May 4, 1965 G. W. STARKEY ETAL 3,181,721

PACKING OF PRODUCE

Filed Oct. 23, 1963

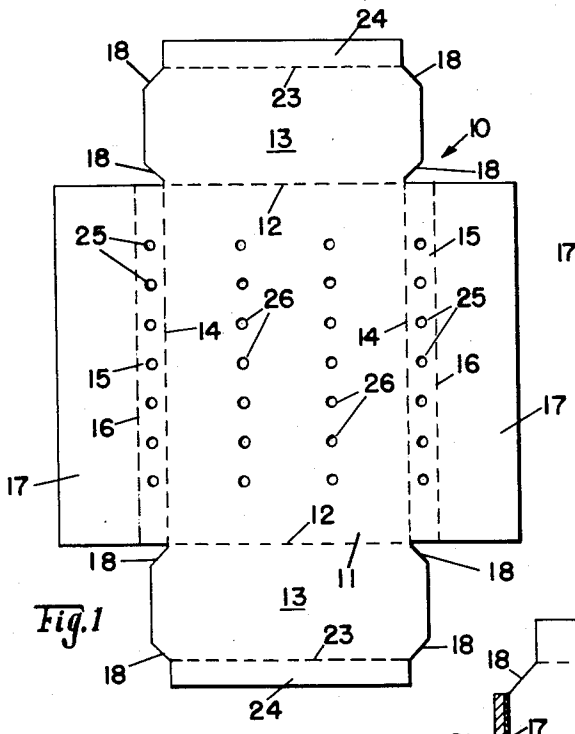

Fig. 1

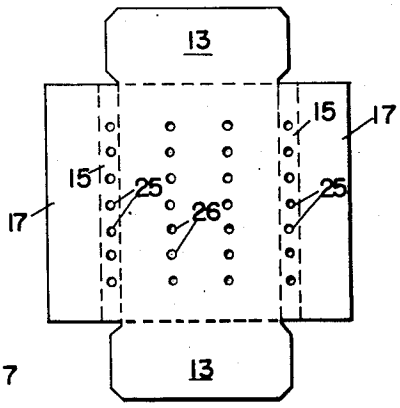

Fig. 1A

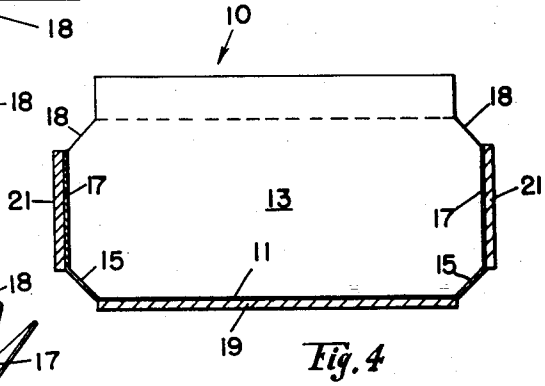

Fig. 4

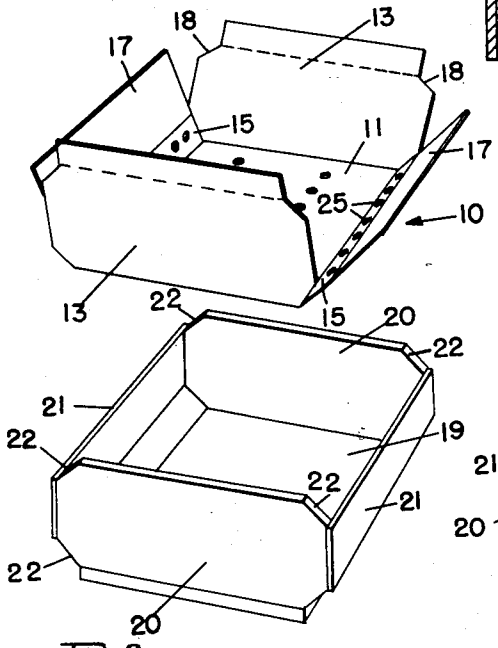

Fig. 2

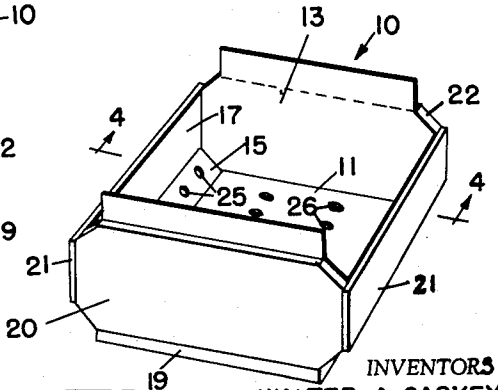

Fig. 3

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PACKING OF PRODUCE

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This invention relates to the packing of farm produce during storage, distribution and marketing thereof.

It is well known that most ripe fruits and vegetables will tend to spoil, in varying degrees, if bruising is not guarded against and unless they are kept under generally favorable conditions of temperature, humidity and ventilation. Farm produce conventionally is packed in wooden boxes or crates for delivery to markets. These boxes or crates are called "lugs" in the trade and will be so referred to herein. Typically each lug is provided with a replaceable liner comprising a plurality of separate paper inserts placed against the sides and bottom of the lug.

It is the principal object of this invention to provide an improved lug and linear combination which serves not only to better protect and maintain the produce, but which also constitutes a packing that is more simple and economical both in manufacture and use.

As indicated in the above-stated object, principal factors are effectiveness in protecting and maintaining the produce, and simplicity and economy in manufacture and use. From the standpoint of protecting and maintaining produce, the main considerations are the inner configuration and surface of the container and opportunity for circulation of air through its contents. In accordance with this invention there is provided a novel one-piece liner which fits within a specially adapted lug; the sides, ends and bottom of this liner are formed by an integral die-cut liner blank. This one-piece liner can be set up and put in place in a lug more quickly and simply than with the older practice of using the multiple liner inserts, previously mentioned, and the manufacture and stocking of liners also is simplified. A structural characteristic of this liner is that the bottom portion and adjacent side wall portions do not merge abruptly as a right-angular corner, but instead these portions are joined by outwardly and upwardly inclined integral, intermediate and perforate strips or panels of relatively medium width. In the lug structure, at the lower corner portions extending lengthwise a gap is provided between each wooden side slat and the lug bottom, and the aforementioned perforate liner strip or panel extends obliquely over this gap. By virtue of this feature, the circulation of air through the lower layer of fruit or vegetables is thought to be improved and damage thereto due to being squeezed into corners is eliminated.

