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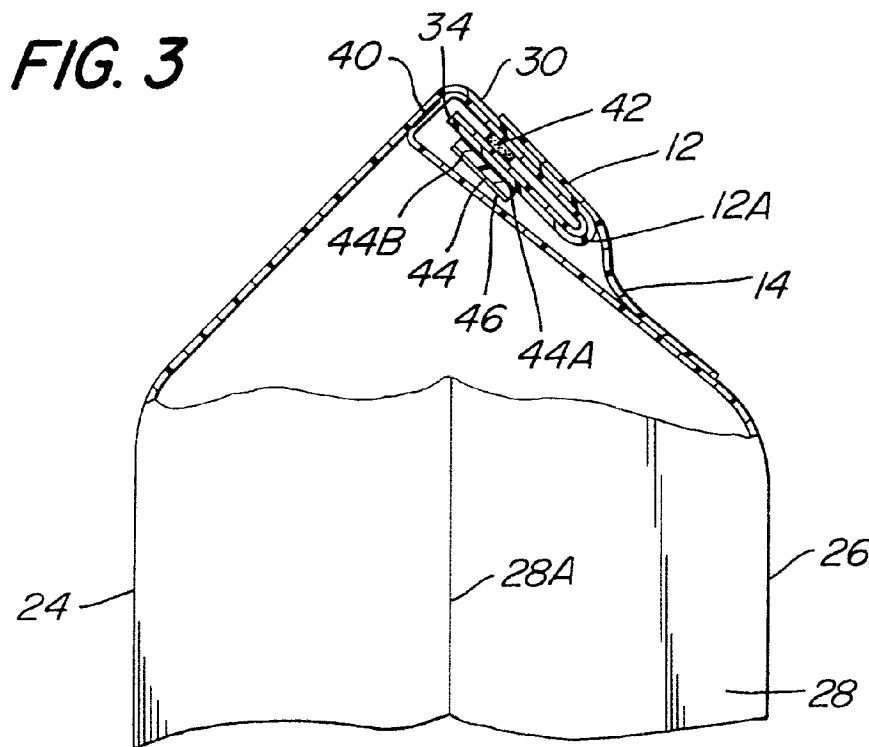
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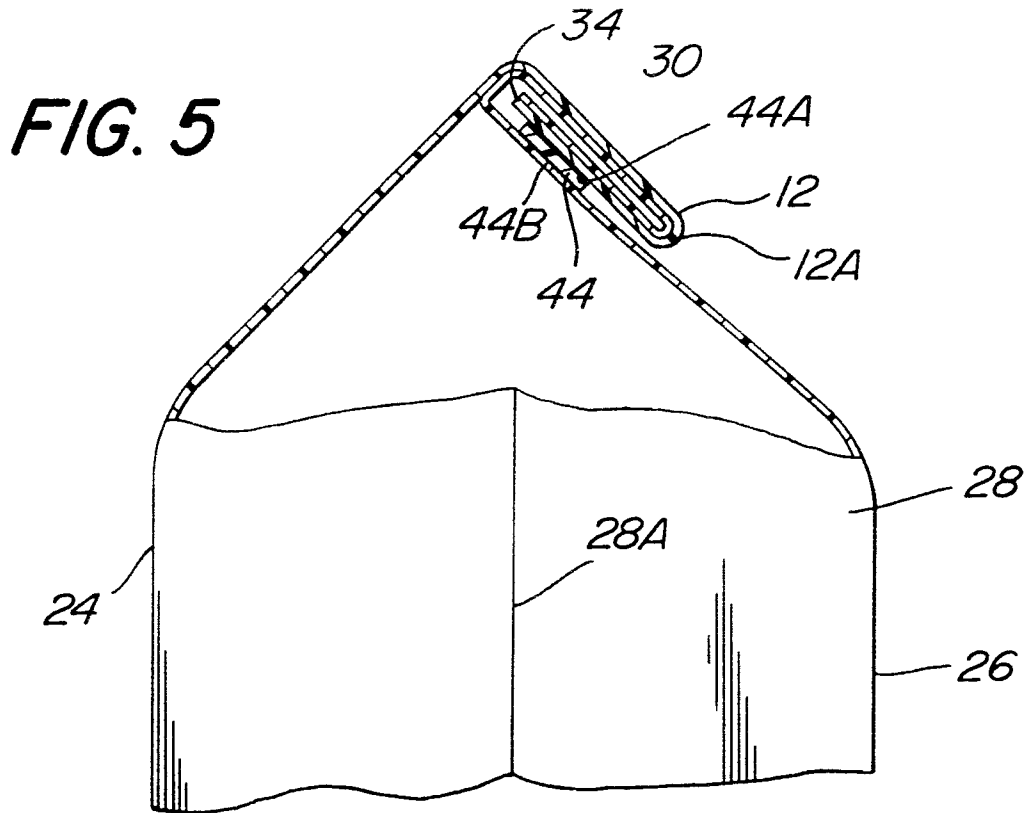
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(54) **Resealable package**

(57) A bag (20, 22) has a mouth (41) internally sealed by a heat seal (40). The top portion (34) of the walls of the bag form a flap (12) which is further sealed

by a bead (42). An extra adhesive layer (44B) is present to reapply the flap to the outside wall (26) of the bag when it has been partially emptied.





Description

This invention relates to packages, and more particularly to flexible packages for holding products under vacuum therein, and which are arranged to be repeatedly re-opened and resealed, while keeping the contents fresh.

Various flexible packages for holding particulate materials, e.g. ground or whole bean coffee, foodstuffs, pet foods and chemicals, etc., under vacuum therein are known, see e.g. US-A- 4,576,285, US-A- 4,705,174 and US-A- 4,913,561.

