding the pin means 157 during its reciprocating or sliding coaxial motion relative thereto. A suitable spacer member 161 is disposed within the opposite end of housing 158, such likewise containing a bearing means 162. A collar means 163 is secured to the latch pin means 157 for compressing a spring member 164 mounted around pin 157 intermediate such collar means and the threaded end cap member 159. As pin means 157 is motivated with a withdrawing action co-axially of housing 158 in response to the pull on cable 152 (to the right in FIGURE 23), spring 164 is compressed.

The pin means 157, of course, is shown in latching engagement with an anchor plate means 68 of the order heretofore described; such being an outboard type as set forth in FIGURES 4 and 5 and having associated therewith a cover plate member 78. The latching mechanism of carrier 30 is, of course, operable with any of the other anchor plate means or assemblies described herein. Note again that the freight carrier means 30 is constructed substantially in accordance to the details of construction employed in the freight carrier means 20 in that such includes a side framing member 165 carrying a wedge casting 166 which serves as a pilot guide and wedge lock means for the anchor plate. Since the latch pin means are at the ends of the freight carrier it is understandable that the anchor means is correspondingly located on the transporting means and that such anchor means may be joined by a "plank" of the order shown at 84 in FIGURE 6, for instance.

It will be understood that when strain is placed on the harness 33 by the crane freight handling mechanism, the preliminary upward motivation of trip plate 141 serves to put a strain on cable 147 which in turn pulls cable 152 appropriately to retract the two latch pins mounted adjacent the opposite ends of the base assembly 137 for the freight carrier 30. Thereafter the freight carrier may be associated or disassociated from the transporting means by the crane.

From the foregoing it is clear that I have described the principles of my invention as the same relates to certain specific mechanisms and forms of freight carrying devices, transporting means and material handling equipment. As yet I have not touched on a very important and outstanding feature of the several devices thus far described. Such is found in the included means for enabling the operator of the material handling equipment to visu-

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ally perceive the locked or unlocked condition of the latching means with respect to the anchor retaining means. Note that in all forms of latching mechanisms described and in all forms of anchor means described, the latching pins, as for example pins 60 illustrated in FIGURE 5, pin 157 illustrated in FIGURE 23, or the multiple latching pin means 110, 110 illustrated in FIGURE 13, are designed to pass through the particular anchor plate means with which they interlock. Note further as well that such anchor plate means, as for example anchor plates 68 of FIGURE 5, and even the inboard type of anchor plate 114 of FIGURES 11-15, is disposed conveniently adjacent the outboard or bordering portions of the freight carrier means so that the invasion therethrough of the latch pin means permits visual observation of its position by the operator of the material handling equipment. Thus, when such latching mechanisms and the anchor retaining means are in their locked or interengaged condition, the protruding pin means will be readily observable to inspection. This relationship is amply demonstrated in FIGURE 19 of the drawings, as note the projecting pin 157 or in FIGURES 4 and 5 as demonstrated by the projecting pin means 60. Therefore, when the operator of material handling equipment disposes his machine in a position ready to engage the load or freight carrier means and prior to imposing a lifting or removing force thereon, the retracted condition of the latching pin means is readily discerned by viewing the anchor plate means related to the transportation providing device. If the latching pin is retracted, the operator is then assured of the safety of imposing a lifting or removing load on the freight carrier means without running the risk of damaging the interlock between the freight carrier means and the supporting surface of the transporting means.

In the employment of the crane type of material handling device, as described hereinabove and particularly as illustrated in FIGURES 19 through 23, it will be understood that an additional visual check is made available through the provision of the trip plate 141. If such plate 141 is not in its raised condition by the time the operator intends to place a lifting load on the freight carrier, he is immediately aware that the automatic disconnection between the latching means and the anchor retaining means has not taken place and therefore he may stop his operation prior to damaging the means interlocking the freight carrier and the freight transporting means.

In addition to the foregoing description of the elements and mechanisms, it is believed that the method involved therein has been amply set forth, but for purposes of clarity it may be well to outline briefly its improved sequence.

