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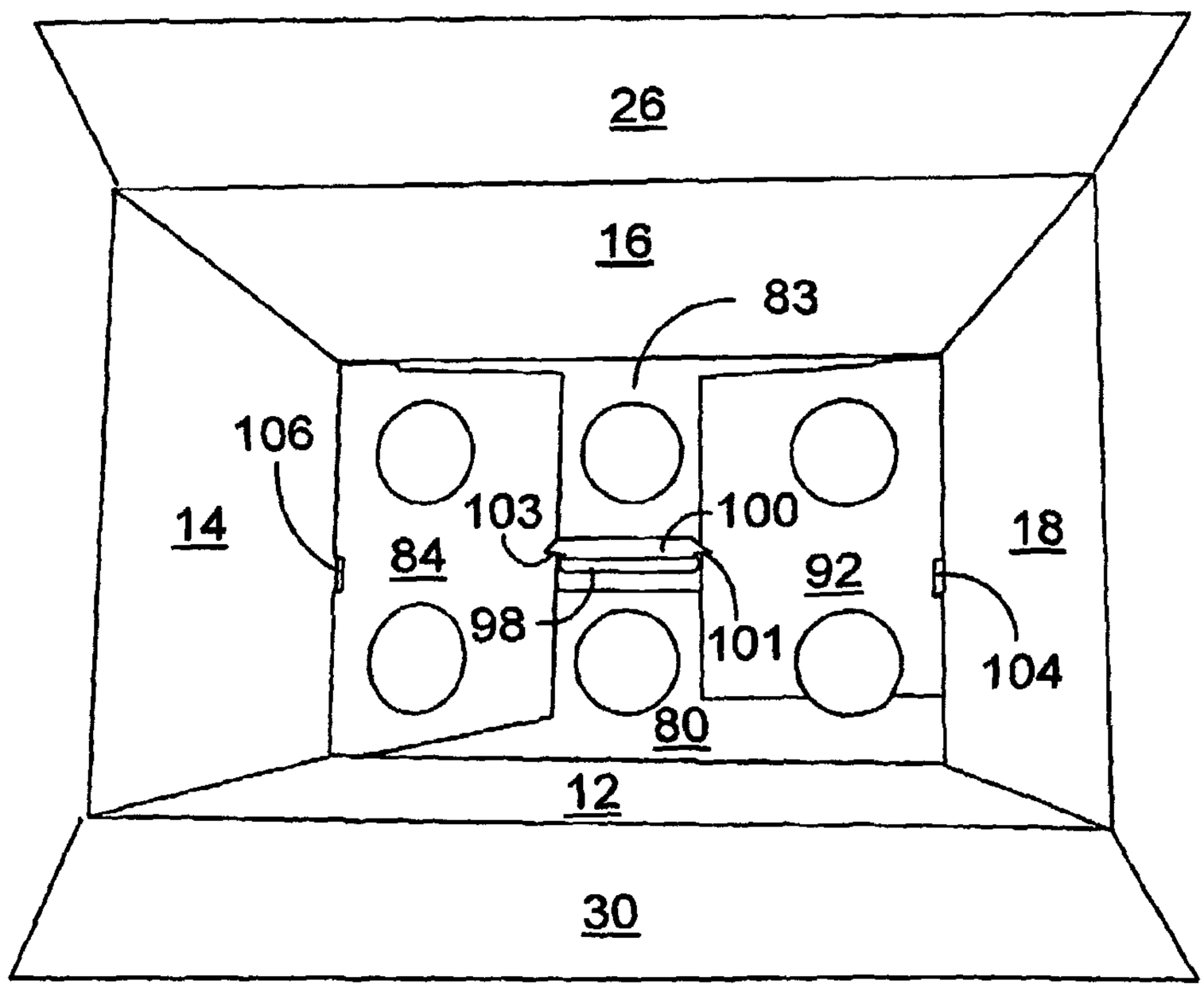
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(54) Titre : CARTON PORTE-BOUTEILLES ET DECOUPE D'UN TEL CARTON
(54) Title: CARTON AND CARTON BLANK



(57) Abrégé/Abstract:
A carton and a blank for forming a carton having a plurality of wall panels (12, 14, 16, 18) for forming a tubular structure and an end wall arrangement for closing one end of the tubular structure. The end wall arrangement is formed from at least three end flaps (80, 84, 83) hingedly connected to corresponding wall panels (12, 14, 16) of the structure, wherein one of the flaps (80) is provided with a locking means (100) to engage the other flaps (84, 83), thereby to secure the flaps (80, 84, 83) together.

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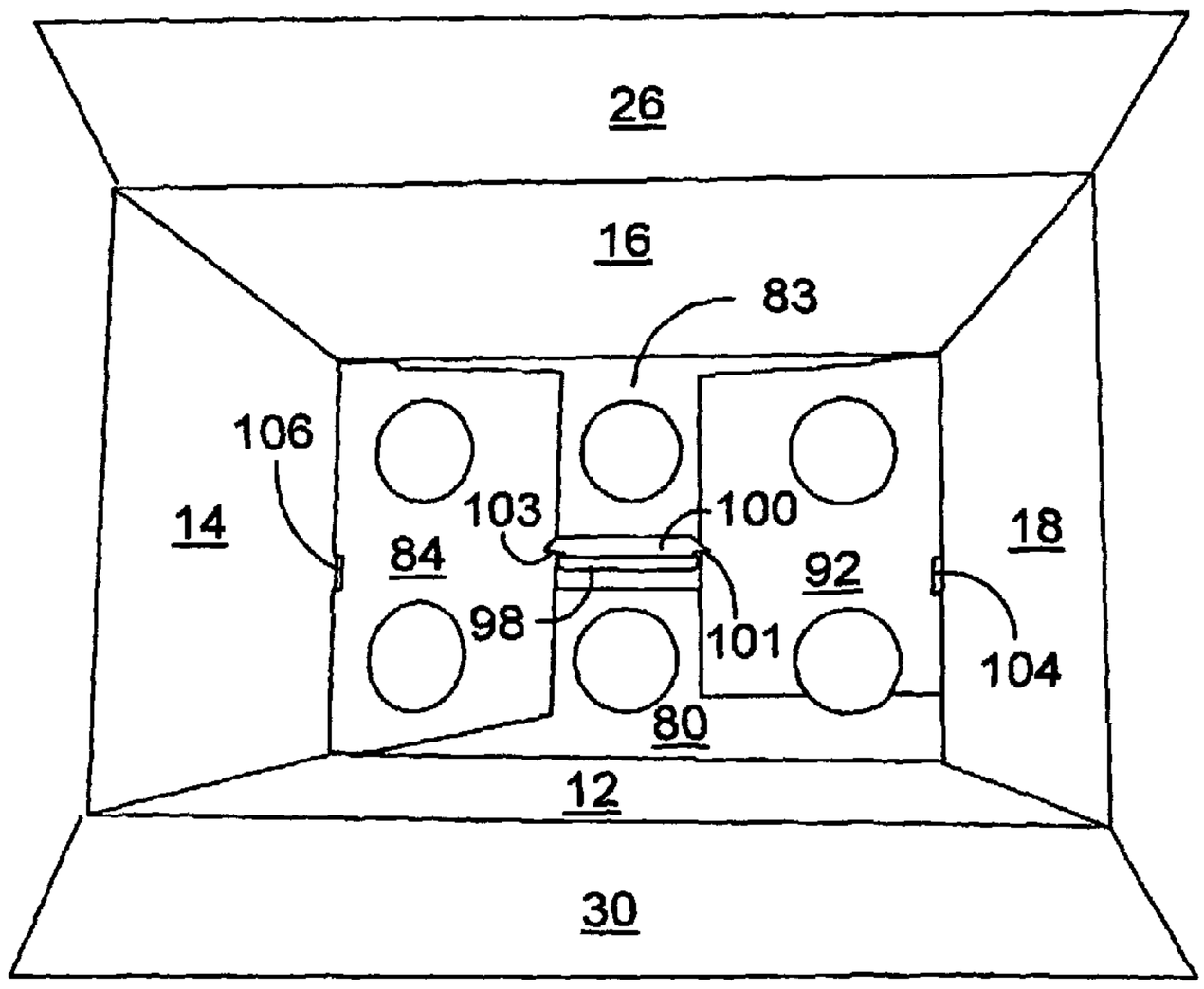
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(54) Title: CARTON AND CARTON BLANK



(57) Abstract: A carton and a blank for forming a carton having a plurality of wall panels (12, 14, 16, 18) for forming a tubular structure and an end wall arrangement for closing one end of the tubular structure. The end wall arrangement is formed from at least three end flaps (80, 84, 83) hingedly connected to corresponding wall panels (12, 14, 16) of the structure, wherein one of the flaps (80) is provided with a locking means (100) to engage the other flaps (84, 83), thereby to secure the flaps (80, 84, 83) together.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

CARTON AND CARTON BLANK

Background of the Invention

The invention relates to a carton and blank for forming a carton for carrying a plurality of articles, for example bottles, and an access structure.

