

April 21, 1942.

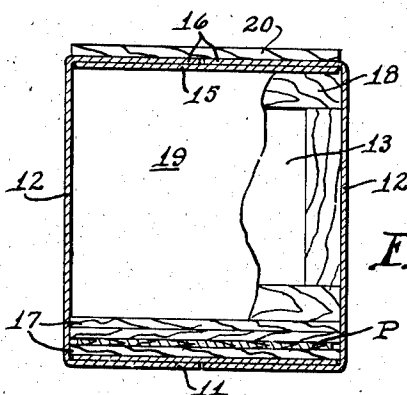
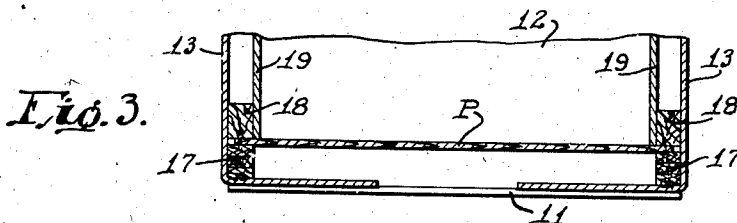
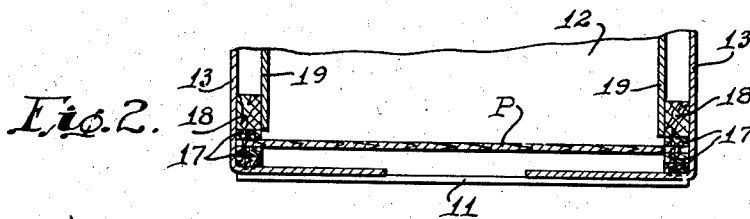
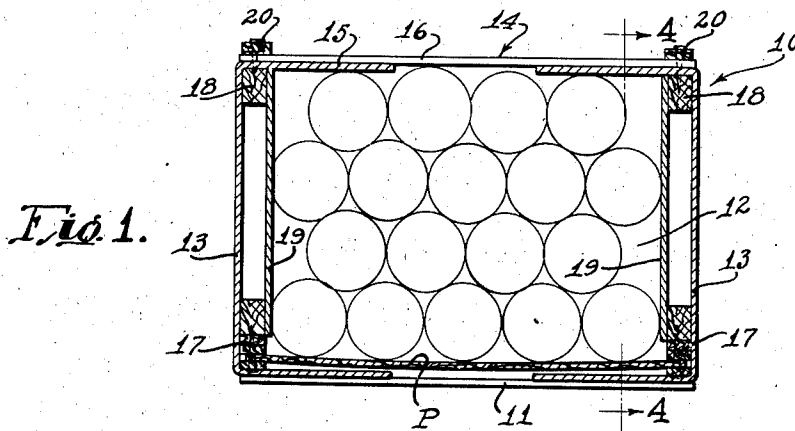
W. F. LUCE

