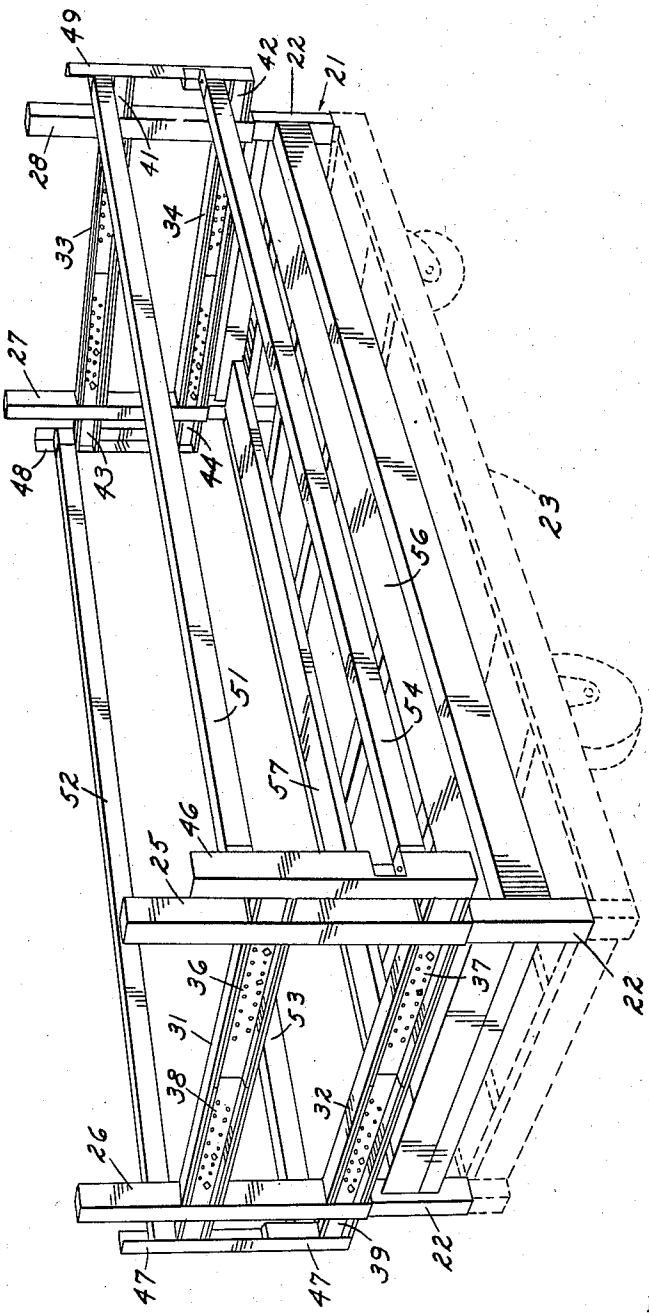
March 17, 1959 E. R. LARSEN 2,877,602

FREIGHT CARRIER

Filed May 15, 1958 5 Sheets-Sheet 1

FIG. 1



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FREIGHT CARRIER

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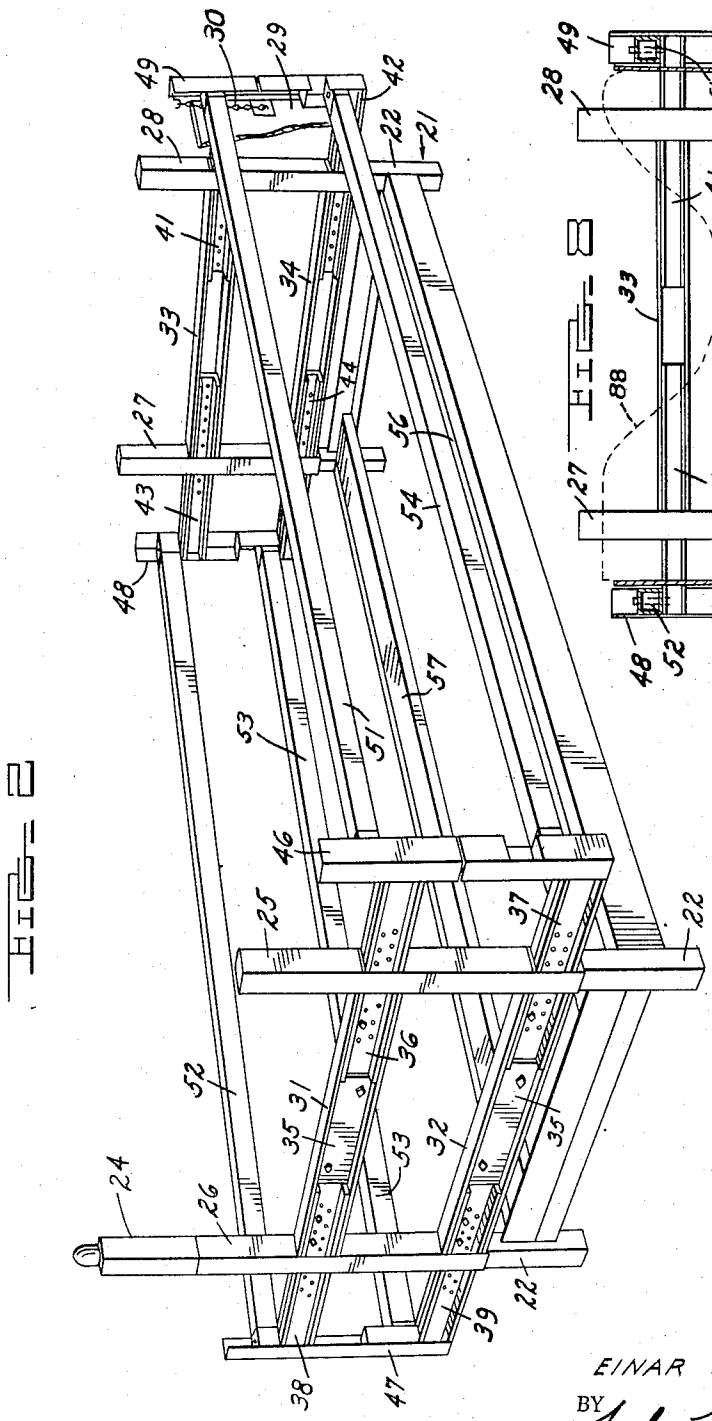


