July 12, 1949. H. C. PIERCE 2,475,719

BRACING SYSTEM FOR BOXED PRODUCE LOADS

Filed May 15, 1946 2 Sheets-Sheet 1

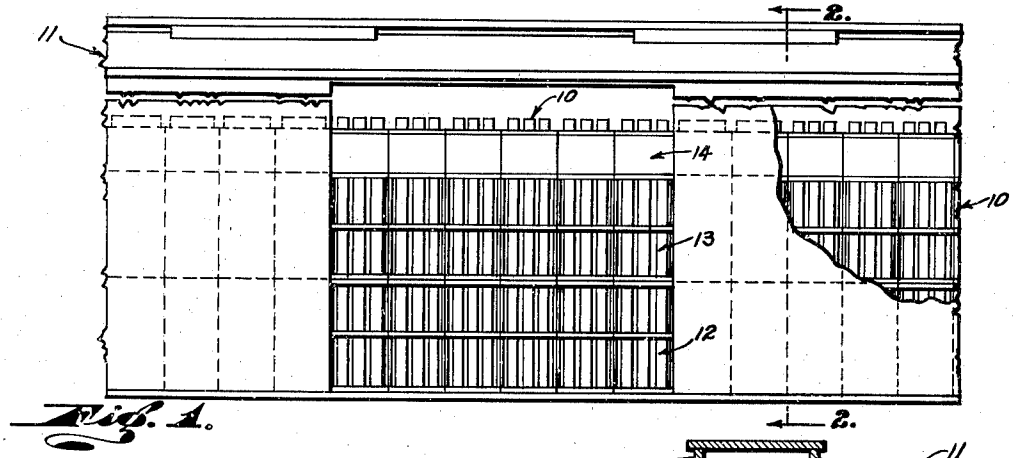


Fig. 1.

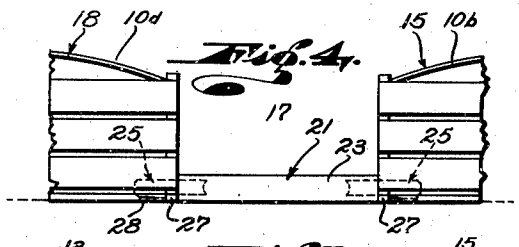


Fig. 4.

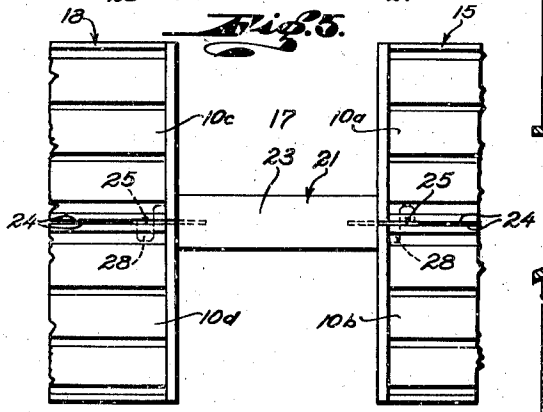


Fig. 5.

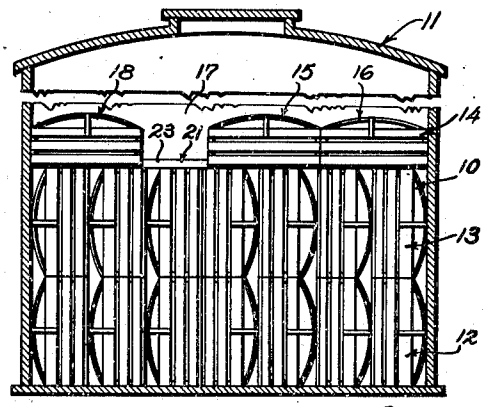


Fig. 2.

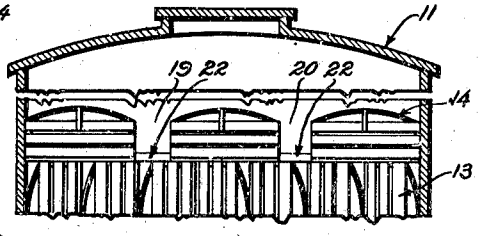


Fig. 3.

