

July 25, 1961

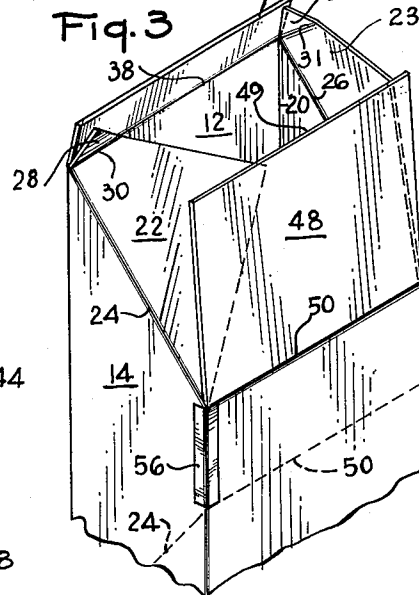
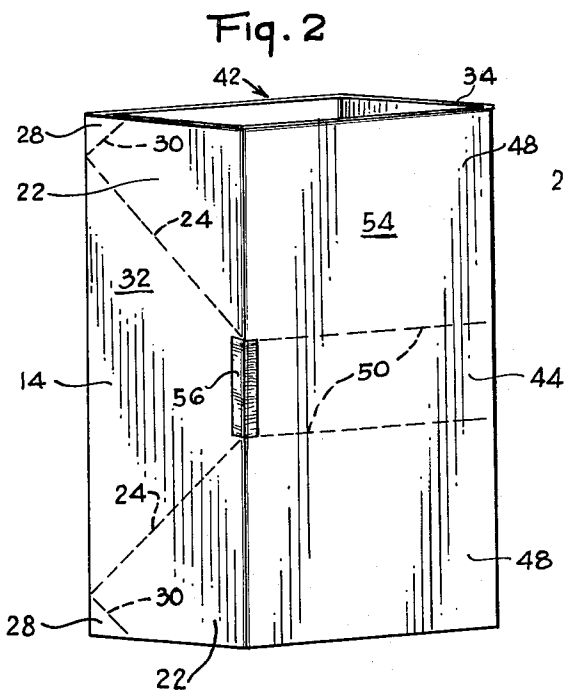
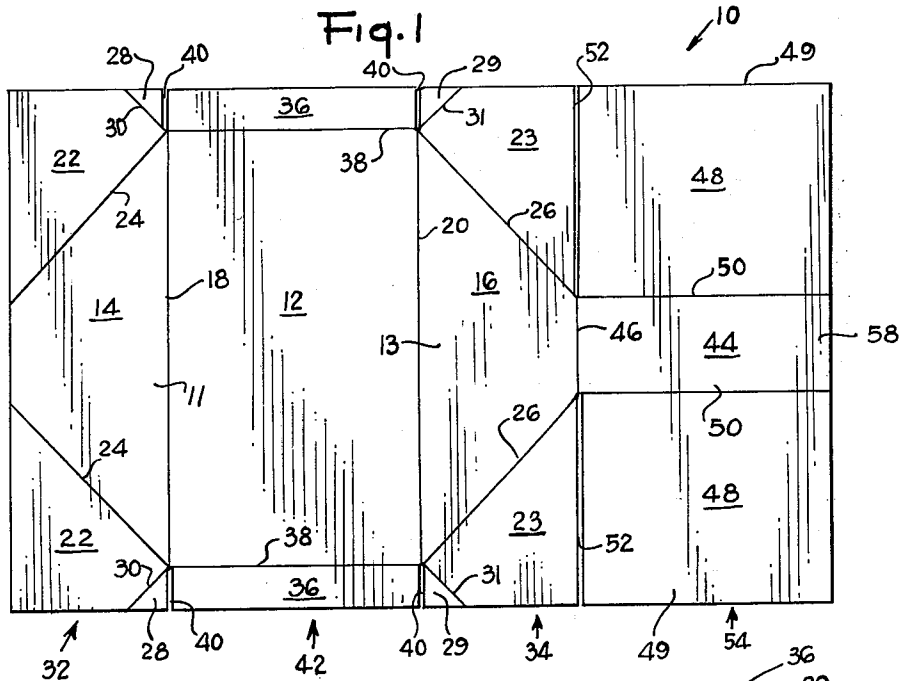
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2,993,631