FIG. 2

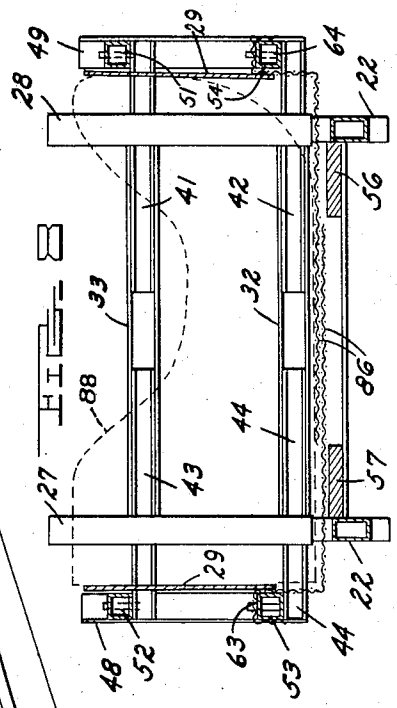


FIG. 3

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FIG. 3

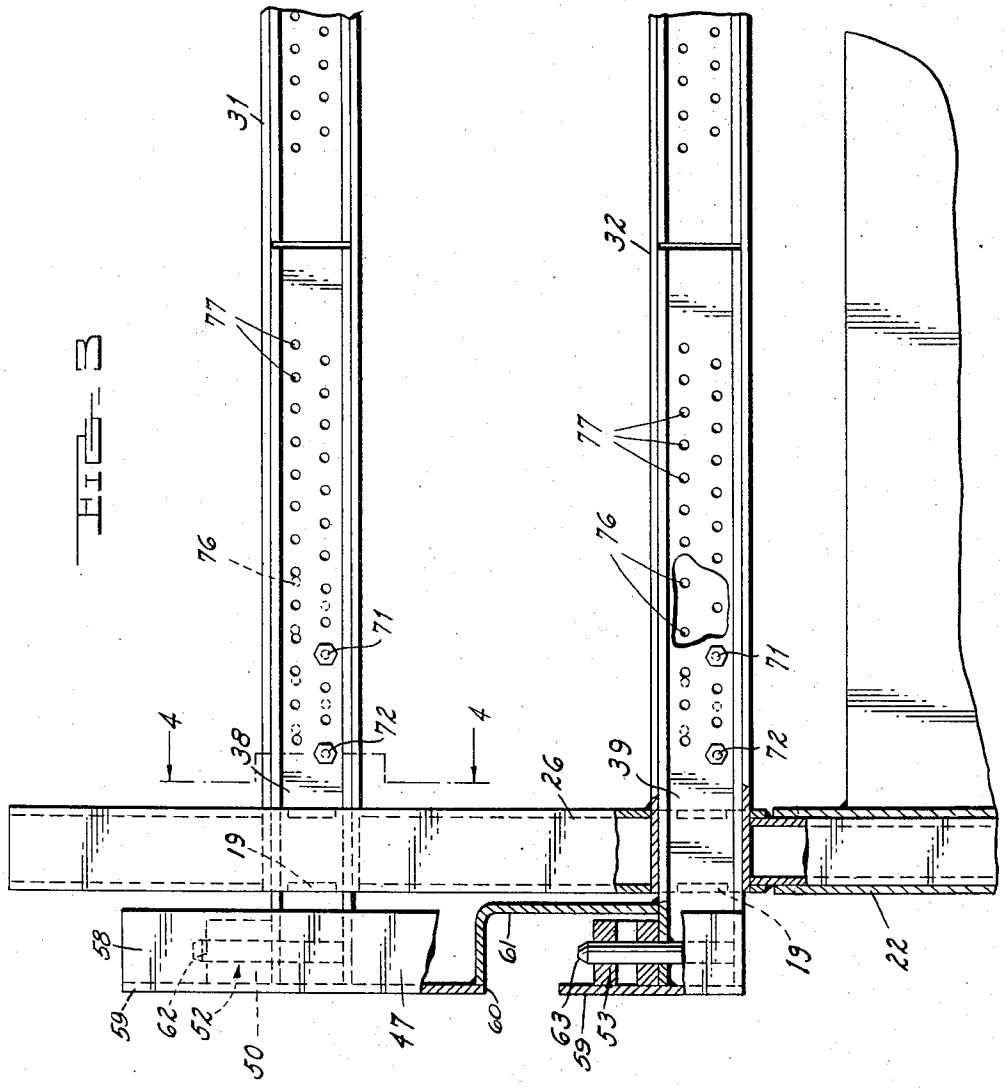


FIG. 4

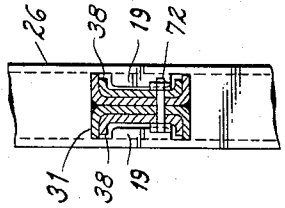
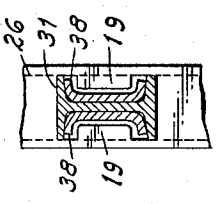


