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Pierce

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[54] **BOXED PRODUCE CARLOADING**

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Related U.S. Application Data

[62] Division of Ser. No. 44,942, June 10, 1970, Pat. No. 3,701,324.

[52] **U.S. Cl.** ..... **105/369 S,** 105/367, 105/369 B

[51] **Int. Cl.** **B61d 45/00,** B60p 7/10

[58] **Field of Search** ..... 105/367, 369 B, 369 S

[56] **References Cited**

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[57] **ABSTRACT**

Boxed produce load for refrigerated rail cars of the type having boxes arranged in vertical stacks and the stacks aligned in plural rows running longitudinally of the car and in which the rows have a cumulative width less than the load width of the car, means being provided to expand the load to the car load width and to support the rows against lateral displacement including a longitudinal series of opposed pairs of uprights engaging the rows and rigid elements extending between and supporting the upright pairs; the rigid elements being length adjustable to selectively transversely space the rows to occupy the full load width of the car and brace the load.

4 Claims, 3 Drawing Figures

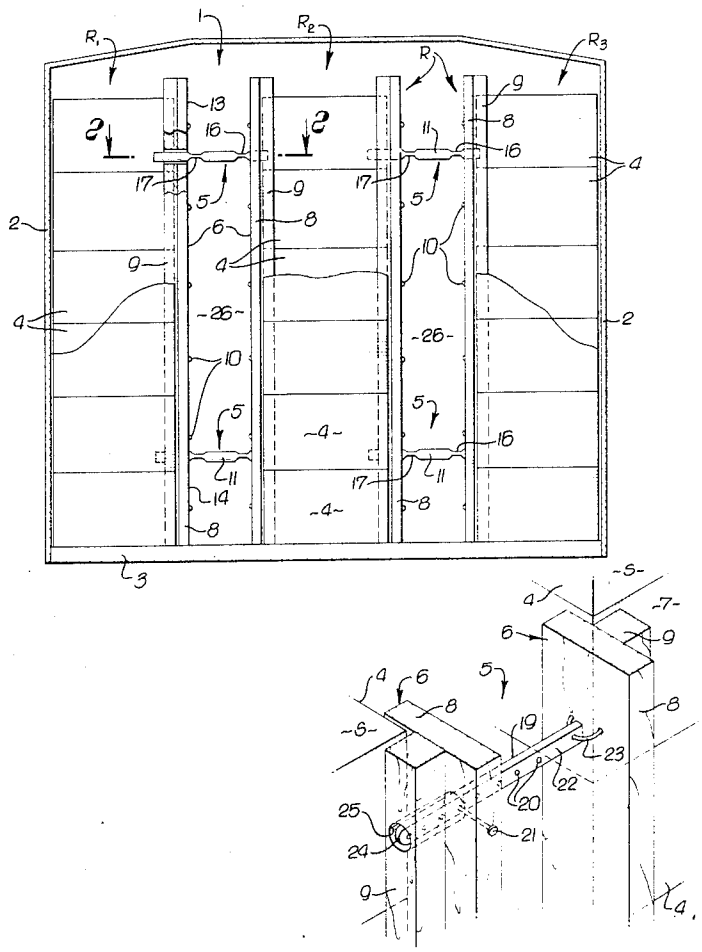


FIG. 1.

