April 18, 1961 J. S. MILLER 2,980,242

OPEN FACED CARTONS FOR COLLAPSIBLE TUBES

Filed March 31, 1959

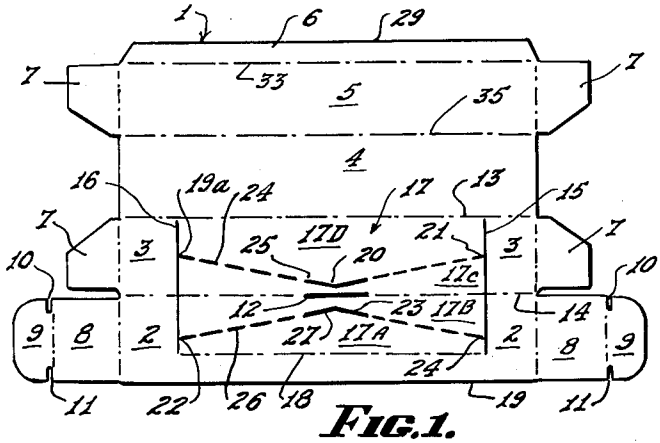


FIG. 1.

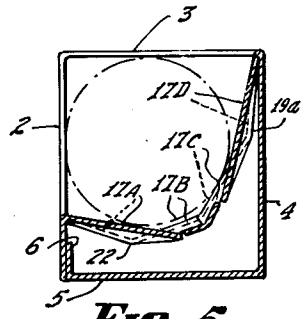


FIG. 5.

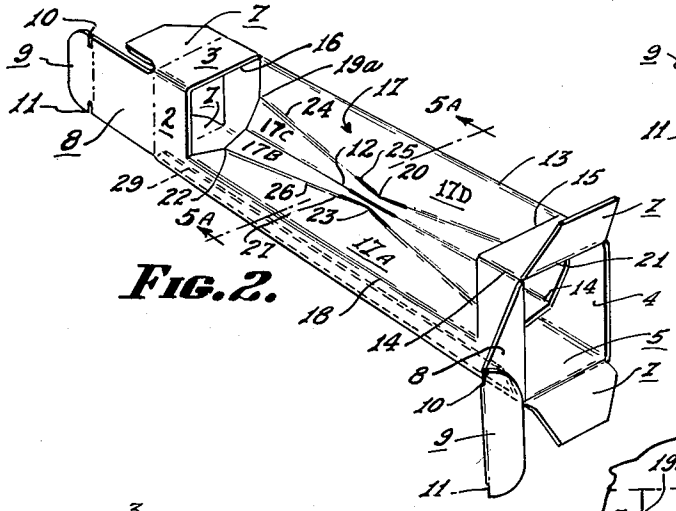


FIG. 2.

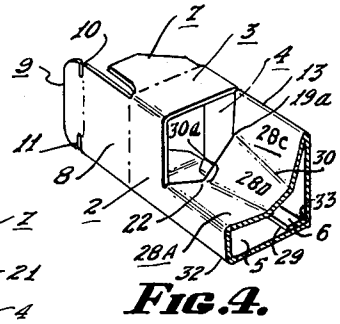


FIG. 4.

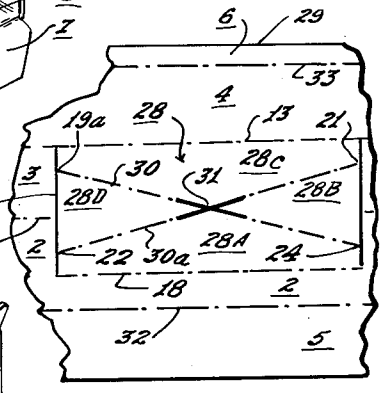


FIG. 3.

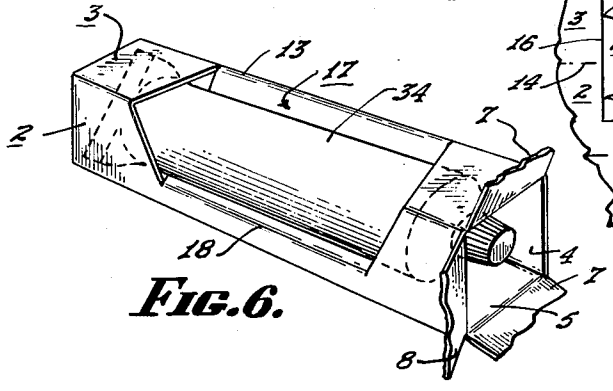


FIG. 6.

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United States Patent Office 2,980,242 Patented Apr. 18, 1961

2,980,242

OPEN FACED CARTONS FOR COLLAPSIBLE TUBES

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Filed Mar. 31, 1959, Ser. No. 803,213

9 Claims. (Cl. 206—45.31)

This invention relates to a carton for collapsible tubes, and more particularly, to an open face display carton for collapsible tubes.