One common type of flexible package is the so-called "gusseted" package or bag. Typically such a package has walls formed from a web of flexible stock material, e.g. polyethylene, polyester, polypropylene, metal foil, and combinations thereof in single or multiple plies, into a body, having a face panel, a back panel and a pair of gusseted sides. Each gusseted side is formed by a pair of gusset sections and a central fold edge between a pair of outer fold edges. The lower end of the bag is permanently sealed, e.g. heat sealed, along a line extending across the width of the bag close to its bottom edge. The top of the bag is sealed across the entire width of the bag in a number of ways to maintain the contents under vacuum until the bag is opened. In one known package the top seal is made peelable by modifying the sealant layer with a peelable coating or incompatible additive. Thus, when the seal is peeled apart the unsealed portions form an open mouth through which the contents of the package may be removed. US-A- 4,705,174 discloses a package which includes a peel strip secured to the inner surface of the package below the top edges. The strip is an airtight interfacial seal which can be readily peeled apart to provide access to the interior of the package.

For many applications it is desirable to be able to reclose the package. One way of doing so is to fold over the top portion of the package contiguous with the peeled-open mouth to form a flap and to then apply a short length of adhesive tape or a small preprinted label onto a portion of the flap and a portion of the contiguous package to hold the flap in place. These tapes or labels only secure a small, e.g. approximately a 25 mm, portion of the folded package mouth, and are prone to releasing and allowing the mouth to reopen. They can be lost or misplaced.

Another approach is to make the adhesive an integral part of the flexible package. Fres-Co System USA, Inc. has provided a package for holding particulate chemicals, e.g. a crystalline catalyst, which included a band of an adhesive transfer on a portion of its exterior surface substantially below the mouth. The package was arranged so that the top edge portion forming the mouth could be folded over to form a flap and to bring the flap into engagement with the band of the adhesive transfer to hold the flap in place. A paper liner or cover strip was releasably secured over the band of the adhe-

sive transfer. Once that package was opened and a portion of its contents removed the cover sheet or strip was peeled off the band of the adhesive transfer to expose it. The top portion of the package was then folded over itself to form a flap and the flap brought into engagement with the exposed band of the adhesive transfer to hold the flap in place. While this package has proved generally suitable for its intended purposes, it has shortcomings. For example, when the package is to hold a substantial weight (e.g. 25 Kg. or more) of material, and a plurality of such packages are stacked on one another vertically, with the plane of the abutting surfaces forming the peelable mouth of each package being horizontal, the pressure on a package by the weight contents by the weight of the package(s) stacked thereon may cause the peelable seal at the mouth of the package to rupture or peel apart, thereby enabling the contents to spill out. In other cases the stress of shipping and/or distribution can result in the peelable mouth accidentally opening.

It is a first object of this invention to provide a flexible package which is peelably sealed and has a reclosable mouth, which overcomes the disadvantages of the prior art. It is a further object of this invention to provide a flexible package which includes adhesive means for enabling the package to be resealed after initial opening and which adhesive means is protected from contamination by dust, dirt, product residue, etc, until it is desired to be used.

According to the invention in one aspect there is provided a package comprising a front wall, a rear wall and sides, the upper portions of which form a mouth sealed by peelable closure means, the upper portions of the package being folded to form a flap **characterised in that** a second seal is present beyond the peelable closure means and in that an adhesive surface covered by a release sheet extends substantially across the width of one wall..

Other features are set out in the dependant Claims.

In order that the invention may be well understood it will now be described by way of illustration only with reference to the accompanying diagrammatic drawings in which:

Figure 1 is an isometric view of a package or the invention in its initially closed state;

Figure 2 is an isometric view showing the top of the package after being peeled open;

Figure 3 is an enlarged sectional view taken along the line 3-3 on Figure 1;

Figure 4 is an enlarged sectional view taken along 4-4 on Figure 2;

Figure 5 is a view similar to Figure 3, after reclosure;

Figure 6 is an isometric view of another embodiment of the package of the invention;

Figure 7 is a sectional view taken on line 7-7 on Figure 6;

Figure 8 is an isometric view of the top portion of the package shown in Figure 6 with the flap lifted up;

Figure 9 is a sectional view taken on line 9-9 on Figure 8;

Figure 10 is an isometric view of the top portion of the package of Figure 6 after it has been partially emptied and then reclosed; and

Figure 11 is a sectional view taken on the line 11-11 on Figure 10.

A flexible package of the invention comprises a gusseted bag 20 adapted to hold under vacuum any material, e.g. coffee beans, ground coffee, chemicals and the like for dispensing, e.g. pouring, therefrom. The bag or package 20 is formed of a web of any suitable, flexible material in a manner to be described hereinafter.

The package 20 comprises a front wall or panel 24, a rear wall or panel 26, a pair of gusseted sides 28, a top end portion 30 and a bottom end portion 32. The top end portion 30 of the package terminates in a top marginal edge 34 (Figures 1 to 4). The bottom end portion 32 of the package terminates in a bottom marginal edge 36. The package has a vertical seamed fin 38. If desired, a one-way venting valve (not shown) may be included in any suitable portion of the package to enable gases which may be produced by the material(s), e.g. coffee,

contained within the sealed package to vent to the ambient air without air gaining ingress to the interior of the package.

The front panel 24, rear panel 26, and the two gusseted sides 28 of the package are all integral portions of a single sheet or web of the flexible material, of single or multiple ply or layers, which has been folded and seamed to form a tubular body. One particularly useful laminated web is commercially available from Fres-Co System USA, Inc. of Telford PA, United States of America. That material comprises a 48 gauge polyester layer, ink, an adhesive layer, a 28 gauge aluminium foil layer, another adhesive layer, and a 600 gauge easy open sealant layer. When a web of such material is formed into the tubular body for the package the polyester layer serves as the outer surface of the package, with the easy-open sealant layer being the inner surface of the package.

The mouth of the bag 20 is internally hermetically sealed along a transverse, peelable seal line 40 after the bag has been filled and vacuum sealed. The seal line 40 is formed in a conventional manner and extends across the width of the bag 20 slightly below the top

edge 34 and the seal includes the gusseted sides. The peelable seal line 40 is formed by heat sealing of the abutting easy-open sealant layer portions forming the inner surface of the bag 20. Alternatively, the seal line 40 can be formed by any other conventional manner.