It is my intention to effect the loading and unloading of freight carrier means with respect to freight transportation means by the employment of conventional material handling equipment and to that end the steps of the method involved will require first disposing the freight carrier means on a supporting surface of the transporting means. Following such disposal of the freight carrier means, it is requisite to fix the freight carrier against movement relative to the transportation means. The freight carrier means is then conditioned for transportation between loading and unloading terminals, as for example, a cross country haul on a railroad flat car or the like. The method of the system continues to the releasing operation wherein prior to imposing removal forces on the freight carrier means, a release of the means which affixes such freight carrier means to the transportation means is necessary. Under my method I propose that such releasing activity take place by the mere positioning of conventional freight handling equipment in a condition ready for the removal of the freight carrier means, and always prior to imposing any removal force thereon. It should be regarded that the disconnection of the particular latching and anchor retaining

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means employed for fixing the freight carrier and transportation means together, is not only responsively disengaged by the material handling equipment itself, but also by the mere positioning of such handling equipment appropriate for the removal of the freight carrier means.

Thus, it will be appreciated that I have hereinabove set forth the features of the improved freight handling system of this invention, a method for effecting the operation of such system, and the provision of means for effectively associating and disassociating suitable portable freight carrier devices or structural means with respect to transporting means. While the foregoing description and disclosure is largely directed to particular embodiments of means for disassociating and associating the freight carrier and transporting means, it is to be understood that numerous changes, modifications and substitutions of equivalent materials and mechanisms may be made therein without departing from the scope and spirit of the inventive aspects involved. As a consequence, it is not my intention to be limited to the particular devices embodying the features of my invention as hereinabove described and illustrated in the accompanying drawings, except as may appear in the limitations and particulars of the following appended claims.

I claim:

1. In a freight handling and transporting system including a freight carrier, transporting means having a supporting surface for supporting the freight carrier, and in which the freight carrier is portable by a material handling device having abutment means for engaging the freight carrier, the combination comprising, anchor means pivotally supported on an axis located beneath the supporting surface of the freight transporting means, means for locking said anchor means in a position extending upwardly of such supporting surface, latching means associated with the freight carrier including pin means arranged to engage portions of said anchor means for preventing movement of said freight carrier off of said supporting surface, trip means disposed in the base of said freight carrier means and having finger portions extending laterally outward thereof for engagement by the abutment means of the material handling device, means interconnecting said finger portions with said pin means whereby the retraction of said finger means inwardly of the side walls of the freight carrier in response to engagement by the said abutment means causes responsive withdrawal of said pin means from the anchor means thus to unlock said freight carrier means from said supporting surface, and spring means opposing such withdrawal action of the pin means.

2. In a freight handling and transporting system including a freight carrier, transporting means having a supporting surface for supporting the freight carrier, and in which the freight carrier is portable by material handling equipment having abutment means for engaging the freight carrier, the combination comprising, anchor means associated with the transporting means extending upwardly from said supporting surface thereon, said anchor means including a pivotal anchor plate having an opening therethrough which is normally disposed beneath said supporting surface and is swingable to a position extending thereabove, a cover plate normally concealing said anchor plate when such is in normal position, said cover plate serving to hold said anchor plate in its extended position by engaging such appropriately to prevent downward swinging movement thereof once it has been placed in its upwardly extending position, latching pin means associated with said freight carrier means and extending laterally outward of the base portion thereof for lockingly engaging said anchor plate, finger portions extending laterally outward of said freight carrier means for engagement by the abutment means of the material handling equipment, linkage means interconnecting the finger means with said pin means, there being two such sets of finger and pin means, one set extending laterally outward of

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opposite sides of said freight carrier means with the engagement of the finger means by the said abutment means occurring upon positioning the material handling equipment for engaging the freight carrier means, inward movement of said finger means causing retraction of said pin means from the anchor plate to release said freight carrier means from said supporting surface, and spring means opposing such retraction of said pin means.

3. In a freight handling and transporting system of the class described including a freight carrier, transporting means having a supporting surface for supporting the freight carrier, and in which the freight carrier is portable by material handling equipment having load engaging and moving means, the combination of latching means mounted on said freight carrier including locking pin members extending outwardly of the base portion of said freight carrier and mounted for reciprocal movement whereby such may be retracted from such extending condition, trip means associated with said latching means engageable by the positioning of the load engaging and moving means of the material handling equipment in a position for engaging the freight carrier, anchor means associated with a supporting surface of said transporting means and comprising plural spaced anchor plates pivotal about axes disposed beneath the said supporting surface and presenting openings receptive of said locking pin members when said carrier is disposed on said supporting surface, and a cover plate associated with each anchor plate disposed on an axis paralleling the pivot axis of said anchor plate and spaced therefrom, said cover plate normally concealing the said anchor plate when such is in a retracted condition beneath said supporting surface and forming in such condition an extension of said supporting surface, the raising of said anchor plate means to an operative position wherein it extends upwardly from said supporting surface necessitating the upward swinging movement of said cover plate, the upward swinging movements of said anchor plate and cover plate being in an opposite rotational sense, said cover plate being disposed and formed appropriate to lock said anchor plate in the latter's operative position by abutting one side of the latter to prevent its further pivotal movement.

