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(54) **Blank for a tray having partitions**

Zuschnitt für eine Schale mit Trennwänden

Flan pour plateau ayant des cloisons

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Description

[0001] The invention relates to a blank for the production of a container divided into compartments, for example for biscuits, chocolates and the like, comprising at least four panels joined by parallel longitudinal fold lines, which panels in the finished container define, successively, a base, a side, a number of transverse partitions and a side, of which panels the three panels defined by the sides and the panel located between them possess a number of parallel transverse cuts which intersect the longitudinal fold lines which join said three panels, and of which panels the intermediate panel possesses a number of transverse fold lines running to the longitudinal fold lines delimiting it, and the side panels possess oblique fold lines running from the point of intersection of a longitudinal fold line with a transverse fold line, such that when the panels defined by the sides are folded with respect to the intermediate panel, the regions of the intermediate panel which in each case are delimited between a transverse fold line, two oblique fold lines and a cut are folded with the formation of transverse partitions which define the compartments.

[0002] A blank of this type is disclosed in US-A 2 744 675. The container produced from said blank has fairly deep cut-outs in the sides, which constitute a weakening in the finished container. At the location of said cut-outs the resistance to sagging is low, as a result of which the container can easily give way under pressure in its longitudinal direction.

[0003] A further important point is that said blank has to be made of a relatively rigid material. First of all this is necessary in order to provide the finished container with adequate robustness even at the location of the deep cut-outs. In addition, the way in which the container is produced from said blank gives rise to the need to use a rigid material. In the production procedure a tube is first formed from the blank, after which the transverse partitions are formed by pressing in the relevant regions, during which operation the material has to pleat. In this stage high forces arise which would destroy a blank made of a lightweight material.

[0004] The aim of the invention is, therefore, to provide a blank from which a container which is more robust can be produced from a relatively lightweight, inexpensive material. Said aim is achieved in that both ends of each transverse cut extend beyond the corresponding longitudinal fold lines and intersect an auxiliary cut, the two ends of which adjoin an oblique fold line.

[0005] As a consequence of the presence of the auxiliary cuts at both ends of a transverse cut, the cut-outs in the sides of the finished container are much smaller, with the result that said sides are able to offer relatively high resistance to sagging. A further advantage of the blank according to the invention is that no material is lost because the blank is completely rectangular or square.

[0006] According to the invention, because the blank

is completely square, the transverse cuts can have a gabled or arched shape at the location of the intermediate panel, such that the regions on either side of each transverse cut have unequal dimensions, viewed in the direction parallel to the longitudinal fold lines. The largest of said regions, which in the finished container form partitions between adjacent compartments, is of a size such that it reaches virtually or completely to the base of the container. As a result a better separation between the compartments is obtained without this having an adverse effect on the strength of the other parts of the container, in particular of the side walls, as a consequence of cut-outs which are too large.

[0007] Both panels defining a side can be joined via a fold line with a panel defining a base. In this embodiment a double base is produced, which provides high strength.

[0008] Furthermore, the intermediate panel can have a section defining an end wall beyond each of the two outer transverse fold lines. The container can be robustly closed off at its two longitudinal ends by means of end walls of this type.

[0009] Preferably, the two outer transverse fold lines extend over the entire two panels defining a side and the side regions located beyond the two outer transverse fold lines are joined via a longitudinal fold line to an end wall section, which side regions are not joined to a panel defining a base and have an oblique fold line running from the point of intersection between an outer transverse fold line and a longitudinal fold line on one side and the free corner of said side region on the other side. With this embodiment the sides extend to beyond the end walls of the container, which provides a very rigid construction.

[0010] In this context, each base has, at both longitudinal ends, a transverse fold line located in the extension of, in each case, an outer transverse fold line, each of which determines an end base section, which end base sections can be accommodated between an end wall section and that region of the intermediate panel which is joined thereto via a transverse fold line. By gluing those sections of sides, base and intermediate panel which are lying against one another at the location of the end wall, a very robust and rigid container is produced.

[0011] With the blank according to the invention, the side wall of the container can be made in various shapes. For instance, according to a first possibility, each auxiliary cut can run in the longitudinal direction and intersect the transverse cut at an essentially right angle. The top edge of the sides of the finished container is then straight.

[0012] According to another possibility, each auxiliary cut can comprise two oblique cut halves which intersect one another and the associated transverse cut at a common point of intersection. The top edge of the sides of the container now has triangular sections protruding upwards.

[0013] According to another possibility, a lid can be produced, in which case a panel forming the base is joined via a fold line to a lid which is foldable onto the transverse partitions defined by the transverse fold lines.

[0014] An embodiment of this type has greater stability and provides better protection for the packed products.

[0015] In particular, the lid can comprise a first lid panel joined via a fold line to a panel forming the base, the width of which first lid panel is essentially equal to the distance between the top of the transverse partitions and the base, and a second lid panel joined via a further fold line to the first lid panel.

[0016] One of the advantages of the blank according to the invention is that it is particularly suitable for high speed production and for shaping of the blank by machine immediately thereafter to produce a container. A method of this type makes the blank suitable for lightweight packaging for, for example, confectionery, biscuits and the like, the relevant machine being installed at the premises of the confectionery manufacturer. The packaging is produced from a stock roll and then filled with the product concerned.

[0017] The invention therefore relates to an installation for the production of a container from a blank according to one of the preceding embodiments, comprising:

feed means for feeding a piece of starting material in sheet form,
cutting and pressing means for making cuts and fold lines in the starting material in order to produce the blank

[0018] Such installation is disclosed in US-A-2 164 436.

[0019] The installation according to the invention is characterised by die means for folding the panels of the blank which in the finished container form the sides, as well as for folding the regions in the panel located between the sides in order to form the transverse partitions.

[0020] In this context it is pointed out that the blanks according to the prior art as described in the abovementioned US-A 2 744 675 are not suitable for such completely mechanised processing to produce a container. In these cases the container is formed by hand. Such a procedure is economically not justifiable when packing large numbers of products in a relatively lightweight container, such as is the subject of the invention.

[0021] The installation according to the invention comprises an upper die and a lower die which are movable towards and away from one another, which lower die has two upright die sections running in the longitudinal direction, between which a number of transverse upright die sections positioned some distance apart are located, the number of said transverse die sections be-

ing equal to the number of transverse partitions to be formed, and which upper die has a number of transverse pressing punches, which pressing punches overlap the upright die sections of the lower die when the lower die and upper die are in the position in which they are moved towards one another.

[0022] By means of the upper die and the lower die it is possible simultaneously to form the transverse partitions and to fold the side walls up. Even in the case of a blank made of lightweight material such as thin corrugated cardboard, it is possible in this way to form a container from the blank without the latter being damaged or pressed flat.

[0023] In this context the number of pressing punches is preferably equal to the number of transverse partitions plus one, which pressing punches are located alongside and between the upright transverse die sections when the lower die and upper die are in the position in which they are moved towards one another.

[0024] To obtain good functioning of the installation, the die sections running transversely can have a saddle roof-shaped top and their dimension transverse to the saddle roof shape can be virtually identical to the distance between two transverse partitions in the finished container, the upper limit of the transverse die sections preferably being at a higher level than that of the die sections running in the longitudinal direction.

[0025] In the case of this latter embodiment, an advantageous operation of the installation can be obtained, comprising the following steps:

feeding a piece of starting material in sheet form,
making cuts and fold lines in the starting material to form a blank, characterised by
placing the blank between the upper die and the lower die, and
moving the upper die and the lower die towards one another, wherein, in a first stage, the pressing punches push the blank onto the transverse die sections and the transverse die sections push open the cuts in the blank, and in a second, immediately consecutive stage the die sections running in the longitudinal direction fold the panels forming the sides whilst at the same time the cuts are pushed further open.

[0026] By virtue of the saddle shape of the transverse die sections and their relatively high positioning in comparison with the die sections running in the longitudinal direction, the cut lines can be opened such that shaping of the blank into a container can proceed rapidly and without any hitches.

[0027] Moreover, the positions of the various die sections can be adjusted in a simple manner, such that blanks of diverse different formats and layouts can be handled by the installation according to the invention.

