Sept. 1, 1964 J. L. LANGSTON 3,146,729

LOADING SYSTEM AND SPACERS

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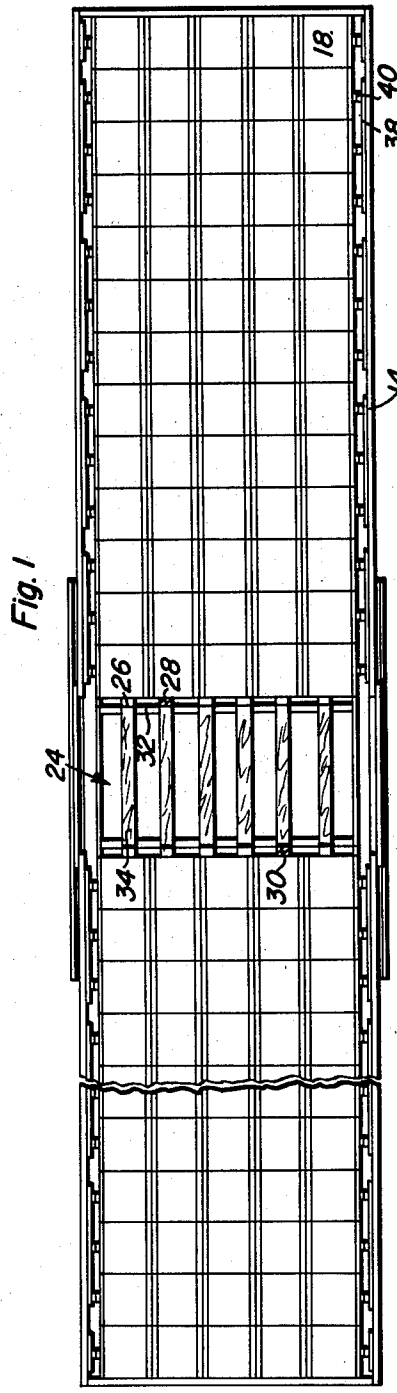