The invention is particularly useful where it is desirable for cartons containing articles to be enclosed, to protect the or each article, for example bottles. Furthermore, the carton should be re-closable to be re-used.

One example of a re-closable sleeve formed from one or more blanks of paperboard is found in US 3 078 030 which illustrates a carton having integral hinged tops which is reclosable.

In US 1 941 514, there is illustrated a carton with a top structure formed from four flaps. Each flap is provided with a locking tab to engage the opposing flap. A problem associated with this carton is that each of the flaps needs to be carefully aligned in order to be secured together as each flap comprises a locking tab. The article is contained within the carton of US'514 which makes it possible for the panels to be folded and manipulated. However, in automated packing, it is necessary to load articles into the cartons at high speeds. Therefore, it is undesirable to have a complicated arrangement for forming an end closure structure.

Summary of the Invention

The present invention and its preferred embodiments, seek to overcome or at least mitigate the problems of the prior art.

A first aspect of the present invention provides a carton having a plurality of wall panels for forming a tubular structure and an end wall arrangement for closing one end of the tubular structure. The end wall arrangement is formed from at least three end flaps hingedly

connected to corresponding wall panels of the structure, wherein one of the flaps is provided with a locking means to engage the other flaps, thereby to secure the flaps together.

Preferably, the locking means may comprise a tab extending from the end edge of said first flap adapted to be received in an aperture formed in the opposing flap to secure the first and opposing flaps together.

More preferably, the locking means may further comprise a tongue extending from a side edge of said first flap for engagement with an adjacent wall panel and wherein the said adjacent wall panel may be formed with a notch or opening to receive the tongue.

Preferably, the locking means further comprises a second tongue extending from a side edge of said first flap for engagement with an adjacent wall panel and wherein the said adjacent wall panel is formed with a notch or opening to receive the tongue.

Optionally the carton comprises a vertical tubular body and the end wall arrangement may be recessed.

Each adjacent wall panel may further comprise a reinforcing panel folded to be disposed on the inside surface of the tubular body and wherein the reinforcing panel may be formed with the notch or opening for engagement with the tongue.

According to an optional feature of this aspect of the present invention, the recessed end wall structure may have an aperture for receiving a top portion of the article.

Preferably, the handle aperture may be formed in the tubular body portion as a position above the recessed end wall structure.

More preferably, a second handle panel may be formed in the tubular body at a position above the recessed end wall structure and opposed the first aperture.

A second aspect of the invention provides a carton having a tubular body formed of first and second opposed walls interconnected by third and fourth walls and an end wall formed of at least three end flaps, one of the end flaps having a locking tab that engages the other flaps to secure all the flaps together, said one flap is connected to the first wall, the other flaps include flaps connected respectively to the second and third walls. Preferably, the other flaps further include a flap connected to the fourth wall.

A third aspect of the present invention provides a blank having a plurality of side panels hinged together in series for forming a tubular structure and an end wall arrangement comprising at least three end flaps hingedly connected to corresponding side panels wherein one of the flaps is provided with a locking means to engage the other flaps, thereby to secure the flaps together when in a set up condition. Preferably, the locking means may comprise a tab extending from the end edge of said first flap and an aperture formed in the opposing flap.

According to an optional feature of the second aspect of the invention, the locking means may further comprise a tongue extending from a side edge of the first flap and the adjacent flap is formed with a notch or opening adapted to receive the tongue when in a set up carton.

Preferably, the locking means further comprises a second tongue extending from a side edge of said first flap for engagement with an adjacent wall panel and wherein the said adjacent wall panel is formed with a notch or opening to receive the tongue.

According to another optional feature of the second aspect of the invention, each flap may comprise a reinforcing panel folded to be disposed on the inside surface of the corresponding side panels.

According to a further optional feature of the second aspect of the present invention the or each end flaps may have one or more aperture for receiving a top portion of an article in a set up carton.

According to a yet further optional feature of the second aspect of the present invention, a handle aperture may be formed in the end flap.

A fourth aspect of the invention provides a blank for forming a carton having a tubular body formed of first and second opposed wall panels interconnected by third and fourth wall panels and an end wall formed of at least three end flaps, one of the end flaps having a locking tab that engages the other flaps to secure all the flaps together in a set up condition, said one flap is connected to the first wall panel, the other flaps include flaps connected respectively to the second and third wall panels.

Preferably, the other flaps further include a flap connected to the fourth wall panel.

Brief Description of the Drawings

Exemplary embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIGURE 1 illustrates a blank for forming a carton according to one embodiment of the invention;

FIGURES 2, 3, 4, 5, 6 and 7 illustrate the construction of an end wall arrangement of the blank shown in Figure 1;

FIGURES 8 illustrates the carton in a partially set-up condition with the end wall arrangement constructed;

FIGURE 9 is a perspective view from below illustrating the end wall arrangement in a set-up condition; and

FIGURE 10 illustrates the carton in a set-up and loaded condition.

Detailed Description of the Preferred Embodiments

Referring to the drawings, and in particular Figure 1, there is shown an embodiment of a unitary blank for forming a carton made from paperboard or similar foldable sheet material. It is envisaged that two or more blanks could be used instead without departing from the scope of the invention. It is envisaged that the carton is a fully enclosed type, although it will be recognized that the invention could be applied to a wraparound type carton or top gripping clip without departing from the scope of the invention.

Turning to Figure 1, the blank 10 comprises a first side wall panel 12, a second side wall panel 14, a third side wall panel 16 and a fourth side wall panel 18 hingedly connected one to the next in series along fold lines 20, 22 and 24 respectively.

In use, the first, second, third and fourth side wall panels are secured together to form a tubular structure, by suitable securing means known in the art. In this embodiment, the securing means is provided by a securing flap 34 hingedly connected to the first side wall panel 12 along fold line 36. In those embodiments with a recessed end wall structure, securing flap 35 is also hingedly connected to securing flap 34 along fold line 37.

One end of the tubular structure is provided with a base panel arrangement for closing that end, in which there comprises a first base panel 26 hingedly connected to the third side wall panel 16 along fold line 28 and a second base wall panel 30 hingedly connected to the first side wall panel 12 along fold line 32.

There further comprises an end closure arrangement which is provided by three or more end flaps. In this embodiment, there comprises four end flaps 80, 84, 83 and 92; each end flap is hingedly connected to a corresponding side wall panel. Therefore, end flap 80 is hingedly connected to first side wall panel 12 along fold line 44; second end flap 84 is hingedly connected to second side wall panel 14 along fold line 48; third end flap 83 is hingedly connected to third side wall panel 16 along fold line 40; and fourth end flap 92 is hingedly connected to fourth side wall panel 18 along fold line 52.

One of the end flaps 80 is provided with locking means to engage the other flaps, thereby to secure them together. It can be seen from Figure 1 that the locking means comprises a locking tab 100 extending from first end flap 80. In this embodiment, it is hingedly connected thereto along fold line 102 and extending outwardly beyond its end edge. A corresponding locking aperture 98 is struck from third end flap 83 proximate the end edge of end flap 83. In some embodiments, aperture 98 further comprises opposed cut lines which cause the outer parts of aperture to flex when the locking tab passes through it in order to reduce the likelihood of locking tab 100 deforming during the engagement process.

Locking tab 100 is preferably 'arrowhead' in shape with a shoulder portion of an increased width and a neck portion of a reduced width so as to define a pair of recesses 101, 103, illustrated in Figure 1. In use, the recesses 101, 103 engage the end edges of the second and fourth flaps 84, 92 as shown in Figure 9, thereby to secure all the flaps in a substantially face contacting relationship, described in more detail below.

In one class of embodiments, the or each end flap further comprises one or more openings 96, for receiving an upper portion of an article, for example a bottle.

Preferably, the end closure arrangement is recessed below the upper edges of the side wall panels 12, 14, 16, 18 to create a carton that reveals an upper portion of the bottles whilst providing a support structure to the bottles. Also, the bottle tops are positioned below the upper edges of the carton to protect them in transit. In order to achieve this, each of the end flaps are provided with a reinforcing panel to hingedly interconnect the side wall panels to the end flaps. Therefore, in this embodiment, there is provided a reinforcing panel 42, hingedly interconnecting end flap 80 to first side wall panel 12 along fold lines 82 and 44 respectively. Similarly, reinforcing panels 46, 38 and 50 are provided to hingedly interconnect end flaps 84, 83 and 92 to side wall panels 14, 16 and 18 respectively along fold lines 86 and 48; 90 and 40; and 94 and 52.

