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2,144,318

CONTAINER

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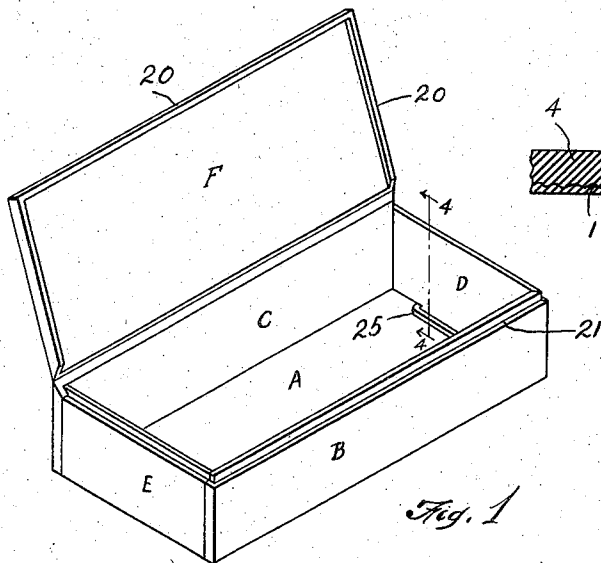


Fig. 1

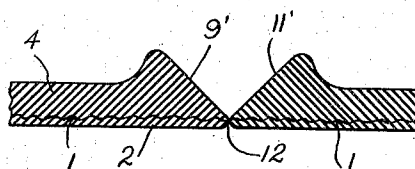


Fig. 5

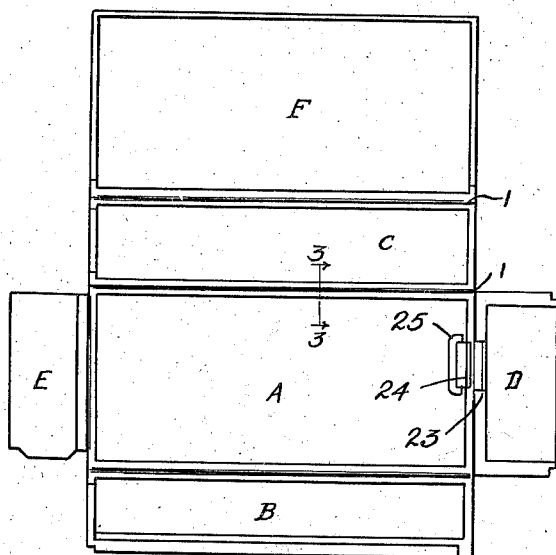


Fig. 2

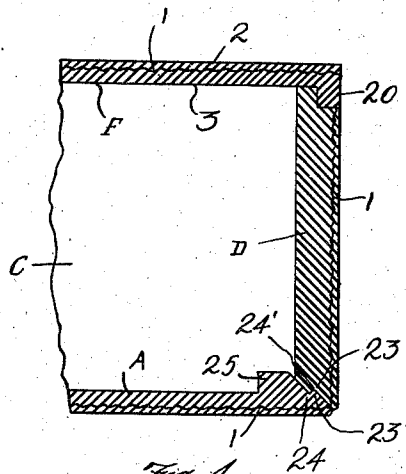


Fig. 4

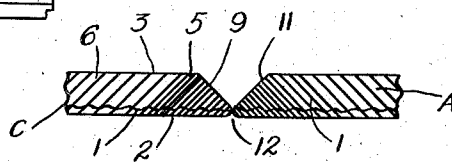


Fig. 3

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CONTAINER

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4 Claims. (Cl. 150—52)

This invention relates to a container and method of making the same, and has for its purpose the provision of a container which will either open out completely flat or be folded into a closed box and so held rigidly and with parts in alignment solely by the interfitting action of the various adjacent edges.

It particularly aims to provide such a container which may be made out of a combination of plastic and flexible materials, and without limiting myself to any definite materials I mention that in practice it has been constructed satisfactorily, both from the standpoint of manufacture and of use, from rubber-impregnated cloth to which a further thickness of rubber is appropriately applied and vulcanized thereto by methods known in the art. My container can also be made of other natural or synthetic plastic materials and may be made with appropriate inside and outside finish.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain structure embodying the invention, such disclosed means constituting, however, but one of various structural forms in which the principle of the invention may be used.

In the accompanying drawing:

Fig. 1 is a perspective showing one form of my improved container set up but with the lid open;

Fig. 2 is a corresponding view showing the container opened flat;

Fig. 3 is a transverse section through a junction, on the plane 3—3 of Fig. 2;

Fig. 4 is a view on the plane 4—4 of Fig. 1, but with the lid down;

Fig. 5 is a transverse section corresponding to Fig. 3 but illustrating a modified construction.

The preferred embodiment of my container comprises a unitary structure built up by coating a plastic material on a flexible sheet of appropriate strength and so dividing the coating material into sections which are nevertheless connected by the pliable sheet, that these sections when appropriately folded relative to one another constitute a complete box whereof the parts hold one another together in closed formation. The pliable material, which for convenience of identification will be called the foundation sheet, may, for example, be a sheet of canvas or of lighter woven material, or may be a sheet of cords such as customarily employed for the making of cord

tires, or a tough sheet of rubber or other material having appropriate physical characteristics of strength and to which the plastic forming the thicker layer will adhere and cohere.

The foundation sheet 1 is preferably a single blank of the plan of the developed box as shown in Fig. 2. If a textile fabric is used for the purpose, such fabric will preferably initially be "filled" with a tough flexible strengthening material, an example of which is rubber applied by pressure rolls in well known manner.

