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DRIVE-IN THEATER SERVICE TRAY

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Fig. 1

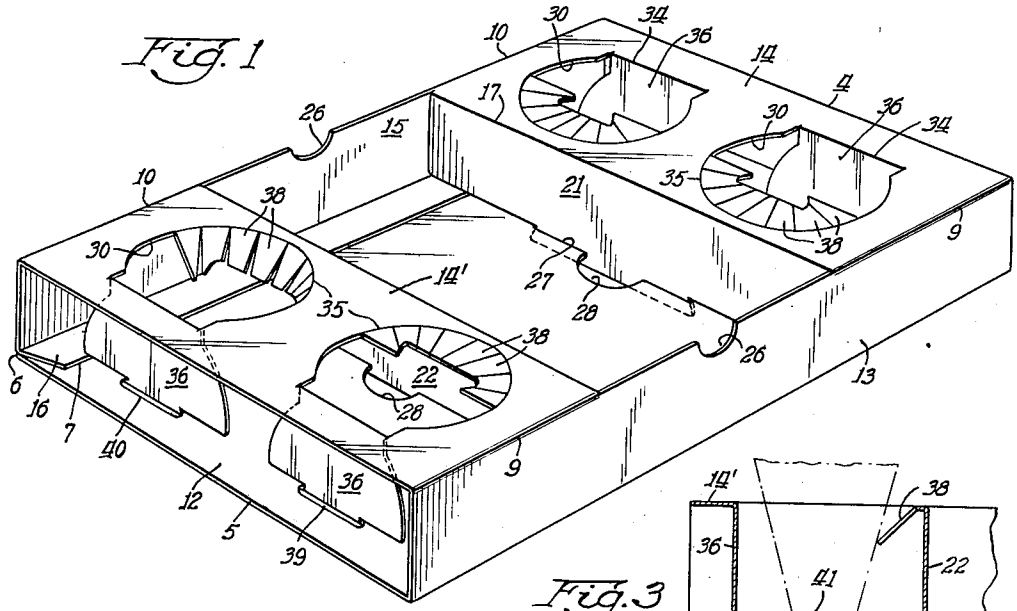
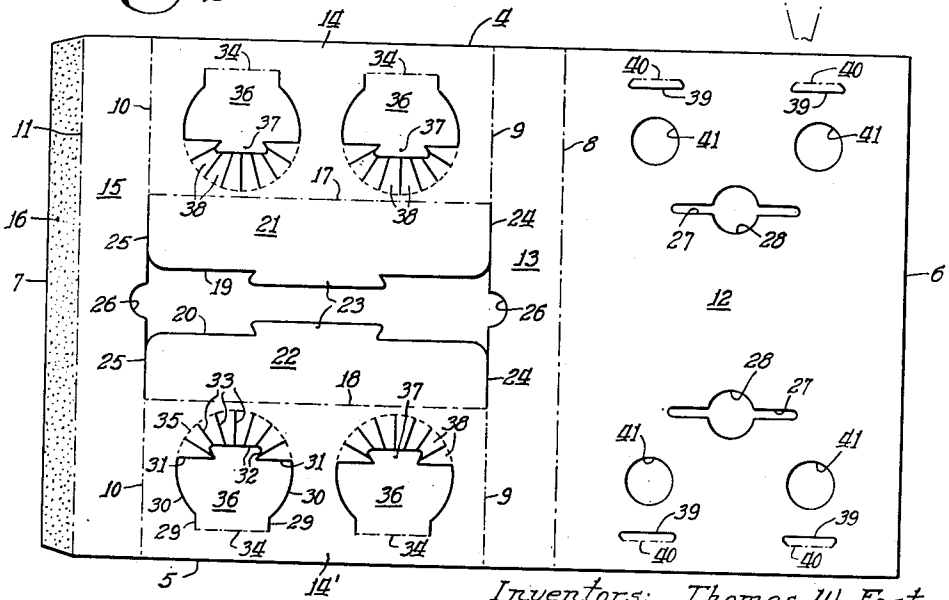


Fig. 3



Fig. 2



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## DRIVE-IN THEATER SERVICE TRAY

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2 Claims. (Cl. 206—72)

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The invention pertains to trays composed of fibrous sheet material such as paperboard for handling and serving food and drinks, particularly trays useful in "drive-in" or "curb" service such as at outdoor theatres, refreshment stands and the like, but the invention is also applicable to trays employed within cartons or boxes as where goods of special types or forms are to be packaged in some particular manner for safety of handling and transportation or for unique display.

