May 5, 1970 F. MICHEL 3,509,993

PACKAGING TRAY

Filed July 18, 1968

Fig. 1.

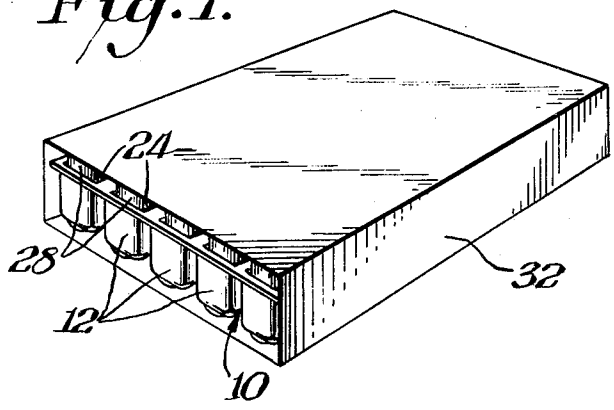


Fig. 2.

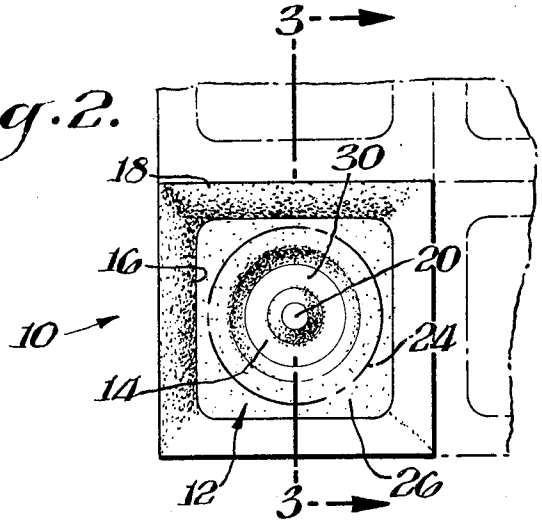


Fig. 3.

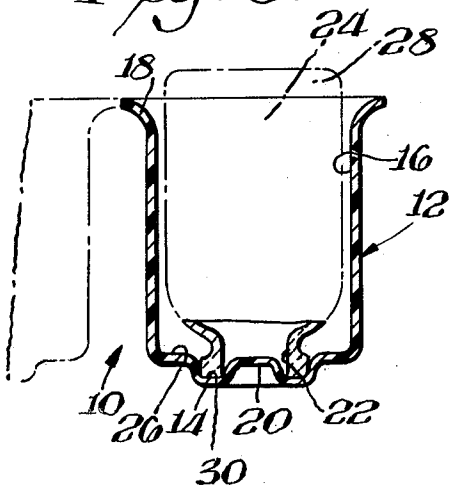
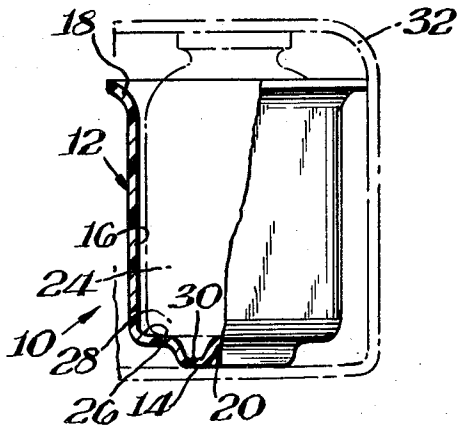


Fig. 4.



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PACKAGING TRAY

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U.S. Cl. 206—65 4 Claims

ABSTRACT OF THE DISCLOSURE

Unitary packaging tray comprises plurality of individual article receiving cells each of which includes bottom with upwardly extending side wall connected around periphery of bottom. Upwardly contoured central boss in each cell bottom is arranged to project into open mouth of empty container-type article when such articles are placed in inverted position in cells of tray. Inwardly contoured ledge in each cell side wall is arranged to support base of filled and capped container-type article when such articles are placed right-side-up in cells of tray.

BACKGROUND OF THE INVENTION

The present invention relates to a packaging tray, and more particularly to a unitary tray for packaging container-type articles both before and after they are filled.

Small glass bottles such as medicament vials are usually packaged by glass manufacturers in an outer carton containing alternating layers of corrugated cardboard fillers and flats. The vials are positioned between the compartments formed by the cardboard fillers and rest upon the cardboard flats directly below the fillers. The packaging process is repeated until the outer carton is completely loaded with vials, and the purchasers of the empty vials receives them in this condition. With this type of packaging arrangement the empty vials often contain cardboard particles and dust which are difficult to remove before the vials are filled with medicament or other substances. After the vials are rigorously cleaned, filled and capped, they are shipped to distribution locations in the original outer carton with alternating layers of fillers and flats. Often, cushioning against breakage during shipment is not completely satisfactory.

Accordingly, it is an object of the present invention to provide a unique packaging tray arrangement for shipping empty container-type articles, and also for shipping them after they are filled.

SUMMARY OF THE INVENTION

In accordance with the present invention a unitary packaging tray is provided comprising a plurality of individual article receiving cells. Each cell includes a bottom with an upwardly extending side wall connected around the periphery of the bottom. An upwardly contoured central boss in each cell bottom projects into the open mouth of an empty container-type article when such articles are placed in inverted position in the cells of the trays. Moreover, an inwardly contoured ledge in each cell side wall supports the base of a filled container-type article when such articles are placed right-side-up in the cells of the tray.

