June 13, 1944. G. K. S. FERGUSON 2,351,417

CARTON

Original Filed Oct. 2, 1936 3 Sheets-Sheet 1

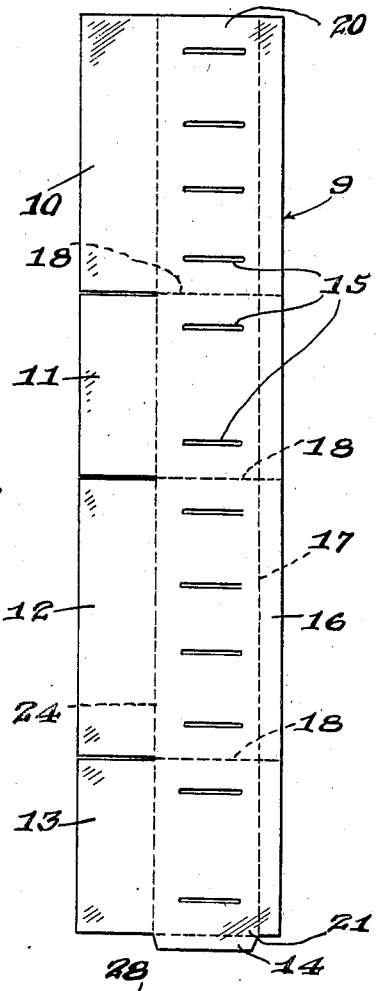

Fig. 1.

Fig. 2.

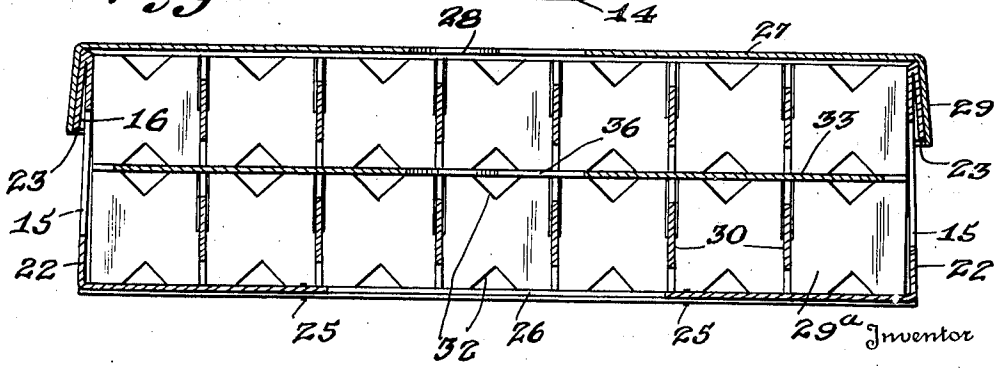

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Fig. 3.

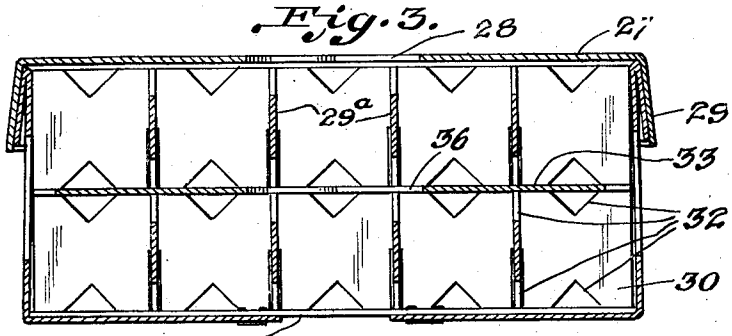

Fig. 4.

