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UNITED STATES PATENT OFFICE.

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BOX AND CRATE.

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Specification of Letters Patent. Patented June 13, 1911.

Application filed November 4, 1909. Serial No. 526,294.

To all whom it may concern:

Be it known that I, HENRY LAWRENCE GULLINE, of the town of Granby, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Boxes and Crates; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates particularly to foldable boxes and crates and it has for its object to provide a box or crate of this type which can be a cube or anything within a cube, and to this end it is constructed with collapsible sides braced together and having a bottom and a cover pivoted thereto, such parts being adapted to, when set up, support and retain a pair of end panels which are otherwise completely removable and adapted to be stored within the box when folded.

Other features of the invention comprise receptacles provided by the box members when folded for the removed end panels folding partitions and such as used in the shipment of eggs, selected fruit and other articles; and the particular arrangement and connection of the parts of the box whereby tightness of the package and proof against pilfering without detection, are secured.

For full comprehension, however, of my invention reference must be had to the accompanying drawings forming a part of this specification in which similar reference characters indicate the same parts and wherein—

Figure 1 is a perspective view of my improved box ready for use; Fig. 2 is a transverse sectional view of the box when set up; Fig. 3 is a like view of the box folded; Fig. 4 is a longitudinal sectional view of the box folded; Fig. 5 is a detail perspective view of one of the posts; and Fig. 6 is a perspective view of one end of the box folded; Fig. 7 is a detail sectional view illustrating the pivotal connection between the posts and bars.

My present box comprises four corner posts rectangular in cross-section and each divided midway of its length into members *b b* joined at their outer sides by plate-hinges *c* having movement in the direction of their length. These hinges are embedded in saw cuts *d* longitudinally of the post members, thus being protected and utilizing

their full strength in bracing such post members, and at the same time permitting the latter to come into full abutment when the box is set up, and the outer side edges of the post members to lie in contact when the box is folded. One of these posts is shown in detail in Fig. 5. The front panel of the box is made up of a pair of these posts having fixed between their upper ends a bar *g* of square cross-section and less in width than the posts and set with its outer and top sides flush with the outer sides and tops of the posts, in order that the said posts may afford abutting strips *h* against which the end panels rest, as will be presently shown. The lower ends of the posts are pivoted to a bar *k*, equal in width to the bar *g* and equal in depth to the width of the posts to permit the lower halves of the latter when turned inwardly (with the box folded) to have their top and bottom sides flush with the top and bottom sides of the bar *k*. These proportions of the bar *k* and posts must be made to accommodate the thickness of the end panels, as will be presently shown. Each post member is slotted longitudinally from the end which abuts its companion post member to a point in the plane of the adjacent side of the bars *g* and *k*, the inner edges of such slots (with relation to the box) being in the plane of the inner sides of the said bars *g* and *k*; and a pair of body pieces *m* having their ends tenoned thus forming shoulders *l* and they are set in these slots with the posts abutting against the shoulders *l*, the inner faces of these body pieces being flush with the inner sides of the bars *g* and *k*.

The back panel is constructed similarly to the front panel excepting that the top bar, indicated at *o*, is pivoted between the upper ends of the rear posts and has its lower side rounded to clear the top edge of the upper body *m* when turned on its pivots.

The pivotal connection between the top bar *o* and the rear posts, and between the lower ends of all the posts and the bottom bars *k*, and between the tops of the front posts and the top bar *g* is effected by pins 30 having heads 31, such pins being passed freely through holes in the end of the posts and driven into the different bars, the portions within the bars being gummed, thus fixing the pivot pins to the bars and

permitting the post ends to freely rotate thereon. The outer ends of the holes in the posts are enlarged to accommodate the heads of the pivot pins, the effect being to counter-sink such heads and prevent tampering therewith without damaging the edges of the holes thereby insuring detection, while the gumming of the nails makes the removal thereof more difficult and causes the tamperer to further damage the edges of the holes.

The bottom of the box consists of a single panel *p* of slightly less length than the bars *k*, and having a pair of battens *x* extending along the side edges thereof and presenting projections disposed within the space between the front and back panels, such projections serving to support the end panels, and the battens serving to lift the main body of the box from anything upon which the battens rest.

