(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 637 461 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
22.03.2006 Bulletin 2006/12

(51) Int Cl.:
B65D 5/54 *(2006.01)* ***B65D 5/72*** *(2006.01)*

(21) Application number: **05021006.1**

(22) Date of filing: **12.12.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
LT LV RO

(30) Priority: **12.12.2000 US 255543 P**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
01991100.7 / 1 360 116

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Remarks:
This application was filed on 27.09.2005 as a divisional application to the application mentioned under INID code 62.

(54) Carton with access dispenser

(57) A carton for cylindrical articles, such as cans, comprises a generally tubular structure formed from a top wall, a bottom wall and a pair of side walls connecting together the top and bottom wall, and an end wall at each end of the carton which closes the ends of the tubular structure to secure the articles therein. At least one end of the carton has access means for removal of the carton contents. The access means comprises an upper portion of an end wall, and adjacent, integral portions of the top and side walls. These portions can be divorced as a unit from that end of the carton to form a removable trough. The extent of the trough provided by the upper portion of the end wall is significantly greater that the remaining part of that end wall which provides a stopper wall to restrain egress of the lower row of articles from the carton whereby access for removal of the endmost articles, when present, is facilitated.

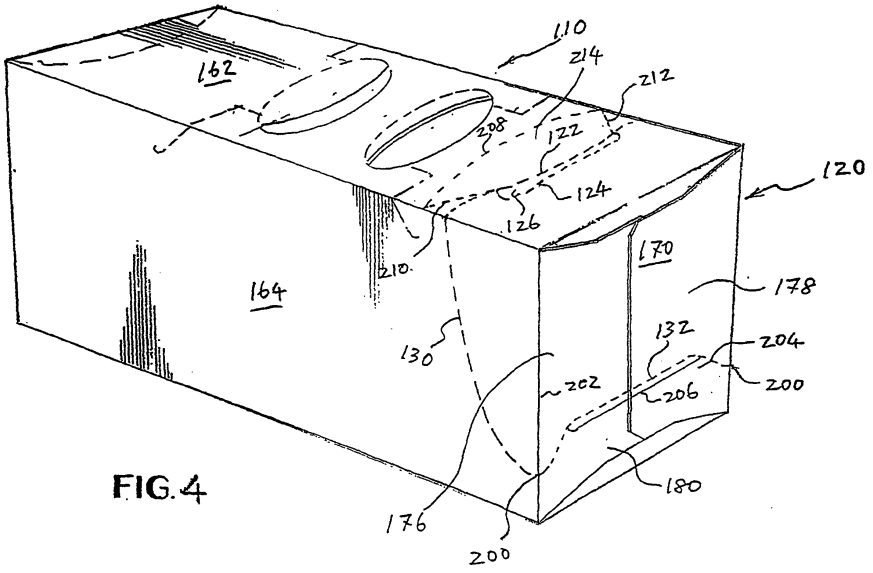

FIG. 4

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Description

[0001] The invention relates to cartons, and more particularly, to a carton for multiple articles, such as cans, having access means for removal of individual articles.

[0002] Cartons for encasing multiple articles are useful for enabling consumers to obtain and transport a desired quantity of individual articles such as soft drinks or other beverages. When such a multiple-pack of articles is obtained, a consumer frequently desires to remove one article from the carton at a time. Thus, it can be appreciated that it would be desirable to have a carton with access means that facilitates the removal of a single article from the carton at a time.

[0003] When the articles contained in the carton are cylindrical, and are disposed in the carton in rolling contact with one another, it is important that the articles be constrained such that, when one is removed, the remaining articles do not roll out of the carton. It is also important that the access means provide a condition where the articles are easily accessed. It is further often desirable when removing individual articles from a carton to be able to determine how many articles remain in the carton.

[0004] The invention provides a carton for cylindrical articles, such as cans, comprising a generally tubular structure formed from a top wall, a bottom wall and a pair of side walls connecting together the top and bottom wall, an end wall at each end of the carton which closes the ends of the tubular structure to secure the articles therein, at least one end of the carton having access means for removal of the carton contents, wherein the access means comprises an upper portion of an end wall, and adjacent, integral portions of the top and side walls wherein said portions can be divorced as a unit from that end of the carton to form a removable trough characterized in that the extent of the trough provided by said upper portion of the end wall is significantly greater than the remaining part of that end wall which provides a stopper wall to restrain egress of the lower row of articles from the carton whereby access for removal of the endmost articles, when present, is facilitated.

[0005] According to a feature of the invention, the trough is defined in part by a frangible connection which extends across the top wall adjacent said one end of the carton, and extends into each of the opposed side walls and by a weakened fold line which extends across said one end wall wherein the frangible connections present in the side walls are curvilinear to expose more of the ends of the endmost cans, when present, than otherwise would be exposed with a similar but linear frangible connection. Preferably, the frangible connection extends across the top wall substantially parallel to an upper edge of said one end wall. It is also preferable that the upper edge of the stopper wall is defined by the hinged connection between the trough and the said remaining part of the end wall and which is provided by a part of the weakened fold line extending across said end wall.

[0006] An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is an isometric illustration of a carton having access means in accordance with a first embodiment of the invention,

Fig. 2 is an isometric illustration of the carton of Fig. 1 with the removable trough pivoted away from the upper portion of the end portion of the carton,

Fig. 3 is a plan view of a blank for forming the carton shown in Figs. 1 and 2,

Fig. 4 is an isometric illustration of a carton having access means in accordance with a preferred embodiment of the invention,

Fig. 5 is an isometric illustration of the carton of Fig. 4 with the removable trough pivoted down to an opened position, and

Fig. 6 is a plan view of a blank for forming the carton shown in Figs. 4 and 5.