[0028] The invention is explained in more detail below with the aid of a few illustrative embodiments shown in

the figures.

[0029] Figure 1 shows a top view of a first blank.

[0030] Figure 2 shows a perspective view of a container produced from the first blank.

[0031] Figure 3 shows a second blank.

[0032] Figure 4 shows a detail of the container produced from the second blank.

[0033] Figure 5 shows further blank variants.

[0034] Figure 6 shows the side of the container produced from the blank according to Figure 5.

[0035] Figure 7 shows a blank for a container with a lid.

[0036] Figure 8 shows the container with lid.

[0037] Figure 9 shows the dies of the installation according to the invention, partially, in cross-section and in perspective.

[0038] Figure 10 shows the various steps in the procedure.

[0039] Figure 11 shows a variant of the installation with two lower dies.

[0040] The blank shown in Figure 1 comprises five panels, that is to say a first base panel 1, a first side panel 2, a second side panel 4, a panel 3 located between them, and a second base panel 5. Said panels are joined to one another by means of longitudinal fold lines 6, 7, 8, 9.

[0041] Furthermore, the blank comprises a number of transverse fold lines 10, 11. The transverse fold lines 11 are located at the extremities of the blank and intersect the longitudinal fold lines in such a way that they are also present in the side panels 2, 4 (transverse fold line sections 12, 13) and the base panels 1, 5 (transverse fold line sections 14, 15). Cuts 23 are provided in the extension of the longitudinal fold lines 6, 9 beyond the transverse fold lines 11.

[0042] The side regions which are located between, in each case, a transverse fold line section 12, 13, a longitudinal fold line 7, 8 and a cut 23 each have an oblique fold line 22.

[0043] A single oblique fold line 16 adjoins the point of intersection between each longitudinal fold line 7, 8 and each outer transverse fold line 11; two oblique single fold lines 16, which run at opposite angles, adjoin in each case the point of intersection between each longitudinal fold line 7, 8 and every other transverse fold line 10.

[0044] A cut 17, which intersects the end of a transverse cut 18 running transversely to the longitudinal fold lines 7, 8, runs, in each case, between the outermost ends of two oblique fold lines 16. In the illustrative embodiment shown, the transverse cut 18 is of gable shape, as a result of which relatively large regions 20 are formed on the one side and relatively small regions 19 are formed on the other side of each cut 18.

[0045] When producing a container, as shown in Figure 2, from the blank according to Figure 1, the side panels 2, 4 are first of all folded down around the fold lines 7, 8. During this folding movement, the side regions 21,

which are delimited by longitudinal fold line 7 or 8, oblique fold line 16 and longitudinal cut 17, are likewise folded such that they come to lie against the remaining part of the side panel concerned. At the same time, the regions 19, 20 are folded against one another about their transverse fold line 10.

[0046] The finished container is shown in Figure 2. The two base panels 1, 5 are folded on top of one another. The side regions in which the oblique fold lines 22 are located are folded about said fold line 22, as can be seen in Figure 2.

[0047] The base flaps 24 located outside the transverse fold line sections 14, 15 likewise overlap one another when the container is in the finished state. At one end of the container said base flaps 24 are inserted between the region 19 folded about the transverse fold line 11 and the region 25; at the other side of the container, said base flaps 24 are located between the region 20 and region 25.

[0048] The blank shown in Figures 3 and 4 substantially corresponds to that in Figure 1. Contrary to the blank according to Figure 1, two fold lines 26, 27 in each case are now made between the transverse cuts 18. When producing the container from the blank according to Figure 3, the regions 19 and 20 do not come to lie against one another as a bridge section 28 is located between them, which bridge section is delimited by, in each case, two fold lines 26, 27. With this arrangement the partition between, in each case, two compartments 30 has a greater strength and rigidity.

[0049] Although the blanks according to the figures both relate to a container having four compartments, the invention can be employed in the case of a container having different numbers of compartments as well.

[0050] The blank (partially) shown in Figure 5 produces a container which has a side as shown in the side view in Figure 6. In this case the respective protrusions 36, 37 and 38 are obtained by the incisions 31, 32, 33 and 34. In addition to a decorative effect, said protrusions also have the effect of increasing the strength of the side.

[0051] Figure 7 shows a blank having panels 53, 54 forming a lid. The panel 53, which is joined via a fold line to the panel 1 forming the base, comes to lie against side panel 4, whilst panel 54 comes to lie above the transverse partitions, as shown in Figure 8.

[0052] Figure 9 shows, diagrammatically, the upper die 40, consisting of three pressing punches 41, 42, which are mounted on the plate 43 indicated by broken lines.

[0053] A lower die 44 is also present, which lower die consists of die sections 45 running in the longitudinal direction and die sections 46, 47 which run in the transverse direction and which, per pair, have a saddle roof-shaped top. Said saddle roof shape has the oblique surfaces 48 and the flat top surfaces 49.

[0054] Thin lines indicate the positions at which the pressing punches come into contact with the blank. In

Figure 9 the blank is shown in its initially shaped state, which is achieved when the blank 1 is lying on those die sections 45 of the lower die 44 which run in the longitudinal direction and the pressing punches 41, 42 have been moved down over a small distance to between said die sections 45 running in the longitudinal direction.

[0055] As the saddle roof-shaped side of the die pairs 46, 47 running in the transverse direction, and in particular the top surfaces 49 thereof, are at a higher level than the top of die sections 45 running in the longitudinal direction, the regions 19, 20 of the blank are pushed open first of all during this operation, as a result of which the cuts 17, 18 are opened. In the subsequent stage, the panels 2 and 4 are folded up with respect to the panel 3, whilst pushing open of the regions 19, 20 continues. In the final stage, the panels 2, 4 have been bent through 90° with respect to the panel 3, said panels then lying against the inside of the die sections 45 running in the longitudinal direction. The regions 19, 20 are in contact with the vertical surfaces of, respectively, the die sections 46, 47 running in the transverse direction.

[0056] The abovementioned procedural steps are shown diagrammatically in Figure 10. First of all the blank according to Figures 7 and 8 is shown, with its various fold and cut lines. The supplementary panel 52, for forming a lid closure, has been added.

[0057] In the first procedural step, carried out by means of the upper die 40 and lower die 44, according to Figure 9, the panels 2 and 4 have been folded through 90° with respect to panel 3, the transverse partitions 19, 27 being formed.

[0058] In the subsequent procedural step, the panels 5 and 1, which have to form the base of the finished container, are folded onto one another.

[0059] The supplementary side wall panel 50 is then folded onto the side wall panel 4, after which the lid panel 51 is folded over the transverse partitions. Finally, the closure panel 52 is folded over as far as side panel 2 and, if desired, fixed with glue. It will be clear that in Figure 10 an upside down container has been obtained.

[0060] The variant of the installation shown in Figure 11 comprises two lower dies 44, 53, mounted on a carrier 54, which lower dies define two stations where different operations take place. In the first procedural step of Figure 10, the blank has just been shaped on the first lower die 44 to give the intermediate product with folded sides 2, 4 and transverse partitions 19, 27. The panels 5 and 1, which form the base, are folded on the second lower die, as is shown in procedural step 2 of Figure 10.

[0061] The carrier 54 with the lower dies 44, 53 is movable both in the horizontal direction and in the vertical direction (see the arrows). There is a product on both lower dies. The carrier moves the products to the following station; after the products have been formed on lower dies 44, 53, they are moved to the right. The blank on lower die 44 is then shaped to give a container by folding over its base panels. At that point in time the container has become a coherent whole, so that the low-

er die 44, with carrier, can be moved away downwards out of the finished container. The carrier then moves to the left and then upwards. Lower die 44 comes into position beneath a blank to be processed, which has been fed in in the interim, and beneath the upper die 40 (which is not shown in Figure 11). Die 53 comes into position inside the finished container and on the following stroke to the right said finished container is discharged.

