

Aug. 27, 1963

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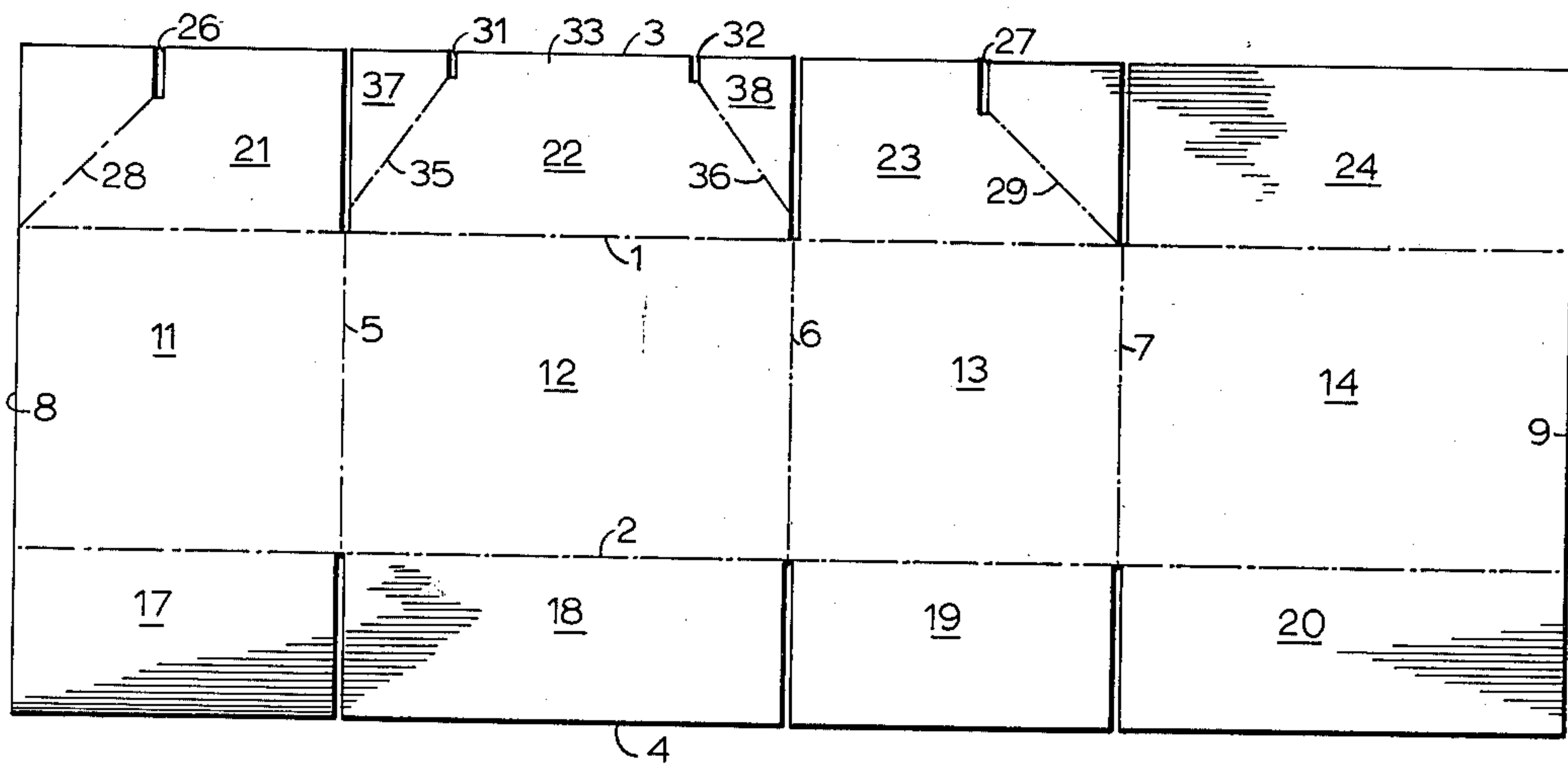
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CONTAINER AND CARDBOARD BLANK FOR FORMING SAME