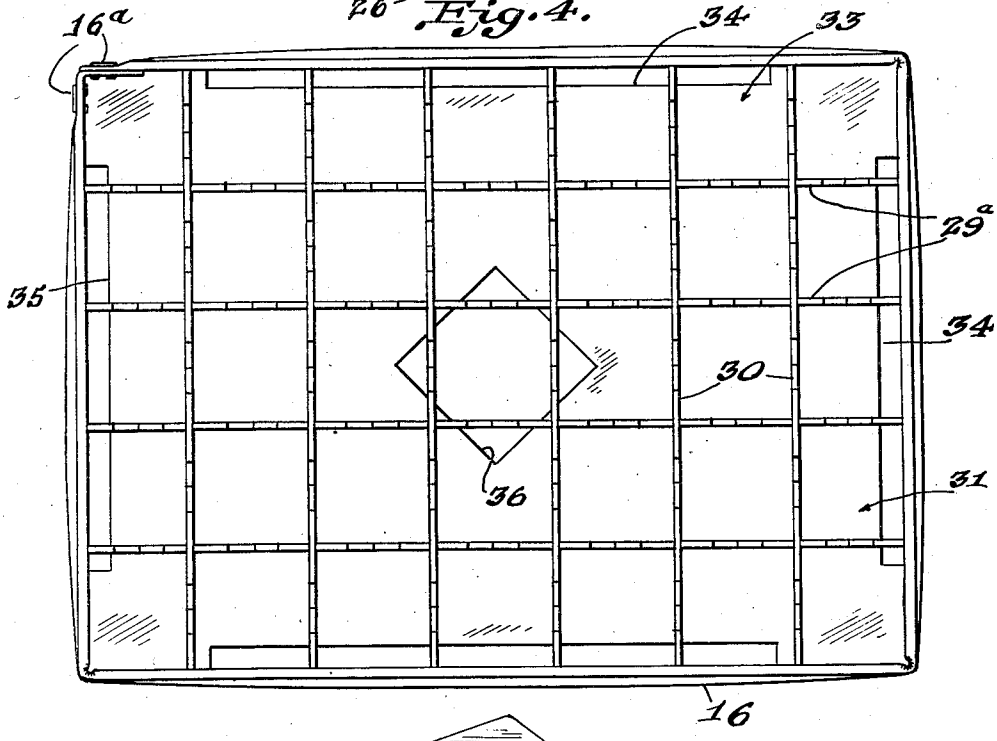

Fig. 5.

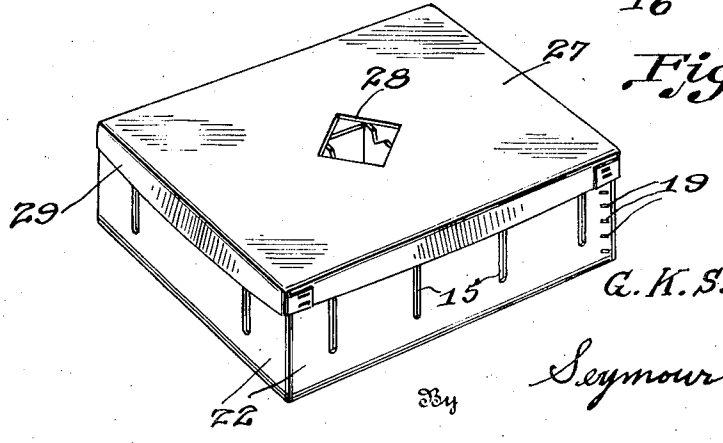

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Fig. 6.

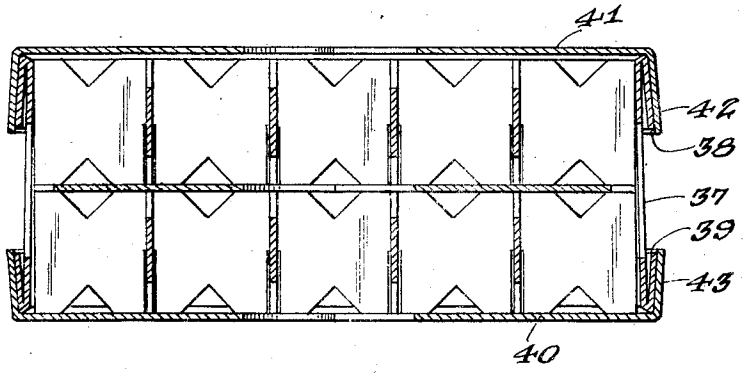


Fig. 7.

