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NL PT SE**(30) Priority: **10.06.1996 GB 9612071**(71) Applicant: **Jacob White (Packaging) Limited
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(57) A box formed from a cut and creased blank comprises a base (1), wall panels (2,3,10,11) forming sides of the box, and a top. The top consists of an inner panel (5) which has an opening giving access to the contents, and an outer panel (4) which lies over the hole to close the box. A closure flap (6) extends from the outer panel and is attached to the external face of the box to secure the outer panel in its closed position. The blank

is part-erected in an open tubular form, with the inner and outer top panels secured in place but a pair of opposite sides left open. The contents are then end-loaded through an open side before the erection of the box is completed. The closure flap is provided with a tab retainer which may be reused to close the box after it has been opened. There are no direct means of attachment between the inner and outer panels.

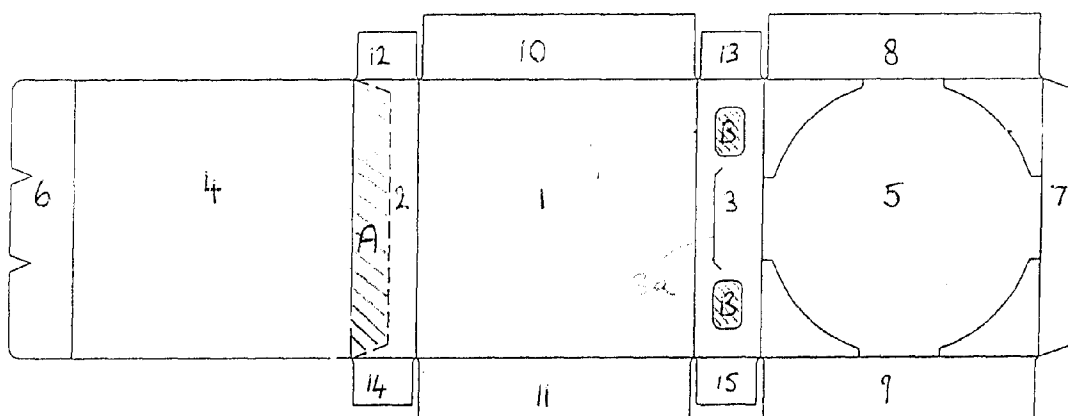


Figure 1

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Description

The present invention relates to a box with a hinged lid formed from a cut and creased blank of foldable material and to a blank therefor as well as to a method of forming the box from the blank.

One form of box which is in widespread use has a one-piece hinged top opening flap or lid. On opening the top flap, the contents of the box can be inserted or removed. The free (unhinged) edge of such lids often has means for attachment to the body of the box allowing the lid to be repeatedly opened and closed. One of the disadvantages of such a box is that, during manufacture and loading, the base of the box and the surrounding walls must be preassembled to form a cup or tray, so that the contents may be inserted into the tray through the top opening and the lid closed so forming the completed box. This necessitates the use of relatively slow, top loading machines for filling or loading the boxes.

Another type of box available in the state of the art may be referred to as the end loading box. In such boxes the box is partly erected, for example as a cylinder or tube, the contents are inserted into the end of the box and the end is then sealed. Such boxes may be erected and filled using a faster, end loading carton erecting and sealing machine.

Examples of this type of box are shown in US 3,254,793 and 3,258,156 which have a double layer top wall, the inner panel having an opening and the outer panel having a removable portion overlying the opening and defined by perforations so that it can be easily removed to allow access to the interior through the opening. The openings of such boxes are not reclosable, of course.

In the box of US 2,097,858, the inner panel of a double layer top wall is perforated to define a central portion that can be removed when the outer panel is raised. The outer panel is adhered directly to the inner panel initially but the inner panel also has slots in its front corners into which the corners of the outer panel can be inserted to reclose the box after use. The need to maintain adequate margins around the corner slits and the adhesive attachments limits the size of the opening in the inner panel. Furthermore, the appearance of the opened box is impaired by the presence of these attachments and the fact that the opening is formed by perforations. There is also a practical difficulty in that, because the corners of the outer panel must be inserted in the inner panel corner slits, the reclosure of the panel is awkward and the re-engagement means can quickly become worn and ineffective.