4. A latching mechanism for a freight carrier having a base structure adapted to secure the carrier to a flat top conveyance having a pair of laterally spaced anchor spaced members projecting upwardly from the flat top thereof, comprising latching members for engaging respectively the anchor members, a pair of laterally spaced rail members on which the respective latching members are mounted, pivot means centrally mounted on the base structure of the carrier, a pair of linkage means connecting the said pivot means respectively to the said two rail members and restricting movement of said members to conjoint movement toward and conjoint movement away from one another, spring means connected between the pivot means and the base structure for biasing all the said latching members to latching position, and finger members mounted respectively on the said rail members and extending outwardly at the opposite sides of the carrier for engagement by a material handling machine preparing to pick up the carrier from either side of the conveyance whereby engagement of the finger members on either side of the carrier by and disengagement thereof from the material handling machine causes the said latching members simultaneously to be disengaged from and engaged with, respectively, the said anchor members.

5. In a freight handling and transporting system including a freight carrier, transporting means having a supporting surface for supporting the freight carrier, and in which the freight carrier is portable by material handling equipment having load engaging means, the combination of retaining means associated with said freight carrier and said supporting surface to prevent

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movement of said freight carrier off of said supporting surface, trip means associated with said retaining means and engageable exteriorly of said freight carrier, and a pair of resilient leaf spring members carried by the load engaging means of the material handling equipment, said trip means being engaged by said spring means when the material handling equipment is positioned to lift the freight carrier from said supporting surface, such positioning of the material handling equipment and the engagement of said trip means effecting disengagement of said retaining means so as to enable removal of said freight carrier from said supporting surface.

6. In a freight handling and transporting system of the class described in which portable freight carrier means are deposited on and removed from the supporting surface of a freight transporting means by a material handling lift truck and in which the carrier means includes a latching mechanism for attaching the same to the supporting surface of the transporting means, the combination comprising, trip means related to the latching mechanism for operating the latter, said trip means extending exteriorly from the base structure of the carrier means, and a pair of leaf spring members carried by the fork means of the material handling lift truck for engaging said trip means when the lift truck is positioned with its lift forks extending beneath the freight carrier ready to remove the same from said supporting surface, the advancement of the lift forks beneath said freight carrier serving to flex said spring members whereby the same impose resilient thrust against said trip means for operating said trip means, said spring members serving to permit partial withdrawal of the lift forks from beneath the freight carrier while maintaining said trip means in a position for operating said latching mechanism.

7. For use with industrial lift truck in moving a portable freight carrier onto and off of a supporting surface of a freight transporting means, the transporting means having anchor members projecting upwardly from its supporting surface for engagement by latch means on the freight carrier, the latch means having tripping members projecting outwardly of the freight carrier, the combination comprising, a pair of load supporting lift fork members associated with the industrial lift truck for insertion beneath the freight carrier, a pair of resilient leaf spring members mounted in cantilever fashion one adjacent each of said fork members, said spring members extending forwardly and inwardly from adjacent the base end of the fork members toward the terminal ends of said fork members, and free end portions on said spring members lying intermediate the base and terminal ends of said fork members for engaging the tripping members associated with the freight carrier's latch means, the insertion of the fork members beneath the freight carrier causing the said spring members to resiliently engage the tripping members for unlatching the freight carrier's latch means in advance of inserting said fork members fully beneath the freight carrier.

8. In a freight handling and transporting system wherein portable freight carriers are deposited on and removed from the supporting surface of a conveyance by materials handling apparatus and the carriers are detachably secured to the conveyance by latching means operated by the load engaging and moving means of the apparatus, the improvement comprising that the latching means include an anchor member at each side of the conveyance and visible at the side of the conveyance and the carrier, a latching member mounted on the carrier at each side thereof for movement from a position in which it is latched with the respective anchor member and is visible from the side of the conveyance and the carrier to a position in which it is unlatched from the respective anchor member, means interconnecting said latch members exclusively for conjoint movement toward and conjoint movement away from each other, and trip means accessible from adjacent each of said latch members by the load

engaging and moving means of the materials handling apparatus for operating both said latch members, whereby said latch and anchor members afford to the operator of said apparatus a visual indication of the fully latched and fully unlatched conditions of the latching means irrespective of the approach of said apparatus to the carrier.