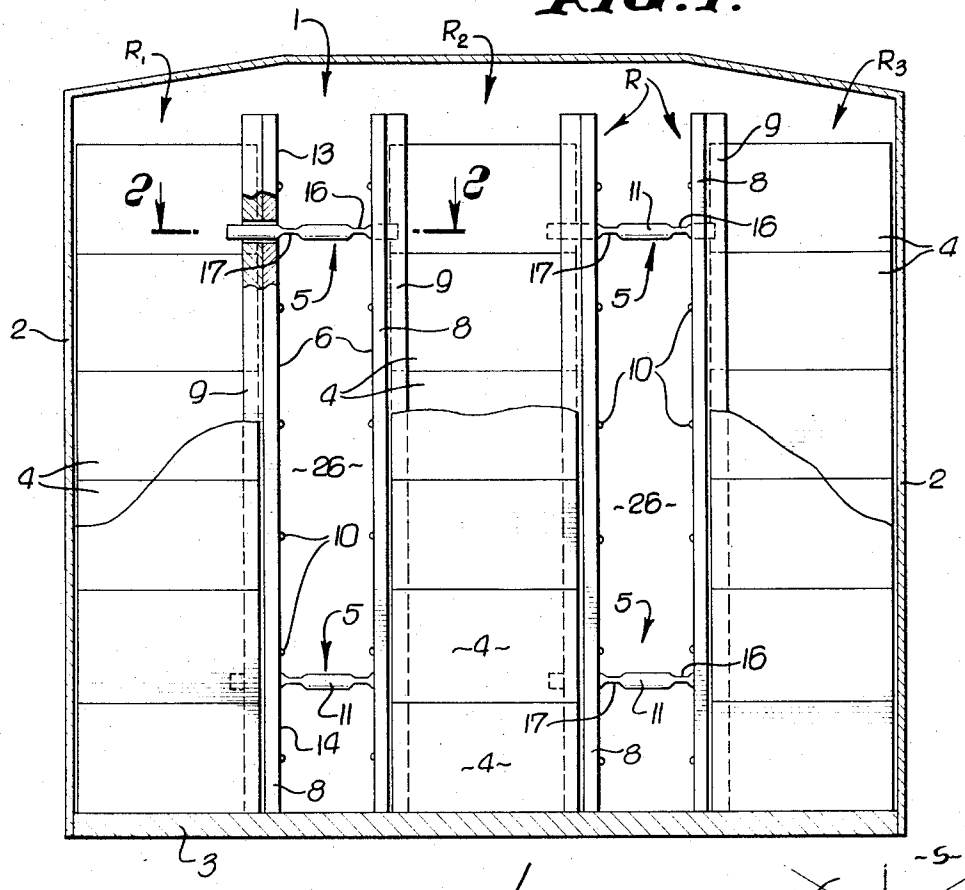


FIG. 2.

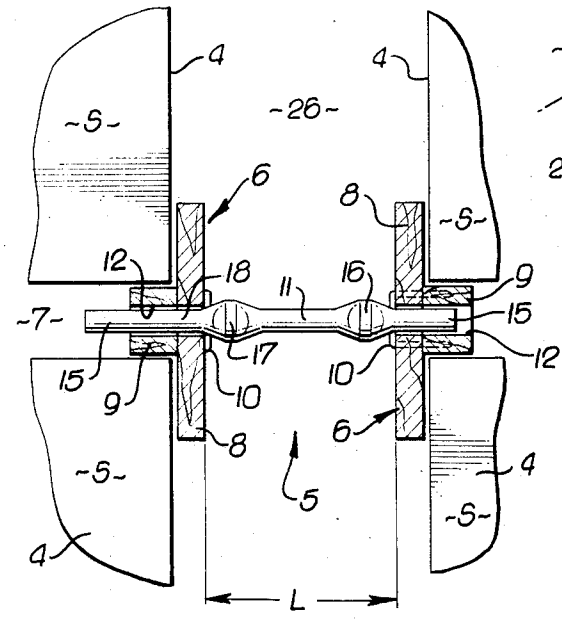
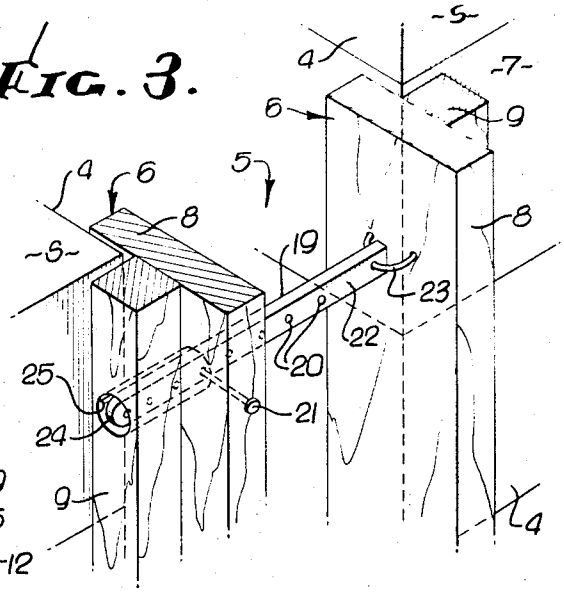


FIG. 3.



BOXED PRODUCE CARLOADING

REFERENCE TO RELATED APPLICATION

This application is a division of my copending application, Ser. No. 44,942 filed June 10, 1970, now U.S. Pat. No. 3,701,324 entitled BOXED PRODUCE CARLOADING.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention has to do with the loading of boxed produce in refrigerated rail cars and particularly with loads of produce in which boxes are arranged in vertical stacks aligned in plural rows running longitudinally of the car, the rows being squeezed longitudinally for maximum stability in shipment. More specifically, the invention is concerned with such boxed produce loads in which the cumulative width of the rows is less than the load width of the car to provide space between rows for circulation of air or refrigerating gas.

2. Prior Art

In past boxed produce loading practice, the produce boxes have been arranged in stacked rows which if spaced or separated within the car were separated between transverse rows, for air circulation. This load arrangement is satisfactory where the width of the car is a convenient multiple of the box transverse width so that multiple boxes may be wedged in rows across the car with possibly some small clearance adjacent the car walls.