Claims

- Blank for the production of a container divided into compartments, for example for biscuits, chocolates and the like, comprising at least four panels joined by parallel longitudinal fold lines (6-9), which panels (1-5) in the finished container define, successively, a base (1, 5), a side (2), a number of transverse partitions and a side (5), of which panels the three panels (2-4) defined by the sides (2, 4) and the panel (3) located between them possess a number of parallel transverse cuts (18) which intersect the longitudinal fold lines (7, 8) which join said three panels (2-4), and of which panels the intermediate panel (3) possesses a number of transverse fold lines (10, 11) running to the longitudinal fold lines (7, 8) delimiting it, and the side panels (2, 4) possess oblique fold lines (16) running from the point of intersection of a longitudinal fold line (7, 8) with a transverse fold line (10, 26, 27), such that when the panels (2, 4) defined by the sides are folded with respect to the intermediate panel (3), the regions (19, 20) of the intermediate panel (3) which in each case are delimited between a transverse fold line (10, 26, 27), two oblique fold lines (16) and a cut (18) are folded with the formation of transverse partitions which define the compartments (30), characterised in that both ends of each transverse cut (18) extend beyond the corresponding longitudinal fold lines (7, 8) and intersect an auxiliary cut (17, 31-34), the two ends of which adjoin an oblique fold line (16).
- Blank according to Claim 1, wherein the transverse cuts (18) have a gabled or arched shape at the location of the intermediate panel (3), such that the regions (19, 20) on either side of each transverse cut (18) have unequal dimensions, viewed in the direction parallel to the longitudinal fold lines (7, 8).
- Blank according to Claim 1 or 2, wherein both panels (2, 4) defining a side are joined via a fold line (6, 9) with a panel (1, 5) defining a base.
- Blank according to Claim 1, 2 or 3, wherein the intermediate panel (3) has a section (25) defining an end wall beyond each of the two outer transverse fold lines (11).

5. Blank according to Claim 4, wherein the two outer transverse fold lines (11) extend over the entire two panels (2, 4) defining a side and the side regions (31) located beyond the two outer transverse fold lines (11) are joined via a longitudinal fold line (7, 8) to an end wall section (25), which side regions (31) are not joined to a panel (1, 5) defining a base and have an oblique fold line (22) running from the point of intersection between an outer transverse fold line (11) and a longitudinal fold line (7, 8) on one side and the free corner of said side region (31) on the other side. 5
6. Blank according to Claim 4 or 5, wherein each base (1, 5) has, at both longitudinal ends, a transverse fold line (14, 15) located in the extension of, in each case, an outer transverse fold line (11), each of which determines an end base section (24), which end base sections (24) can be accommodated between an end wall section (25) and that region (19 and 20 respectively) of the intermediate panel (3) which is joined thereto via a transverse fold line. 10 15 20
7. Blank according to one of the preceding claims, wherein, in each case, a number of pairs of transverse fold lines (26, 27) is provided in the intermediate panel (3), which pairs each enclose a bridge (28) which is joined at both ends via a longitudinal fold line (7, 8) to a panel (2, 4) defining a side. 25 30
8. Blank according to one of the preceding claims, wherein each auxiliary cut (17) runs in the longitudinal direction and intersects the transverse cut at an essentially right angle. 35
9. Blank according to one of Claims 1-7, wherein each auxiliary cut comprises two oblique cut halves (31) which intersect one another and the associated transverse cut at a common point of intersection (35). 40
10. Blank according to one of Claims 1-7, wherein each auxiliary cut has a cut mid section (33) which runs in the longitudinal direction and intersects the associated transverse cut (17) at an essentially right angle, a cut transverse section (32) adjoining each of the two ends of said cut mid section. 45
11. Blank according to one of Claims 1-7, wherein each auxiliary cut is arc-shaped (34) and intersects the associated transverse cut essentially half way along the length of its arc. 50
12. Blank according to one of the preceding claims, wherein a panel (1, 5) forming the base is joined via a fold line to a lid (53, 54) which is foldable onto the transverse partitions defined by the transverse fold lines (10, 26, 27). 55
13. Blank according to Claim 12, wherein the lid comprises a first lid panel (51) joined via a fold line to a panel (1, 5) forming the base, the width of which first lid panel (51) is essentially equal to the distance between the top of the transverse partitions and the base, and a second lid panel (52) joined via a further fold line to the first lid panel (51).
14. Blank according to Claim 13, wherein the width of the second lid panel (52) is essentially equal to the width of the base.
15. Installation for the production of a container from a blank according to one of the preceding claims, comprising:
 - feed means for feeding a piece of starting material in sheet form,
 - cutting and pressing means for making cuts (17, 18, 31-34) and fold lines (6-9, 10, 11, 14-16, 22, 26, 27) in the starting material in order to produce the blank having the cuts and fold lines as defined by claim 1, and
 - die means (40, 44) for folding the panels (1-5) of the blank which in the finished container form the sides, (2,4) as well as for folding the regions (19, 20) in the panel (3) located between the sides (2, 4) in order to form the transverse partitions (19, 27).
16. Installation according to Claim 15, wherein the die means comprise an upper die (40) and a lower die (44) which are movable towards and away from one another, which lower (44) die has two upright die sections (45) running in the longitudinal direction, between which a number of transverse upright die sections (46, 47) positioned some distance apart are located, the number of said transverse die sections (46, 47) being equal to the number of transverse partitions (19, 27) to be formed, and which upper die (40) has a number of transverse pressing punches (41, 42), which pressing punches (41,42) overlap the upright die sections (46, 47) of the lower die (44) when the lower die (44) and upper die (40) are in the position in which they are moved towards one another.
17. Installation according to Claim 16, wherein the number of pressing punches (41, 42) is equal to the number of transverse partitions (19, 27) plus one, which pressing punches (41, 42) are located alongside and between the upright transverse die sections (45) when the lower die (44) and upper die (40) are in the position in which they are moved towards one another.
18. Installation according to Claim 16 or 17, wherein the die sections (41, 42) running transversely have a

saddle roof-shaped top (40) and their dimension transverse to the saddle roof shape is virtually identical to the distance between two transverse partitions (19, 27) in the finished container.

19. Installation according to one of Claims 16 - 18, wherein the upper limit (49) of the transverse die sections (46, 47) is at a higher level than that of the die sections (45) running in the longitudinal direction.

20. Installation according to one of Claims 16 - 19, wherein the lower die (44) is movable in the longitudinal direction for moving, after folding of the side walls (2, 4) and the transverse partitions (19, 27) to a station provided with means for folding the panels (1, 5) forming the base of the container.

21. Installation according to Claim 20, wherein the lower die (44) is movable up and down for downward removal of the lower die (44) from the container after formation of the base in the relevant station and for returning and moving upwards into its position beneath the upper die (40) for receiving a subsequent blank.

22. Installation according to Claim 21, wherein two lower dies (44) are provided, the first of which has an outermost position at the location of the upper die (40) and the other of which has an outermost position at the location of the station for forming the base.

23. Method for producing a container from a blank according to one of Claims 1 - 11, by means of an installation according to one of Claims 16-22, comprising the following steps:

feeding a piece of starting material in sheet form,
making cuts (17, 18, 31-34) and fold lines (6-9, 10, 11, 14-16, 22, 26, 27) in the starting material to form a blank,
having the cuts and fold lines as defined by claim 1,
placing the blank between the upper die (40) and the lower die (44), and
moving the upper die (40) and the lower die (44) towards one another, wherein, in a first stage, the pressing punches (41, 42) push the blank onto the transverse die sections (46, 47) and the transverse die sections (46, 47) push open the cuts (17, 18, 31-34) in the blank, and in a second, immediately consecutive stage the die sections (45) running in the longitudinal direction fold the panels (2, 4) forming the sides whilst at the same time the cuts (17, 18, 31-34) are pushed further open.

24. Method according to Claim 23, wherein the lower die (44), with blank, is moved to a station for folding the panel (1, 5) (panels) forming the base.