[0007] Referring to Figs. 1 to 3 which illustrate an embodiment of the present invention, the same reference numerals are used to denote the same or like features of the carton.

[0008] For convenience of understanding, reference may be made to Figs. 1, 2 and 3 simultaneously. Figs. 1 and 2 illustrate a carton 10 having access means in accordance with the invention. Fig. 3 illustrates the blank 12 from which the carton of Figs. 1 and 2 is formed. Cans "C" arranged in a 6 x 2 array are shown in Figs. 1 and 2 as an aid in understanding the invention. More specifically, the cans "C" are arranged in a group consisting of two vertically disposed tiers each including six cans. The cans "C" in each tier are disposed on their sides in a side-by-side parallel fashion so that they are in rolling contact with one another and the cans of the lower tier are in rolling contact with the bottom wall.

[0009] Referring to Fig. 3, the blank 12 include four primary panels for forming the carton walls, i.e., a first side wall panel 64, a top wall panel 62, a second side wall panel 66 and a bottom wall panel 68 foldably connected one to the next along fold lines 82, 84 and 86. A glue flap 88 is foldably connected to the first side wall panel 64 along a fold line 90.

[0010] Reference numerals 72, 72a, 74, 74a, 76, 76a, 78, 78a designate end flaps foldably connected the ends of the primary panels 62, 64, 66, 68. The end flaps arranged along each of the upper and lower edges (as viewed in Fig. 3) of the blank 12 form a composite end wall such as shown at 70 in Fig. 1.

[0011] To form an erected carton from the blank 12, the first side wall panel 64 is folded along the fold line 82 to lie flat on the top wall panel 62. Glue is applied to the

glue flap 88, and then the bottom wall panel 68 is folded along the fold line 86 to lie flat on the second wall panel 66. By this means, the bottom wall panel 68 is glued to the glue flap 88, and thereby a flat tubular carton is provided. The flat tubular carton is then expanded into an open-ended tubular form. After cans are loaded through one or both of the open ends of the carton, the end flaps 72, 72a, 74, 74a, 76, 76a, 78, 78a are folded to form the respective end walls to thereby close the ends of the carton. To form the end wall 70, the top and bottom end flaps 72 and 74 are folded to their respective vertical positions. Glue is applied to the outside faces of the end flaps 72 and 74, and then the side end flaps 76 and 78 are folded in the described sequence onto the top and bottom end flaps 72 and 74. This causes the side end flaps 76 and 78 to be glued to the top and bottom end flaps 72 and 74. In the closed position show in Fig. 1, the side end flaps 76 and 78 overlap each other and are secured together also by means of glue. The other end wall (not shown) of the carton is formed in like manner by end flaps 72a, 74a, 76a and 78a.

[0012] An erected carton is shown in Fig. 1 wherein a trough 20 is integrally formed at an end portion of the carton 10 to be displaceable to form a dispenser. A hand-hole punch-through means for grasping the trough 20 is formed in the top wall 62 by a weakened line of severance 22 and a weakened fold line 24. Together, these two lines 22 and 24 form the hand-hole punch-through means and define an elliptical panel 26 on the cusp of the trough 20 adjacent the remainder of the carton 10 that can be grasped to pull down the trough 20 and reveal the dispenser area or opening 50. A weakened severance line or tear line 30 is formed in each of the opposed side walls 64 and 66 and extends from the top wall 62 to the composite end wall 70. In the embodiment illustrated, the tear line lines 30 are of arcuate configuration. They are curved or arched concavely toward the end wall 70. The tear lines 30 intersect a frangible or otherwise weakened fold line 32 of joinder that is formed in the side end flaps 76 and 78 to extend between the side walls 64 and 66 entirely across the end wall 70.

[0013] Referring now particularly to Fig. 2, therein is illustrated the manner in which the trough 20 has been substantially removed from the carton 10 at the upper corner region and remains hingedly attached to the lower portion of the end wall 70 along the weakened fold line 32. With the trough 20 pivoted downward, the dispenser opening 50 is revealed. Constraining tab members 40 and 42 formed from the bottom end flap 74 are visible through the dispenser opening 50.

[0014] The cans "C" become accessible through the opening 50 by at least substantially detaching the trough 20 from the carton 10. Although the trough 20 can be completely removed by detaching it from the carton along the weakened fold line 32 that forms its hinge, when it remains attached, as shown, it serves as a handy mechanism for receiving an article (a can "C"), particularly when the dispenser is first opened. When the trough 20 is pivoted down to an opened position as shown in Fig. 2, the upper edge 21 of the end wall 70 is brought into contact with a support surface on which the carton is placed. This allows the trough 20 to be also supported by the support surface to be able to receive and properly support a can.