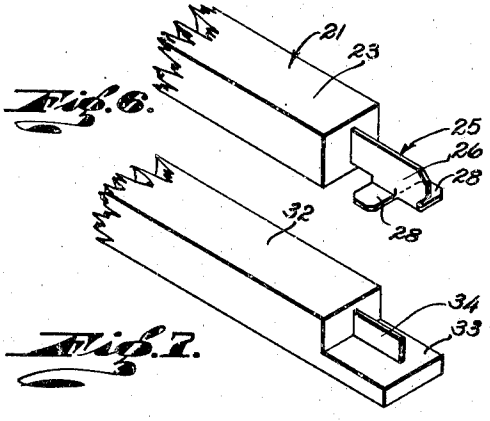


Fig. 6.

Fig. 7.

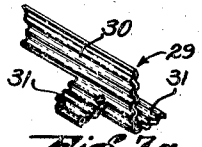


Fig. 7a.

HAROLD C. PIERCE
INVENTOR.

BY Holcombe White
ATTORNEY

July 12, 1949. H. C. PIERCE 2,475,719

BRACING SYSTEM FOR BOXED PRODUCE LOADS

Filed May 15, 1946 2 Sheets-Sheet 2

Fig. 8.

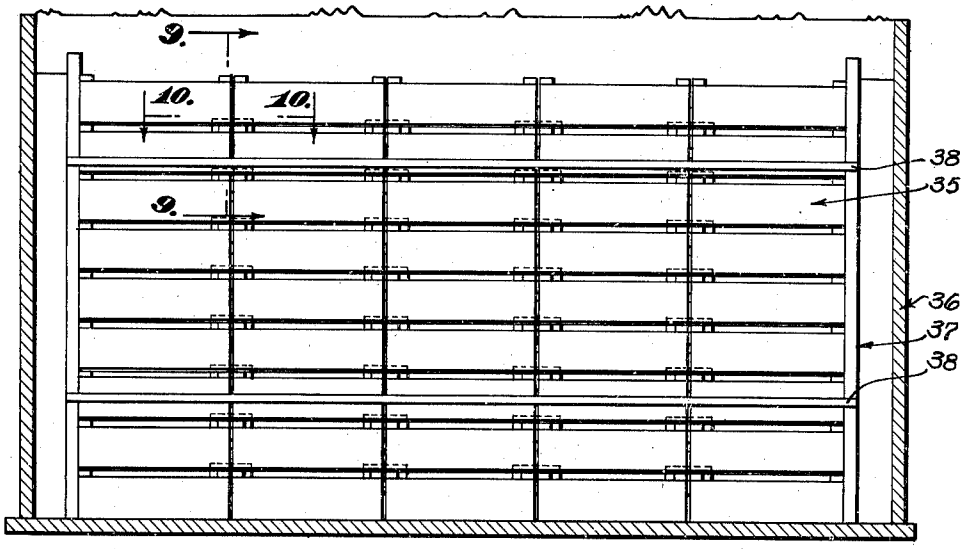


Fig. 9.

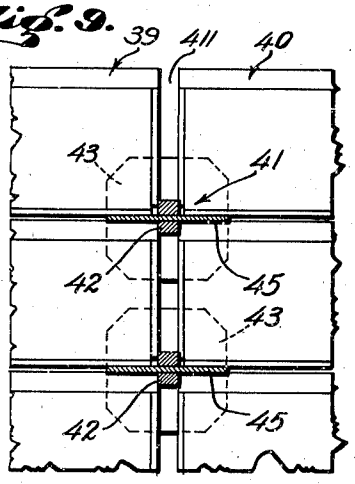
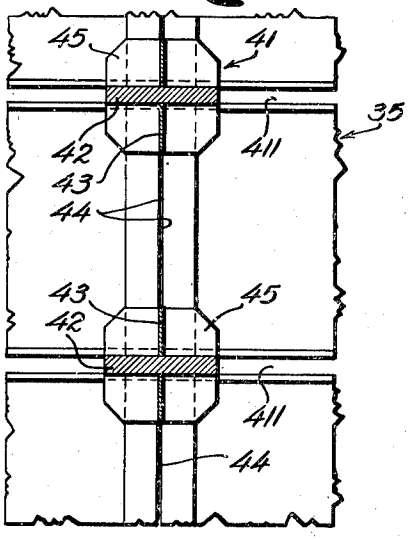


Fig. 10.



