Feb. 9, 1943. R. S. SANFORD 2,310,465

CARTON AND TRAY THEREFOR

Filed Aug. 18, 1939

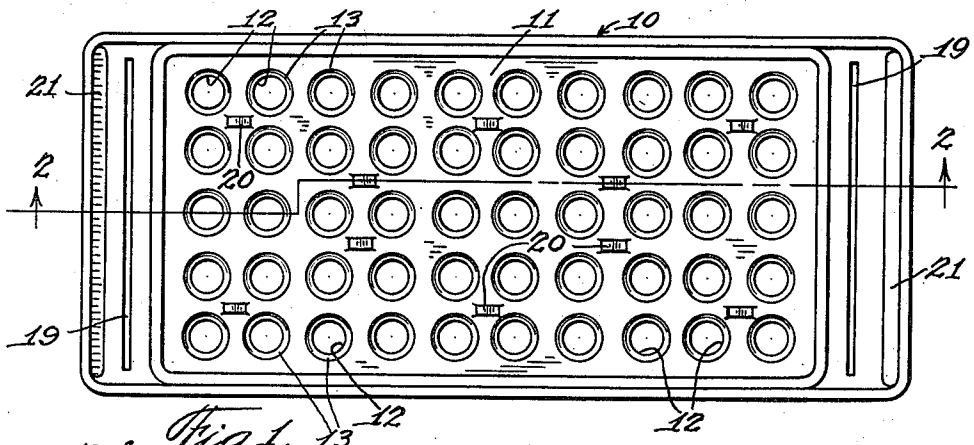


Fig. 1.

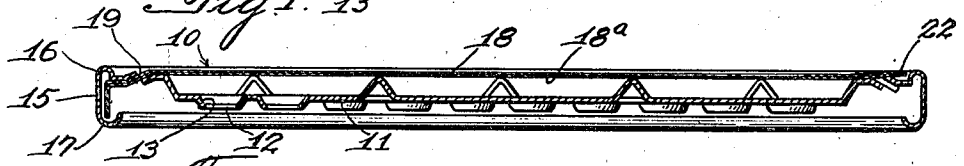


Fig. 2.

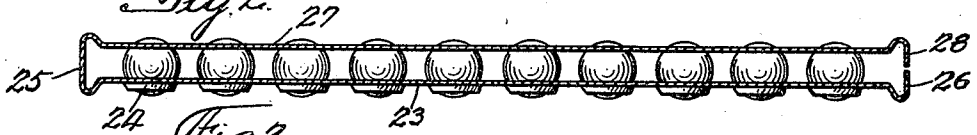


Fig. 3.

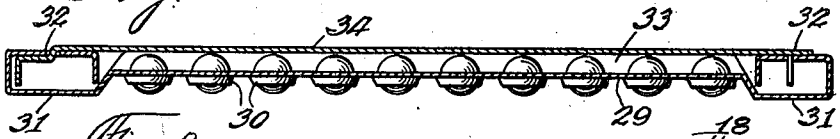


Fig. 4.

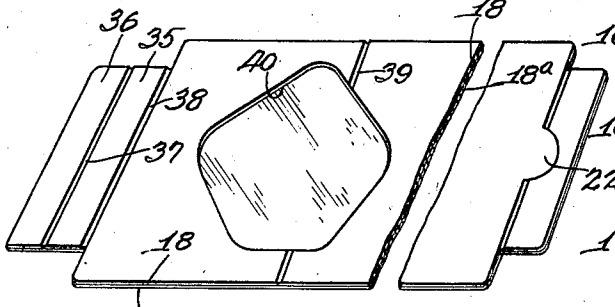


Fig. 5.

