Jan. 2, 1945. E. J. DE HAVEN 2,366,602

PAPERBOARD CONTAINER OR THE LIKE

Filed Jan. 23, 1943 2 Sheets-Sheet 1

Fig. 1

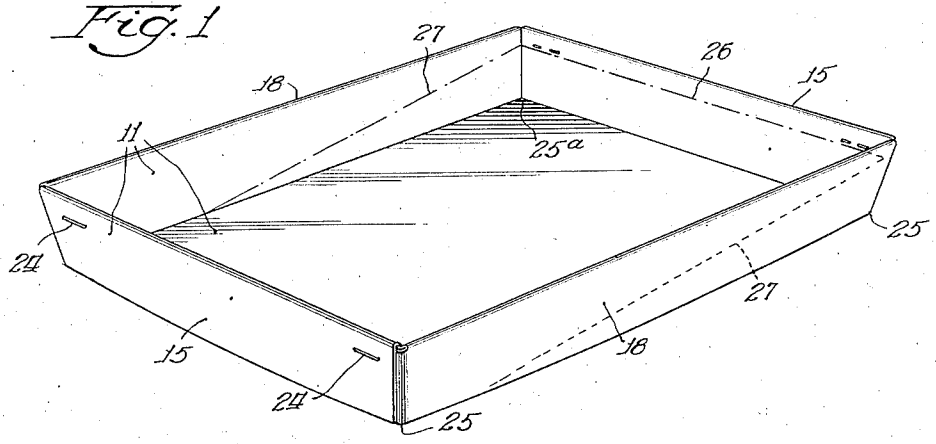
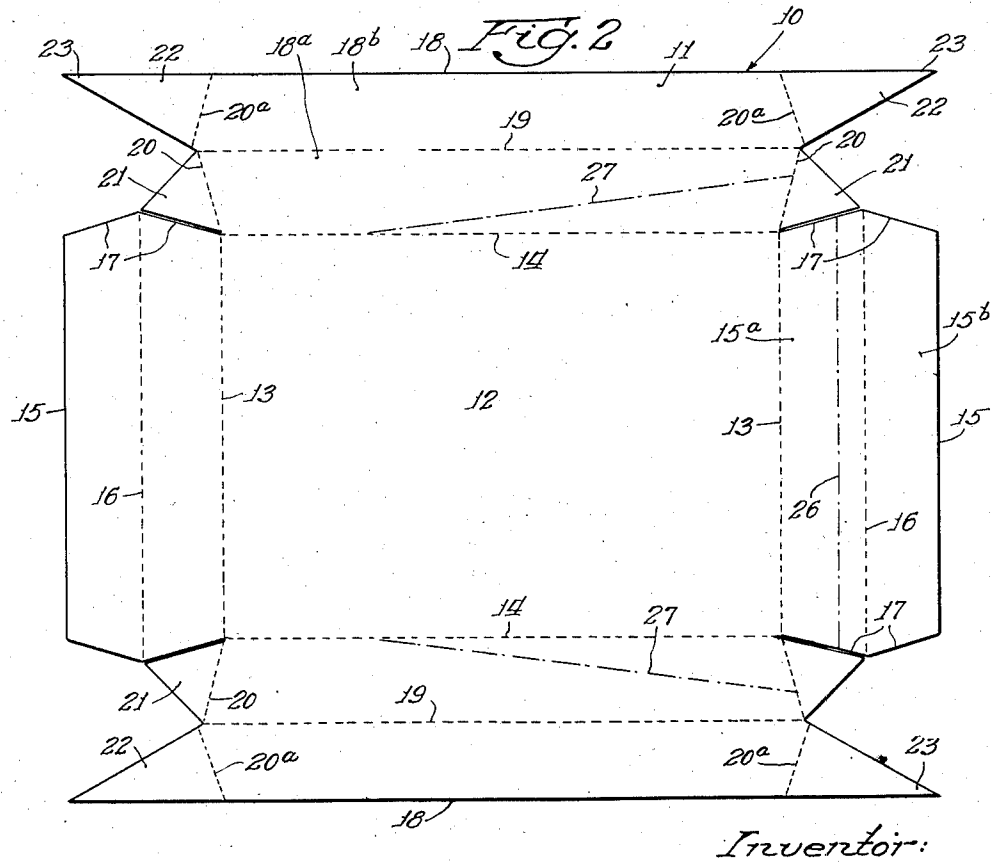


Fig. 2



Inventor:
Edward J. DeHaven
By
A. Trevor Jones
Atty.