In yet a further known box of the end-loading type, shown in GB 1348500, there is a single-panel top wall which is perforated to form a narrower raisable lid having a front flap which can be used to reclose the lid by inserting the flap into a slit in a front wall of the carton. Because the top wall has a single layer, the liftable flap must be confined to the central region to avoid weaken-

ing the opposite lateral ends of the box. The use of perforations again impairs the appearance of the box when opened and the perforations in this case remain visible when the box is closed.

According to a first aspect of the present invention, there is provided a box formed from a cut and folded sheet element, said box comprising a base and a top in spaced relation connected by wall panels, said top comprising an inner panel and an outer panel, said inner panel having an opening therein, and being attached at opposite edges to a substantially parallel pair of said wall panels, the outer panel being hingedly attached at one edge to one of said pair of wall panels and being pivotable about the hinge to overlie at least a portion of said inner panel to cover the opening in said inner panel, and a closure panel being hinged to an edge of the outer panel opposite said one edge and comprising means for securing the outer panel in its position covering said opening.

It is a feature of the invention that the outer panel can be secured in place covering the opening in the inner panel without any direct attachment between the inner and outer panels. In this way, when the box is opened, the appearance of the inner panel is not impaired by the presence of attachment means, and the size and shape of the opening is not compromised by any need to provide attachment means on the inner panel.

The box may be rectangular or it can take other shapes. The invention can be employed in any box which can form a stable tubular structure in the part-erected state, enabling loading from a side or end and yet whose top may be repeatedly opened or closed.

The lid of the box formed by the outer panel may be held in the closed position by the closure panel using interengagement means which form an integral part of the blank from which it is constructed.

In one example, an interengagement means may include one or more slits in the other of said pair of wall panels and one or more tabs integrally formed in the closure panel. The one or more tabs of the outer panel may be arranged to fit into the slit or slits in said other wall panel so forming a repeatedly engageable and disengageable means to releasably hold the outer panel of the top in a closed position.

The box may be held in the erected state by adhesive or other securing means such as hot-welding, staples etc. The top outer panel may be initially secured in its closed position covering the opening by adhesive attachment of the closure panel. Additionally or alternatively the outer panel may be held in a repeatedly releasable manner in its closed position covering the opening, means for interengagement are provided integral with said sheet element. The interengagement means may comprise at least one tab on the closure panel for sliding insertion into at least one slit in an adjoining wall of the box.

The box may be manufactured with the top outer

panel held closed by the adhesive attachment, which provides a tamper-evident seal. After breaking the adhesive bond to open the box, the opening can be re-closed repeatedly using the interengagement means. Throughout, the inner panel, through which the contents of the box are displayed and accessed, remains undisturbed.

In a preferred arrangement the closure panel comprises an extension which overlaps a portion of the base and said adhesive means are applied between said base portion and the closure panel extension. To provide said interengagement means, it may then be arranged that said slit is located at an edge of the base and said at least one tab is provided by the closure panel extension.

In another aspect of the invention, there is provided a cut and creased box blank, said box blank being foldable to form a box as set out above.

One example of such a box blank comprises a base panel, first and second side panels each having first and second substantially parallel edges, at least two end panels, an inner top panel and an outer top panel, the first side panel being hingedly attached along its first edge to said base panel and along its second edge to said inner top panel, the second side panel being hingedly attached along its first edge to the base and its second edge to said outer top panel, the inner top panel having a hole therethrough and comprising an edge flap hinged thereto for attachment to the inner surface of said second side panel, the outer top panel having an edge flap extending therefrom for securing the outer top panel in a closed position covering the inner top panel when the blank is erected.

In a further aspect of the invention there is provided a method of assembling a box and its contents, which method comprises the steps of folding a box blank as previously described to form a generally tubular structure having a base and a top in spaced relation, the top including an inner panel and an outer panel, the inner panel having an opening therein and being attached at opposite edges to substantially parallel first and second wall panels to form an open tube with said base and wall panels, said outer panel being hinged at one edge to one of said pair of wall panels and having a closure panel hinged to its opposite edge, said outer panel being pivoted about the hinge with the wall panel to overlie at least a portion of said inner panel to cover the opening of said inner panel, the closure panel being pivoted about its hinge with the outer panel to be placed against an outside wall of the box and being attached thereto to hold the outer panel in its covering position, the contents being inserted into said tubular structure, and wall portions at the ends of said structure being folded and secured to complete the enclosure of the contents.

