Dec. 5, 1933. V. WILLOUGHBY 1,937,615

SHIPPING CONTAINER

Filed July 22, 1931 4 Sheets-Sheet 1

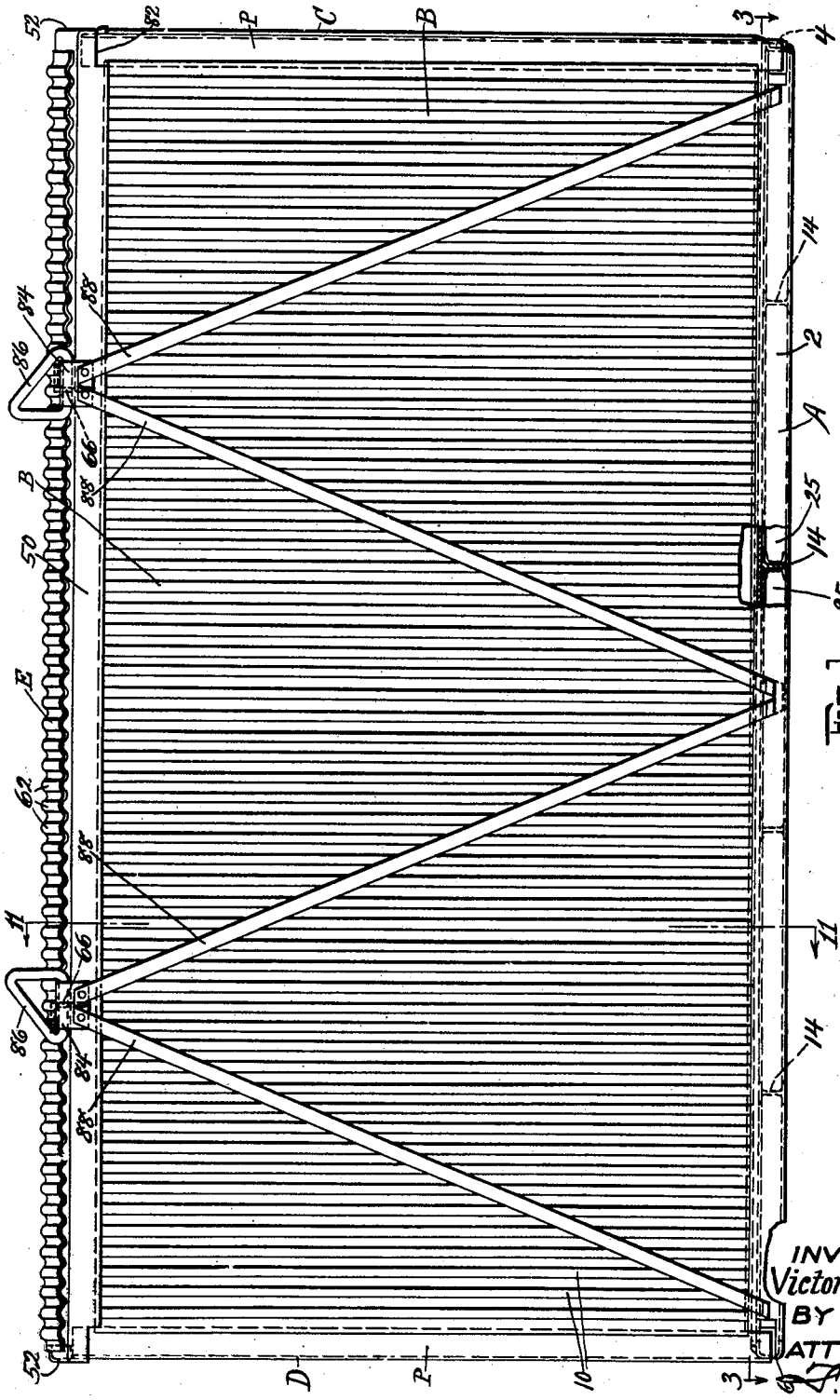


Fig. 1.