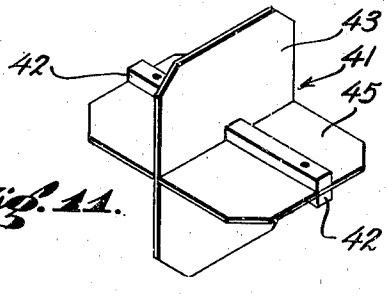


Fig. 11.

HAROLD C. PIERCE
INVENTOR.

BY Calvin White

ATTORNEY

Patented July 12, 1949

2,475,719

UNITED STATES PATENT OFFICE

2,475,719

BRACING SYSTEM FOR BOXED PRODUCE LOADS

Harold C. Pierce, Romona, Calif.

Application May 15, 1946, Serial No. 669,825

8 Claims. (Cl. 105—369)

1

This invention has to do generally with the bracing of box produce loads in freight cars, and in certain of its important aspects relates to improvements in the type of box spacer unit constituting the subject matter of my Patent No. 2,415,368, issued February 4, 1947, on Boxed produce loads.

The present type of brace unit is particularly designed for insertion between opposed and alined pairs of boxes arranged in rows within the car, in a manner serving to maintain the boxes in spaced relation and in a condition of stability preventing their injury during transit. Specifically, the brace unit is made to comprise a body portion engaging the end portions at the adjacent sides of the box pairs, to maintain the latter in spaced relation, and end projections received between the box sides and having such dimensions as will permit interengagement of the box sides. The primary function of the end projections is to prevent lateral or horizontal displacement of the spacer units.

It has been found that because of looseness in the box load, as through failure to properly "squeeze" the boxes longitudinally of the car, sufficient spacing may exist between some of the boxes as will permit upward displacement of the units from proper holding or spacing relation to the boxes, such tendencies of the units to become thus displaced being caused by vibration of the load during transit. My primary object now is to provide such improvements in the units as will positively preclude the possibility of their becoming upwardly displaced from the proper spaced positions in which they originally are installed.

In accordance with the invention, means is provided at the ends of the units for reception beneath the bottoms of the spaced boxes, all in a manner such that the boxes themselves hold down the spacers against any tendencies toward upward displacement. Specifically, the invention contemplates the provision of lateral end projections to be received beneath the boxes and having such dimensions as will permit the bottoms of the boxes to rest directly on supporting surfaces, as for example the top surfaces of lower boxes in the load. Preferably, both the vertically positioned end projections maintaining the units against horizontal displacement, and the lateral projections received beneath the boxes, are made as sheet metal extending in right angle relation, with the bottom flanges disposed in the plane of the bottom surfaces of the boxes.

All of various features and objects of the invention, as well as the details of certain typical embodiments, will be understood to better advantage from the following description of the accompanying drawings, in which:

2

Fig. 1 is a broken side elevation illustrating a citrus car load in a typical form comprising two lower tiers of boxes stacked on end, and a top tier of horizontally positioned boxes;

Fig. 2 is a cross-section on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary view similar to Fig. 2 illustrating a variational arrangement of the top tier boxes;

Fig. 4 is a fragmentary side view showing the spacer unit in enlarged detail;

Fig. 5 is a plan view of Fig. 4;

Figs. 6, 7 and 7a are perspective views showing different typical forms of end projections carried by the spacer units;

Fig. 8 is a view similar to Fig. 2 illustrating a variational adaptation of the invention as applied to a grape lug load;

Fig. 9 is a fragmentary enlarged section on line 9—9 of Fig. 8;

Fig. 10 is a fragmentary enlarged plan on line 10—10 of Fig. 8; and

Fig. 11 is a perspective view of the form of spacer unit shown in Figs. 8 to 10.

Figs. 1 and 2 illustrate a generally used form of "three high" citrus box load in which the crown-packed boxes 10 are alined in the car 11 in rows extending transversely and longitudinally within the car 11, the boxes of the two lower tiers 12 and 13 being arranged on end, as illustrated. The boxes contained in the top tier 14 are positioned bottom down on the intermediate tier 13, with their long dimensions transversely of the car. The top tier boxes may be arranged in three rows extending longitudinally of the car, with rows 15 and 16 engaged and row 15 spaced at 17 from row 18, as in Fig. 2; or the rows may be given transverse spaced symmetrical arrangement with corresponding spacings at 19 and 20, as in the form of load shown in Fig. 3.