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Fig. 3

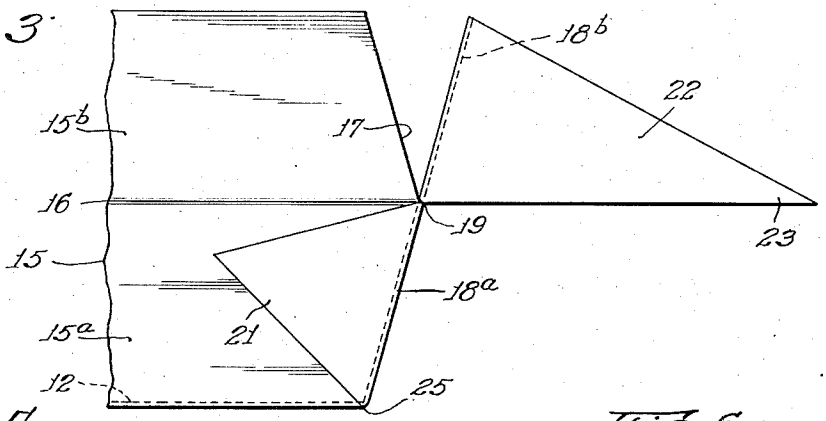


Fig. 4

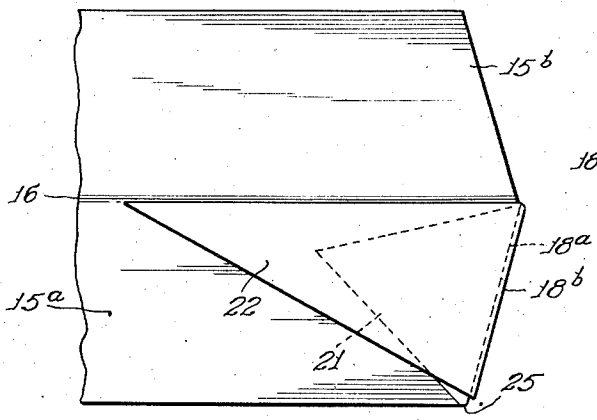
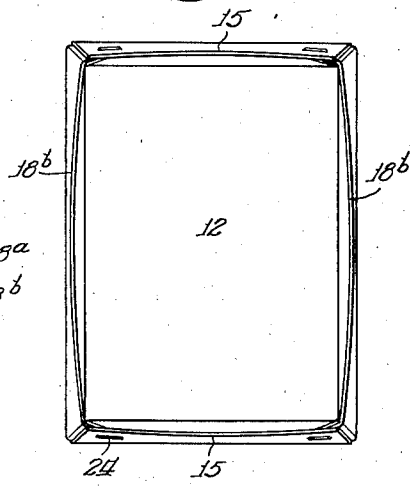


Fig. 6



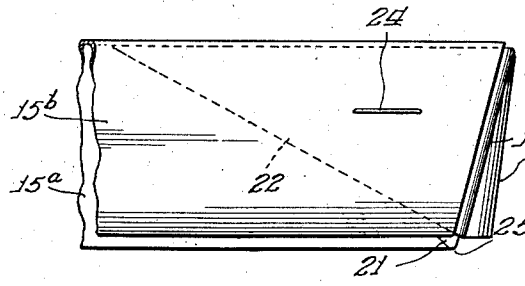


Fig. 5

Inventor:
Edward J. DeHaven
By: A. Trevor Jones
Atty.

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UNITED STATES PATENT OFFICE

2,366,602

PAPERBOARD CONTAINER OR THE LIKE

Edward J. De Haven, Green Bay, Wis., assignor to St. Joe-Mullen Container Corporation, St. Joseph, Mich., a corporation of Michigan

Application January 23, 1943, Serial No. 473,357

1 Claim. (Cl. 229—32)

This invention relates to paper-board container or the like and aims to provide an improved container of this type more particularly for the reception of liquids such as paints which are to be applied with a roller or other utensil which may require an extended or relatively shallow area of the liquid for application to the utensil.

This and other objects and advantages will be apparent from the following description, taken together with the accompanying drawings, in which—

Figure 1 is a perspective completed view of a container embodying the present invention;

Figure 2 is a plan view of a sheet of paper-board or the like from which the container of Fig. 1 is folded;

Figures 3 and 4 are further development views intermediate the structures of Fig. 2 and Fig. 1 and showing one corner of the container;

Figure 5 is a similar view showing a final step in the construction of said corner; and

Figure 6 is a reduced bottom view of the container shown in the other figures.

