

[72] Inventor **Hugh R. Weiss**
Montclair, N.J.; c/o The Pantasote Company
of New York, Inc. 26 Jefferson Street
Passaic, N.J. 07055

[21] Appl. No. **820,465**

[22] Filed **Apr. 30, 1969**

[45] Patented **Feb. 23, 1971**

3,459,356 8/1969 Sparks..... 229/15
3,464,618 9/1969 Martelli..... 229/2.5

Primary Examiner—David M. Bockenek
Attorney—Medert and Te Grotenhuis

[54] **TRAY FOR DISPLAYING AND PROTECTING
FRANGIBLE FOODS**
3 Claims, 4 Drawing Figs.

[52] U.S. Cl..... 229/15;

229/14; 229/2.5; 220/23.8

[51] Int. Cl..... **B65d 1/36,**

B65d 3/24, B65d 5/48

[50] Field of Search..... 229/15, 42,

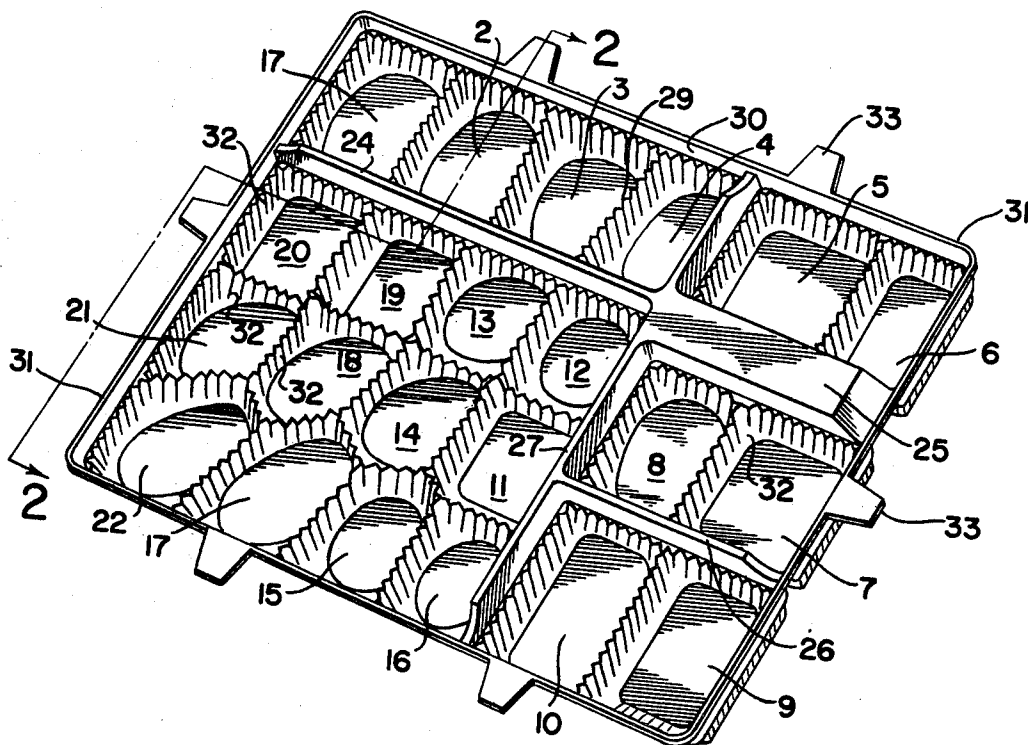
14C, 2.5; 220/23.8

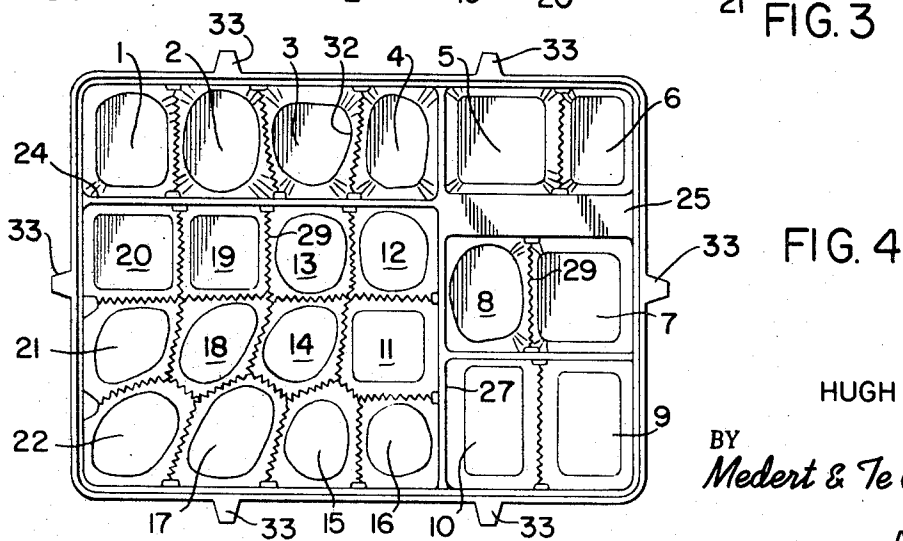
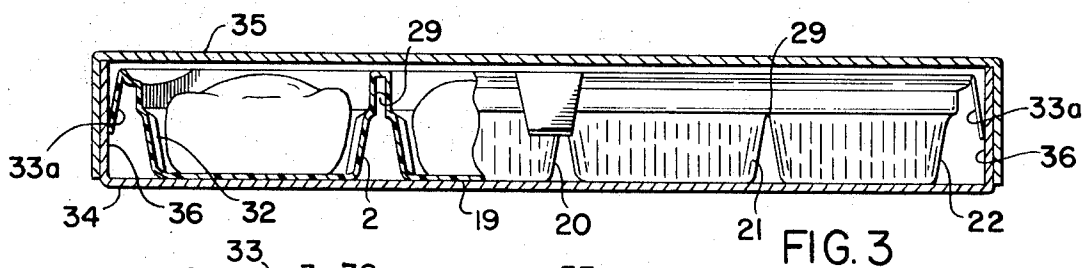
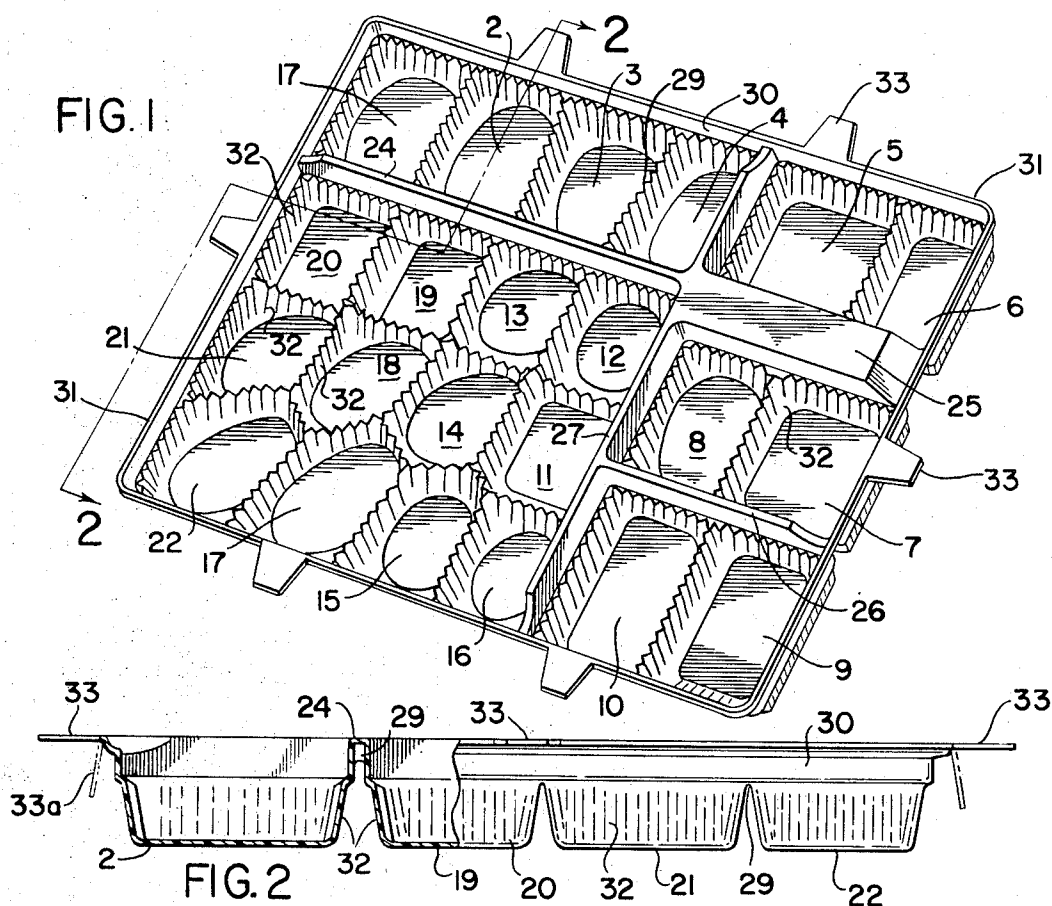
[56] **References Cited**

