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(54) **Packaging boxes or cartons.**

(57) A packaging box of plastics material comprises a hollow base part (1), which has article receiving pockets (4) and a hollow lid (2) which has a substantially flat top portion (13) and side and end walls (14, 15) and which is fastened in its closed position by press-stud fastening means (19, 20). When two or more similar such boxes are stacked one upon the other in aligned relation, at least part of the bottom wall portions (11) of the pockets of the upper box rest on the corner (76) formed between the top portion (13) and the side and end walls (14, 15) of the lid of the lower box. Lugs (17) on the lid of the lower box engage peripheral walls of the base part of the upper box to locate the boxes in alignment.

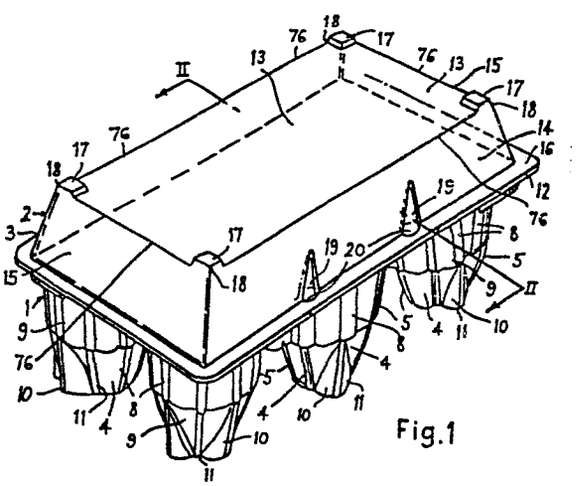

Fig.1

EP 0 169 737 A2

PACKAGING BOXES OR CARTONS

The present invention relates to the packaging of eggs, fruit and other articles and, more particularly, to packaging boxes or cartons of the type comprising a hollow base part, which may be formed with one or more compartments or article receiving pockets for containing individual articles, and a hollow cover part or lid which is fastened over the open top of the base part to close the latter. The base part may be moulded from fibre pulp or plastics material whilst the lid may be moulded from plastics material or cardboard. For example, the base part and lid may conveniently be thermoformed from sheet plastics material as a one or two-piece moulding.

Disposable packaging boxes, for example, moulded from thin plastics sheet material normally have intricately profiled hollow lids in order to provide the lids with sufficient strength and rigidity to prevent them collapsing under load, with consequent damage to the contents, such as when the boxes are stacked during transit and for the purposes of retail display. One example of this type of box is described in our patent specification GB-B-2019815. The lids of such boxes have unsufficient flat spaces or areas on which may be printed or otherwise reproduced advertising matter, decorative material, identification codes and other information and material required by suppliers. Hollow lids may be produced with flat tops and peripheral walls for the presentation of printed information, but

to achieve the required strength and rigidity the plastics sheet material must be of such a thickness as not to be a commercially viable proposition for a disposable package.

With a view to overcoming the problems of lack of strength and printing space on boxes moulded wholly from plastics sheet material, disposable packaging boxes have been developed in which a hollow moulded base part is closed by a separate cardboard lid. Examples of this type of packaging box are described in patent specifications GB-A-1008481, 2110649 and 2115789. When the base part is of similar or greater height than its contents, it may be closed by a cardboard lid disposed generally flush with the rim of the base part, and when the base part is of lesser height than its contents, it may be closed by a preformed hollow cardboard lid, the free edges of which may be disposed within the rim of the base part and be supported on a rebate or ledges on the insides of the rim or peripheral walls of the base part. Such combinations are particularly attractive constructions for packaging eggs and other similar food items in that they provide for ready forming of the intricate base part, with its article receiving pockets, and visual inspection of the contents, whilst lending themselves to printing the lid with the required advertising matter and other information. However, known boxes of this type present problems with regard to use with automatic machinery for packing and closing the boxes

and tend to be more costly than disposable pulp or plastics boxes because of the thicker gauge materials required in their manufacture.

It is an object of the present invention to alleviate the disadvantages experienced with hitherto known packaging boxes of the types described above and to provide a novel construction of disposable packaging box or carton in which the lid may be moulded from thin plastics or other sheet material. Other objects are to provide such a packaging box or carton in which the lid assembly has significant flat spaces or areas for the display of advertising matter and other information and which is adapted for ease of packing and closing by automatic machinery.

Accordingly, the present invention consists in a packaging box or carton in which a hollow base part is closed by a hollow lid fastened over the open top of the base part and comprising a substantially flat or planar top portion and a peripheral wall portion depending from the edge of the top portion and forming a corner therewith, characterised by means for locating the box or carton in aligned relation with a similar box with which it is stacked, and one or more bottom wall portions on the base part which, when the box is stacked upon a similar box in aligned relation, rest on the corner of the hollow lid of the latter.

The invention enables the lid to be thermoformed as a low-cost moulding of thin plastics sheet

material either separately or in one piece with a similar moulded base part. The corner of the lid of the closed box provides strong support for a similar article filled closed box stacked on top in aligned relation therewith. Preferably, the peripheral wall portion or portions of the lid are provided with one or more hollow vertical ribs or pilaster ribs moulded on the outside or inside surfaces of the wall portion(s) so as to provide additional reinforcement, rigidity and vertical strength to the wall portion(s) of the lid, the said ribs or pilaster ribs preferably extending from the top of the lid to the rim where said ribs or pilaster ribs may rest their bottom parts upon upwardly facing outer surface parts of the base part. Advantageously, the peripheral bottom portions of a closed box may rest directly on the top portions of the or each rib or pilaster rib which abut the top of the lid of a box upon which the upper box rests.

In one embodiment of the invention, which is particularly suitable as an eggbox, the hollow base part comprises a pluraltiy of article receiving pockets and at least part of the or each bottom wall portion of one or more of the pockets adjacent the periphery of the base part is arranged to rest on the corner of the hollow lid of a similar box upon which the box is stacked in aligned relation.

The locating means may comprise one or more hollow lugs or ribs projecting upwardly from the top portion of the lid and arranged to engage with

a cooperating peripheral wall portion of the base part or an article receiving pocket of a similar box stacked thereupon. In this event, one or more grooves or recesses extending upwardly from the bottom wall portion(s) of the base part or the article receiving pockets thereof may be formed in the peripheral wall portion(s) of the base part or pockets for cooperation with the upwardly projecting lugs or ribs on the lid of a similar box. Alternatively, the locating means comprises one or more hollow lugs projecting downwardly from the bottom wall portion(s) of the base part or the article receiving pockets thereof adjacent the periphery of the base part and arranged to engage outwardly facing parts of the peripheral wall portion of the lid of a simlar box upon which it is stacked. In the latter event, the lid may have one or more grooves or recesses in its peripheral wall portion and extending downwardly from the top portion of the lid for cooperating with downwardly projecting locating lugs or ribs on the base part of a similar box.

