United States Patent

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[54] **MEANS TO REDUCE DELAMINATION OF CARTONS HAVING REMOVABLE ACCESS PANELS**
7 Claims, 8 Drawing Figs.

[52] **U.S. Cl.** ..... **229/51 TS,** 229/51 D, 206/57
[51] **Int. Cl.** **B65d 5/54**
[50] **Field of Search** ..... 229/51 TS, 51 TC, 51 SC, 51 D, 85, 66; 220/54, 27; 83/9

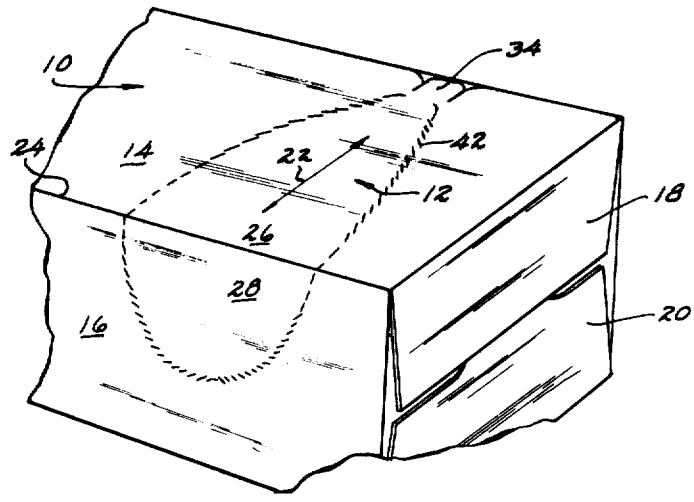
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ABSTRACT: A means to provide a carton with a "tear-out" access panel defined by peripherally spaced perforations so disposed that they permit the panel to be removed without causing delamination of the plies of the material. The perforations are progressively positioned about the periphery of the panel in such a manner that the individual "tears" between adjacent perforations will be directed parallel to the grain of the carton material.



