

Aug. 28, 1951

C. M. MARTIN

2,565,567

LOADING METHOD AND APPARATUS

Filed Dec. 7, 1946

3 Sheets-Sheet 1

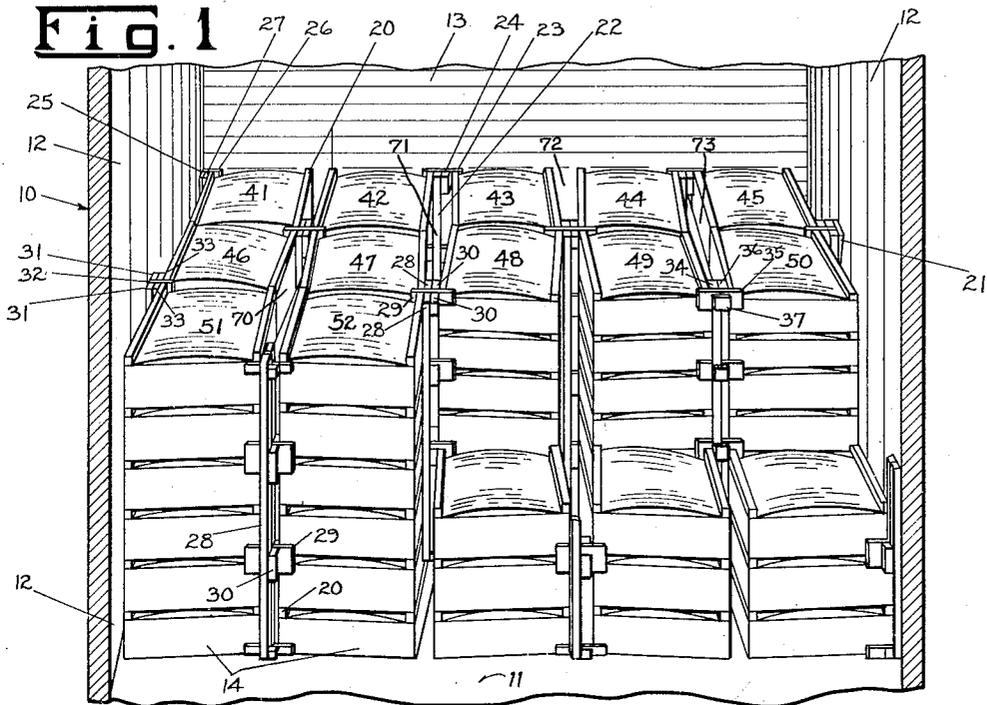


Fig. 2

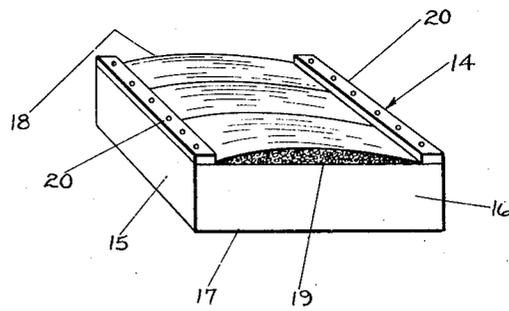
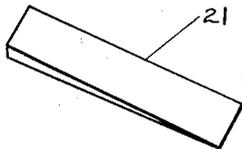