The lower or bottom end 32 of the bag is sealed closed along a transverse, permanent seam line close to the bottom edge 36, as is the vertical seamed fin 38.

When the bag 20 is filled, and vacuum sealed its contents, e.g. whole bean coffee or chemicals, will be kept isolated from the ambient air by the seal line 40. The top portion 30 of the package is folded along a fold line 12A to form a flap 12, Figure 1. The flap 12 is held in place by an elongate bead of adhesive 42 (Figure 3), e.g. a hot-melt adhesive between the abutting surfaces. As shown in Figure 3 the hot-melt adhesive 42 is interposed between the outer surface of the rear panel 26 between its top edge 34 and the fold line 12A (i.e. the portion forming rear surface of the flap 12) and the outer surface of the rear panel immediately below the fold line 12A. As shown in Figure 4 the bead 42 was applied to the outer surface of the panel 26. The folded-over flap reinforces the peelable seal 40 to prevent it from accidentally peeling apart even when pressure is applied to the package (as may occur during the stacking of plural packages or during rough handling).

A strip of double sided adhesive tape 44 is secured to the front panel between the top marginal edge 34 and the fold line 12A. The tape 44 extends for a substantial width of the front panel 24 and includes an inner surface 44A secured to the underlying surface portion of the front panel 24. A release sheet, i.e. a cover or liner strip 46 is releasably secured to the outer surface 44B of the tape strip 44. The adhesive tape is a two-sided adhesive film preferably that sold by Minnesota Mining & Manufacturing Company (3M) under the product designation "3M Double Coated Film Tape #476L". The liner or cover strip 46 is paper. A strip of adhesive tape 14 is used to hold the flap 12 to the panel 26, as shown in Figure 3, the tape 44 thus being shielded within a pocket.

To gain access to the contents of the package the tape 14 is removed and the free edge of the flap 12 is grasped and pulled outward away from the plane of the portion of the package to which the flap is secured by adhesive 42. This action breaks the adhesive bead 42 at the interface with the underlying portion of the package, whereupon the flap can be unfolded to the condition shown in Figure 4. The top marginal edges 34 of the front and rear panels of the package can then be grasped and pulled apart in the direction of the arrows in Figure 4 to peel open the peelable seal line 40, and thereby open the mouth 41 of the package as shown in Figure 2. The contents of the package can then be poured through the open mouth 41.

The package 20 is closed again by refolding the top portion along the fold line 12A to reform the flap 12. The inner strip 46 is removed from the tape strip 44, exposing the adhesive outer surface 44B of that strip. The upper

portion of the package from the fold line 12A to the marginal edge of the package, i.e. the portion of the package forming the flap 12, is then folded over itself so that the exposed adhesive surface 44B of the strip engages the rear panel 26 of the package, to releasably secure the folded over portion in place as shown in Figure 5. The package is reopened by pulling on the double folded portion of the package to break the adhesion of the tape 44, whereupon the flap 12 can be unfolded and the mouth 41 reopened. The package may be reopened repeatedly so long as the adhesive outer surface 44B of the tape 44 remains relatively uncontaminated so that it still exhibits adhesive properties. To ensure such action the liner strip 46 (if retained) can be reapplied to the outer surface 44B of the tape strip 44.

The package 22 of Figure 6 is considerably larger than package 20 and is suitable for packaging of large quantities of particulate materials, e.g. agricultural chemical, dry pet foods, etc. The adhesive means for reclosing the package 22 is located on a portion of the package not forming the flap 12. (The same reference numerals will be used to describe this embodiment, where convenient.)

As can be seen in Figures 8 and 9, the package 22 includes a pair of peelable seal lines 40A above a sealable line 40B. The adhesive strip for reclosing the mouth of the bag 22 is similar to the strip 40 of package 20, but it is larger, i.e. it is a wide strip 44¹, having an inner surface secured to the rear panel 26 of the bag below the edge 34 of the folded flap 12. The strip 44¹ extends substantially the full width of the rear panel 26 and includes an outer surface which is initially covered by a liner or cover strip 46¹.

Initial opening of the package 22 is similar to that of package 20 except that there is no tape strip 14 to remove. Thus, once the flap 12 is lifted up from its position in Figures 6 and 7 to the position shown in Figures 8 and 9, the mouth of the bag 22 can be pulled open (peeled apart) by pulling on the upper edges of the front and rear panels of the bag in the direction of the arrows in Figure 9. The action breaks in succession the peelable seal lines 40A and 40B.

The package 22 is reclosed by refolding the top portion of the package 22 along the fold line 12A to reform the flap 12. The liner strip 46¹, is removed from the tape strip 44¹ on the rear panel, exposing the adhesive outer surface of that strip. The upper portion of the package from the fold line 12A to the marginal edge 34 of the package, i.e. the portion of the package from the flap 12, is then folded over itself and engaged with the exposed adhesive surface of the strip 44¹ on the rear panel 26 of the package 22. The package 22 can readily be opened again by pulling on the double folded portion of the package to break the adhesion of the interposed tape 44¹, whereupon the flap 12 can be unfolded and the mouth opened.

A package or bag of the invention is resistant to premature or accidental opening. The bag may however be

opened when required by pulling side panels apart, i.e. a knife or scissors are not needed. The invention is not limited to the embodiment shown. The package may be of any cross sectional shape, and of any size.

