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EUROPEAN PATENT APPLICATION

21 Application number: **88200135.7**

51 Int. Cl.4: **B65D 5/40** , B65D 5/06

22 Date of filing: **27.01.88**

30 Priority: **28.01.87 JP 12030/87**

43 Date of publication of application:
03.08.88 Bulletin 88/31

84 Designated Contracting States:
CH DE FR GB LI NL SE

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54 Blank for rectangular parallelepipedal sealed container made of paper-base laminate.

57 A blank for preparing a rectangular parallelepipedal sealed container having two triangular ears is formed with a downwardly bulging arcuate fold-forming score (35, 36) at the boundary between a container body portion (31, 32) of the blank and the portion (33, 34) thereof to be formed into each of the triangular ear.

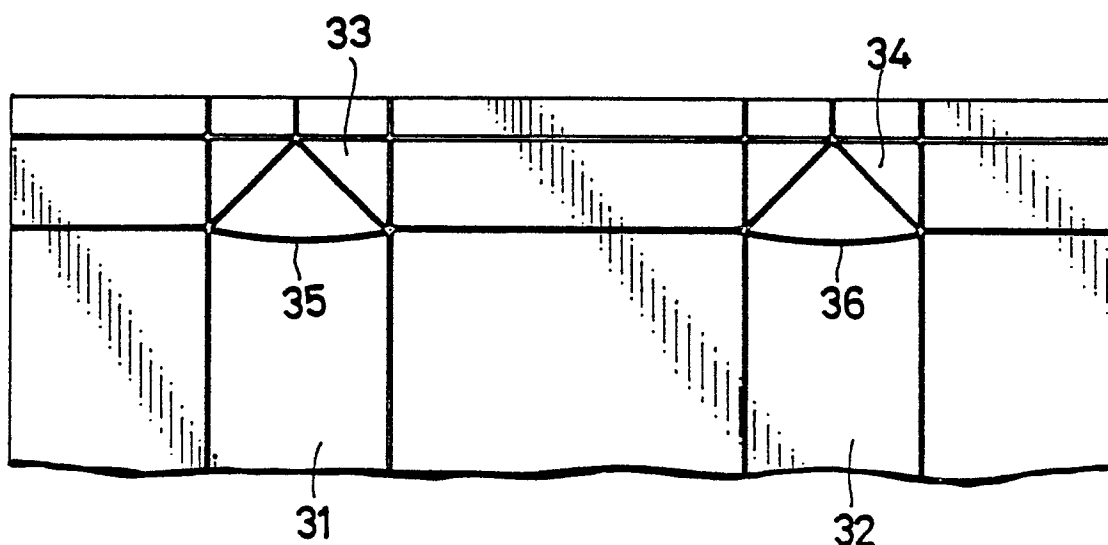


FIG. 1

BLANK FOR RECTANGULAR PARALLELEPIPEDAL SEALED CONTAINER MADE OF PAPER-BASE LAMINATE

The present invention relates to a blank for a rectangular parallelepipedal sealed container of paper-base laminate for containing milk or the like.

The blank is formed with a predetermined pattern of fold-forming scores along which the blank is to be bent to make a container. The blank is made into a rectangular parallelepipedal container by bending the blank along the scores and joining the required portions together.

The process for making the container includes the step of downwardly bending triangular ears projecting horizontally from the main body of the container and attaching the ears to a pair of side walls of the container main body. However, when the triangular ear is bent along a score included in the conventional pattern, the ear tends to revert to its original form due to springback, so that a great force is required to attach the triangular ear to the main body side wall so as to hold the ear folded over the side wall.

The main object of the invention is to provide a container blank having an improved pattern of fold lines to minimize the springback force of the triangular ears and to thereby diminish the force required for attaching the ears to the container main body.

The present invention provides a blank for a rectangular parallelepipedal sealed container which is made of paper-base laminate and which has a container main body including two opposed side walls, and two triangular ears integral with the upper ends of the respective side walls and each attached to the side wall, each of the triangular ears being downwardly folded over the side wall from a horizontally projecting initial position. The blank is formed with a downwardly bulging arcuate fold-forming score at the boundary between the portion providing each of the side walls and the portion forming the triangular ear.

When each triangular ear is formed by bending the blank of the invention along the score, the side wall integral with the base portion of the ear is curved to an inward arcuate form in a horizontal section. The presence of the curved portion serves to diminish the springback force of the triangular ear, consequently reducing the force required for attaching the ear to the side wall.