FIG. 5

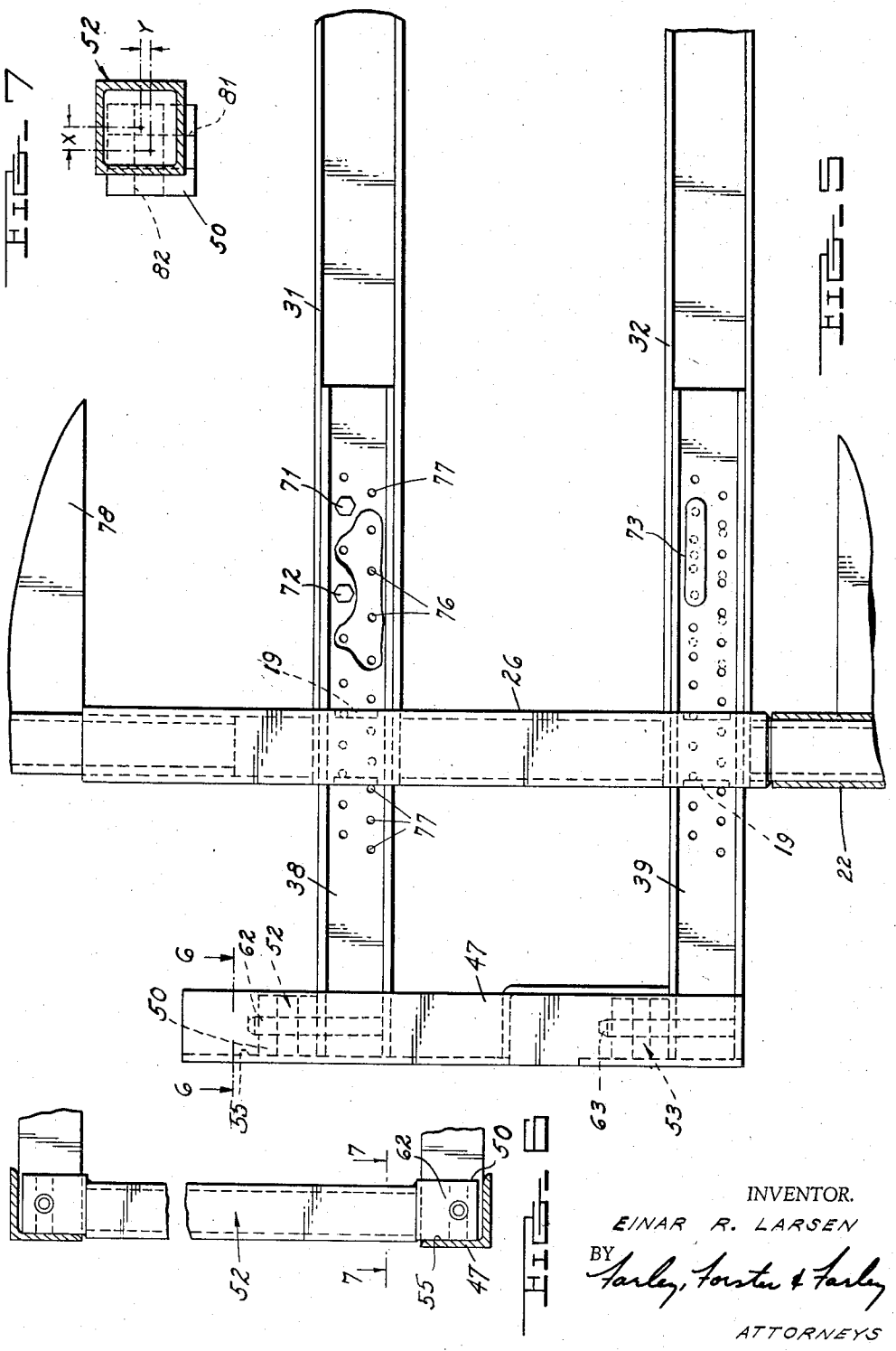


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FIG. 12

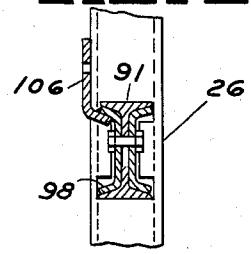


FIG. 11

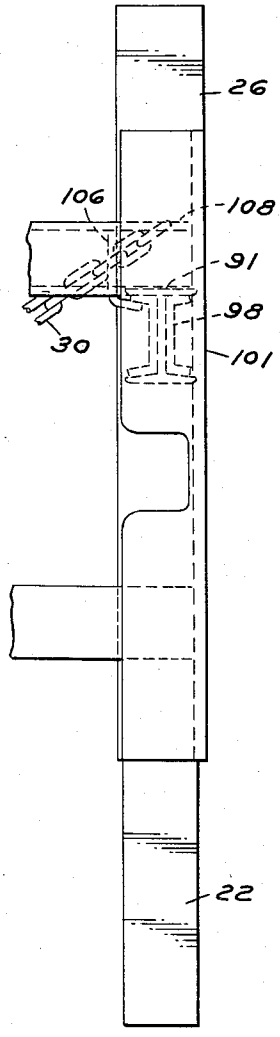
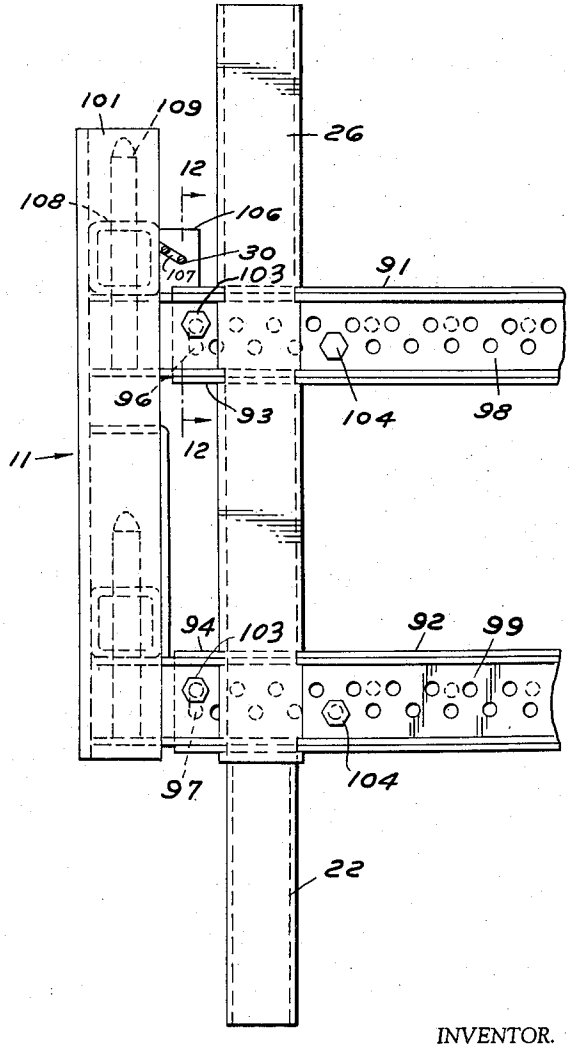


FIG. 10



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FREIGHT CARRIER

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Application May 15, 1958, Serial No. 736,441

15 Claims. (Cl. 211—175)

This invention pertains to a freight carrier and, more particularly, to a carrier which has adjustable side members and is capable of being carried by truck and railroad car without extensive packing procedures.

This application is a continuation-in-part of my earlier copending application, Serial No. 650,659, filed February 18, 1957, now abandoned, which is expressly abandoned upon the filing of this application.

The carrier of this invention is of rigid construction and designed for permanent use. It is adjustable so that it can be used for carrying different types of equipment and parts. This carrier requires a minimum of wood crating or packing which has a large initial expense and an additional expense for removal and disposal. It makes unnecessary metal packing bands which also are expensive to apply and remove, and in addition, are dangerous when overstretched. Once the parts, or equipment, have been packed in the carrier of this invention, they may be shipped without removal from the carrier. After unloading from a freight train or truck, there is little dunnage, if any, to remove. Since the packing is kept to a minimum, storage area is conserved at both the shipping and receiving points. Parts such as metal stampings may be grouped and packed in a carrier eliminating the need for individual packing. Also, a relatively simple, rigid, and precise adjustment to the carrier is provided so that a large range of sizes of equipment or parts may be packed tightly therein.