Claims

1. A package (20,22) comprising a front wall (24), a rear wall (26) and sides (28), the upper portions (34) of which form a mouth (41) sealed by peelable closure means (40;40B), the upper portions of the package being folded to form a flap (12) **characterised in that** a second seal (42) is present beyond the peelable closure means (40,40B) and in that an adhesive surface (44B; 44¹B) covered by a release sheet (46;46¹) extends substantially across the width of one wall (24 or 26).
2. A package (20, Figures 1 to 5) according to Claim 1, wherein the second seal (42) is present between the inside faces of the panels (24, 26) in the upper portion (34) thereof.
3. A package (22, Figures 6 to 11) according to Claim 1, wherein the second seal (42) is present on the outside of a panel (26) between the outside faces of the panels (24 and 26).
4. A package according to any preceding Claim, wherein the adhesive surface (44B; 44¹B) is the outer surface of a strip (44; 44¹) secured by adhesive on its inner face (44A; 44¹A) to the panel (24 or 26).
5. A package (20) (Figures 1 to 5) according to Claim 4, wherein the strip (44) is located on the panel (24) adjacent the top (34) thereof.
6. A package according to Claim 5, including a tape (14) to hold the flap (12) to the panel (24) with the adhesive surface (44B) between the flap (12) and the facing panel (26).
7. A package (22) (Figures 6 to 11) according to any of Claims 1 to 4 adapted to hold substantial weight, wherein the adhesive surface (44¹B) is present on the panel (26) below the edge (34) of the flap (12) when the package is first filled and unopened.