Fig. 3



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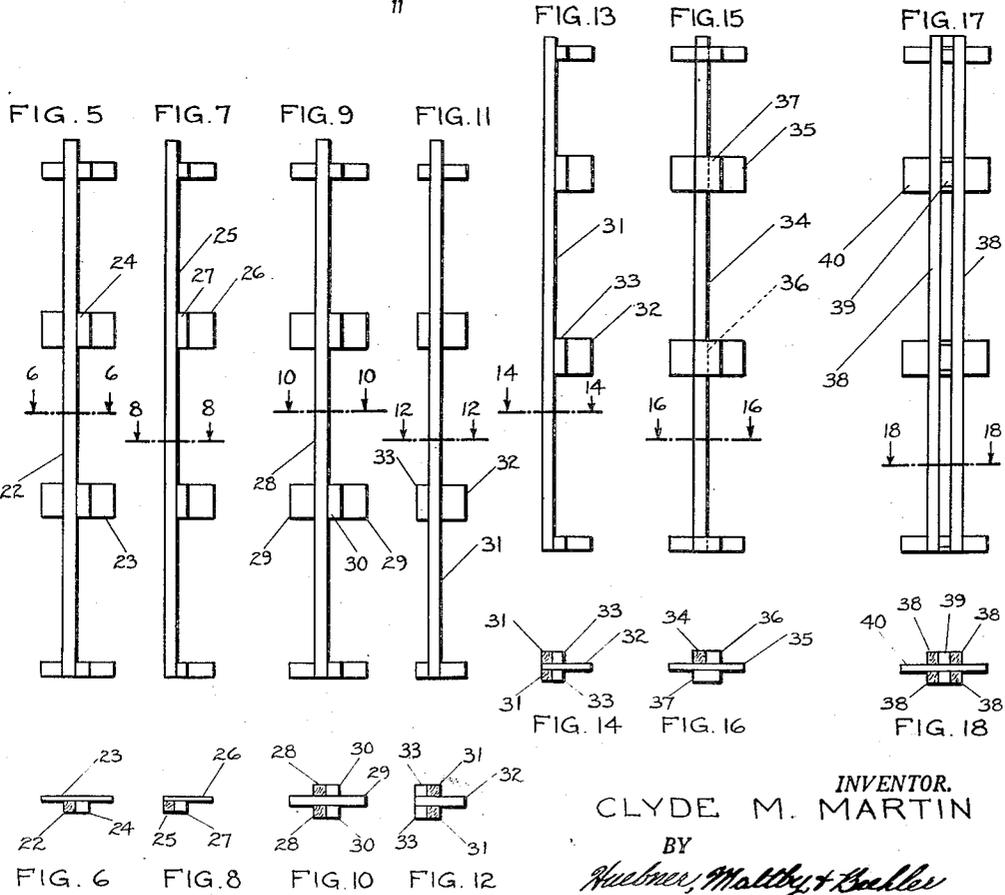
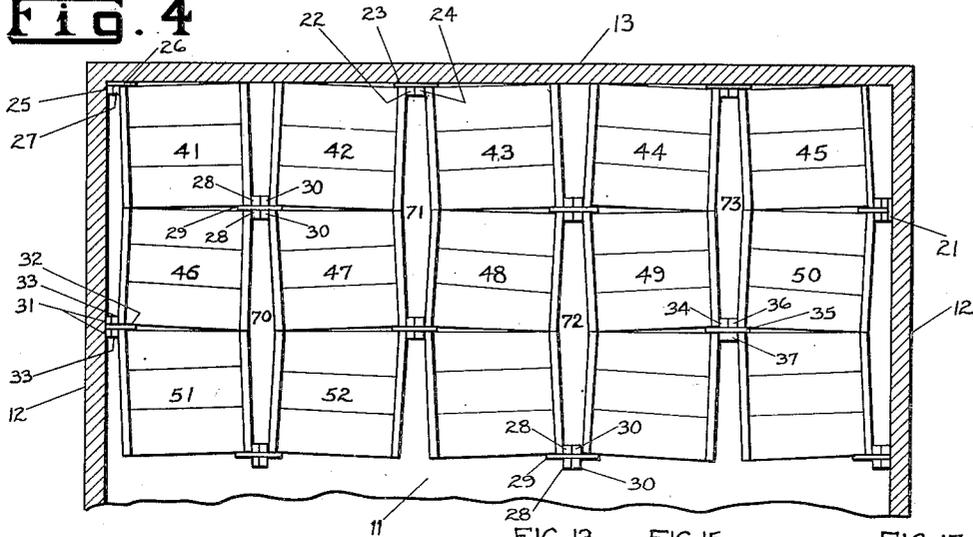
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Fig. 4



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3 Sheets-Sheet 3

FIG. 19.

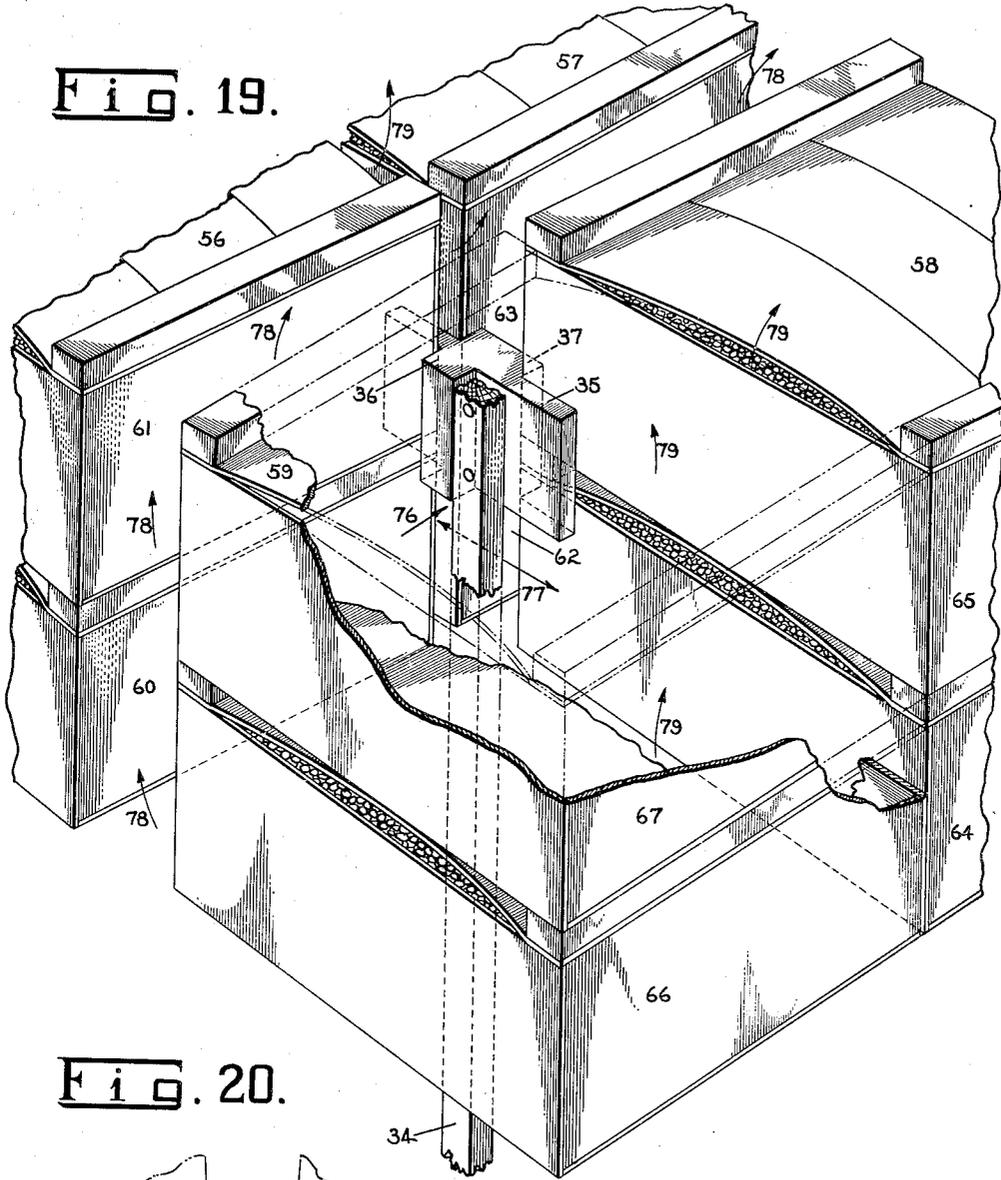
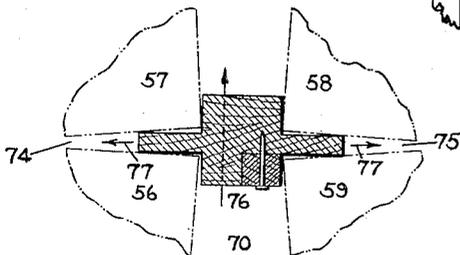