[0015] When the trough 20 is in the opened position or completely detached, the lower portion of the end wall 70 forms a stopper wall 80 that extends all the way between the side walls 64 and 66 along the cylindrical axis X-X (see Fig. 2) of the end most can of the lower tier adjacent the stopper wall 80. The upper edge of the stopper wall 80 is defined by the weakened fold line 32 that is spaced above the bottom wall 68 (see Fig. 3) at a distance less than the diameter of the cans "C", and preferably no more than a half of the diameter of the cans "C". The stopper wall 80 by itself is capable of inhibiting the cans on the lower tier from inadvertently exiting the carton before intended removal. However, an additional can stopper may be used. Such an additional stopper is provided by the constraining tab members 40 and 42. The respective upper or highest points on the tabs 40 and 42 may be disposed above the bottom wall 68 at a distance greater than a half of the diameter of the cans and less than the diameter of the cans. Thus, the constraining tabs 40 and 42 are shown in Fig. 2 as projecting upwardly beyond the upper edge 32 of the stopper wall 80. The contents of the carton are easily viewed through the dispenser opening 50.

[0016] Because each tear line 30 extends across the adjacent end of the endmost can "C" in the lower tier, the opposite ends of the endmost can "C" are partially exposed as shown in Fig. 2 so that a user can easily grasp that can by the opposite ends. The curvature of the tear lines 30 help to increase the exposed areas of the can ends. After the top, end-most can (the can "C" in the trough) is removed from the upper tier, the remaining cans C in the upper tier will nest in the spaces between the cans of the lower tier. Nesting of cans in this manner is well known in the art and is not illustrated. The invention serves as a useful dispensing carton that can be placed upon a surface within a compartment such as a refrigerator or pantry.

[0017] A preferred embodiment of the invention is shown in Figs. 4 to 6, where like parts have been designated by like reference numerals but with the prefix "1" and only the differences are discussed in any greater detail below.

[0018] Referring to Fig. 5, cans "C" in this embodiment are arranged in a group consisting of two vertically disposed tiers each including five cans. The cans in each tier are disposed on their sides in a side-by-side parallel fashion. Thus, as in the first embodiment, the cans are in rolling contact with one another and the cans of the lower tier are in rolling contact with the bottom wall.

[0019] Referring to Fig. 6, the blank of the carton has a pair of bottom wall panels 168a and 168b that are secured together to form a composite bottom wall when the

blank is erected into a carton. The inner or upper bottom wall panel 168a is foldably connected to the first side wall panel 164 along a fold line 190 while the outer or lower bottom wall panel 168b is foldably connected to the second side wall panel 166 along a fold line 186. Each bottom wall panel is provided at its opposite ends with end flaps 100 or 102. The end flaps 100 on the inner bottom wall panel 168a are glued respectively to the end flaps 102 on the outer bottom wall panel 168 to form full bottom end flaps similar to the end flaps 74 and 74a in the first embodiment.

[0020] Fig. 4 illustrates a carton 110 formed from the blank 112 of Fig. 6. The tear lines 130 extend from the top wall 162 to their respective lowest points 200 on the end edges 202 of the respective side walls 164 and 166. The lowest point 200 is spaced above the composite bottom wall at a distance, preferably, no more than a half of the diameter of the cans "C" to provide a maximum exposed area of the respective can end when the trough 120 is detached from the carton 110.

[0021] As shown further in Fig. 4, the weakened fold line 132 is curved, or bent, to assume an inverted "U" shape, which defines a constraining tab 204 along the upper straight portion of the weakened fold line 132. The lowest points on the weakened line 132 are located at its opposite ends 200 which are in registry with the lower ends of the tear lines 130. Therefore, the constraining tab 204 projects above the lowest points 200. The weakened line 132 is located above the composite bottom wall at a distance, preferably, greater than a half of the diameter of the cans "C" and less than the diameter of the cans "C". Stated differently, the weakened fold line 132 is positioned considerably closer to the bottom wall than to the top wall 162. As best shown in Fig. 5, the weakened fold line 132 partially breaks near its opposite ends when the trough 120 is brought to the opened position; however, the straight portion of the line 132 remains unbroken to serve as a fold line.

[0022] Unlike the first embodiment, the tabs 140 and 142 (see Fig. 6) on the end flaps 100 and 102 do not project upwardly beyond the weakened line 132. However, they are disposed flat with the inside face of the constraining tab 204 and thereby function to reinforce the constraining tab 204.

[0023] Reference numeral 206 designate a half cut formed in the constraining tab 204 and extending along the weakened fold line 132. The half cut 206 may be used to facilitate removal of the trough 120 when it is desired to completely detach the trough 120 from the carton 110. Reference numerals 208, 210 and 212 designate fold lines formed in the top wall 162 to define a yielding panel 124. The yielding panel 214 is easily displaced downwardly when pressed downwardly. Therefore, the yielding panel 214 is useful to facilitate breaking of the severance line 122 during the process of grasping the trough 120 by the hand-hole punch-through means or elliptical panel 126. The stopper wall 180 is created in the same manner as in the first embodiment and extend entirely across the dispenser opening 150 along the cylindrical axis X-X (see Fig. 5) of the endmost can "C" of the lower tier. Thus, the height of the end wall remaining when the detachable trough is put into its open position is significantly less than the extent of the trough between the frangible connection and the top 121 of the end wall of the trough.

[0024] Modifications may be made in the foregoing without departing from the scope of the claimed invention. For example, the dispenser may be formed at each end of the carton according to the invention. It should be also appreciated that as used herein, references such as "top", "bottom", "end", "side", "upper" and "lower" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another.

[0025] It should be further appreciated that any reference to hinged or foldable connection should not be construed as necessarily referring to a single fold line only: indeed, it is envisaged that a hinged connection can be formed from one or more of the following, a score line, a frangible line or a fold line, without departing from the scope of invention.