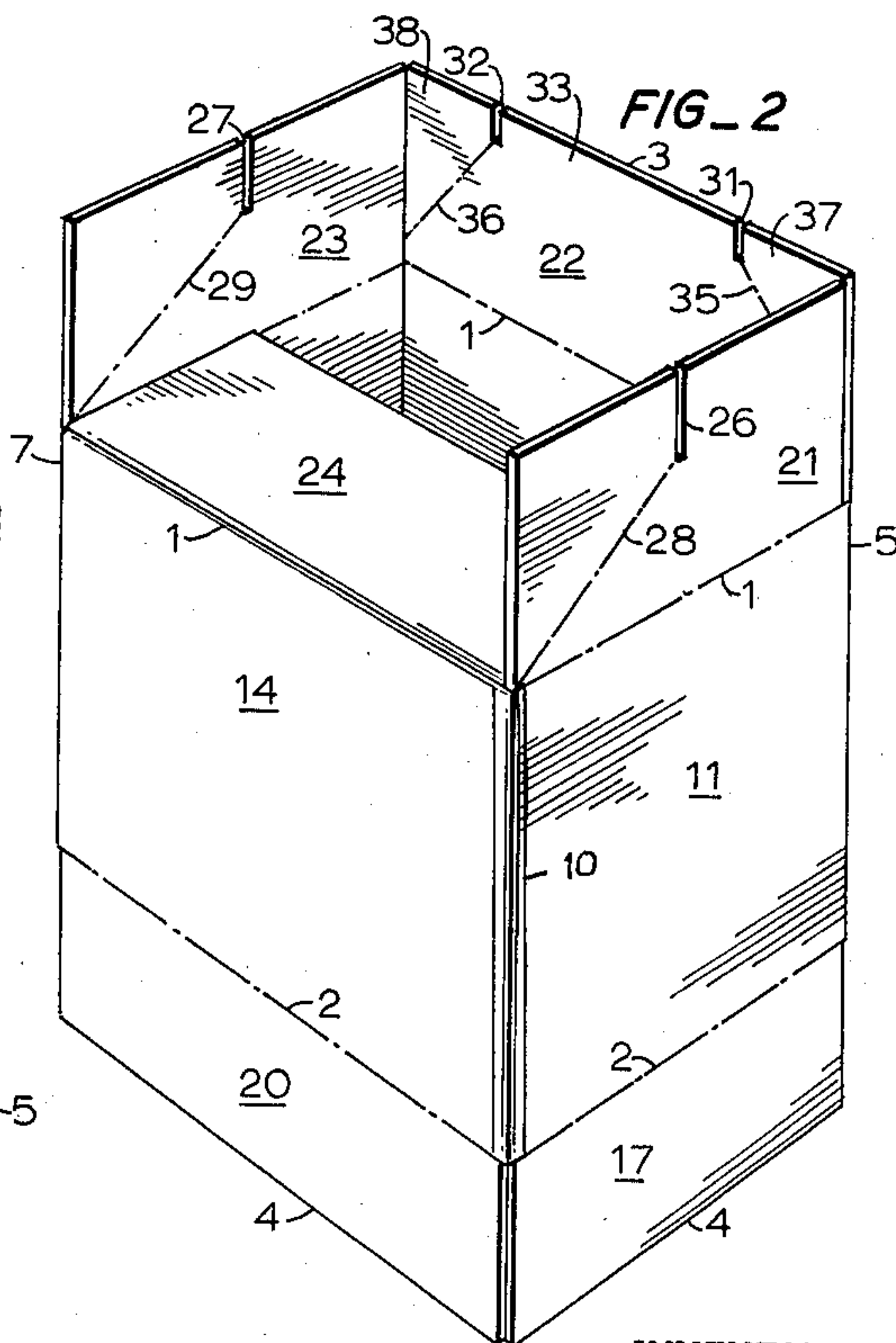
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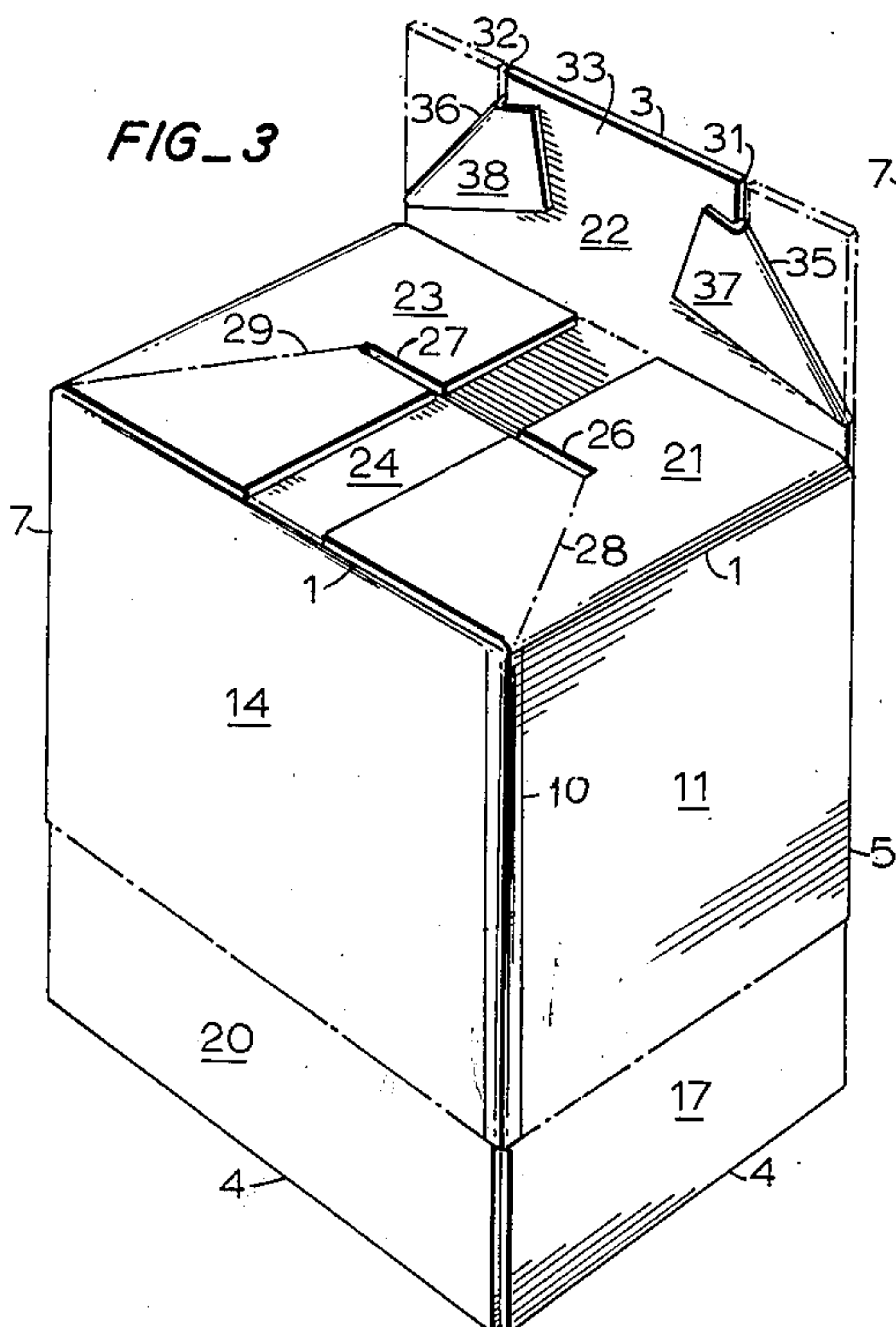
FIG\_1