A preferred form of the invention comprises a packaging box or carton for eggs which is of rectangular shape in plan and is moulded as a one-piece moulding of thin transparent plastics sheet material. The hollow moulded base part is provided with two or more longitudinal rows of egg receiving pockets and is hingedly connected to and closed by a hollow lid which is fastened over the open top of the base part. The lid advantageously comprises a substantially

flat or planar top portion and at least one substantially flat or planar peripheral wall portion depending from the top portion so as to enable substanial printed means, such as, printed adhesively coated labels or blanks of paper or cardboard to be applied, in the manner described in EP-A-0119043, to the inside and/or outside surfaces of the lid so that relevant advertising matter, brand names and other information may be seen clearly on either or both the top portion and the peripheral wall portion of the lid. Such a box or carton is adapted for ease of packing and closing by automatic machinery. The base part and lid may have their rims opposite the hinge formed with fastening means, typically, press-stud type fastening devices, for fastening the two parts together in their closed positions.

In one construction, posts may be formed between rows of article receiving pockets of the base part and project upwardly above the rim of the base part to provide additional support for the central parts of the top of the lid assembly. In another construction for providing central support for the lid assembly, the flat top of the lid is moulded with hollow posts which depend downwardly within the lid and engage with the tops of posts upstanding from the base part between the rows of article receiving pockets. The adjacent ends of the posts of the lid and base part may simply rest one on the other or, alternatively, the end of one post may interengage with a recess or opening in

the top of the cooperating post so as to restrain lateral movement of the lid relatively to the base part.

In order that the present invention may be more readily understood, reference will now be made to the accompanying drawings in which:-

Figure 1 is a perspective view of one embodiment of eggbox constructed in accordance with the invention,

Figure 2 is a section taken along the line II-II of Figure 1,

Figure 3 is an end view of the eggbox of Figure 1, illustrating the eggbox in its fully open position and with a small part of the lid assembly partially boken away to illustrate details of the stud closure means,

Figure 4 is a perspective view of a second embodiment of eggbox according to the invention,

Figure 5 is a perspective view of a third embodiment,

Figure 6 is a perspective view of a fourth embodiment,

Figure 7 is a section taken along the line III-III of Figure 6 showing two such eggboxes stacked one upon the other, and

Figure 8 is an exploded perspective view of a fifth embodiment of the invention wherein the lid and base part are separate.

Referring to Figures 1, 2 and 3 of the drawings, the eggbox is a one-piece moulding of transparent

plastics sheet material. For example, conveniently, it is fluid pressure formed or vacuum formed from high impact polystyrene sheet material. It comprises a hollow base part 1 and hollow lid 2 both of generally rectangular shape in plan and joined together along mutually adjacent longitudinal rims by an integral web portion 3 serving as a hinge about which the lid 2 may be folded over the base part 1. In a preferred form of package for eggs, the package comprises two such boxes formed as an integral unit and joined together at mutually adjacent ends of the base parts and lids by small spaced plastics webs (not shown) which provide a line of weakness along which the package can be readily split into its two component boxes each containing, for example, six eggs. The two component boxes are mirror images of one another and therefore only one box is illustrated and will be described in detail.

The base part 1 comprises six egg receiving pockets 4 disposed in two mutually parallel rows extending longitudinally of the base part, that is parallel to the axis of the hinge formed by the web portion 3, with the pockets of the two rows arranged side-by-side. The pockets 4 are defined by profiled or sculptured peripheral walls 5 of the base part, hollow posts 6 moulded between the pockets 4 at the centre of each array of four adjacent pockets, and hollow partitions 7 interconnecting these posts and the peripheral walls of the base part. The peripheral walls 5 of the base part and

the walls of the posts 6 and partitions 7 are so shaped that each pocket 4 is of a generally circular shape in section and is formed by upper and lower merging conical frustra 8,9. The upper frustrum 8 has a nearly vertical conical wall structure, inclined only slightly downwardly and inwardly, whilst the conical wall of the lower frustrum 9 has a greater inclination than the upper frustrum. Formed on the lower exterior of each lower frustrum is one or more projections 10 bulging outwardly of the base part. Each projection 10 is preferably of generally triangular shape in plan with the broadest part thereof being integral with and forming a corner or nose of a bottom wall portion 11 which closes the bottom of each pocket 4. The bottom wall portion 11 may be slightly recessed above the bottom of each pocket and serves as a protective cushion for the bottom of an egg.

A horizontal stiffening flange 12, which interconnects with the upper ends of the pockets, is formed about the rim of the base part. Along the side connected to the lid 2, this flange is integral with the web portion 3 forming the hinge. The hollow posts 6 between the rows of article receiving pockets 4 project slightly proud of the rim.

The hollow lid 2 accommodates the upper ends of the eggs seated in the pockets 4 when it is folded about the web hinge 3 into an inverted closed position over the base part 1, as shown in Figure 2. The lid 2 comprises a genrally flat or

planar rectangular top portion 13 having substantially flat or planar side and end wall portions 14,15 moulded integrally with the edges of the flat top of the lid and forming an angle or corner 76 therewith. These peripheral walls 14,15 are inclined slightly outwardly from the lid top 13 and terminate in a horizontal external stiffening flange 16 which extends about the rim of the lid and, along the side connected to the base part, is integral with the web hinge 3. As shown in Figures 1 and 3, a series of four shallow hollow lugs or bosses 17 are moulded on the outside of the lid top 13 at each corner 18 and serve to engage with outwardly facing portions of the bottom sides of the pockets of another similar box which is stacked on the lid top in order to locate a stack of such boxes in aligned relation with the pockets 4 positioned on the periphery of the base part and each having at least the part of its bottom wall portion 11 defined by a nose 10 projecting over and resting on the angle or corner 76 formed by the top portion 13 and side and end wall portions 14,15 of the lid 2 to give increased stacking strength to the boxes.

Moulded in the rim flange 16, opposite the hinge 3, and the adjoining front side wall 14 of the lid are small downwardly projecting studs 19 which, when the lid is closed, are arranged to engage in cooperating slot-like cavities 20 moulded in the opposing rim flange 12 of the base part in order to fasten the two parts together. The slot-like

cavities 20 may extend transversely or parallel to the axis of the hinge 3. The relative dispositions of the studs 19 and slot-like cavities 20 is such that when the lid 2 is hinged into its closed position without any relative transverse distortion of the parts 1,2 the studs 19 coincide with the portions of the slot-like cavities 20 and pressure on the top of the lid 2 engages the studs in the cavities to fasten the lid in its closed position.