Claims

1. A carton (10,110) for cylindrical articles (C), such as cans, comprises a generally tubular structure formed from a top wall (62, 162), a bottom wall (68, 168a, 168b) and a pair of side walls (66, 166, 64, 164) connecting together the top and bottom wall, an end wall (70) at each end of the carton which closes the ends of the tubular structure to secure the articles therein, at least one end of the carton having access means for removal of the carton contents, wherein the access means comprises an upper portion of an end wall, and adjacent, integral portions of the top and side walls wherein said portions can be divorced as a unit from that end of the carton to form a removable trough (20, 120) **characterised in that** the extent of the trough provided by said upper portion of the end wall is significantly greater than the remaining part of that end wall which provides a stopper wall (80, 180) to restrain egress of the lower row of articles from the carton whereby access for removal of the endmost articles, when present, is facilitated.

2. A carton according to claim 1 wherein the trough is defined in part by a frangible connection (22, 122, 30, 130) which extends across the top wall adjacent said one end of the carton, and extends into each of the opposed side walls and by a weakened fold line (32, 132) which extends across said one end wall wherein the frangible connections present in the side walls are curvilinear to expose more of the ends of the endmost cans, when present, than otherwise would be exposed with a similar but linear frangible

connection.

3. A carton according to claim 2 wherein the frangible connection extends across the top wall substantially parallel to an upper edge (21, 121) of said one end wall.

4. A carton according to claim 3, wherein the upper edge of the stopper wall is defined by the hinged (32, 132) connection between the trough and the said remaining part of the end wall (70) and which is provided by a part of the weakened fold line (32, 132) extending across said end wall.

5. A carton (10,110) for cylindrical articles (C), such as cans, comprises a generally tubular structure formed from a top wall (62, 162), a bottom wall (68, 168a, 168b) and a pair of side walls (66, 166, 64, 164) connecting together the top and bottom wall, an end wall (70) at each end of the carton which closes the ends of the tubular structure to secure the articles therein, at least one end of the carton having access means for removal of the carton contents, the access means comprising portions of an end wall, and adjacent, integral portions of the top and side walls which portions can be divorced as a unit from that end of the carton to form a removable trough (20, 120) and wherein the trough is defined in part by a frangible connection (22, 122, 30, 130) which extends across the top wall adjacent said one end of the carton, and extends into each of the opposed side walls and by a weakened fold line (32, 132) which extends across said one end wall, **characterised in that** each of the frangible connections present in the side walls are curvilinear to expose more of the ends of the endmost cans, when present, than otherwise would be exposed with a similar but linear frangible connection

6. A carton according to claim 5 wherein the frangible connection extends across the top wall substantially parallel to an upper edge (21, 121) of said one end wall.

7. A carton according to claim 6, wherein the upper edge of the stopper wall is defined by the hinged (32, 132) connection between the trough and the said remaining part of the end wall (70) and which is provided by a part of the weakened fold line (32, 132) extending across said end wall.

8. A carton (10,110) for cylindrical articles (C), such as cans, comprises a generally tubular structure formed from a top wall (62, 162), a bottom wall (68, 168a, 168b) and a pair of side walls (66, 166, 64, 164) connecting together the top and bottom wall, an end wall (70) at each end of the carton which closes the ends of the tubular structure to secure the articles therein, at least one end of the carton having access means for removal of the carton contents, the access means comprising portions of an end wall, and adjacent, integral portions of the top and side walls which portions can be divorced as a unit from that end of the carton to form a removable trough (20, 120) and wherein the trough is defined in part by a frangible connection (22, 122, 30, 130) which extends across the top wall adjacent said one end of the carton, and extends into each of the opposed side walls and by a weakened fold line (32, 132) which extends across said one end wall, **characterised in that** each of the frangible connections present in the side walls are curvilinear to expose more of the ends of the endmost cans, when present, than otherwise would be exposed with a similar but linear frangible connection

9. A carton according to claim 8 wherein the frangible connection extends across the top wall substantially parallel to an upper edge (21, 121) of said one end wall.

10. A carton according to claim 9, wherein the upper edge of the stopper wall is defined by the hinged (32, 132) connection between the trough and the said remaining part of the end wall (70) and which is provided by a part of the weakened fold line (32, 132) extending across said end wall.

11. A carton (10,110 for cylindrical articles (C), such as cans, comprises a generally tubular structure formed from a top wall (62, 162), a bottom wall (68, 168a, 168b) and a pair of side walls (66, 166, 64, 164) connecting together the top and bottom wall, an end wall (70) at each end of the carton which closes the ends of the tubular structure to secure the articles therein, at least one end of the carton having access means for removal of the carton contents the access means comprising portions of an end wall, and adjacent, integral portions of the top and side walls which portions can be divorced as a unit from that end of the carton to form a removable trough (20, 120), wherein the trough is defined in part by a frangible connection (22, 122, 30, 130) which extends across the top wall adjacent said one end of the carton, and extends into each of the opposed side walls and by a weakened fold line (32, 132) which extends across said one end wall, **characterised in that** the lowermost points of the frangible connections present in the side walls are disposed below the uppermost edge of said weakened fold line when the removable trough is opened.