Collapsible tubes are generally packaged in closed cartons which preclude prospective customers from seeing the product-containing tube itself unless the carton is opened and the tube removed for inspection. In many instances this type of package is perfectly acceptacle; however, in certain cases it becomes highly desirable to permit consumers to view a substantial part of the tube itself when the package is displayed in retail outlets. For example, if one of the selling features of the product is the distinctive appearance or construction of the tube, or if a transparent tube is used to package a product so as to permit view of its distinctive properties, it is extremely important that such features be brought to the attention of the public in the best possible way—by actual exposure on the retailer's shelf.

Direct exposure to the consumer's view in some instances has been previously accomplished by marketing the product in transparent containers, for example, and by eliminating entirely the carton which formerly enclosed the container. Although this method is quite satisfactory with certain forms of containers, it is not well suited for use in the collapsible tube field because the shape of the conventional tube is not adapted for the usual type of shelf stacking.

Another method of obtaining such exposure has been to utilize cartons with side panels having portions thereof which are cut out and replaced with a transparent film of cellophane or plastic. This approach to the problem is not only expensive, but also frequently results in a carton of greatly reduced compressive strength.

Numerous other ways of packaging to obtain proper exposure have been attempted, but these have usually had little success in the field of mass-produced goods. The reasons for such lack of success in this field of packaging in the past are manifold, the more common shortcomings being, for example, that the cartons are expensive, or that they cannot be filled with high speed packaging equipment, or that they do not properly support the contents.

It is an object of the present invention to obviate the above difficulties.

Another object of the present invention is to provide an open-faced carton which is inexpensive, adapted to high speed production techniques, designed for positive positioning of the inner container, and relatively strong.

Briefly stated, in accordance with one aspect of this invention, a collapsible tube carton is provided with a saddle portion formed by two cuts transverse of the score separating two adjoining side walls. Each of the sections of the adjoining panels which form the saddle have a substantially V-shaped skip cut so arranged that upon being tucked inwardly the plurality of surfaces forming the saddle walls each become warped. In use, the filled collapsible tube is inserted through an open end of the carton and is positioned over the warped surfaces of the saddle of the formed carton. The warped surfaces bear against

the tube with light pressure and thereby hold the tube in proper position for display purposes.

While the invention will be described in connection with a tuck end carton, it is not so limited and is equally applicable to a seal end carton.

Although the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which is regarded as the present invention, it is believed the invention will be better understood from the following description taken in connection with the accompanying drawing, in which:

Figure 1 is a plan view of the carton blank as cut and scored prior to folding; and

Figure 2 is a perspective view of the erected carton of Figure 1; and

Figure 3 is a fragmentary plan view similar to Figure 1 showing a modification in the construction of the saddle portion and the relocation of one panel of the carton; and

Figure 4 is a fragmentary perspective view of the erected carton of Figure 3; and

Figure 5 is a section taken along the line 5A—5A of Figure 2; and

Figure 6 is a perspective view of a carton of the invention showing a tube packaged therein.

Referring to Figures 1 and 2 of the drawing, the carton blank **1** is cut and scored so as to result in a carton of the correct size. The blank **1** consists of four panels **2**, **3**, **4**, and **5**, glue flap **6**, sidewall flaps **7**, and end flaps **8** provided with tuck ends **9**. All the lines of attachment between adjoining panels, flaps, and tuck ends are fully scored in this embodiment except for portions of such lines which may preferably be cut. The cut portions in the present instance include sections **10** and **11** of the lines separating end flaps **8** and tuck ends **9**, and section **12** at the center of the score line **14** joining panels **2** and **3**.

Extending from the score **13** (located between panels **3** and **4**) across panel **3** and score **14**, and continuing for a part of the distance across panel **2** are two cuts **15** and **16** which define a saddle portion, generally designated as **17** and consisting of sections of panels **2** and **3**. The cuts **15** and **16** which may be straight, as shown in Figs. 1 to 4, or curved or angled as shown in Fig. 6 according to appearance requirements, are each located inwardly of the ends of panels **2** and **3** a distance which is at least sufficient to provide carton end portions having enough of the full rectangular carton structure remaining to house each end of the article to be packaged. Score **18**, which is substantially parallel to edge **19** of the blank **1**, connects the ends of cuts **15** and **16** on panel **2**. Extending from point **19***a*, which is approximately half the distance across panel **3** on cut **16**, to an apex **20** within panel **3** and substantially adjacent cut section **12** and continuing to point **21**, which is approximately midway of the part of cut **15** extending across panel **3**, is a V-shaped line of weakening comprising preferably short skip cuts **24**. This line also preferably has a continuous V-shaped portion **25** cut at the apex **20**. Similarly, an oppositely disposed V-shaped line of weakening formed by skip cuts **26** extends from point **22** on cut **16** to an apex **23** within panel **2** and continues to point **24** on cut **15**. In this embodiment cut **12** and apexes **20** and **23** are shown in a substantially central portion of the saddle, it being understood, of course, that these points could advantageously be placed in other (and non-central) parts of the saddle in order to adapt the saddle to varying shapes of tubes. Points **22** and **24** are each preferably located at the approximate respective center of the part of cuts **15** and **16** which lie in panel **2**. This line also has a continuous cut V-shaped portion **27** at its apex **23**. It has been found most advantageous to make the continuous cuts **25** and **27** so that each divergent leg of each V-shaped line of weakening is cut from the apex