The embodiment illustrated in Figure 4 provides alternative means for locating stacked boxes in which the hollow lid 2 comprises a generally flat or planar rectangular top portion 13 having substantially flat or planar side and end wall portions 14,15 moulded integrally with the edge of the top portion 13 to form an angle or corner 76 therewith. The top portion 13 of the lid 2 is provided at each corner with an inwardly projecting rebate or groove 21 of preferably angular configuration, each groove 21 extending downwardly from the edge of the top portion 13 to the flange 16. Additionally, further shorter recesses or grooves 22 , this time of more curved shape, project inwardly at positions centrally of the side walls 13. Each such groove 22 originates in the edge of the top portion 13 and extends downwardly to terminate, in a ledge, above the flange 16 of the lid 2. The base part 1 has one or more pockets 4, each provided with at least one lug 23 projecting downwardly and outwardly from outer facing parts of the bottom wall portion 11, the or each

lug 23 serving to engage with a corresponding groove 21,22 of another similar box upon which it is stacked in order to locate a stack of such boxes in aligned relation, with at least a part of a bottom wall portion 11 of one or more pockets resting on the angle or corner 76 of the hollow lid 2.

In a further embodiment of the invention shown in Figure 5, for the location of a similar box thereon, the box illustrated is provided with one or more shallow hollow ribs 24 which are moulded on the outside of the top portion 13 of the lid 2 and which serve to engage with bottom side parts or walls 5 of the or each pocket 4 of a box which is stacked on the lid top 13 in order to locate a stack of such similar boxes in aligned relation. The bottom wall portion 11 of one or more pockets 4 rests on outwardly facing parts of the angle or corner 76 formed by the top portion 13 and the side and end walls 14,15 at the tops of recesses or grooves 22 which extend downwardly and generally vertically from the edge of the top portion 13 and taper and terminate short of the flange 16 of the hollow lid 2. The grooves 22 are moulded in the side walls 14,15 which are adjacent to the top side portions of eggs located in the pockets 4 of the base part 1 of the closed box. In this embodiment, moulded integrally with the lid top portion 13 and generally along the longitudinal centreline of the hollow lid 2 and in positions opposite the two posts 46 of the base part 1, are two downwardly projecting

hollow posts 27 which are of generally conical shape. When the hollow lid 2 is closed over the hollow base part 1, the opices of the hollow posts 27 engage in recesses 8 in the upper end, of the posts 6 of the base part 1 in order to resist lateral movement of the lid relative to the base part (see Figure 2).

The embodiment shown in Figure 6 provides a box having locating means for stacked boxes generally similar to the embodiment of Figure 4, except that the hollow lid 2, whilst having a generally flat or planar top portion 13, has only one side wall portion 14 substantially flat or planar. This side wall portion 14 is parallel and adjacent to the hinge 3, whilst the other side and end walls 14,15 have intricately profiled and contoured surface parts which enable eggs to be better contained within the lid portion 2 if the egg-filled closed box is turned over on its side or even upside down, for example, to enable the scanning and reading of a "bar-code" normally used at retail checkouts to register the price of an article or, indeed, if the egg-filled box is accidently turned over.

Figure 7 illustrates, in section, two egg-boxes as shown in Figure 6 and stacked one upon the other, in which the improved stacking and locating means according to the invention comprises one or more shallow hollow lugs 23 projecting outwardly and downwardly from the outer surface parts of the bottom wall portion 11 of the pockets 4 and which

engage with small grooves or recesses 22 moulded in at least one side wall portion 14,15 of the hollow lid 2 and which extend generally downwardly from the edge of the top portion 13 to terminate short of the flange 16. These grooves 22 serve to form abutments on the inside of the wall portion(s) 14 and/or 15, the top parts of the or each abutment forming outwardly facing parts of the angle or corner 76 of the hollow lid 2 upon which cooperating outwardly facing parts of the bottom wall portion(s) 11 of the pocket 4 of the base part 1 of another similar eggbox which is stacked upon it to engage.

The embodiment illustrated in Figure 8 comprises a moulded plastics base part 40 and a separate cardboard lid 41. In the preferred form, the package comprises two base parts 40 formed as an integral unit and joined together at mutually adjacent longitudinal edges by small spaced plastic webs 43 which provide a line of weakness along which the base parts can be readily split into two components each containing, for example, twelve eggs, as shown. The two component base parts are identical and therefore only one base part 40 is illustrated.

The hollow cardboard lid 41 has a generally flat or planar top 55 with integrally formed flat or planar peripheral walls 56,57 depending from the side and end edges of the top portion 55 to form an angle or corner 76 therewith, the peripheral walls 56,57 being inclined outwardly with respect to the top. The opposite end walls 57 of the lid are formed with pairs of fastening apertures 58 which are arranged to cooperate with the fastening tabs 53 on the base part. The peripheral walls 56,57 terminate in edges 64,65.

The base part 40 comprises twelve egg receiving pockets 44 disposed in three mutually parallel rows extending longitudinally of the base part. These pockets are defined by suitably profiled peripheral wall portions 45,46 and bottom wall portions 11. The peripheral wall portions are so configured that each pocket is generally part egg-shaped. Internally of the base part, suitably shaped hollow posts 47 are moulded at the centre of each array of four adjacent pockets 44. Two adjacent posts 47 at opposite ends of the base part project above the rim of the base part in order to serve as a support for the underside of the lid assembly, as will be hereinafter more fully described. Moulded on the outsides of the pockets are hollow axial extending ribs 49 which serve to stiffen the pockets and act as cushion to protect the eggs against side

blows or shocks. The bottom wall portion 11 of each pocket is formed with an internal hollow boss (not shown) which serves as a protective cushion for the bottom of an egg and to stiffen the closed bottom of the pocket. Each bottom wall portion 11 is also provided with at least one shallow hollow lug 23 depending from its outer surface.

The rim of the base part includes a horizontal outwardly projecting flange 50 which, at opposite ends 46 of the base part is connected to the upper ends of the adjacent egg receiving pockets 44 by short end wall portions 51. Along opposite sides upstanding shoulder portions 52 between the pockets terminate just below the rim flange 50. Projecting inwardly from each end wall portion 51 of the base part, just below the rim flange 50 are a pair of hollow fastening tabs 53 for the lid. Below the fastening tabs, the end wall profile of the base part is designed to form external hollow protruberances 54 which serve as stacking shoulders on the outsides of the ends of the base part for engaging with the tabs 53 on another similar base part.

In order to close the base part 40, after it has been filled with eggs, the lid 41 is fitted onto the base part, whereupon the bottom edges 64,65 of the side walls 56,57 of the cardboard lid rest on the shoulders 52 inside the rim flange 50 of the base part and the central parts of the insert and lid are supported by the upstanding posts 47.

As the lid 41 is fitted into position, the end walls 57,46 of the lid and base part are flexed so that the fastening tabs 53 engage in the apertures 58 in the lid to fasten the lid in its closed position. When the box is to be opened, it is a simple matter for a person to flex the walls and disengage the fastening tabs and slots.

Hence, the cardboard lid 41 is firmly supported by the cardboard edges 64,65 and a series of such boxes may be stacked one on top of the other without risk of damage to the contents. In a further embodiment (not shown) of a thin transparent plastics lid and a paper or cardboard insert assembly, the insert lies closely adjacent or in contact with the corresponding parts of the lid so that the printed matter on the insert is readily visible through the lid.