FIBERBOARD CONTAINER

Filed Dec. 13, 1957

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 4

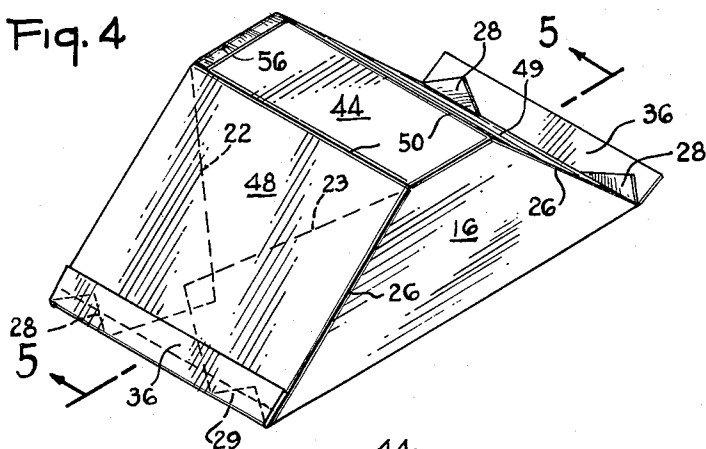


Fig. 5

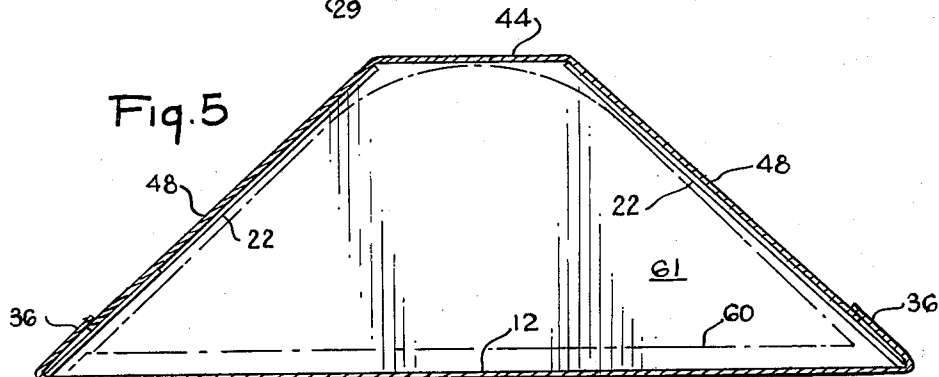


Fig. 6

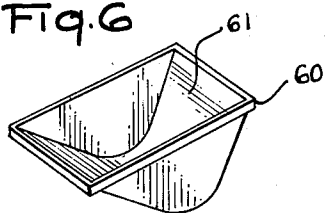


Fig. 7

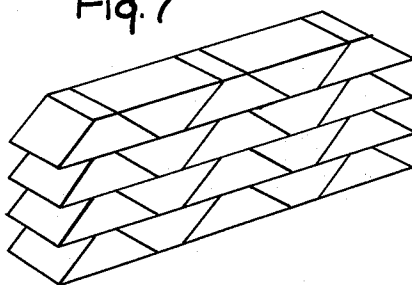
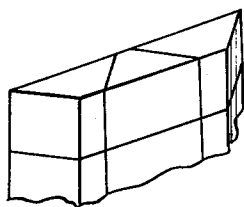


Fig. 8



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1

2,993,631

FIBERBOARD CONTAINER

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6 Claims. (Cl. 229—22)

This invention relates to a container and more particularly to a fiberboard container which is trapezoidal in cross-section and which is formed entirely from a unitary fiberboard blank.