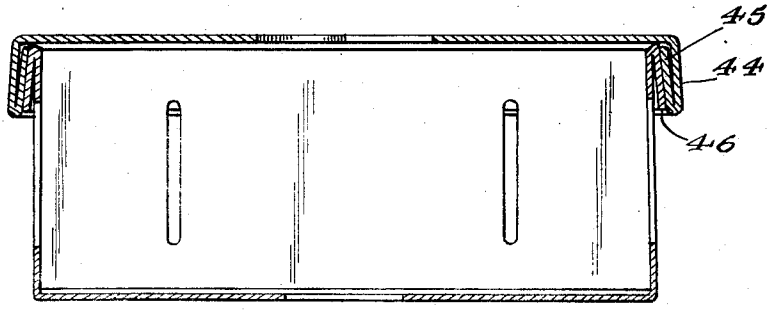
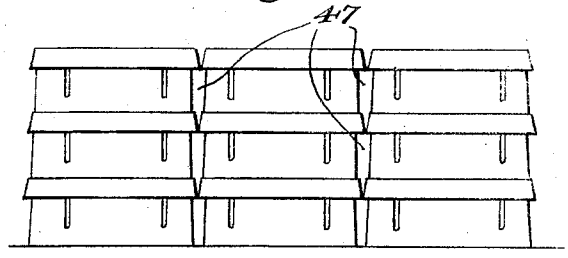


Fig. 8.



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Patented June 13, 1944

2,351,417

UNITED STATES PATENT OFFICE

2,351,417

CARTON

George K. S. Ferguson, Wilkinsburg, Pa., assignor to The Baltimore Paper Box Company, Baltimore, Md., a corporation of Maryland

Refiled for abandoned application Serial No. 103,749, October 2, 1936. This application June 2, 1942, Serial No. 445,524

8 Claims. (Cl. 229—6)

This invention relates to an improved means of handling fruits, vegetables, etc., from the time of plucking to sale to the consumer.

One of the objects of the invention is to provide an improved ventilated carton which may be formed of suitable sheet material, such as fiber board, and may be employed during the precooling, transportation and display of fresh vegetables, fruits or the like.

Another object is to furnish ventilated cartons so constructed that when piled side by side, horizontal air passageways will be provided between adjacent cartons for conducting air or gases discharged from the cartons.

A still further object is to supply an improved fiber board carton of stronger construction than those heretofore known.

A further object is to provide a novel carton, the body and cover of which are both constructed to insure ventilating passageways between adjacent cartons.

With the foregoing objects outlined and with other objects in view, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a plan view of a preferred form of blank from which the body of the carton is made.

Fig. 2 is a longitudinal vertical sectional view of the carton.

Fig. 3 is a transverse sectional view.

Fig. 4 is a top plan view with the cover removed.

Fig. 5 is a perspective view.

Figs. 6 and 7 are longitudinal vertical sectional views respectively of two modified forms.

Fig. 8 is an elevation of a number of the cartons in stack formation and illustrating the horizontal ventilating passageways which are formed between adjacent cartons.

Referring to the drawings, 9 designates a blank preferably formed of fiber board and provided at one longitudinal edge portion with flaps 10, 11, 12 and 13. Another flap 14 projects from one end of the blank.

The medial portion of the blank is provided with a series of ventilating openings 15 which preferably extend transversely of the blank.

In making up the body of a carton from such a blank, a strip 16 is folded outwardly on to the medial portion of the blank along a score line 17 which extends the full length of the blank, and then the ends of this strip are secured to the medial portion of the blank by staples, as shown at 16a (Fig. 4). Afterwards, the blank is folded along the transverse score lines 18 to form a tube, and the flap 14 is secured by any suitable means such as staples 19 (Fig. 5) to the opposite end portion 20 of the blank, to provide a knock-down tube.

Due to the fact that ends of the strip 16 are stapled to the end portions 20 and 21 of the blank, it will be understood that when the flap 14 is secured to the end 20 of the blank to form a tube, the strip 16 will act to force the upper ends of the side walls 22 (Fig. 2) inwardly so that these walls in the finished box will converge upwardly and their upper edge portions will be surrounded by the re-inforcing strip or rim 16. As the latter is continuous from end to end of the blank, it will be manifest that it will not only strengthen the upper end of the body of the box, but it will reinforce three corners of the box, and this is a great advantage as the corners are usually the weakest portion of a carton.

Furthermore, as the ends only of the strip 16 are secured in place, the strip, where it extends along the side walls of the box, has a tendency to bulge outwardly as shown at 23 due to the resilient nature of the fiber board. The bulged portions not only form handles for use in handling the carton but they also function as spacers to hold the side walls of the carton away from the side walls of adjacent cartons, as will be clear from an examination of Fig. 8.

The tubular structure heretofore mentioned can be shipped in flat condition and when it is desired to set the same up, the flaps 10 to 13 inclusive, are folded along the longitudinal score line 24 and then these flaps are secured together by staples 25 or the like to form the bottom of the boxes. The flaps are of such size as to prevent them from meeting at the central portion of the bottom of the box, and consequently, when the flaps are folded and stapled, ventilating opening 26 will be provided at the bottom of the box for the passage of air or gases.

