Oct. 23, 1934. H. O. FRY 1,977,761

SHOOK END CONSTRUCTION

Filed May 19, 1934 2 Sheets-Sheet 1

Fig. 1.

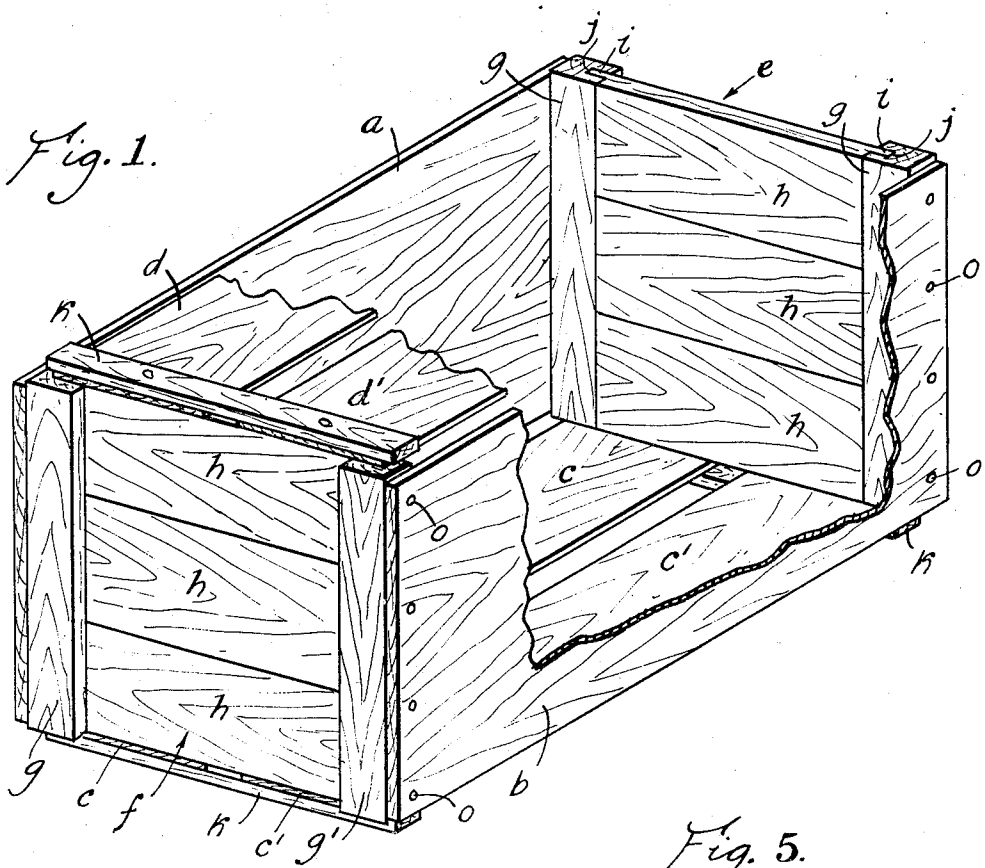


Fig. 5.