Patentansprüche

1. Plattenzuschnitt zur Herstellung eines Behälters, der in Fächer für beispielsweise Kekse, Schokolade und dergleichen aufgeteilt ist und mindestens vier Platten aufweist, die durch parallele, längslaufende Faltlinien (6-9) gebildet sind, wobei die Platten (1-5) in dem fertigen Behälter nacheinander eine Basis (1, 5), eine Seite (2), ein Anzahl von querlaufenden Teilen und eine Seite (5) festlegen, von den Platten die drei durch die Seiten (2, 4) und die zwischen diesen Seiten angeordnete Platte (3) festgelegten Platten (2-4) eine Anzahl von parallelen, querlaufenden Einschnitten (18) besitzen, die die längslaufenden, die drei Platten (2-4) bildenden Faltlinien (7, 8) schneiden, von den Platten die mittlere Platte (3) eine Anzahl von querlaufenden Faltlinien (10, 11) besitzt, die bis zu den längslaufenden Faltlinien (7, 8) verlaufen die die mittlere Platte begrenzen, und die Seitenplatten (2, 4) schräge Faltlinien (16) besitzen, die vom Schnittpunkt einer längslaufenden Faltlinie (7, 8) und einer querlaufenden Faltlinie (10, 26, 27) ausgehen, so dass bei der Faltung der durch die Seiten festgelegten Platten (2, 4) in Bezug auf die mittlere Platte (3) diejenigen Bereiche (19, 20) der mittleren Platte (3), die jeweils durch eine querlaufende Faltlinie (10, 26, 27), zwei schräge Faltlinien (16) und einen Einschnitt (18) begrenzt werden, unter Bildung von die Fächer (30) festlegenden, querlaufenden Teilen gefaltet werden, dadurch gekennzeichnet, dass beide Enden jedes querlaufenden Einschnitts (18) hinter den entsprechenden längslaufenden Faltlinien (7, 8) verlaufen und einen Zusatzeinschnitt (17, 31-34) schneiden, dessen zwei Enden an eine schräge Faltlinie (16) anschließen.
2. Plattenzuschnitt nach Anspruch 1, dadurch gekennzeichnet, dass die querlaufenden Einschnitte (18) eine Giebel- oder Bogenform an der Stelle der mittleren Platte (3) derart aufweisen, dass die Bereiche (19, 20) auf beiden Seiten jedes querlaufenden Einschnitts (18) ungleiche Abmessungen haben, in der Richtung parallel zu den längslaufenden Faltlinien (7, 8) gesehen.
3. Plattenzuschnitt nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass beide eine Seite festlegende Platten (2, 4) über eine Faltlinie (6, 9) mit einer eine Basis festlegenden Platte (1, 5) verbunden sind.

4. Plattenzuschnitt nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, dass die mittlere Platte (3) einen eine Endwand festlegenden Abschnitt (25) hinter jeder der zwei äußeren, querlaufenden Faltlinien (11) aufweist. 5
5. Plattenzuschnitt nach Anspruch 4, dadurch gekennzeichnet, dass die beiden äußeren, querlaufenden Faltlinien (11) über die ganzen beiden, die Seiten festlegenden Platten (2, 4) verlaufen, dass die hinter den beiden äußeren, querlaufenden Faltlinien (11) angeordneten Seitenbereiche (31) über eine längslaufende Faltlinie (7, 8) mit einem Endwandabschnitt (25) verbunden sind und dass die Seitenbereiche (31) nicht mit einer eine Basis festlegenden Platte (1, 5) verbunden sind und eine schräge Faltlinie (22) aufweisen, die vom Schnittpunkt einer äußeren, querlaufenden Faltlinie (11) und einer längslaufenden Faltlinie (7, 8) auf einer Seite zur freien Ecke auf der anderen Seite verläuft. 10
6. Plattenzuschnitt nach Anspruch 4 oder 5, dadurch gekennzeichnet, dass jede Basis (1, 5) an beiden längslaufenden Enden eine querlaufende Faltlinie (14, 15) aufweist, die jeweils in Verlängerung einer äußeren, querlaufenden Faltlinie (11) verläuft, und dass jede dieser querlaufenden Faltlinien (14, 15) einen Endbasisabschnitt (24) festlegt, der zwischen einem Endwandabschnitt (25) und demjenigen Bereich (19 bzw. 20) der mittleren Platte (3) eingepasst werden kann, der über eine querlaufende Faltlinie mit dieser verbunden ist. 15
7. Plattenzuschnitt nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, dass jedenfalls eine Anzahl von querlaufenden Faltlinienpaaren (26, 27) auf der mittleren Platte (3) vorgesehen ist und dass diese Faltlinienpaare jeweils eine Brücke (28) einschließen, die an beiden Enden über eine längslaufende Faltlinie (7, 8) mit einer eine Seite festlegenden Platte (2, 4) verbunden ist. 20
8. Plattenzuschnitt nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, dass jeder Zusatzeinschnitt (17) in Längsrichtung verläuft und den querlaufenden Einschnitt (18) in einem im Wesentlichen rechten Winkel schneidet. 25
9. Plattenzuschnitt nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, dass jeder Zusatzeinschnitt zwei schräge Einschnitthälften (31, Fig. 5)) aufweist, die sich und den zugeordneten, querlaufenden Einschnitt in einem gemeinsamen Schnittpunkt (35) schneiden. 30
10. Plattenzuschnitt nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, dass jeder Zusatzeinschnitt einen Einschnittmittelabschnitt (33) aufweist, der in Längsrichtung verläuft und den zugeordneten, querlaufenden Einschnitt (17) in einem im Wesentlichen rechten Winkel schneidet, wobei jeweils ein querlaufender Einschnittabschnitt (32) an jedem Ende des Einschnittmittelabschnitts (33) anschließt. 35
11. Plattenzuschnitt nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, dass jeder Zusatzeinschnitt bogenförmig (34) ausgebildet ist und den zugeordneten, querlaufenden Einschnitt im Wesentlichen in der Mitte seines Verlaufs schneidet. 40
12. Plattenzuschnitt nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, dass die die Basis bildende Platte (1, 5) über eine Faltlinie mit einem Deckel (53, 54) verbunden ist, der zu den querlaufenden Teilen hin, die durch die querlaufenden Faltlinien (10, 26, 27) festgelegt sind, faltbar ist. 45
13. Plattenzuschnitt nach Anspruch 12, dadurch gekennzeichnet, dass der Deckel eine erste, über eine Faltlinie mit einer Basisplatte (1, 5) verbundene Deckelplatte (51), deren Breite im Wesentlichen dem Abstand zwischen der oberen Fläche der querlaufenden Teile und der Basis entspricht, und eine zweite, über eine weitere Faltlinie mit der ersten Deckelplatte (51) verbundene Deckelplatte (52) aufweist. 50
14. Plattenzuschnitt nach Anspruch 13, dadurch gekennzeichnet, dass die Breite der zweiten Deckelplatte (52) im Wesentlichen der Breite der Basis entspricht. 55
15. Anlage zur Herstellung eines Behälters aus einem Plattenzuschnitt gemäß einem der vorhergehenden Ansprüche, gekennzeichnet durch
- Zuführmittel zum Zuführen eines Startmaterialstücks in Blattform,
 - Schneid- und Pessmittel zur Herstellung von Einschnitten (17, 18, 31-34) und Faltlinien (6-9, 10, 11, 14-16, 22, 26, 27) im Startmaterial zur Herstellung des Plattenzuschnitts, wobei die Einschnitte und Faltlinien gemäß Anspruch 1 ausgebildet sind,
 - Mittel (40, 44) zur Faltung der die Seiten (2, 4) des fertigen Behälters bildenden Platten (1-5)

des Plattenzuschnitts und zur Faltung der Bereiche (19, 20) in der zwischen den Seiten (2, 4) angeordneten Platte (3), um die querlaufenden Teile (19, 27) zu bilden.