FIG\_2



FIG\_3



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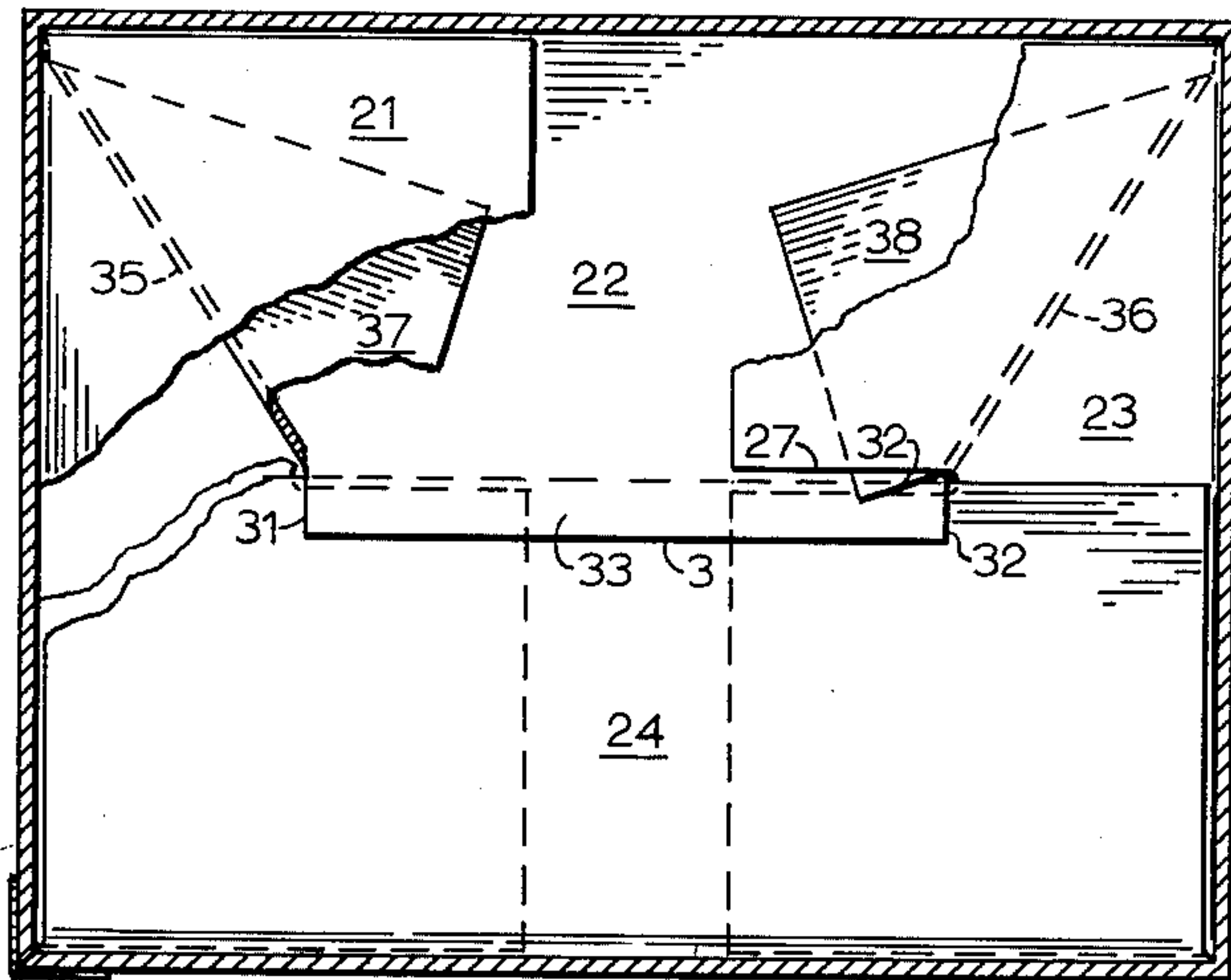


FIG-4

