July 2, 1935. H. B. HEIM 2,006,892

WOODEN BOX

Filed May 17, 1933

FIG. 1.

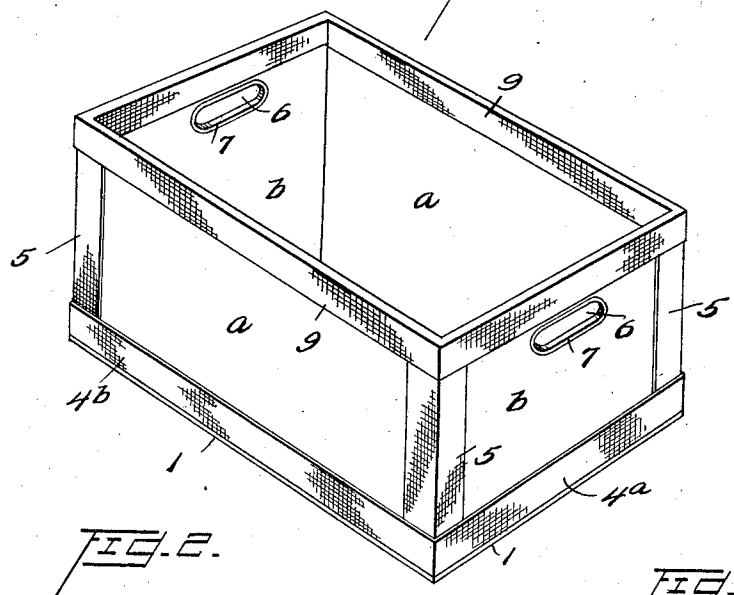


FIG. 2.

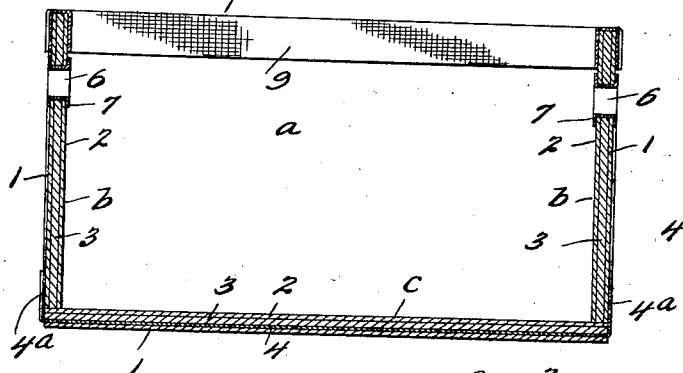


FIG. 4.

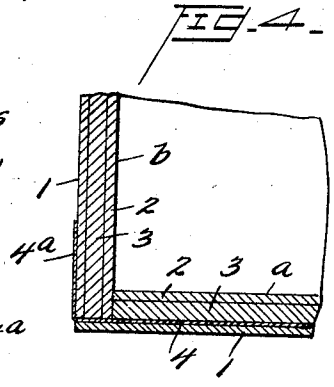
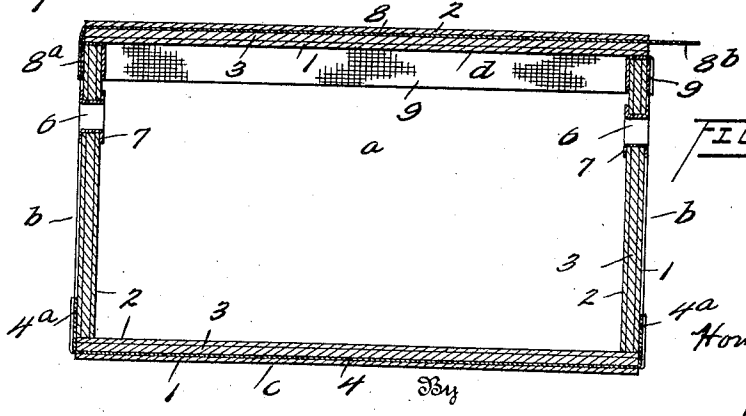


FIG. 3.



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WOODEN BOX

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4 Claims. (Cl. 217—2)

This invention relates to a wooden box or case adapted particularly for containing bottles, but useful for other purposes. The object of the invention is to provide a strong wooden box of light weight, so that it can be easily handled and so that the cost of transportation, usually charged for by weight, shall be reduced to a minimum.

In carrying out the invention, I construct the parts of the box of ply wood, that is, several relatively thin layers or plies of wood cemented together, with the grain of each ply extending transversely with respect to the grain of the adjacent ply. The ply wood is very strong in proportion to its weight, but the parts cannot be strongly united by nails driven into the edges of the parts between the plies. In order to hold the parts together, and particularly in order to hold the bottom securely to the body of the box, I provide in the bottom part a sheet of strong flexible material, preferably a strong fabric, cemented between two of the plies of said part, and the marginal portions of this sheet are turned upwardly and cemented to the sides and ends of the box. The sheet material used might be thin sheet metal, but I prefer a strong woven fabric. A suitable cement unaffected by moisture is used for cementing the plies and the fabric. The corners of the box are fastened together by strips of flexible material cemented thereto and the top edges of the box are covered by a strip of the same material which extends around the corners of the box and is cemented to its inner and outer sides and this strip strengthens the corners. In addition, light sheet metal corner-pieces may be used, if desired. The strips on the corners and top edges of the box protect the edges of the ply wood from moisture and abrasion.

Where a cover is desired on the box, it is made in the same way as the bottom piece, of ply wood with a layer of fabric cemented between two of the plies and with one or more projecting marginal portions for attachment to the body of the box.

