

Product Packaging

Background and Field

5 This invention relates to product packaging formed from a blank of foldable material.

It is known to use a product packaging to display the product but additional material is needed for holding the product sample. Double sided adhesive may be used to hold the product at a specific position, but the adhesive may peel off during shipment. A
10 transparent plastic box to house the product may be an effective way to display the product. However, contamination of fingerprints during shipment and holding of the merchandise is unfavorable.

Summary

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In a first aspect of the invention, there is provided a blank of foldable material for forming a self-supporting structure for use as a packaging for a product, the blank comprising a plurality of packaging panels joined at fold lines for guiding a user for folding the blank into the self-supporting structure; the plurality of packaging panels
20 including a base panel for supporting the self-supporting structure, and a display panel for supporting the product, the display panel including at least one slit defining a bendable web portion to enable the web portion to be bent outwards for supporting the product to enable the product to be visible when the product is supported by the display panel.

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In general, purposes of having a product packaging as described in described embodiment are as follow:

- (i) To protect the product during shipment and merchandising.
- (ii) To generate consumer interest.
- 30 (iii) To project the image and brand of the company which produces the product.

In a preferred embodiment and broadly, cardboard with slits and transparent product
35 clamp layer to secure product for display and logistics. Square transparent plastic box

split into halve triangles and held together by adhesive as mode of hinge. Package using transparent plastic/PET sheet and transparent plastic box to avoid fingerprinting, to secure square transparent plastic box without requisite of adhesive and to be able to display the product with clear visual. Product card to display important message with side tab for ease of extraction.

Preferably, the blank further comprises three slits defining corresponding bendable web portions to enable the corresponding bendable web portions to be bent outwards for supporting three sides of the product. The plurality of packaging panels may include a top panel joined to the display panel, the top panel including a top extension flap arranged to be inserted into a base engagement slit formed at a joint between the base panel and a base extension flap.

The plurality of packaging panels may also include side support panels joined to and extending from respective sides of the display panel, wherein the blank further includes a side extension flap extending from each side support panel, the side extension flaps arranged to be inserted into corresponding side engagement slits formed at the joint between the base panel and corresponding side base panels.

According to a second aspect, there is provided a self-supporting structure for use as a packaging for a product, formed from the blank as discussed above.

According to a third aspect, there is provided a self-supporting structure of the second aspect, a product being supported by the display panel of the self-supporting structure, and a transparent product protection layer for clamping the product to the display panel, the transparent product protection layer having a product recess configured to match the product's size and engaging flaps for engaging edges of the display panel.

Preferably, the combination further comprises a container having first and second cooperating container halves, the first container half being arranged to receive the self-supporting structure, and the second container half being arranged to enclose the product and the transparent product protection layer within.

Advantageously, the combination may further comprise an adhesive tape for adhering an edge of the first container half with an edge of the second container half.

Indeed, an assembly may be formed comprising the any of the above combinations.

It should be apparent that features relating to one aspect may also be applicable for the
5 other aspects.

Brief Description of the Drawings

An exemplary embodiment will now be described with reference to the accompanying
10 drawings, in which:

Figure 1 is a top plan view of a foldable material for forming a self-supporting structure for use as a product packaging;

Figure 2a is a front view of the self-supporting structure formed from the foldable material of Figure 1, with bendable web portions not bent outwards;

15 Figure 2b is a side view of the self-supporting structure of Figure 2a;

Figure 2c and 2d are corresponding front and side views of Figures 2a and 2b respectively with the bendable web portions bent outwards;

Figure 3 illustrates how the bendable web portions of the self-supporting structure of Figures 2c and 2d are used to support a device;

20 Figures 4a and 4b are respective front and side views of the self-supporting structure of Figure 3 and a plastic clamp arranged to protect the device to form an intermediate assembly;

Figure 5a illustrates a transparent housing formed from two housing halves arranged to contain the intermediate assembly of Figures 4a and 4b;

25 Figure 5b illustrates the intermediate assembly and housing of Figure 5a but with one housing half being lifted and placed back-to-back with the other housing half;

Figure 6a shows a plastic sheet having five equal portions and separated by perforated joints;

30 Figure 6b illustrates a square frame formed from folding the equal portions of the plastic sheet of Figure 6a and which is used to protect the housing of Figure 5a;

Figure 6c is a bottom view of the square frame of Figure 6b to show the overlap between the first and last of the equal portions;

Figure 6d is a top view of the square frame of Figure 6b;

Figure 7 shows a product card with a tab; and

Figure 8 shows the product card of Figure 7 being arranged between the intermediate assembly and the housing of Figure 5a and with the tab folded against the intermediate assembly.

