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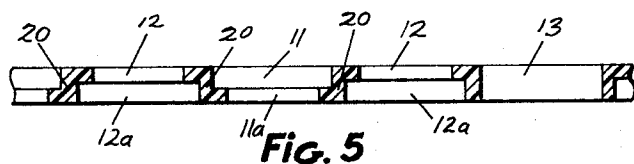
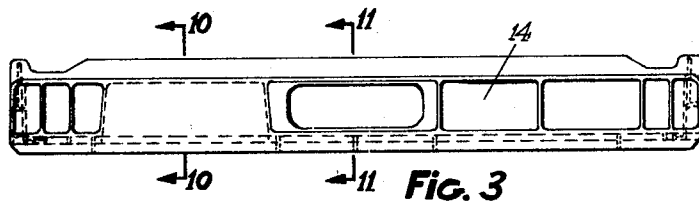
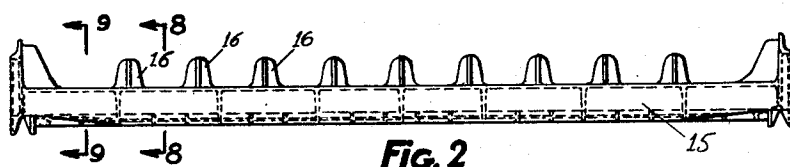
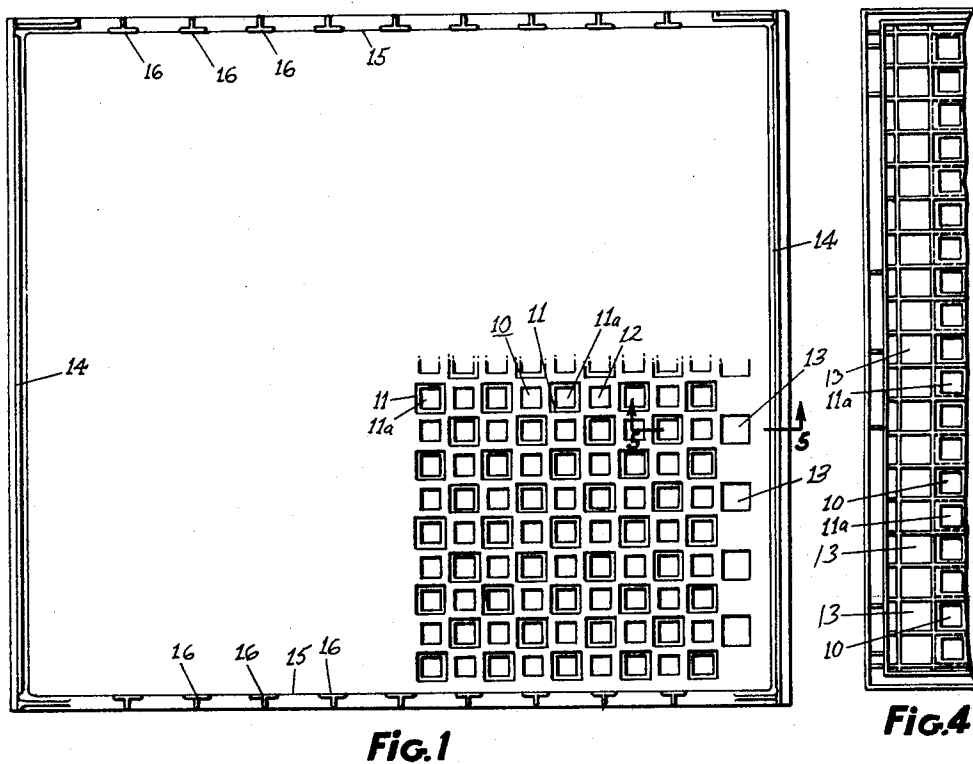
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3,392,875