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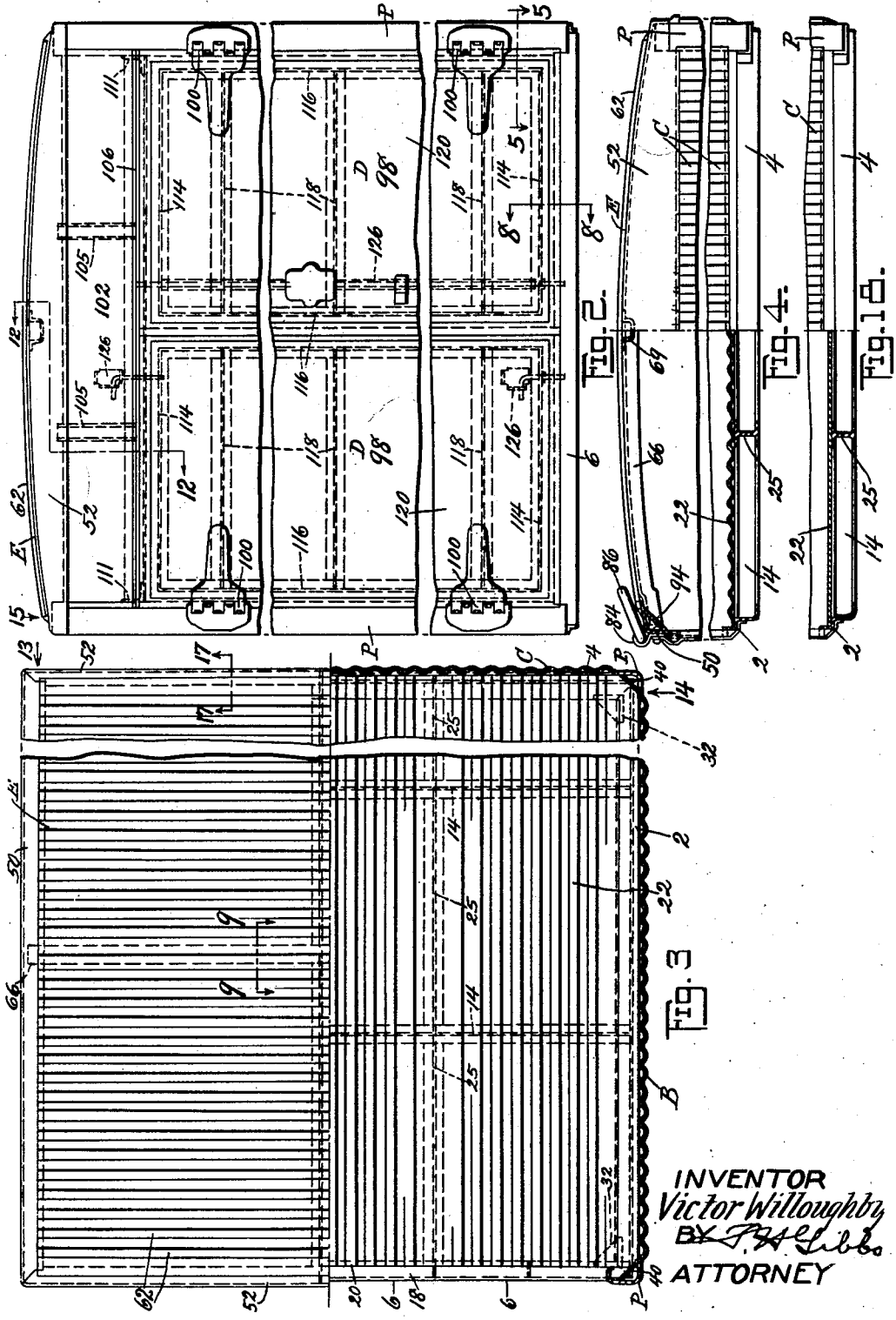


Fig. 2.

Fig. 4.

Fig. 10.