2,280,155

CARTON STRUCTURE

Filed Aug. 31, 1938

2 Sheets-Sheet 1



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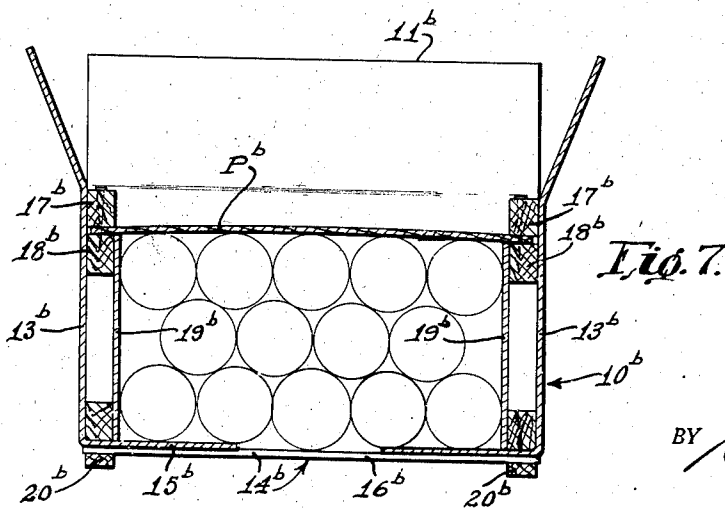
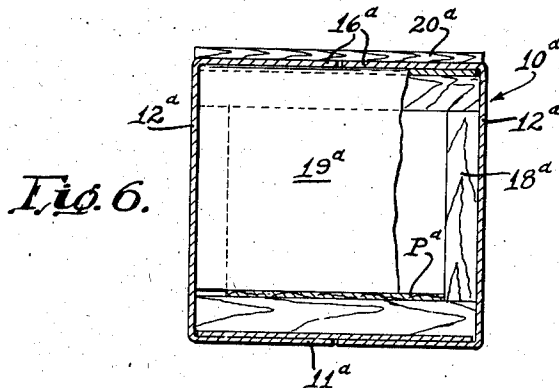
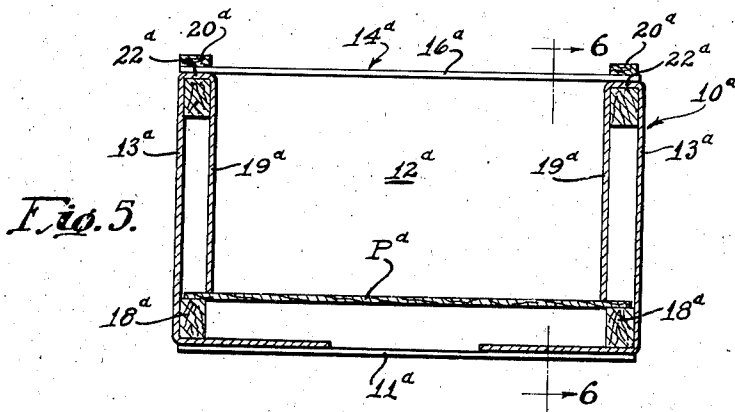
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### CARTON STRUCTURE

Filed Aug. 31, 1938

2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,280,155

## CARTON STRUCTURE

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Application August 31, 1938, Serial No. 227,679

2 Claims. (Cl. 229-14)

The present invention relates to carton structures and particularly to cartons constructed of paperboard, fiberboard or like material and which are designed as shipping containers for the transportation of fruits, vegetables, or other shrinkable commodities.

In United States Patent No. 1,942,032 issued to me January 2, 1934, there is disclosed a shipping container having means for taking up shrinkage of fruit during transportation, the means consisting of a flexible panel within the carton in contact with the commodity and a cleat interposed between each end of the panel and the cover to spring the panel and maintain the same under tension. In packing such perishable goods as fruit under commercial conditions, variations in the height of the pack occur in accordance with variations in the diameter of the graded fruit. Ordinarily, under such conditions, either different internal pressures will be developed in the packed cartons or, if equal pressures are to be maintained, cartons varying in capacity must be employed.

The carton structure comprising the present invention is designed as an improvement over the structure shown in my above identified patent in that means is provided whereby the capacity of the carton container may be varied to accommodate various gradations in the size of the fruit being packed while at the same time insuring uniform internal pressures within the commodity regardless of the graded size thereof.

The provision of such a carton structure being the principal object of the invention, another object is to provide a spring panel assembly for cartons of the type disclosed in my prior patent which is simplified and is possessed of a minimum number of parts, yet one which will accomplish all of the objects sought to be accomplished thereby and in a novel and effective manner.

Other objects of the invention, not at this time enumerated, will become apparent hereinafter.

In the accompanying drawings:

Fig. 1 is a longitudinal vertical sectional view of a carton structure manufactured in accordance with the principles of the present invention and showing the same packed;

Figs. 2 and 3 are fragmentary sectional views similar to Fig. 1 showing the spring panel in various adjusted positions;

Fig. 4 is a sectional view taken along the line 4-4 of Fig. 1;

Fig. 5 is a sectional view, similar to Fig. 1, of a modified form of carton structure;

Fig. 6 is a sectional view taken along the line 6-6 of Fig. 5; and

Fig. 7 is a sectional view similar to Figs. 1 and 5 showing another modified form of a partially opened, inverted carton structure.