16. Anlage nach Anspruch 15, dadurch gekennzeichnet, dass die Mittel eine obere Matrize (40) und eine untere Matrize (44) aufweisen, die beide voneinander weg und aufeinander zu bewegbar sind, dass die untere Matrize (44) zwei nach oben gerichtete, in Längsrichtung verlaufende Matrizenabschnitte (45) hat, zwischen denen eine Anzahl querlaufender, nach oben gerichteter und voneinander entfernt liegender Matrizenabschnitte (46, 47) angeordnet ist, wobei die Anzahl dieser querlaufenden Matrizenabschnitte (46, 47) der Anzahl der zu bildenden, querlaufenden Teile (19, 27) entspricht, und dass die obere Matrize (40) eine Anzahl querlaufender Stanzstempel (41, 42) hat, die die nach oben gerichteten Matrizenabschnitte (46, 47) der unteren Matrize (44) überlappen, wenn die untere Matrize (44) und die obere Matrize (40) sich in einer Position befinden, in der sie sich aufeinander zu bewegen.
17. Anlage nach Anspruch 16, dadurch gekennzeichnet, dass die Anzahl der Stanzstempel (41, 42) der Anzahl der querlaufenden Teile (19, 27) plus eins entspricht und dass die Stanzstempel (41, 42) längs und zwischen den nach oben gerichteten, querlaufenden Matrizenabschnitten (45) angeordnet sind, wenn die untere Matrize (44) und die obere Matrize (40) sich in einer Position befinden, in der sie aufeinander zu bewegt werden.
18. Anlage nach Anspruch 16 oder 17, dadurch gekennzeichnet, dass die querlaufenden Matrizenabschnitte (46, 47) eine satteldachförmige, obere Fläche (48) aufweisen und dass ihre Abmessung quer zur Satteldachform beinahe identisch mit dem Abstand zwischen zwei querlaufenden Teilen (19, 27) des fertigen Behälters ist.
19. Anlage nach einem der Ansprüche 16 bis 18, dadurch gekennzeichnet, dass die obere Grenze (49) der querlaufenden Matrizenabschnitte (46, 47) auf einem höheren Niveau als die der längslaufenden Matrizenabschnitte (45) liegt.
20. Anlage nach einem der Ansprüche 16 bis 19, dadurch gekennzeichnet, dass die untere Matrize (44) nach der Faltung der Seitenwände (2, 4) und der querlaufenden Teile (19, 27) in Längsrichtung zu einer Station bewegbar ist, die mit Mitteln zur Faltung der die Basis des Be-

hälters bildenden Platten (1, 5) versehen ist.

21. Anlage nach Anspruch 20, dadurch gekennzeichnet, dass die untere Matrize (44) nach der Bildung der Basis in der betreffenden Station zu ihrer Abwärtsbewegung aus dem Behälter und zu ihrer Rückkehr und Aufwärtsbewegung in eine Position unter der oberen Matrize (40) zur Aufnahme eines folgenden Plattenzuschnitts aufwärts und abwärts bewegbar ist.
22. Anlage nach Anspruch 21, dadurch gekennzeichnet, dass zwei untere Matrizen (44) vorgesehen sind, von denen die erste eine äußerste Position an der Stelle der oberen Matrize (40) und die zweite eine äußerste Position an der Stelle der zur Bildung des Basis vorgesehenen Station einnimmt.
23. Verfahren zur Herstellung eines Behälters aus einem Plattenzuschnitt nach einem der Ansprüche 1-11 mittels einer Anlage nach einem der Ansprüche 16 bis 22, gekennzeichnet durch folgende Schritte:
- Zuführen eines Stücks des Startmaterials in Blattform,
 - Herstellen von Einschnitten (17, 18, 31-34) und Faltlinien (6-9, 10, 11, 14-16, 22, 26, 27) im Startmaterial zur Bildung eines Plattenzuschnitts mit den in Anspruch 1 genannten Einschnitten und Faltlinien,
 - Anordnen des Plattenzuschnitts zwischen der oberen Matrize (40) und der unteren Matrize (44) und
 - Bewegen der oberen Matrize (40) und der unteren Matrize (44) aufeinander zu, wobei in einer ersten Phase die Stanzstempel (41, 42) den Plattenzuschnitt auf die querlaufenden Matrizenabschnitte (46, 47) stoßen und die querlaufenden Matrizenabschnitte (46, 47) die Einschnitte (17, 18, 31-34) im Plattenzuschnitt aufstoßen und in einer zweiten unmittelbar darauf folgenden Phase die längslaufenden Matrizenabschnitte (45) die die Seiten bildenden Platten (2, 4) falten, während gleichzeitig die Einschnitte (17, 18, 31-34) weiter aufgestoßen werden.
24. Verfahren nach Anspruch 23, dadurch gekennzeichnet, dass die untere Matrize (44) mit dem Plattenzuschnitt zu einer Station zur Faltung der die Basis bildenden Platte (1, 5) bzw. der Basisplatten bewegt wird.

Revendications

1. Flan pour la production d'un contenant divisé en compartiments, par exemple pour des biscuits, des chocolats ou similaires, comprenant au moins quatre panneaux réunis par des lignes de pliage longitudinales parallèles (6-9), lesquels panneaux (1-5) dans le contenant terminé définissent successivement, une base (1, 5), un côté (2), un certain nombre de séparations transversales et un côté (5), parmi ces panneaux les trois panneaux (2-4) définis par les côtés (2, 4) et le panneau (3) placé entre eux possèdent un certain nombre de découpes transversales parallèles (18) qui croisent les lignes de pliage longitudinales parallèles (7,8) qui réunissent lesdits trois panneaux (2-4), et parmi lesquels le panneau intermédiaire (3) présente un certain nombre de lignes de pliage transversales (10, 11) s'étendant vers les lignes de pliage longitudinales (7, 8) le délimitant, et les panneaux latéraux (2, 4) possèdent des lignes de pliages obliques (16) s'étendant depuis le point d'intersection d'une ligne de pliage longitudinale (7, 8) avec une ligne de pliage transversale (10, 26, 27), de sorte que lorsque les panneaux (2, 4) définis par les côtés sont pliés par rapport au panneau intermédiaire (3), les zones (19, 20) du panneau intermédiaire (3) qui sont dans chaque cas délimitées entre une ligne de pliage transversale (10, 26, 27), deux lignes de pliage obliques (16) et une découpe (18) sont pliées en formant des séparations transversales définissant les compartiments (30), caractérisé, en ce que les deux extrémités de chaque découpe transversale (18) se prolongent au delà des lignes de pliage longitudinales (7, 8) et croisent une découpe auxiliaire (17, 31-34), dont les deux extrémités sont contiguës à une ligne de pliage oblique (16).
2. Flan selon la revendication 1, caractérisé en ce que les découpes transversales (18) sont conformées en pignon ou en arche au niveau du panneau intermédiaire (3) de façon que les zones (19, 20) sur l'une ou l'autre face de chaque découpe transversale (18) présentent des dimensions inégales, lorsqu'elles sont observées parallèlement aux lignes de pliage longitudinales (7, 8).
3. Flan selon la revendication 1 ou 2, caractérisé en ce que les deux panneaux (2, 4) qui définissent un côté sont réunis par une ligne de pliage (6, 9) avec un panneau (1, 5) définissant une base.
4. Flan selon la revendication 1, 2 ou 3, caractérisé en ce que le panneau intermédiaire (3) présente une section (25) délimitant une paroi d'extrémité au-delà de chacune des deux lignes de pliage transversales externes (11).
5. Flan selon la revendication 4, caractérisé en ce que les deux lignes de pliage transversales externes (11) s'étendent à travers les deux panneaux (2, 4) délimitant un côté et en ce que les zones latérales (31) situées au-delà des deux lignes de pliage transversales externes (11) sont réunies par une ligne de pliage longitudinale (7, 8) à une partie de paroi (25), lesdites zones latérales (31) n'étant pas réunies à un panneau (1, 5) définissant une base, et présentant une ligne de pliage oblique (22) s'étendant depuis le point d'intersection entre une ligne de pliage transversale externe (11) et une ligne de pliage longitudinale (7, 8) sur un côté et le coin libre de ladite zone latérale (31) sur l'autre côté.
6. Flan selon la revendication 4 ou 5, caractérisé en ce que chaque base (1, 5) présente, aux deux extrémités longitudinales, une ligne de pliage transversale (14, 15) dans le prolongement, dans chaque cas, d'une ligne de pliage transversale externe (11), chacune de celles-ci déterminant une section de base d'extrémité (24), cette section de base d'extrémité (24) pouvant être agencée entre une section de paroi d'extrémité (25) et cette zone (respectivement 19 et 20) du panneau intermédiaire (3) jointe à celui-ci par une ligne de pliage transversale.
7. Flan selon l'une quelconque des revendications précédentes, caractérisé en ce qu'il est prévu, dans chaque cas, un certain nombre de paires de lignes de pliage transversales (26, 27) dans le panneau intermédiaire (3), ces paires entourant une rampe (28) réunie aux deux extrémités par une ligne de pliage longitudinale (7, 8) à un panneau (2, 4) définissant un côté.
8. Flan selon l'une quelconque des revendications précédentes, caractérisé en ce que chaque découpe auxiliaire (17) s'étend longitudinalement et croise la découpe transversale selon un angle sensiblement droit.
9. Flan selon l'une quelconque des revendications 1 à 7, caractérisé en ce que chaque découpe auxiliaire est formée de deux demi-découpes en oblique (31) qui s'intercroisent l'une l'autre et avec la découpe transversale associée en un point d'intersection commun (35).
10. Flan selon l'une quelconque des revendications 1 à 7, caractérisé en ce que chaque découpe auxiliaire présente une découpe médiane (33) s'étendant longitudinalement et croisant la découpe transversale associée (17) selon un angle sensiblement droit, et une découpe transversale (32) réunissant chacune des deux extrémités de la découpe médiane.