Referring in detail to the drawings, and, turning first to Fig. 2, an integral sheet of fiber material 10 is provided which is initially flat and may have one face, that is, the face which is uppermost in Fig. 2, calendered or otherwise finished to effect a smooth glossy somewhat liquid repellent surface 11 thereon, including any coloring or other decoration desired.

While still in the flat, the sheet 10 is advantageously punched or cut to the form shown in Fig. 2 and which comprises a bottom portion 12 bounded by parallel score marks 13 and similar parallel score marks 14 transverse to the score marks 13. The score marks 13 define the bottom 12 as distinguished from a pair of sides 15 which are to be later bent up from the bottom 12 and each folded upon itself along the score mark 16 which is parallel with the score mark 13, thus forming the side of a plurality of laminations or plies of the sheet. It will be noted that the score mark 16 is substantially midway between the score mark 13 and the extreme outer edge of the side 15 while in the flat, thus providing that the laminations of the side when folded are of substantially equal area, and also, since the laminations are folded with the calendered face 11 of the fiber sheet outermost, the uncalendered face of the sheet is substantially completely covered and concealed at the said side.

The two sides 15, which are alike, are somewhat hexagonal as shown, thus forming the ends of these sides with the slating edges 17, the longest dimension of the side being coincident with the score mark 16, so that when the sides are folded up as described, they flare slightly upwardly and outwardly to provide a somewhat tray appearance for the container when completed as presently more particularly pointed out.

Somewhat similarly the score marks 14 each define the bottom portion 12 as distinguished from another pair of sides 18. Each side 18 has a longitudinal center score mark 19 for a purpose similar to the score marks 16 of the sides 15 previously explained. Differing from the sides 15, however, the sides 18 at each end of each of these latter sides have, instead of the edges 17, score marks 20, for the laminations 18*a*, and 20*a*, for the laminations 18*b*, which define a somewhat hexagonal shape for each side 18 corresponding to that of a side 15 whereby when a side 18 and a side 15 are folded up into mating conjunctive position the tray character of the container is maintained.

Beyond the score marks 20 and 20*a*, a side 18 at each end is continued to form a pair of tongues 21 and 22. The tongue 21 in each case is desirably somewhat in the form of an equilateral triangle with its base one of the score marks 20. The tongue 22, however, in each case, is desirably in the form of an isosceles triangle in which a score mark 20*a* is the shorter base and the apex 23 is extended beyond the apex of the triangular tongue 21 and materially diverging therefrom in the flat.

Turning now to Fig. 3, this shows a development view of one corner of the container, in this instance either the upper or the lower corner shown in Fig. 1 looking thereat from the outside of the container, this being initially either the upper right-hand corner or the lower left-hand corner of the blank, as seen in Fig. 2. In this development step, the adjoining sides 15 and 18 have been folded up from the bottom 12. The side 15 is seen to comprise the laminations 15*a* and 15*b* separated by the score mark 16. Similarly, the side 18 is seen to comprise the laminations 18*a* and 18*b* separated by the score mark 19. These laminations, however, have not yet been folded upon themselves respectively. Before doing so, it will be seen that the tongue 21, which is a continuation of the lamination 18*a* of the side 18, is folded to lap the side lamination 15*a* upon its uncalendered face. At this time the tongue 22, which is a continuation of the side lamination 18*b*, is extending in the opposite direction or laterally outwardly of the container.

As a next step, and as shown in Fig. 4, the side lamination 18*b* is folded by means of the score mark 19 to overlap the uncalendered face of the lamination 18*a*, thus bringing the calendered face of the lamination 18*b* to the exterior of the container. At the same time the tongue 22 is rotated 180 degrees with the side lamination 18*b*, to the position shown in Fig. 4, and overlying the uncalendered face of the tongue 21. At the same

time the calendered face of the tongue 22 is now outermost.

As a next and final step in the preparation of an illustrative corner of the container, and as shown at Fig. 5, the side lamination 15b is folded outwardly, by means of the score mark 16, upon the uncalendered face of the side lamination 15a, thus bringing the calendered face of the lamination 15b outermost of the container. At the same time, the tongues 21 and 22 are enclosed between the laminations 15a and 15b. Thereupon the parts may be secured in this position, as, in this instance, by a wire staple 24.