Referring now to Figs. 1 to 4 inclusive, a carton 10 constructed of fiberboard or other suitable material comprises a bottom 11, side walls 12, end walls 13, and a top 14, the latter being provided by inwardly directed end flaps 15 and inwardly directed side flaps 16.

The means for taking up shrinkage of the fruit during transportation comprises a spring panel P which is preferably formed of wood and which extends across the container adjacent the bottom 11 thereof and which is supported at its transverse ends upon one or more of a plurality of wooden cross cleats 17 (three such pairs arbitrarily being shown). Wooden frames 18 of rectangular configuration are disposed in the ends of the container and the weight of any superimposed load on the container is supported by these cleats 17 and frames 18. Cushioning panels 19 are secured to the inner faces of the frames 18. Wooden nailing strips 20 are employed to seal the carton and the nails thereof extend through the cover flaps 15 and 16 and are received in the wood of the frames 18. The cleats 17, the panel P, and the wooden frames 18 are secured together as a unit by the use of nails which pass through these members.

In packing the carton 10 with fruit, regardless of the graded size thereof, no variation in the size or in the inherent structure of the carton is required. In Fig. 1 the ends of the spring panel P are spaced from the bottom 11 by means of a single pair of cleats and are spaced from the frames 18 by the two remaining pairs thereof. Such spacing of the panel from the bottom 11 insures a predetermined degree of pressure on the fruit when a certain graded size of fruit is packed. In Fig. 2, the ends of the panel P are spaced from the bottom 11 by means of two pairs of cleats 17 and are spaced from the frames 18 by the single remaining pair. Thus, the same degree of pressure on the fruit may be attained where fruit of a smaller graded size is packed. For a still smaller graded size, the ends of the panel are supported on the three superimposed pairs of the cleats 17 and the wooden frame is supported directly on the ends of the panel P. In each instance the various parts of the assembly are secured together by nails.

In Figs. 5 and 6 a simplified form of panel assembly is disclosed. Wooden frames 18<sup>a</sup> disposed

in the ends of the carton container 10<sup>a</sup> take care of any superimposed load while the panel P<sup>a</sup> is supported at its ends on the inside of the frame at the bottom thereof. The end walls 13<sup>a</sup> are extended over the top of the frames 18<sup>a</sup> to provide narrow rim panels 22<sup>a</sup> and are extended downwardly to the plane of the panel P<sup>a</sup> to provide cushioning panels 19<sup>a</sup>.

In Fig. 7, a still further modified form of spring panel construction is shown. In this form of the invention the panel assembly is adapted to be assembled after the fruit has been placed in the carton container. The container 10<sup>b</sup> is packed from the bottom and accordingly the container is inverted, the wooden frames 18<sup>b</sup> including the cushioning panels 19<sup>b</sup> are positioned in the ends of the container, and the panel P<sup>b</sup> is nailed in position under tension by means of a pair of relatively heavy cleats 17<sup>b</sup>. The bottom flaps which comprise the bottom 11<sup>b</sup> may then be closed.

The invention is not to be limited to the exact arrangements of parts shown in the accompanying drawings as various changes in the details of construction may be resorted to without departing from the spirit of the invention. For example, while in the various forms of carton structure the spring panel is shown positioned near the bottom of the container, the panel would

function equally well if positioned near the top thereof. Only insofar as the invention has particularly been pointed out in the appended claims is the same to be limited.

I claim:

1. In combination with a carton formed of fiberboard or the like having side walls, end walls, a bottom and a cover, a pair of open rectangular frames disposed in the ends of the carton and including only a pair of vertical members and upper and lower transverse members, and a spring panel having its ends supported only on the lower transverse members on the inside of the frame.

2. In combination with a carton formed from a single blank of carton material and having side walls, end walls, a bottom and a cover, a pair of rectangular frames disposed in the ends of the carton, and including vertical members and upper and lower transverse members, a spring panel having its ends supported on the lower transverse members on the inside of the frame, the end walls of the carton being extended over the upper transverse members and downwardly to the plane of the panel to provide rim panels and cushioning panels for the carton and to retain the spring panel in position.

WILLIS F. LUCE.