In order to stack and locate such boxes one upon the other in aligned relation, the or each lug 23 on the bottom wall portion 11 serves to engage or juxtapose with outwardly facing top parts of the side and end wall portions 56,57 of a lid 41 of a similar box and, at least part of a cooperating bottom wall portion 11 of a peripheral pocket 44 of the base part 40 of the box, rests on the outside portion of the angle or corner 76 of the lid of the similar box upon which it is stacked to locate and stack such boxes in aligned relation.

CLAIMS

1. A packaging box or carton in which a hollow base part (1,40) is closed by a hollow lid (2,41) fastened over the open top of the base part and comprising a substantially flat or planar top portion (13,55) and a peripheral wall portion (14,15,56,57) depending from the edge of the top portion and forming a corner (76) therewith, characterised by means (17,23,24) for locating the box or carton in aligned relation with a similar box with which it is stacked, and one or more bottom wall portions on the base part (1,40) which, when the box is so stacked upon a similar box, rest on the corner (76) of the hollow lid (2,41) of the latter.

2. A packaging box or carton according to claim 1, characterised in that the hollow base part (1,40) comprises a plurality of article receiving pockets (4,44) and at least part of the or each bottom wall portion (11) of one or more of the pockets adjacent the periphery of the base part is arranged to rest on the corner (76) of the hollow lid of a similar box upon which the box is stacked in aligned relation.

3. A packaging box or carton according to claim 1 or 2, characterised in that the locating means comprises one or more hollow lugs or ribs (17,24) projecting upwardly from the top portion of the lid and arranged to engage with a cooperating peripheral wall portion of the base part (1,40) or an article receiving pocket (4,44) of a similar box stacked thereupon.

4. A packaging box or carton according to claim

3, characterised by one or more grooves or recesses formed in a peripheral wall portion of the base part (1,40) or pockets (4,44) thereof and extending upwardly from the bottom wall portion(s) of the base part or pockets and arranged to cooperate with one or more locating lugs or ribs (17,24) projecting upwardly from the lid (2,41) of a similar box upon which it is stacked.

5. A packaging box or carton according to claim 1 or 2, characterised in that the locating means comprises one or more hollow lugs (23) projecting downwardly from the bottom wall portion(s) of the base part (1,40) or the article receiving pockets (4,44) thereof adjacent the periphery of the base part and arranged to engage outwardly facing parts of the peripheral wall portion of the lid (2,41) of a similar box upon which it is stacked.

6. A packaging box or carton according to claim 5, characterised in that the lid (2) includes recesses or grooves (21,22) in its peripheral wall portion extending downwardly from the top portion of the lid and arranged to engage with downwardly projecting locating lugs or ribs (23) of a similar box stacked thereupon.

7. A packaging box or carton according to any preceding claim, characterised in that the lid and base part are hinged together along mutually adjacent rims and the base part has two or more mutually parallel rows or article receiving pockets (4,44) disposed parallel to the axis of the hinge.

8. A packaging box or carton according to any preceding claim, characterised in that the box is of rectangular shape in plan and the hollow lid (2,41) has at least one substantially flat or planar peripheral wall portion.

9. A packaging box or carton according to any preceding claim, characterised in that the base part and lid are of one-piece construction and hinged together along mutually adjacent rim flanges, and in that the fastening means comprises one or more press-stud type devices (19) and cooperating slots (20) moulded in the base part and lid adjacent the rims thereof opposite the hinge, the studs being arranged to engage in the cooperating slots when the lid is hinged to its closed position over the base part in order to fasten the lid in its closed position.

10. A packaging box or carton according to any preceding claim 1 to 8, characterised in that the base part and lid are formed separately and one or more press-stud type fastening devices (19) and cooperating slots are formed in or adjacent mutually opposed side and end rims of the base part and lid for fastening the lid in its closed position.