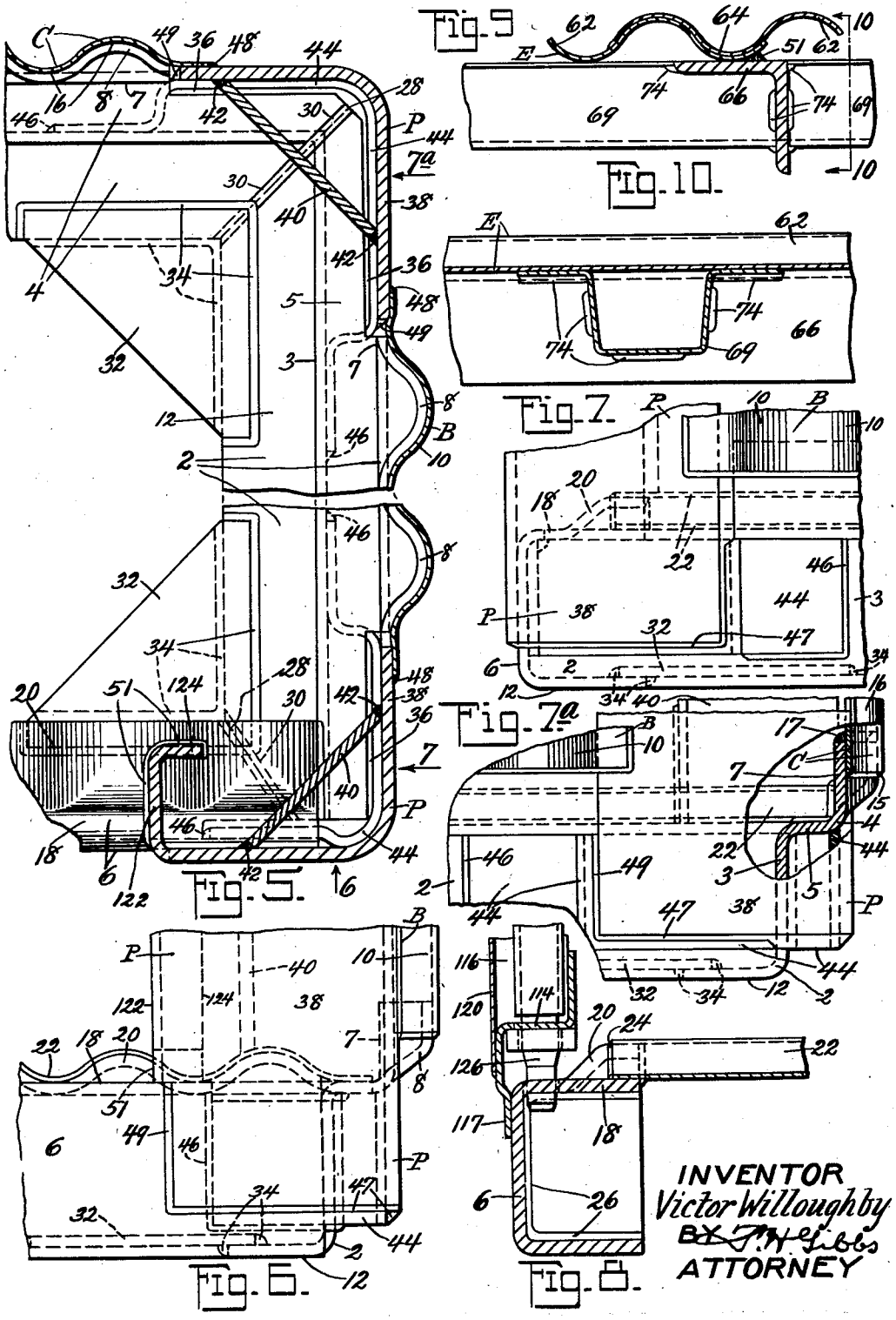
Fig. 3

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SHIPPING CONTAINER

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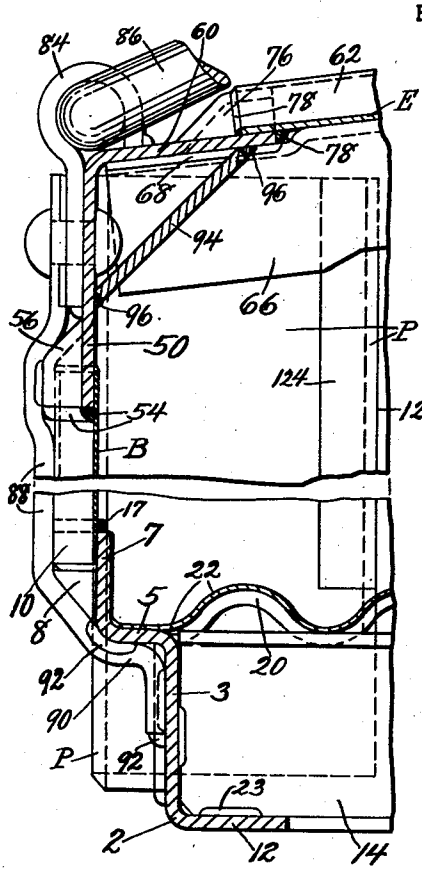


Fig. 11.

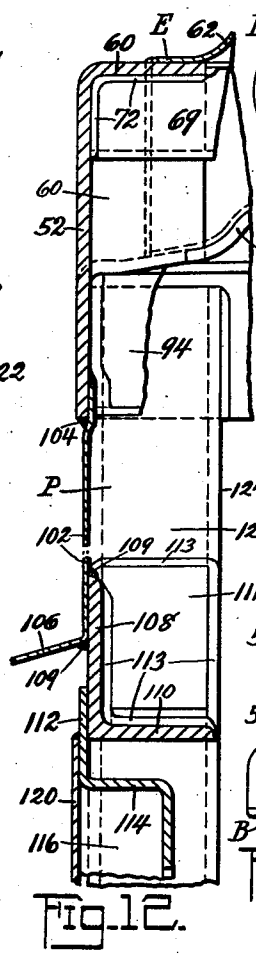


Fig. 12.

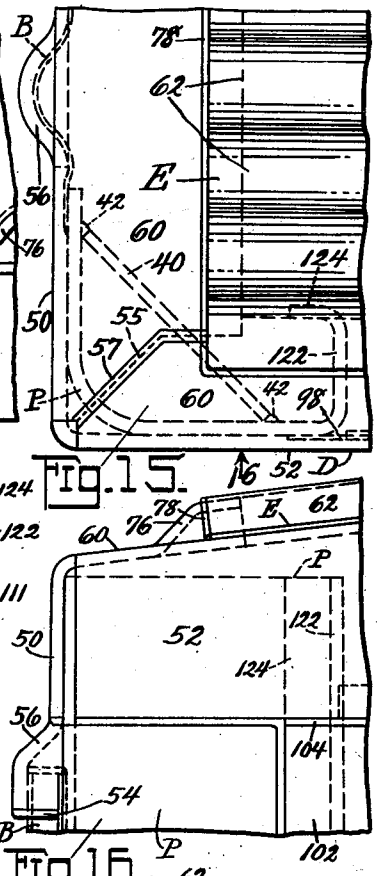


Fig. 15.