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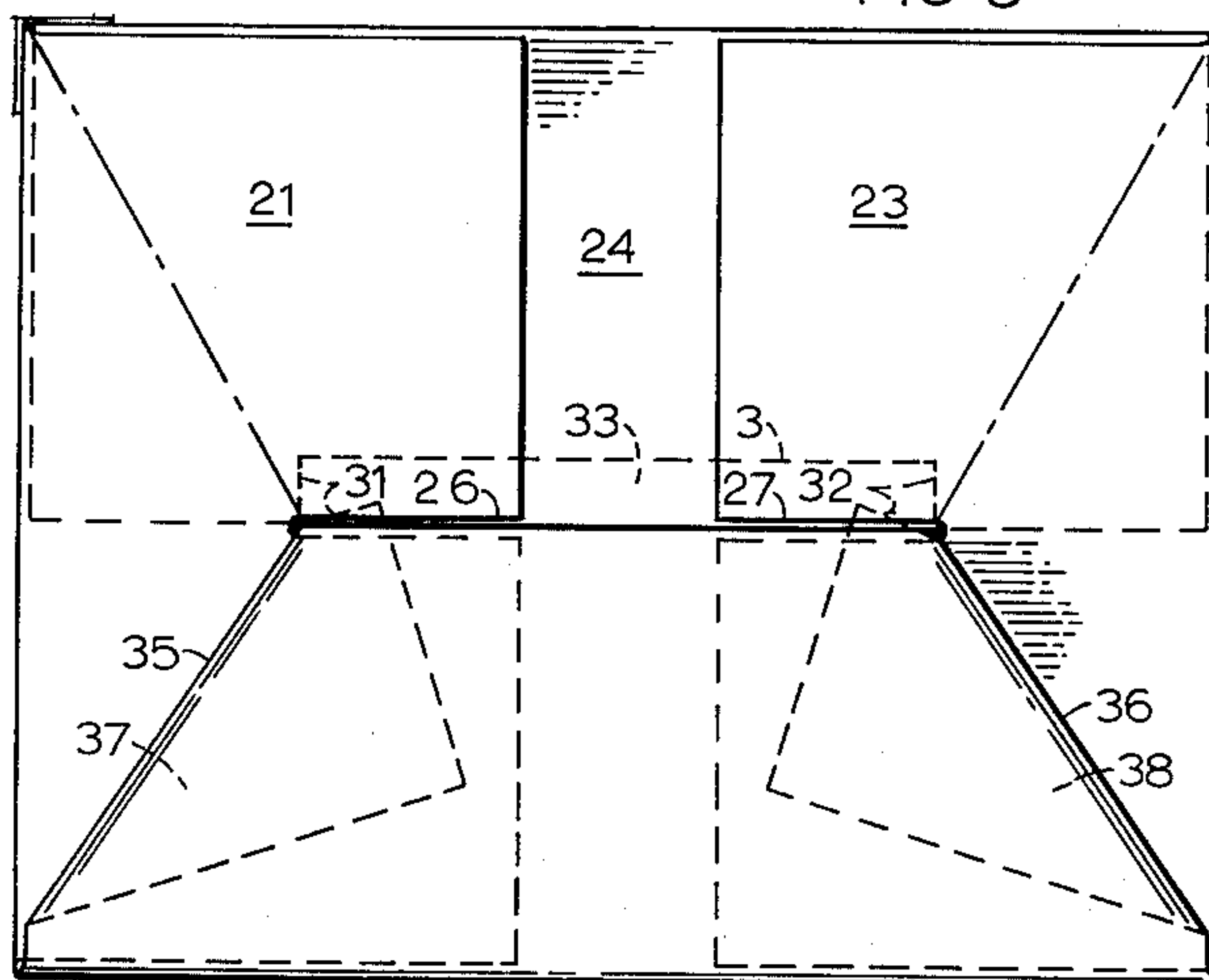
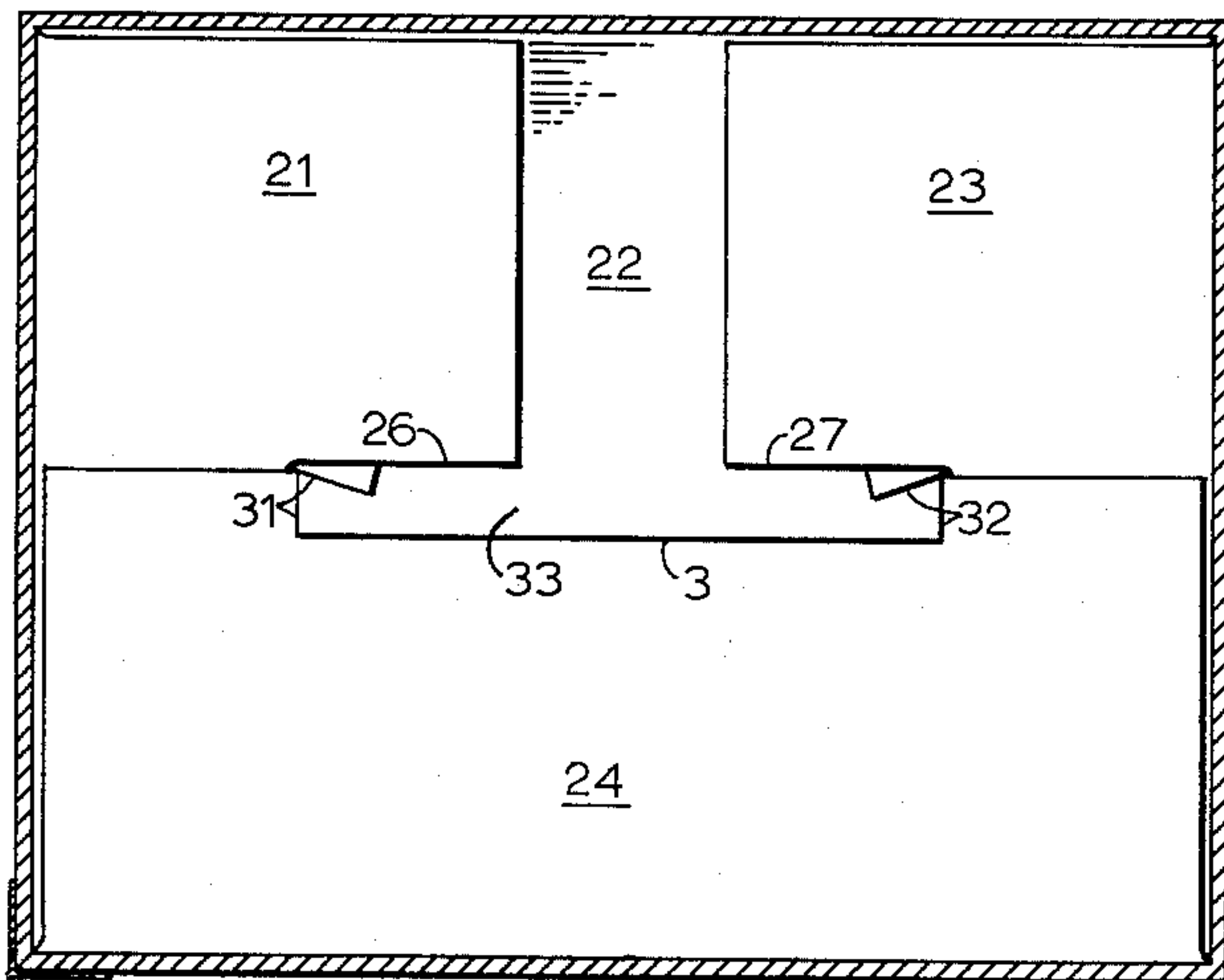


