

R. J. CARRIER.
SECTIONAL TRAY.

APPLICATION FILED DEC. 21, 1903.

2 SHEETS—SHEET 1.

Fig. 1

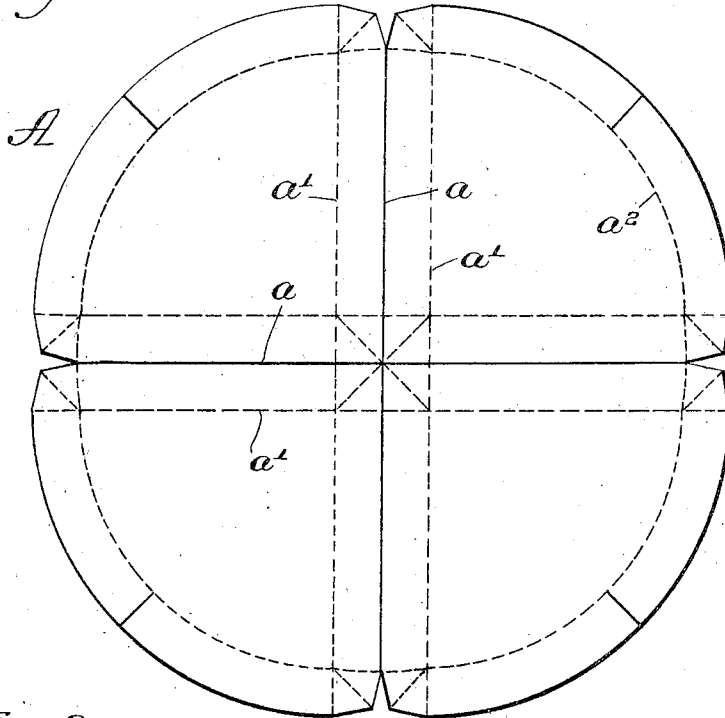


Fig. 2

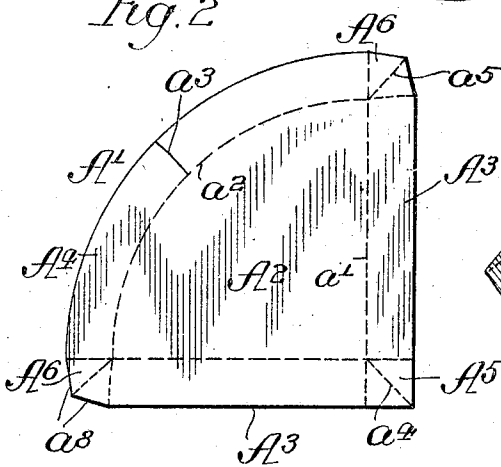


Fig. 3

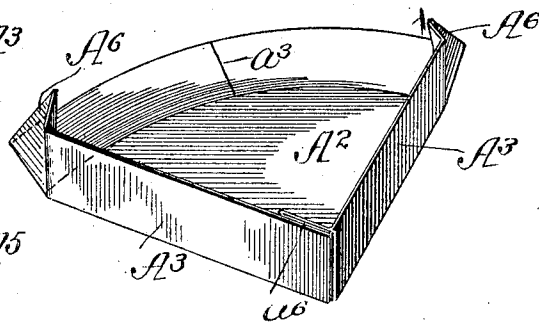
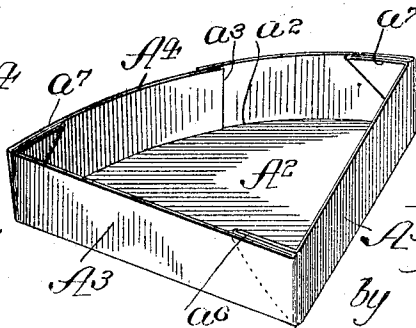


Fig. 4



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No. 798,264.

PATENTED AUG. 29, 1905.

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2 SHEETS—SHEET 2.