Figs. 1 to 7 show embodiments of the invention;

Fig. 1 is a front view of a first embodiment;

Fig. 2 is an enlarged fragmentary front view of Fig. 1;

Fig. 3 is a front view corresponding to Fig. 2 and showing a second embodiment;

Fig. 4 is a perspective view showing a container as completed;

Figs. 5 and 6 are fragmentary views in vertical section showing the container being made;

Fig. 7 is a view in section taken along the line VII-VII in Fig. 6; and

Fig. 8 is a view in vertical section corresponding to Fig. 6 and showing a conventional example.

Embodiments of the invention will be described next with reference to the drawings.

Before describing the blank of the invention, the container prepared from the blank will be described. As seen in Fig. 4, the container comprises a main body 11 which, when seen from above, is in the form of a rectangle having a larger dimension in the right-to-left direction than in the front-to-rear direction, and two left and right triangular ears 12, 13. With reference to Fig. 4, the term "front" refers to the obliquely rightwardly downward direction, and the term "rear" to the opposite direction. The terms "right" and "left" are used as the container is viewed from the front rearward. Although the container main body 11 also has two triangular ears on the bottom, these ears are not shown. The main body 11 has front, rear, left and right side walls 14 to 17, and a top wall 18. The bottom wall is not shown in Fig. 4. A seal portion 19 extends over the top wall 18 and the left and right triangular ears 12, 13. Since the left and right triangular ears 12, 13 are identical, the left ear 12 will be described. The left triangular ear 12 comprises a rear portion 21 integral with the upper end of the left side wall 16 and a front portion 22 integral with the left end of the top wall 18 and has twice the thickness of the container blank. Both the portions 21 and 22 are downwardly folded over the left side wall 16 at the base end of the ear. The folded-over rear portion 21 is partially attached to the left side wall 21 (see Figs. 5 and 6).

The blank from which the above container is prepared is shown in Fig. 1. Fig. 1 shows the upper half of the blank as it is seen from one side thereof providing the exterior of the container.

The blank is in the form of a paper-base laminate which is well known. For example, the laminate comprises a thermoplastic synthetic resin layer, paper layer, adhesive layer, aluminum foil layer and thermoplastic synthetic resin layer which are laminated to one another into a sheet. The blank has a predetermined pattern of fold-forming scores made by impression with a press or the like. The pattern is a known one with the exception of the following feature. A score 35 (36) downwardly bulg-

ing to an arcuate form is formed at the boundary between each of the portions 31, 32 providing the left and right side walls 16, 17 and each of the portions 33, 34 forming the left and right triangular ears 12, 13. The conventional scores corresponding to these scores 35, 36 were each in the form of a straight line.

Fig. 2 shows one of the scores 35, 36, i.e., the score 35, on an enlarged scale. The score 35 is smoothly curved in the form of a circular arc, with the result that the portion 33 to be formed into the triangular ear 12 has a projection 38 projecting downward from a straight line 37 through the two ends of the score 35. The amount or width h of the projection 38 is about one to two times the thickness of the blank. The score, which is in the form of a smooth curve as stated above, may alternatively be V-shaped as shown in Fig. 3.

Figs. 5 and 6 show as exaggerated how the triangular ear 12 is bent during the process for forming the container. Fig. 5 shows the ear 12 in a horizontally projecting state, with the rear portion 21 of the ear 12 bent along the score 35 at an angle of 90 degrees with the side wall 16. Owing to the bending, the side wall 16 is inwardly pushed by the downward projection 38 included in the ear forming portion 33, with the result that the upper portion of the side wall 16 including its upper edge is inwardly curved. When the triangular ear 12 in the state of Fig. 5 is downwardly bent to the position shown in Fig. 6, the side wall 16 is bent to a greater extent. When the triangular ear 12 bent to the state of Fig. 6 acts to revert to the initial state of Fig. 5, the springback force of the ear acts in a direction to make the curved side wall 16 planar, whereas the force of the curved side wall 16 acts against this force, making it difficult for the triangular ear 12 to revert to the initial state.

For comparison, Fig. 8 shows a triangular ear 41 bent along a score of conventional pattern. The side wall 42 remains planar despite the bending of the ear 41, so that the springback force of the triangular ear 41 directly acts to raise the ear 41.