FIG. 20.



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2,565,567

LOADING METHOD AND APPARATUS

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Application December 7, 1946, Serial No. 714,737

13 Claims. (Cl. 105—109)

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This invention relates to improved methods and apparatus for loading railway cars and the like and more particularly to methods and apparatus for integrating stacks of substantially uniform packing units for shipping purposes.

Problems, the solutions to which the present invention is directed, are encountered in fruit and vegetable shipping and are appropriately illustrated thereby. The fruits or vegetables to be shipped in a railway car are customarily packed in packing units, such as crates or boxes, of substantially uniform shape. The packing units are conventionally arranged in stacks and the stacks in tiers across the car parallel to the ends thereof and in rows longitudinally of the car and parallel to the side walls thereof. Erect spacers are positioned at each corner of each stack of packing units and serve to retain the stacks in position for shipping purposes. The spacers are conventionally angular in cross section to embrace the corners of the stacks. The Patent No. 2,224,432, granted to Allan R. Hoak December 10, 1940, and reissued January 26, 1943, Re. 22,256, exemplifies a current practice of car loading for vegetable and fruit shipping and the spacers employed. The current practices, although greatly improving over those previously known, possess certain disadvantages which the present invention seeks to overcome.

Under average market conditions, the residual profit to the packer and shipper after all packing, loading, and selling expenses have been paid, roughly approximates one-half of the cost of the material employed in loading and spacing the packing units in the car according to present practices. This cost of material has been an unnecessarily large expense, the reduction of which has attracted much attention and experimentation.

It is well known that fruits, vegetables and even flowers continue to breathe for a considerable period after they are picked and that they keep best when well ventilated. The present loading practices, in which the stacks of packing units are arranged so that said packing units in adjacent stacks are in close parallel relation, are not conducive to good ventilation. The positioning of spacers at each corner of each stack of packing units further impedes air circulation. Good ventilation is important not only in connection with the breathing of the fruit, but in connection with the pre-cooling of refrigerator cars and their contents. By improving the ventilation characteristics of the car loading and spacers, the present invention has resulted in

saving several hours pre-cooling time for each car.

Further problems encountered are: the total space occupied by conventional spacers seriously reduces the useful loading space in railway cars and the parallel arrangement of the packing units in adjacent stacks is not conducive to convenient and speedy emplacing of the stacks.

An object of my invention is, therefore, to provide improved methods and apparatus for car loading.

Another object is to form a rigid pack in railway cars.

Another object is to reduce the material, and cost thereof, required by current car loading practices.

Another object is to provide an improved ventilative pack for railway cars and the like.

Another object is to employ shipping space more efficiently.

Another object is to reduce pre-cooling time and expense for refrigerator cars and their contents.

Further objects are to provide improved car loading methods; arrangement of articles to be shipped, and spacers that are conveniently employed, economical, and provide improved security, for said articles being shipped, during their transportation.

These and other objects apparent in the specification are accomplished by a method of loading stacks of packing units in zigzag arrangement in railway cars and employing improved spacers, as hereinafter more fully described and illustrated in the accompanying drawings in which:

Fig. 1 is a perspective view of a plurality of packing units loaded in a railway car according to the method of the present invention and employing spacers of the present invention, a fractional view only of the car and load being shown.

Fig. 2 is a perspective view of a packing unit, known as a lug box, shown filled with grapes, cleated and lidded for shipping.

Fig. 3 is a wedge adapted to secure rows of packing units tightly between the side walls of the car.

Fig. 4 is a top plan view of a plurality of lug boxes loaded in a car according to the method of the present invention and employing spacers of the present invention.

Fig. 5 is an elevation of a spacer adapted for use at the ends of the railway car.

Fig. 6 is a section taken on line 6—6 of Fig. 5.

Fig. 7 is an elevation of a spacer adapted for use at the corners of the car.

Fig. 8 is a section taken on line 8—8 of Fig. 7.

Fig. 9 is an elevation of a spacer adapted for use at alternate corners of stacks of packing units within the load where no wall of the car is engaged.

Fig. 10 is a section taken on line 10—10 of Fig. 9.

Fig. 11 is an elevation of a spacer adapted for use between stacks of packing units along the side walls of the car.

Fig. 12 is a section taken on line 12—12 of Fig. 11.

Fig. 13 is an elevation of a modified form of the spacer shown in Figs. 11 and 12.