UNITED STATES PATENTS

3,121,507 2/1964 Weiss 220/23.8

ABSTRACT: A one-piece tray for displaying and packaging candy and the like in boxes. It is formed from a sheet of thermoplastic material and has cups of various configurations for receiving candy and the like. The cups are separated from each other by upstanding hollow ribs, and the tray has a vertical flange extending around the periphery thereof. In accordance with the present invention, a vertically extending flange carries a plurality of resilient, outwardly extending spaced projections of the resilient rigid thermoplastic material. When the tray is inserted in the box, the projections are flexed downwardly or upwardly against the sides of the box, exerting a transverse spring effect that stabilizes the tray in the box to absorb energy and prevent shaking of loose fitting trays against the sides of the box.





INVENTOR
HUGH R. WEISS

BY
Medert & Te Grotenhuis

ATTORNEYS

TRAY FOR DISPLAYING AND PROTECTING FRANGIBLE FOODS

The present invention relates to multicompartment trays formed from thin sheets of thermoplastic resinous material, particularly to a one-piece molded plastic tray constructed to receive candy and other frangible articles of different sizes and shapes, and to the combination of said tray and a box proportioned to properly receive said tray.

Boxes containing suitable one-piece plastic trays, each having a plurality of compartments that contain candy, display layers of candy in a much more attractive manner than do the individual paper cups so often heretofore used.

One-piece plastic trays are, however, relatively rigid in the plane of the tray and boxes containing them may have a tendency to rattle because of relative movement between the tray and the sides of the box. This is particularly the case unless the tray fits snugly within the box, and such a fit frequently does not occur. Such rattling or relative movement between the tray and the box not only is undesirable from the standpoint of protection of the candy during shipment but gives the purchasers an erroneous impression that the box is improperly filled. Too snug a fit of the tray in the box is also considered undesirable both for proper removal of the trays and because distortion of the cavities and other portions of the tray may occur, hurting the display.

I have found that the objectionable features of candy boxes containing one-piece trays and also difficulties in having trays improperly matched to the boxes in which they are disposed may be eliminated by forming on the trays a plurality of laterally or outwardly extending tabs or projections spaced from each other and spaced around the periphery of the tray. These tabs are of substantially unplasticized vinyl resin, such as rigid unplasticized polyvinyl chloride, polystyrene and the like. These tabs or projections only when of substantially unplasticized resin or a resin composition, which is at a temperature well below its glass transition temperature, have a tendency to spring back to their original shape when deformed or flexed by the sides of the box when the tray is inserted therein. Trays containing the lateral projections or tabs of relatively limited extent press against the sides of the box in a springlike manner. When relative movement of the tray and box occurs, energy is absorbed by friction of the tabs against the sides of the box and by increased flexing of the tabs preventing or reducing the rattling that so often previously occurred.

An object of the present invention is to provide a one-piece plastic tray having a plurality of cavities of suitable shape to receive candy and having means for preventing rattling when a box containing a tray with candy therein is lightly shaken sideways.

A further object of the present invention is to provide a one-piece packing tray for holding candy and similar articles of different sizes and shapes and for displaying the candy and similar articles in an attractive manner when the box is open.

It is a further object of the present invention to provide a one-piece packing tray for candy that may fit loosely within a box and yet which does not permit the impression that the closed box containing candy is improperly filled.

Still another object of the invention is to provide a combination of a candy box and a loosely fitting, one-piece plastic tray for displaying candy therein which combination has less tendency to rattle when shaken.

The above and other objects of the invention will become apparent to those skilled in the art from the description and claims and from the drawing, in which:

FIG. 1 is a perspective view of a tray embodying the present invention;

FIG. 2 is a sectional view along the lines 2-2 of FIG. 1;

FIG. 3 is a similar sectional view through the combination of tray and box in which it is confined; and

FIG. 4 is a top plan view of the tray of FIG. 1.