12. A carton (10,110) for cylindrical articles (C), such as cans, comprises a generally tubular structure formed from a top wall (62, 162), a bottom wall (68, 168a, 168b) and a pair of side walls (66, 166, 64, 164)

connecting together the top and bottom wall, an end wall (70) at each end of the carton which closes the ends of the tubular structure to secure the articles therein, at least one end of the carton having access means for removal of the carton contents, wherein the access means comprises portions of an end wall, and adjacent, integral portions of the top and side walls which portions can be divorced as a unit from that end of the carton to form a removable trough (20, 120 wherein the trough is defined in part by a frangible connection (22, 122, 30, 130) which extends across the top wall adjacent said one end of the carton, and extends into each of the opposed side walls and by a weakened fold line (32, 132) which extends across said one end wall, **characterised in that** the weakened fold line is disposed in said one end wall such that the trough can be brought into a position in which that end of the trough remote from the weakened fold line lies in a plane containing the bottom wall of the carton.

13. A carton according to claim 12, wherein the upper edge of the stopper wall is defined by the hinged (32, 132) connection between the trough and the said remaining part of the end wall (70) and which is provided by a part of the weakened fold line (32, 132) extending across said end wall.

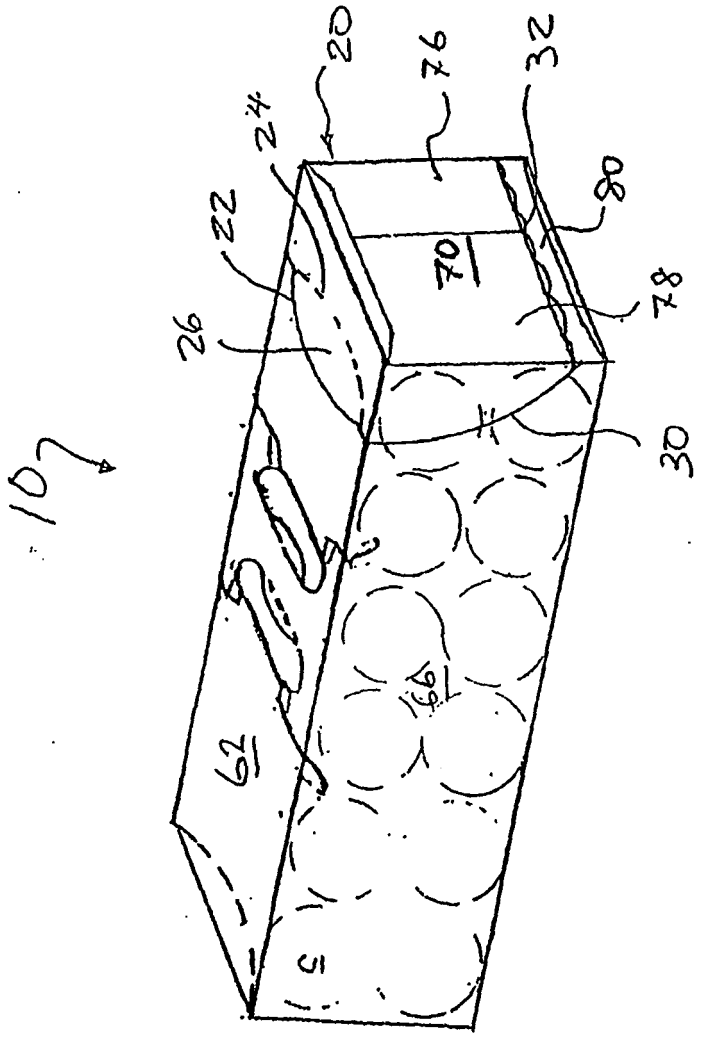

Fig. 1

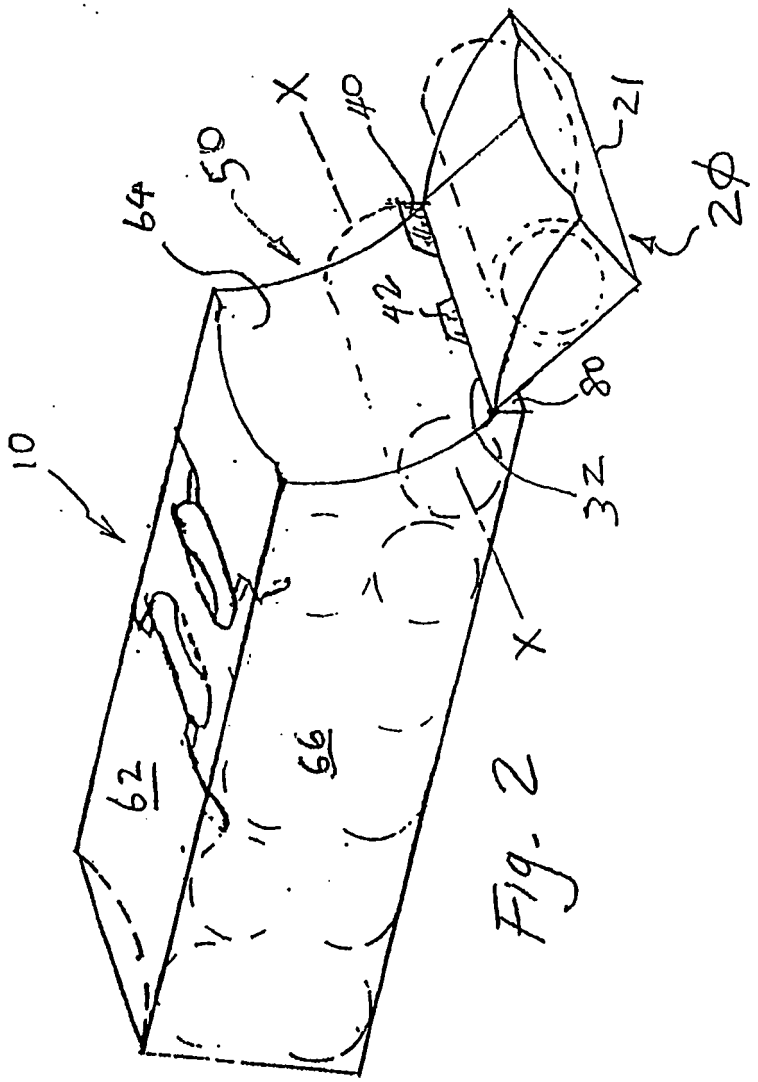

Fig. 2

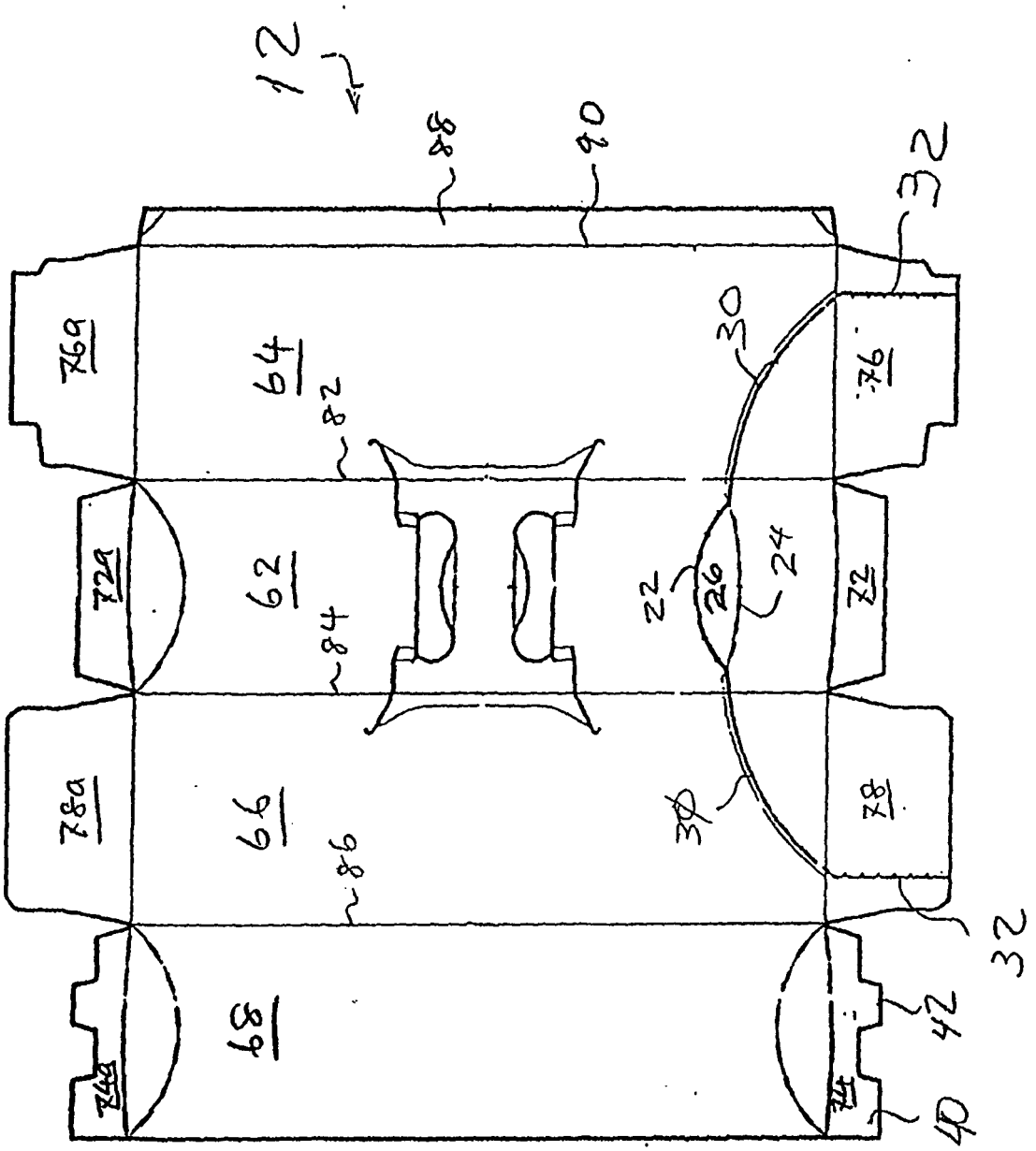
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Fig. 3