Fiberboard containers heretofore in use were generally rectangular in shape regardless of the shape of the articles they enclosed, because such containers can be more easily stacked for shipping and storage, and because their regular shape enables them to more fully utilize expensive shipping and storage space. Furthermore, such containers can be quickly and economically formed from fiberboard blanks. This is an important factor because the containers formed from these blanks can be quickly and easily assembled and because these blanks can be stacked in very compact bundles before they are used.

The great disadvantage in using rectangular containers for packaging all articles regardless of their shape is that the containers have to be larger than the maximum dimensions of the article and this often results in sharply increased costs. For example, when the article to be packaged has an elongated base and a comparatively narrow portion projecting perpendicularly therefrom, any rectangular container large enough to enclose such an article would have a volume which would be very much larger than the volume of the article. This means that much of the material used to form the container is wasted, and that a substantial proportion of the space remains unused and sometimes requires filling with packing material so that the package will be firm enough to permit it to be stacked for shipping or storage. Of even more importance is the fact that such containers of excess capacity occupy excessive space which raises a problem in storage, shipment and display. A retailer cannot maintain a satisfactory inventory of the packaged product. It is apparent, therefore, that it would be desirable to be able to form a container from a cardboard blank which conforms as closely as possible to the shape of the articles to be packaged, and this comprises the principal object of this invention.

Any departure from the customary rectangular shape of these containers must be governed by the requirement that the resulting container be capable of being stacked both horizontally and vertically in stable piles, and these piles must be capable of being grouped together to form a compact mass. In order for containers to satisfy these requirements they should have substantially planar and parallel upper and lower surfaces, and planar and parallel side walls. One departure from the customary rectangular container which satisfies these limitations on form, especially when used to package a semi-cylindrical body such as the body of a garden cart, is a container which is trapezoidal in cross-section. Such containers might better satisfy the packaging requirements of a large class of articles by conforming more closely to their shapes than the more conventional containers. Therefore, another important object of this invention is to provide a container which is trapezoidal in cross-section and which can be formed from a fiberboard blank.

It is also important that the blank for forming these trapezoidal shaped fiberboard containers be substantially rectangular because of their greater ease of manufacture and storage. Therefore, another important object of this invention is to provide a unitary rectangular fiberboard blank which can be formed into a container which is trapezoidal in cross-section.

2

Description of this invention will hereinafter be made with reference to a garden cart having a body portion which approximates an isosceles trapezoid or is elliptical in cross-section and would fit very snugly into containers of the type described, as distinguished from the wasted space in the ends of a rectangular container. Therefore, it is another important object of this invention to provide a packaged article comprising in combination a fiberboard container which has the shape of an isosceles trapezoid in cross-section, and a substantially similarly shaped garden cart which is snugly positioned inside the container with the corresponding surfaces in substantial engagement.

These and other objects of this invention will become more apparent when read in the light of the accompanying drawings and specifications wherein—

FIG. 1 discloses a plan view of the rectangular blank which can be assembled to form a fiberboard container which is trapezoidal in cross-section;

FIG. 2 discloses the first step in assembling the fiberboard container showing the blank folded to form a rectangular tube;

FIG. 3 discloses the second step in assembling the fiberboard container showing in particular the end walls and the end wall flaps in a partly folded position;

FIG. 4 discloses a perspective view of the container substantially completed except for the locking flap;

FIG. 5 is a sectional view taken on the line 5—5 of FIG. 4 and looking in the direction indicated but showing the locking flap in folded position;

FIG. 6 discloses a perspective view of a cart which is to be packaged in the completed container;

FIG. 7 shows the completed containers stacked together horizontally, and

FIG. 8 shows the completed containers stacked together vertically.

Referring now to FIG. 1 of the drawings, the rectangular fiberboard blank indicated generally by the reference numeral 10 from which the container is completely formed, comprises a rectangular base section 12 and rectangular sides 11 and 13. In the example shown, these sides are divided by score lines 24 and 26 to define isosceles trapezoids but other trapezoidal or substantially trapezoidal shapes may be used depending upon the configuration of the articles to be packaged. The larger of the parallel sides of these trapezoidal sections, forming the side wall of the finished container, is coextensive with and integrally secured to the sides of the base section 12 and separated therefrom by score lines 18 and 20. The score lines 24 and 26 divide the sides 11 and 13 of the blank into the trapezoidal side wall sections 14 and 16 described and outlying end wall sections 22 and 23 of trapezium shape. With this arrangement, the side wall sections 14 and 16 are exactly centered between these end wall flap sections because these side wall sections are shaped as isosceles trapezoids in the particular embodiment shown.