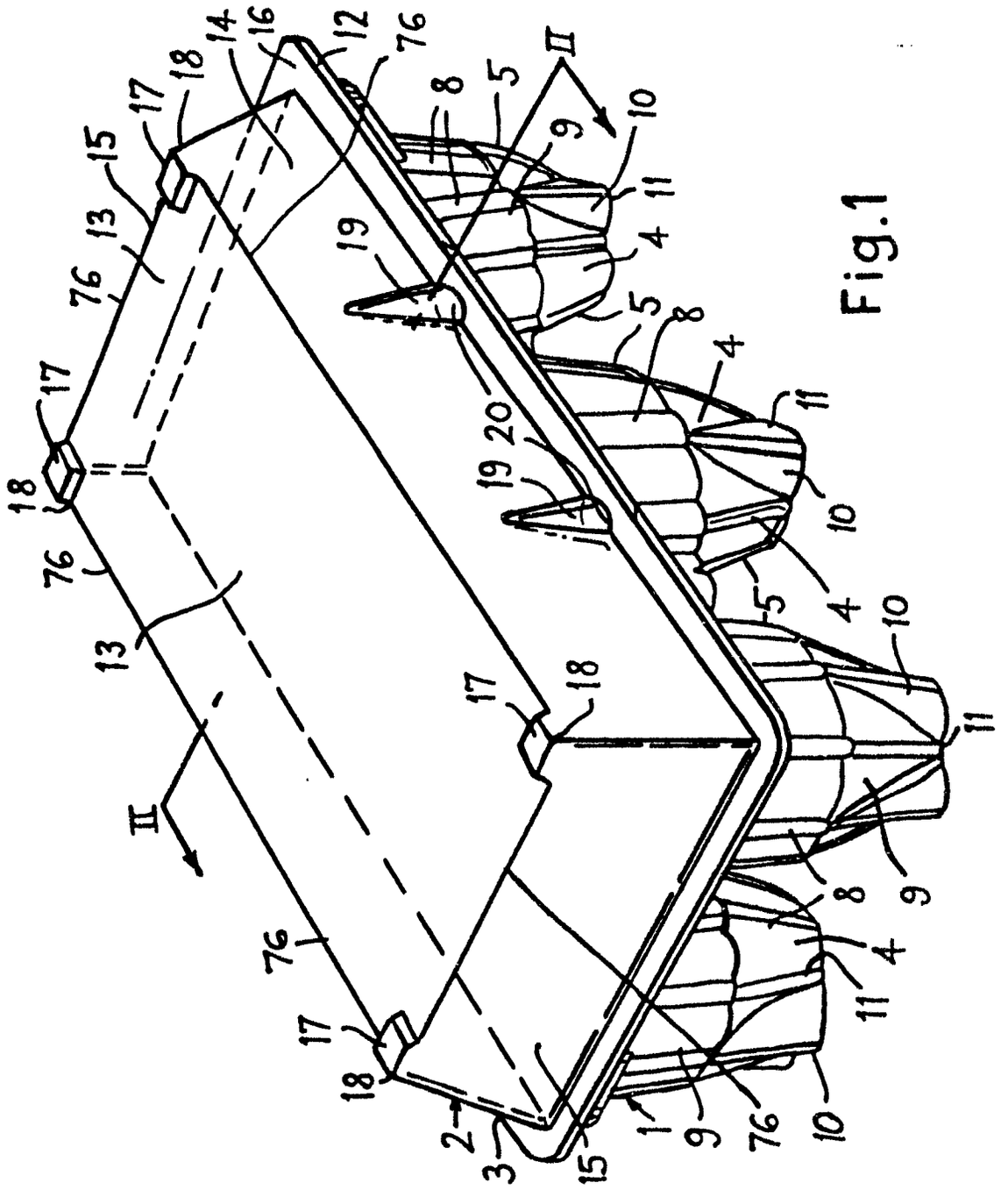

Fig.1

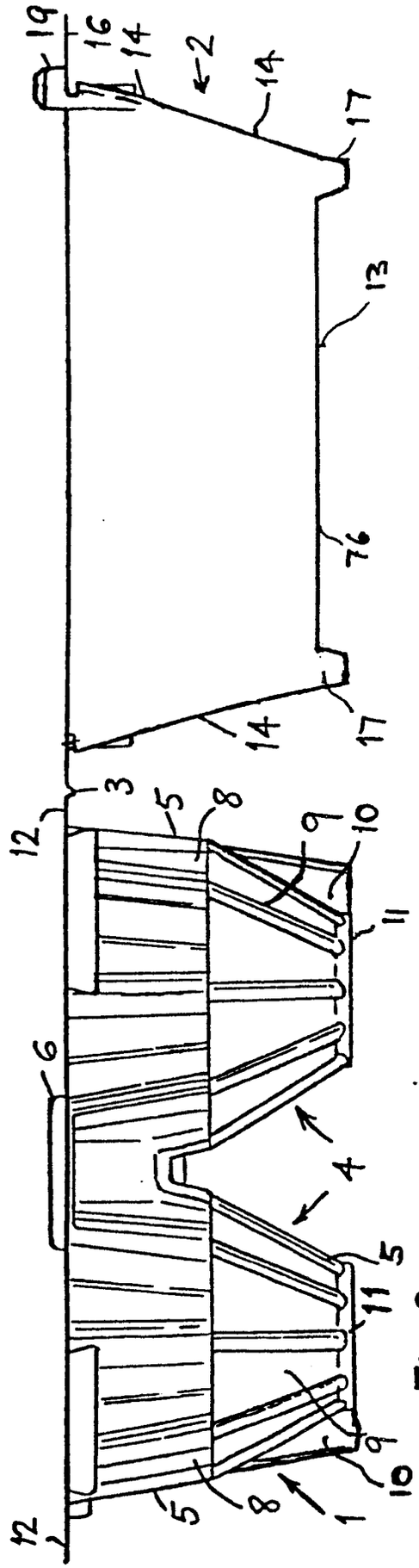

Fig.3

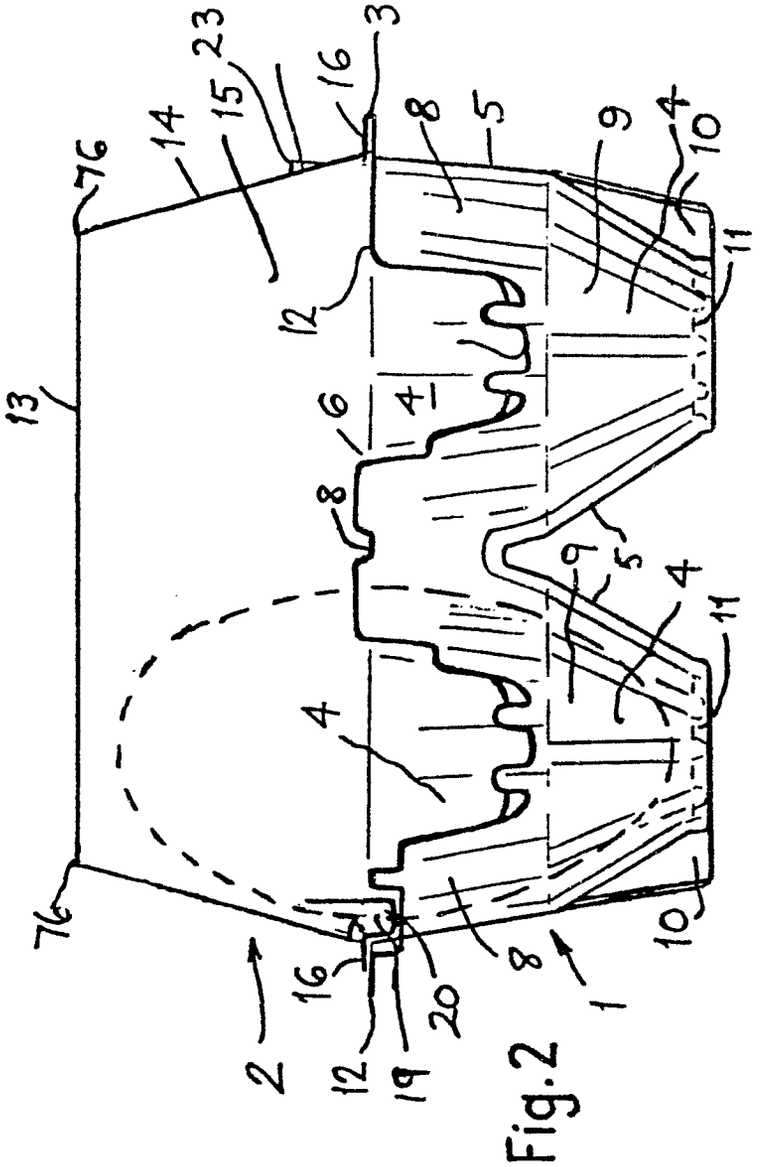