An embodiment of this invention which provides these advantages comprises a horizontally disposed frame having at each end a pair of upstanding posts. The posts at each end are connected by two generally I-shaped guide members having spaced adjustment holes. A post at one end of the carrier is connected to its corresponding post at the other end by railings which are attached to extension members formed of two spaced back-to-back channel members. The extension members are in sliding engagement with the generally I-beam shaped guide members connecting the posts, with a channel fitting on either side of the I shape. The extension members also have adjustment holes but are spaced differently from those in the guide members. In this manner, the extension members may be adjusted with the guide members in small increments equal to the difference in hole spacing between the two members while the spacing of the holes in each member is kept large enough so as not to seriously weaken them. A second adjustment feature is provided at the connection between the railing and the extension members. Each extension member has an upwardly extending pin while each railing has at its end an eccentrically attached block having a series of holes adapted to fit over said pins. The placement of each of said holes

over the pins will provide a different lateral spacing between the pin and the railing. This provides for a fine adjustment which insures a tight and rigid holding of the parts placed in the carrier, thereby permitting rail or truck shipping with minimum damage.

The frame posts have hollow ends and one end of a post is smaller than the other end of the same post, thereby permitting stacking of one on top the other for saving storage area, or shipping of a large number of carriers. Spacers are provided to fit between vertically stacked carriers so that any necessary vertical clearance is possible. Screens can be attached to the carrier for shipment of small and/or loose parts, and side boards are preferably attached to provide a yieldable support for the parts.

Therefore, an object of this invention is to provide a carrier which is quickly and easily loaded. Other objects include: a carrier with adjustment means to permit a single carrier to be used for various loads and for securing each load tightly; to provide a carrier which, when packed, may be shipped by train or truck without expensive and extensive additional packing procedures and yet be free of undue damage to the carried material; and to conserve storage area of the carried material.

These and other objects and advantages will become more apparent when several embodiments of this invention are considered in connection with the drawings in which:

Figure 1 is a perspective view of an embodiment of this invention as mounted on a dolly which is shown in phantom;

Figure 2 is a carrier similar to the one in Figure 1 and in extended position for receiving a load;

Figure 3 is a partial end view of a carrier showing the extension members in a closed position;

Figure 4 is a section taken at 4—4 of Figure 3 showing a cross section of the guide members and the extension members;

Figure 5 is a partial end view of a frame in extended position;

Figure 6 is a section taken at 6—6 of Figure 5 showing the railing and eccentric block for fine adjustment;

Figure 7 is a view taken from 7—7 of Figure 6;

Figure 8 is a schematic view of overlapping screens for the bottom and ends with a load shown in dotted lines;

Figure 9 is a view similar to that in Figure 4 but with different cross sections for the guide members and extension members;

Figure 10 is a partial elevational view of a further embodiment of this invention;

Figure 11 is a view taken from the direction of arrow 11 in Figure 10; and

Figure 12 is a section taken from 12—12 of Figure 10.

In Figure 1 is shown frame 21 which has square, hollow corners 22. The lower portion of corners 22 are fitted over posts of dolly 23 while the upper portion receives respectively frame posts 25 through 28. Posts 25, 26 are fixed as by welding to guides 31, 32 and posts 27, 28 are similarly fixed to guides 33, 34. Extension members 36 through 39 and 41 through 44 slide respectively in guides 31 through 34 with members 36, 37 being fixed at their outside ends to corner 46, members 38, 39 being fixed at their outside ends to corner 47, members 43, 44 being fixed to corner 48 and members 41, 42 being fixed to corner 49. The vertical corners of corner members 46—49 are preferably rounded to facilitate loading in confined spaces such as box cars. Railings 51 through 54 have holes in their outer ends which fit respectively over pins which are attached to the extension members. Each of the guides and extension members have adjustment holes drilled therein with the spacing in the extension members exceeding that in the guide members. Bolts are

placed through the aligned holes to secure the extension members in the guide members. Wooden planks **56, 57** may be placed along bottom portion of frame **21** to provide a yieldable support for the metal or other material to be carried. The extension members slide through holes in their respective frame posts. Extension members with a variety of lengths may be used with the same frame and posts, thereby accommodating a large range of material sizes that can be carried. Screens may be fitted along the railings, guide members, and frame floor to provide a carrier for small and/or loose pieces. While only the width of the carrier shown in Figure 1 is adjustable, it is, of course, within the scope of this invention to likewise adjust the length. But, for the particular application for which frame **21** has been designed, that being for the carriage of metal stampings, it is more practical to have a fixed length equal to a box car width and an adjustable width. Posts **25** through **28** have smaller base portions than top portions which facilitate nesting or stacking of carrier units.