Fig. 16.

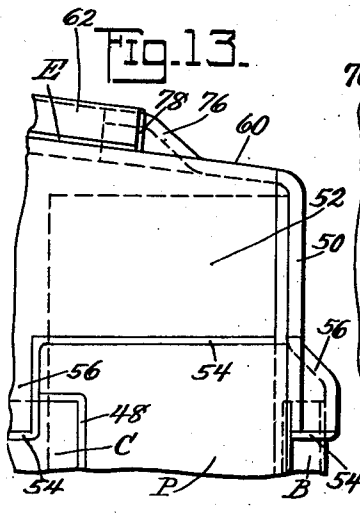


Fig. 13.

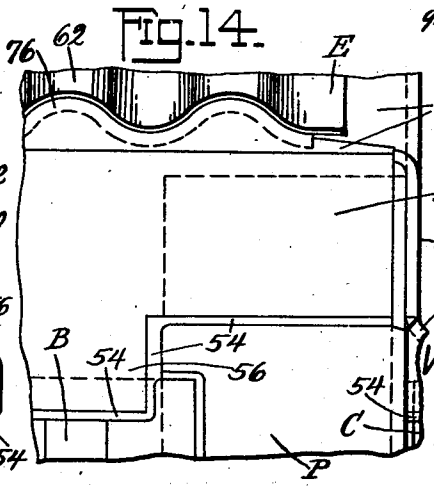


Fig. 14.

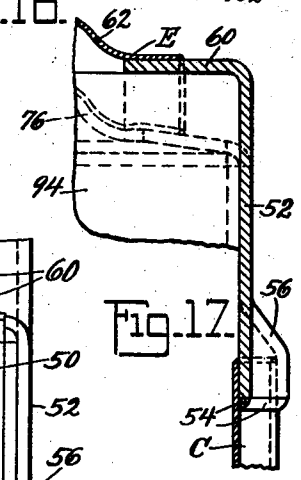


Fig. 17.

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Patented Dec. 5, 1933 1,937,615

UNITED STATES PATENT OFFICE

1,937,615

SHIPPING CONTAINER

Victor Willoughby, Ridgewood, N. J., assignor to American Car and Foundry Company, New York, N. Y., a corporation of New Jersey

Application July 22, 1931. Serial No. 552,374

16 Claims. (Cl. 105—366)

This invention relates generally to containers and has particular reference to shipping containers for use with railway cars such as gondola or flat cars for the storage and transportation of fractional car lots of merchandise.

One object of this invention is the provision of a shipping container formed of metal and including a frame, the elements of which are provided with integral attaching portions for securing the container walls, roof and floor sheets.

Another object of this invention is the provision of a container of the character described having a base comprising a skeleton frame formed of pressed metal sections and transversely and longitudinally extending frame stiffeners or floor beams.

A still further object of the present invention is to provide a container formed of metal parts united by welding to produce a unitary integral construction, the container being provided at one end with doors forming a part of one of the end walls.

Other objects and advantages of this invention will be apparent from the following description taken in conjunction with the accompanying drawings in which:

Figure 1 is a side elevation of the container, certain parts being shown in section.

Fig. 2 is a broken end view of the container at the front end thereof.

Fig. 3 is a view partly in top plan and partly in section on the line 3—3, Fig. 1, the section showing the interior of the container.

Fig. 4 is a broken view, partly in end elevation and partly in section, showing the rear end of the container.

Fig. 5 is a sectional view taken on the line 5—5, Fig. 2, with the floor sheet omitted.

Fig. 6 is a fragmentary elevation of a portion of the container, the view being taken in the direction of the arrow "6", Fig. 5.

Fig. 7 is a fragmentary view of a portion of the container, the view being in elevation and being taken in the direction of the arrow "7", Fig. 5.

Fig. 7*a* is a fragmentary view of a portion of the container, the view being in elevation and taken in the direction of the arrow "7*a*", Fig. 5.

Fig. 8 is a sectional view on the line 8—8, Fig. 2.

Fig. 9 is a sectional view on the line 9—9, Fig. 3.

Fig. 10 is a sectional view on the line 10—10, Fig. 9.

Fig. 11 is a sectional view on the line 11—11, Fig. 1.

Fig. 12 is a sectional view on the line 12—12, Fig. 2.

Fig. 13 is a fragmentary view in elevation, showing a portion of the container, the view being taken in the direction of the arrow "13", Fig. 3.

Fig. 14 is a fragmentary view in elevation, showing a portion of the container, the view being taken in the direction of the arrow "14", Fig. 3.

Fig. 15 is a fragmentary elevation of a portion of the container, the view being taken in the direction of the arrow "15", Fig. 2.