FIG. 1

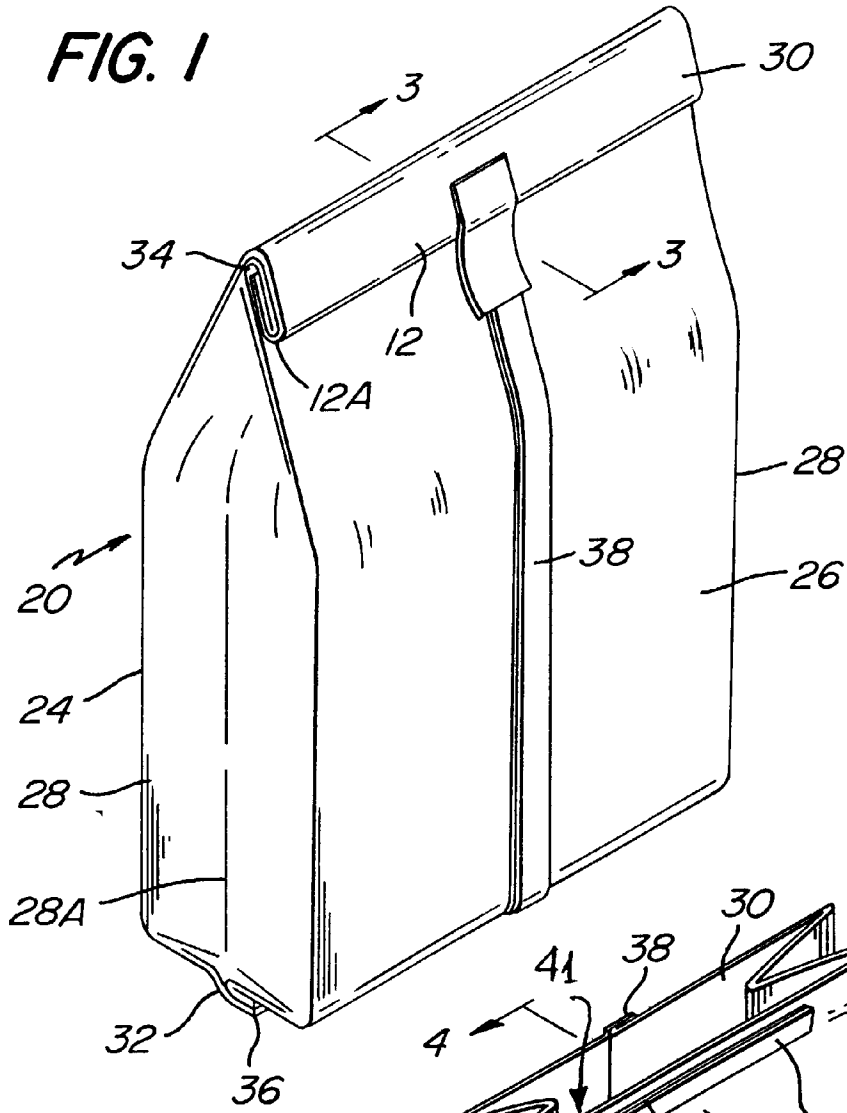


FIG. 2

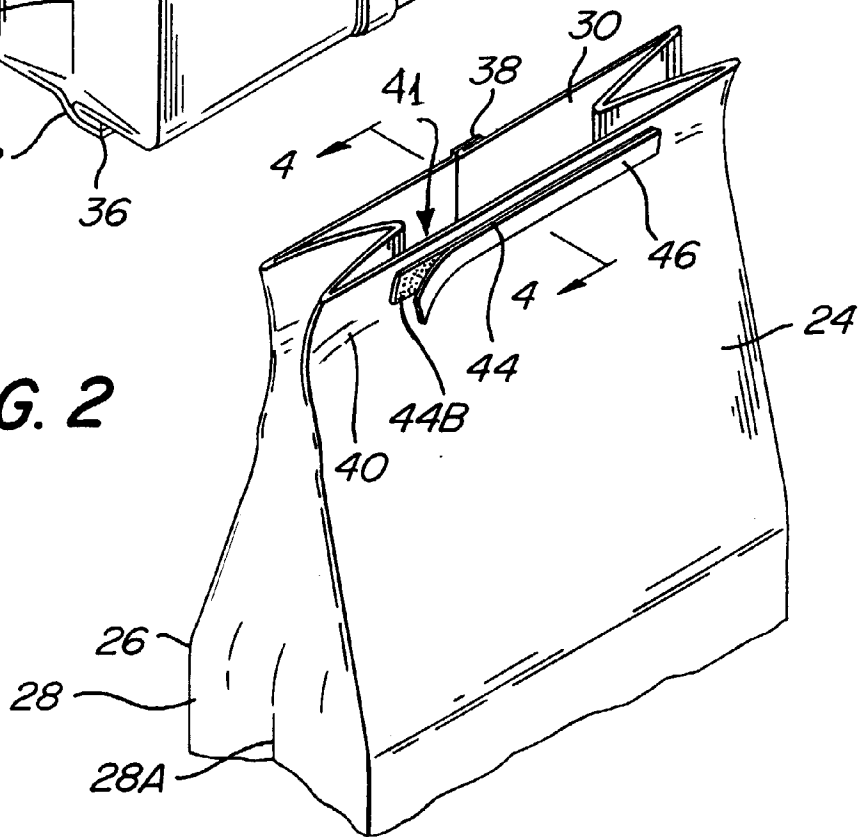


FIG. 3