Fig. 5

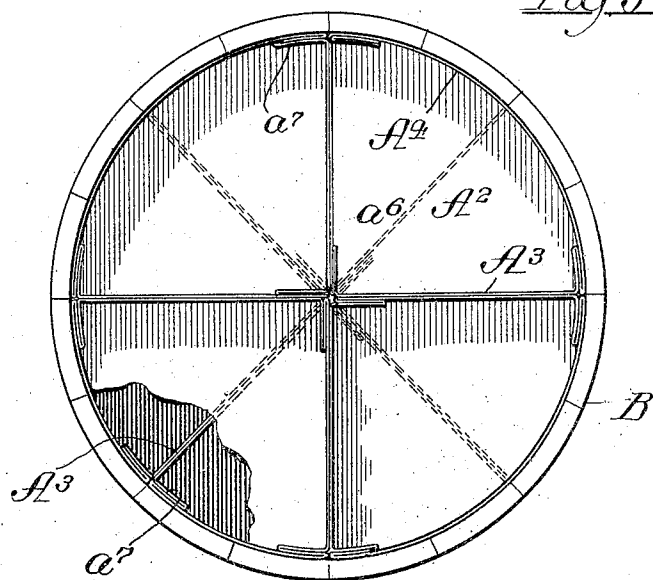
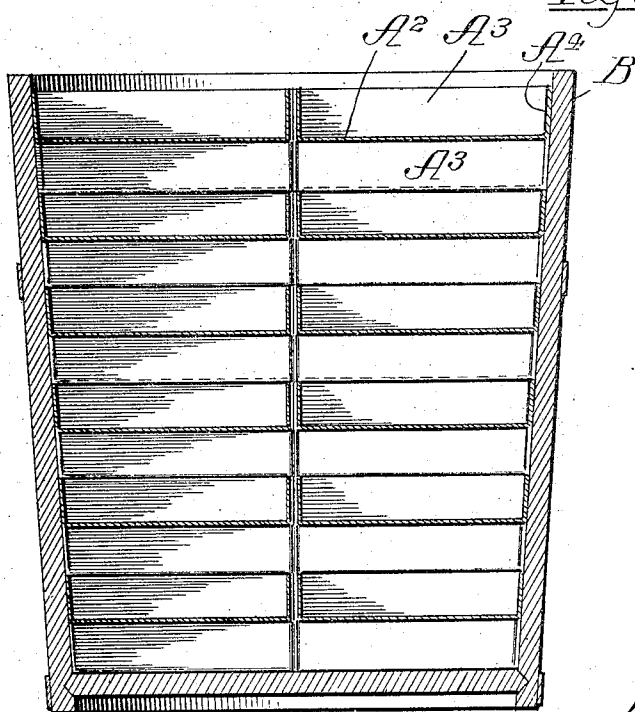


Fig. 6



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UNITED STATES PATENT OFFICE.

ROY J. CARRIER, OF HINSDALE, ILLINOIS.

SECTIONAL TRAY.

No. 798,264.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed December 21, 1903. Serial No. 185,961.

To all whom it may concern:

Be it known that I, ROY J. CARRIER, a citizen of the United States, and a resident of the village of Hinsdale, in the county of Dupage and State of Illinois, have invented certain new and useful Improvements in Sectional Trays; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in trays made of paper or other flexible sheet material and provided with a flat end wall and an outer curved rim or circumferential wall.

The device herein illustrated is especially applicable for use in packing candies and like merchandise in pails or other receptacles, and when used in this manner the trays are placed in the receptacle one over the other and filled either before or after being placed in the receptacle, the trays thus serving as horizontal separators or partitions by which the layers of merchandise in the receptacle are separately supported.

A complete tray embodying my invention is of sectional structure and is made up of a plurality of sector-shaped tray-sections, each of which is provided with a flat bottom or end wall surrounded by converging radial walls and a connecting curved or arc wall; and when said sector-shaped tray-sections are brought together to form the complete tray, the radial side walls of adjacent trays lie side by side in vertical contact to constitute double partitions between adjacent compartments of the tray, while the curved or arc walls of the several tray-sections together constitute a practically continuous circumferential wall surrounding the entire sectional tray.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of a blank from which my improved sectional tray is made, showing the same after it has been cut and scored to constitute the several blanks for the sector-shaped tray-sections. Fig. 2 is a top plan view of one-quarter of the blank shown in Fig. 1, it being the blank for one section of the tray. Fig. 3 illustrates one of the tray-sections partially closed, showing the manner of folding the same to constitute the side walls. Fig. 4 is a perspective view of a completely-folded tray-section. Fig. 5 is a

top view of a pail, showing in dotted and full lines the manner of supporting the trays one upon the other in the pail or other receptacle. Fig. 6 is an axial section of said pail, illustrating the superposed trays therein.