An edge of each of these end wall flap sections 22 and 23 is integrally secured to and coextensive with the sides of the triangularly shaped reinforcing flaps 28 and 29 and are separated therefrom by score lines 30 and 31. The score lines 30 and 31 are substantially perpendicular to score lines 24 and 26, respectively, for reasons to be described below. The side wall section 14, the end wall flap sections 22, and the reinforcing flap sections 28 form a first rectangular segment indicated generally by the reference numeral 32 and are positioned on one side of base section 12, while the side wall section 16, the end wall flap sections 23 and the reinforcing flap sections 29 form a second rectangular segment indicated generally by the reference numeral 34 which are on the opposite side of base section 12.

The opposite ends of the rectangular base section 12 are coextensive with and integrally connected to the sides of locking flaps 36 and are separated therefrom by score lines 38. The ends of these locking flaps are adjacent to and coextensive with a side of the triangularly shaped reinforcing flaps 28 and 29 and are separated therefrom by cuts 40. In this particular embodiment the base section 12 happens to be exactly centered between the locking flaps 36, and together with these locking flaps forms the third rectangular segment indicated generally by the reference numeral 42. The ends of segments 32, 34 and 42 are all aligned and form a substantial portion of the rectangular blank 10.

A rectangular top section 44 has an end which is coextensive with and integrally secured to the smaller of the parallel sides of the side wall section 16 and is separated therefrom by a score line 46. Rectangular end wall sections or closure flaps 48 have an edge which is coextensive with and integrally secured to the opposite sides of the top section 44 and are separated therefrom by score lines 50. These end wall sections have a side which is coextensive with a side of the end wall flaps 23 and are separated therefrom by inwardly extending cuts 52. The top section 44 is centered between the end wall or closure flaps 48 and these together form a four rectangular segment indicated generally by the reference numeral 54. The ends of this segment are aligned with the ends of the other segments 32, 34 and 42 to form the completed integral rectangular container forming blank 10. The rectangular shape of this blank is very important because the fiberboard sheets can be ordered in exact multiples of the dimensions of each blank, and when the blanks are formed from these fiberboard sheets there will be no wasted material.

To assemble the container, the blank 10 is first folded on score lines 18, 20 and 46 to form the rectangular tube shown in FIG. 2, with each of the above mentioned segments forming a complete side. To hold the rectangular tube together, a piece of tape 56, or other conventional locking means, is secured to an end 58 of the top section 44 and to the top portion of end wall 14. At this point, the article to be packaged, which in the example shown is the body of a garden cart 60 substantially trapezoidally shaped in cross-section, see FIG. 6, may be inserted in the tube. Next the end wall flaps 22 and 23 on each side of the rectangular tube are folded inwardly on score lines 24 and 26 until their edges defined by score lines 30 and 31 abut against the edge of base section 12 which is defined by score lines 38. This engagement limits further inward movement by these end wall flaps and it occurs when the end wall flaps are substantially perpendicular to the plane of the side walls 14 and 16. In this folded position the end wall flaps 22 and 23 define a reinforcing surface on each side of the container for receiving and supporting the end walls 48 which are to be folded thereon. For this reason, the perpendicular relationship between score lines 24 and 30, and score lines 26 and 31 on the end wall flaps is important because it provides a means for automatically holding these end wall flaps in position to support and control the position of the end walls 48.