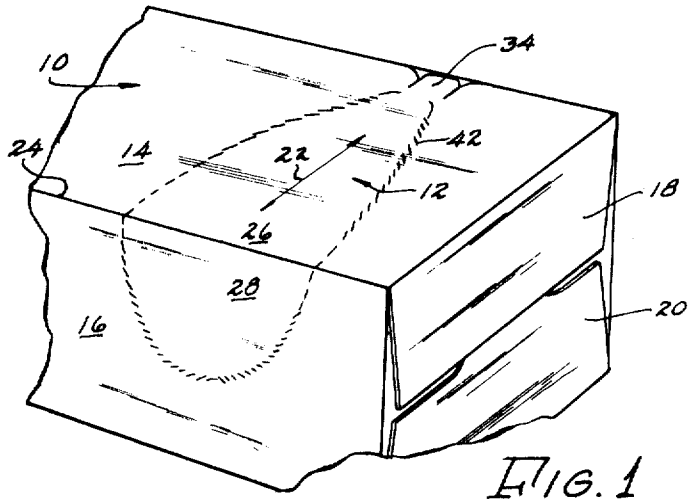


FIG. 1

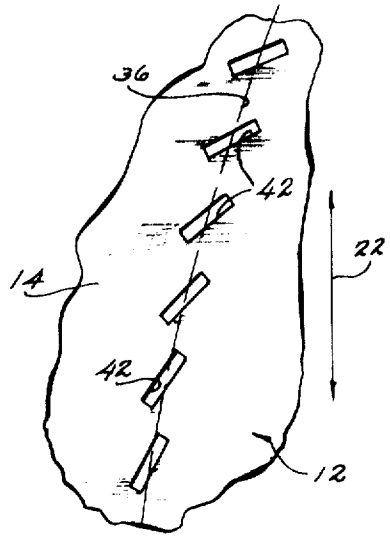


FIG. 3

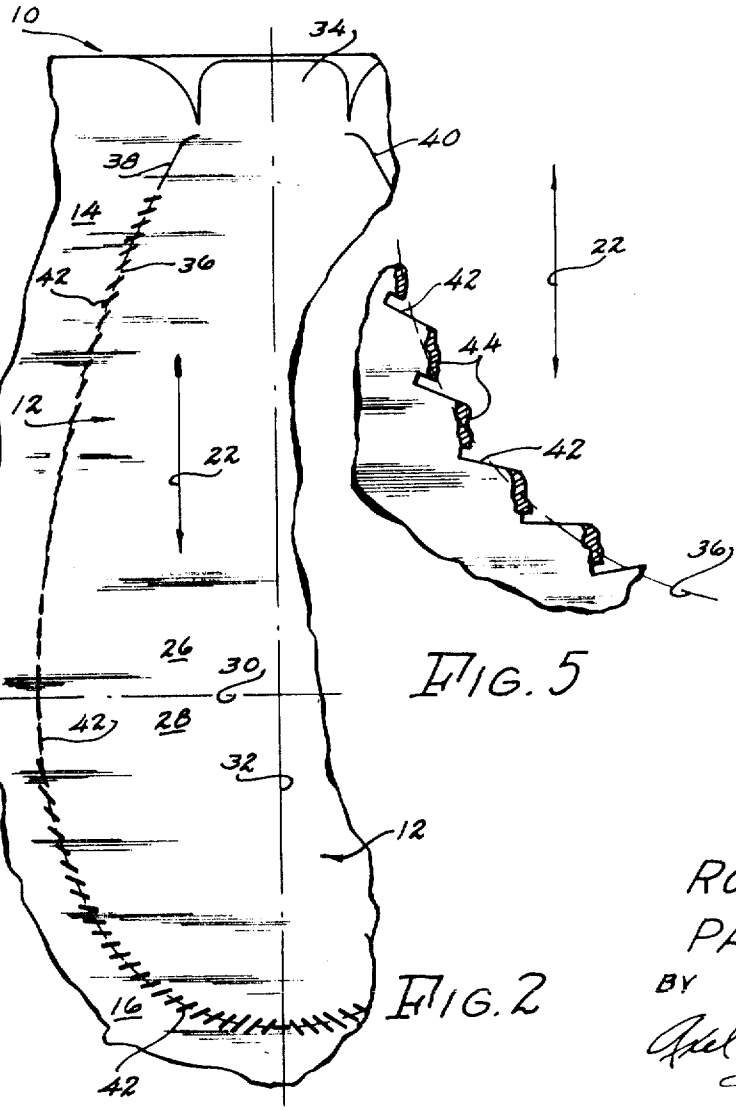


FIG. 2

FIG. 5

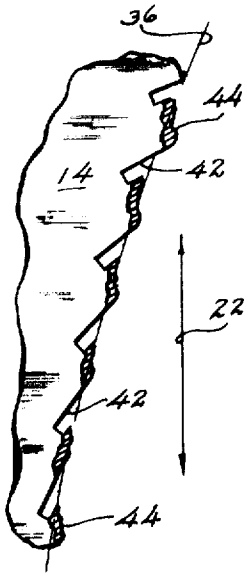


FIG. 4

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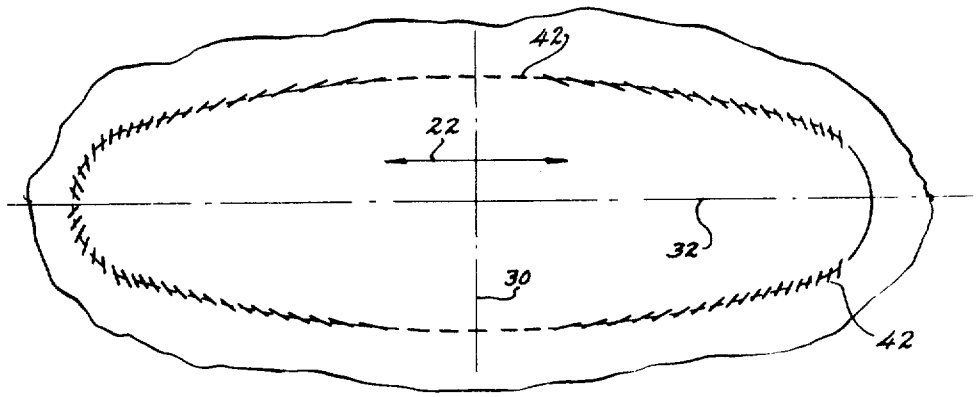