The box rows are maintained in spaced relation by individual spacer units 21, Fig. 2, or units 22, Fig. 3, as the case may be, associated with spaced opposed pairs of the boxes as clearly illustrated in Figs. 4 and 5. The unit 21 is shown to comprise a body portion 23 comprising a wooden block whose length corresponds to a spacing at 17 which, together with the long dimensions of the boxes 15, 16 and 18, will correspond substantially to the inside width of the car. As illustrated, the body 23 rests horizontally on the box tier 13 in overlapping relation with the ends of the opposed box pairs 10a, 10b, and 10c, 10d, at

their adjacent side surfaces 24. Preferably an individual spacer unit 21 is provided in the position shown at each successive box pair so that the end of each box is transversely supported and spaced adjacent its side.

Each unit 21 carries a pair of end projections 25 in the form of sheet metal elements having vertically extending portions or flanges 26, the inner ends of which are driven into and embedded in the block 23. These vertical portions 26 of the end projections are received between the box sides 24 to hold the blocks against transverse shifting, and are sufficiently thin to permit interengagement of the box sides, particularly as they are pressed together in the usual car squeezing operation. The unit is positively held against upward displacement by the reception beneath the boxes and at the inside of the end cleats 27 of a pair of horizontal projections or flanges 28, the latter being sufficiently thin that the bottoms of the boxes rest directly on the supporting surfaces below. Both the vertical and horizontal projections advantageously are made from a single piece of sheet metal by forming flanges 28 integral with portion 26 and turning them to project horizontally at opposite sides. It will be observed that the flanges 28 are disposed in the common plane of the bottom surfaces of the unit body 23 and the boxes and that in the inserted condition of the spacer, the flanges 28 extend at the inside of the end cleats 27 to permit the latter to rest directly on the box supporting surfaces.

Fig. 7*a* illustrates a variational form of end projection 29 generally similar to the projection 25 as shown in Fig. 6, except that the vertical portion 30, and preferably also the lateral flanges 31 are longitudinally corrugated to add rigidity to the metal and give it irregular box-engaging surfaces.

In accordance with the variational form shown in Fig. 7, the body 32 of the spacer unit has bottom, relatively thin end projections 33 for reception beneath the boxes to serve the purposes of the above described flanges 28, although in this instance the end portions 33 may be sufficiently wide to serve as bottom rests for the boxes and thus support them with corresponding clearance from the surface below. The body 32 is maintained against lateral displacement by thin metallic projections 34 to be received between the interengaging box sides, and driven into the end of the block 32 in overlying relation to the end portion 33.

Figs. 8 to 10 illustrate a conventional grape lug load in which the horizontally positioned boxes 35 are placed in stacks alined in rows extending transversely and longitudinally in the car 36. As usual, the box load may be maintained in spaced relation to the side walls of the car by suitable braces 37 interconnected as by steel straps 38 extending transversely between the boxes.

Referring to Figs. 9 and 10, the lugs in successive transverse rows 39 and 40 of the vertical stacks are spaced apart at 411 by individual spacer assemblies, generally indicated at 41, placed at the corners of successive box pairs. Each unit 41 comprises a block 42 engaging and overlapping the ends of eight boxes comprising, as to each unit, successive vertical pairs in the stacks 39 and 40 to maintain at 411 a spacing corresponding to the width of the block. The latter is maintained against transverse shifting by a vertically positioned sheet metal section 43, see Fig. 11, received between adjacent sides 44 of the boxes, and preferably having sufficient thinness to permit interengagement of the box sides, at least when the load is subjected to pressures tending to compact the boxes together. Each spacer unit is vertically confined and supported in fixed position by a horizontal sheet metal section 45 received between the top and bottom surfaces of the vertically adjacent box pairs, as shown in Fig. 9. Section 45 may be sufficiently thin to permit little or no effective vertical spacing between the boxes, or it may be thickened to afford such vertical spacing as may be desired.

Where in the claims reference is made to the "ends" and "sides" of the boxes, such terms are used to distinguish different vertical box walls without any intended limitation with respect to the relative dimensions of those walls.

I claim:

1. For use in stabilizing boxed produce loads, a spacer unit comprising a member adapted to be placed between and in engagement with the ends of oppositely positioned spaced pairs of boxes and at each side of the interengaging sides of the boxes in each pair, a projection carried by and extending beyond said member and receivable between the interengaging vertically extending sides of the boxes of one of said spaced pairs to prevent horizontal shifting of the spacer unit relative to the boxes, and means carried by said member to extend beneath the bottom one of the boxes to prevent upward displacement of said member.

