Aug. 26, 1952 H. C. PIERCE 2,608,165

BOX LOAD BRACE

Filed July 25, 1947 2 SHEETS—SHEET 1

Fig. 1.

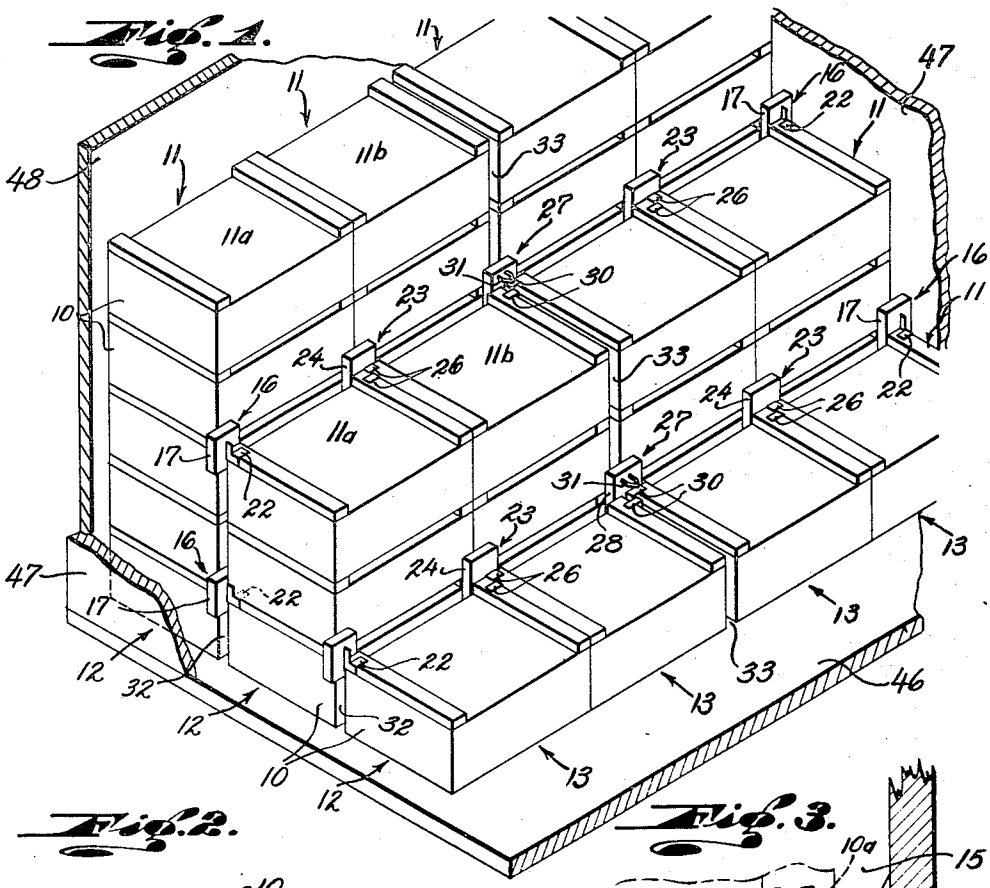


Fig. 2.

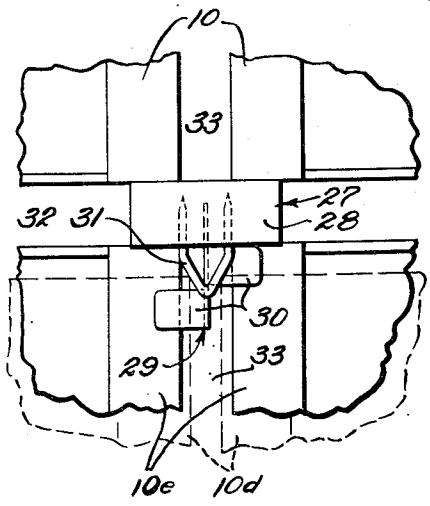
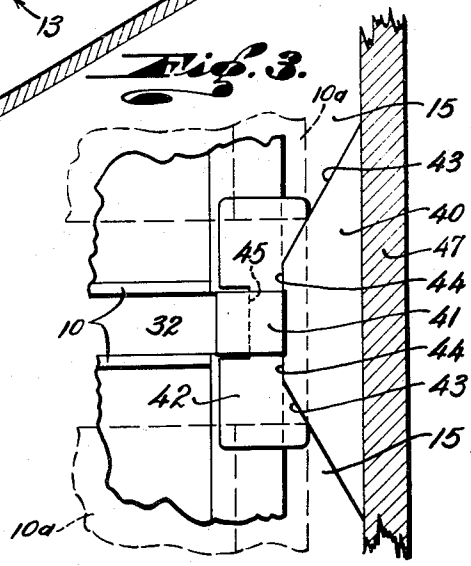