Fig. 14 is a section taken on line 14—14 of Fig. 13.

Fig. 15 is an elevation of a modified form of the spacer shown in Figs. 9 and 10.

Fig. 16 is a section taken on line 16—16 of Fig. 15.

Fig. 17 is a further modified form of the spacer shown in Figs. 9 and 10.

Fig. 18 is a section taken on line 18—18 of Fig. 17.

Fig. 19 is a fragmentary perspective view of eight adjacent boxes arranged in adjoining stacks of adjoining tiers according to the teachings, and employing a spacer, of the present invention.

Fig. 20 is a top plan view of the spacer and stacks of boxes shown in Fig. 19.

For convenience in description the present invention is described in terms of the loading of lug boxes in railway cars. It is to be understood that the lug boxes merely exemplify boxes, crates, and other packing units of substantially uniform shape. The railway car exemplifies transporting means having load constraining side walls.

Referring in greater detail to the drawings:

In Figs. 1 and 4 a portion of a railway car is indicated generally at 10 having a floor 11, side walls 12 and end walls 13. Lug boxes 14 are shown stacked and arranged in the car according to the method of the present invention. Fig. 2 is a perspective view of a lug box illustrating its substantially rectangular shape delineated by ends 15, sides 16, bottom 17, and cover 18. Before the loading of the car begins, the lug boxes are packed with grapes 19 and the covers affixed. Because of the contents of the lug boxes, the covers usually are bowed upwardly when applied. To permit the stacking of the lug boxes without depressing the bowed covers and mashing the grapes, cleats 20 are nailed to the cover at the ends of the boxes and space the boxes when they are stacked.

A conventional wedge 21 is illustrated in Fig. 3. Such wedges are employed to secure loads in place between the constraining side walls 12, as will presently be more fully described.

Figs. 5 to 12 illustrate spacers employed in loading the car 10 as shown in Figs. 1 and 4. The spacers, or buttress means, are particularly directed to the formation of a rigid and secure pack, of boxes that is well ventilated. Further, the spacers are adapted to save material, time of loading, and space in the railway car.

In Fig. 5 and in cross section in Fig. 6, spacers adapted for use at the ends 13 of the car 10 are shown. These end spacers each comprise an erect post 22, of substantially rigid material, bearing flanges 23 laterally extended therefrom. The flanges are mounted on the post at intervals in response to the size of the packing units being loaded. For example, when the lug boxes are

arranged in stacks, the flanges are preferably so spaced as to embrace a side of each box of each pair of vertically contiguous boxes in the stack. The top flange is conveniently of half the width of the other flanges for it need only embrace the side of the top box. The flanges 23 are adapted to be interposed between the end wall of the car and the sides of the stacks of lug boxes adjacent thereto while the posts are adapted to be interposed between the ends 15 of said lug boxes. To the end of forming air passages between the post and ends of the boxes of adjacent stacks, spacing blocks 24 are mounted on the post so as to be interposed between said post and the box ends of an adjacent stack. The spacing blocks are preferably spaced to coincide with the flanges and are secured both to the flanges and to the post. This enables the spacing blocks to engage the ends of the boxes in adjacent stacks at the junctures of vertically related pairs thereof.

In Fig. 7, and in cross section in Fig. 8, spacers adapted for use at the corners of the car are illustrated. These corner spacers comprise an erect post 25, flanges 26, and spacing blocks 27; similar to the posts 22, the flanges 23 and the spacing blocks 24, but with a difference. The flanges 26 are extended from the posts in only one direction to enable the spacers to be received by the corners of the car.

In Fig. 9 and in cross section in Fig. 10, spacers adapted for use between four adjacent corners of four adjacent stacks of lug boxes, is illustrated. These spacers are arbitrarily designated interior spacers and are readily visualized as two end spacers joined in flange to flange relation. A pair of posts 28, similar to posts 22, are secured in parallel relation with flanges 29 mounted therebetween and laterally extended to each side of the posts. The flanges 29 are vertically spaced, in the manner described for the flanges 23, to embrace the stacks of lug boxes near the junctures of vertically related boxes thereof. For reasons soon to become apparent the flanges 29 are preferably of twice the thickness of the flanges 23 and 26. Spacing blocks 30, similar to the spacing blocks 24 and 27, are mounted on each of the posts 28 and interposed between said posts and an adjacent stack of lug boxes. The spacing blocks are preferably vertically spaced to coincide with the flanges 29.

In Fig. 13, and in cross section in Fig. 14, spacers adapted for use at the sides of the car are illustrated. These side spacers comprise a pair of posts 31 secured in parallel relation with flanges 32 mounted therebetween and laterally extended to one side of said posts. The flanges 32 are vertically spaced, in the manner described for the flanges 23, to embrace the stacks of lug boxes near the junctures of vertically related boxes thereof. To form ventilation passage ways between the posts and adjacent side walls 12, spacing blocks 33 are mounted between said posts and the adjacent side walls. The spacing blocks are also preferably spaced to coincide with the junctures of vertically related boxes in the stacks.

Figs. 13 and 14 illustrate the side spacers modified to form ventilation passage ways between the posts and the sides of the car. To achieve this, the relative positions of the posts 31 and spacing blocks 33, as shown in Figs. 11 and 12, are interchanged. That is, the spacing blocks are interposed between the posts and the side walls of the car.

