June 15, 1954 R. S. SANFORD 2,681,172

CONTAINER

Original Filed Feb. 3, 1945 2 Sheets-Sheet 1

Fig. 1

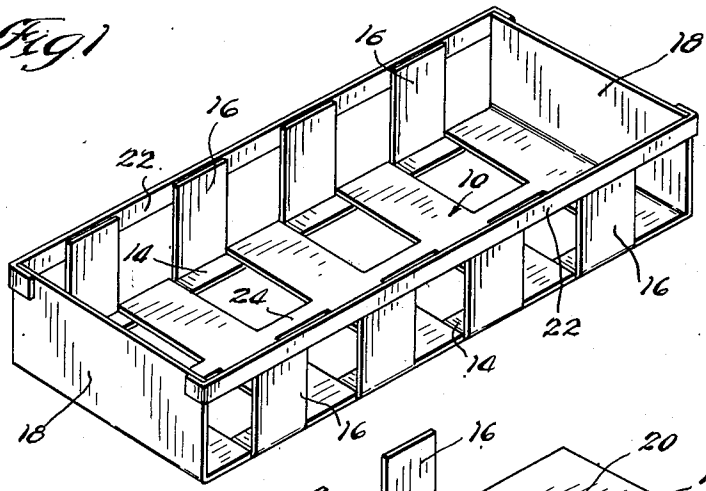


Fig. 2.

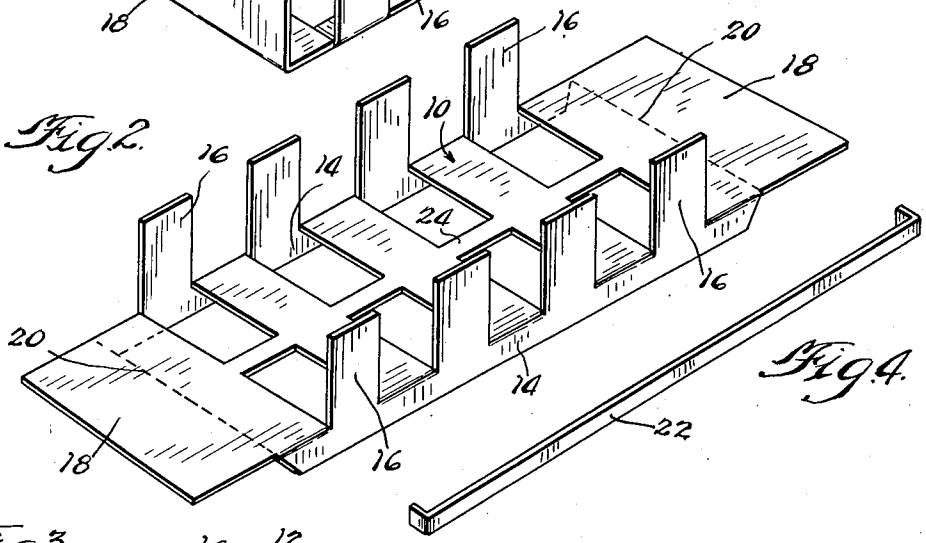
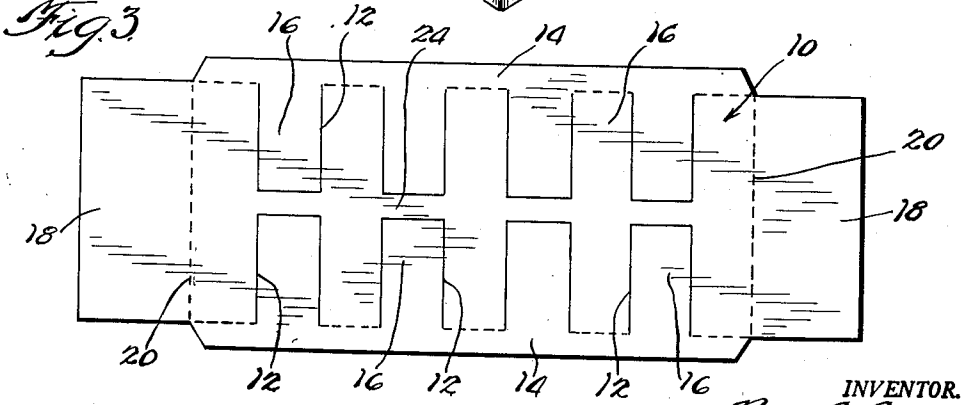


Fig. 4.