11. Flan selon l'une quelconque des revendications 1 à 7, caractérisé en ce que chaque découpe auxiliaire est conformée en arc (34) et croise la découpe transversale associée sensiblement à mi-parcours le long de son arc. 5
12. Flan selon l'une quelconque des revendications précédentes, caractérisé en ce qu'un panneau (1, 5) formant la base est relié par une ligne de pliage à un couvercle (53, 54) repliable par-dessus les séparations définies par les lignes de pliage transversales (10, 26, 27). 10
13. Flan selon la revendication 12, caractérisé en ce que le couvercle comporte un premier panneau de couvercle (51) relié par une ligne de pliage à un panneau (1, 5) formant la base, la largeur de ce premier panneau de couvercle (51) étant sensiblement égale à la distance entre le sommet des séparations transversales et la base, et un second panneau de couvercle (52) relié par une ligne de pliage supplémentaire au premier panneau de couvercle (51). 20
14. Flan selon la revendication 13, caractérisé en ce que la largeur du second panneau de couvercle (52) est sensiblement égale à la largeur de la base. 25
15. Installation pour la production d'un contenant à partir d'un flan selon l'une quelconque des revendications précédentes, caractérisée en ce qu'elle comporte : 30
- . des moyens pour charger une pièce d'un matériau de départ en feuille ;
 - . des moyens de découpe et de pressage pour réaliser des découpes (17, 18, 31-34) et des lignes de pliage (6-9, 10, 11, 14-16, 22, 26, 27) dans le matériau de départ de manière à produire le flan présentant les découpes et les lignes de pliage telles que définies par la revendication 1 ; et 35
 - . des moyens de matrice (40, 44) pour plier les panneaux (1-5) du flan qui, dans le contenant, forment les côtés (2, 4), ainsi que pour plier les zones (19, 20) dans le panneau (3) situées entre les côtés (2, 4) de manière à former les séparations transversales (19, 27). 40 45
16. Installation selon la revendication 15, caractérisée en ce que les moyens de matrice comportent une matrice supérieure (40) et une matrice inférieure (44) déplaçables en rapprochement et en éloignement l'une de l'autre, la matrice inférieure (44) présentant deux parties montantes de matrice (45) s'étendant longitudinalement, entre lesquelles sont agencés un certain nombre d'éléments transversaux (46, 47) de partie montante de matrice positionnés à une distance quelconque l'un de l'autre, le nombre d'éléments transversaux (46, 47) de parties montantes de matrice étant égal au nombre de séparations transversales (19, 27) à former, cette matrice supérieure (40) présentant un certain nombre de poinçons de découpe transversaux (41, 42), ces poinçons de découpe (41, 42) recouvrant les éléments (46, 47) de partie montante de matrice de la matrice inférieure (44) lorsque la matrice inférieure (44) et la matrice supérieure (40) se trouvent dans la position de rapprochement l'une vers l'autre.
17. Installation selon la revendication 16, caractérisée en ce que le nombre de poinçons de découpe (41, 42) est égal au nombre de séparations transversales (19, 27) plus un, ces poinçons de découpe (41, 42) étant agencés le long de et entre les éléments transversaux de parties montantes de matrice (45) lorsque la matrice inférieure (44) et la matrice supérieure (40) sont dans la position de rapprochement l'une vers l'autre.
18. Installation selon la revendication 16 ou 17, caractérisée en ce que les éléments de matrice (41, 42) s'étendant transversalement présentent un sommet en forme de toit et conformé en selle (48) et leur dimension transversale au toit conformé en selle est sensiblement identique à la distance entre deux séparations transversales (19, 27) dans le contenant terminé.
19. Installation selon l'une quelconque des revendications 16 à 18, caractérisée en ce que la limite supérieure (49) des éléments transversaux (46, 47) de matrice est à une hauteur supérieure à celle des parties de matrice (45) s'étendant longitudinalement.
20. Installation selon l'une quelconque des revendications 16 à 19, caractérisée en ce que la matrice inférieure (44) se déplace dans le sens longitudinal, après pliage des parois latérales (2, 4) et des séparations transversales (19, 27), vers une station comportant des moyens de pliage des panneaux (1, 5) formant la base du contenant.
21. Installation selon la revendication 20, caractérisée en ce que la matrice inférieure (44) est déplaçable vers le haut et le bas pour le retrait vers le bas de la matrice inférieure (44) hors du contenant après formation de la base dans la station concernée et pour le retour et le déplacement vers le haut dans sa position en-dessous de la matrice supérieure (40) pour la réception d'un flan suivant.
22. Installation selon la revendication 21, caractérisée en ce que l'on prévoit deux matrices inférieures (44), la première de celles-ci présentant une posi-

tion la plus à l'extérieur à l'emplacement de la matrice supérieure (40) et la seconde de celles-ci présentant une position la plus à l'extérieur à l'emplacement de la station pour former la base.

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- 23.** Procédé pour la production d'un contenant à partir d'un flan selon l'une quelconque des revendications 1 à 11 au moyen d'une installation selon l'une quelconque des revendications 16 à 22, comprenant les étapes suivantes :

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- . chargement d'une pièce d'un matériau de départ en feuille ;
- . réalisation des découpes (17, 18, 31-34) et des lignes de pliage (6-9, 10, 11, 14-16, 22, 26, 27) dans le matériau de départ de manière à produire un flan présentant les découpes et les lignes de pliage telles que définies par la revendication 1 ;
- . mise en place du flan entre la matrice supérieure (40) et la matrice inférieure (44) ; et
- . déplacement de la matrice supérieure (40) et de la matrice inférieure (44) l'une vers l'autre ;

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dans lequel lors d'une première étape, les poinçons de découpe (41, 42) pressent le flan sur les éléments transversaux (46, 47) de matrice et les éléments transversaux (46, 47) de matrice forment les découpes (17, 18, 31-34) par pressage et en ce que lors d'une seconde étape immédiatement consécutive, les parties de matrice (45) s'étendant longitudinalement plient les panneaux (2, 4) formant les côtés tandis que simultanément les découpes (17, 18, 31-34) sont formées par nouveau pressage.

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- 24.** Procédé selon la revendication 23, caractérisé en ce que la matrice inférieure (44) portant le flan est déplacée vers une station pour plier le ou les panneau(x) (1, 5) formant la base.