Referring to Figs. 6, 8, 10, 12 and 14, the end

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spacers, the corner spacers, and the side spacers are readily seen to be the interior spacers with portions thereof removed. The end spacers comprise substantially one-half of the interior spacers, the division being made in a longitudinal plane parallel to the posts 28 and bisecting the flanges 29 in the plane of the flanges. The corner spacers are essentially end spacers with the flanges 23 thereof removed on one side of the posts 22 to permit the spacers to be received by the corners of the car. The side spacers, as shown in Figs. 12 and 14, essentially comprise interior spacers having the laterally extended flanges 29 thereof removed from one side of the posts 28 or from one side of the spacing blocks 30. In each spacer it is seen that the flanges, the spacing blocks and the posts are arranged to form angular receptacles adapted to embrace corners of boxes arranged in stacks, the posts mounting the spacing blocks and the flanges constraining said angular receptacles to substantially vertical alignment.

In Fig. 15, and in cross section in Fig. 16, a modified form of the interior spacer is illustrated. In the modified form, only a single erect post 34 is employed. Flanges 35 are mounted on the post and laterally extended therefrom. The flanges are vertically spaced in the manner described for the flanges 23, to embrace the stack of lug boxes near the junctures of vertically related boxes thereof. Spacing blocks 36 are mounted on the post and interposed between said posts and an adjacent stack of lug boxes. Opposite the flanges from the post and spacing blocks, enlarged spacing blocks 37 substantially equal in width to the combined post and spacing block 36, are provided. The spacing blocks and enlarged spacing blocks are preferably vertically spaced to coincide with the flanges. This modified form of interior spacer possesses superior ventilation characteristics in that it allows maximum air flow between the rows of stacks longitudinally of the car and slight post resistance to said flow sufficient to divert air flow between the tiers.

In Figs. 17 and 18, a second modified form of the interior spacers is provided having four erect posts 38. The posts 38 are arranged in parallel pairs having spacing blocks 39 interposed between the posts of each pair. The pairs of posts are secured in parallel relation with flanges 40 mounted between the pairs and laterally extended to opposite sides thereof. The flanges are vertically spaced in the manner previously described for flanges 23. The second modified form of interior spacers, is advantageously employed where light weight and strength are required. It is to be noted that this form has ventilation passages between the posts and the spacing blocks and further ventilation passages between the posts and the spacers.

The vertical spacing of the flanges and spacing blocks has been described in terms of coincidence with the junctures of vertically related boxes in the stacks. It is to be understood that every juncture need not be embraced. For example, by embracing alternate junctures in the stacks, as shown in Fig. 1, each box in the stack is engaged. This increases ventilation without impairing rigidity of the pack.

The spacers herein described are advantageously employed in the method of ventilative car loading of the present invention, as follows:

The lug boxes are arranged in stacks of a height it is desired to have the load in the car.

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The stacks may be formed in the car but are usually conveniently formed on a platform or in the packing house and manually trucked to the inside of the car.

To illustrate the loading method, reference is again had to Figs. 1 and 4. A stack of lug boxes 41 is placed in a corner of the car, a side of the lug boxes thereof being positioned adjacent the end wall 13 of the car. A corner spacer is positioned in the corner of the box car and a corner of the stack of boxes 41 engaged in the angular receptacle formed by the flanges 26 and the spacing blocks 27 so that the flanges embrace the side of the stack and the spacing blocks the end thereof. The stack is then forced against the flanges 26 and the end wall 13. A second stack of boxes 42 is positioned generally in spaced end to end relationship with the stack 41, and an interior spacer employed between the ends of the stacks at the side of the boxes away from the wall so that the post 28 and the spacing blocks 30 are received by the interstice between the stacks and the flanges 29 embrace the sides of the stacks. An end spacer is positioned at the corner of the stack 42 diagonally opposite the interior spacer so that its flanges 23 space one corner of said stack from the end wall. Subsequently, additional stacks 43, 44 and 45 are similarly positioned and appropriate spacers employed. It is to be noted that the stacks form a tier laterally across the car 10, said tier, but not the individual stacks, being substantially parallel to the end wall 13 of the car. The consecutive stacks of boxes in the tier are substantially equally and oppositely angularly displaced from true alignment. It is further to be noted that spacers are interposed between the ends of the stacks of boxes at alternate sides of the row. A stack of boxes 46 is positioned in side to side relationship with the stack 41. A side spacer is employed to space the outer corner of the stack 45 from the side wall 12 of the car. The interior spacer positioned between stacks 41 and 42 also serves to space one corner of the stack 46 from the stack 41. Stacks 47, 48, 49 and 50 complete the second tier of stacks across the car. A further stack of boxes 51 is positioned in side to side relationship with the stack 46, one corner thereof being received by the angular receptacle of the side spacer already positioned and another corner thereof abutting a corner of the stack 46. The procedure is continued working from the end of the car toward the center. It is now apparent that the load consists of tiers of stacks across the car and rows of stacks longitudinally of the car as illustrated by stacks 41, 46, and 51. Further, it is apparent that the adjacent stacks in parallel rows longitudinally of the car are substantially equally and oppositely angularly displaced from parallel relationship with the side walls 12 of the car. Inasmuch as the flanges 29, and 32 are inserted in interstices formed by the angular displacement of adjacent stacks, their thickness is preferably twice that of the flanges 23 and 26 that are inserted in interstices between the sides of the stacks and the walls of the car. The flanges 23 and 26 compensate for the angular displacement of a single stack while flanges 29 and 32 compensate for angular displacement of adjacent stacks.

The tier of stacks are preferably secured by the constraining side walls 12 of the car by driving wedges 21 between side spacers and the side walls. It is evident that the spacers not only space the stacks, but also are shoring means

rigidly maintaining the boxes in position for transporting purposes.