Fig. 3.



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Fig. 5.

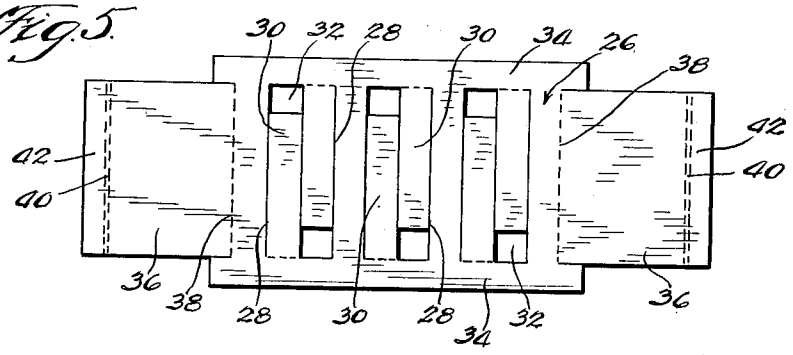


Fig. 6.

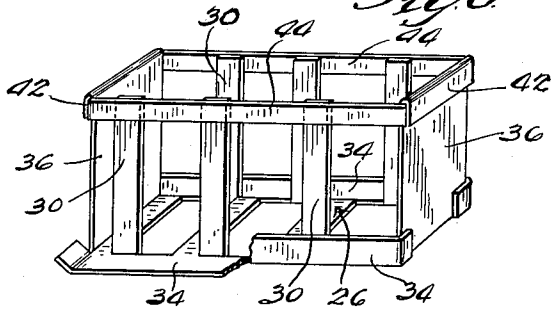


Fig. 8.

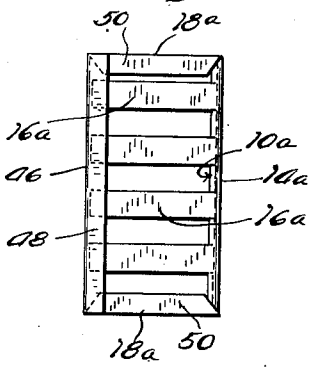
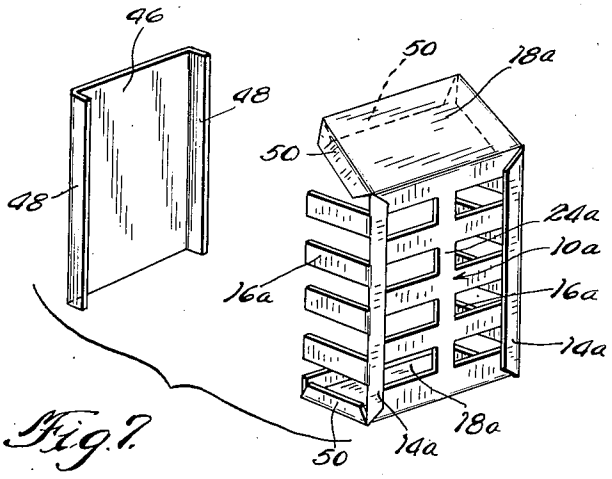


Fig. 7.



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2,681,172

CONTAINER

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Original application February 3, 1945, Serial No. 576,071. Divided and this application June 2, 1949, Serial No. 96,720

10 Claims. (Cl. 229—30)

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This invention relates to containers and methods for manufacturing same, and more particularly to containers made from sheet material having one or more apertured or perforated walls and methods for their manufacture. The invention has for an object the provision of improved containers of this character. This application is a division of application Serial No. 576,071, filed February 3, 1945, now Patent No. 2,476,948.

The invention herein disclosed is particularly applicable to the manufacture of containers of various types including cartons, trays or boxes made from paper board, sheet metal, or the like, as hereinafter appears. Such containers have heretofore been fabricated by suitably stamping or cutting a flat sheet of paper board or metal to provide a central portion constituting the bottom wall of the container and having side wall-forming portions extending outwardly from the edges thereof, and then folding or bending these extending portions upwardly to form the sides of the container. The blank in this type of construction must be at least as wide as the combined width of the bottom and the height of the two longitudinal side walls, and must be at least as long as the combined length of the bottom wall and the height of the transverse side walls.

