Aug. 6, 1968 E. E. LANGSTON 3,395,823

LUG CONSTRUCTION

Filed Nov. 16, 1966 2 Sheets-Sheet 1

Fig. 1

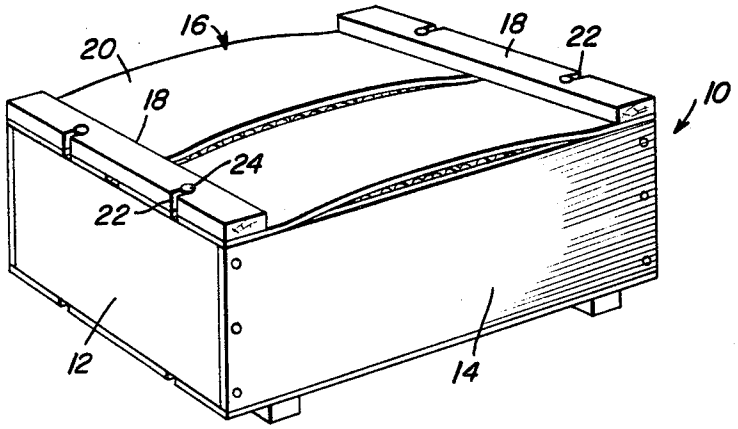

Fig. 2

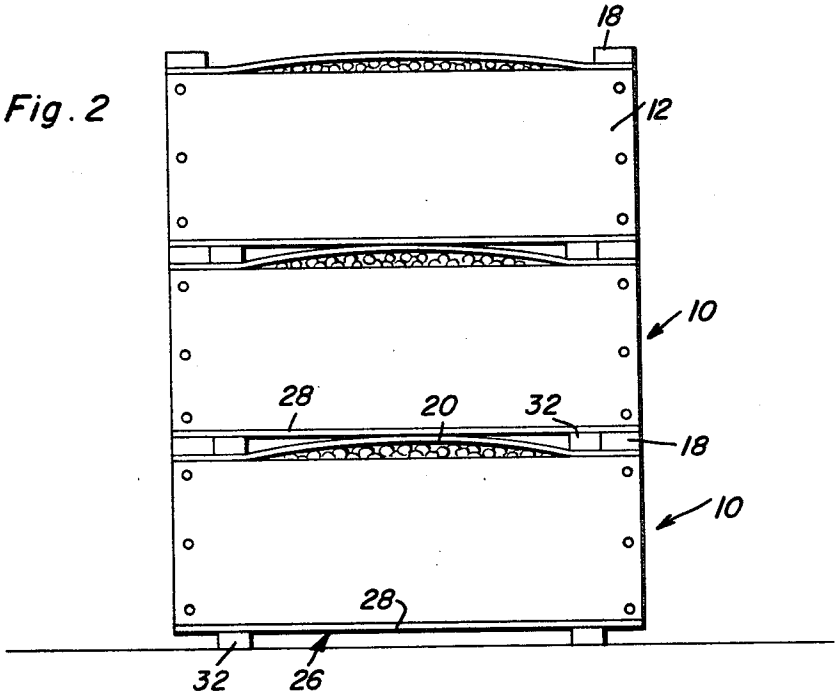

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Fig. 4

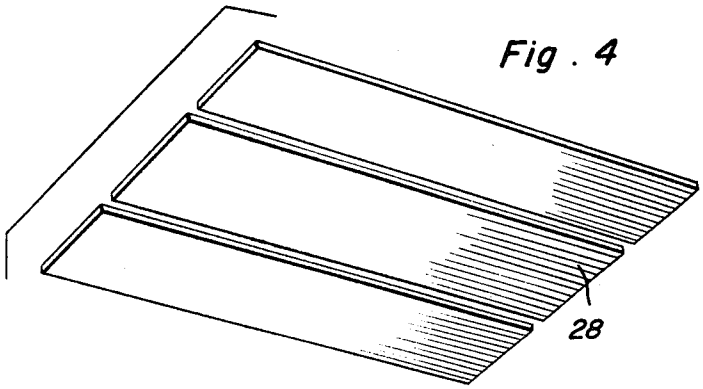


Fig. 5

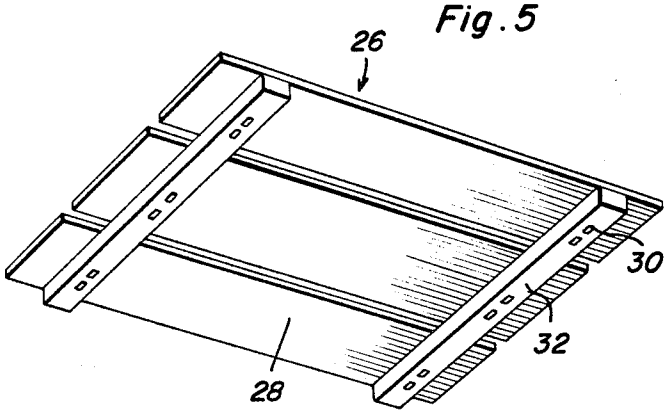


Fig. 6

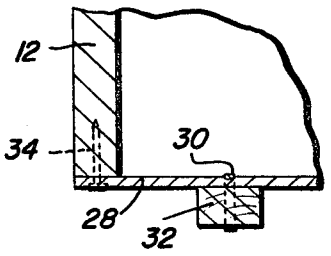
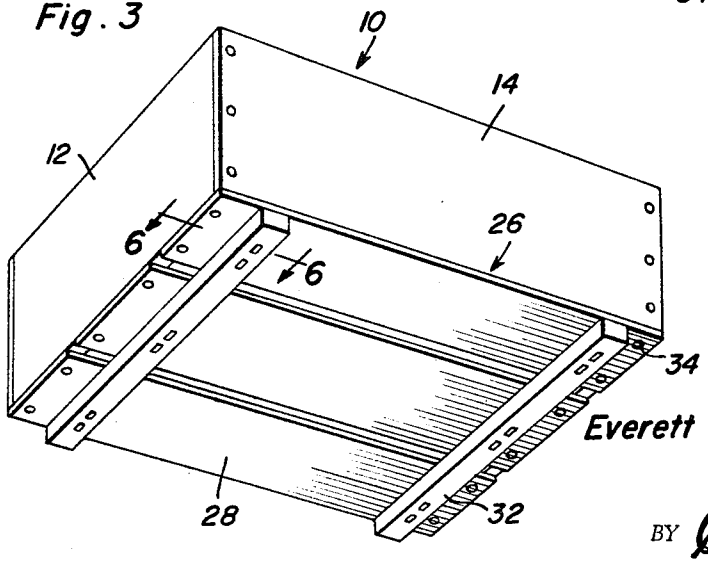


Fig. 3



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United States Patent Office

3,395,823

Patented Aug. 6, 1968

3,395,823

LUG CONSTRUCTION

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Filed Nov. 16, 1966, Ser. No. 594,907
2 Claims. (Cl. 217—40)

ABSTRACT OF THE DISCLOSURE

The disclosure herein involved is concerned with a packing crate or lug of the type particularly adapted for the boxing of grapes. This lug incorporates, in addition to the end pieces, side slats and a lid, a bottom having inwardly offset locking cleats receivable in locking relationship to the top cleats of a subjacent lug. The lug bottom is constructed of slats and cleats as a single unit prior to mounting on the end pieces with the mounting of the bottom being effected through the utilization of nails driven through the projecting ends of the bottom slats.

The instant invention is concerned with new and useful improvements in the construction of grape lugs which, within the scope of conventional practices, construction techniques, and government regulations, results in not only a substantially improved product, but one wherein substantial savings are effected when compared with the conventionally constructed lug.

It is a primary object of the instant invention to provide a lug which, in the construction thereof, incorporates features which result in substantial economies, while at the same time producing a lug incorporating a unique stabilizing feature therein whereby a stacking of a plurality of lugs is possible without fear of damage due to lateral shifting of the lugs relative to each other.