In those embodiments with a recessed end wall structure, the upper end flap 80 is provided with a tongue 108 extending from a side edge for engagement with a notch or opening 106 formed, at least in part, in the reinforcing panel 46. Preferably, there further comprises a second tongue 110, protruding from the opposing side edge of end flap 80 and adapted to be engaged with a second notch 104 struck from at least part of reinforcing panel 50.

In those embodiments where the end closure arrangement is recessed, it is possible to provide one or more handle panels positioned above the end wall arrangement. Thus, in this embodiment, there comprises a hand aperture 72a struck from the reinforcing panel 42 and a corresponding hand aperture 70a struck from an upper portion of side panel 12. In use, hand apertures 70a and 72a are aligned. There may further comprise tabs 74a and 76a extending into the corresponding apertures 70a, 72a and foldable to improve comfort of the user. Fold lines 78a allow the tab to flex. Similar hand apertures 70b, 72b; 70c, 72c and 70d, 72d may be provided in the other walls of the carton which are struck from corresponding reinforcing panels 46, 38 and 50 and side wall panels 14, 16 and 18.

The reinforcing panels 42, 46, 38, 50 may be hingedly connected together along fold lines 54, 56 and 58 respectively and in which case there may also comprise a slot S to aid the folding process.

Turning to the construction of the carton from the carton blank as illustrated in Figure 1, each blank requires a series of sequential folding and gluing operations which are preferably performed in a straight line machine, so that the carton and/or blank are not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements.

The first stage is to form the end wall arrangement by which the end flaps 80,84, 83 and 92 are folded inwardly in direction X (Figure 2) into face contacting arrangement with corresponding side wall panels 12, 14, 16 and 18 respectively. Reinforcing panels 42, 46, 38 and 50 are folded over into face contacting arrangement with the corresponding side wall panels along fold lines 44, 48, 40 and 52 respectively, as shown in Figure 2. Optionally, the

reinforcing panels are secured to the side wall panels by glue G (shown in hatching) or other means known in the art so that the hand apertures 70, 72 are brought into alignment, as shown in Figure 3.

The end flaps 80, 84, 83 and 92 are then folded about fold lines 82, 86, 90 and 94 in an upward direction Y shown in Figure 4.

Of course, in those embodiments without reinforcing panels, then the construction process would correspond to the next section only.

The tubular structure of the carton is formed whereby the side wall panels 12 and 18 are folded inwardly towards each other with side wall panel 18 placed in face contacting arrangement with securing flaps 34 and 35 and is secured thereto by glue or other securing means known in the art, so that the carton is in a flat collapsed condition as shown in Figure 5 ready to be supplied to the end user.

The tubular structure is then formed by separating the side wall panels 12, 14, 16 and 18 and the end wall arrangement is constructed as shown in Figures 6, 7 and 8. In some embodiments the articles are loaded before forming the end wall arrangement, although in this embodiment, the end wall is formed first and then the bottles are loaded from below.

The end flaps 84 and 92 are folded downwardly along fold lines 86 and 94 and then end flap 83 with locking aperture 98 is folded downwardly into face contacting arrangement with end flaps 84 and 92. Finally, end flap 80 is folded downwardly along fold line 82, as shown in Figure 7. At this point, the article openings 96 are in alignment so the articles can be loaded from below and into the openings 96. One advantage is that the end flaps are then held in position as they are secured together, described in more detail below.

The end flaps are secured together by punching the locking tab 100 through the locking aperture 98 so that the carton is in a position as shown in Figure 8. Preferably, the shoulders of the locking tab 100 pass beyond the end flaps 84 and 92 to engage the undersides of the

end flaps 84 and 92 so that the end edges of these flaps 84, 92 are received in the recesses 101 and 103 as shown in Figure 9. Thus, the locking means of the upper flap engages the other flaps, thereby to secure all the flaps together.

In those embodiments with the or each tongue 108, 110, they are engaged in the notches 106, 104 respectively, as shown in Figure 7.

Finally, if the articles B have not yet been loaded then this is done and the base panels 26 and 30 are folded inwardly about fold lines 28 and 32 respectively and secured together in overlapping arrangement, by glue or other means known in the art. Thus, the carton is in a set up and loaded condition ready to be supplied to an end user, as shown in Figure 10.

In order to gain access to the articles, the upper end flap 80 is pulled in an upward direction so that the locking tab 100 is disengaged from the other flap and/ or the notches. This action release the other flaps so that they can be folded in an upward direction to reveal the articles. To reclose the access structure then the process is reversed.

The present invention and its preferred embodiment relate to an arrangement for providing a reclosable access structure in a fully enclosed carton. However, it is anticipated that the invention can be applied to a variety of carriers and is not limited to those of the fully enclosed type hereinbefore described and could be used for numerous applications for example a wraparound carton.

It will be recognized that as used herein, directional references such as “top”, “base”, “end”, “side”, “inner”, “outer”, “upper” and “lower” do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only: indeed it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line, without departing from the scope of invention.

It should be understood that various changes may be made within the scope of the present invention, for example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing size or shape, alternative top and base closure structures may be used. The carton may accommodate more than one article in different arrays. Furthermore, in those embodiments employing a locking means with the or each tongue 108, 110 and corresponding notch 106, 104, it is not necessary for the locking function provided by recesses 101, 103 to be incorporated in the invention and vice versa.

CLAIMS

1. A carton including first, second, third and fourth wall panels for forming a tubular structure and an end wall arrangement for closing one end of the tubular structure, the first and third wall panels being opposed to each other, the second and fourth wall panel being opposed to each other, the end wall arrangement comprising first, second and third end flaps hingedly connected to the first, second and third wall panels respectively, wherein the first end flap comprises locking means for engagement at least with the second and third end flaps to secure the first, second and third flaps together.

2. A carton as claimed in claim 1 wherein the locking means comprises a tab extending from an end edge of said first end flap to be received in a locking aperture in the third end flap.

3. A carton as claimed in claim 2 wherein the locking means further comprises a first tongue extending from a side edge of said first flap for engagement with one of the second and fourth wall panels, and wherein the said one wall panel is formed with a notch or opening to receive the first tongue.

4. A carton as claimed in claim 3 wherein the locking means further comprises a second tongue extending from a side edge of said first flap for engagement with the other of the second and fourth wall panels, and wherein the said other wall panel is formed with a notch or opening to receive the second tongue.

5. A carton as claimed in claim 3 or claim 4 wherein the tubular structure has a vertical tubular body, and the end wall arrangement is recessed.

6. A carton as claimed in claim 5 wherein each of the second and fourth wall panels comprises a panel body and a reinforcing panel foldably connected to the panel body, the reinforcing panel being folded to be disposed on an inside surface of the panel body, and wherein the reinforcing panel is formed with saidnotch or opening.

7. A carton as claimed in claim 5 or claim 6 wherein the recessed end wall arrangement has an opening for receiving a top portion of the article.

8. A carton as claimed in claim 7 wherein a first handle aperture is formed in the tubular structure at a position above the recessed end wall arrangement.

9. A carton as claimed in claim 8 wherein a second handle aperture is formed in the tubular structure at a position above the recessed end wall arrangement and opposing the first handle aperture.

10. A carton as claimed in claim 2 wherein the tab has a shoulder for engagement with an underside of the second end flap,

11. A carton having a tubular body comprising first and third opposed walls interconnected by second and fourth walls and an end wall comprising first, second and third end flaps, the first end flap having a locking tab that engages the second and third end flaps to secure the first, second and third end flaps together, said first, second and third end flaps being connected to the first, second and third walls respectively, the locking tab being disposed in a locking aperture in the third end flap and in engagement with an underside of the second end flap.

12. A carton as claimed in claim 11 wherein the end wall further comprises a fourth end flap connected to the fourth wall.

13. A blank including first, second, third and fourth side panels hinged together in series for forming a tubular structure and an end wall arrangement comprising first, second and third end flaps hingedly connected to the first, second and third side panels respectively, wherein the first end flap is provided with locking means for engagement at least with the second and third end flaps to secure the first, second and third end flaps together in a set up condition.

14. A blank as claimed in claim 13 wherein the locking means comprises a tab extending from an end edge of said first flap to be received in a locking aperture formed in the third end flap.

15. A blank as claimed in claim 14 wherein the locking means further comprises a first tongue extending from a side edge of said first end flap, and one of the second and fourth side panels is formed with a notch or opening for receiving the first tongue.