Each carton will preferably be provided with a cover 27 having a central ventilating opening 28 and a depending skirt 29 which will embrace the strip 16.

For display purposes, I prefer to have the inner surfaces of the walls of the carton and the outer surface of the strip 16 of a color contrasting to that of the outer surfaces of the side walls and cover, and when the cover is in place it will function not only as an additional spacer but will protect the colored outer surface of the strip 16

so such surface will be in good condition when the carton with its contents is put on display.

If the carton is to be employed in the shipment of certain goods, such as apples, oranges or the like, I arrange within the same longitudinal and transverse partitions **29***a* and **30** which intersect one another to form cells **31**, each of which may receive a single apple, orange or the like, and in order to insure adequate ventilation, the partitions have top and bottom notches **32** through which air or gas may pass from one cell to the other.

If the carton is made sufficiently deep to contain more than one layer of fruit or the like, I divide upper and lower partitions from one another by a horizontal partition **33** having elongated edge notches **34** and **35**, and a central draft opening **36**. Obviously, this places the cells above the partition in communication with the cells below.

Instead of employing a blank like that shown in Fig. 1, I may use a blank similar to that illustrated, but modified so as to use a second strip **16** in place of the flaps **10** to **13** inclusive. Such a structure is shown in Fig. 6. In that figure, the ventilated tube **37** has an upper re-inforcing and spacing strip **38** and a lower one **39**, and these strips, like in the structure shown in Figs. 1 to 4 inclusive, will be continuous from one corner of the box back to that corner, and will be stapled in place as shown at **16***a* in Fig. 4, so that the strips will not only re-inforce the body of the box, but will act as spacers at both the top and bottom of the box. In this form of the invention, the bottom **40** of the box will be similar to the lid **41**, and the respective skirt **42** and upstanding wall **43** of these members will embrace the reinforcing strips or rims and also form spacers.

In order to obtain additional spacing, the cover member may be made as shown in Fig. 7. In this instance, the skirt **44** is provided with an extension flap **45** which is folded inwardly so as to make the skirt of double thickness, and this two thickness skirt, like in the other figures, will embrace the reinforcing strip **46** of the body of the box.

As illustrated in Fig. 8, when a number of these cartons are stacked side by side in a truck or railway car, horizontal passageways **47** will be arranged between them and this is of particular advantage for precooling purposes. For example, if we assume that a refrigerator car is substantially filled with cartons of this type, stacked as shown in Fig. 8, and containing fruit or vegetables, cold air could be forced downwardly through the cartons for precooling purposes. By forcing the cold air downwardly, it can travel through all of the cartons and be discharged into the passageways **47** from which warm air may be returned to the cooling system. By such precooling, fruit or vegetables are maintained in better condition, and when they reach their destination, they are in substantially the same condition as when packed in the cartons.

In reference to the advantages of my invention, I may list them as follows:

(1) By employing a continuous turn back rim or strip **16**, it is only necessary to staple one corner of the box, and this rim at the top of the box strengthens not only the corners, which are the weakest part of any shipping case, but makes a more rigid construction in the set-up box. Furthermore, the rim serves as handles and forms spacers at all sides of the box. In addition, the rim can be made of a color contrasting to the color of the external surface of the case, and this will add to the attractiveness of the fruit on display. As the cover will protect the rim, of course, the rim will present a clean appearance when the cover is removed. This factor is worthy of consideration due to the fact that when the cases are loaded in refrigerator cars, they are subjected to considerable chafing by rubbing against the walls and against each other.

(2) The cover and rim combined provides a space or channel between the cases to allow passage of sufficient air under forced circulation during precooling, down through the vent openings where the air dispenses out through the notches **32** and openings **15**, and then returns to the circulating fan. In this way, I obtain the greatest efficiency in precooling by actual convection of the heat from the surface of the fruit in the package.

(3) When the construction shown in Fig. 6 is used, there is also spacing between the side walls of adjacent packages, even when the packages are positioned on their sides. This spacing in connection with the vent openings in the side wall members will form a ventilated package for bulk produce, such as beans, peas, etc. This type of package can be loaded solid in trucks, cars or storage on their sides without placing strips between the packages and with ample ventilation assured. Any suitable means may be employed, of course, to keep the top and bottom members in position until it is desired to remove one or the other.