Fig.2

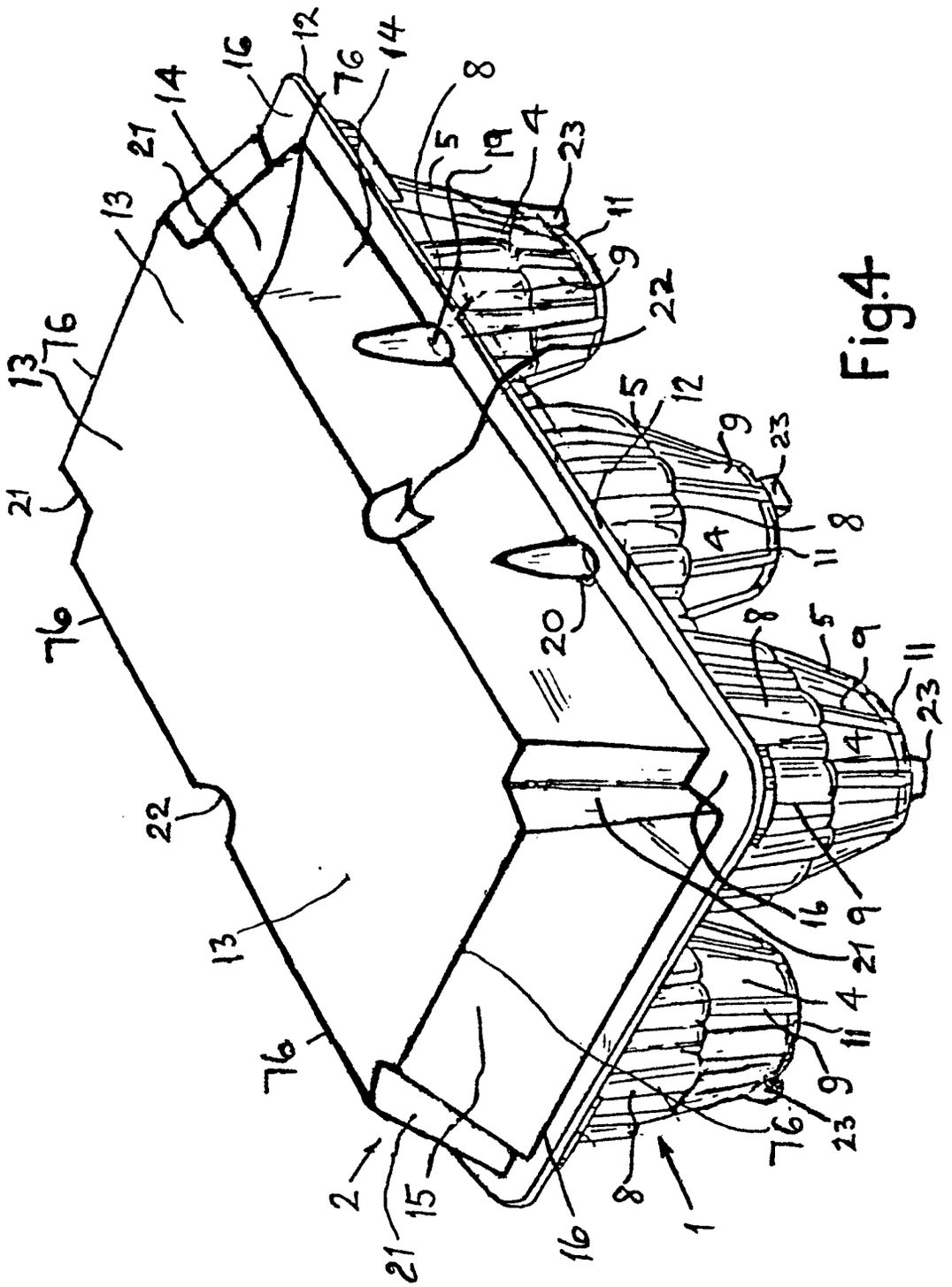
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Fig.4