In conjunction with the above object, another important object of the instant invention resides in the utilization of a preformed bottom which, because of the nature thereof, results in a saving in both the material used, and in the assembly procedure and equipment.

Shippers of perishable commodities, such as grapes, in lugs have and are still experiencing heavy in-transit damage arising from a shifting of the stacked lugs. This shifting resulting in a sliding of the upper lugs off the support cleats of the lower lugs and a dropping of the upper lugs in the lower lugs so as to not only damage the goods in the immediately adjacent lower lug, but also, in some instances, set up what in effect amounts to a chain reaction with the shifting continuing along the entire stack. Many efforts have been made to solve this particularly vexing problem, such as for example the use of specially milled upper and lower interlocking cleats having notched offsets or the like. However, inasmuch as literally tens of millions of lugs are used each year, it will be appreciated that a tremendous and most likely prohibitive expense would be involved were the cleats to be specially milled or provided with an interlocking configuration as compared to the conventionally used elongated rectangular strips. Other attempts to solve this problem have involved a notching or otherwise modifying of the end pieces or heads. However, inasmuch as these end pieces are only ⅝" thick any reduction of this width so as to define an interlocking notch or the like would result in a substantial weakening of the lug. By the same token, inasmuch as the published weights of the lugs are based on the cubic inches therein any variations in the internal area of the container by a change in the mounting of the lid or bottom would preclude a shipper from using the published weight normally associated with the particular type of lug involved.