FIG-5

FIG-6



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FIG-7

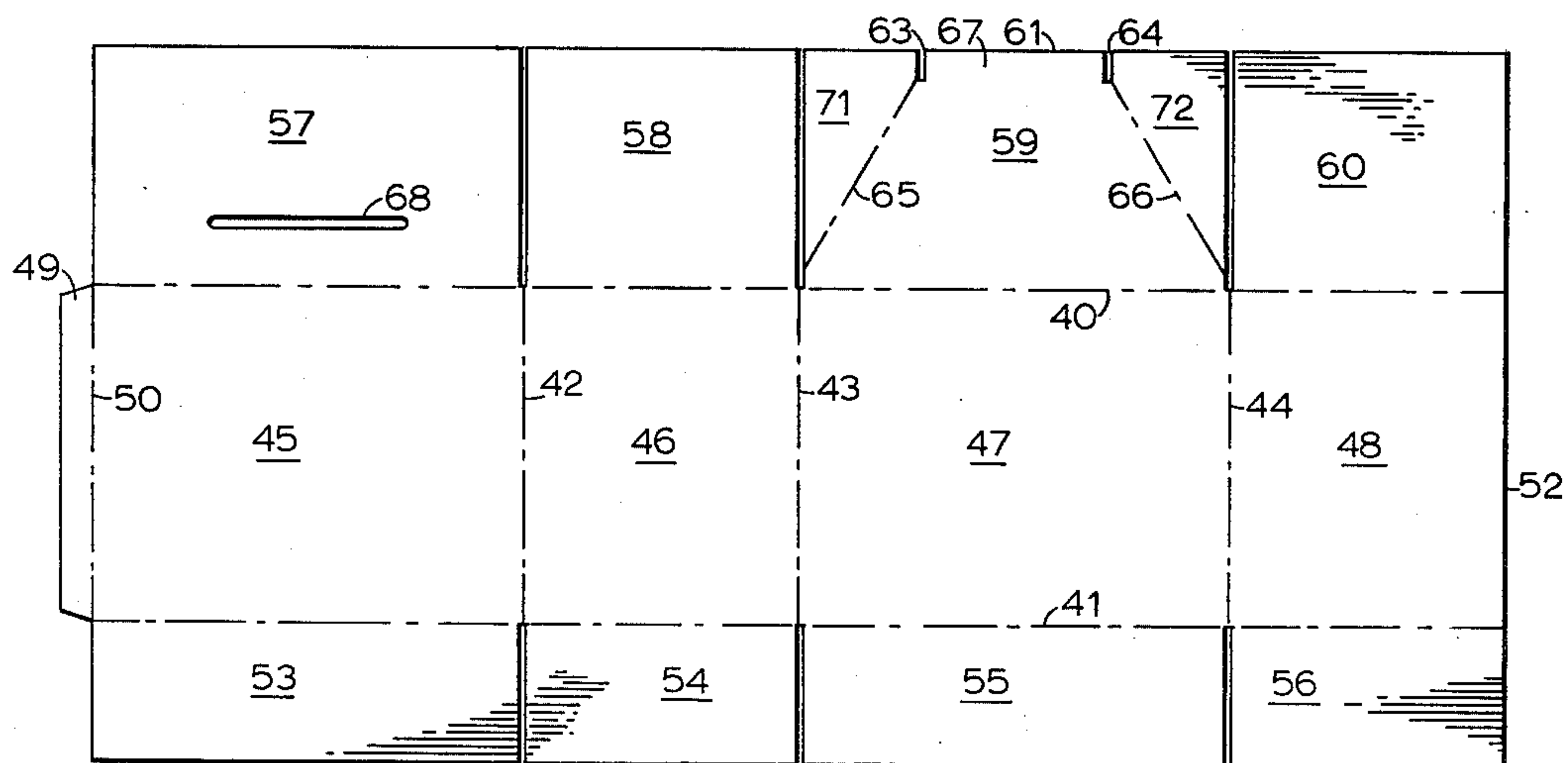


FIG-8

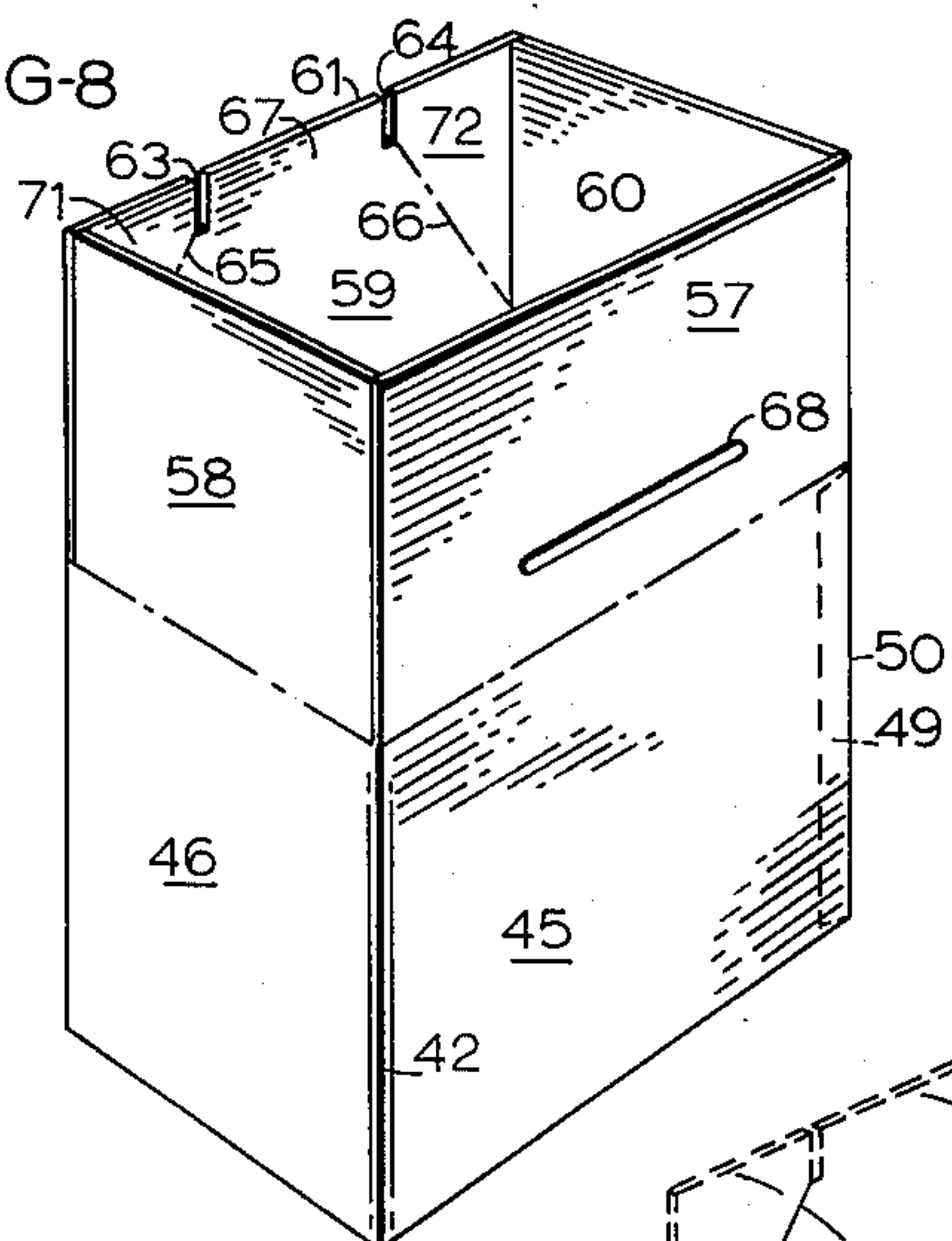


FIG-9

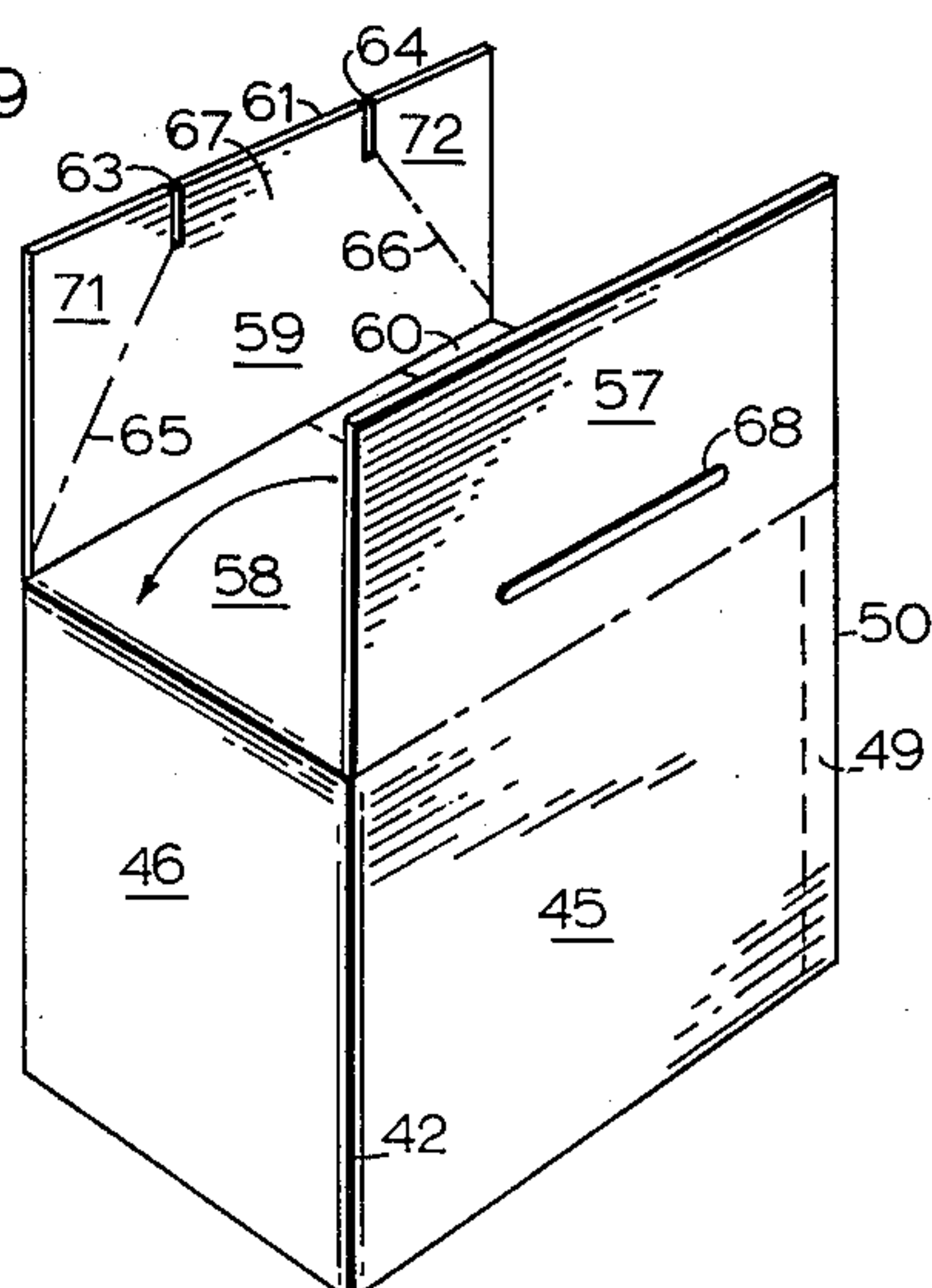
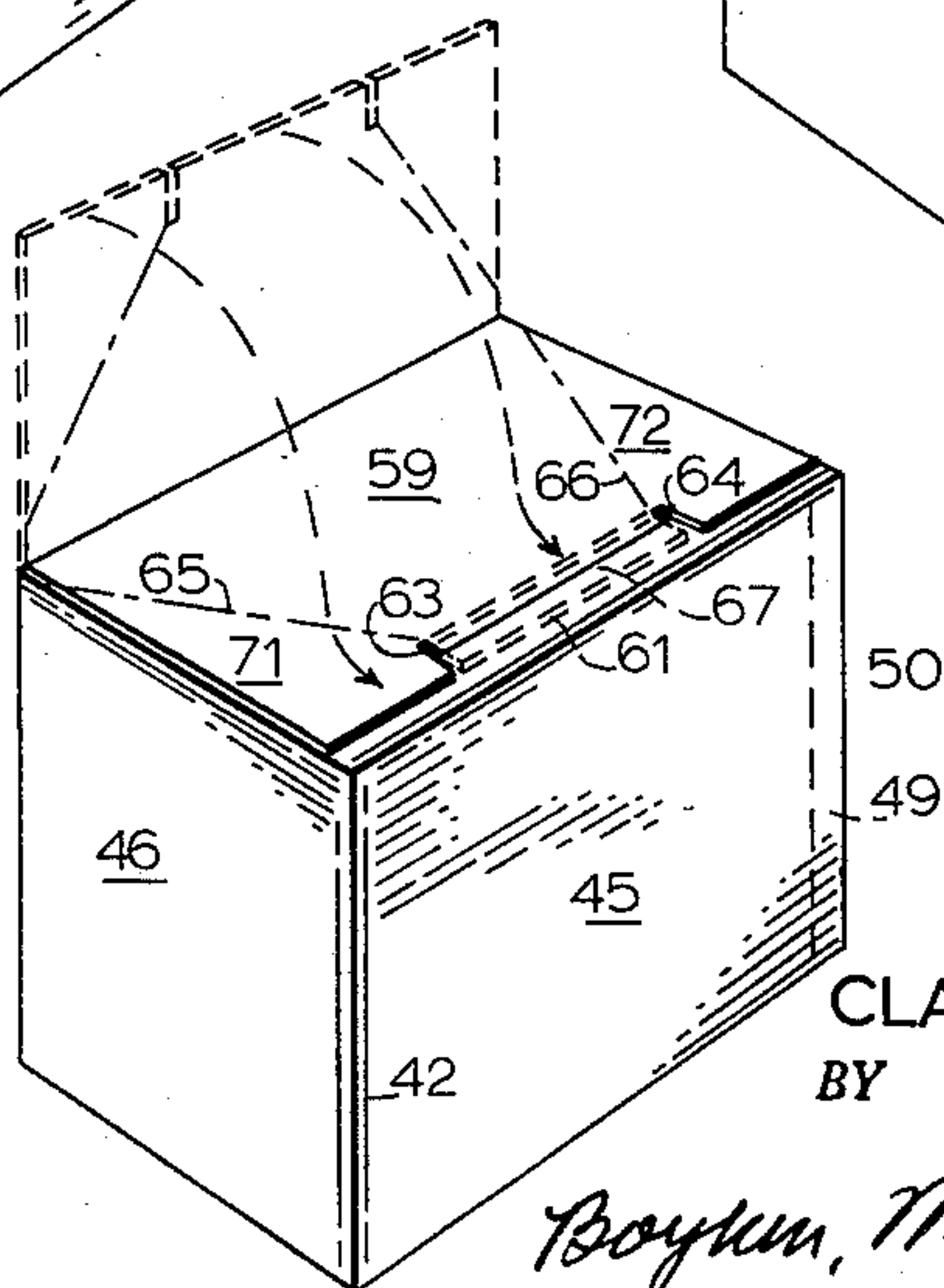


FIG-10



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## CONTAINER AND CARDBOARD BLANK FOR FORMING SAME

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3 Claims. (Cl. 229—39)

This invention relates to cardboard containers, and has for one of its objects the provision of a container, the blank for which is adapted to be rotary cut, but includes structure that heretofore has been obtainable by die cutting, or by the employment of flat bed dies.

In explanation of the above, containers of the general type hereinafter described have been die cut due to limitations of structure therein. However, since the production costs of die cut blanks is appreciably greater than where the blanks are rotary cut, the production of rotary cut blanks that have all of the advantages of blanks that have heretofore been, of necessity, die cut blanks, is a substantial advantage.

The present structure has all of the advantages of die cut blanks heretofore used plus the additional advantages of leaving intact all of the bottom flap material of the rectangular flaps; providing a substantially stronger bottom wall and one that lends to adoption of a completely double or triple layer bottom wall; providing greater resistance to racking (corner to corner instability) and providing greater resistance to sagging.

The accomplishment of the above advantages, in addition to providing a more economical container, is an object of the invention.

Other objects and advantages will appear in the description and in the drawings.

In the drawings—

FIG. 1 is a plan view of a rotary cut blank from which a container is adapted to be formed.

FIG. 2 is a bottom isometric view of the initial step in folding the bottom flaps of the container.

FIG. 3 is a view similar to that of FIG. 2 showing further steps in the folding of the bottom flaps.

FIG. 4 is a horizontal sectional view of a container looking at the inside of the bottom of the container after the latter is formed, several of the bottom flaps being broken away to show their relationship to each other.

FIG. 5 is a bottom plan view of the container from outside the latter.