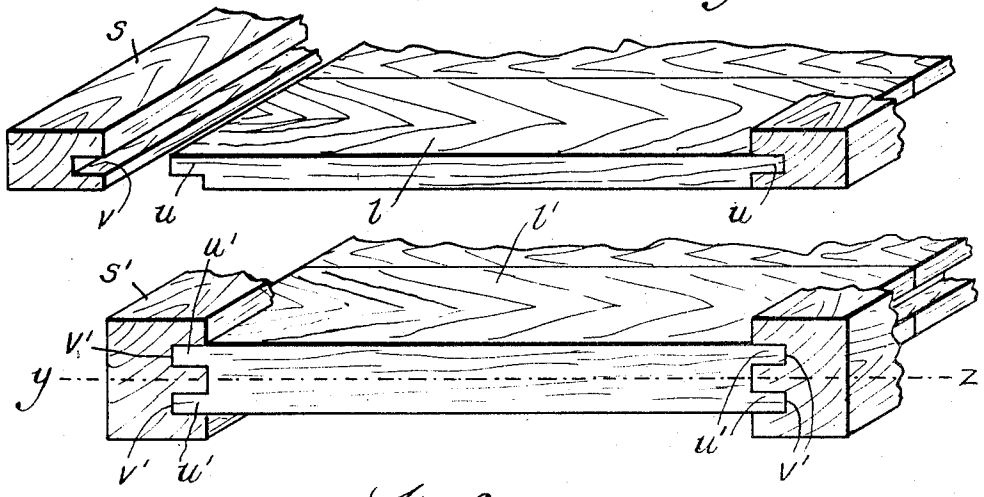


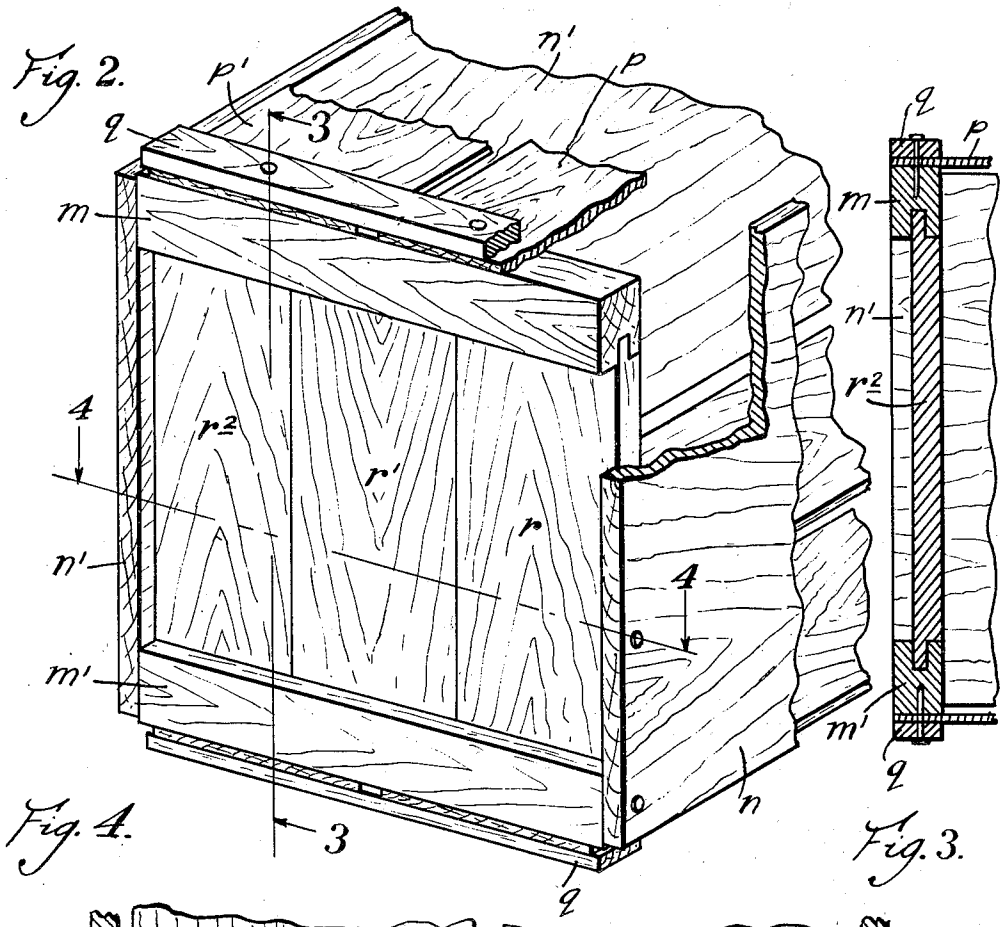
Fig. 6.

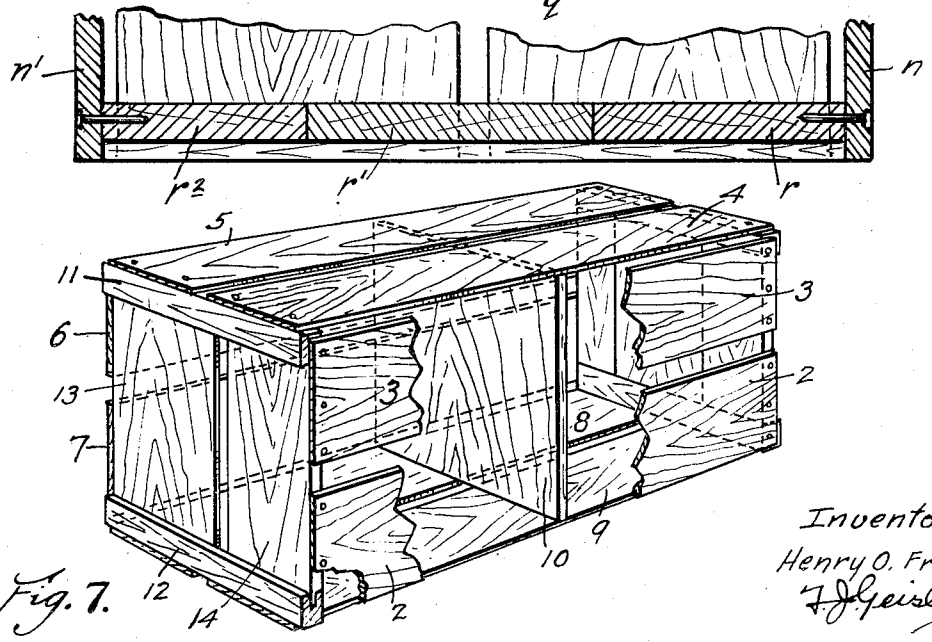
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SHOOK END CONSTRUCTION