When the end wall flaps 22 and 23 are folded into their proper position as shown in FIG. 3, the triangular reinforcing flaps 28 and 29 will be forced into parallel coextensive engagement with the locking flaps 36. Next the end wall sections 48 are folded on score lines 50 until they are in coextensive engagement with the end wall flaps 22 and 23. In completion, the locking flaps 36 at each end of the container are then folded over the end 49 of these end wall sections 48 and are held in place by adhesives or staples, or any other conventional locking means, see FIG. 4. This engagement between the locking flaps 36 and the ends 49 of the end wall sections 48 also folds the reinforcing flaps 28 and 29 into coextensive engagement with the outer surface of the end 49 of

each of these end wall sections to support the locking flaps 36. The completed container with the article locked inside is shaped as an isosceles trapezoid in cross-section. Since the article inside the container is a garden cart 60 which is similar in shape to the container, the surface of this cart will substantially coincide with the corresponding surfaces of the container, see FIG. 5. It is apparent that the angle of the inclined end walls of the container is controlled by the slope of the non-parallel sides of the side walls 14 and 16, so that a considerable variation in shape of these containers may be achieved by varying the angle of these non-parallel sides. In this way, containers of this kind may be used to package articles having a greater variety cross-sectional shapes.

As seen in FIG. 5, this container provides a neat package for the garden cart described above and it does not waste any space or require the extensive use of packing material to make the container strong enough to be stacked. In addition the space 61 inside the body of the cart can be used to hold the other necessary parts such as the wheels, axles, and handle. Furthermore, because the resulting container is trapezoidal in cross-section and has parallel and planar upper and lower surfaces and has parallel and planar opposed side walls, the containers may be stacked both horizontally and vertically in stable compact piles, see FIGS. 7 and 8.

The invention may be embodied in other forms without departing from the spirit or essential characteristics thereof as set forth in the claims, and the present embodiment is therefore to be considered as illustrative and not restrictive and it is intended to include all changes which come within the scope and range of the claims.

I claim:

1. A fiberboard blank for a container comprising a rectangular base section, side wall sections substantially trapezoidal in shape, one of the substantially parallel sides of each of said side wall sections secured to the opposite sides of said base sections and separated therefrom by score lines, end wall flap sections integrally secured to the non-parallel sides of each of said side wall sections and separated therefrom by score lines, the side wall sections and the said end wall flap sections on each side of the base section fitted together to form first and second rectangular segments on each side of the base section, said base section having at least one locking flange secured thereto, said at least one locking flange and said base section fitted together to form a third rectangular segment, a rectangular top section integrally secured to the side of one of said side wall sections remote from said base section and separated therefrom by score lines, and end wall sections integrally connected to the opposite sides of said top section and separated therefrom by score lines, said top section and said end wall sections joined together to form a fourth rectangular segment with the sides of the rectangular segments parallel to each other.

2. A fiberboard blank for a container, said fiberboard blank rectangular in shape and including a rectangular base section, side wall sections in the form of an isosceles trapezoid, the larger of the parallel side of each of said side wall sections coextensive with and secured to the opposite sides of said base section and separated therefrom by score lines, trapezium shaped end wall flap sections for supporting and positioning the end walls of the container, said end wall flap sections having one edge coextensive with and integrally secured to the non-parallel sides of each of said side wall sections and separated therefrom by score lines so that each side wall section is centered between them, another edge of each of said end wall flap sections substantially perpendicular to said one edge and coextensive with and integrally secured to one side of one of the triangularly shaped reinforcing flaps and separated therefrom by score lines, the side wall sections, the end wall flap sections and the reinforcing flaps on each side of said base section fitted

5

together to form first and second rectangular segments, rectangular shaped locking flaps having one side coextensive with and integrally secured to the opposite ends of said base section and separated therefrom by score lines, said locking flaps having opposed ends coextensive with said one side of the triangularly shaped reinforcing flaps, said base section centered between said locking flaps to form a third rectangular segment having opposed ends aligned with the ends of said first and second rectangular segments, a rectangular top section having an end coextensive with and integrally secured to the smaller of the parallel sides of one of said side wall sections and separated therefrom by score lines, rectangular end wall sections having edges coextensive with the sides of said top section and separated therefrom by score lines so that the top section is centered between them, the top section and the end wall sections joined together to form a fourth rectangular segment with ends aligned with the other rectangular segments to form the complete rectangular blank.