Fig. 16 is an elevation of a portion of the container, the view being taken in the direction of the arrow "16", Fig. 15.

Fig. 17 is a sectional view on the line 17—17, Fig. 3, and

Fig. 18 is a view partly in elevation and partly in section showing a modification of the container, the section showing a flat floor sheet.

Referring now more particularly to the drawings, the container of the present invention comprises generally a base indicated at A, side walls B, rear end wall C, a front end wall D and a roof E, all formed of metal and united to form a strong and rugged construction in a manner hereinafter more clearly pointed out. The base A comprises a skeleton frame formed of pressed metal side and end sills reinforced and stiffened by suitable longitudinal and transverse stiffeners or floor beams, and as shown clearly in the drawings, the side sills, which are indicated at 2, are substantially identical with the end sill 4 at the rear end of the container, as shown in Fig. 7*a*, while the end sill 6 at the front end of the container differs in construction from the side sills 2 and the rear end sill 4; the front end sill 6 being shown in section in Fig. 8 and the construction thereof being more clearly described hereinafter. As before mentioned, the side and end sills are formed of pressed metal and the side sills, as shown in Fig. 11, are substantially Z-shape in form and are arranged with their webs 3 vertically positioned and the upper chords 5 of said sills horizontally and outwardly extended and provided with vertical flanges 7, corrugated vertically as at 8 to fit complemental corrugations 10 formed vertically in the side walls B. The lower chords 12 of the side sills extend inwardly to support the transverse base stiffeners or floor beams 14, which latter, in the instance shown, are I-beams, a cross section thereof being shown in Fig. 1. The rear end sill 4 is similar in construction to the side sills and hence the

same reference characters are applied thereto, the vertical corrugations in flange 7 fitting the complemental vertical corrugations 16 in the rear end wall C, as shown clearly in Fig. 7*a*. The side sills and end sill 4 are connected to their adjacent container walls B and C at the interengaged corrugations by being welded as at 15. Further, the flanges 7 are welded to the inner surfaces of the side walls and end wall C, as shown at 17.

The end sill 6 at the front end of the container comprises a pressed metal channel the upper flange of which defines a threshold plate 18 and is corrugated as at 20 to cooperate with the forward end of a floor plate 22 which is supported on the upper chords 5 of the side sills 2 and rear end sill 4 and secured to said sills in any suitable manner as by welding; the threshold plate 18 supporting the forward end of the floor plate 22 and the corrugations in the latter fitting over the corrugations 20 in the threshold plate. The threshold plate and floor plate are preferably connected to form a unitary construction by means of welding as shown at 24 in Fig. 8.

The transverse floor beams 14 may be and preferably are welded to the side sills as shown at 23, see Fig. 11, while the longitudinal beams indicated at 25 herein extend between adjacent transverse beams and between the end sills and the adjacent transverse beams and preferably are welded to the end sills as shown at 26 in Fig. 8 and their opposite ends are welded to the adjacent transverse floor beams.

Near the ends of the side sills 2 and end sill 4 the vertical flanges 7 thereof are removed and the adjacent corners of adjacent side and end sills are mitered as shown at 28 and welded together as at 30 (see Fig. 5). The lower flange of the end sill 6 at its ends is mitered to lie adjacent the adjacent mitered ends of the side sills 2 and said lower flange of sill 6 and the adjacent end sills are connected by welding in a manner similar to that just described and hence the same reference characters are applied. To further connect the side and end sills, gussets 32 are provided which are supported by the lower flanges of adjacent sills and are welded to said sills as shown at 34. The cut-away portions of sills 2 and 4 are indicated in Fig. 5 at the area 36 and this construction has been designed in order to permit connection of the corner posts P at the corners of the container as now to be described.

The corner posts P comprise angles 38 and are internally braced by plate post stiffeners 40 arranged to extend between the respective legs or flanges of the posts and said stiffeners 40 are welded to the posts as shown clearly at 42; the plates extending from the upper flanges of the sills substantialy the full length of said posts. As will be apparent the construction just described provides in effect, hollow, self-stiffened, corner posts and to secure said posts to the base A, corner clips 44 are provided (see Fig. 5) which are substantially angle shaped to bear against the webs of adjacent side and end sills and are welded to said webs at 46; said clips also resting against the inner surfaces of the corner posts and being welded to the latter and to the upper flanges of the sills at the before mentioned areas 36, thus forming a strong connection. In addition to the weld at 36, the corner posts 38 at their lower edges are welded to the clips 44 as shown at 47 and at their side edges to the clips, as shown at 49. At the front end of the container the corner posts P are welded to the upper flange of the end sill 6 as shown at 51.

The side edges of the side walls B and the rear end wall C lap the corner posts and are welded thereto as shown at 48 in Fig. 5.