Fig. 3.



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Fig. 4.

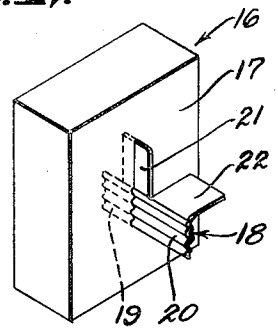


Fig. 5.

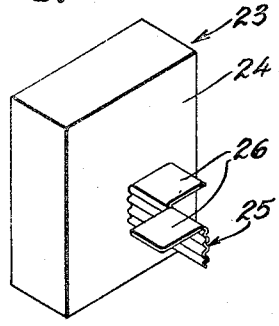


Fig. 6.

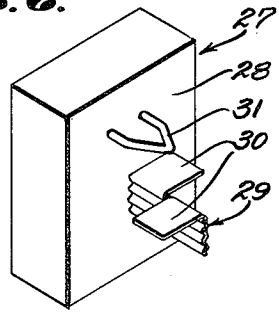


Fig. 7.

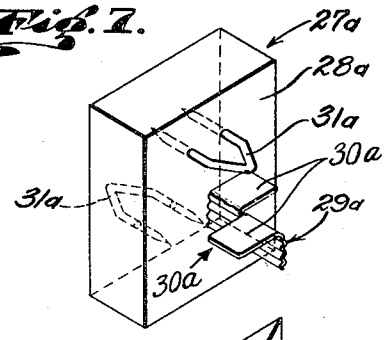


Fig. 8.

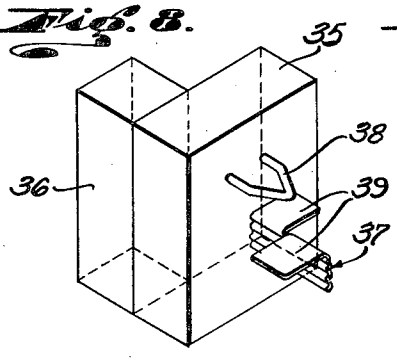
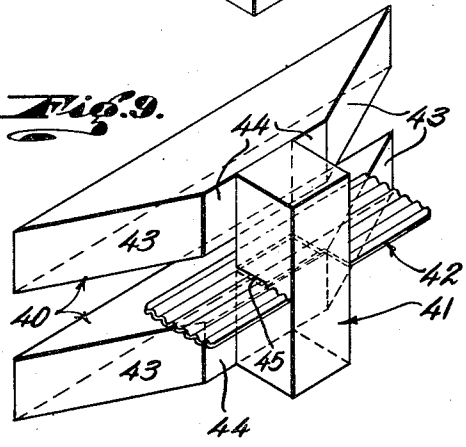


Fig. 9.



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2,608,165

BOX LOAD BRACE

Harold C. Pierce, Pomona, Calif.

Application July 25, 1947, Serial No. 763,692

8 Claims. (Cl. 105—367)

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This invention has to do with the loading of boxed produce for shipment in refrigerator cars, and relates particularly to improvements in braces or spacers for supporting and maintaining the load units in fixed predetermined relation in the car. While applicable to the loading of boxed fruit and vegetable produce in general, the invention has special adaptability to the loading of produce such as grapes, melons and the like contained in boxes arranged top up in stacked rows alined transversely and longitudinally of the car. In certain of its aspects, the invention represents improvements in types of brace units disclosed in my copending application Serial No. 624,008, filed October 23, 1945, on "Boxed Produce Car Loading."