9. In a freight handling and transporting system wherein portable freight carriers are deposited on and removed from the supporting surface of a conveyance by materials handling apparatus and the carriers are detachably secured to the conveyance by latching means operated by the load engaging and moving means of the apparatus, the improvement comprising that the latching means includes an anchor member adjacent each side of the conveyance, a guide pad on each side of the carrier, co-operable cam surfaces on said members and said pads for guiding the carrier into alignment with the conveyance and for retaining the carrier against lateral and longitudinal disassociation from the conveyance, a latch member adjacent each side of the carrier and engageable with the respective anchor member for retaining the carrier against vertical disassociation from the conveyance, said anchor members and said pads being visible from the exterior of the carrier and conveyance at the respective sides thereof, said latch members being movable from a latched to an unlatched position and including a portion visible from the exterior of the respective sides of the carrier and conveyance in at least one position thereof, means interconnecting said latch members exclusively for conjoint movement toward and conjoint movement away from one another, and trip means adjacent each latch member engageable by the load engaging and moving means of said apparatus for actuating said latch members.

10. In a freight handling and transporting system wherein portable freight carriers are deposited on and removed from the supporting surface of a conveyance by materials handling apparatus and the carriers are detachably secured to the conveyance by latching means operated by the load engaging and moving means of the apparatus, the improvement comprising that the latching means includes an anchor member at each side of the conveyance, a latch member at each side of the carrier engageable with the respective anchor member for retaining the carrier against disassociation from the conveyance, said anchor members being visible from the exterior of the respective sides of the carrier and conveyance, said latch members being movable from a normally latched position to an unlatched position and including a portion visible from the exterior of the respective sides of the carrier and conveyance in at least one position thereof, and trip means operatively associated with both said latch members and engageable by the load engaging and moving means of the materials handling apparatus for simultaneously moving both said latch members from the latched to the unlatched position.

11. In a freight handling and transporting system wherein portable freight carriers are deposited on and removed from the supporting surface of a conveyance by materials handling apparatus and the carriers are detachably secured to the conveyance by latching means operated by the load engaging and moving means of the apparatus, the improvement comprising that the latching means includes an anchor member at each side of the conveyance, a guide pad at each side of the carrier, co-operable cam surfaces on said members and said pads for guiding the carrier into alignment with the conveyance and for retaining the carrier against lateral and longitudinal disassociation from the conveyance, a latch member at each side of the carrier engageable with the respective anchor member for retaining the carrier against vertical disassociation from the conveyance, said anchor members and said pads being visible from the exterior of the carrier and conveyance at the respective sides thereof, said latch members being movable from a latched

to an unlatched position and including a portion visible from the exterior of the respective sides of the carrier and conveyance in at least one position thereof, means interconnecting said latch members for conjoint movement toward and away from one another, and trip means operatively associated with said interconnecting means and both of said latch members and engageable by the load engaging and moving means of the materials handling apparatus for operating both said latch members.

12. In a freight handling and transporting system as set forth in claim 10, said anchor members having apertures therethrough, said latch members being movable from an unlatched position interiorly of the anchor members to a latched position wherein they extend through said apertures and are visible at the respective sides of the carrier and conveyance.

13. In a freight handling and transporting system as set forth in claim 10, wherein the materials handling apparatus is a crane and means extend from the upper end of the carrier for engagement by the load engaging and moving means of the crane; said trip means comprising a plate associated with at least one of said upwardly extending means and mounted for sliding movement relative thereto, an opening in said plate for passage of the load engaging and moving means of the crane, said opening normally being spaced downwardly from the respective one of said upwardly extending means so that the load engaging and moving means of the crane serves to move said plate upwardly prior to engaging said upwardly extending means, and cable means interconnecting said latch members for conjoint movement toward and away from one another and interconnecting said latch members with said plate whereby the upward movement of said plate serves to effect actuation of said latch members.

14. In a freight handling and transporting system as set forth in claim 11 wherein the materials handling apparatus is a crane and means extend from the upper end of the carrier for engagement by the load engaging and moving means of the crane; said trip means comprising a plate associated with at least one of said upwardly extending means and mounted for sliding movement relative thereto, an opening in said plate for passage of the load engaging and moving means of the crane, said opening normally being spaced downwardly from the respective one of said upwardly extending means so that the load engaging and moving means of the crane serves to move said plate upwardly prior to engaging said upwardly extending means, said interconnecting means comprising cable means interconnecting said latch members with one another and said plate whereby the upward movement of said plate serves to effect actuation of said latch members.

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