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a plan view of the box blank;

Figure 2 is a perspective view after the box blank has been partly erected to form a skillet and it illustrates the inserting the contents into the skillet;

Figure 3 shows the completely assembled closed box;

Figure 4 shows the assembled box opens and indicates the closing motion of the top lid; and

Fig. 5 shows another box according to the invention to illustrate some possible modifications.

As shown in Figure 1, the cut and creased box blank has a rectangular base panel. On each edge of the rectangular base panel 1 is hingedly attached a side wall panel 2,3,10,11. On the opposite edge of a first side wall panel 2 to the base panel 1, there is hingedly attached an outer top panel 4.

A second side wall panel 3 is hingedly attached at one edge to the base 1 opposite the first side wall panel 2 and hingedly attached to the opposite edge of the second wall panel 3 is an inner top panel 5. This inner panel 5 contains a large opening which extends as far as the edges of the panel and through which, when the box is assembled, contents of the box can be reached. There are attached to the remaining edges of the inner panel 5 three further side wall panels 7,8,9, of which the panel 7 is attached along the edge parallel to the second side wall panel 3 to act as a gluing tab. When erecting the box blank, the gluing tab 7 abuts against and is adhered to the inner face of the first side wall panel 2 at shaded area A.

There is also hingedly attached to the outer panel 4, at the edge opposite to said first wall panel 2, a front extension forming a closing panel 6. The closing panel 6 has cut-outs on its free edge forming a central tab. When assembling the box blank into a box, the closing panel overlaps the second wall panel 3 and may be secured in position by glue applied to shaded areas B of that overlap.

The first and second wall panels 2,3 also have on their free edges minor panels 12,13,14,15. After folding the box blank into a skillet or open-ended tube, the minor panels 12,13,14,15 are folded in and overlapped by the side wall panels 8,9,10,11 to close the ends of said tube and so complete the box. The insertion of the contents after formation of the generally tubular structure and before the closure of the ends can yield advantages of increased speed of erection and loading of the box, and improved ease of construction.

When in use, the glued attachment of the closing panel 6 is broken to allow the outer top panel 4 to be lifted to open the box, the box may be reclosed repeatedly by interengagement of the tab on the closing panel 6 with a slit 3a in the second wall panel 3. In an unillustrated modification, the second wall panel 3 has a series of slits and the closing panel 6 a corresponding series of tabs, the slits and tabs forming the interengagement means. It is of course possible to dispense with the

glued attachment of the closing panel and rely on tab and slit engagements only for the initial closure of the box.

In Figure 2 the blank has been partly erected by folding into an open-ended tube or skillet. This may be done by folding the side panels 2,3 up to lie substantially normal to the base panel 1, folding said inner top panel 5 over to form a top substantially parallel to base panel, folding over adhering the gluing tab panel 7 to the second wall panel 2 as indicated by the shaded area A in Fig. 1, folding the outer top panel 4 to lie substantially parallel to the base panel 1, and against at least a portion of the inner panel 5, folding the closing panel 6 to overlie the first wall panel 3 and adhering the closing panel 6 to the first wall panel 3 at the shaded areas B or otherwise to the tube wall. This may then be followed by the step of inserting the contents into the box.

Shown in Figure 3 is the box in the completely erected state, which is achieved by folding in the minor panels 12,13,14,15 and the further side panels 8,9,10,11 to close the ends of the tube. The box may be held in this assembled state by adhesive adhering together the overlapping panels, or by stapling, heat welding etc, provided that the means of attachment allow the box to be opened by lifting to outer top panel 4 as shown in Fig. 4. As will be clear from Fig. 4, the exposed face of the inner top panel has an opening that occupies the greater part of its area and that can extend in any desired form, even to the edges of the panel. At the same time the face can be kept clear of any attachments that might mar its appearance and any decoration or information that may be printed there.