along the leg a distance of roughly 10 to 30 percent of the length of the leg. This combination of skip cuts, scores and cuts divides the saddle 17 into four surfaces, 17A, 17B, 17C and 17D.

After the blank has been printed and cut and scored as described above, it is folded and glued in preparation for use. In the case of the embodiment shown in Figures 1 and 2 it is preferable to fold the blank along scores 14 and 35, and adhesively secure the inside edge portion of panel 2 to the outer surface of glue flap 6. Note that the height of glue flap 6 is such that edge 29 does not quite reach score 18 of panel 2 when the carton is glued.

In use, the carton is erected or "squared" in the usual way and the saddle portion folded inwardly after "breaking" the saddle along the V-shaped lines of weakening. The resulting erected carton, as shown in Figure 2, is then ready for the insertion of a collapsible tube. The tube is loaded by sliding it into one end of the erected carton, cap end first and the crimped tube bottom positioned so as to rest diagonally across the carton with one end of the crimp in the corner defined by panels 3 and 4 and the other end of the crimp near the diametrically opposite corner. As shown in Figure 6 the saddle 17 is designed to support the tube 34 from beneath so that the tube is suspended next to the open faces in the panels 2 and 3 of the carton. Packaging is completed by folding in sidewall flaps 7 and superimposing end flaps 8, tuck ends 9 being folded over and inserted adjacent the inner face of panel 4.

Due to its construction, when the saddle is folded inwardly as described above, the four surfaces 17A through 17D become warped into slightly curved surfaces. The warping of the surfaces is the result of internal stresses set up in the saddle when the saddle material is "broken" along the V-shaped lines and folded inwardly. Figure 5 illustrates the nature of the distortion of each surface of the saddle, and that each is bowed in a substantially longitudinal direction. Thus it is clear that as shown in Figure 5, the cross section of the saddle of the erected carton gradually changes from point-to-point along the full length of the saddle.

Because of the warped surfaces and/or the forces which produce the warping, and because of the curvature of the combined surfaces, it has been found that the saddle portion permits positive positioning of a tube within the display carton—minimizing tube movement and thus retaining it in maximum display position. This combination in the cradle-like saddle portion, i.e. a shape which will roughly conform to the shape of a collapsible tube and the gentle pressures applied by each of the warped surfaces, not only permits the aforementioned positive positioning of the tube, but also permits the tube to be inserted in the carton rather easily—a necessity for efficient high speed production of the packaged product.

The cost of the above-described open face display cartons will be approximately identical to that of the usual closed cartons of the same thickness and quality since the only changes necessitated by the additional cutting and scoring are changes in the dies. Aside from the die conversions, material costs, printing expenses, shipping costs and all other expenses remain the same.

As far as the strength of the display carton is concerned, there can be no doubt that additional cuts and scores will tend to weaken the portion of the carton within which they lie. However, it is to be noted that this tendency has been compensated for in the display carton, of the present invention by the adhesive attachment of the glue flaps 6 to the uncut portion of panel 2 and by having a fold line for the saddle on corner score 13. By means of the glue flap placement, a double thickness of material is present at the base of panel 2 to prevent distortion or tearing of the panel due to forces acting upon the saddle and to increase the compressive strength of the remaining portions of the panel. The

advantage of having a sharp angle fold on score 13 is that the fold results in a corner having greater stiffness in a single direction than that of a right angle corner. By proper placement in the stacking of the cartons in order to utilize the unidirectionally increased stiffness, the effect of any reduction in the compressive strength of the carton due to the open faces is materially reduced.