One object of the invention is to provide improvements in a type and form of brace or spacer element insertible between the transverse stack rows to space the rows apart by engagement with the adjacent corner portions of upper and lower pairs of boxes in each row. In general, the spacers may have the form of individual units or blocks placed at the outside corners of the transverse rows, and in overlapping relation with the intermediate boxes at their adjacent corners. As will appear, the units may be arranged to overlap the adjacent top and bottom side surfaces of vertically adjacent boxes in the stack rows, or the units may so overlap only such alternate portions of the boxes, since by either arrangement the units will serve to maintain the transverse stack rows in spaced relation.

In one of its aspects, the invention is particularly concerned with improvements in means for vertically supporting the individual units and for maintaining them against transverse shifting. Preferably, the units are composed of spacer blocks inserted between the transverse rows and carrying projections received between the top and bottom surfaces of adjacent boxes to vertically support the blocks, and received also between adjacent vertical walls of the boxes to position the blocks against displacement longitudinally of the spaced rows. The invention particularly contemplates a form of projection permitting interengagement of the box surfaces between which it is received, and having the form of a single metallic piece having angular flange portions, one of which enters between the top and bottom surfaces of the boxes while the other is received between their vertical faces.

A further important object of the invention is to provide spacer means, which typically may have the described unit form, capable of shifting

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some or all of the boxes transversely of the car to compact the load against the side walls of the car, in response to displacement of the boxes longitudinally of the car. It is common practice to load the car from its ends toward the center space between the doors, and to put into that space a so-called "car squeeze," a machine which operates to displace and compact the load sections toward opposite ends of the car. Suitable bracing then is inserted to prevent return shifting of the boxes toward the center space. In accordance with the invention, I have provided a novel spacing means which may serve the dual functions of maintaining the boxes in spaced relation, and of shifting and transversely compacting them in the car, as the load is longitudinally compressed by the car squeeze. For this purpose, I employ a spacer unit having the wedge characteristics such that upon movement longitudinally of the car, the unit engages an end portion of the box to which it is applied, and shifts the box transversely toward the car side wall.

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

Fig. 1 is a perspective view showing the load arrangement and spacer units;

Fig. 2 is a fragmentary enlarged plan view of the center wedge spacer and associated box corners;

Fig. 3 is a view showing a form of end spacer contemplated by the invention; and

Figs. 4 to 9 are perspective views illustrating various forms of spacer units contemplated by the invention, and adapted for use at different locations in the load, as will hereinafter appear.

Referring first to Fig. 1, I have illustrated a load embodying the invention and contained within a conventional railroad freight car having a floor 46, a pair of side walls 47 and a pair of end walls 48 (only one shown). The boxes 10 are loaded into the car in vertical stacks 11 alined in rows 12 extending transversely of the car, and alined also in rows 13 running longitudinally of car. As will be understood, the completed load will contain the boxes stacked in each row at the same height, the stepped showing in Fig. 1 of the boxes in the transverse rows being simply for purposes of illustration. Ordinarily the transverse dimension of the load will be less than the spacing of the car side walls 47, see Fig. 3, so that the boxes nearest the side wall normally positioned as indicated by the dotted lines

10*a* in Fig. 3 are spaced at 15 from the wall. Before considering the placement and arrangement of the spacer units in the load, reference first may be had to the particular form of the units shown in Figs. 4 to 6.

The unit 16 illustrated in Fig. 4 is shown to comprise a block 17 carrying a relatively thin metallic projection 18, the inner end 19 of which is driven into or otherwise secured centrally to the block. Projection 18 preferably is formed of a single piece of sheet metal having a vertical portion 20 which may be corrugated for reenforcement, a top straight vertical section 21, and a horizontally projecting flange 22. The metal forming the projection is sufficiently thin to permit interengagement of the box surfaces between which portions 20 and 22 are received, as will appear.

The unit 23 shown in Fig. 5, similarly comprises a block 24 into which is driven the projection 25 having a pair of oppositely turned horizontal flanges 26.

Unit 27 illustrated in Fig. 6, comprises the block 28 carrying projection 29 with oppositely turned flanges 30. The block carries above projection 29 and in vertical alinement therewith, a wedge 31 of suitable form and consisting typically of a tapered staple driven into the block.