Fig. 5 illustrates some possible modifications of the box described. The blank for the box of Fig. 5 may generally take the form shown in Fig. 1, but differs in the following respects. The hole in the inner panel 5a is square rather than round, leaving only a narrow peripheral wall margin, and of course other variations of shape can be provided. The closing front panel 6a has a tapered bottom edge in the centre of which is a closure tab 6b, hinged to the panel to be folded against the base of the box and be releasably secured there, as by gluing. The tab 6b also serves to reclose the box after opening, for which purpose the receiving slit 3a is located at the bottom of the side wall, at its junction with the base. In this example, therefore, the means of attachment for closure of the outer top panel 4 are virtually completely hidden from view.

Claims

1. A box formed from a cut and folded sheet element, said box comprising a base and a top in spaced relation connected by wall panels, said top comprising an inner panel and an outer panel, said inner panel having an opening therein, and being attached at opposite edges to a substantially parallel pair of

said wall panels, the outer panel being hingedly attached at one edge to one of said pair of wall panels and being pivotable about the hinge to overlie at least a portion of said inner panel to cover the opening in said inner panel, and a closure panel being hinged to an edge of the outer panel opposite said one edge and comprising means for securing the outer panel in its position covering said opening.

2. A box according claim 1, wherein said outer panel is initially secured in its closed position covering the opening by adhesive attachment of the closure panel.
3. A box according to claim 2, wherein the closure panel comprises an extension which overlaps a portion of the base and said adhesive means are applied between said base portion and the closure panel extension.
4. A box according to any one of claims 1 to 3, wherein, to hold the outer panel in a repeatedly releasable manner in its closed position covering the opening, means for interengagement are provided integral with said sheet element.
5. A box according to claim 4, wherein said interengagement means comprises at least one tab on the closure panel for sliding insertion into at least one slit in an adjoining wall of the box.
6. A box according to claim 3 together with claim 5 wherein said slit is located at an edge of the base and said at least one tab is provided by the closure panel extension.
7. A box according to any one of the preceding claims wherein the inner panel opening occupies the major part of the area of the inner panel leaving a narrow rim of said panel around its periphery.
8. A cut and creased box blank comprising a base panel, first and second side panels each having first and second substantially parallel edges, at least two end panels, an inner top panel and an outer top panel, the first side panel being hingedly attached along its first edge to said base panel and along its second edge to said inner top panel, the second side panel being hingedly attached along its first edge to said base panel and its second edge to said outer top panel, said inner top panel having an opening therein and comprising an edge flap hinged thereto for attachment to the inner surface of said second side panel, said outer top panel having an edge flap extending therefrom for securing the outer top panel in a closed position covering the inner top panel when the blank is erected.

9. A blank according to claim 8, wherein the blank can be partly erected in a first stage as a substantially tubular structure with the outer top panel covering the inner top panel, and the erection completed by the adhesion of further portions to close the box. 5
10. A blank according to claim 8 or claim 9, wherein interengageable tab and slit means are provided for releasable closure of the outer top panel. 10
11. A blank according to any one of claims 8 to 10 wherein said edge flap of the outer top panel comprises a panel able to overlap the first side panel and the base adjacent thereto when the blank is erected. 15
12. A blank according to claim 11 wherein a slit is formed at the junction of the first side panel and the base for interengagement with the portion of said edge flap overlapping the base. 20
13. A blank according to any one of claims 8 to 12 wherein the inner top panel comprises a narrow peripheral rim, the inner boundary of said rim defining the hole. 25
14. A method of assembling a box and contents for the box, comprising the steps of folding a box blank to form a generally tubular structure having a base and a top in spaced relation, said top comprising an inner panel having an opening therein and an outer panel, said inner panel being attached at opposite edges to a substantially parallel pair of wall panels to form an open tube with said base and wall panels, said outer panel being hinged at one edge to one of said pair of wall panels and having a closure panel hinged to its opposite edge, said outer panel being pivoted about the hinge with the wall panel to overlie at least a portion of said inner panel to cover the opening of said inner panel, the closure panel being pivoted about its hinge with the outer panel to be placed against an outside wall of the box and being attached thereto to hold the outer panel in its covering position, the contents being inserted into said tubular structure, and wall portions at the ends of said structure being folded and secured to complete the enclosure of the contents. 30 35 40 45