The recent substantial increases in both labor and material costs will inevitably be reflected in the final costs and sales prices of the finished articles if the above-referred-to types of containers are manufactured in the known fashion. It is highly desirable, however, that containers of this character be manufactured at costs which will permit them to be sold at prices comparable to previous levels in spite of the increase in labor costs and material costs. The amount of sheet material required in manufacturing these containers results in relatively high material costs, particularly when formed from sheet metal. Accordingly, it is a further object of this invention to provide an improved method of manufacturing containers of this type which results in low cost, attractive and durable articles, and which may be carried out with an expenditure of minimum amounts of material and labor.

In carrying out this invention in one form, a suitable sheet of metal, paper board or other material is slit to form a plurality of tongues having free inner ends, the slits terminating short of the edges of the sheet to leave unslit marginal portions. The tongues are then struck or bent upwardly and outwardly to form spaced side members along the edges of the sheet, which side members are connected to intermediate portions of the sheet solely by the unslit marginal portions, and the upper ends of the side members are then connected to an upper portion or edge-forming strip or strips to complete the side walls

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of the container. The container thus formed has apertures or perforations in the bottom wall corresponding to the tongues which have been bent upwardly. The tongues may be spaced along two or more longitudinal edges and extensions of the sheet may be provided which are adapted to be bent upwardly and inwardly to form the transverse side walls.

In the embodiments of the invention disclosed and specifically claimed herein the marginal portions may be bent upwardly into face-to-face contact with the tongues or side members and adhesively or otherwise secured thereto, or may be bent inwardly into face-to-face engagement with and adhesively or otherwise secured to the under surface of the bottom wall of the container. Thus a reinforcing edge portion is provided for the containers adjacent the bases of the spaced tongues and along a peripheral edge of the bottom wall of the container.

For a more complete understanding of the invention, reference should now be had to the drawings in which:

Fig. 1 is an isometric view of a carton or box made in accordance with the process of the present invention;

Fig. 2 is a similar view of a partially formed blank from which the bottom and side walls of the carton shown in Fig. 1 may be formed;

Fig. 3 is a plan view of the slit but unfolded blank shown in Fig. 2;

Fig. 4 is a detail view of one of the edge-forming strips employed in the carton of Fig. 1;

Fig. 5 is a plan view of a blank from which the bottom and side walls of another form of carton made in accordance with the process of the present invention may be formed;

Fig. 6 is a perspective view of a carton formed from the blank of Fig. 5, a part of the marginal edge being shown in an unbent condition to show structural details;

Fig. 7 is an exploded perspective view of still another form of carton before completion; and

Fig. 8 is a side elevational view of the carton shown in Fig. 7.

Referring now to the drawings, the invention is shown in Figs. 1 to 4 as embodied in a box or carton for shipping or display purposes. Although this box or carton may be made from sheet metal if desired, it is preferably formed from paper board or similar inexpensive material ordinarily used in the construction of cartons and containers. As shown in Fig. 3, the blank 10 from which the carton or container is formed is provided along opposed longitudinal edges thereof with U-shaped slits 12 which terminate short of the opposed edges to leave unslit marginal portions 14. The tongues 16 formed by the slits 12 may, as shown best in Fig. 2, be bent or struck upwardly out of the plane of the blank to

form upstanding side wall portions, the unslit marginal portions 14 being simultaneously bent downwardly out of the plane of the blank. Extending outwardly from the central portion of the blank 10 in which the tongues 16 are formed is a pair of side wall forming members 18 which may be bent upwardly along the fold lines 20. In order to complete the carton a pair of edge-forming strips 22 (Fig. 4) is provided which may be adhesively secured to the upper ends of the side members or tongues 16, the opposite ends of the strips 22 being turned inwardly for securement to the end side wall members 18. The downwardly extending marginal portions 14, shown in Fig. 2, are bent inwardly and secured, preferably by an adhesive, to the undersurfaces of the portions of the blank 10 which form the perforate bottom wall of the container or carton, as shown in Fig. 1. In this embodiment of the invention the free ends of the tongues 16 are spaced apart when formed so as to leave a central longitudinally extending portion 24 which extends throughout the length of the bottom wall of the container. It will of course be understood that any suitable top or closure member may be provided for cooperation with the finished container shown in Fig. 1, and the top or closure member may be secured to the body of the container in any desired manner. The central portion 24 and the bent marginal portions 14 serve as reinforcements for the bottom wall and the container. In the event that the container is formed of sheet metal the marginal portion 14 may be secured to the bottom wall by welding or soldering and the strips 22 may likewise be secured to the tongues 16 and the end side wall members 18 by soldering or welding.