Referring more particularly to the drawing, in which like parts are identified by the same numerals of reference throughout the several views, FIGS. 1 to 4 show a one-piece rectangular tray containing cavities or cups, numbers 1 to 22

inclusive, for receiving candy or other frangible articles therein. Each of the cups, numbers 1 to 22, are separated from adjacent cups by a rib formed from the vertically extending and tapered walls of the adjacent cups. The tray may be formed by a vacuum-molding process or matched die-molding process from a sheet of flat thermoplastic material, such as a vinyl resin that is heated above its glass transition temperature at the time the tray is formed.

When the resin is heated above its glass transition temperature, it is rubberlike and may be formed in the desired shape. When the resin is cooled in such deformed shape, it tends to retain that shape until such time as it may be again heated above its glass transition temperature.

The materials used to form the trays are preferably an unplasticized or substantially unplasticized vinyl resin, including polystyrene, polyvinyl chloride and copolymers of vinyl chloride and vinyl acetate which have a glass transition temperature above room temperature and preferably above 40° C. Resins which have been plasticized sufficiently to lower the glass transition temperature T_g below 60° C. are undesirable and cannot be used in forming trays of the present invention for the reason that the spring action referred to above is not retained.

The trays shown herein have a plurality of cups, numbers 1 to 22 inclusive, of desired sizes and shapes. It may also have groups of the cups separated by suitable dividers or ribs, such as hollow ribs 24, 25, 26 and 27 arranged in any desired configuration and extending higher than the ribs formed by walls of adjacent cups in one group. The ribs 24 to 27 inclusive increase the longitudinal stiffness of the trays in the plane of the trays.

Surrounding the entire candy or article-receiving portion of the tray is a generally vertical flange 30 which is directly connected to and an extension of the outer peripheral walls of the peripheral cups of the tray. The flange 30 extends around the entire periphery of the candy-receiving portions of the tray and preferably terminates in a small generally laterally extending rolled portion 31 at the top edge thereof. The cup-shaped portions 1 to 22, inclusive, preferably have wavy partitions 32 which preferably taper outwardly from the base of the cups. Adjacent walls of adjacent cups meet and are joined together at their upper edges to form ribs such as rib 29 between adjacent cups of a given group.

In accordance with the present invention, a plurality of tabs or projections 33 of limited peripheral extent spaced from each other and along the periphery of the tray are provided to project laterally outwardly from the upper edge portion of the generally vertical peripheral flange 30. The tabs 33 are projected outwardly in a substantially horizontal direction when formed. They project radially outwardly from the upper peripheral edge of the tray at spaced portions thereof. When the tray is placed in a suitable candy box, such as a box having a bottom portion 34 and a cover portion 35, the tabs 33 are bent or deflected preferably downwardly into the dotted portion 33a shown in FIG. 2 and in the position shown in FIG. 3 so that they bear against the side edges 36 of the bottom of the candy box. Since the tabs are of resilient unplasticized material and are maintained well above the glass transition temperature thereof, they continually exert a spring action against the sides of the box, preventing or decreasing tendency for rattle thereof in said box and improving the sales potential of prefilled boxes of candy. They also exert energy and have a damping effect on the relative movement of the tray and the box, decreasing shock that may be transferred to the candy or articles therein.

It is also apparent that in accordance with the provisions of the patent statutes modifications of the invention may be made without changing the spirit thereof.

I claim:

1. A one-piece tray for displaying and packing candy and the like in boxes, which comprises a candy-receiving portion having a plurality of cups of desired configurations for receiving the candy or frangible articles, each cup being separated

3

from an adjacent cup by upstanding hollow ribbed portions formed from the peripheral walls of the adjacent cups, a generally vertical flange extending around the periphery of the cup portion of the tray and forming the periphery of said tray, said vertically extending flange carrying adjacent the upper edge thereof a plurality of resilient (outwardly extending) projections spaced thereon and from each other, said projections normally extending horizontally out from said edge of said flange, said tray being entirely formed of one-piece thermoplastic resinous composition having a glass transition temperature greater than 60° C., whereby when said projections are flexed downwardly or upwardly they exert a transverse

4

spring effect against the flexing force.
2. The tray according to claim 1 wherein said tray is completely made of a substantially unplasticized polyvinyl chloride base composition.
3. The combination of (1) a box having a bottom and vertically extending sidewalls, (2) a one-piece tray according to claim 1 being disposed in said box, said box and said tray being proportioned and shaped so that said projections on said tray are maintained in a deflected position continuously exerting a force in springlike fashion against the adjacent vertical wall of the said box.

15

20

25

30

35

40

45

50

55

60

65

70

75