Dec. 17, 1968 C. H. BESSETT ET AL 3,416,695

TRAY CONSTRUCTION

Filed Oct. 28, 1966

Fig. 1

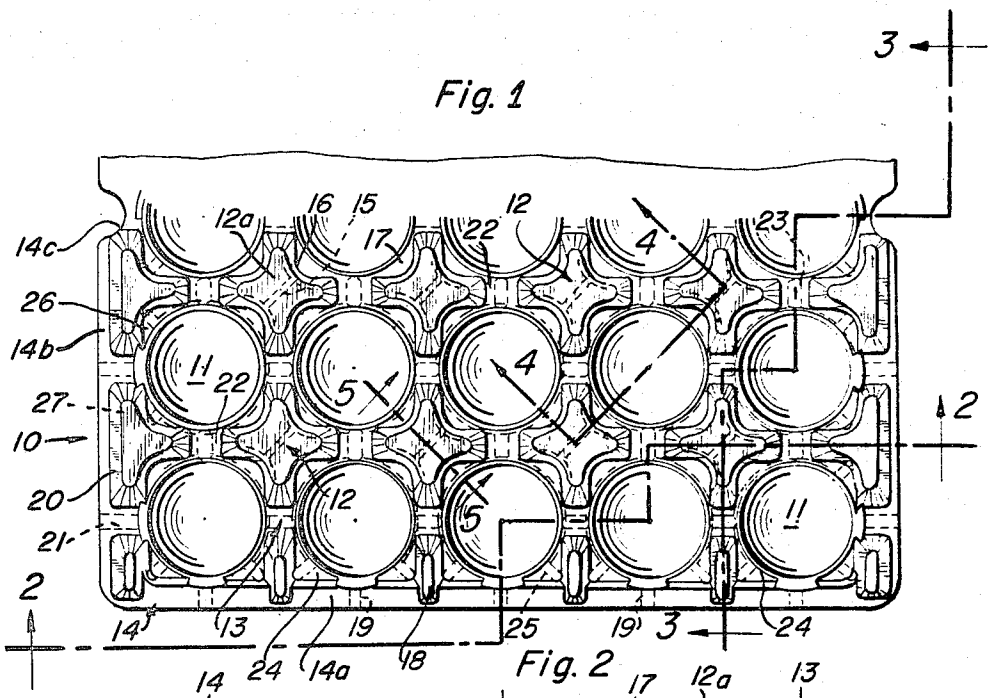


Fig. 2

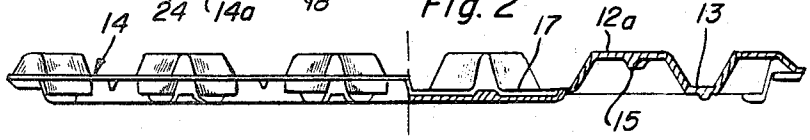


Fig. 3

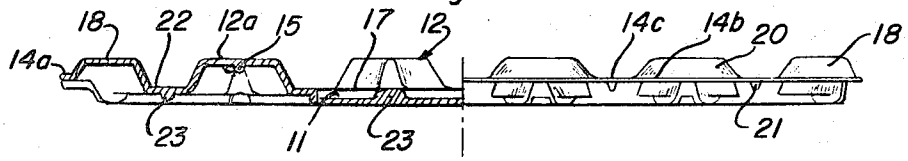


Fig. 4

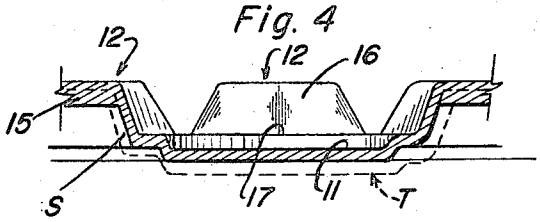


Fig. 5

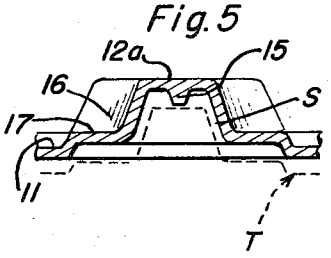
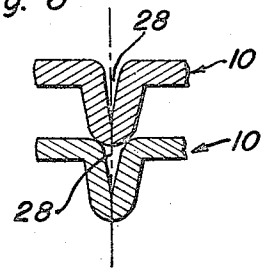


Fig. 6



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TRAY CONSTRUCTION

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3 Claims. (Cl. 220—23.8)

This invention relates to a tray construction formed of molded pulp, expanded polystyrene, polyethylene or the like and more particularly to a tray adapted to carry a plurality of small articles such as cups containing individual servings of jelly, catsup, etc.