In the accompanying drawing,

Fig. 1 is a perspective view of a box, without top, made in accordance with my invention;

Fig. 2 is a central longitudinal vertical section through the same;

Fig. 3 is a similar section through the box with a lid or cover applied thereto, and,

Fig. 4 is a similar section through part of the box, showing a modification.

Referring to Figs. 1, 2 and 3 of the drawing, the box comprises sides *a*, ends *b* and a bottom *c*, each of these parts composed of ply board, consisting of thin outer layers of wood 1 and 2 and an intermediate layer 3, cemented together by a waterproof cement. As is usual in three-ply boards, the grains of the outer plies run longitudinally of the board and the grain of the intermediate ply runs cross-wise of the outer plies.

The three-ply board is very strong in proportion to its weight, but it is impracticable to make a strong box by nailing the parts together because the nails will not hold well when driven into the edges of the board parallel with the plies. In order to overcome this difficulty and to make a strong box of light weight, I connect the parts together as hereinafter described.

Since the bottom of the box supports the contents and is subjected to rougher usage and greater stress than the other parts, I cement a layer of flexible sheet material 4 between the outer ply 1 and the intermediate ply 3 of the bottom board *c*, and the marginal portions 4ª and 4ᵇ of this sheet are brought upwardly on the ends and sides of the box and are cemented to these parts. This sheet material is preferably a strong fabric. The three plies of the bottom, in Figs. 1, 2 and 3, are all of the same width and length and extend to the sides and ends of the box body.

In constructing the box, the sides and ends are tacked together, for convenience in handling, and are then firmly bound together by strips 5 of strong flexible sheet material cemented to the corners, as shown in Fig. 1, and by a strip 9 of similar material which covers and is cemented to the upper edge of the box and extends downwardly on its sides and ends and is cemented to the latter parts. The box may be further strengthened by light metal corner-pieces, if desired. The body of the box thus assembled, is placed on the bottom board and the margins 4ª and 4ᵇ of the fabric 4 are then brought upwardly and cemented to the sides and ends. While nails driven through the bottom and into the sides and ends would only hold the bottom lightly at the points where the nails were driven, the fabric or other strong flexible material holds throughout the lengths of the sides and ends and firmly secures the bottom to the box body.

For convenience in handling the box, hand holes 6 are provided in the ends and in these are fitted metal grommets 7.

For use in stores or for local delivery of bottled goods, it is not necessary to provide a top for the box, but for transportation by freight or express, it is desirable to provide a top *d*, as shown in

Fig. 3. This top, substantially the same as the bottom *c*, comprises the outer plies **1**, **2**, the intermediate ply **3**, and the flexible sheet material **8**, cemented between the plies **2** and **3**.

The sheet material may be extended beyond the side and end edges of the top and cemented to the sides and ends of the box body, or it may be extended beyond the side edges only or the end edges only. For convenience of illustration, I have shown the marginal portions 8^a of the sheet **8** extended beyond one end of the top and cemented to one end of the box body, while the opposite marginal portion 8^b of the sheet is shown free, but may be cemented to the adjacent end of the box body. With this arrangement it would be necessary to cut one of the marginal portions of the sheet to open the box and the opposed marginal portion would serve as a hinge. Preferably, if the box is to be used for repeated shipments, a lock will be substituted for the extension 8^b. Where it is desired to hinge the top at one side of the box, instead of at one end, as shown in the drawing, the fabric will be extended beyond one or both side edges of the top, but not beyond the end edges.

Instead of making the three plies of the bottom of the box all of the same length and width, I may make two of the plies, **2** and **3**, of smaller dimensions, so as to fit closely within the sides and ends of the box, while the outer ply **1** will extend the full length and width of the exterior of the box body, as shown in Fig. 4. The arrangement of the flexible sheet material, is the same as in the previously described figures. The bottom, constructed as in Fig. 4, has some advantages in the matter of assembling, that is, in positioning the box body on the bottom, but the structure is not as strong as that illustrated in the other figures of the drawing, because the body of the box in Fig. 4, rests only on the single ply of the bottom, while in Figs. 1 to 3, the body rests upon the three plies.

What I claim is:

1. A wooden box comprising flat sides, ends and bottom pieces composed of ply-wood and a sheet of strong flexible material cemented between plies of the bottom piece, the margins of the sheet extending beyond the edges of the bottom piece and cemented to the sides and ends and securing the bottom thereto.

2. A wooden box comprising flat sides, ends and bottom pieces composed of ply-wood and a sheet of strong fabric cemented between plies of the bottom piece, the margins of the sheet extending beyond the edges of the bottom piece and cemented to the sides and ends and securing the bottom thereto.

3. A wooden box comprising flat sides, ends, top and bottom pieces composed of ply-wood, a sheet of strong flexible material cemented between plies of the bottom piece, the margins of the sheet extending beyond the edges of the bottom piece and cemented to the sides and ends and securing the bottom thereto, and a sheet of strong flexible material between plies of the top and having a projecting marginal portion cemented to one wall of the box.

4. A wooden box comprising flat sides, ends and bottom pieces composed of ply-wood, a sheet of strong flexible material cemented between plies of the bottom piece, the margins of the sheet extending beyond the edges of the bottom piece and cemented to the sides and ends and securing the bottom thereto, strips of strong flexible material cemented to the corners of the box and securing the ends and sides together, and a strip of strong flexible material extending along the top edges of the box and cemented to its inner and outer walls.

HOMER B. HEIM.