Figures 3 and 4 show fragmentary views of a modified form of carton which is identical with that shown in Figures 1 and 2 except for the cuts and scores in the saddle portion 28 and a rearrangement of panel 5. In these figures elements common to both embodiments are denoted by numbers corresponding with those used in connection with Figures 1 and 2. In this modified carton blank, panel 5 and the sidewall flaps 7 which are connected thereto (not shown) have been moved to a position next to panel 2 and glue flap 6 has been moved so as to be contiguous to panel 4. Score line 32 defines the line of attachment between panels 5 and 2 and score line 33 denotes the line of attachment between panel 4 and glue flap 6. Saddle 28 is transversed by two lines of weakening 30 and 30*a* which are preferably score lines with skip cuts therealong and which are of approximately the same length, crossing at point 31 in the central saddle portion. As shown in Figure 3 each of the score-cut lines 30 and 30*a* has a cut section which extends through point 31, and is approximately bisected at the point of intersection. These cut sections which extend through the point of intersection each are preferably a length roughly equal to from 10 to 30% of the length of the score-cut line along which it lies.

In order to glue the formed carton blank, it is folded along scores 13 and 32 and the outer surface of glue flap 6 adhesively attached to the inside edge portion of panel 5. Thus saddle 28 remains unfolded prior to "breaking" the saddle along lines 30 and 30*a*.

The modified form of the display carton is erected in substantially the same manner as that of Figures 1 and 2, and because the lines of weakening 30 and 30*a* affect the saddle 28 in the same way as the skip cut lines of saddle 17, surfaces 28A, 28B, 28C, and 28D are warped in a manner similar to surfaces 17A through D of saddle 17. Due to the similarity in the shape and function of the two saddles, many of the advantages mentioned with respect to saddle 17 are equally applicable with regard to saddle 28.

Many modifications of the above invention may be used and it is not intended to hereby limit it to the particular embodiments shown or described. The terms used in describing the invention are used in their descriptive sense and not as terms of limitation, it being intended that all equivalents thereof be included within the scope of the appended claims.

What is claimed is:

1. In a carton adapted to display a collapsible tube, a saddle formed by two cuts of substantially equal length, said cuts being in spaced relation to each other and each extending across at least a substantial portion of each of two adjoining panels of said cartons but not completely across both of said adjoining panels, and two score lines each connecting corresponding ends of each cut, said saddle being divided into four surfaces by diverging lines of weakening extending from a portion of the saddle to points spaced along said cuts, said lines of weakening being so constructed and arranged that upon tucking said saddle inwardly when the carton is erected each of said surfaces becomes warped in a longitudinal direction, whereby said saddle constitutes an integral combination of individually warped surfaces which hold said collapsible tube and restrain its movement when in proper alignment for display.

2. The carton claimed in claim 1 wherein said lines of weakening are formed along portions of three non-intersecting lines, said non-intersecting lines comprising a first line which extends straight across the saddle in a direction substantially paralleling the line of separation

between said adjoining panels, a second line which is placed to one side of said first line and is V-shaped with the apex thereof located closer to said first line than is any other point on either diverging leg, and a third line which lies to the other side of said first line and is also V-shaped with the apex thereof located closer to said first line than is any other point on either diverging leg.

3. The carton claimed in claim 2 wherein a continuous cut exists along the apex end of each diverging leg of said second and third lines, each of said continuous cuts extending from the apex a distance equal to about 10 to about 30 percent of the full length of the respective diverging leg along which the continuous cut is made.

4. The carton claimed in claim 2 wherein said first line coincides with the line of separation between said adjoining panels.

5. The carton claimed in claim 1 wherein one of said score lines coincides with a corner of said carton and the other of said score lines is spaced from the corner diametrically opposite said first mentioned corner when the carton is erected.

6. The carton claimed in claim 1 wherein said lines of weakening are formed along portions of two intersecting lines.

7. The carton claimed in claim 6 wherein said intersecting lines each have a cut section which is substantially bisected at the point of intersection, the length of each of said sections equalling from about 10 to about 30 percent of the total length of the respective intersecting line along which such section is cut.

8. The carton claimed in claim 7 wherein said intersecting lines are of substantially the same length.

9. A carton adapted to display an article, said carton having four panels and two end flaps, a saddle portion formed by two cuts transverse of the score separating two adjoining panels, said cuts extending across at least a substantial portion of each of said adjoining panels but not completely across both of said adjoining panels, said saddle portion being tucked inwardly and folded along the score originally provided to separate the adjoining panels thereby providing two adjoining panel sections which form said saddle, each of said panel sections having a substantially V-shaped line of skip cuts, said skip cuts being so arranged that upon being tucked inwardly the plurality of surfaces which comprise said saddle each become warped in a longitudinal direction, whereby said saddle will hold said article and restrain its movement when the article is placed in proper alignment for display.

References Cited in the file of this patent

UNITED STATES PATENTS

2,593,430	Frankenstein	Apr. 22, 1952
2,822,917	Toensmeier	Feb. 11, 1958
2,858,013	Vines et al.	Oct. 28, 1958

FOREIGN PATENTS

314,520	Switzerland	June 15, 1956