As shown in said drawings, A, Fig. 1, indicates a blank in flat form from which my improved sectional tray is made. Said blank is of a generally circular contour. It is divided into four sectional blanks A' (shown separately in Fig. 2) by two intersecting lines of incision $a a$, which cross each other at a right-angle relation at the center of the blank. The said blank is provided on each side of each of the division-lines a with radial score-lines a' , the score-lines of each set extending centrally through the blank from one side margin thereof to the other and crossing the score-line of the other set. Each of the sector-shaped blanks A' is provided with a curved score-line a^2 , which is generally parallel with the curved or arc margin of the section and which intersects the radial score-lines a' just inside the margins of said sections. The radial score-lines a' of each blank-section divide from the main body or flat end wall A² of the blank radial elongated strips or sections A³, which are adapted to be folded upwardly about said radial score-lines a' to constitute the converging side or radial walls of the tray-section, as shown in Fig. 4, and the circular strip or section A⁴ of each blank-section, located between the curved score-lines a^2 and the margin of the blank, constitute the arc or circumferential wall of the tray-section, which is adapted to be folded upwardly from the bottom or end wall about said score-line a^2 . By reason of the curved form of the walls A⁴ the parts of the blank constituting said walls are slit, as indicated at a^3 , to permit said parts to be readily folded upwardly from the bottom or end wall of the tray, so as to assume a curve conforming to the wall of the pail. The radial score-lines a' of each blank-section intersect near the point of the blank a distance inside said point, thereby forming a rectangularly-shaped part A⁵, and similar parts A⁶ are formed in the angles between the outer ends of the radial score-lines a' and the ends of the curved score-line a^2 . Said parts A⁵ A⁶ are preferably retained in the blank and may be disposed of in any suitable manner when the parts A³ and A⁴, constituting the radial and correct walls, respectively, of the tray, are folded upwardly. As herein shown, said parts A⁵ A⁶ are bisected

by score-lines a^4 a^5 , respectively, and said parts are folded on said score-lines a^4 a^5 to form triangular folds a^6 a^7 , which are laid flat against one of the connected walls, and such triangular folds may be folded either outside or inside the associated radial and curved walls, as desired. As herein shown, the said folds a^6 are laid against the inner faces of the radial walls, while the folds a^7 are laid against the inner faces of the curved walls A^4 . The outer margins of the parts A^6 A^7 are cut away, as indicated at a^8 , so that said margins will not project above the margins of the up-turned walls when the parts are set up in the position shown in Fig. 4, such cutting away of the parts being made necessary by reason of the radial and arc walls meeting at acute angles.

It will be observed that in forming the blank A the curvature of the score-line a^2 of each blank-section A' , which score-lines define the outer curved margins of the set-up tray-sections, is formed from a center which is located at the intersection of the radial score-lines a' of said blank-section, which central point constitutes the point of the set-up tray-section, so that said score-lines a^2 are not concentric with the center of the blank A. If the blank be originally made to constitute a perfect circle, the score-lines a^2 would not be concentric with the center of the completed tray made up of a plurality of said tray-sections and would not, therefore, fill the complete circle of the pail.

The manner of placing the trays in the pail B is shown in Figs. 5 and 6. As shown in said figures, the trays are made in sets of graduated diameters to correspond with the gradually-increasing diameter of the tapered pail. The first tray is placed on the bottom of the pail, the second tray is placed upon the upper margin of the first tray, and the third tray occupies a similar position with respect to the second tray, and so on until the pail is filled, and the number of trays depend upon the depth thereof.

A completed tray or one entirely filling the area of the pail in a given horizontal plane is made up of four individual tray-sections, as herein shown, or a greater or less number, depending upon the subdivision of the blank A, and said individual tray-sections fit with their radial walls in close contact with each other, as shown in Fig. 5, and with their curved walls lying closely against the inner wall of the pail, as shown in Fig. 6. The double radial walls of adjacent tray-sections constitute radial partitions between the compartments of each complete tray. It will be observed that when the tray-sections are assembled in the pail no fastening means are required to hold the radial and curved walls thereof in place, inasmuch as said walls are held in place by contact with each other and the wall of the pail. If desired, however, and

for the purpose of giving permanency of form to the tray-sections, said intersecting radial and curved walls may be connected together in any suitable manner, as by means of corner-pieces, glue applied to the interfolding sections A^5 and A^6 , or otherwise.