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UNITED STATES PATENT OFFICE

1,977,761

SHOOK END CONSTRUCTION

Henry O. Fry, Reedsport, Oreg.

Application May 19, 1934, Serial No. 726,517

4 Claims. (Cl. 217—5)

My invention relates to wooden boxes of the styles used, for example, for shipping egg cartons and fruits, and is concerned specifically with the construction of the ends of these boxes. In this style of box the ends, instead of being made up of solid pieces of lumber, are often made up of lighter strips or slats fastened between end bars. This, as well known, has the advantage of saving material and reducing the weight, and thus reducing the cost of shipping. It also prevents warping of the box ends, and largely eliminates end-grain nailing surfaces which are so susceptible to splitting when the slats or sides are nailed to the box ends.

Boxes of the style mentioned are further provided with cleats to strengthen the box ends, and these cleats incidentally afford hand-holds facilitating the handling of the box when loaded with its pack. In order to serve for the latter purpose, it is necessary that the cleats are firmly secured in place and resist being torn loose. Cleats nailed in place have more or less weakness.

One of the main objects of my invention is, therefore, to provide made-up box-end structures including cleats as an integral part of the main or strong portion of these box ends, instead of being separate pieces dependent for their security on the nails by which they are fastened to the box-ends.

A further object of my invention is to provide strong cleated box-end structures which incidentally provide broad nailing surfaces at their opposite outer faces or edges, and likewise at their ends, thus providing effective nail anchoring surfaces to which the slats making up the sides and the top and bottom of the box may be securely fastened.

A further object of my invention is to eliminate the danger of having any projections from the interior faces of the box-ends which might injure the pack or its lining. When the cleats are nailed on the box-ends it frequently happens that unclenched nails project into the interior of the box and tear its lining or filler and even injure the contents, for example, when the box constitutes an egg crate, puncturing both the egg carton and the eggs.

A still further object of my invention is to provide unitary box-end structures whose component parts are so arranged and interlocked as to contribute maximum strength and firmness to each other, and to the entire box; and, by affording secure anchorage for the nails fastening the side slats to the box-ends, to hold the side slats connecting the box-ends so firmly in place that the side slats form strong braces therewith.

These objects I attain by a box construction comprising end walls composed of outer bars of rectangular cross-section and interfitted panel-pieces fastened to the outer bars by tongue and groove, the tongue and groove fitting so arranged as to provide a broad abutting face or shoulder at the base of the tongue, at the inner faces of the end walls, whereby said abutting shoulder will receive the wrenching strain imposed on said cleat-like projections when the filled box is lifted.

Other details of construction by which I attain the above mentioned objects, and incidental features, are hereinafter fully described with reference to the accompanying drawings.

In the drawings:

Fig. 1 is a perspective drawing of one model of my improved box, with a portion of one side and of the top broken away. The ends of this box are set up with the cleats vertical;

Fig. 2 is a fragmentary drawing in perspective of another model of my improved box, with the cleats in the box-end horizontal;

Fig. 3 is a vertical cross-section of the end of the box taken on the line 3—3 of Fig. 2;

Fig. 4 is a horizontal cross-section of the end of the box taken on the line 4—4 of Fig. 2;

Fig. 5 is a fragmentary drawing of my box-end with one of the cleats separated from the cross pieces;

Fig. 6 illustrates the construction for making duplicate box-ends simultaneously preparatory to sawing them apart; and

Fig. 7 is a drawing in perspective showing the application of my invention to a standard egg-crate.

Referring to Fig. 1: *a* and *b* are sides of the box fastened to its ends by nails *o*; *c* and *c'* and *d* and *d'* pieces constituting its bottom and top respectively, and *e* and *f* the box-ends. Each box-end comprises a pair of cleats or vertical posts *g*, *g'* rigidly fastened to the panel-pieces *h*, the ends of said panel-pieces *h* being made with tongues *i* fitting in grooves *j* of the cleats *g* and *g'*. Strips *k* are placed over the ends of the top and bottom of the box, as is customary, to facilitate opening up the top or bottom and to hold the top and bottom more securely to the box-ends.