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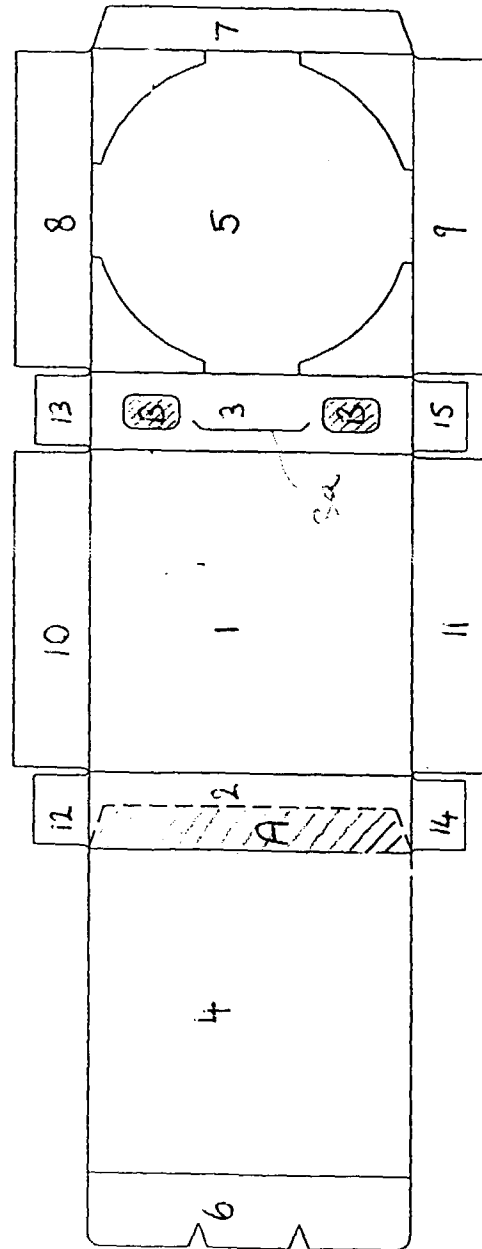