The solution proposed herein for this problem of interlocking stacked lugs against side slipping is quite simple

yet highly unique in that the desired interlocking between superimposed lugs is provided for utilizing materials which require no special milling work and which, when considering all the factors thereof, additionally provide for a substantial savings in the cost of the materials utilized and in the assembly procedures.

Basically, lugs as now commercially manufactured so as to most economically comply with strict government regulations, include end pieces or heads, generally ⅝" thick, a pair of opposed parallel side slats nailed at the opposite ends thereof to the end pieces, and top and bottom slats having the opposite ends thereof overlaid by cleats paralleling the upper and lower edges of the end pieces with nails extending through the cleats, the subjacent edge portions of the top and bottom slats, and into the top and bottom edge portions of the end pieces. As will be appreciated from FIGURE 4 of the drawings, it is normal that there be approximately a 1" crown between the top or lid cleats so as to avoid the appearance of being "slack packed" upon arrival at the destination. Such lugs are normally made up or framed at each individual packing and harvesting location from precut material. This make-up or framing comprises the placing of the two end pieces and the two side slats in a machine which, in a single operation, nails the side slats to the end pieces. Two bottom slats are then positioned and machine nailed. The lug next moves by conveyor to a cleating machine where two 1½" wide cleats are machine nailed to the bottom edge of the end pieces. As a final step, after the individual lug is loaded, the top slats and cleats are slipped beneath vertically extending nail-like clips previously provided in the upper edges of the end pieces. Slits or slots are provided in the upper slats and cleats for this purpose as will be noted in the drawings. The lugs are then ready for shipment with the bottom cleats of the upper lug engaging directly on top of the upper cleats of the lower lug.

The lug of the instant invention differs from the above described conventional lug through the utilization of a preformed bottom wherein the bottom cleats are offset inwardly from the end edges of the bottom slats a distance substantially equal to the width of the edge mounted top cleats so as to lie just inwardly thereof in the lug stacks, this slight inward positioning of the bottom cleats not interfering with the necessary crown of the top slats of the subjacent lugs. By the same token, inasmuch as the bottom is constructed as a single unit at the mill, essential time at the packing and harvesting location will not be required to individually mount the slats and bottom cleats. Likewise, the independent machine now utilized in mounting the two bottom cleats will also not be required. On the contrary, the only step in preparing the bottom of the lug at the harvesting location will be the nailing of the bottom to the end pieces by the driving of nails directly through the slat ends and into the bottom portions of the end pieces.

Several significant advantages are also additionally derived from this construction. For example, it is contemplated that rather than utilizing two relatively wide bottom slats such as is now conventional, substantially narrower bottom slats can be used with the slats being directly stapled to the bottom cleats. This use of narrower bottom slats can result in a substantial saving in the cost of the slats, wider slats being disproportionately more expensive than thinner slats as is the case with most lumber products. Further, inasmuch as the ends of the slats are to be nailed directly to the bottoms of the end pieces, rather than the mounting nails being driven directly through the bottom cleats, the bottom slats and then into the end pieces, substantially shorter nails can be used in mounting the lug bottom, this also resulting in savings.

Finally, while the bottom cleats in a conventional lug will be, as is also the case with the upper cleats, approximately 1½" wide, so as to provide a sufficient width for the reception of a nail therethrough sufficiently long so as to penetrate the cleat, underlying slat and a holding distance into the end piece, the bottom cleats in the lug of the instant invention can be approximately ¾" wide in that the width thereof need only be sufficient so as to receive and anchor a bottom slat holding staple driven therein. Accordingly, in summary it will be appreciated that the use of a preformed bottom unit with inwardly offset reduced width cleats and narrower slats enables the provision of a non-slipping lug which, while closely conforming to conventional lugs in materials and assembly procedures so as to enable the utilization of conventional assembling machines and methods, provides for a substantial reduction in the cost thereof. As an example, by eliminating one bottom cleat, the proposed bottom cleats being one half the width of the conventional cleat, a saving of one cent on each lug can be realized. This saving, when considering that tens of millions of lugs are used each year, will in turn result in a savings of tens of thousands of dollars. By the same token, the use of shorter nails through the inward offsetting of the bottom cleats likewise results in savings which could amount to thousands of dollars.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a top perspective view of a lug incorporating the features of the instant invention therein;

FIGURE 2 is a side elevational view of a stack of such lugs illustrating the interlocking cleats;

FIGURE 3 is a bottom perspective view of the lug of the instant invention;

FIGURE 4 is a perspective view of the three bottom slats;

FIGURE 5 is a perspective view of the preformed lug bottom; and

FIGURE 6 is a cross-sectional detail taken substantially on a plane passing along line 6—6 in FIGURE 3.