FIG. 6 is a view similar to that of FIG. 4 in which the dotted lines are omitted and the flaps are shown as they appear from the inside of the container.

FIG. 7 is a plan view of a slightly modified form of blank from that shown in FIG. 1.

FIGS. 8, 9, and 10 are isometric runs showing successive steps in folding the bottom flaps of a carton employing the blank of FIG. 7.

In detail, FIG. 1 is a plan view of the oblong blank from which the container is adapted to be formed. This blank is formed with a pair of spaced, folding creases 1, 2 extending longitudinally of the blank and parallel with the longitudinally extending free outer edges 3, 4 of the blank.

The central portion of the blank between creases 1, 2 is formed with folding creases 5, 6, and 7, that are normal to creases 1, 2 and parallel with the free end edges 8, 9 of the blank.

When the blank is folded along creases 5, 6, 7 and the ends of the blank are connected, as by tape 10 (FIG. 3) or in any other suitable manner, the panels 11, 12, 13, 14 (from left to right as seen in FIG. 1) will form the lateral side walls of the container, with panels 11, 13 in opposed relation and panels 12, 14 in opposed relation. Panel 11

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is between end edge 8 and crease 5; panel 12 is between creases 5, 6; panel 13 is between creases 6, 7 while panel 14 is between crease 7 and free end edge 9. Creases 1, 2 to which creases 5, 6, 7 extend define the other limits of the panels.

Extending from, and integral with the panels 11—14 are top flaps 17, 18, 19 and 20. These top flaps are adapted to be folded along crease 2 to lapping relation to form the upper or top wall of the container.

Up to the present point the structure described is conventional.

Flaps 21, 22, 23 and 24 are integral with the panels 11—14 respectively, and are foldable along crease 1, as will later be explained, to form the bottom wall of the container, all of these flaps 21—24 are of the same length.

Flaps 21, 23, which are integral with panels 11, 13 are respectively formed along their free outer edges with slots 26, 27, which slots extend at right angles to the free outer edges 3 of said flaps. These slots, respectively, are the same distance from flap 22, and this distance is preferably more than the distance to free end edge 8, and to flap 24. Thus when panels 21, 23 are swung to planar relation upon forming the carton, as seen in FIG. 3, the slots 26, 27 will be in longitudinal alignment at the bottom of the box (the box being upside down in FIG. 3) with their open ends facing toward each other.

A folding crease 28 extends from the closed end of slot 26 in flap 21 to the corner of the flap, or to the juncture between crease 1 and the free end edge 8 of the blank.

A similar folding crease 29 extends across panel 23 from the closed end of the slot 27 to the juncture between creases 1 and 7. As seen in FIG. 3 when said flaps 21, 23 are folded toward each other at the bottom of the container, the creases 28, 29 will extend divergently relative to each other to the opposite corners of the container that are respectively along the adjacent free end edges 8, 9 and crease 7.

The flap 22 is formed along free edge 3 with a pair of spaced slots 31, 32 that open outwardly of the edge 3. These slots may be of any desired length according to desired width of the tab 33 that is between said pair of slots, the said "width" being the dimension of the tab at right angles to edge 3. This spacing between slots 31, 32 is preferably slightly less than the distance between the closed ends of slots 26, 27 when flaps 21, 23 are folded to the positions seen in FIG. 3. The width of the flap 22 from its free outer edge 3 to the crease 1 is such that the tab 33 will be in lapping relation to the marginal portion of flap 24 along its free outer edge, and also in lapping relation to the marginal portions of flaps 21, 23 along the edges of slots 26, 27 that are remote from flap 22 when flaps 21, 23 and 24 are folded over the open bottom end of the container as seen in FIG. 3 with flap 24 innermost relative to the inside of the container.

In forming the bottom wall of the container, the flap 24 is first folded over as seen in FIG. 3. The flaps 21, 23 are folded to lapping engaging relation with flap 24, and in this position the free edge 3 of flap 24 is substantially even with, and aligned with the sides of slots 31, 32 that are remote from flap 22.

Folding creases 35, 36 in flap 22 extend divergently from the closed ends of slots 31, 32 to the end edges of flap 23 at approximately the crease 1, and the portions 37, 38 outwardly of these creases 35, 36 are folded against the underside of the flap 23 as the latter is folded downwardly toward the previously folded flaps 24, 21, 23.

Upon the flap 22 being folded against the previously folded flaps, and to horizontal position, further pressure against flap 22 toward the inside of the container will result in the tab 33 slipping through slots 26, 27 and past the free outer edge of flap 22 so that subsequent release of the pressure on said flap 22 will result in its



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springing back to horizontal carrying flaps 21, 23, 24 with it and tab 33 (FIG. 6) will then lock the bottom wall of the container against unfolding outwardly. The portions 37, 38 on flap 22 not only tend to hold the bottom flaps stiffened but they provide an extra layer of cardboard in the bottom, which is highly desirable.

The slots and creases described in the blank of FIG. 1 are all readily formed on a rotary press, whereas were any diagonal cuts formed, the blank would, of necessity have to be die cut. In structure heretofore employed that is somewhat similar to the above, special die cuts were required.

The blank of FIG. 7 is a modification of the blank of FIG. 1. In said blank of FIG. 7, parallel, spaced creases 40, 41 correspond to creases 1, 2 of FIG. 1 and transverse creases 42, 43, 44 correspond to creases 5, 6, 7, and said creases 40—44 coact to define panels 45, 46, 47 and 48, from left to right in FIG. 7. If desired, an end flap 49 may project from the outer end of panel 45, with a folding crease 50 defining the juncture between said flap 49 and panel 45. This end flap is adapted to lap over the marginal portion of panel 48 along its free end edge 52 at the outer end of the blank for stapling to said marginal portion when the blank is folded in forming the carton. Obviously this variation could be used relative to the blank of FIG. 1.

Top flaps 53, 54, 55 and 56 are integral with panels 45—48 along crease 41 while bottom end flaps 57, 58, 59 and 60 are integral with panels 45—48 along crease 40. These panels 57—60 are of equal width, transversely of the blank. Panels 45, 47 are in opposed relation when the blank is folded, and panels 46, 48 are also in opposed relation at that time. These panels form the side walls of the container.

In the drawings, panels 45, 47 are longer than panels 46, 48, longitudinally of the blank and the widths of flaps 58, 60 in a direction at right angles to crease 40, is such that when they are folded toward each other which is the first step in forming the bottom wall, they preferably will not overlap along their free end edges, which edges are designated 61 and constitute one of the free longitudinally extending edges of the blank, and defines the free outer edges of all the flaps 57—60.

The flaps 57, 59 may, on the other hand, be of a width that extends completely across the container from substantially one side to the other, as the proportions of panels 45—48 relative to flaps 57 to 60 may be such that they extend only partially across the open bottom end of the container, generally as seen in FIGS. 1 to 6.