STACKING TRAY WITH 90° NESTING

Filed June 22, 1967

2 Sheets-Sheet 1



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3,392,875

STACKING TRAY WITH 90° NESTING

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ABSTRACT OF THE DISCLOSURE

A nesting and stacking tray for bakery goods and the like, having two opposed end walls and two intermediate opposed open sides provided with abutments or posts to prevent goods on the tray from sliding out while permitting inspection thereof. The opposed full walls are provided with top and bottom stacking elements whereby like trays may be stacked upon each other and the bottom of the tray adjacent the full walls is provided with a series of apertures such that when one tray is rotated 90° with respect to another, it will nest therein with said posts passing through said apertures. The dimensions are such that with one tray nested within another, a third tray oriented as the first tray may be stacked thereon.

Cross reference to related application

This application is related to a copending application, Ser. No. 648,003, filed June 22, 1967, and relating to a reinforcement of the tray along the open sides.

Background of the invention

The invention related to the field of bakery trays and the like which are provided with means whereby a plurality of like trays may be stacked one upon the other and to a construction whereby when the trays are not loaded with goods they may be nested for economy of space and storage.

The art is replete with various structures of stacking and nesting trays and boxes. In some the trays must be oriented in the same direction for stacking and rotated either 180° or 90° for nesting. Generally with a rectangular box the rotation for nesting is a 180° rotation. Generally the trays have four sides, although there have been instances of open sided trays which are subject to the objection that goods stored on a tray can slide out through the open side.

Summary

The tray of the present invention is slightly rectangular. By the phrase "slightly rectangular" it is meant that the tray in horizontal cross section is nearly but not quite square. The two shorter sides of the tray have full walls and the two longer sides are open except for a series of posts or abutments which will prevent goods stored on a tray from sliding out but which will yet permit inspection and circulation of air.

The full walls are provided at their top and bottom with cooperating stacking elements so that a plurality of like trays may be stacked one upon the other when oriented such that the full walls of the trays are together.

Along each of the full walls the bottom of the tray is provided with a series of spaced apertures in number and spacing equal to the posts along the open sides of the tray. Thus, in order to nest one tray within another it is rotated 90° so that the posts along the long sides of the lower tray pass through the apertures along the short sides of the upper tray and the posts are of such height that when one like tray is nested within another as described above, a third tray oriented as the bottom tray may be stacked on the bottom tray. In this way, a plurality of trays when nested occupies roughly one-half the height of the same number of trays when stacked.

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Brief description of the drawing

FIG. 1 is a plan view of a tray according to the present invention.

FIG. 2 is a front elevational view of the same.

FIG. 3 is a side elevational view of the same.

FIG. 4 is a fragmentary bottom view.

FIG. 5 is a fragmentary cross sectional view taken on the line 5-5 of FIG. 1.

FIG. 6 is a fragmentary elevational view showing two like trays stacked one upon the other.

FIG. 7 is a fragmentary view similar to FIG. 6 showing two like trays stacked upon each other with two additional like trays nested therewith.

FIGS. 8 and 9 are, respectively, fragmentary cross sectional views taken on the lines 8-8 and 9-9 of FIG. 2; and

FIGS. 10 and 11 are, respectively, cross sectional views taken on the line 10-10 and 11-11 of FIG. 3.

Description of the preferred embodiment

The tray of the present invention may be made of any suitable material such as one of the plastics which are conventionally used for this purpose. It is desirable that the bottom of the tray be perforated to permit ventilation; but this creates a problem in that a perforated flat surface with no reinforcing ribs would be too weak. When it comes to providing reinforcing ribs, it would be desirable from the standpoint of strength, to provide such ribs on top of the flat surfaces, so that they would be in compression when the tray is loaded. From the standpoint of the bakeries (the users) it would be desirable to provide such ribs on the underside of the flat surface for sanitation purposes; but there they would be under tension when the tray is loaded, and therefore would not serve their purpose as well as if they were on top.