Figure 1

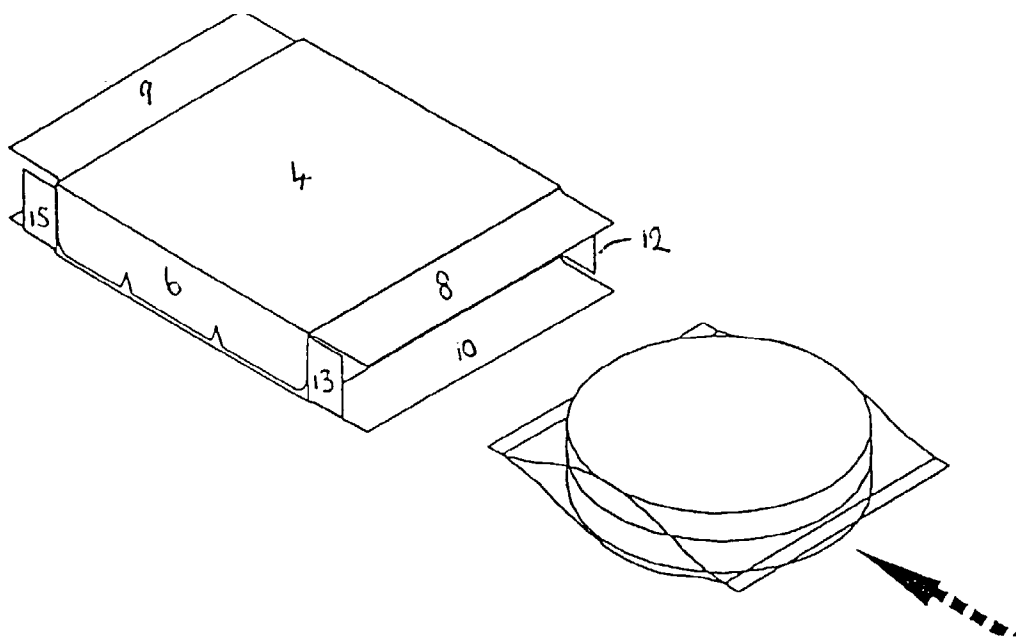


Figure 2

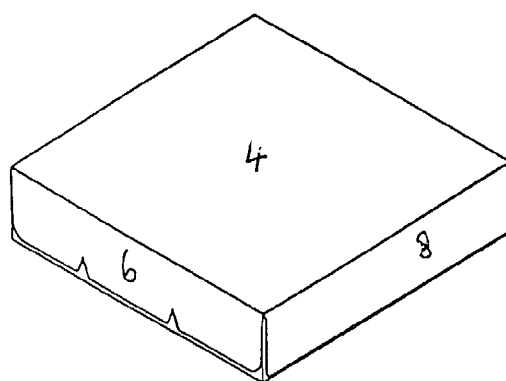


Figure 3

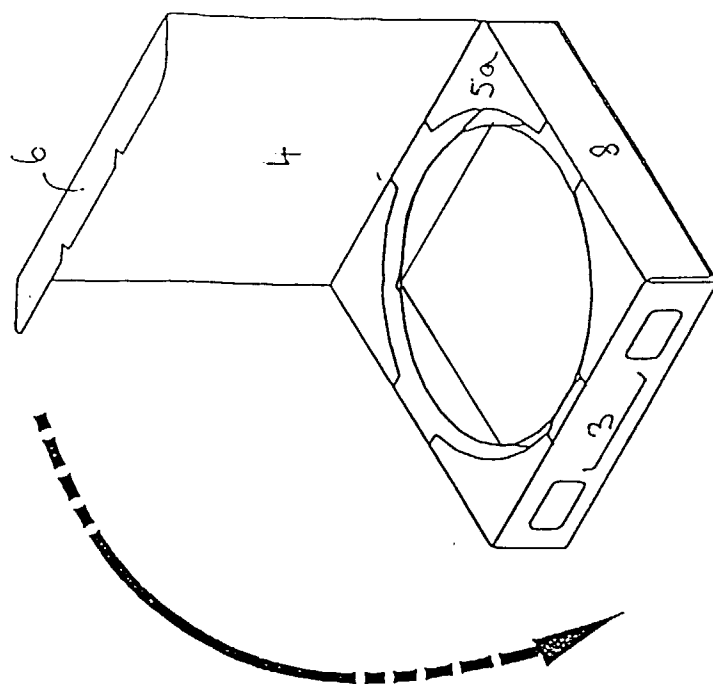


Figure 4

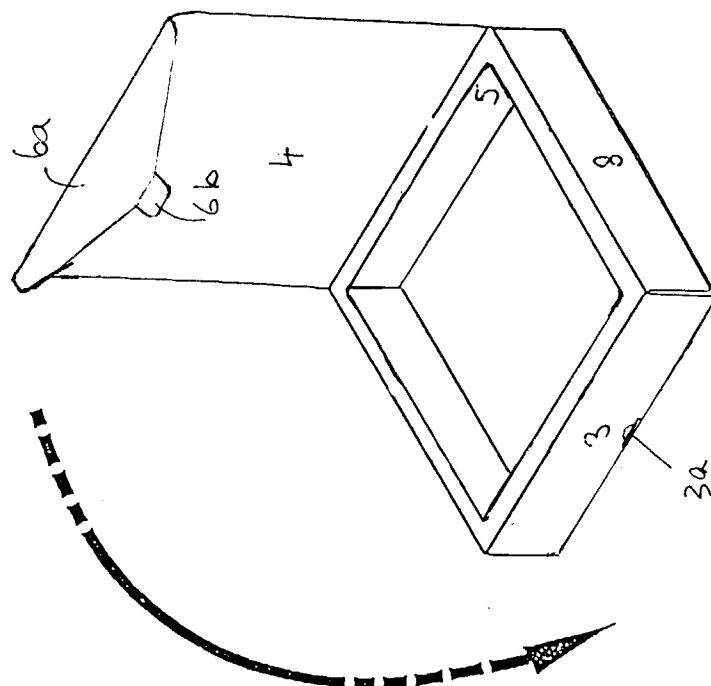


Figure 5