While extension members **38, 39** are shown connected to corner **47** and, therefore, movable simultaneously, it would be possible, of course, to arrange to have them move independently for a particular purpose. One way this could be done would be by merely separating or cutting corner **46** between extension members **36, 37** and corner **49** between its attachment to extension members **41, 42** as seen in one set of extension members in Figure 2. In addition, post combinations **25, 26,** and **27, 28** may both either, or neither, be fixed to corners **22** instead of telescoping or having a narrow portion insertable therein. In other words, either set of posts may be removable and the other fixed, or both may be fixed for added rigidity or both may be removed for knockdown in return shipment, and by having one set removable and one set fixed, loading may be facilitated.

Also in Figure 2 is shown a carrier in an extended position with wedge members **35** inserted between extension members **36, 38** and between members **37, 39** to unload the bolts attaching the extension members to the guide members as explained later. Stampings as shown in dashed lines in Figure 8 may be placed in the carrier at the stamping machine and may be separated only by a paper element. One set of frame posts may be stacked on another to provide the required height for these parts. Boards **29** are attached to the side railings by chain **30** thereby permitting the boards to move slightly with the load, and to provide a liner which will not mar the metal parts. Spacer **24** is shown placed in the top portion of frame post **26** so that a second carrier unit may be vertically spaced at any clearance necessary for a particular load when all four posts have similar spacers. The extension members are adjusted to hold the stamping securely and then the carrier may be lifted onto a dolly or carried by a lift truck to the loading platform. From here it is placed on a freight car or truck in layers with these layers being filled as completely as possible, and if any space is left over at the end of the freight car, then an unloaded or empty carrier unit may be adjusted to take up the unused space in order to prevent any sliding or jamming of the load in the car.

If the space is too small for the use of a carrier, then a suitable filler means may be used, such as spaced turnbuckle assemblies between a carrier frame and a car wall. In the second and succeeding layers, the stacking of one unit on another will tend to prevent any sliding or jamming. Since the length of the carrier shown in the preferred embodiment is equal to a freight car width, there will be no unused space at the sides. However, if in some usage there is space at the side, it may, of course, be taken up in a suitable way. In this way, no special freight car or packing materials and fixtures are needed which are in use today. At the destination, the freight car may be unloaded and the carrier taken to the point where the freight is to be used without any additional unpacking and packing. Also, there is a minimum of dunnage in the freight car after the unloading and the cost of shipping is additionally reduced since cleaning and removal of a large dunnage is unnecessary.

In Figure 3 is shown a partial end view with extension members **38, 39** shown in the inner or closed position. Extension members **38, 39** are slidable relative to guides **31, 32** with guides **31, 32** having holes **76** horizontally spaced .918 inches apart in staggered relation, while extension members **36** and **37** have holes **77** horizontally spaced .612 inch apart in staggered relation. The vertical distance between hole rows may be .625 inch. It is seen that by having at least three of the holes spaced .612 inch apart and having two holes spaced .918 inch apart, .306 inch adjustments are possible for a spacing of .918 inch. This is possible even though the smaller horizontal spacing is .612 inch. The wider the spacing, of course, the stronger members **31, 32, 38** and **39** will be. Small incremental spacing is possible with relatively large spacing between holes, by using this principle. By continuing the number of holes in each of the members, not only is a larger range of adjustment possible, but, also, two or more bolts, such as **71, 72** may be used, since there will be at least two aligned holes for every .306 inch adjustment. Bolts **71, 72** may be joined at one end to form U bolt **73** shown in Figure 5. Only one nut instead of two is needed for tightening the U bolt to the carrier. Also the U bolt may have spacing equal to the spacing of aligned holes. With eight holes in each side of each guide member and 26 holes in each extension member, satisfactory results are possible for a medium size rack. For support, in addition to that offered by the bolts, wedge member **35**, seen in Figure 2, may be placed between the extension members in channels **31** and **32** to unload the bolts and tend to prevent shear in the case of any large compressive stress caused by the jamming together of carriers.

Also seen in Figure 3 are railings **52, 53** shown placed over pins **62, 63** which are fixed to extension members **38, 39.** The railings are removed by lifting over the pins and replaced by placement upon the pins. This replacement operation, particularly with respect to the lower side railing **53**, is facilitated by the construction of the corner posts **46—49.** Each of these posts is formed from a length of angle section stock and is mounted so that one flange **58** of the angle extends parallel to an end of the rack and the other flange **59** parallel to a side of the rack. A notch **60** is cut in the flange **59** above the end of the pin **63** to provide an opening in the flange **59** through which the end block **50** of the side railings **53** can be moved into position for placement upon the pin **63.** An L-shaped member **61** (Fig. 3) extends from the upper edge of the notch **60** inwardly and downwardly to the upper surface of the extension members **39** to provide a guide for the side railing **53** as it is placed upon the pin **63.**