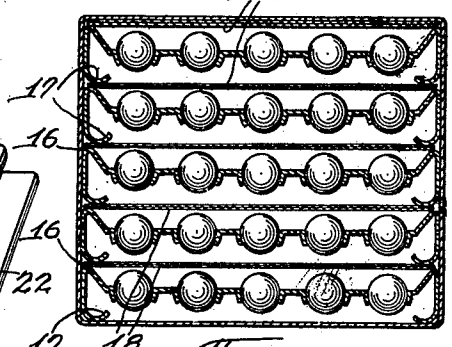


Fig. 6.

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CARTON AND TRAY THEREFOR

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2 Claims. (Cl. 206—42)

This invention relates to a carton and tray therefor and has special reference to a tray formed of sheet metal or other relatively stiff sheet material which is adapted to contain therein fragile or crushable merchandise. This application is a continuation in part of the copending application Serial No. 220,627 entitled Carton and tray therefor, filed July 22, 1938, by the present applicant.

More particularly, this invention relates to a carton comprising a tray formed of a sheet material having a plurality of spaced apertures or depressions which are adapted to hold small capsules in a spaced apart relation, the capsules comprising a coating of a substantially soft biologically assimilable organic substance for holding food or medicines. The sheet material employed for the preparation of a tray in accordance with this invention is constructed or treated in such a manner as to present a surface which is substantially non-toxic and substantially inert to the article or capsule which is positioned within the tray.

The present invention contemplates the provision of a tray formed of stiff sheet material having a plurality of spaced depressions or apertures bounded by ledges forming seats for holding articles such as capsules in spaced apart positions with a casing preferably embracing the tray. The ledges of the tray are preferably formed by converging the material bounding the depressions or apertures inwardly in a direction toward each other when viewed in cross section so as to have a soft line contact with the articles held in spaced apart positions by the apertures. The outer surface of the tray and particularly that portion at the point of contact with the articles is of such a nature that it is substantially inert to the action of the ingredients contained within the article supported within the aperture. The surface is also substantially non-toxic and the article cannot become contaminated with a toxic material absorbed from the tray.

In the prior art of which the applicant is aware, apertures are provided for holding articles in spaced apart positions, but in many instances such apertures have sharp annular edges which, while they may be satisfactory for use in holding efficiently certain objects such as eggs having hard non-assimilable shells, still they are not satisfactory from the standpoint of holding capsules having soft, biologically assimilable coatings and like articles. The shells of eggs are not affected by temperature conditions, while capsules such as those prepared from gelatin and similar materials are definitely affected. There are, therefore, many articles of merchandise which, while they may be housed effectively under ordinary conditions to prevent them from being crushed in the usual type of container, would not be so effectively housed under all conditions to which they may be subjected. The ordinary gelatin capsule or the like, for example, if kept in a cool place, may be satisfactorily stored in somewhat the usual container. However, if the capsule is even temporarily stored or transported under higher temperature conditions, the sharp edges may break through the shell of the capsule or at least deform the same and cause it to be mutilated or destroyed. Furthermore, the ingredients of the capsule may react directly with the material of the surface of the tray and the capsule may stick and become firmly adhered thereto. The capsules then become difficult to remove and at least an undesirable appearance results when a portion of the capsule has reacted with the surface of the tray.

The present invention, therefore, has for one of its objects the provision of a construction wherein the capsule under even unusual temperature conditions may be effectively stored or handled, the soft seat provided by the arcuate surfaces substantially preventing distortion or disfiguration of the article held. The surfaces of the tray are of such a nature that they will not react with the ingredients of the capsular material and the same does not have a tendency to become strongly adhered to the surface, which makes for subsequent difficult removal of the capsule from the tray. A surface is also provided which is substantially non-toxic and there is no danger of harmful ingredients becoming absorbed into the capsular material while it is in contact with the surface of the tray.

