

FIG. 1.

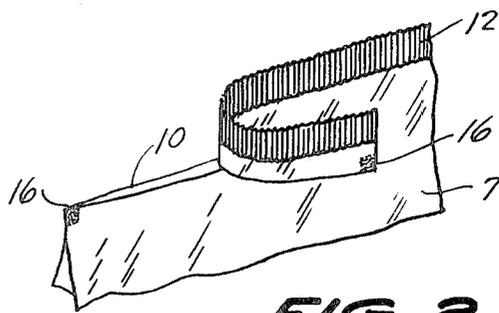
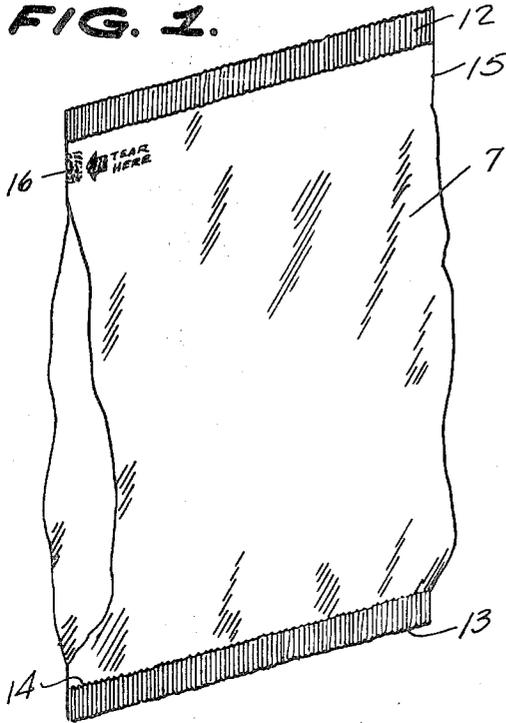


FIG. 2.

FIG. 3.

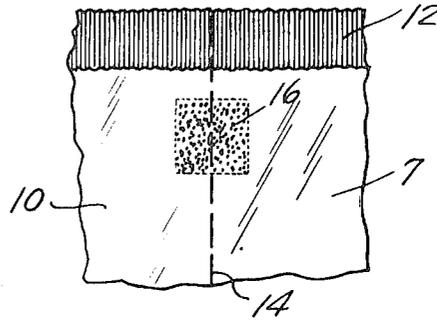


FIG. 5.