16. A carton as claimed in claim 15 wherein the locking means further comprises a second tongue extending from a side edge of said first end flap for engagement with the other of the second and fourth panels, and wherein the said other side panel is formed with a notch or opening for receiving the second tongue.

17. A blank as claimed in any of claims 13 to 16 wherein each of the second and fourth side panels comprises a panel body and a reinforcing panel foldably connected to the panel body, the reinforcing panel being folded to be disposed on an inside surface of the panel body in a set up carton.

18. A blank as claimed in any of claims 13 to 17 wherein each of the end flaps has one or more openings for receiving a top portion of an article in a set up carton.

19. A blank as claimed in any of claims 13 to 18 wherein a handle aperture is formed in at least one of the side panels.

20. A blank for forming a carton having a tubular structure comprising first and third opposed wall panels interconnected by second and fourth wall panels and an end wall comprising first, second and third end flaps, the first end flap having a locking tab that engages the second and third end flaps to secure the first, second and third end flaps together in a set up condition, said first, second and third end flaps being connected to the first, second and third wall panels respective.

21. A blank as claimed in claim 20 wherein the end wall further comprises a fourth end flap connected to the fourth wall panel.

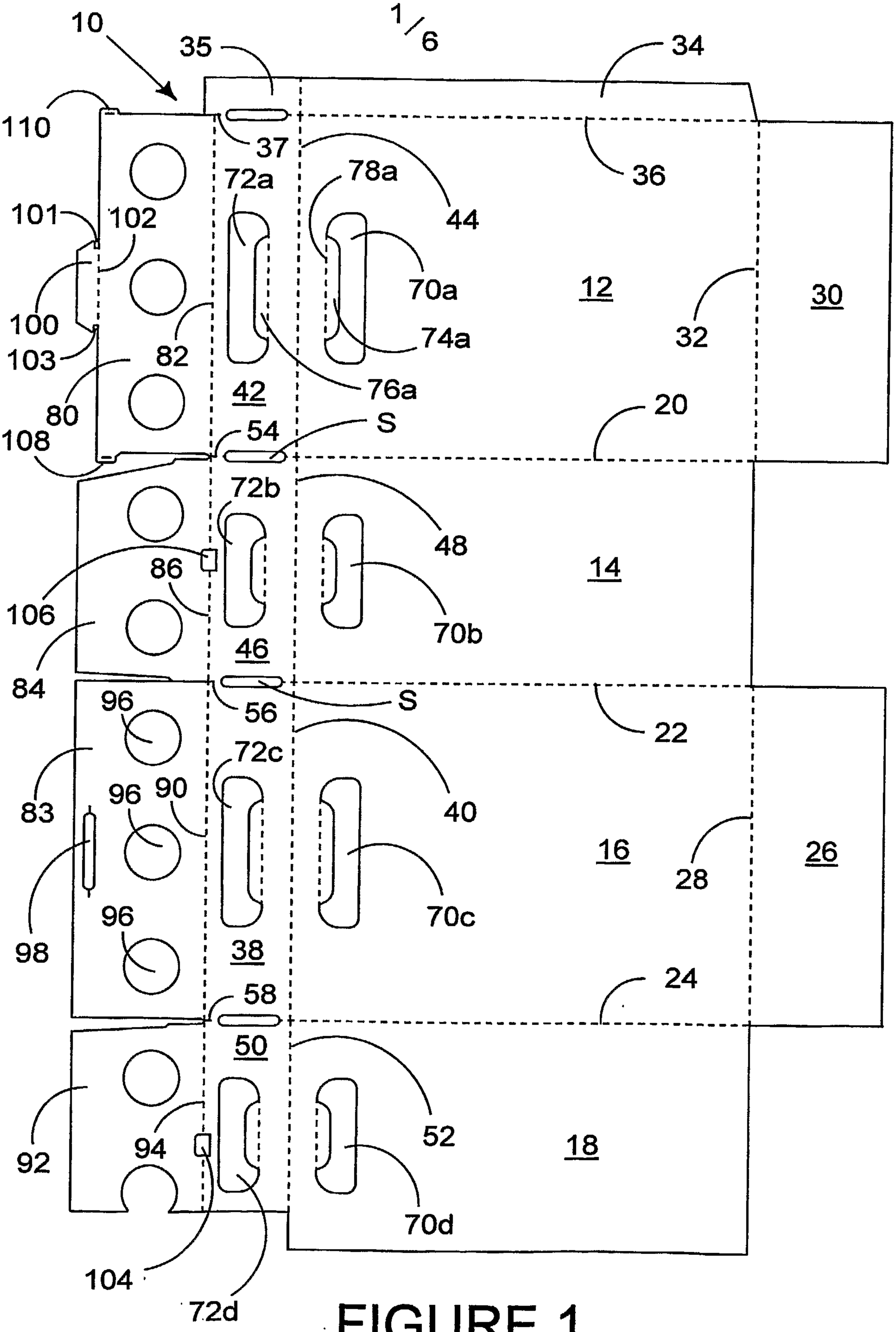

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FIGURE 1

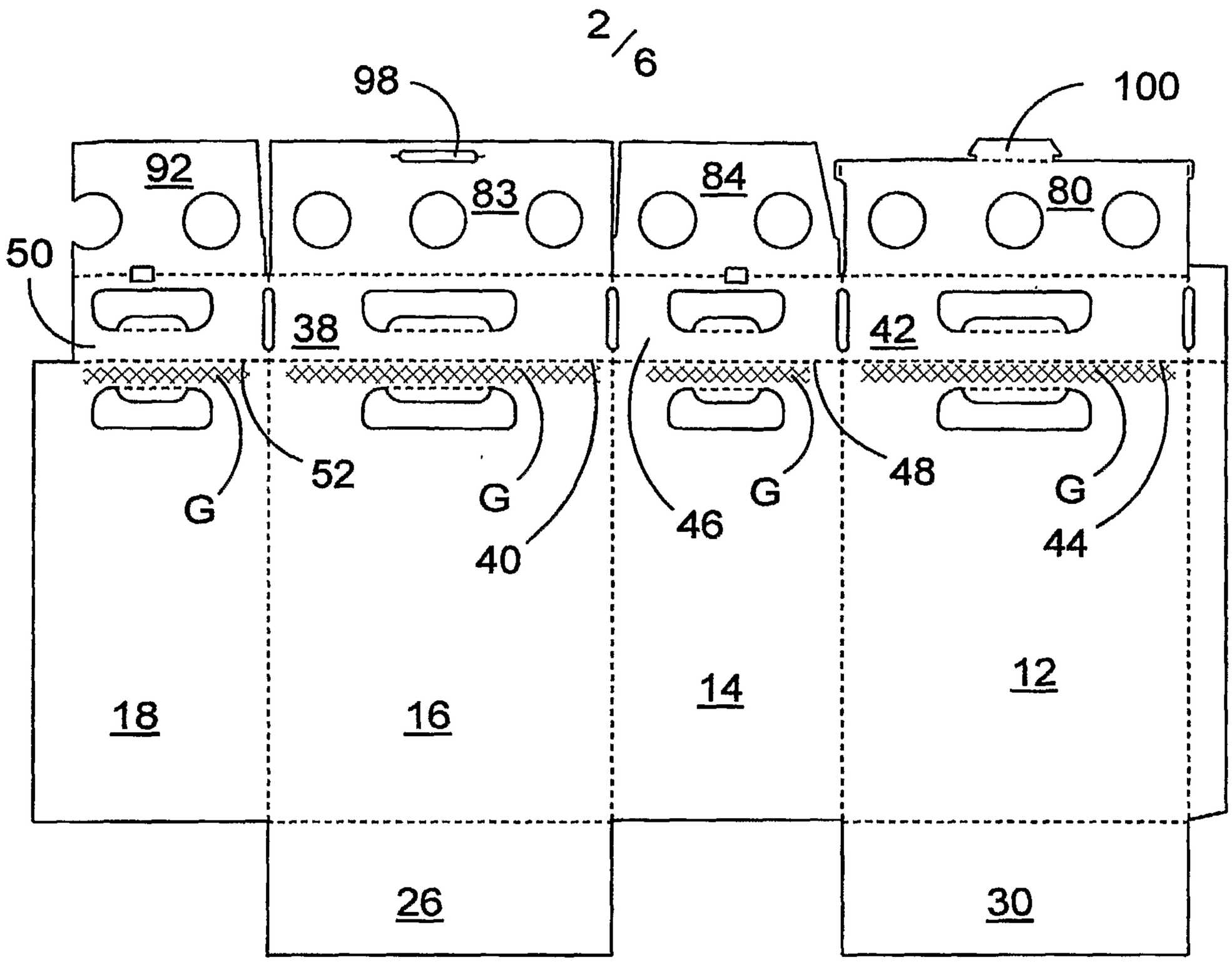


FIGURE 2

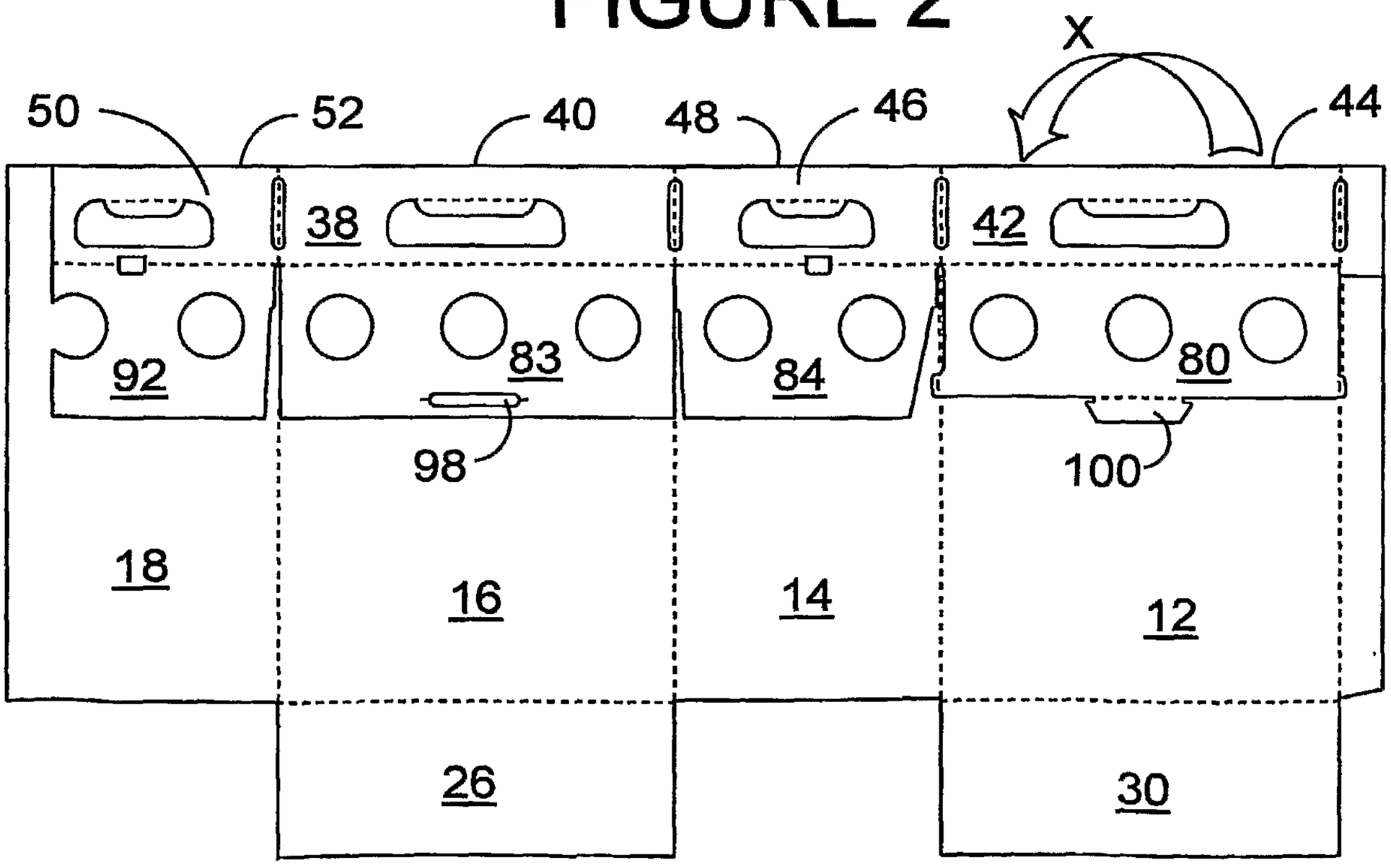


FIGURE 3

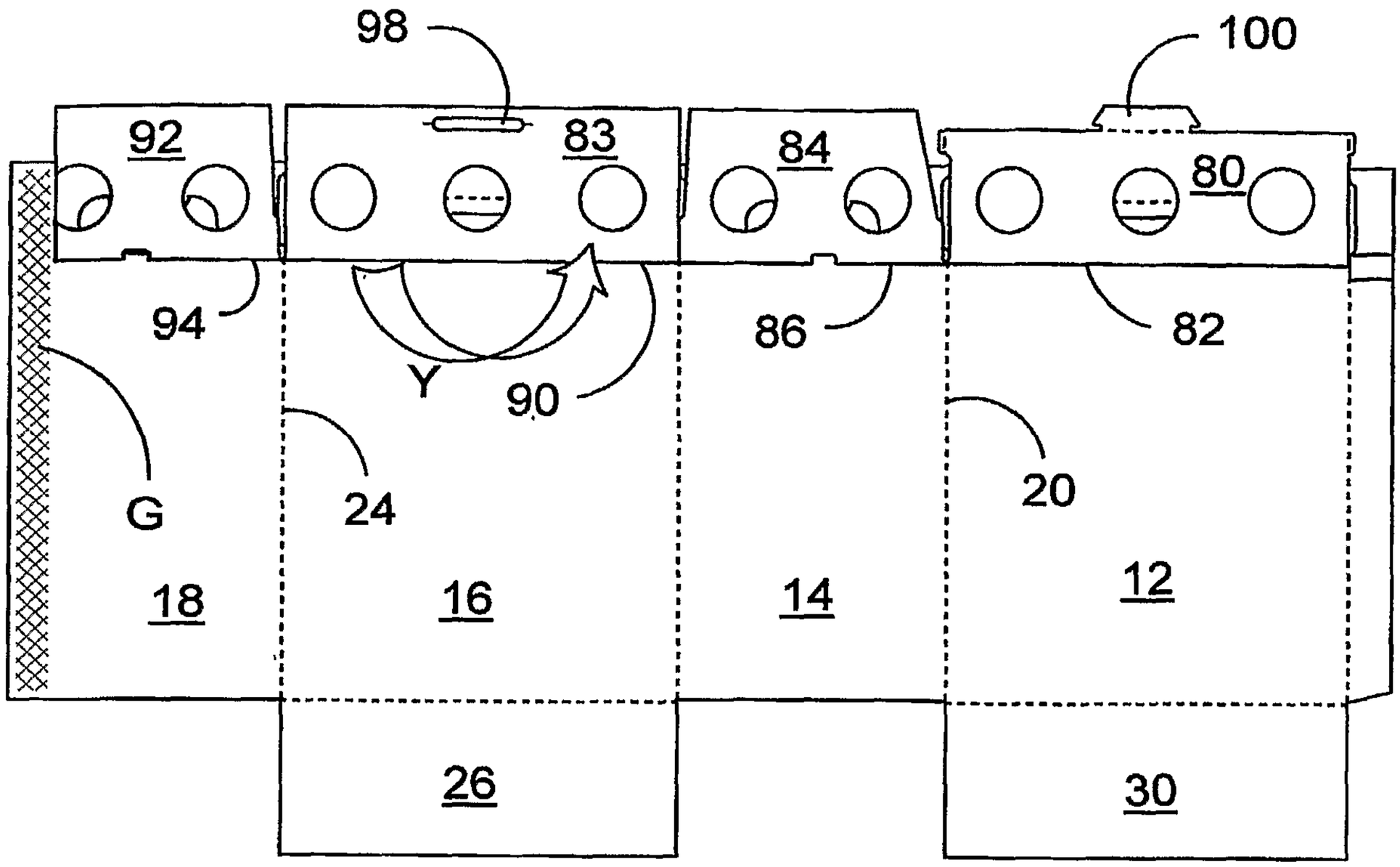