The present invention was disclosed in my prior forfeited application Serial No. 103,749, filed October 2, 1936, for which this application is a refile.

While I have disclosed what I now consider to be preferred embodiments of the invention in such manner that the same may be readily understood by those skilled in the art, I am aware that changes may be made in the details disclosed, without departing from the spirit of the invention, as expressed in the claims.

What I claim and desire to secure by Letters Patent is:

1. A fiberboard carton comprising a bottom from which extends side walls converging upwardly from the bottom to the top of the carton, a pair of said walls being secured together at one corner of the carton, the upper end portions of the side walls being folded outwardly and downwardly to provide a rim extending continuously around the walls from said corner back to that corner, means securing the ends of the rim to the carton, and a cover for the carton formed of fiberboard and having a skirt of double thickness embracing said rim.

2. A stiff fiberboard carton comprising straight side walls converging upwardly from the bottom to the top of the carton, the upper end portions of the side walls being folded outwardly and downwardly to provide a rim extending continuously around the walls from a point back to said point, the lower end portion of the walls being folded outwardly and upwardly to provide a second rim extending continuously around the walls from a point back to the last-mentioned point, and flat top and bottom members having portions embracing said rims.

3. A rectangular carton having a stiff body formed of fibrous sheet material and provided with straight upwardly converging side walls having at their upper ends an integral outwardly and downwardly folded rim which extends con-

tinuously around the walls of the carton from one corner back to that corner, whereby the upper end portion of each side wall is of plural thickness, means securing the ends only of the rim to adjacent walls of the carton whereby the rim bulges at the medial portion of each side wall and forms spacers at all sides of the carton, and a bottom united with the lower ends of the side walls.

4. A rectangular carton having a stiff body formed of fibrous sheet material and provided with straight upwardly converging side walls having at their upper ends an integral outwardly and downwardly folded rim which extends continuously around the walls of the carton from one corner back to that corner, whereby the upper end portion of each side wall is of plural thickness, means securing the ends only of the rim to adjacent walls of the carton whereby the rim bulges at the medial portion of each side wall and forms spacers at all sides of the carton, a bottom united with the lower ends of the side walls, and a cover for the carton having a skirt embracing said rim and bulged outwardly by the bulged portions of the rim.

5. A rectangular carton having a stiff body formed of fibrous sheet material and provided with straight upwardly converging side walls having at their upper ends an integral outwardly and downwardly folded rim which extends continuously around the walls of the carton from one corner back to that corner, whereby the upper end portion of each side wall is of plural thickness, means securing the ends only of the rim to adjacent walls of the carton whereby the rim bulges at the medial portion of each side wall and forms spacers at all sides of the carton, a bottom united with the lower ends of the side walls, and a cover for the carton having a skirt embracing said rim and bulged outwardly by the bulged portions of the rim, the bottom and cover having relatively large ventilating openings and the side walls having relatively small ventilating openings.

6. A rectangular carton having a stiff body formed of fibrous sheet material and provided with straight upwardly converging side walls having at their upper ends an integral outwardly and downwardly folded rim which extends continuously around the walls of the carton from one corner back to that corner, whereby the upper end portion of each side wall is of plural thickness, means securing the ends only of the rim to adjacent walls of the carton whereby the rim bulges at the medial portion of each side wall and forms spacers at all sides of the carton, a bottom united with the lower ends of the side walls, and a cover for the carton having a skirt embracing said rim and bulged outwardly by the bulged portions of the rim.

7. A fiberboard carton comprising a single piece of stiff fibrous material forming a flat bottom from which extends integral upwardly converging straight side walls, a pair of said walls being secured together, the upper end portions of the side walls being folded outwardly and downwardly to provide a rim extending continuously around the walls, means securing the ends only of the rim to the wall structure, whereby the rim bulges at the medial portion of each side wall and forms spacers at all sides of the carton, and a flat cover having a continuous skirt embracing said rim.

8. A rectangular carton having a body formed of a single piece of stiff sheet material and comprising straight upwardly converging side walls provided at their upper ends with an integral outwardly and downwardly folded rim which extends continuously around the walls of the carton from one corner back to that corner, means securing the ends only of the rim to adjacent walls of the carton, whereby the upper end of the body is contracted and the rim bulges at the medial portion of each side wall and forms spacers at all sides of the carton, and a flat cover having a continuous skirt embracing said rim.

GEORGE K. S. FERGUSON.