Claims

1. A blank for a rectangular parallelepipedal sealed container made of paper-base laminate and having a container main body including two opposed side walls, and two triangular ears integral with the upper ends of the respective side walls and each attached to the side wall, each of the triangular ears being downwardly folded over the side wall from a horizontally projecting initial position, the blank being formed with a downwardly

bulging arcuate fold-forming score at the boundary between the portion providing each of the side walls and the portion forming the triangular ear.

2. A blank as defined in claim 1 wherein the distance between the midportion of the score and a straight line through both ends of the score is one to two times the thickness of the blank.

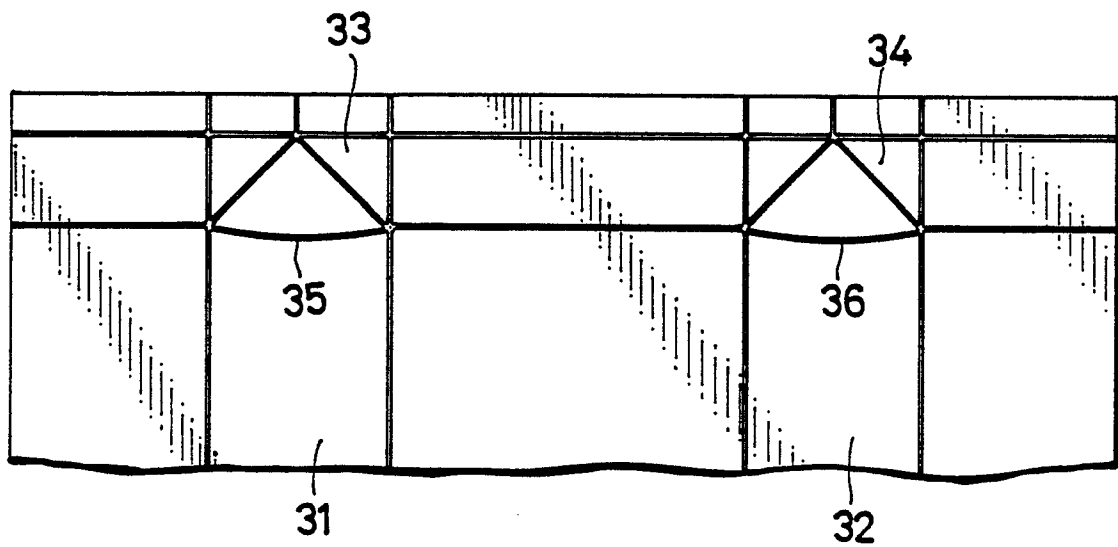


FIG. 1

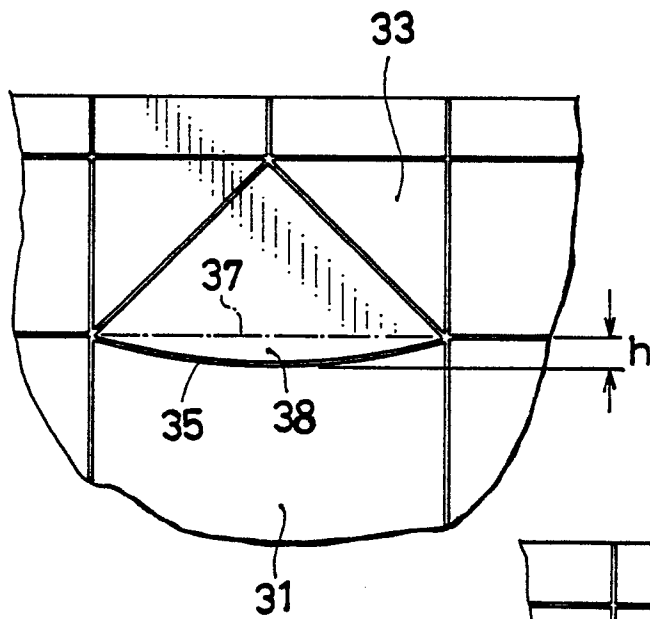


FIG. 2

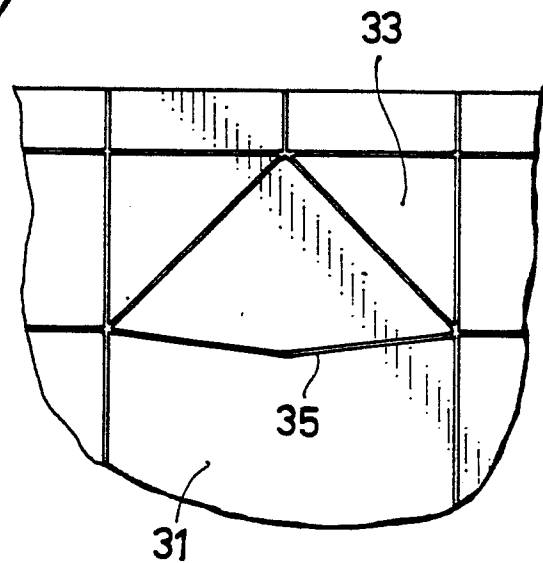
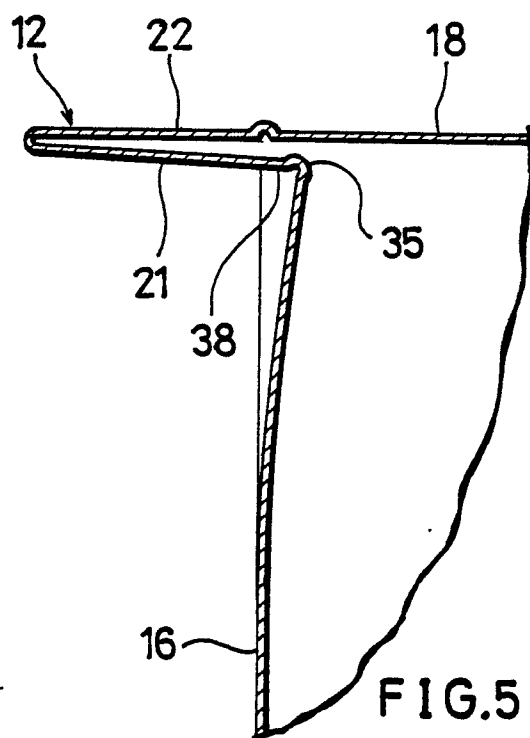
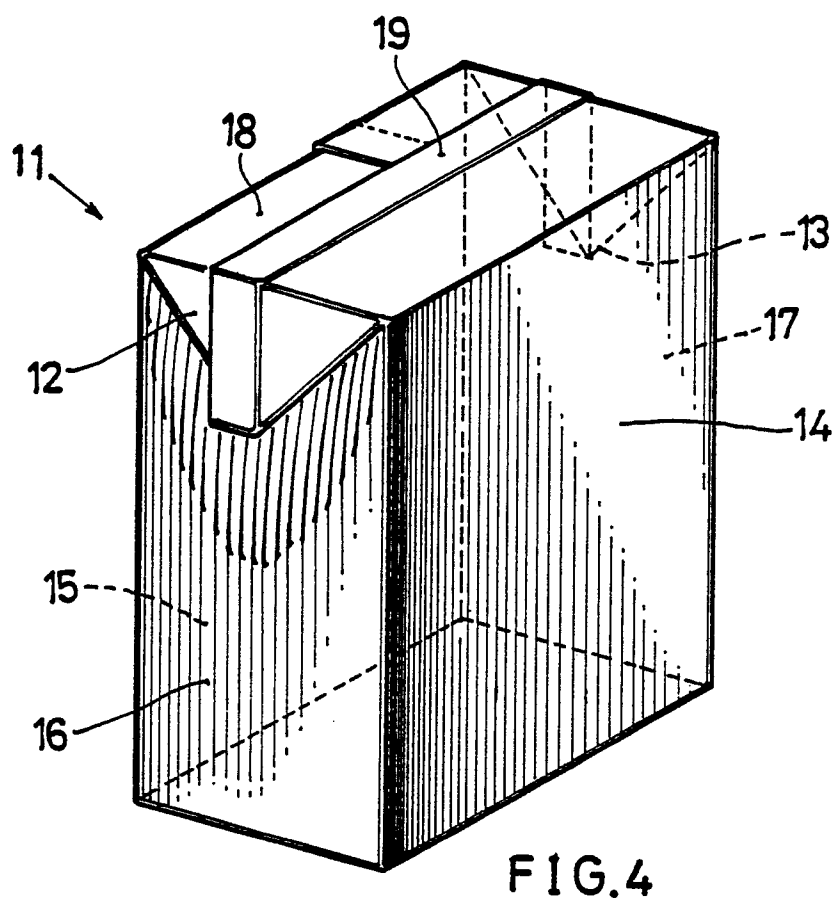
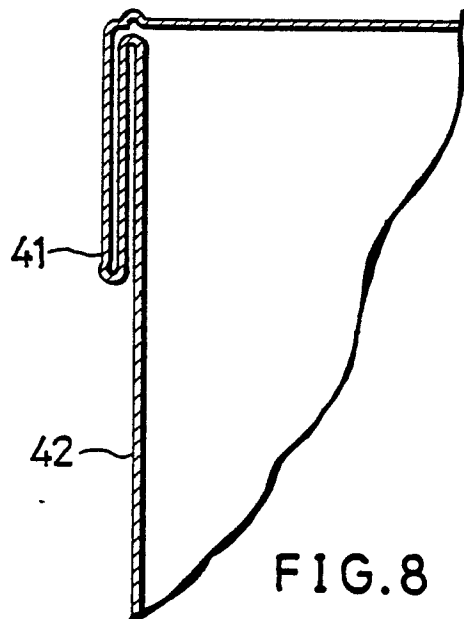
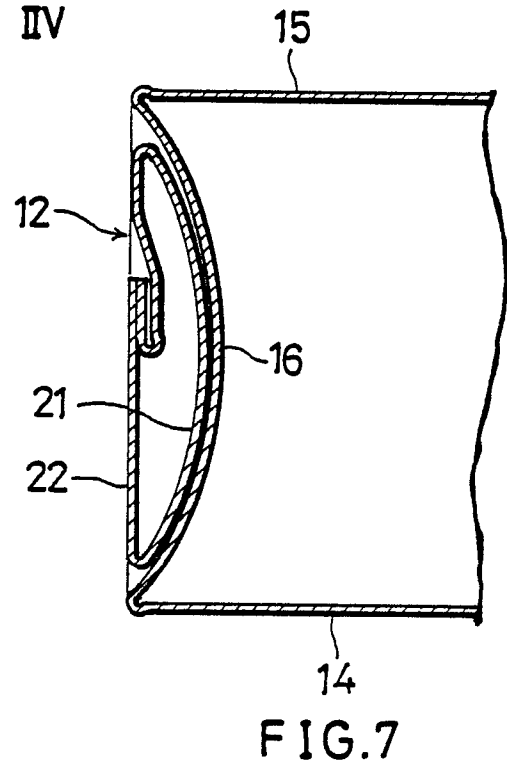
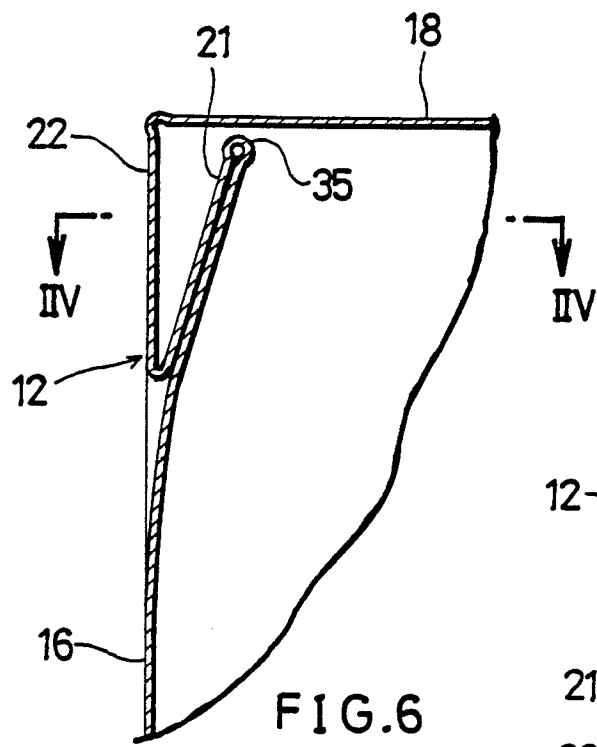


FIG. 3







EP 88 20 0135

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	US-A-4 362 245 (KUCHENBECKER) * Column 9, lines 60-68; column 10, lines 1-20; figures 1,8,11 *	1	B 65 D 5/40 B 65 D 5/06
A	US-A-3 166 235 (SCHROEDER) * Column 4, lines 15-29; figures 1-8 *	1	
A	EP-A-0 011 348 (TETRA PAK) * Page 7, lines 5-34; figures 1-3 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 65 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15-04-1988	Examiner BESSY M.J.F.M.G.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			