Further details of this liner and lug structure, and other objects and advantages, will become apparent from the following description when read in conjunction with the accompanying drawings, in which:

FIGURE 1 is a face view of a preferred form of an unfolded lug liner blank according to this invention;

FIGURE 1A is a face view of a modified or alternate form of liner blank;

FIGURE 2 is a perspective view showing the lug, having a design especially adapted for use with the herein disclosed liner, together with this liner in the course of setting it up and placement in the lug;

FIGURE 3 is a perspective view of the lug with the liner in place against its bottom and side walls; and

FIGURE 4 is a transverse vertical section taken as indicated by lines 4—4 in FIGURE 3.

Referring to FIGURE 1, at **10** there is generally indicated the one-piece liner in its condition as an unfolded blank that has been cut, perforated and scored from sheet material by conventional manufacturing methods. The liner material may comprise relatively stiff paperboard, corrugated paper, foil or other paper-laminate combinations, and other suitable materials known in the art. For example, a wax-coated paperboard has been found to be highly satisfactory for this purpose. The liner **10** has a rectangular (quadrangular) bottom panel **11** defined by side fold lines **14** and end fold lines **12**. Fold lines **12** facilitate folding of end panels **13** perpendicularly relative to bottom panel **11**. Side panels **17**, adapted to extend in upright relation to panel **11**, are separated therefrom by an intermediate strip or panel **15** extending lengthwise between parallel fold lines **14** and **16**. Each panel **15** has an approximate width of between one and one and a half inch, which is less than (about ¼ to ½ of) the width or height of its adjoining side panel **17**. The corners of each end panel **13** are clipped or chamfered at roughly a 45-degree angle along edges **18** (although other angles between 30 and 60 degrees may be chosen as desired), and the length of each of these edges should be approximately the same as the width of each intermediate side panel **15**. Ventilating holes **25** are punched at intervals along the length of each such panel **15** and similar holes **26** are punched in the bottom panel **11**. A narrow strip **24** along the outer edge of each end panel **13** is adapted to project above the end walls of the lug, and if desired a scored fold line **23** may be provided as indicated. FIGURE 1A illustrates a modified or alternate form of liner in which this strip **24** has been omitted.