5 Detailed Description

In a preferred embodiment, cardboard is used as a product blank and in general, the cardboard has openings and slits defining web portions and when the web portions are bent outwards, bended edges can support a product. A transparent product clamp is used to hold the product to the cardboard box. Four surfaces of plastic box are covered with transparent plastic/PET sheet to avoid finger printing. Product card has a tab and conforms to the design of the cardboard box.

A blank 100 of foldable material, for example, cardboard for forming a self-supporting structure 200 for use as a packaging for a product 300 is shown in Figure 1. Front and side views of the self-supporting structure 200 are shown in Figures 2a and 2b respectively. The blank 100 is patterned and includes a plurality of packaging panels including a base panel 102, a display panel 104 joined to the base panel 102 and a top panel 106 joined to the display panel 104. Each of the base panel, display panel and the top panel 102,104,106 is substantially square or rectangular. At a top edge of the top panel 106 is a top extension flap 108 and at one edge of the base panel 102 is a base extension flap 110. A base engagement slit 111 is formed at a joint between the base extension flap 110 and the base panel 104. The top extension flap 108 is arranged to be inserted into the base engagement slit 111 when forming the self-supporting structure 200. The blank 100 further includes side base panels 112,114 which extend from respective side of the base panel 102. Each of the side base panel 112,114 is substantially triangular in shape and the blank 100 includes side engagement slits 113,115 formed at respective joints between the side base panel 112,114 and the base panel 102. The display panel 104 also has side support panels 116,118 extending from respective side of the display panel. Further, the blank 100 includes side extension flaps 120,122 joined to a corresponding edge of the side support panels 116,118 nearer to the top panel 106. The display panel 104 further includes at least one slit and in this embodiment, the display panel 104 includes a base slit 124, and two side slits 126,128 arranged adjacent to the base slit 124. Each of the slits 124,126,128 creates a cut in the display panel 104 and comprises three adjacent

sides leaving one side uncut to define a bendable web portion 130,132,134 to enable the web portions 130,132,134 to be bent outwards for supporting the product 300 to be displayed. As shown in Figure 1, joints of the panels 102, 104,106,112,114,116,118 and the flaps 108,110,120,122 are defined by fold lines 136 for guiding a user for
5 folding the blank 100 into the self-supporting structure 200.

To transform the blank 100 into the self-supporting structure 200, the bendable web portions 130,132,134 are first bent outwards to form support portions for supporting the product 300. Next, the side base panels 112,114 and the support panels 116,118 are
10 folded backwards (opposite to the outward direction of the web portions 130,132,134) along the fold lines 136 so that the side base panels 112,114 are substantially in registration with each other and substantially orthogonal to the base panel 102. Similarly, after folding the support panels 116,118, these support panels 116,118 are substantially in registration with each other and substantially orthogonal to the display
15 panel 104. Next, the base panel 102 and the top panel 106 are folded backwards along the fold lines 136 to enable the side support panels 116,118 to overlap with respective side base panels 112,114 and for the side extension flaps 122,124 to be inserted into the corresponding side engagement slits 113,115. Similarly, the top extension flap 108 is inserted into the base engagement slit 111 to create the self-supporting structure 200
20 illustrated in Figures 2a and 2b with the base panel 102 supporting the structure 200. In Figure 2b, the web portions 130,132,134 are not shown to be bent outwards, whereas in Figures 2c and 2d, they are shown bent outwards.

As shown in Figure 3, the self-supporting structure 200 is generally a triangular box
25 and arranged to support the product 300 to be displayed and in this embodiment, the product 300 is a sensor product. The display panel 104 thus forms a slanted surface with respect to the top panel 106 which forms a vertical axis for the structure 200. Together with the bent web portions 130,132,134, the slanted surface is arranged to support the product 300 (in particular, the slanted surface makes contact with the
30 product's 300 rear surface). It should be appreciated that the lower web portion 130 is arranged to support the product 300 with other two web portions 132,134 arranged at the sides of the product 300 and in this way, the product 300 fits snugly between the web portions 130,132,134 and is visible when the product is supported by the display panel 104.