Secured to the upper edges of the side and end walls are angle shaped side plates 50 and end plates 52, the horizontal legs of which project inwardly as shown clearly in Fig. 11. The lower portions of the vertical legs of the side plates 50 and the end plates 52 at the rear end of the container are vertically corrugated as shown at 56 to fit the corrugations of the side walls and rear end wall (see Figs. 11 and 17). The side walls and end wall at the rear end of the container are connected to the respective side plates and end plate by welding as shown at 54. As clearly shown in Fig. 15 the adjacent edges of adjacent side and end plates are complementally formed as by being mitered at 55 and are welded together as shown at 57. The horizontal flanges of the side and end plates are indicated at 60 and extend inwardly to support the roof E which is formed of plate metal corrugated as at 62, the corrugations extending transversely of the container as shown in Fig. 3. The roof E may be formed, of course, of a single plate if desired, but in the instance shown the roof is formed of a plurality of corrugated plates, the adjacent edges of said plates being overlapped as shown at 64 (see Fig. 9) and the roof at the juncture of adjacent roof sheets is suitably stiffened by means of angle shaped carlins 66 extending transversely of the container and welded at their ends as at 68 to oppositely arranged side plates 50 and to the roof as at 51. A ridge pole 69 is provided which extends in sections between the end plates, the ridge pole being a flanged U section and having its ends underlying the horizontal flanges and the end plates are welded thereto as at 72. The ridge pole 69 is connected to the carlins 66 by welding as at 74. As shown clearly in Fig. 11, the horizontal flanges 60 of the side plates 50 are provided with corrugations 76 which cooperate with the corrugations 62 of the roof, and the roof is preferably welded to the side plates and to the corrugations forming parts thereof, as shown at 78. In manufacturing the side plates and the rear end plate it has been found practical to corrugate the entire plate from end to end, but inasmuch as the corner posts are not corrugated, the side plates and rear end plate have portions of the ends thereof removed as shown at 82, Fig. 1, in order to present a smooth surface overlying the corner posts. Secured to the side plates are oppositely arranged ears 84 carrying lifting loops 86 adapted to be engaged by suitable tackle whereby to lift the container and move the same about and for reinforcing the container and for relieving the body of stresses incident to lifting of the container, straps 88 are provided which are connected to the ears 84 and diverge downwardly to the base A, the straps having their lower ends angled as at 90 to underlie the upper chords 5 of the side sills and to rest against the webs 3 of said sills, as shown clearly in Fig. 11. The straps 88 are connected to the sills by being welded thereto as shown at 92. By the arrangement just described it will be obvious that lifting stresses are transmitted from the side plates directly to the base A, thus relieving the side walls and in fact substantially the entire body portion of he container of such lifting stresses. If desired, the straps may of course be welded to the side walls B.

The present invention also contemplates a fur-

ther strengthening means for the container and as shown clearly in Fig. 11, the respective legs or flanges of the side plates are internally braced by means of diagonally extending side plate stiffeners 94 which are welded as at 96 to said legs; these braces 94 serving as a strut between the lifting ears 84 on each side of the container. In view of the extension of the carlins 66 beneath the horizontal legs 60 of the side plates, the braces 94 are formed of three sections which extend respectively from the ends of the container to the carlins 66 and between said carlins as shown in Fig. 11. This applies to both side walls of the container.

At the front end of the container the front end wall D includes doors 98 hingedly connected as at 100 to the end corner posts as shown in Fig. 2, and a door header 102 which underlaps the lower edge of the adjacent end plate 52 and is welded to the latter, as shown at 104, the door header extending from corner post to corner post and having its lower end outwardly flanged as at 106 to define a water shed. Vertical braces 105 are secured to the header 102 and extend from the adjacent end plate to which they are welded to an angle shaped door frame member 108 secured as by welding at 109 to the lower portion of the header 102. The horizontal flange 110 of member 108 projects inwardly, and the vertical leg thereof is adapted to be engaged by the upwardly extending vertical leg 112 of a Z-shaped door member 114 forming the top rail of the door frame, the vertical leg of member 108, therefore, forming a door stop. The member 108 extends between the corner posts and is connected thereto by angle clips 111, welded as at 113 to said corner posts and door frame member. The doors 98 each comprise a frame including spaced vertical stiles 116 and the before mentioned top rail 114 and a bottom rail similar in form to the top rail and so arranged that the downwardly extending vertical flange 117 thereof may engage the web of the channel end sill 6, as shown clearly in Fig. 8. The door frames are each stiffened by transverse members 118 (see Fig. 2) and the door frames are covered by plates 120. The doors are adapted to close a door opening formed in the front end of the container and the doors are framed by door posts formed integral with the adjacent corner posts P, the latter having one edge of each thereof inturned as shown at 122 and then rearwardly bent as at 124 to define said door posts. The latter extend from the threshold plate 18 upwardly adjacent the lower edge of the door header and if desired the door posts at the top and bottom ends thereof may be welded to the header and threshold plate, respectively.

As clearly shown in Fig. 2, suitable locking means 126 are provided for the doors, the same being of any preferred or desired form.

Fig. 18 discloses a slight modification in the form of the container in which figure the floor sheet 22, instead of being corrugated as disclosed in Fig. 4, comprises a flat metal sheet supported by the upper flanges of the sills.