Variations in car load width and a multiplicity of box dimensions for different kinds of produce requires that a form of boxed produce load be found having such adjustability as to be capable of providing adequately braced loads, sufficient air circulation between rows and an economic load capacity.

SUMMARY OF THE INVENTION

It is accordingly a major objective of the present invention to provide a boxed produce load in which adjacent longitudinal rows are spaced a distance to expand the load to fully occupy the load space and are braced there by length adjustable spacer means to form a stable load of boxes in longitudinal rows transversely spaced boxes across the car.

For achieving this objective, the invention provides a boxed produce load for refrigerated cars comprising boxes arranged in vertical stacks and aligned in plural rows running longitudinally of the car, the rows having a cumulative width less than the load width of the car and means supporting the rows against lateral displacement including box engaging uprights longitudinally distributed in a series of opposed pairs along the length of adjacent rows and length adjustable rigid elements extending between and supported by the upright pairs in a selected adjustment condition to transversely space the rows to occupy the full load width of the car.

The uprights are typically located at and interfit with the intersections of the row stacks and for this purpose may be of T-shaped cross-section and have a leg portion inserted between and spacing the stacks and a head portion bridging the stacks spaced by the leg portion.

The rigid elements, which may take the form of a strap having a series of perforations along its length or a tubular member having local deflectability, are supported at one upright of a pair in a manner to be insertable endwise into the opposing upright a selected distance determined by an insertion limiting means carried by the element such as a pin insertable into one or another of the perforations or a crimped deflection of the tubular member, which distance correspondingly spaces the opposed uprights and the rows supported thereby. Accordingly, one upright of each pair may be apertured to receive the rigid element endwise while the element may be hingedly mounted on the other opposing upright or both uprights may be apertured to receive opposite ends of the element, in either case the insertion limiting means is inserted or formed on the strap or tubular member element to define the spacing between the uprights.

When the vertical height of the stacks makes it desirable, plural, vertically spaced, e.g. upper and lower tubular members may be provided extending between each pair of opposed uprights.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be further described as to several illustrative embodiments in connection with the attached drawings in which

FIG. 1 is a cross-section partly broken away to show underlying parts and taken transversely through the car and a load incorporating one embodiment of the invention;

FIG. 2 is a fragmentary plan section taken on line 2—2 of FIG. 1; and

FIG. 3 is a fragmentary view taken in the aspect of FIG. 1 showing a variational form of load spacing element.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGS. 1 and 2, the box load generally indicated at 1 is shown to be contained within a refrigerator car having sidewalls 2 and floor 3. The load 1 is shown to comprise individual stacks S typically of citrus or like boxes 4 arranged bottom down and in vertical alignment within the individual stacks. The stacks S are aligned in plural rows R running longitudinally of the car i.e. normal to the plane of FIG. 1 as will be readily understood. The rows R are transversely spaced across the full width of the car floor 3, defining the car load space, with left and right hand side rows R1 and R3 bearing against their respectively adjacent walls 2 and the center row R2 supported in spaced relation to the side rows, as will be described. While three rows R are illustrated, additional rows may be used in the load depending on the relative dimensions of the load boxes, the car width and the air space required or desired between rows. The corresponding stacks S of the several rows R are in substantially opposed spaced relation transversely of the car successively along the length of the car.

The individual boxes 4 may be any of the conventional types used for shipping grapes, citrus, tomatoes and the like. Typically these boxes will have air spaces, not shown, in the end or side walls or both to permit circulation of refrigerating gas to the produce.

The rows R are spaced apart and the boxes 4 and stacks S in each row are maintained and supported in proper condition by the following described assembly adapted to be interposed between the rows R and the stacks S of each row as the load is built in the car from its end toward the center. The spacing and bracing as-

sembly generally indicated at 5 serves to support the rows R against lateral displacement i.e. transversely of the car and to space the stacks S of each row longitudinally. For this purpose the assembly 5 comprises uprights 6 in cornerwise engagement with the boxes 4 at the intersection 7 of longitudinally successive stacks S. The uprights 6 are disposed in a series of opposed pairs distributed longitudinally of the car at locations defined by the stack intersections. Each upright 6 is T-shaped in horizontal cross-section and comprises a brace or board 8 extending vertically from the car floor 3 the full height of the stacks S and bearing against and overlapping the sides of adjacent stacks at their opposed ends and a spacer 9 of lesser width than the board, fastened with nails or staples 10 to the board along the board center line and of equal length therewith. The spacer 9 forms a leg portion of the T-shaped upright 6 which is insertable between stacks S to space the same with the board 8 forming upright head portion bridging the stacks as spaced by the leg portion.

In building the load through the car, the first stacks of each row are arranged at the car ends and the uprights 6 placed at the exposed corners of the stacks as the second stack of each row is positioned.