In placing the trays in the pail the radial walls or partitions of one tray are preferably disposed at an angle with respect to the radial walls or partitions of a subjacent or superjacent tray, as clearly indicated in Fig. 5, and desirably the radial walls of a superjacent tray are located in planes midway between the planes of the like walls of a subjacent tray. In this manner the bottom or end wall A^2 of each tray above the bottom tray is supported by the radial walls of a subjacent tray, thereby producing an assembled structure of great strength and permitting the trays to be made of lighter material than if the bottom or end walls of the trays were supported excepting at their outer margins. It will also be noted that the pointed or inner ends of the tray-sections are brought together at the center of the pail in close fitting relation, thereby constituting, in effect, at the center of the pail a column extending from the top to the bottom of the assembled trays, which adds greatly to the strength of the assembled tray structure in the pail.

An advantage in forming the partitions in the tray end wall in the manner shown is that this construction not only gives great vertical and lateral rigidity to the tray, but when the trays are filled and the receptacle containing the same is tipped or tilted the lateral weight of the tray contents does not act as a unit against any part of the tray or trays or against the individual articles of the said contents, but such weight is divided into as many parts as there are separate compartments of the tray, due to the presence of the partitions, so that the contents of the tray is not so likely to become crushed in the tray. When the trays are used to contain soft merchandise, as chocolate or iced confections, the trays will be made of a depth to correspond with the depth of a single layer of the merchandise, so that notwithstanding tilting or tipping of the receptacle the articles of the several layers will not shift out of position and be crushed.

An important advantage of the form of tray herein shown is that it may be made of relatively light material by reason of the fact that the assembled trays are capable of mutually sustaining each other in the pail and each tray bottom or end wall does not, therefore, independently support the load carried thereby. By reason of using a relatively light material in the manufacture of the trays I am enabled to greatly decrease the cost of producing the trays and the cost of the finished article to the users of the trays.

Another important advantage of the construction described is that the trays are capa-

ble of being shipped and stored in flat or knockdown form, so that but little storage or transportation space is required for a large number of trays. Furthermore, in this manner I am enabled to economize not only the storage and transportation space required for such trays, but am also enabled to save greatly the cost of freight transportation, inasmuch as the flat or knockdown form of the device takes a much lower freight rate than set-up trays.

It will be understood that the complete tray may be made to assume other than a circular form and that the trays may be adapted to other receptacles than the pail therein shown. It is to be further understood that the trays may be divided into a less or greater number of compartments or sections than herein illustrated.

I claim as my invention—

1. A sector-shaped tray-section comprising an unbroken flat-bottom wall, an arc and two radial walls which are narrow and are integral with and folded upwardly from said bottom wall at right angles thereto, said radial walls meeting each other at their inner ends and meeting the arc wall at their outer ends, the arc wall being transversely cut and the parts thereof divided by said cut overlapping each other, and means for joining the radial walls at their meeting ends and for joining the same to the arc wall.

2. A sector-shaped blank for a sector-shaped tray provided with score-lines located inside of and parallel with the radial margins of the blank and a curved score-line located

inside of and parallel with the arc margin of the blank and meeting at its outer ends the outer ends of said radial score-lines and the curved section between said arc margin and the inner curved line being provided with a transverse cut or line of severance.

3. A sector-shaped blank for a sector-shaped tray provided with intersecting score-lines a' a' arranged parallel with the radial margins of said blank, a curved score-line a'' arranged parallel with the arc margin of the blank, the arc margin of the blank being concentric with the point of intersection of the radial score-lines, and the section of the tray between said arc line and the parallel score-line a'' being transversely severed.

4. A blank from which is made a plurality of sector-shaped blanks for sector-shaped trays, provided with the intersecting score-lines a' a' extending from margin to margin thereof, said blank being made generally circular and provided inside its curved margins with score-lines, parallel therewith, said curved score-lines each extending between two adjacent straight score-lines a' a' and the intersecting lines of severance a which intersect at the center of the blank and extend thereacross from margin to margin.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 15th day of December, A. D. 1903.

ROY J. CARRIER.

Witnesses:

TAYLOR E. BROWN,
GERTRUDE BRYCE.