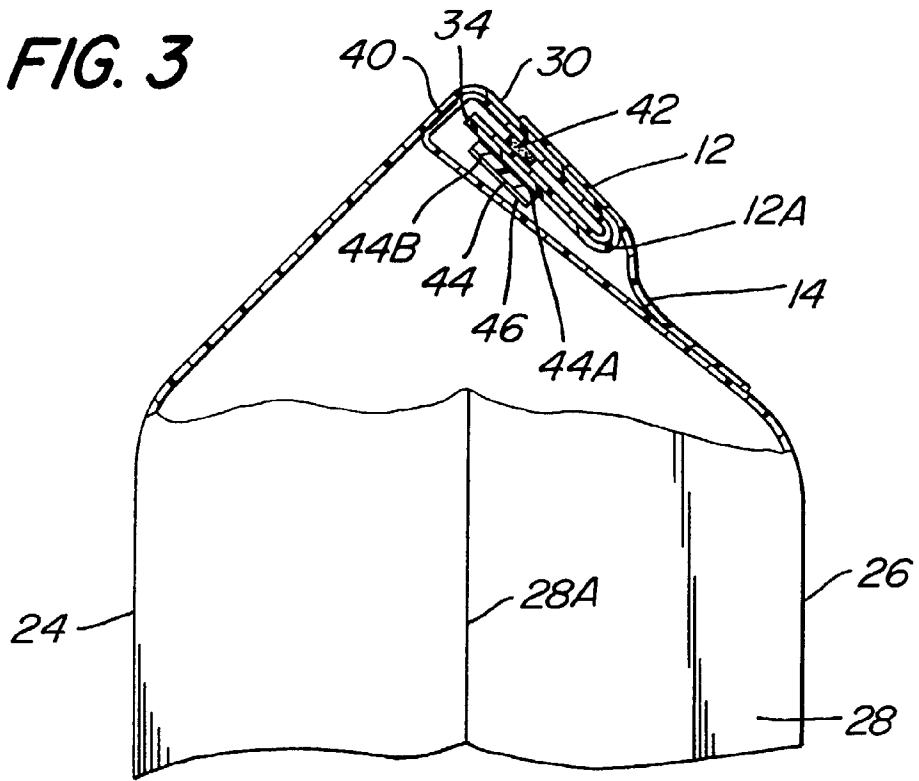
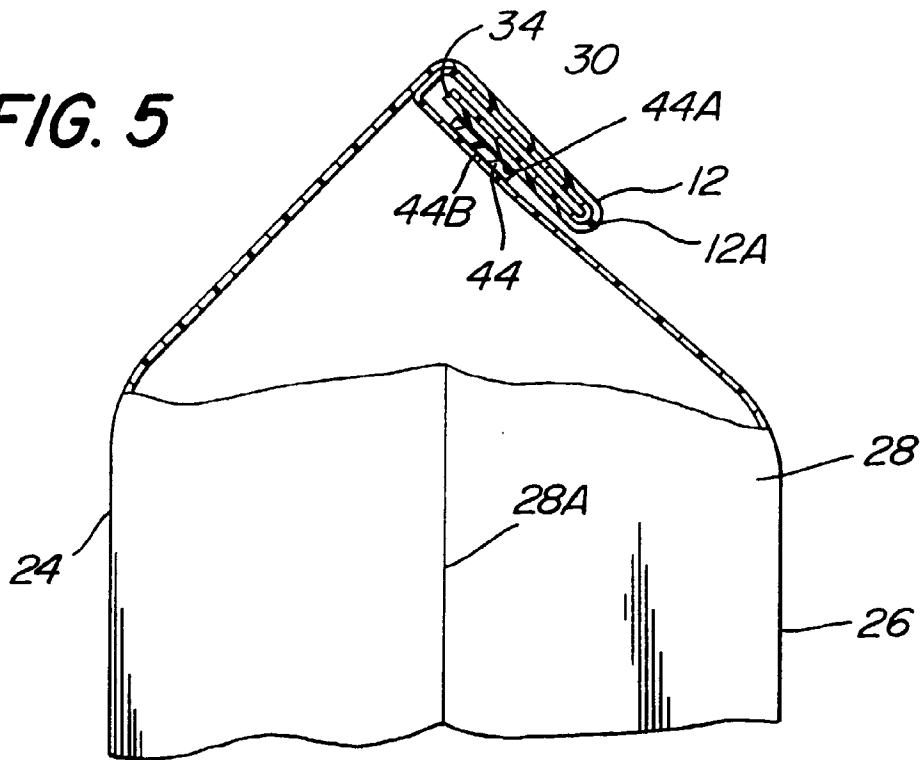
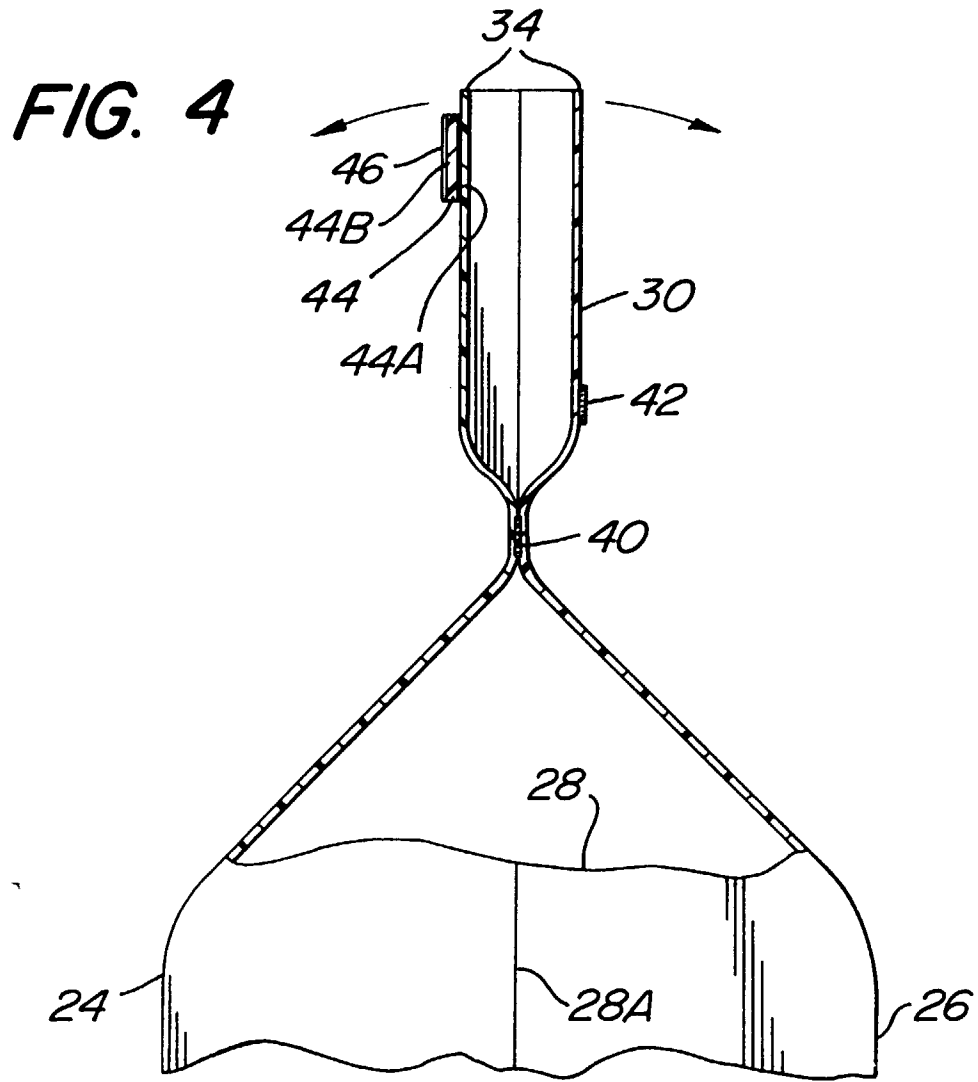