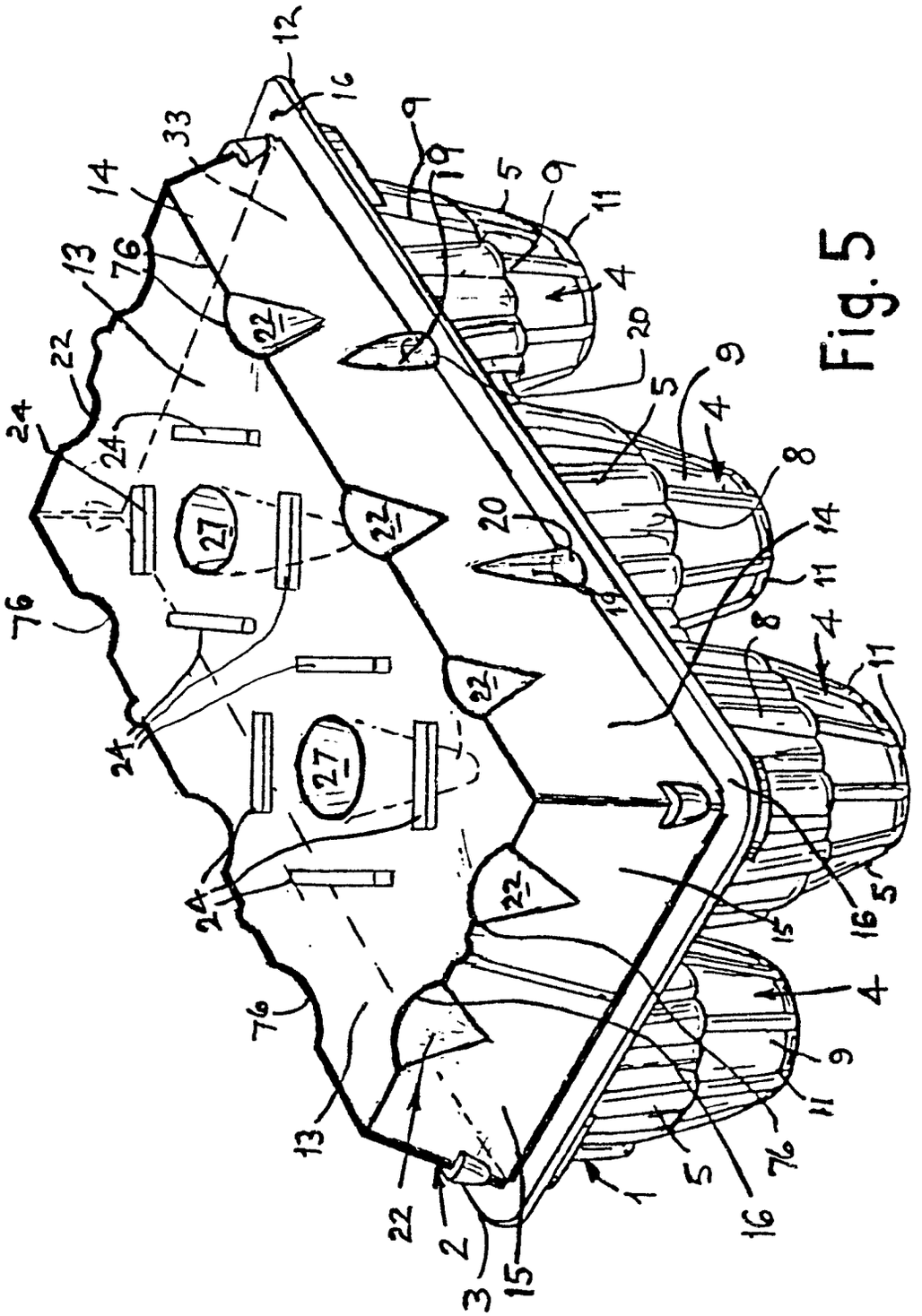

Fig.5

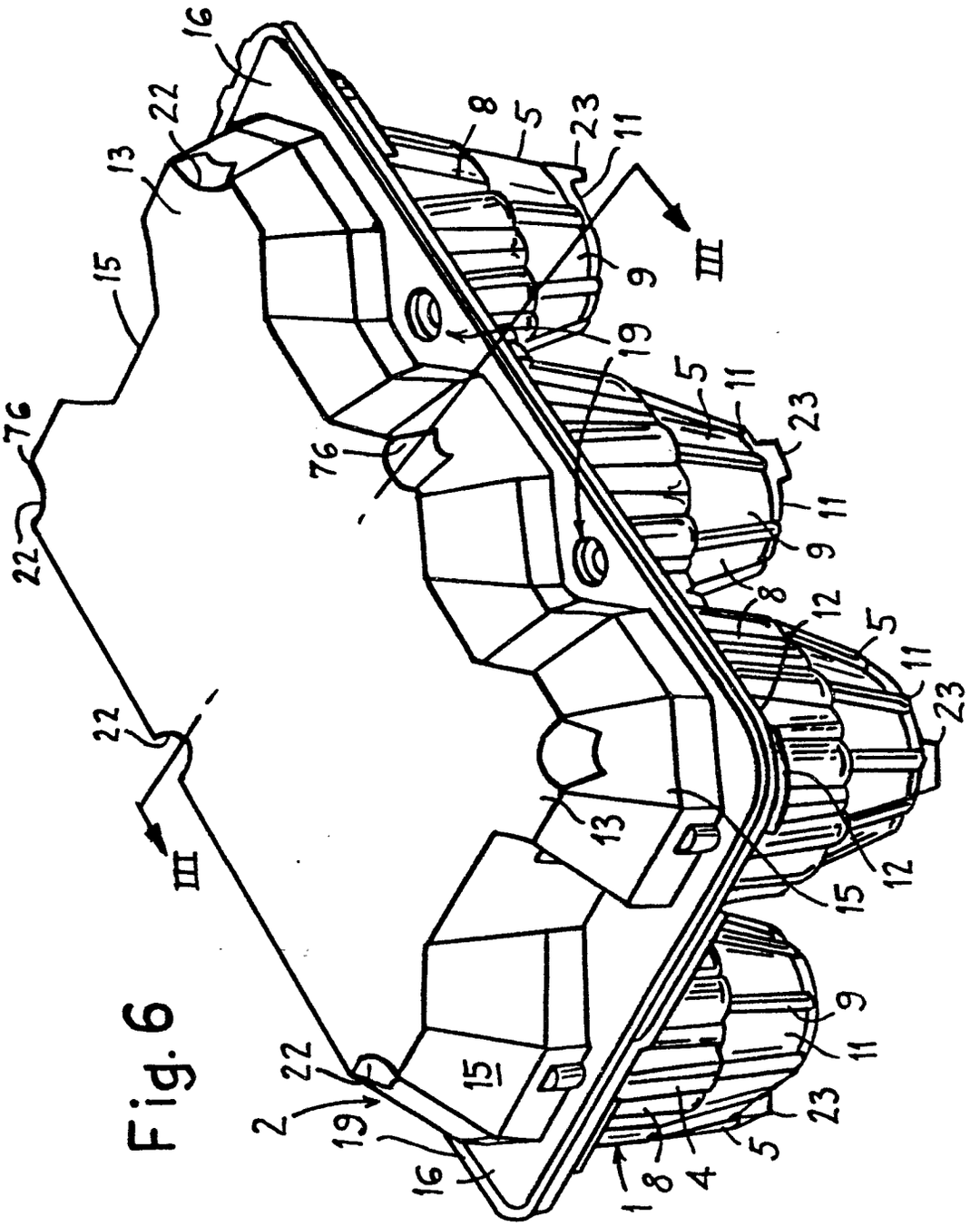
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Fig. 6

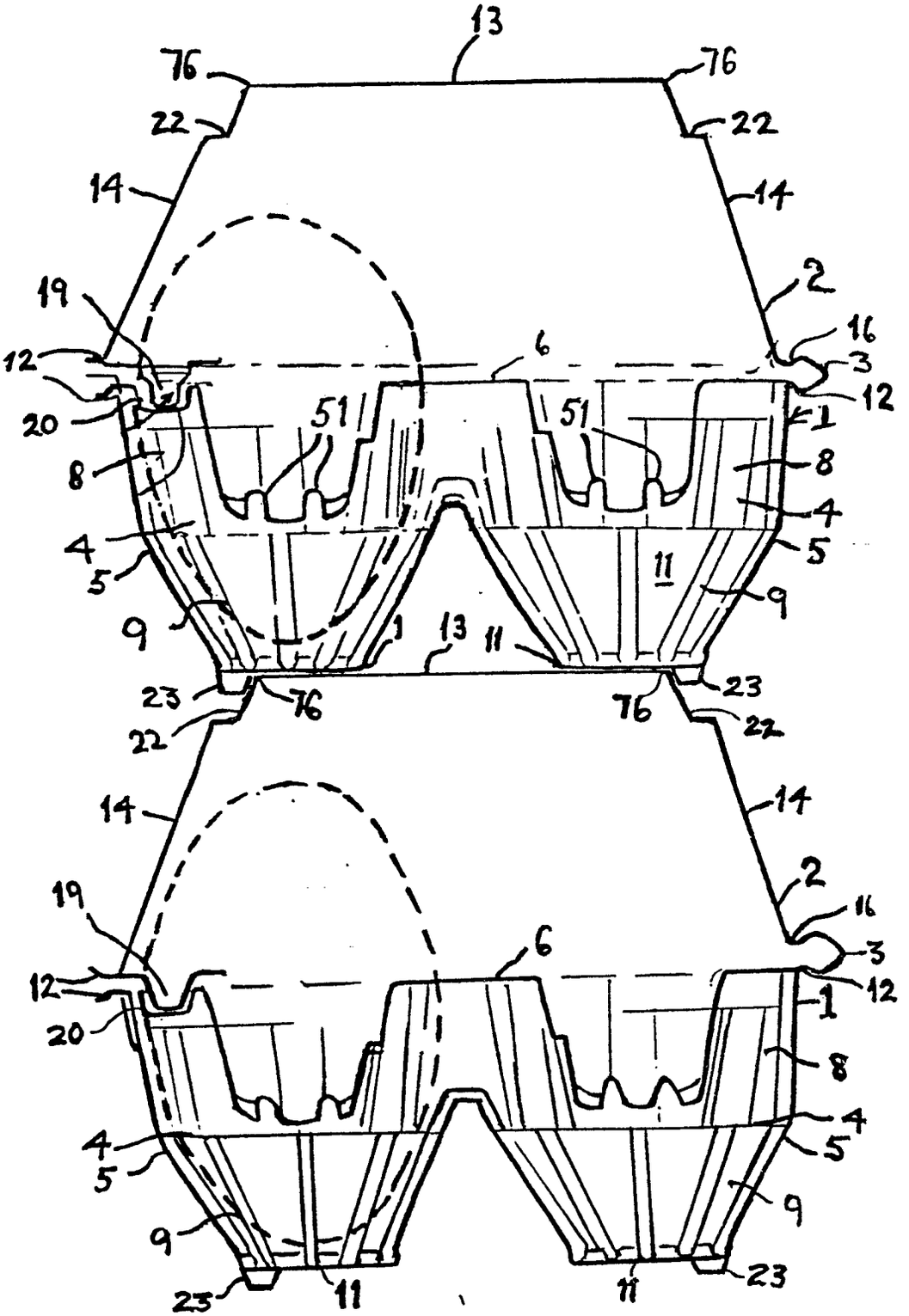
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Fig.7