Various trays of this general type have heretofore been proposed but because of certain design characteristics are beset with numerous shortcomings. For example, such trays are often not capable of carrying articles having more than one exterior configuration. Secondly, when the loaded prior trays are arranged in stacked relation, the articles in the lower trays are susceptible to damage due to carrying part of the weight of the upper loaded trays. Furthermore, the prior empty trays are oftentimes not capable of being closely nested together; and, if they are, they have a tendency of sticking together.

Thus, it is an object of this invention to provide an inexpensive tray which avoids the aforenoted shortcomings of prior structures.

It is a further object of this invention to provide a tray which is readily capable of accommodating articles such as jelly cups, which have either rounded or multisided tapered side wall configurations.

Further and additional objects will appear from the description, accompanying drawing, and appended claims.

In accordance with one embodiment of this invention a tray is provided which comprises a plane of reference and shallow pockets depending from said plane and disposed in a plurality of spaced parallel rows. Arranged in alternate parallel rows are a plurality of hollow posts extending upwardly from said plane of reference. Each shallow pocket is substantially delimited by four posts which are separated from one another by a portion of said reference plane. Each of the said portions of the reference plane intermediate adjacent posts has a solid rib depending from the underside thereof and interconnecting adjacent pockets.

For a more complete understanding of this invention reference should be made to the drawing wherein:

FIGURE 1 is a fragmentary top view of the improved tray;

FIG. 2 is a front view of the improved tray partially in section and taken along line 2—2 of FIG. 1;

FIG. 3 is a side view of the improved tray partially in section and taken along line 3—3 of FIG. 1;

FIGS. 4 and 5 are enlarged fragmentary sectional views taken along lines 4—4 and 5—5, respectively, of FIG. 1 and showing the tray in each instance arranged in stacked relation with a second similar tray, shown in dotted lines; and

FIG. 6 is an enlarged fragmentary vertical sectional view of the improved trays made by a thermoforming method; said trays being shown in stacked relation.

Referring now to the drawings and more particularly to FIG. 1, a tray **10** preferably formed of molded pulp, expanded polystyrene, polyethylene or the like is shown which is adapted for use in carrying a plurality of articles such as small metallic or plastic cups. The cups in question are of a type frequently used in restaurants, drive-in establishments and the like for dispensing individual servings of jelly, catsup, mustard, etc. The top of the cup is normally sealed by a plastic or foil membrane.

FIG. 1 shows approximately one-half of the improved tray with the unillustrated remainder of the tray being of like configuration. The tray **10** may be manufactured by pulp molding, thermoforming, and/or injection molding depending upon the material being used. All of such manufacturing methods are well known in this art.

Tray **10** includes a plurality of shallow pockets **11** which are arranged in parallel rows. The rows of pockets are separated by parallel rows of upwardly projecting hollow posts **12**. The pockets and posts extend in opposite directions from a plane of reference **13**. The illustrated tray is delimited by a peripheral rim **14** which is shown as forming a plane above the plane of reference but below the plane formed by the tops **12***a* of the posts **12**. If desired however the rim may be coplanar with the plane of reference.

The posts **12** have broad, substantially star-shaped tops **12***a*, which have solid ribs **15** depending from the undersides thereof. The rib **15** extends diagonally across the post top. The substantially star-shape of the post top is established by the side walls of the post being concaved or recessed in areas **16** adjacent the peripheries of the pockets **11**. The areas of the tray disposed between the post concaved portions **16** and the peripheries of the pockets form plateaus **17** which are disposed within the plane of reference **13**. The concaved portions **16** of the posts, disposed about the periphery of a pocket, define a substantially square shape which is adapted to accommodate cups or receptacles having substantially square-shaped side walls. The shallow pockets **11**, on the other hand, are round and adapted to accommodate the bottoms of cups or receptacles having rounded but tapered side walls. With either type of cup it is conventional for the top thereof to be provided with an outwardly extending peripheral flange which is adapted to engage and be supported by the tops **12***a* of the posts **12** surrounding the particular pocket.