FIG. 5





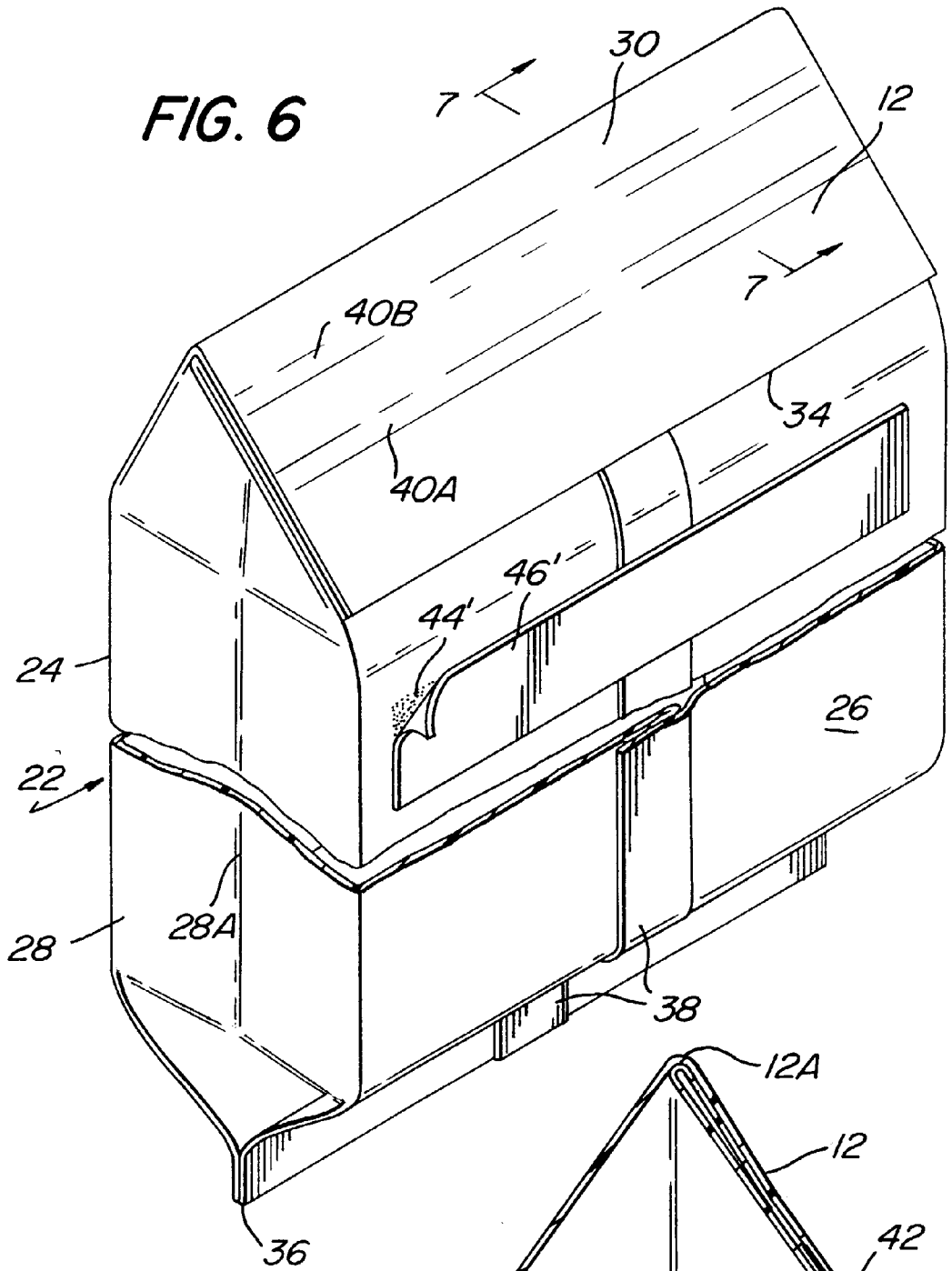
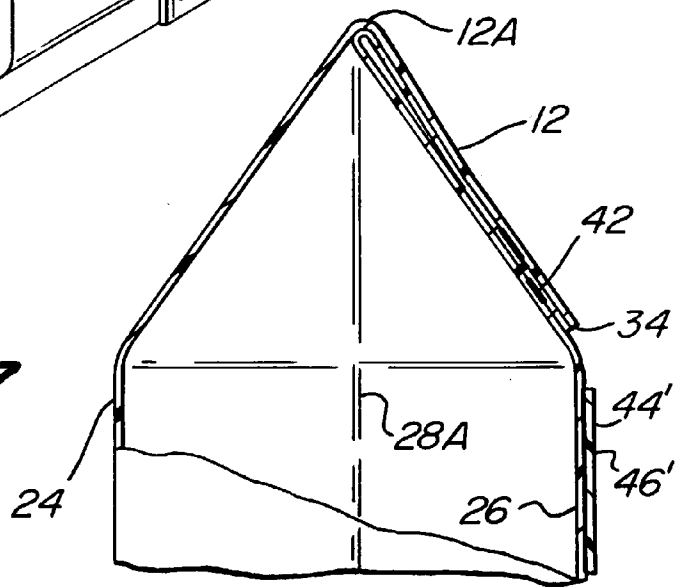