In making up the load, the boxes are stacked into the car from the ends toward the center, in successively built up transverse rows 12. As the boxes are stacked, units 16 are applied to the adjacent corner portions of vertically successive or alternate end boxes in one of each transverse row 12 of adjacent pairs thereof, by insertion of flange 22 between the top and bottom surfaces of the boxes, as illustrated in Fig. 1. The transverse rows thus are spaced at 32 by and in accordance with the thickness of the blocks, and the latter are supported vertically by the flanges 22 and are held against shifting inwardly of the load by engagement of portions 20 of the projections against the sides of the boxes. Spacer units 23 are placed at corresponding vertical intervals between the adjacent corner portions of stacks 11*a* and 11*b*, by insertion of the corrugated vertical portions of the projections 25 between the adjacent vertical walls of the boxes, the projection flanges 26 being received between the engaged top and bottom surfaces of vertically adjacent boxes. Units 27 similarly may be placed between the boxes at a central or other inner location within the load in the same relation with respect to projection 29 and its flanges 30, as stated with reference to unit 23. The wedge 31 is alined with any space between the longitudinal vertical faces of the boxes to which the unit is applied, so that as the load is compressed longitudinally of the car, the wedge may enter and expand the spaces at 33. At this point it may be mentioned that if desired, the unit 27 may carry wedges projecting from opposite faces of the block. Thus as shown in Fig. 7, the unit 27*a* may consist of a block 28*a* carrying projection 29*a* (like 29 in Fig. 6) having flanges 30*a* and wedges 31*a* projecting in the same vertical plane from opposite faces in the block. The double wedges 31*a* thus may be thrust into spaces 33 to positively displace the boxes at both sides of the transverse space 32.

The spacer units 16, 23 and 27 thus are inserted between the boxes and rows in the manner described, as the load is put into the car from its opposite ends toward a central space, and the loaded sections at opposite sides of the space compressed by the above-mentioned "car squeeze" to displace and compact the boxes longitudinally of the car, or in the direction of rows 13. As the box edges are pressed against the wedges 31, the boxes in each transverse row at opposite sides of the wedge, are shifted transversely to bring block 16 into snug engagement with the car side walls 14.

Fig. 2 shows the wedge 31 to be fully thrust between the boxes to open the space 33 and to have displaced the boxes from an initial dotted line position 10*d* to the solid line position 10*e*.

Instead of transversely compacting the load by shifting the boxes outwardly against the car side walls, the load may be compacted in a transverse direction by displacing the boxes inwardly from the car walls into snug or tight interengagement. In this instance units 27 may be replaced by units like 23, and units 16 replaced by spacers of the form shown in Figs. 8 and 9. The spacer of Fig. 8 comprises an angular block 35 having an integral or attached portion 36, and carrying the projection 37 and wedge 38. The unit may be used at either side of the load by inserting one of the flanges 39 adjacent top and bottom box surfaces, with one side of the wedge 38 brought to bear against the outer edge or face of the associated box. The side of the block carrying the projection 36 bears against the car wall. As the load is compressed longitudinally in the car, the consequent shifting of the boxes causes the wedges 38 to displace the boxes inwardly into compact interengagement, while of course the outside of the block remains engaged against the car wall.

The units shown in Fig. 9 may be similarly used at the ends of the transverse rows, to shift and compact the boxes inwardly. Here the unit comprises a pair of double face wedge blocks 40 connected by a spacer block 41 and a horizontal thin metal projection 42 received in a notch 45 centrally located in the block 40 and extending outwardly adjacent block 41. Referring to Fig. 3, the unit is positioned by placing blocks 40 against the car wall with block 41 inserted within space 32 between the transverse rows. Projection 42 is received between the top and bottom surfaces of the boxes. Initially the boxes may be positioned as indicated by the dotted lines 10*a*. As the load is compressed, the box corners are moved and displaced inwardly along the wedge surfaces 43, shifting the boxes inwardly from the car walls distances depending upon the load displacement, the maximum distance being reached when the boxes override the surfaces 43 onto the block faces at 44.