Sheet metal affords an opportunity for sanitation, since the trays may be sterilized and even reused when desired. Further, certain sheet materials provide a surface which is substantially non-toxic and which is inert to the capsular material. Trays formed of sheet metal, pressed card board or other substantially rigid material may be enameled, lacquered, or otherwise coated or treated in order to provide the desired surface. Aluminum trays, stainless steel trays, or various electroplated metal trays may be employed without enameling or lacquering. Coating a tray with enamel or lacquer, electroplating a sheet metal tray, or buffing a cast or sheet aluminum tray or a stainless steel tray provides a highly polished surface. Trays thus formed are non-

toxic and inert to ordinary capsular articles which may be packed in a carton contemplated by the present invention, and may be cleaned and sterilized, whereby the accumulation of microorganisms and foreign matter thereon may be prevented.

This invention further contemplates the provision of a flap for covering the tray and for preventing axial displacement of the articles from the ledges bounding the apertures. The flap is preferably formed of a relatively stiff, although flexible member, detachably secured to the tray. The surface of the flap adjacent the capsules contained within the tray is preferably also nontoxic and inert to the action of the ingredients of the capsules. Thus, the surface of the flap may contact the capsules without danger of their becoming stuck thereto under adverse temperature conditions. The tray and flap are embraced by a casing and the flap is held in position over the tray by the casing. In accordance with one modification of this invention, the flap may be dispensed with entirely and the casing itself which surrounds the tray may be provided with a non-toxic inert surface on those portions of the tray adjacent to the capsular material.

For a more complete understanding of the characteristic features of this invention, reference may now be had to the following description when taken together with the accompanying drawing, in which latter:

Fig. 1 is top plan view of a tray embodying the features of this invention;

Fig. 2 is a side elevational view of the construction shown in Fig. 1, partially in section, as taken on the lines 2—2 thereof and showing the flap in section in position thereon.

Fig. 3 is a side elevational view of a modified form of tray construction incorporating the features of this invention;

Fig. 4 is a view similar to Fig. 3 of a further modified form of tray construction embodying the features of this invention;

Fig. 5 is a perspective view of a portion of a flap for use on tray constructions embodying the features of this invention, and

Fig. 6 is a sectional view of a carton enclosing a plurality of superposed trays incorporating the features of this invention.

Referring now to the drawing, the tray embodying the features of this invention is preferably formed of a single sheet of material of a very light gauge. It has been found preferable to form the tray of a sheet steel of substantially paper thickness or approximately 7 to 8 thousandth of an inch. In using sheet steel, it is desirable to plate the tray with cadmium, nickel, or chromium, or to enamel it in any desired manner, or to coat it with one of several types of lacquers in order to provide a surface with an inert, substantially non-toxic coating. Stainless steel may be employed without treatment, since it does not have a tendency to corrode or react with the ingredients of the capsule in the presence of small amounts of moisture which may be condensed or absorbed from the atmosphere. Other metals may be employed, such as cast aluminum or polished aluminum sheet. Also, cardboard or stiff paper may be used which has been coated with a suitable lacquer or paint in order to provide a surface which is non-reactive to the capsular material and is substantially non-toxic. The following description is particularly directed to a sheet metal tray, but it is to be borne in mind that other types of materials may be employed which have the surface characteristics which have been previously indicated.

The sheet metal tray 10 of Figs. 1 and 2 is provided with a substantially horizontally extending main body portion 11 having a plurality of spaced apertures 12 formed therein, the material bounding the apertures forming ledges 13 for holding articles in spaced-apart positions. The apertures may be aligned in rows either staggered or straight as may be more convenient for filling. In the drawing, the rows of apertures are formed in straight lines both longitudinally and laterally of the main body portion. The apertures are shown as being round with annular ledges converging inwardly in a direction toward each other when viewed in cross section, although, of course, it is to be understood that apertures of any configuration may be employed in keeping with the configuration of the article to be held therein. For example, capsules may be of globular or elliptical configuration and it is desirable to have the aperture conform therewith.