In FIGS. 7 to 11 the flaps 57, 59 each extends substantially across the bottom end of the container when folded to form the bottom wall of the container.

The flap 59 is formed with a pair of spaced slots 63, 64 along the free edge 61 of the blank, and which slots are preferably equally spaced from the end edges of flap 59. Folding creases 65, 66 extend from the closed ends of slots 63, 64 substantially to the corners of the flap 59 at crease 40. This structure is similar to that of flap 22 of FIG. 1.

The marginal portion of the flap 59 between slots 63, 64 provides a tab 67, the width of which, perpendicular to said free edge 61, may vary according to the lengths of slots 63, 64 but preferably the distance is only a fraction of the total width of flap 59.

Flap 57, which is on panel 45 that is opposite to the panel 47 that carries flap 59, is formed with a closed, elongated slot 68 that is parallel with crease 40 and adjacent to, but spaced from said crease a distance at least equal to the width of tab 67. The length of this slot is preferably slightly greater than the length of tab 67.

In forming the container, the bottom flaps 58, 60 are first folded to coplanar relation across the open bottom end of the container, and this flap 57 is folded over flaps 58, 60. Finally flap 59 is folded over the flap 57 and when flap 59 is pressed toward the inside of the con-

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tainer past a flat horizontal position, it will bend along folding creases 65, 66 until the free outer edge of tab 67 slips through slot 68. Upon release of the pressure on the flap 59 it will spring back to horizontal with the tab 67 extended through slot 68 below the flap 57 and said tab 67 will lock the bottom flaps 57, 59 together.

The folding creases 35, 36 of FIG. 1 and 65, 66 of FIG. 7 function to facilitate bending these flaps to effect the locking of the flaps by tabs 33 and 67.

It is obvious from the foregoing that the ends of the blanks may be secured together with the blanks folded flat for shipment, and later set up as needed. Also the bottom flaps may be disengaged for collapsing the containers. However, when they are in use holding produce or particles of any kind, the bottom flaps will be securely locked against separation in an outward direction.

In the container of FIGS. 7 to 11, the marginal portions 71, 72 outwardly of the pair of slots 63, 64 preferably extend over the flap 57 outwardly of the ends of the slot 68.

I claim:

1. A substantially oblong blank of cardboard formed with a plurality of spaced folding creases extending thereacross at right angles to the longitudinal axis thereof defining four side walls of a rectangular container when said blank is folded along said creases and when the ends of the blank are connected, separate folding flaps integral with said blank along one of the longitudinally extending edges of the latter providing four bottom closure flaps adapted to be folded to form the bottom wall of said container when the said ends of said blank are connected, a folding crease formed in said blank parallel with said one of the longitudinally extending edges of said blank about which said flaps are so foldable, said flaps being rectangular in outline and having straight, substantially continuous, aligned outer free edges parallel with said last mentioned folding crease when said blank is flat, one flap of said four thereof being formed with a pair of spaced slots disposed normal to and opening outwardly of the outer free edge thereof, said slots being spaced apart a distance substantially greater than their lengths and extending into said one flap a relatively small distance across said one flap thereby providing an elongated tab between said pair of slots extending longitudinally of said outer edge, said one flap, excepting said tab, being adapted to overlap portions of all of the other three flaps and to be outermost relative to the inside of such container when the blank is folded to form a container, two of said other three flaps being adjacent to said one flap at opposite ends of the latter and foldable along said folding crease toward each other to coplanar relation with their outer free edges adjacent to each other when said flaps are folded to form said bottom wall, said two of said other three flaps being formed with aligned slots opening toward each other outwardly of their said free outer edges when said flaps are folded to form said bottom wall, and said tab being adapted to extend through said slots in said two of said other three flaps when said one flap is in said lapping relation to said last mentioned two of said other flaps to hold said one flap and said two of said other three flaps together.

2. A substantially oblong blank of cardboard formed with a plurality of spaced folding creases extending thereacross at right angles to the longitudinal axis thereof defining four side walls of a rectangular container when said blank is folded along said creases and when the ends of the blank are connected, separate folding flaps integral with said blank along one of the longitudinally extending edges of the latter providing four bottom closure flaps adapted to be folded to form the bottom wall of said container when the said ends of said blank are connected, a folding crease formed in said blank parallel with said one of the longitudinally extending edges of said blank about which said flaps are so foldable, said flaps each being rectangular in outline and having outer free edges



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parallel with said last mentioned folding crease, one flap of said four thereof being formed with a pair of spaced slots disposed normal to and opening outwardly of the outer free edge thereof, said slots being spaced apart a distance substantially greater than their lengths and extending into said one flap a relatively small distance across said one flap thereby providing an elongated tab between said pair of slots extending longitudinally of said outer edge, said one flap being adapted to overlap portions of all of the other three flaps and to be outermost relative to the inside of such container when said flaps are folded to form said bottom wall, one portion in one of said other three flaps being adapted to be in direct lapping engagement with said one flap and being formed with a slot through which said tab is adapted to pass and in which it is adapted to be releasably held when said flaps are so folded to form said bottom wall for holding said flaps together in lapping relation, divergent folding creases formed in said one flap extending divergently from the closed ends of the slots of said pair to the ends of said one flap at said longitudinally extending edge of said blank to facilitate bending the end portions of said one flap that adjoin the portion between said divergent creases relative to said last mentioned portion, said end portions of said one flap being bendable along said last mentioned creases to positions between said portion that is between said divergent creases to thereby provide an additional layer for said bottom wall and to stiffen said one flap.

3. A substantially oblong blank of cardboard formed with a plurality of spaced folding creases extending thereacross at right angles to the longitudinal axis thereof defining four side walls of a rectangular container when said blank is folded along said creases and when the ends of said blank are connected; separate folding flaps integral with said blank along one of the longitudinally extending

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edges of the latter providing four bottom closure flaps adapted to be folded to form the bottom wall of said container when the said ends of said blank are connected, a folding crease formed in said blank parallel with said one of the longitudinally extending edges of said blank about which said flaps are so foldable, said flaps each being rectangular in outline and having free outer edges substantially parallel with said last mentioned folding crease, one flap of said four thereof being formed with a pair of spaced slots disposed normal to and opening outwardly of the outer free edge thereof, said slots being spaced apart a distance substantially greater than their lengths providing an elongated tab between them extending longitudinally of said outer edge, two flaps of the remaining three being adjacent to said one flap at two opposite edges of said one flap, each of said two flaps being formed with a slot opening outwardly of the outer free edges thereof, said four flaps each being adapted to be folded to a position perpendicular to the side wall with which it is integrally connected to form the bottom wall of said container when the ends of said blank are connected, said one flap being the outermost flap of said bottom wall relative to the inside of the container.

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