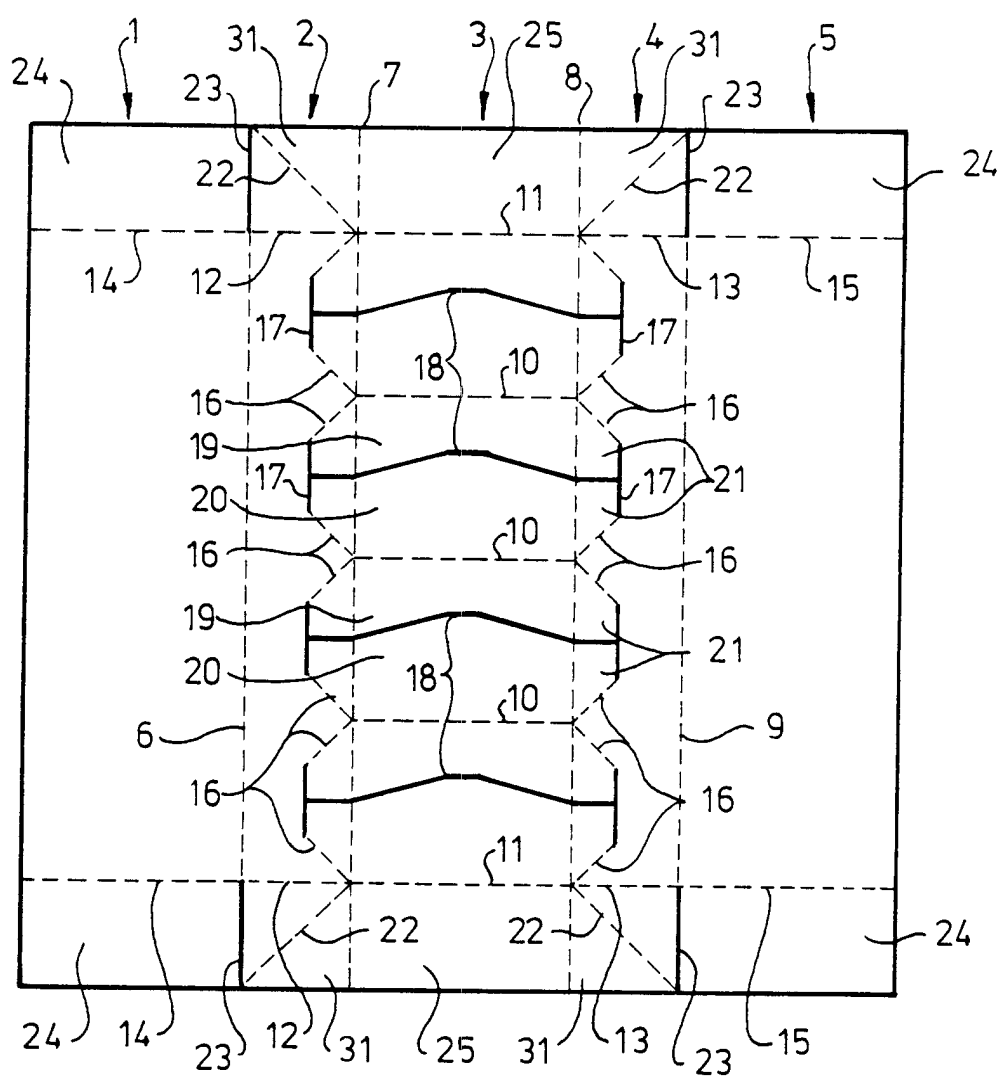
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fig -1