The cover 20 has battens 22 and is similar to the bottom and carried solely by the pivoted bar *o* and fastened to the front top bar *g* only after the box is packed.

The end panels are indicated at *s* and consist of a pair of rectangular members preferably made up of several layers of wood or other material, and their dimensions are such that they fit snugly between the front and back panels and between the abutting strips *h* and the ends of the bottom and cover panels while the projections of the battens prevent vertical displacement in both directions of these end panels.

The front and back panels are braced together by a pair of rigid links *t*, preferably steel strips, slotted at their ends to be retained in slidable relation with the tops of the front and back posts at points above the center pivots thereof, the slots permitting of the relative movement of the front and back necessary to allow the box to be folded. These links afford handles by which the box can be lifted and when the box is folded are not liable to become caught on projecting objects.

w are foldable partitions for packing eggs, fruit or other articles.

Recesses *x* are cut in the batten at the free edge of the cover in the vicinity of the screw holes *y* by which the cover is fastened, and sealing labels *z* stuck in these recesses over the heads of the screws enable tampering with the fastenings to be detected.

The front upper side bar *g* is held against rotation with relation to the corner posts by pins 40 driven through the posts into the ends of the bar.

To fold the box the end panels are slid from place and laid on the bottom, the cover shut down, and the sides folded inwardly. The upper portion of one side edge of the folded box is then lifted sufficiently to permit the collapsed or folded partitions *w* to

be introduced into the receptacle 25, (see Fig. 4) formed by the folded posts, the bars *g* and *k*, and *o* and *k*, and the outer surfaces of the panels or body pieces of the sides; while the receptacle 26 (see Fig. 4) formed by the bottom panel, abutment strips *h*, the lower portions of the bars *k*, and the inner surfaces of the lower halves on the side panels or body pieces, together with the end panels contained therein, serve to reinforce one side of the receptacle 25, and the cover reinforces the other side, thus solidifying the package formed by the folded box.

The corner posts being divided permit of saw cuts being made from one end instead from a point inward from the end; the separation of the side panel sections affords the receptacles as above mentioned for the end panels and the folded partitions used in the shipment of eggs, fruit, &c.; the freedom of the side panel sections from each other prevents the collection of dirt at their abutting edges; the end panels retained in place according to this invention are more effectively braced without the necessity of weakening them by screws or other attaching means; and the particular relation of the front and back panels or body pieces to the corner posts and longitudinal bars gives to the box an interior without protuberances.

A box constructed as above described is thoroughly ventilated when folded and all interior surfaces are protected.

What I claim is as follows:—

1. A foldable box comprising a bottom, corner posts divided midway of their length to form two sections such sections being hinged together and adapted to fold one upon the other, side panel sections carried by the post sections and inwardly disposed from the hinge points of the latter to cause such side panel sections to be spaced apart from one another to form a compartment when the post sections are folded, removable end panels closing the spaces between the ends of the side panel sections, and means connecting the upper ends of the corner posts at each end of the box.

2. In a foldable box, the combination with a bottom member having upwardly projecting longitudinal side bars, of corner posts divided midway of their length into upper and lower sections such sections being hinged together and adapted to fold one upon the other, the lower sections being pivoted near their lower ends to the said longitudinal side bars at points in a plane above the bottom member, upper and lower side panel sections carried by the post sections and disposed adjacent to the said pivot points and inwardly of the hinge points of the post sections to cause the lower panel sections to be spaced apart when the box is folded from the said bottom members to form one compartment and the upper panel sections to be spaced

apart from the lower panel sections to form
a second compartment, removable end panels
closing the space between the ends of the
side panel sections, and links connecting the
5 upper ends of the corner posts at each end
of the box, substantially as described and for
the purpose set forth.

In testimony whereof, I have signed my
name to this specification, in the presence of
two subscribing witnesses.

HENRY LAWRENCE GULLINE.

Witnesses:

WILLIAM P. McFERT,
FRED J. SEARS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