To this a further coating of desired material, which will be described as rubber although such description is not intended to exclude other materials, is applied and wholly or partly hardened by suitable mechanism and methods.

Such coatings may be thin on the outside, as at 2 Figs. 3 and 5, and thicker on the inside as at 3, Fig. 3 and 4, Fig. 5.

Ordinarily the applied plastic will be hardened to the same degree throughout, but for specialized uses it may be desirable to harden it only around the edges of the various parts of the box, and to leave it more pliable in the middle portion. For example, in the event that the box of Fig. 1 was being constructed for carrying goods where a degree of bulging in the middle should be allowed for, the hardening could be complete along the edge, as indicated by the reference character 5, Fig. 3, and a softer degree of vulcanization reached in the central part as at 6, Fig. 3, and as indicated there by the wider spaced shading.

The plastic coating 2, 3 or 2, 4 is molded into a single blank having sections or panels as shown in Fig. 2, in which figure the parts of the box are designated by reference letters, A being the bottom, B the front wall, C the rear wall, D the right end, E the left end and F the top. The applied plastic of the various sections is grooved in molding to thinness at the edges, exposing or almost exposing the foundation sheet 1 which thus acts as a hinge along the various edges. The plastic is formed at these edges at an appropriate angle to bear upon the adjacent edge when folded. For example in Fig. 3 the surfaces 9 and 11 are bevelled to bear against one another when the back C is brought up to a right angle relationship to the bottom A. Similarly, in Fig. 5 the surfaces 9' and 11' will abut when the two parts are hinged into right-angle relationship. It will be understood that if the relation of surfaces in the closed box is to be other than a right angle the bevel will be varied accordingly. It will be further understood that a bevel is

selected as a simple form of matching surface easily made and otherwise satisfactory, but that the principle can be applied by the use of other matching surfaces.

5 In order to prevent strain at the joint in case one of the box portions drops down somewhat below the level of the other, the outer layer of plastic 2 is relieved at the joint as indicated by reference character 12, Figs. 3 and 5.

10 In some circumstances a greater thickness may be advisable on the edge than is needed for the main part of one of the box sections A to F, so as to give a sufficient bearing surface without undue weight. Such a construction is illustrated in Fig. 5 where the bevelled edges 9' and 11' otherwise corresponding to edges 9 and 11, Fig. 3, rise higher than the main thickness 4 of the interior plastic.

The foregoing application of the plastic to the foundation sheet and its shaping at the edges can be done by a pressure head or other mold having appropriate surface. The parts A to F of the box are thus separated by grooves when the box is in its initial flat condition in the mold, 25 corresponding to the showing of Fig. 2. These grooves must be so shaped and so spaced as to match throughout substantially their entire abutting surfaces when the container is closed.

Illustrating the varieties of hardness possible in finishing the box, the range may be from a completely hard finish on the order of a knife handle or a hard rubber comb, for example, to the resiliency of an automobile tire tread or even softer.

35 In the figures of the drawing several possible joint details are shown as matters of illustration. For example, the lid F is shown on its front and its right end with an overhanging lip 20 which fits into a corresponding rabbet on the front B and ends D and E, thus holding up the front and ends when the lid is closed. It will be appreciated that other constructions could be used for the same purpose.

Also the ends D and E do not exactly correspond. Differences of shape are here shown to show possibilities within the scope of the invention.

My invention also provides for an interlocking on the adjacent edge surfaces, where unusual 50 firmness is required. Such interlock may preferably take the form best seen in Fig. 4, but also visible in Figs. 1 and 2 at the right end. Here there are corresponding supplemental notches, 23 in the bevelled edge of the side D and 24 in the bevelled edge of the bottom A, with corresponding tongues 23' and 24, which fit said notches, the angular relationship being such that when the side D is hinged upwardly from the flat position, the tongue 24' overrides and slightly clears the tongue 23' and drops into the notch 24. Such an arrangement may be either short

as shown in Fig. 2 or may extend the entire length of the interengaging surfaces. It may be used on one or all of the hinged joints where needed for additional strength, stiffness and close fit. Further strengthening against motion is accomplished by forming the portion which carries the notch 23 as only a relatively short section, the ends of which bear against lugs such as 25 on the box bottom A.

From the foregoing it will be seen that I have 10 provided a box structure combining strength, flexibility, ease of manufacture, and adaptability to a wide range of materials. It will be further seen that this container is capable of being formed in many different finishes and many different details of form, proportion, and weight and strength of parts.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the 20 structure herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a box of the character described and comprising mutually hinged wall portions, as a subcombination two complementary bevelled edges adapted to abut when the box is closed, an opposed tongue and notch on each of said edges, 30 one of said tongue-and-notches being adapted to swing in a generally transverse direction into an interfit with the opposing notch-and-tongue.

2. In a container of the class described, a foundation sheet, plastic material based thereon and comprising panel elements adapted when closed to form the container and when open to lie flat, said panel elements comprising edges wherein the plastic is of greater rigidity than the middle portions.

3. In a container of the class described, a foundation sheet, plastic material based thereon and comprising panel elements adapted when closed to form the container and when open to lie flat, said panel elements comprising edges 45 wherein the plastic is of greater rigidity and thicker than the middle portions.

4. A unitary container comprising a plurality of panels forming bottom, sides and lid and adapted when open to lie flat and when folded together to constitute a box, a foundation sheet common to all said panels, said panels comprising plastic material coated upon said foundation and of greater rigidity along the edges than in the interior area, said edges including outer surfaces each mutually abutable to a correspondingly positioned and shaped surface on an edge of another panel, the edges of said lid being adapted to interlock with one edge of each of said sides when the box is closed.

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