FIGURE 4

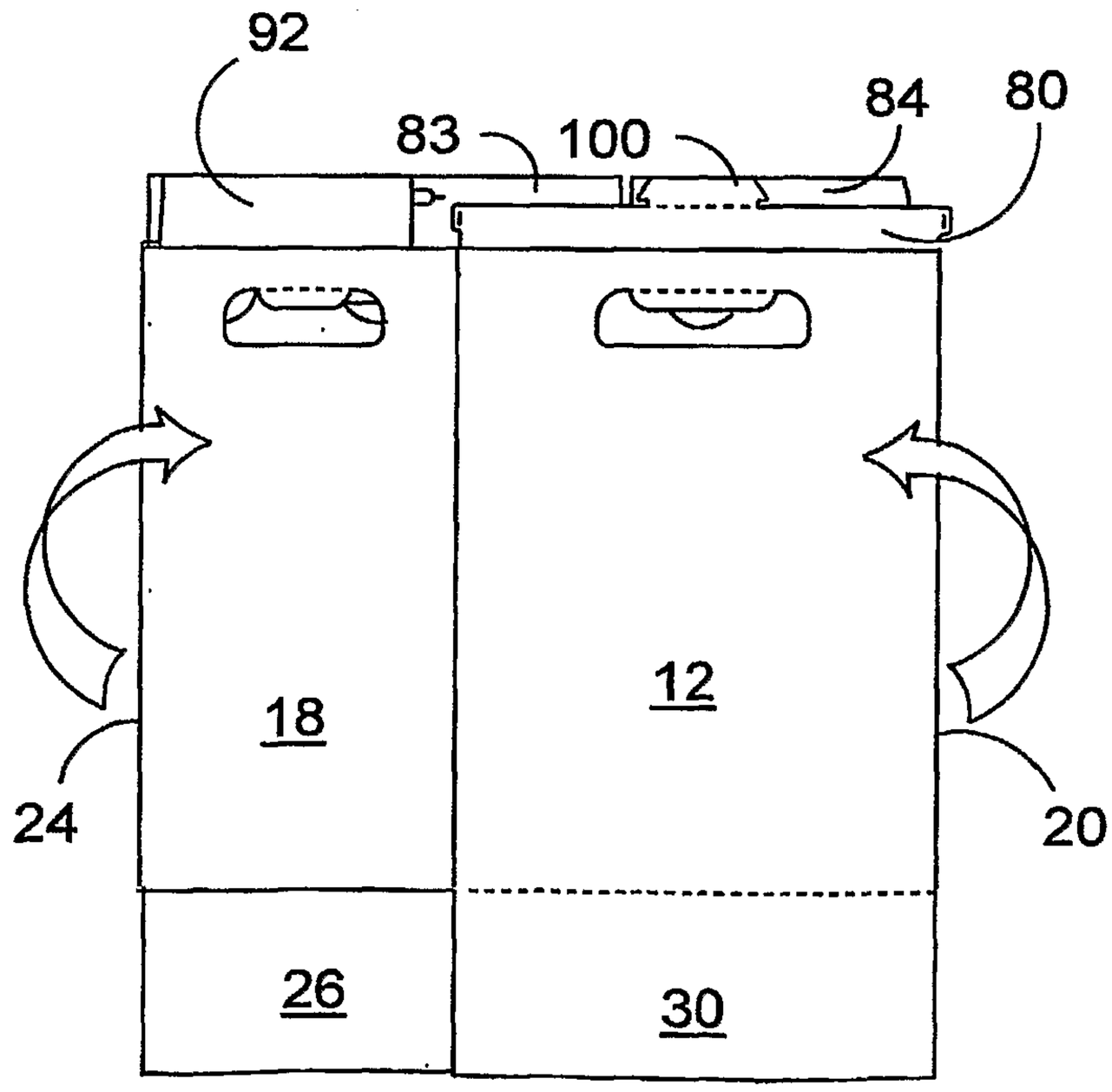


FIGURE 5

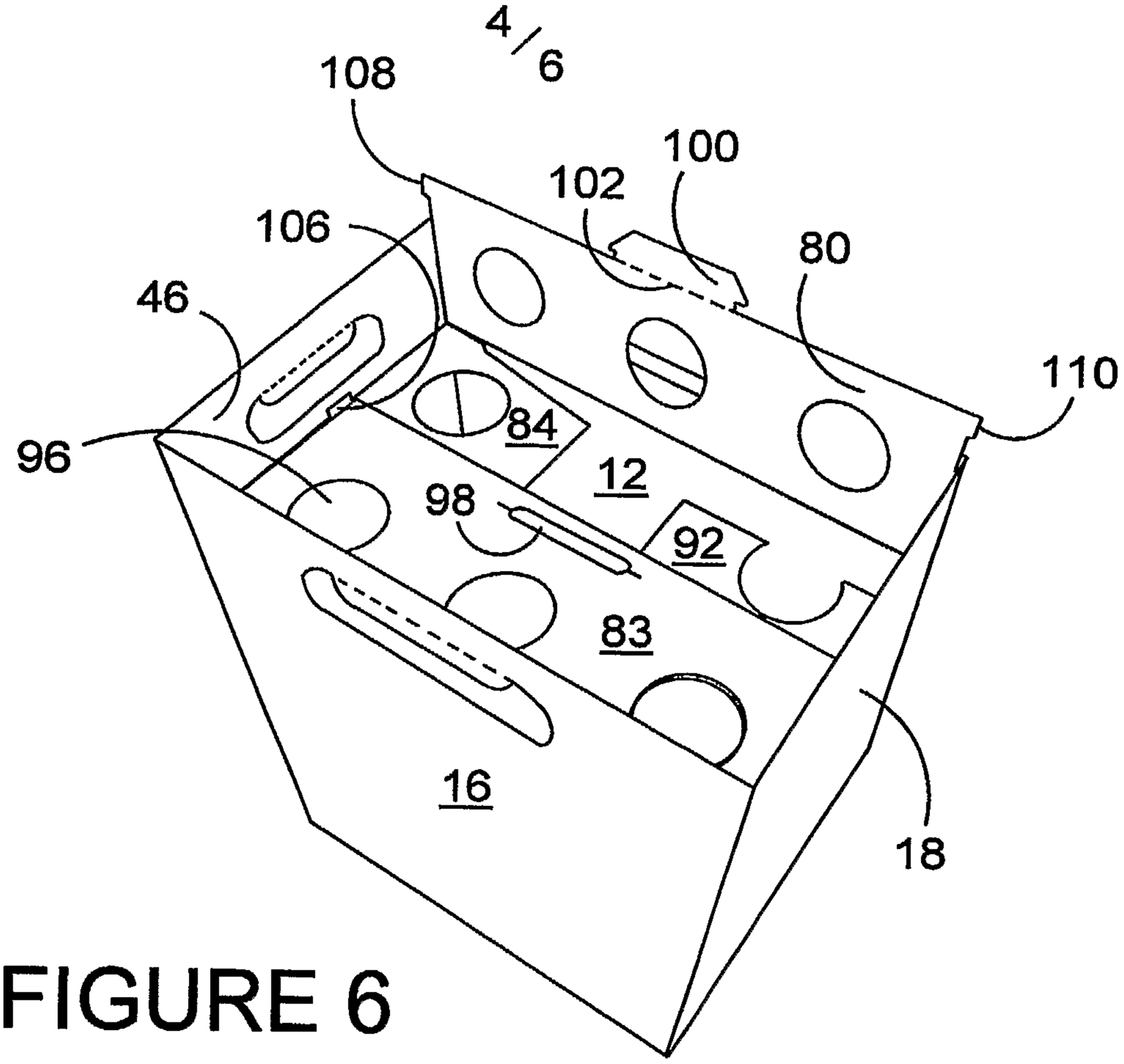


FIGURE 6

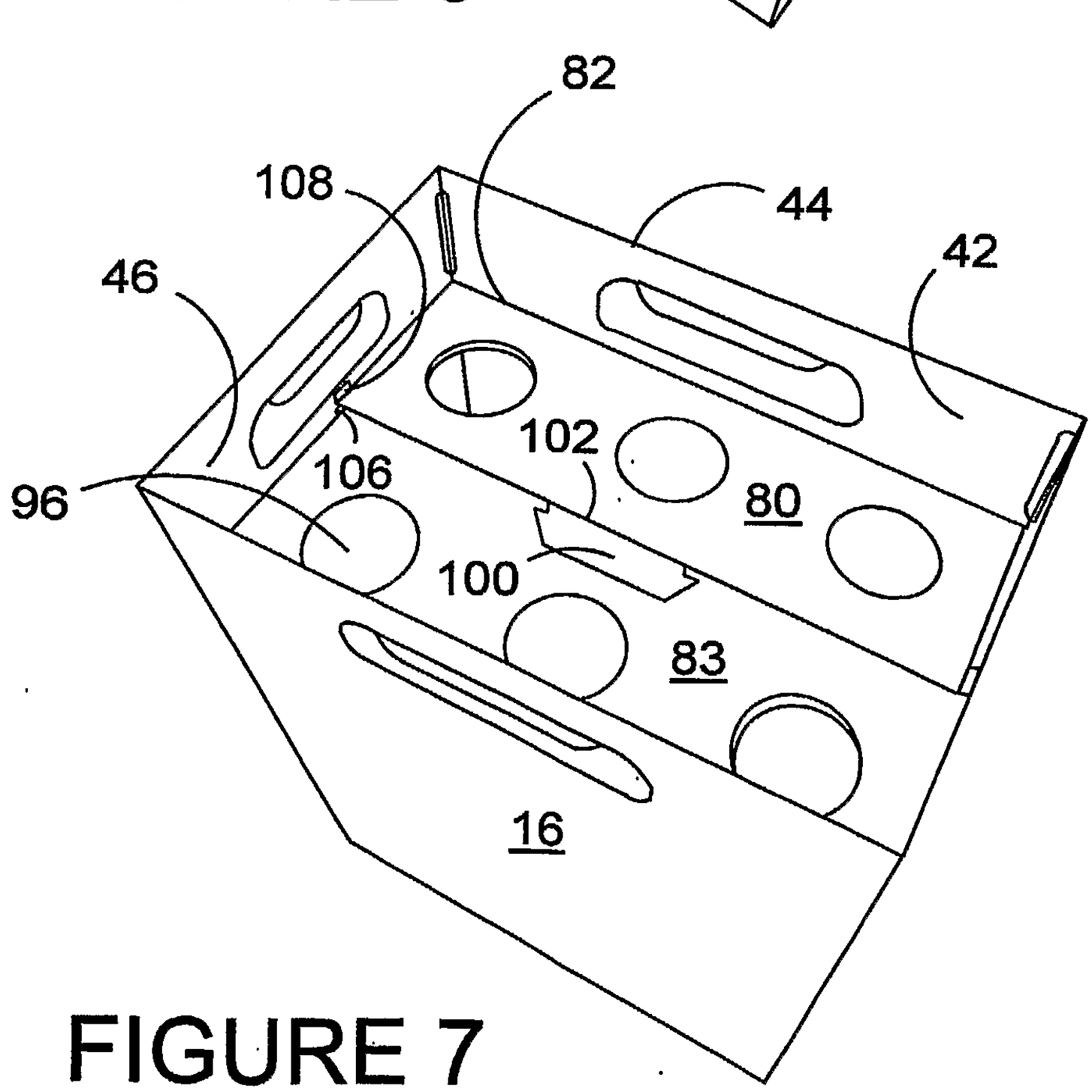


FIGURE 7

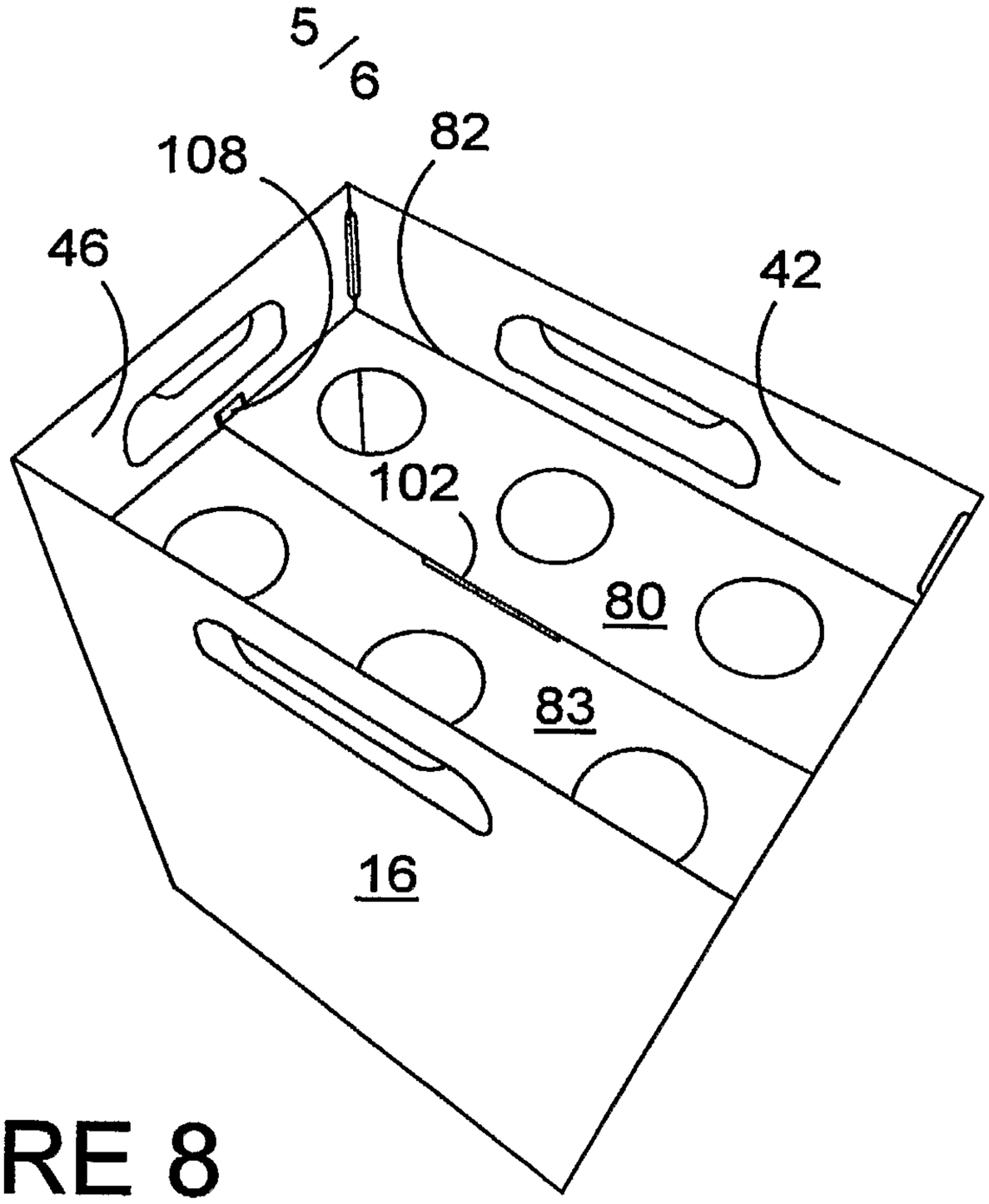


FIGURE 8

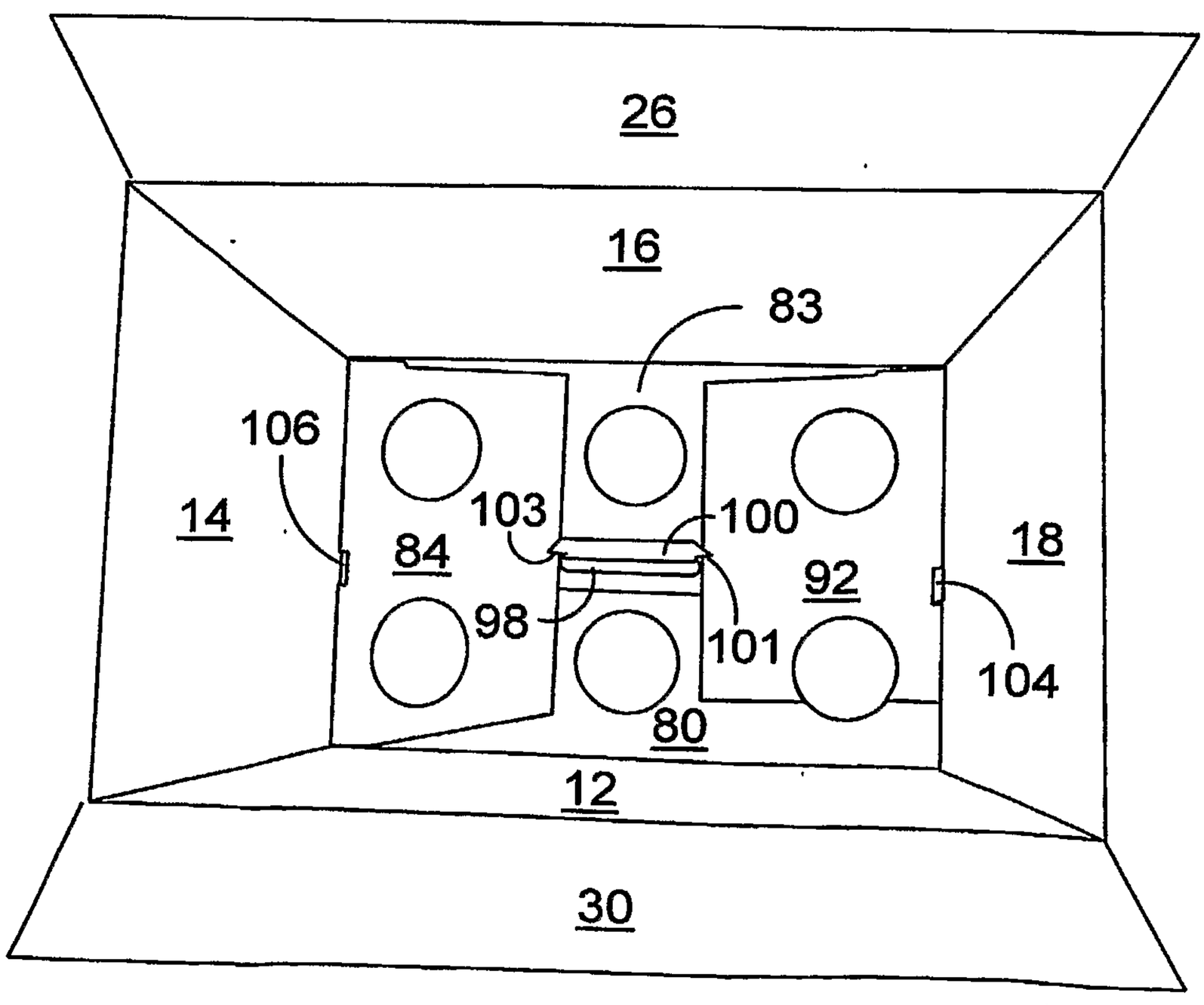


FIGURE 9

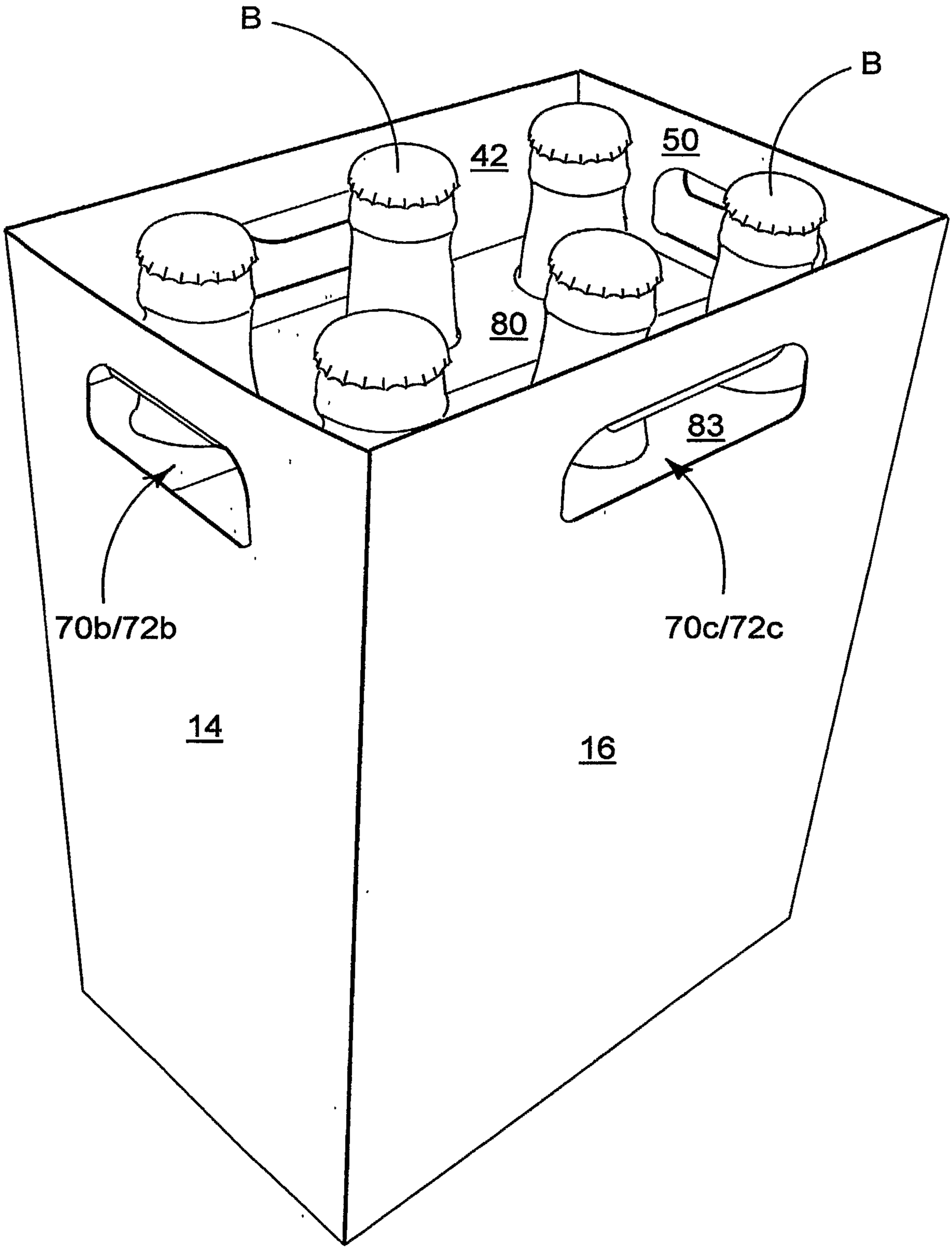
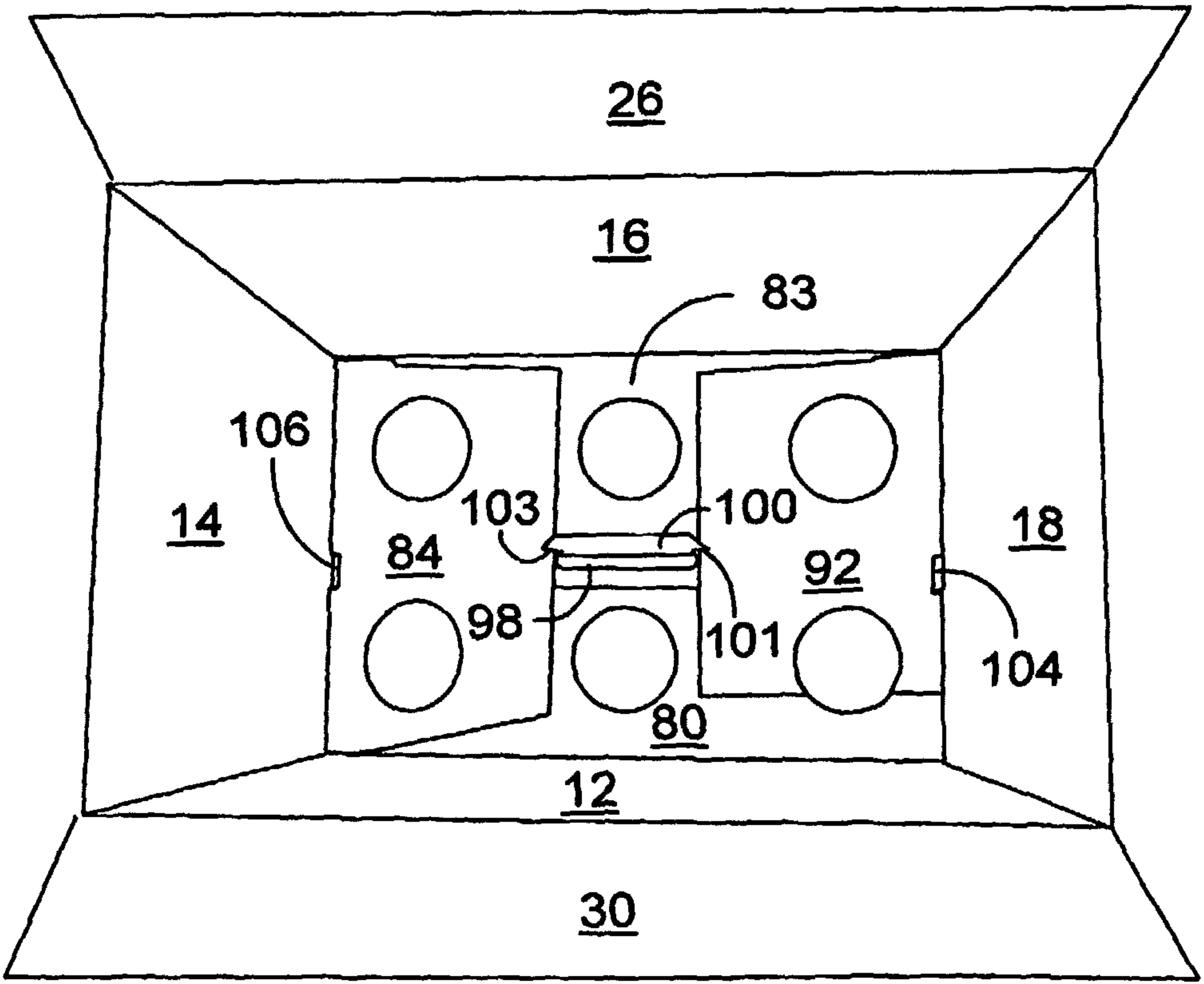


FIGURE 10


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