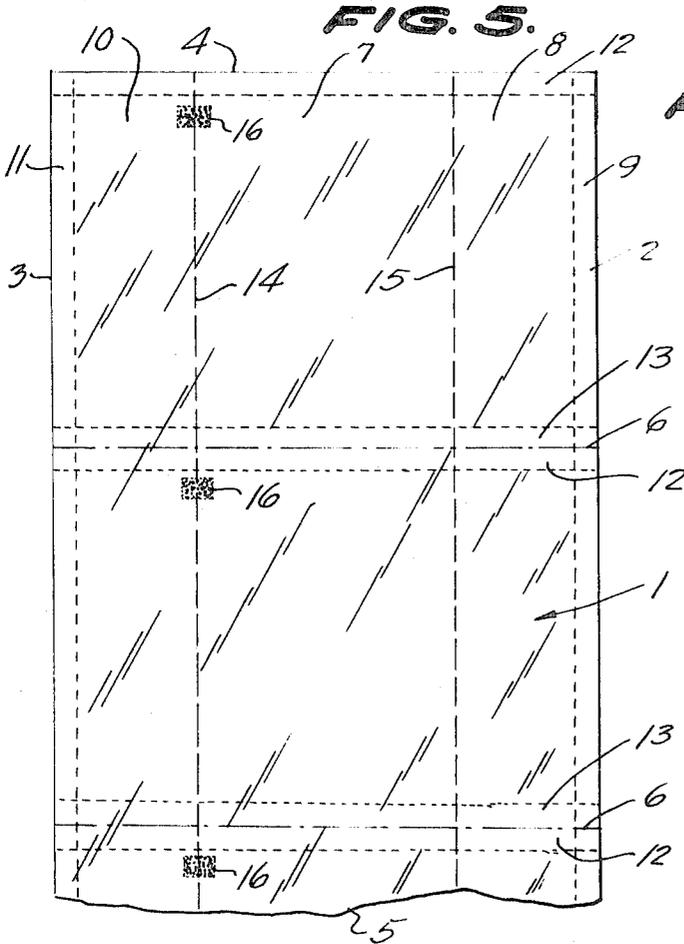
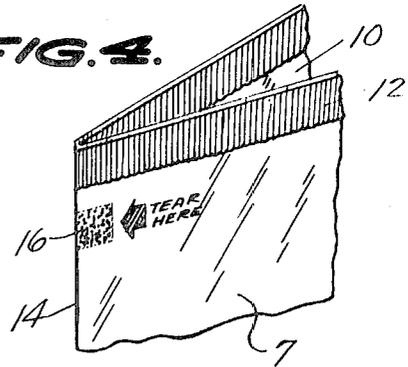
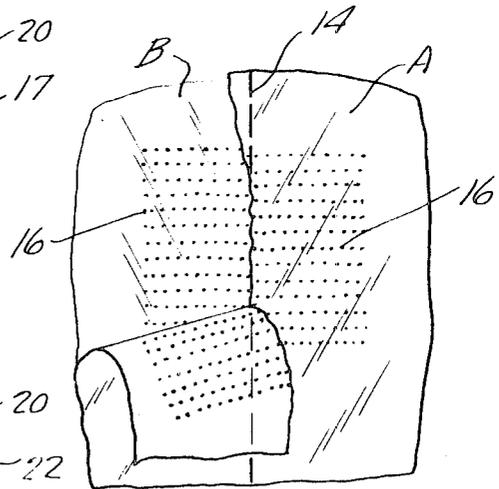
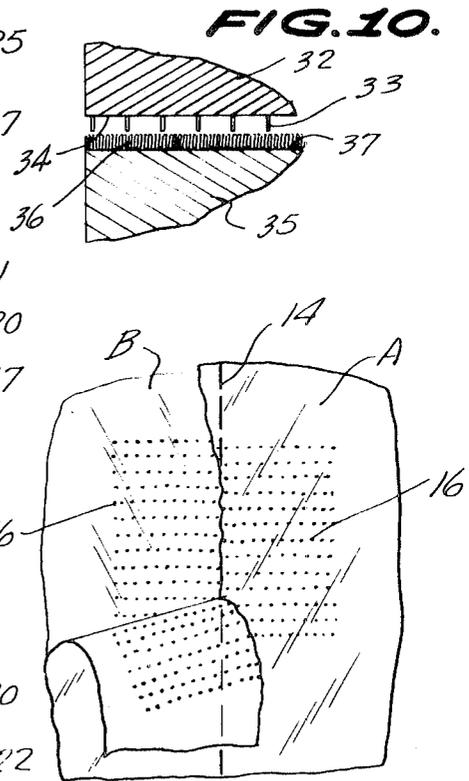
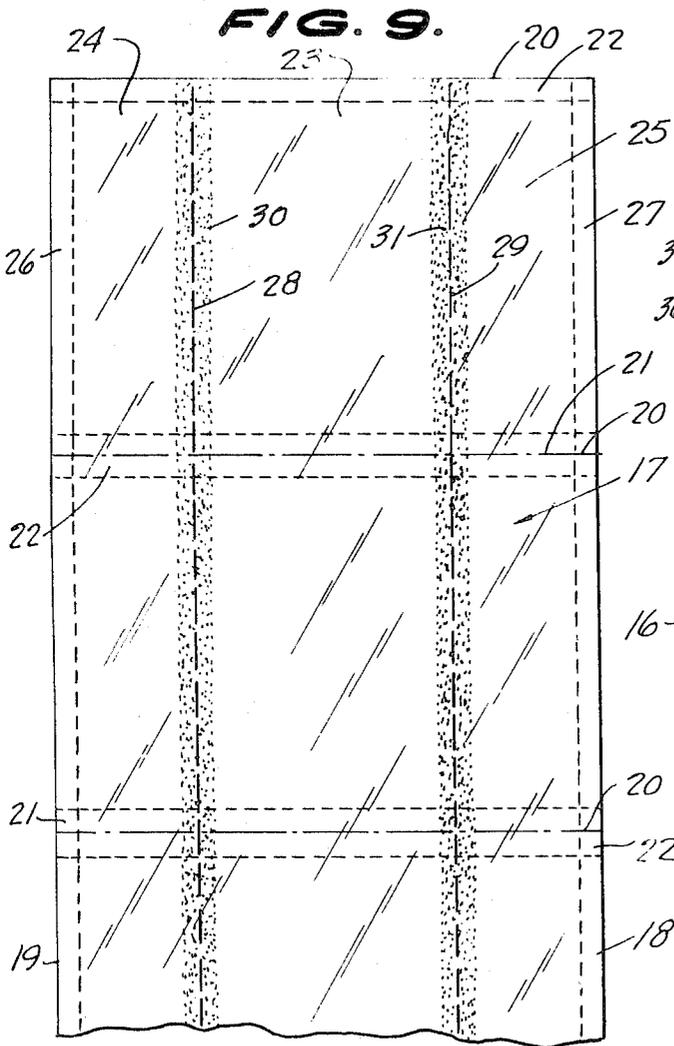
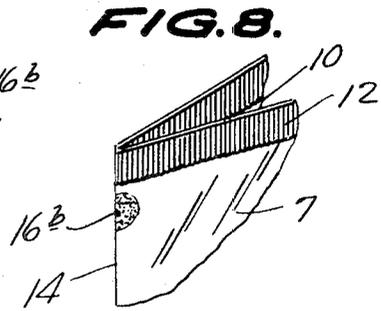
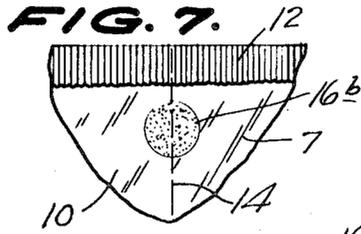
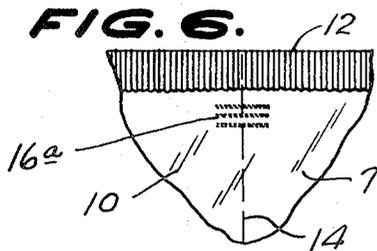