The main body portion 11 of the tray 10 is provided with a peripheral flange 15 extending substantially vertically thereof, the main body portion lying in a plane intermediate the edges of the flange. The peripheral flange 15 is preferably formed integrally with the main body portion and extends upwardly a distance at least to the plane of the tops of the articles and downwardly therefrom a distance at least to the plane of the bottoms of the articles. The upper edge of the flange, formed by bending the material of the flange downwardly upon itself, is preferably beaded, as at 16, with the lower edge of the flange turned inwardly to form a bead 17. As will hereinafter be more particularly apparent, the beaded edges 16 and 17 act as runners to facilitate removal of the tray from the carton, to facilitate stacking of the trays in superposed relation and to reinforce the tray generally.

A flap 18, preferably formed of cardboard or other relatively stiff, yet flexible, material, is detachably secured to the tray for covering the tray and for preventing axial displacement of the articles from the ledges 13. The surface of the flap 18 which comes into contact with the capsules positioned within the tray is preferably coated with a lacquer or provided with a sheet 18a, either of which is inert to the ingredients of the capsules. Such an inert film, sheet, or coating may be cellulose acetate, nitrocellulose, various synthetic resin lacquers, and the like. The main body portion 11 of the tray is provided at each end thereof with a laterally extending slit 19 of substantially the same length as the width of the flap and of substantially the same width as the thickness of the material of the flap, the material bounding the slit being inclined to facilitate threading the flap into the slit.

The end of the flap 18 is inserted into one of the slits 19 a distance preferably to meet the bead 17 and is thereafter laid across the tray in its longitudinal direction. A plurality of projections 20 extend upwardly from the main body portion 11 to hold the flap in a spaced relation therewith, the projections preferably being cut and deformed outwardly from the material of the main body portion. In this manner of construction the flap will not rest of its own weight on the top of the tray or on the tops of the articles and the articles are thus relieved of unnecessary

pressure during the functioning of the flap to prevent axial displacement of the articles from the tray.

The ends of the tray adjacent the slits are provided with recesses 21 depressed from the surface of the tray in the main body portion thereof. The ends of the flap are retained in the slits 19 to provide a detachable engagement of the flap on the tray. The flap is provided with a tab 22 cut from the material of the flap so that access may be had to the articles on the tray by inserting the tip of the finger under the tab 22 to lift the flap 18. The flap 18 may be scored laterally at spaced intervals over the surface thereof so that sections only of the flap may be lifted to uncover certain only of the articles.

A casing may embrace the flap 18 and the tray 10 or a plurality of flaps and trays as shown in Fig. 6, the casing preferably comprising a substantially rectangular paper, card board, or metal box having open ends. The open ends of the casing may be enclosed by flaps or the flanges of the tray may be employed for such purpose. Also, the tray or the tray and flap may be encased in a sheet of cellulose acetate, nitrocellulose or like material such, for example, as is generally known as Cellophane.

When the tray is initially filled with articles the cover flap 18 is secured in position, as shown in Fig. 2, whereafter the assembled tray and flap may be inserted into an open end of a casing. In moving the tray into and out of position within the casing, the beaded edges 16 and 17 of the flange 15 act as runners to facilitate the relative movement therebetween. The flap 18 is held in position to prevent axial displacement of the articles from their seats. If desired, the flap 18 may be omitted entirely and the tray may be inserted directly within the casing 23. In such a case it is desirable that the interior portions of the casing coming into contact with the capsules positioned within the tray be coated with an inert, non-toxic substance.

It will thus be seen from the above description that a carton and tray has been provided which is particularly useful for packaging capsular articles such as vitamin capsules, codliver oil capsules, and the like, which, as a general rule, have a coating comprising essentially gelatin or similar material. The surfaces of the tray, flap or portions with which the capsule comes into contact in the package are substantially inert to the action of the ingredients of the capsule. The term "inert" when used herein and hereafter in the claims defines such contacting surfaces as will not stick, adhere or chemically react with the ingredients of the capsular coating material even in the presence of small amounts of water which may be absorbed or condensed from the atmosphere.

