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2,981,039

TRAY PACKAGE AND METHOD OF PACKAGING

Filed Jan. 26, 1956

FIG. 1.

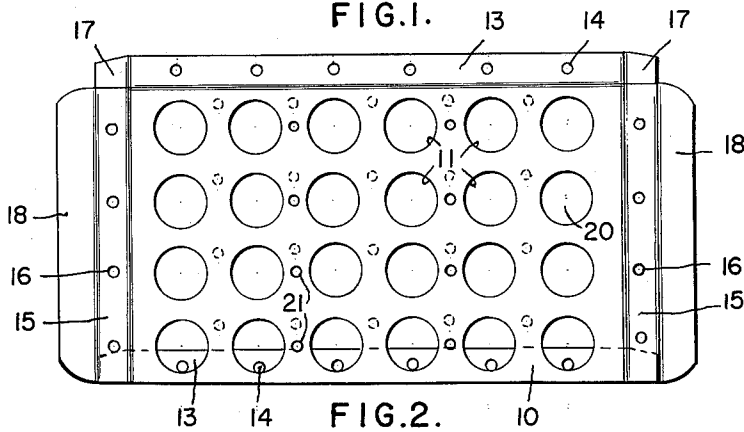


FIG. 2.

FIG. 7.

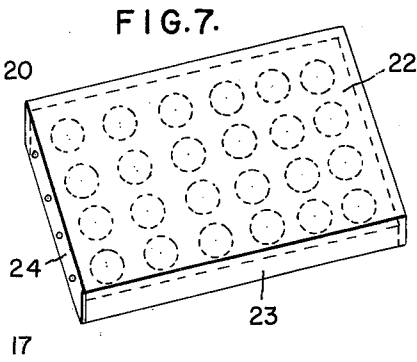
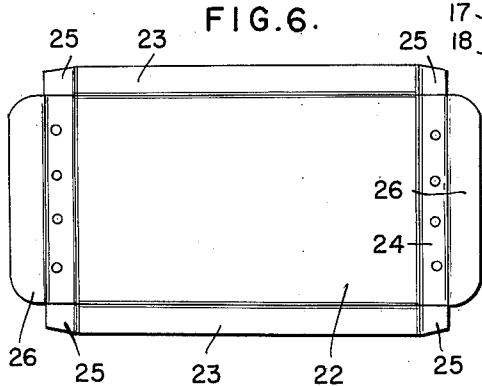


FIG. 3.

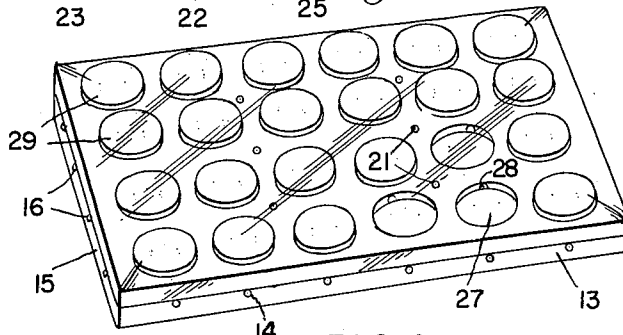
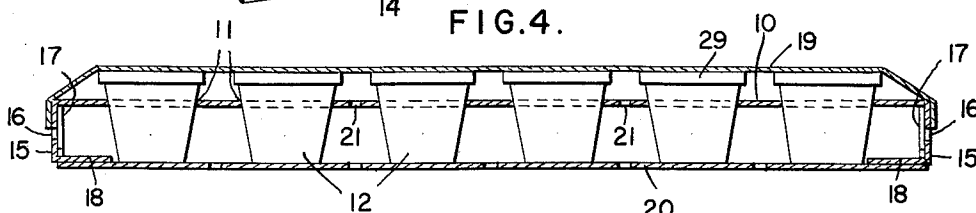
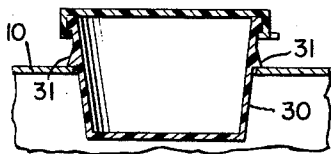


FIG. 4.



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FIG. 5.



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ATTYS

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**TRAY PACKAGE AND METHOD OF PACKAGING**

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2 Claims. (Cl. 53—29)

This invention relates to improved packaging methods and means adaptable for easy and cheap mass handling and packaging of individual containers of liquid or solid materials without jeopardizing compliance with strictest health regulations in case the materials handled are perishable or contaminable.