Two sides **14***a* of the rim **14** are substantially straight and have a row of narrow posts **18** disposed adjacent each straight side. Each post **18** is aligned with a row of posts **12** which extends transversely from the rim side. Depending from the underside of rim portion **14***a* and intermediate narrow posts **18** are solid projections **19**, see FIG. 1.

The remaining two opposed sides **14***b* of the rim **14** are provided with hand or finger holes **14***c* which are adapted to facilitate removal of a loaded tray from a shipping container or the like. Disposed adjacent each rim side **14***b* is a row of half posts **20**. Depending from the underside of the portion of rim side **14***b* intermediate half posts **20** is a solid projection **21**.

Posts **12** of a row and corresponding posts **12**, **18** and **20** of adjacent rows are spaced from one another, and separated by areas or portions **22** which are disposed within the plane of reference **13**. Depending from the underside of areas **22** are solid ribs **23**, each of which interconnects the peripheries of adjacent pockets. Areas **22** provide spaces for accommodating fingertips so as to enable the individual articles carried by the tray to be readily removed therefrom manually.

Plateaus **24**, formed between the row of narrow posts **18** and the adjacent pockets **11**, have solid ribs **25** depending from the undersides thereof. In a like manner plateaus **26** are formed between the row of half posts **20** and the adjacent pockets **11** and have depending solid ribs **27** formed therebeneath. Solid ribs **15**, **23**, **25**, and **27** and projections **19** and **21** cooperate with one another to maintain minimum spacing S, see FIGS. 4 and 5, between adjacent trays T in a stack and thereby facilitate hand denesting of the trays from the stack.

In addition to facilitating denesting, the solid ribs and

projections increase the over-all stiffness of the tray. Ribs **23** also serve to carry the weight of the loaded trays disposed thereabove, and thus prevent the plastic or metallic membrane used as a closure for each of the cups from being ruptured or torn when loaded trays are arranged in stacked relation. In describing the improved tray **10**, the ribs **15**, **23**, **25**, and **27** and projections **19** and **21** have been defined as being solid. Such a definition is appropriate where the method of manufacturing the tray involves pulp molding or injection molding; however, where thermoforming is involved, such ribs and projections would be hollow. Notwithstanding the hollow character of the ribs and projections, the same would have narrow crevices **28** therein providing effective anti-jamming between the adjacent trays in a stack as seen in FIG. 6. It is intended therefore that the term "solid" as herein used, covers the rib and projection construction shown in FIG. 6 as well.

Tray **10** may vary in size and shape from that shown without departing from the scope of this invention. In addition the height of the posts and the depths of pockets may be increased, if desired, so as to more effectively accommodate articles of varying size and shape.

Thus, it will be seen that an inexpensive tray has been provided which will facilitate the handling of a plurality of articles without damaging of said articles.

While a particular embodiment of this invention has been described above, further modifications may be made thereto and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

We claim:

1. A molded tray for accommodating a plurality of articles, comprising a plane of reference, shallow pockets depending from said plane of reference and arranged in a plurality of spaced rows, and hollow posts extending upwardly from said plane of reference, a substantially greater distance than said pockets depend from said plane, said posts being arranged in substantially delimiting relation with respect to but spaced from the upper extremities of said shallow pockets and forming a plurality of plateaus symmetrically arranged with respect to the upper extremities of each pocket; portions separating adjacent posts and disposed within said plane of reference, said portions having elongated projections depending from said plane of reference and interconnecting adjacent pockets of a row.

2. The tray of claim **1** wherein each hollow post has a broad flat upper surface disposed substantially parallel to said plane of reference; a predetermined number of said post flat upper surfaces being provided with elongated depending projections.

3. The tray of claim **2** wherein each shallow pocket has a base portion thereof for subtending and supporting an accommodated article, and each post adjacent said pocket has a portion of the broad flat upper surface thereof for supporting a peripheral segment of the accommodated article.

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U.S. Cl. X.R.

229—2.5; 217—26.5; 220—97