FIG. 4.



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OPENING AID FOR PACKAGES

DESCRIPTION OF THE INVENTION

The present invention is concerned with packaging materials and packages formed thereof which material consists of or includes an oriented material which, by an inherent quality, tears in a straight line.

The principal object of the present invention is to provide an opening aid for packages formed from a material consisting of or including an oriented material which will assist a user to begin the tear while retaining stringent product taste and freshness keeping qualities in the materials and packages, and retaining the tensile strength and tear resistance in the packaging materials to prevent premature tearing thereof while passing under the pressure and tension of printing, coating, laminating, slitting or automatic form and fill equipment.

A further important object of the invention is to provide an opening aid for packaging material including an oriented material which opening aid can be applied to said material during prelamination stages thereof or conversion to provide a selectivity of webs of material receiving the opening aid to be laminated and/or coated.

Another important object of the invention is to provide a packaging material which can be used on automatic form and fill equipment to be formed into packages filled with a product and sealed close and each of which packages includes an opening aid provided in said material without requiring additional apparatus on the form and fill equipment.

Further objects of the invention will be a part obvious and in part pointed out in the following detailed description of the drawings, in which,

FIG. 1 is a front perspective view of a package having the present opening aid;

FIG. 2 is a perspective view of a top portion of the package of FIG. 1 during the opening thereof;

FIG. 3 is an enlarged view of the open portion of a package having the opening aid prior to folding;

FIG. 4 is a view similar to FIG. 3, but with the package folded;

FIG. 5 is a top view of the end portion of a web of the present packaging material;

FIG. 6 is a view similar to FIG. 3, of a modified form of opening aid;

FIG. 7 is a further view similar to FIG. 3 of a further form of opening aid;

FIG. 8 is a view similar to FIG. 7, but with the package folded;

FIG. 9 is a top view of the end portion of a modified form of a web of the packaging material;

FIG. 10 is a cross-sectional view of a portion of a needle roller and a fine brushlike web impression or web support roller for forming the present opening aid; and

FIG. 11 is a top view of a portion of packaging material having the opening aid in two laminated materials thereof.