FIG. 6

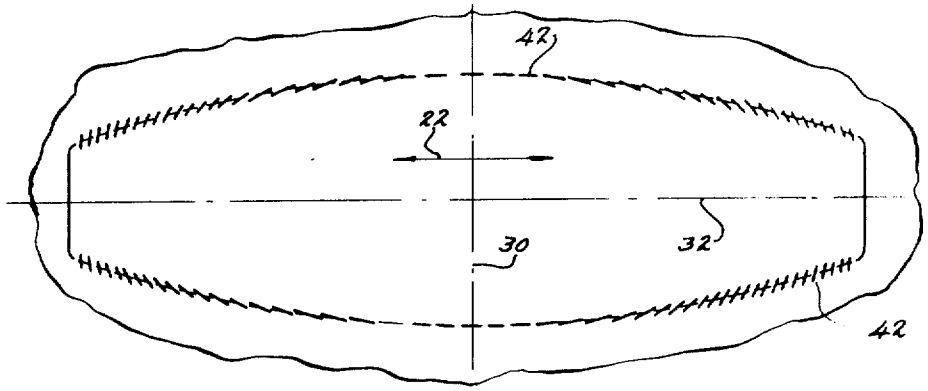


FIG. 7

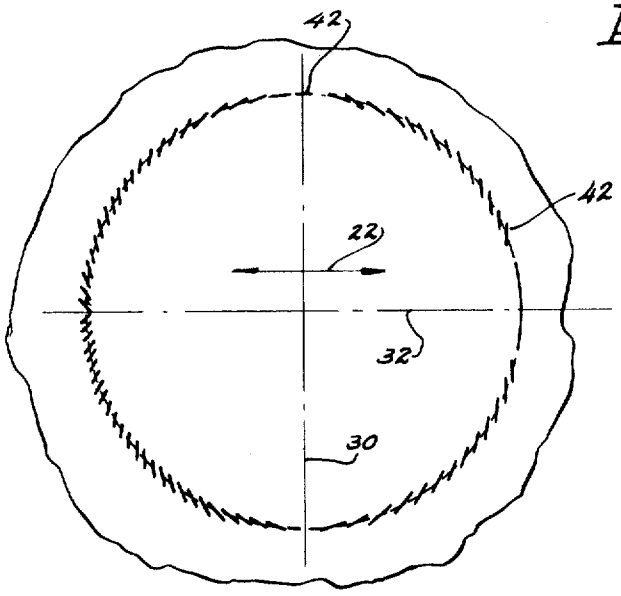


FIG. 8

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MEANS TO REDUCE DELAMINATION OF CARTONS HAVING REMOVABLE ACCESS PANELS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention concerns cartons of fibrous material having a panel which is defined by perforations that permit the panel to be torn from the carton so as to expose the contents thereof.

2. Description of the Prior Art

Presently produced cartons having access panels similar to that of the present invention tend to delaminate between the plies when the panel is removed, owing to the arrangement of the perforations defining the latter.

SUMMARY OF THE INVENTION

Facial tissues and similar products are customarily packed in a carton having an access panel that is outlined by perforations that maintain the panel intact in the carton until the contents are to be removed individually as needed. Presently available cartons of this type are of a material composed of laminated plies or layers that tend to separate or delaminate, and present a ragged and unsightly appearance when the panel is removed. An object, therefore, of this invention is to provide a carton having an access panel that is defined by perforations positioned in such a manner as to permit the panel to be torn and yet leave a neat-appearing opening.

Further objects and advantages of this invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein an embodiment of the invention is shown. It is however, to be understood that the invention is not limited to the details disclosed, but includes all such variations as fall within the spirit of the invention.

Referring to the drawings:

FIG. 1 is a perspective view of a portion of a carton showing the access panel of this invention before being removed.

FIG. 2 is an enlarged fragmentary view of a portion of a carton with the access panel intact and lying in one plane.

FIG. 3 is an enlarged fragmentary view of the upper portion of FIG. 2, and showing the relative positions of the perforations which define the outline of the access panel.

FIG. 4 is a fragmentary view of the portion indicated in FIG. 3, but in which the access panel has been removed.

FIG. 5 is a fragmentary view of a portion of the carton adjacent the lower portion of the access opening after the panel has been removed.