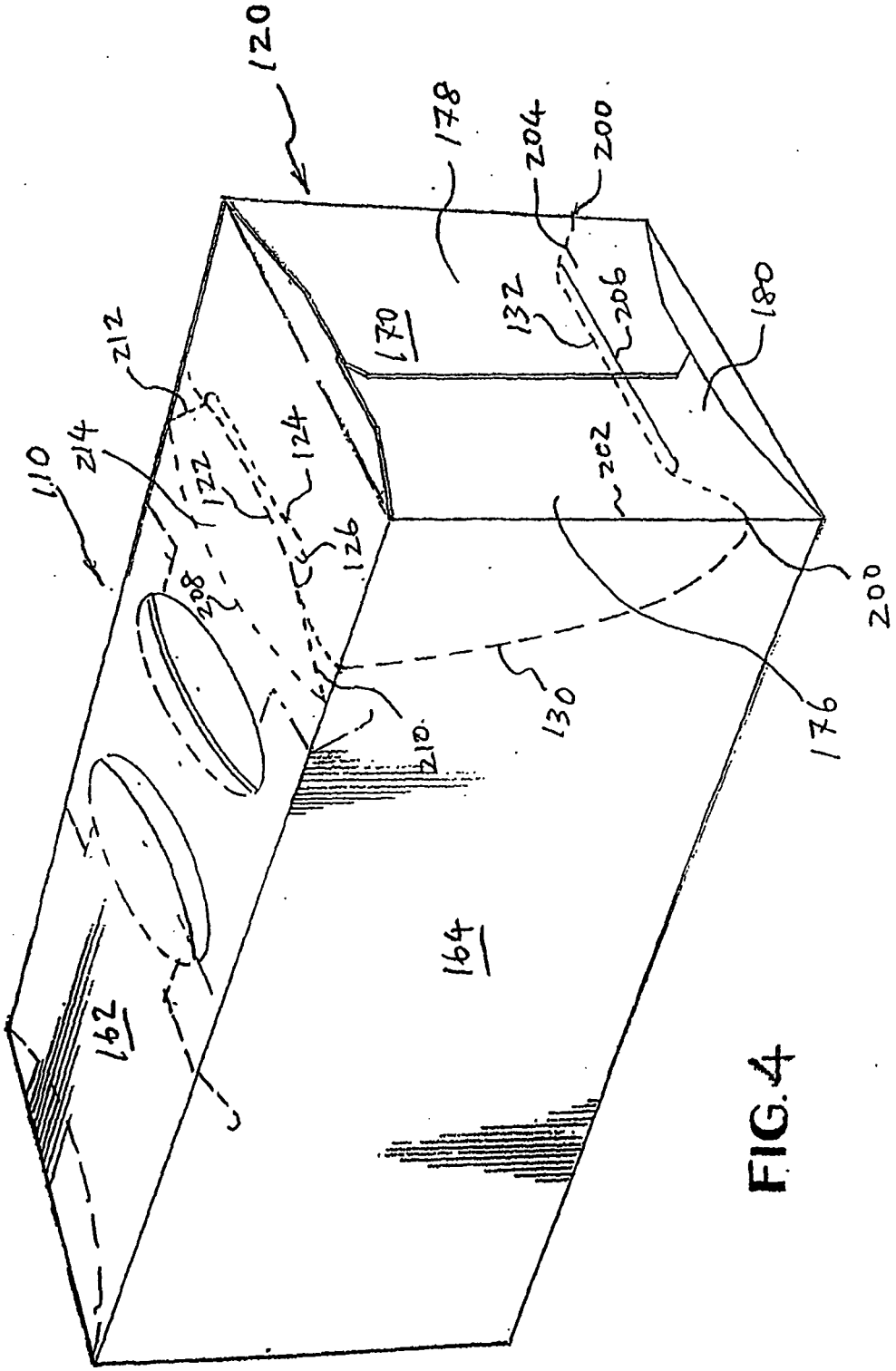
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FIG. 4