A compromise construction, which satisfies both the requirements of strength, and the demands of the bakeries, is shown in FIGS. 1 and 5. As there shown, a number of larger square openings 11 and smaller square openings 12 are provided in a checkerboard arrangement. The ribs 20 extend downwardly from the surface in which the openings 11 and 12 are formed, but they are on top of the surface in which the openings 11a and 12a are formed. The ribs 20 are formed by alternating the openings 11a and 12a in the same manner as the openings 11 and 12, so that each opening is a composite of a smaller and larger opening, the larger ones being on top in a checkerboard arrangement. The bottom may be considered as having rows of square openings, alternate ones of said openings in a checkerboard arrangement, having rabbets on the upper side of the bottom, and the remaining ones of said openings having rabbets on the underside, whereby a grid of reinforcing ribs is provided between the upper and lower surfaces of the bottom 10.

The tray is provided with a series of apertures 13 along the two shorter sides of the bottom 10, and the shorter sides are provided with the side walls 14, while the longer sides 15 are basically open except for a series of posts 16 spaced at regular intervals. The post 16 permits circulation of air and inspection of the contents of the tray when a plurality of trays are stacked upon each other and yet prevents goods disposed on the tray from sliding out.

The sides 14, as best seen in FIGS. 10 and 11, are provided with the stacking elements 17 at the top and 18 at the bottom and these stacking elements engage each other as best seen in FIGS. 6 and 7.

As pointed out above, the tray is slightly rectangular in cross section with the sides 15 being slightly longer than the sides 14. Thus, when one tray is rotated 90° with respect to another, the posts 16 along the two long walls

15 of a lower tray pass through the apertures 13 along the two short walls 14 of the next upper tray.

The height of the posts 16 is such that they do not extend beyond the flange 17a whereby when one tray is nested as above described within another tray, a third tray may be stacked on top of the first tray as clearly shown in FIG. 7. By virtue of the interaction between the posts 16 and the apertures 13, the nested tray is interlocked with the tray in which it is nested against lateral displacement.

It will be seen that a given number of trays, when not in use may be disposed as shown in FIG. 7 whereby such number of trays will occupy only approximately one-half the height they would occupy if all trays were stacked upon each other rather than nested. It will be clear also that in stacking it is only necessary that the trays be oriented with their long axes in the same direction and it is not necessary to have regard for the end for end orientation thereof. Similarly, when it is desired to nest one tray with respect to the other it makes no difference whether it is rotated 90° or 270° and again end for end orientation is irrelevant.

It will be clear that numerous modifications may be made without departing from the spirit of the invention and therefore no limitation not especially set forth herein is intended.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A nesting and stacking tray for bakery goods and the like, said tray being slightly rectangular in horizontal cross section and having continuous walls along the two opposed shorter sides, said walls along the top and bottom having cooperating stacking elements, whereby a like tray in like orientation may be stacked thereon, the two longer opposed sides being provided with a plurality of spaced posts to prevent the goods disposed in said tray from sliding out and yet permitting inspection thereof, said tray having a series of spaced apertures in its

bottom adjacent said shorter opposed sides, whereby a like tray, oriented at 90° with respect to said tray, will nest therein, with said posts extending through said apertures.

2. A tray according to claim 1, wherein said posts are of such height that, one such tray being oriented at 90° to the other and nested therein, a third such tray oriented as said other tray may be stacked on said tray without interfering with said nested tray.

3. A nesting and stacking tray for bakery goods and the like, said tray being of rectangular form in horizontal cross section and having a bottom, said bottom having rows of square openings therein, alternate ones of said openings in checkerboard arrangement having rabbets on the upper side of said bottom, and the remaining ones of said openings having rabbets on the underside of said bottom, to provide a grid of reinforcing ribs between the upper and lower surfaces of said bottom.

4. A nesting and stacking tray according to claim 1, said bottom having rows of square openings therein, alternate ones of said openings in checkerboard arrangement having rabbets on the upper side of said bottom, and the remaining ones of said openings having rabbets on the underside of said bottom, to provide a grid of reinforcing ribs between the upper and lower surfaces of said bottom.

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