Referring now more particularly to the accompanying drawings, wherein like and corresponding parts are designated by similar references characters, numeral 4, of FIG. 5 generally designates the lead end portion of a web of packaging material to be formed into a bag such as shown in FIG. 1, for example. Said web 1 has straight parallel side edges 2 and 3, straight lead edge 4 normal to said side edges and rear edge 5 is shown uneven to indicate that the web continues to a roll thereof (not shown). Broken lines 6 indicate the cutoff line between packages while center portion 7 provides the face of each package. 8 indicates one-half of the back of the package, while 9 is the back seal area for back portion 8. Similarly, 10 indicates the other half-portion of each package back with 11 the back seal area thereof. The top seal area of each package is indicated at 12, while the bottom seal area for each package is shown at 13 with a cutoff line 6 between each area 12 and 13. The crease lines 14 and 15 define the face of the packages and crease line 14 has an opening aid area 16 extending laterally of said crease line adjacent each top seal area 12.

Crease line 15 may also have similar opening aid areas 16, if desired, provided laterally thereof.

Web 1 is composed of at least one oriented material, but may be a laminated web of a plurality of laminated oriented materials or one or more oriented materials laminated with other materials such as coated or uncoated glassine, paper, foil, cellophane, laminated polymer coated cellophanes, and other packaging materials.

By the term "oriented materials" as used herein designates materials which have received special processing called "orientation" which causes a realignment of the molecules of the material into a linear chain pattern, or which are by nature oriented causing them to tear in an essentially straight line. Such oriented materials may have a high initial resistance to tear or tension breaks, but when once started they will tear with very minor resistance in a very straight line without the need for a secondarily imposed guideline of weakness. Examples of such oriented materials may include polypropylene, polyethylene, polystyrene and the like.

Regenerated cellulose (cellophane) is moderately difficult to start tearing, but once started it will tear without directional control. When regenerated cellulose is laminated with an oriented material and the resulting material is torn, a clean straight, directional tear path is formed in both materials as the oriented material establishes and controls the tear path of both materials.

In the conversion of the packaging materials, one or more oriented materials may be pattern ruptured as at 16 in FIG. 5. That is, a pattern 16 of minute porelike punctures are provided across a fold line 14 or 15 so as to be on an edge of a formed package as shown in FIG. 1, which prepares the package for easy tearing along natural tear paths created by the molecular orientation of the oriented material.

The minute punctures of the pattern 16 are provided by minutely expanding and not by removing portions of the material. The punctures are formed by momentarily parting the continuity of the material and releasing the same so that the material substantially refills the puncture. The puncture size can vary upwardly from the point of a pin, but the smaller the puncture the more effectively it will serve as an opening aid.

Each pattern includes a considerable number of punctures equally distributed on both sides of the fold line 14 or 15, but within a pattern such as a rectangular linear pattern 16 of FIGS. 1 to 5, an oblong random pattern 16a of FIG. 6, circular random pattern 16b of FIGS. 7 and 8 or continuous patterns 30 and 31 of FIG. 9. Said patterns have a narrow width compared with the width of web 17, for example, and a suggested width would be an inch on a web width of 10 inches with one-half inch of the pattern on each side of the fold line 14 or 15.

When the packaging materials or conditions are such that it is desirable to apply opening aid pattern of punctures to two or more materials, the position of the puncture patterns are juxtaposed to prevent the alignment of the individual punctures of the materials so as to retain the necessary product keeping or atmospheric barrier properties of the combined materials. For example, as shown in FIG. 11, there is shown two superimposed webs A and B. The punctures of pattern 16 of web A are positioned between the punctures of pattern 16 of web B with the result that none of the punctures of sheet A are in alignment with any of the punctures of pattern 16 of sheet B. Web B thus closes off the punctures of web B and vice versa.

To produce the punctures of the patterns, the material to be so pattern punctured can be passed beneath a driven roller 32 of FIG. 10 having a periphery from which extend pins 33 arranged to produce pattern 16, 16a, 16b or 30 or 31, or the like. The pins 33 are intermittently or continuously pushed through the web and removed during the travel of the material therebeneath.