So constructed and arranged, the container, here in the form of a tray and shown completed in Fig. 1, displays only the calendered surface 11 of the paper-board or other fiber material from which it is formed as described, the only uncalendered surface which is exterior of the container being upon the under face of the bottom 12 and thereby concealed when the container is in use upon a table or other support. Furthermore, the provision of the double or overlapping tongues 21 and 22 desirably at each corner of the container, which have a base 20 and 20a respectively in each instance substantially equivalent to the height of the container side, effect a reinforcement of the container at its lower corner 25, and particularly at the lower interior corner 25a thereof, so that the container is particularly adapted to hold or carry liquids without leaking. Also, the folded-over side laminations or plies of substantially equal height materially strengthen the container and provide in effect a substitute for a structure which ordinarily might be made of metal or other more inherently rigid material.

Figure 6 shows a reduced bottom view of the container and it will be noted from this figure that the outer laminations 15b and 18b of the sides respectively tend to arch or spring outwardly along their lower edges when the container is completed and between the corners of the device. It has been found that by making the laminations of the sides of substantially equal height as already mentioned, that this arching or bowing effect is produced and contributes materially to the strength and rigidity of the container, the laminations of the sides when so spaced apart by this arching or bowing effect enhancing the beam effect of the sides. To accomplish this desirable result, the laminations of the sides are not secured together adjacent their lower ends between the corners of the container. Thus any sagging of the container when filled is inhibited.

The score marks 20a are advantageously offset from the score marks 20 to provide a crease or line of fold for the laminations 18b spaced from the line of fold for the laminations 18a longitudinally of the side 18, to facilitate folding.

As an aid to the handling of such liquids there may be imprinted upon the interior of one of the sides, in this instance one of the sides 15, as at 26, a heavy line or other indicia of contrasting color with the color of the calendered surface 11 and parallel with the bottom 12 at a suitable height upwardly of the side 15 to provide a liquid level gauge line indicating a safe height for liquid in the container without danger of spilling. To enhance the effectiveness of the line 26, another line 27 is here shown imprinted upon each of the sides 18 which in the completed container are inwardly of the latter. The lines 27 are advantageously oblique to the bottom 12 and are arranged so that when the sides 15 and 18 are folded up to complete the container, the lines 27 will register at their higher ends with the line 26, as best seen in Fig. 1.

Thus a shallow depth of liquid in the container may be enhanced in depth at one end thereof by tilting the container to bring the level of the liquid substantially coincident with the combined gauge line 27—26—27, the container thus acting as a reservoir for many useful purposes such as the application of a liquid to a roller utensil, for example, such roller being initially inserted into the container at its deep end and then rolled upwardly toward the shallower end of the container whereupon only sufficient of the liquid will remain upon the roller to provide a suitable coating thereon without dripping when lifted out. The angle of the lines 27 is advantageously such that the upper end of the container, when so tilted to cause the liquid to register with the line 27—26—27, is free of the liquid. To contribute to this result, the tray or container is here shown slightly elongated or oblong rather than square. Since the wire clips 24 are on the shorter sides 15, the longer sides 18 acquire an enhanced beam effect to reinforce the greater length of the container by the bowing or arching function of the laminations 18b of the sides 18.

As is well known in the art, the score marks 13, 14, 16, 19, 20 and 20a may be of the usual double character facilitating ready creasing of the sheet material in the manner described.

Trays so formed are readily stacked or nested for convenient storage and handling.

Such changes or modifications may be made as fall within the scope of the appended claim without departing from the invention.

What is claimed is:

A paper-board container or the like comprising a sheet having one surface liquid repellent initially flat and folded up to provide a bottom and four sides, each of said sides being formed of an inner and an outer lamination of the sheet folded upon each other with the outer lamination outermost and said liquid repellent surface innermost, the laminations for a given side being of substantially equal area for that side whereby one of the faces of said sheet where so laminated is substantially completely covered, each side being of hexagonal shape in the flat and the longest dimension of each side being on its longitudinal center fold line whereby to provide a tray-like flare for the container, and two tongues at each end of two opposite sides, one tongue on each lamination of said side, the outer of said tongues on said outer laminations being such as to make said outer laminations including said outer tongues of a length substantially equal to the longer overall dimension of the said sheet when in the flat, said tongues being adapted to be folded together with the laminations of an adjoining side and secured together and to the laminations thereat, the outer tongues being bent on a line of fold spaced beyond the line of fold of the inner tongues longitudinally of that side, the laminations of the sides being otherwise unsecured adjacent their lower margins whereby to spring apart therebetween to enhance the beam effect of the side and strengthen the container and whereby said container is substantially liquid tight.

EDWARD J. DE HAVEN.