Fig. 1

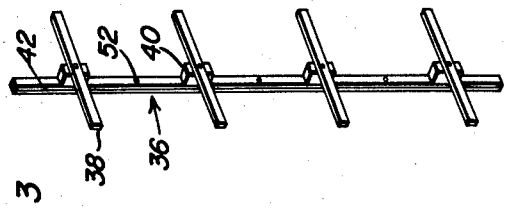


Fig. 3

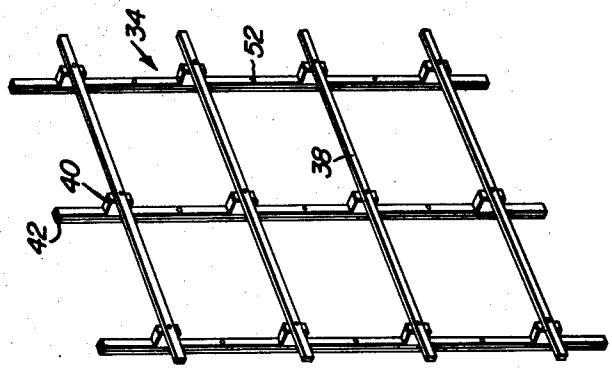


Fig. 2

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Fig. 4

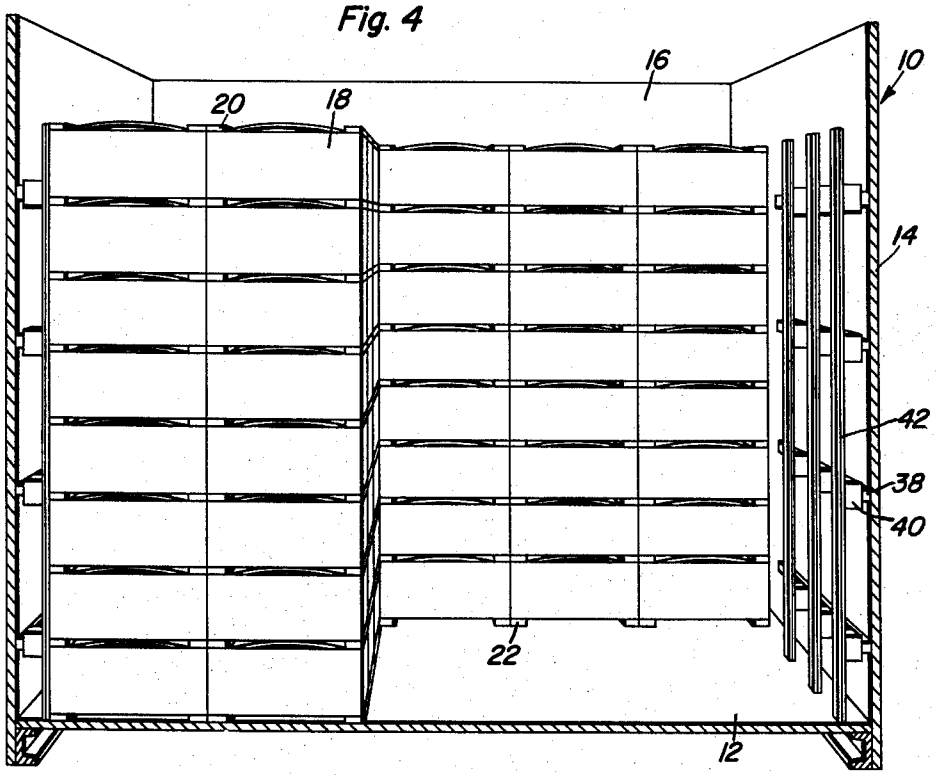
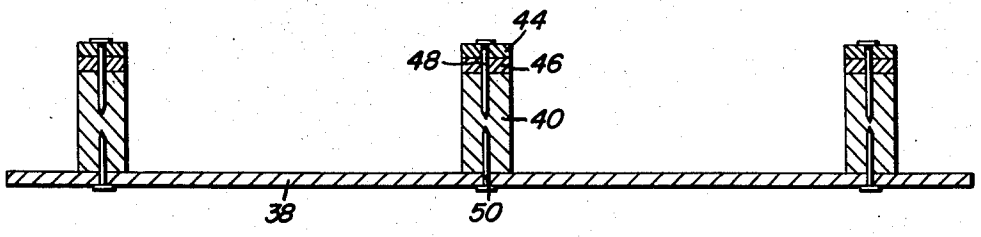


Fig. 5



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LOADING SYSTEM AND SPACERS

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The present invention generally relates to a novel manner of loading a load carrying body such as but not limited to a refrigerated railroad car together with novel spacer frames employed when loading the load carrying space for the purpose of extensively reducing material cost over conventional loading methods and increasing the speed and facility of loading which method is especially useful in cold storage or refrigerated shipment of various articles packaged in boxes generally known as lugs such as are employed for transporting table grapes.

The primary object of the present invention is to provide a frame unit employed in a novel method of loading a refrigerated load space such as a refrigerated railroad car which will eliminate the slack at the walls of the car thus maintaining a uniform temperature for longer periods of time thus insuring better quality of arrivals for the perishable commodities.

Still another object of the present invention is to provide a load spacer in accordance with the preceding object which may be installed as loading progresses or which may be initially set up or installed for loads prior to loading thereby greatly facilitating the installation of the spacer frame.

Another important object of the present invention is to provide a spacer frame in accordance with the preceding objects which is quite simple in construction, and employs very little material and no metal except for a very few nails and the dimensions of the frame may be altered for lugs or boxes of greater or lesser outside heights thereby rendering the present invention quite versatile in use.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a schematic top plan view of a center braced, pressure squeezed load employing the method of the present invention together with the load spacer frame;

FIGURE 2 is a perspective view of a load spacer frame unit having three vertical load engaging strips;

FIGURE 3 is a perspective view of a spacer frame unit having a single vertical load engaging strip;

FIGURE 4 is a perspective view of the interior of the load carrying body illustrating the position of the spacer frame unit and the orientation of the lugs or boxes therein; and

FIGURE 5 is a transverse sectional view of the spacer frame unit illustrating the relationship of components thereof.

Referring now specifically to the drawings, the numeral 10 generally designates the load carrying body which is of conventional construction and is a center loading refrigerated railroad car or the like.