One of the principal objects of the invention is to provide a tray of the character specified so constructed and arranged, dimensioned and shaped, that it may be made from a single unitary piece or blank of material such as paperboard while making the most efficient use, with the least wastage, of stock sheet sizes or stock rolls of the material, thereby to produce a most inexpensive yet very useful product.

Another principal object of the invention is to provide a tray of the character mentioned which may be manufactured in a partially completed but flat form from which the final "ready-to-use" tray product may quickly and easily be erected or "set up" and which, when so erected or "set up," will be locked in that condition and held against accidental collapse.

Still another object is to provide a tray arrangement wherein there are separate compartments for food and drink and wherein there is provision for firmly securing drinking cups, glasses and even ice-cream cones as well as other containers or objects including food and utensils to be placed on or in the tray.

Many other objects as well as the advantages and uses of the invention will be or should become apparent upon reading the following description and claims and after viewing the accompanying drawings in which:

Fig. 1 is a perspective view of a paperboard tray constructed to accord with a preferred form of the invention, this drawing view illustrating the tray as erected or "set up" ready for use;

Fig. 2 is a top plan view of a blank piece or sheet of paperboard as the same appears when cut, scored and otherwise prepared ready to be folded and secured in flattened tube form prior to being erected into the final condition of Fig. 1; and

Fig. 3 is a sectional view of a fragment of the completed tray illustrating the manner in which one type of object is supported on the tray.

The preferred shape of the tray blank, as will be seen from the illustration of Fig. 2, is rectangular, a shape best suited for utmost economy and minimum wastage in manufacturing trays of the instant character from stock sheets

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and rolls of material such as paperboard. However, if special variations or features should be desired and require extra material or entail some wastage, such special variations or features may readily be incorporated although savings otherwise available by reason of the instant simplicity of the construction may be reduced. Certain features of the invention are susceptible of incorporation in other tray and similar constructions regardless of matters of economy as will be appreciated.

Preferably, the blank is cut and scored simultaneously with the cutting of the blank from stock sheets or rolls and adhesive may be applied, over the one area in which it is required, at the same time or, more desirably, by a succeeding operation. The parallel long edges 4 and 5 are destined, eventually, to lie at the ends of the final tray product while the short edges 6 and 7 will extend along and adjacent to one side wall and one another in such final product. Score lines 8, 9, 10 and 11, lines 8 and 11, extending continuously and completely across the blank and lines 9 and 10 extending inwardly from edges 4 and 5 for equal distances to transverse score lines to be described, and all extending parallel to one another and to edges 6 and 7 and perpendicular to edges 4 and 5, crease the blank for folding therealong to effect the tubular form of Fig. 1. These score lines and the blank edges together define a bottom wall or bottom panel 12, a side wall or side panel 13, a top wall consisting of panels 14, 14', a second side panel 15 and a glue flap 16.

The dimension of panel 12 between edge 6 and score line 8 is equal to the dimension of each of panels 14 and 14' between score lines 9 and 10 and, similarly, the corresponding dimensions of side walls 13 and 15 between score lines 8 and 9, and 10 and 11, respectively, are equal so that when the folding along score lines 8, 9, 10 and 11 is completed, the rectangular tube of Fig. 1, with parallel sides and parallel top and bottom wall parts, may result. Since Fig. 2 may be considered as illustrating the blank with what are to be the outer surfaces of the wall panels or parts, exposed or directed toward the observer and since it is deemed preferable to have the glue flaps 16 disposed in overlapping relationship on the inside surface of the margin adjacent to edge 6 of bottom wall 12, glue or other adhesive is applied to the exposed face of the flap 16, as indicated by the stippling in Fig. 2 and the folding is so performed as to bring the adhesive covered face of flap 16 against the unexposed or hidden margin of bottom wall 12 to which it is to be secured.

The blank is also scored along score lines 17,

18 transverse or perpendicular to score lines 9 and 10 and parallel to edges 4 and 5, to define the top panels 14, 14' which, in the illustrated embodiment, have correspondingly equal dimensions. Score lines 17 and 18, together with free edges 19, 20, formed by cutting away material between those edges, define what may be termed well side wall panels 21 and 22 of corresponding shape and equal dimensions, the dimension from score line 17 to edge 19 and that from score line 18 to edge 20 being equal to the height of the side walls i. e. the distance from score line 8 to score line 9, for instance. In cutting away the material between the well side walls or panels 21 and 22, a dove-tailed locking projection or tab 23 is left on each, preferably along a center portion of the edge. The narrow dimension of each tab or projection as measured perpendicular to the adjacent free edge 19 or 20 of its connected well side panel, preferably is several times the thickness of the material from which the blank is formed for reasons which later will become apparent. The side edges of each of panels 21 and 22 are cut free from the adjacent side wall panels 13 and 15 along lines 24 and 25 coextensive with scoring lines 9 and 10, respectively. The corners of panels 21 and 22 at the junctures between edges 19 and 24, 25 and 20 and 24, 25 preferably are rounded as shown, and if desired, finger notches 26 may be formed centrally of those edges of the side wall panels which later will be upper edges of the resulting tray.