As noted, in loading a car the loading starts at each end thereof, and is continued by placing additional tiers across the car until loaded to within a spaced distance from the longitudinal center of the car. Each end of the car is thus filled toward the center with tiers of stacks arranged in horizontal zigzag pattern across the car and rows of stacks in zigzag arrangement longitudinally of the car. The last tier of the pack started at each end of the box car is provided with a gate comprising strips of rigid material held at approximate parallel relation by being attached to posts positioned at right angles to the strips. The function of the gate is to position the last tier of lugs in the half car pack, one being provided for each half car load. The two gates are then wedged toward their respective ends of the car to hold the loads tightly in place. This is a cut and try job of carpentering for the lengths of the cars vary. The employing of gates and their wedges is conventional.

Figs. 19 and 20 demonstrate the improved ventilation characteristics of the loading methods and apparatus of the present invention. In Fig. 19 adjacent stacks of boxes 56, 57, 58 and 59 are shown in spaced arrangement and in association with a spacer of the general type shown in Figs. 15 and 16. The stacks 57 and 58 represent adjacent stacks in a tier of boxes and stacks 56 and 59 adjacent stacks in an adjoining tier. Individual boxes of stack 56 are shown at 60 and 61, boxes of stack 57 at 62 and 63, boxes of stack 58 at 64 and 65, and boxes of stack 59 at 66 and 67. It is to be noted that the stacks 57 and 58 and 56 and 59 are arranged in zigzag pattern in their respective tiers and that boxes 56 and 57 and boxes 58 and 59 are in zigzag arrangement in their respective rows.

The spacer employs a single erect post 34 mounting a plurality of flanges 35 each laterally extended therefrom at a juncture of superposed boxes. A spacing block 36 is mounted in the angle formed by the flange and a side of the post, at one side thereof, and a spacing block 37 of a width substantially equal to the combined width of a spacing block 36 and the post 34 is mounted on the flange on the opposite side of the post. As previously mentioned, the spacer is of the form shown in Figs. 15 and 16 but with the flange 35 and the blocks 36 and 37 formed from a single block of wood or other suitable material so as to present a unitary construction convenient for assembling purposes and conducive to economical construction. The flanges 35 are extended between the adjacent sides of the boxes in stacks 56 and 57, and the adjacent sides of the boxes in stacks 58 and 59. As shown, the flanges overlay portions of sides of vertically related boxes in each stack. Thus the flange 35 at one side of the post 34 is interposed between the side walls of the boxes 64 and 65 and the sides of boxes 66 and 67 and the flange on the opposite side of the post 34 between the sides of boxes 60 and 61 and the sides of boxes 62 and 63. When the gates are wedged toward the ends of the car to hold the load tightly in place, as previously described, the sides of the boxes are urged tightly against the flange 35, said flange serving dependably to space adjacent stacks in the rows of boxes and each flange to engage eight boxes in the load.

The post 34 engages the ends of boxes 66 and 67 in stack 59 and the block 36 the lower end

portion of box 61 and the upper end portion of box 60 in stack 56. The spacing block 37 engages and spaces the lower end portions of boxes 63 and 65 and the upper end portions of boxes 62 and 64 of stacks 57 and 58, respectively. The wedging of the stacks of boxes in the tiers between the side walls of the car urges the boxes in the stacks tightly against the blocks 37 and against the post 34 and blocks 36.

It will be noted that adjacent boxes in the stacks 58 and 59 abut each other near an end portion of sides of their boxes while the opposite end portion of said sides are spaced by the flange 35. Thus a transversely V-shaped passage is formed between the side walls of the boxes in stacks 58 and 59 vertically between the stacks. The same is of course true of the boxes in adjacent stacks in each row.

It will further be apparent by reference to Figs. 1, 4, 19 and 20 that the ends of boxes in each stack of each tier are most closely adjacent where engaged by a spacer. That is, the ends of the boxes converge toward the spacers, while the sides of the boxes converge at their ends farthest removed from the flanges 35 interposed therebetween. Thus, ventilation passages are formed longitudinally of the car between the rows of boxes as shown at 70, 71, 72 and 73 in Fig. 1. These passages serve to feed the horizontally wedge shaped passages between the side walls of the boxes, clearly indicated at 74 and 75 in Fig. 20. The passage of air or fumigating gases down the passages longitudinally of the car is demonstrated by arrow 76 in Fig. 19 between the ends of adjacent boxes and the post 34. Passage of air or fumigation gases transversely of the car between the sides of the boxes and past the post 34 are demonstrated by the two-headed arrow 77. Vertical movement of air and such gases in the longitudinal passages formed in the car between the end walls of the boxes are demonstrated at 78 and vertical movement of air between side walls of the boxes in the passages 74 and 75 shown at 79. It will further be evident that each box has an air passage at each side and at each end thereof being in abutment with adjacent stacks at opposite corners thereof and positioned by abutment with spacers at the alternate and opposite corners thereof.

Because of the zigzag formation of the stacks of lugs in the tiers and in the rows by the present invention and because only one-half of the number of adjacent corners of the stacks are spaced apart with spacers; one-half of the thickness of the spacers is saved for the conventional loading where spacers are employed at each corner. There are approximately 12 tiers of boxes in each row from each end wall of the car to the gates near the center of the car when conventional loading methods are employed. Assuming that the spacers are one inch in thickness, six inches of space is saved longitudinally of the car by each row of 12 boxes by employing the present method of loading. Thus 12 inches are saved in a row of 24 stacks. Lug boxes are approximately 14 inches wide. As stated herein, there is a degree of tolerance in the space left between the two car loads at the center of the car for wedging. This space usually is approximately 12 inches in width. By reducing this space only two inches and adding it to the 12 inches saved by employing the present method of car loading, sufficient space is saved in the car for another tier of boxes.