The main object of the present invention is to provide an economical package and method of making the same adapted for handling a plurality of individual containers of material and packaging them in one package.

A further object is to make a package partly made up of a tray portion suitable for mass handling in feeding, filling and sealing a plurality of individual containers of material without requiring removal of said containers from said tray in carrying out the several operations.

A further object is to facilitate and reduce the cost of handling, filling, sealing and packaging individual food servings and the like by making all parts of the package and containers of throw-away nature, and using paper-board trays of rigid box construction which may be quickly assembled from prefabricated blanks folded flat for space conservation in stacks until used, the trays, which form the basic part of the ultimate package, being of suitable dimensions to serve as conveyor trays for mass handling of the individual containers in standard filling and capping machines, as well as in individual serving cup loading machines, such as recently described in patent application Serial No. 561,631, filed January 26, 1956, for Individual and Multi-Packaging Method and Cup Feeding Means Therefor, now abandoned.

A further object is to provide vent holes in the walls of the box construction to facilitate refrigeration by air circulation around all the cups including those grouped in the middle of the tray, the cooling of which by heat conduction alone without connection through the hollow spaces would be very slow, and making use of at least a portion of these holes as guide holes for cooperation with the tray conveyor operating means in suitably standardized filling and capping machines.

A further object is to use standard cups with caps of the desired size and provide a plurality of rows of holes in the upper wall of the box construction referred to above, of suitable size to hold the cups dropped into them in the cup loading machine, so that the cups rest on the lower wall of the box tray construction, the height of the box tray being less than that of the cups so that the latter may be conveniently grasped for removal from the trays at their destination after unpacking.

A further object is to cover the loaded trays, when the cups are filled and capped, with cellophane or other transparent sheet material suitably meeting health regulation requirements, the sheet being firmly stretched over the cups and sealed around the edges of the tray near the top so as not to cover any of the vent holes around the sides of the tray.

A further object is to use paper cups in the above tray and package with paper caps wedged into ring grooves

near the top of the cups, the caps having tongues turned up at the edge to facilitate removal thereof.

A further object is to use paper cups in this tray and package with plastic caps having a turned down flange with an internal ridge to slip over and grip under the rolled rims of the cups.

A further object is to use clear plastic cups and translucent caps of the turned-down flange type in the above tray and package, the clear plastic material being stiff to prevent accidental mashing, and unbreakable when dropped on a hard floor.

A further object is to uniformly space adjacent rows of cup holes on the tray in accordance with the requirements of the cup filling and capping machine in which the tray is to be used prior to packaging of the trays, the center lines of the edge rows being spaced half of this distance from the adjacent side of the tray, so that when the trays are placed side by side in said machine the spacing between adjacent edge rows on the two adjacent trays will be spaced the same distance as adjacent rows on either tray to provide uniform spacing of all the rows on a plurality of trays mounted in succession on the conveyor platform of the machine.

Another object is to space the guide holes for the conveyor means in the top of the trays between the cups, and uniformly in the direction of conveyor motion, the holes nearest the sides of the tray being spaced half the distance from the corresponding sides, so as to provide uniform spacing of these guide holes throughout the series of trays on the conveyor platform in accordance with the requirements for cooperation with the conveyor operating means.

A further object is to use box blanks with all the holes already cut and edges at one of the long corners of the box glued together; the end flaps of the box extending from the ends of the top of the box and the corners of the box being scored for easy creasing into rectangular form and turning of the end flaps into the ends of the box to hold this form rigidly.

A further object is to use similarly formed blanks minus the bottom panel for covers, said covers being a little higher than the box trays, to accommodate the height that the cup tops project upwardly over the top of the tray, said covers being used for covering the trays to complete their packaging.

Other and more specific objects will appear in the following detailed description of the parts of the package and tray and the method of making them when taken together with the accompany drawings, wherein:

Fig. 1 is a plan view of a folded blank for one form of package tray,

Fig. 2 is an end view thereof taken from the right end in Fig. 1,

Fig. 3 is a perspective view of a finished tray package with a transparent wrapping sheet stretched over the top of the tray,

Fig. 4 is a sectional view taken axially of said package, and

Fig. 5 illustrates the use of a different type of cup.

Fig. 6 is a reduced plan view of a blank cover form adaptable for use with the tray illustrated in place of the transparent wrapping, and

Fig. 7 is a reduced perspective view of this cover applied to a tray to complete the tray package containing the plurality of sealed individual servings.

The handling and packaging of perishable foodstuffs in individual serving containers is subject to strict health regulations in most jurisdictions.