Fig.8

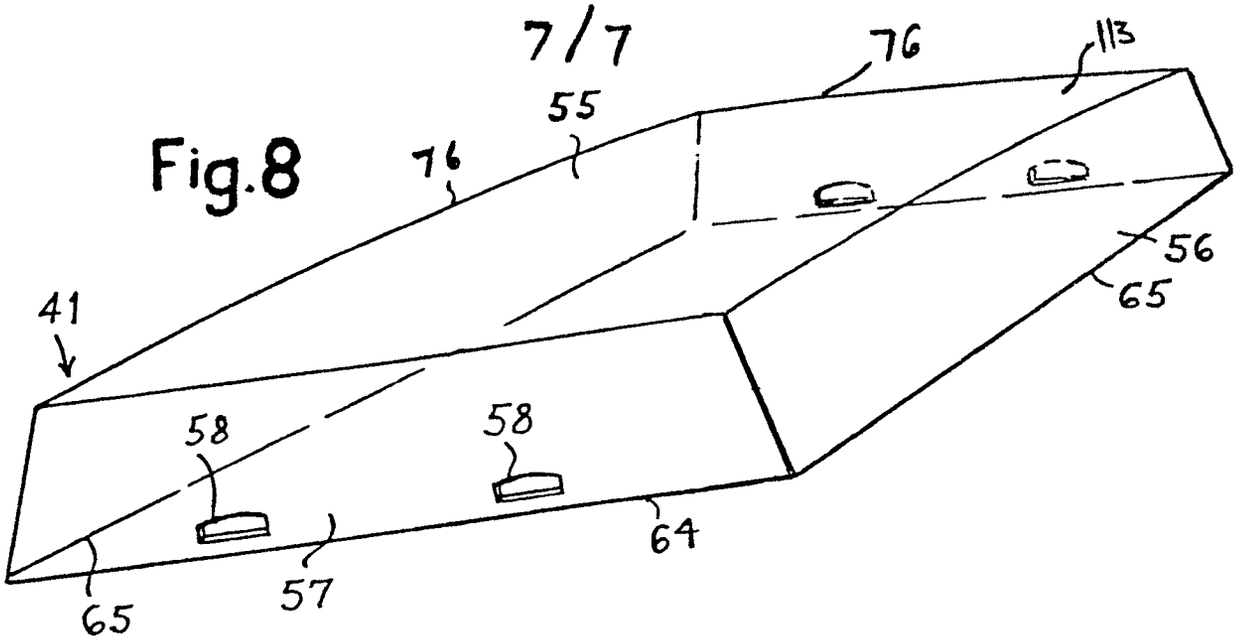
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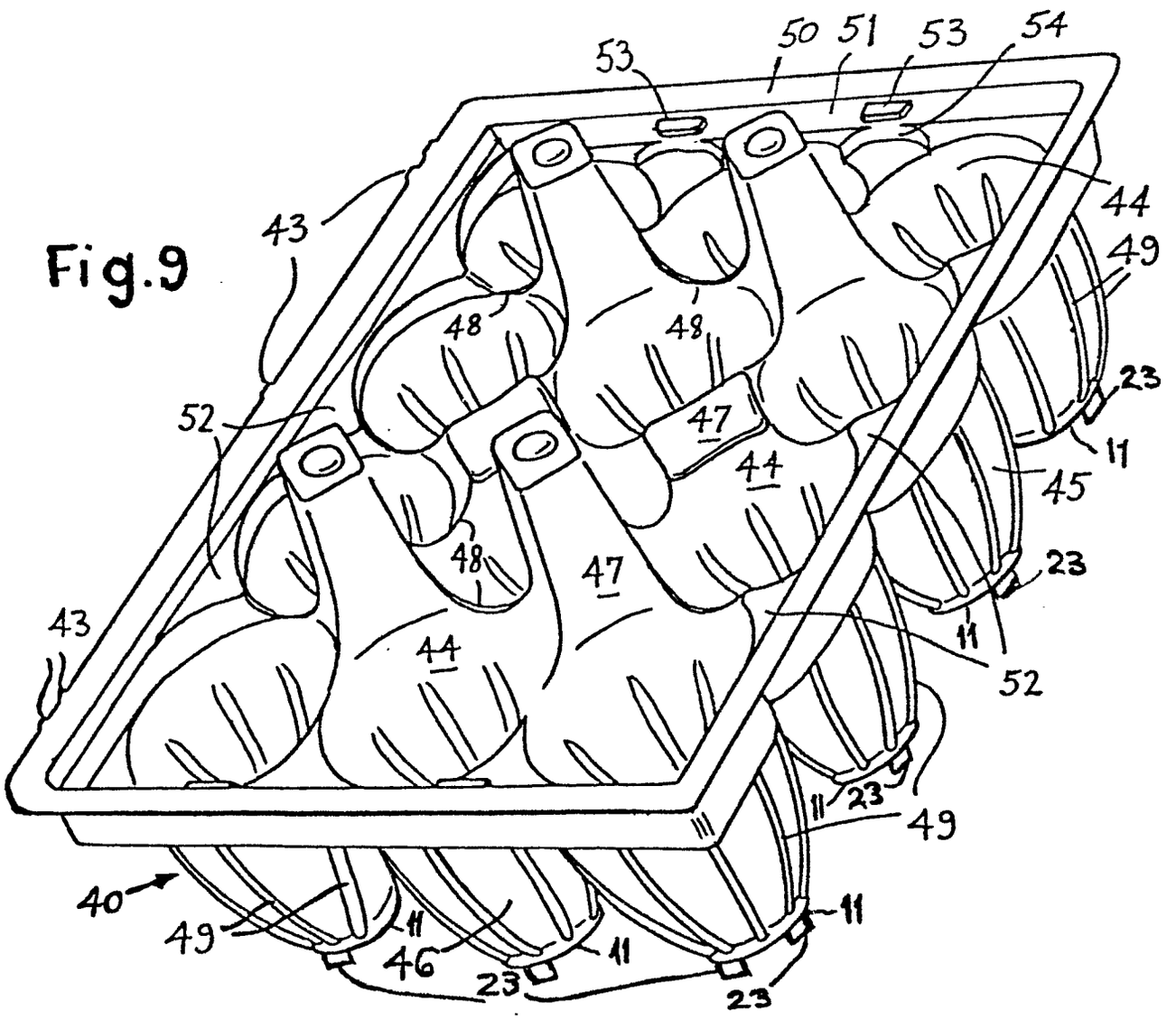
Fig.9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