Referring to FIGURE 2, the wooden lug with which the previously described liner is particularly adapted to be used comprises essentially a bottom **19**, ends **20** and side slats **21**. The bottom **19** and the sides may comprise single wood boards or spaced slats, the latter being better for circulation of air. It should be noted that the corners of lug ends **20** are clipped or chamfered as indicated at **22** in correspondence with the edges **18** at the liner corner portions; also, that opposite these corner portions, at **22**, there are open spaces or gaps between the lug bottom **19** and the adjacent side slats **21**.

In placing the liner **10** in an empty lug, the liner simply can be grasped by its upper protruding strips **24** and forced downwardly into the lug, thereby bending the end panels **13** and side panels **15** and **17** upwardly. If desired, end panels **13** and side panels **15** and **17** may be bent upwardly along fold lines **12**, **15** and **16** before placing the liner in the lug. Narrow strips **24** then may be folded inwardly or outwardly if desired.

The narrow strips or panels **15** provide an inclined, more gradual merger between bottom panel **11** and side panels **17**. If desired, a similar perforated inclined panel can be interposed between the bottom panel **11** and each end panel **13** to promote greater air circulation through the lower layers of produce.

Inherent in the use of this lug and liner combination is the fact that fruits and vegetables at the lower side corners engage the inclined intermediate strips or panels **15** and cannot be bruised by being pressed into a corner. When many produce-containing lugs are closely stacked on top of and next to one another, the spaces between the liner strips or panels **15** in adjacent lugs provide ducts for the circulation of air through the stack and to the produce via ventilating holes **25**. It obviously is a less troublesome and time consuming operation to place this unitary liner **10** in a lug than to use a number of liner inserts placed individually against the lug bottom and walls. The manufacture and stocking of liners also is simplified.

It will be understood that various departures from the

specifically disclosed embodiments of the invention may be effected without departing from the scope thereof as defined by the following claims.

We claim:

1. In combination,

(I) a lug or the like comprising:

(*a*) a quadrangular bottom member,

(*b*) a pair of substantially rectangular upright end members secured to said bottom member, the lower corner portions of said end members being cut at an angle of between 30 degrees and 60 degrees, and

(*c*) upright side members extending between said end members and having their lower edges spaced above and outside said bottom member to leave a continuous opening between the lower edge of each side member and the adjacent side edge of said bottom member,

(II) and a liner within said lug comprising:

(*a*) a bottom panel sheet covering the bottom of the lug,

(*b*) relatively narrow, intermediate, perforated panels integral with said bottom panel and extending therefrom upwardly and outwardly within and along the length of said openings at an angle substantially the same as the angle of said lower corner portions of said end members,

(*c*) side panels integral with the last-mentioned panels and extending vertically therefrom along the insides of said side members, and

(*d*) end panels integral with said bottom panel and extending vertically along the insides of said end members.

2. A flat liner blank for use in a lug or the like comprising a single piece of sheet material having a central rectangular bottom panel defined by straight side and end fold lines, narrow panels integrally adjoining said bottom panel along said side fold lines and extending along the entire length of both sides of the bottom panel, side panels projecting beyond the last-mentioned panels and being joined therewith along fold lines parallel to said side fold lines defining the bottom panel, the width of said side panels being substantially greater than the width of said narrow panels, substantially rectangular end panels integrally adjoining said bottom panel along the entire length of said end fold lines and having a lengthwise dimension parallel to said end fold lines which is slightly greater than the width of the bottom panel, the outward corners of said end panels and also the inward corners thereof extending beyond the adjacent corners of the bottom panel being cut away at approximately 45-degree angles, and said narrow panels having ventilating holes punched at intervals along the length thereof.

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