3. A fiberboard blank for a container comprising a rectangular base section, side wall sections substantially trapezoidal in shape, one of the parallel sides of each of said trapezoidal side wall sections being coextensive with and integrally secured to opposite sides of said base section and separated therefrom by score lines, end wall flap sections for supporting and positioning the end walls of the container, an end wall flap section integrally secured to at least one of the non-parallel sides of each of said side wall sections and separated therefrom by score lines with the side wall sections and at least one end wall section being attached thereto being fitted together to form two oppositely opposed parallel rectangular segments with the base section which comprises the third rectangular segment, a rectangular top section integrally secured to the side of one of said side wall sections remote from said base section and separated therefrom by score lines, and at least one end wall section integrally connected to one side of said top section and separated therefrom by a score line, said top section and said at least one end wall section joined together to form a fourth rectangular segment with the sides of all the rectangular segments parallel to each other, the opposite side of said top section adapted to be connected to a closure flap section.

4. A fiberboard blank for a container, said fiberboard blank being rectangular in shape and including a rectangular base section, side wall sections trapezoidal in shape, one of the parallel sides of each of said side wall sections coextensive with and integrally secured to the opposite sides of said base section and separated therefrom by score lines, end wall flap sections for supporting and positioning the end walls of the container, said end wall flap sections having an edge coextensive with and integrally secured to at least one of the non-parallel sides of each of said side wall sections and separated therefrom by score lines with the side wall sections and the end wall side sections being attached thereto being fitted together to form two oppositely opposed parallel rectangular segments with the base section which comprises the third rectangular segment, a rectangular top section having an end coextensive with and integrally secured to the side of one of said side wall sections remote from said base section and separated therefrom by score lines, and at least one end wall section adjacent an end wall flap section, said end wall section having an edge coextensive with

6

and integrally secured to one side of said top section and separated therefrom by a score line, said top section and said at least one end wall section joined together to form a fourth rectangular segment with the sides of all the rectangular segments parallel to each other, the opposite side of said top section adapted to be connected to parallel closure flaps, secured to opposite ends of the base section.

5. A fiberboard blank for a container, said fiberboard blank rectangular in shape and including a rectangular base section, side wall sections trapezoidal in shape, one of the parallel sides of each of said side wall sections coextensive with and integrally secured to the opposite sides of said base section and separated therefrom by score lines, end wall flap sections having reinforcing flaps and an edge coextensive with and integrally secured to the non-parallel sides of each of said side wall sections and separated therefrom by score lines with the side wall sections and the end wall side sections being attached thereto being fitted together to form two oppositely opposed parallel rectangular segments with the base section which comprises the third rectangular segment, a rectangular top section having an end coextensive with and integrally secured to the side of one of said side wall sections remote from said base section and separated therefrom by score lines, end wall sections adjacent said end wall flap sections, said end wall sections having an edge coextensive with and integrally secured to the opposite sides of said top section and separated therefrom by score lines, said top section and said at least one end wall section joined together to form a fourth rectangular segment with the sides of all the rectangular segments parallel to each other.

6. A blank for a contour box comprising a rectangular sheet of corrugated paper board or the like, said rectangular sheet having a first transverse score line spaced inwardly from one end, a first pair of oppositely inclined score lines extending respectively from the outer ends of said first score line to said one end of said sheet whereby there is formed a first trapezoidal side wall having a short top edge at said one end of said sheet and having a pair of generally triangular fold-in end flaps respectively integrally secured to the inclined front and rear edges thereof, a second transverse score line parallel to but spaced farther from said one end of said sheet than said first transverse score line whereby a rectangular bottom wall is defined, a second pair of oppositely inclined score lines extending respectively from the outer ends of said second transverse score line to a third transverse score line parallel to said second transverse score line and spaced therefrom whereby a second trapezoidal side wall is defined, said sheet being slit inwardly from its opposite sides to the opposite ends of said third transverse score line on extensions thereof, a pair of spaced longitudinal score lines respectively extending from the outer ends of said third transverse score line to the other end of said sheet.

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