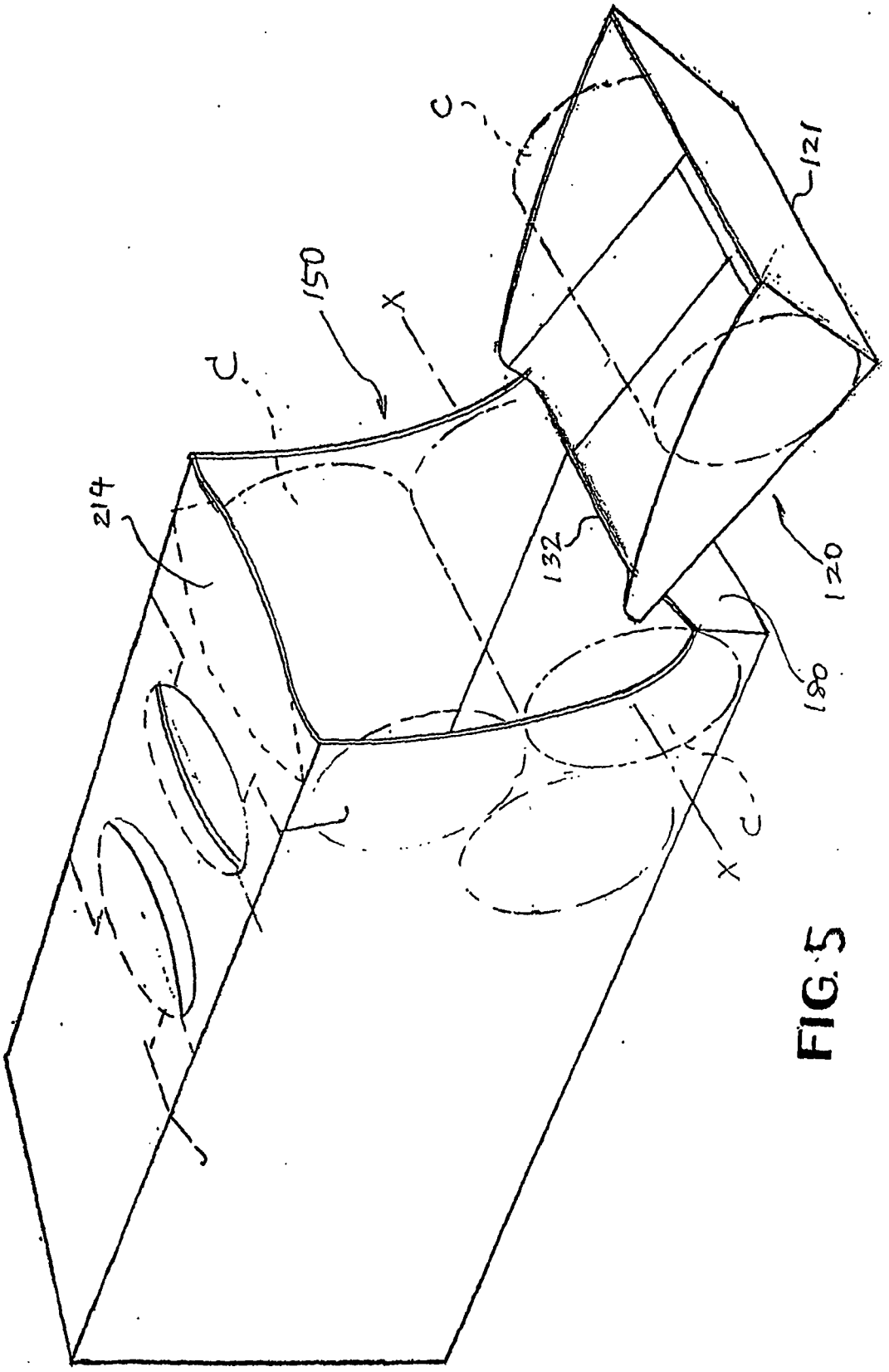

FIG. 5

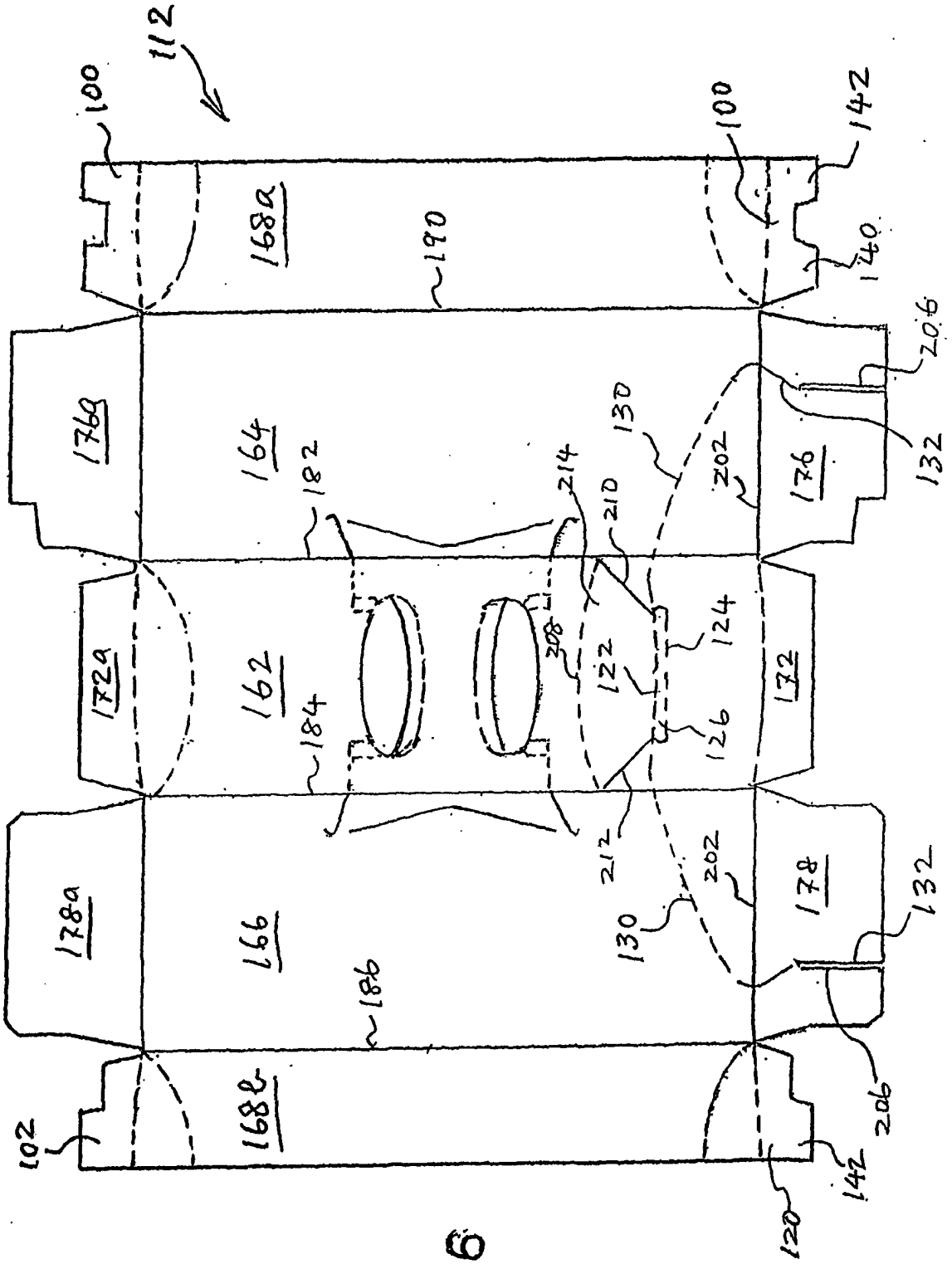
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FIG.6