The puncturing of the material can be applied by rollers 32 mounted on printing, coating and laminating equipment through which the material is passing at any stage of the conversion of the material to packaging material prior to the ac-

tual laminating function, but preferably at the last stage of the conversion, which permits the opening aid to be on packaging material webs 1 supplied in roll stock form or fabricated packaging, such as the bag of FIG. 1. The area pattern of small punctures can be positioned anywhere along the face folds 14 or 15 of the package and the area patterns can be of any desired configuration. The punctures of the tear patterns 16, 16a, 16b, 30, 31, or the like are produced close together in the group to cross the tear paths of the oriented material.

As shown in FIG. 9, the web of material 17 has parallel side edges 18 and 19, lead or cutoff top edges 20, top seal areas 22, bottom seal areas 21, front face portion 23, back half-portions 24 and 25, back seal areas 26 and 27, fold lines 28 and 29 and continuous puncture patterns 30 and 31 along the length of said fold lines 28 and 29, respectively.

Webs 1 and 17 can be a single oriented materials or laminations of one or more oriented materials alone or together with other packaging materials. After said webs have been converted into the finished web 1 or 17, they are formed into packages such as the bag of FIG. 1 or shipped in roll form to users thereof on automatic form and fill machines. Such form and fill machines transforms continuous rolls of said webs of connected package portions from the flat web into the three-dimensional form such as the bag in FIG. 1, or a pouch or the like, seal the back overlaps 9 and 11 or 26 and 27, seal the bottom area 21, dump in 1 predetermined quantity or weight of product and then seal the top 20 and bottom 21 of the next package and cutoff the individual FILLED and sealed bags. For use on such machines there is not created any significantly rough lines or areas in the patterns 16, 16a, 16b, 30 or 31 which would snag on elements of the machines and effect premature tearing of the web 1 or 17 as the material is drawn through the machine. Likewise, the webs 1 or 17 retain their tensile strength and tear resistance after receiving said puncture areas preventing premature tearing of the web while it is under the pressure and tension of printing, coating, laminating, or slitting in equipment therefor as well as in said form and fill equipment.

A sealed package, such as the bag of FIG. 1, can be easily opened by squeezing the front 7 and back 10 of the bag together in the puncture area 16 and by using the usual tearing action with the users index finger and thumb, the sealed top portion as shown in FIG. 2 will be torn from the bag as far as desired.

I claim:

1. A tearing aid for oriented materials comprising an oriented material having a fold and a group of adjacent minute

porelike punctures in said material with said group extending on opposite sides of said fold for a relatively narrow width of said oriented material from said fold.

2. A tearing aid for packaging material comprising at least one oriented material having at least one fold and a group of adjacent minute porelike punctures in said material with said group extending on opposite sides of said fold for a relatively narrow width of said oriented material from said fold.

3. In a laminated packaging material, a tearing aid comprising at least one oriented material providing a lamination of the packaging material and said material having at least one fold and a group of adjacent minute porelike punctures in said material with said group extending on opposite sides of said fold for a relatively narrow width of said oriented material from said fold.

4. In a laminated packaging material, a tearing aid comprising a plurality of oriented materials providing laminations of the packaging material, said oriented materials having a common fold and each of said oriented materials having a group of adjacent minute porelike punctures with said groups extending on opposite sides of said fold for a relatively narrow width of said oriented material from said fold.

5. In a laminated packaging material, a tearing aid as claimed in claim 4, wherein each of the punctures of one of said oriented materials is offset relative to each of the punctures of a further one of said oriented materials.

6. In a package of a material including at least one oriented material, a tearing aid comprising a fold in said package and a group of adjacent minute porelike punctures in the oriented material with said group extending on opposite sides of said fold for a relatively narrow width of said oriented material from said fold.

7. In a package of a material including at least one oriented material, a tearing aid as claimed in claim 6, wherein said punctures are closely grouped together in a geometric pattern.

8. In a package of a material including at least one oriented material, a tearing aid as claimed in claim 6, wherein said punctures are positioned along the length of said fold.

9. In a package of a material including at least one oriented material, a tearing aid as claimed in claim 6, wherein said punctures are each expanded portions of said oriented material.

10. A package comprising a tube of a material including at least one oriented material and a group of adjacent minute porelike punctures in a relatively small portion of said oriented material for assisting in the starting of the tearing of said tube.

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