Referring now more particularly to Fig. 3 of the drawing, a tray embodying the features of this invention is shown as comprising a main body portion 23 having a plurality of spaced apertures of which the material bounding the apertures form ledges 24 for holding articles in spaced-apart positions. The ledges may be formed in the manner shown in the previously described embodiment and the apertures bounded thereby may be aligned in rows either staggered or straight as may be convenient or desirable. The apertures together with the ledges may be round or oval in keeping with the configuration of the article to be held therein.

The ends of the main body portion are provided with flanges 25 and 26 which preferably extend substantially vertically therefrom, the main body portion lying in a plane above the lower edges thereof. The flange 26 is preferably formed integrally with the main body portion 23 and extends downwardly at least to the plane or below the plane of the bottoms of the articles extending through the apertures bounded by the ledges 24 and upwardly therefrom forming preferably a beaded bottom edge.

The flange 25 is likewise preferably formed integrally with the main body portion 23 and extends downwardly a distance similar to the flange 26 and upwardly therefrom a distance to the plane or above the plane of the tops of the articles held on the ledges 24. A flap 27 extends from and is preferably integrally formed with the flange 25, the flap 27 lying in a plane substantially parallel with the main body portion 23 below the plane of the upper edge of the flange 25. The edges of the flange 25 at the juncture thereof with the main body portion 24 and with the flap 27 are preferably beaded. The free end of the flap 27 is provided with a flange 28, the flange 28 being preferably formed integrally with the flap 27 and being co-extensive with the flange 26 of the main body portion 23. The edge of the flange extends above the plane of the flap 27 and the juncture thereof is beaded to correspond with the beaded edge of the flange 26. The flanges 26 and 28 act in the same manner as the flange 25 to space the flap from the main body portion.

The flap 27 is preferably provided with a plurality of apertures registering with the apertures bounded by the ledges 24, the sets of registering apertures being co-axial. The flap 27 as in the previously described embodiment acts to prevent displacement of the articles from the tray.

The tray is preferably formed of a substantially rigid although flexible material so that the flap 27 may be flexed in a direction away from the main body portion 23 for filling and for dispensing the capsules. Suitable intermediate spacers may be provided as in the previously described embodiment for holding the intermediate portion of the flap in a spaced relation from the tray and the integrally formed tray and flap may be encased by any suitable carton or wrapping. The material of the tray and flap may preferably be the same as that described with reference to the embodiment of Figs. 1 and 2 so as to be non-toxic and inert to ordinary capsular articles and may be cleaned and sterilized whereby the accumulation of micro-organisms and dirt thereon may be prevented.

Referring now more particularly to Fig. 4 of the drawing, the tray construction therein shown embodying the features of this invention comprises a main body portion 29 having a plurality of spaced apertures or depressions formed therein, the material bounding the apertures forming ledges 30 for holding articles in spaced-apart positions. The apertures may be aligned in rows either staggered or straight, as may be more convenient or desirable, and may be round, elliptical or any other configuration in keeping with the configuration of the article to be held therein. The ledges preferably converge inwardly in a direction toward each other when viewed in cross section to form seats for varying sizes of capsules.

The material from which the main body portion is formed may be of sheet metal coated, plated or lacquered with any desired non-toxic material substantially inert to the article or cap-

sule which is positioned within the tray, or the tray may be formed of a cardboard, paper or other substantially rigid material treated, coated or otherwise provided with a surface inert to the action of the ingredients contained within the article supported on the ledges. Each end of the main body portion is formed downwardly and thereafter outwardly to form portions 31 extending in a substantially parallel plane to the main body portion below the bottoms of the capsules which protrude through the apertures bounded by the ledges 30. The ends of the portions 31 are thereafter formed upwardly and back over the portions 31 in a spaced relation therewith to form portions 32 likewise extending in a substantially parallel plane to the main body portion 29 above the tops of the articles held in the ledges 30. The ends of the portions 32 are turned downwardly to form a substantially rectangular box-like end construction to give rigidity to the tray.