Looking at Figure 4 is seen the relation between a guide member, extension member, and a frame post. The guide **31** in this embodiment is formed of two back-to-back welded channel-shaped members, and this construction is welded or otherwise fixed to post **26.** Sliding into guide **32** is extension member **38** which is composed of two back-to-back separated channel members which, in this embodiment, are welded in their spaced separation to corner **47.** Tabs **19** are formed in posts **26** for greater compressive strength and also for a more attractive appearance. Bolt **72** is shown in its attached position. In Figure 5, extension members **38, 39** are shown in an extended position with bolt **72** in aligned holes. The bottom portion of a second carrier **78** is shown connected to post **26.** In Figure 9 is seen a second possible cross section of guide member **31** and extension member **38.** An I beam is used for guide member **31** in Figure 9.

Looking at Figures 6 and 7 is seen an embodiment of

railings which provides for a fine adjustment thereof with corner 47 while still maintaining a lateral surface in flush contact therewith. For example, surface 55 in Figure 5 is flush with block 50, thereby unloading pin 62 for outward forces on railing 53. Block 50 is mounted eccentrically to railing 52 and has holes 81, 82 seen in Figure 7 formed therein. Dimension x is the distance between the vertical center lines of railing 52 and hole 81 and is different from dimension y, which is the distance between railing 53 horizontal center line and hole 82 center line. Also, holes 81 and 82 are formed in the centers of their respective block faces. Each hole offers two positions of railing 52 relative pin 62, depending on which end of the hole is first placed over pin 62. Since dimensions x and y are different, four different positions of railing 52 in respect to pin 62 are offered. There may be, of course, as many faces on block 50 as are practical with a corresponding number of faces on railing 52.

As mentioned, boards 29 may be placed along railings 51 through 54 and overlapping screens 86, shown in Figure 8, may be attached to the lower pins 63, 64, or welded to the railings on either side to provide a containing means for small parts. The overlap of screens 86 is sufficient so that for all positions of members 37, 39 there will be screen coverage for the bottom of the carrier. As shown in Figure 8, the screen sides are formed over the railings for support along the entire screen length. Overlapping screens may be attached also to the carrier ends. Screens may be placed along the sides of the carrier and also used for sectioning the carrier into compartments or bins. An automobile fender 88 is shown in dotted lines in Figure 8. A large number of fenders may be stacked longitudinally of the carrier for shipment to destination.

Figures 10–12 show a further embodiment having a wider adjustment range. As in the previous embodiment, guide members 91, 92 have an I shaped cross section and are fixed as by welding to posts 26, and have respectively, extensions 93, 94 beyond the outside of posts 26. Each extension 93, 94 has a pair of connected vertically aligned holes 96, 97 which are horizontally aligned with the upper and lower row of holes in their respective guide members. With this arrangement, extension members 98, 99, which comprise two spaced back-to-back channel members welded or otherwise fixed to corner 101, can be attached to their respective guide member at a point outside of posts 26 thereby adding substantially to the degree of possible outward movement of extension members 98, 99 in their respective guides 91, 92. Bolts 103 and 104 may be inserted through aligned holes in extension members 98, 99 and their respective guides 91, 92 to rigidly secure the members to the guides. Preferably, the spacing between the holes in the extension members 98, 99 is made exactly one-half of that between the spacing of the holes in the guides 91, 92.

An additional feature residing in the embodiment shown in Figures 10–12 is the support for chain 30 which comprises plate 106 welded or otherwise fixed to the inside channel of extension member 98 and which has formed therein tilted slot 107 proportioned to receive a link of chain 30. Due to the location of plate 106 and slot 107, chain 30 may be inserted or removed from the slot 107 only when railing 108 is removed from its pin 109 and by placement of the railing 108 over the pin 109, the chain 30 is effectively secured in slot 107.

While a preferred embodiment of my invention has been described above in detail, it will be understood that numerous modifications may be resorted to without departing from the scope of this invention as defined in the following claims.

I claim:

1. A shipping rack of the four-sided open framework type having a base frame of fixed dimensions, structure composing each one of a pair of opposite sides of said rack comprising, a pair of vertical posts carried by and projecting above said base frame, a guide member rigidly connecting said pair of posts above said base frame, said guide member having a plurality of outwardly facing angularly related surfaces forming a guideway, an extension member supported by said guide member, a corner post rigidly secured to one end of said extension member for support thereby, said extension member having correspondingly angularly related surfaces dimensioned for sliding engagement in said guideway, means for connecting said extension member to said guide member in any one of a number of positions therealong whereby the length of each of said pair of rack sides can be varied, means for forming a third side of said rack perpendicular to said pair of sides, said side forming means including a rail, and means for detachably connecting said side rail to the said corner post of each of said pair of sides.