The present tray package was conceived not only to meet the strictest of these regulations as far as the ultimate package is concerned, but also for sanitary use in the mass handling and making up of the individual serv-

ings without requiring any contact with personnel or any washing or cleaning of the handling material. The tray illustrated is adapted for filling and packaging machines requiring the handling of cups in rows of six and having a conveyor capacity of four rows or any multiple thereof. However, the present tray package may be adapted for any number of cups in a row and any number of rows, to meet the requirements of the available automatic machines built to handle the same number of cups in a row for all operations performed successively on the individual servings while they are in or being fed into the trays.

In the drawing, the tray or box like form is prefabricated by making a folded blank as shown in Figs. 1 and 2. The top of the box 10 has holes 11, providing spaces or holding means for the individual cups 12, and vent holes 21. The sides 13 are provided with vent holes 14, and the ends 15 are similarly provided with vent holes 16. The sides 13 are further provided with end flaps 17 to support the tray in box form when assembled by unfolding the blank, folding the ends 15 down and inserting the flaps 18 of the ends into the bottom of the box under the lower edges of turned-in flaps 17. Thus the tray can be quickly assembled as needed and immediately placed on the first machine in the process; that in which cups are fed to the trays. The trays with the cups may then be similarly mass handled in successive machines for filling and capping the individual serving cups, when the package is already made up except for the cover, which may be readily applied by suitably stretching a wrapper 19 over the top of the tray, being careful not to cover the vent holes, if they are desirable under any circumstances, such as, e.g. for facilitating refrigeration when the trays are stacked one on top of another in refrigerators or freezers. The wrapper cover may be glued or tacked at the edges, and may be transparent paper or plastic as may be required or most suitable.

This cover may alternatively be of cardboard supplied in prefabricated blanks of the same dimensions as the tray, minus the bottom, except that its ends and sides and the corresponding flaps would be higher than the box tray by the amount that the cup tops protrude over the top of the tray. These blanks may be easily applied as covers fixed to the tray by folding the sides down over the tray, their end flaps over the ends of the tray, and the ends over the ends of the tray, slipping the flaps on these cover ends into the bottom of the box under the corresponding flaps of the tray. This form of cover is illustrated in Figs. 6 and 7, and is the same as that shown in Figs. 1 and 2, minus the bottom 20, and the height of the sides and ends being a little greater.

The cover blank as shown in Figs. 6 and 7 has a top panel 22 of substantially the same size as the top 10 of the tray, but without any perforations. The sides 23 and ends 24 may be perforated to register with the perforations 14 and 16 respectively in the tray sides and ends, it being noted that these side and end panels are wider than those of the tray so as to form a higher cover for the tray to accommodate the protruding tops of the cups in the tray.

After the tray with the filled and sealed cups is ready for packaging, the cover blank may be placed over the tops of the cups, its sides and ends folded downwardly, the sides 23 being folded down first and the side flaps 25 turned inwardly over the ends of the tray. The ends 24 are then folded downwardly while the end flaps 26 are turned inwardly and their end edges inserted and pushed into the bottom of the tray box under the end flaps 18 and under the lower edges of the side flaps 25 which assist in maintaining the box form and in holding the end flaps in place firmly upon completion of the multi-package.

The standard size cups here used may take any one of a number of different forms, or they may be mixed in

each tray. The individual servings also may be the same in all cups in a tray or they may be arranged in any desired combinations of different ingredients, as may be desired.

In Fig. 3, some cups are shown with disc caps 27 pressed into a grooved top, the discs having edge flaps 28 to facilitate removal. The cups shown in Fig. 4 are of the type having turned-down circumferential edges on their tops 29 with an internal bead to be formed over the rolled edge of the cup rim. Another form of cup 30 is shown in Fig. 5, made of plastic material, which may be transparent if desired. This may be a stiff material forming a structure that will not mash easily such as by dropping to the floor when filled with heavy ingredients, and may be suitably tough so as not to break readily under impact. These cups may be provided with lugs 31 around the sides for stacking purposes to prevent telescopic binding between cups by properly spacing the cups axially in the stack.

Thus a method of packaging is provided which is very versatile in that it is adaptable to meeting any degree of strictness in regulations depending on the jurisdiction and the types of materials handled.