It should be appreciated that the product 300 is supported by the web portions 130,132,134 (acting as a holder) and the self-supporting structure 200 and no additional material is required to hold the product 300 during display. This is advantageous since a unitary self-supporting structure 200 is easily created from the blank 100.

To protect the product 300 from impact, shock or being damaged during shipment or handling, a transparent product protection layer in the form of a plastic clamp 400 is used to retain the product to the self-supporting structure 200 and this is illustrated in Figures 4a and 4b. The clamp 400 is configured to match the external shape of the product 300 when resting on the web portions 130,132,134 and acts as cover which fits over the product outline and the self-supporting structure 200. Specifically, the clamp 400 includes a product recess 402 configured to match the size and dimension of the product 300 so that the product 300 fits snugly in the product recess 402. Further, the clamp 400 includes engaging flaps 404 for engaging a surface of the display panel 104 and angled ends 406 which hook over a respective edge of the display panel 104. The clamp 400 is formed through a vacuum forming process to replicate the shape of the product 300 and is made of transparent PET or any equivalent material.

After covering with the plastic clamp 400, an intermediate assembly 450 is formed comprising the product 300 supported by the self-supporting structure 200 and the clamp 400. The intermediate assembly 450 is next placed in a transparent protective housing 500 as shown in Figures 5a and 5b. The housing 500 comprises two housing halves 502,504 with each housing half 502,504 identical to each other and having a triangular cross section. Each housing half 502,504 is adapted to match the shape and size of the self-supporting structure 200 and Figure 5a shows the self-supporting structure 200 being placed in the first housing half 502 configured as a base box to hold the product 300 and the second housing half 504 configured as a cover box for covering the intermediate assembly 450. In other words, the protective housing formed by the first and second housing half cooperating with each other is a cubicle box.

The two housing halves 502,504 are held together at top and bottom adjoining edges 506,508 by an adhesive tape 510 and a circular tape 512. The adhesive tape 510 is used at the top adjoining edge 506 and doubles as a pivot or hinge. The circular tape 512 is used at the bottom edge 508 and is arranged to be removed by a purchaser or

user of the product 300. With the circular tape 512 peeled off, the second housing half 504 may be lifted and pivoted at the top edge 506 as shown in Figure 5b. In other words, when the second housing half 504 functioning as a cover is closed, the housing 500 becomes the cubicle box and this makes it easier for stacking, storing and/or shipping and displaying. When the second housing half 504 is lifted open and arranged in a "back-to-back" arrangement as shown in Figure 5b, this may be placed stably on a flat surface and can function as product holder or display.

As it can be appreciated, after delivering the product to the user, self-supporting structure 200 and transparent housing 500 may be used as a holder for displaying the product when the user is not using the product.

To improve the aesthetics of the housing 500, a transparent plastic or PET sheet 600 may be used and Figure 6a shows the plastic sheet 600 laid flat and the sheet has five equal portions 602,604,606,608,610 with each portion 602,604,606,608,610 substantially square. Each portion 602,604,606,608,610 is joined to another portion 602,604,606,608,610 by perforated joints 612 which enable the plastic sheet 600 to be folded along the perforated joints 612. The first and last portions 602,610 of the plastic sheet 600 have an elongate cut 614,616 formed about halfway into the respective portions 602,610 and on opposing edges 618,620 to enable the first and last portions 602,610 to mate and overlap when the plastic sheet 600 is folded into a square frame 622 as shown in Figure 6b. Figure 6c is a bottom view of the square frame of Figure 6b to illustrate the overlap between the first and second portions and Figure 6d is a top view of the square frame of Figure 6b which is basically the central portion of Figure 6a. In this way, a simple and yet effective square frame is formed without using adhesive.