In the embodiment of the invention shown in Figs. 5 and 6, the central portion of a suitable blank 26 is again provided with rows of U-shaped slits 28, the slits in this case overlapping and having a portion of one leg of each slit coinciding with the adjacent slit to provide pairs of side-by-side tongues 30. In the embodiment shown the free end of each tongue terminates short of the base of the adjacent tongue so that a space 32 is left adjacent the free end of each tongue. If it is desired to form higher side walls on the container, however, the tongues may extend entirely to the base of the adjacent tongue so that the height of the side walls formed by the tongues will be the same as the width of the bottom wall of the container. In this embodiment of the invention the tongues are bent upwardly from the plane of the blank, as in the previously described embodiment, to form spaced-apart members, but the unslit marginal portions 34, which extend along the opposed longitudinal edges of the blank, are not bent downwardly but instead are bent upwardly and secured into face-to-face engagement with the side members 30 constituting the side walls, as shown best in Fig. 6.

Adjacent the opposite ends thereof the blank 26 includes extending side wall forming portions 36 which may be bent upwardly about the fold lines 38 to form the end walls of the carton or container. These portions 36 are preferably of greater height than the tongues 30 and are suitably scored, as indicated by the score lines 40, so that the portions 42 beyond the score lines may be bent downwardly as shown in Fig. 6. Suitable edge-forming strips 44, similar to the strips 22 shown in Fig. 4, are provided for securement to the upper ends of the tongues 30 and the inwardly turned ends of these strips 44 extend under the downwardly turned portions 42 of the end walls 36. As shown, the longitudinal marginal portions 34 are so formed as to extend beyond the fold lines 38 which correspond to the ends of the bottom wall of the container, and these extending portions are bent inwardly into engagement with and are preferably adhesively secured to the outer surfaces of the end walls 36, as shown in Fig. 6.

In Figs. 7 and 8 the invention is shown as embodied in a carton of the type having openable and closable end flaps. The various parts of this carton which are similar to the corresponding parts of the carton shown in Figs. 1 to 4 have been given similar reference numerals. Thus it will be observed that the carton consists of side members or tongues 16*a* which are formed from the material of another wall 10*a*, in this case a side wall but in the embodiment of Fig. 1 the bottom wall, this wall 10*a* having a longitudinally extending central strip 24*a* and the marginal portions 14*a* being inturned into face-to-face engagement with the outer surfaces of the wall 10*a* intermediate the apertures left by the tongues 16*a*. In place of the edge-forming strips 22 shown in Fig. 4, the carton is provided with a solid wall-forming portion 46 which is provided along opposed edges thereof with edge-forming strips 48 adapted to be adhesively secured to the free ends of the tongues 16*a*. The end wall portions 18*a* in this embodiment of the invention are provided with tuck flaps 50, as shown, which, when the ends of the carton are closed, extend within the side walls formed by the portion 46 and the side members or tongues 16*a*, and these ends of the carton may be opened or closed at will to fill the carton or remove the contents thereof. If desired, one of the end walls may be adhesively secured in its closed position so that the carton may be opened from one end only without destroying the carton.

It will now be apparent that the process of this invention may be employed for the manufacture of various types of cartons, containers, trays, dishes and the like, and that attractive and rugged articles are produced with a minimum number of manipulative steps and with the employment of a minimum amount of material relative to the size of the finished article. Various types of foldable or formable material may likewise be employed depending upon the use to which the finished article is to be put, and various types of finishes, such as plating or enameling, may be employed. The process may be carried out by cutting or stamping the blank of sheet material into the desired configuration, slitting the formed blank, striking or bending upwardly the end walls and the several tongue members forming the side walls, bending the lower marginal portions of the bottom wall and securing them in face-to-face relationship with a side or bottom wall of the container, and securing the upper ends of the tongue members to an upper edge portion 22 or 44 as in Figs. 1 to 6 or to a separate top wall member 46 as in Figs. 7 and 8.

Claims broadly directed to the process of forming containers of the general type herein disclosed are contained in my co-pending application Serial No. 96,719, filed June 2, 1949, now abandoned, as a division of my previously referred to application, Serial No. 576,071, now Patent No. 2,476,948.