The details of the load carrying body are not important to the present invention except as to the orientation of the floor 12, side walls 14 and end walls 16. Suitable mechanism is provided for supplying chilled or cooled air to the interior of the load carrying compartment. The present invention is primarily adapted for use with boxes 18 used in transporting table grapes. Such boxes are commonly referred to as lug boxes or

lugs and have been standardized as to their height, width and length. The lug boxes 18 are stacked eight high in each vertical row as illustrated in FIGURE 4 and there are five rows disposed transversely of the load carrying body 10. As illustrated in FIGURE 1, there are twenty-six stacks disposed longitudinally of the load carrying body 10 thus making a total of 1,040 lug boxes 18 stored in the load carrying body or compartment 10. The lug boxes 18 form no part of the present invention in that they are conventionally constructed and are provided with usual cleats 20 along the top end edges thereof for spacing the lug boxes 18 properly when stacked vertically to prevent the grapes from being mashed. Also, each of the lug boxes is provided with cleats 22 on the bottom thereof which serve the same purpose as the cleats on the top and also space the lug boxes from the bottom 12 when disposed thereon. The conventional dimensions of a lug box 18 is an outside height of 7⅛ inches, width 14 inches and length 17½ inches. The inside length of a standard railroad car is 33 feet 2¾ inches or 398¾ inches. The twenty six box rows of 14 inch lug boxes occupy a total space of 364 inches thus leaving a center space of 34¾ inches. The lug boxes are loaded from the ends toward the center and when the loading has been completed, the loads are pressure squeezed and a center gate or center brace is installed in the doorway of the car. The center gate is required since no through or solid loads are authorized for grapes in that they all must be center braced and divided in accordance with regulations. The center gate or center brace is generally designated by numeral 24 and includes a plurality of posts or uprights 26 including two elongated uprights 28 and 30 which extend from the bottom to the top of the load carrying body and may be attached to the top of the load carrying body as desired. Interconnecting the upright or vertical members are a plurality of stringers 32 extending perpendicularly thereto and which are vertically spaced in relation to each other. Interconnecting the stringers 32 and extending between the uprights 26 in end-abutting engagement therewith is a plurality of horizontal spreaders 34 with there being a plurality of said spreaders engaging and resting on each transverse stringer 32. Each of the transverse stringers 32 may be considered cross bars and may conveniently be one inch by four inch members of a suitable length. There are three pairs of cross bars 32. The uprights 26, 28 and 30 may be conveniently two inch by four inch wood members and the spreaders 34 may also be two inch by four inch members. The over-all longitudinal dimension of the center gate or center brace is approximately 34¾ inches depending upon the exact interior dimension of the load carrying body.

In the spaces between the side walls 14 and the lug boxes 18 is a plurality of frame units 34 and 36. The frame units 34 and 36 are the same as to their details of construction except that the frame unit 34 is for engaging three stacks of lug boxes 18 while the frame unit 36 is for engaging a single stack of lug boxes. Thus, in an arrangement as illustrated in which 26 stacks of lug boxes are employed, sixteen three stacks frame units 34 are employed and four single stacks frame units 36 are employed as indicated in FIGURE 1.

Each frame unit 34 includes a plurality of horizontally disposed strips 38 which may be considered car strips and which are of single thickness and serve as cross ties. The strips 38 are preferably 36 inches long and there are four strips used and each strip may be a one-half inch strip. Attached to each of the strips 38 are three spacer blocks 40 which are preferably two inch by four inch blocks that are four inches long and twelve of these blocks are needed for each unit 34.

Attached to the spacer blocks **40** are vertical laminated strips **42** which are of double thickness and include two one-half inch strips **44** and **46** secured together. The vertical strips **42** are preferably 58 inches in length and there are actually six one-half inch strips which are arranged in pairs to make three vertical strips **42**.

As illustrated in FIGURE 5, nails **48**, size 8*d* are employed and are driven in from the double strip side and will penetrate one and three eighths inches into the two by four blocks **40**. Also, nails **50**, size 5*d*, are driven into the unit from the single strip sides and the strips **44** and **46** are further secured together by nails **52**, size 5*d*, which are clinched. Also, size 5*d* nails are employed for nailing the strips **38** to the walls **14** of the load carrying body.