The dimension of the square frame 622 is slightly bigger than the housing 500 and this allows the housing 500 to be inserted into the square frame 622 so that each of the portions 602,604,606,608,610 are used to protect respective surfaces of the housing 500. In this way, any fingerprints during handling and shipment are mostly made on the square frame 622 and not on the housing 500 thus improving the aesthetics of the product. The square frame 622 also ensures that the two housing halves 502,504 are secured together during transportation. Since the square frame 622 may be easily removed or formed around the housing 500, this adds convenience to the user when removing the square frame 622.

With the square frame 622, a product card 700 containing product description with a tab 702 extending from one end of the product card 700 card may be used to draw attention to the product card 700. Figure 7 illustrates the product card 700, and Figure 8 illustrates the product card 700 being inserted between the housing 500 and the intermediate assembly 450 with the tab 702 folded against the intermediate assembly 450. In this way, the tab 702 may draw the user's attention to the product card 700 and at the same time, the product card 700 conforms to the design of the self-supporting structure 200.

The described embodiment should not be construed as limitative. For example, it should be appreciated that double sided tape or glue may be used to hold or adhere the product or device to the display panel but this is not preferred as it risks damage to the product.

Further, shrink-wrapped of transparent plastic box instead of transparent plastic/PET sheet may be used but the use of shrink wrap may be unsightly during manufacturing, and heat from shrink wrap machine may damage the product 300, which is not preferred. Further, the product card 700 may be inserted between the square frame 622 and the housing 500 and to be slipped out from the housing 500 by pulling the tab 702. With this simple arrangement, the product card 700 is visible and yet unobtrusive to consumer without using a complicated arrangement.

The adhesive tape 510 to hold or hinge the two housing halves 502,504 is neater and simpler than a complicated screw design etc.

The blank 100 may not necessarily be cardboard but other foldable materials are envisaged which are sufficiently stiff and rigid (and yet foldable) to form the self-supporting structure 200. Since the product/device 300 is visible when it is supported by the display panel (i.e. the web portions), the self-supporting structure 200 may be used to display the product in addition to use as a packaging for the product. Although it is preferred to have three slits and corresponding web portions which are bendable outwards, it should be appreciated that one slit may be sufficient for supporting the product/device, especially if the transparent product clamp layer is used.

The blank may be configured to form different shapes and sizes of the self-supporting structure i.e. the self-supporting structure may come in different shapes and sizes, not just triangular cross-section as illustrated.

- 5 Having now fully described the invention, it should be apparent to one of ordinary skill in the art that many modifications can be made hereto without departing from the scope as claimed.

Claims

1. A blank of foldable material for forming a self-supporting structure for use as a packaging for a product, the blank comprising a plurality of packaging panels joined at fold lines for guiding a user for folding the blank into the self-supporting structure; the plurality of packaging panels including a base panel for supporting the self-supporting structure, and a display panel for supporting the product, the display panel including at least one slit defining a bendable web portion to enable the web portion to be bent outwards for supporting the product to enable the product to be visible when the product is supported by the display panel.
2. A blank according to claim 1, further comprising three slits defining corresponding bendable web portions to enable the corresponding bendable web portions to be bent outwards for supporting three sides of the product.
3. A blank according to claim 1 or 2, wherein the plurality of packaging panels includes a top panel joined to the display panel, the top panel including a top extension flap arranged to be inserted into a base engagement slit formed at a joint between the base panel and a base extension flap.
4. A blank according to any preceding claim, wherein the plurality of packaging panels includes side support panels joined to and extending from respective sides of the display panel, wherein the blank further includes a side extension flap extending from each side support panel, the side extension flaps arranged to be inserted into corresponding side engagement slits formed at the joint between the base panel and corresponding side base panels.
5. A self-supporting structure for use as a packaging for a product, formed from the blank of any preceding claim.
6. In combination, a self-supporting structure of claim 5, a product being supported by the display panel of the self-supporting structure, and a transparent product protection layer for clamping the product to the display panel, the transparent

product protection layer having a product recess configured to match the product's size and engaging flaps for engaging edges of the display panel.

- 5 7. The combination of claim 6, further comprising a container having first and second cooperating container halves, the first container half being arranged to receive the self-supporting structure, and the second container half being arranged to enclose the product and the transparent product protection layer within.
- 10 8. The combination of claim 7, further comprising an adhesive tape for adhering an edge of the first container half with an edge of the second container half.
9. An assembly comprising the combinations of any of the claims 6 to 8.