As mentioned, the invention is particularly adapted to boxed produce loads wherein the cumulative width of the several rows is less than the load width of the car and where it is therefore desired to expand the effective width of the load to adequately brace the load for transit. To achieve this purpose, the invention provides length adjustable rigid elements extending horizontally between and supported by the upright pairs in a selected adjustment condition to transversely space the rows to the full load width of the car.

In one embodiment of the invention, shown in FIGS. 1 and 2, the rigid elements comprise tubular members 11 which are receivable endwise in holes 12 drilled into uprights 6 at opposed locations generally in both the upper and lower reaches 13, 14 of the uprights. The tubular members 11 are of a lesser diameter than the spacer 9 width and because of the spacing between adjacent stacks S provided by the spacer, these members may be received to a greater or less extent between these stacks S.

The assembly of the stack spacing and bracing system according to the first embodiment comprises inserting in an upright 6 which has been placed in position at the intersection of adjacent stacks, at either the upper or lower hole 12 therein, the end portion 15 of tubular member 11. The tubular member 11 will typically carry a preformed insertion limiting means such as a crimped portion 16, inwardly of the end portion 15, which will not pass through hole 12 in the upright 6. The tubular member 11 is inserted to the extent permitted by the location of crimped portion 16. The opposed upright of the particular pair is then aligned with the first upright and the tubular member 11 is inserted in the hole 12 therein endwise oppositely from the first upright. The tubular member may be previously crimped inwardly of its end entering the second upright 6 a predetermined distance selected for the particular load, or the second upright may be set in place between adjacent stacks S opposite the first upright and when spaced the desired distance, the tubular member 11 may be crimped at 17 inwardly of inserted end 18 and adjacent the second upright to individually adjust the spacing length "L" of the tubular member i.e. the length between the crimped portions to that desired between the first and second uprights 6 of the pair.

The spacing of adjacent stacks S by the insertion of the uprights 6 therebetween and the spacing of adjacent rows R by the insertion of tubular members 11 between the uprights with appropriate adjustment of the spacing effected by the tubular members is continued as successive stacks are added to the car in the rows. The entire load is thus filled into the car in this manner, from the car ends toward the car center, and finally the load may be subjected to the usual squeezing operation to compact the load longitudinally of the car, anchoring the uprights 6 firmly between stacks S, and opening the car center space for bracing or insertion of finally to be added boxes.

The car and load are thus ready for refrigeration which is accomplished by the usual means, not shown, acting to maintain a flow of refrigerant air or gas such as nitrogen through the inter-row spaces 26 until the load is taken down to the proper temperature for shipment.

With respect to FIG. 3, an alternative embodiment of the rigid element used to space the uprights 6 is shown while the arrangement and relationship of the stacks and rows remains the same as in the first described embodiment. In this embodiment the rigid element comprises a strap 19 perforated with openings 20 spaced along its length, fastenable at a desired length by nail 21 driven through board 8 to act as an insertion limiting means. As illustrated, the strap 19 is hingedly mounted at one end 22 by bail 23 on one upright 6 of a pair, to be selectively positionable normally to the upright. The opposite end 24 of the strap 19 is insertable endwise into hole 25 of closely corresponding size relation formed in opposed upright 6. The effective spacing length "L" of the strap 19 is determined by securing the strap with nail 21 driven into one or another of openings 20 distributed along the length of the strap inwardly of insertable strap end 24. In this manner as each stack is placed and the upright 6 inserted therebetween, the strap 19 is length adjusted to maintain the desired transverse spacing of the stacks S forming the adjacent rows R.

I claim:

1. A boxed produce load for refrigerated cars comprising boxes arranged in vertical stacks and aligned in plural rows running longitudinally of the car, said rows having a cumulative width less than the load width of the car and means supporting the rows against lateral displacement including box engaging uprights distributed in a series of opposed pairs along the length of adjacent rows, each pair including an apertured upright, and rigid elements extending horizontally between and supported by the upright pairs, said elements being hingedly mounted at one end on one upright and insertable endwise at its other end into an opposed apertured upright, and carrying means to limit endwise insertion to a preselected distance to correspondingly transversely space said rows to occupy the full load width of the car.

2. Boxed load according to claim 1 in which said rigid element comprises a strap having a series of perforations along its length, and said insertion limiting means comprises a nail insertable into one or another of said perforations to effect a selected adjustment condition.

3. Boxed produce load according to claim 1 in which said uprights are T-shaped in cross-section, and each

has a leg portion inserted between and spacing said stacks and a head portion bridging the leg portion spaced stacks, said leg portions being apertured, said rigid elements being inserted into said leg apertures.

4. Boxed produce load according to claim **3** including plural vertically spaced rigid elements extending between each pair of opposed uprights.

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