Certain features of the Fig. 9 type of spacer are more particularly dealt with and claimed in my copending application Number 57,500, filed October 30, 1948, on Bracing System for Box Car Loads, which is to be considered a continuation in part of the present application.

I claim:

1. For use in a boxed produce load comprising boxes placed in stacked rows alined and running transversely and longitudinally of the load, a wooden block inserted between and spacing apart the adjacent corner portions of adjacent upper and lower opposed pairs of boxes in each of adjacent transverse rows, a wedge shaped projection carried by said block and having a pair of relatively angular surfaces engaged against and received between the adjacent side walls of a pair of the boxes and operable to shift

the last mentioned boxes apart transversely of the load in response to compression of the box load longitudinally, and a projection extending horizontally from said block and received between the top and bottom surfaces of adjacent boxes.

2. For use in a boxed produce load comprising boxes placed in stacked rows alined and running transversely and longitudinally of the load, a body to be inserted between and spacing apart longitudinally of the load the adjacent corner portions of adjacent upper and lower opposed pairs of boxes in each of adjacent transverse rows, and a metallic projection adapted to be carried by said body and to extend between the adjacent vertical walls of one of said pairs of boxes, said projection having an integral laterally turned flange portion receivable between the top and bottom surfaces of adjacent lower and upper boxes.

3. A boxed produce load comprising boxes placed in stacked rows alined and running transversely and longitudinally of the load, a body inserted between and spacing apart longitudinally of the load the adjacent corner portions of adjacent upper and lower opposed pairs of boxes in each of adjacent transverse rows, and a metallic projection carried by said body and extending between interengaging vertical walls of one of said pairs of boxes, said projection having an integral laterally turned flange portion received between the top and bottom surfaces of adjacent lower and upper boxes.

4. For use in a boxed produce load comprising boxes placed in stacked rows alined and running transversely and longitudinally of the load, a body to be inserted between and space apart longitudinally of the load the adjacent corner portions of adjacent upper and lower opposed pairs of boxes in each of adjacent transverse rows, and a metallic projection carried by said body and adapted to extend between the adjacent vertical walls of one of said pairs of boxes, said projection having a pair of oppositely and laterally turned flange portions received between the top and bottom surfaces of one of said lower and upper pairs of boxes.

5. For use in a boxed produce load comprising boxes placed in stacked rows alined and running transversely and longitudinally of the load, a spacer including a body to be inserted between and space apart adjacent transverse box rows, said spacer including means carried by said body and projecting to a location above a portion of one of said boxes to vertically support the spacer in the load, and a projection having a pair of relatively angular surfaces adapted to engage against and between side walls of adjacent boxes in one of said rows and operable to

shift the boxes transversely of the load in response to compression of the box load longitudinally.

6. For use in a boxed produce load comprising boxes placed in stacked rows alined and running transversely and longitudinally of the load, a spacer including a body to be inserted between and space apart adjacent transverse box rows, said spacer including means adapted to be received between the top and bottom surfaces of adjacent boxes and including also a projection having a pair of relatively angular surfaces adapted to be engaged against and between the sides of adjacent boxes in one of said rows, said projection being operable to shift the boxes transversely of the load in response to compression of the box load longitudinally.

7. For use in a boxed produce load comprising boxes placed in stacked rows alined and running transversely and longitudinally of the load, a spacer member to be inserted between and space apart adjacent transverse box rows, a wedge-shaped spreader member attached to said spacer member and having relatively angular surfaces to be engaged against and between the vertical sides of adjacent boxes in said load, said member being operable to shift the last mentioned boxes transversely of the load in response to compression of the box load longitudinally, said spreader member having a vertical dimension substantially smaller than the vertical dimension of said spacer member, and means for vertically supporting said member in its said box engaging position.

8. A boxed produce load comprising boxes placed in stacked rows alined and running transversely and longitudinally of the load, a plurality of spacer members interposed between and spacing apart opposed portions of adjacent boxes in said load, and tapering wedge members attached to and projecting from said spacer members to locations between adjacent boxes in said load, said wedge members having oppositely facing box engaging surfaces with first substantially parallel portions adjacent said spacer members and second relatively converging wedge portions outwardly beyond said parallel portions.

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REFERENCES CITED

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

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