FIGS. 6, 7 and 8 show examples of access panels of various contours embracing this invention and illustrate the versatility thereof.

A typical carton embracing this invention is shown in FIGS. 1 through 5, and comprises a container for facial tissues and similar products. In this instance, the access panel 12 is an integral part of both the upper panel 14 and the side panel 16, and when removed, permits access to the contents of the carton 10. Panels 14 and 16 in this instance, lie in planes perpendicular to each other. The usual end flaps 18 and 20 form the means of closing the end of the carton. Similar flaps are provided at the other end of the carton. The carton 10 is so folded that the grain of the material of panel 14 extends in the direction of arrow 22, and perpendicular to the fold 24, the fold being perpendicular to the direction of removal of the panel 12. It is to be understood that the panel 12 may lie entirely in one panel, such as 14 when so desired.

Access panel 12 in this instance, is of an approximate oval shape, having an upper portion 26 and a lower portion 28. A minor axis 30 defines the maximum width of panel 12 and coincides with fold 24 of FIG. 1. A major axis 32 extends parallel to the grain of the material and divides the access panel 12 into a pair of allochirally related portions, each being identical with the other, such as right and left. A tab 34 is provided at the upper end of panel 12, to be grasped by the fingers when the panel is to be removed. Access panel 12 is defined by a peripheral outline 36 as shown in FIGS. 3, 4 and 5. Initial perforations or cuts 38 and 40 are provided, in this instance, and which pass through the material. These cuts conform to the outline 36, and are adjacent tab 34.

The gist of this invention comprises defining the access panel 12 by a plurality of perforations 42 which pass through the material and are peripherally spaced along outline 36 in an approximate echelon formation, and which proceed from cut 38 to cut 40. Perforations 42 adjacent cuts 38 and 40 extend initially and forwardly and at a maximum divergency relative to axis 32, and progress along outline 36 in a substantial echelon manner, viz (in the form of steps). However, the perforations 42 progressively decrease in divergency relative to the outline 36 as they approach the minor axis 30, so as to coincide with outline 36 as the perforations approach minor axis 30. Perforations 42 continue in coincidence with the outline 36 below axis 30 and increase in divergency relative to outline 36 on approaching axis 32.

When the access panel is being removed, the material is severed from one perforation 42 to the adjoining perforation in the direction of the grain of the material so that the tendency to delaminate the layers of the material is substantially eliminated. The result being that an access opening is obtained having a periphery that is substantially free of delamination, and presents a neat appearance. This arrangement of the perforations 42 also results in a carton that is not easily damaged by normal handling.

FIGS. 6, 7 and 8 illustrate various access panel contours which embrace the present invention. They are presented to indicate the adaptability of it to various carton requirements.

The above being a complete description of an illustrative embodiment of the invention, what is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A carton of sheet fibrous material having a removable access panel characterized by a curvilinear peripheral outline defined by a first axis extending in the direction of the grain of said material and a minor axis extending normal to said first axis and positioned substantially at the maximum width of said panel, said outline diverging from a point adjacent said first axis and approaching said minor axis and being characterized by a plurality of spaced linear perforations initiated adjacent said first axis and progressing along said outline in an approximate echelon formation, said spaced linear perforations initially extending at a maximum divergency relative to said outline, and progressing relative to said outline and progressively diminishing in divergency relative to said outline and becoming substantially coincident with said outline upon approaching said minor axis.

2. A carton as set forth in claim 1, in which said panel comprises a pair of allochirally related areas defined by said axes and symmetrically related thereto.

3. A carton as set forth in claim 1, in which said outline continues beyond said minor axis and converges toward said first axis, and said linear perforations continue along said outline beyond said minor axis, and progressively increase in divergency relative to said outline on approaching said first axis.

4. A carton as set forth in claim 2, in which on each of said areas an initial perforation is provided coincident with said outline and symmetrical to each other with respect to said first axis.

5. A carton as set forth in claim 3, and having an upper panel and a side panel, the intersection of said panels defining a fold, said access panel lying partly in said upper panel and partly in said side panel.

6. A carton as set forth in claim 5, in which said fold and said minor axis coincide.

7. A carton as set forth in claim 6, in which said grain is perpendicular to said fold.

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