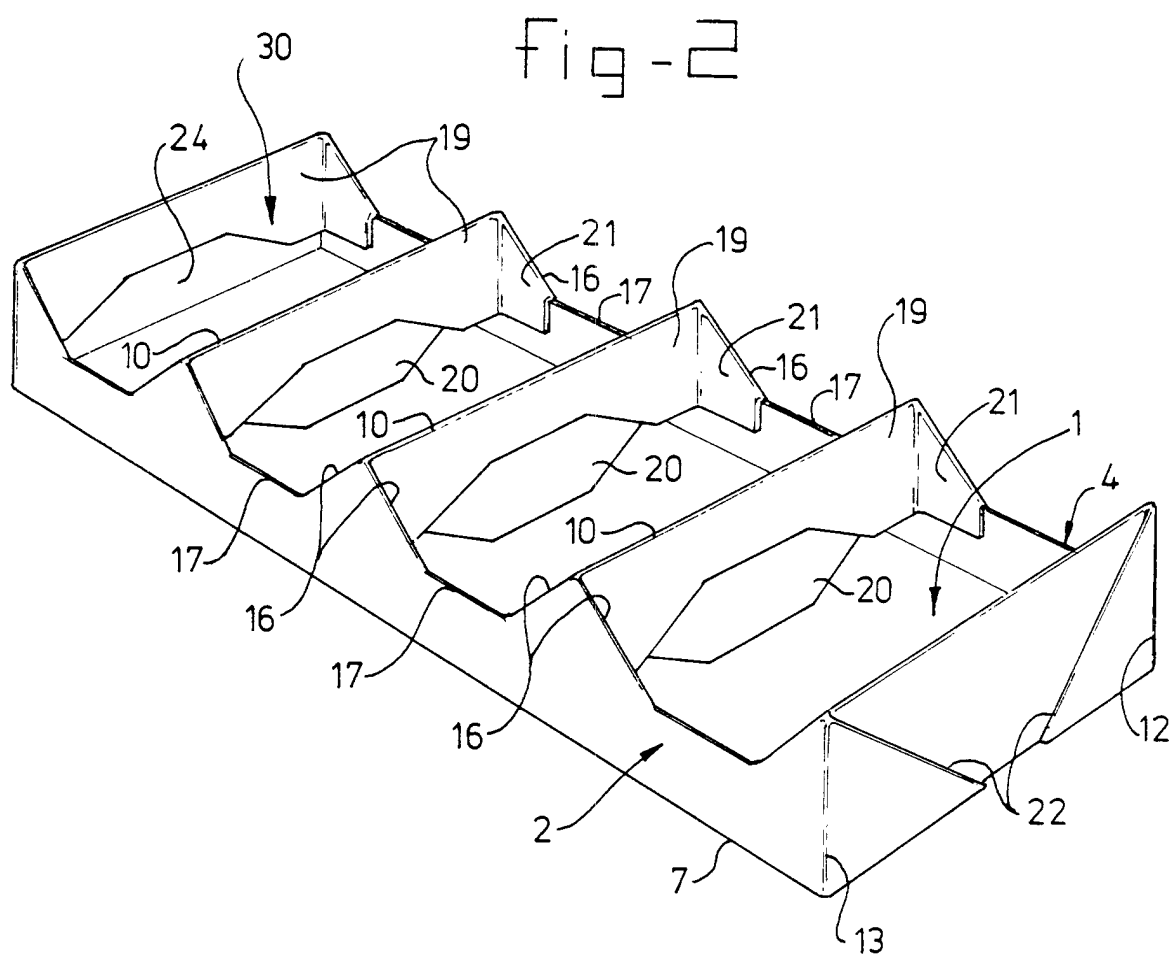


fig - 3

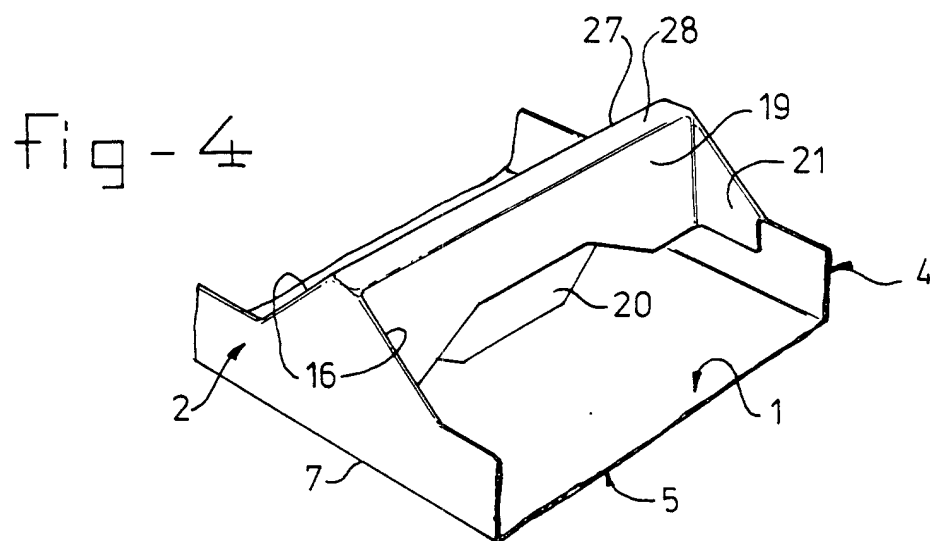
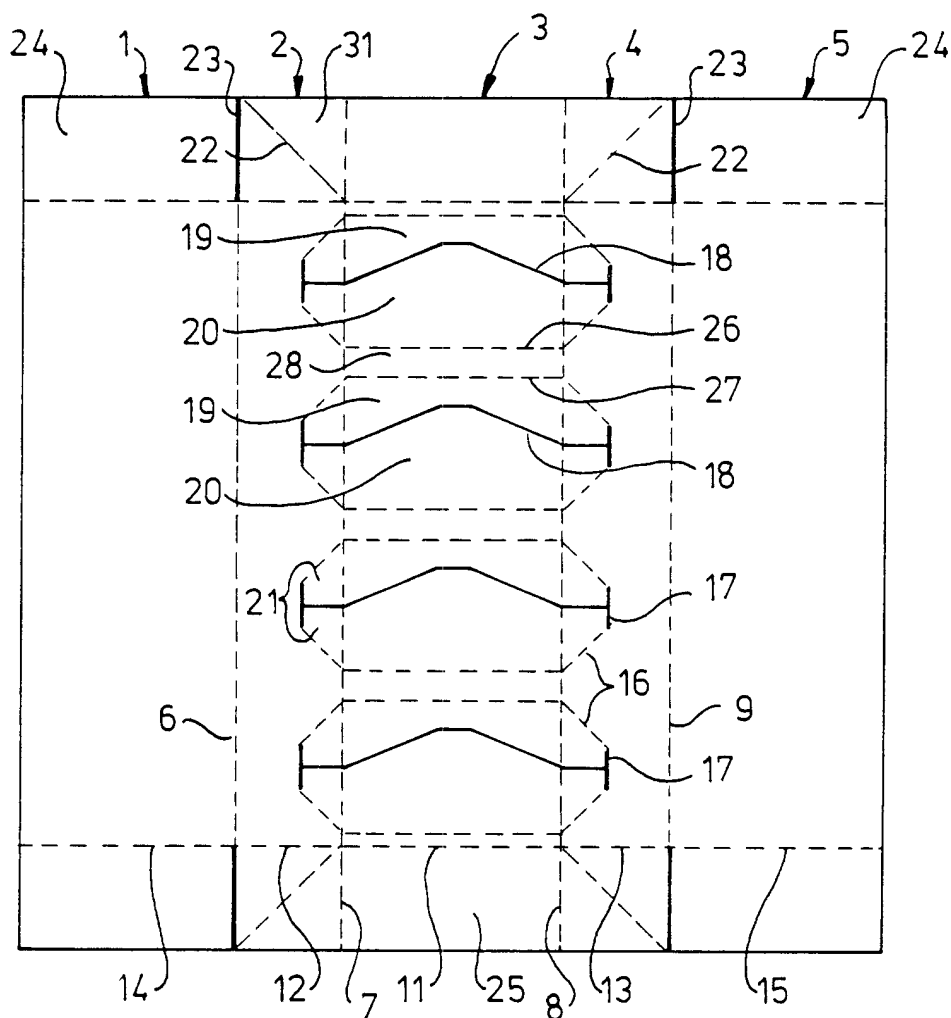


fig-5

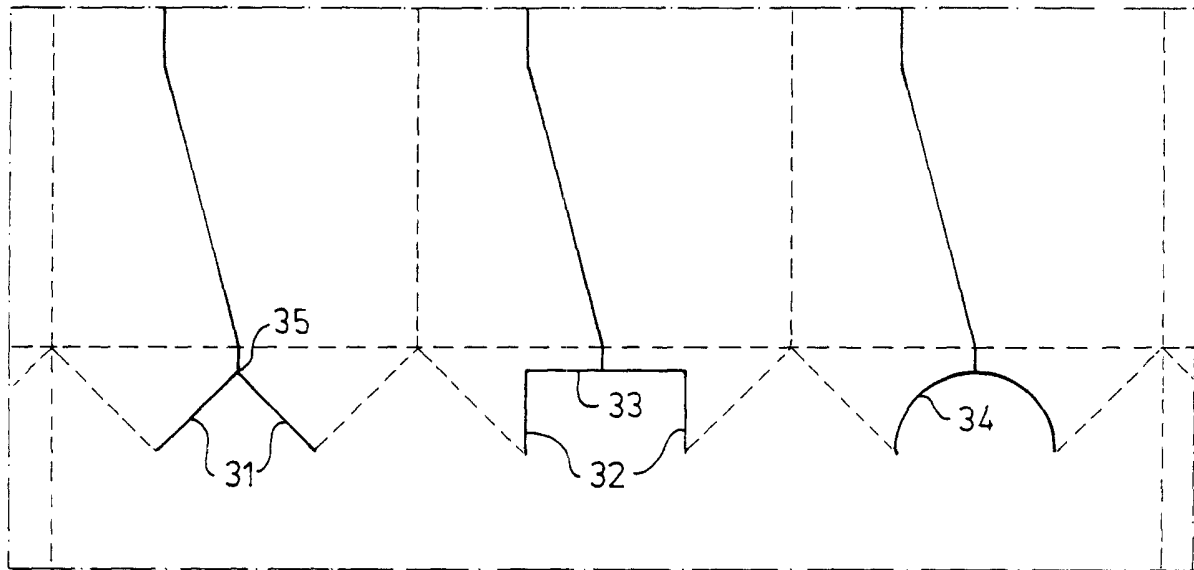


fig-6

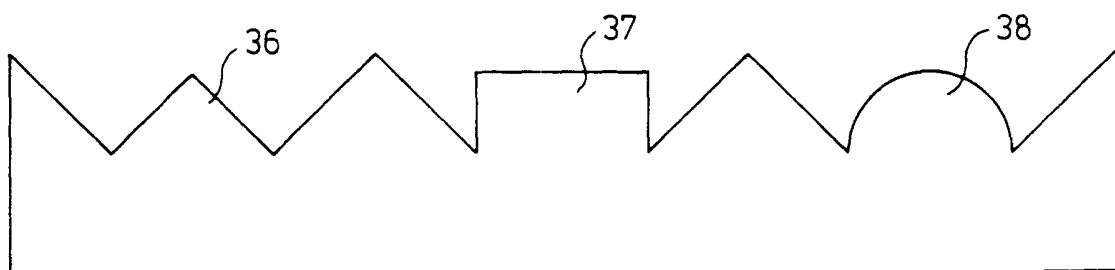


fig - 7

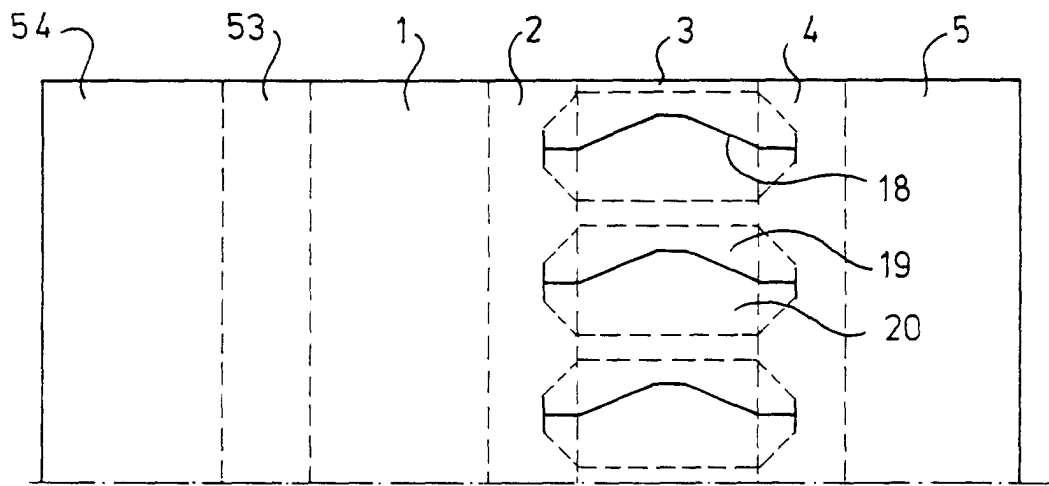


fig - 8