From the description herein it is believed that the construction of the container forming the subject matter of the present invention will be fully apparent to those skilled in the art. The drawings herein illustrate only one embodiment of the invention and it is to be understood that they are for illustrative purposes only and various changes in the form and proportions of the construction shown may be made within the scope of the appended claims without departing from the spirit of the invention.

What is claimed is:

1. In a container adapted for the storage and transportation of fractional car lots of merchandise, a body including side and end walls, a base frame having side and end sills, one of said end sills being channel-shaped and including a horizontal flange forming a threshold plate and the remaining end sill and said side sills being substantially Z-shaped with the webs thereof vertically arranged and the lower flanges inwardly extended and the upper flanges thereof provided with upwardly projecting extensions constituting attaching portions for connection with adjacent side and end walls.

2. In a container of the kind described, side walls and a rear end wall, said walls being corrugated to the lower edges thereof, a base frame for the container including side sills and end sills, the said side sills and rear end sill being provided with corrugations interfitted with and welded to the corrugations of said walls, doors normally closing the front end of the container, and a front end sill connected to the side sills and defining a threshold plate.

3. A base frame for a container of the kind described comprising Z-shaped side sills and a rear end sill, the webs of said sills being vertically arranged, integral attaching portions formed with the upper flanges of the said sills and arranged substantially parallel to the webs thereof, and a channel shaped front end sill, the adjacent side and end sills being connected together at adjacent ends.

4. In a container of the kind described, a base frame comprising Z-shaped side sills, a Z-shaped rear end sill, a channel shaped front end sill, the webs of said Z-shaped sills being vertically arranged and the upper flanges of said Z-shaped sills being provided with attaching portions arranged substantially parallel to the webs thereof, the adjacent corners of adjacent sills being mitered and welded together, and gussets welded to adjacent side and end sills for connecting the same.

5. In a container, a base comprising side sills, a rear end sill, said side sills and rear end sill being substantially Z-shaped with the webs thereof vertically arranged, an inwardly facing channel front end sill, gussets connecting adjacent side and end sills, corner posts lapping adjacent side and end sills, side walls extending between adjacent corner posts and welded thereto, a rear end wall extending between corner posts at the rear end of the container, said side walls and rear end wall having corrugations adjacent their upper and lower ends and said side sills and rear end sill being corrugated with the corrugations thereof interfitted with and welded to the corrugations of the respective side walls and rear end wall, a floor supported by said sills, doors hingedly connected to the corner posts at the front end of the container and defining the front end wall of the container, vertically corrugated side plates interfitted with and welded to the corrugations of the side walls at the upper edges of the latter, a rear end plate corrugated to interfit with the corrugations at the upper edge of the rear end wall, said side plates and rear end plate being welded to the side walls and rear end wall, a front end plate, and a corrugated roof supported by the side plates and end plates with the corrugations transversely arranged and interfitted with and welded to the corrugations of the side plates.

6. In a container of the kind described, a base comprising a frame formed of side sills and a rear end sill formed of Z sections the webs of which are vertically arranged, and an inwardly facing channel front end sill, a floor supported by the upper flanges of side sills, and the upper flange of said front end sill defining a threshold plate, attaching elements projecting from the upper flanges of Z-shaped sills, connected stationary side walls and a rear end wall lapping the attaching portions of the Z-shaped sills and connected thereto, doors forming a part of the front end wall, side plates and end plates secured to the respective walls of the container adjacent the upper edges thereof and having inwardly projecting supporting flanges, internal brace members for the side and end plates, and a roof supported by said inwardly projecting supporting flanges.

7. In a container of the kind described a base formed of connected side and end sills each having horizontally arranged supporting flanges and the supporting flange of one of end sills being corrugated, a floor supported on said flanges and provided with corrugations arranged longitudinally of the container and interfitted with and welded to the corrugations of the end sill, corrugated attaching portions projecting from the upper flanges of the side sills and rear end sill, corner posts lapping adjacent side and end sills, side walls welded to adjacent corner posts and having corrugated portions interfitted with and welded to the corrugations of the attaching portions of the side sills, corrugated angle shaped side plates having one leg of each thereof lapping the side walls and the latter having corrugations interfitted with and welded to the corrugations of the side plates, angle shaped end plates connected to the side plates and having one leg thereof lapping the end walls, the rear end wall being corrugated adjacent its upper edge and the rear end plate having corrugations interfitted with and welded to the corrugations of said rear end wall, and a roof supported by the side plates and end plates and provided with corrugations arranged transversely of the container and interfitted with and welded to the corrugations of the side plates.