In Fig. 2 the cleats *m* and *m'* of the box-ends are horizontal. In other respects the box-end is exactly the same as those shown in Fig. 1. The box-end contains the intermediate panel-pieces *r*, *r'* and r^2. *n* and *n'* are the sides of the box, *p* and *p'* the strips constituting the top and *q* the

strips placed over the ends of the top and bottom. The upper cleat *m* offers a firm hand-hold for lifting the box.

Detail of construction of my box-ends is shown more clearly in Figs. 5 and 6. In Fig. 5 the cleat *s* is removed from the end panel-pieces *t* showing a clear view of the rectangular groove *v* of the cleat into which the rectangular tongue *u* of the panel-piece *t* fits tightly. In the construction of my box end I use a waterproof glue for holding the tongue *u* firmly in the groove *v*, thereby rendering the use of any nails in the construction of my box-end unnecessary. It will be noted that the inside faces of the ends *e* and *f* in Fig. 1 are smooth. There are no rough projections and no projecting nails to injure the box contacts.

Fig. 6 illustrates a special method of manufacturing my box-ends by making the cleats *s'* and the panel piece *t'* of double thickness, providing double grooves *v'* in the cleats and double tongues *u'* in the ends of the panel-pieces, and, after the double box-end is made, it is re-sawed thru the middle on the longitudinal line *y—z*, thus producing two box-ends. This procedure is a considerable aid in speeding up the manufacture of my box-ends and thus reduces cost.

Fig. 7 illustrates the embodiment of my invention in a standard crate for packing eggs. The ordinary egg crate is quite light in weight, the sides being made of thin spaced slats as 2, 3, 4, 5, 6, 7, 8 and 9 in Fig. 7. It is customary to make such crates with a center partition 10. To insure the careful handling of egg-crates they are provided with horizontal cleats on the ends. But the customary nailed-on cleats have the objectionable features already explained, which objectionable features are completely eliminated by the use of my unitary box-end in which the necessary cleats are provided by the rectangular bars 11 and 12, to which the panel-pieces 13 and 14 are rigidly attached by tongue and groove fitting. Furthermore the rectangular bars 11 and 12 provide broad firm edge surfaces as anchorage for the nails fastening the slats of the top and bottom of the crate.

I claim:

1. A cleated wooden box-end comprising bars of rectangular cross-section and interfitted thinner panel pieces, each of said bars having a longitudinal groove, and each end of said panel pieces having a tongue adapted to fit into said longitudinal groove, said tongues being offset from one face of said panel pieces, the distance between one wall of said groove and one face of said bars being equal to the distance said tongues are offset, whereby one face of said box-end will be smooth and said bars will project out in the other face of said box-end and constitute cleats for the box-end.

2. A cleated wooden box-end comprising bars of rectangular cross-section and interfitted thinner panel pieces, each of said bars having a longitudinal, rectangular groove, and each end of said panel pieces having a rectangular tongue adapted to fit into said longitudinal groove, said tongues being offset from one face of said panel pieces, the distance between one wall of said groove and one face of said bars being equal to the distance said tongues are offset, whereby one face of said box-end will be smooth and said bars will project out in the other face of said box-end and constitute cleats for the box-end.

3. A cleated wooden box-end comprising bars of rectangular cross-section and interfitted thinner panel pieces, each of said bars having a longitudinal, rectangular groove, and each end of said panel pieces having a rectangular tongue adapted to fit into said longitudinal groove, said tongues being offset from one face of said panel pieces, the other face of said panel pieces being flush with one side of said tongues, the distance between one wall of said groove and one face of said bars being equal to the distance said tongues are offset, whereby one face of said box-end will be smooth and said bars will project out in the other face of said box-end and constitute cleats for the box-end.

4. A wooden box assembly comprising cleated end walls, each comprising a pair of bars of rectangular cross-section and interfitted thinner panel pieces, each of said bars having a longitudinal, rectangular groove, and each end of said panel pieces having a rectangular tongue adapted to fit into said longitudinal groove, said grooves and said tongues arranged to provide broad abutting shoulders adjacent to the inside face of said end walls, said bars and said panel pieces being flush on the inside face of said end walls, said bars overhanging said panel pieces on the outside face of said end walls and thereby constituting cleat-like projections for said outside faces of said end walls, and side members fastened to and connecting said end walls.

HENRY O. FRY.