In assembling the frame units, the first step is to nail together the double strips **44** and **46** and the double strips are then nailed to the blocks **40** and then the single strips **38** nailed thereto.

The frame unit **36** is the same as the frame unit **34** except that a single vertical strip **42** is employed and relatively short horizontal strips **38** are employed whereby the vertical strip **42** will engage only one stack of lug boxes **18** as illustrated at the ends of the load carrying body in FIGURE 1.

When installing the spacer frame units, they may be installed in the load carrying body initially throughout the surface area of the load carrying body after which the lug boxes are loaded into the body or they may be installed as loading progresses.

Thus, with the present invention, a crosswise divided center braced load with framed units constructed from two by four blocks and car strips is employed with no metal except for nails used in assembling the frame and employed for securing the frame unit in place. The frame units are constructed for three stacks and may be cut into three parts for wall corner (single) units. The outside height of the lug boxes **18** is 7⅛ inches including the cleats and the blocks **40** in the frame units are positioned the same distance from either end of the upright strips **42** and thus will be positioned at the junctures of alternate layers of lug boxes as illustrated in FIGURE 4 and also will be positioned in the center of the ends of the lug boxes as far as the width dimension of 14 inches is concerned.

The lug boxes that are 17½ inches long are loaded crosswise with the ends facing the side walls of the load carrying body. The wall take-up frame units eliminate crosswise slack and if there is any additional crosswise slack which needs to be eliminated, this is accomplished by the application of one or more car strips nailed horizontally to the ends of the lugs vertically through the car in the same row. If desired, nine high loads may be loaded with the use of a single frame unit **36** disposed horizontally opposite the top of the ninth layer. It is pointed out that dimensions of the frame units may be altered for lugs of greater outside height or for cars of greater inside widths.

This method is primarily useful for cold storage or precooled fruit unless lugs are side cleated or unitized side slats (with cleats) are used so as to furnish air space for precooling. The loads must be pressure squeezed and center braced in order to conform with various tariff regulations and the present invention is especially adapted for use in transporting table grapes.

This concept of loading will reduce material cost by forty to fifty percent over conventional loading methods now in use and loading will be faster since it is only necessary to nail the framing units to the wall with a minimum number of relatively small nails. Further, the frame units may be installed as loading progresses or the cars can be set up for loads prior to loading. This arrangement of loads for precooled or storage fruit loaded with lugs flush and with slack eliminated at the walls of the car does actually produce a more uniform temperature for longer periods of time thus insuring better quality of perishable commodities inasmuch as the cool air may move peripherally of the load as well as horizontally through and between the various stacked lug boxes.

The extreme simplicity of the invention and the extreme economies in its construction enable the device to be readily constructed and employed in an economical manner and will provide a highly effective load spacer conforming to various tariff regulations and will be sufficiently economical to be expandable thus eliminating any necessity of return shipment.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination, a vehicle body including a floor and spaced, opposed side walls, longitudinal rows of stacks of standard lugs of similar and uniform dimensions on the floor adjacent to but in spaced parallelism with the side walls, and spacing units mounted between the lugs and the side walls and secured to the latter for positively spacing said lugs therefrom, said units comprising vertical frames including intersecting vertical and horizontal strips and spacing blocks secured therebetween at the intersections thereof for orientating same in two vertical planes, said vertical strips abutting the stacks at intermediate points and having their lower ends engaged with the floor, said horizontal strips abutting the side walls, the uppermost and lowermost blocks being equidistantly spaced from the respective ends of the vertical strips a distance approximating the height of one of the lugs and from each other a distance approximating the combined height of two of the lugs whereby said frames are invertable and reversible with the blocks orientated in all positions of the frames to laterally brace all of the lugs comprising the stacks at alternate junctures thereof.

2. The combination of claim 1, said vertical strips comprising laminations and driven fasteners securing said laminations together.

3. The combination of claim 2, together with driven fasteners securing the horizontal strips to the side walls.

4. The combination of claim 3, said vertical strips being materially spaced from each other for providing access to the horizontal strips for driving the respective fasteners thereinto.

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