Referring now more specifically to the drawings, reference numeral **10** is used to generally designate a lug constructed in accordance with the instant invention. This lug **10** includes a pair of rectangular end or head pieces **12**, substantial full height rectangular side slats **14** nailed at the opposite ends thereof to the side edges of the end pieces **12**, and a clip-on lid **16**, the cleats **18** of which, in conjunction with the edges of the two slats **20**, have slots **22** for engagement about the shanks of predriven mounting nails or clips **24**. This structure is the same as that found in the conventional grape lug now substantially universally used. As an example of some pertinent dimensions, in a 30 pound lug, the end pieces **12** will be ⅝" thick and the cleats 1½" wide, this also being the width of such bottom cleats as are provided in the conventional lug.

The features which are deemed specifically unique in the instant invention reside in the bottom **26** of the lug **10** and the manner in which the bottom is constructed and mounted. The bottom **26** is to be preconstructed as a unit at the mill for subsequent assembly as such at the harvesting and packing location. This bottom **26** comprises three or four bottom slats **28** intimately stapled, by staples **30**, to a pair of elongated bottom cleats **32** which are positioned transversely across the ends of the bottom slats **28** inwardly spaced from the ends thereof a distance equal to or slightly greater than the width of the top cleats **18** so as to seat immediately inward thereof upon a stacking of the lugs as illustrated in FIGURE 2. Inasmuch as the lug bottoms **26** are preassembled, thinner strips of lumber can be used for the slats **28** than is conventionally required when assembling the lugs at the harvesting location. Thus, as noted supra, the lug bottom **26** of the instant invention will incorporate three or four slats, rather than the two slats normally used. This use of thinner slats will, by the same token, result in a cost saving.

The actual assembly of the lug bottom to the end pieces **12** of the lug **10** consists of driving nails **34** through the opposite ends of the bottom slats **28** into the lower edge portions of the end pieces **12**. As will be appreciated, these nails **34** do not go through the bottom cleats as in a conventional lug, thus enabling the use of substantially shorter nails, this also resulting in appreciable savings in addition to requiring only a simplified nailing process. In addition, as will possibly best be appreciated from FIGURE 2, the bottom cleats **32** are approximately one half the width of the top cleats **18**, the greater width not being required by the bottom cleats in that no nails are to be driven therethrough such as would be required were these cleats **32** to be nailed directly to the edge pieces **12**.

The bottom cleats **32**, paralleling the top cleats **18** transversely across the lug **10** at the opposite ends thereof, because of the relatively narrow width thereof, nest just inwardly of the top cleats **18** of a subjacent lug **10** without affecting the upward bulging or crowning of the top slats **20** as will be readily appreciated from FIGURE 2. By the same token, the seating of the bottom cleats **32** in this manner effectively prevents any shifting of the stacked lugs such as could result in a dropping of an upper lug into a lower lug and the substantial damage which would result therefrom. Furthermore, this construction is effected utilizing conventional rectangular wood strips with the final product being a lug having all of the size and rigidity characteristics of a conventional lug at a reduced price both because of less expensive materials and the elimination of assembly steps at the harvesting and packing location, all of this of course being in addition to the lug locking feature constituting one of the basic objects of the instant invention.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a packing lug, a pair of laterally spaced rectangular end pieces, a pair of side slats having the opposite ends thereof secured to the side edges of said end pieces so as to define a rectangular enclosure, a lid overlying said enclosure, said lid comprising top slats extending transversely between and overlying the upper edges of said end pieces in direct surface-to-surface engagement therewith, and a pair of top cleats fixed to the top slats and extending transversely across the end portions thereof, one top cleat paralleling and directly overlying the upper edge of each end piece with the top slats therebetween, said top cleats being in direct surface-to-surface contact with the top slats, nail-like lid fasteners fixed within and extending upwardly from the upper edges of said end pieces, said top slats and top cleats, at the opposite ends of the lid, both including outwardly opening inwardly extending slots therein for reception of the nail-like lid fasteners therein upon an outward movement of the opposite ends of the lid for securing the lid to the end pieces in overlying relation thereto, and a bottom, said bottom comprising bottom slats extending transversely between, underlying, and being in surface-to-surface contact with the lower edges of said end pieces, fastener means securing the opposite ends of said bottom slats to the lower edges of said end pieces, a pair of bottom cleats in direct surface-to-surface contact with the bottom slats, one bottom cleat paralleling the lower edge of each end piece, each bottom cleat being inwardly offset from the

corresponding end piece lower edge to a point just laterally inward of the corresponding top cleat for engagement, in a stack of lugs, just inward of the top cleat of a subjacent aligned lug, and fastener means securing said bottom cleats solely to said bottom slats, said top and bottom cleats being substantially rectangular in cross-section and of generally equal height.

2. The construction of claim 1 wherein said bottom comprises a preassembled unit wherein the bottom slats are elongated, of equal length, and coplanar, said bottom slats being independently secured to the bottom cleats for coaction between said bottom slats and said bottom cleats in defining a single unit for mounting on the lower edges of the end pieces.

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