Longitudinally extending projections 33 may be formed on the main body portion 29, the projections being preferably raised out of the material forming the main body portion or fixed thereto in any desired manner to give rigidity to the tray and also to act as a spacer upon which a flap 34 may rest. The flap 34 may be of a substantially rigid yet flexible material such as cardboard and is preferably coated on one side thereof adjacent the capsules contained within the tray with a film or sheet of material which is non-toxic and inert to the action of the ingredients of the capsules. The tray thus formed may be inserted in an open-ended cardboard carton or may be wrapped with a sheet of Cellophane.

Referring now more particularly to Fig. 5 of the drawing, a portion of a flap is shown comprising a rectangular sheet of cardboard, paper, or like material 18 having a coating 18a over one surface thereof. An extension of reduced width is formed on the end of the rectangular box portion 18 and preferably integrally therewith, the extension being divided into portions 35 and 36 by means of a score mark 37, the extension as a whole being divided from the rectangular portion thereof by means of a score 38. Other suitable scores 39 across the sheet may be provided for use in raising portions of the flap at a time for access to the capsules. The portion 35 of the extension fits beneath the horizontally extending ledge of the end of the tray and the portion 36 holds the horizontally extending ledge 35 in that relative position since the length of the portion 36 is substantially that of the flange 15 of Fig. 2 or the space between the portions 31 and 32 of Fig. 4. The other end of the rectangular portion 18 is merely provided with a scored end protruding directly downwardly through a slot in the tray, the tab 22 being cut from the material of the scored end.

The present construction adapts itself readily to the idea of providing a window 40 through which the articles of the tray may be viewed without the necessity of opening the package. A corresponding window may be disposed in the carton surrounding the tray and flap if such is desirable to be employed. The window is, of course, merely cut in the cardboard, paper or the like, forming the main body portion 18, while the sheet 18a preferably of an acetate material covers the opening but is transparent so that the articles may be viewed therebeneath. This flap insures positive protection to the soluble gelatin capsules. The laminations of the sheets 18 and 18a provide a moisture-proof and germ-proof container and reduces capsule adherence to a negligible degree. No foreign matter, such as flakes from the cartons or the chemicals in the usual paper, can come into contact with the capsules and the seal thus provided overcomes sweating and at all times safeguards the valuable properties of the article held on the tray.

Each or any of the above described trays and flaps may be stacked in a superposed relation for packaging a plurality of trays in a single carton. A plurality of trays of the type shown in Figs. 1 and 2 are disposed in a superposed relation and contained in a single carton as disclosed in Fig. 6. The flap 18 extends across and rests on the beaded edges 16 of the flanges 15 and the beaded edges 17 rest on the top of the adjacent thus supported flaps. In other words, the bottom beaded edges of the trays rest on the flap of the tray therebelow, the beaded edges providing runners or facilitating the withdrawal of the trays from the carton and providing substantial supports for the respective trays when in the carton.

While several particular embodiments of this invention are shown above, it will be understood, of course, that the invention is not to be limited thereto since many modifications may be made and it is contemplated, therefore, to cover any such modifications as fall within the true spirit and scope of this invention as defined by the appended claims.

I claim:

1. A small capsule retaining tray formed of a body portion of a substantially rigid material having a plurality of spaced depressions therein for holding said capsules in spaced-apart positions, spaced flanges on opposed sides of said body portion extending above and below the tops and bottoms respectively of said capsules held in said tray, a flap resting on and between said flanges for preventing axial displacement of said capsules, and projections on said body portion extending above the plane of the tops of said capsules for preventing said flap from resting on said capsules.

2. A small capsule retaining tray formed of a body portion of a substantially rigid material having a plurality of spaced depressions therein for holding said capsules in spaced-apart positions, spaced flanges on opposed sides of said body portion extending above and below the tops and bottoms respectively of said capsules held in said tray, a flap resting on and between said flanges for preventing axial displacement of said capsules, and projections struck upwardly from the material of said body portion intermediate said spaced depressions and extending above the plane of the tops of said capsules for preventing said flap from resting on said capsules.

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