While I have shown particular embodiments of my invention, it will be understood, of course,

that I do not wish to be limited thereto since many modifications may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A container formed from sheet material comprising a bottom wall, a plurality of spaced tab members struck up from a central area of said bottom wall to form each of a pair of side walls for said container and to form a plurality of apertures in said bottom wall terminating adjacent each of said side walls, means integral with said bottom wall and the lower ends of said tab members for integrally connecting the lower ends of said tab member and including an integral portion deformed out of the plane of said bottom wall and secured in face-to-face relationship with a wall of said container to provide a reinforcement for said container, and means connecting the upper ends of said tab members.

2. A container formed from sheet material comprising a bottom wall, a side wall including a plurality of spaced tab members struck upwardly from one surface of said bottom wall leaving apertures therein, means connecting the upper ends of said tab members, and means also formed from said sheet material integral with said bottom wall and said tab members connecting the lower ends of said tab members, said last mentioned means including portions turned under said bottom wall and secured thereto in face-to-face relationship to provide a reinforcement for said container.

3. A container formed from sheet material comprising a bottom wall having a row of apertures therein along each of two longitudinal edges, the apertures in each row extending to the adjacent edge, spaced apart members struck up from a central area of said bottom wall to form said apertures and to form a side wall extending upwardly from the plane of said bottom wall at the outer ends of said apertures, a continuous strip along each of said edges each having longitudinal edges disposed substantially in the plane of said side wall integrally connecting the lower ends of said members to the edge portions of said bottom wall intermediate said apertures, said strips being bent and secured in face-to-face relationship with a wall of said container, additional side wall members extending upwardly from other edges of said bottom wall, and means connecting the upper ends of at least some of said members.

4. A continer formed from sheet material comprising a bottom wall having a row of aperture means therein along each of two opposite edges thereof, said aperture means extending to the adjacent edge, spaced apart tongue members struck upwardly from the plane of said bottom wall at the outer ends of said aperture means forming opposed side walls for said container, a continuous strip along each of said opposite edges integrally connecting the lower ends of adjacent tongue members and integral with said bottom wall, said strip being bent out of the plane of the bottom wall and secured to a wall of said container in face-to-face relationship, side wall members extending upwardly from the other edges of said bottom wall, and means connecting the upper ends of the tongue members of each opposed side wall.

5. The container recited in claim 4 wherein each continuous strip is secured in face-to-face relationship with said bottom wall.

6. The container recited in claim 4 wherein each continuous strip is secured in face-to-face relationship with said tongue members forming each of said opposed side walls.

7. A container formed from sheet material comprising a bottom wall having a row of apertures therein along each of two longitudinal edges, the apertures in each row extending to the adjacent edge, spaced-apart side members extending upwardly from the plane of said bottom wall at the outer ends of said apertures, a strip along each of said edges connecting the lower ends of said side members to the edge portions of said bottom wall adjacent said apertures, said strips being folded inwardly and secured in flatwise relation to the undersurface of said bottom wall, other side members extending upwardly from other edges of said bottom wall, and upper edge strips secured in flatwise relation to the upper end portions of said spaced side members and to said other side members.

8. A container formed from sheet material comprising a bottom wall having a row of apertures therein along each of two longitudinal edges, the apertures in each row extending to the adjacent edge, spaced-apart side members extending upwardly from the plane of said bottom wall at the outer ends of said apertures, a strip along each of said edges connecting the lower ends of said side members to the edge portions of said bottom wall adjacent said apertures, said strips being folded upwardly and secured in flatwise relation to the outer surfaces of said side members, an upper edge strip secured in flatwise relation to the upper ends of said side members along said edges, and other side members extending upwardly from other edges of said bottom wall, said upper edge strips being secured at opposite ends thereof to said other side members.

9. A container formed from sheet material comprising a bottom wall having a row of apertures therein along each of two longitudinal edges, the apertures in each row extending to the adjacent edge, spaced-apart side members struck up from a central area of said bottom wall to form said apertures extending upwardly from the plane of said bottom wall at the outer ends of said apertures, a strip along each of said edges connecting the lower ends of said side members to the edge portions of said bottom wall adjacent said apertures, a wall member including edge strips along opposite sides thereof secured to the upper ends of said side members to form a wall of said container opposite said bottom wall, and end wall members integral with said bottom wall at least one of which includes tuck flaps insertable inside said side members and said wall member to close the ends of said container.

10. The container recited in claim 9 wherein said strips are folded inwardly and secured in flatwise relation to the under surface of said bottom wall.

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2,476,948	Sanford	July 19, 1949

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