The locking tabs 23 are designed ultimately to be interlocked with the bottom wall 12 of the tray and to that end the bottom wall is provided with slots 27 so located as to extend substantially in alignment with and symmetrically with respect to the respective score lines 17 and 18 and with the slot mid-points directly below the mid-points of the respective locking tabs 23 when the tray is fully erected as in Fig. 1. The length of each slot 27 is approximately equal to the distance between the narrowest width, i. e. the inner ends, of the dove-tails of the tabs 23 and, in any event is less than the widest or outer end width of the dove-tail of those tabs. Midway of each slot 27 the slots widen to provide circular openings 28 for insertion of the fingers of a person erecting a tray for use.

The top panels 14, 14' may each have one or more generally circular openings formed for the reception of receptacles such as cups, glasses, bottles and the like. Initially and while the tray is in the blank form and also in the flat folded form the openings are closed as shown in Fig. 2 but on erection and before placement or insertion of a receptacle therein they are partly open appearing as shown in the lower right and upper left and right corners of Fig. 1. In forming each of these receptacle receiving openings the material is slit or cut along the straight and arcuate full lines designated 29, 30, 31, 32 and 33 and scored along tangent 34 and arc 35 indicated by dash lines, to provide a hinged flap 36, a locking tab 37 of dove-tail shape on the end of the flap 36 opposite to the hinge score line 34, and a series of sectors 38 independent of one another by reason of the slits 33 but each of which has a degree of upward or downward flexibility relative to the top panel to which it is connected by reason of the scored line 35. The perpendicular distance from the hinge or score line 34 to slits 31 which are parallel to one another, should be substantially equal to the perpendicular distance between a top panel and the inside surface of the bottom wall panel 12.



The bottom wall panel is cut or slit as indicated by the full lines 39 and scored between the recurving ends of those lines as indicated by the dash lines 40 to permit passage of the dove-tail locking tabs 37 and frictional gripping of those tabs when interlocked with the bottom wall panel. Preferably each of the tangential parts of slits 39 lies perpendicularly beneath and in alignment with the locking tab 37 of the corresponding flap 36 when the tray is in its fully erected condition and, preferably also, the overall length of opening provided by each slit 39 is less than the maximum or greatest length of the free outer edge of the locking tab to be passed therethrough or substantially equal to the corresponding dimension of the inner or narrow part of the dove-tailed locking tab. In the bottom wall panel adjacent to each of slits 39, with its center substantially perpendicularly beneath the center of the circular part of each corresponding or registering receptacle receiving opening in the top panels, is a circular opening 41 which may serve usefully to receive the small diameter portion of a conical paper cup or ice-cream cone or for the admission of a finger to aid in raising some receptacle or other article out of its seat within the opening in the top panel thereabove.

Ordinarily the trays will be cut, scored, folded flat and so secured at the factory where made and shipment will be made in their flattened condition. To this end folding may take place either along score lines 8 and 10 or along score lines 9 and 11. Assuming that folding is to be effected along scored lines 8 and 10, the bottom panel 12 will be swung away from the observer and to the left, viewing Fig. 2 and side panel 15 and glue flap 16 will be swung together away from the observer and to the right. Side panel 15 and glue flap 16 will first be brought against the back or under side of the top panels 14, 14' and the bottom panel 12 will be swung in thereafter if the glue flap is to be concealed on the inside of the tray. The thus prepared trays are assembled in suitable numbers in bundles or cartons and shipped or stored for use.

When it is desired to erect or "set up" a tray for use, pressure directed from opposite sides upon the folded edges, as, for instance against the edges formed by fold lines 8 and 10, will cause the tray tube to expand toward its open or erected condition as in Fig. 1. When the expansion reaches its maximum where the side wall panels 13 and 15 stand perpendicular to the bottom and top walls, the well side panels 21 and 22 may be swung downward and the lock tabs 23 may then be pushed or pressed through the slots 27 for locking engagement with the bottom wall. Likewise at this time the flaps 36 may be swung downward and the locking tabs 37 pushed or pressed through slits 39, the small tabs formed by the slits 39 and the scored lines 40, giving way to such degree as required to permit passage of tabs 37 but springing back to add to the frictional locking and steadying effects produced by the connection.