2. For use in stabilizing boxed produce loads, a spacer unit comprising a member adapted to be placed between and in engagement with the ends of oppositely positioned spaced pairs of boxes and at each side of the interengaging sides of the boxes in each pair, a projection carried by and extending beyond said member and receivable between the interengaging vertically extending sides of the boxes of one of said spaced pairs to prevent horizontal shifting of the spacer unit relative to the boxes, and means carried by said member to extend beneath the bottom one of the boxes to prevent upward displacement of said member, said means permitting said box to rest directly on a supporting surface.

3. For use in stabilizing boxed produce loads, a spacer unit comprising a member adapted to be placed between and in engagement with the ends of oppositely positioned spaced pairs of boxes and at each side of the interengaging sides of the boxes in each pair, a projection carried by and extending beyond said member and receivable between the interengaging vertically extending sides of the boxes of one of said spaced pairs to prevent horizontal shifting of the spacer unit relative to the boxes, and means beyond opposite ends of said member to extend beneath bottom surfaces of the boxes to prevent upward displacement of said member.

4. For use in stabilizing boxed produce loads, a spacer unit comprising a member adapted to be placed between and in engagement with the ends of oppositely positioned spaced pairs of boxes and at each side of the interengaging sides of the boxes in each pair, a projection carried by and extending beyond said member and receivable between the interengaging vertically extending sides of the boxes of one of said spaced pairs to prevent horizontal shifting of the spacer unit relative to the boxes, and means extending laterally beyond both sides of said projection to be received beneath the bottom of one of the boxes to prevent upward displacement of said member.

5. For use in stabilizing boxed produce loads, a spacer unit comprising a member adapted to be placed between and in engagement with the ends of oppositely positioned spaced pairs of boxes and at each side of the interengaging sides of the boxes in each pair, a projection carried by and extending beyond said member and receivable between the interengaging vertically extending sides of the boxes of one of said spaced pairs to prevent horizontal shifting of the spacer unit relative to the boxes, and means formed integrally with and extending laterally from opposite sides of said projection to be received beneath the bottoms of said one of the spaced pairs to prevent upward displacement of said member.

6. For use in stabilizing boxed produce loads, a spacer unit comprising a member adapted to be placed between and in engagement with the ends of oppositely positioned spaced pairs of boxes and at each side of the interengaging sides of the boxes in each pair, and a metallic element carried by and extending beyond said member and of sufficient thinness to be receivable between engaging vertically extending sides of the boxes of one of said spaced pairs to prevent horizontal shifting of the spacer unit relative to the boxes, said element having an integral lateral metallic projection receivable beneath the bottom of one of the boxes to prevent upward displacement of said member, said lateral projection permitting said bottom of the box to rest directly on a supporting surface.

7. For use in stabilizing boxed produce loads, a spacer unit comprising a member adapted to be placed between and in engagement with the ends of oppositely positioned spaced pairs of boxes and at each side of the interengaging sides of the boxes in each pair, thin sheet metal elements carried by and extending beyond said

member and of sufficient thinness to be receivable between engaging vertically extending sides of said spaced pairs of boxes to prevent horizontal shifting of the spaced unit relative to the boxes, said element having integral lateral flanges disposed in the plane of the bottom surfaces of said boxes and receivable beneath said surfaces to prevent upward displacement of said member, said flanges permitting the bottoms of the boxes to rest directly on supporting surfaces.

8. For use in stabilizing boxed produce loads, a spacer unit comprising a member adapted to be placed between and in engagement with the ends of oppositely positioned spaced pairs of boxes and at each side of the interengaging sides of the boxes in each pair, a thin sheet metal element having a driven end embedded in said member and being of sufficient thinness to be receivable between engaging vertically extending sides of one of said spaced pair of boxes to prevent horizontal shifting of the spacer unit, said element having integral horizontally turned side flanges disposed in the plane of the bottom surfaces of the box and receivable beneath said surfaces to prevent upward displacement of said member, said side flanges permitting the bottoms of the boxes to rest directly on supporting surfaces.

HAROLD C. PIERCE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,514,512	Fisher	Nov. 4, 1924
2,415,368	Pierce	Feb. 4, 1947

Certificate of Correction

Patent No. 2,475,719. July 12, 1949.

HAROLD C. PIERCE

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 6, line 4, claim 7, for the word "spaced" read *spacer*;

and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of November, A. D. 1949.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.