FIG. 7



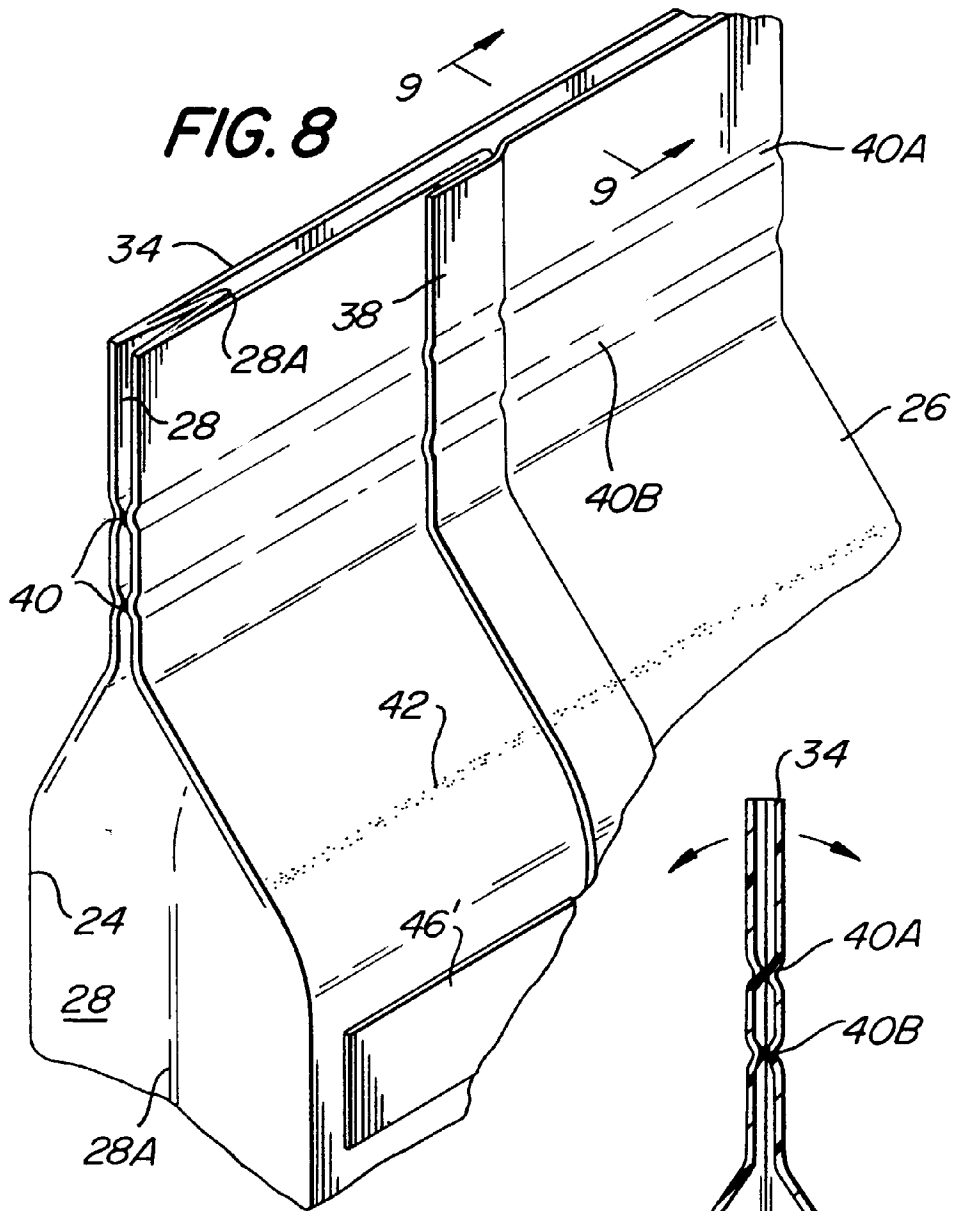


FIG. 9

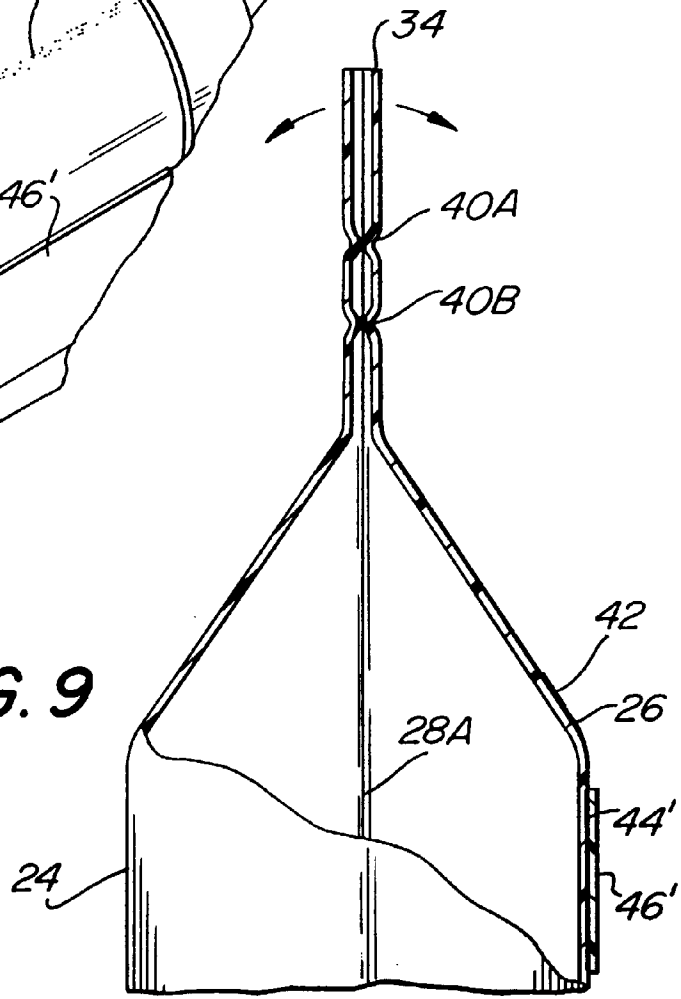


FIG. 10

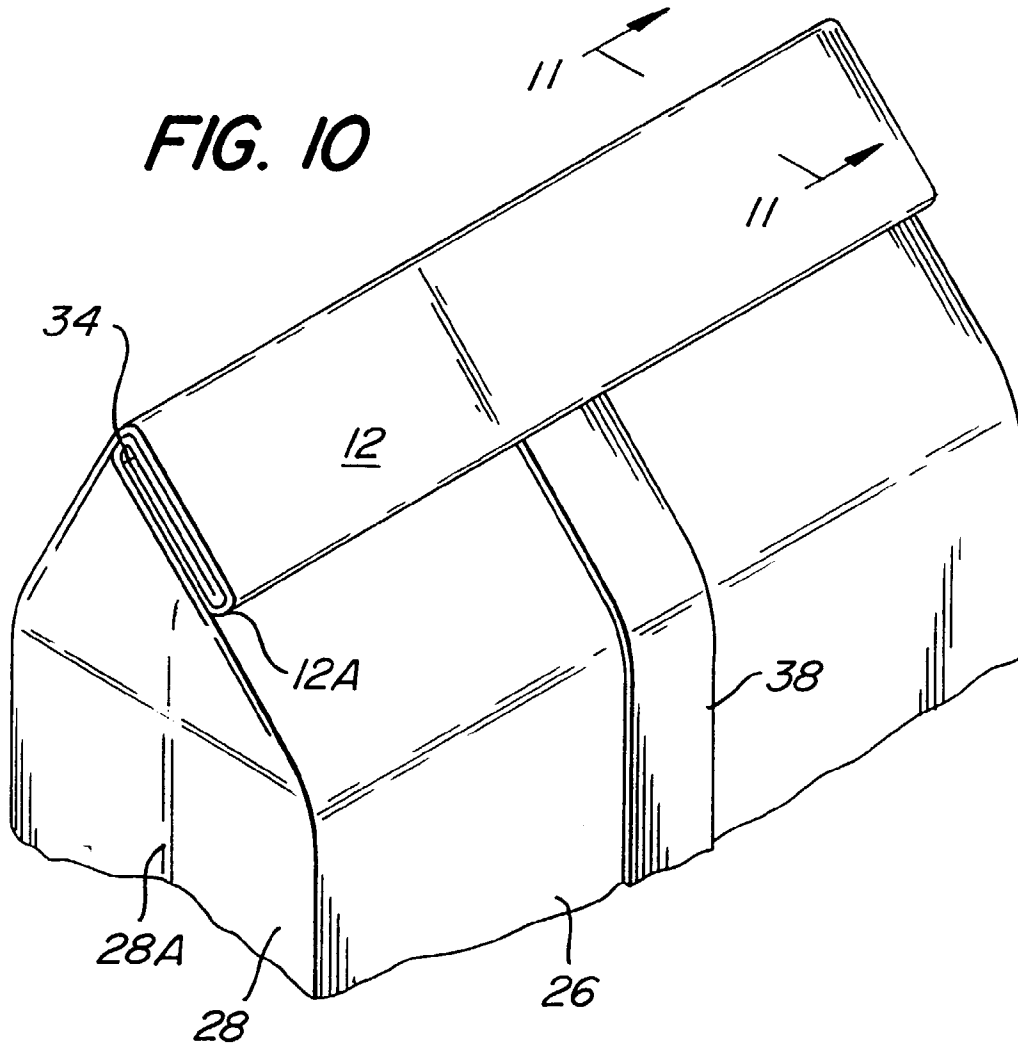


FIG. 11