This permits the including of, in excess of, 4% more pay load in each car. In reducing the amount of material required in each spacer and reducing the number of spacers heretofore required by half, the present invention results in material savings in excess of 50% of that heretofore required. A rigid pack that has improved ventilative characteristics is achieved. Pre-cooling time of refrigerator cars and their contents is materially reduced. Cars loaded by the present method are conveniently and speedily loaded and unloaded. The fact that the ends, corner, and side spacers are longitudinal divisions of the interior spacers is conducive to speedy and economical formation of the same.

Although I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiments, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein, but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices and systems.

This application is a continuation in part of the application having Serial Number 569,859 which was filed on December 26, 1944, which application is now abandoned in favor of the instant application.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Buttress and spacing means for stacks of boxes and the like comprising a pair of erect parallel posts, vertically spaced flanges secured between the posts and substantially horizontally extended to each side of the posts, and vertically spaced spacing blocks mounted on each post on at least one of the two sides thereof from which the flanges are extended, the flanges and the blocks being of substantially the same vertical dimensions and being correspondingly spaced.

2. Buttress and spacing means for stacks of substantially uniform boxes and the like comprising vertically spaced spacing blocks, vertically spaced flanges secured to the spacing blocks and in association therewith forming angular receptacles adapted to embrace corners of boxes arranged in stacks, and post means mounting said spacing blocks and flanges with their centers in vertically spaced substantially twice the height of the individual boxes embraced and constraining the angular receptacles thereof to substantially vertical alignment.

3. In combination with a freight car, or the like, having circumscribing means for load retention, stacks of uniform substantially rectangular packing units arranged in end to end relation in tiers transversely of the car and in side to side relation in rows longitudinally of the car, and spacers, adapted to maintain the stacks of packing units in ventilative spaced relation, comprising posts erectedly positioned between the stacks of packing units in the tiers at alternate sides of the tiers, vertically spaced spacing blocks interposed between the posts and the stacks of packing units in the tiers and forming ventilating spaces therebetween, and vertically spaced flanges mounted on the posts and extended into the interstices between the tiers, the spacing blocks and flanges being mounted on their respective posts with their centers spaced substantially to coincide with alternate junctures of superimposed units in the stacks and to bridge the junctures.

4. Box spacers, adapted to secure boxes of substantially uniform size and shape arranged in

stacks and said stacks arranged in adjoining tiers, comprising pairs of substantially erect interconnected posts, one thereof being positioned between stacks of boxes of one tier and the other thereof juxtapositioned between adjacent stacks of boxes of an adjoining tier; vertically spaced flanges mounted between the posts and extended between the tiers of boxes at the junctures of superimposed boxes; and vertically spaced spacing blocks mounted on the posts and interposed between their respective posts and at least one of the adjacent stacks of boxes in the same tier.

5. In combination with a pack of boxes, or the like, of substantially uniform rectangular shape and size arranged in stacks, the stacks arranged in parallel tiers, the boxes arranged in end to end relation within the tiers, and the consecutive stacks of each tier approximately equally and oppositely angularly displaced from true alignment; spacers adapted to hold said boxes in ventilative spaced relation comprising posts positioned between the ends of adjacent stacks of boxes of each tier at alternate sides of the tier, vertically spaced spacing blocks mounted on the posts and positioned between their respective posts and adjacent stacks of boxes and forming ventilation passages between said posts and stacks of boxes, and vertically spaced flanges mounted on the posts and embracing the sides of the boxes of the stacks adjacent to the posts.

6. In combination with a railway freight car loaded with packing units of substantially uniform rectangular shape arranged in stacks, the stacks arranged in parallel tiers, the boxes arranged in end to end relation within the tiers, and the consecutive stacks of each tier approximately equally and oppositely angularly displaced from true alignment; buttress and spacing means adapted to hold boxes adjacent a wall of the railway car in ventilative spaced relation comprising posts positioned between the box ends of alternate stacks of boxes, near the side of the tier of said boxes adjacent said wall; elevationally spaced flanges borne by the posts and interposed between the sides of the boxes and the adjacent wall, and elevationally spaced spacing blocks interposed between the posts and at least one of each post's adjacent stacks of boxes.

7. In combination with a railway freight car loaded with packing units of substantially rectangular uniform shape arranged in stacks, the stacks arranged in parallel rows; the boxes arranged in side to side relation within the rows, and the consecutive stacks of each row approximately equally and oppositely angularly displaced from true alignment; buttress and spacing means adapted to hold boxes adjacent a wall of the railway car in ventilative spaced relation comprising elevationally spaced flanges interposed between the sides of alternate stacks of boxes, near the side of the row of boxes adjacent to the wall; pairs of erect posts mounting said flanges therebetween and positioned between the boxes and the wall; and elevationally spaced spacing blocks mounted on the posts between the boxes and the wall and forming ventilating passages between said boxes and the wall.

8. In combination with rectangular packing units of substantially uniform size and shape arranged in stacks and the stacks arranged in right angularly related rows and tiers, spacers comprising erect posts positioned between the stacks in the tiers, elevationally spaced flanges mounted on the posts and extended between the stacks in the rows, and elevationally spaced spacing

blocks mounted on the posts between their respective posts and adjacent rows of stacks, the flanges and spacing blocks being correspondingly vertically spaced to coincide with the alternate junctures of superimposed packing units in the stacks and to span the junctures between said packing units.