The unitary tray of the present invention may have cell bottoms each of which includes an annular recess that surrounds the upwardly contoured central boss. Also, the inwardly contoured ledge in each cell side wall may be annular.

The present invention also includes the combination of a unitary packaging tray and a plurality of empty or filled container-type articles each of which has a base portion and an open or capped mouth at its upper end portion. The empty articles rest in inverted position in the cells of the tray with one article in each cell so that the upwardly contoured central boss in each cell bottom projects into the open mouth of the article in that cell. Alternatively, filled articles are positioned right-side-up in the cells of the tray with one article in each cell supported at its base portion by the inwardly contoured ledge in the cell side wall. Each arrangement may be surrounded by an outer wrap, such as a sleeve, for maintaining the tray and the articles in packaged relationship.

BRIEF DESCRIPTION OF THE DRAWING

Novel features and advantages of the present invention in addition to those mentioned above will become apparent to one skilled in the art from a reading of the following detailed description in conjunction with the accompanying drawing wherein similar reference characters refer to similar parts and in which:

FIG. 1 is a perspective view of a packaging tray loaded with container-type articles and surrounded by an outer wrap according to the present invention;

FIG. 2 is a top plan view of a portion of a packaging tray according to the present invention;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2 with a container-type article resting in inverted position in one of the cells of the tray; and

FIG. 4 is a side elevational view of a portion of a packaging tray according to the present invention with a container-type article positioned right-side-up in one of the cells of the tray and an outer wrap surrounding the tray and articles.

DETAILED DESCRIPTION OF THE INVENTION

Referring in more particularity to the drawing, a unitary packaging tray **10** comprises a plurality of individual article receiving cells **12** formed therein. The tray may be fabricated of plastic material such as thin polystyrene or polyethylene, for example, by molding techniques known in the art. Each cell of the unitary tray **10** includes a bottom **14** with an upwardly extending side wall **16** connected around the periphery of the bottom. The side wall **16** may be flared at its upper end portion **18** and the flared portions of adjacent cell side walls merge together to provide the unitary construction of the tray.

Each cell bottom **14** has an upwardly contoured central boss **20** arranged to loosely project into the open upper end **22** of an empty container-type article **24** when such articles are placed in inverted position in the cells **12** in the tray. Also, an inwardly contoured ledge **26** is provided in each cell side wall which functions to support the base portion **28** of the article **24** when such articles are placed right-side-up in the cells in the tray. The articles **24** are positioned upright in the cells after they are filled and capped.

Each cell bottom **14** of the unitary packaging tray **10** may also include an annular recess **30** that surrounds the upwardly contoured central boss **20**. The recess in the cell bottom serves to support the open mouth portion **22** of an empty container-type article **24** when the article is inverted in the cell, as shown in FIGURE 3. Further, the inwardly contoured ledge **26** in each cell side wall **16** may be annular in configuration to thereby provide adequate support surface for the base portion **28** of a filled and capped article **24** when it is positioned upright in the cell, as shown in FIG. 4.

In use, empty container-type articles **24** such as medicament vials are packaged by the glass manufacturer by inserting them in inverted position into the individual cells **12** of the unitary packaging tray **10**. The upwardly contoured boss **20** in the bottom of each cell **12** loosely projects into the open mouth **22** of the vial **24** to thereby effectively seal that opening against dust or any for-

eign matter which may be in the packaging tray. The medicament vials also fit closely next to the cell side walls **16** which serve to cushion the vials during shipment to the receiver. After a vial is positioned in each tray cell the tray and vials are slipped into an overwrap such as a cardboard sleeve **32**. The overwrapped trays are then packaged in an outer carton and shipped to the purchaser for subsequent filling. With this arrangement the individual vials are effectively cushioned during transit and arrive at their destination in a relatively clean and dust-free state.

Prior to filling, the individual vials are removed from the packaging tray **10** and subjected to a simple cleaning operation. The vials are then filled with medicament, for example, capped, labeled if desired, and then repackaged in the same packaging tray. The same outer wrap **32** is finally positioned around the loaded trays. The filled vials are placed right-side-up in the individual cells of the tray so that their base portions **28** are supported by the inwardly contoured ledges **26** of the tray cells. The particular cell construction of the packaging tray **10** causes the filled vials to project slightly further out of the cell by a distance equal to the depth of the annular recess **30** surrounding the upwardly contoured central boss **20**. Thus, when the sleeve **32** is repositioned around a tray loaded with filled vials it is stretched or distorted slightly but this does not present any problem in re-applying the sleeve. The loaded trays surrounded by the sleeves **32** may then be packaged in an outer carton for shipment to distribution points.

What is claimed is:

1. A unitary packaging tray and a plurality of empty container-type articles each having an open mouth, the packaging tray comprising a plurality of individual article receiving cells with one container-type article resting in inverted position in each cell, each cell of the tray including a bottom with an upwardly extending side wall connected around the periphery of the bottom, and upwardly contoured central bosses, one in each cell bottom, constructed and arranged to project into and seal the open mouths of the empty inverted container-type articles in the cells.

2. The combination of claim **1** wherein each cell bottom in the unitary packaging tray includes an annular recess surrounding the upwardly contoured central boss.

3. The combination of claim **1** including an outer wrap surrounding the unitary packaging tray and the empty inverted container-type articles for maintaining them in packaged relationship.

4. The combination of claim **3** wherein the outer wrap is a sleeve.

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229—10; 217—26.5; 220—21; 206—72