Thus constructed and erected, the tray is remarkably rigid even though made from relatively light paperboard. And once the several interlocking connections between the top and bottom walls have been effected, there is little if any danger that the tray will collapse or that the top wall panels will move in any direction relative to the bottom wall. When the locking tabs 23

have been pushed through the slots 27, the angular or beveled sides of the dove-tail form tend to hold the tabs in such position and tend to urge or draw the edges 19 and 20 firmly against the inner or upper surface of the bottom wall thereby to provide a structure of relatively high rigidity. Similarly the straight edges 31 of tabs 36 are arranged to make contact over their lengths with the inner surface of the bottom wall and function similarly in that respect. By locating the tabs 36 at or adjacent to the ends of the tray they have the same functional spacing, strengthening and rigidifying effects as solid ends for the tray but save all of the material which otherwise would be required to provide such solid ends, and effectively utilize material which would otherwise be thrown away in forming the several receptacle holding openings. In other respects also the construction has structural advantages as will be appreciated.

Useful as a tray for service of food and drink to persons seated in automobiles at "drive-ins" or to persons at picnics and at other functions, the trays may be disposed of by burning or otherwise. As indicated above, the construction employed is also useful in trays or inserts for containers or packages for packing, storing, shipping, displaying and otherwise handling fragile articles. When an article such as a paper cup is placed in a tray recess as provided by one of the openings in the panels 14, 14', the several sectors 38 around the margin of the opening will be depressed as indicated in the lower left hand corner of Fig. 1. The inherent resiliency of the several sectors 38 will permit the insertion of the cup and yet will maintain frictional contact with the cup sides thereby tending to hold and steady the cup and to compensate for varying sizes of cup. As indicated in Fig. 3, the conical peak of a paper cup, ice-cream cone or the like may project downward through the opening in the top panel into and through the registering opening 41 therebelow.

The invention has been disclosed in a presently preferred form but, as will be apparent, it is susceptible of other embodiments and variations and structural and functional features thereof may be employed singly as well as in combination. Accordingly the invention should not be considered as limited to the embodiment chosen for disclosure thereof but rather by the invention spirit within the scope of the appended claims.

We claim:

1. An open-ended collapsible tubular tray of the character described composed of and from a single, integral and rectangular piece of fibrous sheet material such as paperboard so cut and scored that when folded it will provide substantially opposed, coextensive and spaced side walls, a bottom wall extending between said side walls and substantially from end to end of each side wall, a pair of top wall panels extending from side wall to side wall above and in spaced relation to said bottom wall, said top wall panels having adjacent edge portions spaced from one another to expose an area of said bottom wall thereby to provide a well between the tray ends, a well side panel depending from one of said adjacent edges of one of said top wall panels into contact with the upper surface of said bottom wall adjacent to said exposed area, means on said well side panel for effecting connection with said bottom wall, a pair of flaps having rounded sides struck from each of the top wall panels to provide portions of rounded article-receiving openings, a series of separate hinged sectors struck out from each top wall panel cooperating with the rounded flaps to complete the rounded article-receiving openings, each flap being hingedly connected to its respective top wall panel adjacent an end of the tray, a pair of tab-receiving slits in the bottom wall, one adjacent each end thereof, and located directly beneath the hinge lines of the respective opening forming flaps, each such flap having a locking tab portion at the end thereof projecting through the corresponding bottom wall slit and frictionally engaged with the bottom wall at the ends of such slit.



2. An open-ended collapsible tubular tray of the character described composed of and from a single integral piece of fibrous sheet material such as paperboard so cut, scored and folded as to provide substantially opposed, coextensive and spaced side walls, a bottom wall extending between said side walls and substantially from end to end of each side wall, a pair of top wall panels extending from side wall to side wall above and in spaced relation to said bottom wall, said top wall panels having adjacent edge portions spaced from one another to expose an area of said bottom wall thereby to provide a well between the tray ends, a well side panel hinged by a score line to and depending from each of said adjacent edges of said top wall panels into contact with the upper surface of said bottom wall adjacent to said exposed area, said bottom wall having a slot therein beneath and substantially in register with each well side panel score line, an interlocking connection between the bottom edge of each well side panel and said bottom wall through said slots, a pair of flaps having rounded sides struck from each of the top wall panels to provide portions of rounded article-receiving openings, a series of separate hinged sectors struck out from each top wall panel cooperating with the rounded flaps to complete the rounded article-receiving openings, each flap being hingedly connected to its respective top wall panel adjacent an end of the tray, a pair of tab-receiving slits in the bottom wall, one adjacent each end thereof, and located directly beneath the hinge lines of the respective opening forming flaps, each such flap having a locking tab portion at the end thereof projecting through the corresponding bottom wall slit and frictionally engaged with the bottom wall at the ends of such slit.

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