9. In combination with a freight car, or the like, having circumscribing means for load retention, stacks of substantially rectangular packing units of approximately uniform size and shape arranged in right angularly related rows and tiers, and spacers adapted to maintain adjacent stacks in the rows and in the tiers in ventilative spaced relation, comprising erect posts positioned between the stacks of packing units in the tiers, spacing blocks positioned between the posts and adjacent stacks of packing units in the tiers mounted on the posts in vertically spaced relation, and flanges positioned between the tiers and mounted on the posts in vertically spaced relation, the spacing blocks and flanges being mounted on their respective posts in positions coincident with alternate junctures of superimposed packing units.

10. In combination with a pack of substantially rectangular packing units of approximately uniform size and shape arranged in stacks, the stacks being arranged with their boxes in end to end spaced relation in tiers with successive stacks substantially equally and oppositely angularly displaced from alignment in their tiers providing relatively closer spacing of alternate sides of the ends of the boxes of successive stacks in the tiers, corresponding stacks in the tiers forming rows right angularly related to the tiers, successive stacks in the rows being substantially equally and oppositely angularly displaced from alignment in the rows providing interstices between successive stacks at alternate sides of the rows; spacers adapted to hold the stacks in the rows and tiers rigidly in ventilative spaced relation positioned between the tiers at the interstices between the stacks in the rows and between the rows at the more closely spaced sides of the stacks in the tiers comprising erect posts positioned between the stacks of packing units in the tiers, elevationally spaced spacing blocks mounted on the posts between their respective posts and adjacent stacks of packing units in the tiers, and elevationally spaced flanges mounted on the posts and extended into the interstices between the stacks in the rows, the centers of the spacing blocks and flanges being correspondingly elevationally positioned on their respective posts distances from the lower ends thereof multiples of the height of the individual packing units and from each other twice the height of said packing units.

11. A method for loading a railway car, or the like, having rectangularly related end walls and side walls with substantially uniform rectangular boxes comprising arranging the boxes in stacks approximately the height desired for the load in the car, arranging the stacks in tiers transversely of the car with the boxes in end to end relation in the tiers and successive stacks in the tiers substantially equally and oppositely angularly displaced from true alignment with corresponding stacks of boxes in the tiers forming rows longitudinally of the car with the boxes in side to side relation in the rows and successive stacks in the rows substantially equally and oppositely angularly displaced from true alignment, whereby adjacent sides of the boxes in the rows are in

abutment at one end and have interstices therebetween at the opposite end and adjacent ends of boxes in the tiers are more closely spaced at one side than at the other, and concurrently with the arranging of the stacks, positioning spacers in the load having erect posts, laterally extended flanges mounted on the posts in elevationally spaced relation coincident with alternate junctures of superimposed boxes in the stacks, and elevationally spaced spacing blocks mounted on the sides of the posts coincident with said alternate junctures of superimposed boxes with the spacers fitted in the interstices between the sides of the boxes and the posts and their spacing blocks mounted thereon fitted between the adjacent more closely spaced sides of the box ends.

12. In combination with substantially rectangular boxes of approximately uniform size and shape arranged in stacks with the stacks positioned in a plurality of adjacent tiers having the boxes in end to end relation and successive stacks in the tiers substantially equally and oppositely angularly displaced from true alignment, corresponding stacks of boxes in the tiers forming rows transversely of the tiers with the boxes in side to side relation in the rows and successive stacks in the rows being substantially equally and oppositely angularly displaced from true alignment, whereby adjacent sides of the boxes in the rows are in abutment at one end and have interstices therebetween at the opposite end, the interstices between successive stacks being at alternate sides of the rows, and whereby adjacent ends of the boxes are more closely spaced at one side of the tiers than at the other, the more closely spaced sides of the ends between successive stacks being at alternate sides of the tiers; spacers adapted to maintain adjacent stacks in the rows and in the tiers in ventilative spaced relation comprising erect posts positioned between the more closely adjacent sides of the ends of the stacks in the tiers, elevationally spaced spacing blocks mounted on the posts between said more closely spaced sides of the ends, and elevationally spaced flanges mounted on the posts and fitted to the interstices between the sides of the boxes, the spacing blocks and the flanges being mounted on their respective posts at alternate junctures of superimposed boxes.

13. In combination with a freight car, or the like, having rectangularly arranged end walls and side walls; a plurality of substantially rectangular uniform boxes arranged in stacks with the stacks positioned in a plurality of adjacent tiers having the boxes in end to end relation and successive stacks in the tiers substantially equally and oppositely angularly displaced from true alignment, corresponding stacks of boxes in the tiers forming rows longitudinally of the car with the boxes in side to side relation in the rows and successive stacks in the rows substantially equally and oppositely angularly displaced from true alignment, whereby adjacent sides of the boxes in the rows are in abutment at one end and have interstices therebetween at the opposite end, the interstices between successive stacks being at alternate sides of the rows, and whereby adjacent ends of the boxes are more closely spaced at one side than at the other, the more closely spaced sides of the ends between successive stacks being at alternate sides of the tiers; and spacers adapted to maintain adjacent stacks in the rows and in the tiers in ventilative spaced relation comprising erect posts positioned between the more closely adjacent sides of the ends of the

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stacks in the tiers, elevationally spaced spacing blocks mounted on the posts between said more closely spaced sides of the ends, and elevationally spaced flanges mounted on the posts and fitted to the interstices between the sides of the boxes, the spacing blocks and the flanges being mounted on their respective posts at alternate junctures of superimposed boxes.

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