8. In a container of the kind described, a base comprising a reinforced frame including side and ends sills each having horizontally arranged supporting flanges and the side sills and rear end still having corrugated attaching elements projecting from the supporting flanges, a corrugated floor mounted on the supporting flanges, side walls lapping the attaching elements and provided with corrugations interfitted with and welded to the corrugations of the side sill attaching elements, a stationary end wall connected to the side walls and having its lower edge corrugated and interfitted with and welded to the corrugations of said rear end sill, doors forming a part of the front end wall, the front end sill defining a threshold plate for the door opening connected side and end plates secured to the respective side and end walls, and a roof mounted on the side and end plates and welded thereto, said roof being provided with corrugations arranged at substantially right angles to the direction of the corrugations of the floor sheet.

9. In a container, a base comprising connected side and end sills having horizontally arranged upper and lower supporting flanges, a floor supported on the upper flanges, the side sills and one end sill having integral attaching means projecting from the upper supporting flanges, corner posts lapping adjacent side and end sills, stationary side walls connected to adjacent corner posts and to the beforementioned attaching means, a stationary rear end wall lapping a corner post at the rear end of the container and connected thereto and to the attaching means at the rear end sill, the corner posts at the front end of the container having flanged portions defining door posts the lower ends of which contact with and are attached to the front end sill, doors hinged to the corner posts at the front end of the container, side plates and end plates secured to the side and end walls and having inwardly projecting supporting flanges, internal side and end plate stiffeners, and a roof mounted on and supported by the side and end plate supporting flanges.

10. In a container, a body comprising connected side and end walls the side walls and one end wall having corrugations adjacent their upper and lower edges and the opposite end wall having a door opening formed therein, doors normally closing the opening, connected side sills and a rear end sill having horizontally arranged upper supporting flanges and corrugated attaching portions projecting therefrom in interfitting relation with the side walls and rear end wall and welded thereto, the front end sill having its upper flange corrugated, a corrugated floor sheet mounted on and welded to the supporting flanges and at its forward end interfitted with and welded to the corrugations of the front end sill, the latter defining a threshold plate at the door opening, and a roof connected to the upper edges of the side and end walls.

11. In a container, means defining a door opening in the front end thereof comprising a channel end sill providing a threshold plate and lower door frame member, corner posts secured to the sill and having internal flanges defining door posts the lower ends of which contact and are connected to the end sill, a door header extending between and secured to the corner posts, an angle shaped upper door frame member extending between the door posts and secured to the header, the vertical leg of said member defining a door stop, and angle clips connecting the door frame member and corner posts.

12. In a container of the kind described, an end wall structure comprising a metal panel formed with vertical corrugations extending to the upper and lower edges thereof, an end plate having its lower edge conforming with the corrugated configuration of the upper edge of the panel and interfitted with and secured to the latter, and a Z-shaped end sill having an upstanding flange to which the lower edge of the panel is secured, said flange being vertically corrugated to conform with the corrugated configuration of the lower edge of the panel and having its corrugations interfitted with and secured to the corrugations of said panel.

13. In a container of the kind described a base frame structure comprising side sills and a Z-shaped end sill, an end wall structure for said container comprising a metal panel formed with vertical corrugations extending to the upper and lower edges thereof, the end sill having an upstanding vertical flange formed integral therewith and provided with vertical corrugations interfitted with and secured to the corrugations at the lower edge of said wall, an upper frame structure for the container including connected angle-shaped side and end plates, the said

end plates having their vertical flanges vertically corrugated with the corrugations thereof interfitted with and connected to the corrugations at the upper edge of said wall.

14. In a container of the kind described, a base frame comprising connected side and end sills, the side sills and one of said end sills being Z-shaped in section and the other end sill comprising a channel, the Z-shaped sills each having an upstanding vertically corrugated flange, side walls having corrugations extending to the upper and lower edges thereof, the corrugations at the lower edges of said side walls being interfitted with and secured to the corrugations of said upstanding flanges, an end wall having vertical corrugations extending to the upper and lower edges thereof with the corrugations at the lower edge thereof interfitted with and connected to the corrugations on the upstanding flange of the adjacent end sill, connected side and end plates of angle shape with their horizontal flanges inwardly extended, the horizontal flanges of said side plates being corrugated and the vertical flanges of the side and end plates being vertically corrugated and interfitted with and connected to the corrugations of the side walls and end wall, a roof sheet supported by the horizontal flanges of the side and end plates, said roof sheet being provided with corrugations the ends of which are interfitted with and secured to the corrugations on the horizontal flanges of the side plates, the said channel-shaped end sill being inwardly facing and having its upper flange corrugated to define a threshold plate, a corrugated floor sheet supported by the side and end sills and having the corrugations at one edge thereof interfitted with and secured to the corrugations of the channel end sill, and means secured to said container adapted to be engaged by a crane or the like whereby the container may be lifted and moved about.

15. In a container for fractional car lots of merchandise, a base comprising connected side and end sills each having horizontally arranged supporting flanges, the supporting flange of one of the end sills being corrugated, and a metal floor supported by said flanges and interfitted with and connected to the corrugations of said end sill.

16. In a container of the kind described, an end sill constituting a threshold plate and provided with corrugations, and a corrugated floor supported by said end sill and having its corrugations interfitted with and welded to the corrugations of said sill.

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