By adopting a suitable standard row spacing for a plurality of stations in mass cup handling machines for feeding the cups, filling and sealing them, the tray portion of the present multi-packaging method may be adapted to provide a plurality of rows of holding means similarly spaced for the individual cup or other container servings, and to fit in the machines as handling trays, so that all operations on the individual packages in a tray can be performed successively in the respective machines, in the same tray, serving as a part of the conveyor system in the mass handling in each machine. From the time the empty containers are fed into the tray, they never have to leave the tray until they have been delivered in the multi-packages to their destination and have been unpacked for use.

The trays serve as part in the conveyor systems of the several machines, replacing normally required handling trays, which would ordinarily be filled with the cups for each machine, requiring additional handling of the individual servings in transferring them from the trays or conveyors of one machine to those of the other, thus multiplying the unnecessary handling costs. These trays would also require occasional cleaning and servicing, all of which is eliminated in the present method of using part of the packaging means also as standard mass handling means in a plurality of operations normally requiring different machines.

The method of making up the package of a plurality of sealed containers is thus simultaneous with, and is actually started before the individual containers are filled and sealed, and the steps so correlated that the handling time, space and effort, as well as equipment are reduced to a minimum. Time and effort are saved because unnecessary transfers of individual containers between processes is eliminated by using the same mass handling means. Space is saved because the box tray blanks are not unfolded until the trays are needed. The folded blanks occupy comparatively little space. By standardizing the spacing in the several mass handling means, the package trays may be adapted to take the place of conveyor trays in each of the several mass handling operations, thus reducing the amount of permanent handling equipment required in the mass handling means. In addition, stricter health regulations can be more readily met because personal handling is reduced, or, in the event automatically operating means are used in the several processes, no hands need touch the individual servings at all, and no individual container handling equipment is left, which might require cleaning.

Many obvious modifications in the presently disclosed method and means may be made without departing from

the spirit and scope of the present invention, as defined in the appended claims.

What is claimed is:

1. In the method of making tray packages for packaging individual serving containers in lot packages, the step of supplying a stack of package tray blanks folded flat, making said blanks of usual box form folded flat across its diagonal side corners and having openings in the top panel for holding said containers, and ends with end flaps extending from said top panel, unfolding a package tray blank, folding its side flaps inwardly, folding said ends downwardly, and slipping the end flaps into the bottom of the box under the lower edges of said side flaps to form a rigid box tray, feeding individual containers to each opening in said trays, and after filling and sealing said containers, providing a stack of cover blanks having substantially the same form and dimensions as said tray blanks minus the bottom panel, and having wider side and end panels to accommodate the protruding tops of the containers in said openings, placing a cover blank over said package tray, folding down the side panels and folding the side flaps over the ends of the tray, then folding down the ends and inserting the end flaps into the bottom of the box under the lower edges of said side flaps and under the end flaps of the box, and pushing said cover end flaps fully in to hold the cover firmly in place over the top of said containers.

2. In the method of making tray package for packaging individual serving containers in lot packages, the step of supplying a stack of package tray blanks each having a top panel, a bottom panel and folded flat, making said blanks of usual box form folded flat across its diagonal side corners and having openings in the top panel for holding said containers, and ends with end flaps extending from said top panel, unfolding a package tray

blank, folding its side flaps inwardly, folding said ends downwardly, and slipping the end flaps into the bottom of the box under the lower edges of said side flaps to form a rigid box tray, feeding individual containers to each opening in said tray, and filling and sealing said containers, providing a stack of covers each being in the form of a blank having a top panel and also having opposite ends terminating in end flaps, the further steps of placing said top panel of the cover blanks in engagement with the top of the containers, bending the ends of the cover blank downwardly along the ends of the tray blank and then folding the end flaps of the cover blank inwardly so as to be sandwiched between the end flaps of the tray and the bottom panel of the tray.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

1,176,932	Smith	Mar. 28, 1916
1,647,289	Gwinn	Nov. 1, 1927
1,940,292	Bueschel	Dec. 19, 1933
1,976,211	Bickford	Oct. 9, 1934
2,066,769	Conti	Jan. 5, 1937
2,090,399	Kondolf	Aug. 17, 1937
2,166,762	Lowe	July 18, 1939
2,387,326	Harrison	Oct. 23, 1945
2,512,963	Peiker	June 27, 1950
2,514,038	Doolittle	July 4, 1950
2,556,844	Istwan	June 12, 1951
2,628,466	Brown	Feb. 17, 1953
2,682,138	Sax	June 29, 1954
2,745,752	Peters	May 15, 1956
2,749,245	Peters	June 5, 1956
2,796,711	Rich	June 25, 1957