2. A shipping rack according to claim 1 wherein said means for detachably connecting said side rail to said corner posts includes an upstanding pin connected to said extension member and an aperture extending through said side rail adjacent each end thereof.

3. A shipping rack according to claim 2 wherein said aperture is positioned eccentrically to the longitudinal axis of said side rail.

4. A shipping rack according to claim 1 further characterized by said means for detachably connecting said side rail to said corner posts comprising an upstanding pin secured to said extension member, an eccentric block having multiplicity of faces mounted at each end of said side rail, said block having a multiplicity of bores formed in said faces, the axis of each of said bores being eccentric to the longitudinal axis of said side rail by a different amount, each of said bores being registerable with said pin so that the longitudinal axis of said rail can be placed in any one of a plurality of distances from the axis of said pin depending upon the bore engaged on said pin.

5. A shipping rack according to claim 4 further characterized by each of said corner posts being provided with a vertical surface extending parallel to said third rack side and said pin so as to be engageable by any one of the faces of said block.

6. A shipping rack according to claim 1 wherein said third side forming means includes a side board and means for suspending said side board from said corner posts inside said side rail.

7. A shipping rack according to claim 6 wherein said means for suspending said side board comprises a flexible suspending member secured thereto, slot means on said side structure for engagement by the other end of said flexible member and means including said side rail for preventing disengagement of said flexible member from said slot means.

8. A shipping rack according to claim 1 further characterized by said guide member extending through and beyond at least one of said pair of posts.

9. A shipping rack of the four-sided open framework type having a base frame of fixed dimensions, structure composing each one of a pair of opposite sides of said rack comprising a pair of vertical posts carried by and projecting above said base frame, a guide member rigidly connecting said pair of posts above said base frame, said guide member being formed from I-section stock to provide a pair of opposed channel shaped guideways, a corner post, an extension member supported by said guide member, said extension member being formed by a pair of channel section members secured to said corner post in spaced back-to-back relation, said extension channel members being dimensioned for sliding engagement in the guideways of said guide member, means for connecting said extension member to said guide member in any one of a number of positions therealong whereby the length of each of said pair of rack sides can be varied, said connecting means comprising rows of alignable apertures formed in said guide and extension members and fastening means insertable in said apertures, means for forming a third side of said rack perpendicular to said

pair of sides, said side forming means including a rail and means for detachably connecting said rail to the said corner post of said pair of sides when the length of said pair of sides is equal.

10. A shipping rack according to claim 9 further characterized by said pair of vertical posts each being formed of a four-sided tubular member and wherein said guide member extends through said tubular post between two sides thereof, and wherein the other two sides thereof straddle said extension member.

11. A shipping rack of the four-sided open framework type having a base frame of fixed dimensions, structure composing each one of a pair of opposite sides of said rack comprising, a pair of vertical posts carried by and projecting above said base frame, a pair of vertically spaced guide members rigidly connecting said pair of posts above said base frame, said guide members each having a pair of opposed channel-shaped guideways, a corner post, an extension member supported by each of said guide members, said extension members each being formed by a pair of channel section members secured to said corner post in spaced back-to-back relation, said extension channel members being dimensioned for sliding engagement in the guideways of said guide members, means for connecting said extension members to said guide members in any one of a number of positions therealong whereby the length of each of said pair of rack sides can be varied, said connecting means comprising rows of alignable apertures formed in said guide and extension members and fastening means insertable in said apertures, means for forming a third side of said rack perpendicular to said pair of sides, said side forming means including a pair of rails, and means for detachably connecting each of said rails to the said corner post of each of said pair of sides when the length of said pair of sides is equal.

12. A shipping rack according to claim 11 wherein said means for detachably connecting said rails to each of said corner posts comprises a pin extending vertically above each of said extension members and an aperture formed adjacent each end of said rails for engagement by said pin, and further characterized by said corner posts each including a vertical surface extending parallel to said third rack side, said surface being spaced from the center of a pin a distance slightly greater than the distance between the center of said aperture and the outer face of said side rail.

13. A shipping rack according to claim 12 further characterized by each of said corner posts being provided with a notch in the said vertically extending surface thereof, said notch being located above the lower of said extension members a distance greater than the length of the said pin which projects thereabove, and said posts having a second vertical surface spaced inwardly from said notch a distance slightly greater than the width of said side rail.

14. A shipping rack according to claim 11 further characterized by said side forming means including a board having a width greater than the spacing between said side rails, and means for suspending said board between the corner posts of said pair of sides inwardly of said side rails.

15. A shipping rack according to claim 14 wherein said means for suspending said board comprises a pair of chains, each chain being connected at one end to said board and means for detachably connecting the other end of each chain to one of said posts.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,877,602 March 17, 1959

Einar R. Larsen

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 26, for "Serial No. 650,659" read -- Serial No. 640,659 --.

Signed and sealed this 7th day of July 1959.

(SEAL)
Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents